

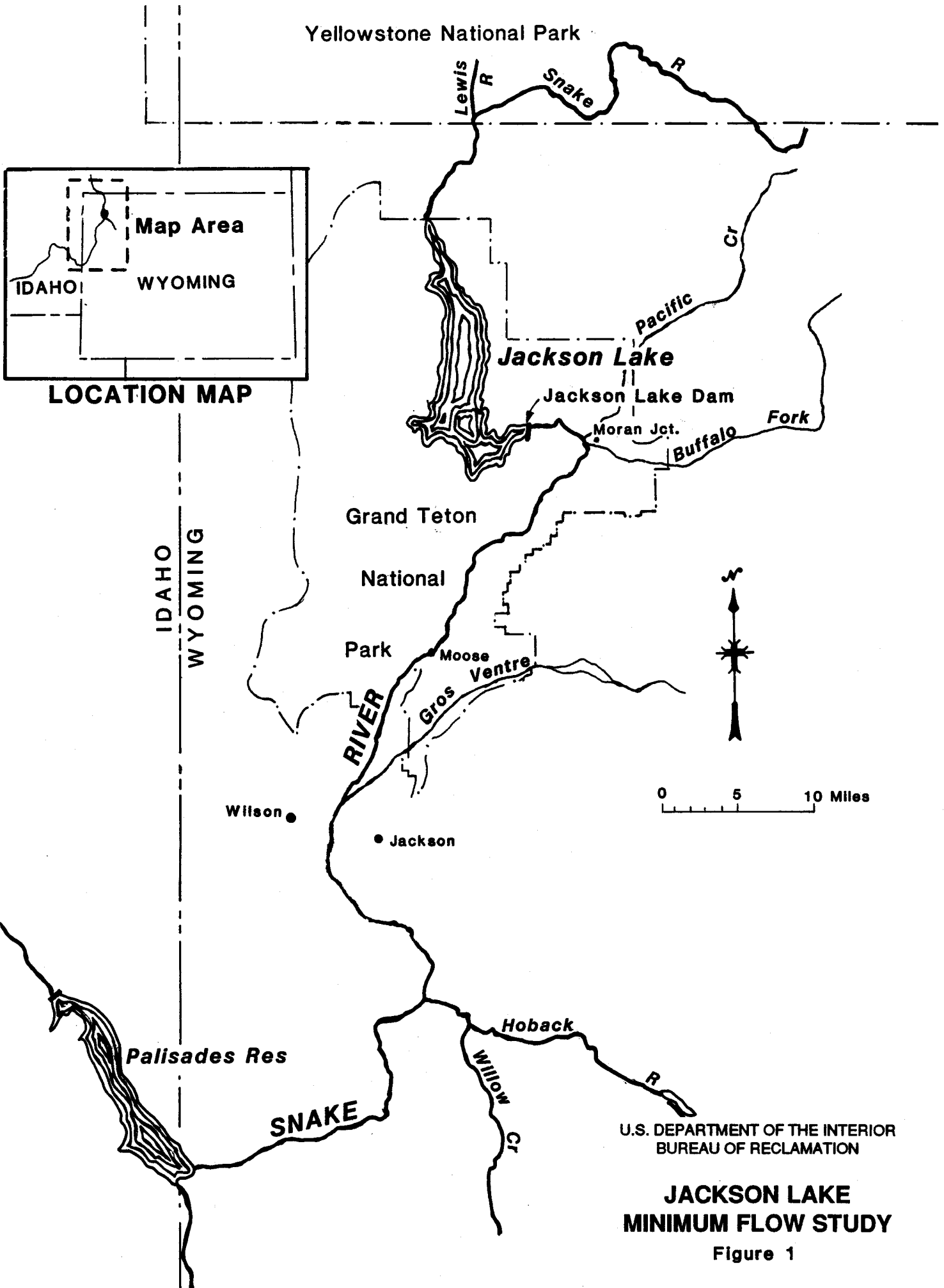
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**SNAKE RIVER BELOW JACKSON LAKE,  
WYOMING**

**-MINIMUM STREAMFLOW STUDY-  
PRELIMINARY REPORT**

**U.S. Department of The Interior  
Bureau of Reclamation  
Pacific Northwest Region  
Boise, Idaho**

**February 1996**



**JACKSON LAKE  
MINIMUM FLOW STUDY**

Figure 1

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## SUMMARY OF STUDY ANALYSIS

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The Bureau of Reclamation (Reclamation) currently attempts to provide a winter streamflow of at least 280 cubic feet per second (cfs) below Jackson Lake Dam during the winter. Water released from the dam provides almost all of the streamflow of the Snake River from the dam to the mouth of Pacific Creek, 4.3 miles downstream (Frontispiece map). The Wyoming Department of Game and Fish (WDGF) has requested this level of streamflow for the maintenance of fish habitat. Under most hydrologic conditions, streamflow exceeding this level can be provided without consequences to irrigation water rights or violation of reservoir spaceholder contracts. The recent drought has created conditions where 280 cfs could not be maintained without such impacts. The State of Wyoming has reservoir space, which through exchange provisions can be used, if the State chooses, to augment winter streamflows below Jackson Lake Dam. No other Snake River system reservoir capacity is contractually available to provide water for instream flows.

Recently, local fishing interests (Trout Unlimited) asked Reclamation to consider increasing the Jackson Lake Dam minimum winter release from the current 280 cfs to 400 cfs. They believe that 280 cfs is too low for recreation purposes and asked Reclamation to consider methods of increasing the minimum winter release. Reclamation agreed to conduct a preliminary level analysis of increasing Snake River winter streamflows, but only for information purposes. Additional detailed studies could be pursued if interest warrants and cost-sharing could be obtained.

An important issue is that the Trout Unlimited request conflicts with the recommended minimum Jackson Lake Dam winter streamflow release of 280 cfs. The 280 cfs release is based on biological need for fish in the river reach below Jackson Lake. In contrast, the Trout Unlimited request is based upon experience from the commercial and public users of the river, over the Snake River reach from Jackson Lake Dam to Palisades Reservoir.

It is also important to note that a release of 280 cfs at Jackson Lake Dam results in a flow of 355 to 380 cfs in the Snake River where Pacific Creek joins the Snake River.

A major concern is potential impacts on irrigation.

Hydrologic comparisons were made between the scenarios studied and the base operation for:

- \* The number of times the end-of-month storage during the 1929-1989 historical period (62 years) encroached on (exceeded) the required flood control space. The goal is a maximum of 647,000 acre-feet.
- \* Number of times the monthly Jackson Lake discharge to the Snake River, measured in terms of streamflow near Moran, Wyoming over the 1929-1989 historical period, does not meet a streamflow of 400 cfs or greater.

It should be noted that the end-of-month physical operations model that was used in this study does not consider water rights. The operations model uses streamflow as the main priority, and flood control space is secondary.

The tabular information included below shows the number of years the Jackson Lake end-of-month storage exceeded 647,000 acre-feet:

| <u>Oct</u> | <u>Nov</u> | <u>Dec</u> | <u>Jan</u> | <u>Feb</u> | <u>Mar</u> | <u>Apr</u> | <u>May</u> |
|------------|------------|------------|------------|------------|------------|------------|------------|
|------------|------------|------------|------------|------------|------------|------------|------------|

Operation 133 (base), 280 cfs (minimum winter streamflow) and  
200,000 acre-feet (winter flood space)

|   |   |   |   |   |   |   |    |
|---|---|---|---|---|---|---|----|
| 0 | 1 | 1 | 1 | 3 | 7 | 4 | 32 |
|---|---|---|---|---|---|---|----|

Operation 951 (scenario), 400 cfs (minimum winter streamflow) and  
200,000 acre-feet (winter flood space)

|   |   |   |   |   |   |   |    |
|---|---|---|---|---|---|---|----|
| 0 | 1 | 1 | 1 | 3 | 7 | 4 | 32 |
|---|---|---|---|---|---|---|----|

Operation 956 (scenario), 400 cfs (minimum winter streamflow) and  
150,000 acre-feet (winter flood space)

|   |   |    |    |   |    |    |    |
|---|---|----|----|---|----|----|----|
| 2 | 6 | 13 | 17 | 9 | 11 | 14 | 32 |
|---|---|----|----|---|----|----|----|

Operation 951 would not differ from the base operation.

Comparing Operation 956 (scenario with 50,000 acre-foot less flood space) to Operation 133 shows that 400 cfs could be met, but the end-of-month Jackson Lake storage change in the 647,000 acre-foot storage exceedance varies considerably, requiring the need to accomplish structural protection for Jackson Lake Dam gates to protect them from lake ice pressure.

When a salmon flushing-flow demand of 427,000 acre-feet from the Snake River system is added to the Snake River operation, then the number of times the Jackson Lake end-of-month storage exceeded 647,000 acre-feet becomes:

| <u>Oct</u> | <u>Nov</u> | <u>Dec</u> | <u>Jan</u> | <u>Feb</u> | <u>Mar</u> | <u>Apr</u> | <u>May</u> |
|------------|------------|------------|------------|------------|------------|------------|------------|
|------------|------------|------------|------------|------------|------------|------------|------------|

Operation 952 (base with 427,000-acre-foot salmon flushing  
flow demand), 280 cfs (minimum winter streamflow) and  
200,000 acre-feet (winter flood space)

|   |   |   |   |   |   |   |    |
|---|---|---|---|---|---|---|----|
| 0 | 1 | 1 | 1 | 2 | 6 | 4 | 27 |
|---|---|---|---|---|---|---|----|

Operation 953 (scenario with 427,000-acre-foot salmon flushing  
flow demand), 400 cfs (minimum winter streamflow) and  
200,000 acre-feet (winter flood space)

|   |   |   |   |   |   |   |    |
|---|---|---|---|---|---|---|----|
| 0 | 1 | 1 | 1 | 2 | 7 | 2 | 27 |
|---|---|---|---|---|---|---|----|

Operation 955 (scenario with 427,000-acre-foot salmon flushing-  
flow demand), 400 cfs (minimum winter streamflow) and  
150,000 acre-feet (winter flood space)

|   |   |   |    |   |    |    |    |
|---|---|---|----|---|----|----|----|
| 2 | 5 | 9 | 16 | 9 | 12 | 12 | 27 |
|---|---|---|----|---|----|----|----|

Comparing Operations 953 to 952 (base or present), and 955 to 952, results in the same conclusions as comparing operations 951 to 13 and 953 to 133, respectively.

It is reasonable to assume that although only end-of-month values were analyzed, daily values would probably support the same or similar conclusions.

The tabular information below shows the number of times the Jackson Lake end-of-month discharge to the Snake River, measured in terms of streamflows near Moran, Wyoming, does not meet a streamflow of 400 cfs or greater:

|            |            |            |            |            |            |            |            |
|------------|------------|------------|------------|------------|------------|------------|------------|
| <u>Oct</u> | <u>Nov</u> | <u>Dec</u> | <u>Jan</u> | <u>Feb</u> | <u>Mar</u> | <u>Apr</u> | <u>May</u> |
|------------|------------|------------|------------|------------|------------|------------|------------|

Operation 133 (base) 280 cfs (minimum winter streamflow) and  
200,000 acre-feet (winter flood space)

|    |    |    |    |    |    |    |    |
|----|----|----|----|----|----|----|----|
| 19 | 18 | 17 | 13 | 15 | 48 | 12 | 10 |
|----|----|----|----|----|----|----|----|

Operation 951 (scenario), 400 cfs (minimum winter streamflow) and  
200,000 acre-feet (winter flood space)

|   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|---|---|---|---|---|---|---|---|

Operation 956 (scenario), 400 cfs (minimum winter streamflow) and  
150,000 acre-feet (winter flood space)

|   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|---|---|---|---|---|---|---|---|

It is evident for operation 133, that 400 cfs or greater would not be met for a number of months because the minimum streamflow target was 280 cfs.

For both scenario operations 951 and 956, the 400 cfs minimum streamflow could be met.

When a salmon flushing-flow demand of 427,000 acre-feet from the Snake River system operation is added to the Snake River operation, the number of times the 400 cfs minimum streamflow is not met becomes:

|                                                                                                                                                             | <u>Oct</u> | <u>Nov</u> | <u>Dec</u> | <u>Jan</u> | <u>Feb</u> | <u>Mar</u> | <u>Apr</u> | <u>May</u> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Operation 952 (base with 427,000-acre-foot salmon flushing-flow demand), 280 cfs (minimum winter streamflow) and 200,000 acre-feet (winter flood space)     |            |            |            |            |            |            |            |            |
|                                                                                                                                                             | 10         | 18         | 22         | 17         | 17         | 46         | 12         | 11         |
| Operation 953 (scenario with 427,000-acre-foot salmon flushing-flow demand), 400 cfs (minimum winter streamflow) and 200,000 acre-feet (winter flood space) |            |            |            |            |            |            |            |            |
|                                                                                                                                                             | 0          | 1          | 1          | 0          | 0          | 0          | 0          | 0          |
| Operation 955 (scenario with 427,000-acre-foot salmon flushing-flow demand), 400 cfs (minimum winter streamflow) and 150,000 acre-feet (winter flood space) |            |            |            |            |            |            |            |            |
|                                                                                                                                                             | 1          | 0          | 0          | 0          | 0          | 0          | 0          | 0          |

Again, as was expected, the base operation 952 would not meet the 400 cfs in many months because the minimum streamflow value was 280 cfs. Scenario operations 953 and 955 could meet the 400 cfs minimum streamflow need.

The results for a day-to-day operation would be similar for the scenarios meeting the 400 cfs.

## Further Study and Considerations

The next step in the process is a detailed study, if implementation to increase the Jackson Lake Dam 280 cfs minimum streamflow release to the Snake River is a goal. Before a detailed study should be undertaken, the following "operation consideration" would need to be resolved:

THE WDGf WANTS RECLAMATION TO MAINTAIN A 280 CFS MINIMUM STREAMFLOW RELEASE FROM JACKSON LAKE DAM INTO THE SNAKE RIVER. THIS STREAMFLOW IS FOR FISHERY MAINTENANCE OF TROUT HABITAT.

IF RESPONSIBLE PARTIES AGREE THAT THE JACKSON LAKE DAM MINIMUM STREAMFLOW RELEASE TO THE SNAKE RIVER COULD BE GREATER THAN 280 CFS, FURTHER STUDY COULD BE WARRANTED.

If the above issue resolution results in an agreement to look at minimum streamflows greater than 280 cfs, and detailed studies are undertaken, the following issues would have to be resolved through the study process:

- The possibility that the winter flood space of 200,000 acre-feet be reduced. This analysis used 200,000 and 150,000 acre-feet. If reduction or change is called for, the acceptable amount should be determined and may be more than 150,000 but less than 200,000 acre-feet.

Somewhere between the 200,000 and 150,000 acre-feet may be acceptable, and not require structural change to protect Jackson Lake Dam gates from ice pressure.

It may be helpful to irrigation operations to maintain a space allocation of less than 200,000 acre-feet if a minimum streamflow greater than 280 cfs is desirable.

- Irrigation operations (as part of the scenarios analyzed relating to a change in the 280 cfs minimum streamflow) would have to be acceptable.
- Flood control needs would have to be met for scenarios analyzed.
- Impacts to fish, wildlife, recreation, and other important activities would need to be determined and addressed in an acceptable manner.
- Other Snake River system reservoir operations would need to be studied for each scenario and result in acceptable operations.

## CHAPTER I. INTRODUCTION

---

### Study Objective

The objective of this study is to provide information on the possible effects of increasing the Jackson Lake Dam minimum winter release from 280 cfs to 400 cfs, and the effects of identifying measures needed.

### Setting

Jackson Lake is located on the Snake River within Teton National Park in Wyoming (see frontispiece map) and is the furthest upstream of the major storage reservoirs located on the Snake River. It is part of a system of seven Federal and two private reservoirs (Henrys Lake and Milner) with a total capacity of over 4 million acre-feet. To maintain the greatest flexibility, Reclamation operates the system to maintain storage as high in the system (farthest upstream) as possible. American Falls Reservoir (capacity of 1,672,590 acre-feet) is drawn-down to meet irrigation water demands first, followed by Palisades Reservoir (capacity of 1,200,000 acre-feet). The upstream reservoirs—Jackson Lake (capacity of 847,000 acre-feet) and the reservoirs on the Henrys Fork, including Island Park Reservoir (capacity of 135,000 acre-feet); Henrys Lake (capacity of 90,000 acre-feet), and Grassy Lake (capacity of 15,000 acre-feet) — are left as full as possible while meeting flood space criteria.

In an average-to-wet year, Jackson Lake can end the irrigation season with only the flood control space evacuated. In that case, natural winter inflows are passed through the reservoir to maintain the flood control space. The historical average-year inflow into the lake has been more than 500 cfs. The reservoir is filled by storing the peak inflows during the spring flood.

In years below normal or low-water precipitation years, such as 1994, irrigation demands require more water withdrawals from the lake, leaving the lake volume below that required for flood control.

The use of stored water is a function of water supply and irrigation demand. In years of less-than-average snowpack in which drought conditions prevail, snowmelt occurs earlier than for a normal water year. Irrigation demands, therefore, develop earlier because dry ground conditions and crop demands result in early water demands. Spring rains often change the situation as they simultaneously increase the water supply, reduce crop demands, and, except in the worst potential flood situation, delay snowmelt.

To fully utilize Palisades and American Falls Reservoirs, Jackson Lake Dam operations are continuously modified during the year as conditions change. This flexibility allows more efficient use of the available water supply. Operational risks can be very high. In a year when system utilization approaches 100 percent, an error of only 10 percent in predicting the total system storage use equates to almost one-half the capacity of Jackson Lake.

Reclamation currently operates the system to fulfill as many water-related needs as possible within the constraints of Federal law, State law, and spaceholder contracts. Operation of the reservoir system to meet only State water law and contractual agreements would result in no winter releases during dry years; this has occurred numerous times in the past. In response to requests to provide instream flows to maintain the biological health of the river, Reclamation uses its operational flexibility in the entire upper Snake River system to provide winter streamflows below Jackson Lake Dam.

The 280 cfs minimum streamflow target has been reduced during low precipitation years with streamflows as low as 100 cfs occurring for extended periods because other reservoir operation commitments had priority.

The State of Wyoming has entered into a contract with Reclamation for 33,000 acre-feet of space in Palisades Reservoir, located downstream of Jackson Lake, in Idaho. This space was reserved in the reservoir to enable Wyoming to meet its Snake River Compact obligations. This storage can be used at the discretion of Wyoming; to maintain higher Jackson Lake levels, to supplement low fall/winter streamflows, or some combination through exchange arrangements. All decisions on the use of this space will be made by Wyoming through its appropriate authorities. The purchase of such storage space does not relieve Wyoming of its obligation under the Compact. Wyoming also has the option of marketing its Palisades storage water through the Snake River rental pool.

## **Jackson Lake Dam Operating Criteria**

### **Flood control**

Jackson Lake and Palisades Dams provide flood protection on the Snake River as required by Section 8 of the 1949 Flood Control Act. This function is administered by the Corps of Engineers. Flood control criteria call for the use of these reservoirs to aid in controlling streamflows on the Snake River at Heise, Idaho to a maximum of 20,000 cfs.

A winter flood space reservation of 200,000 acre-feet is required at Jackson Lake from October 1 through April 30 of each year to provide protection from rain-on-snow events. Maximum storage content with this operation is 647,000 acre-feet, and the maximum water surface elevation is 6,761 feet above mean sea level. Jackson Lake Dam is also operated to provide flood control in the Wilson, Wyoming area which has experienced encroachment on the floodplain. This encroachment has restricted the effective channel capacity. Dikes are used to pass flood-flows up to 20,000 cfs; however, relief from flows in excess of 10,000 cfs is provided when flood space is available in Jackson Lake and other authorized project purposes are not compromised.

The actual amount of flood control space needed at Jackson Lake and Palisades Reservoir is determined daily from March through July, using reservoir rule curves that determine the space requirement based on the predicted spring runoff. The required flood control space is allocated 75 percent minimum to Palisades Reservoir.

Releases are made as necessary during the summer and fall months to meet downstream irrigation demands and to lower the lake to the flood control elevation.

### **Fall/winter Operation For Lake Trout**

Beginning on October 1, Jackson Lake Dam protecting the lake trout redds is a consideration. In most years, the lake has been drawn-down only to elevation 6,761 feet and inflow is passed to maintain that surface elevation. In years when substantial releases from storage are required to meet irrigation demands, the lake is at a much lower elevation on October 1. Fall and winter outflow is reduced to increase the elevation to 6,761 feet.

### **Winter Release Operations**

Winter releases at Jackson Lake Dam have typically ranged from 100 cfs up to the total inflow rate (from 350 to 700 cfs) depending upon the fall and winter streamflow and watershed conditions. In most years, water supply conditions are such that winter releases meet or exceed the recommended minimum for fishery protection and enhancement. However, there are rare occasions when meeting the storage contracts in Jackson Lake requires releases as low as 100 cfs for extended periods. Exchange agreements for storage space in Palisades Reservoir can allow some additional streamflow. The State of Wyoming may choose to use some or all of its storage in Palisades Reservoir in exchange for water from Jackson Lake to supplement the winter release.

### **Flow Release Demand Criteria**

In near-normal to above-normal water years, operations from May 1 through October 1 do not require Jackson Lake Dam releases for irrigation. Inflow is passed as needed to meet local flood control criteria after the lake is filled, and releases are made from storage to reach the flood control space required by October 1. These releases are timed in an attempt to balance boating and fishing opportunities downstream from Jackson Lake Dam during peak recreation periods. Boaters interested in scenic viewing in the upper reaches of the river prefer relatively tranquil flows (500 to 2,000 cfs near Jackson Lake Dam) for the scenic float boating experience. Whitewater boaters want moderate to high releases from Jackson Lake Dam (2,000 to 6,000 cfs) depending on the skill level and other requirements of targeted clientele. Anglers prefer lower streamflows when possible and object to rapid or frequent streamflow changes. The minimum streamflow for floating downstream from the Buffalo Fork confluence is 2,000 cfs. The local gain from Buffalo Fork is approximately 600 cfs.



During the early part of the irrigation season, the estimated volume of water needed from Jackson Lake to meet irrigation demands is based on runoff forecasts and storage volume in downstream reservoirs. Jackson Lake operations for the remainder of the irrigation season are discussed in a public meeting held about May 20 each year in Jackson, Wyoming. Jackson Lake is then operated within project purposes according to the public meeting outcome. If operational changes are necessary, they are coordinated with the operation of other reservoirs of the upper Snake River system.

During low water years, storage releases from Jackson Lake Dam are required to meet irrigation demands. These releases are generally made to meet late season irrigation demands. Early irrigation demands are met from storage in American Falls and Palisades Reservoirs. Jackson Lake Dam releases are also factored into Palisades Dam power generation. In years of limited carryover storage in Palisades, which are infrequent, the Jackson Lake Dam releases are important to providing sufficient hydraulic head for power generation and releases are made much earlier from Jackson Lake Dam.

### **Standard Operation**

Jackson Lake is usually filled during the period that the spring runoff is declining, sometime near the end of June. Inflows are passed until no longer sufficient to meet the required release rate and then storage is drafted. If irrigation demands remain high throughout the summer season, a large portion of the active storage of the lake (approximately 800,000 acre-feet) may be depleted by mid-to-late September. As the irrigation season progresses, demands are carefully monitored to avoid excessive releases from upstream reservoirs such as Jackson Lake. Jackson Lake normally provides the last storage to be delivered from the Snake River system.

### **Water Accounting**

In order for Wyoming to utilize its water stored in Palisades Reservoir to supplement operational releases from Jackson Lake Dam, a water exchange is required. Placeholder contracts within the upper Snake River basin allow for the temporary holding of water belonging to one reservoir in another reservoir, so long as the storage right of that reservoir is not injured in any manner. If water is requested to be released from Jackson Lake Dam by Wyoming for the purpose of supplementing minimum releases, it is charged to the Wyoming accrual in Palisades Reservoir. Once this water is released from Jackson Lake, it loses its identity and becomes available to fill downstream natural flow rights.

If American Falls Reservoir is not filled, the water released from Jackson Lake could be moved from Palisades Reservoir to American Falls Reservoir in the water rights accounting process. Once American Falls Reservoir is filled and Palisades Reservoir is nearly full, the physical release of storage from Jackson Lake could, in the accounting process, flow from Wyoming's Palisades Reservoir space and also accrue to Palisades Reservoir space of which Wyoming would share on a *pro rata* basis. Curtailment of releases is triggered by downstream reservoirs filling and the possibility of stored water passing Milner Dam. The majority of requests from Wyoming would probably occur in the fall and winter months.

## **CHAPTER II.**

### **RECREATION RECOMMENDATIONS AND REQUESTS**

Under present operations, optimum streamflows for recreation uses are not met at times. Optimum streamflows for specific recreation uses have been determined through interviews, other study efforts, and research. In general:

- High spring streamflows challenge advanced boaters but are too challenging for tourist rafters.
- Moderate streamflows offer good river running for a wide variety of users.
- Low water provides more scenic and much longer trips.

Whitewater Boating Recommendations. (Streamflow rates as measured at the Alpine Narrows gauge.)

- A variety of streamflows provides a broad range of recreational opportunities at varying skill levels.
- Majority of season (July-August) maintain water streamflows between 4,000 and 8,000 cfs.
  - Best variety of fun rapids at these levels.
  - Trip times are reasonable (5,000 cfs = 1.5 hour trip).
  - Outfitters can run 4 to 6 trips per day at these levels.
  - Less conflict between kayakers and rafts because there are many waves and hydraulics for surfing.
- End of season (mid-September), 3,000 cfs for more scenic trip and older age groups.
  - Ramps at West Table and Sheep's Gulch are unusable below 3,000 cfs.
  - Trips become slow and some rapids become hazardous due to exposed rocks.

Scenic Float Trip Recommendations. (Streamflow rates refer to the gauge just below Jackson Lake Dam near Moran, except where noted. Recommendations are for optimal scenic float trips between Pacific Creek and Wilson (river sections 2 - 5).)

- Periodic high spring streamflows are needed to remove logs and other debris from side channels prior to the recreation season.
  - 12,000 to 16,000 cfs for 7 to 10 days below Buffalo River improves navigability and increases usable side channels.
- Maximum water for safe operation is 12,000 cfs.
- Level less than 2,000 cfs, cannot easily get boats and floaters to water.
- Optimum level is between 3,000 and 4,000 cfs.
  - 2 to 2.5 hour float from Deadman's Bar to Moose; good timing can maximize guide-to-guest ratios
  - Easy access to water
  - Variety of side channels which offer improved wildlife viewing
- Provide advanced notice of changes in dam releases to improve planning of trip schedules. Lower water slowly so channels have time to become defined.

Recreational Fishing Recommendations. (The area of primary interest for recreational river fishing is Jackson Lake Dam to South Park. Recommendations refer to Jackson Lake Dam discharge rates.)

- Maintain consistent streamflows.
  - Changes relocate fish and reduce visibility causing decreased catch rates.
  - Rapid streamflow reductions (greater than 300 cfs) can isolate aquatic insects.
- Bring water levels down to fishable levels after the spring flushing flows.
- Change streamflows over a 24-hour period in a step-wise fashion.
- Maintain winter streamflows of 400 to 700 cfs.
  - Keeps deep pools intact for resting fish.
  - Maintains ample habitat for fish and aquatic insects.

- Maintain winter streamflows of 1,500 cfs or greater on the South Fork below Palisades Dam.
  - Keeps deep pools intact for resting fish.
  - Maintains ample habitat for fish and aquatic insects.
- Reduce streamflows on the South Fork to 12,000 cfs or less by July 1 to make fishing during the salmon fly hatch easier and more productive.
- Maintain summer streamflows between 1,500 and 2,500 cfs.
  - Maintains side channels, provides good habitat for fish.

#### National Park Service Recommendations

- Manage water to simulate the natural historic flow regimen.
  - High spring streamflow, diminishing streamflow through the season.
  - Match Jackson Lake inflow and discharge.
- Set streamflow rates to protect and preserve natural river systems.
  - Sustained high streamflow rates are increasing erosion rates of river banks.
- Work with Army Corps of Engineers on better flood control management and modifications of the levee system.

#### U.S. Forest Service Recommendations

- Manage water to maintain riparian cottonwood habitats.
  - Maintain status for Wild and Scenic Rivers consideration.
  - Provide habitat for bald eagle population.

### Jackson Lake Recreation Recommendations

- Maintain lake level above 6,754 feet elevation from June through September.
  - Colter Bay operations are closed below this level.
- Match Jackson Lake inflow with outflow during the winter to reduce flooding of ice, which causes very hazardous conditions.
- Mud flats reduce aesthetics of lake and limit access to backcountry areas on the northwest shore.
- Southeastern portions of the lake becomes segmented, with sandbars starting around elevation 6,756 feet.
  - Provides beach and landing areas for boaters.
  - Can increase boat damage due to exposed rocks.
- Provide for a variety of recreational opportunities.

## CHAPTER III. STUDIES

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### Study Design

To fully meet a 400 cfs winter streamflow without adversely affecting other water uses in the Snake River system could require increasing the amount of available water at Jackson Lake for streamflow release. In designing a study to test the potential for increasing winter streamflows, Reclamation recognized that changes in State water law, Federal project authorization, and the priority of space-holder contracts are unlikely. In addition, major structural changes are not a likely option. The only non-structural option identified for providing additional water for winter streamflows is to change the flood control criteria to reduce the amount of flood control space required during the winter. It should be noted that this is a conceptual option for analysis purposes only and was not explored with the Corps of Engineers nor suggested as a possible change in flood control criteria. Two levels of Jackson Lake flood control space were selected for the study: (1) the current level (200,000 acre-feet) and (2) 150,000 acre-feet. The 150,000 acre-feet was selected recognizing that a greater reduction in flood control space was highly unlikely.

Because of recent changes in operation of the upper Snake River system and uncertainties of future requirements, another factor was added to the study — system requirements to provide 427,000 acre-feet annually to flush salmon downstream in the lower Snake River. One level of salmon flushing flow was selected for the two analyses: (1) 427,000 acre-feet (the current requirement), and (2) no flushing flows.

In addition to the hydrologic studies, the effects on fish, wildlife, and recreational values for Jackson Lake and the Snake River reach from Jackson Lake Dam to Palisades Reservoir were evaluated. In addition, designs and costs estimates for maintaining a higher water surface in Jackson Lake during winter months were identified.

### Upper Snake River Operation Studies

A total of 6 operation studies<sup>1</sup> were made using the Idaho Department of Water Resources monthly hydrologic model. These studies assume the 1990 level of irrigation development and other 1990 reservoir operating criteria and use a 62-year period of analysis (1928-1989). Winter streamflow targets, Jackson Lake flood space, and amount of salmon flushing flows used in each study are shown in Table 1. The current operation is study number 952.

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<sup>1</sup> The study has limitations because it is based on a monthly time-step. The 30-day (or monthly) average flows may not exceed flood flows, while high flows may occur on a daily basis early in the month, and low flows may occur later in the month. Also, streamflows not stored while the storage water right is in effect cannot be captured for storage when the storage water right is not in effect.

| Table 1.— Hydrologic Studies |                                 |                                |                                  |
|------------------------------|---------------------------------|--------------------------------|----------------------------------|
| Study Number                 | Minimum Winter Streamflow (cfs) | Winter Flood Space (acre-feet) | Salmon Flushing-Flow (acre-feet) |
| 133                          | 280                             | 200,000                        | 0                                |
| 951                          | 400                             | 200,000                        | 0                                |
| 956                          | 400                             | 150,000                        | 0                                |
| 952                          | 280                             | 200,000                        | 427,000                          |
| 953                          | 400                             | 200,000                        | 427,000                          |
| 955                          | 400                             | 150,000                        | 427,000                          |

Tabular data for each of the hydrology studies are attached as Addendum A and include the following tables for each study:

- End-of-month contents of Jackson Lake (acre-feet)
- Average monthly discharge to the Snake River (cfs) as measured at the gauge near Moran, Wyoming
- Average monthly discharge of the Snake River (cfs) near Milner, Idaho
- End-of-month contents of major Federal reservoirs in the upper Snake (total of Island Park Reservoir, Palisades Reservoir, Ririe Reservoir, and American Falls Reservoir)

## CHAPTER IV. STUDY FINDINGS

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Major hydrologic findings are presented below. Somewhat more detail is provided in Table 2, which follows this section. Monthly data for the full 62-year period of analysis is contained in Addendum A.

### Hydrology

#### **Alternative: No Salmon Flushing Flows and 200,000 Acre-feet of Flood Control Space.**

A minimum streamflow of 400 cfs could be provided at Moran, Wyoming, in all months. Compared to providing a streamflow of 280 cfs there would be:

- **Less average monthly storage in Jackson Lake in all months.**  
(refer to Addendum A; table D, page 1).
- **Generally higher winter month (October through March) streamflows near Moran.**  
(refer to Addendum A; table D, page 2).
- **Generally lower summer month (April through September) streamflows near Moran.**  
(refer to Addendum A; table D, page 2).
- **Negligible impacts on average monthly streamflows at Milner Dam.**  
(refer to Addendum A; table D, page 3).
- **Slightly higher average monthly storage at the other major reservoirs.**  
(refer to Addendum A; table D, page 5).

#### **Alternative: No Salmon Flushing Flows and 150,000 Acre-feet of Flood Control Space**

A minimum streamflow of 400 cfs could be met at Moran, Wyoming, in all months. Compared to the 200,000 acre-foot flood control space and a 280 cfs minimum streamflow there would be:

- **Higher average monthly storage in Jackson Lake in all months.**  
(refer to Addendum A; table E, page 1).
- **Higher average winter month (October through March) streamflows near Moran.**  
(refer to Addendum A; table E, page 2).



- **Mixed summer month (April through September) streamflows near Moran (higher in April through June and lower from July through September.**  
(refer to Addendum A; table E, page 2).
- **Lower August to December average monthly streamflows with higher January to July monthly average streamflows at Milner Dam.** (refer to Addendum A; table E, page 3).
- **Lower average monthly storage at the other major reservoirs.**  
(refer to Addendum A; table E, page 5).

**Alternative: Salmon Flushing Flow of 427,000 Acre-feet and 200,000 Acre-feet of Flood Control Storage**

The 400 cfs minimum streamflow release would be met in all months. Compared with a 280 cfs minimum streamflow there would be:

- **Less average monthly storage in Jackson Lake in all months.**  
(refer to Addendum A; table D1, page 1).
- **Higher average monthly winter (October through March) streamflows near Moran.**  
(refer to Addendum A; table D1, page 2).
- **Lower average monthly summer (April through September) streamflows near Moran.**  
(refer to Addendum A; table D1, page 2).
- **Generally negligible impacts on average monthly streamflows at Milner Dam.**  
(refer to Addendum A; table D1, page 3).
- **Generally slightly higher average monthly storage at the other major reservoirs.**  
(refer to Addendum A; table D1, page 5).

**Alternative: Salmon Flushing Flow of 427,000 Acre-feet and 150,000 Acre-feet of Flood Control Space**

A 400 cfs minimum streamflow release could be met in all months. Compared to 200,000 acre-feet of flood control space and a 280 cfs minimum streamflow there would be:

- **Higher average monthly storage in Jackson Lake in all months.**  
(refer to Addendum A; table E1, page 1).
- **Higher winter month (October through March) streamflows near Moran.**  
(refer to Addendum A; table E1, page 2).

- **Mixed summer month (April through September) streamflows near Moran (higher in April through June and lower in July through September).**  
(refer to Addendum A; table E1, page 2).
- **Lower August to December and higher January through June average monthly streamflows at Milner Dam.** (refer to Addendum A; table E1, page 3).
- **Lower average monthly storage at the other major reservoirs.**  
(refer to Addendum A; table E1, page 5).

| Table 2.— Change Incurred by Increasing Winter Outflow at Jackson Lake<br>From 280 cfs to 400 cfs (62-year Period of Analysis, 1928-1989) |                                                |                                                |                                                 |                                                |
|-------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|------------------------------------------------|-------------------------------------------------|------------------------------------------------|
| Item                                                                                                                                      | No Storage for Salmon Flows                    |                                                | 427,000 acre-feet for Salmon Flows <sup>1</sup> |                                                |
|                                                                                                                                           | 200,000 acre-feet<br>of Flood Control<br>Space | 150,000 acre-feet<br>of Flood Control<br>Space | 200,000 acre-feet<br>of Flood Control<br>Space  | 150,000 acre-feet of<br>Flood Control<br>Space |
| <b>Jackson Lake Storage (end-of-month contents) (acre-feet)</b>                                                                           |                                                |                                                |                                                 |                                                |
| Average                                                                                                                                   | - 2,300 to -10,000                             | +9,200 to +42,500                              | - 200 to -10,600                                | +8,100 to +42,500                              |
| Range                                                                                                                                     | +2,500 to -67,700                              | +99,500 to -30,400                             | +1,700 to -56,500                               | +99,500 to -45,900                             |
| <b>Jackson Lake Winter month outflow ( October through March) (cfs)</b>                                                                   |                                                |                                                |                                                 |                                                |
| Average                                                                                                                                   | +38.0 to -25.0                                 | +27.0 to +117.2                                | +21.5 to -47.2                                  | +7.4 to +117.3                                 |
| Range                                                                                                                                     | +120.0 to -631.0                               | +568.0 to -805.0                               | +120.0 to -295.0                                | +651.0 to -805.0                               |
| <b>Jackson Lake Summer Months outflow (April through September) (cfs)</b>                                                                 |                                                |                                                |                                                 |                                                |
| Average                                                                                                                                   | -0.7 to -58.4                                  | -93.6 to -330.7                                | -4.3 to -49.5                                   | +107.3 to -323.0                               |
| Range                                                                                                                                     | +41.0 to -784.0                                | +838.0 to -892.0                               | +122.0 to -12.0                                 | +838.0 to -1,367.0                             |
| <b>Milner Dam Flow (cfs)</b>                                                                                                              |                                                |                                                |                                                 |                                                |
| Average                                                                                                                                   | +5.5 to -11.5                                  | +129.6 to -144.9                               | +7.7 to -8.2                                    | +106.2 to -100.7                               |
| Range                                                                                                                                     | +340.0 to -484.0                               | +900.0 to -827.0                               | +318.0 to -306.0                                | +900.0 to -828.0                               |
| <b>Other Major Federal Storage ( Palisades, Island Park, Ririe, and American Falls Reservoirs<br/>(end-of-month contents) (acre-feet)</b> |                                                |                                                |                                                 |                                                |
| Average                                                                                                                                   | +100 to +7,600                                 | +1,100 to -28,400                              | +9,100 to -1,000                                | +600 to -30,300                                |
| Range                                                                                                                                     | +61,600 to -20,800                             | +61,200 to -99,500                             | +56,400 to -16,800                              | +50,900 to -99,500                             |

<sup>1</sup> Currently, 427,000 acre-feet of water are to be provided annually from the upper Snake River system to aid downstream migration of salmon in the lower Snake River.

## Designs and Cost Estimates

Reducing the flood control space at Jackson Lake would in effect raise the lake level during the winter in most years. If the flood control space is reduced by 50,000 acre-feet (allowing an additional 50,000 acre-feet of water to be stored during the winter), the winter lake elevation would increase from 6,760.9 feet to 6,763.0 feet.

Because of extreme winter conditions at Jackson Lake, a raise in the lake level could cause ice loading on the spillway gates. During the winter, the temperature can drop as low as -40 degrees Fahrenheit and the ice pack on the lake can reach 4 to 5 feet deep. The current maximum elevation with a flood space of 200,000 acre-feet provides about 1/2-foot of freeboard between the water surface and the bottom of the wooden radial gates at the spillway. These gates were not designed for ice loading and would need to be protected if the water elevation is increased in the winter.

Several alternatives to address the ice loading problem were examined and are described in Addendum D. The selected alternative is the use of inflatable rubber dams (bladders) in front of each wooden gate to protect the gate from ice loading. Each rubber bladder would be 2.5-foot-high by 8-foot-wide and would be mounted to the sill of the spillway between the parapet walls. Rubber seals would be attached to each parapet wall to seal the sides of the dams. A typical section showing the placement of a rubber bladder is shown in Figure 1.

A low-pressure air blower would be used to fill the rubber bladders. This would avoid problems associated with cold-weather operation of compressors. Each bay would have a pipe for air supply to inflate and deflate the dam. All piping would run to a central location where a control panel and the blower would be located. For the purposes of this study, it was assumed that there is adequate room in the existing shop to locate the control panel, blower, and piping. The rubber bladders would be filled at the beginning of winter, periodically refilled as part of normal winter operation, and emptied in the spring.

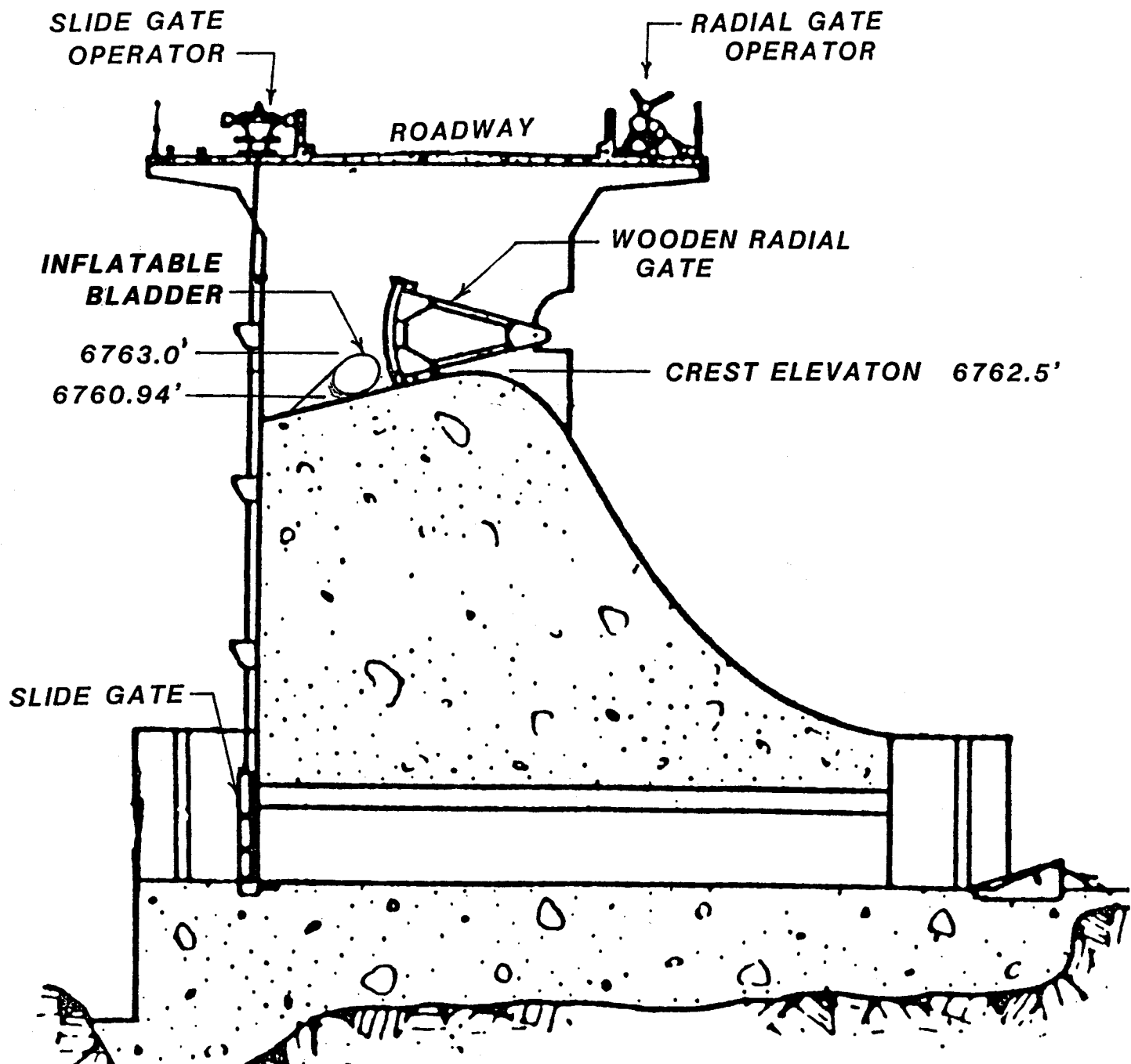
Discussions with the manufacturer indicate that the inflatable dams are durable, capable of withstanding ice loading, and have a long useful life. According to the manufacturer, these dams have been used extensively in high-mountain reservoirs in Japan for over 30 years. Designed for a 20-year lifetime, the rubber bladders tested after 30 years of operation have greater strength than anticipated for a 20-year period of use. The useful life of the rubber bladders is conservatively estimated at 20 years.

Maintenance and repair are potential concerns. It appears that the rubber bladders need very little maintenance because there are few moving parts and do not need to be painted. Holes can be repaired unless the hole is large.

Installation of the rubber bladders would require that a portion of the sill of the spillway be removed and replaced due to deterioration of the concrete sill. For cost estimates it was assumed that the concrete at each rubber bladder attachment site would need to be removed and replaced.

An appraisal-level cost estimate for the rubber bladder alternative is shown in Table 3. The total cost to purchase and install the inflatable rubber bladders is estimated to be \$1,120,000, including allowances for mobilization, unlisted items, contingencies, and indirect costs.

| <b>Table 3. – Inflatable Rubber Bladders; Appraisal-level Cost Estimate</b> |                                                                                                                                                                                                                      |                           |             |                   |                    |
|-----------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|-------------|-------------------|--------------------|
| <b>Item</b>                                                                 | <b>Schedule</b>                                                                                                                                                                                                      | <b>Estimated Quantity</b> | <b>Unit</b> | <b>Unit Price</b> | <b>Amount</b>      |
| 1                                                                           | Mobilization and Prep Work                                                                                                                                                                                           | lump sum                  | 7 percent   | lump sum          | \$ 38,000          |
| 2                                                                           | Inflatable Rubber Bladders <ul style="list-style-type: none"> <li>• Inflatable membrane</li> <li>• Inflation fan and blower</li> <li>• Inflation/deflation piping</li> <li>• Inflation/deflation controls</li> </ul> | lump sum                  | lump sum    | \$420,000         | \$420,000          |
| 3                                                                           | Installation of Rubber Bladders                                                                                                                                                                                      | lump sum                  | lump sum    | \$100,000         | \$100,000          |
| 4                                                                           | Concrete Removal/Replacement                                                                                                                                                                                         | lump sum                  | lump sum    | \$ 20,000         | \$ 20,000          |
| 5                                                                           | Additional Piping from Dam to Shop                                                                                                                                                                                   | lump sum                  | lump sum    | \$ 5,000          | \$ 5,000           |
| 6                                                                           | Allowance for Unlisted Items                                                                                                                                                                                         | lump sum                  | 10 percent  | lump sum          | \$ 58,000          |
| Subtotal: SCHEDULE ITEMS 1-6 .....                                          |                                                                                                                                                                                                                      |                           |             |                   | \$641,000          |
|                                                                             | Contingencies                                                                                                                                                                                                        | lump sum                  | 25 percent  |                   | +\$160,000         |
| Subtotal: FIELD COST .....                                                  |                                                                                                                                                                                                                      |                           |             |                   | \$801,000          |
|                                                                             | Indirect                                                                                                                                                                                                             | lump sum                  | 40 percent  |                   | +\$319,000         |
| <b>TOTAL: CONSTRUCTION COST .....</b>                                       |                                                                                                                                                                                                                      |                           |             |                   | <b>\$1,120,000</b> |



**TYPICAL SECTION WITH  
INFLATABLE BLADDER**

## **Other Effects**

More detailed information about fish and wildlife resources are included in Addendum B, and anticipated impacts to recreation are discussed in Addendum C.

### **Fish**

Studies by WDGF indicate that Jackson Lake Dam minimum streamflow releases of 280 cfs are desirable. Releases greater than 280 cfs would decrease available habitat for trout below Pacific Creek, a tributary to the Snake River.

This assessment is based on impacts to the cutthroat trout fishery during the period October 1 through March 31. This is the only information available that relates to fish and streamflow for the reach of the Snake River from the dam downstream to Moose.

### **Wildlife**

Raising the elevation of Jackson Lake during the months of October through March may result in the temporary loss of aquatic vegetation. This vegetation is important to redheaded ducks building-up body reserves necessary for winter, and trumpeter swans residing in the area (for late fall and early spring breeding periods).

### **Recreation**

Recreation uses as they relate to the Snake River operations would be enhanced, but there would be some conflicts with fish and wildlife streamflow needs. Some conflicts exist between the various recreation needs. The recreation analysis assumed the following priorities of operation:

- Priority 1: Conditions should be optimized for the success and health of the Snake River cutthroat recreational fishery and the environment which supports it.
- Priority 2: Conditions should maximize the physical, social, facility, and ecological carrying capacity and variety of opportunities for recreational activity in all resource segments.
- Priority 3: Flow regimes should support the land management mandates of the Federal and State agencies which hold interests in the Snake River corridor.
- Priority 4: Water levels and streamflows should minimize conflicts.

The operations were rated with "1" being the most preferred and "4" being the least preferred for recreation and tourism. This ranking is based upon the desired optimum conditions and management parameters provided by professionals in the Jackson Lake area that were interviewed, as well as observations of preparers of the attached Recreation Report (Addendum C).

1. **Study 956**

400 cfs minimum streamflow, 150,000 acre-feet of flood space, and no salmon flush

2. **Study 951**

400 cfs minimum streamflow, 200,000 acre-feet of flood space, and no salmon flush

3. **Study 955**

400 cfs minimum streamflow, 150,000 acre-feet of flood space, and a salmon flush

4. **Study 953**

400 cfs minimum streamflow, 200,000 acre-feet of flood space, and a salmon flush

1. **Scenario 956.** This operation would provide improved winter instream flow rates for minimum, maximum, and average conditions. Slightly declining lake elevations during the winter months should improve the ice conditions, providing greater safety and opportunities for winter recreation. This scenario provides one of the highest spring flushing levels of all the proposals; deemed a very important factor by all interest groups. A rapid decline and early season stabilization of lake discharge for the summer tourist and angling season helps to maximize the recreational opportunities of the system. Adequate lake elevations and instream flows near the end of the summer provide for the longest recreational season possible.

2. **Scenario 951.** This operation would provide slightly lower winter flows at average and maximum levels. Spring flush is not quite as high as other scenarios, lessening the benefits. Higher river levels at the latter part of the summer is a positive impact, although this must be weighed against the lower lake levels for the same time period.

3. **Scenario 955.** This operation would provide good winter instream flow rates and stability to declining winter lake levels. The high spring flush is good but the flow rates need to drop to a lower level to maximize fishing and scenic floating opportunities. Lower lake levels at the end of the season is also a disadvantage as are the rapidly declining instream flow rates of the minimum water level scenario.

4. **Scenario 953.** This operation would provide good winter flows, but rising winter lake levels are a disadvantage continuing the hazardous ice conditions presently observed. Delay in water delivery in the spring reduces the level of the flushing-flow and extends the high flows for a longer period, increasing the likelihood of resource damage due to erosion. Mid-summer flows are good but end-of-season streamflows and lake levels are generally lower than other proposals.



## REFERENCES

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- Bovee, K., and R. Milhous. 1978. *Hydraulic Simulation in Instream Flow Studies: Theory and Technique*. Instream Flow Information Paper 5. FWS/OBS/78/33. Cooperative Instream Flow Group, U.S. Fish and Wildlife Service. Fort Collins, CO.

**ADDENDUM A**

**Hydrologic Operations**

TABLE A

## JACKSON LAKE

STUDY 133 - UPPER SNAKE RIVER OPERATION STUDIES (IDWR MODEL)

UNITS ARE 1000 ACRE-FEET

| YEAR | OCT   | NOV   | DEC   | JAN   | FEB   | MAR   | APR   | MAY   | JUN   | JUL   | AUG   | SEP   |  |
|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--|
| 1928 | 580.0 | 611.2 | 630.0 | 645.3 | 648.7 | 659.7 | 350.0 | 805.0 | 847.0 | 847.0 | 700.0 | 580.0 |  |
| 1929 | 580.0 | 580.0 | 582.9 | 587.8 | 592.8 | 598.5 | 608.6 | 734.8 | 847.0 | 780.0 | 640.0 | 580.0 |  |
| 1930 | 580.0 | 576.5 | 580.0 | 580.0 | 584.2 | 585.3 | 628.7 | 790.0 | 847.0 | 780.0 | 640.0 | 580.0 |  |
| 1931 | 580.0 | 580.0 | 580.0 | 580.0 | 579.9 | 581.5 | 595.3 | 719.1 | 726.3 | 550.0 | 274.3 | 144.1 |  |
| 1932 | 148.3 | 151.0 | 158.7 | 168.0 | 178.6 | 191.0 | 209.7 | 416.8 | 746.0 | 733.5 | 640.0 | 516.4 |  |
| 1933 | 489.2 | 442.0 | 382.4 | 337.0 | 347.8 | 350.0 | 357.7 | 455.1 | 816.5 | 780.0 | 636.9 | 448.4 |  |
| 1934 | 399.2 | 337.1 | 311.0 | 320.0 | 324.1 | 335.5 | 382.3 | 400.0 | 385.0 | 200.0 | 100.0 | 10.0  |  |
| 1935 | 20.7  | 31.6  | 41.0  | 54.1  | 61.5  | 70.3  | 99.0  | 249.2 | 586.1 | 550.0 | 320.6 | 10.0  |  |
| 1936 | 14.8  | 21.5  | 23.9  | 46.8  | 68.7  | 79.2  | 128.9 | 491.0 | 745.6 | 689.3 | 629.9 | 580.0 |  |
| 1937 | 578.8 | 574.0 | 578.9 | 483.9 | 494.5 | 497.2 | 507.9 | 713.7 | 838.6 | 780.0 | 640.0 | 512.9 |  |
| 1938 | 495.0 | 438.8 | 428.5 | 379.9 | 350.0 | 350.0 | 383.2 | 582.0 | 847.0 | 847.0 | 700.0 | 580.0 |  |
| 1939 | 580.0 | 580.0 | 580.0 | 583.9 | 590.0 | 594.6 | 636.9 | 847.0 | 847.0 | 780.0 | 640.0 | 580.0 |  |
| 1940 | 580.0 | 576.1 | 576.6 | 580.0 | 580.0 | 586.1 | 610.8 | 847.0 | 800.0 | 725.3 | 500.0 | 350.0 |  |
| 1941 | 357.3 | 336.5 | 316.3 | 320.0 | 325.4 | 326.7 | 342.9 | 547.0 | 703.4 | 577.5 | 500.0 | 350.0 |  |
| 1942 | 380.5 | 337.7 | 347.9 | 320.0 | 328.1 | 331.3 | 372.8 | 511.6 | 761.2 | 747.1 | 640.0 | 580.0 |  |
| 1943 | 577.7 | 583.2 | 586.3 | 607.6 | 614.9 | 583.5 | 350.0 | 400.0 | 800.0 | 847.0 | 700.0 | 593.3 |  |
| 1944 | 590.0 | 590.1 | 582.4 | 580.0 | 580.0 | 584.1 | 589.4 | 733.8 | 847.0 | 825.2 | 640.0 | 580.0 |  |
| 1945 | 580.0 | 580.0 | 580.0 | 580.0 | 586.2 | 587.7 | 520.0 | 652.6 | 800.0 | 827.7 | 700.0 | 583.7 |  |
| 1946 | 580.0 | 581.5 | 585.7 | 594.1 | 607.7 | 621.8 | 670.0 | 847.0 | 847.0 | 617.6 | 640.0 | 580.0 |  |
| 1947 | 580.0 | 580.0 | 582.3 | 588.1 | 587.4 | 594.2 | 486.7 | 800.4 | 847.0 | 846.9 | 688.1 | 580.0 |  |
| 1948 | 580.0 | 580.0 | 580.0 | 585.0 | 588.4 | 593.0 | 610.5 | 833.8 | 847.0 | 787.4 | 640.0 | 580.0 |  |
| 1949 | 580.0 | 580.1 | 582.7 | 587.4 | 593.5 | 590.0 | 520.0 | 834.1 | 847.0 | 780.0 | 640.0 | 580.0 |  |
| 1950 | 580.0 | 580.0 | 580.0 | 590.9 | 602.9 | 615.3 | 350.0 | 421.0 | 800.0 | 847.0 | 700.0 | 591.6 |  |
| 1951 | 593.3 | 603.3 | 607.8 | 623.2 | 613.1 | 550.0 | 350.0 | 580.0 | 811.0 | 836.1 | 700.0 | 598.3 |  |
| 1952 | 600.2 | 597.4 | 606.3 | 619.6 | 640.2 | 660.0 | 520.0 | 819.6 | 847.0 | 844.4 | 700.0 | 580.0 |  |
| 1953 | 580.0 | 578.1 | 580.0 | 596.5 | 603.2 | 607.4 | 627.1 | 691.0 | 847.0 | 846.9 | 651.3 | 580.0 |  |
| 1954 | 580.0 | 580.0 | 580.0 | 594.4 | 602.8 | 611.0 | 355.8 | 621.4 | 800.0 | 833.3 | 640.0 | 580.0 |  |
| 1955 | 580.0 | 580.0 | 580.0 | 581.9 | 585.9 | 596.3 | 602.4 | 741.9 | 847.0 | 780.0 | 640.0 | 580.0 |  |
| 1956 | 580.0 | 584.7 | 604.8 | 625.9 | 580.0 | 418.1 | 350.0 | 580.0 | 847.0 | 847.0 | 700.0 | 596.7 |  |
| 1957 | 591.6 | 614.9 | 623.9 | 635.0 | 650.0 | 390.5 | 570.3 | 836.2 | 847.0 | 847.0 | 700.0 | 580.0 |  |
| 1958 | 580.0 | 580.0 | 582.0 | 585.2 | 599.3 | 611.3 | 624.0 | 847.0 | 847.0 | 754.1 | 640.0 | 580.0 |  |
| 1959 | 578.9 | 580.0 | 580.0 | 580.1 | 590.5 | 596.7 | 551.5 | 580.0 | 800.0 | 758.2 | 640.0 | 580.0 |  |
| 1960 | 580.0 | 580.0 | 580.0 | 585.1 | 588.8 | 594.6 | 618.5 | 761.3 | 847.0 | 782.0 | 630.7 | 494.1 |  |
| 1961 | 496.4 | 498.3 | 456.7 | 389.7 | 383.8 | 350.0 | 374.4 | 580.0 | 731.7 | 550.0 | 440.5 | 350.0 |  |
| 1962 | 324.9 | 322.8 | 309.1 | 320.0 | 339.1 | 350.0 | 418.3 | 677.8 | 842.2 | 827.9 | 700.0 | 580.0 |  |
| 1963 | 580.0 | 580.0 | 580.0 | 581.3 | 580.3 | 589.2 | 598.4 | 795.5 | 847.0 | 780.0 | 640.0 | 580.0 |  |
| 1964 | 580.0 | 580.0 | 580.0 | 586.7 | 585.9 | 592.1 | 387.2 | 561.8 | 809.4 | 832.9 | 700.0 | 580.0 |  |
| 1965 | 580.0 | 580.0 | 603.4 | 623.4 | 580.0 | 550.0 | 350.0 | 400.0 | 800.0 | 847.0 | 700.0 | 597.8 |  |
| 1966 | 594.8 | 598.0 | 591.8 | 603.6 | 605.5 | 612.8 | 633.8 | 847.0 | 847.0 | 773.0 | 640.0 | 580.0 |  |
| 1967 | 580.0 | 580.0 | 580.0 | 590.9 | 592.0 | 597.0 | 455.3 | 580.0 | 847.0 | 847.0 | 700.0 | 582.2 |  |
| 1968 | 583.9 | 580.0 | 580.0 | 586.7 | 595.7 | 601.2 | 605.9 | 603.4 | 847.0 | 822.2 | 700.0 | 597.3 |  |
| 1969 | 589.6 | 592.0 | 590.2 | 613.1 | 580.0 | 550.0 | 594.1 | 847.0 | 847.0 | 805.0 | 640.0 | 580.0 |  |
| 1970 | 580.0 | 580.0 | 580.0 | 597.4 | 600.3 | 606.2 | 520.0 | 591.4 | 847.0 | 843.3 | 700.0 | 593.5 |  |
| 1971 | 587.0 | 591.4 | 604.2 | 627.0 | 580.0 | 454.2 | 350.0 | 447.1 | 847.0 | 847.0 | 700.0 | 599.0 |  |
| 1972 | 607.0 | 609.9 | 624.0 | 644.1 | 580.0 | 350.0 | 350.0 | 400.0 | 800.0 | 821.4 | 700.0 | 611.1 |  |
| 1973 | 627.4 | 633.6 | 639.3 | 650.0 | 650.0 | 656.4 | 663.5 | 843.0 | 847.0 | 782.6 | 649.4 | 580.0 |  |
| 1974 | 580.0 | 596.8 | 602.0 | 616.6 | 593.9 | 620.2 | 350.0 | 589.7 | 847.0 | 847.0 | 700.0 | 586.1 |  |
| 1975 | 583.2 | 580.1 | 580.0 | 591.8 | 604.2 | 616.5 | 350.0 | 400.0 | 781.8 | 847.0 | 700.0 | 585.3 |  |
| 1976 | 581.9 | 584.8 | 591.4 | 603.9 | 580.0 | 478.2 | 350.0 | 516.9 | 800.0 | 820.0 | 700.0 | 586.0 |  |
| 1977 | 580.0 | 580.0 | 580.0 | 582.3 | 580.0 | 581.3 | 598.2 | 580.0 | 600.0 | 479.6 | 210.7 | 143.7 |  |
| 1978 | 149.9 | 154.5 | 177.3 | 193.1 | 212.7 | 216.5 | 248.0 | 445.9 | 800.0 | 838.0 | 700.0 | 587.9 |  |
| 1979 | 580.0 | 580.0 | 584.9 | 591.8 | 600.3 | 607.7 | 556.1 | 782.6 | 847.0 | 801.8 | 640.0 | 580.0 |  |
| 1980 | 579.1 | 579.0 | 578.0 | 588.9 | 595.2 | 604.4 | 632.6 | 847.0 | 847.0 | 805.7 | 673.9 | 580.0 |  |
| 1981 | 580.0 | 580.0 | 580.0 | 580.0 | 582.2 | 583.4 | 610.7 | 616.5 | 847.0 | 759.0 | 640.0 | 580.0 |  |
| 1982 | 580.0 | 580.0 | 585.8 | 591.1 | 599.6 | 496.6 | 350.0 | 400.0 | 800.0 | 847.0 | 700.0 | 600.4 |  |
| 1983 | 606.9 | 611.8 | 621.8 | 635.4 | 644.6 | 657.1 | 528.5 | 688.0 | 847.0 | 847.0 | 700.0 | 593.5 |  |
| 1984 | 616.0 | 650.0 | 650.0 | 643.3 | 640.2 | 651.2 | 520.0 | 752.4 | 847.0 | 847.0 | 700.0 | 613.2 |  |
| 1985 | 612.0 | 623.7 | 628.6 | 636.1 | 643.5 | 658.7 | 670.0 | 847.0 | 847.0 | 777.0 | 640.0 | 580.0 |  |
| 1986 | 580.0 | 587.1 | 592.9 | 605.5 | 628.2 | 490.2 | 413.5 | 580.0 | 847.0 | 847.0 | 700.0 | 601.6 |  |
| 1987 | 608.7 | 620.1 | 621.4 | 629.8 | 636.4 | 648.8 | 670.0 | 847.0 | 800.0 | 700.6 | 606.5 | 584.3 |  |
| 1988 | 561.1 | 562.0 | 562.0 | 559.5 | 567.6 | 569.3 | 617.5 | 824.0 | 800.0 | 683.5 | 500.0 | 350.0 |  |
| 1989 | 270.6 | 282.8 | 288.7 | 301.8 | 309.6 | 330.3 | 397.6 | 698.2 | 815.8 | 752.7 | 640.0 | 580.0 |  |
| AVG  | 529.0 | 528.7 | 529.8 | 533.7 | 534.7 | 520.0 | 474.3 | 648.3 | 806.5 | 773.1 | 628.3 | 531.7 |  |
| MAX  | 627.4 | 650.0 | 650.0 | 650.0 | 650.0 | 650.0 | 680.0 | 870.0 | 847.0 | 847.0 | 700.0 | 613.2 |  |
| MIN  | 14.8  | 21.5  | 23.9  | 46.8  | 61.5  | 70.3  | 99.0  | 249.2 | 385.0 | 200.0 | 100.0 | 10.0  |  |

TABLE A

## DISCHARGE, SNAKE RIVER NEAR MORAN, WYOMING

## STUDY 133 UPPER SNAKE RIVER OPERATION STUDIES (IDWR MODEL)

UNITS ARE MEAN CUBIC FEET PER SECOND (CFS)

| YEAR | OCT    | NOV    | DEC    | JAN    | FEB    | MAR    | APR    | MAY    | JUN    | JUL    | AUG    | SEP    | AVG    |
|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1928 | 495.0  | 500.0  | 500.0  | 400.0  | 400.0  | 400.0  | 350.0  | 5987.0 | 400.0  | 4221.0 | 2781.0 | 3336.0 | 2560.0 |
| 1929 | 512.0  | 400.0  | 500.0  | 400.0  | 400.0  | 400.0  | 350.0  | 400.0  | 400.0  | 3401.0 | 2968.0 | 3042.0 | 1527.0 |
| 1930 | 367.0  | 300.0  | 381.0  | 392.0  | 400.0  | 400.0  | 350.0  | 400.0  | 400.0  | 2527.0 | 2705.0 | 3302.0 | 1525.0 |
| 1931 | 695.0  | 405.0  | 325.0  | 329.0  | 300.0  | 350.0  | 400.0  | 400.0  | 400.0  | 2361.0 | 3815.0 | 4925.0 | 2482.0 |
| 1932 | 280.0  | 280.0  | 280.0  | 280.0  | 280.0  | 280.0  | 280.0  | 280.0  | 350.0  | 500.0  | 2400.0 | 2512.0 | 2486.0 |
| 1933 | 785.0  | 1130.0 | 1330.0 | 1247.0 | 300.0  | 294.0  | 300.0  | 300.0  | 350.0  | 500.0  | 2412.0 | 3178.0 | 3371.0 |
| 1934 | 1481.0 | 1369.0 | 748.0  | 315.0  | 300.0  | 280.0  | 1425.0 | 2781.0 | 2037.0 | 3470.0 | 1953.0 | 1749.0 |        |
| 1935 | 280.0  | 280.0  | 280.0  | 280.0  | 280.0  | 280.0  | 280.0  | 280.0  | 300.0  | 300.0  | 2784.0 | 4557.0 | 5536.0 |
| 1936 | 280.0  | 280.0  | 280.0  | 280.0  | 280.0  | 280.0  | 280.0  | 280.0  | 350.0  | 500.0  | 2400.0 | 1800.0 | 1223.0 |
| 1937 | 300.0  | 300.0  | 300.0  | 1910.0 | 300.0  | 300.0  | 300.0  | 300.0  | 400.0  | 1806.0 | 2573.0 | 2967.0 | 2444.0 |
| 1938 | 684.0  | 1324.0 | 680.0  | 1265.0 | 1018.0 | 587.0  | 300.0  | 400.0  | 400.0  | 2918.0 | 2550.0 | 3422.0 | 2703.0 |
| 1939 | 505.0  | 489.0  | 498.0  | 400.0  | 400.0  | 350.0  | 400.0  | 1110.0 | 3218.0 | 2822.0 | 3102.0 | 1441.0 |        |
| 1940 | 368.0  | 300.0  | 300.0  | 379.0  | 511.0  | 350.0  | 400.0  | 481.0  | 4238.0 | 2400.0 | 4286.0 | 2918.0 |        |
| 1941 | 300.0  | 708.0  | 750.0  | 377.0  | 300.0  | 280.0  | 280.0  | 350.0  | 500.0  | 3417.0 | 2270.0 | 3303.0 |        |
| 1942 | 483.0  | 916.0  | 492.0  | 906.0  | 300.0  | 280.0  | 300.0  | 350.0  | 500.0  | 2400.0 | 2482.0 | 1401.0 |        |
| 1943 | 300.0  | 500.0  | 500.0  | 400.0  | 400.0  | 4298.0 | 2222.0 | 3098.0 | 1386.0 | 3708.0 | 3803.0 | 2500.0 |        |
| 1944 | 600.0  | 500.0  | 500.0  | 362.0  | 395.0  | 350.0  | 400.0  | 400.0  | 2180.0 | 2400.0 | 4063.0 | 1371.0 |        |
| 1945 | 308.0  | 430.0  | 324.0  | 389.0  | 400.0  | 350.0  | 1531.0 | 631.0  | 2350.0 | 2400.0 | 3153.0 | 2500.0 |        |
| 1946 | 533.0  | 500.0  | 500.0  | 400.0  | 400.0  | 350.0  | 967.0  | 1536.0 | 4608.0 | 2445.0 | 3698.0 | 1613.0 |        |
| 1947 | 560.0  | 489.0  | 500.0  | 400.0  | 400.0  | 350.0  | 2372.0 | 400.0  | 4880.0 | 2400.0 | 3848.0 | 2539.0 |        |
| 1948 | 486.0  | 487.0  | 436.0  | 400.0  | 400.0  | 350.0  | 400.0  | 400.0  | 5963.0 | 2912.0 | 3233.0 | 1488.0 |        |
| 1949 | 403.0  | 500.0  | 500.0  | 400.0  | 400.0  | 1205.0 | 1840.0 | 400.0  | 5087.0 | 3082.0 | 3171.0 | 1551.0 |        |
| 1950 | 515.0  | 452.0  | 389.0  | 400.0  | 400.0  | 350.0  | 5135.0 | 1461.0 | 1079.0 | 2933.0 | 3528.0 | 2500.0 |        |
| 1951 | 600.0  | 500.0  | 500.0  | 400.0  | 918.0  | 1858.0 | 4332.0 | 1180.0 | 1333.0 | 2400.0 | 3601.0 | 2500.0 |        |
| 1952 | 600.0  | 500.0  | 500.0  | 400.0  | 400.0  | 373.0  | 3871.0 | 400.0  | 5269.0 | 2400.0 | 3424.0 | 2616.0 |        |
| 1953 | 334.0  | 300.0  | 483.0  | 400.0  | 400.0  | 350.0  | 400.0  | 1429.0 | 3577.0 | 2400.0 | 4152.0 | 1754.0 |        |
| 1954 | 341.0  | 412.0  | 436.0  | 400.0  | 400.0  | 350.0  | 5108.0 | 1221.0 | 2353.0 | 2400.0 | 4303.0 | 1840.0 |        |
| 1955 | 416.0  | 440.0  | 402.0  | 400.0  | 400.0  | 350.0  | 400.0  | 400.0  | 3567.0 | 3327.0 | 3213.0 | 1482.0 |        |
| 1956 | 492.0  | 500.0  | 500.0  | 400.0  | 1325.0 | 3303.0 | 2303.0 | 2621.0 | 3849.0 | 2721.0 | 3678.0 | 2528.0 |        |
| 1957 | 600.0  | 500.0  | 500.0  | 400.0  | 423.0  | 488.0  | 5828.0 | 350.0  | 2385.0 | 2575.0 | 3219.0 | 2487.0 |        |
| 1958 | 416.0  | 368.0  | 500.0  | 400.0  | 400.0  | 350.0  | 400.0  | 882.0  | 3078.0 | 2400.0 | 2382.0 | 1406.0 |        |
| 1959 | 300.0  | 489.0  | 384.0  | 400.0  | 400.0  | 350.0  | 1427.0 | 1980.0 | 2654.0 | 2400.0 | 2591.0 | 1578.0 |        |
| 1960 | 567.0  | 383.0  | 346.0  | 400.0  | 400.0  | 350.0  | 400.0  | 400.0  | 2796.0 | 2400.0 | 2643.0 | 3053.0 |        |
| 1961 | 300.0  | 532.0  | 901.0  | 1440.0 | 782.0  | 998.0  | 300.0  | 445.0  | 2033.0 | 3840.0 | 2224.0 | 2071.0 |        |
| 1962 | 1248.0 | 638.0  | 874.0  | 340.0  | 300.0  | 352.0  | 300.0  | 400.0  | 3025.0 | 2400.0 | 2918.0 | 2517.0 |        |
| 1963 | 481.0  | 403.0  | 390.0  | 400.0  | 400.0  | 350.0  | 400.0  | 400.0  | 4843.0 | 2674.0 | 2820.0 | 1640.0 |        |
| 1964 | 414.0  | 466.0  | 337.0  | 400.0  | 400.0  | 350.0  | 3880.0 | 350.0  | 2554.0 | 2400.0 | 2980.0 | 2340.0 |        |
| 1965 | 349.0  | 388.0  | 500.0  | 400.0  | 1334.0 | 947.0  | 4483.0 | 2985.0 | 1332.0 | 2904.0 | 3586.0 | 2500.0 |        |
| 1966 | 600.0  | 500.0  | 500.0  | 400.0  | 400.0  | 350.0  | 400.0  | 826.0  | 3902.0 | 2400.0 | 2744.0 | 1667.0 |        |
| 1967 | 357.0  | 447.0  | 488.0  | 400.0  | 489.0  | 350.0  | 2919.0 | 958.0  | 3217.0 | 2854.0 | 3364.0 | 2500.0 |        |
| 1968 | 600.0  | 500.0  | 470.0  | 400.0  | 400.0  | 350.0  | 400.0  | 2495.0 | 2391.0 | 2400.0 | 3286.0 | 2500.0 |        |
| 1969 | 600.0  | 500.0  | 500.0  | 400.0  | 1198.0 | 842.0  | 400.0  | 1238.0 | 3893.0 | 2400.0 | 3445.0 | 1801.0 |        |
| 1970 | 346.0  | 348.0  | 473.0  | 400.0  | 400.0  | 350.0  | 1956.0 | 1917.0 | 3203.0 | 2400.0 | 3088.0 | 2500.0 |        |
| 1971 | 600.0  | 500.0  | 500.0  | 400.0  | 1408.0 | 2679.0 | 2673.0 | 3029.0 | 2385.0 | 4201.0 | 3827.0 | 2500.0 |        |
| 1972 | 600.0  | 500.0  | 500.0  | 400.0  | 1785.0 | 4458.0 | 891.0  | 3486.0 | 1796.0 | 2400.0 | 3249.0 | 2500.0 |        |
| 1973 | 600.0  | 500.0  | 500.0  | 404.0  | 529.0  | 350.0  | 400.0  | 400.0  | 4283.0 | 2400.0 | 2800.0 | 1823.0 |        |
| 1974 | 476.0  | 500.0  | 500.0  | 400.0  | 1016.0 | 350.0  | 5598.0 | 375.0  | 5730.0 | 3365.0 | 3601.0 | 2500.0 |        |
| 1975 | 600.0  | 500.0  | 455.0  | 400.0  | 400.0  | 350.0  | 5083.0 | 1011.0 | 500.0  | 3288.0 | 3847.0 | 2500.0 |        |
| 1976 | 600.0  | 500.0  | 500.0  | 400.0  | 981.0  | 2205.0 | 3133.0 | 2419.0 | 1995.0 | 2400.0 | 3080.0 | 2500.0 |        |
| 1977 | 519.0  | 304.0  | 368.0  | 400.0  | 368.0  | 350.0  | 400.0  | 1883.0 | 1779.0 | 2586.0 | 4744.0 | 1368.0 |        |
| 1978 | 280.0  | 280.0  | 280.0  | 280.0  | 280.0  | 280.0  | 280.0  | 350.0  | 814.0  | 2400.0 | 3167.0 | 2500.0 |        |
| 1979 | 450.0  | 363.0  | 500.0  | 400.0  | 400.0  | 350.0  | 1589.0 | 400.0  | 3969.0 | 2400.0 | 3225.0 | 1312.0 |        |
| 1980 | 300.0  | 300.0  | 300.0  | 400.0  | 400.0  | 350.0  | 400.0  | 1137.0 | 4359.0 | 2400.0 | 2800.0 | 2200.0 |        |
| 1981 | 357.0  | 392.0  | 482.0  | 400.0  | 400.0  | 350.0  | 400.0  | 400.0  | 4536.0 | 2400.0 | 2310.0 | 1218.0 |        |
| 1982 | 334.0  | 460.0  | 500.0  | 505.0  | 400.0  | 2215.0 | 3343.0 | 3214.0 | 832.0  | 4322.0 | 3681.0 | 2500.0 |        |
| 1983 | 600.0  | 500.0  | 500.0  | 400.0  | 400.0  | 350.0  | 2803.0 | 400.0  | 4018.0 | 3550.0 | 3674.0 | 2500.0 |        |
| 1984 | 600.0  | 594.0  | 888.0  | 736.0  | 608.0  | 350.0  | 2913.0 | 400.0  | 4824.0 | 3285.0 | 3603.0 | 2500.0 |        |
| 1985 | 600.0  | 500.0  | 500.0  | 400.0  | 400.0  | 350.0  | 968.0  | 2555.0 | 3742.0 | 2400.0 | 2727.0 | 1467.0 |        |
| 1986 | 591.0  | 500.0  | 500.0  | 400.0  | 400.0  | 3074.0 | 2955.0 | 1886.0 | 5597.0 | 2628.0 | 3481.0 | 2500.0 |        |
| 1987 | 600.0  | 500.0  | 500.0  | 400.0  | 400.0  | 350.0  | 1173.0 | 462.0  | 2495.0 | 2400.0 | 1800.0 | 1000.0 |        |
| 1988 | 300.0  | 300.0  | 479.0  | 517.0  | 300.0  | 369.0  | 400.0  | 400.0  | 3439.0 | 2400.0 | 3144.0 | 2701.0 |        |
| 1989 | 1502.0 | 300.0  | 300.0  | 300.0  | 300.0  | 280.0  | 280.0  | 300.0  | 546.0  | 2868.0 | 2400.0 | 2444.0 | 1522.0 |
| AVG  | 515.0  | 487.8  | 488.7  | 471.5  | 511.0  | 731.1  | 1641.5 | 1041.5 | 2867.8 | 2736.9 | 3228.7 | 2183.9 |        |
| MAX  | 1502.0 | 1369.0 | 1330.0 | 1910.0 | 1785.0 | 4458.0 | 5987.0 | 3486.0 | 5963.0 | 4322.0 | 4925.0 | 5536.0 |        |
| MIN  | 280.0  | 280.0  | 280.0  | 280.0  | 280.0  | 280.0  | 280.0  | 280.0  | 300.0  | 300.0  | 2400.0 | 1800.0 | 1000.0 |

TABLE A

DISCHARGE, SNAKE RIVER NEAR MILNER, IDAHO

STUDY 133: UPPER SNAKE RIVER OPERATION STUDIES (IDWR MODEL)

UNITS ARE MEAN CUBIC FEET PER SECOND (CFS)

| YEAR | OCT    | NOV     | DEC     | JAN     | FEB     | MAR     | APR     | MAY     | JUN     | JUL    | AUG    | SEP    | AVG |
|------|--------|---------|---------|---------|---------|---------|---------|---------|---------|--------|--------|--------|-----|
| 1928 | 1304.0 | 3718.0  | 3074.0  | 6286.0  | 5388.0  | 3556.0  | 15872.0 | 7240.0  | 3940.0  | 1000.0 | 1000.0 | 1000.0 |     |
| 1929 | 2000.0 | 3925.0  | 7432.0  | 6440.0  | 3078.0  | 2671.0  | 4241.0  | 2295.0  | 300.0   | 1000.0 | 660.0  | 1000.0 |     |
| 1930 | 1000.0 | 2152.0  | 2968.0  | 3595.0  | 4504.0  | 1327.0  | 10.0    | 30.0    | 300.0   | 660.0  | 660.0  | 1000.0 |     |
| 1931 | 1000.0 | 593.0   | 2409.0  | 824.0   | 2486.0  | 820.0   | 10.0    | 30.0    | 300.0   | 660.0  | 240.0  | 100.0  |     |
| 1932 | 260.0  | 260.0   | 765.0   | 500.0   | 500.0   | 150.0   | 10.0    | 30.0    | 5.0     | 660.0  | 660.0  | 1000.0 |     |
| 1933 | 1000.0 | 656.0   | 1000.0  | 635.0   | 670.0   | 405.0   | 275.0   | 30.0    | 300.0   | 660.0  | 660.0  | 1000.0 |     |
| 1934 | 1000.0 | 583.0   | 877.0   | 894.0   | 999.0   | 150.0   | 10.0    | 30.0    | 300.0   | 660.0  | 240.0  | 100.0  |     |
| 1935 | 260.0  | 200.0   | 400.0   | 502.0   | 604.0   | 150.0   | 10.0    | 30.0    | 5.0     | 300.0  | 240.0  | 100.0  |     |
| 1936 | 260.0  | 260.0   | 418.0   | 830.0   | 916.0   | 430.0   | 10.0    | 30.0    | 300.0   | 660.0  | 660.0  | 1000.0 |     |
| 1937 | 1000.0 | 864.0   | 1022.0  | 890.0   | 1332.0  | 767.0   | 1671.0  | 30.0    | 300.0   | 660.0  | 660.0  | 1000.0 |     |
| 1938 | 1000.0 | 743.0   | 1062.0  | 926.0   | 1806.0  | 1820.0  | 1404.0  | 3099.0  | 300.0   | 1000.0 | 1000.0 | 1000.0 |     |
| 1939 | 2000.0 | 3870.0  | 4370.0  | 6566.0  | 3235.0  | 2126.0  | 1575.0  | 198.0   | 300.0   | 1000.0 | 660.0  | 1000.0 |     |
| 1940 | 1000.0 | 714.0   | 1180.0  | 951.0   | 2253.0  | 901.0   | 748.0   | 30.0    | 300.0   | 660.0  | 240.0  | 760.0  |     |
| 1941 | 1000.0 | 854.0   | 1759.0  | 967.0   | 1456.0  | 447.0   | 378.0   | 30.0    | 300.0   | 660.0  | 240.0  | 100.0  |     |
| 1942 | 1000.0 | 1117.0  | 1969.0  | 762.0   | 802.0   | 626.0   | 886.0   | 30.0    | 300.0   | 660.0  | 660.0  | 1000.0 |     |
| 1943 | 1000.0 | 810.0   | 2863.0  | 2008.0  | 3584.0  | 9671.0  | 15771.0 | 5986.0  | 1777.0  | 1000.0 | 1000.0 | 1800.0 |     |
| 1944 | 2000.0 | 4448.0  | 9426.0  | 6638.0  | 4020.0  | 1805.0  | 2844.0  | 30.0    | 300.0   | 1000.0 | 660.0  | 1000.0 |     |
| 1945 | 1000.0 | 1129.0  | 3069.0  | 3801.0  | 4288.0  | 1416.0  | 5074.0  | 5063.0  | 300.0   | 1000.0 | 1000.0 | 1800.0 |     |
| 1946 | 2000.0 | 4475.0  | 9479.0  | 7143.0  | 3744.0  | 3994.0  | 7402.0  | 6503.0  | 1949.0  | 1000.0 | 1000.0 | 1000.0 |     |
| 1947 | 2000.0 | 3886.0  | 8205.0  | 6333.0  | 4509.0  | 1450.0  | 11287.0 | 30.0    | 300.0   | 1000.0 | 1000.0 | 1000.0 |     |
| 1948 | 2000.0 | 3854.0  | 6195.0  | 7381.0  | 4329.0  | 3037.0  | 1503.0  | 6171.0  | 5294.0  | 1000.0 | 1000.0 | 1000.0 |     |
| 1949 | 2000.0 | 3641.0  | 3086.0  | 6066.0  | 3454.0  | 7251.0  | 7361.0  | 3634.0  | 453.0   | 1000.0 | 1000.0 | 1000.0 |     |
| 1950 | 2000.0 | 3867.0  | 3207.0  | 6949.0  | 5449.0  | 4508.0  | 17794.0 | 4440.0  | 2104.0  | 1000.0 | 1000.0 | 1800.0 |     |
| 1951 | 3487.0 | 10425.0 | 10063.0 | 9318.0  | 8986.0  | 9696.0  | 12185.0 | 7403.0  | 300.0   | 1000.0 | 1000.0 | 1800.0 |     |
| 1952 | 2000.0 | 5635.0  | 9587.0  | 9940.0  | 5851.0  | 4289.0  | 15100.0 | 6635.0  | 5563.0  | 1000.0 | 1000.0 | 1000.0 |     |
| 1953 | 2000.0 | 3590.0  | 5751.0  | 8472.0  | 4669.0  | 1856.0  | 763.0   | 4496.0  | 2880.0  | 1000.0 | 1000.0 | 1000.0 |     |
| 1954 | 1096.0 | 3676.0  | 3067.0  | 6164.0  | 4236.0  | 1834.0  | 13089.0 | 896.0   | 300.0   | 1000.0 | 660.0  | 1000.0 |     |
| 1955 | 1000.0 | 3734.0  | 2949.0  | 4012.0  | 3447.0  | 1459.0  | 3529.0  | 30.0    | 300.0   | 1000.0 | 660.0  | 1000.0 |     |
| 1956 | 1000.0 | 1295.0  | 3067.0  | 7375.0  | 7092.0  | 10184.0 | 11835.0 | 7235.0  | 3679.0  | 1000.0 | 1000.0 | 1800.0 |     |
| 1957 | 2000.0 | 4493.0  | 8905.0  | 6721.0  | 5084.0  | 2369.0  | 15850.0 | 9278.0  | 806.0   | 1000.0 | 1000.0 | 1000.0 |     |
| 1958 | 2000.0 | 3742.0  | 7706.0  | 7181.0  | 5014.0  | 2193.0  | 2718.0  | 3862.0  | 300.0   | 1000.0 | 660.0  | 1000.0 |     |
| 1959 | 1000.0 | 1044.0  | 2872.0  | 3938.0  | 4164.0  | 1541.0  | 3577.0  | 2031.0  | 300.0   | 1000.0 | 660.0  | 1000.0 |     |
| 1960 | 1000.0 | 451.0   | 2959.0  | 4096.0  | 4378.0  | 2021.0  | 2616.0  | 30.0    | 300.0   | 660.0  | 660.0  | 1000.0 |     |
| 1961 | 1000.0 | 950.0   | 1296.0  | 868.0   | 1777.0  | 579.0   | 10.0    | 30.0    | 300.0   | 660.0  | 240.0  | 100.0  |     |
| 1962 | 1000.0 | 1063.0  | 889.0   | 791.0   | 2704.0  | 1514.0  | 8804.0  | 2337.0  | 300.0   | 1000.0 | 1000.0 | 1000.0 |     |
| 1963 | 2000.0 | 3806.0  | 3243.0  | 3986.0  | 5702.0  | 794.0   | 3878.0  | 30.0    | 7250.0  | 1000.0 | 660.0  | 1000.0 |     |
| 1964 | 1000.0 | 1780.0  | 3338.0  | 3097.0  | 3134.0  | 2462.0  | 12436.0 | 6446.0  | 4821.0  | 1000.0 | 1000.0 | 1000.0 |     |
| 1965 | 2000.0 | 4205.0  | 6765.0  | 6612.0  | 6303.0  | 6710.0  | 14436.0 | 7908.0  | 2634.0  | 1000.0 | 1178.0 | 3330.0 |     |
| 1966 | 3278.0 | 7794.0  | 9631.0  | 8395.0  | 4566.0  | 2246.0  | 1296.0  | 36.0    | 300.0   | 1000.0 | 660.0  | 1000.0 |     |
| 1967 | 1000.0 | 1210.0  | 1644.0  | 1019.0  | 2551.0  | 1061.0  | 9673.0  | 6433.0  | 3898.0  | 1000.0 | 1000.0 | 1800.0 |     |
| 1968 | 2000.0 | 4150.0  | 6220.0  | 7100.0  | 5151.0  | 1540.0  | 1238.0  | 3316.0  | 1807.0  | 1000.0 | 1000.0 | 1800.0 |     |
| 1969 | 2000.0 | 3813.0  | 8049.0  | 10219.0 | 6776.0  | 6614.0  | 4067.0  | 6162.0  | 789.0   | 1000.0 | 854.0  | 1000.0 |     |
| 1970 | 2000.0 | 3700.0  | 4196.0  | 8029.0  | 4544.0  | 2725.0  | 7547.0  | 9807.0  | 6114.0  | 1000.0 | 1000.0 | 1800.0 |     |
| 1971 | 2000.0 | 4047.0  | 9948.0  | 14924.0 | 8632.0  | 9661.0  | 13108.0 | 17517.0 | 12206.0 | 4563.0 | 2586.0 | 4264.0 |     |
| 1972 | 6472.0 | 11663.0 | 10437.0 | 13965.0 | 10039.0 | 14366.0 | 11811.0 | 12464.0 | 9639.0  | 1000.0 | 1000.0 | 1800.0 |     |
| 1973 | 4956.0 | 10351.0 | 10367.0 | 11808.0 | 5670.0  | 3437.0  | 6186.0  | 3841.0  | 1215.0  | 1000.0 | 1000.0 | 1247.0 |     |
| 1974 | 2000.0 | 6523.0  | 9756.0  | 9287.0  | 5266.0  | 5911.0  | 16333.0 | 9864.0  | 11291.0 | 1000.0 | 1157.0 | 1800.0 |     |
| 1975 | 3829.0 | 9685.0  | 9967.0  | 8073.0  | 5789.0  | 5292.0  | 13621.0 | 6742.0  | 6349.0  | 1685.0 | 2626.0 | 1800.0 |     |
| 1976 | 5153.0 | 9773.0  | 10512.0 | 12022.0 | 7662.0  | 10071.0 | 14275.0 | 16011.0 | 7402.0  | 1000.0 | 1000.0 | 1800.0 |     |
| 1977 | 2000.0 | 8379.0  | 9653.0  | 7579.0  | 4991.0  | 1226.0  | 10.0    | 30.0    | 300.0   | 660.0  | 240.0  | 100.0  |     |
| 1978 | 260.0  | 465.0   | 679.0   | 1003.0  | 752.0   | 150.0   | 3090.0  | 8646.0  | 300.0   | 1000.0 | 1000.0 | 1800.0 |     |
| 1979 | 2000.0 | 3928.0  | 7203.0  | 7233.0  | 4853.0  | 2660.0  | 8634.0  | 30.0    | 300.0   | 1000.0 | 660.0  | 1000.0 |     |
| 1980 | 1000.0 | 1000.0  | 2988.0  | 2167.0  | 4956.0  | 1046.0  | 2057.0  | 5880.0  | 7612.0  | 1000.0 | 1000.0 | 1000.0 |     |
| 1981 | 2000.0 | 3745.0  | 4847.0  | 6955.0  | 4137.0  | 1223.0  | 856.0   | 30.0    | 470.0   | 1000.0 | 660.0  | 1000.0 |     |
| 1982 | 1000.0 | 1611.0  | 3158.0  | 2387.0  | 3614.0  | 7862.0  | 11800.0 | 14848.0 | 5666.0  | 2229.0 | 1694.0 | 2621.0 |     |
| 1983 | 6916.0 | 10296.0 | 10274.0 | 15486.0 | 6651.0  | 6075.0  | 8375.0  | 12261.0 | 14230.0 | 3206.0 | 3284.0 | 1800.0 |     |
| 1984 | 6774.0 | 12419.0 | 11091.0 | 17586.0 | 6612.0  | 7717.0  | 12366.0 | 14742.0 | 21332.0 | 1363.0 | 4533.0 | 1800.0 |     |
| 1985 | 5576.0 | 11184.0 | 10232.0 | 12322.0 | 5508.0  | 4410.0  | 9992.0  | 8579.0  | 300.0   | 1000.0 | 660.0  | 1000.0 |     |
| 1986 | 2000.0 | 3795.0  | 3547.0  | 10964.0 | 6357.0  | 16241.0 | 14974.0 | 13017.0 | 14738.0 | 1000.0 | 1000.0 | 1800.0 |     |
| 1987 | 4752.0 | 8902.0  | 10014.0 | 10605.0 | 5705.0  | 2737.0  | 10.0    | 30.0    | 300.0   | 660.0  | 660.0  | 1000.0 |     |
| 1988 | 1000.0 | 1236.0  | 2146.0  | 960.0   | 2296.0  | 756.0   | 10.0    | 30.0    | 300.0   | 660.0  | 240.0  | 100.0  |     |
| 1989 | 1000.0 | 1120.0  | 767.0   | 907.0   | 592.0   | 150.0   | 4243.0  | 30.0    | 300.0   | 660.0  | 660.0  | 1000.0 |     |
| AVG  | 1994.1 | 3827.3  | 5132.9  | 5861.8  | 4224.5  | 3454.3  | 6347.2  | 4294.2  | 2892.1  | 1031.1 | 946.6  | 1224.5 |     |
| MAX  | 6916.0 | 12419.0 | 11091.0 | 17586.0 | 10039.0 | 16241.0 | 19333.0 | 17517.0 | 21332.0 | 4563.0 | 4533.0 | 4264.0 |     |
| MIN  | 260.0  | 200.0   | 400.0   | 500.0   | 500.0   | 150.0   | 10.0    | 30.0    | 5.0     | 300.0  | 240.0  | 100.0  |     |

TABLE A

## STUDY 133 UPPER SNAKE RIVER OPERATION STUDIES (IDWR MODEL)

UNITS ARE 1000 ACRE-FEET

| YEAR | OCT    | NOV    | DEC    | JAN    | FEB    | MAR    | APR    | MAY    | JUN    | JUL    | AUG    | SEP    |
|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1928 | 2358.8 | 2749.6 | 3071.9 | 3176.5 | 3291.5 | 3530.7 | 2962.7 | 3867.4 | 4088.4 | 3657.4 | 2998.8 | 2630.7 |
| 1929 | 2782.0 | 3089.1 | 3074.2 | 3087.1 | 3256.2 | 3530.2 | 3684.6 | 3830.9 | 3909.5 | 3182.0 | 2398.9 | 2060.5 |
| 1930 | 2289.2 | 2612.6 | 2915.5 | 3058.8 | 3219.2 | 3496.5 | 3810.7 | 3872.7 | 3575.9 | 2684.9 | 2119.5 | 1745.8 |
| 1931 | 2035.1 | 2449.3 | 2717.6 | 3010.2 | 3197.3 | 3466.7 | 3623.5 | 3308.0 | 2670.5 | 1574.1 | 838.6  | 443.6  |
| 1932 | 545.2  | 780.0  | 1080.1 | 1348.8 | 1588.6 | 1891.3 | 2201.5 | 2681.1 | 3074.5 | 2457.4 | 1716.8 | 1225.0 |
| 1933 | 1289.2 | 1653.0 | 1982.2 | 2314.7 | 2570.8 | 2868.2 | 3083.5 | 3184.0 | 3379.5 | 2496.4 | 1698.9 | 1185.2 |
| 1934 | 1199.2 | 1500.9 | 1871.4 | 2191.5 | 2450.5 | 2752.2 | 2923.6 | 2841.7 | 1887.9 | 1062.3 | 538.4  | 283.3  |
| 1935 | 380.0  | 617.8  | 896.2  | 1150.4 | 1376.8 | 1616.6 | 1906.8 | 2067.3 | 2158.4 | 1356.3 | 696.5  | 276.7  |
| 1936 | 384.8  | 714.5  | 1031.0 | 1340.7 | 1618.0 | 1916.6 | 2402.7 | 3310.4 | 3813.3 | 2775.9 | 2081.0 | 1560.1 |
| 1937 | 1629.8 | 1976.4 | 2329.7 | 2584.4 | 2812.2 | 3086.5 | 3273.2 | 3587.9 | 3432.5 | 2530.2 | 1694.4 | 1205.4 |
| 1938 | 1290.4 | 1807.0 | 2001.2 | 2315.7 | 2557.3 | 2801.9 | 3180.2 | 3594.2 | 4031.0 | 3614.5 | 2877.0 | 2399.6 |
| 1939 | 2558.2 | 2841.4 | 3055.1 | 3065.1 | 3225.5 | 3520.3 | 3901.5 | 4096.1 | 3781.6 | 2877.6 | 2078.8 | 1688.6 |
| 1940 | 1843.5 | 2171.2 | 2504.7 | 2833.3 | 3073.5 | 3380.1 | 3603.5 | 3846.7 | 3225.7 | 2172.5 | 1373.6 | 1042.2 |
| 1941 | 1247.7 | 1609.6 | 1921.9 | 2236.1 | 2502.7 | 2808.9 | 3030.3 | 3129.2 | 2840.7 | 1918.1 | 1299.4 | 965.1  |
| 1942 | 1157.9 | 1548.5 | 1944.1 | 2264.8 | 2536.3 | 2824.7 | 3266.5 | 3567.2 | 3567.9 | 2834.1 | 2027.4 | 1603.4 |
| 1943 | 1674.1 | 2107.1 | 2438.1 | 2796.8 | 2991.4 | 2795.9 | 2768.1 | 3023.8 | 3764.9 | 3819.1 | 3283.7 | 2888.2 |
| 1944 | 3039.8 | 3338.0 | 3266.5 | 3253.4 | 3404.8 | 3687.1 | 3838.5 | 3926.7 | 4071.6 | 3383.4 | 2573.2 | 2180.3 |
| 1945 | 2234.8 | 2628.2 | 2864.8 | 3069.8 | 3231.9 | 3484.7 | 3472.9 | 3538.3 | 3890.4 | 3546.2 | 2968.3 | 2676.9 |
| 1946 | 2875.9 | 3155.8 | 3099.7 | 3106.1 | 3269.8 | 3500.5 | 3936.2 | 4120.6 | 4116.8 | 3377.6 | 2716.5 | 2476.4 |
| 1947 | 2707.3 | 3050.8 | 3083.1 | 3098.1 | 3245.9 | 3546.5 | 3155.3 | 3670.1 | 3941.0 | 3361.7 | 2792.8 | 2481.6 |
| 1948 | 2627.1 | 2934.3 | 3077.7 | 3092.0 | 3253.5 | 3435.5 | 3735.9 | 3959.0 | 4121.1 | 3361.9 | 2673.7 | 2328.9 |
| 1949 | 2502.9 | 2789.2 | 3071.7 | 3084.6 | 3246.0 | 3246.2 | 3277.8 | 3853.3 | 4064.4 | 3296.4 | 2640.5 | 2246.0 |
| 1950 | 2465.3 | 2765.7 | 3062.1 | 3081.5 | 3209.6 | 3410.0 | 2934.0 | 3108.1 | 3957.6 | 3974.8 | 3467.5 | 3226.0 |
| 1951 | 3372.0 | 3368.2 | 3334.1 | 3233.1 | 3256.0 | 3113.8 | 2967.4 | 3426.9 | 3807.6 | 3471.5 | 3253.2 | 2918.3 |
| 1952 | 3136.2 | 3365.3 | 3317.9 | 3162.2 | 3241.8 | 3414.6 | 3222.7 | 3988.1 | 4128.3 | 3531.4 | 2960.6 | 2608.9 |
| 1953 | 2863.1 | 2919.7 | 3088.4 | 3113.4 | 3270.5 | 3536.4 | 3762.7 | 3576.5 | 4057.6 | 3432.6 | 2755.6 | 2312.2 |
| 1954 | 2422.1 | 2699.7 | 3012.5 | 3103.9 | 3265.2 | 3535.0 | 3023.1 | 3508.2 | 3587.0 | 3194.4 | 2589.9 | 2173.6 |
| 1955 | 2355.6 | 2638.0 | 2918.0 | 3062.8 | 3244.6 | 3512.8 | 3653.2 | 3814.5 | 3889.8 | 3157.8 | 2478.3 | 2040.2 |
| 1956 | 2194.5 | 2620.7 | 3019.6 | 3117.1 | 3082.4 | 2875.5 | 2828.5 | 3371.7 | 4111.0 | 3815.3 | 3037.9 | 2685.2 |
| 1957 | 2842.0 | 3123.5 | 3111.8 | 3132.0 | 3308.4 | 3593.9 | 3003.3 | 3300.1 | 4016.8 | 3557.2 | 2911.4 | 2564.4 |
| 1958 | 2718.7 | 3008.9 | 3080.8 | 3094.1 | 3263.5 | 3531.3 | 3722.9 | 4121.3 | 4047.1 | 3071.7 | 2375.3 | 2022.1 |
| 1959 | 2085.2 | 2509.9 | 2853.2 | 3063.4 | 3229.6 | 3493.3 | 3513.3 | 3364.9 | 3646.4 | 2905.2 | 2168.6 | 1824.3 |
| 1960 | 2149.4 | 2590.1 | 2904.5 | 3095.4 | 3250.2 | 3524.1 | 3816.9 | 3703.0 | 3498.4 | 2479.1 | 1702.8 | 1210.1 |
| 1961 | 1353.4 | 1756.7 | 2084.7 | 2369.1 | 2627.4 | 2919.7 | 3098.8 | 3025.6 | 2762.4 | 1720.8 | 970.0  | 782.7  |
| 1962 | 1051.0 | 1451.6 | 1817.2 | 2131.5 | 2552.5 | 2898.4 | 3111.4 | 3661.2 | 3995.5 | 3465.1 | 2838.8 | 2395.1 |
| 1963 | 2474.6 | 2685.4 | 2941.6 | 3067.8 | 3286.1 | 3556.5 | 3621.0 | 4029.3 | 4120.8 | 3284.0 | 2562.0 | 2276.2 |
| 1964 | 2254.3 | 2635.5 | 2879.5 | 3087.7 | 3239.2 | 3412.8 | 3043.6 | 3284.9 | 3992.0 | 3687.5 | 3020.5 | 2599.8 |
| 1965 | 2616.3 | 2892.3 | 3114.0 | 3118.4 | 3135.1 | 3038.4 | 2823.4 | 3069.4 | 3951.2 | 3990.6 | 3624.3 | 3359.2 |
| 1966 | 3399.5 | 3375.7 | 3297.0 | 3271.5 | 3430.1 | 3711.7 | 3908.3 | 4068.6 | 3780.3 | 2812.6 | 2062.1 | 1731.7 |
| 1967 | 1894.5 | 2286.5 | 2633.2 | 3017.6 | 3234.1 | 3496.6 | 3089.9 | 3282.5 | 4041.2 | 3843.5 | 3193.9 | 2707.5 |
| 1968 | 2868.1 | 3142.1 | 3108.3 | 3103.7 | 3263.7 | 3540.5 | 3812.7 | 3489.3 | 4037.2 | 3420.1 | 3155.4 | 2924.4 |
| 1969 | 3010.8 | 3276.6 | 3251.0 | 3198.2 | 3168.8 | 3153.3 | 3572.9 | 4016.2 | 4129.6 | 3442.8 | 2770.7 | 2429.2 |
| 1970 | 2597.0 | 2858.0 | 3086.6 | 3112.2 | 3257.6 | 3435.5 | 3172.9 | 3477.1 | 4092.4 | 3792.6 | 3139.9 | 2954.7 |
| 1971 | 3069.0 | 3367.1 | 3311.7 | 2967.7 | 2962.7 | 2790.8 | 2630.7 | 3132.2 | 4129.6 | 4090.6 | 3631.1 | 3379.9 |
| 1972 | 3428.0 | 3404.3 | 3378.3 | 3091.6 | 3051.8 | 2790.8 | 2708.2 | 2963.0 | 3946.8 | 3736.2 | 3378.9 | 3250.6 |
| 1973 | 3453.3 | 3435.5 | 3378.4 | 3208.3 | 3381.2 | 3654.9 | 3847.1 | 4089.4 | 4106.3 | 3477.7 | 2831.3 | 2692.9 |
| 1974 | 2948.5 | 3168.1 | 3110.1 | 3032.4 | 3152.8 | 3293.6 | 2863.2 | 3254.3 | 4127.7 | 4039.3 | 3632.1 | 3284.0 |
| 1975 | 3374.5 | 3315.3 | 3233.8 | 3216.5 | 3346.7 | 3463.0 | 2980.4 | 3020.6 | 3752.3 | 4099.8 | 3638.2 | 3323.2 |
| 1976 | 3395.5 | 3353.3 | 3289.1 | 3059.0 | 3095.2 | 2920.4 | 2697.6 | 3201.7 | 3813.4 | 3581.0 | 3250.2 | 3054.9 |
| 1977 | 3339.1 | 3288.5 | 3190.8 | 3190.0 | 3317.6 | 3574.7 | 3564.6 | 3096.6 | 2502.4 | 1447.4 | 784.4  | 437.6  |
| 1978 | 720.4  | 1072.5 | 1487.7 | 1844.9 | 2155.3 | 2486.3 | 2917.9 | 3156.4 | 3858.3 | 3689.4 | 3127.9 | 2898.8 |
| 1979 | 2981.7 | 3214.4 | 3219.2 | 3188.3 | 3347.4 | 3583.0 | 3514.6 | 3890.9 | 3920.5 | 3136.9 | 2540.6 | 2028.5 |
| 1980 | 2169.8 | 2493.6 | 2752.2 | 3084.6 | 3250.5 | 3532.1 | 3667.6 | 4072.2 | 4108.6 | 3470.4 | 2874.8 | 2626.6 |
| 1981 | 2643.5 | 2887.3 | 3086.6 | 3091.2 | 3248.2 | 3518.9 | 3738.0 | 3929.3 | 4102.3 | 3143.4 | 2300.7 | 1722.0 |
| 1982 | 1904.6 | 2291.8 | 2583.9 | 2853.4 | 3054.7 | 2920.8 | 2742.6 | 3053.1 | 3823.6 | 4083.1 | 3625.5 | 3385.7 |
| 1983 | 3436.2 | 3431.4 | 3398.0 | 3061.9 | 3224.3 | 3424.3 | 3437.8 | 3771.9 | 4129.3 | 4096.6 | 3642.0 | 3321.6 |
| 1984 | 3456.0 | 3471.8 | 3441.6 | 2991.2 | 3173.5 | 3245.5 | 3187.7 | 3922.9 | 4129.6 | 4106.2 | 3651.5 | 3406.6 |
| 1985 | 3448.3 | 3444.3 | 3405.5 | 3186.9 | 3353.0 | 3613.4 | 3894.4 | 4125.0 | 3963.3 | 3119.6 | 2463.6 | 2328.1 |
| 1986 | 2537.5 | 2802.3 | 3101.4 | 2928.2 | 3155.1 | 2845.9 | 3034.7 | 3437.5 | 4127.3 | 3927.0 | 3454.1 | 3308.6 |
| 1987 | 3437.2 | 3430.1 | 3381.2 | 3237.5 | 3407.2 | 3690.5 | 3851.0 | 3742.5 | 3336.6 | 2829.5 | 1921.2 | 1457.9 |
| 1988 | 1532.4 | 1996.0 | 2302.6 | 2671.1 | 2914.8 | 3215.7 | 3567.3 | 3510.1 | 3108.7 | 2042.7 | 1256.6 | 840.7  |
| 1989 | 900.2  | 1309.1 | 1670.9 | 1995.8 | 2285.7 | 2725.8 | 3059.6 | 3504.6 | 3605.0 | 2811.5 | 2123.8 | 1667.1 |
| AVG  | 2334.4 | 2597.9 | 2773.2 | 2857.1 | 3025.9 | 3212.0 | 3285.4 | 3516.3 | 3732.8 | 3159.5 | 2536.5 | 2188.4 |
| MAX  | 3456.0 | 3471.8 | 3441.6 | 3271.5 | 3430.1 | 3711.7 | 3938.2 | 4125.0 | 4129.6 | 4106.2 | 3651.5 | 3408.6 |
| MIN  | 380.0  | 617.8  | 896.2  | 1150.4 | 1376.8 | 1616.6 | 1906.8 | 2067.3 | 1887.9 | 1062.3 | 538.4  | 276.7  |

TABLE A

## STUDY 133 UPPER SNAKE RIVER OPERATION STUDIES (IDWR MODEL)

UNITS ARE 1000 ACRE-FEET

| YEAR | OCT    | NOV    | DEC    | JAN    | FEB    | MAR    | APR    | MAY    | JUN    | JUL    | AUG    | SEP    |  |  |
|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--|--|
| 1928 | 1778.8 | 2138.4 | 2441.9 | 2531.2 | 2642.8 | 2871.0 | 2812.7 | 3082.4 | 3241.4 | 2810.4 | 2298.8 | 2050.7 |  |  |
| 1929 | 2202.0 | 2509.1 | 2491.3 | 2499.3 | 2663.4 | 2931.7 | 3075.0 | 3086.1 | 3082.5 | 2382.0 | 1758.9 | 1480.5 |  |  |
| 1930 | 1689.2 | 2036.1 | 2335.5 | 2478.8 | 2635.0 | 2911.2 | 3182.0 | 3082.7 | 2728.9 | 1904.9 | 1479.5 | 1185.8 |  |  |
| 1931 | 1455.1 | 1869.3 | 2137.6 | 2430.2 | 2617.4 | 2888.2 | 3028.2 | 2588.9 | 1844.2 | 1024.1 | 564.3  | 299.5  |  |  |
| 1932 | 396.9  | 829.0  | 921.4  | 1180.8 | 1410.0 | 1700.3 | 1981.8 | 2264.3 | 2328.5 | 1723.9 | 1076.8 | 708.6  |  |  |
| 1933 | 800.0  | 1211.0 | 1599.8 | 1977.7 | 2223.0 | 2518.2 | 2725.8 | 2708.9 | 2563.0 | 1716.4 | 1082.0 | 696.8  |  |  |
| 1934 | 800.0  | 1183.8 | 1560.4 | 1871.5 | 2126.4 | 2416.7 | 2561.3 | 2241.7 | 1522.9 | 862.3  | 438.4  | 273.3  |  |  |
| 1935 | 359.3  | 586.2  | 855.2  | 1096.3 | 1315.3 | 1546.5 | 1807.8 | 1818.1 | 1572.3 | 808.3  | 375.9  | 266.7  |  |  |
| 1936 | 370.0  | 683.0  | 1007.1 | 1293.9 | 1549.3 | 1837.4 | 2273.8 | 2819.4 | 2867.7 | 2088.6 | 1431.1 | 980.1  |  |  |
| 1937 | 1051.0 | 1402.4 | 1752.8 | 2100.5 | 2317.7 | 2589.3 | 2785.3 | 2874.2 | 2583.9 | 1750.2 | 1054.4 | 682.5  |  |  |
| 1938 | 795.4  | 1168.2 | 1572.7 | 1935.8 | 2207.3 | 2451.9 | 2787.0 | 3012.2 | 3184.0 | 2767.5 | 2177.0 | 1819.6 |  |  |
| 1939 | 1978.2 | 2261.4 | 2475.1 | 2481.2 | 2635.5 | 2925.7 | 3264.6 | 3251.1 | 2934.8 | 2067.6 | 1438.8 | 1078.6 |  |  |
| 1940 | 1263.5 | 1595.1 | 1928.1 | 2253.3 | 2483.5 | 2774.0 | 2982.7 | 2799.7 | 2425.7 | 1447.2 | 873.6  | 682.2  |  |  |
| 1941 | 890.4  | 1270.1 | 1805.6 | 1916.1 | 2177.3 | 2482.2 | 2687.4 | 2582.2 | 2137.3 | 1340.6 | 799.4  | 615.1  |  |  |
| 1942 | 787.4  | 1210.8 | 1596.2 | 1944.8 | 2208.2 | 2483.4 | 2863.7 | 3055.8 | 2806.7 | 2067.0 | 1367.4 | 1023.4 |  |  |
| 1943 | 1098.4 | 1523.9 | 1849.8 | 2189.2 | 2376.5 | 2412.4 | 2418.1 | 2623.8 | 2964.9 | 2872.1 | 2593.7 | 2294.9 |  |  |
| 1944 | 2449.8 | 2745.9 | 2884.1 | 2673.4 | 2824.8 | 3083.0 | 3248.1 | 3182.9 | 3224.6 | 2568.2 | 1933.2 | 1600.3 |  |  |
| 1945 | 1854.8 | 2048.2 | 2304.8 | 2486.8 | 2645.7 | 2887.0 | 2952.9 | 2885.7 | 3080.4 | 2718.5 | 2286.3 | 2083.2 |  |  |
| 1946 | 2295.9 | 2574.3 | 2514.0 | 2512.0 | 2682.1 | 2878.7 | 3286.2 | 3273.6 | 3289.8 | 2580.0 | 2078.5 | 1886.4 |  |  |
| 1947 | 2127.3 | 2470.8 | 2500.8 | 2510.0 | 2658.5 | 2952.3 | 3088.6 | 2888.7 | 3084.0 | 2514.8 | 2104.7 | 1901.8 |  |  |
| 1948 | 2047.1 | 2354.3 | 2497.7 | 2507.0 | 2665.1 | 2842.5 | 3125.4 | 3125.2 | 3274.1 | 2574.5 | 2033.7 | 1748.9 |  |  |
| 1949 | 1922.9 | 2209.1 | 2489.0 | 2497.2 | 2652.5 | 2888.2 | 2757.8 | 3018.2 | 3217.4 | 2519.4 | 2000.5 | 1868.0 |  |  |
| 1950 | 1885.3 | 2185.7 | 2482.1 | 2490.6 | 2606.7 | 2784.7 | 2584.0 | 2687.1 | 3157.6 | 3127.8 | 2767.5 | 2634.4 |  |  |
| 1951 | 2778.7 | 2784.9 | 2726.3 | 2809.9 | 2642.9 | 2563.8 | 2617.4 | 2844.9 | 2896.6 | 2635.4 | 2553.2 | 2320.0 |  |  |
| 1952 | 2536.0 | 2787.9 | 2711.6 | 2542.6 | 2801.8 | 2754.6 | 2702.7 | 3168.5 | 3281.3 | 2687.0 | 2280.6 | 2028.9 |  |  |
| 1953 | 2083.1 | 2341.6 | 2508.4 | 2516.9 | 2687.3 | 2929.0 | 3135.6 | 2885.5 | 3210.8 | 2586.7 | 2104.3 | 1732.2 |  |  |
| 1954 | 1842.1 | 2119.7 | 2432.5 | 2509.5 | 2662.4 | 2924.0 | 2967.3 | 2888.8 | 2787.0 | 2361.1 | 1948.9 | 1563.6 |  |  |
| 1955 | 1775.6 | 2058.0 | 2338.0 | 2500.9 | 2658.9 | 2916.3 | 3050.8 | 3072.6 | 3022.8 | 2377.8 | 1838.3 | 1460.2 |  |  |
| 1956 | 1614.5 | 2036.0 | 2414.8 | 2491.2 | 2502.4 | 2457.4 | 2478.5 | 2791.7 | 3264.0 | 2768.3 | 2337.9 | 2068.5 |  |  |
| 1957 | 2250.4 | 2508.6 | 2487.9 | 2487.0 | 2658.4 | 2833.9 | 2852.8 | 2729.8 | 3182.8 | 2710.2 | 2211.4 | 1984.4 |  |  |
| 1958 | 2138.7 | 2428.9 | 2488.8 | 2508.9 | 2664.2 | 2920.0 | 3088.9 | 3274.3 | 3200.1 | 2317.6 | 1738.3 | 1442.1 |  |  |
| 1959 | 1506.3 | 1929.9 | 2273.2 | 2483.3 | 2639.1 | 2884.6 | 2961.8 | 2784.9 | 2848.4 | 2147.0 | 1526.6 | 1244.3 |  |  |
| 1960 | 1589.4 | 2010.1 | 2324.5 | 2510.3 | 2681.4 | 2929.5 | 3188.4 | 2941.7 | 2852.4 | 1717.1 | 1072.1 | 716.0  |  |  |
| 1961 | 857.0  | 1267.4 | 1828.0 | 1979.4 | 2243.6 | 2588.7 | 2724.4 | 2446.6 | 2030.7 | 1170.8 | 529.5  | 432.7  |  |  |
| 1962 | 728.1  | 1128.8 | 1508.1 | 1811.5 | 2213.4 | 2548.4 | 2863.1 | 2963.4 | 3153.3 | 2637.2 | 2138.8 | 1615.1 |  |  |
| 1963 | 1894.6 | 2105.4 | 2381.6 | 2506.5 | 2695.8 | 2967.3 | 3021.6 | 3233.8 | 3273.8 | 2504.0 | 1922.0 | 1686.2 |  |  |
| 1964 | 1874.3 | 2055.5 | 2299.5 | 2501.0 | 2653.3 | 2820.7 | 2856.4 | 2723.1 | 3182.6 | 2834.6 | 2320.5 | 2019.8 |  |  |
| 1965 | 2036.3 | 2312.3 | 2510.6 | 2495.0 | 2555.1 | 2488.4 | 2473.4 | 2688.4 | 3151.2 | 3143.6 | 2824.3 | 2781.4 |  |  |
| 1966 | 2804.7 | 2777.7 | 2705.2 | 2667.9 | 2824.6 | 3088.9 | 3274.5 | 3218.6 | 2933.3 | 2038.6 | 1422.1 | 1151.7 |  |  |
| 1967 | 1314.5 | 1706.5 | 2053.2 | 2426.7 | 2642.1 | 2889.6 | 2644.6 | 2702.5 | 3184.2 | 2988.5 | 2483.9 | 2125.3 |  |  |
| 1968 | 2284.2 | 2562.1 | 2526.3 | 2517.0 | 2688.0 | 2939.3 | 3008.8 | 2885.9 | 3190.2 | 2587.9 | 2455.4 | 2327.1 |  |  |
| 1969 | 2421.2 | 2684.6 | 2660.8 | 2585.1 | 2588.8 | 2803.3 | 2978.9 | 3189.2 | 3282.6 | 2637.8 | 2130.7 | 1849.2 |  |  |
| 1970 | 2017.0 | 2278.0 | 2506.8 | 2514.8 | 2657.3 | 2829.3 | 2882.9 | 2885.7 | 3245.4 | 2949.3 | 2438.9 | 2381.2 |  |  |
| 1971 | 2482.0 | 2775.7 | 2707.5 | 2340.7 | 2372.7 | 2336.6 | 2280.7 | 2686.1 | 3282.6 | 3243.6 | 2931.1 | 2780.9 |  |  |
| 1972 | 2819.0 | 2794.4 | 2752.3 | 2447.5 | 2471.8 | 2440.8 | 2358.2 | 2593.0 | 3146.8 | 2914.8 | 2678.9 | 2639.5 |  |  |
| 1973 | 2825.9 | 2801.9 | 2740.1 | 2558.3 | 2731.2 | 2986.5 | 3183.6 | 3246.4 | 3281.3 | 2886.1 | 2181.9 | 2112.9 |  |  |
| 1974 | 2368.5 | 2571.3 | 2508.1 | 2415.8 | 2588.9 | 2673.6 | 2513.2 | 2684.6 | 3280.7 | 3192.3 | 2632.1 | 2697.9 |  |  |
| 1975 | 2791.3 | 2735.2 | 2653.8 | 2624.7 | 2742.5 | 2846.5 | 2630.4 | 2620.8 | 2980.5 | 3252.8 | 2938.2 | 2737.9 |  |  |
| 1976 | 2813.6 | 2788.5 | 2697.7 | 2455.1 | 2515.2 | 2442.2 | 2347.6 | 2684.8 | 3013.4 | 2781.0 | 2580.2 | 2468.9 |  |  |
| 1977 | 2758.1 | 2708.5 | 2610.8 | 2597.7 | 2737.6 | 2963.4 | 2988.4 | 2506.6 | 1902.4 | 967.8  | 573.7  | 293.9  |  |  |
| 1978 | 570.5  | 918.0  | 1310.4 | 1651.8 | 1942.6 | 2272.8 | 2689.9 | 2710.5 | 3088.3 | 2851.4 | 2427.9 | 2310.9 |  |  |
| 1979 | 2401.7 | 2634.4 | 2634.3 | 2583.5 | 2747.1 | 2975.3 | 2968.5 | 3078.3 | 3073.5 | 2335.1 | 1900.6 | 1446.5 |  |  |
| 1980 | 1590.7 | 1914.6 | 2174.2 | 2486.7 | 2658.3 | 2927.7 | 3035.0 | 3225.2 | 3281.6 | 2864.7 | 2200.7 | 2046.6 |  |  |
| 1981 | 2063.5 | 2307.3 | 2508.8 | 2511.2 | 2684.0 | 2935.5 | 3125.3 | 3112.8 | 3255.3 | 2384.4 | 1880.7 | 1142.0 |  |  |
| 1982 | 1324.6 | 1711.8 | 1998.1 | 2282.3 | 2455.1 | 2424.2 | 2392.6 | 2653.1 | 3023.6 | 3246.1 | 2925.5 | 2785.3 |  |  |
| 1983 | 2829.3 | 2819.6 | 2778.2 | 2426.5 | 2579.7 | 2787.2 | 2908.3 | 3083.9 | 3282.3 | 3248.6 | 2942.0 | 2728.1 |  |  |
| 1984 | 2837.0 | 2821.8 | 2791.8 | 2347.9 | 2533.3 | 2584.3 | 2667.7 | 3170.5 | 3282.6 | 3259.2 | 2961.5 | 2796.4 |  |  |
| 1985 | 2836.3 | 2820.8 | 2776.9 | 2580.8 | 2709.5 | 2964.7 | 3224.4 | 3278.0 | 3118.3 | 2342.6 | 1823.6 | 1746.1 |  |  |
| 1986 | 1957.5 | 2215.2 | 2508.5 | 2322.7 | 2526.9 | 2365.7 | 2821.2 | 2857.5 | 3280.3 | 3080.0 | 2754.1 | 2707.2 |  |  |
| 1987 | 2828.5 | 2810.0 | 2739.8 | 2607.7 | 2770.8 | 3043.9 | 3181.0 | 2895.5 | 2536.6 | 1928.9 | 1311.7 | 883.6  |  |  |
| 1988 | 971.3  | 1434.0 | 1740.6 | 2111.6 | 2347.2 | 2646.4 | 2948.8 | 2888.1 | 2308.7 | 1389.2 | 756.6  | 480.7  |  |  |
| 1989 | 629.6  | 1028.3 | 1382.2 | 1684.0 | 1975.9 | 2385.5 | 2682.0 | 2806.4 | 2788.2 | 2058.8 | 1483.8 | 1087.1 |  |  |
| AVG  | 1805.3 | 2089.2 | 2243.4 | 2323.4 | 2481.2 | 2692.0 | 2791.1 | 2868.0 | 2926.4 | 2386.4 | 1908.2 | 1656.8 |  |  |
| MAX  | 2837.0 | 2821.8 | 2791.8 | 2673.4 | 2824.8 | 3088.9 | 3274.5 | 3278.0 | 3282.6 | 3258.2 | 2961.5 | 2796.4 |  |  |
| MIN  | 359.3  | 586.2  | 855.2  | 1096.3 | 1315.3 | 1546.5 | 1807.8 | 1818.1 | 1522.9 | 808.3  | 375.9  | 266.7  |  |  |

TABLE B

JACKSON LAKE  
STUDY 951 UPPER SNAKE RIVER OPERATION STUDIES (IDWR MODEL)  
UNITS ARE 1000 ACRE-FEET

| YEAR | OCT   | NOV   | DEC   | JAN   | FEB   | MAR   | APR   | MAY   | JUN   | JUL   | AUG   | SEP   |
|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 1928 | 580.0 | 611.2 | 630.0 | 645.3 | 648.7 | 656.6 | 350.0 | 805.0 | 847.0 | 847.0 | 700.0 | 580.0 |
| 1929 | 580.0 | 580.0 | 582.9 | 587.8 | 592.8 | 596.4 | 606.6 | 731.7 | 847.0 | 780.0 | 640.0 | 580.0 |
| 1930 | 578.0 | 568.8 | 571.5 | 571.0 | 575.1 | 573.2 | 616.6 | 777.9 | 847.0 | 780.0 | 640.0 | 580.0 |
| 1931 | 580.0 | 580.0 | 575.4 | 571.0 | 565.4 | 563.9 | 577.7 | 701.5 | 717.1 | 550.0 | 280.0 | 129.8 |
| 1932 | 126.6 | 122.2 | 122.5 | 124.4 | 126.1 | 133.1 | 144.8 | 349.1 | 678.6 | 666.3 | 605.4 | 478.6 |
| 1933 | 451.5 | 398.7 | 332.9 | 320.0 | 325.3 | 321.0 | 322.7 | 414.1 | 775.7 | 740.0 | 621.3 | 453.0 |
| 1934 | 383.7 | 316.9 | 300.0 | 303.8 | 302.4 | 306.4 | 358.3 | 400.0 | 364.8 | 200.0 | 100.0 | 10.0  |
| 1935 | 13.3  | 17.1  | 19.1  | 24.6  | 25.5  | 27.0  | 48.6  | 192.6 | 524.1 | 536.4 | 319.7 | 10.0  |
| 1936 | 7.4   | 7.0   | 2.0   | 17.5  | 32.5  | 35.6  | 78.3  | 434.4 | 689.1 | 633.1 | 573.6 | 537.3 |
| 1937 | 530.0 | 519.2 | 516.0 | 461.7 | 466.8 | 463.4 | 468.2 | 674.1 | 818.3 | 770.4 | 627.6 | 491.1 |
| 1938 | 473.3 | 412.4 | 395.9 | 341.1 | 345.4 | 350.0 | 377.2 | 573.0 | 847.0 | 847.0 | 700.0 | 580.0 |
| 1939 | 580.0 | 580.0 | 580.0 | 583.9 | 580.0 | 591.5 | 633.8 | 847.0 | 847.0 | 780.0 | 640.0 | 580.0 |
| 1940 | 578.1 | 568.3 | 562.6 | 564.7 | 571.1 | 574.1 | 598.8 | 838.8 | 800.0 | 725.3 | 500.0 | 350.0 |
| 1941 | 351.1 | 329.1 | 300.0 | 302.3 | 302.2 | 296.1 | 305.2 | 503.3 | 659.8 | 577.7 | 500.0 | 350.0 |
| 1942 | 360.5 | 332.5 | 336.5 | 320.0 | 322.6 | 318.4 | 353.9 | 486.6 | 738.4 | 722.2 | 640.0 | 580.0 |
| 1943 | 571.6 | 580.0 | 585.2 | 604.5 | 611.7 | 583.5 | 350.0 | 400.0 | 800.0 | 847.0 | 700.0 | 593.3 |
| 1944 | 590.0 | 590.1 | 582.4 | 577.6 | 577.3 | 578.3 | 583.7 | 726.1 | 847.0 | 825.2 | 640.0 | 580.0 |
| 1945 | 574.4 | 576.2 | 571.5 | 570.8 | 576.9 | 575.4 | 520.0 | 652.6 | 800.0 | 827.7 | 700.0 | 583.7 |
| 1946 | 580.0 | 581.5 | 585.7 | 584.1 | 607.7 | 618.7 | 670.0 | 847.0 | 847.0 | 817.8 | 640.0 | 580.0 |
| 1947 | 580.0 | 580.0 | 582.3 | 588.1 | 587.4 | 591.1 | 486.7 | 800.4 | 847.0 | 846.9 | 688.1 | 580.0 |
| 1948 | 580.0 | 580.0 | 580.0 | 585.0 | 588.4 | 589.9 | 607.4 | 830.8 | 847.0 | 787.4 | 640.0 | 580.0 |
| 1949 | 580.0 | 580.1 | 582.7 | 587.4 | 593.5 | 550.0 | 520.0 | 834.1 | 847.0 | 780.0 | 640.0 | 580.0 |
| 1950 | 580.0 | 580.0 | 579.3 | 580.2 | 602.2 | 611.5 | 350.0 | 421.0 | 800.0 | 847.0 | 700.0 | 581.6 |
| 1951 | 583.3 | 603.3 | 607.8 | 623.2 | 613.1 | 590.0 | 350.0 | 580.0 | 811.0 | 636.1 | 700.0 | 598.3 |
| 1952 | 600.2 | 597.4 | 606.3 | 619.6 | 640.2 | 658.3 | 520.0 | 819.6 | 847.0 | 844.4 | 700.0 | 580.0 |
| 1953 | 576.0 | 568.2 | 573.9 | 580.4 | 597.0 | 596.2 | 617.9 | 691.0 | 847.0 | 846.9 | 651.3 | 580.0 |
| 1954 | 576.4 | 577.1 | 579.5 | 583.9 | 602.2 | 607.4 | 355.8 | 621.4 | 800.0 | 633.3 | 640.0 | 580.0 |
| 1955 | 580.0 | 580.0 | 580.0 | 581.9 | 585.9 | 593.2 | 599.3 | 736.9 | 847.0 | 780.0 | 640.0 | 580.0 |
| 1956 | 580.0 | 584.7 | 604.8 | 625.9 | 580.0 | 416.1 | 350.0 | 580.0 | 847.0 | 847.0 | 700.0 | 596.7 |
| 1957 | 591.6 | 614.9 | 623.9 | 638.0 | 650.0 | 660.0 | 350.5 | 564.2 | 636.2 | 847.0 | 700.0 | 580.0 |
| 1958 | 580.0 | 578.1 | 580.1 | 583.3 | 587.4 | 606.3 | 619.1 | 847.0 | 847.0 | 764.1 | 640.0 | 580.0 |
| 1959 | 572.8 | 579.8 | 579.4 | 579.5 | 589.8 | 596.0 | 561.5 | 580.0 | 800.0 | 758.2 | 640.0 | 580.0 |
| 1960 | 580.0 | 579.0 | 575.7 | 580.8 | 584.5 | 587.2 | 611.1 | 754.0 | 847.0 | 782.0 | 626.6 | 499.9 |
| 1961 | 486.1 | 474.3 | 435.5 | 362.4 | 350.9 | 350.0 | 368.4 | 573.7 | 734.2 | 550.0 | 443.0 | 350.0 |
| 1962 | 327.4 | 322.8 | 302.9 | 310.2 | 323.7 | 331.6 | 394.0 | 653.6 | 842.2 | 827.9 | 700.0 | 580.0 |
| 1963 | 580.0 | 580.0 | 578.4 | 580.7 | 589.7 | 585.5 | 596.7 | 791.8 | 847.0 | 780.0 | 640.0 | 580.0 |
| 1964 | 580.0 | 580.0 | 576.1 | 582.6 | 582.0 | 585.1 | 387.3 | 555.6 | 808.4 | 832.9 | 700.0 | 580.0 |
| 1965 | 576.9 | 576.2 | 596.5 | 619.5 | 580.0 | 550.0 | 350.0 | 400.0 | 800.0 | 847.0 | 700.0 | 597.6 |
| 1966 | 594.8 | 596.0 | 591.8 | 603.6 | 605.5 | 606.7 | 630.7 | 847.0 | 847.0 | 773.0 | 640.0 | 580.0 |
| 1967 | 577.4 | 580.0 | 580.0 | 580.9 | 591.3 | 593.3 | 455.3 | 580.0 | 847.0 | 847.0 | 700.0 | 582.2 |
| 1968 | 583.9 | 580.0 | 580.0 | 586.7 | 596.7 | 596.1 | 602.8 | 603.4 | 847.0 | 822.2 | 700.0 | 597.3 |
| 1969 | 589.6 | 592.0 | 580.2 | 613.1 | 580.0 | 550.0 | 594.1 | 847.0 | 847.0 | 806.0 | 640.0 | 580.0 |
| 1970 | 576.7 | 573.6 | 578.1 | 595.5 | 598.3 | 601.2 | 520.0 | 591.4 | 847.0 | 843.3 | 700.0 | 583.5 |
| 1971 | 587.0 | 591.4 | 604.2 | 627.0 | 580.0 | 464.2 | 350.0 | 447.1 | 847.0 | 847.0 | 700.0 | 599.0 |
| 1972 | 607.0 | 609.9 | 624.0 | 644.1 | 580.0 | 350.0 | 350.0 | 400.0 | 800.0 | 821.4 | 700.0 | 611.1 |
| 1973 | 627.4 | 633.6 | 639.3 | 650.0 | 650.0 | 653.3 | 660.5 | 639.9 | 847.0 | 782.6 | 649.4 | 580.0 |
| 1974 | 580.0 | 586.8 | 602.0 | 616.6 | 583.9 | 617.1 | 350.0 | 585.1 | 847.0 | 847.0 | 700.0 | 586.1 |
| 1975 | 583.2 | 580.1 | 580.0 | 591.8 | 604.2 | 613.4 | 350.0 | 400.0 | 761.8 | 847.0 | 700.0 | 585.3 |
| 1976 | 581.9 | 584.8 | 591.4 | 603.9 | 580.0 | 478.2 | 350.0 | 516.9 | 800.0 | 820.0 | 700.0 | 586.0 |
| 1977 | 580.0 | 574.3 | 572.2 | 574.5 | 570.3 | 568.5 | 585.4 | 580.0 | 600.0 | 479.5 | 210.6 | 143.7 |
| 1978 | 142.5 | 139.9 | 155.4 | 163.8 | 178.7 | 173.1 | 197.6 | 392.6 | 785.6 | 803.7 | 688.4 | 580.0 |
| 1979 | 575.2 | 573.0 | 580.0 | 586.9 | 596.5 | 596.6 | 586.1 | 782.6 | 847.0 | 801.8 | 640.0 | 580.0 |
| 1980 | 573.0 | 566.9 | 559.8 | 570.7 | 577.0 | 583.1 | 611.3 | 847.0 | 847.0 | 805.7 | 673.9 | 580.0 |
| 1981 | 577.4 | 576.9 | 580.0 | 580.0 | 582.2 | 580.3 | 607.6 | 613.5 | 847.0 | 759.0 | 640.0 | 580.0 |
| 1982 | 576.0 | 579.6 | 585.3 | 590.7 | 596.2 | 496.6 | 350.0 | 400.0 | 800.0 | 847.0 | 700.0 | 800.4 |
| 1983 | 606.9 | 611.6 | 621.8 | 635.4 | 644.6 | 654.0 | 528.5 | 688.0 | 847.0 | 847.0 | 700.0 | 593.5 |
| 1984 | 619.0 | 650.0 | 650.0 | 643.3 | 640.2 | 648.1 | 520.0 | 752.4 | 847.0 | 847.0 | 700.0 | 613.2 |
| 1985 | 612.0 | 623.7 | 628.6 | 636.1 | 643.5 | 655.6 | 670.0 | 847.0 | 847.0 | 777.0 | 640.0 | 580.0 |
| 1986 | 580.0 | 587.1 | 592.9 | 606.5 | 628.2 | 490.2 | 413.5 | 580.0 | 847.0 | 847.0 | 700.0 | 601.6 |
| 1987 | 608.7 | 620.1 | 621.4 | 629.8 | 636.4 | 643.5 | 670.0 | 847.0 | 800.0 | 700.6 | 609.5 | 584.3 |
| 1988 | 555.0 | 549.9 | 543.8 | 535.1 | 537.4 | 537.2 | 585.4 | 792.0 | 800.0 | 683.5 | 500.0 | 350.0 |
| 1989 | 266.0 | 272.3 | 272.0 | 279.0 | 281.5 | 294.6 | 358.0 | 665.6 | 815.8 | 752.7 | 640.0 | 580.0 |
| AVG  | 525.0 | 523.1 | 522.7 | 526.8 | 527.0 | 510.1 | 464.7 | 639.0 | 800.7 | 786.2 | 625.9 | 529.3 |
| MAX  | 627.4 | 650.0 | 650.0 | 650.0 | 650.0 | 650.0 | 670.0 | 847.0 | 847.0 | 847.0 | 700.0 | 613.2 |
| MIN  | 7.4   | 7.0   | 2.0   | 17.5  | 25.5  | 27.0  | 48.6  | 192.6 | 384.8 | 200.0 | 100.0 | 10.0  |



TABLE B

## DISCHARGE, SNAKE RIVER NEAR MORAN, WYOMING

## STUDY 951 UPPER SNAKE RIVER OPERATION STUDIES (IDWR MODEL)

UNITS ARE MEAN CUBIC FEET PER SECOND (CFS)

| YEAR | OCT    | NOV    | DEC    | JAN    | FEB    | MAR    | APR    | MAY    | JUN    | JUL    | AUG    | SEP    | AVG    |        |  |
|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--|
| 1928 | 495.0  | 500.0  | 500.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 5935.0 | 400.0  | 4221.0 | 2791.0 | 3336.0 | 2580.0 |  |
| 1929 | 512.0  | 400.0  | 500.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 3350.0 | 2968.0 | 3042.0 | 1527.0 |  |
| 1930 | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 2324.0 | 2705.0 | 3302.0 | 1525.0 |  |
| 1931 | 695.0  | 405.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 2220.0 | 3466.0 | 5158.0 | 2482.0 |  |
| 1932 | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 500.0  | 2400.0 | 1985.0 | 2542.0 |  |
| 1933 | 785.0  | 1222.0 | 1430.0 | 719.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 450.0  | 500.0  | 2400.0 | 2782.0 | 3371.0 |  |
| 1934 | 1461.0 | 1449.0 | 598.0  | 400.0  | 400.0  | 400.0  | 400.0  | 1002.0 | 2717.0 | 2040.0 | 3488.0 | 1953.0 | 1749.0 |        |  |
| 1935 | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 2000.0 | 4351.0 | 5522.0 |        |  |
| 1936 | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 450.0  | 500.0  | 2400.0 | 1800.0 | 1000.0 |        |  |
| 1937 | 400.0  | 400.0  | 400.0  | 1279.0 | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 1484.0 | 2400.0 | 3033.0 | 2602.0 |  |
| 1938 | 684.0  | 1403.0 | 790.0  | 1385.0 | 400.0  | 513.0  | 400.0  | 450.0  | 2767.0 | 2550.0 | 3422.0 | 2703.0 |        |        |  |
| 1939 | 505.0  | 489.0  | 495.0  | 400.0  | 400.0  | 400.0  | 400.0  | 1081.0 | 3218.0 | 2822.0 | 3102.0 | 1441.0 |        |        |  |
| 1940 | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 4100.0 | 2400.0 | 4266.0 | 2916.0 |        |  |
| 1941 | 400.0  | 781.0  | 845.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 450.0  | 500.0  | 2706.0 | 2273.0 | 3303.0 |        |  |
| 1942 | 483.0  | 1004.0 | 592.0  | 721.0  | 400.0  | 400.0  | 400.0  | 450.0  | 500.0  | 2400.0 | 2080.0 | 1401.0 |        |        |  |
| 1943 | 400.0  | 450.0  | 500.0  | 400.0  | 400.0  | 4245.0 | 2222.0 | 3098.0 | 1386.0 | 3706.0 | 3803.0 | 2500.0 |        |        |  |
| 1944 | 600.0  | 500.0  | 500.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 2084.0 | 2400.0 | 4063.0 | 1371.0 |        |        |  |
| 1945 | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 1324.0 | 631.0  | 2350.0 | 2400.0 | 3153.0 | 2500.0 |        |  |
| 1946 | 533.0  | 500.0  | 500.0  | 400.0  | 400.0  | 400.0  | 400.0  | 906.0  | 1536.0 | 4808.0 | 2445.0 | 3688.0 | 1613.0 |        |  |
| 1947 | 560.0  | 489.0  | 500.0  | 400.0  | 400.0  | 400.0  | 400.0  | 2320.0 | 400.0  | 4660.0 | 2400.0 | 3648.0 | 2536.0 |        |  |
| 1948 | 466.0  | 497.0  | 436.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 5912.0 | 2912.0 | 3233.0 | 1488.0 |        |        |  |
| 1949 | 403.0  | 500.0  | 500.0  | 400.0  | 400.0  | 400.0  | 1205.0 | 1640.0 | 400.0  | 5067.0 | 3062.0 | 3171.0 | 1551.0 |        |  |
| 1950 | 515.0  | 452.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 5072.0 | 1461.0 | 1079.0 | 2633.0 | 3528.0 | 2500.0 |        |  |
| 1951 | 600.0  | 500.0  | 500.0  | 400.0  | 916.0  | 1858.0 | 4332.0 | 1180.0 | 1333.0 | 2400.0 | 3601.0 | 2500.0 |        |        |  |
| 1952 | 600.0  | 500.0  | 500.0  | 400.0  | 400.0  | 400.0  | 400.0  | 3643.0 | 400.0  | 5269.0 | 2400.0 | 3424.0 | 2616.0 |        |  |
| 1953 | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 1280.0 | 3577.0 | 2400.0 | 4152.0 | 1754.0 |        |        |  |
| 1954 | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 5047.0 | 1221.0 | 2383.0 | 2400.0 | 4303.0 | 1840.0 |        |  |
| 1955 | 416.0  | 440.0  | 402.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 3515.0 | 3327.0 | 3213.0 | 1482.0 |        |  |
| 1956 | 492.0  | 500.0  | 500.0  | 400.0  | 1325.0 | 3303.0 | 2303.0 | 2621.0 | 3849.0 | 2721.0 | 3678.0 | 2526.0 |        |        |  |
| 1957 | 600.0  | 500.0  | 500.0  | 400.0  | 423.0  | 488.0  | 5828.0 | 450.0  | 2282.0 | 2575.0 | 3219.0 | 2467.0 |        |        |  |
| 1958 | 416.0  | 400.0  | 500.0  | 400.0  | 400.0  | 400.0  | 400.0  | 801.0  | 3078.0 | 2400.0 | 2382.0 | 1408.0 |        |        |  |
| 1959 | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 1364.0 | 1980.0 | 2654.0 | 2400.0 | 2561.0 | 1576.0 |        |  |
| 1960 | 567.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 2672.0 | 2400.0 | 2710.0 | 3053.0 |        |        |  |
| 1961 | 400.0  | 811.0  | 1001.0 | 1540.0 | 882.0  | 464.0  | 400.0  | 450.0  | 1885.0 | 3881.0 | 2184.0 | 2113.0 |        |        |  |
| 1962 | 1208.0 | 680.0  | 974.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 2619.0 | 2400.0 | 2918.0 | 2517.0 |        |        |  |
| 1963 | 481.0  | 403.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 4782.0 | 2674.0 | 2920.0 | 1640.0 |        |        |  |
| 1964 | 414.0  | 466.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 3783.0 | 450.0  | 2451.0 | 2400.0 | 2980.0 | 2340.0 |        |  |
| 1965 | 400.0  | 400.0  | 500.0  | 400.0  | 1264.0 | 947.0  | 4483.0 | 2985.0 | 1332.0 | 2904.0 | 3596.0 | 2500.0 |        |        |  |
| 1966 | 600.0  | 500.0  | 500.0  | 400.0  | 400.0  | 400.0  | 400.0  | 776.0  | 3902.0 | 2400.0 | 2744.0 | 1667.0 |        |        |  |
| 1967 | 400.0  | 403.0  | 488.0  | 400.0  | 501.0  | 400.0  | 2856.0 | 956.0  | 3217.0 | 2854.0 | 3354.0 | 2500.0 |        |        |  |
| 1968 | 600.0  | 500.0  | 470.0  | 400.0  | 400.0  | 400.0  | 400.0  | 2445.0 | 2391.0 | 2400.0 | 3286.0 | 2500.0 |        |        |  |
| 1969 | 600.0  | 500.0  | 500.0  | 400.0  | 1196.0 | 842.0  | 400.0  | 1236.0 | 3883.0 | 2400.0 | 3445.0 | 1601.0 |        |        |  |
| 1970 | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 1872.0 | 1917.0 | 3203.0 | 2400.0 | 3088.0 | 2500.0 |        |        |  |
| 1971 | 600.0  | 500.0  | 500.0  | 400.0  | 1409.0 | 2679.0 | 2673.0 | 3029.0 | 2355.0 | 4201.0 | 3827.0 | 2500.0 |        |        |  |
| 1972 | 600.0  | 500.0  | 500.0  | 400.0  | 1785.0 | 4458.0 | 891.0  | 3486.0 | 1796.0 | 2400.0 | 3246.0 | 2500.0 |        |        |  |
| 1973 | 600.0  | 500.0  | 500.0  | 404.0  | 529.0  | 400.0  | 400.0  | 400.0  | 4232.0 | 2400.0 | 2800.0 | 1823.0 |        |        |  |
| 1974 | 476.0  | 500.0  | 500.0  | 400.0  | 1016.0 | 400.0  | 5546.0 | 460.0  | 5853.0 | 3386.0 | 3601.0 | 2500.0 |        |        |  |
| 1975 | 600.0  | 500.0  | 455.0  | 400.0  | 400.0  | 400.0  | 5032.0 | 1011.0 | 500.0  | 3288.0 | 3647.0 | 2500.0 |        |        |  |
| 1976 | 600.0  | 500.0  | 500.0  | 400.0  | 981.0  | 2205.0 | 3133.0 | 2419.0 | 1996.0 | 2400.0 | 3080.0 | 2500.0 |        |        |  |
| 1977 | 519.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 1675.0 | 1779.0 | 2587.0 | 4744.0 | 1368.0 |        |  |
| 1978 | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 500.0  | 2400.0 | 2800.0 | 2438.0 |        |        |  |
| 1979 | 400.0  | 400.0  | 464.0  | 400.0  | 400.0  | 400.0  | 400.0  | 1435.0 | 400.0  | 3989.0 | 2400.0 | 3225.0 | 1312.0 |        |  |
| 1980 | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 791.0  | 4359.0 | 2400.0 | 2800.0 | 2200.0 |        |        |  |
| 1981 | 400.0  | 400.0  | 411.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 4485.0 | 2400.0 | 2310.0 | 1218.0 |        |        |  |
| 1982 | 400.0  | 400.0  | 500.0  | 505.0  | 400.0  | 2208.0 | 3343.0 | 3214.0 | 832.0  | 4322.0 | 3661.0 | 2500.0 |        |        |  |
| 1983 | 600.0  | 500.0  | 500.0  | 400.0  | 400.0  | 400.0  | 2751.0 | 400.0  | 4018.0 | 3550.0 | 3674.0 | 2500.0 |        |        |  |
| 1984 | 600.0  | 594.0  | 888.0  | 738.0  | 808.0  | 400.0  | 2862.0 | 400.0  | 4824.0 | 3285.0 | 3603.0 | 2500.0 |        |        |  |
| 1985 | 600.0  | 500.0  | 500.0  | 400.0  | 400.0  | 400.0  | 914.0  | 2585.0 | 3742.0 | 2400.0 | 2727.0 | 1467.0 |        |        |  |
| 1986 | 591.0  | 500.0  | 500.0  | 400.0  | 400.0  | 3074.0 | 2955.0 | 1896.0 | 5587.0 | 2628.0 | 3461.0 | 2500.0 |        |        |  |
| 1987 | 600.0  | 500.0  | 500.0  | 400.0  | 400.0  | 400.0  | 1121.0 | 482.0  | 2495.0 | 2400.0 | 1800.0 | 1000.0 |        |        |  |
| 1988 | 400.0  | 400.0  | 579.0  | 617.0  | 400.0  | 400.0  | 400.0  | 400.0  | 2903.0 | 2400.0 | 3144.0 | 2701.0 |        |        |  |
| 1989 | 1576.0 | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 2323.0 | 2400.0 | 2444.0 | 1522.0 |        |        |  |
| AVG  | 542.5  | 514.8  | 512.9  | 489.1  | 522.8  | 769.1  | 1635.0 | 1037.1 | 2806.4 | 2706.0 | 3203.1 | 2183.2 |        |        |  |
| MAX  | 1576.0 | 1449.0 | 1430.0 | 1540.0 | 1785.0 | 4458.0 | 5935.0 | 3486.0 | 5912.0 | 4322.0 | 5158.0 | 5522.0 |        |        |  |
| MIN  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 2000.0 | 1800.0 | 1000.0 |        |        |  |

TABLE B

DISCHARGE, SNAKE RIVER NEAR MILNER, IDAHO

STUDY 951 UPPER SNAKE RIVER OPERATION STUDIES (IDWR MODEL)

UNITS ARE MEAN CUBIC FEET PER SECOND (CFS)

| YEAR | OCT    | NOV     | DEC     | JAN     | FEB     | MAR     | APR     | MAY     | JUN     | JUL    | AUG    | SEP    | AVG |
|------|--------|---------|---------|---------|---------|---------|---------|---------|---------|--------|--------|--------|-----|
| 1928 | 1304.0 | 3716.0  | 3074.0  | 6286.0  | 5388.0  | 3556.0  | 15672.0 | 7240.0  | 3940.0  | 1000.0 | 1000.0 | 1000.0 |     |
| 1929 | 2000.0 | 3925.0  | 7432.0  | 6440.0  | 3078.0  | 2671.0  | 4241.0  | 2295.0  | 300.0   | 1000.0 | 680.0  | 1000.0 |     |
| 1930 | 1000.0 | 2287.0  | 2966.0  | 3612.0  | 4504.0  | 1327.0  | 10.0    | 30.0    | 300.0   | 680.0  | 680.0  | 1000.0 |     |
| 1931 | 1000.0 | 593.0   | 2342.0  | 824.0   | 2666.0  | 820.0   | 10.0    | 30.0    | 300.0   | 680.0  | 240.0  | 100.0  |     |
| 1932 | 280.0  | 260.0   | 765.0   | 692.0   | 500.0   | 150.0   | 10.0    | 30.0    | 275.0   | 680.0  | 680.0  | 1000.0 |     |
| 1933 | 1000.0 | 656.0   | 1000.0  | 835.0   | 659.0   | 150.0   | 177.0   | 30.0    | 300.0   | 680.0  | 680.0  | 1000.0 |     |
| 1934 | 1000.0 | 583.0   | 877.0   | 894.0   | 767.0   | 150.0   | 10.0    | 30.0    | 300.0   | 680.0  | 240.0  | 100.0  |     |
| 1935 | 280.0  | 200.0   | 400.0   | 502.0   | 604.0   | 150.0   | 10.0    | 30.0    | 3.0     | 300.0  | 240.0  | 100.0  |     |
| 1936 | 280.0  | 260.0   | 418.0   | 830.0   | 916.0   | 430.0   | 10.0    | 30.0    | 300.0   | 1000.0 | 680.0  | 1000.0 |     |
| 1937 | 1000.0 | 864.0   | 1022.0  | 890.0   | 1332.0  | 767.0   | 1671.0  | 30.0    | 300.0   | 680.0  | 680.0  | 1000.0 |     |
| 1938 | 1000.0 | 743.0   | 1062.0  | 926.0   | 1122.0  | 1820.0  | 1491.0  | 3099.0  | 300.0   | 1000.0 | 1000.0 | 1000.0 |     |
| 1939 | 2000.0 | 3670.0  | 4370.0  | 6566.0  | 3235.0  | 2126.0  | 1626.0  | 146.0   | 300.0   | 1000.0 | 680.0  | 1000.0 |     |
| 1940 | 1000.0 | 714.0   | 1180.0  | 951.0   | 2253.0  | 1096.0  | 748.0   | 30.0    | 300.0   | 680.0  | 240.0  | 562.0  |     |
| 1941 | 1000.0 | 854.0   | 1754.0  | 967.0   | 1456.0  | 447.0   | 378.0   | 30.0    | 300.0   | 680.0  | 240.0  | 100.0  |     |
| 1942 | 1000.0 | 1117.0  | 1969.0  | 762.0   | 707.0   | 622.0   | 886.0   | 30.0    | 300.0   | 680.0  | 680.0  | 1000.0 |     |
| 1943 | 1000.0 | 810.0   | 2863.0  | 2008.0  | 3584.0  | 9748.0  | 15771.0 | 5989.0  | 1777.0  | 1000.0 | 1000.0 | 1800.0 |     |
| 1944 | 2000.0 | 4446.0  | 9426.0  | 6638.0  | 4020.0  | 1762.0  | 2844.0  | 30.0    | 300.0   | 1000.0 | 680.0  | 1000.0 |     |
| 1945 | 1000.0 | 1193.0  | 3089.0  | 3888.0  | 4288.0  | 1416.0  | 4919.0  | 5083.0  | 300.0   | 1000.0 | 1000.0 | 1800.0 |     |
| 1946 | 2000.0 | 4475.0  | 9479.0  | 7143.0  | 3744.0  | 3994.0  | 7402.0  | 6503.0  | 1948.0  | 1000.0 | 1000.0 | 1000.0 |     |
| 1947 | 2000.0 | 3886.0  | 8205.0  | 6333.0  | 4508.0  | 1450.0  | 11287.0 | 30.0    | 300.0   | 1000.0 | 1000.0 | 1000.0 |     |
| 1948 | 2000.0 | 3854.0  | 6195.0  | 7381.0  | 4329.0  | 3037.0  | 1503.0  | 6171.0  | 5294.0  | 1000.0 | 1000.0 | 1000.0 |     |
| 1949 | 2000.0 | 3641.0  | 3086.0  | 6066.0  | 3454.0  | 7251.0  | 7361.0  | 3634.0  | 453.0   | 1000.0 | 1000.0 | 1000.0 |     |
| 1950 | 2000.0 | 3867.0  | 3207.0  | 6960.0  | 5446.0  | 4506.0  | 17782.0 | 4440.0  | 2104.0  | 1000.0 | 1000.0 | 1800.0 |     |
| 1951 | 3487.0 | 10425.0 | 10063.0 | 9318.0  | 8986.0  | 9696.0  | 12185.0 | 7403.0  | 300.0   | 1000.0 | 1000.0 | 1800.0 |     |
| 1952 | 2000.0 | 5635.0  | 9587.0  | 9940.0  | 5851.0  | 4289.0  | 15100.0 | 6636.0  | 5563.0  | 1000.0 | 1000.0 | 1000.0 |     |
| 1953 | 2000.0 | 3590.0  | 5851.0  | 8472.0  | 4668.0  | 1858.0  | 783.0   | 4396.0  | 2880.0  | 1000.0 | 1000.0 | 1000.0 |     |
| 1954 | 1096.0 | 3676.0  | 3067.0  | 6173.0  | 4236.0  | 1634.0  | 13060.0 | 696.0   | 300.0   | 1000.0 | 680.0  | 1000.0 |     |
| 1955 | 1000.0 | 3734.0  | 2949.0  | 4012.0  | 3447.0  | 1459.0  | 3529.0  | 30.0    | 300.0   | 1000.0 | 680.0  | 1000.0 |     |
| 1956 | 1000.0 | 1295.0  | 3067.0  | 7375.0  | 7092.0  | 10184.0 | 11835.0 | 7235.0  | 3679.0  | 1000.0 | 1000.0 | 1800.0 |     |
| 1957 | 2000.0 | 4463.0  | 8905.0  | 6721.0  | 5064.0  | 2369.0  | 15890.0 | 9278.0  | 806.0   | 1000.0 | 1000.0 | 1000.0 |     |
| 1958 | 2000.0 | 3742.0  | 7737.0  | 7161.0  | 5014.0  | 2193.0  | 2718.0  | 3961.0  | 300.0   | 1000.0 | 680.0  | 1000.0 |     |
| 1959 | 1000.0 | 1044.0  | 2672.0  | 3948.0  | 4164.0  | 1541.0  | 3566.0  | 2031.0  | 300.0   | 1000.0 | 680.0  | 1000.0 |     |
| 1960 | 1000.0 | 451.0   | 2959.0  | 4166.0  | 4378.0  | 2021.0  | 2616.0  | 30.0    | 300.0   | 680.0  | 680.0  | 1000.0 |     |
| 1961 | 1000.0 | 950.0   | 1296.0  | 868.0   | 1777.0  | 470.0   | 10.0    | 30.0    | 300.0   | 680.0  | 240.0  | 100.0  |     |
| 1962 | 1000.0 | 1063.0  | 889.0   | 791.0   | 2704.0  | 1462.0  | 8969.0  | 2336.0  | 300.0   | 1000.0 | 1000.0 | 1000.0 |     |
| 1963 | 2000.0 | 3806.0  | 3243.0  | 3996.0  | 5702.0  | 794.0   | 3966.0  | 30.0    | 7248.0  | 1000.0 | 680.0  | 1000.0 |     |
| 1964 | 1000.0 | 1760.0  | 3336.0  | 3161.0  | 3134.0  | 2462.0  | 12370.0 | 5448.0  | 4821.0  | 1000.0 | 1000.0 | 1000.0 |     |
| 1965 | 2000.0 | 4205.0  | 6827.0  | 8612.0  | 6233.0  | 6710.0  | 14435.0 | 7905.0  | 2634.0  | 1000.0 | 1178.0 | 3330.0 |     |
| 1966 | 3278.0 | 7794.0  | 9631.0  | 6395.0  | 4566.0  | 2246.0  | 1309.0  | 30.0    | 300.0   | 1000.0 | 680.0  | 1000.0 |     |
| 1967 | 1000.0 | 1210.0  | 1644.0  | 1019.0  | 2551.0  | 1061.0  | 9624.0  | 2433.0  | 3888.0  | 1000.0 | 1000.0 | 1800.0 |     |
| 1968 | 2000.0 | 4150.0  | 8220.0  | 7100.0  | 5151.0  | 1540.0  | 1236.0  | 3310.0  | 1607.0  | 1000.0 | 1000.0 | 1800.0 |     |
| 1969 | 2000.0 | 3813.0  | 8048.0  | 10219.0 | 8778.0  | 6614.0  | 4067.0  | 5182.0  | 758.0   | 1000.0 | 654.0  | 1000.0 |     |
| 1970 | 2000.0 | 3700.0  | 4226.0  | 8029.0  | 4544.0  | 2725.0  | 7515.0  | 5807.0  | 6114.0  | 1000.0 | 1000.0 | 1800.0 |     |
| 1971 | 2000.0 | 4047.0  | 9948.0  | 14924.0 | 8632.0  | 9651.0  | 13108.0 | 17517.0 | 12208.0 | 4563.0 | 2586.0 | 4264.0 |     |
| 1972 | 6472.0 | 11663.0 | 10437.0 | 13965.0 | 10039.0 | 14396.0 | 11811.0 | 12464.0 | 9639.0  | 1000.0 | 1000.0 | 1800.0 |     |
| 1973 | 4956.0 | 10351.0 | 10367.0 | 11908.0 | 5570.0  | 3437.0  | 5185.0  | 3841.0  | 1215.0  | 1000.0 | 1000.0 | 1247.0 |     |
| 1974 | 2000.0 | 6523.0  | 9756.0  | 9287.0  | 5266.0  | 5911.0  | 19333.0 | 9684.0  | 11291.0 | 1000.0 | 1157.0 | 1800.0 |     |
| 1975 | 3829.0 | 9685.0  | 9667.0  | 8073.0  | 5789.0  | 5292.0  | 13921.0 | 8742.0  | 8348.0  | 1885.0 | 326.0  | 1800.0 |     |
| 1976 | 5153.0 | 9773.0  | 10512.0 | 12022.0 | 7862.0  | 10071.0 | 14275.0 | 18011.0 | 7402.0  | 1000.0 | 1000.0 | 1800.0 |     |
| 1977 | 2000.0 | 8379.0  | 9653.0  | 7579.0  | 4991.0  | 1226.0  | 10.0    | 30.0    | 300.0   | 680.0  | 240.0  | 100.0  |     |
| 1978 | 260.0  | 465.0   | 679.0   | 1003.0  | 752.0   | 150.0   | 3090.0  | 8946.0  | 300.0   | 1000.0 | 1000.0 | 1800.0 |     |
| 1979 | 2000.0 | 3928.0  | 7330.0  | 7105.0  | 4853.0  | 2660.0  | 6834.0  | 30.0    | 300.0   | 1000.0 | 680.0  | 1000.0 |     |
| 1980 | 1000.0 | 1000.0  | 2986.0  | 2464.0  | 4956.0  | 1045.0  | 1751.0  | 5679.0  | 7812.0  | 1000.0 | 1000.0 | 1000.0 |     |
| 1981 | 2000.0 | 3745.0  | 4847.0  | 6965.0  | 4137.0  | 1223.0  | 858.0   | 30.0    | 468.0   | 1000.0 | 680.0  | 1000.0 |     |
| 1982 | 1000.0 | 1611.0  | 3158.0  | 2367.0  | 3914.0  | 7982.0  | 11900.0 | 14848.0 | 5666.0  | 2229.0 | 1694.0 | 2821.0 |     |
| 1983 | 6916.0 | 10296.0 | 10274.0 | 15486.0 | 6651.0  | 6075.0  | 8375.0  | 12261.0 | 14230.0 | 3206.0 | 3264.0 | 1800.0 |     |
| 1984 | 6774.0 | 12419.0 | 11061.0 | 17586.0 | 6612.0  | 7717.0  | 12366.0 | 14742.0 | 21332.0 | 1363.0 | 4533.0 | 1800.0 |     |
| 1985 | 5576.0 | 11184.0 | 10232.0 | 12322.0 | 5506.0  | 4416.0  | 8982.0  | 8579.0  | 300.0   | 1000.0 | 680.0  | 1000.0 |     |
| 1986 | 2000.0 | 3795.0  | 3547.0  | 10964.0 | 6357.0  | 16241.0 | 14874.0 | 13017.0 | 14736.0 | 1000.0 | 1000.0 | 1800.0 |     |
| 1987 | 4752.0 | 8902.0  | 10014.0 | 10605.0 | 5705.0  | 2737.0  | 10.0    | 30.0    | 300.0   | 680.0  | 680.0  | 1000.0 |     |
| 1988 | 1000.0 | 1236.0  | 2148.0  | 960.0   | 2296.0  | 758.0   | 327.0   | 30.0    | 300.0   | 680.0  | 240.0  | 100.0  |     |
| 1989 | 1000.0 | 1013.0  | 767.0   | 907.0   | 592.0   | 150.0   | 4036.0  | 30.0    | 300.0   | 680.0  | 680.0  | 1000.0 |     |
| AVG  | 1994.1 | 3828.8  | 5137.4  | 5672.1  | 4213.0  | 3451.3  | 6341.5  | 4291.3  | 2896.4  | 1036.5 | 946.8  | 1221.4 |     |
| MAX  | 6916.0 | 12419.0 | 11061.0 | 17586.0 | 10039.0 | 16241.0 | 19333.0 | 17517.0 | 21332.0 | 4563.0 | 4533.0 | 4264.0 |     |
| MIN  | 260.0  | 200.0   | 400.0   | 502.0   | 500.0   | 150.0   | 10.0    | 30.0    | 5.0     | 300.0  | 240.0  | 100.0  |     |

TABLE B

STUDY 951 UPPER SNAKE RIVER OPERATION STUDIES (IDWR MODEL)

UNITS ARE 1000 ACRE-FEET

| YEAR | OCT    | NOV    | DEC    | JAN    | FEB    | MAR    | APR    | MAY    | JUN    | JUL    | AUG    | SEP    |
|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1928 | 2358.8 | 2749.6 | 3071.9 | 3176.5 | 3291.5 | 3530.7 | 2942.7 | 3867.4 | 4088.4 | 3657.4 | 2998.8 | 2630.7 |
| 1929 | 2782.0 | 3089.1 | 3074.2 | 3087.1 | 3256.2 | 3530.2 | 3684.6 | 3630.9 | 3909.5 | 3162.0 | 2398.9 | 2060.5 |
| 1930 | 2269.2 | 2604.6 | 2907.5 | 3049.8 | 3210.1 | 3487.5 | 3801.7 | 3863.7 | 3566.9 | 2676.0 | 2110.7 | 1737.1 |
| 1931 | 2026.4 | 2440.6 | 2713.0 | 3005.6 | 3182.8 | 3452.1 | 3608.9 | 3293.5 | 2656.0 | 1558.7 | 824.2  | 429.3  |
| 1932 | 535.7  | 770.3  | 1070.4 | 1327.2 | 1567.0 | 1869.8 | 2179.9 | 2659.5 | 3036.7 | 2419.5 | 1678.9 | 1187.2 |
| 1933 | 1251.5 | 1615.2 | 1944.5 | 2276.9 | 2533.6 | 2846.8 | 3067.8 | 3148.4 | 3363.9 | 2480.9 | 1663.4 | 1149.8 |
| 1934 | 1183.7 | 1485.4 | 1856.0 | 2176.0 | 2447.9 | 2749.6 | 2921.0 | 2639.1 | 1885.5 | 1080.1 | 538.4  | 283.3  |
| 1935 | 380.0  | 617.1  | 896.2  | 1150.4 | 1376.8 | 1616.8 | 1906.8 | 2067.0 | 2158.0 | 1355.4 | 695.6  | 276.7  |
| 1936 | 364.8  | 714.5  | 1031.0 | 1340.7 | 1618.0 | 1916.6 | 2402.7 | 3310.4 | 3613.0 | 2754.3 | 2038.1 | 1538.0 |
| 1937 | 1607.7 | 1954.3 | 2307.6 | 2562.3 | 2790.1 | 3064.4 | 3251.1 | 3585.8 | 3410.5 | 2508.3 | 1672.6 | 1183.6 |
| 1938 | 1268.6 | 1585.3 | 1979.4 | 2293.9 | 2562.5 | 2807.1 | 3180.2 | 3594.2 | 4031.0 | 3614.4 | 2877.0 | 2399.6 |
| 1939 | 2558.2 | 2841.4 | 3055.1 | 3086.1 | 3225.5 | 3520.3 | 3898.4 | 4096.1 | 3781.8 | 2877.6 | 2078.8 | 1658.6 |
| 1940 | 1843.5 | 2171.2 | 2504.7 | 2833.3 | 3073.5 | 3348.0 | 3591.5 | 3634.7 | 3213.7 | 2160.6 | 1361.8 | 1042.2 |
| 1941 | 1247.7 | 1609.8 | 1922.3 | 2236.4 | 2503.0 | 2806.2 | 3030.6 | 3129.5 | 2841.0 | 1918.3 | 1299.4 | 965.1  |
| 1942 | 1157.9 | 1548.5 | 1944.1 | 2264.6 | 2541.6 | 2830.2 | 3271.9 | 3572.7 | 3573.3 | 2839.3 | 2032.2 | 1608.1 |
| 1943 | 1678.9 | 2111.9 | 2442.8 | 2801.5 | 2996.1 | 2795.9 | 2768.1 | 3023.6 | 3764.9 | 3819.1 | 3293.7 | 2888.2 |
| 1944 | 3039.8 | 3336.0 | 3286.5 | 3253.4 | 3404.8 | 3667.1 | 3838.5 | 3926.7 | 4071.6 | 3383.4 | 2573.2 | 2180.3 |
| 1945 | 2234.8 | 2624.4 | 2881.0 | 3060.5 | 3222.7 | 3475.5 | 3472.9 | 3538.3 | 3890.4 | 3546.2 | 2968.3 | 2676.9 |
| 1946 | 2875.9 | 3155.8 | 3099.7 | 3106.1 | 3269.8 | 3500.5 | 3836.2 | 4120.6 | 4116.8 | 3377.6 | 2716.5 | 2476.4 |
| 1947 | 2707.3 | 3050.8 | 3063.1 | 3096.1 | 3245.9 | 3546.5 | 3155.3 | 3670.1 | 3941.0 | 3361.7 | 2792.8 | 2481.6 |
| 1948 | 2627.1 | 2934.3 | 3077.7 | 3092.0 | 3253.5 | 3435.5 | 3735.9 | 3959.0 | 4121.1 | 3361.9 | 2673.7 | 2328.9 |
| 1949 | 2502.9 | 2789.2 | 3071.7 | 3084.6 | 3246.0 | 3246.2 | 3277.8 | 3653.3 | 4064.4 | 3296.4 | 2640.5 | 2246.0 |
| 1950 | 2465.3 | 2765.7 | 3062.1 | 3060.8 | 3209.0 | 3409.3 | 2934.0 | 3108.1 | 3957.6 | 3974.8 | 3467.5 | 3226.0 |
| 1951 | 3372.0 | 3368.2 | 3334.1 | 3233.1 | 3256.0 | 3113.8 | 2967.4 | 3426.9 | 3807.6 | 3471.5 | 3253.2 | 2918.3 |
| 1952 | 3136.2 | 3365.3 | 3317.9 | 3162.2 | 3241.8 | 3414.6 | 3222.7 | 3968.1 | 4128.3 | 3531.4 | 2960.6 | 2608.9 |
| 1953 | 2663.1 | 2919.7 | 3082.3 | 3107.2 | 3264.3 | 3530.3 | 3756.6 | 3578.5 | 4057.6 | 3432.6 | 2755.6 | 2312.2 |
| 1954 | 2422.1 | 2699.7 | 3012.5 | 3103.4 | 3264.7 | 3534.5 | 3023.1 | 3508.2 | 3567.0 | 3194.4 | 2599.9 | 2173.6 |
| 1955 | 2355.6 | 2638.0 | 2918.0 | 3082.8 | 3244.8 | 3512.6 | 3653.2 | 3614.5 | 3869.8 | 3157.8 | 2478.3 | 2040.2 |
| 1956 | 2194.5 | 2620.7 | 3019.6 | 3117.1 | 3082.4 | 2875.5 | 2828.5 | 3371.7 | 4111.0 | 3615.3 | 3037.9 | 2668.2 |
| 1957 | 2642.0 | 3123.5 | 3111.8 | 3132.0 | 3308.4 | 3593.9 | 3003.3 | 3300.1 | 4018.8 | 3557.2 | 2911.4 | 2564.4 |
| 1958 | 2718.7 | 3008.9 | 3078.9 | 3082.2 | 3261.6 | 3529.4 | 3721.0 | 4121.3 | 4047.1 | 3071.7 | 2375.3 | 2022.1 |
| 1959 | 2085.2 | 2506.9 | 2853.2 | 3062.8 | 3229.0 | 3492.6 | 3513.3 | 3364.9 | 3646.4 | 2905.2 | 2168.6 | 1824.3 |
| 1960 | 2149.4 | 2590.1 | 2904.5 | 3091.1 | 3245.9 | 3519.8 | 3612.6 | 3696.7 | 3495.1 | 2474.9 | 1698.6 | 1205.9 |
| 1961 | 1349.3 | 1752.6 | 2080.6 | 2365.0 | 2623.3 | 2922.3 | 3101.4 | 3028.1 | 2785.0 | 1723.3 | 972.5  | 785.2  |
| 1962 | 1053.5 | 1454.1 | 1819.7 | 2134.0 | 2555.0 | 2904.1 | 3111.4 | 3661.2 | 3996.4 | 3465.1 | 2838.8 | 2395.1 |
| 1963 | 2474.6 | 2685.4 | 2941.6 | 3087.2 | 3265.5 | 3555.9 | 3621.0 | 4029.3 | 4120.6 | 3284.0 | 2562.0 | 2276.2 |
| 1964 | 2254.3 | 2635.5 | 2879.5 | 3083.8 | 3235.3 | 3408.9 | 3043.6 | 3294.9 | 3692.0 | 3667.5 | 3020.5 | 2596.8 |
| 1965 | 2616.3 | 2892.3 | 3110.1 | 3114.5 | 3135.1 | 3038.4 | 2823.4 | 3086.4 | 3661.2 | 3690.6 | 3624.3 | 3369.2 |
| 1966 | 3399.5 | 3375.7 | 3297.0 | 3271.5 | 3430.1 | 3711.7 | 3806.2 | 4063.5 | 3777.3 | 2809.5 | 2059.1 | 1728.9 |
| 1967 | 1891.6 | 2263.6 | 2630.3 | 3014.7 | 3231.1 | 3483.7 | 3089.9 | 3382.6 | 4041.2 | 3643.5 | 3193.9 | 2707.5 |
| 1968 | 2868.1 | 3142.1 | 3108.3 | 3103.7 | 3263.7 | 3540.9 | 3612.7 | 3489.3 | 4037.2 | 3420.1 | 3155.4 | 2924.4 |
| 1969 | 3010.8 | 3276.6 | 3251.0 | 3196.2 | 3168.8 | 3153.3 | 3672.9 | 4016.3 | 4129.6 | 3442.6 | 2770.7 | 2429.2 |
| 1970 | 2597.0 | 2858.0 | 3084.7 | 3110.2 | 3255.7 | 3433.8 | 3172.9 | 3477.1 | 4098.4 | 3792.6 | 3139.9 | 2954.7 |
| 1971 | 3069.0 | 3367.1 | 3311.7 | 2967.7 | 2952.7 | 2790.8 | 2630.7 | 3132.3 | 4129.6 | 4090.6 | 3631.1 | 3379.9 |
| 1972 | 3426.0 | 3404.3 | 3376.3 | 3091.6 | 3051.8 | 2780.8 | 2708.2 | 2993.9 | 3946.8 | 3736.2 | 3376.9 | 3250.6 |
| 1973 | 3453.3 | 3436.5 | 3379.4 | 3206.3 | 3381.2 | 3664.9 | 3647.1 | 4086.4 | 4108.3 | 3477.7 | 2831.3 | 2692.9 |
| 1974 | 2948.5 | 3168.1 | 3110.1 | 3032.4 | 3152.8 | 3293.6 | 2983.2 | 3294.3 | 4127.7 | 4039.3 | 3632.1 | 3284.0 |
| 1975 | 3374.5 | 3315.3 | 3233.6 | 3216.5 | 3346.7 | 3463.0 | 2980.4 | 3080.6 | 3732.3 | 4099.8 | 3638.2 | 3323.2 |
| 1976 | 3395.5 | 3353.3 | 3289.1 | 3059.0 | 3096.2 | 2920.4 | 2697.6 | 3201.7 | 3813.4 | 3581.0 | 3250.2 | 3054.9 |
| 1977 | 3339.1 | 3288.5 | 3190.8 | 3180.0 | 3317.6 | 3574.7 | 3664.6 | 3096.6 | 2502.3 | 1447.4 | 784.4  | 437.6  |
| 1978 | 720.4  | 1072.5 | 1487.6 | 1844.9 | 2155.2 | 2496.2 | 2917.9 | 3196.4 | 3656.3 | 3689.3 | 3127.8 | 2998.7 |
| 1979 | 2981.6 | 3214.3 | 3211.4 | 3186.3 | 3347.4 | 3583.0 | 3514.6 | 3690.9 | 3920.5 | 3136.9 | 2540.6 | 2026.5 |
| 1980 | 2169.8 | 2483.6 | 2752.2 | 3066.3 | 3232.3 | 3513.8 | 3667.6 | 4072.2 | 4106.6 | 3470.4 | 2874.6 | 2626.6 |
| 1981 | 2643.5 | 2867.3 | 3088.6 | 3081.2 | 3248.2 | 3518.9 | 3736.0 | 3929.3 | 4102.3 | 3143.4 | 2300.7 | 1722.0 |
| 1982 | 1904.8 | 2291.8 | 2563.9 | 2853.4 | 3054.7 | 2920.8 | 2742.6 | 3053.1 | 3623.6 | 4063.1 | 3625.5 | 3385.7 |
| 1983 | 3436.2 | 3431.4 | 3396.0 | 3061.9 | 3224.3 | 3424.2 | 3437.8 | 3771.9 | 4129.3 | 4096.6 | 3642.0 | 3321.6 |
| 1984 | 3456.0 | 3471.8 | 3441.6 | 2991.2 | 3173.5 | 3245.5 | 3187.7 | 3922.9 | 4129.6 | 4106.2 | 3651.5 | 3406.6 |
| 1985 | 3448.3 | 3444.3 | 3406.5 | 3186.9 | 3353.0 | 3613.4 | 3894.4 | 4125.0 | 3963.3 | 3119.8 | 2463.6 | 2326.1 |
| 1986 | 2537.5 | 2802.3 | 3101.4 | 2928.2 | 3155.1 | 2845.9 | 3034.7 | 3437.5 | 4127.3 | 3927.0 | 3454.1 | 3308.8 |
| 1987 | 3437.2 | 3430.1 | 3361.2 | 3237.5 | 3407.2 | 3690.5 | 3851.0 | 3742.5 | 3336.6 | 2629.5 | 1921.2 | 1457.9 |
| 1988 | 1532.4 | 1996.0 | 2302.6 | 2671.1 | 2914.8 | 3215.7 | 3548.4 | 3491.2 | 3089.8 | 2023.9 | 1248.9 | 832.8  |
| 1989 | 867.8  | 1296.8 | 1658.5 | 1963.5 | 2273.4 | 2713.4 | 3069.6 | 3504.6 | 3604.9 | 2811.5 | 2123.8 | 1667.1 |
| VG   | 2332.3 | 2595.6 | 2770.6 | 2854.0 | 3023.3 | 3209.6 | 3263.4 | 3514.4 | 3730.7 | 3157.1 | 2534.2 | 2186.4 |
| AX   | 3456.0 | 3471.8 | 3441.6 | 3271.5 | 3430.1 | 3711.7 | 3936.2 | 4125.0 | 4129.6 | 4106.2 | 3651.5 | 3408.6 |
| IN   | 380.0  | 617.1  | 896.2  | 1150.4 | 1376.8 | 1616.8 | 1906.8 | 2067.0 | 1885.5 | 1080.1 | 538.4  | 276.7  |

TABLE B

STUDY 951 UPPER SNAKE RIVER OPERATION STUDIES (IDWR MODEL)

UNITS ARE 1000 ACRE-FEET

| YEAR | OCT    | NOV    | DEC    | JAN    | FEB    | MAR    | APR    | MAY    | JUN    | JUL    | AUG    | SEP    |
|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1928 | 1778.8 | 2138.4 | 2441.9 | 2531.2 | 2642.8 | 2874.1 | 2612.7 | 3082.4 | 3241.4 | 2810.4 | 2298.8 | 2050.7 |
| 1929 | 2202.0 | 2508.1 | 2491.3 | 2499.3 | 2683.4 | 2934.8 | 3078.0 | 3099.2 | 3082.5 | 2382.0 | 1758.9 | 1480.5 |
| 1930 | 1691.2 | 2036.0 | 2336.0 | 2478.8 | 2635.0 | 2914.3 | 3185.1 | 3085.8 | 2719.9 | 1896.0 | 1470.7 | 1157.1 |
| 1931 | 1446.4 | 1860.6 | 2137.6 | 2434.6 | 2617.4 | 2888.2 | 3031.2 | 2592.0 | 1938.9 | 1008.7 | 564.2  | 299.5  |
| 1932 | 409.1  | 648.1  | 947.9  | 1202.8 | 1438.9 | 1736.7 | 2035.1 | 2310.4 | 2358.1 | 1753.2 | 1073.5 | 706.8  |
| 1933 | 800.0  | 1216.5 | 1611.8 | 1956.9 | 2208.3 | 2525.8 | 2745.1 | 2734.3 | 2588.2 | 1740.9 | 1082.1 | 696.8  |
| 1934 | 800.0  | 1168.5 | 1556.0 | 1872.2 | 2145.5 | 2443.2 | 2562.7 | 2239.1 | 1520.7 | 860.1  | 438.4  | 273.3  |
| 1935 | 366.7  | 600.0  | 877.1  | 1125.6 | 1351.3 | 1589.8 | 1858.0 | 1674.2 | 1633.9 | 819.0  | 375.9  | 266.7  |
| 1936 | 377.4  | 707.5  | 1029.0 | 1323.2 | 1585.5 | 1881.0 | 2324.4 | 2876.0 | 2923.9 | 2121.2 | 1465.3 | 1000.7 |
| 1937 | 1077.7 | 1435.1 | 1791.6 | 2100.8 | 2323.3 | 2601.0 | 2782.9 | 2891.7 | 2592.2 | 1737.9 | 1045.0 | 682.5  |
| 1938 | 795.3  | 1172.9 | 1583.5 | 1952.8 | 2217.1 | 2457.1 | 2803.0 | 3021.2 | 3184.0 | 2767.4 | 2177.0 | 1819.6 |
| 1939 | 1978.2 | 2261.4 | 2475.1 | 2481.2 | 2635.5 | 2928.8 | 3264.6 | 3251.1 | 2934.6 | 2067.6 | 1438.8 | 1078.6 |
| 1940 | 1265.4 | 1802.9 | 1942.1 | 2268.6 | 2502.4 | 2773.9 | 2992.7 | 2795.9 | 2413.7 | 1435.3 | 861.8  | 682.2  |
| 1941 | 896.8  | 1290.5 | 1622.3 | 1934.1 | 2200.8 | 2513.1 | 2725.4 | 2826.2 | 2181.2 | 1340.6 | 799.4  | 615.1  |
| 1942 | 797.4  | 1216.0 | 1607.6 | 1944.8 | 2219.0 | 2511.8 | 2918.0 | 3088.1 | 2836.9 | 2117.1 | 1392.2 | 1028.1 |
| 1943 | 1107.3 | 1531.9 | 1857.6 | 2197.0 | 2384.4 | 2412.4 | 2418.1 | 2623.6 | 2984.9 | 2972.1 | 2583.7 | 2294.9 |
| 1944 | 2448.8 | 2745.9 | 2884.1 | 2675.8 | 2827.5 | 3088.8 | 3254.8 | 3198.6 | 3224.6 | 2558.2 | 1833.2 | 1600.3 |
| 1945 | 1660.4 | 2048.2 | 2308.5 | 2489.7 | 2645.8 | 2900.1 | 2952.9 | 2885.7 | 3090.4 | 2718.5 | 2288.3 | 2093.2 |
| 1946 | 2295.9 | 2574.3 | 2514.0 | 2512.0 | 2682.1 | 2881.8 | 3266.2 | 3273.6 | 3269.8 | 2560.0 | 2076.5 | 1896.4 |
| 1947 | 2127.3 | 2470.8 | 2500.8 | 2510.0 | 2656.5 | 2856.4 | 2688.6 | 2869.7 | 3094.0 | 2514.8 | 2104.7 | 1901.6 |
| 1948 | 2047.1 | 2354.3 | 2467.7 | 2507.0 | 2685.1 | 2845.6 | 3128.5 | 3128.2 | 3274.1 | 2574.5 | 2033.7 | 1748.9 |
| 1949 | 1922.9 | 2209.1 | 2489.0 | 2497.2 | 2652.5 | 2896.2 | 2757.8 | 3019.2 | 3217.4 | 2519.4 | 2000.5 | 1686.0 |
| 1950 | 1845.3 | 2185.7 | 2482.8 | 2490.6 | 2606.8 | 2797.8 | 2584.0 | 2687.1 | 3157.6 | 3127.8 | 2767.5 | 2634.4 |
| 1951 | 2778.7 | 2784.9 | 2726.3 | 2809.9 | 2642.9 | 2583.8 | 2617.4 | 2848.9 | 2996.6 | 2835.4 | 2553.2 | 2320.0 |
| 1952 | 2536.0 | 2767.9 | 2711.6 | 2542.6 | 2601.6 | 2756.3 | 2702.7 | 3168.5 | 3281.3 | 2667.0 | 2280.6 | 2028.9 |
| 1953 | 2087.1 | 2351.5 | 2508.4 | 2516.8 | 2667.3 | 2832.1 | 3138.7 | 2885.5 | 3210.8 | 2585.7 | 2104.3 | 1732.2 |
| 1954 | 1845.7 | 2122.6 | 2433.0 | 2508.5 | 2682.5 | 2927.1 | 2667.3 | 2886.8 | 2787.0 | 2361.1 | 1946.9 | 1563.6 |
| 1955 | 1775.6 | 2058.0 | 2338.0 | 2500.9 | 2688.9 | 2919.4 | 3053.9 | 3075.6 | 3022.8 | 2377.8 | 1838.3 | 1480.2 |
| 1956 | 1614.5 | 2036.0 | 2414.8 | 2491.2 | 2502.4 | 2457.4 | 2478.5 | 2791.7 | 3264.0 | 2768.3 | 2337.9 | 2068.5 |
| 1957 | 2250.4 | 2506.8 | 2487.9 | 2497.0 | 2658.4 | 2933.9 | 2652.8 | 2735.9 | 3182.8 | 2710.2 | 2211.4 | 1984.4 |
| 1958 | 2136.7 | 2430.8 | 2498.8 | 2508.9 | 2684.2 | 2923.1 | 3101.9 | 3274.3 | 3200.1 | 2317.6 | 1735.3 | 1442.1 |
| 1959 | 1512.4 | 1930.1 | 2273.8 | 2483.3 | 2639.2 | 2897.8 | 2961.8 | 2784.9 | 2848.4 | 2147.0 | 1526.6 | 1244.3 |
| 1960 | 1588.4 | 2011.1 | 2328.8 | 2510.3 | 2661.4 | 2932.6 | 3201.5 | 2944.7 | 2848.1 | 1712.9 | 1072.0 | 716.0  |
| 1961 | 863.2  | 1278.3 | 1645.1 | 2002.6 | 2272.4 | 2572.3 | 2733.0 | 2454.4 | 2030.8 | 1173.3 | 529.5  | 435.2  |
| 1962 | 726.1  | 1131.3 | 1516.8 | 1823.8 | 2231.3 | 2572.5 | 2717.4 | 3007.6 | 3153.2 | 2637.2 | 2136.8 | 1815.1 |
| 1963 | 1884.8 | 2105.4 | 2382.2 | 2506.5 | 2696.8 | 2970.4 | 3025.3 | 3237.5 | 3273.8 | 2504.0 | 1922.0 | 1696.2 |
| 1964 | 1674.3 | 2055.5 | 2303.4 | 2501.0 | 2653.3 | 2823.8 | 2656.3 | 2729.3 | 3182.6 | 2634.6 | 2320.5 | 2019.8 |
| 1965 | 2039.4 | 2316.1 | 2510.6 | 2495.0 | 2555.1 | 2488.4 | 2473.4 | 2689.4 | 3151.2 | 3143.8 | 2924.3 | 2761.4 |
| 1966 | 2804.7 | 2777.7 | 2705.2 | 2667.9 | 2824.6 | 3102.0 | 3274.5 | 3216.5 | 2930.3 | 2036.5 | 1419.1 | 1148.8 |
| 1967 | 1314.2 | 1703.6 | 2050.3 | 2423.8 | 2639.8 | 2900.4 | 2644.6 | 2702.5 | 3194.2 | 2906.5 | 2483.9 | 2125.3 |
| 1968 | 2284.2 | 2562.1 | 2526.3 | 2517.0 | 2668.0 | 2942.4 | 3008.9 | 2885.9 | 3190.2 | 2587.9 | 2466.4 | 2327.1 |
| 1969 | 2421.2 | 2684.6 | 2680.8 | 2585.1 | 2586.8 | 2803.3 | 2978.8 | 3199.2 | 3282.6 | 2637.8 | 2130.7 | 1846.2 |
| 1970 | 2020.3 | 2284.4 | 2506.6 | 2514.7 | 2657.4 | 2832.3 | 2852.9 | 2885.7 | 3245.4 | 2949.3 | 2439.9 | 2361.2 |
| 1971 | 2482.0 | 2775.7 | 2707.5 | 2340.7 | 2372.7 | 2336.8 | 2280.7 | 2685.1 | 3282.6 | 3243.6 | 2931.1 | 2786.9 |
| 1972 | 2819.0 | 2794.4 | 2752.3 | 2447.5 | 2471.8 | 2440.8 | 2358.2 | 2583.0 | 3146.8 | 2914.8 | 2678.9 | 2639.5 |
| 1973 | 2825.9 | 2801.9 | 2740.1 | 2558.3 | 2731.2 | 3001.8 | 3186.8 | 3249.5 | 3261.3 | 2895.1 | 2181.9 | 2112.9 |
| 1974 | 2368.5 | 2571.3 | 2506.1 | 2415.8 | 2558.9 | 2676.7 | 2513.2 | 2686.2 | 3280.7 | 3192.3 | 2932.1 | 2697.9 |
| 1975 | 2791.3 | 2735.2 | 2653.8 | 2624.7 | 2742.5 | 2849.6 | 2630.4 | 2620.6 | 2980.5 | 3252.8 | 2938.2 | 2737.9 |
| 1976 | 2813.6 | 2788.5 | 2697.7 | 2455.1 | 2515.2 | 2442.2 | 2347.6 | 2684.8 | 3013.4 | 2781.0 | 2550.2 | 2468.9 |
| 1977 | 2759.1 | 2714.2 | 2618.6 | 2605.5 | 2747.3 | 3006.2 | 2979.2 | 2506.6 | 1902.3 | 967.9  | 573.8  | 293.9  |
| 1978 | 577.9  | 932.6  | 1332.2 | 1681.1 | 1978.5 | 2316.1 | 2720.3 | 2763.8 | 3082.7 | 2885.6 | 2438.4 | 2318.7 |
| 1979 | 2406.4 | 2641.3 | 2631.4 | 2598.4 | 2751.9 | 2983.2 | 2958.5 | 3078.3 | 3073.5 | 2335.1 | 1900.6 | 1446.5 |
| 1980 | 1596.8 | 1926.7 | 2192.4 | 2485.6 | 2655.3 | 2930.7 | 3056.3 | 3225.2 | 3261.6 | 2884.7 | 2200.7 | 2048.6 |
| 1981 | 2066.1 | 2310.4 | 2508.6 | 2511.2 | 2686.0 | 2938.6 | 3128.4 | 3115.8 | 3255.3 | 2384.4 | 1660.7 | 1142.0 |
| 1982 | 1328.6 | 1712.2 | 1988.6 | 2282.7 | 2455.5 | 2424.2 | 2382.6 | 2653.1 | 3023.8 | 3246.1 | 2925.5 | 2785.3 |
| 1983 | 2829.3 | 2819.6 | 2776.2 | 2426.5 | 2579.7 | 2770.2 | 2908.3 | 3063.9 | 3282.3 | 3249.6 | 2942.0 | 2726.1 |
| 1984 | 2837.0 | 2821.8 | 2791.6 | 2347.9 | 2533.3 | 2567.4 | 2667.7 | 3170.5 | 3282.6 | 3259.2 | 2951.5 | 2795.4 |
| 1985 | 2836.3 | 2820.6 | 2776.9 | 2580.8 | 2708.5 | 2657.8 | 3224.4 | 3278.0 | 3116.3 | 2342.6 | 1823.6 | 1746.1 |
| 1986 | 1957.5 | 2215.2 | 2508.5 | 2322.7 | 2526.9 | 2365.7 | 2621.2 | 2857.5 | 3280.3 | 3080.0 | 2754.1 | 2707.2 |
| 1987 | 2828.5 | 2810.0 | 2738.8 | 2607.7 | 2770.8 | 3047.0 | 3181.0 | 2895.5 | 2536.6 | 1928.9 | 1311.7 | 893.6  |
| 1988 | 977.4  | 1446.1 | 1758.8 | 2136.0 | 2377.4 | 2678.5 | 2963.0 | 2699.2 | 2289.8 | 1340.4 | 748.9  | 482.8  |
| 1989 | 621.8  | 1024.5 | 1366.5 | 1704.5 | 1991.9 | 2418.8 | 2703.8 | 2839.0 | 2786.1 | 2058.8 | 1483.8 | 1087.1 |
| AVG  | 1807.3 | 2072.5 | 2248.0 | 2327.2 | 2496.3 | 2699.6 | 2798.6 | 2875.4 | 2930.0 | 2387.9 | 1908.3 | 1657.0 |
| MAX  | 2837.0 | 2821.8 | 2791.6 | 2675.8 | 2827.5 | 3102.0 | 3274.5 | 3278.0 | 3282.6 | 3259.2 | 2951.5 | 2795.4 |
| MIN  | 366.7  | 600.0  | 877.1  | 1125.6 | 1351.3 | 1589.8 | 1858.0 | 1674.2 | 1520.7 | 819.0  | 375.9  | 266.7  |

TABLE C

## JACKSON LAKE

## STUDY 956 UPPER SNAKE RIVER OPERATION STUDIES (IDWR MODEL)

UNITS ARE 1000 ACRE-FEET

| YEAR | OCT   | NOV   | DEC   | JAN   | FEB   | MAR   | APR   | MAY   | JUN   | JUL   | AUG   | SEP   |
|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 1928 | 585.9 | 620.0 | 638.8 | 654.1 | 657.5 | 660.0 | 350.0 | 805.0 | 847.0 | 847.0 | 730.0 | 630.0 |
| 1929 | 630.0 | 624.0 | 626.9 | 631.8 | 636.8 | 639.5 | 650.6 | 775.6 | 847.0 | 814.9 | 690.0 | 630.0 |
| 1930 | 627.9 | 618.5 | 615.3 | 614.8 | 618.9 | 617.0 | 660.4 | 821.6 | 847.0 | 796.7 | 690.0 | 630.0 |
| 1931 | 630.0 | 624.3 | 613.6 | 609.2 | 603.6 | 602.1 | 615.8 | 739.6 | 755.1 | 600.0 | 297.8 | 167.4 |
| 1932 | 164.2 | 159.8 | 160.1 | 162.0 | 165.7 | 170.7 | 182.3 | 368.4 | 715.8 | 703.4 | 642.4 | 515.5 |
| 1933 | 488.3 | 435.6 | 369.8 | 350.0 | 350.0 | 345.7 | 347.4 | 438.7 | 800.2 | 764.5 | 657.6 | 488.2 |
| 1934 | 419.9 | 353.1 | 320.8 | 324.6 | 323.2 | 327.2 | 379.1 | 400.0 | 385.5 | 200.0 | 100.0 | 60.0  |
| 1935 | 83.2  | 67.0  | 69.0  | 74.7  | 75.4  | 76.9  | 98.4  | 242.5 | 573.5 | 585.6 | 349.9 | 80.0  |
| 1936 | 57.3  | 56.9  | 51.9  | 67.4  | 82.4  | 85.5  | 128.1 | 484.1 | 738.6 | 682.4 | 623.0 | 586.4 |
| 1937 | 579.0 | 568.2 | 565.0 | 510.8 | 515.9 | 512.5 | 517.2 | 723.0 | 840.0 | 792.0 | 675.6 | 539.1 |
| 1938 | 521.1 | 460.2 | 443.8 | 389.0 | 350.0 | 350.0 | 377.2 | 573.0 | 847.0 | 847.0 | 730.0 | 630.0 |
| 1939 | 630.0 | 628.1 | 627.9 | 631.8 | 637.9 | 639.4 | 670.0 | 847.0 | 847.0 | 805.9 | 690.0 | 630.0 |
| 1940 | 628.0 | 618.2 | 610.0 | 600.0 | 606.4 | 609.4 | 634.1 | 847.0 | 840.0 | 765.1 | 500.0 | 400.0 |
| 1941 | 401.1 | 379.0 | 349.6 | 350.0 | 349.9 | 343.8 | 352.8 | 550.8 | 707.1 | 626.8 | 500.0 | 400.0 |
| 1942 | 402.4 | 374.4 | 378.4 | 350.0 | 350.0 | 345.8 | 381.3 | 513.9 | 763.6 | 749.4 | 684.2 | 630.0 |
| 1943 | 621.5 | 627.0 | 632.1 | 651.4 | 637.8 | 383.5 | 350.0 | 400.0 | 840.0 | 847.0 | 730.0 | 630.0 |
| 1944 | 630.0 | 630.0 | 622.4 | 617.6 | 617.3 | 618.3 | 623.6 | 767.9 | 847.0 | 625.2 | 690.0 | 630.0 |
| 1945 | 624.3 | 620.2 | 610.0 | 609.3 | 615.5 | 613.9 | 570.0 | 652.6 | 840.0 | 847.0 | 730.0 | 630.0 |
| 1946 | 630.0 | 631.5 | 635.7 | 644.1 | 657.7 | 660.0 | 670.0 | 847.0 | 847.0 | 820.3 | 690.0 | 630.0 |
| 1947 | 630.0 | 629.3 | 631.6 | 637.4 | 636.8 | 640.5 | 486.7 | 800.4 | 847.0 | 846.9 | 690.0 | 630.0 |
| 1948 | 630.0 | 629.8 | 625.9 | 630.9 | 634.3 | 635.8 | 653.3 | 847.0 | 847.0 | 818.9 | 690.0 | 630.0 |
| 1949 | 630.0 | 630.1 | 632.7 | 637.4 | 643.5 | 649.5 | 570.0 | 847.0 | 847.0 | 820.7 | 690.0 | 630.0 |
| 1950 | 630.0 | 627.1 | 620.3 | 631.2 | 622.8 | 632.1 | 350.0 | 421.0 | 834.5 | 847.0 | 730.0 | 630.0 |
| 1951 | 631.7 | 641.7 | 646.2 | 661.6 | 620.0 | 597.5 | 350.0 | 623.7 | 840.0 | 847.0 | 730.0 | 630.0 |
| 1952 | 631.9 | 629.1 | 638.0 | 651.3 | 644.0 | 660.0 | 570.0 | 847.0 | 847.0 | 844.4 | 730.0 | 630.0 |
| 1953 | 625.9 | 616.1 | 617.7 | 634.2 | 640.8 | 642.0 | 661.6 | 661.0 | 847.0 | 846.9 | 690.0 | 630.0 |
| 1954 | 626.3 | 621.1 | 617.3 | 631.7 | 640.1 | 645.2 | 355.8 | 630.0 | 840.0 | 847.0 | 690.0 | 630.0 |
| 1955 | 630.0 | 626.4 | 620.4 | 622.3 | 626.3 | 633.6 | 639.7 | 779.2 | 847.0 | 830.0 | 690.0 | 630.0 |
| 1956 | 630.0 | 634.7 | 654.8 | 648.0 | 620.0 | 418.1 | 350.0 | 630.0 | 847.0 | 847.0 | 730.0 | 630.0 |
| 1957 | 630.0 | 653.3 | 662.3 | 670.0 | 660.0 | 660.0 | 350.5 | 564.2 | 840.0 | 847.0 | 725.8 | 630.0 |
| 1958 | 630.0 | 622.1 | 624.1 | 627.3 | 641.5 | 650.4 | 663.1 | 847.0 | 847.0 | 754.1 | 675.8 | 630.0 |
| 1959 | 622.7 | 623.8 | 617.2 | 617.3 | 627.7 | 632.8 | 570.0 | 630.0 | 840.0 | 796.0 | 690.0 | 630.0 |
| 1960 | 630.0 | 623.0 | 613.6 | 618.7 | 622.4 | 625.1 | 649.0 | 791.8 | 847.0 | 762.0 | 663.2 | 526.4 |
| 1961 | 522.5 | 510.8 | 472.0 | 396.9 | 367.4 | 377.6 | 396.0 | 601.2 | 761.6 | 600.0 | 470.3 | 400.0 |
| 1962 | 354.6 | 350.0 | 330.2 | 337.4 | 350.9 | 350.0 | 412.3 | 671.9 | 842.2 | 827.9 | 707.3 | 630.0 |
| 1963 | 630.0 | 624.2 | 617.5 | 618.8 | 627.8 | 623.6 | 633.6 | 829.8 | 847.0 | 796.8 | 690.0 | 630.0 |
| 1964 | 630.0 | 627.9 | 617.9 | 624.6 | 623.8 | 626.9 | 387.3 | 556.6 | 840.0 | 847.0 | 725.2 | 630.0 |
| 1965 | 626.8 | 620.2 | 643.5 | 653.3 | 620.0 | 551.0 | 350.0 | 400.0 | 840.0 | 847.0 | 730.0 | 630.0 |
| 1966 | 630.0 | 633.1 | 627.0 | 638.8 | 640.7 | 644.9 | 665.9 | 847.0 | 847.0 | 773.0 | 690.0 | 630.0 |
| 1967 | 627.3 | 624.2 | 622.2 | 633.1 | 633.5 | 635.5 | 455.3 | 602.0 | 847.0 | 847.0 | 730.0 | 630.0 |
| 1968 | 631.6 | 627.8 | 625.9 | 632.6 | 641.6 | 644.0 | 648.7 | 630.0 | 847.0 | 822.2 | 729.9 | 630.0 |
| 1969 | 630.0 | 632.3 | 630.6 | 653.5 | 620.0 | 575.5 | 619.5 | 847.0 | 847.0 | 805.0 | 690.0 | 630.0 |
| 1970 | 626.8 | 620.0 | 618.4 | 635.8 | 631.6 | 634.4 | 525.0 | 630.0 | 847.0 | 843.3 | 717.7 | 630.0 |
| 1971 | 630.0 | 634.3 | 647.2 | 654.8 | 620.0 | 464.2 | 350.0 | 447.1 | 847.0 | 847.0 | 730.0 | 630.0 |
| 1972 | 638.0 | 640.9 | 655.0 | 656.7 | 620.0 | 350.0 | 350.0 | 400.0 | 840.0 | 847.0 | 730.0 | 641.0 |
| 1973 | 657.3 | 663.5 | 669.2 | 670.0 | 660.0 | 660.0 | 667.2 | 846.6 | 847.0 | 782.6 | 690.0 | 630.0 |
| 1974 | 630.0 | 646.8 | 652.0 | 666.6 | 620.0 | 643.2 | 350.0 | 565.1 | 847.0 | 847.0 | 730.0 | 630.0 |
| 1975 | 630.0 | 626.8 | 624.0 | 635.8 | 648.2 | 657.4 | 350.0 | 400.0 | 761.8 | 847.0 | 730.0 | 630.0 |
| 1976 | 630.0 | 632.8 | 639.4 | 648.7 | 620.0 | 478.2 | 350.0 | 516.9 | 840.0 | 847.0 | 730.0 | 630.0 |
| 1977 | 630.0 | 620.0 | 611.8 | 614.1 | 609.8 | 608.0 | 625.0 | 630.0 | 600.0 | 515.6 | 254.0 | 186.9 |
| 1978 | 185.6 | 183.1 | 196.5 | 206.9 | 219.9 | 216.3 | 240.6 | 432.4 | 805.3 | 843.2 | 727.8 | 630.0 |
| 1979 | 625.1 | 620.0 | 624.9 | 631.8 | 640.3 | 644.6 | 570.0 | 796.5 | 847.0 | 801.8 | 690.0 | 630.0 |
| 1980 | 622.9 | 616.8 | 606.7 | 620.6 | 626.9 | 633.0 | 661.2 | 847.0 | 847.0 | 805.7 | 690.0 | 630.0 |
| 1981 | 627.3 | 620.9 | 618.5 | 618.5 | 620.7 | 618.8 | 648.1 | 847.0 | 847.0 | 759.0 | 671.4 | 624.3 |
| 1982 | 620.2 | 620.0 | 625.8 | 631.1 | 639.6 | 496.6 | 350.0 | 400.0 | 619.7 | 847.0 | 730.0 | 630.3 |
| 1983 | 636.8 | 641.7 | 651.7 | 665.4 | 660.0 | 660.0 | 570.0 | 729.4 | 847.0 | 847.0 | 730.0 | 630.0 |
| 1984 | 655.5 | 660.0 | 660.0 | 643.3 | 640.2 | 648.1 | 570.0 | 802.3 | 847.0 | 847.0 | 730.0 | 643.1 |
| 1985 | 641.9 | 653.6 | 658.5 | 662.7 | 660.0 | 660.0 | 670.0 | 847.0 | 847.0 | 777.0 | 690.0 | 630.0 |
| 1986 | 630.0 | 637.1 | 642.9 | 655.5 | 660.0 | 490.2 | 413.5 | 630.0 | 847.0 | 847.0 | 730.0 | 631.5 |
| 1987 | 638.6 | 650.0 | 651.3 | 659.8 | 660.0 | 660.0 | 670.0 | 847.0 | 840.0 | 740.4 | 648.2 | 604.0 |
| 1988 | 594.6 | 589.5 | 583.4 | 574.8 | 574.0 | 573.6 | 621.9 | 628.4 | 840.0 | 723.3 | 500.0 | 400.0 |
| 1989 | 300.0 | 306.3 | 306.0 | 313.0 | 315.5 | 326.6 | 389.9 | 696.2 | 840.0 | 776.8 | 690.0 | 630.0 |
| AVG  | 569.0 | 565.6 | 563.2 | 564.8 | 561.7 | 539.8 | 486.5 | 659.5 | 815.6 | 784.5 | 660.0 | 574.1 |
| MAX  | 657.3 | 690.0 | 680.0 | 670.0 | 660.0 | 660.0 | 670.0 | 847.0 | 847.0 | 847.0 | 730.0 | 643.1 |
| MIN  | 57.3  | 56.9  | 51.9  | 67.4  | 75.4  | 76.9  | 98.4  | 242.5 | 385.5 | 200.0 | 100.0 | 60.0  |

TABLE C

## DISCHARGE, SNAKE RIVER NEAR MORAN, WYOMING

STUDY 956 UPPER SNAKE RIVER OPERATION STUDIES (IDWR MODEL)

UNITS ARE MEAN CUBIC FEET PER SECOND (CFS)

| YEAR | OCT    | NOV    | DEC    | JAN    | FEB    | MAR    | APR    | MAY    | JUN    | JUL    | AUG    | SEP    | AVG    |
|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1928 | 400.0  | 451.0  | 500.0  | 400.0  | 400.0  | 487.0  | 5992.0 | 400.0  | 4221.0 | 2791.0 | 2848.0 | 2223.0 |        |
| 1929 | 511.0  | 500.0  | 500.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 4086.0 | 2400.0 | 2795.0 | 1526.0 |        |
| 1930 | 400.0  | 400.0  | 500.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 3056.0 | 2400.0 | 2793.0 | 1524.0 |        |
| 1931 | 894.0  | 500.0  | 500.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 2220.0 | 3269.0 | 5356.0 | 2482.0 |        |
| 1932 | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 500.0  | 2400.0 | 1985.0 | 2542.0 |        |
| 1933 | 785.0  | 1222.0 | 1430.0 | 831.0  | 495.0  | 400.0  | 400.0  | 400.0  | 450.0  | 500.0  | 2400.0 | 2588.0 | 3371.0 |
| 1934 | 1461.0 | 1448.0 | 848.0  | 400.0  | 400.0  | 400.0  | 1002.0 | 3054.0 | 1692.0 | 3803.0 | 1953.0 | 909.0  |        |
| 1935 | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 2000.0 | 4857.0 | 5188.0 |        |
| 1936 | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 450.0  | 500.0  | 2400.0 | 1800.0 | 1000.0 |        |
| 1937 | 400.0  | 400.0  | 400.0  | 1279.0 | 400.0  | 400.0  | 400.0  | 400.0  | 1938.0 | 2400.0 | 2604.0 | 2602.0 |        |
| 1938 | 684.0  | 1403.0 | 790.0  | 1365.0 | 1179.0 | 587.0  | 400.0  | 450.0  | 2767.0 | 2550.0 | 2934.0 | 2386.0 |        |
| 1939 | 504.0  | 500.0  | 500.0  | 400.0  | 400.0  | 400.0  | 598.0  | 1648.0 | 3216.0 | 2400.0 | 2708.0 | 1440.0 |        |
| 1940 | 400.0  | 400.0  | 441.0  | 597.0  | 400.0  | 400.0  | 400.0  | 838.0  | 3586.0 | 2400.0 | 4915.0 | 2078.0 |        |
| 1941 | 400.0  | 781.0  | 850.0  | 431.0  | 400.0  | 400.0  | 400.0  | 450.0  | 500.0  | 2675.0 | 3069.0 | 2463.0 |        |
| 1942 | 614.0  | 1004.0 | 592.0  | 914.0  | 447.0  | 400.0  | 400.0  | 450.0  | 500.0  | 2400.0 | 1800.0 | 1303.0 |        |
| 1943 | 400.0  | 500.0  | 500.0  | 400.0  | 778.0  | 4889.0 | 2222.0 | 3099.0 | 714.0  | 4354.0 | 3315.0 | 2386.0 |        |
| 1944 | 548.0  | 500.0  | 500.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 2732.0 | 2400.0 | 3269.0 | 1369.0 |        |
| 1945 | 400.0  | 500.0  | 489.0  | 400.0  | 400.0  | 400.0  | 1131.0 | 1443.0 | 1678.0 | 2734.0 | 2978.0 | 2225.0 |        |
| 1946 | 472.0  | 500.0  | 500.0  | 400.0  | 400.0  | 400.0  | 541.0  | 1599.0 | 1536.0 | 4606.0 | 2400.0 | 2930.0 | 1811.0 |
| 1947 | 559.0  | 500.0  | 500.0  | 400.0  | 400.0  | 400.0  | 3149.0 | 400.0  | 4660.0 | 2400.0 | 3618.0 | 1731.0 |        |
| 1948 | 485.0  | 500.0  | 500.0  | 400.0  | 400.0  | 400.0  | 400.0  | 881.0  | 6184.0 | 2400.0 | 2930.0 | 1487.0 |        |
| 1949 | 402.0  | 500.0  | 500.0  | 400.0  | 400.0  | 400.0  | 2470.0 | 1002.0 | 5283.0 | 2400.0 | 3018.0 | 1549.0 |        |
| 1950 | 514.0  | 500.0  | 500.0  | 400.0  | 767.0  | 400.0  | 5418.0 | 1481.0 | 500.0  | 3492.0 | 3040.0 | 2356.0 |        |
| 1951 | 600.0  | 500.0  | 500.0  | 400.0  | 1484.0 | 1197.0 | 5129.0 | 450.0  | 1578.0 | 2692.0 | 3291.0 | 2470.0 |        |
| 1952 | 600.0  | 500.0  | 500.0  | 400.0  | 885.0  | 434.0  | 2831.0 | 766.0  | 5729.0 | 2400.0 | 2936.0 | 2279.0 |        |
| 1953 | 400.0  | 400.0  | 500.0  | 400.0  | 400.0  | 400.0  | 400.0  | 1980.0 | 3577.0 | 2400.0 | 3523.0 | 1543.0 |        |
| 1954 | 400.0  | 500.0  | 500.0  | 400.0  | 400.0  | 400.0  | 5682.0 | 1081.0 | 1825.0 | 2825.0 | 3712.0 | 1836.0 |        |
| 1955 | 415.0  | 500.0  | 500.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 4190.0 | 2514.0 | 3210.0 | 1480.0 |        |
| 1956 | 491.0  | 500.0  | 500.0  | 853.0  | 1014.0 | 3954.0 | 2303.0 | 1808.0 | 4687.0 | 2721.0 | 3190.0 | 2466.0 |        |
| 1957 | 517.0  | 500.0  | 500.0  | 455.0  | 873.0  | 651.0  | 5828.0 | 450.0  | 2218.0 | 2637.0 | 2800.0 | 2078.0 |        |
| 1958 | 415.0  | 500.0  | 500.0  | 400.0  | 400.0  | 400.0  | 400.0  | 1516.0 | 3078.0 | 2400.0 | 1800.0 | 1168.0 |        |
| 1959 | 400.0  | 500.0  | 500.0  | 400.0  | 400.0  | 400.0  | 1689.0 | 1467.0 | 2820.0 | 2400.0 | 2424.0 | 1574.0 |        |
| 1960 | 546.0  | 500.0  | 500.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 3306.0 | 2400.0 | 2115.0 | 3053.0 |        |
| 1961 | 400.0  | 811.0  | 1001.0 | 1540.0 | 882.0  | 608.0  | 400.0  | 450.0  | 1885.0 | 3513.0 | 2590.0 | 1730.0 |        |
| 1962 | 1577.0 | 680.0  | 974.0  | 400.0  | 400.0  | 400.0  | 544.0  | 400.0  | 2926.0 | 2400.0 | 2800.0 | 1798.0 |        |
| 1963 | 480.0  | 500.0  | 500.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 5418.0 | 2400.0 | 2380.0 | 1838.0 |        |
| 1964 | 413.0  | 500.0  | 500.0  | 400.0  | 400.0  | 400.0  | 4484.0 | 450.0  | 1937.0 | 2666.0 | 2800.0 | 1922.0 |        |
| 1965 | 400.0  | 500.0  | 500.0  | 566.0  | 1152.0 | 1581.0 | 4500.0 | 2985.0 | 660.0  | 3552.0 | 3110.0 | 2462.0 |        |
| 1966 | 551.0  | 500.0  | 500.0  | 400.0  | 400.0  | 400.0  | 400.0  | 1347.0 | 3902.0 | 2400.0 | 1830.0 | 1665.0 |        |
| 1967 | 400.0  | 500.0  | 500.0  | 400.0  | 501.0  | 400.0  | 3565.0 | 596.0  | 3586.0 | 2854.0 | 2866.0 | 2200.0 |        |
| 1968 | 600.0  | 500.0  | 500.0  | 400.0  | 400.0  | 400.0  | 400.0  | 2757.0 | 2837.0 | 2400.0 | 2800.0 | 2451.0 |        |
| 1969 | 475.0  | 500.0  | 500.0  | 400.0  | 1203.0 | 1078.0 | 400.0  | 1690.0 | 3893.0 | 2400.0 | 2631.0 | 1600.0 |        |
| 1970 | 400.0  | 459.0  | 500.0  | 400.0  | 527.0  | 400.0  | 2347.0 | 1370.0 | 3850.0 | 2400.0 | 2800.0 | 2183.0 |        |
| 1971 | 494.0  | 500.0  | 500.0  | 648.0  | 1188.0 | 3329.0 | 2673.0 | 3029.0 | 2355.0 | 4201.0 | 3336.0 | 2462.0 |        |
| 1972 | 600.0  | 500.0  | 500.0  | 699.0  | 1288.0 | 5107.0 | 891.0  | 3486.0 | 1124.0 | 2632.0 | 3177.0 | 2500.0 |        |
| 1973 | 600.0  | 500.0  | 500.0  | 565.0  | 709.0  | 454.0  | 400.0  | 400.0  | 4344.0 | 2400.0 | 2140.0 | 1663.0 |        |
| 1974 | 475.0  | 500.0  | 500.0  | 400.0  | 1446.0 | 400.0  | 5984.0 | 450.0  | 5653.0 | 3385.0 | 3113.0 | 2265.0 |        |
| 1975 | 553.0  | 500.0  | 500.0  | 400.0  | 400.0  | 400.0  | 5770.0 | 1011.0 | 500.0  | 3288.0 | 3189.0 | 2252.0 |        |
| 1976 | 545.0  | 500.0  | 500.0  | 453.0  | 1065.0 | 2856.0 | 3133.0 | 2419.0 | 1323.0 | 2909.0 | 3030.0 | 2264.0 |        |
| 1977 | 421.0  | 472.0  | 500.0  | 400.0  | 400.0  | 400.0  | 400.0  | 1504.0 | 2617.0 | 2000.0 | 4623.0 | 1368.0 |        |
| 1978 | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 450.0  | 500.0  | 2400.0 | 2800.0 | 2259.0 |        |
| 1979 | 400.0  | 449.0  | 500.0  | 400.0  | 400.0  | 400.0  | 1968.0 | 400.0  | 4202.0 | 2400.0 | 2412.0 | 1310.0 |        |
| 1980 | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 1601.0 | 4389.0 | 2400.0 | 2539.0 | 1630.0 |        |
| 1981 | 400.0  | 500.0  | 500.0  | 400.0  | 400.0  | 400.0  | 400.0  | 479.0  | 5046.0 | 2400.0 | 1800.0 | 1000.0 |        |
| 1982 | 400.0  | 463.0  | 500.0  | 506.0  | 400.0  | 2966.0 | 3343.0 | 3214.0 | 500.0  | 4642.0 | 3173.0 | 2500.0 |        |
| 1983 | 600.0  | 500.0  | 500.0  | 400.0  | 682.0  | 553.0  | 2154.0 | 400.0  | 4713.0 | 3550.0 | 3186.0 | 2390.0 |        |
| 1984 | 600.0  | 535.0  | 1061.0 | 1224.0 | 608.0  | 400.0  | 2021.0 | 400.0  | 5460.0 | 3285.0 | 3115.0 | 2500.0 |        |
| 1985 | 600.0  | 500.0  | 500.0  | 458.0  | 581.0  | 597.0  | 988.0  | 2555.0 | 3742.0 | 2400.0 | 1914.0 | 1465.0 |        |
| 1986 | 590.0  | 500.0  | 500.0  | 400.0  | 728.0  | 3591.0 | 2965.0 | 883.0  | 6435.0 | 2628.0 | 2973.0 | 2500.0 |        |
| 1987 | 600.0  | 500.0  | 500.0  | 400.0  | 514.0  | 516.0  | 1398.0 | 492.0  | 1823.0 | 2400.0 | 1800.0 | 1000.0 |        |
| 1988 | 400.0  | 400.0  | 579.0  | 617.0  | 454.0  | 400.0  | 400.0  | 400.0  | 2841.0 | 2400.0 | 3790.0 | 1861.0 |        |
| 1989 | 1835.0 | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 421.0  | 2482.0 | 2400.0 | 2022.0 | 1521.0 |
| AVG  | 542.0  | 538.4  | 545.9  | 509.8  | 584.3  | 848.4  | 1735.2 | 1089.4 | 2902.3 | 2700.7 | 2898.0 | 2001.0 |        |
| MAX  | 1835.0 | 1449.0 | 1430.0 | 1540.0 | 1484.0 | 5107.0 | 5992.0 | 3486.0 | 6435.0 | 4642.0 | 5355.0 | 5188.0 |        |
| MIN  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 2000.0 | 1800.0 | 909.0  |        |

TABLE C

DISCHARGE, SNAKE RIVER NEAR MILNER, IDAHO

STUDY 956, UPPER SNAKE RIVER OPERATION STUDIES (IDWR MODEL)

UNITS ARE MEAN CUBIC FEET PER SECOND (CFS)

YEAR OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP AVG

|      |        |         |         |         |         |         |         |         |         |        |        |        |
|------|--------|---------|---------|---------|---------|---------|---------|---------|---------|--------|--------|--------|
| 1928 | 1304.0 | 3718.0  | 3074.0  | 6286.0  | 5388.0  | 3556.0  | 15872.0 | 7240.0  | 3940.0  | 1000.0 | 1000.0 | 1000.0 |
| 1929 | 2000.0 | 3925.0  | 6721.0  | 6440.0  | 3078.0  | 2671.0  | 4241.0  | 3009.0  | 300.0   | 1000.0 | 860.0  | 1000.0 |
| 1930 | 1000.0 | 1451.0  | 2966.0  | 3712.0  | 4504.0  | 1327.0  | 10.0    | 30.0    | 300.0   | 660.0  | 660.0  | 1000.0 |
| 1931 | 1000.0 | 593.0   | 2154.0  | 824.0   | 2666.0  | 820.0   | 10.0    | 30.0    | 300.0   | 660.0  | 240.0  | 100.0  |
| 1932 | 260.0  | 260.0   | 765.0   | 692.0   | 500.0   | 150.0   | 10.0    | 30.0    | 294.0   | 660.0  | 660.0  | 1000.0 |
| 1933 | 1000.0 | 656.0   | 1000.0  | 835.0   | 659.0   | 150.0   | 177.0   | 30.0    | 300.0   | 660.0  | 660.0  | 1000.0 |
| 1934 | 1000.0 | 583.0   | 877.0   | 894.0   | 999.0   | 150.0   | 10.0    | 30.0    | 300.0   | 628.0  | 240.0  | 100.0  |
| 1935 | 260.0  | 200.0   | 400.0   | 502.0   | 604.0   | 150.0   | 10.0    | 30.0    | 5.0     | 300.0  | 240.0  | 100.0  |
| 1936 | 260.0  | 260.0   | 418.0   | 830.0   | 918.0   | 430.0   | 10.0    | 30.0    | 300.0   | 1000.0 | 660.0  | 1000.0 |
| 1937 | 1000.0 | 864.0   | 1022.0  | 690.0   | 1332.0  | 767.0   | 1671.0  | 30.0    | 300.0   | 660.0  | 660.0  | 1000.0 |
| 1938 | 1000.0 | 743.0   | 1062.0  | 926.0   | 1670.0  | 1820.0  | 1783.0  | 3099.0  | 300.0   | 1000.0 | 1000.0 | 1000.0 |
| 1939 | 2000.0 | 3870.0  | 3594.0  | 6566.0  | 3235.0  | 2126.0  | 1823.0  | 734.0   | 300.0   | 1000.0 | 660.0  | 1000.0 |
| 1940 | 1000.0 | 714.0   | 1180.0  | 951.0   | 2253.0  | 660.0   | 748.0   | 30.0    | 300.0   | 660.0  | 240.0  | 250.0  |
| 1941 | 1000.0 | 778.0   | 1752.0  | 967.0   | 1456.0  | 447.0   | 378.0   | 30.0    | 300.0   | 660.0  | 240.0  | 100.0  |
| 1942 | 1000.0 | 1117.0  | 1969.0  | 762.0   | 707.0   | 622.0   | 666.0   | 30.0    | 300.0   | 660.0  | 660.0  | 1000.0 |
| 1943 | 1000.0 | 810.0   | 2663.0  | 2018.0  | 3960.0  | 10075.0 | 15771.0 | 6089.0  | 1777.0  | 1000.0 | 1000.0 | 1800.0 |
| 1944 | 2000.0 | 3839.0  | 9426.0  | 6636.0  | 4020.0  | 1815.0  | 2844.0  | 30.0    | 300.0   | 1000.0 | 660.0  | 1000.0 |
| 1945 | 1000.0 | 978.0   | 3068.0  | 3672.0  | 4288.0  | 1416.0  | 5566.0  | 5064.0  | 300.0   | 1000.0 | 1000.0 | 1057.0 |
| 1946 | 2000.0 | 4475.0  | 9479.0  | 7050.0  | 3744.0  | 4529.0  | 7689.0  | 6503.0  | 1949.0  | 1000.0 | 1000.0 | 1000.0 |
| 1947 | 2000.0 | 3886.0  | 7496.0  | 6320.0  | 4464.0  | 1696.0  | 11831.0 | 30.0    | 300.0   | 1000.0 | 660.0  | 1000.0 |
| 1948 | 2000.0 | 3854.0  | 5481.0  | 7381.0  | 4329.0  | 3037.0  | 1503.0  | 6916.0  | 5294.0  | 1000.0 | 1000.0 | 1000.0 |
| 1949 | 2000.0 | 3641.0  | 2963.0  | 5448.0  | 3454.0  | 7994.0  | 7362.0  | 3635.0  | 453.0   | 1000.0 | 1000.0 | 1000.0 |
| 1950 | 2000.0 | 3867.0  | 3207.0  | 6296.0  | 5817.0  | 4706.0  | 17923.0 | 4440.0  | 2104.0  | 1000.0 | 1000.0 | 1800.0 |
| 1951 | 2968.0 | 10425.0 | 10063.0 | 9942.0  | 8966.0  | 9696.0  | 12185.0 | 7403.0  | 300.0   | 1000.0 | 1000.0 | 1800.0 |
| 1952 | 2000.0 | 5109.0  | 9587.0  | 10455.0 | 5851.0  | 4288.0  | 15100.0 | 6636.0  | 5593.0  | 1000.0 | 1000.0 | 1000.0 |
| 1953 | 2000.0 | 3590.0  | 5144.0  | 6472.0  | 4669.0  | 1858.0  | 783.0   | 5108.0  | 2880.0  | 1000.0 | 660.0  | 1000.0 |
| 1954 | 1000.0 | 3676.0  | 3067.0  | 6005.0  | 4236.0  | 1938.0  | 13608.0 | 896.0   | 300.0   | 1000.0 | 660.0  | 1000.0 |
| 1955 | 1000.0 | 2907.0  | 2948.0  | 4168.0  | 3447.0  | 1459.0  | 3529.0  | 472.0   | 300.0   | 1000.0 | 660.0  | 1000.0 |
| 1956 | 1000.0 | 1008.0  | 3067.0  | 7656.0  | 7309.0  | 10184.0 | 11835.0 | 7235.0  | 3980.0  | 1000.0 | 1000.0 | 1243.0 |
| 1957 | 2000.0 | 4483.0  | 8622.0  | 6777.0  | 5117.0  | 2369.0  | 16406.0 | 9278.0  | 806.0   | 1000.0 | 1000.0 | 1000.0 |
| 1958 | 2000.0 | 3742.0  | 7025.0  | 7181.0  | 5014.0  | 2193.0  | 2718.0  | 4866.0  | 300.0   | 1000.0 | 660.0  | 1000.0 |
| 1959 | 1000.0 | 1044.0  | 2672.0  | 3333.0  | 4164.0  | 1541.0  | 4201.0  | 2031.0  | 300.0   | 1000.0 | 660.0  | 1000.0 |
| 1960 | 1000.0 | 451.0   | 2958.0  | 3553.0  | 4378.0  | 2021.0  | 2616.0  | 30.0    | 300.0   | 660.0  | 660.0  | 1000.0 |
| 1961 | 1000.0 | 950.0   | 1296.0  | 668.0   | 1777.0  | 614.0   | 10.0    | 30.0    | 300.0   | 660.0  | 240.0  | 100.0  |
| 1962 | 1000.0 | 1083.0  | 889.0   | 791.0   | 2704.0  | 1606.0  | 9207.0  | 2336.0  | 300.0   | 1000.0 | 1000.0 | 1000.0 |
| 1963 | 1683.0 | 3806.0  | 3243.0  | 3696.0  | 5702.0  | 794.0   | 4605.0  | 30.0    | 7252.0  | 1000.0 | 660.0  | 1000.0 |
| 1964 | 1000.0 | 1074.0  | 3338.0  | 3147.0  | 3134.0  | 2462.0  | 13072.0 | 5449.0  | 4821.0  | 1000.0 | 1000.0 | 1000.0 |
| 1965 | 2000.0 | 4205.0  | 6116.0  | 8971.0  | 6627.0  | 6710.0  | 14435.0 | 7905.0  | 2634.0  | 1000.0 | 1000.0 | 2974.0 |
| 1966 | 3278.0 | 7794.0  | 9631.0  | 8918.0  | 4566.0  | 2246.0  | 719.0   | 117.0   | 300.0   | 1000.0 | 660.0  | 1000.0 |
| 1967 | 1000.0 | 1210.0  | 1844.0  | 1019.0  | 2551.0  | 1061.0  | 10304.0 | 2433.0  | 3888.0  | 1000.0 | 1000.0 | 1405.0 |
| 1968 | 2000.0 | 4150.0  | 8162.0  | 6848.0  | 5151.0  | 1540.0  | 1953.0  | 3311.0  | 1607.0  | 1000.0 | 1000.0 | 1800.0 |
| 1969 | 2000.0 | 3813.0  | 7523.0  | 10750.0 | 8776.0  | 6614.0  | 4067.0  | 5163.0  | 759.0   | 1000.0 | 667.0  | 1000.0 |
| 1970 | 2000.0 | 3700.0  | 3542.0  | 8029.0  | 4671.0  | 2725.0  | 8073.0  | 5807.0  | 6114.0  | 1000.0 | 1000.0 | 1800.0 |
| 1971 | 2000.0 | 3717.0  | 9677.0  | 15517.0 | 6632.0  | 9651.0  | 13108.0 | 17517.0 | 12208.0 | 4563.0 | 2098.0 | 4246.0 |
| 1972 | 6472.0 | 11663.0 | 10437.0 | 14460.0 | 10039.0 | 14366.0 | 11811.0 | 12464.0 | 9639.0  | 1000.0 | 1000.0 | 1800.0 |
| 1973 | 4476.0 | 10351.0 | 10367.0 | 12094.0 | 5570.0  | 3437.0  | 5185.0  | 3841.0  | 1215.0  | 1000.0 | 1000.0 | 1000.0 |
| 1974 | 2000.0 | 5935.0  | 9755.0  | 9267.0  | 6166.0  | 5911.0  | 19334.0 | 9664.0  | 11291.0 | 1000.0 | 1000.0 | 1800.0 |
| 1975 | 3276.0 | 9685.0  | 9667.0  | 6667.0  | 5969.0  | 5292.0  | 13922.0 | 8742.0  | 8349.0  | 1685.0 | 2138.0 | 1800.0 |
| 1976 | 4914.0 | 9773.0  | 10512.0 | 12746.0 | 7662.0  | 10071.0 | 14275.0 | 16011.0 | 7402.0  | 1000.0 | 1000.0 | 1800.0 |
| 1977 | 2000.0 | 7648.0  | 9653.0  | 7579.0  | 4961.0  | 1226.0  | 10.0    | 30.0    | 300.0   | 660.0  | 240.0  | 100.0  |
| 1978 | 260.0  | 465.0   | 679.0   | 1003.0  | 752.0   | 150.0   | 3813.0  | 6945.0  | 300.0   | 1000.0 | 1000.0 | 1800.0 |
| 1979 | 2000.0 | 3928.0  | 6525.0  | 7917.0  | 4853.0  | 2680.0  | 6935.0  | 30.0    | 300.0   | 1000.0 | 660.0  | 1000.0 |
| 1980 | 1000.0 | 1000.0  | 2589.0  | 2053.0  | 4956.0  | 1045.0  | 2580.0  | 5680.0  | 7612.0  | 1000.0 | 1000.0 | 1000.0 |
| 1981 | 2000.0 | 3745.0  | 4225.0  | 6955.0  | 4137.0  | 1223.0  | 856.0   | 30.0    | 1111.0  | 1000.0 | 660.0  | 1000.0 |
| 1982 | 1000.0 | 1611.0  | 3156.0  | 2367.0  | 3914.0  | 7862.0  | 11900.0 | 14646.0 | 5666.0  | 2230.0 | 1206.0 | 2821.0 |
| 1983 | 6916.0 | 10296.0 | 10274.0 | 15963.0 | 6651.0  | 6075.0  | 8378.0  | 12262.0 | 14232.0 | 3206.0 | 2796.0 | 1800.0 |
| 1984 | 6668.0 | 12360.0 | 11253.0 | 18074.0 | 6912.0  | 7717.0  | 12966.0 | 14743.0 | 21333.0 | 1363.0 | 4045.0 | 1800.0 |
| 1985 | 5576.0 | 11184.0 | 10232.0 | 12808.0 | 5508.0  | 4410.0  | 9992.0  | 8579.0  | 300.0   | 1000.0 | 660.0  | 1000.0 |
| 1986 | 2000.0 | 3795.0  | 2822.0  | 10777.0 | 7047.0  | 16431.0 | 14974.0 | 13017.0 | 14739.0 | 1000.0 | 1000.0 | 1800.0 |
| 1987 | 4270.0 | 8902.0  | 10014.0 | 11091.0 | 5705.0  | 2737.0  | 10.0    | 30.0    | 300.0   | 660.0  | 660.0  | 1000.0 |
| 1988 | 1000.0 | 1236.0  | 2148.0  | 960.0   | 2226.0  | 758.0   | 10.0    | 30.0    | 300.0   | 660.0  | 240.0  | 100.0  |
| 1989 | 790.0  | 1120.0  | 767.0   | 907.0   | 592.0   | 150.0   | 4535.0  | 30.0    | 300.0   | 660.0  | 660.0  | 1000.0 |
| AVG  | 1944.0 | 3737.5  | 4988.0  | 5950.7  | 4275.6  | 3487.4  | 6476.7  | 4357.5  | 2907.2  | 1036.0 | 896.4  | 1179.0 |
| MAX  | 6916.0 | 12360.0 | 11253.0 | 18074.0 | 10039.0 | 16431.0 | 19334.0 | 17517.0 | 21333.0 | 4563.0 | 4045.0 | 4246.0 |
| MIN  | 260.0  | 200.0   | 400.0   | 502.0   | 500.0   | 150.0   | 10.0    | 30.0    | 5.0     | 300.0  | 240.0  | 100.0  |

TABLE C

STUDY 956 UPPER SNAKE RIVER OPERATION STUDIES (IDWR MODEL)

UNITS ARE 1000 ACRE-FEET

| YEAR | OCT    | NOV    | DEC    | JAN    | FEB    | MAR    | APR    | MAY    | JUN    | JUL    | AUG    | SEP    |
|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1928 | 2358.8 | 2749.6 | 3071.9 | 3176.5 | 3291.5 | 3530.7 | 2962.7 | 3867.4 | 4068.4 | 3657.4 | 2998.8 | 2632.7 |
| 1929 | 2782.3 | 3089.4 | 3118.2 | 3131.2 | 3300.2 | 3574.3 | 3728.6 | 3830.9 | 3909.8 | 3182.1 | 2399.0 | 2060.6 |
| 1930 | 2269.4 | 2654.6 | 2957.4 | 3093.6 | 3253.9 | 3531.3 | 3845.4 | 3907.3 | 3594.4 | 2703.0 | 2137.4 | 1763.8 |
| 1931 | 2053.0 | 2467.2 | 2751.2 | 3043.6 | 3221.0 | 3480.3 | 3647.1 | 3331.6 | 2884.0 | 1597.5 | 862.0  | 467.0  |
| 1932 | 574.4  | 809.1  | 1109.1 | 1365.9 | 1605.7 | 1908.5 | 2218.6 | 2698.0 | 3073.9 | 2456.6 | 1715.8 | 1224.1 |
| 1933 | 1288.3 | 1652.0 | 1981.3 | 2313.8 | 2570.5 | 2883.6 | 3104.6 | 3185.1 | 3400.5 | 2517.4 | 1719.7 | 1186.0 |
| 1934 | 1219.9 | 1521.6 | 1892.1 | 2212.2 | 2471.2 | 2772.9 | 2944.3 | 2682.3 | 1890.3 | 1046.4 | 530.6  | 333.3  |
| 1935 | 429.9  | 667.0  | 945.8  | 1199.9 | 1426.4 | 1666.3 | 1956.1 | 2116.3 | 2207.0 | 1404.3 | 725.8  | 326.7  |
| 1936 | 434.7  | 764.4  | 1080.9 | 1390.6 | 1667.9 | 1966.5 | 2452.5 | 3380.0 | 3662.5 | 2803.6 | 2088.3 | 1567.1 |
| 1937 | 1656.7 | 2003.3 | 2356.7 | 2611.3 | 2839.1 | 3113.5 | 3300.1 | 3614.7 | 3456.4 | 2556.8 | 1720.6 | 1231.6 |
| 1938 | 1316.5 | 1633.1 | 2027.3 | 2341.6 | 2579.9 | 2824.5 | 3180.2 | 3584.2 | 4031.0 | 3614.4 | 2877.0 | 2399.6 |
| 1939 | 2558.4 | 2841.5 | 3103.0 | 3113.0 | 3273.4 | 3568.2 | 3834.6 | 4096.1 | 3781.6 | 2877.6 | 2078.6 | 1656.7 |
| 1940 | 1843.6 | 2171.3 | 2504.8 | 2833.4 | 3073.6 | 3375.0 | 3618.4 | 3661.6 | 3240.5 | 2187.3 | 1388.4 | 1092.2 |
| 1941 | 1297.1 | 1659.0 | 1971.9 | 2286.0 | 2552.6 | 2856.8 | 3080.1 | 3178.9 | 2890.3 | 1967.5 | 1341.2 | 1006.9 |
| 1942 | 1199.8 | 1590.4 | 1886.0 | 2306.5 | 2583.5 | 2872.1 | 3313.8 | 3614.4 | 3614.9 | 2880.6 | 2073.3 | 1649.1 |
| 1943 | 1719.8 | 2152.8 | 2483.8 | 2842.5 | 3016.2 | 2795.9 | 2766.1 | 3023.8 | 3764.9 | 3619.2 | 3293.8 | 2886.5 |
| 1944 | 3040.2 | 3372.6 | 3303.1 | 3290.0 | 3441.4 | 3703.7 | 3875.2 | 3963.3 | 4106.0 | 3408.8 | 2566.3 | 2205.2 |
| 1945 | 2257.9 | 2661.9 | 2918.5 | 3099.1 | 3261.2 | 3514.0 | 3472.9 | 3536.3 | 3890.4 | 3546.2 | 2966.3 | 2721.2 |
| 1946 | 2920.2 | 3200.1 | 3144.0 | 3156.1 | 3319.8 | 3517.5 | 3836.2 | 4120.6 | 4116.8 | 3377.6 | 2718.5 | 2482.3 |
| 1947 | 2713.2 | 3056.7 | 3132.4 | 3147.4 | 3295.2 | 3578.9 | 3155.3 | 3670.0 | 3840.9 | 3361.7 | 2794.6 | 2463.5 |
| 1948 | 2629.2 | 2936.3 | 3123.6 | 3137.9 | 3299.4 | 3481.4 | 3781.6 | 3969.0 | 4121.1 | 3381.9 | 2678.1 | 2333.4 |
| 1949 | 2507.4 | 2793.6 | 3063.7 | 3134.6 | 3296.0 | 3246.2 | 3277.8 | 3853.3 | 4064.4 | 3299.4 | 2640.5 | 2246.1 |
| 1950 | 2465.4 | 2768.9 | 3062.3 | 3121.8 | 3229.6 | 3417.6 | 2934.0 | 3106.1 | 3957.6 | 3674.6 | 3467.6 | 3226.1 |
| 1951 | 3410.4 | 3406.5 | 3372.4 | 3233.1 | 3125.0 | 3113.8 | 2967.4 | 3426.9 | 3807.7 | 3471.5 | 3253.2 | 2916.5 |
| 1952 | 3136.5 | 3397.0 | 3349.5 | 3182.2 | 3241.8 | 3414.6 | 3222.7 | 3988.1 | 4128.3 | 3531.4 | 2960.6 | 2608.9 |
| 1953 | 2663.4 | 2920.0 | 3126.1 | 3151.0 | 3306.1 | 3574.1 | 3800.3 | 3576.5 | 4057.6 | 3432.6 | 2778.5 | 2333.8 |
| 1954 | 2449.6 | 2727.2 | 3040.0 | 3141.2 | 3302.6 | 3565.9 | 3023.1 | 3508.2 | 3587.0 | 3184.5 | 2590.0 | 2174.1 |
| 1955 | 2356.4 | 2688.0 | 2968.0 | 3123.2 | 3285.2 | 3553.0 | 3863.6 | 3827.6 | 3882.9 | 3170.8 | 2491.2 | 2053.0 |
| 1956 | 2202.7 | 2650.4 | 3049.4 | 3129.6 | 3082.4 | 2875.5 | 2828.5 | 3371.7 | 4111.0 | 3615.3 | 3037.9 | 2698.6 |
| 1957 | 2675.3 | 3156.8 | 3150.3 | 3167.0 | 3341.5 | 3627.0 | 3003.3 | 3300.1 | 4018.8 | 3557.2 | 2911.4 | 2564.4 |
| 1958 | 2719.0 | 3009.1 | 3122.9 | 3136.2 | 3306.6 | 3573.4 | 3765.0 | 4121.3 | 4047.1 | 3071.7 | 2375.3 | 2022.1 |
| 1959 | 2065.2 | 2510.0 | 2853.2 | 3100.6 | 3266.9 | 3530.5 | 3513.3 | 3364.9 | 3646.4 | 2905.2 | 2168.8 | 1824.5 |
| 1960 | 2149.6 | 2590.3 | 2904.7 | 3129.0 | 3283.8 | 3557.7 | 3850.4 | 3736.5 | 3532.8 | 2512.1 | 1735.2 | 1242.4 |
| 1961 | 1385.7 | 1789.1 | 2117.1 | 2401.4 | 2689.7 | 2949.9 | 3128.9 | 3056.6 | 2782.4 | 1750.7 | 989.8  | 812.4  |
| 1962 | 1080.7 | 1481.3 | 1846.9 | 2181.2 | 2582.2 | 2922.4 | 3111.4 | 3661.2 | 3996.5 | 3465.1 | 2838.8 | 2395.1 |
| 1963 | 2494.3 | 2705.0 | 2961.3 | 3125.3 | 3323.6 | 3594.0 | 3621.0 | 4029.4 | 4120.8 | 3284.0 | 2582.1 | 2276.3 |
| 1964 | 2254.4 | 2676.4 | 2920.4 | 3125.6 | 3277.1 | 3450.7 | 3043.6 | 3284.9 | 3992.0 | 3667.6 | 3020.5 | 2599.8 |
| 1965 | 2616.5 | 2892.6 | 3154.1 | 3136.4 | 3135.1 | 3038.4 | 2823.4 | 3049.4 | 3951.2 | 3980.6 | 3635.3 | 3361.4 |
| 1966 | 3431.7 | 3407.9 | 3329.1 | 3271.5 | 3430.1 | 3711.7 | 3940.4 | 4093.3 | 3806.8 | 2636.8 | 2067.9 | 1757.4 |
| 1967 | 1920.1 | 2312.1 | 2658.9 | 3043.3 | 3259.7 | 3522.2 | 3096.9 | 3282.5 | 4041.2 | 3843.5 | 3193.9 | 2731.0 |
| 1968 | 2891.6 | 3165.6 | 3133.3 | 3146.3 | 3306.3 | 3583.0 | 3612.7 | 3489.3 | 4037.2 | 3420.1 | 3156.4 | 2924.6 |
| 1969 | 3011.2 | 3277.0 | 3263.6 | 3196.2 | 3168.8 | 3153.3 | 3572.9 | 4016.2 | 4129.6 | 3442.8 | 2770.7 | 2427.2 |
| 1970 | 2595.1 | 2856.2 | 3125.0 | 3150.5 | 3289.0 | 3466.8 | 3172.9 | 3477.1 | 4092.4 | 3792.6 | 3139.9 | 2954.7 |
| 1971 | 3069.1 | 3386.9 | 3346.1 | 2967.7 | 2952.7 | 2790.6 | 2630.7 | 3132.2 | 4129.6 | 4080.6 | 3661.1 | 3410.9 |
| 1972 | 3457.0 | 3435.2 | 3407.2 | 3091.6 | 3051.8 | 2790.8 | 2706.2 | 2993.0 | 3946.8 | 3736.2 | 3378.9 | 3250.9 |
| 1973 | 3483.2 | 3465.4 | 3408.3 | 3206.3 | 3381.2 | 3654.9 | 3647.2 | 4088.4 | 4106.3 | 3477.7 | 2831.3 | 2707.6 |
| 1974 | 2963.4 | 3218.1 | 3160.1 | 3082.4 | 3152.8 | 3293.8 | 2863.2 | 3254.3 | 4127.7 | 4039.3 | 3641.8 | 3293.7 |
| 1975 | 3418.4 | 3359.2 | 3277.6 | 3222.6 | 3346.7 | 3463.0 | 2980.4 | 3020.6 | 3752.3 | 4096.8 | 3668.2 | 3353.2 |
| 1976 | 3440.2 | 3396.0 | 3333.7 | 3059.0 | 3096.2 | 2920.4 | 2867.6 | 3201.7 | 3813.4 | 3581.1 | 3250.3 | 3055.2 |
| 1977 | 3336.6 | 3332.5 | 3234.7 | 3224.0 | 3361.5 | 3616.7 | 3606.5 | 3130.4 | 2546.0 | 1491.0 | 827.8  | 480.9  |
| 1978 | 763.5  | 1115.6 | 1530.8 | 1888.0 | 2196.4 | 2532.4 | 2917.9 | 3156.4 | 3858.3 | 3689.4 | 3127.9 | 2699.0 |
| 1979 | 2982.1 | 3214.8 | 3261.3 | 3186.3 | 3347.4 | 3583.0 | 3514.6 | 3860.9 | 3620.6 | 3136.9 | 2540.7 | 2026.6 |
| 1980 | 2169.9 | 2493.7 | 2776.9 | 3116.3 | 3282.2 | 3563.8 | 3667.6 | 4072.2 | 4108.6 | 3470.4 | 2874.6 | 2626.6 |
| 1981 | 2643.8 | 2887.5 | 3127.1 | 3129.7 | 3286.7 | 3557.4 | 3774.4 | 3967.7 | 4102.3 | 3143.4 | 2300.7 | 1722.0 |
| 1982 | 1904.7 | 2291.8 | 2583.9 | 2853.4 | 3054.7 | 2920.8 | 2742.6 | 3053.1 | 3823.6 | 4093.1 | 3655.5 | 3415.6 |
| 1983 | 3466.1 | 3461.4 | 3427.9 | 3061.9 | 3224.3 | 3424.2 | 3437.8 | 3771.9 | 4129.3 | 4096.6 | 3672.0 | 3351.6 |
| 1984 | 3492.5 | 3511.8 | 3471.6 | 2991.2 | 3173.5 | 3245.5 | 3187.7 | 3922.9 | 4129.6 | 4106.2 | 3681.5 | 3438.6 |
| 1985 | 3478.2 | 3474.2 | 3436.4 | 3186.9 | 3363.0 | 3613.4 | 3884.4 | 4125.0 | 3863.3 | 3119.6 | 2463.6 | 2326.2 |
| 1986 | 2537.6 | 2802.4 | 3139.9 | 2978.2 | 3166.8 | 2846.9 | 3034.7 | 3437.5 | 4127.3 | 3927.0 | 3454.1 | 3308.0 |
| 1987 | 3467.1 | 3460.0 | 3391.1 | 3237.5 | 3407.2 | 3690.5 | 3681.0 | 3742.5 | 3336.7 | 2629.6 | 1921.3 | 1458.0 |
| 1988 | 1532.6 | 1996.1 | 2302.8 | 2671.2 | 2919.0 | 3219.9 | 3571.5 | 3514.3 | 3112.9 | 2047.0 | 1260.8 | 844.9  |
| 1989 | 917.5  | 1326.5 | 1686.2 | 2013.2 | 2303.1 | 2743.1 | 3059.6 | 3504.6 | 3606.0 | 2811.5 | 2123.9 | 1667.2 |
| AVG  | 2351.5 | 2620.4 | 2804.6 | 2883.1 | 3048.9 | 3232.9 | 3278.6 | 3525.6 | 3740.7 | 3166.6 | 2546.4 | 2202.5 |
| MAX  | 3492.5 | 3511.8 | 3471.6 | 3290.0 | 3441.4 | 3711.7 | 3940.4 | 4125.0 | 4129.6 | 4106.2 | 3681.5 | 3438.6 |
| MIN  | 429.9  | 667.0  | 945.8  | 1199.9 | 1426.4 | 1666.3 | 1956.1 | 2116.3 | 1890.3 | 1046.4 | 530.6  | 326.7  |



TABLE C

## STUDY 956: UPPER SNAKE RIVER OPERATION STUDIES (IDWR MODEL)

UNITS ARE 1000 ACRE-FEET

| YEAR | OCT    | NOV    | DEC    | JAN    | FEB    | MAR    | APR    | MAY    | JUN    | JUL    | AUG    | SEP    |
|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1928 | 1772.9 | 2129.6 | 2433.1 | 2522.4 | 2634.0 | 2870.7 | 2612.7 | 3082.4 | 3241.4 | 2810.4 | 2268.8 | 2002.7 |
| 1929 | 2152.3 | 2485.4 | 2491.3 | 2499.4 | 2663.3 | 2834.8 | 3078.0 | 3055.3 | 3082.6 | 2347.2 | 1709.0 | 1430.8 |
| 1930 | 1841.5 | 2036.1 | 2342.1 | 2478.8 | 2635.0 | 2914.3 | 3185.0 | 3085.7 | 2747.4 | 1904.3 | 1447.4 | 1133.8 |
| 1931 | 1423.0 | 1842.9 | 2137.6 | 2434.6 | 2617.4 | 2888.2 | 3031.3 | 2592.0 | 1938.9 | 997.5  | 564.2  | 299.6  |
| 1932 | 410.2  | 649.3  | 949.0  | 1203.9 | 1440.0 | 1737.8 | 2036.3 | 2311.6 | 2358.1 | 1753.2 | 1073.4 | 708.6  |
| 1933 | 800.0  | 1216.4 | 1611.5 | 1963.8 | 2220.5 | 2537.9 | 2757.2 | 2746.4 | 2800.3 | 1752.9 | 1082.1 | 696.8  |
| 1934 | 800.0  | 1188.5 | 1571.3 | 1887.6 | 2148.0 | 2445.7 | 2565.2 | 2262.3 | 1504.8 | 846.4  | 430.6  | 273.3  |
| 1935 | 366.7  | 600.0  | 876.8  | 1125.2 | 1351.0 | 1589.4 | 1857.7 | 1873.8 | 1633.5 | 818.7  | 375.9  | 266.7  |
| 1936 | 377.4  | 707.5  | 1029.0 | 1323.2 | 1585.5 | 1881.0 | 2324.4 | 2675.9 | 2923.9 | 2121.2 | 1465.3 | 1000.7 |
| 1937 | 1077.7 | 1435.1 | 1791.7 | 2100.5 | 2323.2 | 2601.0 | 2782.9 | 2891.7 | 2619.4 | 1764.8 | 1046.0 | 682.5  |
| 1938 | 795.4  | 1172.9 | 1583.5 | 1952.8 | 2229.9 | 2474.5 | 2803.0 | 3021.2 | 3184.0 | 2767.4 | 2147.0 | 1769.8 |
| 1939 | 1928.4 | 2213.4 | 2475.1 | 2481.2 | 2635.5 | 2928.8 | 3264.6 | 3251.1 | 2934.6 | 2071.7 | 1386.8 | 1028.7 |
| 1940 | 1215.6 | 1553.1 | 1894.8 | 2233.4 | 2487.2 | 2765.6 | 2984.3 | 2814.6 | 2400.5 | 1422.2 | 888.4  | 682.2  |
| 1941 | 896.0  | 1280.0 | 1622.3 | 1936.0 | 2202.7 | 2515.0 | 2727.3 | 2628.1 | 2183.2 | 1340.7 | 841.2  | 606.9  |
| 1942 | 787.4  | 1216.0 | 1607.6 | 1966.5 | 2233.5 | 2526.3 | 2932.5 | 3100.5 | 2851.3 | 2131.2 | 1389.1 | 1019.1 |
| 1943 | 1096.3 | 1525.8 | 1851.7 | 2191.1 | 2378.4 | 2412.4 | 2418.1 | 2623.8 | 2924.9 | 2972.2 | 2563.8 | 2258.5 |
| 1944 | 2410.2 | 2742.6 | 2680.7 | 2672.4 | 2824.1 | 3085.4 | 3251.6 | 3195.4 | 3261.0 | 2583.6 | 1908.3 | 1575.2 |
| 1945 | 1633.6 | 2041.7 | 2308.5 | 2489.8 | 2645.7 | 2900.1 | 2902.9 | 2885.7 | 3050.4 | 2689.2 | 2256.3 | 2091.2 |
| 1946 | 2290.2 | 2568.6 | 2508.3 | 2512.0 | 2682.1 | 2857.5 | 3266.2 | 3273.6 | 3289.8 | 2567.3 | 2028.5 | 1852.3 |
| 1947 | 2083.2 | 2427.4 | 2500.8 | 2510.0 | 2658.4 | 2938.4 | 2686.6 | 2689.6 | 3093.9 | 2514.6 | 2104.6 | 1853.5 |
| 1948 | 1999.2 | 2306.5 | 2497.7 | 2507.0 | 2685.1 | 2845.6 | 3128.5 | 3112.0 | 3274.1 | 2543.0 | 1988.1 | 1703.4 |
| 1949 | 1677.4 | 2163.5 | 2451.0 | 2497.2 | 2652.5 | 2596.7 | 2707.8 | 3006.3 | 3217.4 | 2478.7 | 1950.5 | 1616.1 |
| 1950 | 1635.4 | 2138.8 | 2442.0 | 2490.6 | 2606.8 | 2785.5 | 2584.0 | 2687.1 | 3123.1 | 3127.8 | 2737.6 | 2596.1 |
| 1951 | 2778.7 | 2764.8 | 2726.2 | 2571.5 | 2636.0 | 2516.3 | 2617.4 | 2803.2 | 2967.7 | 2624.5 | 2523.2 | 2288.5 |
| 1952 | 2504.6 | 2767.9 | 2711.5 | 2510.9 | 2597.8 | 2754.6 | 2652.7 | 3141.1 | 3281.3 | 2687.0 | 2230.6 | 1978.9 |
| 1953 | 2037.5 | 2301.9 | 2508.4 | 2516.8 | 2667.3 | 2932.1 | 3138.7 | 2885.5 | 3210.6 | 2685.7 | 2088.5 | 1703.8 |
| 1954 | 1823.3 | 2106.1 | 2422.7 | 2506.5 | 2682.5 | 2920.7 | 2967.3 | 2878.2 | 2747.0 | 2347.5 | 1900.0 | 1544.1 |
| 1955 | 1726.4 | 2081.6 | 2347.6 | 2500.9 | 2668.9 | 2919.4 | 3053.9 | 3048.4 | 3035.9 | 2340.8 | 1801.2 | 1423.0 |
| 1956 | 1572.7 | 2015.7 | 2394.6 | 2481.6 | 2482.4 | 2457.4 | 2478.5 | 2741.7 | 3264.0 | 2768.3 | 2307.9 | 2068.6 |
| 1957 | 2245.3 | 2503.5 | 2488.0 | 2497.0 | 2681.5 | 2967.0 | 2652.8 | 2735.9 | 3178.8 | 2710.2 | 2185.6 | 1934.4 |
| 1958 | 2089.0 | 2387.0 | 2498.8 | 2508.9 | 2684.1 | 2923.0 | 3101.9 | 3274.3 | 3200.1 | 2317.6 | 1688.5 | 1392.1 |
| 1959 | 1482.5 | 1886.2 | 2236.0 | 2483.3 | 2639.2 | 2897.7 | 2943.3 | 2734.9 | 2806.4 | 2107.2 | 1478.8 | 1184.5 |
| 1960 | 1519.6 | 1967.3 | 2291.1 | 2510.3 | 2661.4 | 2932.6 | 3201.4 | 2944.7 | 2685.8 | 1750.1 | 1072.0 | 716.0  |
| 1961 | 863.2  | 1278.3 | 1645.1 | 2002.5 | 2272.3 | 2572.3 | 2732.9 | 2454.4 | 2030.8 | 1150.7 | 526.5  | 412.4  |
| 1962 | 726.1  | 1131.3 | 1516.7 | 1823.8 | 2231.3 | 2572.4 | 2699.1 | 2999.3 | 3163.3 | 2637.2 | 2131.5 | 1785.1 |
| 1963 | 1864.3 | 2080.8 | 2343.8 | 2506.5 | 2695.8 | 2970.4 | 2967.2 | 3199.6 | 3273.8 | 2487.2 | 1872.1 | 1646.3 |
| 1964 | 1624.4 | 2048.5 | 2302.5 | 2501.0 | 2653.3 | 2823.8 | 2664.3 | 2726.3 | 3182.0 | 2620.6 | 2296.3 | 1998.8 |
| 1965 | 1989.7 | 2272.4 | 2510.8 | 2483.1 | 2515.1 | 2487.4 | 2473.4 | 2989.4 | 3111.2 | 3143.8 | 2906.3 | 2761.4 |
| 1966 | 2601.7 | 2774.8 | 2702.1 | 2632.7 | 2789.4 | 3066.8 | 3274.9 | 3046.3 | 2968.6 | 2065.8 | 1387.9 | 1127.4 |
| 1967 | 1292.8 | 1687.9 | 2036.7 | 2410.2 | 2626.2 | 2896.7 | 2644.6 | 2989.9 | 3194.2 | 2996.5 | 2463.9 | 2101.0 |
| 1968 | 2280.0 | 2537.8 | 2507.4 | 2513.7 | 2664.7 | 2938.0 | 2984.6 | 2989.3 | 3190.2 | 2567.9 | 2425.5 | 2294.6 |
| 1969 | 2381.2 | 2644.7 | 2653.0 | 2544.7 | 2546.8 | 2677.8 | 2663.4 | 3169.2 | 3382.6 | 2637.8 | 2080.7 | 1797.2 |
| 1970 | 1968.5 | 2236.2 | 2506.6 | 2514.7 | 2657.4 | 2832.4 | 2647.9 | 2647.1 | 3246.4 | 2948.3 | 2422.2 | 2324.7 |
| 1971 | 2439.1 | 2752.6 | 2700.9 | 2312.9 | 2332.7 | 2336.6 | 2280.7 | 2988.1 | 3382.6 | 3243.6 | 2931.1 | 2780.9 |
| 1972 | 2819.0 | 2794.3 | 2752.2 | 2434.9 | 2431.8 | 2440.8 | 3388.2 | 2983.0 | 3108.8 | 2989.2 | 2646.9 | 2609.9 |
| 1973 | 2625.9 | 2801.9 | 2740.1 | 2538.3 | 2721.2 | 2984.9 | 3180.0 | 3342.8 | 3261.3 | 2995.1 | 2141.3 | 2077.6 |
| 1974 | 2333.4 | 2571.3 | 2508.1 | 2415.6 | 2532.8 | 2650.6 | 2513.2 | 2989.2 | 3280.7 | 3192.3 | 2911.8 | 2663.7 |
| 1975 | 2788.4 | 2732.4 | 2653.6 | 2586.8 | 2696.5 | 2806.6 | 2630.4 | 2630.6 | 2990.5 | 3252.8 | 2938.2 | 2723.2 |
| 1976 | 2810.2 | 2765.2 | 2694.3 | 2410.3 | 2475.2 | 2442.2 | 2347.6 | 2684.8 | 2973.4 | 2734.1 | 2520.3 | 2425.2 |
| 1977 | 2709.6 | 2712.5 | 2622.9 | 2609.9 | 2751.7 | 3010.7 | 2963.5 | 2900.4 | 1946.0 | 975.4  | 573.8  | 294.0  |
| 1978 | 577.9  | 932.5  | 1332.3 | 1681.1 | 1978.5 | 2316.1 | 2677.3 | 2724.0 | 3063.0 | 2848.2 | 2400.1 | 2289.0 |
| 1979 | 2357.0 | 2594.8 | 2636.4 | 2553.5 | 2707.1 | 2938.4 | 2944.6 | 3064.4 | 3073.6 | 2335.1 | 1850.7 | 1396.6 |
| 1980 | 1547.0 | 1876.9 | 2167.2 | 2496.7 | 2655.3 | 2930.8 | 3008.4 | 3225.2 | 3261.8 | 2684.7 | 2184.6 | 1996.6 |
| 1981 | 2016.5 | 2266.6 | 2506.6 | 2511.2 | 2666.0 | 2938.6 | 3128.3 | 3120.7 | 3256.3 | 3384.4 | 1629.3 | 1067.7 |
| 1982 | 1284.5 | 1671.8 | 1958.1 | 2222.3 | 2415.1 | 2424.2 | 2392.6 | 2663.1 | 3003.9 | 3246.1 | 2925.5 | 2785.3 |
| 1983 | 2829.3 | 2819.7 | 2776.2 | 2396.5 | 2564.3 | 2764.2 | 2867.8 | 3042.5 | 3282.3 | 3246.6 | 2942.0 | 2721.6 |
| 1984 | 2637.0 | 2821.8 | 2791.6 | 2347.9 | 2533.3 | 2587.4 | 2617.7 | 3120.6 | 3282.6 | 3259.2 | 2951.5 | 2795.5 |
| 1985 | 2836.3 | 2820.6 | 2776.9 | 2524.2 | 2683.4 | 2963.4 | 3224.4 | 3278.0 | 3116.3 | 3242.6 | 1773.6 | 1896.2 |
| 1986 | 1907.6 | 2165.3 | 2497.0 | 2322.7 | 2508.8 | 2356.7 | 2621.2 | 2807.5 | 3280.3 | 3080.0 | 2724.1 | 2677.5 |
| 1987 | 2628.5 | 2810.0 | 2739.8 | 2577.7 | 2747.2 | 3030.5 | 3181.0 | 2895.5 | 2496.7 | 1889.2 | 1272.1 | 854.0  |
| 1988 | 938.0  | 1408.6 | 1719.4 | 2096.4 | 2345.0 | 2646.1 | 2949.8 | 2685.9 | 2272.9 | 1323.7 | 780.8  | 444.9  |
| 1989 | 617.5  | 1020.2 | 1382.2 | 1700.2 | 1967.6 | 2414.5 | 2669.7 | 2806.4 | 2785.0 | 2034.7 | 1433.9 | 1037.2 |
| AVG  | 1782.5 | 2054.7 | 2241.4 | 2318.2 | 2487.2 | 2693.1 | 2790.1 | 2866.1 | 2925.1 | 2382.1 | 1886.4 | 1628.4 |
| MAX  | 2637.0 | 2821.8 | 2791.6 | 2672.4 | 2824.1 | 3085.4 | 3274.5 | 3278.0 | 3262.6 | 3259.2 | 2951.5 | 2795.5 |
| MIN  | 366.7  | 600.0  | 876.8  | 1125.2 | 1351.0 | 1589.4 | 1857.7 | 1873.8 | 1504.8 | 818.7  | 375.9  | 266.7  |

TABLE D

## JACKSON LAKE

STUDY 951-133 UPPER SNAKE RIVER OPERATION STUDIES (IDWR M 400 minus 280)

UNITS ARE 1000 ACRE-FEET

| YEAR | OCT   | NOV   | DEC   | JAN   | FEB   | MAR   | APR   | MAY   | JUN   | JUL   | AUG   | SEP   |
|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 1928 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | -3.1  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1929 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | -3.1  | -3.0  | -3.1  | 0.0   | 0.0   | 0.0   | 0.0   |
| 1930 | -2.0  | -7.9  | -8.5  | -9.0  | -9.1  | -12.1 | -12.1 | -12.1 | 0.0   | 0.0   | 0.0   | 0.0   |
| 1931 | 0.0   | 0.0   | -4.6  | -9.0  | -14.5 | -17.6 | -17.6 | -17.6 | -9.2  | 0.0   | -14.3 | -14.3 |
| 1932 | -21.7 | -28.8 | -36.2 | -43.6 | -50.5 | -57.9 | -64.9 | -67.7 | -67.4 | -67.2 | -34.6 | -37.8 |
| 1933 | -37.7 | -43.3 | -49.5 | -17.0 | -22.5 | -29.0 | -35.0 | -41.0 | -40.8 | -40.0 | -15.6 | -15.4 |
| 1934 | -15.5 | -20.2 | -11.0 | -16.2 | -21.7 | -29.1 | -4.0  | 0.0   | -0.2  | 0.0   | 0.0   | 0.0   |
| 1935 | -7.4  | -14.5 | -21.9 | -29.3 | -36.0 | -43.3 | -50.4 | -56.4 | -62.0 | -13.6 | -0.9  | 0.0   |
| 1936 | -7.4  | -14.5 | -21.9 | -29.3 | -36.2 | -43.6 | -50.6 | -56.6 | -56.5 | -56.2 | -56.1 | -42.7 |
| 1937 | -48.8 | -54.8 | -60.9 | -22.2 | -27.7 | -33.8 | -39.7 | -39.6 | -20.3 | -9.6  | -12.4 | -21.8 |
| 1938 | -21.7 | -26.4 | -32.6 | -38.8 | -4.6  | 0.0   | -6.0  | -9.0  | 0.0   | 0.0   | 0.0   | 0.0   |
| 1939 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | -3.1  | -3.1  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1940 | -1.9  | -7.8  | -14.0 | -15.3 | -8.9  | -12.0 | -12.0 | -6.2  | 0.0   | 0.0   | 0.0   | 0.0   |
| 1941 | -6.2  | -10.4 | -16.3 | -17.7 | -23.2 | -30.6 | -37.7 | -43.7 | -43.6 | 0.2   | 0.0   | 0.0   |
| 1942 | 0.0   | -5.2  | -11.4 | 0.0   | -5.5  | -12.9 | -18.9 | -25.0 | -24.8 | -24.9 | 0.0   | 0.0   |
| 1943 | -6.1  | -3.2  | -3.1  | -3.1  | -3.2  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1944 | 0.0   | 0.0   | 0.0   | -2.4  | -2.7  | -5.6  | -5.7  | -5.7  | 0.0   | 0.0   | 0.0   | 0.0   |
| 1945 | -5.6  | -3.8  | -8.5  | -9.2  | -9.3  | -12.3 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1946 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | -3.1  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1947 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | -3.1  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1948 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | -3.1  | -3.1  | -3.0  | 0.0   | 0.0   | 0.0   | 0.0   |
| 1949 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1950 | 0.0   | 0.0   | -0.7  | -0.7  | -0.7  | -3.8  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1951 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1952 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | -1.7  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1953 | -4.0  | -9.9  | -6.1  | -6.1  | -6.2  | -9.2  | -9.2  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1954 | -3.6  | -2.9  | -0.5  | -0.5  | -0.6  | -3.6  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1955 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | -3.1  | -3.1  | -3.0  | 0.0   | 0.0   | 0.0   | 0.0   |
| 1956 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1957 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | -6.1  | 0.0   | 0.0   | 0.0   | 0.0   |
| 1958 | 0.0   | -1.9  | -1.9  | -1.9  | -1.9  | -5.0  | -4.9  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1959 | -6.1  | -0.2  | -0.6  | -0.6  | -0.7  | -3.7  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1960 | 0.0   | -1.0  | -4.3  | -4.3  | -4.3  | -7.4  | -7.4  | -7.3  | 0.0   | 0.0   | -4.1  | -4.2  |
| 1961 | -10.3 | -15.0 | -21.2 | -27.3 | -32.9 | 0.0   | -6.0  | -6.3  | 2.5   | 0.0   | 2.5   | 0.0   |
| 1962 | 2.5   | 0.0   | -6.2  | -9.6  | -15.4 | -18.4 | -24.3 | -24.2 | 0.0   | 0.0   | 0.0   | 0.0   |
| 1963 | 0.0   | 0.0   | -0.6  | -0.6  | -0.6  | -3.7  | -3.7  | -3.7  | 0.0   | 0.0   | 0.0   | 0.0   |
| 1964 | 0.0   | 0.0   | -3.9  | -3.9  | -3.9  | -7.0  | 0.1   | -6.2  | 0.0   | 0.0   | 0.0   | 0.0   |
| 1965 | -3.1  | -3.8  | -3.9  | -3.9  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1966 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | -3.1  | -3.1  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1967 | -2.6  | 0.0   | 0.0   | 0.0   | -0.7  | -3.7  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1968 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | -3.1  | -3.1  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1969 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1970 | -3.3  | -6.4  | -1.9  | -1.9  | -2.0  | -5.0  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1971 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1972 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1973 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | -3.1  | -3.0  | -3.1  | 0.0   | 0.0   | 0.0   | 0.0   |
| 1974 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | -3.1  | 0.0   | -4.6  | 0.0   | 0.0   | 0.0   | 0.0   |
| 1975 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | -3.1  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1976 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1977 | 0.0   | -5.7  | -7.8  | -7.8  | -9.7  | -12.8 | -12.8 | 0.0   | 0.0   | -0.1  | -0.1  | 0.0   |
| 1978 | -7.4  | -14.6 | -21.9 | -29.3 | -36.0 | -43.4 | -50.4 | -53.3 | -34.4 | -34.3 | -11.6 | -7.9  |
| 1979 | -4.8  | -7.0  | -4.9  | -4.9  | -4.8  | -7.9  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1980 | -6.1  | -12.1 | -18.2 | -18.2 | -18.2 | -21.3 | -21.3 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1981 | -2.6  | -3.1  | 0.0   | 0.0   | 0.0   | -3.1  | -3.1  | -3.0  | 0.0   | 0.0   | 0.0   | 0.0   |
| 1982 | -4.0  | -0.4  | -0.5  | -0.4  | -0.4  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1983 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | -3.1  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1984 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | -3.1  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1985 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | -3.1  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1986 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1987 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | -3.1  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1988 | -6.1  | -12.1 | -18.2 | -24.4 | -30.2 | -32.1 | -32.1 | -32.0 | 0.0   | 0.0   | 0.0   | 0.0   |
| 1989 | -4.6  | -10.5 | -16.7 | -22.8 | -28.3 | -35.7 | -41.6 | -32.6 | 0.0   | 0.0   | 0.0   | 0.0   |
| AVG  | -4.0  | -5.6  | -7.1  | -7.0  | -7.6  | -10.0 | -9.6  | -9.3  | -5.8  | -4.0  | -2.4  | -2.3  |
| MAX  | 2.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.1   | 0.0   | 2.5   | 0.2   | 2.5   | 0.0   |
| MIN  | -48.8 | -54.8 | -60.9 | -43.6 | -50.5 | -57.9 | -64.9 | -67.7 | -67.4 | -67.2 | -56.1 | -42.7 |

TABLE D

## DISCHARGE, SNAKE RIVER NEAR MORAN, WYOMING

STUDY 951-133 UPPER SNAKE RIVER OPERATION STUDIES (IDWR M-400 minus 280)

UNITS ARE MEAN CUBIC FEET PER SECOND (CFS)

| YEAR | OCT   | NOV   | DEC    | JAN    | FEB    | MAR    | APR    | MAY    | JUN    | JUL    | AUG    | SEP    |
|------|-------|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1928 | 0.0   | 0.0   | 0.0    | 0.0    | 0.0    | 50.0   | -52.0  | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 1929 | 0.0   | 0.0   | 0.0    | 0.0    | 0.0    | 50.0   | 0.0    | 0.0    | -51.0  | 0.0    | 0.0    | 0.0    |
| 1930 | 33.0  | 100.0 | 9.0    | 8.0    | 0.0    | 50.0   | 0.0    | 0.0    | -203.0 | 0.0    | 0.0    | 0.0    |
| 1931 | 0.0   | 0.0   | 75.0   | 71.0   | 100.0  | 50.0   | 0.0    | 0.0    | -141.0 | -149.0 | 233.0  | 0.0    |
| 1932 | 120.0 | 120.0 | 120.0  | 120.0  | 120.0  | 120.0  | 120.0  | 50.0   | 0.0    | 0.0    | -527.0 | 56.0   |
| 1933 | 0.0   | 92.0  | 100.0  | -528.0 | 100.0  | 106.0  | 100.0  | 100.0  | 0.0    | -12.0  | -396.0 | 0.0    |
| 1934 | 0.0   | 80.0  | -150.0 | 85.0   | 100.0  | 120.0  | -423.0 | -64.0  | 3.0    | -2.0   | 0.0    | 0.0    |
| 1935 | 120.0 | 120.0 | 120.0  | 120.0  | 120.0  | 120.0  | 120.0  | 100.0  | 100.0  | -784.0 | -208.0 | -14.0  |
| 1936 | 120.0 | 120.0 | 120.0  | 120.0  | 120.0  | 120.0  | 120.0  | 100.0  | 0.0    | 0.0    | 0.0    | -223.0 |
| 1937 | 100.0 | 100.0 | 100.0  | -631.0 | 100.0  | 100.0  | 100.0  | 0.0    | -322.0 | -173.0 | 48.0   | 158.0  |
| 1938 | 0.0   | 79.0  | 100.0  | 100.0  | -616.0 | -74.0  | 100.0  | 50.0   | -151.0 | 0.0    | 0.0    | 0.0    |
| 1939 | 0.0   | 0.0   | 0.0    | 0.0    | 0.0    | 50.0   | 0.0    | -49.0  | 0.0    | 0.0    | 0.0    | 0.0    |
| 1940 | 32.0  | 100.0 | 100.0  | 21.0   | -111.0 | 50.0   | 0.0    | -61.0  | -138.0 | 0.0    | 0.0    | 0.0    |
| 1941 | 100.0 | 73.0  | 95.0   | 23.0   | 100.0  | 120.0  | 120.0  | 100.0  | 0.0    | -711.0 | 3.0    | 0.0    |
| 1942 | 0.0   | 88.0  | 100.0  | -185.0 | 100.0  | 120.0  | 100.0  | 100.0  | 0.0    | 0.0    | -402.0 | 0.0    |
| 1943 | 100.0 | -50.0 | 0.0    | 0.0    | 0.0    | -51.0  | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 1944 | 0.0   | 0.0   | 0.0    | 38.0   | 5.0    | 50.0   | 0.0    | 0.0    | -96.0  | 0.0    | 0.0    | 0.0    |
| 1945 | 92.0  | -30.0 | 76.0   | 11.0   | 0.0    | 50.0   | -207.0 | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 1946 | 0.0   | 0.0   | 0.0    | 0.0    | 0.0    | 50.0   | -51.0  | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 1947 | 0.0   | 0.0   | 0.0    | 0.0    | 0.0    | 50.0   | -52.0  | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 1948 | 0.0   | 0.0   | 0.0    | 0.0    | 0.0    | 50.0   | 0.0    | 0.0    | -51.0  | 0.0    | 0.0    | 0.0    |
| 1949 | 0.0   | 0.0   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 1950 | 0.0   | 0.0   | 11.0   | 0.0    | 0.0    | 50.0   | -63.0  | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 1951 | 0.0   | 0.0   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 1952 | 0.0   | 0.0   | 0.0    | 0.0    | 0.0    | 27.0   | -28.0  | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 1953 | 66.0  | 100.0 | -63.0  | 0.0    | 0.0    | 50.0   | 0.0    | -149.0 | 0.0    | 0.0    | 0.0    | 0.0    |
| 1954 | 59.0  | -12.0 | -39.0  | 0.0    | 0.0    | 50.0   | -61.0  | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 1955 | 0.0   | 0.0   | 0.0    | 0.0    | 0.0    | 50.0   | 0.0    | 0.0    | -52.0  | 0.0    | 0.0    | 0.0    |
| 1956 | 0.0   | 0.0   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 1957 | 0.0   | 0.0   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 100.0  | -103.0 | 0.0    | 0.0    | 0.0    |
| 1958 | 0.0   | 32.0  | 0.0    | 0.0    | 0.0    | 50.0   | 0.0    | -61.0  | 0.0    | 0.0    | 0.0    | 0.0    |
| 1959 | 100.0 | -99.0 | 8.0    | 0.0    | 0.0    | 50.0   | -63.0  | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 1960 | 0.0   | 17.0  | 54.0   | 0.0    | 0.0    | 50.0   | 0.0    | 0.0    | -124.0 | 0.0    | 67.0   | 0.0    |
| 1961 | 100.0 | 79.0  | 100.0  | 100.0  | 100.0  | -534.0 | 100.0  | 5.0    | -148.0 | 41.0   | -40.0  | 42.0   |
| 1962 | -40.0 | 42.0  | 100.0  | 80.0   | 100.0  | 48.0   | 100.0  | 0.0    | -406.0 | 0.0    | 0.0    | 0.0    |
| 1963 | 0.0   | 0.0   | 10.0   | 0.0    | 0.0    | 50.0   | 0.0    | 0.0    | -61.0  | 0.0    | 0.0    | 0.0    |
| 1964 | 0.0   | 0.0   | 63.0   | 0.0    | 0.0    | 50.0   | -117.0 | 100.0  | -103.0 | 0.0    | 0.0    | 0.0    |
| 1965 | 51.0  | 12.0  | 0.0    | 0.0    | -70.0  | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 1966 | 0.0   | 0.0   | 0.0    | 0.0    | 0.0    | 50.0   | 0.0    | -50.0  | 0.0    | 0.0    | 0.0    | 0.0    |
| 1967 | 43.0  | -44.0 | 0.0    | 0.0    | 12.0   | 50.0   | -63.0  | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 1968 | 0.0   | 0.0   | 0.0    | 0.0    | 0.0    | 50.0   | 0.0    | -50.0  | 0.0    | 0.0    | 0.0    | 0.0    |
| 1969 | 0.0   | 0.0   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 1970 | 54.0  | 52.0  | -73.0  | 0.0    | 0.0    | 50.0   | -64.0  | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 1971 | 0.0   | 0.0   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 1972 | 0.0   | 0.0   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 1973 | 0.0   | 0.0   | 0.0    | 0.0    | 0.0    | 50.0   | 0.0    | 0.0    | -51.0  | 0.0    | 0.0    | 0.0    |
| 1974 | 0.0   | 0.0   | 0.0    | 0.0    | 0.0    | 50.0   | -52.0  | 75.0   | -77.0  | 0.0    | 0.0    | 0.0    |
| 1975 | 0.0   | 0.0   | 0.0    | 0.0    | 0.0    | 50.0   | -51.0  | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 1976 | 0.0   | 0.0   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 1977 | 0.0   | 96.0  | 34.0   | 0.0    | 34.0   | 50.0   | 0.0    | -206.0 | 0.0    | 1.0    | 0.0    | 0.0    |
| 1978 | 120.0 | 120.0 | 120.0  | 120.0  | 120.0  | 120.0  | 120.0  | 50.0   | -314.0 | 0.0    | -367.0 | -62.0  |
| 1979 | -50.0 | 37.0  | -36.0  | 0.0    | 0.0    | 50.0   | -134.0 | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 1980 | 100.0 | 100.0 | 100.0  | 0.0    | 0.0    | 50.0   | 0.0    | -346.0 | 0.0    | 0.0    | 0.0    | 0.0    |
| 1981 | 43.0  | 8.0   | -51.0  | 0.0    | 0.0    | 50.0   | 0.0    | 0.0    | -51.0  | 0.0    | 0.0    | 0.0    |
| 1982 | 66.0  | -60.0 | 0.0    | 0.0    | 0.0    | -7.0   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 1983 | 0.0   | 0.0   | 0.0    | 0.0    | 0.0    | 50.0   | -52.0  | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 1984 | 0.0   | 0.0   | 0.0    | 0.0    | 0.0    | 50.0   | -51.0  | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 1985 | 0.0   | 0.0   | 0.0    | 0.0    | 0.0    | 50.0   | -52.0  | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 1986 | 0.0   | 0.0   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 1987 | 0.0   | 0.0   | 0.0    | 0.0    | 0.0    | 50.0   | -52.0  | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 1988 | 100.0 | 100.0 | 100.0  | 100.0  | 100.0  | 31.0   | 0.0    | 0.0    | -536.0 | 0.0    | 0.0    | 0.0    |
| 1989 | 74.0  | 100.0 | 100.0  | 100.0  | 100.0  | 120.0  | 100.0  | -146.0 | -546.0 | 0.0    | 0.0    | 0.0    |
| AVG  | 27.5  | 27.0  | 24.2   | -2.4   | 11.8   | 38.0   | -6.6   | -4.4   | -56.4  | -28.9  | -25.6  | -0.7   |
| MAX  | 120.0 | 120.0 | 120.0  | 120.0  | 120.0  | 120.0  | 120.0  | 100.0  | 100.0  | 41.0   | 233.0  | 158.0  |
| MIN  | -50.0 | -99.0 | -150.0 | -631.0 | -616.0 | -534.0 | -423.0 | -346.0 | -546.0 | -784.0 | -527.0 | -223.0 |

TABLE D

## DISCHARGE, SNAKE RIVER NEAR MILNER, IDAHO

STUDY 951-133 UPPER SNAKE RIVER OPERATION STUDIES (IDWR M-400 minus 280)

UNITS ARE MEAN CUBIC FEET PER SECOND (CFS)

| YEAR | OCT | NOV    | DEC   | JAN    | FEB    | MAR    | APR    | MAY    | JUN   | JUL   | AUG | SEP    |
|------|-----|--------|-------|--------|--------|--------|--------|--------|-------|-------|-----|--------|
| 1928 | 0.0 | 0.0    | 0.0   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0   | 0.0   | 0.0 | 0.0    |
| 1929 | 0.0 | 0.0    | 0.0   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0   | 0.0   | 0.0 | 0.0    |
| 1930 | 0.0 | 135.0  | 0.0   | 17.0   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0   | 0.0   | 0.0 | 0.0    |
| 1931 | 0.0 | 0.0    | -87.0 | 0.0    | 180.0  | 0.0    | 0.0    | 0.0    | 0.0   | 0.0   | 0.0 | 0.0    |
| 1932 | 0.0 | 0.0    | 0.0   | 192.0  | 0.0    | 0.0    | 0.0    | 0.0    | 270.0 | 0.0   | 0.0 | 0.0    |
| 1933 | 0.0 | 0.0    | 0.0   | 0.0    | -11.0  | -255.0 | -96.0  | 0.0    | 0.0   | 0.0   | 0.0 | 0.0    |
| 1934 | 0.0 | 0.0    | 0.0   | 0.0    | -232.0 | 0.0    | 0.0    | 0.0    | 0.0   | 0.0   | 0.0 | 0.0    |
| 1935 | 0.0 | 0.0    | 0.0   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0   | 0.0   | 0.0 | 0.0    |
| 1936 | 0.0 | 0.0    | 0.0   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0   | 340.0 | 0.0 | 0.0    |
| 1937 | 0.0 | 0.0    | 0.0   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0   | 0.0   | 0.0 | 0.0    |
| 1938 | 0.0 | 0.0    | 0.0   | 0.0    | -484.0 | 0.0    | 87.0   | 0.0    | 0.0   | 0.0   | 0.0 | 0.0    |
| 1939 | 0.0 | 0.0    | 0.0   | 0.0    | 0.0    | 0.0    | 51.0   | -50.0  | 0.0   | 0.0   | 0.0 | 0.0    |
| 1940 | 0.0 | 0.0    | 0.0   | 0.0    | 0.0    | 195.0  | 0.0    | 0.0    | 0.0   | 0.0   | 0.0 | -198.0 |
| 1941 | 0.0 | 0.0    | -5.0  | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0   | 0.0   | 0.0 | 0.0    |
| 1942 | 0.0 | 0.0    | 0.0   | 0.0    | -95.0  | -4.0   | 0.0    | 0.0    | 0.0   | 0.0   | 0.0 | 0.0    |
| 1943 | 0.0 | 0.0    | 0.0   | 0.0    | 0.0    | 77.0   | 0.0    | 3.0    | 0.0   | 0.0   | 0.0 | 0.0    |
| 1944 | 0.0 | 0.0    | 0.0   | 0.0    | 0.0    | -43.0  | 0.0    | 0.0    | 0.0   | 0.0   | 0.0 | 0.0    |
| 1945 | 0.0 | 64.0   | 0.0   | 87.0   | 0.0    | 0.0    | -155.0 | 0.0    | 0.0   | 0.0   | 0.0 | 0.0    |
| 1946 | 0.0 | 0.0    | 0.0   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0   | 0.0   | 0.0 | 0.0    |
| 1947 | 0.0 | 0.0    | 0.0   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0   | 0.0   | 0.0 | 0.0    |
| 1948 | 0.0 | 0.0    | 0.0   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0   | 0.0   | 0.0 | 0.0    |
| 1949 | 0.0 | 0.0    | 0.0   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0   | 0.0   | 0.0 | 0.0    |
| 1950 | 0.0 | 0.0    | 0.0   | 11.0   | 0.0    | 0.0    | -12.0  | 0.0    | 0.0   | 0.0   | 0.0 | 0.0    |
| 1951 | 0.0 | 0.0    | 0.0   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0   | 0.0   | 0.0 | 0.0    |
| 1952 | 0.0 | 0.0    | 0.0   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0   | 0.0   | 0.0 | 0.0    |
| 1953 | 0.0 | 0.0    | 100.0 | 0.0    | 0.0    | 0.0    | 0.0    | -100.0 | 0.0   | 0.0   | 0.0 | 0.0    |
| 1954 | 0.0 | 0.0    | 0.0   | 9.0    | 0.0    | 0.0    | -9.0   | 0.0    | 0.0   | 0.0   | 0.0 | 0.0    |
| 1955 | 0.0 | 0.0    | 0.0   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0   | 0.0   | 0.0 | 0.0    |
| 1956 | 0.0 | 0.0    | 0.0   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0   | 0.0   | 0.0 | 0.0    |
| 1957 | 0.0 | 0.0    | 0.0   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0   | 0.0   | 0.0 | 0.0    |
| 1958 | 0.0 | 0.0    | 31.0  | 0.0    | 0.0    | 0.0    | 0.0    | -31.0  | 0.0   | 0.0   | 0.0 | 0.0    |
| 1959 | 0.0 | 0.0    | 0.0   | 10.0   | 0.0    | 0.0    | -11.0  | 0.0    | 0.0   | 0.0   | 0.0 | 0.0    |
| 1960 | 0.0 | 0.0    | 0.0   | 70.0   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0   | 0.0   | 0.0 | 0.0    |
| 1961 | 0.0 | 0.0    | 0.0   | 0.0    | 0.0    | -106.0 | 0.0    | 0.0    | 0.0   | 0.0   | 0.0 | 0.0    |
| 1962 | 0.0 | 0.0    | 0.0   | 0.0    | 0.0    | -52.0  | 95.0   | -1.0   | 0.0   | 0.0   | 0.0 | 0.0    |
| 1963 | 0.0 | 0.0    | 0.0   | 10.0   | 0.0    | 0.0    | -10.0  | 0.0    | -1.0  | 0.0   | 0.0 | 0.0    |
| 1964 | 0.0 | 0.0    | 0.0   | 64.0   | 0.0    | 0.0    | -66.0  | 0.0    | 0.0   | 0.0   | 0.0 | 0.0    |
| 1965 | 0.0 | 0.0    | 62.0  | 0.0    | -70.0  | 0.0    | 0.0    | 0.0    | 0.0   | 0.0   | 0.0 | 0.0    |
| 1966 | 0.0 | 0.0    | 0.0   | 0.0    | 0.0    | 0.0    | 51.0   | 0.0    | 0.0   | 0.0   | 0.0 | 0.0    |
| 1967 | 0.0 | 0.0    | 0.0   | 0.0    | 0.0    | 0.0    | -49.0  | 0.0    | 0.0   | 0.0   | 0.0 | 0.0    |
| 1968 | 0.0 | 0.0    | 0.0   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0   | 0.0   | 0.0 | 0.0    |
| 1969 | 0.0 | 0.0    | 0.0   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0   | 0.0   | 0.0 | 0.0    |
| 1970 | 0.0 | 0.0    | 32.0  | 0.0    | 0.0    | 0.0    | -32.0  | 0.0    | 0.0   | 0.0   | 0.0 | 0.0    |
| 1971 | 0.0 | 0.0    | 0.0   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0   | 0.0   | 0.0 | 0.0    |
| 1972 | 0.0 | 0.0    | 0.0   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0   | 0.0   | 0.0 | 0.0    |
| 1973 | 0.0 | 0.0    | 0.0   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0   | 0.0   | 0.0 | 0.0    |
| 1974 | 0.0 | 0.0    | 0.0   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0   | 0.0   | 0.0 | 0.0    |
| 1975 | 0.0 | 0.0    | 0.0   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0   | 0.0   | 0.0 | 0.0    |
| 1976 | 0.0 | 0.0    | 0.0   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0   | 0.0   | 0.0 | 0.0    |
| 1977 | 0.0 | 0.0    | 0.0   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0   | 0.0   | 0.0 | 0.0    |
| 1978 | 0.0 | 0.0    | 0.0   | 0.0    | 0.0    | 0.0    | 0.0    | 1.0    | 0.0   | 0.0   | 0.0 | 0.0    |
| 1979 | 0.0 | 0.0    | 127.0 | -128.0 | 0.0    | 0.0    | 0.0    | 0.0    | 0.0   | 0.0   | 0.0 | 0.0    |
| 1980 | 0.0 | 0.0    | 0.0   | 297.0  | 0.0    | 0.0    | -306.0 | -1.0   | 0.0   | 0.0   | 0.0 | 0.0    |
| 1981 | 0.0 | 0.0    | 0.0   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | -1.0  | 0.0   | 0.0 | 0.0    |
| 1982 | 0.0 | 0.0    | 0.0   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0   | 0.0   | 0.0 | 0.0    |
| 1983 | 0.0 | 0.0    | 0.0   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0   | 0.0   | 0.0 | 0.0    |
| 1984 | 0.0 | 0.0    | 0.0   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0   | 0.0   | 0.0 | 0.0    |
| 1985 | 0.0 | 0.0    | 0.0   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0   | 0.0   | 0.0 | 0.0    |
| 1986 | 0.0 | 0.0    | 0.0   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0   | 0.0   | 0.0 | 0.0    |
| 1987 | 0.0 | 0.0    | 0.0   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0   | 0.0   | 0.0 | 0.0    |
| 1988 | 0.0 | 0.0    | 0.0   | 0.0    | 0.0    | 0.0    | 317.0  | 0.0    | 0.0   | 0.0   | 0.0 | 0.0    |
| 1989 | 0.0 | -107.0 | 0.0   | 0.0    | 0.0    | 0.0    | -207.0 | 0.0    | 0.0   | 0.0   | 0.0 | 0.0    |
| AVG  | 0.0 | 1.5    | 4.5   | 10.3   | -11.5  | -3.1   | -5.7   | -2.9   | 4.3   | 5.5   | 0.0 | -3.2   |
| MAX  | 0.0 | 135.0  | 127.0 | 297.0  | 180.0  | 195.0  | 317.0  | 3.0    | 270.0 | 340.0 | 0.0 | 0.0    |
| MIN  | 0.0 | -107.0 | -87.0 | -128.0 | -484.0 | -255.0 | -306.0 | -100.0 | -1.0  | 0.0   | 0.0 | -198.0 |

TABLE D

STUDY 951-133, UPPER SNAKE RIVER OPERATION STUDIES (IDWR 10-400 minus 200)

UNITS ARE 1000 ACRE-FEET

| YEAR | OCT   | NOV   | DEC   | JAN   | FEB   | MAR   | APR   | MAY   | JUN   | JUL   | AUG   | SEP   |
|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 1928 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1929 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1930 | 0.0   | -8.0  | -8.0  | -9.0  | -9.1  | -9.0  | -9.0  | -9.0  | -9.0  | -8.9  | -8.8  | -8.7  |
| 1931 | -8.7  | -8.7  | -4.6  | -4.6  | -14.5 | -14.6 | -14.6 | -14.5 | -14.5 | -14.4 | -14.4 | -14.3 |
| 1932 | -9.5  | -9.7  | -9.7  | -21.6 | -21.6 | -21.5 | -21.6 | -21.6 | -37.8 | -37.9 | -37.9 | -37.8 |
| 1933 | -37.7 | -37.8 | -37.7 | -37.8 | -37.2 | -21.4 | -15.7 | -15.6 | -15.6 | -15.5 | -15.5 | -15.4 |
| 1934 | -15.5 | -15.5 | -15.4 | -15.5 | -2.6  | -2.6  | -2.6  | -2.6  | -2.4  | -2.2  | 0.0   | 0.0   |
| 1935 | 0.0   | -0.7  | 0.0   | 0.0   | 0.0   | 0.0   | -0.2  | -0.3  | -0.4  | -0.9  | -0.9  | 0.0   |
| 1936 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | -0.3  | -21.6 | -21.9 | -22.1 |
| 1937 | -22.1 | -22.1 | -22.1 | -22.1 | -22.1 | -22.1 | -22.1 | -22.1 | -22.0 | -21.9 | -21.8 | -21.8 |
| 1938 | -21.8 | -21.7 | -21.8 | -21.8 | 5.2   | 5.2   | 0.0   | 0.0   | 0.0   | -0.1  | 0.0   | 0.0   |
| 1939 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | -3.1  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1940 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | -12.1 | -12.0 | -12.0 | -12.0 | -11.9 | -11.8 | 0.0   |
| 1941 | 0.0   | 0.0   | 0.4   | 0.3   | 0.3   | 0.3   | 0.3   | 0.3   | 0.3   | 0.2   | 0.0   | 0.0   |
| 1942 | 0.0   | 0.0   | 0.0   | 0.0   | 5.3   | 5.5   | 5.4   | 5.5   | 5.4   | 5.2   | 4.8   | 4.7   |
| 1943 | 4.8   | 4.8   | 4.7   | 4.7   | 4.7   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1944 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1945 | 0.0   | -3.8  | -3.8  | -9.3  | -9.2  | -9.2  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1946 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1947 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1948 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1949 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1950 | 0.0   | 0.0   | 0.0   | -0.7  | -0.6  | -0.7  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1951 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1952 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1953 | 0.0   | 0.0   | -6.1  | -6.2  | -6.2  | -6.1  | -6.1  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1954 | 0.0   | 0.0   | 0.0   | -0.5  | -0.5  | -0.5  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1955 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1956 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1957 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1958 | 0.0   | 0.0   | -1.9  | -1.9  | -1.9  | -1.9  | -1.9  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1959 | 0.0   | 0.0   | 0.0   | -0.6  | -0.6  | -0.7  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1960 | 0.0   | 0.0   | 0.0   | -4.3  | -4.3  | -4.3  | -4.3  | -4.3  | -4.3  | -4.2  | -4.2  | -4.2  |
| 1961 | -4.1  | -4.1  | -4.1  | -4.1  | -4.1  | 2.6   | 2.6   | 2.5   | 2.6   | 2.5   | 2.5   | 2.5   |
| 1962 | 2.5   | 2.5   | 2.5   | 2.5   | 2.5   | 5.7   | 0.0   | 0.0   | -0.1  | 0.0   | 0.0   | 0.0   |
| 1963 | 0.0   | 0.0   | 0.0   | -0.6  | -0.6  | -0.6  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1964 | 0.0   | 0.0   | 0.0   | -3.9  | -3.9  | -3.9  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1965 | 0.0   | 0.0   | -3.9  | -3.9  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1966 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | -3.1  | -3.1  | -3.0  | -3.1  | -3.0  | -2.9  |
| 1967 | -2.9  | -2.9  | -2.9  | -2.9  | -3.0  | -2.9  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1968 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1969 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1970 | 0.0   | 0.0   | -1.9  | -2.0  | -1.9  | -2.0  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1971 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1972 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1973 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1974 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1975 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1976 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1977 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | -0.1  | 0.0   | 0.0   | 0.0   |
| 1978 | 0.0   | 0.0   | -0.1  | 0.0   | -0.1  | -0.1  | 0.0   | 0.0   | 0.0   | -0.1  | -0.1  | -0.1  |
| 1979 | -0.1  | -0.1  | -7.8  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1980 | 0.0   | 0.0   | 0.0   | -18.3 | -18.2 | -18.3 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1981 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1982 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1983 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | -0.1  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1984 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1985 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1986 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1987 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1988 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | -18.9 | -18.9 | -18.9 | -18.8 | -7.7  | -7.9  |
| 1989 | -12.4 | -12.3 | -12.4 | -12.3 | -12.3 | -12.4 | 0.0   | 0.0   | -0.1  | 0.0   | 0.0   | 0.0   |
| AVG  | -2.1  | -2.3  | -2.5  | -3.2  | -2.5  | -2.4  | -2.0  | -1.9  | -2.1  | -2.5  | -2.3  | -2.1  |
| MAX  | 4.8   | 4.8   | 4.7   | 4.7   | 5.3   | 5.7   | 5.4   | 5.5   | 5.4   | 5.2   | 4.8   | 4.7   |
| MIN  | -37.7 | -37.8 | -37.7 | -37.8 | -37.2 | -22.1 | -22.1 | -22.1 | -37.8 | -37.9 | -37.9 | -37.8 |

TABLE D

## TOTAL CONTENTS ISLPALAMF RIR

STUDY 951-133 UPPER SNAKE RIVER OPERATION STUDIES (IDWR M 400 minus 280)

UNITS ARE 1000 ACRE-FEET

| YEAR |      |      |      |       |       |      |      |      |       |       |       |      |
|------|------|------|------|-------|-------|------|------|------|-------|-------|-------|------|
| 1928 | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   | 3.1  | 0.0  | 0.0  | 0.0   | 0.0   | 0.0   | 0.0  |
| 1929 | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   | 3.1  | 3.0  | 3.1  | 0.0   | 0.0   | 0.0   | 0.0  |
| 1930 | 2.0  | -0.1 | 0.5  | 0.0   | 0.0   | 3.1  | 3.1  | 3.1  | -9.0  | -8.9  | -8.8  | -8.7 |
| 1931 | -8.7 | -8.7 | 0.0  | 4.4   | 0.0   | 3.0  | 3.0  | 3.1  | -5.3  | -14.4 | -0.1  | 0.0  |
| 1932 | 12.2 | 19.1 | 26.5 | 22.0  | 28.9  | 36.4 | 43.3 | 48.1 | 29.8  | 29.3  | -3.3  | 0.0  |
| 1933 | 0.0  | 5.5  | 11.8 | -20.8 | -14.7 | 7.8  | 19.3 | 25.4 | 25.2  | 24.5  | 0.1   | 0.0  |
| 1934 | 0.0  | 4.7  | -4.4 | 0.7   | 19.1  | 26.5 | 1.4  | -2.8 | -2.2  | -2.2  | 0.0   | 0.0  |
| 1935 | 7.4  | 13.8 | 21.9 | 29.3  | 36.0  | 43.3 | 50.2 | 56.1 | 61.6  | 12.7  | 0.0   | 0.0  |
| 1936 | 7.4  | 14.5 | 21.9 | 29.3  | 36.2  | 43.6 | 50.6 | 56.6 | 56.2  | 34.6  | 34.2  | 20.6 |
| 1937 | 26.7 | 32.7 | 38.8 | 0.1   | 5.6   | 11.7 | 17.6 | 17.5 | -1.7  | -12.3 | -9.4  | 0.0  |
| 1938 | -0.1 | 4.7  | 10.8 | 17.0  | 9.8   | 5.2  | 6.0  | 9.0  | 0.0   | -0.1  | 0.0   | 0.0  |
| 1939 | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   | 3.1  | 0.0  | 0.0  | 0.0   | 0.0   | 0.0   | 0.0  |
| 1940 | 1.9  | 7.8  | 14.0 | 15.3  | 8.9   | -0.1 | 0.0  | -3.8 | -12.0 | -11.9 | -11.8 | 0.0  |
| 1941 | 6.2  | 10.4 | 16.7 | 18.0  | 23.5  | 30.9 | 38.0 | 44.0 | 43.9  | 0.0   | 0.0   | 0.0  |
| 1942 | 0.0  | 5.2  | 11.4 | 0.0   | 10.8  | 18.4 | 24.3 | 30.5 | 30.2  | 30.1  | 4.8   | 4.7  |
| 1943 | 10.9 | 8.0  | 7.8  | 7.8   | 7.9   | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   | 0.0   | 0.0  |
| 1944 | 0.0  | 0.0  | 0.0  | 2.4   | 2.7   | 5.8  | 5.7  | 5.7  | 0.0   | 0.0   | 0.0   | 0.0  |
| 1945 | 5.6  | 0.0  | 4.7  | -0.1  | 0.1   | 3.1  | 0.0  | 0.0  | 0.0   | 0.0   | 0.0   | 0.0  |
| 1946 | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   | 3.1  | 0.0  | 0.0  | 0.0   | 0.0   | 0.0   | 0.0  |
| 1947 | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   | 3.1  | 0.0  | 0.0  | 0.0   | 0.0   | 0.0   | 0.0  |
| 1948 | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   | 3.1  | 3.1  | 3.0  | 0.0   | 0.0   | 0.0   | 0.0  |
| 1949 | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   | 0.0   | 0.0  |
| 1950 | 0.0  | 0.0  | 0.7  | 0.0   | 0.1   | 3.1  | 0.0  | 0.0  | 0.0   | 0.0   | 0.0   | 0.0  |
| 1951 | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   | 0.0   | 0.0  |
| 1952 | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   | 1.7  | 0.0  | 0.0  | 0.0   | 0.0   | 0.0   | 0.0  |
| 1953 | 4.0  | 9.9  | 0.0  | -0.1  | 0.0   | 3.1  | 3.1  | 0.0  | 0.0   | 0.0   | 0.0   | 0.0  |
| 1954 | 3.8  | 2.9  | 0.5  | 0.0   | 0.1   | 3.1  | 0.0  | 0.0  | 0.0   | 0.0   | 0.0   | 0.0  |
| 1955 | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   | 3.1  | 3.1  | 3.0  | 0.0   | 0.0   | 0.0   | 0.0  |
| 1956 | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   | 0.0   | 0.0  |
| 1957 | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   | 0.0  | 0.0  | 6.1  | 0.0   | 0.0   | 0.0   | 0.0  |
| 1958 | 0.0  | 1.9  | 0.0  | 0.0   | 0.0   | 3.1  | 3.0  | 0.0  | 0.0   | 0.0   | 0.0   | 0.0  |
| 1959 | 6.1  | 0.2  | 0.6  | 0.0   | 0.1   | 3.0  | 0.0  | 0.0  | 0.0   | 0.0   | 0.0   | 0.0  |
| 1960 | 0.0  | 1.0  | 4.3  | 0.0   | 0.0   | 3.1  | 3.1  | 3.0  | -4.3  | -4.2  | -0.1  | 0.0  |
| 1961 | 6.2  | 10.9 | 17.1 | 23.2  | 28.8  | 2.6  | 8.6  | 8.8  | 0.1   | 2.5   | 0.0   | 2.5  |
| 1962 | 0.0  | 2.5  | 8.7  | 12.3  | 17.9  | 24.1 | 24.3 | 24.2 | -0.1  | 0.0   | 0.0   | 0.0  |
| 1963 | 0.0  | 0.0  | 0.6  | 0.0   | 0.0   | 3.1  | 3.7  | 3.7  | 0.0   | 0.0   | 0.0   | 0.0  |
| 1964 | 0.0  | 0.0  | 3.9  | 0.0   | 0.0   | 3.1  | -0.1 | 6.2  | 0.0   | 0.0   | 0.0   | 0.0  |
| 1965 | 3.1  | 3.8  | 0.0  | 0.0   | 0.0   | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   | 0.0   | 0.0  |
| 1966 | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   | 3.1  | 0.0  | -3.1 | -3.0  | -3.1  | -3.0  | -2.9 |
| 1967 | -0.3 | -2.9 | -2.9 | -2.9  | -2.3  | 0.8  | 0.0  | 0.0  | 0.0   | 0.0   | 0.0   | 0.0  |
| 1968 | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   | 3.1  | 3.1  | 0.0  | 0.0   | 0.0   | 0.0   | 0.0  |
| 1969 | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   | 0.0   | 0.0  |
| 1970 | 3.3  | 6.4  | 0.0  | -0.1  | 0.1   | 3.0  | 0.0  | 0.0  | 0.0   | 0.0   | 0.0   | 0.0  |
| 1971 | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   | 0.0   | 0.0  |
| 1972 | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   | 0.0   | 0.0  |
| 1973 | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   | 3.1  | 3.0  | 3.1  | 0.0   | 0.0   | 0.0   | 0.0  |
| 1974 | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   | 3.1  | 0.0  | 4.6  | 0.0   | 0.0   | 0.0   | 0.0  |
| 1975 | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   | 3.1  | 0.0  | 0.0  | 0.0   | 0.0   | 0.0   | 0.0  |
| 1976 | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   | 0.0   | 0.0  |
| 1977 | 0.0  | 5.7  | 7.8  | 7.8   | 9.7   | 12.8 | 12.8 | 0.0  | -0.1  | 0.1   | 0.1   | 0.0  |
| 1978 | 7.4  | 14.6 | 21.8 | 29.3  | 35.9  | 43.3 | 50.4 | 53.3 | 34.4  | 34.2  | 11.5  | 7.8  |
| 1979 | 4.7  | 6.9  | -2.9 | 4.9   | 4.8   | 7.9  | 0.0  | 0.0  | 0.0   | 0.0   | 0.0   | 0.0  |
| 1980 | 6.1  | 12.1 | 18.2 | -0.1  | 0.0   | 3.0  | 21.3 | 0.0  | 0.0   | 0.0   | 0.0   | 0.0  |
| 1981 | 2.6  | 3.1  | 0.0  | 0.0   | 0.0   | 3.1  | 3.1  | 3.0  | 0.0   | 0.0   | 0.0   | 0.0  |
| 1982 | 4.0  | 0.4  | 0.5  | 0.4   | 0.4   | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   | 0.0   | 0.0  |
| 1983 | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   | 3.0  | 0.0  | 0.0  | 0.0   | 0.0   | 0.0   | 0.0  |
| 1984 | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   | 3.1  | 0.0  | 0.0  | 0.0   | 0.0   | 0.0   | 0.0  |
| 1985 | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   | 3.1  | 0.0  | 0.0  | 0.0   | 0.0   | 0.0   | 0.0  |
| 1986 | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   | 0.0   | 0.0  |
| 1987 | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   | 3.1  | 0.0  | 0.0  | 0.0   | 0.0   | 0.0   | 0.0  |
| 1988 | 6.1  | 12.1 | 18.2 | 24.4  | 30.2  | 32.1 | 13.2 | 13.1 | -18.9 | -18.8 | -7.7  | -7.9 |
| 1989 | -7.8 | -1.8 | 4.3  | 10.5  | 16.0  | 23.3 | 41.6 | 32.6 | -0.1  | 0.0   | 0.0   | 0.0  |
| AVG  | 1.9  | 3.3  | 4.6  | 3.8   | 5.1   | 7.6  | 7.5  | 7.4  | 3.6   | 1.5   | 0.1   | 0.3  |
| MAX  | 26.7 | 32.7 | 38.8 | 29.3  | 36.2  | 43.6 | 50.6 | 56.6 | 61.6  | 34.6  | 34.2  | 20.6 |
| MIN  | -8.7 | -8.7 | -4.4 | -20.8 | -14.7 | -0.1 | -0.1 | -3.8 | -18.9 | -18.8 | -11.8 | -8.7 |

TABLE E

## JACKSON LAKE

STUDY 956-133 UPPER SNAKE RIVER OPERATION STUDIES (IDWR M-400 minus 280)

Guide level +50 ksf

UNITS ARE 1000 ACRE-FEET

| YEAR | OCT  | NOV  | DEC   | JAN  | FEB   | MAR   | APR   | MAY   | JUN   | JUL   | AUG  | SEP  |
|------|------|------|-------|------|-------|-------|-------|-------|-------|-------|------|------|
| 1928 | 5.9  | 8.8  | 8.8   | 8.8  | 8.8   | 0.3   | 0.0   | 0.0   | 0.0   | 0.0   | 30.0 | 50.0 |
| 1929 | 50.0 | 44.0 | 44.0  | 44.0 | 44.1  | 41.0  | 41.0  | 40.8  | 0.0   | 34.9  | 50.0 | 50.0 |
| 1930 | 47.9 | 42.0 | 35.3  | 34.8 | 34.7  | 31.7  | 31.7  | 31.8  | 0.0   | 18.7  | 50.0 | 50.0 |
| 1931 | 50.0 | 44.3 | 33.6  | 29.2 | 23.7  | 20.6  | 20.5  | 20.5  | 28.8  | 50.0  | 23.5 | 23.3 |
| 1932 | 15.9 | 8.8  | 1.4   | -6.0 | -12.9 | -20.3 | -27.4 | -30.4 | -30.2 | -30.1 | 2.4  | -0.9 |
| 1933 | -0.9 | -6.4 | -12.6 | 13.0 | 2.2   | -4.3  | -10.3 | -18.4 | -16.3 | -15.5 | 20.7 | 20.8 |
| 1934 | 20.7 | 18.0 | 9.8   | 4.6  | -0.9  | -8.3  | 18.8  | 0.0   | 20.3  | 0.0   | 0.0  | 50.0 |
| 1935 | 42.5 | 35.4 | 28.0  | 20.8 | 13.9  | 6.6   | -0.6  | -6.7  | -12.6 | 35.8  | 29.3 | 50.0 |
| 1936 | 42.5 | 35.4 | 28.0  | 20.8 | 13.7  | 6.3   | -0.8  | -6.9  | -7.0  | -6.9  | -6.9 | 6.4  |
| 1937 | 0.2  | -5.8 | -11.9 | 28.9 | 21.4  | 15.3  | 9.3   | 9.3   | 1.4   | 12.0  | 35.6 | 28.2 |
| 1938 | 28.1 | 21.4 | 15.3  | 9.1  | 0.0   | 0.0   | -6.0  | -6.0  | 0.0   | 0.0   | 30.0 | 50.0 |
| 1939 | 50.0 | 48.1 | 47.9  | 47.9 | 47.9  | 44.8  | 33.1  | 0.0   | 0.0   | 25.9  | 50.0 | 50.0 |
| 1940 | 48.0 | 42.1 | 33.4  | 20.0 | 26.4  | 23.3  | 23.3  | 0.0   | 40.0  | 39.8  | 0.0  | 50.0 |
| 1941 | 43.8 | 39.5 | 33.3  | 30.0 | 24.5  | 17.1  | 9.9   | 3.8   | 3.7   | 48.3  | 0.0  | 50.0 |
| 1942 | 41.9 | 36.7 | 30.5  | 30.0 | 21.9  | 14.5  | 8.5   | 2.3   | 2.4   | 2.3   | 44.2 | 50.0 |
| 1943 | 43.8 | 43.8 | 43.8  | 43.8 | 22.9  | 0.0   | 0.0   | 0.0   | 40.0  | 0.0   | 30.0 | 36.7 |
| 1944 | 40.0 | 39.9 | 40.0  | 37.6 | 37.3  | 34.2  | 34.2  | 34.1  | 0.0   | 0.0   | 50.0 | 50.0 |
| 1945 | 44.3 | 40.2 | 30.0  | 29.3 | 29.3  | 26.2  | 50.0  | 0.0   | 40.0  | 19.3  | 30.0 | 48.3 |
| 1946 | 50.0 | 50.0 | 50.0  | 50.0 | 50.0  | 38.2  | 0.0   | 0.0   | 0.0   | 2.7   | 50.0 | 50.0 |
| 1947 | 50.0 | 49.3 | 49.3  | 49.3 | 49.4  | 46.3  | 0.0   | 0.0   | 0.0   | 0.0   | 1.9  | 50.0 |
| 1948 | 50.0 | 49.8 | 45.9  | 45.9 | 45.9  | 42.8  | 42.8  | 13.2  | 0.0   | 31.5  | 50.0 | 50.0 |
| 1949 | 50.0 | 50.0 | 50.0  | 50.0 | 50.0  | 99.5  | 50.0  | 12.9  | 0.0   | 40.7  | 50.0 | 50.0 |
| 1950 | 50.0 | 47.1 | 40.3  | 40.3 | 19.9  | 16.8  | 0.0   | 0.0   | 34.5  | 0.0   | 30.0 | 38.4 |
| 1951 | 38.4 | 38.4 | 38.4  | 38.4 | 6.9   | 47.5  | 0.0   | 43.7  | 29.0  | 10.9  | 30.0 | 31.7 |
| 1952 | 31.7 | 31.7 | 31.7  | 31.7 | 3.8   | 0.0   | 50.0  | 27.4  | 0.0   | 0.0   | 30.0 | 50.0 |
| 1953 | 45.9 | 40.0 | 37.7  | 37.7 | 37.6  | 34.6  | 34.5  | 0.0   | 0.0   | 0.0   | 38.7 | 50.0 |
| 1954 | 46.3 | 41.1 | 37.3  | 37.3 | 37.3  | 34.2  | 0.0   | 8.6   | 40.0  | 13.7  | 50.0 | 50.0 |
| 1955 | 50.0 | 46.4 | 40.4  | 40.4 | 40.4  | 37.3  | 37.3  | 37.3  | 0.0   | 50.0  | 50.0 | 50.0 |
| 1956 | 50.0 | 50.0 | 50.0  | 22.1 | 40.0  | 0.0   | 0.0   | 50.0  | 0.0   | 0.0   | 30.0 | 33.3 |
| 1957 | 38.4 | 38.4 | 38.4  | 35.0 | 10.0  | 0.0   | 0.0   | -6.1  | 3.8   | 0.0   | 25.8 | 50.0 |
| 1958 | 50.0 | 42.1 | 42.1  | 42.1 | 42.2  | 39.1  | 39.1  | 0.0   | 0.0   | 0.0   | 35.8 | 50.0 |
| 1959 | 43.8 | 43.8 | 37.2  | 37.2 | 37.2  | 34.1  | 18.5  | 50.0  | 40.0  | 39.8  | 50.0 | 50.0 |
| 1960 | 50.0 | 43.0 | 33.6  | 33.6 | 33.6  | 30.5  | 30.5  | 30.5  | 0.0   | 0.0   | 32.5 | 32.3 |
| 1961 | 26.1 | 21.5 | 15.3  | 9.2  | 3.8   | 27.6  | 21.6  | 21.2  | 29.9  | 50.0  | 29.8 | 50.0 |
| 1962 | 29.7 | 27.2 | 21.1  | 17.4 | 11.8  | 0.0   | -6.0  | -6.9  | 0.0   | 0.0   | 7.3  | 50.0 |
| 1963 | 50.0 | 44.2 | 37.5  | 37.5 | 37.5  | 34.4  | 34.4  | 34.3  | 0.0   | 16.8  | 50.0 | 50.0 |
| 1964 | 50.0 | 47.9 | 37.9  | 37.9 | 37.9  | 34.6  | 9.1   | -6.2  | 30.6  | 14.1  | 25.2 | 50.0 |
| 1965 | 46.8 | 40.2 | 40.1  | 29.9 | 40.0  | 1.0   | 0.0   | 8.9   | 40.0  | 0.0   | 30.0 | 32.2 |
| 1966 | 35.2 | 35.1 | 35.2  | 35.2 | 35.2  | 32.1  | 32.1  | 0.0   | 0.0   | 0.0   | 50.0 | 50.0 |
| 1967 | 47.3 | 44.2 | 42.2  | 42.2 | 41.5  | 38.5  | 0.0   | 22.0  | 0.0   | 0.0   | 30.0 | 47.8 |
| 1968 | 47.7 | 47.8 | 45.9  | 45.9 | 45.9  | 42.8  | 42.8  | 26.6  | 0.0   | 0.0   | 29.9 | 32.7 |
| 1969 | 40.4 | 40.3 | 40.4  | 40.4 | 40.0  | 25.5  | 25.4  | 8.9   | 0.0   | 0.0   | 50.0 | 50.0 |
| 1970 | 46.6 | 40.0 | 38.4  | 38.4 | 31.3  | 28.2  | 6.9   | 26.6  | 0.0   | 0.0   | 17.7 | 36.5 |
| 1971 | 43.0 | 42.9 | 43.0  | 27.8 | 40.0  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 30.0 | 31.0 |
| 1972 | 31.0 | 31.0 | 31.0  | 12.6 | 40.0  | 0.0   | 0.0   | 0.0   | 40.0  | 25.6  | 30.0 | 29.9 |
| 1973 | 29.9 | 29.9 | 29.9  | 20.0 | 10.0  | 3.6   | 3.7   | 3.6   | 0.0   | 0.0   | 40.6 | 50.0 |
| 1974 | 50.0 | 50.0 | 50.0  | 50.0 | 26.1  | 23.0  | 0.0   | -4.6  | 0.0   | 0.0   | 30.0 | 43.9 |
| 1975 | 46.8 | 46.7 | 44.0  | 44.0 | 44.0  | 40.9  | 0.0   | 0.0   | 0.0   | 0.0   | 30.0 | 44.7 |
| 1976 | 48.1 | 48.0 | 48.0  | 44.8 | 40.0  | 0.0   | 0.0   | 0.0   | 40.0  | 27.0  | 30.0 | 44.0 |
| 1977 | 50.0 | 40.0 | 31.8  | 31.8 | 29.8  | 26.7  | 26.8  | 50.0  | 0.0   | 36.0  | 43.3 | 43.2 |
| 1978 | 35.7 | 28.6 | 21.2  | 13.8 | 7.2   | -0.2  | -7.4  | -13.5 | 5.3   | 5.2   | 27.8 | 42.1 |
| 1979 | 45.1 | 40.0 | 40.0  | 40.0 | 40.0  | 36.9  | 13.9  | 13.9  | 0.0   | 0.0   | 50.0 | 50.0 |
| 1980 | 43.8 | 37.8 | 31.7  | 31.7 | 31.7  | 28.6  | 28.6  | 0.0   | 0.0   | 0.0   | 16.1 | 50.0 |
| 1981 | 47.3 | 40.9 | 38.5  | 38.5 | 38.5  | 35.4  | 35.4  | 30.5  | 0.0   | 0.0   | 31.4 | 44.3 |
| 1982 | 40.2 | 40.0 | 40.0  | 40.0 | 40.0  | 0.0   | 0.0   | 0.0   | 19.7  | 0.0   | 30.0 | 29.9 |
| 1983 | 29.9 | 29.9 | 29.9  | 30.0 | 15.4  | 2.9   | 41.5  | 41.4  | 0.0   | 0.0   | 30.0 | 36.5 |
| 1984 | 36.5 | 40.0 | 30.0  | 0.0  | 0.0   | -3.1  | 50.0  | 48.9  | 0.0   | 0.0   | 30.0 | 29.9 |
| 1985 | 29.9 | 29.9 | 29.9  | 28.6 | 16.5  | 1.3   | 0.0   | 0.0   | 0.0   | 0.0   | 50.0 | 50.0 |
| 1986 | 50.0 | 50.0 | 50.0  | 50.0 | 31.8  | 0.0   | 0.0   | 50.0  | 0.0   | 0.0   | 30.0 | 29.9 |
| 1987 | 29.9 | 29.9 | 29.9  | 30.0 | 23.6  | 13.4  | 0.0   | 0.0   | 40.0  | 39.8  | 39.7 | 39.7 |
| 1988 | 33.5 | 27.5 | 21.4  | 15.3 | 6.4   | 4.5   | 4.4   | 4.4   | 40.0  | 39.8  | 0.0  | 50.0 |
| 1989 | 29.4 | 23.5 | 17.3  | 11.2 | 5.7   | -1.7  | -7.7  | 0.0   | 24.2  | 24.1  | 50.0 | 50.0 |
| AVG  | 40.0 | 36.9 | 33.4  | 31.1 | 27.0  | 19.6  | 14.2  | 11.2  | 9.2   | 11.3  | 31.7 | 42.5 |
| MAX  | 50.0 | 50.0 | 50.0  | 50.0 | 50.0  | 99.5  | 50.0  | 50.0  | 40.0  | 50.0  | 50.0 | 50.0 |
| MIN  | -0.9 | -6.4 | -12.6 | -6.0 | -12.9 | -20.3 | -27.4 | -30.4 | -30.2 | -30.1 | -6.9 | -0.9 |

TABLE E

## DISCHARGE, SNAKE RIVER NEAR MORAN, WYOMING

STUDY 956-133 UPPER SNAKE RIVER OPERATION STUDIES (IDWR M-400 minus 280)

Guide level +50 ksf

UNITS ARE MEAN CUBIC FEET PER SECOND (CFS)

| YEAR | OCT    | NOV   | DEC   | JAN    | FEB    | MAR    | APR    | MAY    | JUN    | JUL    | AUG    | SEP    |
|------|--------|-------|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1928 | -95.0  | -49.0 | 0.0   | 0.0    | 0.0    | 137.0  | 5.0    | 0.0    | 0.0    | 0.0    | -488.0 | -337.0 |
| 1929 | -1.0   | 100.0 | 0.0   | 0.0    | 0.0    | 50.0   | 0.0    | 0.0    | 685.0  | -568.0 | -247.0 | -1.0   |
| 1930 | 33.0   | 100.0 | 109.0 | 8.0    | 0.0    | 50.0   | 0.0    | 0.0    | 529.0  | -305.0 | -509.0 | -1.0   |
| 1931 | -1.0   | 95.0  | 175.0 | 71.0   | 100.0  | 50.0   | 0.0    | 0.0    | -141.0 | -346.0 | 430.0  | 0.0    |
| 1932 | 120.0  | 120.0 | 120.0 | 120.0  | 120.0  | 120.0  | 120.0  | 50.0   | 0.0    | 0.0    | -527.0 | 56.0   |
| 1933 | 0.0    | 92.0  | 100.0 | -416.0 | 195.0  | 106.0  | 100.0  | 100.0  | 0.0    | -12.0  | -590.0 | 0.0    |
| 1934 | 0.0    | 80.0  | 100.0 | 85.0   | 100.0  | 120.0  | -423.0 | 273.0  | -345.0 | 333.0  | 0.0    | -840.0 |
| 1935 | 120.0  | 120.0 | 120.0 | 120.0  | 120.0  | 120.0  | 120.0  | 100.0  | 100.0  | -784.0 | 100.0  | -348.0 |
| 1936 | 120.0  | 120.0 | 120.0 | 120.0  | 120.0  | 120.0  | 120.0  | 100.0  | 0.0    | 0.0    | 0.0    | -223.0 |
| 1937 | 100.0  | 100.0 | 100.0 | -631.0 | 100.0  | 100.0  | 100.0  | 0.0    | 132.0  | -173.0 | -383.0 | 158.0  |
| 1938 | 0.0    | 79.0  | 100.0 | 100.0  | 163.0  | 0.0    | 100.0  | 50.0   | -151.0 | 0.0    | -488.0 | -337.0 |
| 1939 | -1.0   | 31.0  | 4.0   | 0.0    | 0.0    | 50.0   | 196.0  | 538.0  | 0.0    | -422.0 | -393.0 | -1.0   |
| 1940 | 32.0   | 100.0 | 141.0 | 218.0  | -111.0 | 50.0   | 0.0    | 378.0  | -672.0 | 0.0    | 646.0  | -840.0 |
| 1941 | 100.0  | 73.0  | 100.0 | 54.0   | 100.0  | 120.0  | 120.0  | 100.0  | 0.0    | -742.0 | 799.0  | -840.0 |
| 1942 | 131.0  | 88.0  | 100.0 | 8.0    | 147.0  | 120.0  | 100.0  | 100.0  | 0.0    | 0.0    | -682.0 | -96.0  |
| 1943 | 100.0  | 0.0   | 0.0   | 0.0    | 378.0  | 373.0  | 0.0    | 0.0    | -672.0 | 648.0  | -488.0 | -114.0 |
| 1944 | -54.0  | 0.0   | 0.0   | 38.0   | 5.0    | 50.0   | 0.0    | 0.0    | 572.0  | 0.0    | -814.0 | -2.0   |
| 1945 | 92.0   | 70.0  | 165.0 | 11.0   | 0.0    | 50.0   | -400.0 | 812.0  | -672.0 | 334.0  | -175.0 | -275.0 |
| 1946 | -61.0  | 0.0   | 0.0   | 0.0    | 0.0    | 191.0  | 642.0  | 0.0    | 0.0    | -45.0  | -768.0 | -2.0   |
| 1947 | -1.0   | 11.0  | 0.0   | 0.0    | 0.0    | 50.0   | 777.0  | 0.0    | 0.0    | 0.0    | -30.0  | -608.0 |
| 1948 | -1.0   | 3.0   | 64.0  | 0.0    | 0.0    | 50.0   | 0.0    | 481.0  | 221.0  | -512.0 | -303.0 | -1.0   |
| 1949 | -1.0   | 0.0   | 0.0   | 0.0    | 0.0    | -805.0 | 630.0  | 602.0  | 216.0  | -662.0 | -153.0 | -2.0   |
| 1950 | -1.0   | 48.0  | 111.0 | 0.0    | 367.0  | 50.0   | 283.0  | 0.0    | -579.0 | 559.0  | -488.0 | -142.0 |
| 1951 | 0.0    | 0.0   | 0.0   | 0.0    | 568.0  | -861.0 | 797.0  | -710.0 | 245.0  | 292.0  | -310.0 | -30.0  |
| 1952 | 0.0    | 0.0   | 0.0   | 0.0    | 485.0  | 61.0   | -840.0 | 366.0  | 480.0  | 0.0    | -488.0 | -337.0 |
| 1953 | 66.0   | 100.0 | 37.0  | 0.0    | 0.0    | 50.0   | 0.0    | 561.0  | 0.0    | 0.0    | -629.0 | -191.0 |
| 1954 | 59.0   | 88.0  | 61.0  | 0.0    | 0.0    | 50.0   | 574.0  | -140.0 | -528.0 | 425.0  | -591.0 | -2.0   |
| 1955 | -1.0   | 60.0  | 96.0  | 0.0    | 0.0    | 50.0   | 0.0    | 0.0    | 623.0  | -813.0 | -3.0   | -2.0   |
| 1956 | -1.0   | 0.0   | 0.0   | 453.0  | -311.0 | 851.0  | 0.0    | -813.0 | 838.0  | 0.0    | -488.0 | -57.0  |
| 1957 | -83.0  | 0.0   | 0.0   | 55.0   | 450.0  | 163.0  | 0.0    | 100.0  | -167.0 | 62.0   | -419.0 | -409.0 |
| 1958 | -1.0   | 132.0 | 0.0   | 0.0    | 0.0    | 50.0   | 0.0    | 634.0  | 0.0    | 0.0    | -582.0 | -240.0 |
| 1959 | 100.0  | 1.0   | 106.0 | 0.0    | 0.0    | 50.0   | 262.0  | -513.0 | 166.0  | 0.0    | -167.0 | -2.0   |
| 1960 | -1.0   | 117.0 | 154.0 | 0.0    | 0.0    | 50.0   | 0.0    | 0.0    | 510.0  | 0.0    | -528.0 | 0.0    |
| 1961 | 100.0  | 79.0  | 100.0 | 100.0  | 100.0  | -390.0 | 100.0  | 5.0    | -148.0 | -327.0 | 326.0  | -341.0 |
| 1962 | 329.0  | 42.0  | 100.0 | 80.0   | 100.0  | 192.0  | 100.0  | 0.0    | -96.0  | 0.0    | -118.0 | -719.0 |
| 1963 | -1.0   | 97.0  | 110.0 | 0.0    | 0.0    | 50.0   | 0.0    | 0.0    | 575.0  | -274.0 | -540.0 | -2.0   |
| 1964 | -1.0   | 34.0  | 163.0 | 0.0    | 0.0    | 50.0   | 584.0  | 100.0  | -617.0 | 266.0  | -180.0 | -418.0 |
| 1965 | 51.0   | 112.0 | 0.0   | 166.0  | -182.0 | 634.0  | 17.0   | 0.0    | -672.0 | 648.0  | -488.0 | -38.0  |
| 1966 | -49.0  | 0.0   | 0.0   | 0.0    | 0.0    | 50.0   | 0.0    | 521.0  | 0.0    | 0.0    | -814.0 | -2.0   |
| 1967 | 43.0   | 53.0  | 32.0  | 0.0    | 12.0   | 50.0   | 646.0  | -356.0 | 369.0  | 0.0    | -488.0 | -300.0 |
| 1968 | 0.0    | 0.0   | 30.0  | 0.0    | 0.0    | 50.0   | 0.0    | 262.0  | 446.0  | 0.0    | -488.0 | -49.0  |
| 1969 | -125.0 | 0.0   | 0.0   | 0.0    | 7.0    | 236.0  | 0.0    | 414.0  | 0.0    | 0.0    | -814.0 | -1.0   |
| 1970 | 54.0   | 111.0 | 27.0  | 0.0    | 127.0  | 50.0   | 391.0  | -547.0 | 647.0  | 0.0    | -268.0 | -317.0 |
| 1971 | -106.0 | 0.0   | 0.0   | 248.0  | -221.0 | 660.0  | 0.0    | 0.0    | 0.0    | 0.0    | -488.0 | -18.0  |
| 1972 | 0.0    | 0.0   | 0.0   | 299.0  | -477.0 | 651.0  | 0.0    | 0.0    | -672.0 | 232.0  | -72.0  | 0.0    |
| 1973 | 0.0    | 0.0   | 0.0   | 161.0  | 180.0  | 104.0  | 0.0    | 0.0    | 61.0   | 0.0    | -680.0 | -160.0 |
| 1974 | -1.0   | 0.0   | 0.0   | 0.0    | 430.0  | 50.0   | 386.0  | 75.0   | -77.0  | 0.0    | -488.0 | -235.0 |
| 1975 | -47.0  | 0.0   | 45.0  | 0.0    | 0.0    | 50.0   | 667.0  | 0.0    | 0.0    | 0.0    | -488.0 | -248.0 |
| 1976 | -55.0  | 0.0   | 0.0   | 53.0   | 84.0   | 651.0  | 0.0    | 0.0    | -672.0 | 209.0  | -50.0  | -236.0 |
| 1977 | -96.0  | 168.0 | 134.0 | 0.0    | 34.0   | 50.0   | 0.0    | -379.0 | 638.0  | -586.0 | -121.0 | 0.0    |
| 1978 | 120.0  | 120.0 | 120.0 | 120.0  | 120.0  | 120.0  | 120.0  | 100.0  | -314.0 | 0.0    | -367.0 | -241.0 |
| 1979 | -50.0  | 86.0  | 0.0   | 0.0    | 0.0    | 50.0   | 386.0  | 0.0    | 233.0  | 0.0    | -813.0 | -2.0   |
| 1980 | 100.0  | 100.0 | 100.0 | 0.0    | 0.0    | 50.0   | 0.0    | 464.0  | 0.0    | 0.0    | -261.0 | -570.0 |
| 1981 | 43.0   | 106.0 | 38.0  | 0.0    | 0.0    | 50.0   | 0.0    | 79.0   | 510.0  | 0.0    | -510.0 | -218.0 |
| 1982 | 66.0   | 3.0   | 0.0   | 0.0    | 0.0    | 651.0  | 0.0    | 0.0    | -332.0 | 320.0  | -488.0 | 0.0    |
| 1983 | 0.0    | 0.0   | 0.0   | 0.0    | 262.0  | 203.0  | -649.0 | 0.0    | 695.0  | 0.0    | -488.0 | -110.0 |
| 1984 | 0.0    | -59.0 | 163.0 | 488.0  | 0.0    | 50.0   | -892.0 | 0.0    | 636.0  | 0.0    | -488.0 | 0.0    |
| 1985 | 0.0    | 0.0   | 0.0   | 55.0   | 181.0  | 247.0  | 22.0   | 0.0    | 0.0    | 0.0    | -813.0 | -2.0   |
| 1986 | -1.0   | 0.0   | 0.0   | 0.0    | 328.0  | 517.0  | 0.0    | -813.0 | 838.0  | 0.0    | -488.0 | 0.0    |
| 1987 | 0.0    | 0.0   | 0.0   | 0.0    | 114.0  | 166.0  | 225.0  | 0.0    | -672.0 | 0.0    | 0.0    | 0.0    |
| 1988 | 100.0  | 100.0 | 100.0 | 100.0  | 154.0  | 31.0   | 0.0    | 0.0    | -596.0 | 0.0    | 646.0  | -840.0 |
| 1989 | 333.0  | 100.0 | 100.0 | 100.0  | 100.0  | 120.0  | 100.0  | -125.0 | -407.0 | 0.0    | -422.0 | -1.0   |
| AVG  | 27.0   | 50.5  | 57.2  | 38.1   | 73.3   | 117.2  | 93.6   | 47.9   | 34.5   | -36.2  | -330.7 | -182.8 |
| MAX  | 333.0  | 168.0 | 175.0 | 488.0  | 568.0  | 651.0  | 830.0  | 812.0  | 638.0  | 648.0  | 799.0  | 158.0  |
| MIN  | -125.0 | -59.0 | 0.0   | -631.0 | -477.0 | -805.0 | -892.0 | -813.0 | -672.0 | -813.0 | -814.0 | -840.0 |



TABLE E

DISCHARGE, SNAKE RIVER NEAR MILNER, IDAHO

STUDY 956-133, UPPER SNAKE RIVER OPERATION STUDIES (IDWR M 400 minus 280)

Gage level -50 kaf

UNITS ARE MEAN CUBIC FEET PER SECOND (CFS)

| YEAR | OCT    | NOV    | DEC    | JAN    | FEB   | MAR    | APR    | MAY   | JUN   | JUL   | AUG    | SEP    |
|------|--------|--------|--------|--------|-------|--------|--------|-------|-------|-------|--------|--------|
| 1928 | 0.0    | 0.0    | 0.0    | 0.0    | 0.0   | 0.0    | 0.0    | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    |
| 1929 | 0.0    | 0.0    | -711.0 | 0.0    | 0.0   | 0.0    | 0.0    | 714.0 | 0.0   | 0.0   | 0.0    | 0.0    |
| 1930 | 0.0    | -701.0 | 0.0    | 117.0  | 0.0   | 0.0    | 0.0    | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    |
| 1931 | 0.0    | 0.0    | -255.0 | 0.0    | 180.0 | 0.0    | 0.0    | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    |
| 1932 | 0.0    | 0.0    | 0.0    | 192.0  | 0.0   | 0.0    | 0.0    | 0.0   | 289.0 | 0.0   | 0.0    | 0.0    |
| 1933 | 0.0    | 0.0    | 0.0    | 0.0    | -11.0 | -255.0 | -98.0  | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    |
| 1934 | 0.0    | 0.0    | 0.0    | 0.0    | 0.0   | 0.0    | 0.0    | 0.0   | 0.0   | -32.0 | 0.0    | 0.0    |
| 1935 | 0.0    | 0.0    | 0.0    | 0.0    | 0.0   | 0.0    | 0.0    | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    |
| 1936 | 0.0    | 0.0    | 0.0    | 0.0    | 0.0   | 0.0    | 0.0    | 0.0   | 0.0   | 340.0 | 0.0    | 0.0    |
| 1937 | 0.0    | 0.0    | 0.0    | 0.0    | 0.0   | 0.0    | 0.0    | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    |
| 1938 | 0.0    | 0.0    | 0.0    | 0.0    | 84.0  | 0.0    | 379.0  | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    |
| 1939 | 0.0    | 0.0    | -778.0 | 0.0    | 0.0   | 0.0    | 248.0  | 538.0 | 0.0   | 0.0   | 0.0    | 0.0    |
| 1940 | 0.0    | 0.0    | 0.0    | 0.0    | 0.0   | -241.0 | 0.0    | 0.0   | 0.0   | 0.0   | 0.0    | -510.0 |
| 1941 | 0.0    | -78.0  | -7.0   | 0.0    | 0.0   | 0.0    | 0.0    | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    |
| 1942 | 0.0    | 0.0    | 0.0    | 0.0    | -95.0 | -4.0   | 0.0    | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    |
| 1943 | 0.0    | 0.0    | 0.0    | 10.0   | 378.0 | 404.0  | 0.0    | 103.0 | 0.0   | 0.0   | 0.0    | 0.0    |
| 1944 | 0.0    | -609.0 | 0.0    | 0.0    | 0.0   | 10.0   | 0.0    | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    |
| 1945 | 0.0    | -151.0 | 0.0    | 71.0   | 0.0   | 0.0    | 492.0  | 1.0   | 0.0   | 0.0   | 0.0    | -743.0 |
| 1946 | 0.0    | 0.0    | 0.0    | -93.0  | 0.0   | 535.0  | 287.0  | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    |
| 1947 | 0.0    | 0.0    | -707.0 | -13.0  | -45.0 | 236.0  | 544.0  | 0.0   | 0.0   | 0.0   | -31.0  | 0.0    |
| 1948 | 0.0    | 0.0    | -714.0 | 0.0    | 0.0   | 0.0    | 0.0    | 745.0 | 0.0   | 0.0   | 0.0    | 0.0    |
| 1949 | 0.0    | 0.0    | -123.0 | -618.0 | 0.0   | 743.0  | 1.0    | 1.0   | 0.0   | 0.0   | 0.0    | 0.0    |
| 1950 | 0.0    | 0.0    | 0.0    | -653.0 | 368.0 | 198.0  | 129.0  | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    |
| 1951 | -619.0 | 0.0    | 0.0    | 624.0  | 0.0   | 0.0    | 0.0    | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    |
| 1952 | 0.0    | -526.0 | 0.0    | 515.0  | 0.0   | 0.0    | 0.0    | 1.0   | 0.0   | 0.0   | 0.0    | 0.0    |
| 1953 | 0.0    | 0.0    | -607.0 | 0.0    | 0.0   | 0.0    | 0.0    | 610.0 | 0.0   | 0.0   | -340.0 | 0.0    |
| 1954 | -96.0  | 0.0    | 0.0    | -159.0 | 0.0   | 104.0  | 518.0  | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    |
| 1955 | 0.0    | -827.0 | 0.0    | 156.0  | 0.0   | 0.0    | 0.0    | 442.0 | 0.0   | 0.0   | 0.0    | 0.0    |
| 1956 | 0.0    | -286.0 | 0.0    | 281.0  | 217.0 | 0.0    | 0.0    | 0.0   | 1.0   | 0.0   | 0.0    | -557.0 |
| 1957 | 0.0    | 0.0    | -63.0  | 56.0   | 33.0  | 0.0    | 556.0  | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    |
| 1958 | 0.0    | 0.0    | -681.0 | 0.0    | 0.0   | 0.0    | 0.0    | 684.0 | 0.0   | 0.0   | 0.0    | 0.0    |
| 1959 | 0.0    | 0.0    | 0.0    | -605.0 | 0.0   | 0.0    | 624.0  | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    |
| 1960 | 0.0    | 0.0    | 0.0    | -543.0 | 0.0   | 0.0    | 0.0    | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    |
| 1961 | 0.0    | 0.0    | 0.0    | 0.0    | 0.0   | 35.0   | 0.0    | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    |
| 1962 | 0.0    | 0.0    | 0.0    | 0.0    | 0.0   | 92.0   | 403.0  | -1.0  | 0.0   | 0.0   | 0.0    | 0.0    |
| 1963 | -317.0 | 0.0    | 0.0    | -290.0 | 0.0   | 0.0    | 629.0  | 0.0   | 2.0   | 0.0   | 0.0    | 0.0    |
| 1964 | 0.0    | -686.0 | 0.0    | 50.0   | 0.0   | 0.0    | 636.0  | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    |
| 1965 | 0.0    | 0.0    | -649.0 | 359.0  | 324.0 | 0.0    | 0.0    | 0.0   | 0.0   | 0.0   | -178.0 | -356.0 |
| 1966 | 0.0    | 0.0    | 0.0    | 523.0  | 0.0   | 0.0    | -539.0 | 87.0  | 0.0   | 0.0   | 0.0    | 0.0    |
| 1967 | 0.0    | 0.0    | 0.0    | 0.0    | 0.0   | 0.0    | 431.0  | 0.0   | 0.0   | 0.0   | 0.0    | -395.0 |
| 1968 | 0.0    | 0.0    | -58.0  | -252.0 | 0.0   | 0.0    | 715.0  | 1.0   | 0.0   | 0.0   | 0.0    | 0.0    |
| 1969 | 0.0    | 0.0    | -526.0 | 531.0  | 0.0   | 0.0    | 0.0    | 1.0   | 0.0   | 0.0   | 33.0   | 0.0    |
| 1970 | 0.0    | 0.0    | -654.0 | 0.0    | 127.0 | 0.0    | 526.0  | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    |
| 1971 | 0.0    | -330.0 | -271.0 | 593.0  | 0.0   | 0.0    | 0.0    | 0.0   | 0.0   | 0.0   | -488.0 | -18.0  |
| 1972 | 0.0    | 0.0    | 0.0    | 504.0  | 0.0   | 0.0    | 0.0    | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    |
| 1973 | -480.0 | 0.0    | 0.0    | 486.0  | 0.0   | 0.0    | 0.0    | 0.0   | 0.0   | 0.0   | 0.0    | -247.0 |
| 1974 | 0.0    | -588.0 | -1.0   | 0.0    | 900.0 | 0.0    | 1.0    | 0.0   | 0.0   | 0.0   | -157.0 | 0.0    |
| 1975 | -553.0 | 0.0    | 0.0    | 614.0  | 110.0 | 0.0    | 1.0    | 0.0   | 0.0   | 0.0   | -488.0 | 0.0    |
| 1976 | -239.0 | 0.0    | 0.0    | 726.0  | 0.0   | 0.0    | 0.0    | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    |
| 1977 | 0.0    | -731.0 | 0.0    | 0.0    | 0.0   | 0.0    | 0.0    | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    |
| 1978 | 0.0    | 0.0    | 0.0    | 0.0    | 0.0   | 0.0    | 723.0  | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    |
| 1979 | 0.0    | 0.0    | -678.0 | 684.0  | 0.0   | 0.0    | 1.0    | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    |
| 1980 | 0.0    | 0.0    | -399.0 | -114.0 | 0.0   | 0.0    | 533.0  | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    |
| 1981 | 0.0    | 0.0    | -422.0 | 0.0    | 0.0   | 0.0    | 0.0    | 0.0   | 641.0 | 0.0   | 0.0    | 0.0    |
| 1982 | 0.0    | 0.0    | 0.0    | 0.0    | 0.0   | 0.0    | 0.0    | 0.0   | 0.0   | 1.0   | -488.0 | 0.0    |
| 1983 | 0.0    | 0.0    | 0.0    | 487.0  | 0.0   | 0.0    | 0.0    | 1.0   | 2.0   | 0.0   | -488.0 | 0.0    |
| 1984 | -108.0 | -59.0  | 162.0  | 488.0  | 0.0   | 0.0    | 0.0    | 1.0   | 1.0   | 0.0   | -488.0 | 0.0    |
| 1985 | 0.0    | 0.0    | 0.0    | 487.0  | 0.0   | 0.0    | 0.0    | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    |
| 1986 | 0.0    | 0.0    | -625.0 | -187.0 | 980.0 | 190.0  | 0.0    | 0.0   | 1.0   | 0.0   | 0.0    | 0.0    |
| 1987 | -482.0 | 0.0    | 0.0    | 486.0  | 0.0   | 0.0    | 0.0    | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    |
| 1988 | 0.0    | 0.0    | 0.0    | 0.0    | -70.0 | 0.0    | 0.0    | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    |
| 1989 | -210.0 | 0.0    | 0.0    | 0.0    | 0.0   | 0.0    | 292.0  | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    |
| AVG  | -50.0  | -89.9  | -144.9 | 88.9   | 51.1  | 33.0   | 129.6  | 63.4  | 15.1  | 5.0   | -50.2  | -45.6  |
| MAX  | 0.0    | 0.0    | 162.0  | 726.0  | 900.0 | 743.0  | 723.0  | 745.0 | 641.0 | 340.0 | 33.0   | 0.0    |
| MIN  | -619.0 | -827.0 | -778.0 | -653.0 | -95.0 | -255.0 | -539.0 | -1.0  | 0.0   | -32.0 | -488.0 | -743.0 |

TABLE E

STUDY 956-133 UPPER SNAKE RIVER OPERATION STUDIES (IDWR M 400 minus 280) Guide level +50 xaf  
 UNITS ARE 1000 ACRE-FEET

| YEAR | OCT  | NOV  | DEC  | JAN  | FEB  | MAR  | APR  | MAY  | JUN  | JUL   | AUG  | SEP  |
|------|------|------|------|------|------|------|------|------|------|-------|------|------|
| 1928 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | 2.0  |
| 1929 | 0.3  | 0.3  | 44.0 | 44.1 | 44.0 | 44.1 | 44.0 | 0.0  | 0.1  | 0.1   | 0.1  | 0.1  |
| 1930 | 0.2  | 42.0 | 41.9 | 34.8 | 34.7 | 34.8 | 34.7 | 34.8 | 18.5 | 18.1  | 17.9 | 18.0 |
| 1931 | 17.9 | 17.9 | 33.6 | 33.6 | 23.7 | 23.6 | 23.6 | 23.6 | 23.5 | 23.4  | 23.4 | 23.4 |
| 1932 | 29.2 | 29.1 | 29.0 | 17.1 | 17.1 | 17.2 | 17.1 | 16.9 | -0.6 | -0.8  | -1.0 | -0.9 |
| 1933 | -0.9 | -1.0 | -0.9 | -0.9 | -0.3 | 15.4 | 21.1 | 21.1 | 21.0 | 21.0  | 20.8 | 20.8 |
| 1934 | 20.7 | 20.7 | 20.7 | 20.7 | 20.7 | 20.7 | 20.7 | 20.6 | 2.4  | -15.9 | -7.8 | 50.0 |
| 1935 | 49.9 | 49.2 | 49.6 | 49.5 | 49.6 | 49.5 | 49.3 | 49.0 | 48.6 | 48.0  | 29.3 | 50.0 |
| 1936 | 49.9 | 49.9 | 49.9 | 49.9 | 49.9 | 49.9 | 49.8 | 49.6 | 49.2 | 27.7  | 27.3 | 27.0 |
| 1937 | 26.9 | 26.9 | 27.0 | 26.9 | 26.9 | 27.0 | 26.9 | 26.8 | 26.9 | 26.8  | 26.2 | 26.2 |
| 1938 | 26.1 | 26.1 | 26.1 | 26.1 | 22.8 | 22.8 | 0.0  | 0.0  | 0.0  | -0.1  | 0.0  | 0.0  |
| 1939 | 0.2  | 0.1  | 47.9 | 47.9 | 47.9 | 47.9 | 33.1 | 0.0  | 0.0  | 0.0   | 0.0  | 0.1  |
| 1940 | 0.1  | 0.1  | 0.1  | 0.1  | 0.1  | 14.9 | 14.9 | 14.9 | 14.8 | 14.8  | 14.8 | 50.0 |
| 1941 | 49.4 | 49.4 | 50.0 | 49.9 | 49.9 | 49.9 | 49.8 | 49.7 | 49.6 | 49.4  | 41.8 | 41.8 |
| 1942 | 41.9 | 41.9 | 41.9 | 41.9 | 47.2 | 47.4 | 47.3 | 47.2 | 47.0 | 46.5  | 45.9 | 45.7 |
| 1943 | 45.7 | 45.7 | 45.7 | 45.7 | 24.8 | 0.0  | 0.0  | 0.0  | 0.0  | 0.1   | 0.1  | 0.3  |
| 1944 | 0.4  | 36.6 | 36.6 | 36.6 | 36.6 | 36.6 | 36.7 | 36.6 | 36.4 | 25.4  | 25.1 | 24.9 |
| 1945 | 23.1 | 33.7 | 33.7 | 29.3 | 29.3 | 29.3 | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | 44.3 |
| 1946 | 44.3 | 44.3 | 44.3 | 50.0 | 50.0 | 17.0 | 0.0  | 0.0  | 0.0  | 0.0   | 2.0  | 5.9  |
| 1947 | 5.9  | 5.9  | 49.3 | 49.3 | 49.3 | 32.4 | 0.0  | -0.1 | -0.1 | 0.0   | 1.8  | 1.9  |
| 1948 | 2.1  | 2.0  | 45.9 | 45.9 | 45.9 | 45.9 | 45.9 | 0.0  | 0.0  | 0.0   | 4.4  | 4.5  |
| 1949 | 4.5  | 4.4  | 12.0 | 50.0 | 50.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | 0.1  |
| 1950 | 0.1  | 0.2  | 0.2  | 40.3 | 20.0 | 7.6  | 0.0  | 0.0  | 0.0  | 0.0   | 0.1  | 0.1  |
| 1951 | 38.4 | 38.3 | 38.3 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0   | 0.0  | 0.2  |
| 1952 | 0.3  | 31.7 | 31.6 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | 0.0  |
| 1953 | 0.3  | 0.3  | 37.7 | 37.6 | 37.6 | 37.7 | 37.6 | 0.0  | 0.0  | 0.0   | 22.9 | 21.6 |
| 1954 | 27.5 | 27.5 | 27.5 | 37.3 | 37.4 | 30.9 | 0.0  | 0.0  | 0.0  | 0.1   | 0.1  | 0.5  |
| 1955 | 0.8  | 50.0 | 50.0 | 40.4 | 40.4 | 40.4 | 40.4 | 13.1 | 13.1 | 13.0  | 12.9 | 12.8 |
| 1956 | 8.2  | 29.7 | 29.8 | 12.5 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | 33.4 |
| 1957 | 33.3 | 33.3 | 38.5 | 35.0 | 33.1 | 33.1 | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | 0.0  |
| 1958 | 0.3  | 0.2  | 42.1 | 42.1 | 42.1 | 42.1 | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | 0.0  |
| 1959 | 0.0  | 0.1  | 0.0  | 37.2 | 37.3 | 37.2 | 0.0  | 0.0  | 0.0  | 0.0   | 0.2  | 0.2  |
| 1960 | 0.2  | 0.2  | 0.2  | 33.6 | 33.6 | 33.6 | 33.5 | 33.5 | 33.4 | 33.0  | 32.4 | 32.3 |
| 1961 | 32.3 | 32.4 | 32.4 | 32.3 | 32.3 | 30.2 | 30.1 | 30.0 | 30.0 | 29.9  | 29.8 | 29.7 |
| 1962 | 29.7 | 29.7 | 29.7 | 29.7 | 29.7 | 24.0 | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | 0.0  |
| 1963 | 19.7 | 19.6 | 19.7 | 37.5 | 37.5 | 37.5 | 0.0  | 0.1  | 0.0  | 0.0   | 0.1  | 0.1  |
| 1964 | 0.1  | 40.9 | 40.9 | 37.9 | 37.9 | 37.9 | 0.0  | 0.0  | 0.0  | 0.1   | 0.0  | 0.0  |
| 1965 | 0.2  | 0.3  | 40.1 | 18.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 11.0 | 32.2 |
| 1966 | 32.2 | 32.2 | 32.1 | 0.0  | 0.0  | 0.0  | 32.1 | 26.7 | 26.5 | 26.2  | 25.8 | 25.7 |
| 1967 | 25.6 | 25.6 | 25.7 | 25.7 | 25.6 | 25.6 | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | 23.5 |
| 1968 | 23.5 | 23.5 | 27.0 | 42.6 | 42.6 | 42.5 | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | 0.2  |
| 1969 | 0.4  | 0.4  | 32.6 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | -2.0 |
| 1970 | -1.9 | -1.8 | 38.4 | 38.3 | 31.4 | 31.3 | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | 0.0  |
| 1971 | 0.1  | 19.8 | 36.4 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 30.0 | 31.0 |
| 1972 | 31.0 | 30.9 | 30.9 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | 0.3  |
| 1973 | 29.9 | 29.9 | 29.9 | 0.0  | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  | 0.0   | 0.0  | 14.7 |
| 1974 | 14.9 | 50.0 | 50.0 | 50.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 9.7  | 9.7  |
| 1975 | 43.9 | 43.9 | 43.8 | 6.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 30.0 | 30.0 |
| 1976 | 44.7 | 44.7 | 44.6 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1   | 0.1  | 0.3  |
| 1977 | 0.5  | 44.0 | 43.9 | 44.0 | 43.9 | 44.0 | 43.9 | 43.8 | 43.6 | 43.6  | 43.4 | 43.3 |
| 1978 | 43.1 | 43.1 | 43.1 | 43.1 | 43.1 | 43.1 | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | 0.2  |
| 1979 | 0.4  | 0.4  | 42.1 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  | 0.0   | 0.1  | 0.1  |
| 1980 | 0.1  | 0.1  | 24.7 | 31.7 | 31.7 | 31.7 | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | 0.0  |
| 1981 | 0.3  | 0.2  | 38.5 | 38.5 | 38.5 | 38.5 | 38.4 | 38.4 | 0.0  | 0.0   | 0.0  | 0.0  |
| 1982 | 0.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 30.0 | 29.9 |
| 1983 | 29.9 | 30.0 | 29.9 | 0.0  | 0.0  | -0.1 | 0.0  | 0.0  | 0.0  | 0.0   | 30.0 | 30.0 |
| 1984 | 38.5 | 40.0 | 30.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 30.0 | 30.0 |
| 1985 | 29.9 | 29.9 | 29.9 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | 0.1  |
| 1986 | 0.1  | 0.1  | 38.5 | 50.0 | 11.7 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | 0.2  |
| 1987 | 29.9 | 29.9 | 29.9 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1  | 0.1   | 0.1  | 0.1  |
| 1988 | 0.2  | 0.1  | 0.2  | 0.1  | 4.2  | 4.2  | 4.2  | 4.2  | 4.2  | 4.3   | 4.2  | 4.2  |
| 1989 | 17.3 | 17.4 | 17.3 | 17.4 | 17.4 | 17.3 | 0.0  | 0.0  | 0.0  | 0.0   | 0.1  | 0.1  |
| AVG  | 17.1 | 22.5 | 31.4 | 25.9 | 23.0 | 20.9 | 13.2 | 9.4  | 7.9  | 7.0   | 9.9  | 14.0 |
| MAX  | 49.9 | 50.0 | 50.0 | 50.0 | 50.0 | 49.9 | 49.8 | 49.7 | 49.6 | 49.4  | 45.9 | 50.0 |
| MIN  | -1.9 | -1.8 | -0.9 | -0.9 | -0.3 | -0.1 | 0.0  | -0.1 | -0.6 | -15.9 | -7.8 | -2.0 |

TABLE E

TOTAL CONTENTS ISL. PALAMF RIR

STUDY 958-133 UPPER SNAKE RIVER OPERATION STUDIES (IDWR M 400 minus 280)

Guide level +50 kaf

UNITS ARE 1000 ACRE-FEET

YEAR

|      |       |       |       |       |       |       |       |       |       |       |       |       |
|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 1928 | -5.9  | -8.8  | -8.8  | -8.8  | -8.8  | -0.3  | 0.0   | 0.0   | 0.0   | 0.0   | -30.0 | -48.0 |
| 1929 | -49.7 | -43.7 | 0.0   | 0.1   | -0.1  | 3.1   | 3.0   | -40.8 | 0.1   | -34.8 | -49.9 | -49.9 |
| 1930 | -47.7 | 0.0   | 8.6   | 0.0   | 0.0   | 3.1   | 3.0   | 3.0   | 18.5  | -0.8  | -32.1 | -32.0 |
| 1931 | -32.1 | -26.4 | 0.0   | 4.4   | 0.0   | 3.0   | 3.1   | 3.1   | -5.3  | -26.6 | -0.1  | 0.1   |
| 1932 | 13.3  | 20.3  | 27.6  | 23.1  | 30.0  | 37.5  | 44.5  | 47.3  | 29.6  | 29.3  | -3.4  | 0.0   |
| 1933 | 0.0   | 5.4   | 11.7  | -13.9 | -2.5  | 19.7  | 31.4  | 37.5  | 37.3  | 36.5  | 0.1   | 0.0   |
| 1934 | 0.0   | 4.7   | 10.9  | 16.1  | 21.6  | 29.0  | 3.9   | 20.6  | -18.1 | -15.9 | -7.8  | 0.0   |
| 1935 | 7.4   | 13.8  | 21.6  | 28.9  | 35.7  | 42.9  | 49.9  | 55.7  | 61.2  | 12.4  | 0.0   | 0.0   |
| 1936 | 7.4   | 14.5  | 21.9  | 29.3  | 36.2  | 43.6  | 50.8  | 56.5  | 56.2  | 34.6  | 34.2  | 20.6  |
| 1937 | 26.7  | 32.7  | 38.9  | 0.0   | 5.5   | 11.7  | 17.6  | 17.5  | 25.5  | 14.6  | -9.4  | 0.0   |
| 1938 | 0.0   | 4.7   | 10.8  | 17.0  | 22.6  | 22.6  | 6.0   | 9.0   | 0.0   | -0.1  | -30.0 | -50.0 |
| 1939 | -49.8 | -48.0 | 0.0   | 0.0   | 0.0   | 3.1   | 0.0   | 0.0   | 0.0   | -25.9 | -50.0 | -49.9 |
| 1940 | -47.9 | -42.0 | -33.3 | -19.9 | -26.3 | -8.4  | -8.4  | 14.9  | -25.2 | -25.0 | 14.8  | 0.0   |
| 1941 | 5.6   | 9.9   | 16.7  | 19.9  | 25.4  | 32.8  | 39.9  | 45.9  | 45.9  | 0.1   | 41.8  | -8.2  |
| 1942 | 0.0   | 5.2   | 11.4  | 11.9  | 25.3  | 32.9  | 38.8  | 44.9  | 44.6  | 44.2  | 1.7   | -4.3  |
| 1943 | 1.9   | 1.9   | 1.9   | 1.9   | 1.9   | 0.0   | 0.0   | 0.0   | -40.0 | 0.1   | -29.9 | -36.4 |
| 1944 | -39.6 | -3.3  | -3.4  | -1.0  | -0.7  | 2.4   | 2.5   | 2.5   | 36.4  | 25.4  | -24.9 | -25.1 |
| 1945 | -21.2 | -6.5  | 3.7   | 0.0   | 0.0   | 3.1   | -50.0 | 0.0   | -40.0 | -19.3 | -30.0 | -2.0  |
| 1946 | -5.7  | -5.7  | -5.7  | 0.0   | 0.0   | -21.2 | 0.0   | 0.0   | 0.0   | -2.7  | -48.0 | -44.1 |
| 1947 | -44.1 | -43.4 | 0.0   | 0.0   | -0.1  | -13.9 | 0.0   | -0.1  | -0.1  | 0.0   | -0.1  | -48.1 |
| 1948 | -47.9 | -47.8 | 0.0   | 0.0   | 0.0   | 3.1   | 3.1   | -13.2 | 0.0   | -31.5 | -45.6 | -45.5 |
| 1949 | -45.5 | -45.6 | -36.0 | 0.0   | 0.0   | -99.5 | -50.0 | -12.9 | 0.0   | -40.7 | -50.0 | -49.9 |
| 1950 | -49.9 | -46.9 | -40.1 | 0.0   | 0.1   | -9.2  | 0.0   | 0.0   | -34.5 | 0.0   | -29.9 | -38.3 |
| 1951 | 0.0   | -0.1  | -0.1  | -38.4 | -6.9  | -47.5 | 0.0   | -43.7 | -28.9 | -10.9 | -30.0 | -31.5 |
| 1952 | -31.4 | 0.0   | -0.1  | -31.7 | -3.8  | 0.0   | -50.0 | -27.4 | 0.0   | 0.0   | -30.0 | -50.0 |
| 1953 | -45.6 | -39.7 | 0.0   | -0.1  | 0.0   | 3.1   | 3.1   | 0.0   | 0.0   | 0.0   | -15.8 | -28.4 |
| 1954 | -18.6 | -13.6 | -9.8  | 0.0   | 0.1   | -3.3  | 0.0   | -8.6  | -40.0 | -13.6 | -49.9 | -49.5 |
| 1955 | -49.2 | 3.6   | 9.6   | 0.0   | 0.0   | 3.1   | 3.1   | -24.2 | 13.1  | -37.0 | -37.1 | -37.2 |
| 1956 | -41.6 | -20.3 | -20.2 | -9.6  | -40.0 | 0.0   | 0.0   | -50.0 | 0.0   | 0.0   | -30.0 | 0.1   |
| 1957 | -5.1  | -5.1  | 0.1   | 0.0   | 23.1  | 33.1  | 0.0   | 6.1   | -3.8  | 0.0   | -25.8 | -50.0 |
| 1958 | -49.7 | -41.9 | 0.0   | 0.0   | -0.1  | 3.0   | 3.0   | 0.0   | 0.0   | 0.0   | -35.8 | -50.0 |
| 1959 | -43.8 | -43.7 | -37.2 | 0.0   | 0.1   | 3.1   | -18.5 | -50.0 | -40.0 | -39.8 | -49.8 | -49.8 |
| 1960 | -49.8 | -42.8 | -33.4 | 0.0   | 0.0   | 3.1   | 3.0   | 3.0   | 33.4  | 33.0  | -0.1  | 0.0   |
| 1961 | 6.2   | 10.9  | 17.1  | 23.1  | 26.7  | 2.6   | 8.5   | 8.8   | 0.1   | -20.1 | 0.0   | -20.3 |
| 1962 | 0.0   | 2.5   | 8.6   | 12.3  | 17.9  | 24.0  | 6.0   | 5.9   | 0.0   | 0.0   | -7.3  | -50.0 |
| 1963 | -30.3 | -24.6 | -17.8 | 0.0   | 0.0   | 3.1   | -34.4 | -34.2 | 0.0   | -18.8 | -49.9 | -49.9 |
| 1964 | -49.9 | -7.0  | 3.0   | 0.0   | 0.0   | 3.1   | -0.1  | 6.2   | -30.8 | -14.0 | -25.2 | -50.0 |
| 1965 | -46.6 | -39.9 | 0.0   | -11.9 | -40.0 | -1.0  | 0.0   | 0.0   | -40.0 | 0.0   | -19.0 | 0.0   |
| 1966 | -3.0  | -2.9  | -3.1  | -35.2 | -35.2 | -32.1 | 0.0   | 26.7  | 26.5  | 26.2  | -24.2 | -24.3 |
| 1967 | -21.7 | -18.6 | -16.5 | -16.5 | -15.9 | -12.9 | 0.0   | -22.0 | 0.0   | 0.0   | -30.0 | -24.3 |
| 1968 | -24.2 | -24.3 | -18.9 | -3.3  | -3.3  | -0.3  | -42.8 | -26.8 | 0.0   | 0.0   | -29.9 | -32.5 |
| 1969 | -40.0 | -39.9 | -7.8  | -40.4 | -40.0 | -25.5 | -25.4 | 0.0   | 0.0   | 0.0   | -50.0 | -52.0 |
| 1970 | -48.5 | -41.8 | 0.0   | -0.1  | 0.1   | 3.1   | -5.0  | -36.8 | 0.0   | 0.0   | -17.7 | -36.5 |
| 1971 | -42.9 | -23.1 | -6.6  | -27.8 | -40.0 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1972 | 0.0   | -0.1  | -0.1  | -12.6 | -40.0 | 0.0   | 0.0   | 0.0   | -40.0 | -25.6 | -30.0 | -29.6 |
| 1973 | 0.0   | 0.0   | 0.0   | -20.0 | -10.0 | -3.6  | -3.6  | -3.6  | 0.0   | 0.0   | -40.6 | -35.3 |
| 1974 | -35.1 | 0.0   | 0.0   | 0.0   | -26.1 | -23.0 | 0.0   | 4.6   | 0.0   | 0.0   | -20.3 | -34.2 |
| 1975 | -2.9  | -2.8  | -0.2  | -37.9 | -44.0 | -40.9 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | -14.7 |
| 1976 | -3.4  | -3.3  | -3.4  | -44.8 | -40.0 | 0.0   | 0.0   | 0.0   | -40.0 | -26.9 | -29.9 | -43.7 |
| 1977 | -49.5 | 4.0   | 12.1  | 12.2  | 14.1  | 17.3  | 17.1  | -6.2  | 43.8  | 7.6   | 0.1   | 0.1   |
| 1978 | 7.4   | 14.5  | 21.9  | 29.3  | 35.9  | 43.3  | 7.4   | 13.5  | -5.3  | -5.2  | -27.8 | -41.9 |
| 1979 | -44.7 | -39.6 | 2.1   | -40.0 | -40.0 | -36.9 | -13.9 | -13.9 | 0.1   | 0.0   | -49.9 | -49.9 |
| 1980 | -43.7 | -37.7 | -7.0  | 0.0   | 0.0   | 3.1   | -28.8 | 0.0   | 0.0   | 0.0   | -16.1 | -50.0 |
| 1981 | -47.0 | -40.7 | 0.0   | 0.0   | 0.0   | 3.1   | 3.0   | 7.9   | 0.0   | 0.0   | -31.4 | -44.3 |
| 1982 | -40.1 | -40.0 | -40.0 | -40.0 | -40.0 | 0.0   | 0.0   | 0.0   | -19.7 | 0.0   | 0.0   | 0.0   |
| 1983 | 0.0   | 0.1   | 0.0   | -30.0 | -15.4 | -3.0  | -41.5 | -41.4 | 0.0   | 0.0   | 0.0   | -6.5  |
| 1984 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 3.1   | -50.0 | -49.9 | 0.0   | 0.0   | 0.0   | 0.1   |
| 1985 | 0.0   | 0.0   | 0.0   | -26.6 | -16.5 | -1.3  | 0.0   | 0.0   | 0.0   | 0.0   | -50.0 | -49.9 |
| 1986 | -49.9 | -49.9 | -11.5 | 0.0   | -20.1 | 0.0   | 0.0   | -50.0 | 0.0   | 0.0   | -30.0 | -29.7 |
| 1987 | 0.0   | 0.0   | 0.0   | -30.0 | -23.6 | -13.4 | 0.0   | 0.0   | -39.9 | -39.7 | -39.6 | -39.6 |
| 1988 | -33.3 | -27.4 | -21.2 | -15.2 | -2.2  | -0.3  | -0.2  | -0.2  | -35.8 | -35.5 | 4.2   | -45.8 |
| 1989 | -12.1 | -6.1  | 0.0   | 6.2   | 11.7  | 19.0  | 7.7   | 0.0   | -24.2 | -24.1 | -49.9 | -49.9 |
| AVG  | -22.8 | -14.5 | -2.0  | -5.2  | -4.0  | 1.1   | -1.0  | -1.9  | -1.3  | -4.3  | -21.7 | -26.4 |
| MAX  | 26.7  | 32.7  | 38.9  | 29.3  | 36.2  | 43.6  | 50.8  | 56.5  | 61.2  | 44.2  | 41.8  | 20.6  |
| MIN  | -49.9 | -49.9 | -40.1 | -44.8 | -44.0 | -99.5 | -50.0 | -50.0 | -40.0 | -40.7 | -50.0 | -52.0 |

TABLE A1

| JACKSON LAKE<br>STUDY 952. UPPER SNAKE RIVER OPERATION STUDIES (IDWR MODEL)<br>UNITS ARE 1000 ACRE-FEET |       |       |       |       |       |       |       |       |       |       |       |       |
|---------------------------------------------------------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| YEAR                                                                                                    | OCT   | NOV   | DEC   | JAN   | FEB   | MAR   | APR   | MAY   | JUN   | JUL   | AUG   | SEP   |
| 1928                                                                                                    | 580.0 | 611.2 | 630.0 | 645.3 | 648.7 | 659.7 | 350.0 | 806.0 | 847.0 | 847.0 | 700.0 | 580.0 |
| 1929                                                                                                    | 580.0 | 580.0 | 582.9 | 587.8 | 582.8 | 596.5 | 609.6 | 734.8 | 847.0 | 780.0 | 640.0 | 580.0 |
| 1930                                                                                                    | 580.0 | 578.5 | 580.0 | 580.0 | 584.2 | 585.3 | 628.7 | 790.0 | 847.0 | 780.0 | 640.0 | 580.0 |
| 1931                                                                                                    | 580.0 | 580.0 | 580.0 | 580.0 | 579.9 | 583.3 | 581.6 | 589.3 | 614.8 | 482.9 | 159.0 | 10.0  |
| 1932                                                                                                    | 14.5  | 17.2  | 24.9  | 34.2  | 44.8  | 57.2  | 76.2  | 286.8 | 616.6 | 599.7 | 500.0 | 350.0 |
| 1933                                                                                                    | 263.3 | 250.0 | 253.7 | 266.5 | 277.3 | 280.4 | 289.4 | 390.0 | 751.7 | 596.0 | 500.0 | 350.0 |
| 1934                                                                                                    | 250.0 | 250.0 | 251.5 | 261.4 | 265.5 | 276.9 | 350.0 | 400.0 | 290.7 | 180.3 | 0.0   | 0.0   |
| 1935                                                                                                    | 10.7  | 21.7  | 31.0  | 44.1  | 51.5  | 50.3  | 79.0  | 229.2 | 566.2 | 273.0 | 100.0 | 0.0   |
| 1936                                                                                                    | 4.8   | 11.6  | 13.9  | 36.8  | 58.7  | 69.2  | 119.0 | 481.1 | 735.7 | 679.4 | 533.3 | 383.5 |
| 1937                                                                                                    | 350.7 | 306.6 | 300.0 | 306.0 | 316.6 | 320.6 | 332.7 | 541.9 | 745.0 | 579.5 | 500.0 | 350.0 |
| 1938                                                                                                    | 250.0 | 250.0 | 263.7 | 274.4 | 284.2 | 303.1 | 337.5 | 539.8 | 847.0 | 847.0 | 640.0 | 580.0 |
| 1939                                                                                                    | 580.0 | 580.0 | 580.0 | 583.9 | 590.0 | 594.6 | 636.9 | 847.0 | 847.0 | 780.0 | 640.0 | 580.0 |
| 1940                                                                                                    | 580.0 | 530.9 | 491.7 | 452.8 | 464.9 | 474.1 | 504.9 | 745.0 | 800.0 | 550.0 | 496.5 | 350.0 |
| 1941                                                                                                    | 250.0 | 250.0 | 254.5 | 262.9 | 268.3 | 269.6 | 265.9 | 490.2 | 646.7 | 550.0 | 500.0 | 344.9 |
| 1942                                                                                                    | 250.0 | 250.0 | 272.0 | 281.3 | 289.4 | 292.6 | 335.4 | 474.2 | 724.0 | 709.9 | 500.0 | 420.6 |
| 1943                                                                                                    | 396.2 | 400.5 | 412.6 | 429.4 | 418.7 | 383.5 | 360.0 | 400.0 | 800.0 | 847.0 | 700.0 | 593.3 |
| 1944                                                                                                    | 580.0 | 580.1 | 582.4 | 580.0 | 580.0 | 584.1 | 586.4 | 733.8 | 847.0 | 825.2 | 640.0 | 580.0 |
| 1945                                                                                                    | 580.0 | 580.0 | 580.0 | 580.0 | 586.2 | 587.7 | 520.0 | 652.6 | 800.0 | 827.7 | 689.7 | 580.0 |
| 1946                                                                                                    | 580.0 | 581.5 | 585.7 | 594.1 | 607.7 | 621.8 | 670.0 | 847.0 | 847.0 | 817.6 | 640.0 | 580.0 |
| 1947                                                                                                    | 580.0 | 580.0 | 582.3 | 586.1 | 587.4 | 594.2 | 486.7 | 800.4 | 847.0 | 848.9 | 640.0 | 580.0 |
| 1948                                                                                                    | 580.0 | 580.0 | 580.0 | 585.0 | 588.4 | 593.0 | 610.5 | 833.8 | 847.0 | 787.4 | 640.0 | 580.0 |
| 1949                                                                                                    | 580.0 | 580.1 | 582.7 | 587.4 | 593.5 | 550.0 | 520.0 | 834.1 | 847.0 | 780.0 | 640.0 | 580.0 |
| 1950                                                                                                    | 580.0 | 580.0 | 580.0 | 590.9 | 602.9 | 615.3 | 350.0 | 421.0 | 800.0 | 847.0 | 700.0 | 591.6 |
| 1951                                                                                                    | 583.3 | 603.3 | 607.8 | 623.2 | 613.1 | 550.0 | 350.0 | 580.0 | 811.0 | 836.1 | 700.0 | 598.3 |
| 1952                                                                                                    | 600.2 | 597.4 | 606.3 | 619.6 | 640.2 | 680.0 | 520.0 | 819.6 | 847.0 | 844.4 | 643.3 | 580.0 |
| 1953                                                                                                    | 580.0 | 578.1 | 580.0 | 596.5 | 603.2 | 607.4 | 627.1 | 691.0 | 847.0 | 846.9 | 640.0 | 580.0 |
| 1954                                                                                                    | 580.0 | 580.0 | 580.0 | 594.4 | 602.8 | 611.0 | 355.8 | 621.4 | 800.0 | 820.1 | 640.0 | 580.0 |
| 1955                                                                                                    | 580.0 | 580.0 | 580.0 | 581.9 | 585.9 | 596.3 | 602.4 | 741.9 | 847.0 | 780.0 | 640.0 | 580.0 |
| 1956                                                                                                    | 580.0 | 584.7 | 604.8 | 625.9 | 580.0 | 418.1 | 360.0 | 580.0 | 847.0 | 847.0 | 700.0 | 580.0 |
| 1957                                                                                                    | 580.0 | 603.3 | 612.3 | 623.4 | 639.7 | 658.2 | 360.5 | 570.3 | 636.2 | 847.0 | 641.5 | 580.0 |
| 1958                                                                                                    | 580.0 | 580.0 | 582.0 | 586.2 | 599.3 | 611.3 | 624.0 | 847.0 | 847.0 | 754.1 | 640.0 | 580.0 |
| 1959                                                                                                    | 578.9 | 580.0 | 580.0 | 580.1 | 590.5 | 598.7 | 561.6 | 580.0 | 800.0 | 758.2 | 640.0 | 580.0 |
| 1960                                                                                                    | 580.0 | 580.0 | 580.0 | 585.1 | 588.8 | 594.6 | 618.5 | 781.3 | 847.0 | 782.0 | 500.0 | 350.0 |
| 1961                                                                                                    | 352.5 | 343.8 | 311.2 | 314.4 | 335.2 | 345.6 | 366.3 | 487.3 | 639.0 | 550.0 | 325.8 | 243.5 |
| 1962                                                                                                    | 250.0 | 250.0 | 271.6 | 284.9 | 304.0 | 319.3 | 387.6 | 847.3 | 842.2 | 827.9 | 640.0 | 580.0 |
| 1963                                                                                                    | 580.0 | 580.0 | 580.0 | 581.3 | 590.3 | 609.2 | 689.4 | 796.5 | 847.0 | 780.0 | 640.0 | 580.0 |
| 1964                                                                                                    | 580.0 | 580.0 | 580.0 | 586.7 | 585.9 | 582.1 | 387.2 | 561.8 | 606.4 | 832.9 | 700.0 | 580.0 |
| 1965                                                                                                    | 580.0 | 580.0 | 603.4 | 623.4 | 580.0 | 580.0 | 380.9 | 400.0 | 800.0 | 847.0 | 700.0 | 597.8 |
| 1966                                                                                                    | 594.8 | 596.0 | 591.8 | 603.6 | 606.5 | 612.8 | 635.8 | 847.0 | 847.0 | 773.0 | 640.0 | 580.0 |
| 1967                                                                                                    | 580.0 | 580.0 | 580.0 | 584.7 | 585.0 | 574.8 | 486.3 | 580.0 | 847.0 | 847.0 | 700.0 | 580.0 |
| 1968                                                                                                    | 581.7 | 580.0 | 580.0 | 586.7 | 596.7 | 601.2 | 606.9 | 603.4 | 847.0 | 822.2 | 700.0 | 597.3 |
| 1969                                                                                                    | 589.6 | 592.0 | 590.2 | 613.1 | 580.0 | 580.0 | 684.1 | 847.0 | 847.0 | 806.0 | 640.0 | 580.0 |
| 1970                                                                                                    | 580.0 | 580.0 | 580.0 | 597.4 | 600.3 | 606.2 | 539.9 | 601.4 | 847.0 | 843.3 | 700.0 | 593.5 |
| 1971                                                                                                    | 587.0 | 591.4 | 604.2 | 627.0 | 580.0 | 484.2 | 389.0 | 447.1 | 847.0 | 847.0 | 700.0 | 599.0 |
| 1972                                                                                                    | 607.0 | 609.9 | 624.0 | 644.1 | 580.0 | 360.0 | 380.0 | 400.0 | 800.0 | 821.4 | 700.0 | 611.1 |
| 1973                                                                                                    | 627.4 | 633.6 | 639.3 | 650.0 | 650.0 | 664.4 | 683.5 | 843.0 | 847.0 | 782.6 | 640.0 | 580.0 |
| 1974                                                                                                    | 580.0 | 596.8 | 602.0 | 616.6 | 593.9 | 620.2 | 380.9 | 569.7 | 847.0 | 847.0 | 700.0 | 586.1 |
| 1975                                                                                                    | 583.2 | 580.1 | 580.0 | 591.8 | 604.2 | 616.5 | 380.0 | 400.0 | 781.8 | 847.0 | 700.0 | 585.3 |
| 1976                                                                                                    | 581.9 | 584.8 | 591.4 | 603.9 | 580.0 | 478.2 | 380.0 | 516.9 | 800.0 | 820.0 | 700.0 | 586.0 |
| 1977                                                                                                    | 580.0 | 580.0 | 580.0 | 582.3 | 580.0 | 581.3 | 598.2 | 580.0 | 600.0 | 480.2 | 222.0 | 10.0  |
| 1978                                                                                                    | 16.4  | 21.0  | 43.8  | 59.6  | 79.3  | 83.0  | 114.8 | 316.3 | 689.6 | 727.9 | 640.0 | 580.0 |
| 1979                                                                                                    | 580.0 | 580.0 | 584.9 | 591.8 | 600.3 | 607.7 | 566.1 | 782.6 | 847.0 | 780.0 | 640.0 | 580.0 |
| 1980                                                                                                    | 579.1 | 579.0 | 578.0 | 588.9 | 586.2 | 604.4 | 632.6 | 847.0 | 847.0 | 806.7 | 640.0 | 580.0 |
| 1981                                                                                                    | 580.0 | 580.0 | 580.0 | 580.0 | 582.2 | 583.4 | 610.7 | 816.5 | 847.0 | 759.0 | 640.0 | 580.0 |
| 1982                                                                                                    | 580.0 | 580.0 | 585.8 | 591.1 | 599.6 | 496.6 | 360.0 | 400.0 | 800.0 | 847.0 | 700.0 | 600.4 |
| 1983                                                                                                    | 606.9 | 611.8 | 621.8 | 636.4 | 644.6 | 657.1 | 528.5 | 688.0 | 847.0 | 847.0 | 700.0 | 593.5 |
| 1984                                                                                                    | 619.0 | 660.0 | 680.0 | 643.3 | 640.2 | 651.2 | 520.0 | 752.4 | 847.0 | 847.0 | 700.0 | 613.2 |
| 1985                                                                                                    | 612.0 | 623.7 | 626.6 | 638.1 | 643.5 | 658.7 | 670.0 | 847.0 | 847.0 | 777.0 | 640.0 | 580.0 |
| 1986                                                                                                    | 580.0 | 587.1 | 592.9 | 606.5 | 628.2 | 490.2 | 413.5 | 580.0 | 847.0 | 847.0 | 700.0 | 601.6 |
| 1987                                                                                                    | 606.7 | 620.1 | 621.4 | 629.8 | 636.4 | 646.6 | 670.0 | 847.0 | 800.0 | 700.6 | 556.4 | 453.9 |
| 1988                                                                                                    | 430.2 | 431.1 | 431.1 | 426.6 | 412.0 | 399.1 | 443.4 | 650.3 | 800.0 | 560.0 | 468.0 | 158.4 |
| 1989                                                                                                    | 150.0 | 163.4 | 170.5 | 184.9 | 194.1 | 214.5 | 283.2 | 593.1 | 815.8 | 752.7 | 640.0 | 567.8 |
| AVG                                                                                                     | 496.5 | 497.9 | 501.4 | 509.9 | 511.5 | 500.2 | 455.4 | 627.5 | 793.1 | 750.4 | 598.9 | 504.4 |
| MAX                                                                                                     | 627.4 | 650.0 | 650.0 | 650.0 | 650.0 | 660.0 | 670.0 | 847.0 | 847.0 | 847.0 | 700.0 | 613.2 |
| MIN                                                                                                     | 4.8   | 11.6  | 13.9  | 34.2  | 44.8  | 50.3  | 76.2  | 229.2 | 260.7 | 180.3 | 0.0   | 0.0   |

TABLE A1

## DISCHARGE, SNAKE RIVER NEAR MORAN, WYOMING

## STUDY 952 UPPER SNAKE RIVER OPERATION STUDIES (IDWR MODEL)

UNITS ARE MEAN CUBIC FEET PER SECOND (CFS)

| YEAR | OCT    | NOV    | DEC   | JAN    | FEB    | MAR    | APR    | MAY    | JUN    | JUL    | AUG    | SEP    |
|------|--------|--------|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1928 | 495.0  | 500.0  | 500.0 | 400.0  | 400.0  | 350.0  | 5987.0 | 400.0  | 4221.0 | 2791.0 | 3336.0 | 2560.0 |
| 1929 | 512.0  | 400.0  | 500.0 | 400.0  | 400.0  | 350.0  | 400.0  | 400.0  | 3401.0 | 2968.0 | 3042.0 | 1527.0 |
| 1930 | 367.0  | 300.0  | 391.0 | 392.0  | 400.0  | 350.0  | 400.0  | 400.0  | 2527.0 | 2705.0 | 3302.0 | 1525.0 |
| 1931 | 695.0  | 405.0  | 325.0 | 329.0  | 300.0  | 646.0  | 659.0  | 1966.0 | 2059.0 | 2898.0 | 5712.0 | 2784.0 |
| 1932 | 280.0  | 280.0  | 280.0 | 280.0  | 280.0  | 280.0  | 280.0  | 300.0  | 500.0  | 2477.0 | 2620.0 | 2935.0 |
| 1933 | 1736.0 | 559.0  | 300.0 | 300.0  | 300.0  | 280.0  | 280.0  | 300.0  | 500.0  | 4353.0 | 2421.0 | 3066.0 |
| 1934 | 1963.0 | 326.0  | 300.0 | 300.0  | 300.0  | 280.0  | 648.0  | 2582.0 | 3790.0 | 2103.0 | 3260.0 | 243.0  |
| 1935 | 280.0  | 280.0  | 280.0 | 280.0  | 280.0  | 444.0  | 280.0  | 300.0  | 300.0  | 6988.0 | 3856.0 | 2011.0 |
| 1936 | 280.0  | 280.0  | 280.0 | 280.0  | 280.0  | 280.0  | 280.0  | 350.0  | 500.0  | 2400.0 | 3211.0 | 2904.0 |
| 1937 | 818.0  | 977.0  | 439.0 | 300.0  | 300.0  | 280.0  | 280.0  | 350.0  | 500.0  | 4317.0 | 2013.0 | 2634.0 |
| 1938 | 2022.0 | 380.0  | 300.0 | 300.0  | 300.0  | 280.0  | 280.0  | 350.0  | 2207.0 | 2550.0 | 4398.0 | 1697.0 |
| 1939 | 505.0  | 469.0  | 496.0 | 400.0  | 400.0  | 350.0  | 400.0  | 1110.0 | 3216.0 | 2822.0 | 3102.0 | 1441.0 |
| 1940 | 368.0  | 1061.0 | 944.0 | 1068.0 | 300.0  | 300.0  | 300.0  | 400.0  | 2528.0 | 5251.0 | 1500.0 | 2843.0 |
| 1941 | 2045.0 | 410.0  | 300.0 | 300.0  | 300.0  | 280.0  | 280.0  | 350.0  | 500.0  | 2945.0 | 1824.0 | 3389.0 |
| 1942 | 2197.0 | 533.0  | 300.0 | 300.0  | 300.0  | 280.0  | 280.0  | 350.0  | 500.0  | 2400.0 | 4157.0 | 1731.0 |
| 1943 | 663.0  | 520.0  | 387.0 | 440.0  | 725.0  | 1105.0 | 2222.0 | 3099.0 | 1386.0 | 3706.0 | 3803.0 | 2500.0 |
| 1944 | 600.0  | 500.0  | 500.0 | 362.0  | 395.0  | 350.0  | 400.0  | 400.0  | 2180.0 | 2400.0 | 4083.0 | 1371.0 |
| 1945 | 306.0  | 430.0  | 324.0 | 389.0  | 400.0  | 350.0  | 1531.0 | 631.0  | 2350.0 | 2400.0 | 3320.0 | 2380.0 |
| 1946 | 472.0  | 500.0  | 500.0 | 400.0  | 400.0  | 350.0  | 957.0  | 1536.0 | 4608.0 | 2445.0 | 3698.0 | 1613.0 |
| 1947 | 560.0  | 489.0  | 500.0 | 400.0  | 400.0  | 350.0  | 2372.0 | 400.0  | 4680.0 | 2400.0 | 4431.0 | 1732.0 |
| 1948 | 466.0  | 497.0  | 436.0 | 400.0  | 400.0  | 350.0  | 400.0  | 400.0  | 5963.0 | 2912.0 | 3233.0 | 1488.0 |
| 1949 | 403.0  | 500.0  | 500.0 | 400.0  | 400.0  | 1205.0 | 1640.0 | 400.0  | 5067.0 | 3062.0 | 3171.0 | 1551.0 |
| 1950 | 515.0  | 452.0  | 389.0 | 400.0  | 400.0  | 350.0  | 5135.0 | 1481.0 | 1079.0 | 2933.0 | 3526.0 | 2500.0 |
| 1951 | 600.0  | 500.0  | 500.0 | 400.0  | 916.0  | 1858.0 | 4332.0 | 1160.0 | 1333.0 | 2400.0 | 3601.0 | 2500.0 |
| 1952 | 600.0  | 500.0  | 500.0 | 400.0  | 400.0  | 373.0  | 3671.0 | 400.0  | 5269.0 | 2400.0 | 4347.0 | 1665.0 |
| 1953 | 334.0  | 300.0  | 483.0 | 400.0  | 400.0  | 350.0  | 400.0  | 1429.0 | 3577.0 | 2400.0 | 4337.0 | 1564.0 |
| 1954 | 341.0  | 412.0  | 439.0 | 400.0  | 400.0  | 350.0  | 5108.0 | 1221.0 | 2383.0 | 2614.0 | 4090.0 | 1640.0 |
| 1955 | 416.0  | 440.0  | 402.0 | 400.0  | 400.0  | 350.0  | 400.0  | 400.0  | 3567.0 | 3327.0 | 3213.0 | 1482.0 |
| 1956 | 492.0  | 500.0  | 500.0 | 400.0  | 1325.0 | 3303.0 | 2303.0 | 2621.0 | 3649.0 | 2721.0 | 3678.0 | 2806.0 |
| 1957 | 518.0  | 500.0  | 500.0 | 400.0  | 400.0  | 350.0  | 5797.0 | 350.0  | 2385.0 | 2575.0 | 4171.0 | 1506.0 |
| 1958 | 416.0  | 368.0  | 500.0 | 400.0  | 400.0  | 350.0  | 400.0  | 682.0  | 3078.0 | 2400.0 | 2382.0 | 1408.0 |
| 1959 | 300.0  | 499.0  | 394.0 | 400.0  | 400.0  | 350.0  | 1427.0 | 1980.0 | 2654.0 | 2400.0 | 2591.0 | 1576.0 |
| 1960 | 567.0  | 383.0  | 346.0 | 400.0  | 400.0  | 350.0  | 400.0  | 400.0  | 2796.0 | 2400.0 | 4769.0 | 3281.0 |
| 1961 | 300.0  | 559.0  | 901.0 | 300.0  | 300.0  | 280.0  | 545.0  | 1481.0 | 2205.0 | 2338.0 | 4090.0 | 1938.0 |
| 1962 | 737.0  | 603.0  | 300.0 | 300.0  | 300.0  | 280.0  | 300.0  | 400.0  | 2513.0 | 2400.0 | 3894.0 | 1510.0 |
| 1963 | 481.0  | 403.0  | 390.0 | 400.0  | 400.0  | 350.0  | 400.0  | 400.0  | 4843.0 | 2674.0 | 2920.0 | 1640.0 |
| 1964 | 414.0  | 466.0  | 337.0 | 400.0  | 400.0  | 350.0  | 3880.0 | 350.0  | 2554.0 | 2400.0 | 2980.0 | 2340.0 |
| 1965 | 349.0  | 388.0  | 500.0 | 400.0  | 1334.0 | 947.0  | 4483.0 | 2965.0 | 1332.0 | 2904.0 | 3596.0 | 2500.0 |
| 1966 | 600.0  | 500.0  | 500.0 | 400.0  | 400.0  | 350.0  | 400.0  | 826.0  | 3902.0 | 2400.0 | 2744.0 | 1667.0 |
| 1967 | 357.0  | 447.0  | 468.0 | 501.0  | 501.0  | 599.0  | 2546.0 | 956.0  | 3217.0 | 2854.0 | 3354.0 | 2537.0 |
| 1968 | 600.0  | 463.0  | 470.0 | 400.0  | 400.0  | 350.0  | 400.0  | 2495.0 | 2391.0 | 2400.0 | 3286.0 | 2500.0 |
| 1969 | 600.0  | 500.0  | 500.0 | 400.0  | 1196.0 | 842.0  | 400.0  | 1236.0 | 3693.0 | 2400.0 | 3445.0 | 1601.0 |
| 1970 | 346.0  | 348.0  | 473.0 | 400.0  | 400.0  | 350.0  | 1956.0 | 1917.0 | 3203.0 | 2400.0 | 3068.0 | 2500.0 |
| 1971 | 600.0  | 500.0  | 500.0 | 400.0  | 1409.0 | 2679.0 | 2673.0 | 3029.0 | 2355.0 | 4201.0 | 3827.0 | 2500.0 |
| 1972 | 600.0  | 500.0  | 500.0 | 400.0  | 1785.0 | 4456.0 | 891.0  | 3486.0 | 1796.0 | 2400.0 | 3249.0 | 2500.0 |
| 1973 | 600.0  | 500.0  | 500.0 | 404.0  | 529.0  | 350.0  | 400.0  | 400.0  | 4283.0 | 2400.0 | 2953.0 | 1665.0 |
| 1974 | 476.0  | 500.0  | 500.0 | 400.0  | 1016.0 | 350.0  | 5596.0 | 375.0  | 5730.0 | 3365.0 | 3601.0 | 2500.0 |
| 1975 | 600.0  | 500.0  | 455.0 | 400.0  | 400.0  | 350.0  | 5083.0 | 1011.0 | 500.0  | 3289.0 | 3647.0 | 2500.0 |
| 1976 | 600.0  | 500.0  | 500.0 | 400.0  | 981.0  | 2205.0 | 3133.0 | 2419.0 | 1995.0 | 2400.0 | 3080.0 | 2500.0 |
| 1977 | 519.0  | 304.0  | 366.0 | 400.0  | 366.0  | 350.0  | 400.0  | 1883.0 | 1779.0 | 2576.0 | 4569.0 | 3805.0 |
| 1978 | 280.0  | 280.0  | 280.0 | 280.0  | 280.0  | 280.0  | 280.0  | 300.0  | 500.0  | 2400.0 | 2358.0 | 1626.0 |
| 1979 | 321.0  | 363.0  | 500.0 | 400.0  | 400.0  | 360.0  | 1569.0 | 400.0  | 3969.0 | 2755.0 | 2871.0 | 1312.0 |
| 1980 | 300.0  | 300.0  | 300.0 | 400.0  | 400.0  | 350.0  | 400.0  | 1137.0 | 4359.0 | 2400.0 | 3352.0 | 1631.0 |
| 1981 | 357.0  | 392.0  | 462.0 | 400.0  | 400.0  | 350.0  | 400.0  | 400.0  | 4536.0 | 2400.0 | 2310.0 | 1218.0 |
| 1982 | 334.0  | 460.0  | 500.0 | 506.0  | 400.0  | 2215.0 | 3343.0 | 3214.0 | 832.0  | 4322.0 | 3661.0 | 2500.0 |
| 1983 | 600.0  | 500.0  | 500.0 | 400.0  | 400.0  | 350.0  | 2803.0 | 400.0  | 4018.0 | 3550.0 | 3674.0 | 2500.0 |
| 1984 | 600.0  | 594.0  | 888.0 | 736.0  | 609.0  | 350.0  | 2913.0 | 400.0  | 4624.0 | 3285.0 | 3603.0 | 2500.0 |
| 1985 | 600.0  | 500.0  | 500.0 | 400.0  | 400.0  | 350.0  | 966.0  | 2556.0 | 3742.0 | 2400.0 | 2727.0 | 1467.0 |
| 1986 | 591.0  | 500.0  | 500.0 | 400.0  | 400.0  | 3074.0 | 2965.0 | 1696.0 | 5597.0 | 2628.0 | 3461.0 | 2500.0 |
| 1987 | 600.0  | 500.0  | 500.0 | 400.0  | 400.0  | 350.0  | 1173.0 | 492.0  | 2495.0 | 2400.0 | 2663.0 | 1966.0 |
| 1988 | 634.0  | 300.0  | 479.0 | 517.0  | 729.0  | 769.0  | 300.0  | 400.0  | 528.0  | 4571.0 | 1500.0 | 5384.0 |
| 1989 | 353.0  | 280.0  | 280.0 | 280.0  | 280.0  | 280.0  | 280.0  | 400.0  | 1107.0 | 2400.0 | 2444.0 | 1727.0 |
| AVG  | 604.6  | 458.1  | 449.4 | 397.5  | 499.9  | 676.3  | 1625.8 | 1072.9 | 2745.2 | 2889.6 | 3337.9 | 2149.9 |
| MAX  | 2197.0 | 1061.0 | 944.0 | 1068.0 | 1785.0 | 4456.0 | 5967.0 | 3486.0 | 5963.0 | 6968.0 | 5712.0 | 5384.0 |
| MIN  | 280.0  | 280.0  | 280.0 | 280.0  | 280.0  | 280.0  | 280.0  | 300.0  | 300.0  | 2103.0 | 1500.0 | 243.0  |

TABLE A1

DISCHARGE, SNAKE RIVER NEAR MILNER, IDAHO  
 STUDY 952 UPPER SNAKE RIVER OPERATION STUDIES (IDWR MODEL)  
 UNITS ARE MEAN CUBIC FEET PER SECOND (CFS)

| YEAR | OCT    | NOV     | DEC     | JAN     | FEB     | MAR     | APR     | MAY     | JUN     | JUL    | AUG    | SEP    |
|------|--------|---------|---------|---------|---------|---------|---------|---------|---------|--------|--------|--------|
| 1928 | 1000.0 | 3004.0  | 3074.0  | 5987.0  | 5388.0  | 3558.0  | 15872.0 | 7240.0  | 4780.0  | 2484.0 | 1293.0 | 1000.0 |
| 1929 | 2000.0 | 3925.0  | 4939.0  | 6440.0  | 3078.0  | 2671.0  | 4241.0  | 2295.0  | 1813.0  | 2484.0 | 953.0  | 1000.0 |
| 1930 | 1000.0 | 869.0   | 2986.0  | 1842.0  | 4504.0  | 1327.0  | 10.0    | 1494.0  | 1813.0  | 2124.0 | 953.0  | 1000.0 |
| 1931 | 1000.0 | 593.0   | 1387.0  | 824.0   | 1582.0  | 350.0   | 10.0    | 1494.0  | 1813.0  | 1764.0 | 533.0  | 5.0    |
| 1932 | 100.0  | 200.0   | 400.0   | 500.0   | 500.0   | 150.0   | 10.0    | 1494.0  | 1518.0  | 2124.0 | 533.0  | 100.0  |
| 1933 | 1000.0 | 377.0   | 852.0   | 835.0   | 500.0   | 150.0   | 10.0    | 1494.0  | 1518.0  | 2124.0 | 533.0  | 100.0  |
| 1934 | 280.0  | 278.0   | 777.0   | 694.0   | 587.0   | 150.0   | 10.0    | 1494.0  | 1518.0  | 1489.0 | 145.0  | 5.0    |
| 1935 | 100.0  | 200.0   | 400.0   | 502.0   | 604.0   | 150.0   | 10.0    | 1494.0  | 1518.0  | 1764.0 | 298.0  | 5.0    |
| 1936 | 100.0  | 200.0   | 400.0   | 630.0   | 916.0   | 430.0   | 10.0    | 1494.0  | 1813.0  | 2124.0 | 953.0  | 1000.0 |
| 1937 | 1000.0 | 814.0   | 1022.0  | 890.0   | 792.0   | 150.0   | 1221.0  | 1494.0  | 1813.0  | 2124.0 | 533.0  | 100.0  |
| 1938 | 280.0  | 280.0   | 879.0   | 726.0   | 529.0   | 150.0   | 10.0    | 1494.0  | 1813.0  | 2484.0 | 953.0  | 1000.0 |
| 1939 | 1000.0 | 3380.0  | 3096.0  | 4342.0  | 3235.0  | 2128.0  | 1432.0  | 1880.0  | 1813.0  | 2124.0 | 953.0  | 1000.0 |
| 1940 | 1000.0 | 714.0   | 1181.0  | 951.0   | 2243.0  | 880.0   | 310.0   | 1494.0  | 1813.0  | 1764.0 | 533.0  | 100.0  |
| 1941 | 499.0  | 280.0   | 890.0   | 967.0   | 886.0   | 150.0   | 10.0    | 1494.0  | 1813.0  | 1764.0 | 533.0  | 100.0  |
| 1942 | 280.0  | 280.0   | 1028.0  | 762.0   | 707.0   | 150.0   | 10.0    | 1494.0  | 1813.0  | 2124.0 | 953.0  | 1000.0 |
| 1943 | 1000.0 | 810.0   | 2171.0  | 1648.0  | 3509.0  | 3212.0  | 15771.0 | 5918.0  | 1813.0  | 2484.0 | 1293.0 | 1800.0 |
| 1944 | 2000.0 | 3800.0  | 9163.0  | 6838.0  | 4020.0  | 1842.0  | 2844.0  | 1494.0  | 1813.0  | 2484.0 | 953.0  | 1000.0 |
| 1945 | 1000.0 | 642.0   | 1765.0  | 884.0   | 3580.0  | 1416.0  | 5074.0  | 5083.0  | 1813.0  | 2484.0 | 1293.0 | 1000.0 |
| 1946 | 2000.0 | 3738.0  | 8034.0  | 7051.0  | 3744.0  | 3994.0  | 7402.0  | 7987.0  | 1969.0  | 2484.0 | 953.0  | 1000.0 |
| 1947 | 2000.0 | 3886.0  | 5421.0  | 6333.0  | 4509.0  | 1450.0  | 11287.0 | 1494.0  | 1813.0  | 2484.0 | 953.0  | 1000.0 |
| 1948 | 1000.0 | 3854.0  | 3021.0  | 7371.0  | 4329.0  | 3037.0  | 1503.0  | 6171.0  | 6806.0  | 2484.0 | 953.0  | 1000.0 |
| 1949 | 1673.0 | 3641.0  | 2983.0  | 3958.0  | 3454.0  | 7251.0  | 7381.0  | 3834.0  | 1813.0  | 2484.0 | 953.0  | 1000.0 |
| 1950 | 1874.0 | 3742.0  | 3207.0  | 4732.0  | 5449.0  | 4508.0  | 17794.0 | 4440.0  | 2104.0  | 2484.0 | 1293.0 | 1800.0 |
| 1951 | 2000.0 | 10182.0 | 10063.0 | 9318.0  | 8986.0  | 9896.0  | 12185.0 | 7403.0  | 1813.0  | 2484.0 | 1293.0 | 1800.0 |
| 1952 | 2000.0 | 4169.0  | 9587.0  | 8584.0  | 5851.0  | 4289.0  | 15100.0 | 6635.0  | 7105.0  | 2484.0 | 1293.0 | 1000.0 |
| 1953 | 2000.0 | 3590.0  | 2964.0  | 8355.0  | 4689.0  | 1858.0  | 783.0   | 4498.0  | 3248.0  | 2484.0 | 953.0  | 1000.0 |
| 1954 | 1000.0 | 3286.0  | 3087.0  | 5151.0  | 4236.0  | 1834.0  | 13089.0 | 1494.0  | 1813.0  | 2484.0 | 953.0  | 1000.0 |
| 1955 | 1000.0 | 868.0   | 2948.0  | 3080.0  | 3447.0  | 1459.0  | 3529.0  | 1494.0  | 1813.0  | 2484.0 | 953.0  | 1000.0 |
| 1956 | 1000.0 | 725.0   | 3087.0  | 3402.0  | 7092.0  | 10184.0 | 11835.0 | 7235.0  | 5482.0  | 2484.0 | 1293.0 | 1000.0 |
| 1957 | 2000.0 | 3582.0  | 7805.0  | 6721.0  | 5061.0  | 2369.0  | 15677.0 | 9278.0  | 1813.0  | 2484.0 | 1293.0 | 1000.0 |
| 1958 | 2000.0 | 3742.0  | 5038.0  | 7181.0  | 5014.0  | 2193.0  | 2718.0  | 5448.0  | 1813.0  | 2484.0 | 953.0  | 1000.0 |
| 1959 | 1000.0 | 731.0   | 2872.0  | 1091.0  | 3181.0  | 1541.0  | 3082.0  | 2031.0  | 1813.0  | 2124.0 | 953.0  | 1000.0 |
| 1960 | 1000.0 | 451.0   | 2959.0  | 1958.0  | 3688.0  | 2021.0  | 2618.0  | 1494.0  | 1813.0  | 2124.0 | 533.0  | 100.0  |
| 1961 | 1000.0 | 888.0   | 1298.0  | 868.0   | 896.0   | 384.0   | 10.0    | 1494.0  | 1813.0  | 1764.0 | 533.0  | 100.0  |
| 1962 | 280.0  | 280.0   | 789.0   | 791.0   | 832.0   | 643.0   | 7174.0  | 2304.0  | 1813.0  | 2484.0 | 953.0  | 1000.0 |
| 1963 | 1000.0 | 2795.0  | 3243.0  | 3294.0  | 5702.0  | 794.0   | 3978.0  | 1494.0  | 7281.0  | 2484.0 | 953.0  | 1000.0 |
| 1964 | 1000.0 | 770.0   | 3338.0  | 1035.0  | 3134.0  | 2482.0  | 12436.0 | 5449.0  | 4821.0  | 2484.0 | 1293.0 | 1000.0 |
| 1965 | 2000.0 | 4205.0  | 5041.0  | 8612.0  | 6303.0  | 6710.0  | 14401.0 | 7905.0  | 2634.0  | 2484.0 | 1293.0 | 1800.0 |
| 1966 | 3204.0 | 7794.0  | 9631.0  | 8395.0  | 4586.0  | 2246.0  | 1258.0  | 1494.0  | 1813.0  | 2124.0 | 953.0  | 1000.0 |
| 1967 | 1000.0 | 1210.0  | 1844.0  | 1019.0  | 2418.0  | 510.0   | 6194.0  | 2433.0  | 3915.0  | 2484.0 | 1293.0 | 1000.0 |
| 1968 | 2000.0 | 4150.0  | 7551.0  | 6848.0  | 5151.0  | 1540.0  | 1182.0  | 3310.0  | 1813.0  | 2484.0 | 1293.0 | 1800.0 |
| 1969 | 2000.0 | 3813.0  | 6879.0  | 9681.0  | 8778.0  | 6614.0  | 4067.0  | 5182.0  | 2272.0  | 2484.0 | 953.0  | 1000.0 |
| 1970 | 1219.0 | 3700.0  | 3285.0  | 6896.0  | 4544.0  | 2723.0  | 7547.0  | 5807.0  | 7112.0  | 2484.0 | 1293.0 | 1800.0 |
| 1971 | 2000.0 | 3717.0  | 8980.0  | 13550.0 | 9832.0  | 9851.0  | 13108.0 | 17517.0 | 13721.0 | 4575.0 | 1426.0 | 3983.0 |
| 1972 | 6472.0 | 11663.0 | 10437.0 | 13965.0 | 10039.0 | 14386.0 | 11811.0 | 12464.0 | 9639.0  | 2484.0 | 1293.0 | 1800.0 |
| 1973 | 3238.0 | 10351.0 | 10367.0 | 11808.0 | 5570.0  | 3437.0  | 5185.0  | 4647.0  | 1900.0  | 2484.0 | 953.0  | 1000.0 |
| 1974 | 2000.0 | 3943.0  | 9702.0  | 9287.0  | 5288.0  | 5911.0  | 19333.0 | 9864.0  | 12803.0 | 2484.0 | 1293.0 | 1800.0 |
| 1975 | 2000.0 | 8483.0  | 9987.0  | 8073.0  | 5789.0  | 5292.0  | 13921.0 | 8742.0  | 8349.0  | 3149.0 | 1466.0 | 1800.0 |
| 1976 | 4863.0 | 9773.0  | 10512.0 | 12022.0 | 7862.0  | 10071.0 | 14275.0 | 18011.0 | 7402.0  | 2484.0 | 1293.0 | 1800.0 |
| 1977 | 2000.0 | 6808.0  | 9653.0  | 7579.0  | 4991.0  | 1226.0  | 10.0    | 1494.0  | 1813.0  | 1764.0 | 533.0  | 100.0  |
| 1978 | 280.0  | 280.0   | 619.0   | 1003.0  | 752.0   | 150.0   | 10.0    | 8081.0  | 1813.0  | 2484.0 | 1293.0 | 1800.0 |
| 1979 | 2000.0 | 3928.0  | 6028.0  | 6846.0  | 4645.0  | 1902.0  | 6623.0  | 1494.0  | 1813.0  | 2484.0 | 953.0  | 1000.0 |
| 1980 | 1000.0 | 1000.0  | 888.0   | 1136.0  | 3447.0  | 1046.0  | 2057.0  | 6347.0  | 8481.0  | 2484.0 | 953.0  | 1000.0 |
| 1981 | 2000.0 | 3745.0  | 3163.0  | 6380.0  | 4137.0  | 1223.0  | 858.0   | 1494.0  | 1813.0  | 2484.0 | 953.0  | 1000.0 |
| 1982 | 1000.0 | 1359.0  | 1583.0  | 1353.0  | 3914.0  | 6392.0  | 11900.0 | 14848.0 | 5686.0  | 3693.0 | 1293.0 | 1800.0 |
| 1983 | 6859.0 | 10296.0 | 10274.0 | 15466.0 | 9851.0  | 6075.0  | 8375.0  | 12261.0 | 15743.0 | 3218.0 | 2123.0 | 1800.0 |
| 1984 | 8484.0 | 12419.0 | 11091.0 | 17586.0 | 6912.0  | 7717.0  | 12386.0 | 14742.0 | 22845.0 | 2484.0 | 2314.0 | 1800.0 |
| 1985 | 5286.0 | 11184.0 | 10232.0 | 12322.0 | 5508.0  | 4410.0  | 9992.0  | 10043.0 | 1813.0  | 2484.0 | 953.0  | 1000.0 |
| 1986 | 1000.0 | 2261.0  | 2922.0  | 9558.0  | 6357.0  | 16241.0 | 14974.0 | 13017.0 | 16251.0 | 2484.0 | 1293.0 | 1800.0 |
| 1987 | 2000.0 | 8502.0  | 10014.0 | 10805.0 | 5705.0  | 2737.0  | 10.0    | 1494.0  | 1813.0  | 2124.0 | 953.0  | 1000.0 |
| 1988 | 1000.0 | 1236.0  | 2148.0  | 980.0   | 2226.0  | 758.0   | 10.0    | 1494.0  | 1813.0  | 1764.0 | 533.0  | 100.0  |
| 1989 | 280.0  | 330.0   | 767.0   | 707.0   | 592.0   | 150.0   | 10.0    | 1494.0  | 1813.0  | 2124.0 | 953.0  | 1000.0 |
| AVG  | 1686.0 | 3409.3  | 4532.7  | 5283.4  | 4047.2  | 3223.5  | 6062.9  | 4944.1  | 4032.3  | 2380.2 | 1022.8 | 1062.5 |
| MAX  | 6859.0 | 12419.0 | 11091.0 | 17586.0 | 10039.0 | 16241.0 | 19333.0 | 17517.0 | 22845.0 | 4575.0 | 2314.0 | 3983.0 |
| MIN  | 100.0  | 200.0   | 400.0   | 500.0   | 500.0   | 150.0   | 10.0    | 1494.0  | 1518.0  | 1489.0 | 145.0  | 5.0    |

TABLE A1

## STUDY 952 UPPER SNAKE RIVER OPERATION STUDIES (IDWR MODEL)

UNITS ARE 1000 ACRE-FEET

| YEAR | OCT    | NOV    | DEC    | JAN    | FEB    | MAR    | APR    | MAY    | JUN    | JUL    | AUG    | SEP    |
|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1928 | 2340.5 | 2731.2 | 3053.5 | 3178.5 | 3291.5 | 3530.7 | 2962.7 | 3867.4 | 4039.6 | 3519.0 | 2644.0 | 2478.4 |
| 1929 | 2628.7 | 2935.8 | 3074.2 | 3067.1 | 3256.2 | 3530.2 | 3684.6 | 3830.9 | 3619.5 | 2990.8 | 2211.9 | 1875.3 |
| 1930 | 2104.6 | 2504.9 | 2807.7 | 3058.8 | 3219.2 | 3496.5 | 3810.7 | 3782.7 | 3396.7 | 2418.2 | 1840.2 | 1467.3 |
| 1931 | 1756.9 | 2171.1 | 2502.3 | 2794.8 | 3032.2 | 3330.4 | 3487.5 | 3082.4 | 2356.1 | 1194.8 | 472.9  | 129.3  |
| 1932 | 216.3  | 479.3  | 772.2  | 1040.9 | 1280.7 | 1583.4 | 1895.1 | 2296.9 | 2608.8 | 1907.8 | 1202.0 | 786.4  |
| 1933 | 833.1  | 1202.8 | 1541.2 | 1873.7 | 2139.1 | 2451.7 | 2702.7 | 2704.0 | 2860.1 | 1896.3 | 1149.2 | 683.9  |
| 1934 | 744.2  | 1051.9 | 1428.5 | 1780.3 | 2042.7 | 2380.2 | 2547.4 | 2211.9 | 1375.6 | 307.3  | 43.0   | 51.3   |
| 1935 | 113.4  | 364.5  | 632.0  | 915.8  | 1141.2 | 1380.2 | 1671.3 | 1743.6 | 1762.7 | 923.0  | 277.4  | 46.1   |
| 1936 | 115.2  | 480.0  | 768.0  | 1087.9 | 1365.3 | 1683.9 | 2151.3 | 3012.7 | 3236.5 | 2303.2 | 1578.3 | 1076.2 |
| 1937 | 1146.5 | 1493.1 | 1846.5 | 2101.1 | 2359.0 | 2671.2 | 2885.3 | 3106.2 | 2856.5 | 1859.9 | 1065.6 | 685.3  |
| 1938 | 795.4  | 1103.6 | 1509.0 | 1835.8 | 2137.2 | 2483.9 | 2974.5 | 3493.9 | 3838.5 | 3318.1 | 2586.7 | 2088.4 |
| 1939 | 2311.1 | 2622.4 | 2913.3 | 3059.4 | 3219.3 | 3513.4 | 3801.5 | 4005.3 | 3596.6 | 2627.7 | 1809.9 | 1387.3 |
| 1940 | 1572.7 | 1900.4 | 2233.8 | 2562.4 | 2802.7 | 3104.0 | 3373.9 | 3324.4 | 2817.0 | 1700.8 | 896.3  | 673.0  |
| 1941 | 903.1  | 1255.4 | 1614.4 | 1928.6 | 2226.9 | 2551.3 | 2795.5 | 2817.4 | 2442.9 | 1457.6 | 889.4  | 576.7  |
| 1942 | 808.8  | 1203.4 | 1656.8 | 1977.4 | 2254.3 | 2575.1 | 3084.2 | 3294.1 | 3192.9 | 2379.3 | 1564.0 | 1136.7 |
| 1943 | 1208.1 | 1641.1 | 2014.6 | 2395.5 | 2594.2 | 2795.9 | 2768.1 | 3023.8 | 3762.3 | 3726.5 | 3183.9 | 2779.4 |
| 1944 | 2931.3 | 3266.1 | 3212.7 | 3199.6 | 3361.0 | 3613.3 | 3784.9 | 3783.2 | 3639.3 | 3063.3 | 2239.3 | 1649.7 |
| 1945 | 1924.3 | 2328.3 | 2685.1 | 3029.3 | 3231.9 | 3484.7 | 3472.9 | 3538.3 | 3800.4 | 3374.7 | 2801.0 | 2538.7 |
| 1946 | 2737.6 | 3061.3 | 3094.0 | 3106.1 | 3269.8 | 3500.5 | 3836.2 | 4030.6 | 4026.8 | 3198.3 | 2544.5 | 2304.1 |
| 1947 | 2536.1 | 2679.6 | 3083.1 | 3098.1 | 3245.9 | 3546.5 | 3155.3 | 3580.1 | 3761.7 | 3064.3 | 2533.7 | 2222.8 |
| 1948 | 2431.3 | 2738.5 | 3077.1 | 3092.0 | 3253.5 | 3435.5 | 3735.9 | 3959.0 | 4031.1 | 3197.0 | 2513.8 | 2170.7 |
| 1949 | 2385.7 | 2652.0 | 2942.0 | 3084.6 | 3246.0 | 3246.2 | 3277.8 | 3853.3 | 3983.5 | 3140.4 | 2486.4 | 2093.5 |
| 1950 | 2321.5 | 2629.4 | 2925.8 | 3081.5 | 3209.6 | 3410.0 | 2934.0 | 3108.1 | 3957.6 | 3884.8 | 3380.3 | 3119.5 |
| 1951 | 3357.5 | 3368.2 | 3334.1 | 3233.1 | 3256.0 | 3113.8 | 2967.4 | 3426.9 | 3717.6 | 3314.7 | 3080.5 | 2747.1 |
| 1952 | 2965.5 | 3281.9 | 3234.4 | 3162.2 | 3241.8 | 3414.6 | 3222.7 | 3988.1 | 4036.3 | 3367.1 | 2780.3 | 2429.3 |
| 1953 | 2484.5 | 2741.1 | 3081.2 | 3113.4 | 3270.5 | 3536.4 | 3762.7 | 3576.5 | 4035.7 | 3333.9 | 2863.1 | 2219.1 |
| 1954 | 2337.1 | 2637.4 | 2950.2 | 3103.9 | 3265.2 | 3535.0 | 3023.1 | 3471.4 | 3480.5 | 2979.2 | 2358.7 | 1944.7 |
| 1955 | 2144.9 | 2580.7 | 2860.7 | 3082.8 | 3244.8 | 3512.6 | 3653.2 | 3724.5 | 3680.4 | 2890.2 | 2196.2 | 1780.9 |
| 1956 | 1928.6 | 2376.4 | 2775.3 | 3117.1 | 3082.4 | 2875.5 | 2826.5 | 3371.7 | 4021.0 | 3436.0 | 2842.8 | 2520.7 |
| 1957 | 2696.3 | 3032.0 | 3100.3 | 3120.4 | 3298.1 | 3583.6 | 3003.3 | 3300.1 | 3958.9 | 3407.8 | 2745.9 | 2398.3 |
| 1958 | 2554.8 | 2844.7 | 3080.8 | 3084.1 | 3263.5 | 3631.3 | 3722.9 | 4031.3 | 3867.7 | 2804.1 | 2083.1 | 1742.8 |
| 1959 | 1824.0 | 2250.9 | 2584.1 | 2979.3 | 3200.2 | 3463.8 | 3513.3 | 3364.9 | 3558.4 | 2749.0 | 1986.3 | 1651.7 |
| 1960 | 1977.1 | 2417.8 | 2732.2 | 3054.6 | 3250.2 | 3524.1 | 3616.9 | 3613.0 | 3323.2 | 2215.6 | 1460.4 | 1032.4 |
| 1961 | 1164.6 | 1568.0 | 1896.0 | 2180.3 | 2487.6 | 2791.9 | 2971.2 | 2808.4 | 2456.5 | 1353.0 | 644.3  | 474.7  |
| 1962 | 781.7  | 1184.3 | 1556.0 | 1870.3 | 2395.3 | 2794.8 | 3105.0 | 3658.0 | 3902.2 | 3291.7 | 2672.6 | 2230.2 |
| 1963 | 2373.6 | 2642.9 | 2899.1 | 3087.8 | 3286.1 | 3556.5 | 3621.0 | 3839.3 | 4030.8 | 3111.0 | 2373.3 | 2069.4 |
| 1964 | 2086.7 | 2508.7 | 2752.7 | 3067.7 | 3239.2 | 3412.6 | 3043.6 | 3284.9 | 3992.0 | 3577.5 | 2913.4 | 2493.1 |
| 1965 | 2510.3 | 2786.4 | 3114.0 | 3118.4 | 3136.1 | 3038.4 | 2823.4 | 3069.4 | 3951.2 | 3800.6 | 3528.1 | 3354.6 |
| 1966 | 3399.5 | 3375.7 | 3297.0 | 3271.5 | 3430.1 | 3711.7 | 3908.3 | 3976.6 | 3801.0 | 2568.0 | 1801.2 | 1470.7 |
| 1967 | 1633.9 | 2025.9 | 2372.6 | 2757.0 | 2980.8 | 3277.2 | 3099.9 | 3282.5 | 4039.6 | 3751.9 | 3085.1 | 2647.3 |
| 1968 | 2808.2 | 3082.1 | 3067.4 | 3100.4 | 3280.4 | 3537.1 | 3612.7 | 3489.3 | 4025.0 | 3317.9 | 3036.6 | 2806.6 |
| 1969 | 2893.5 | 3159.3 | 3217.9 | 3198.2 | 3168.8 | 3153.3 | 3572.9 | 4016.2 | 4039.6 | 3268.7 | 2584.7 | 2253.1 |
| 1970 | 2470.0 | 2731.1 | 3017.0 | 3112.2 | 3257.6 | 3435.5 | 3172.9 | 3477.1 | 4033.0 | 3643.6 | 2974.4 | 2790.6 |
| 1971 | 2905.4 | 3223.1 | 3227.2 | 2967.7 | 2952.7 | 2790.8 | 2630.7 | 3132.2 | 4039.6 | 4000.6 | 3613.1 | 3379.9 |
| 1972 | 3426.0 | 3404.3 | 3376.3 | 3091.6 | 3061.8 | 2790.8 | 2708.2 | 2983.0 | 3946.8 | 3646.2 | 3269.7 | 3144.4 |
| 1973 | 3453.3 | 3435.5 | 3379.4 | 3206.3 | 3381.2 | 3654.9 | 3647.1 | 4039.8 | 4018.3 | 3296.4 | 2659.1 | 2537.0 |
| 1974 | 2791.6 | 3164.8 | 3110.1 | 3032.4 | 3152.8 | 3293.8 | 2863.2 | 3254.3 | 4037.7 | 3890.0 | 3446.1 | 3089.1 |
| 1975 | 3303.0 | 3315.3 | 3233.8 | 3216.5 | 3346.7 | 3463.0 | 2980.4 | 3020.6 | 3752.3 | 4006.8 | 3620.2 | 3305.3 |
| 1976 | 3395.5 | 3353.3 | 3289.1 | 3059.0 | 3095.2 | 2920.4 | 2697.6 | 3201.7 | 3813.4 | 3491.0 | 3143.3 | 2948.9 |
| 1977 | 3233.7 | 3288.5 | 3180.8 | 3180.0 | 3317.6 | 3574.7 | 3564.6 | 2996.6 | 2323.2 | 1203.0 | 542.0  | 226.1  |
| 1978 | 492.1  | 828.8  | 1250.1 | 1607.4 | 1917.7 | 2251.7 | 2664.4 | 3156.2 | 3763.8 | 3505.6 | 2945.8 | 2715.2 |
| 1979 | 2797.5 | 3030.2 | 3107.3 | 3109.4 | 3282.9 | 3585.1 | 3514.6 | 3770.7 | 3741.0 | 2868.2 | 2258.2 | 1746.4 |
| 1980 | 1890.4 | 2214.3 | 2602.0 | 2997.8 | 3250.5 | 3532.1 | 3667.6 | 4043.5 | 4028.4 | 3324.0 | 2735.0 | 2485.6 |
| 1981 | 2503.4 | 2747.1 | 3062.0 | 3091.2 | 3248.2 | 3518.9 | 3736.0 | 3839.3 | 3833.1 | 2885.8 | 2028.4 | 1452.4 |
| 1982 | 1651.4 | 2038.5 | 2428.8 | 2781.8 | 2963.1 | 2920.8 | 2742.6 | 3063.1 | 3823.6 | 4003.1 | 3580.8 | 3382.1 |
| 1983 | 3436.2 | 3431.4 | 3398.0 | 3081.9 | 3224.3 | 3424.3 | 3437.8 | 3771.9 | 4039.3 | 4006.6 | 3624.0 | 3303.8 |
| 1984 | 3456.0 | 3471.8 | 3441.6 | 2961.2 | 3173.5 | 3245.5 | 3167.7 | 3922.9 | 4039.6 | 3980.5 | 3633.5 | 3380.7 |
| 1985 | 3448.3 | 3444.3 | 3405.5 | 3186.9 | 3353.0 | 3613.4 | 3894.4 | 4035.0 | 3784.0 | 2852.1 | 2181.5 | 2046.8 |
| 1986 | 2322.7 | 2677.5 | 3015.0 | 2926.2 | 3155.1 | 2945.9 | 3034.7 | 3437.5 | 4037.3 | 3747.7 | 3258.4 | 3114.8 |
| 1987 | 3413.4 | 3430.1 | 3361.2 | 3237.5 | 3407.2 | 3690.5 | 3851.0 | 3652.5 | 3157.4 | 2362.9 | 1640.3 | 1177.9 |
| 1988 | 1252.8 | 1716.4 | 2023.0 | 2391.5 | 2639.3 | 2940.1 | 3292.1 | 3145.6 | 2657.9 | 1529.0 | 801.7  | 401.2  |
| 1989 | 503.5  | 912.5  | 1274.2 | 1611.5 | 1901.4 | 2341.4 | 2958.5 | 3317.4 | 3344.5 | 2482.5 | 1761.3 | 1300.1 |
| AVG  | 2143.8 | 2425.8 | 2636.8 | 2756.8 | 2935.4 | 3136.1 | 3206.2 | 3421.0 | 3670.7 | 2915.7 | 2300.6 | 1974.8 |
| MAX  | 3456.0 | 3471.8 | 3441.6 | 3271.5 | 3430.1 | 3711.7 | 3936.2 | 4043.5 | 4039.6 | 4009.8 | 3633.5 | 3380.7 |
| MIN  | 113.4  | 364.5  | 632.0  | 915.8  | 1141.2 | 1380.2 | 1671.3 | 1743.6 | 1375.6 | 307.3  | 43.0   | 46.1   |

TABLE A1

TOTAL CONTENTS ISL.PALAMF.RIR

STUDY 952 UPPER SNAKE RIVER OPERATION STUDIES (IDWR MODEL)

UNITS ARE 1000 ACRE-FEET

| YEAR | OCT    | NOV    | DEC    | JAN    | FEB    | MAR    | APR    | MAY    | JUN    | JUL    | AUG    | SEP    |
|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1928 | 1780.5 | 2120.0 | 2423.5 | 2531.2 | 2642.8 | 2871.0 | 2612.7 | 3062.4 | 3192.6 | 2672.0 | 2144.0 | 1896.4 |
| 1929 | 2048.7 | 2355.8 | 2491.3 | 2499.3 | 2663.4 | 2931.7 | 3075.0 | 3098.1 | 2972.5 | 2210.8 | 1571.9 | 1295.3 |
| 1930 | 1524.6 | 1928.4 | 2227.7 | 2478.8 | 2635.0 | 2911.2 | 3182.0 | 2982.7 | 2549.7 | 1638.2 | 1200.2 | 887.3  |
| 1931 | 1178.9 | 1591.1 | 1922.3 | 2214.8 | 2452.3 | 2767.1 | 2925.9 | 2493.1 | 1741.3 | 711.9  | 313.9  | 119.3  |
| 1932 | 201.8  | 462.1  | 747.3  | 1006.7 | 1235.9 | 1526.2 | 1818.9 | 2010.1 | 1982.2 | 1308.1 | 702.0  | 436.4  |
| 1933 | 569.8  | 952.8  | 1287.5 | 1607.2 | 1861.8 | 2171.3 | 2413.3 | 2314.0 | 2108.4 | 1298.3 | 649.2  | 333.9  |
| 1934 | 494.2  | 801.9  | 1177.0 | 1498.9 | 1777.2 | 2083.3 | 2187.4 | 1811.9 | 1114.9 | 127.0  | 43.0   | 51.3   |
| 1935 | 102.7  | 342.8  | 601.0  | 871.7  | 1089.7 | 1329.9 | 1582.3 | 1514.4 | 1196.5 | 650.0  | 177.4  | 46.1   |
| 1936 | 110.4  | 448.4  | 752.1  | 1051.1 | 1308.6 | 1594.7 | 2032.3 | 2531.6 | 2500.8 | 1623.8 | 1045.0 | 692.7  |
| 1937 | 795.8  | 1187.5 | 1546.5 | 1795.1 | 2042.4 | 2350.6 | 2552.6 | 2564.3 | 2111.5 | 1280.4 | 565.6  | 335.3  |
| 1938 | 545.4  | 853.8  | 1245.3 | 1581.4 | 1863.0 | 2180.8 | 2637.0 | 2984.3 | 2991.5 | 2471.1 | 1926.7 | 1508.4 |
| 1939 | 1731.1 | 2042.4 | 2333.3 | 2475.5 | 2629.3 | 2918.8 | 3264.6 | 3158.3 | 2748.6 | 1847.7 | 1169.9 | 807.3  |
| 1940 | 982.7  | 1389.5 | 1742.1 | 2109.6 | 2337.8 | 2629.9 | 2889.0 | 2579.4 | 2017.0 | 1150.8 | 400.8  | 323.0  |
| 1941 | 653.1  | 1005.4 | 1359.9 | 1665.7 | 1968.6 | 2281.7 | 2509.6 | 2327.2 | 1796.2 | 907.6  | 389.4  | 231.8  |
| 1942 | 558.8  | 953.4  | 1384.8 | 1696.1 | 1984.9 | 2282.5 | 2748.8 | 2619.9 | 2488.9 | 1669.4 | 1064.0 | 716.1  |
| 1943 | 811.9  | 1240.6 | 1602.0 | 1966.1 | 2175.5 | 2412.4 | 2418.1 | 2623.8 | 2962.3 | 2679.5 | 2483.9 | 2186.1 |
| 1944 | 2341.3 | 2676.0 | 2630.3 | 2619.8 | 2771.0 | 3029.2 | 3195.5 | 3049.4 | 2982.3 | 2236.1 | 1596.3 | 1269.7 |
| 1945 | 1344.3 | 1748.3 | 2085.1 | 2449.3 | 2645.7 | 2887.0 | 2952.9 | 2885.7 | 3000.4 | 2547.0 | 2111.3 | 1659.7 |
| 1946 | 2157.6 | 2479.8 | 2508.3 | 2512.0 | 2662.1 | 2878.7 | 3266.2 | 3163.6 | 3179.8 | 2380.7 | 1904.5 | 1724.1 |
| 1947 | 1956.1 | 2299.6 | 2500.8 | 2510.0 | 2658.5 | 2952.3 | 2668.6 | 2779.7 | 2914.7 | 2247.4 | 1893.7 | 1642.8 |
| 1948 | 1851.3 | 2158.5 | 2497.1 | 2507.0 | 2665.1 | 2842.5 | 3125.4 | 3125.2 | 3184.1 | 2406.6 | 1873.8 | 1590.7 |
| 1949 | 1785.7 | 2071.9 | 2359.3 | 2497.2 | 2652.5 | 2896.2 | 2757.8 | 3019.2 | 3136.5 | 2380.4 | 1946.4 | 1513.5 |
| 1950 | 1741.5 | 2049.4 | 2345.8 | 2490.6 | 2606.7 | 2794.7 | 2584.0 | 2667.1 | 3157.6 | 3037.8 | 2660.3 | 2527.9 |
| 1951 | 2764.2 | 2764.9 | 2726.3 | 2609.9 | 2642.9 | 2563.8 | 2617.4 | 2846.9 | 2906.6 | 2478.6 | 2380.5 | 2148.8 |
| 1952 | 2365.3 | 2684.5 | 2628.1 | 2542.6 | 2601.6 | 2754.6 | 2702.7 | 3168.5 | 3191.3 | 2522.7 | 2137.0 | 1849.3 |
| 1953 | 1904.5 | 2183.0 | 2501.2 | 2516.9 | 2667.3 | 2929.0 | 3135.6 | 2885.5 | 3188.7 | 2467.0 | 2023.1 | 1639.1 |
| 1954 | 1757.1 | 2057.4 | 2370.2 | 2506.5 | 2662.4 | 2924.0 | 2667.3 | 2850.0 | 2680.5 | 2159.1 | 1718.7 | 1364.7 |
| 1955 | 1564.9 | 2000.7 | 2280.7 | 2500.9 | 2658.9 | 2916.3 | 3060.8 | 2962.6 | 2843.4 | 2110.2 | 1556.2 | 1180.9 |
| 1956 | 1348.6 | 1791.7 | 2170.5 | 2491.2 | 2502.4 | 2457.4 | 2478.5 | 2791.7 | 3174.0 | 2589.0 | 2142.8 | 1940.7 |
| 1957 | 2116.3 | 2428.7 | 2488.0 | 2497.0 | 2658.4 | 2925.4 | 2652.8 | 2729.6 | 3122.7 | 2580.8 | 2104.4 | 1619.3 |
| 1958 | 1974.6 | 2264.7 | 2498.8 | 2508.9 | 2664.2 | 2920.0 | 3086.9 | 3184.3 | 3020.7 | 2050.0 | 1483.1 | 1162.8 |
| 1959 | 1246.1 | 1670.9 | 2014.1 | 2399.2 | 2609.7 | 2865.1 | 2961.8 | 2784.9 | 2756.4 | 1960.8 | 1355.3 | 1071.7 |
| 1960 | 1397.1 | 1837.8 | 2152.2 | 2469.5 | 2661.4 | 2929.5 | 3198.4 | 2861.7 | 2478.2 | 1453.8 | 980.4  | 682.4  |
| 1961 | 812.1  | 1224.2 | 1584.8 | 1885.9 | 2152.4 | 2446.3 | 2615.9 | 2311.1 | 1817.5 | 803.0  | 318.5  | 231.2  |
| 1962 | 531.7  | 934.3  | 1264.4 | 1585.4 | 2091.3 | 2475.5 | 2717.4 | 3010.7 | 3080.0 | 2483.8 | 2032.6 | 1650.2 |
| 1963 | 1793.6 | 2062.9 | 2319.1 | 2506.5 | 2695.8 | 2967.3 | 3021.6 | 3143.8 | 3183.8 | 2331.0 | 1733.3 | 1509.4 |
| 1964 | 1506.7 | 1928.7 | 2172.7 | 2501.0 | 2653.3 | 2820.7 | 2856.4 | 2723.1 | 3182.6 | 2744.8 | 2213.4 | 1913.1 |
| 1965 | 1930.3 | 2208.4 | 2510.6 | 2496.0 | 2555.1 | 2488.4 | 2473.4 | 2669.4 | 3151.2 | 3053.6 | 2628.1 | 2758.8 |
| 1966 | 2804.7 | 2777.7 | 2705.2 | 2667.9 | 2824.6 | 3086.9 | 3274.5 | 3129.6 | 2754.0 | 1796.0 | 1161.2 | 890.7  |
| 1967 | 1063.9 | 1445.9 | 1792.6 | 2172.3 | 2395.8 | 2702.4 | 2644.7 | 2702.5 | 3192.6 | 2904.9 | 2388.1 | 2067.3 |
| 1968 | 2226.5 | 2502.1 | 2507.4 | 2513.7 | 2664.7 | 2935.9 | 3006.8 | 2886.9 | 3178.0 | 2486.7 | 2336.6 | 2209.3 |
| 1969 | 2303.9 | 2567.3 | 2627.7 | 2585.1 | 2588.8 | 2603.3 | 2978.8 | 3169.2 | 3192.6 | 2463.7 | 1964.7 | 1673.1 |
| 1970 | 1890.0 | 2151.1 | 2437.0 | 2514.8 | 2667.3 | 2829.3 | 2652.9 | 2885.7 | 3186.0 | 2800.3 | 2274.4 | 2197.1 |
| 1971 | 2318.4 | 2631.7 | 2623.0 | 2340.7 | 2372.7 | 2336.6 | 2280.7 | 2685.1 | 3192.6 | 3153.6 | 2913.1 | 2780.9 |
| 1972 | 2819.0 | 2794.4 | 2752.3 | 2447.5 | 2471.8 | 2440.8 | 2358.2 | 2589.0 | 3146.8 | 2824.8 | 2569.7 | 2533.3 |
| 1973 | 2825.9 | 2801.9 | 2740.1 | 2558.3 | 2731.2 | 2998.5 | 3183.6 | 3196.8 | 3171.3 | 2515.8 | 2019.1 | 1957.0 |
| 1974 | 2211.6 | 2568.0 | 2508.1 | 2415.8 | 2568.9 | 2673.6 | 2513.2 | 2684.6 | 3190.7 | 3013.0 | 2746.1 | 2513.0 |
| 1975 | 2719.8 | 2735.2 | 2653.8 | 2624.7 | 2742.5 | 2846.5 | 2630.4 | 2620.6 | 2960.5 | 3162.8 | 2920.2 | 2720.0 |
| 1976 | 2613.6 | 2766.5 | 2697.7 | 2455.1 | 2515.2 | 2442.2 | 2347.6 | 2684.8 | 3013.4 | 2671.0 | 2443.3 | 2362.9 |
| 1977 | 2653.7 | 2706.5 | 2610.8 | 2597.7 | 2737.8 | 2693.4 | 2696.4 | 2416.8 | 1723.2 | 722.8  | 320.0  | 216.1  |
| 1978 | 475.7  | 807.8  | 1206.3 | 1547.8 | 1838.4 | 2168.7 | 2749.8 | 2639.9 | 3074.2 | 2777.7 | 2306.8 | 2135.2 |
| 1979 | 2217.5 | 2450.2 | 2522.4 | 2517.6 | 2682.6 | 2967.4 | 2958.5 | 2986.1 | 2984.0 | 2089.2 | 1616.2 | 1166.4 |
| 1980 | 1311.3 | 1635.3 | 2024.0 | 2408.9 | 2665.3 | 2927.7 | 3035.0 | 3196.5 | 3181.4 | 2518.3 | 2065.0 | 1905.6 |
| 1981 | 1923.4 | 2167.1 | 2472.0 | 2511.2 | 2686.0 | 2836.5 | 3125.3 | 3022.8 | 3086.1 | 2126.8 | 1386.4 | 872.4  |
| 1982 | 1071.4 | 1458.5 | 1843.0 | 2170.7 | 2363.5 | 2424.2 | 2392.8 | 2653.1 | 3023.6 | 3156.1 | 2880.8 | 2781.7 |
| 1983 | 2629.3 | 2619.6 | 2776.2 | 2426.5 | 2579.7 | 2767.2 | 2909.3 | 3083.9 | 3182.3 | 3159.6 | 2924.0 | 2710.3 |
| 1984 | 2637.0 | 2821.8 | 2791.6 | 2347.9 | 2533.3 | 2564.3 | 2667.7 | 3170.5 | 3192.6 | 3103.5 | 2933.5 | 2777.5 |
| 1985 | 2636.3 | 2820.8 | 2776.9 | 2560.8 | 2709.5 | 2964.7 | 3224.4 | 3188.0 | 2937.0 | 2075.1 | 1541.5 | 1466.8 |
| 1986 | 1742.7 | 2090.4 | 2422.1 | 2322.7 | 2526.9 | 2355.7 | 2621.2 | 2857.5 | 3190.3 | 2900.7 | 2558.4 | 2513.2 |
| 1987 | 2604.7 | 2610.0 | 2739.8 | 2607.7 | 2770.8 | 3043.9 | 3181.0 | 2805.5 | 2357.4 | 1662.3 | 1063.9 | 724.0  |
| 1988 | 822.6  | 1285.3 | 1591.9 | 1962.9 | 2227.3 | 2551.0 | 2848.7 | 2495.3 | 1857.9 | 979.0  | 333.7  | 242.8  |
| 1989 | 353.5  | 749.1  | 1103.7 | 1426.6 | 1707.3 | 2126.9 | 2675.3 | 2724.3 | 2528.7 | 1709.8 | 1121.3 | 732.3  |
| AVG  | 1647.3 | 1927.9 | 2135.4 | 2246.9 | 2424.0 | 2638.9 | 2752.8 | 2793.5 | 2777.7 | 2165.3 | 1701.6 | 1470.4 |
| MAX  | 2837.0 | 2821.8 | 2791.6 | 2687.9 | 2624.6 | 3098.9 | 3274.5 | 3196.8 | 3192.6 | 3162.8 | 2933.5 | 2781.7 |
| MIN  | 102.7  | 342.8  | 601.0  | 871.7  | 1089.7 | 1329.9 | 1582.3 | 1514.4 | 1114.9 | 127.0  | 43.0   | 46.1   |



TABLE B1

JACKSON LAKE  
STUDY 953 UPPER SNAKE RIVER OPERATION STUDIES (IDWR MODEL)  
UNITS ARE 1000 ACRE-FEET

| YEAR | OCT   | NOV   | DEC   | JAN   | FEB   | MAR   | APR   | MAY   | JUN   | JUL   | AUG   | SEP   |
|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 1928 | 580.0 | 611.2 | 630.0 | 645.3 | 648.7 | 656.6 | 350.0 | 805.0 | 847.0 | 847.0 | 700.0 | 580.0 |
| 1929 | 580.0 | 580.0 | 582.9 | 587.8 | 592.8 | 595.4 | 606.6 | 731.7 | 847.0 | 780.0 | 640.0 | 580.0 |
| 1930 | 578.0 | 568.6 | 571.5 | 571.0 | 575.1 | 573.2 | 616.6 | 777.9 | 847.0 | 780.0 | 640.0 | 580.0 |
| 1931 | 580.0 | 580.0 | 575.4 | 571.0 | 565.4 | 554.5 | 552.8 | 580.5 | 806.0 | 474.2 | 150.3 | 10.0  |
| 1932 | 7.1   | 2.7   | 3.0   | 4.9   | 8.6   | 13.6  | 25.6  | 230.2 | 566.3 | 554.3 | 500.0 | 350.0 |
| 1933 | 263.0 | 250.0 | 247.5 | 254.2 | 259.5 | 255.2 | 257.1 | 351.7 | 713.5 | 579.1 | 500.0 | 350.0 |
| 1934 | 250.0 | 245.6 | 240.9 | 244.7 | 243.3 | 247.3 | 335.2 | 400.0 | 280.0 | 179.6 | 0.0   | 0.0   |
| 1935 | 3.3   | 7.1   | 9.1   | 14.8  | 15.5  | 17.0  | 36.7  | 182.9 | 514.2 | 271.1 | 100.0 | 0.0   |
| 1936 | 0.0   | 0.0   | 0.0   | 15.5  | 30.5  | 33.8  | 76.3  | 435.5 | 680.2 | 634.1 | 524.1 | 374.3 |
| 1937 | 341.5 | 291.3 | 288.1 | 287.9 | 293.0 | 289.6 | 294.6 | 500.9 | 704.1 | 571.9 | 500.0 | 350.0 |
| 1938 | 250.0 | 248.8 | 256.3 | 260.9 | 265.2 | 276.7 | 304.0 | 503.1 | 847.0 | 847.0 | 640.0 | 580.0 |
| 1939 | 580.0 | 580.0 | 580.0 | 583.9 | 590.0 | 591.5 | 633.8 | 847.0 | 847.0 | 780.0 | 640.0 | 580.0 |
| 1940 | 578.1 | 524.4 | 490.4 | 445.3 | 451.6 | 454.6 | 479.5 | 719.7 | 800.0 | 550.0 | 495.5 | 350.0 |
| 1941 | 250.0 | 250.0 | 248.3 | 250.6 | 250.5 | 244.4 | 253.6 | 454.9 | 611.6 | 550.0 | 500.0 | 344.9 |
| 1942 | 250.0 | 250.0 | 265.8 | 269.0 | 271.6 | 267.4 | 303.0 | 438.9 | 688.8 | 674.8 | 500.0 | 420.4 |
| 1943 | 396.0 | 400.2 | 406.2 | 416.9 | 400.6 | 383.4 | 350.0 | 400.0 | 800.0 | 847.0 | 700.0 | 593.3 |
| 1944 | 580.0 | 590.1 | 582.4 | 577.6 | 577.3 | 578.3 | 583.7 | 728.1 | 847.0 | 825.2 | 640.0 | 580.0 |
| 1945 | 574.4 | 576.2 | 571.5 | 570.8 | 576.9 | 575.4 | 520.0 | 652.6 | 800.0 | 827.7 | 689.7 | 580.0 |
| 1946 | 580.0 | 581.5 | 585.7 | 594.1 | 607.7 | 618.7 | 670.0 | 847.0 | 847.0 | 817.6 | 640.0 | 580.0 |
| 1947 | 580.0 | 580.0 | 582.3 | 588.1 | 587.4 | 591.1 | 486.7 | 800.4 | 847.0 | 846.9 | 640.0 | 580.0 |
| 1948 | 580.0 | 580.0 | 580.0 | 585.0 | 588.4 | 589.9 | 607.4 | 830.8 | 847.0 | 787.4 | 640.0 | 580.0 |
| 1949 | 580.0 | 580.1 | 582.7 | 587.4 | 593.5 | 550.0 | 520.0 | 834.1 | 847.0 | 780.0 | 640.0 | 580.0 |
| 1950 | 580.0 | 580.0 | 579.3 | 590.2 | 602.2 | 611.5 | 350.0 | 421.0 | 800.0 | 847.0 | 700.0 | 591.6 |
| 1951 | 593.3 | 603.3 | 607.8 | 623.2 | 613.1 | 550.0 | 350.0 | 580.0 | 611.0 | 836.1 | 700.0 | 596.3 |
| 1952 | 600.2 | 597.4 | 606.3 | 619.6 | 640.2 | 658.3 | 520.0 | 619.6 | 847.0 | 844.4 | 643.3 | 580.0 |
| 1953 | 576.0 | 568.2 | 573.9 | 590.4 | 597.0 | 596.2 | 617.9 | 691.0 | 847.0 | 846.9 | 640.0 | 580.0 |
| 1954 | 576.4 | 577.1 | 579.5 | 593.9 | 602.2 | 607.4 | 355.8 | 621.4 | 800.0 | 820.1 | 640.0 | 580.0 |
| 1955 | 580.0 | 580.0 | 580.0 | 581.9 | 585.9 | 593.2 | 599.3 | 736.9 | 847.0 | 780.0 | 640.0 | 580.0 |
| 1956 | 580.0 | 584.7 | 604.6 | 625.9 | 580.0 | 418.1 | 350.0 | 580.0 | 847.0 | 847.0 | 700.0 | 580.0 |
| 1957 | 580.0 | 603.3 | 612.3 | 623.4 | 639.7 | 655.1 | 350.5 | 567.3 | 636.2 | 847.0 | 641.5 | 580.0 |
| 1958 | 580.0 | 578.1 | 580.1 | 583.3 | 597.4 | 606.3 | 619.1 | 847.0 | 847.0 | 754.1 | 640.0 | 580.0 |
| 1959 | 572.8 | 579.8 | 579.4 | 579.5 | 589.8 | 595.0 | 551.5 | 580.0 | 800.0 | 758.2 | 640.0 | 580.0 |
| 1960 | 580.0 | 579.0 | 575.7 | 580.8 | 584.5 | 587.2 | 611.1 | 754.0 | 847.0 | 762.0 | 500.0 | 360.0 |
| 1961 | 346.3 | 333.0 | 300.0 | 297.0 | 312.3 | 315.3 | 333.7 | 499.0 | 640.7 | 550.0 | 327.4 | 245.1 |
| 1962 | 250.0 | 250.0 | 265.4 | 272.6 | 286.2 | 294.1 | 356.5 | 616.2 | 842.2 | 827.9 | 640.0 | 580.0 |
| 1963 | 580.0 | 580.0 | 579.4 | 580.7 | 589.7 | 586.5 | 595.7 | 791.8 | 847.0 | 780.0 | 640.0 | 580.0 |
| 1964 | 580.0 | 580.0 | 576.1 | 582.8 | 582.0 | 585.1 | 387.3 | 558.7 | 809.4 | 832.9 | 700.0 | 580.0 |
| 1965 | 576.9 | 576.2 | 599.5 | 619.5 | 580.0 | 550.0 | 350.0 | 400.0 | 800.0 | 847.0 | 700.0 | 597.8 |
| 1966 | 594.8 | 596.0 | 591.8 | 603.6 | 605.5 | 609.7 | 630.7 | 847.0 | 847.0 | 773.0 | 640.0 | 580.0 |
| 1967 | 577.4 | 580.0 | 580.0 | 581.7 | 582.1 | 588.8 | 455.3 | 580.0 | 847.0 | 847.0 | 700.0 | 580.0 |
| 1968 | 581.7 | 580.0 | 580.0 | 586.7 | 595.7 | 598.1 | 602.8 | 603.4 | 847.0 | 822.2 | 700.0 | 597.3 |
| 1969 | 589.8 | 582.0 | 590.2 | 613.1 | 580.0 | 550.0 | 594.1 | 847.0 | 847.0 | 805.0 | 640.0 | 580.0 |
| 1970 | 576.7 | 573.6 | 576.1 | 595.5 | 598.3 | 601.2 | 520.0 | 591.4 | 847.0 | 843.3 | 700.0 | 593.5 |
| 1971 | 587.0 | 591.4 | 604.2 | 627.0 | 580.0 | 454.2 | 350.0 | 447.1 | 847.0 | 847.0 | 700.0 | 599.0 |
| 1972 | 607.0 | 609.9 | 624.0 | 644.1 | 580.0 | 350.0 | 350.0 | 400.0 | 800.0 | 821.4 | 700.0 | 611.1 |
| 1973 | 627.4 | 633.6 | 639.3 | 650.0 | 650.0 | 653.3 | 660.5 | 639.9 | 847.0 | 782.6 | 640.0 | 580.0 |
| 1974 | 580.0 | 596.8 | 602.0 | 616.6 | 593.9 | 617.1 | 350.0 | 568.2 | 847.0 | 847.0 | 700.0 | 586.1 |
| 1975 | 583.2 | 580.1 | 580.0 | 591.8 | 604.2 | 613.4 | 350.0 | 400.0 | 761.8 | 847.0 | 700.0 | 595.3 |
| 1976 | 581.9 | 584.8 | 591.4 | 603.9 | 580.0 | 478.2 | 350.0 | 516.9 | 800.0 | 820.0 | 700.0 | 586.0 |
| 1977 | 580.0 | 574.3 | 572.2 | 574.5 | 570.3 | 568.5 | 585.4 | 580.0 | 600.0 | 480.2 | 222.0 | 10.0  |
| 1978 | 9.0   | 6.5   | 21.9  | 30.3  | 43.3  | 39.7  | 64.4  | 259.9 | 633.5 | 672.0 | 618.6 | 580.0 |
| 1979 | 575.2 | 573.0 | 580.0 | 586.9 | 596.5 | 599.8 | 556.1 | 782.6 | 847.0 | 780.0 | 640.0 | 580.0 |
| 1980 | 573.0 | 566.9 | 569.8 | 570.7 | 577.0 | 583.1 | 611.3 | 847.0 | 847.0 | 805.7 | 640.0 | 580.0 |
| 1981 | 577.4 | 576.9 | 580.0 | 580.0 | 582.2 | 580.3 | 607.6 | 813.5 | 847.0 | 759.0 | 640.0 | 580.0 |
| 1982 | 576.0 | 579.6 | 585.3 | 590.7 | 599.2 | 496.6 | 350.0 | 400.0 | 800.0 | 847.0 | 700.0 | 600.4 |
| 1983 | 606.9 | 611.6 | 621.6 | 635.4 | 644.6 | 654.0 | 526.5 | 688.0 | 847.0 | 847.0 | 700.0 | 593.5 |
| 1984 | 619.0 | 650.0 | 650.0 | 643.3 | 640.2 | 648.1 | 520.0 | 752.4 | 847.0 | 847.0 | 700.0 | 613.2 |
| 1985 | 612.0 | 623.7 | 628.6 | 636.1 | 643.5 | 655.6 | 670.0 | 847.0 | 847.0 | 777.0 | 640.0 | 580.0 |
| 1986 | 580.0 | 587.1 | 592.9 | 605.5 | 628.2 | 490.2 | 413.5 | 580.0 | 847.0 | 847.0 | 700.0 | 601.6 |
| 1987 | 608.7 | 620.1 | 621.4 | 629.6 | 638.4 | 643.5 | 670.0 | 847.0 | 800.0 | 700.6 | 556.4 | 453.9 |
| 1988 | 430.2 | 425.1 | 419.0 | 410.4 | 388.0 | 359.0 | 407.4 | 614.3 | 765.8 | 550.0 | 468.0 | 158.3 |
| 1989 | 147.0 | 153.3 | 153.0 | 160.0 | 162.5 | 175.6 | 237.2 | 547.2 | 806.2 | 743.1 | 640.0 | 580.5 |
| AVG  | 494.9 | 495.1 | 497.2 | 503.9 | 503.8 | 489.6 | 445.1 | 618.0 | 786.5 | 746.7 | 596.3 | 504.1 |
| MAX  | 627.4 | 650.0 | 650.0 | 650.0 | 650.0 | 658.3 | 670.0 | 847.0 | 847.0 | 847.0 | 700.0 | 613.2 |
| MIN  | 0.0   | 0.0   | 0.0   | 4.9   | 6.6   | 13.6  | 25.6  | 182.9 | 260.0 | 179.6 | 0.0   | 0.0   |

TABLE B1

DISCHARGE, SNAKE RIVER NEAR MORAN, WYOMING  
STUDY 953 UPPER SNAKE RIVER OPERATION STUDIES (IDWR MODEL)  
UNITS ARE MEAN CUBIC FEET PER SECOND (CFS)

| YEAR | OCT    | NOV    | DEC   | JAN    | FEB    | MAR    | APR    | MAY    | JUN    | JUL    | AUG    | SEP    |
|------|--------|--------|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1928 | 495.0  | 500.0  | 500.0 | 400.0  | 400.0  | 400.0  | 5835.0 | 400.0  | 4221.0 | 2791.0 | 3336.0 | 2580.0 |
| 1929 | 512.0  | 400.0  | 500.0 | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 3350.0 | 2968.0 | 3042.0 | 1527.0 |
| 1930 | 400.0  | 400.0  | 400.0 | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 2324.0 | 2705.0 | 3302.0 | 1525.0 |
| 1931 | 695.0  | 405.0  | 400.0 | 400.0  | 400.0  | 553.0  | 659.0  | 1966.0 | 2059.0 | 2896.0 | 5712.0 | 2639.0 |
| 1932 | 400.0  | 400.0  | 400.0 | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 2400.0 | 1884.0 | 2935.0 |
| 1933 | 1741.0 | 554.0  | 400.0 | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 500.0  | 4006.0 | 2146.0 | 3066.0 |
| 1934 | 1963.0 | 400.0  | 400.0 | 400.0  | 400.0  | 400.0  | 400.0  | 2341.0 | 3801.0 | 2103.0 | 3250.0 | 243.0  |
| 1935 | 400.0  | 400.0  | 400.0 | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 6156.0 | 2011.0 |
| 1936 | 358.0  | 393.0  | 319.0 | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 500.0  | 2400.0 | 2626.0 | 2904.0 |
| 1937 | 818.0  | 1063.0 | 400.0 | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 500.0  | 3777.0 | 1889.0 | 2634.0 |
| 1938 | 2022.0 | 400.0  | 400.0 | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 1595.0 | 2550.0 | 4398.0 | 1697.0 |
| 1939 | 505.0  | 469.0  | 496.0 | 400.0  | 400.0  | 400.0  | 400.0  | 1061.0 | 3216.0 | 2622.0 | 3102.0 | 1441.0 |
| 1940 | 400.0  | 1137.0 | 861.0 | 1168.0 | 400.0  | 400.0  | 400.0  | 400.0  | 2105.0 | 5251.0 | 1500.0 | 2843.0 |
| 1941 | 2045.0 | 410.0  | 400.0 | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 500.0  | 2375.0 | 1824.0 | 3389.0 |
| 1942 | 2197.0 | 533.0  | 400.0 | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 500.0  | 2400.0 | 3586.0 | 1735.0 |
| 1943 | 663.0  | 520.0  | 487.0 | 540.0  | 825.0  | 810.0  | 2222.0 | 3099.0 | 1386.0 | 3706.0 | 3803.0 | 2500.0 |
| 1944 | 600.0  | 500.0  | 500.0 | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 2084.0 | 2400.0 | 4063.0 | 1371.0 |
| 1945 | 400.0  | 400.0  | 400.0 | 400.0  | 400.0  | 400.0  | 1324.0 | 631.0  | 2350.0 | 2400.0 | 3320.0 | 2380.0 |
| 1946 | 472.0  | 500.0  | 500.0 | 400.0  | 400.0  | 400.0  | 906.0  | 1536.0 | 4806.0 | 2445.0 | 3696.0 | 1613.0 |
| 1947 | 560.0  | 489.0  | 500.0 | 400.0  | 400.0  | 400.0  | 2320.0 | 400.0  | 4660.0 | 2400.0 | 4431.0 | 1732.0 |
| 1948 | 466.0  | 497.0  | 436.0 | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 5912.0 | 2912.0 | 3233.0 | 1486.0 |
| 1949 | 403.0  | 500.0  | 500.0 | 400.0  | 400.0  | 1205.0 | 1640.0 | 400.0  | 5067.0 | 3062.0 | 3171.0 | 1551.0 |
| 1950 | 515.0  | 452.0  | 400.0 | 400.0  | 400.0  | 400.0  | 5072.0 | 1461.0 | 1079.0 | 2933.0 | 3526.0 | 2500.0 |
| 1951 | 600.0  | 500.0  | 500.0 | 400.0  | 916.0  | 1858.0 | 4332.0 | 1160.0 | 1333.0 | 2400.0 | 3801.0 | 2500.0 |
| 1952 | 600.0  | 500.0  | 500.0 | 400.0  | 400.0  | 400.0  | 3643.0 | 400.0  | 5269.0 | 2400.0 | 4347.0 | 1665.0 |
| 1953 | 400.0  | 400.0  | 400.0 | 400.0  | 400.0  | 400.0  | 400.0  | 1280.0 | 3577.0 | 2400.0 | 4337.0 | 1564.0 |
| 1954 | 400.0  | 400.0  | 400.0 | 400.0  | 400.0  | 400.0  | 5047.0 | 1221.0 | 2353.0 | 2614.0 | 4060.0 | 1840.0 |
| 1955 | 416.0  | 440.0  | 402.0 | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 3515.0 | 3327.0 | 3213.0 | 1482.0 |
| 1956 | 492.0  | 500.0  | 500.0 | 400.0  | 1325.0 | 3303.0 | 2303.0 | 2621.0 | 3849.0 | 2721.0 | 3678.0 | 2806.0 |
| 1957 | 518.0  | 500.0  | 500.0 | 400.0  | 400.0  | 400.0  | 5746.0 | 400.0  | 2333.0 | 2575.0 | 4171.0 | 1505.0 |
| 1958 | 416.0  | 400.0  | 500.0 | 400.0  | 400.0  | 400.0  | 400.0  | 801.0  | 3078.0 | 2400.0 | 2382.0 | 1406.0 |
| 1959 | 400.0  | 400.0  | 400.0 | 400.0  | 400.0  | 400.0  | 1364.0 | 1960.0 | 2654.0 | 2400.0 | 2591.0 | 1578.0 |
| 1960 | 567.0  | 400.0  | 400.0 | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 2672.0 | 2400.0 | 4769.0 | 3281.0 |
| 1961 | 400.0  | 636.0  | 907.0 | 400.0  | 400.0  | 400.0  | 400.0  | 1104.0 | 2205.0 | 2386.0 | 4063.0 | 1938.0 |
| 1962 | 763.0  | 603.0  | 400.0 | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 1962.0 | 2400.0 | 3894.0 | 1510.0 |
| 1963 | 481.0  | 403.0  | 400.0 | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 4782.0 | 2674.0 | 2920.0 | 1640.0 |
| 1964 | 414.0  | 466.0  | 400.0 | 400.0  | 400.0  | 400.0  | 3763.0 | 400.0  | 2502.0 | 2400.0 | 2980.0 | 2340.0 |
| 1965 | 400.0  | 400.0  | 500.0 | 400.0  | 1264.0 | 947.0  | 4463.0 | 2966.0 | 1332.0 | 2904.0 | 3596.0 | 2500.0 |
| 1966 | 600.0  | 500.0  | 500.0 | 400.0  | 400.0  | 400.0  | 400.0  | 776.0  | 3602.0 | 2400.0 | 2744.0 | 1667.0 |
| 1967 | 400.0  | 403.0  | 468.0 | 549.0  | 501.0  | 646.0  | 3446.0 | 966.0  | 3217.0 | 2654.0 | 3354.0 | 2537.0 |
| 1968 | 600.0  | 463.0  | 470.0 | 400.0  | 400.0  | 400.0  | 400.0  | 3446.0 | 2361.0 | 2400.0 | 3286.0 | 2500.0 |
| 1969 | 600.0  | 500.0  | 500.0 | 400.0  | 1196.0 | 842.0  | 409.0  | 1236.0 | 3863.0 | 2400.0 | 3445.0 | 1801.0 |
| 1970 | 400.0  | 400.0  | 400.0 | 400.0  | 400.0  | 400.0  | 1672.0 | 1917.0 | 3203.0 | 2400.0 | 3088.0 | 2500.0 |
| 1971 | 600.0  | 500.0  | 500.0 | 400.0  | 1406.0 | 2679.0 | 2673.0 | 3029.0 | 2365.0 | 4201.0 | 3627.0 | 2500.0 |
| 1972 | 600.0  | 500.0  | 500.0 | 400.0  | 1766.0 | 4466.0 | 861.0  | 3466.0 | 1796.0 | 2400.0 | 3249.0 | 2500.0 |
| 1973 | 600.0  | 500.0  | 500.0 | 404.0  | 529.0  | 400.0  | 400.0  | 400.0  | 4232.0 | 2400.0 | 2953.0 | 1665.0 |
| 1974 | 476.0  | 500.0  | 500.0 | 400.0  | 1016.0 | 400.0  | 5646.0 | 400.0  | 5704.0 | 3365.0 | 3801.0 | 2500.0 |
| 1975 | 600.0  | 500.0  | 455.0 | 400.0  | 400.0  | 400.0  | 9022.0 | 1011.0 | 500.0  | 3269.0 | 3647.0 | 2500.0 |
| 1976 | 600.0  | 500.0  | 500.0 | 400.0  | 981.0  | 2206.0 | 3133.0 | 2419.0 | 1995.0 | 2400.0 | 3080.0 | 2500.0 |
| 1977 | 519.0  | 400.0  | 400.0 | 400.0  | 400.0  | 400.0  | 400.0  | 1675.0 | 1779.0 | 2577.0 | 4569.0 | 3806.0 |
| 1978 | 400.0  | 400.0  | 400.0 | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 500.0  | 2400.0 | 1800.0 | 1267.0 |
| 1979 | 400.0  | 400.0  | 464.0 | 400.0  | 400.0  | 400.0  | 1435.0 | 400.0  | 3969.0 | 2756.0 | 2671.0 | 1312.0 |
| 1980 | 400.0  | 400.0  | 400.0 | 400.0  | 400.0  | 400.0  | 400.0  | 791.0  | 4359.0 | 2400.0 | 3352.0 | 1631.0 |
| 1981 | 400.0  | 400.0  | 411.0 | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 4485.0 | 2400.0 | 2310.0 | 1218.0 |
| 1982 | 400.0  | 400.0  | 500.0 | 506.0  | 400.0  | 2206.0 | 3343.0 | 3214.0 | 832.0  | 4322.0 | 3861.0 | 2500.0 |
| 1983 | 600.0  | 500.0  | 500.0 | 400.0  | 400.0  | 400.0  | 2751.0 | 400.0  | 4016.0 | 3550.0 | 3674.0 | 2500.0 |
| 1984 | 600.0  | 594.0  | 886.0 | 736.0  | 606.0  | 400.0  | 2862.0 | 400.0  | 4624.0 | 3285.0 | 3803.0 | 2500.0 |
| 1985 | 600.0  | 500.0  | 500.0 | 400.0  | 400.0  | 400.0  | 914.0  | 2555.0 | 3742.0 | 2400.0 | 2727.0 | 1467.0 |
| 1986 | 591.0  | 500.0  | 500.0 | 400.0  | 400.0  | 3074.0 | 2955.0 | 1696.0 | 5597.0 | 2628.0 | 3461.0 | 2500.0 |
| 1987 | 600.0  | 500.0  | 500.0 | 400.0  | 400.0  | 400.0  | 1121.0 | 492.0  | 2495.0 | 2400.0 | 2663.0 | 1966.0 |
| 1988 | 634.0  | 400.0  | 579.0 | 617.0  | 829.0  | 869.0  | 400.0  | 400.0  | 500.0  | 4016.0 | 1500.0 | 5367.0 |
| 1989 | 400.0  | 400.0  | 400.0 | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 500.0  | 2400.0 | 2266.0 | 1849.0 |
| AVG  | 627.7  | 479.5  | 471.7 | 427.7  | 528.5  | 723.5  | 1621.5 | 1060.4 | 2696.0 | 2843.3 | 3266.4 | 2143.9 |
| MAX  | 2197.0 | 1137.0 | 907.0 | 1168.0 | 1765.0 | 4456.0 | 5835.0 | 3486.0 | 5912.0 | 6156.0 | 5712.0 | 5367.0 |
| MIN  | 358.0  | 393.0  | 319.0 | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 2103.0 | 1500.0 | 243.0  |

TABLE B1

| DISCHARGE, SNAKE RIVER NEAR MILNER, IDAHO                  |        |         |         |         |         |         |         |         |         |        |        |        |
|------------------------------------------------------------|--------|---------|---------|---------|---------|---------|---------|---------|---------|--------|--------|--------|
| STUDY 953 UPPER SNAKE RIVER OPERATION STUDIES (IDWR MODEL) |        |         |         |         |         |         |         |         |         |        |        |        |
| UNITS ARE MEAN CUBIC FEET PER SECOND (CFS)                 |        |         |         |         |         |         |         |         |         |        |        |        |
| YEAR                                                       | OCT    | NOV     | DEC     | JAN     | FEB     | MAR     | APR     | MAY     | JUN     | JUL    | AUG    | SEP    |
| 1928                                                       | 1000.0 | 3004.0  | 3074.0  | 5987.0  | 5388.0  | 3556.0  | 15872.0 | 7240.0  | 4780.0  | 2464.0 | 1293.0 | 1000.0 |
| 1929                                                       | 2000.0 | 3925.0  | 4939.0  | 6440.0  | 3078.0  | 2671.0  | 4241.0  | 2295.0  | 1813.0  | 2464.0 | 953.0  | 1000.0 |
| 1930                                                       | 1000.0 | 869.0   | 2966.0  | 1989.0  | 4504.0  | 1327.0  | 10.0    | 1494.0  | 1813.0  | 2124.0 | 953.0  | 1000.0 |
| 1931                                                       | 1000.0 | 593.0   | 1387.0  | 824.0   | 1582.0  | 350.0   | 10.0    | 1494.0  | 1813.0  | 1764.0 | 533.0  | 5.0    |
| 1932                                                       | 100.0  | 200.0   | 400.0   | 500.0   | 500.0   | 150.0   | 10.0    | 1494.0  | 1518.0  | 2124.0 | 533.0  | 100.0  |
| 1933                                                       | 1000.0 | 377.0   | 852.0   | 835.0   | 500.0   | 150.0   | 10.0    | 1494.0  | 1518.0  | 2124.0 | 533.0  | 100.0  |
| 1934                                                       | 260.0  | 278.0   | 777.0   | 694.0   | 567.0   | 150.0   | 10.0    | 1494.0  | 1518.0  | 1469.0 | 145.0  | 5.0    |
| 1935                                                       | 100.0  | 200.0   | 400.0   | 502.0   | 604.0   | 150.0   | 10.0    | 1494.0  | 1518.0  | 1764.0 | 298.0  | 5.0    |
| 1936                                                       | 100.0  | 200.0   | 400.0   | 630.0   | 916.0   | 430.0   | 10.0    | 1494.0  | 1813.0  | 2124.0 | 953.0  | 1000.0 |
| 1937                                                       | 1000.0 | 814.0   | 1022.0  | 890.0   | 792.0   | 150.0   | 1194.0  | 1494.0  | 1813.0  | 2124.0 | 533.0  | 100.0  |
| 1938                                                       | 260.0  | 260.0   | 879.0   | 726.0   | 529.0   | 150.0   | 10.0    | 1494.0  | 1813.0  | 2464.0 | 953.0  | 1000.0 |
| 1939                                                       | 1000.0 | 3272.0  | 3095.0  | 4342.0  | 3235.0  | 2126.0  | 1484.0  | 1610.0  | 1813.0  | 2124.0 | 953.0  | 1000.0 |
| 1940                                                       | 1000.0 | 714.0   | 1181.0  | 951.0   | 2243.0  | 660.0   | 310.0   | 1494.0  | 1813.0  | 1764.0 | 533.0  | 100.0  |
| 1941                                                       | 477.0  | 260.0   | 890.0   | 967.0   | 896.0   | 150.0   | 10.0    | 1494.0  | 1813.0  | 1764.0 | 533.0  | 100.0  |
| 1942                                                       | 260.0  | 260.0   | 1028.0  | 762.0   | 707.0   | 150.0   | 10.0    | 1494.0  | 1813.0  | 2124.0 | 953.0  | 1000.0 |
| 1943                                                       | 1000.0 | 810.0   | 2171.0  | 1648.0  | 3509.0  | 3208.0  | 15771.0 | 5918.0  | 1813.0  | 2464.0 | 1293.0 | 1800.0 |
| 1944                                                       | 2000.0 | 3800.0  | 9163.0  | 6638.0  | 4020.0  | 1842.0  | 2844.0  | 1494.0  | 1813.0  | 2464.0 | 953.0  | 1000.0 |
| 1945                                                       | 1000.0 | 642.0   | 1785.0  | 884.0   | 3715.0  | 1416.0  | 4919.0  | 5083.0  | 1813.0  | 2464.0 | 1293.0 | 1000.0 |
| 1946                                                       | 2000.0 | 3738.0  | 8034.0  | 7051.0  | 3744.0  | 3994.0  | 7402.0  | 7967.0  | 1959.0  | 2464.0 | 953.0  | 1000.0 |
| 1947                                                       | 2000.0 | 3686.0  | 5421.0  | 6333.0  | 4509.0  | 1450.0  | 11287.0 | 1494.0  | 1813.0  | 2464.0 | 953.0  | 1000.0 |
| 1948                                                       | 1000.0 | 3854.0  | 3021.0  | 7371.0  | 4329.0  | 3037.0  | 1503.0  | 8171.0  | 6806.0  | 2464.0 | 953.0  | 1000.0 |
| 1949                                                       | 1673.0 | 3641.0  | 2963.0  | 3958.0  | 3454.0  | 7251.0  | 7361.0  | 3634.0  | 1813.0  | 2464.0 | 953.0  | 1000.0 |
| 1950                                                       | 1874.0 | 3742.0  | 3207.0  | 4743.0  | 5449.0  | 4508.0  | 17782.0 | 4440.0  | 2104.0  | 2464.0 | 1293.0 | 1800.0 |
| 1951                                                       | 2000.0 | 10182.0 | 10063.0 | 8318.0  | 6966.0  | 9696.0  | 12185.0 | 7403.0  | 1813.0  | 2464.0 | 1293.0 | 1800.0 |
| 1952                                                       | 2000.0 | 4169.0  | 9587.0  | 8584.0  | 5851.0  | 4289.0  | 15100.0 | 6635.0  | 7105.0  | 2464.0 | 1293.0 | 1000.0 |
| 1953                                                       | 2000.0 | 3590.0  | 2984.0  | 8455.0  | 4669.0  | 1859.0  | 783.0   | 4398.0  | 3246.0  | 2464.0 | 953.0  | 1000.0 |
| 1954                                                       | 1000.0 | 3316.0  | 3067.0  | 5112.0  | 4236.0  | 1834.0  | 13080.0 | 1494.0  | 1813.0  | 2464.0 | 953.0  | 1000.0 |
| 1955                                                       | 1000.0 | 868.0   | 2949.0  | 3080.0  | 3447.0  | 1459.0  | 3529.0  | 1494.0  | 1813.0  | 2464.0 | 953.0  | 1000.0 |
| 1956                                                       | 1000.0 | 725.0   | 3067.0  | 3402.0  | 7092.0  | 10184.0 | 11835.0 | 7235.0  | 5492.0  | 2464.0 | 1293.0 | 1000.0 |
| 1957                                                       | 2000.0 | 3582.0  | 7605.0  | 6721.0  | 5061.0  | 2369.0  | 15677.0 | 9278.0  | 1813.0  | 2464.0 | 1293.0 | 1000.0 |
| 1958                                                       | 2000.0 | 3742.0  | 5067.0  | 7161.0  | 5014.0  | 2193.0  | 2718.0  | 5415.0  | 1813.0  | 2464.0 | 953.0  | 1000.0 |
| 1959                                                       | 1000.0 | 731.0   | 2872.0  | 1091.0  | 3181.0  | 1541.0  | 3082.0  | 2031.0  | 1813.0  | 2124.0 | 953.0  | 1000.0 |
| 1960                                                       | 1000.0 | 451.0   | 2959.0  | 1958.0  | 3743.0  | 2021.0  | 2616.0  | 1494.0  | 1813.0  | 2124.0 | 533.0  | 100.0  |
| 1961                                                       | 1000.0 | 888.0   | 1203.0  | 868.0   | 896.0   | 384.0   | 10.0    | 1494.0  | 1813.0  | 1764.0 | 533.0  | 100.0  |
| 1962                                                       | 260.0  | 260.0   | 789.0   | 791.0   | 832.0   | 602.0   | 7243.0  | 2304.0  | 1813.0  | 2464.0 | 953.0  | 1000.0 |
| 1963                                                       | 1000.0 | 2794.0  | 3243.0  | 3304.0  | 5702.0  | 794.0   | 3968.0  | 1494.0  | 7261.0  | 2464.0 | 953.0  | 1000.0 |
| 1964                                                       | 1000.0 | 770.0   | 3338.0  | 1099.0  | 3134.0  | 2462.0  | 12370.0 | 5449.0  | 4821.0  | 2464.0 | 1293.0 | 1000.0 |
| 1965                                                       | 2000.0 | 4205.0  | 5104.0  | 8612.0  | 6233.0  | 6710.0  | 14401.0 | 7905.0  | 2634.0  | 2464.0 | 1293.0 | 1800.0 |
| 1966                                                       | 3204.0 | 7794.0  | 9631.0  | 8395.0  | 4566.0  | 2246.0  | 1309.0  | 1494.0  | 1813.0  | 2124.0 | 953.0  | 1000.0 |
| 1967                                                       | 1000.0 | 1210.0  | 1844.0  | 1019.0  | 2418.0  | 510.0   | 6144.0  | 2433.0  | 3915.0  | 2464.0 | 1293.0 | 1000.0 |
| 1968                                                       | 2000.0 | 4150.0  | 7551.0  | 6848.0  | 5151.0  | 1540.0  | 1182.0  | 3310.0  | 1813.0  | 2464.0 | 1293.0 | 1800.0 |
| 1969                                                       | 2000.0 | 3813.0  | 6679.0  | 9681.0  | 8776.0  | 6614.0  | 4067.0  | 5162.0  | 2272.0  | 2464.0 | 953.0  | 1000.0 |
| 1970                                                       | 1274.0 | 3700.0  | 3265.0  | 6873.0  | 4544.0  | 2723.0  | 7515.0  | 5807.0  | 7112.0  | 2464.0 | 1293.0 | 1800.0 |
| 1971                                                       | 2000.0 | 3717.0  | 8980.0  | 13550.0 | 8632.0  | 9651.0  | 13108.0 | 17517.0 | 13721.0 | 4575.0 | 1426.0 | 3963.0 |
| 1972                                                       | 6472.0 | 11663.0 | 10437.0 | 13985.0 | 10039.0 | 14366.0 | 11811.0 | 12464.0 | 9639.0  | 2464.0 | 1293.0 | 1800.0 |
| 1973                                                       | 3238.0 | 10351.0 | 10367.0 | 11608.0 | 5570.0  | 3437.0  | 5185.0  | 4697.0  | 1849.0  | 2464.0 | 953.0  | 1000.0 |
| 1974                                                       | 2000.0 | 3943.0  | 9702.0  | 9287.0  | 5266.0  | 5911.0  | 19333.0 | 9684.0  | 12803.0 | 2464.0 | 1293.0 | 1800.0 |
| 1975                                                       | 2000.0 | 8483.0  | 9987.0  | 8073.0  | 5789.0  | 5292.0  | 13921.0 | 8742.0  | 8349.0  | 3149.0 | 1466.0 | 1800.0 |
| 1976                                                       | 4863.0 | 9773.0  | 10512.0 | 12022.0 | 7862.0  | 10071.0 | 14275.0 | 18011.0 | 7402.0  | 2464.0 | 1293.0 | 1800.0 |
| 1977                                                       | 2000.0 | 6608.0  | 9853.0  | 7579.0  | 4991.0  | 1226.0  | 10.0    | 1494.0  | 1813.0  | 1764.0 | 533.0  | 100.0  |
| 1978                                                       | 260.0  | 260.0   | 619.0   | 1003.0  | 752.0   | 150.0   | 10.0    | 8081.0  | 1813.0  | 2464.0 | 1293.0 | 1800.0 |
| 1979                                                       | 2000.0 | 3928.0  | 6028.0  | 6846.0  | 4845.0  | 1902.0  | 6612.0  | 1494.0  | 1813.0  | 2464.0 | 953.0  | 1000.0 |
| 1980                                                       | 1000.0 | 1000.0  | 868.0   | 1138.0  | 3765.0  | 1045.0  | 1751.0  | 6346.0  | 8481.0  | 2464.0 | 953.0  | 1000.0 |
| 1981                                                       | 2000.0 | 3745.0  | 3163.0  | 6380.0  | 4137.0  | 1223.0  | 858.0   | 1494.0  | 1813.0  | 2464.0 | 953.0  | 1000.0 |
| 1982                                                       | 1000.0 | 1359.0  | 1563.0  | 1353.0  | 3914.0  | 6392.0  | 11900.0 | 14848.0 | 5686.0  | 3693.0 | 1293.0 | 1800.0 |
| 1983                                                       | 6859.0 | 10296.0 | 10274.0 | 15486.0 | 6651.0  | 6075.0  | 8375.0  | 12261.0 | 15743.0 | 3218.0 | 2123.0 | 1800.0 |
| 1984                                                       | 6484.0 | 12419.0 | 11091.0 | 17596.0 | 6912.0  | 7717.0  | 12366.0 | 14742.0 | 22845.0 | 2464.0 | 2314.0 | 1800.0 |
| 1985                                                       | 5286.0 | 11184.0 | 10232.0 | 12322.0 | 5508.0  | 4410.0  | 9992.0  | 10043.0 | 1813.0  | 2464.0 | 953.0  | 1000.0 |
| 1986                                                       | 1000.0 | 2261.0  | 2922.0  | 9558.0  | 6357.0  | 16241.0 | 14974.0 | 13017.0 | 16251.0 | 2464.0 | 1293.0 | 1800.0 |
| 1987                                                       | 2000.0 | 8502.0  | 10014.0 | 10605.0 | 5705.0  | 2737.0  | 10.0    | 1494.0  | 1813.0  | 2124.0 | 953.0  | 1000.0 |
| 1988                                                       | 1000.0 | 1236.0  | 2148.0  | 960.0   | 2226.0  | 758.0   | 10.0    | 1494.0  | 1813.0  | 1764.0 | 533.0  | 100.0  |
| 1989                                                       | 260.0  | 330.0   | 767.0   | 707.0   | 592.0   | 150.0   | 10.0    | 1494.0  | 1813.0  | 2124.0 | 953.0  | 1000.0 |
| AVG                                                        | 1686.5 | 3408.7  | 4532.7  | 5287.8  | 4054.9  | 3222.7  | 8054.7  | 4941.9  | 4031.5  | 2380.2 | 1022.8 | 1062.5 |
| MAX                                                        | 6859.0 | 12419.0 | 11091.0 | 17596.0 | 10039.0 | 16241.0 | 19333.0 | 17517.0 | 22845.0 | 4575.0 | 2314.0 | 3963.0 |
| MIN                                                        | 100.0  | 200.0   | 400.0   | 500.0   | 500.0   | 150.0   | 10.0    | 1494.0  | 1518.0  | 1469.0 | 145.0  | 5.0    |

TABLE B1

## STUDY 953 UPPER SNAKE RIVER OPERATION STUDIES (IDWR MODEL)

UNITS ARE 1000 ACRE-FEET

| YEAR | OCT    | NOV    | DEC    | JAN    | FEB    | MAR    | APR    | MAY    | JUN    | JUL    | AUG    | SEP    |
|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1928 | 2340.5 | 2731.2 | 3053.5 | 3178.5 | 3291.5 | 3530.7 | 2962.7 | 3867.4 | 4039.6 | 3519.0 | 2844.0 | 2478.4 |
| 1929 | 2628.7 | 2935.8 | 3074.2 | 3067.1 | 3256.2 | 3530.2 | 3684.6 | 3830.9 | 3819.5 | 2990.8 | 2211.9 | 1875.3 |
| 1930 | 2104.8 | 2504.9 | 2807.7 | 3049.8 | 3210.1 | 3487.5 | 3801.7 | 3773.7 | 3387.7 | 2409.3 | 1831.4 | 1458.4 |
| 1931 | 1748.1 | 2162.3 | 2483.4 | 2786.0 | 3023.4 | 3321.8 | 3478.7 | 3073.8 | 2347.3 | 1186.1 | 484.2  | 120.6  |
| 1932 | 207.7  | 470.6  | 763.5  | 1032.2 | 1272.1 | 1574.8 | 1866.3 | 2286.1 | 2599.8 | 1896.6 | 1192.8 | 777.2  |
| 1933 | 824.2  | 1193.8 | 1532.2 | 1864.7 | 2130.2 | 2442.7 | 2683.7 | 2695.2 | 2842.9 | 1879.4 | 1132.4 | 667.1  |
| 1934 | 727.4  | 1035.1 | 1411.7 | 1743.5 | 2025.9 | 2343.4 | 2537.4 | 2202.0 | 1367.2 | 299.0  | 43.0   | 51.3   |
| 1935 | 113.4  | 364.5  | 632.0  | 915.8  | 1141.2 | 1380.2 | 1671.0 | 1743.2 | 1781.7 | 921.1  | 275.4  | 46.1   |
| 1936 | 115.2  | 480.0  | 766.0  | 1087.9 | 1365.3 | 1663.9 | 2151.2 | 3012.5 | 3227.7 | 2294.0 | 1569.1 | 1067.0 |
| 1937 | 1137.3 | 1483.9 | 1837.3 | 2091.9 | 2349.8 | 2662.0 | 2877.7 | 3098.7 | 2848.9 | 1852.3 | 1058.0 | 685.3  |
| 1938 | 795.4  | 1103.6 | 1509.0 | 1835.8 | 2137.2 | 2483.9 | 2973.9 | 3493.3 | 3833.1 | 3312.7 | 2561.4 | 2083.2 |
| 1939 | 2305.9 | 2622.4 | 2913.3 | 3069.4 | 3219.3 | 3513.4 | 3896.4 | 4005.3 | 3595.6 | 2627.7 | 1809.9 | 1385.9 |
| 1940 | 1571.4 | 1899.0 | 2232.5 | 2561.1 | 2801.3 | 3102.7 | 3372.5 | 3323.0 | 2815.6 | 1899.4 | 894.9  | 671.7  |
| 1941 | 903.1  | 1255.4 | 1614.4 | 1928.6 | 2226.9 | 2551.3 | 2795.5 | 2817.4 | 2442.8 | 1457.4 | 889.2  | 576.7  |
| 1942 | 808.8  | 1203.4 | 1656.8 | 1977.4 | 2254.3 | 2575.1 | 3084.2 | 3294.1 | 3192.9 | 2379.2 | 1563.8 | 1138.5 |
| 1943 | 1207.9 | 1640.9 | 2014.4 | 2395.2 | 2594.0 | 2795.9 | 2768.1 | 3023.8 | 3761.6 | 3725.8 | 3183.2 | 2778.7 |
| 1944 | 2930.6 | 3265.4 | 3212.1 | 3199.0 | 3350.4 | 3612.7 | 3784.2 | 3782.5 | 3838.6 | 3062.6 | 2238.6 | 1849.0 |
| 1945 | 1923.7 | 2327.7 | 2664.4 | 3028.7 | 3222.7 | 3475.5 | 3472.9 | 3538.3 | 3800.4 | 3374.7 | 2801.0 | 2539.7 |
| 1946 | 2737.6 | 3061.3 | 3094.0 | 3106.1 | 3269.8 | 3500.5 | 3836.2 | 4030.6 | 4026.8 | 3196.3 | 2544.5 | 2304.1 |
| 1947 | 2536.1 | 2879.6 | 3083.1 | 3096.1 | 3245.9 | 3546.5 | 3155.3 | 3580.1 | 3761.7 | 3094.3 | 2533.7 | 2222.8 |
| 1948 | 2431.3 | 2738.5 | 3077.1 | 3092.0 | 3253.5 | 3435.5 | 3735.9 | 3959.0 | 4031.1 | 3197.0 | 2513.8 | 2170.7 |
| 1949 | 2365.7 | 2652.0 | 2942.0 | 3084.6 | 3246.0 | 3246.2 | 3277.8 | 3853.3 | 3983.5 | 3140.4 | 2486.4 | 2093.5 |
| 1950 | 2321.5 | 2629.4 | 2925.8 | 3080.8 | 3209.0 | 3409.3 | 2934.0 | 3108.1 | 3967.6 | 3884.8 | 3380.3 | 3119.5 |
| 1951 | 3357.5 | 3368.2 | 3334.1 | 3233.1 | 3258.0 | 3113.8 | 2967.4 | 3426.9 | 3717.6 | 3314.7 | 3080.5 | 2747.1 |
| 1952 | 2965.5 | 3281.9 | 3234.4 | 3162.2 | 3241.8 | 3414.6 | 3222.7 | 3988.1 | 4038.3 | 3367.1 | 2780.3 | 2429.3 |
| 1953 | 2484.5 | 2741.1 | 3081.2 | 3107.2 | 3264.3 | 3530.3 | 3756.6 | 3576.5 | 4035.7 | 3333.9 | 2863.1 | 2219.1 |
| 1954 | 2337.1 | 2634.5 | 2947.3 | 3103.4 | 3264.7 | 3534.5 | 3023.1 | 3471.4 | 3460.5 | 2979.2 | 2358.7 | 1944.7 |
| 1955 | 2144.9 | 2580.7 | 2880.7 | 3082.8 | 3244.8 | 3512.6 | 3653.2 | 3724.5 | 3680.4 | 2980.2 | 2186.2 | 1760.9 |
| 1956 | 1928.6 | 2378.4 | 2775.3 | 3117.1 | 3082.4 | 2875.5 | 2828.5 | 3371.7 | 4021.0 | 3436.0 | 2842.8 | 2520.7 |
| 1957 | 2696.3 | 3032.0 | 3100.3 | 3120.4 | 3296.1 | 3583.6 | 3003.3 | 3300.1 | 3958.9 | 3407.8 | 2745.9 | 2399.3 |
| 1958 | 2554.6 | 2844.7 | 3078.9 | 3082.2 | 3261.6 | 3529.4 | 3721.0 | 4031.3 | 3867.7 | 2804.1 | 2083.1 | 1742.8 |
| 1959 | 1824.0 | 2250.9 | 2584.1 | 2979.3 | 3200.2 | 3463.8 | 3513.3 | 3364.9 | 3558.4 | 2748.0 | 1996.3 | 1651.7 |
| 1960 | 1977.1 | 2417.8 | 2732.2 | 3064.6 | 3245.9 | 3519.8 | 3812.6 | 3808.7 | 3319.0 | 2211.3 | 1456.2 | 1028.2 |
| 1961 | 1180.5 | 1563.8 | 1897.7 | 2182.0 | 2489.2 | 2793.6 | 2972.9 | 2810.1 | 2458.2 | 1364.6 | 645.9  | 476.3  |
| 1962 | 783.3  | 1185.9 | 1557.6 | 1871.9 | 2396.9 | 2798.9 | 3105.0 | 3658.0 | 3902.2 | 3291.7 | 2672.5 | 2230.1 |
| 1963 | 2373.5 | 2642.9 | 2899.1 | 3087.2 | 3286.5 | 3555.9 | 3821.0 | 3939.3 | 4030.8 | 3111.0 | 2373.3 | 2089.4 |
| 1964 | 2066.7 | 2506.7 | 2752.7 | 3083.8 | 3235.3 | 3408.9 | 3043.6 | 3284.9 | 3992.0 | 3577.5 | 2913.4 | 2483.1 |
| 1965 | 2510.3 | 2796.4 | 3110.1 | 3114.5 | 3135.1 | 3038.4 | 2823.4 | 3069.4 | 3951.2 | 3900.6 | 3528.1 | 3354.6 |
| 1966 | 3399.5 | 3375.7 | 3297.0 | 3271.5 | 3430.1 | 3711.7 | 3806.2 | 3973.5 | 3597.9 | 2565.0 | 1798.2 | 1467.7 |
| 1967 | 1630.9 | 2023.0 | 2369.7 | 2754.1 | 2977.9 | 3274.3 | 3089.9 | 3282.5 | 4038.6 | 3751.9 | 3085.1 | 2647.3 |
| 1968 | 2808.2 | 3082.1 | 3087.4 | 3100.4 | 3260.4 | 3537.1 | 3612.7 | 3489.3 | 4026.0 | 3317.9 | 3036.6 | 2806.6 |
| 1969 | 2893.5 | 3159.3 | 3217.9 | 3198.2 | 3188.8 | 3153.3 | 3572.9 | 4016.2 | 4039.6 | 3286.7 | 2594.7 | 2253.1 |
| 1970 | 2466.7 | 2727.8 | 3013.6 | 3110.2 | 3255.7 | 3433.5 | 3172.9 | 3477.1 | 4033.0 | 3643.8 | 2974.4 | 2790.6 |
| 1971 | 2905.4 | 3223.1 | 3227.2 | 2967.7 | 2962.7 | 2790.8 | 2630.7 | 3132.2 | 4039.6 | 4000.6 | 3613.1 | 3379.9 |
| 1972 | 3426.0 | 3404.3 | 3376.3 | 3091.6 | 3051.8 | 2790.8 | 2708.2 | 2993.0 | 3946.8 | 3646.2 | 3289.7 | 3144.4 |
| 1973 | 3453.3 | 3435.5 | 3379.4 | 3208.3 | 3381.2 | 3654.9 | 3847.1 | 4036.7 | 4016.3 | 3298.4 | 2659.1 | 2537.0 |
| 1974 | 2791.6 | 3164.8 | 3110.1 | 3032.4 | 3152.8 | 3283.8 | 2863.2 | 3254.3 | 4037.7 | 3880.0 | 3446.1 | 3099.1 |
| 1975 | 3303.0 | 3315.3 | 3233.8 | 3216.5 | 3346.7 | 3463.0 | 2980.4 | 3020.6 | 3752.3 | 4009.8 | 3620.2 | 3305.3 |
| 1976 | 3395.5 | 3353.3 | 3289.1 | 3059.0 | 3086.2 | 2920.4 | 2697.6 | 3201.7 | 3813.4 | 3491.0 | 3143.3 | 2948.9 |
| 1977 | 3233.7 | 3288.5 | 3190.8 | 3180.0 | 3317.6 | 3574.7 | 3564.6 | 2968.6 | 2323.1 | 1202.9 | 542.0  | 226.1  |
| 1978 | 492.1  | 828.8  | 1250.1 | 1607.4 | 1917.7 | 2251.7 | 2864.4 | 3156.2 | 3763.9 | 3506.5 | 2945.3 | 2714.5 |
| 1979 | 2796.9 | 3029.6 | 3106.6 | 3106.8 | 3282.3 | 3664.5 | 3514.6 | 3770.7 | 3741.0 | 2869.2 | 2258.2 | 1746.4 |
| 1980 | 1890.4 | 2214.3 | 2602.0 | 2967.8 | 3232.3 | 3513.8 | 3667.6 | 4043.5 | 4028.4 | 3324.0 | 2735.0 | 2485.6 |
| 1981 | 2503.4 | 2747.1 | 3062.0 | 3081.2 | 3246.2 | 3518.9 | 3736.0 | 3839.3 | 3933.1 | 2986.7 | 2028.4 | 1452.4 |
| 1982 | 1651.4 | 2038.5 | 2426.7 | 2761.8 | 2983.1 | 2920.8 | 2742.6 | 3063.1 | 3823.6 | 4003.1 | 3560.8 | 3382.1 |
| 1983 | 3436.2 | 3431.4 | 3398.0 | 3061.9 | 3224.3 | 3424.2 | 3437.8 | 3771.9 | 4039.3 | 4006.6 | 3624.0 | 3303.8 |
| 1984 | 3456.0 | 3471.8 | 3441.6 | 2991.2 | 3173.5 | 3245.5 | 3187.7 | 3922.9 | 4039.6 | 3960.5 | 3633.5 | 3390.7 |
| 1985 | 3448.3 | 3444.3 | 3406.5 | 3186.9 | 3353.0 | 3613.4 | 3894.4 | 4035.0 | 3784.0 | 2852.1 | 2181.5 | 2046.8 |
| 1986 | 2322.7 | 2677.5 | 3015.0 | 2928.2 | 3155.1 | 2845.9 | 3034.7 | 3437.5 | 4037.3 | 3747.7 | 3258.4 | 3114.8 |
| 1987 | 3413.4 | 3430.1 | 3361.2 | 3237.5 | 3407.2 | 3690.5 | 3851.0 | 3652.5 | 3157.4 | 2362.9 | 1640.3 | 1177.9 |
| 1988 | 1252.8 | 1716.4 | 2023.0 | 2391.5 | 2639.3 | 2940.1 | 3292.1 | 3145.5 | 2857.8 | 1528.8 | 801.6  | 401.1  |
| 1989 | 503.4  | 912.3  | 1274.1 | 1611.3 | 1901.2 | 2341.3 | 2958.4 | 3307.0 | 3333.3 | 2453.4 | 1752.1 | 1292.8 |
| AVG  | 2142.7 | 2424.7 | 2636.7 | 2755.5 | 2933.6 | 3134.3 | 3207.1 | 3419.8 | 3669.2 | 2914.1 | 2299.2 | 1973.8 |
| MAX  | 3456.0 | 3471.8 | 3441.6 | 3271.5 | 3430.1 | 3711.7 | 3836.2 | 4043.5 | 4039.6 | 4009.8 | 3633.5 | 3390.7 |
| MIN  | 113.4  | 364.5  | 632.0  | 915.8  | 1141.2 | 1380.2 | 1671.0 | 1743.2 | 1367.2 | 299.0  | 43.0   | 46.1   |

TABLE B1

| JACKSON LAKE<br>STUDY 955 UPPER SNAKE RIVER OPERATION STUDIES (IDWR MODEL)<br>UNITS ARE 1000 ACRE-FEET |       |       |       |       |       |       |       |       |       |       |       |       |
|--------------------------------------------------------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| YEAR                                                                                                   | OCT   | NOV   | DEC   | JAN   | FEB   | MAR   | APR   | MAY   | JUN   | JUL   | AUG   | SEP   |
| 1928                                                                                                   | 585.9 | 620.0 | 638.8 | 654.1 | 657.5 | 660.0 | 350.0 | 805.0 | 847.0 | 847.0 | 730.0 | 630.0 |
| 1929                                                                                                   | 630.0 | 624.0 | 626.9 | 631.8 | 636.9 | 639.5 | 650.6 | 775.6 | 847.0 | 814.9 | 690.0 | 630.0 |
| 1930                                                                                                   | 627.9 | 618.5 | 615.3 | 614.8 | 618.9 | 617.0 | 680.4 | 821.8 | 847.0 | 798.7 | 690.0 | 630.0 |
| 1931                                                                                                   | 630.0 | 624.3 | 610.0 | 600.0 | 594.4 | 592.9 | 591.2 | 630.0 | 644.2 | 512.3 | 188.3 | 60.0  |
| 1932                                                                                                   | 57.0  | 52.6  | 52.9  | 54.8  | 58.5  | 63.5  | 75.4  | 279.9 | 606.7 | 600.0 | 500.0 | 400.0 |
| 1933                                                                                                   | 300.0 | 290.0 | 287.5 | 294.2 | 299.5 | 295.2 | 297.0 | 381.5 | 753.1 | 615.4 | 500.0 | 400.0 |
| 1934                                                                                                   | 300.0 | 290.0 | 285.3 | 289.1 | 287.7 | 291.7 | 350.0 | 400.0 | 302.5 | 200.0 | 50.0  | 50.0  |
| 1935                                                                                                   | 53.2  | 57.0  | 59.0  | 64.7  | 65.4  | 66.9  | 88.5  | 232.5 | 583.6 | 320.2 | 100.0 | 50.0  |
| 1936                                                                                                   | 50.0  | 49.6  | 44.6  | 60.1  | 75.1  | 78.2  | 120.8 | 479.9 | 734.4 | 678.2 | 571.1 | 421.3 |
| 1937                                                                                                   | 388.4 | 338.2 | 320.0 | 319.8 | 324.9 | 321.5 | 326.4 | 532.7 | 735.8 | 610.3 | 500.0 | 400.0 |
| 1938                                                                                                   | 300.0 | 290.0 | 287.5 | 302.1 | 308.4 | 317.9 | 345.1 | 544.1 | 847.0 | 847.0 | 690.0 | 630.0 |
| 1939                                                                                                   | 630.0 | 628.1 | 627.9 | 631.8 | 637.9 | 639.4 | 670.0 | 847.0 | 847.0 | 806.9 | 690.0 | 630.0 |
| 1940                                                                                                   | 628.0 | 574.4 | 523.4 | 478.3 | 477.7 | 480.7 | 506.5 | 745.6 | 840.0 | 600.0 | 500.0 | 400.0 |
| 1941                                                                                                   | 300.0 | 290.0 | 288.3 | 290.6 | 290.5 | 284.4 | 293.5 | 484.7 | 651.2 | 600.0 | 500.0 | 382.0 |
| 1942                                                                                                   | 300.0 | 290.0 | 305.8 | 309.0 | 311.6 | 307.4 | 343.0 | 478.7 | 728.5 | 714.4 | 518.6 | 460.0 |
| 1943                                                                                                   | 425.6 | 429.8 | 435.8 | 446.5 | 430.2 | 383.5 | 350.0 | 400.0 | 840.0 | 847.0 | 730.0 | 630.0 |
| 1944                                                                                                   | 630.0 | 630.0 | 622.4 | 617.6 | 617.3 | 618.3 | 623.6 | 767.9 | 847.0 | 825.2 | 690.0 | 630.0 |
| 1945                                                                                                   | 624.3 | 620.2 | 610.0 | 605.9 | 612.1 | 610.5 | 570.0 | 652.6 | 840.0 | 847.0 | 690.0 | 630.0 |
| 1946                                                                                                   | 630.0 | 631.5 | 635.7 | 644.1 | 657.7 | 680.0 | 670.0 | 847.0 | 847.0 | 820.3 | 690.0 | 630.0 |
| 1947                                                                                                   | 630.0 | 629.3 | 631.6 | 637.4 | 636.8 | 640.5 | 486.7 | 800.4 | 847.0 | 846.9 | 690.0 | 630.0 |
| 1948                                                                                                   | 630.0 | 629.8 | 625.9 | 630.9 | 634.3 | 635.8 | 653.3 | 847.0 | 847.0 | 818.9 | 690.0 | 630.0 |
| 1949                                                                                                   | 630.0 | 630.1 | 632.7 | 637.4 | 643.5 | 649.5 | 570.0 | 847.0 | 847.0 | 820.7 | 690.0 | 630.0 |
| 1950                                                                                                   | 630.0 | 627.1 | 620.3 | 631.2 | 622.8 | 632.1 | 350.0 | 421.0 | 834.5 | 847.0 | 730.0 | 630.0 |
| 1951                                                                                                   | 631.7 | 641.7 | 646.2 | 661.6 | 620.0 | 597.5 | 350.0 | 626.8 | 840.0 | 847.0 | 730.0 | 630.0 |
| 1952                                                                                                   | 631.9 | 629.1 | 638.0 | 651.3 | 644.0 | 680.0 | 570.0 | 847.0 | 847.0 | 844.4 | 690.0 | 630.0 |
| 1953                                                                                                   | 625.9 | 618.1 | 617.7 | 634.2 | 640.8 | 642.0 | 661.6 | 691.0 | 847.0 | 846.9 | 690.0 | 630.0 |
| 1954                                                                                                   | 626.3 | 621.1 | 617.3 | 631.7 | 640.1 | 645.2 | 355.8 | 630.0 | 840.0 | 630.0 | 690.0 | 630.0 |
| 1955                                                                                                   | 630.0 | 626.4 | 620.4 | 622.3 | 626.3 | 633.6 | 639.7 | 779.2 | 847.0 | 830.0 | 690.0 | 630.0 |
| 1956                                                                                                   | 630.0 | 634.7 | 654.8 | 648.0 | 620.0 | 418.1 | 350.0 | 630.0 | 847.0 | 847.0 | 730.0 | 630.0 |
| 1957                                                                                                   | 630.0 | 653.3 | 662.3 | 670.0 | 680.0 | 680.0 | 350.5 | 567.3 | 840.0 | 847.0 | 690.0 | 630.0 |
| 1958                                                                                                   | 630.0 | 622.1 | 624.1 | 627.3 | 641.5 | 650.4 | 663.1 | 847.0 | 847.0 | 754.1 | 675.8 | 630.0 |
| 1959                                                                                                   | 622.7 | 623.8 | 617.2 | 617.3 | 627.7 | 632.8 | 570.0 | 630.0 | 840.0 | 798.0 | 690.0 | 630.0 |
| 1960                                                                                                   | 630.0 | 623.0 | 613.6 | 618.7 | 622.4 | 625.1 | 649.0 | 791.8 | 847.0 | 762.0 | 500.0 | 400.0 |
| 1961                                                                                                   | 394.2 | 380.8 | 342.1 | 339.1 | 350.0 | 350.0 | 368.4 | 513.2 | 654.8 | 586.6 | 341.5 | 259.2 |
| 1962                                                                                                   | 286.4 | 290.0 | 305.4 | 312.6 | 326.2 | 334.1 | 396.4 | 666.1 | 842.2 | 827.9 | 690.0 | 630.0 |
| 1963                                                                                                   | 630.0 | 624.2 | 617.5 | 618.8 | 627.8 | 623.6 | 633.8 | 829.8 | 847.0 | 796.8 | 690.0 | 630.0 |
| 1964                                                                                                   | 630.0 | 627.9 | 617.9 | 624.6 | 623.8 | 626.9 | 387.3 | 558.7 | 840.0 | 847.0 | 725.2 | 630.0 |
| 1965                                                                                                   | 626.8 | 620.2 | 643.5 | 653.3 | 620.0 | 551.0 | 350.0 | 400.0 | 840.0 | 847.0 | 730.0 | 630.0 |
| 1966                                                                                                   | 630.0 | 633.1 | 627.0 | 638.8 | 640.7 | 644.8 | 665.9 | 847.0 | 847.0 | 773.0 | 690.0 | 630.0 |
| 1967                                                                                                   | 627.3 | 613.3 | 611.3 | 614.1 | 620.0 | 622.0 | 455.3 | 602.0 | 847.0 | 847.0 | 730.0 | 630.0 |
| 1968                                                                                                   | 631.6 | 627.8 | 625.9 | 632.6 | 641.6 | 644.0 | 648.7 | 630.0 | 847.0 | 822.2 | 729.9 | 630.0 |
| 1969                                                                                                   | 630.0 | 632.3 | 630.6 | 653.5 | 620.0 | 575.5 | 619.5 | 847.0 | 847.0 | 805.0 | 690.0 | 630.0 |
| 1970                                                                                                   | 626.6 | 620.0 | 618.4 | 635.8 | 631.6 | 634.4 | 525.0 | 630.0 | 847.0 | 843.3 | 717.7 | 630.0 |
| 1971                                                                                                   | 630.0 | 634.3 | 647.2 | 654.8 | 620.0 | 454.2 | 350.0 | 447.1 | 847.0 | 847.0 | 730.0 | 630.0 |
| 1972                                                                                                   | 638.0 | 640.9 | 655.0 | 666.7 | 620.0 | 360.0 | 350.0 | 400.0 | 840.0 | 847.0 | 730.0 | 641.0 |
| 1973                                                                                                   | 657.3 | 663.5 | 669.2 | 670.0 | 680.0 | 680.0 | 687.2 | 846.8 | 847.0 | 782.8 | 690.0 | 630.0 |
| 1974                                                                                                   | 630.0 | 646.8 | 652.0 | 666.6 | 620.0 | 643.2 | 350.0 | 568.2 | 847.0 | 847.0 | 730.0 | 630.0 |
| 1975                                                                                                   | 630.0 | 626.8 | 624.0 | 635.8 | 646.2 | 657.4 | 350.0 | 400.0 | 761.8 | 847.0 | 730.0 | 630.0 |
| 1976                                                                                                   | 630.0 | 632.8 | 639.4 | 648.7 | 620.0 | 478.2 | 350.0 | 516.9 | 840.0 | 847.0 | 730.0 | 630.0 |
| 1977                                                                                                   | 630.0 | 620.0 | 611.8 | 614.1 | 609.8 | 608.0 | 625.0 | 630.0 | 600.0 | 515.6 | 266.4 | 60.0  |
| 1978                                                                                                   | 58.9  | 56.4  | 71.8  | 80.2  | 93.2  | 89.6  | 114.2 | 309.6 | 682.9 | 721.2 | 667.7 | 630.0 |
| 1979                                                                                                   | 625.1 | 620.0 | 624.9 | 631.8 | 640.3 | 644.6 | 570.0 | 796.5 | 847.0 | 801.8 | 690.0 | 630.0 |
| 1980                                                                                                   | 622.9 | 616.8 | 609.7 | 620.6 | 628.9 | 633.0 | 661.2 | 847.0 | 847.0 | 806.7 | 690.0 | 630.0 |
| 1981                                                                                                   | 627.3 | 620.9 | 618.5 | 618.5 | 620.7 | 618.8 | 646.1 | 847.0 | 847.0 | 759.0 | 671.4 | 624.3 |
| 1982                                                                                                   | 620.2 | 620.0 | 625.8 | 631.1 | 639.8 | 496.8 | 350.0 | 400.0 | 819.7 | 847.0 | 730.0 | 630.3 |
| 1983                                                                                                   | 636.8 | 641.7 | 651.7 | 665.4 | 680.0 | 680.0 | 570.0 | 729.4 | 847.0 | 847.0 | 730.0 | 630.0 |
| 1984                                                                                                   | 655.5 | 680.0 | 680.0 | 643.3 | 640.2 | 648.1 | 570.0 | 802.3 | 847.0 | 847.0 | 730.0 | 643.1 |
| 1985                                                                                                   | 641.9 | 653.6 | 658.5 | 662.7 | 680.0 | 680.0 | 670.0 | 847.0 | 847.0 | 777.0 | 690.0 | 630.0 |
| 1986                                                                                                   | 630.0 | 637.1 | 642.9 | 655.5 | 680.0 | 490.2 | 413.5 | 630.0 | 847.0 | 847.0 | 730.0 | 631.5 |
| 1987                                                                                                   | 638.6 | 650.0 | 651.3 | 659.8 | 680.0 | 680.0 | 670.0 | 847.0 | 840.0 | 740.4 | 556.5 | 453.9 |
| 1988                                                                                                   | 430.3 | 425.2 | 419.1 | 410.5 | 388.1 | 359.0 | 407.4 | 614.3 | 765.8 | 600.0 | 469.6 | 158.4 |
| 1989                                                                                                   | 147.1 | 153.4 | 153.1 | 160.1 | 162.6 | 175.7 | 237.3 | 547.3 | 806.3 | 743.3 | 680.4 | 560.7 |
| AVG                                                                                                    | 538.6 | 536.7 | 536.4 | 540.9 | 538.6 | 520.1 | 468.9 | 639.1 | 801.2 | 763.1 | 631.4 | 546.9 |
| MAX                                                                                                    | 657.3 | 690.0 | 680.0 | 670.0 | 680.0 | 680.0 | 670.0 | 847.0 | 847.0 | 847.0 | 730.0 | 643.1 |
| MIN                                                                                                    | 50.0  | 49.6  | 44.6  | 54.8  | 58.5  | 63.5  | 75.4  | 232.5 | 302.5 | 200.0 | 50.0  | 50.0  |

TABLE C1

## STUDY 953 UPPER SNAKE RIVER OPERATION STUDIES (IDWR MODEL)

UNITS ARE 1000 ACRE-FEET

| YEAR | OCT    | NOV    | DEC    | JAN    | FEB    | MAR    | APR    | MAY    | JUN    | JUL    | AUG    | SEP    |
|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1928 | 1760.5 | 2120.0 | 2423.5 | 2531.2 | 2642.8 | 2674.1 | 2612.7 | 3062.4 | 3192.6 | 2672.0 | 2144.0 | 1896.4 |
| 1929 | 2048.7 | 2355.8 | 2491.3 | 2499.3 | 2663.4 | 2934.8 | 3078.0 | 3099.2 | 2972.5 | 2210.8 | 1571.9 | 1295.3 |
| 1930 | 1526.6 | 1938.3 | 2236.2 | 2478.8 | 2635.0 | 2914.3 | 3185.1 | 2995.8 | 2540.7 | 1629.3 | 1191.4 | 878.4  |
| 1931 | 1168.1 | 1582.3 | 1918.0 | 2215.0 | 2458.0 | 2767.1 | 2925.9 | 2493.1 | 1741.3 | 711.9  | 313.9  | 110.6  |
| 1932 | 200.6  | 467.9  | 780.5  | 1027.3 | 1263.5 | 1561.2 | 1860.7 | 2057.9 | 2033.5 | 1344.3 | 692.8  | 427.2  |
| 1933 | 561.2  | 943.8  | 1284.7 | 1610.5 | 1870.7 | 2187.5 | 2438.6 | 2343.5 | 2129.4 | 1299.3 | 632.4  | 317.1  |
| 1934 | 477.4  | 789.5  | 1170.8 | 1498.8 | 1782.6 | 2096.1 | 2202.2 | 1802.0 | 1107.2 | 119.4  | 43.0   | 51.3   |
| 1935 | 110.1  | 357.4  | 622.9  | 901.0  | 1125.7 | 1363.2 | 1632.3 | 1560.3 | 1247.5 | 650.0  | 175.4  | 46.1   |
| 1936 | 115.2  | 460.0  | 766.0  | 1072.4 | 1334.8 | 1630.3 | 2074.9 | 2577.0 | 2537.5 | 1659.9 | 1045.0 | 692.7  |
| 1937 | 795.8  | 1192.6 | 1549.2 | 1804.0 | 2056.8 | 2372.4 | 2583.1 | 2597.8 | 2144.8 | 1280.4 | 558.0  | 335.3  |
| 1938 | 545.4  | 854.8  | 1252.7 | 1574.9 | 1872.0 | 2207.2 | 2689.9 | 2990.2 | 2986.1 | 2465.7 | 1921.4 | 1503.2 |
| 1939 | 1725.9 | 2042.4 | 2333.3 | 2475.5 | 2629.3 | 2921.9 | 3264.6 | 3158.3 | 2748.6 | 1847.7 | 1169.9 | 805.9  |
| 1940 | 993.3  | 1374.6 | 1742.1 | 2115.8 | 2349.7 | 2648.1 | 2893.0 | 2603.3 | 2015.6 | 1149.4 | 399.4  | 321.7  |
| 1941 | 653.1  | 1005.4 | 1366.1 | 1678.0 | 1978.4 | 2306.9 | 2541.9 | 2362.5 | 1831.2 | 907.4  | 389.2  | 231.8  |
| 1942 | 558.8  | 953.4  | 1391.0 | 1708.4 | 1982.7 | 2307.7 | 2781.2 | 2855.2 | 2504.1 | 1704.4 | 1063.8 | 716.1  |
| 1943 | 811.9  | 1240.7 | 1608.2 | 1978.3 | 2193.4 | 2412.5 | 2418.1 | 2623.8 | 2961.6 | 2678.8 | 2483.2 | 2185.4 |
| 1944 | 2340.6 | 2675.3 | 2629.7 | 2621.4 | 2773.1 | 3034.4 | 3200.5 | 3054.4 | 2991.6 | 2237.4 | 1598.6 | 1269.0 |
| 1945 | 1349.3 | 1751.5 | 2092.9 | 2457.9 | 2645.8 | 2900.1 | 2952.9 | 2885.7 | 3000.4 | 2547.0 | 2111.3 | 1959.7 |
| 1946 | 2157.6 | 2479.8 | 2508.3 | 2512.0 | 2662.1 | 2881.8 | 3266.2 | 3183.6 | 3179.8 | 2390.7 | 1904.5 | 1724.1 |
| 1947 | 1956.1 | 2299.6 | 2500.8 | 2510.0 | 2658.5 | 2955.4 | 2688.6 | 2779.7 | 2914.7 | 2247.4 | 1893.7 | 1642.8 |
| 1948 | 1851.3 | 2158.5 | 2497.1 | 2507.0 | 2665.1 | 2846.6 | 3128.5 | 3128.2 | 3184.1 | 2409.6 | 1873.8 | 1590.7 |
| 1949 | 1785.7 | 2071.9 | 2359.3 | 2497.2 | 2652.5 | 2896.2 | 2757.8 | 3019.2 | 3136.5 | 2360.4 | 1846.4 | 1513.5 |
| 1950 | 1741.5 | 2049.4 | 2346.5 | 2490.6 | 2606.8 | 2797.8 | 2584.0 | 2687.1 | 3157.6 | 3037.8 | 2660.3 | 2527.9 |
| 1951 | 2764.2 | 2764.9 | 2726.3 | 2608.9 | 2642.9 | 2563.8 | 2617.4 | 2646.9 | 2908.6 | 2478.6 | 2380.5 | 2148.8 |
| 1952 | 2365.3 | 2684.5 | 2626.1 | 2542.6 | 2601.6 | 2756.3 | 2702.7 | 3168.5 | 3191.3 | 2522.7 | 2137.0 | 1849.3 |
| 1953 | 1906.5 | 2172.9 | 2507.3 | 2516.8 | 2667.3 | 2932.1 | 3138.7 | 2885.5 | 3188.7 | 2487.0 | 2023.1 | 1639.1 |
| 1954 | 1760.7 | 2057.4 | 2367.8 | 2508.5 | 2662.5 | 2927.1 | 2667.3 | 2850.0 | 2660.5 | 2159.1 | 1718.7 | 1364.7 |
| 1955 | 1564.9 | 2000.7 | 2280.7 | 2500.9 | 2658.9 | 2919.4 | 3053.9 | 2985.6 | 2843.4 | 2110.2 | 1556.2 | 1180.9 |
| 1956 | 1348.8 | 1791.7 | 2170.5 | 2491.2 | 2502.4 | 2457.4 | 2478.5 | 2791.7 | 3174.0 | 2589.0 | 2142.8 | 1940.7 |
| 1957 | 2116.3 | 2426.7 | 2488.0 | 2497.0 | 2658.4 | 2928.5 | 2852.8 | 2732.8 | 3122.7 | 2560.8 | 2104.4 | 1819.3 |
| 1958 | 1974.6 | 2286.6 | 2496.8 | 2508.9 | 2684.2 | 2923.1 | 3101.9 | 3184.3 | 3020.7 | 2050.0 | 1453.1 | 1162.8 |
| 1959 | 1251.2 | 1871.1 | 2014.7 | 2399.8 | 2610.4 | 2866.8 | 2961.8 | 2784.9 | 2758.4 | 1980.8 | 1355.3 | 1071.7 |
| 1960 | 1397.1 | 1838.8 | 2156.5 | 2473.8 | 2661.4 | 2932.6 | 3201.5 | 2864.7 | 2472.0 | 1449.3 | 966.2  | 678.2  |
| 1961 | 814.2  | 1230.8 | 1587.7 | 1885.0 | 2176.9 | 2478.3 | 2639.2 | 2311.1 | 1817.5 | 804.6  | 318.5  | 231.2  |
| 1962 | 533.3  | 935.9  | 1292.2 | 1599.3 | 2110.7 | 2504.8 | 2748.5 | 3041.8 | 3080.0 | 2463.8 | 2032.5 | 1650.1 |
| 1963 | 1793.5 | 2062.9 | 2319.7 | 2506.5 | 2696.8 | 2970.4 | 3025.3 | 3147.5 | 3183.8 | 2331.0 | 1733.3 | 1509.4 |
| 1964 | 1506.7 | 1928.7 | 2176.8 | 2501.0 | 2653.3 | 2823.8 | 2856.3 | 2726.2 | 3182.6 | 2744.6 | 2213.4 | 1913.1 |
| 1965 | 1933.4 | 2210.2 | 2510.6 | 2495.0 | 2555.1 | 2488.4 | 2473.4 | 2669.4 | 3151.2 | 3053.6 | 2628.1 | 2756.8 |
| 1966 | 2604.7 | 2777.7 | 2705.2 | 2667.9 | 2824.6 | 3102.0 | 3274.5 | 3126.5 | 2750.9 | 1792.0 | 1158.2 | 867.7  |
| 1967 | 1053.5 | 1443.0 | 1789.7 | 2172.4 | 2396.8 | 2705.5 | 2844.6 | 2702.5 | 3192.6 | 2904.9 | 2385.1 | 2087.3 |
| 1968 | 2226.5 | 2502.1 | 2507.4 | 2513.7 | 2664.7 | 2936.0 | 3009.9 | 2885.9 | 3178.0 | 2495.7 | 2336.6 | 2209.3 |
| 1969 | 2303.9 | 2567.3 | 2627.7 | 2585.1 | 2588.8 | 2603.3 | 2978.8 | 3169.2 | 3192.6 | 2463.7 | 1954.7 | 1673.1 |
| 1970 | 1890.0 | 2154.2 | 2435.5 | 2514.7 | 2657.4 | 2832.3 | 2652.9 | 2885.7 | 3186.0 | 2800.3 | 2274.4 | 2197.1 |
| 1971 | 2318.4 | 2631.7 | 2823.0 | 2340.7 | 2372.7 | 2336.6 | 2280.7 | 2685.1 | 3192.6 | 3153.6 | 2913.1 | 2780.9 |
| 1972 | 2819.0 | 2794.4 | 2752.3 | 2447.5 | 2471.8 | 2440.8 | 2358.2 | 2593.0 | 3146.8 | 2824.8 | 2568.7 | 2533.3 |
| 1973 | 2825.9 | 2801.9 | 2740.1 | 2558.3 | 2731.2 | 3001.8 | 3186.6 | 3196.8 | 3171.3 | 2515.8 | 2019.1 | 1957.0 |
| 1974 | 2211.8 | 2568.0 | 2506.1 | 2415.8 | 2558.9 | 2676.7 | 2513.2 | 2686.1 | 3190.7 | 3013.0 | 2746.1 | 2513.0 |
| 1975 | 2719.8 | 2735.2 | 2653.8 | 2624.7 | 2742.5 | 2846.6 | 2630.4 | 2620.6 | 2980.5 | 3162.8 | 2920.2 | 2720.0 |
| 1976 | 2613.6 | 2768.5 | 2697.7 | 2455.1 | 2515.2 | 2442.2 | 2347.6 | 2684.8 | 3013.4 | 2671.0 | 2443.3 | 2362.9 |
| 1977 | 2653.7 | 2714.2 | 2618.8 | 2605.5 | 2747.3 | 3006.2 | 2979.2 | 2416.6 | 1723.1 | 722.7  | 320.0  | 216.1  |
| 1978 | 483.1  | 822.3  | 1226.2 | 1577.1 | 1874.4 | 2212.0 | 2800.0 | 2896.3 | 3130.4 | 2833.5 | 2326.7 | 2134.5 |
| 1979 | 2221.7 | 2456.6 | 2526.6 | 2521.9 | 2686.8 | 2984.7 | 2958.5 | 2968.1 | 2894.0 | 2689.2 | 1618.2 | 1166.4 |
| 1980 | 1317.4 | 1647.4 | 2042.2 | 2427.1 | 2665.3 | 2930.7 | 3056.3 | 3196.5 | 3181.4 | 2518.3 | 2095.0 | 1905.6 |
| 1981 | 1926.0 | 2170.2 | 2472.0 | 2511.2 | 2666.0 | 2938.6 | 3128.4 | 3025.8 | 3086.1 | 2126.7 | 1388.4 | 872.4  |
| 1982 | 1075.4 | 1458.9 | 1843.4 | 2171.1 | 2363.9 | 2424.2 | 2392.6 | 2653.1 | 3023.6 | 3156.1 | 2680.8 | 2781.7 |
| 1983 | 2629.3 | 2819.6 | 2776.2 | 2426.5 | 2579.7 | 2770.2 | 2909.3 | 3083.9 | 3192.3 | 3159.8 | 2924.0 | 2710.3 |
| 1984 | 2837.0 | 2821.8 | 2791.8 | 2347.9 | 2533.3 | 2597.4 | 2867.7 | 3170.5 | 3192.6 | 3103.5 | 2933.5 | 2777.5 |
| 1985 | 2636.3 | 2620.6 | 2776.9 | 2550.8 | 2709.5 | 2967.8 | 3224.4 | 3186.0 | 2937.0 | 2075.1 | 1541.5 | 1466.8 |
| 1986 | 1742.7 | 2090.4 | 2422.1 | 2322.7 | 2526.9 | 2355.7 | 2621.2 | 2857.5 | 3180.3 | 2900.7 | 2558.4 | 2513.2 |
| 1987 | 2604.7 | 2810.0 | 2739.8 | 2607.7 | 2770.8 | 3047.0 | 3181.0 | 2905.5 | 2357.4 | 1662.3 | 1063.9 | 724.0  |
| 1988 | 822.6  | 1291.3 | 1604.0 | 1981.1 | 2251.3 | 2581.1 | 2884.7 | 2531.2 | 1892.0 | 978.8  | 333.6  | 242.6  |
| 1989 | 356.4  | 759.0  | 1121.1 | 1451.3 | 1738.7 | 2165.7 | 2721.2 | 2759.8 | 2527.1 | 1710.3 | 1112.1 | 732.3  |
| AVG  | 1647.7 | 1929.6 | 2138.5 | 2251.6 | 2429.8 | 2644.7 | 2761.9 | 2801.8 | 2782.7 | 2167.4 | 1700.9 | 1469.4 |
| MAX  | 2837.0 | 2821.8 | 2791.6 | 2667.9 | 2624.6 | 3102.0 | 3274.5 | 3196.8 | 3192.6 | 3162.8 | 2933.5 | 2781.7 |
| MIN  | 110.1  | 357.4  | 622.9  | 901.0  | 1125.7 | 1363.2 | 1632.3 | 1560.3 | 1107.2 | 119.4  | 43.0   | 46.1   |

TABLE C1

| DISCHARGE, SNAKE RIVER NEAR MORAN, WYOMING                 |        |        |        |        |        |        |        |        |        |        |        |        |
|------------------------------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| STUDY 955 UPPER SNAKE RIVER OPERATION STUDIES (IDWR MODEL) |        |        |        |        |        |        |        |        |        |        |        |        |
| UNITS ARE MEAN CUBIC FEET PER SECOND (CFS)                 |        |        |        |        |        |        |        |        |        |        |        |        |
| YEAR                                                       | OCT    | NOV    | DEC    | JAN    | FEB    | MAR    | APR    | MAY    | JUN    | JUL    | AUG    | SEP    |
| 1928                                                       | 400.0  | 451.0  | 500.0  | 400.0  | 400.0  | 487.0  | 5992.0 | 400.0  | 4221.0 | 2791.0 | 2848.0 | 2223.0 |
| 1929                                                       | 511.0  | 500.0  | 500.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 4086.0 | 2400.0 | 2795.0 | 1526.0 |
| 1930                                                       | 400.0  | 400.0  | 500.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 3056.0 | 2400.0 | 2793.0 | 1524.0 |
| 1931                                                       | 694.0  | 500.0  | 559.0  | 491.0  | 400.0  | 400.0  | 659.0  | 1783.0 | 2247.0 | 2696.0 | 5712.0 | 2434.0 |
| 1932                                                       | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 500.0  | 2381.0 | 2625.0 | 2095.0 |
| 1933                                                       | 1951.0 | 504.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 500.0  | 4061.0 | 2735.0 | 2226.0 |
| 1934                                                       | 1962.0 | 494.0  | 400.0  | 400.0  | 400.0  | 400.0  | 896.0  | 2582.0 | 3087.0 | 2458.0 | 2766.0 | 240.0  |
| 1935                                                       | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 6156.0 | 4421.0 | 1171.0 |
| 1936                                                       | 357.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 500.0  | 2400.0 | 2576.0 | 2904.0 |
| 1937                                                       | 818.0  | 1063.0 | 644.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 500.0  | 3686.0 | 2512.0 | 1994.0 |
| 1938                                                       | 2021.0 | 548.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 2283.0 | 2550.0 | 3585.0 | 1695.0 |
| 1939                                                       | 504.0  | 500.0  | 500.0  | 400.0  | 400.0  | 400.0  | 596.0  | 1648.0 | 3216.0 | 2400.0 | 2709.0 | 1440.0 |
| 1940                                                       | 400.0  | 1137.0 | 1136.0 | 1168.0 | 522.0  | 400.0  | 400.0  | 400.0  | 1867.0 | 5086.0 | 2238.0 | 2078.0 |
| 1941                                                       | 2044.0 | 578.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 500.0  | 2205.0 | 2636.0 | 2765.0 |
| 1942                                                       | 1987.0 | 701.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 500.0  | 2400.0 | 3928.0 | 1546.0 |
| 1943                                                       | 663.0  | 520.0  | 487.0  | 540.0  | 825.0  | 1292.0 | 2222.0 | 3099.0 | 714.0  | 4354.0 | 3315.0 | 2386.0 |
| 1944                                                       | 546.0  | 500.0  | 500.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 2752.0 | 2400.0 | 3269.0 | 1369.0 |
| 1945                                                       | 400.0  | 500.0  | 489.0  | 456.0  | 400.0  | 400.0  | 1073.0 | 1443.0 | 1678.0 | 2734.0 | 3629.0 | 1554.0 |
| 1946                                                       | 472.0  | 500.0  | 500.0  | 400.0  | 400.0  | 541.0  | 1599.0 | 1536.0 | 4608.0 | 2400.0 | 2930.0 | 1611.0 |
| 1947                                                       | 559.0  | 500.0  | 500.0  | 400.0  | 400.0  | 400.0  | 3149.0 | 400.0  | 4660.0 | 2400.0 | 3618.0 | 1731.0 |
| 1948                                                       | 465.0  | 500.0  | 500.0  | 400.0  | 400.0  | 400.0  | 400.0  | 881.0  | 6184.0 | 2400.0 | 2930.0 | 1487.0 |
| 1949                                                       | 402.0  | 500.0  | 500.0  | 400.0  | 400.0  | 400.0  | 2470.0 | 1002.0 | 5283.0 | 2400.0 | 3018.0 | 1549.0 |
| 1950                                                       | 514.0  | 500.0  | 500.0  | 400.0  | 767.0  | 400.0  | 5418.0 | 1461.0 | 500.0  | 3492.0 | 3040.0 | 2358.0 |
| 1951                                                       | 600.0  | 500.0  | 500.0  | 400.0  | 1484.0 | 1197.0 | 5129.0 | 400.0  | 1629.0 | 2692.0 | 3291.0 | 2470.0 |
| 1952                                                       | 600.0  | 500.0  | 500.0  | 400.0  | 865.0  | 434.0  | 2631.0 | 766.0  | 5729.0 | 2400.0 | 3567.0 | 1606.0 |
| 1953                                                       | 400.0  | 400.0  | 500.0  | 400.0  | 400.0  | 400.0  | 400.0  | 1990.0 | 3577.0 | 2400.0 | 3523.0 | 1563.0 |
| 1954                                                       | 400.0  | 500.0  | 500.0  | 400.0  | 400.0  | 400.0  | 5682.0 | 1081.0 | 1825.0 | 3102.0 | 3436.0 | 1836.0 |
| 1955                                                       | 415.0  | 500.0  | 500.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 4190.0 | 2514.0 | 3210.0 | 1480.0 |
| 1956                                                       | 491.0  | 500.0  | 500.0  | 853.0  | 1014.0 | 3964.0 | 2303.0 | 1806.0 | 4687.0 | 2721.0 | 3190.0 | 2469.0 |
| 1957                                                       | 517.0  | 500.0  | 500.0  | 455.0  | 873.0  | 651.0  | 5826.0 | 400.0  | 2269.0 | 2637.0 | 3382.0 | 1479.0 |
| 1958                                                       | 415.0  | 500.0  | 500.0  | 400.0  | 400.0  | 400.0  | 400.0  | 1516.0 | 3078.0 | 2400.0 | 1800.0 | 1168.0 |
| 1959                                                       | 400.0  | 500.0  | 500.0  | 400.0  | 400.0  | 400.0  | 1689.0 | 1467.0 | 2620.0 | 2400.0 | 2424.0 | 1574.0 |
| 1960                                                       | 568.0  | 500.0  | 500.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 3306.0 | 2400.0 | 4769.0 | 2441.0 |
| 1961                                                       | 434.0  | 636.0  | 1001.0 | 400.0  | 478.0  | 449.0  | 400.0  | 1435.0 | 2205.0 | 2000.0 | 4426.0 | 1936.0 |
| 1962                                                       | 400.0  | 543.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 2680.0 | 2400.0 | 3061.0 | 1509.0 |
| 1963                                                       | 480.0  | 500.0  | 500.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 5418.0 | 2400.0 | 2380.0 | 1636.0 |
| 1964                                                       | 413.0  | 500.0  | 500.0  | 400.0  | 400.0  | 400.0  | 4464.0 | 400.0  | 1988.0 | 2666.0 | 2800.0 | 1922.0 |
| 1965                                                       | 400.0  | 500.0  | 500.0  | 566.0  | 1152.0 | 1581.0 | 4500.0 | 2985.0 | 680.0  | 3552.0 | 3110.0 | 2462.0 |
| 1966                                                       | 551.0  | 500.0  | 500.0  | 400.0  | 400.0  | 400.0  | 400.0  | 1347.0 | 3902.0 | 2400.0 | 1930.0 | 1665.0 |
| 1967                                                       | 400.0  | 683.0  | 500.0  | 532.0  | 401.0  | 400.0  | 3336.0 | 596.0  | 3586.0 | 2654.0 | 2666.0 | 2200.0 |
| 1968                                                       | 600.0  | 500.0  | 500.0  | 400.0  | 400.0  | 400.0  | 400.0  | 2757.0 | 2837.0 | 2400.0 | 2800.0 | 2451.0 |
| 1969                                                       | 475.0  | 500.0  | 500.0  | 400.0  | 1203.0 | 1078.0 | 400.0  | 1650.0 | 3693.0 | 2400.0 | 2631.0 | 1600.0 |
| 1970                                                       | 400.0  | 459.0  | 500.0  | 400.0  | 527.0  | 400.0  | 2347.0 | 1370.0 | 3850.0 | 2400.0 | 2800.0 | 2183.0 |
| 1971                                                       | 494.0  | 500.0  | 500.0  | 648.0  | 1188.0 | 3329.0 | 2673.0 | 3029.0 | 2355.0 | 4201.0 | 3339.0 | 2482.0 |
| 1972                                                       | 600.0  | 500.0  | 500.0  | 699.0  | 1286.0 | 5107.0 | 891.0  | 3486.0 | 1124.0 | 2632.0 | 3177.0 | 2500.0 |
| 1973                                                       | 600.0  | 500.0  | 500.0  | 565.0  | 709.0  | 454.0  | 400.0  | 400.0  | 4344.0 | 2400.0 | 2140.0 | 1663.0 |
| 1974                                                       | 475.0  | 500.0  | 500.0  | 400.0  | 1446.0 | 400.0  | 5984.0 | 400.0  | 5704.0 | 3365.0 | 3113.0 | 2265.0 |
| 1975                                                       | 553.0  | 500.0  | 500.0  | 400.0  | 400.0  | 400.0  | 5770.0 | 1011.0 | 500.0  | 3289.0 | 3159.0 | 2252.0 |
| 1976                                                       | 545.0  | 500.0  | 500.0  | 453.0  | 1065.0 | 2856.0 | 3133.0 | 2419.0 | 1323.0 | 2609.0 | 3030.0 | 2264.0 |
| 1977                                                       | 421.0  | 472.0  | 500.0  | 400.0  | 400.0  | 400.0  | 400.0  | 1504.0 | 2617.0 | 2000.0 | 4438.0 | 3691.0 |
| 1978                                                       | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 500.0  | 2400.0 | 1800.0 | 1250.0 |
| 1979                                                       | 400.0  | 449.0  | 500.0  | 400.0  | 400.0  | 400.0  | 1955.0 | 400.0  | 4202.0 | 2400.0 | 2412.0 | 1310.0 |
| 1980                                                       | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 1601.0 | 4359.0 | 2400.0 | 2539.0 | 1630.0 |
| 1981                                                       | 400.0  | 500.0  | 500.0  | 400.0  | 400.0  | 400.0  | 400.0  | 479.0  | 5046.0 | 2400.0 | 1800.0 | 1000.0 |
| 1982                                                       | 400.0  | 463.0  | 500.0  | 505.0  | 400.0  | 2966.0 | 3343.0 | 3214.0 | 500.0  | 4642.0 | 3173.0 | 2500.0 |
| 1983                                                       | 600.0  | 500.0  | 500.0  | 400.0  | 662.0  | 553.0  | 2154.0 | 400.0  | 4713.0 | 3550.0 | 3186.0 | 2390.0 |
| 1984                                                       | 600.0  | 535.0  | 1051.0 | 1224.0 | 609.0  | 400.0  | 2021.0 | 400.0  | 5460.0 | 3285.0 | 3115.0 | 2500.0 |
| 1985                                                       | 600.0  | 500.0  | 500.0  | 455.0  | 581.0  | 597.0  | 968.0  | 2555.0 | 3742.0 | 2400.0 | 1914.0 | 1465.0 |
| 1986                                                       | 590.0  | 500.0  | 500.0  | 400.0  | 726.0  | 3591.0 | 2955.0 | 863.0  | 6435.0 | 2628.0 | 2973.0 | 2500.0 |
| 1987                                                       | 600.0  | 500.0  | 500.0  | 400.0  | 514.0  | 516.0  | 1396.0 | 492.0  | 1823.0 | 2400.0 | 3309.0 | 1966.0 |
| 1988                                                       | 634.0  | 400.0  | 579.0  | 617.0  | 829.0  | 869.0  | 400.0  | 400.0  | 500.0  | 3204.0 | 2265.0 | 5412.0 |
| 1989                                                       | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 500.0  | 2400.0 | 1958.0 | 2189.0 |
| AVG                                                        | 611.9  | 513.5  | 512.0  | 461.7  | 570.2  | 793.6  | 1733.1 | 1104.5 | 2601.6 | 2815.4 | 3014.9 | 1960.6 |
| MAX                                                        | 2044.0 | 1137.0 | 1136.0 | 1224.0 | 1484.0 | 5107.0 | 5992.0 | 3486.0 | 6435.0 | 6156.0 | 5712.0 | 5412.0 |
| MIN                                                        | 357.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 400.0  | 2000.0 | 1800.0 | 240.0  |

TABLE C1

DISCHARGE, SNAKE RIVER NEAR MILNER, IDAHO  
STUDY 955 UPPER SNAKE RIVER OPERATION STUDIES (IDWR MODEL)  
UNITS ARE MEAN CUBIC FEET PER SECOND (CFS)

| YEAR | OCT    | NOV     | DEC     | JAN     | FEB     | MAR     | APR     | MAY     | JUN     | JUL    | AUG    | SEP    |
|------|--------|---------|---------|---------|---------|---------|---------|---------|---------|--------|--------|--------|
| 1928 | 1000.0 | 3004.0  | 3074.0  | 5987.0  | 5388.0  | 3558.0  | 15872.0 | 7240.0  | 4780.0  | 2464.0 | 1293.0 | 1000.0 |
| 1929 | 2000.0 | 3925.0  | 4226.0  | 6440.0  | 3078.0  | 2671.0  | 4241.0  | 3009.0  | 1813.0  | 2464.0 | 953.0  | 1000.0 |
| 1930 | 1000.0 | 869.0   | 2986.0  | 1280.0  | 4504.0  | 1327.0  | 10.0    | 1494.0  | 1813.0  | 2124.0 | 953.0  | 1000.0 |
| 1931 | 1000.0 | 593.0   | 1387.0  | 824.0   | 1582.0  | 419.0   | 10.0    | 1494.0  | 1813.0  | 1784.0 | 533.0  | 5.0    |
| 1932 | 100.0  | 200.0   | 400.0   | 500.0   | 500.0   | 150.0   | 10.0    | 1494.0  | 1518.0  | 2124.0 | 533.0  | 100.0  |
| 1933 | 849.0  | 473.0   | 852.0   | 835.0   | 500.0   | 150.0   | 10.0    | 1494.0  | 1518.0  | 2124.0 | 533.0  | 100.0  |
| 1934 | 260.0  | 280.0   | 777.0   | 694.0   | 567.0   | 150.0   | 10.0    | 1494.0  | 1518.0  | 1469.0 | 145.0  | 5.0    |
| 1935 | 100.0  | 200.0   | 400.0   | 502.0   | 804.0   | 150.0   | 10.0    | 1494.0  | 1518.0  | 1764.0 | 298.0  | 5.0    |
| 1936 | 100.0  | 200.0   | 400.0   | 630.0   | 918.0   | 430.0   | 10.0    | 1494.0  | 1813.0  | 2124.0 | 953.0  | 1000.0 |
| 1937 | 1000.0 | 814.0   | 1022.0  | 890.0   | 792.0   | 150.0   | 1329.0  | 1494.0  | 1813.0  | 2124.0 | 533.0  | 100.0  |
| 1938 | 280.0  | 280.0   | 879.0   | 726.0   | 529.0   | 150.0   | 10.0    | 1494.0  | 1813.0  | 2464.0 | 953.0  | 1000.0 |
| 1939 | 1000.0 | 3124.0  | 3086.0  | 4368.0  | 3235.0  | 2126.0  | 1680.0  | 2187.0  | 1813.0  | 2124.0 | 953.0  | 1000.0 |
| 1940 | 1000.0 | 714.0   | 1181.0  | 951.0   | 2243.0  | 852.0   | 310.0   | 1494.0  | 1813.0  | 1784.0 | 533.0  | 100.0  |
| 1941 | 280.0  | 280.0   | 790.0   | 967.0   | 886.0   | 150.0   | 10.0    | 1494.0  | 1813.0  | 1784.0 | 533.0  | 100.0  |
| 1942 | 280.0  | 280.0   | 1028.0  | 762.0   | 707.0   | 150.0   | 10.0    | 1494.0  | 1813.0  | 2124.0 | 953.0  | 1000.0 |
| 1943 | 1000.0 | 810.0   | 2171.0  | 1648.0  | 3489.0  | 3680.0  | 15771.0 | 5918.0  | 1813.0  | 2464.0 | 1293.0 | 1800.0 |
| 1944 | 2000.0 | 3800.0  | 9163.0  | 6638.0  | 4020.0  | 1842.0  | 2644.0  | 1494.0  | 1813.0  | 2464.0 | 953.0  | 1000.0 |
| 1945 | 1000.0 | 642.0   | 1765.0  | 884.0   | 2952.0  | 1416.0  | 5506.0  | 5084.0  | 1813.0  | 2464.0 | 1293.0 | 1000.0 |
| 1946 | 2000.0 | 3738.0  | 7228.0  | 7050.0  | 3744.0  | 4529.0  | 7589.0  | 7967.0  | 1959.0  | 2464.0 | 953.0  | 1000.0 |
| 1947 | 2000.0 | 3886.0  | 4714.0  | 6320.0  | 4464.0  | 1686.0  | 11831.0 | 1494.0  | 1813.0  | 2464.0 | 953.0  | 1000.0 |
| 1948 | 1000.0 | 3854.0  | 3021.0  | 6634.0  | 4329.0  | 3037.0  | 1503.0  | 6916.0  | 6806.0  | 2464.0 | 953.0  | 1000.0 |
| 1949 | 1743.0 | 3175.0  | 2983.0  | 3598.0  | 3454.0  | 7994.0  | 7362.0  | 3635.0  | 1813.0  | 2464.0 | 953.0  | 1000.0 |
| 1950 | 1874.0 | 2953.0  | 3207.0  | 4843.0  | 5817.0  | 4706.0  | 17923.0 | 4440.0  | 2104.0  | 2464.0 | 1293.0 | 1800.0 |
| 1951 | 2000.0 | 9543.0  | 10063.0 | 9942.0  | 8986.0  | 9898.0  | 12185.0 | 7403.0  | 1813.0  | 2464.0 | 1293.0 | 1800.0 |
| 1952 | 2000.0 | 4189.0  | 9587.0  | 8586.0  | 5851.0  | 4289.0  | 15100.0 | 6636.0  | 7106.0  | 2464.0 | 953.0  | 1000.0 |
| 1953 | 1873.0 | 3580.0  | 2964.0  | 8214.0  | 4689.0  | 1858.0  | 783.0   | 5108.0  | 3248.0  | 2464.0 | 953.0  | 1000.0 |
| 1954 | 1000.0 | 2588.0  | 3087.0  | 5212.0  | 4236.0  | 1938.0  | 13608.0 | 1494.0  | 1813.0  | 2464.0 | 953.0  | 1000.0 |
| 1955 | 1000.0 | 868.0   | 2949.0  | 2432.0  | 3447.0  | 1459.0  | 3529.0  | 1494.0  | 1813.0  | 2464.0 | 953.0  | 1000.0 |
| 1956 | 1000.0 | 725.0   | 3067.0  | 3831.0  | 7309.0  | 10184.0 | 11835.0 | 7235.0  | 5483.0  | 2464.0 | 1293.0 | 1000.0 |
| 1957 | 2000.0 | 3582.0  | 6796.0  | 6777.0  | 5117.0  | 2389.0  | 16406.0 | 9278.0  | 1813.0  | 2464.0 | 953.0  | 1000.0 |
| 1958 | 2000.0 | 3742.0  | 4896.0  | 7181.0  | 5014.0  | 2193.0  | 2718.0  | 6129.0  | 1813.0  | 2464.0 | 953.0  | 1000.0 |
| 1959 | 1000.0 | 731.0   | 2872.0  | 1091.0  | 3181.0  | 1541.0  | 3084.0  | 2031.0  | 1813.0  | 2124.0 | 953.0  | 1000.0 |
| 1960 | 1000.0 | 451.0   | 2959.0  | 1958.0  | 3309.0  | 2021.0  | 2616.0  | 1494.0  | 1813.0  | 2124.0 | 533.0  | 100.0  |
| 1961 | 1000.0 | 869.0   | 1298.0  | 868.0   | 975.0   | 384.0   | 10.0    | 1494.0  | 1813.0  | 1764.0 | 533.0  | 100.0  |
| 1962 | 280.0  | 280.0   | 789.0   | 791.0   | 832.0   | 543.0   | 7540.0  | 2304.0  | 1813.0  | 2464.0 | 953.0  | 1000.0 |
| 1963 | 1000.0 | 1967.0  | 3243.0  | 3496.0  | 5702.0  | 784.0   | 4805.0  | 1494.0  | 7264.0  | 2464.0 | 953.0  | 1000.0 |
| 1964 | 1000.0 | 770.0   | 2735.0  | 1024.0  | 3134.0  | 2462.0  | 13072.0 | 5448.0  | 4821.0  | 2464.0 | 1293.0 | 1000.0 |
| 1965 | 2000.0 | 4205.0  | 4591.0  | 8971.0  | 8627.0  | 6710.0  | 14401.0 | 7905.0  | 2634.0  | 2464.0 | 1293.0 | 1800.0 |
| 1966 | 2684.0 | 7794.0  | 9631.0  | 8918.0  | 4566.0  | 2246.0  | 719.0   | 1591.0  | 1813.0  | 2124.0 | 953.0  | 1000.0 |
| 1967 | 1000.0 | 1210.0  | 1583.0  | 1019.0  | 2418.0  | 510.0   | 8888.0  | 2433.0  | 3915.0  | 2464.0 | 1293.0 | 1000.0 |
| 1968 | 2000.0 | 4150.0  | 6907.0  | 6848.0  | 5151.0  | 1540.0  | 1853.0  | 3311.0  | 1813.0  | 2464.0 | 1293.0 | 1800.0 |
| 1969 | 2000.0 | 3813.0  | 6879.0  | 9684.0  | 8778.0  | 8814.0  | 4087.0  | 5183.0  | 2272.0  | 2464.0 | 953.0  | 1000.0 |
| 1970 | 1000.0 | 3700.0  | 3265.0  | 6464.0  | 4671.0  | 2723.0  | 8073.0  | 5807.0  | 7112.0  | 2464.0 | 1293.0 | 1800.0 |
| 1971 | 2000.0 | 3717.0  | 8980.0  | 13550.0 | 8632.0  | 9851.0  | 13108.0 | 17517.0 | 13721.0 | 4575.0 | 1293.0 | 3581.0 |
| 1972 | 6472.0 | 11683.0 | 10437.0 | 14469.0 | 10039.0 | 14386.0 | 11811.0 | 12464.0 | 9639.0  | 2464.0 | 1293.0 | 1800.0 |
| 1973 | 2758.0 | 10351.0 | 10367.0 | 12094.0 | 5570.0  | 3437.0  | 5186.0  | 4588.0  | 1980.0  | 2464.0 | 953.0  | 1000.0 |
| 1974 | 2000.0 | 3943.0  | 8896.0  | 9287.0  | 6168.0  | 5911.0  | 18334.0 | 9864.0  | 12803.0 | 2464.0 | 1293.0 | 1800.0 |
| 1975 | 2000.0 | 7752.0  | 9967.0  | 8687.0  | 5896.0  | 5292.0  | 13622.0 | 8742.0  | 8349.0  | 3149.0 | 1293.0 | 1800.0 |
| 1976 | 4312.0 | 9773.0  | 10512.0 | 12748.0 | 7862.0  | 10071.0 | 14275.0 | 18011.0 | 7402.0  | 2464.0 | 1293.0 | 1800.0 |
| 1977 | 2000.0 | 5877.0  | 9653.0  | 7579.0  | 4961.0  | 1226.0  | 10.0    | 1494.0  | 1813.0  | 1764.0 | 533.0  | 100.0  |
| 1978 | 280.0  | 280.0   | 619.0   | 1003.0  | 752.0   | 150.0   | 10.0    | 8778.0  | 1813.0  | 2464.0 | 1293.0 | 1800.0 |
| 1979 | 2000.0 | 3928.0  | 5847.0  | 6405.0  | 2034.0  | 6623.0  | 1494.0  | 1813.0  | 2464.0  | 2464.0 | 953.0  | 1000.0 |
| 1980 | 1000.0 | 1000.0  | 888.0   | 1136.0  | 3039.0  | 1045.0  | 2458.0  | 6348.0  | 8481.0  | 2464.0 | 953.0  | 1000.0 |
| 1981 | 1936.0 | 3745.0  | 3183.0  | 5809.0  | 4137.0  | 1223.0  | 858.0   | 1494.0  | 1813.0  | 2464.0 | 953.0  | 1000.0 |
| 1982 | 1000.0 | 1359.0  | 1583.0  | 1363.0  | 3914.0  | 6982.0  | 11900.0 | 14848.0 | 5666.0  | 3893.0 | 1293.0 | 1800.0 |
| 1983 | 6378.0 | 10296.0 | 10274.0 | 15963.0 | 6651.0  | 8075.0  | 8375.0  | 12262.0 | 15744.0 | 3218.0 | 1635.0 | 1800.0 |
| 1984 | 6378.0 | 12360.0 | 11253.0 | 18074.0 | 8912.0  | 7717.0  | 12386.0 | 14743.0 | 22846.0 | 2464.0 | 1826.0 | 1800.0 |
| 1985 | 5286.0 | 11184.0 | 10232.0 | 12809.0 | 5508.0  | 4410.0  | 9992.0  | 10043.0 | 1813.0  | 2464.0 | 953.0  | 1000.0 |
| 1986 | 1000.0 | 1596.0  | 2922.0  | 9390.0  | 7047.0  | 16431.0 | 14974.0 | 13017.0 | 16252.0 | 2464.0 | 1293.0 | 1800.0 |
| 1987 | 2000.0 | 8005.0  | 10014.0 | 11091.0 | 5708.0  | 2737.0  | 10.0    | 1494.0  | 1813.0  | 2124.0 | 953.0  | 1000.0 |
| 1988 | 1000.0 | 1236.0  | 2148.0  | 960.0   | 2226.0  | 759.0   | 10.0    | 1494.0  | 1813.0  | 1764.0 | 533.0  | 100.0  |
| 1989 | 280.0  | 330.0   | 767.0   | 707.0   | 592.0   | 150.0   | 10.0    | 1494.0  | 1813.0  | 2124.0 | 953.0  | 1000.0 |
| AVG  | 1639.7 | 3306.8  | 4435.0  | 5329.3  | 4079.5  | 3274.5  | 6169.1  | 5006.9  | 4033.4  | 2380.2 | 990.9  | 1056.4 |
| MAX  | 6472.0 | 12360.0 | 11253.0 | 18074.0 | 10039.0 | 16431.0 | 19334.0 | 17517.0 | 22846.0 | 4575.0 | 1826.0 | 3581.0 |
| MIN  | 100.0  | 200.0   | 400.0   | 500.0   | 500.0   | 150.0   | 10.0    | 1494.0  | 1518.0  | 1469.0 | 145.0  | 5.0    |



TABLE C1

## STUDY 955 UPPER SNAKE RIVER OPERATION STUDIES (IDWR MODEL)

UNITS ARE 1000 ACRE-FEET

| YEAR | OCT    | NOV    | DEC    | JAN    | FEB    | MAR    | APR    | MAY    | JUN    | JUL    | AUG    | SEP    |
|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1928 | 2340.5 | 2731.2 | 3063.5 | 3176.5 | 3291.5 | 3530.7 | 2962.7 | 3867.4 | 4039.6 | 3519.0 | 2844.0 | 2478.4 |
| 1929 | 2628.9 | 2936.1 | 3118.2 | 3131.2 | 3300.2 | 3574.3 | 3728.6 | 3630.9 | 3619.6 | 2990.9 | 2212.0 | 1875.5 |
| 1930 | 2104.8 | 2505.1 | 2807.9 | 3093.6 | 3253.9 | 3531.3 | 3845.4 | 3817.3 | 3431.2 | 2452.2 | 1874.1 | 1501.1 |
| 1931 | 1790.8 | 2204.9 | 2536.1 | 2828.6 | 3066.0 | 3360.0 | 3517.0 | 3111.9 | 2385.5 | 1232.2 | 502.1  | 166.2  |
| 1932 | 253.2  | 516.1  | 809.1  | 1077.8 | 1317.6 | 1620.3 | 1931.8 | 2333.4 | 2644.9 | 1943.6 | 1219.5 | 804.1  |
| 1933 | 860.2  | 1229.9 | 1568.3 | 1900.8 | 2166.2 | 2479.4 | 2730.4 | 2731.7 | 2679.3 | 1914.7 | 1168.6 | 714.9  |
| 1934 | 775.1  | 1080.5 | 1457.2 | 1789.0 | 2071.4 | 2389.5 | 2579.1 | 2239.7 | 1415.2 | 340.6  | 93.0   | 101.3  |
| 1935 | 163.3  | 414.4  | 681.9  | 965.7  | 1191.1 | 1430.1 | 1720.8 | 1792.8 | 1811.0 | 970.2  | 324.4  | 96.3   |
| 1936 | 165.3  | 510.1  | 818.0  | 1138.0 | 1415.4 | 1713.9 | 2201.1 | 3080.0 | 3275.1 | 2341.2 | 1616.1 | 1113.9 |
| 1937 | 1184.2 | 1530.8 | 1884.2 | 2138.8 | 2396.7 | 2708.9 | 2916.5 | 3137.3 | 2887.5 | 1890.7 | 1099.8 | 730.7  |
| 1938 | 841.7  | 1148.9 | 1554.3 | 1881.1 | 2182.5 | 2529.2 | 3019.1 | 3536.8 | 3875.1 | 3354.3 | 2602.4 | 2124.2 |
| 1939 | 2346.9 | 2672.3 | 2963.2 | 3107.3 | 3267.2 | 3561.3 | 3834.8 | 4005.3 | 3596.6 | 2627.7 | 1809.9 | 1386.0 |
| 1940 | 1571.5 | 1899.1 | 2232.8 | 2561.2 | 2801.4 | 3102.8 | 3372.7 | 3323.1 | 2815.8 | 1696.6 | 895.7  | 688.9  |
| 1941 | 933.6  | 1286.0 | 1651.1 | 1965.3 | 2263.6 | 2588.0 | 2832.1 | 2854.0 | 2479.4 | 1494.0 | 918.7  | 613.8  |
| 1942 | 845.9  | 1240.5 | 1693.9 | 2014.4 | 2291.4 | 2612.2 | 3123.1 | 3326.5 | 3225.3 | 2409.0 | 1593.6 | 1166.1 |
| 1943 | 1237.5 | 1670.5 | 2044.0 | 2424.8 | 2623.6 | 2796.9 | 2768.1 | 3023.8 | 3756.3 | 3720.1 | 3177.5 | 2773.3 |
| 1944 | 2925.2 | 3260.0 | 3206.7 | 3193.5 | 3344.9 | 3607.3 | 3778.8 | 3777.2 | 3633.3 | 3066.9 | 2231.2 | 1841.7 |
| 1945 | 1916.4 | 2320.4 | 2657.1 | 3021.4 | 3257.8 | 3510.8 | 3472.9 | 3538.3 | 3800.4 | 3347.7 | 2801.0 | 2539.7 |
| 1946 | 2737.9 | 3061.5 | 3144.0 | 3156.1 | 3319.8 | 3517.5 | 3836.2 | 4030.6 | 4026.8 | 3198.3 | 2544.5 | 2310.0 |
| 1947 | 2542.0 | 2885.5 | 3132.4 | 3147.4 | 3295.2 | 3578.9 | 3155.3 | 3580.0 | 3761.7 | 3094.2 | 2533.6 | 2223.1 |
| 1948 | 2431.9 | 2739.1 | 3077.7 | 3137.9 | 3299.4 | 3481.4 | 3781.8 | 3959.0 | 4031.1 | 3197.0 | 2518.2 | 2175.1 |
| 1949 | 2365.9 | 2679.9 | 2969.9 | 3134.6 | 3296.0 | 3246.2 | 3277.8 | 3853.3 | 3963.5 | 3140.4 | 2486.5 | 2093.6 |
| 1950 | 2321.7 | 2676.5 | 2972.9 | 3121.8 | 3229.6 | 3417.6 | 2934.0 | 3108.1 | 3957.6 | 3884.8 | 3360.4 | 3119.7 |
| 1951 | 3357.9 | 3406.5 | 3372.4 | 3233.1 | 3256.0 | 3113.8 | 2987.4 | 3426.9 | 3717.7 | 3314.7 | 3080.5 | 2747.3 |
| 1952 | 2985.7 | 3282.1 | 3234.7 | 3162.2 | 3241.8 | 3414.6 | 3222.7 | 3988.1 | 4038.3 | 3367.1 | 2803.2 | 2450.3 |
| 1953 | 2513.5 | 2770.1 | 3110.2 | 3151.0 | 3308.1 | 3574.1 | 3800.3 | 3576.5 | 4035.7 | 3333.9 | 2863.1 | 2219.6 |
| 1954 | 2339.2 | 2678.5 | 2991.3 | 3141.2 | 3302.6 | 3565.9 | 3823.1 | 3471.4 | 3460.5 | 2979.3 | 2358.9 | 1945.2 |
| 1955 | 2145.5 | 2581.3 | 2861.2 | 3123.2 | 3285.2 | 3553.0 | 3683.6 | 3784.8 | 3730.4 | 2929.8 | 2235.4 | 1799.8 |
| 1956 | 1967.5 | 2415.2 | 2814.2 | 3129.6 | 3082.4 | 2875.5 | 2828.5 | 3371.7 | 4021.0 | 3436.0 | 2842.8 | 2520.7 |
| 1957 | 2696.5 | 3032.2 | 3150.3 | 3167.0 | 3341.5 | 3627.0 | 3803.3 | 3300.1 | 3958.9 | 3407.8 | 2768.8 | 2420.4 |
| 1958 | 2575.8 | 2866.0 | 3122.9 | 3136.2 | 3306.8 | 3573.4 | 3785.0 | 4031.3 | 3867.7 | 2804.1 | 2093.1 | 1742.8 |
| 1959 | 1824.1 | 2250.9 | 2594.2 | 2979.4 | 3200.2 | 3463.9 | 3513.3 | 3364.9 | 3558.4 | 2749.1 | 1995.4 | 1651.9 |
| 1960 | 1977.3 | 2418.0 | 2732.4 | 3064.7 | 3271.0 | 3548.0 | 3837.7 | 3633.8 | 3344.0 | 2236.0 | 1480.8 | 1052.5 |
| 1961 | 1184.9 | 1588.3 | 1916.3 | 2200.8 | 2503.5 | 2807.8 | 2987.2 | 2824.3 | 2472.3 | 1368.8 | 680.0  | 490.4  |
| 1962 | 797.3  | 1200.0 | 1571.7 | 1886.0 | 2411.0 | 2816.6 | 3105.0 | 3658.0 | 3902.3 | 3291.7 | 2672.6 | 2230.6 |
| 1963 | 2374.3 | 2692.9 | 2949.1 | 3125.3 | 3323.6 | 3594.0 | 3821.0 | 3939.4 | 4030.8 | 3111.0 | 2373.3 | 2089.4 |
| 1964 | 2066.8 | 2506.8 | 2789.9 | 3125.6 | 3277.1 | 3450.7 | 3843.8 | 3284.9 | 3992.0 | 3577.6 | 2925.7 | 2505.4 |
| 1965 | 2522.8 | 2798.8 | 3154.1 | 3136.4 | 3135.1 | 3038.4 | 2823.4 | 3069.4 | 3951.2 | 3900.6 | 3528.1 | 3354.8 |
| 1966 | 3431.7 | 3407.9 | 3329.1 | 3271.5 | 3430.1 | 3711.7 | 3940.4 | 4003.3 | 3627.4 | 2594.1 | 1826.9 | 1496.4 |
| 1967 | 1659.6 | 2051.6 | 2402.1 | 2786.5 | 3010.2 | 3306.6 | 3699.9 | 3282.5 | 4039.8 | 3751.9 | 3091.2 | 2655.4 |
| 1968 | 2814.5 | 3088.4 | 3133.3 | 3146.3 | 3306.3 | 3583.0 | 3612.7 | 3489.3 | 4025.0 | 3317.9 | 3036.6 | 2806.8 |
| 1969 | 2893.8 | 3159.6 | 3218.1 | 3196.2 | 3168.8 | 3153.3 | 3572.9 | 4016.2 | 4039.6 | 3268.7 | 2594.7 | 2253.1 |
| 1970 | 2483.6 | 2744.7 | 3030.6 | 3150.5 | 3289.0 | 3468.8 | 3172.9 | 3477.1 | 4033.0 | 3643.6 | 2974.4 | 2790.6 |
| 1971 | 2905.4 | 3223.2 | 3227.2 | 2967.7 | 2952.7 | 2790.8 | 2630.7 | 3132.2 | 4039.6 | 4000.6 | 3621.2 | 3410.9 |
| 1972 | 3457.0 | 3435.2 | 3407.2 | 3091.6 | 3051.8 | 2790.8 | 2708.2 | 2993.0 | 3946.8 | 3646.2 | 3269.8 | 3144.6 |
| 1973 | 3483.2 | 3465.4 | 3409.3 | 3206.3 | 3381.2 | 3654.9 | 3647.2 | 4043.4 | 4016.3 | 3296.4 | 2659.1 | 2537.2 |
| 1974 | 2792.1 | 3165.2 | 3180.1 | 3082.4 | 3152.8 | 3293.8 | 2863.2 | 3254.3 | 4037.7 | 3880.0 | 3446.1 | 3099.2 |
| 1975 | 3303.4 | 3359.2 | 3277.6 | 3222.6 | 3346.7 | 3463.0 | 2980.4 | 3020.6 | 3752.3 | 4006.8 | 3630.8 | 3316.0 |
| 1976 | 3440.2 | 3398.0 | 3333.7 | 3059.0 | 3096.2 | 2920.4 | 2697.6 | 3201.7 | 3813.4 | 3491.1 | 3143.3 | 2949.2 |
| 1977 | 3234.1 | 3332.5 | 3234.7 | 3224.0 | 3361.5 | 3618.7 | 3608.5 | 3040.4 | 2366.8 | 1246.5 | 585.4  | 269.3  |
| 1978 | 535.2  | 871.9  | 1293.3 | 1650.5 | 1980.9 | 2294.9 | 2907.4 | 3156.2 | 3763.8 | 3505.6 | 2945.7 | 2715.2 |
| 1979 | 2797.5 | 3030.2 | 3118.5 | 3135.5 | 3308.9 | 3583.0 | 3514.6 | 3770.7 | 3741.0 | 2869.2 | 2258.5 | 1746.8 |
| 1980 | 1890.8 | 2214.6 | 2602.4 | 2966.2 | 3274.4 | 3655.9 | 3667.6 | 4043.5 | 4028.4 | 3324.0 | 2735.0 | 2486.0 |
| 1981 | 2508.0 | 2751.7 | 3066.6 | 3129.7 | 3286.7 | 3557.4 | 3774.4 | 3877.7 | 3971.3 | 2923.5 | 2065.7 | 1489.3 |
| 1982 | 1688.3 | 2075.4 | 2465.7 | 2796.7 | 3000.0 | 2920.8 | 2742.6 | 3063.1 | 3823.6 | 4003.1 | 3560.8 | 3382.3 |
| 1983 | 3466.1 | 3461.4 | 3427.9 | 3081.9 | 3224.3 | 3424.2 | 3437.8 | 3771.9 | 4039.3 | 4006.6 | 3654.0 | 3333.7 |
| 1984 | 3492.5 | 3511.8 | 3471.6 | 2961.2 | 3173.5 | 3245.5 | 3187.7 | 3922.9 | 4039.6 | 3960.5 | 3663.5 | 3420.7 |
| 1985 | 3478.2 | 3474.2 | 3435.4 | 3186.9 | 3353.0 | 3613.4 | 3894.4 | 4035.0 | 3784.0 | 2854.1 | 2181.6 | 2046.9 |
| 1986 | 2323.7 | 2717.1 | 3054.7 | 2978.2 | 3166.8 | 2845.9 | 3034.7 | 3437.5 | 4037.3 | 3747.7 | 3258.4 | 3115.0 |
| 1987 | 3413.7 | 3480.0 | 3391.1 | 3237.5 | 3407.2 | 3690.5 | 3851.0 | 3652.5 | 3157.5 | 2362.9 | 1640.3 | 1177.9 |
| 1988 | 1252.9 | 1716.4 | 2023.1 | 2391.6 | 2639.3 | 2940.2 | 3292.1 | 3145.6 | 2657.9 | 1528.9 | 801.7  | 401.2  |
| 1989 | 503.5  | 912.4  | 1274.2 | 1611.5 | 1901.4 | 2341.4 | 2958.5 | 3307.1 | 3333.4 | 2453.5 | 1752.2 | 1293.0 |
| AVG  | 2159.1 | 2447.0 | 2664.1 | 2781.3 | 2968.5 | 3155.9 | 3221.8 | 3430.2 | 3579.5 | 2924.4 | 2311.4 | 1987.0 |
| MAX  | 3492.5 | 3511.8 | 3471.6 | 3271.5 | 3430.1 | 3711.7 | 3940.4 | 4043.5 | 4039.6 | 4006.8 | 3663.5 | 3420.7 |
| MIN  | 163.3  | 414.4  | 681.9  | 965.7  | 1191.1 | 1430.1 | 1720.8 | 1792.8 | 1415.2 | 340.6  | 93.0   | 96.3   |

TABLE C1

## STUDY 955 UPPER SNAKE RIVER OPERATION STUDIES (IOWR MODEL)

UNITS ARE 1000 ACRE-FEET

| YEAR | OCT    | NOV    | DEC    | JAN    | FEB    | MAR    | APR    | MAY    | JUN    | JUL    | AUG    | SEP    |
|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1928 | 1754.6 | 2111.2 | 2414.7 | 2522.4 | 2634.0 | 2870.7 | 2612.7 | 3062.4 | 3192.8 | 2672.0 | 2114.0 | 1848.4 |
| 1929 | 1998.9 | 2312.1 | 2491.3 | 2498.4 | 2663.3 | 2934.8 | 3078.0 | 3055.3 | 2972.8 | 2178.0 | 1522.0 | 1245.5 |
| 1930 | 1478.9 | 1886.8 | 2192.8 | 2478.8 | 2635.0 | 2914.3 | 3185.0 | 2995.7 | 2584.2 | 1853.5 | 1184.1 | 871.1  |
| 1931 | 1180.8 | 1580.6 | 1926.1 | 2228.6 | 2471.6 | 2767.1 | 2925.8 | 2481.9 | 1741.3 | 719.9  | 313.8  | 106.2  |
| 1932 | 196.2  | 463.5  | 756.2  | 1023.0 | 1259.1 | 1566.8 | 1858.4 | 2053.5 | 2035.2 | 1343.6 | 719.5  | 404.1  |
| 1933 | 560.2  | 939.9  | 1280.8 | 1606.6 | 1866.7 | 2184.2 | 2433.4 | 2340.2 | 2126.2 | 1299.3 | 688.6  | 314.9  |
| 1934 | 475.1  | 790.5  | 1171.9 | 1499.9 | 1783.7 | 2097.8 | 2229.1 | 1839.7 | 1112.7 | 140.6  | 43.0   | 51.3   |
| 1935 | 110.1  | 357.4  | 622.9  | 901.0  | 1125.7 | 1363.2 | 1632.3 | 1580.3 | 1247.4 | 650.0  | 224.4  | 46.3   |
| 1936 | 115.3  | 480.5  | 771.4  | 1077.9 | 1340.3 | 1635.7 | 2080.3 | 2580.1 | 2540.7 | 1863.0 | 1045.0 | 692.6  |
| 1937 | 795.8  | 1182.6 | 1564.2 | 1819.0 | 2071.8 | 2387.4 | 2590.1 | 2604.6 | 2151.7 | 1280.4 | 599.8  | 330.7  |
| 1938 | 541.7  | 858.9  | 1258.8 | 1579.0 | 1876.1 | 2211.3 | 2674.0 | 2982.7 | 3028.1 | 2507.3 | 1912.4 | 1494.2 |
| 1939 | 1718.9 | 2044.2 | 2335.3 | 2475.5 | 2629.3 | 2921.9 | 3264.8 | 3158.3 | 2748.8 | 1821.8 | 1119.9 | 758.0  |
| 1940 | 943.5  | 1324.7 | 1709.2 | 2082.9 | 2323.7 | 2622.1 | 2867.2 | 2577.5 | 1975.8 | 1096.6 | 395.7  | 288.9  |
| 1941 | 633.8  | 996.0  | 1362.8 | 1674.7 | 1973.1 | 2303.6 | 2538.6 | 2359.3 | 1828.2 | 894.0  | 418.7  | 231.8  |
| 1942 | 545.9  | 950.5  | 1388.1 | 1705.4 | 1979.8 | 2304.8 | 2780.1 | 2847.8 | 2496.8 | 1694.6 | 1075.0 | 716.1  |
| 1943 | 811.9  | 1240.7 | 1608.2 | 1978.3 | 2193.4 | 2412.4 | 2418.1 | 2623.8 | 2916.3 | 2673.1 | 2447.5 | 2143.3 |
| 1944 | 2295.2 | 2630.0 | 2584.3 | 2575.9 | 2727.6 | 2989.0 | 3155.2 | 3009.3 | 2986.3 | 2231.7 | 1541.2 | 1211.7 |
| 1945 | 1292.1 | 1700.2 | 2047.1 | 2415.5 | 2645.7 | 2900.1 | 2902.9 | 2885.7 | 2980.4 | 2527.7 | 2111.0 | 1909.7 |
| 1946 | 2107.9 | 2430.0 | 2508.3 | 2512.0 | 2682.1 | 2857.5 | 3266.2 | 3183.6 | 3179.8 | 2378.0 | 1854.5 | 1680.0 |
| 1947 | 1912.0 | 2256.2 | 2500.8 | 2510.0 | 2658.4 | 2838.4 | 2988.8 | 2779.8 | 2914.7 | 2247.3 | 1843.8 | 1583.1 |
| 1948 | 1801.9 | 2109.3 | 2451.8 | 2507.0 | 2685.1 | 2845.8 | 3128.5 | 3112.0 | 3184.1 | 2378.1 | 1828.2 | 1545.1 |
| 1949 | 1735.9 | 2049.8 | 2337.2 | 2487.2 | 2652.5 | 2596.7 | 2707.8 | 3006.3 | 3136.5 | 2319.7 | 1796.5 | 1483.8 |
| 1950 | 1891.7 | 2049.4 | 2352.6 | 2490.6 | 2606.8 | 2785.5 | 2584.0 | 2687.1 | 3123.1 | 3037.8 | 2630.4 | 2489.7 |
| 1951 | 2728.2 | 2764.8 | 2726.2 | 2571.5 | 2636.0 | 2516.3 | 2617.4 | 2800.1 | 2877.7 | 2467.7 | 2350.5 | 2117.3 |
| 1952 | 2333.8 | 2653.0 | 2586.7 | 2510.9 | 2597.8 | 2754.6 | 2652.7 | 3141.1 | 3191.3 | 2522.7 | 2113.2 | 1820.3 |
| 1953 | 1887.8 | 2152.0 | 2492.5 | 2516.8 | 2667.3 | 2932.1 | 3138.7 | 2885.5 | 3188.7 | 2487.0 | 1973.1 | 1589.6 |
| 1954 | 1712.9 | 2057.4 | 2374.0 | 2509.5 | 2662.5 | 2920.7 | 2867.3 | 2841.4 | 2820.5 | 2149.3 | 1688.9 | 1315.2 |
| 1955 | 1515.5 | 1954.9 | 2240.8 | 2500.9 | 2658.9 | 2919.4 | 3053.9 | 2985.6 | 2883.4 | 2096.8 | 1545.4 | 1169.8 |
| 1956 | 1337.5 | 1780.5 | 2159.4 | 2481.6 | 2482.4 | 2487.4 | 2478.5 | 2741.7 | 3174.0 | 2589.0 | 2112.8 | 1890.7 |
| 1957 | 2068.5 | 2378.9 | 2488.0 | 2497.0 | 2681.5 | 2967.0 | 2852.8 | 2732.8 | 3118.9 | 2560.8 | 2078.8 | 1790.4 |
| 1958 | 1948.8 | 2243.9 | 2498.8 | 2508.9 | 2684.1 | 2923.0 | 3101.9 | 3184.3 | 3020.7 | 2080.0 | 1417.3 | 1112.8 |
| 1959 | 1201.4 | 1627.1 | 1977.0 | 2362.1 | 2572.5 | 2831.1 | 2943.3 | 2734.9 | 2718.4 | 1951.1 | 1308.4 | 1021.9 |
| 1960 | 1347.3 | 1795.0 | 2118.8 | 2436.0 | 2648.6 | 2919.9 | 3188.7 | 2842.0 | 2497.0 | 1474.0 | 980.8  | 652.5  |
| 1961 | 790.7  | 1207.5 | 1574.2 | 1861.5 | 2153.5 | 2457.8 | 2618.8 | 2311.1 | 1817.5 | 782.2  | 318.5  | 231.2  |
| 1962 | 510.9  | 910.0  | 1286.3 | 1573.4 | 2084.8 | 2482.5 | 2708.6 | 3001.9 | 3080.1 | 2483.8 | 1982.6 | 1800.8 |
| 1963 | 1744.3 | 2069.7 | 2331.6 | 2506.5 | 2695.8 | 2970.4 | 2987.2 | 3109.6 | 3183.8 | 2314.2 | 1683.3 | 1459.4 |
| 1964 | 1456.8 | 1880.9 | 2172.0 | 2501.0 | 2653.3 | 2823.8 | 2958.3 | 2726.2 | 3152.0 | 2730.8 | 2200.5 | 1875.4 |
| 1965 | 1898.0 | 2178.6 | 2510.6 | 2483.1 | 2515.1 | 2487.4 | 2473.4 | 2689.4 | 3111.2 | 3083.8 | 2798.1 | 2724.8 |
| 1966 | 2801.7 | 2774.8 | 2702.1 | 2632.7 | 2789.4 | 3086.8 | 3274.5 | 3156.3 | 2780.4 | 1821.1 | 1136.9 | 866.4  |
| 1967 | 1032.3 | 1438.3 | 1790.8 | 2172.4 | 2390.2 | 2684.6 | 2644.6 | 2680.5 | 3192.6 | 2904.9 | 2361.2 | 2025.4 |
| 1968 | 2182.9 | 2480.6 | 2607.4 | 2513.7 | 2664.7 | 2939.0 | 2984.0 | 2859.3 | 3178.0 | 2486.7 | 2306.7 | 2176.8 |
| 1969 | 2263.8 | 2527.3 | 2587.5 | 2544.7 | 2548.8 | 2577.8 | 2953.4 | 3189.2 | 3192.6 | 2463.7 | 1904.7 | 1623.1 |
| 1970 | 1857.0 | 2124.7 | 2412.2 | 2514.7 | 2657.4 | 2832.4 | 2847.9 | 2847.1 | 3186.0 | 2800.3 | 2256.7 | 2160.6 |
| 1971 | 2275.4 | 2588.9 | 2580.0 | 2312.9 | 2332.7 | 2336.8 | 2280.7 | 2686.1 | 3192.6 | 3153.6 | 2891.2 | 2780.9 |
| 1972 | 2619.0 | 2794.3 | 2752.2 | 2434.9 | 2431.8 | 2440.8 | 2358.2 | 2593.0 | 3108.8 | 2799.2 | 2538.8 | 2503.6 |
| 1973 | 2825.9 | 2801.9 | 2740.1 | 2538.3 | 2721.2 | 2984.9 | 3180.0 | 3196.8 | 3171.3 | 2515.8 | 1988.1 | 1907.2 |
| 1974 | 2162.1 | 2518.4 | 2508.1 | 2415.8 | 2532.8 | 2680.8 | 2513.2 | 2686.1 | 3190.7 | 3013.0 | 2716.1 | 2469.2 |
| 1975 | 2673.4 | 2732.4 | 2653.6 | 2588.8 | 2686.5 | 2806.8 | 2630.4 | 2620.6 | 2980.5 | 3162.8 | 2900.8 | 2686.0 |
| 1976 | 2810.2 | 2765.2 | 2694.3 | 2410.3 | 2475.2 | 2442.2 | 2347.6 | 2684.8 | 2973.4 | 2844.1 | 2413.3 | 2319.2 |
| 1977 | 2604.1 | 2712.5 | 2622.9 | 2609.9 | 2751.7 | 3010.7 | 2983.5 | 2410.4 | 1768.8 | 730.9  | 320.0  | 209.3  |
| 1978 | 476.3  | 815.5  | 1221.5 | 1570.3 | 1867.7 | 2205.3 | 2793.2 | 2846.6 | 3080.9 | 2784.4 | 2278.0 | 2085.2 |
| 1979 | 2172.4 | 2410.2 | 2480.8 | 2503.7 | 2668.6 | 2838.4 | 2944.6 | 2974.2 | 2894.0 | 2087.4 | 1568.5 | 1116.8 |
| 1980 | 1267.9 | 1587.8 | 1882.7 | 2377.6 | 2647.5 | 2922.9 | 3008.4 | 3196.5 | 3181.4 | 2518.3 | 2046.0 | 1856.0 |
| 1981 | 1880.7 | 2130.8 | 2438.1 | 2511.2 | 2688.0 | 2938.6 | 3128.3 | 3030.7 | 3124.3 | 2164.5 | 1384.3 | 865.0  |
| 1982 | 1068.1 | 1455.4 | 1808.9 | 2167.8 | 2380.4 | 2424.2 | 2392.8 | 2653.1 | 3003.9 | 3156.1 | 2630.8 | 2752.0 |
| 1983 | 2829.3 | 2819.7 | 2776.2 | 2396.5 | 2584.3 | 2764.2 | 2867.8 | 3042.5 | 3192.3 | 3159.6 | 2924.0 | 2703.7 |
| 1984 | 2837.0 | 2821.8 | 2791.8 | 2347.9 | 2533.3 | 2597.4 | 2617.7 | 3120.6 | 3192.6 | 3103.5 | 2833.5 | 2777.6 |
| 1985 | 2836.3 | 2820.8 | 2778.9 | 2524.2 | 2683.0 | 2953.4 | 3224.4 | 3188.0 | 2937.0 | 2077.1 | 1491.6 | 1416.9 |
| 1986 | 1893.7 | 2080.0 | 2411.8 | 2322.7 | 2508.8 | 2365.7 | 2621.2 | 2807.5 | 3190.3 | 2900.7 | 2528.4 | 2483.5 |
| 1987 | 2775.1 | 2810.0 | 2739.8 | 2577.7 | 2747.2 | 3030.5 | 3181.0 | 2806.5 | 2317.5 | 1622.5 | 1083.8 | 724.0  |
| 1988 | 822.6  | 1291.2 | 1604.0 | 1961.1 | 2251.2 | 2581.2 | 2884.7 | 2531.3 | 1892.1 | 928.9  | 332.1  | 242.8  |
| 1989 | 356.4  | 759.0  | 1121.1 | 1451.4 | 1738.8 | 2185.7 | 2721.2 | 2759.8 | 2527.1 | 1710.2 | 1091.8 | 732.3  |
| AVG  | 1620.5 | 1910.3 | 2127.7 | 2240.3 | 2420.0 | 2635.9 | 2752.9 | 2791.1 | 2778.3 | 2161.3 | 1679.9 | 1440.2 |
| MAX  | 2837.0 | 2821.8 | 2791.8 | 2632.7 | 2789.4 | 3086.8 | 3274.5 | 3196.8 | 3192.6 | 2933.5 | 2780.9 |        |
| MIN  | 110.1  | 357.4  | 622.9  | 901.0  | 1125.7 | 1363.2 | 1632.3 | 1580.3 | 1112.7 | 140.6  | 43.0   | 46.3   |

TABLE D1

JACKSON LAKE  
STUDY 953-952 UPPER SNAKE RIVER OPERATION STUDIES (IDWR MODEL) 427 BASE. 400-280  
UNITS ARE 1000 ACRE-FEET

| YEAR | OCT  | NOV   | DEC   | JAN   | FEB   | MAR   | APR   | MAY   | JUN   | JUL   | AUG   | SEP  |
|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|
| 1928 | 0.0  | 0.0   | 0.0   | 0.0   | 0.0   | -3.1  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0  |
| 1929 | 0.0  | 0.0   | 0.0   | 0.0   | 0.0   | -3.1  | -3.0  | -3.1  | 0.0   | 0.0   | 0.0   | 0.0  |
| 1930 | -2.0 | -7.9  | -8.5  | -9.0  | -9.1  | -12.1 | -12.1 | -12.1 | 0.0   | 0.0   | 0.0   | 0.0  |
| 1931 | 0.0  | 0.0   | -4.6  | -9.0  | -14.5 | -8.8  | -8.8  | -8.8  | -8.8  | -8.7  | -8.7  | 0.0  |
| 1932 | -7.4 | -14.5 | -21.9 | -29.3 | -36.2 | -43.6 | -50.6 | -56.6 | -50.3 | -45.4 | 0.0   | 0.0  |
| 1933 | -0.3 | 0.0   | -6.2  | -12.3 | -17.8 | -25.2 | -32.3 | -38.3 | -38.2 | -18.9 | 0.0   | 0.0  |
| 1934 | 0.0  | -4.4  | -10.6 | -16.7 | -22.2 | -29.6 | -14.8 | 0.0   | -0.7  | -0.7  | 0.0   | 0.0  |
| 1935 | -7.4 | -14.6 | -21.9 | -29.3 | -36.0 | -33.3 | -40.3 | -46.3 | -52.0 | -1.9  | 0.0   | 0.0  |
| 1936 | -4.8 | -11.6 | -13.9 | -21.3 | -28.2 | -35.6 | -42.7 | -45.6 | -45.5 | -45.3 | -9.2  | -9.2 |
| 1937 | -9.2 | -14.3 | -11.9 | -18.1 | -23.6 | -31.0 | -38.1 | -41.0 | -40.9 | -7.6  | 0.0   | 0.0  |
| 1938 | 0.0  | -1.2  | -7.4  | -13.5 | -19.0 | -26.4 | -33.5 | -36.5 | 0.0   | 0.0   | 0.0   | 0.0  |
| 1939 | 0.0  | 0.0   | 0.0   | 0.0   | 0.0   | -3.1  | -3.1  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0  |
| 1940 | -1.9 | -6.5  | -1.3  | -7.5  | -13.3 | -19.5 | -25.4 | -25.3 | 0.0   | 0.0   | 0.0   | 0.0  |
| 1941 | 0.0  | 0.0   | -6.2  | -12.3 | -17.8 | -25.2 | -32.3 | -35.3 | -35.1 | 0.0   | 0.0   | 0.0  |
| 1942 | 0.0  | 0.0   | -6.2  | -12.3 | -17.8 | -25.2 | -32.4 | -35.3 | -35.2 | -35.1 | 0.0   | -0.2 |
| 1943 | -0.2 | -0.3  | -6.4  | -12.5 | -18.1 | -0.1  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0  |
| 1944 | 0.0  | 0.0   | 0.0   | -2.4  | -2.7  | -5.8  | -5.7  | -5.7  | 0.0   | 0.0   | 0.0   | 0.0  |
| 1945 | -5.6 | -3.8  | -8.5  | -9.2  | -9.3  | -12.3 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0  |
| 1946 | 0.0  | 0.0   | 0.0   | 0.0   | 0.0   | -3.1  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0  |
| 1947 | 0.0  | 0.0   | 0.0   | 0.0   | 0.0   | -3.1  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0  |
| 1948 | 0.0  | 0.0   | 0.0   | 0.0   | 0.0   | -3.1  | -3.1  | -3.0  | 0.0   | 0.0   | 0.0   | 0.0  |
| 1949 | 0.0  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0  |
| 1950 | 0.0  | 0.0   | -0.7  | -0.7  | -0.7  | -3.8  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0  |
| 1951 | 0.0  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0  |
| 1952 | 0.0  | 0.0   | 0.0   | 0.0   | 0.0   | -1.7  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0  |
| 1953 | -4.0 | -9.9  | -6.1  | -6.1  | -6.2  | -9.2  | -9.2  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0  |
| 1954 | -3.6 | -2.9  | -0.5  | -0.5  | -0.6  | -3.6  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0  |
| 1955 | 0.0  | 0.0   | 0.0   | 0.0   | 0.0   | -3.1  | -3.1  | -3.0  | 0.0   | 0.0   | 0.0   | 0.0  |
| 1956 | 0.0  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0  |
| 1957 | 0.0  | 0.0   | 0.0   | 0.0   | 0.0   | -3.1  | 0.0   | -3.0  | 0.0   | 0.0   | 0.0   | 0.0  |
| 1958 | 0.0  | -1.9  | -1.9  | -1.9  | -1.9  | -5.0  | -4.9  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0  |
| 1959 | -6.1 | -0.2  | -0.6  | -0.6  | -0.7  | -3.7  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0  |
| 1960 | 0.0  | -1.0  | -4.3  | -4.3  | -4.3  | -7.4  | -7.4  | -7.3  | 0.0   | 0.0   | 0.0   | 0.0  |
| 1961 | -6.2 | -10.8 | -11.2 | -17.4 | -22.9 | -30.3 | -21.6 | 1.7   | 1.7   | 0.0   | 1.6   | 1.6  |
| 1962 | 0.0  | 0.0   | -6.2  | -12.3 | -17.8 | -25.2 | -31.1 | -31.1 | 0.0   | 0.0   | 0.0   | 0.0  |
| 1963 | 0.0  | 0.0   | -0.6  | -0.6  | -0.6  | -3.7  | -3.7  | -3.7  | 0.0   | 0.0   | 0.0   | 0.0  |
| 1964 | 0.0  | 0.0   | -3.9  | -3.9  | -3.9  | -7.0  | 0.1   | -3.1  | 0.0   | 0.0   | 0.0   | 0.0  |
| 1965 | -3.1 | -3.8  | -3.9  | -3.9  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0  |
| 1966 | 0.0  | 0.0   | 0.0   | 0.0   | 0.0   | -3.1  | -3.1  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0  |
| 1967 | -2.6 | 0.0   | 0.0   | -3.0  | -2.9  | -6.0  | 0.1   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0  |
| 1968 | 0.0  | 0.0   | 0.0   | 0.0   | 0.0   | -3.1  | -3.1  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0  |
| 1969 | 0.0  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0  |
| 1970 | -3.3 | -6.4  | -1.9  | -1.9  | -2.0  | -5.0  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0  |
| 1971 | 0.0  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0  |
| 1972 | 0.0  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0  |
| 1973 | 0.0  | 0.0   | 0.0   | 0.0   | 0.0   | -3.1  | -3.0  | -3.1  | 0.0   | 0.0   | 0.0   | 0.0  |
| 1974 | 0.0  | 0.0   | 0.0   | 0.0   | 0.0   | -3.1  | 0.0   | -1.5  | 0.0   | 0.0   | 0.0   | 0.0  |
| 1975 | 0.0  | 0.0   | 0.0   | 0.0   | 0.0   | -3.1  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0  |
| 1976 | 0.0  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0  |
| 1977 | 0.0  | -5.7  | -7.8  | -7.8  | -9.7  | -12.8 | -12.8 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0  |
| 1978 | -7.4 | -14.5 | -21.9 | -29.3 | -36.0 | -43.3 | -50.4 | -56.4 | -56.1 | -55.9 | -21.4 | 0.0  |
| 1979 | -4.8 | -7.0  | -4.9  | -4.9  | -4.8  | -7.9  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0  |
| 1980 | -6.1 | -12.1 | -18.2 | -18.2 | -18.2 | -21.3 | -21.3 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0  |
| 1981 | -2.6 | -3.1  | 0.0   | 0.0   | 0.0   | -3.1  | -3.1  | -3.0  | 0.0   | 0.0   | 0.0   | 0.0  |
| 1982 | -4.0 | -0.4  | -0.5  | -0.4  | -0.4  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0  |
| 1983 | 0.0  | 0.0   | 0.0   | 0.0   | 0.0   | -3.1  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0  |
| 1984 | 0.0  | 0.0   | 0.0   | 0.0   | 0.0   | -3.1  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0  |
| 1985 | 0.0  | 0.0   | 0.0   | 0.0   | 0.0   | -3.1  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0  |
| 1986 | 0.0  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0  |
| 1987 | 0.0  | 0.0   | 0.0   | 0.0   | 0.0   | -3.1  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0  |
| 1988 | 0.0  | -6.0  | -12.1 | -18.2 | -24.0 | -30.1 | -36.0 | -36.0 | -34.2 | 0.0   | 0.0   | -0.1 |
| 1989 | -3.0 | -10.1 | -17.5 | -24.9 | -31.6 | -38.9 | -46.0 | -45.9 | -9.6  | -9.6  | 0.0   | -7.3 |
| AVG  | -1.5 | -2.8  | -4.2  | -6.1  | -7.7  | -10.6 | -10.3 | -9.5  | -6.5  | -3.7  | -0.6  | -0.2 |
| MAX  | 0.0  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.1   | 1.7   | 1.7   | 0.0   | 1.6   | 1.6  |
| MIN  | -9.2 | -14.6 | -21.9 | -29.3 | -36.2 | -43.6 | -50.6 | -56.6 | -56.1 | -55.9 | -21.4 | -9.2 |

TABLE D1

## DISCHARGE, SNAKE RIVER NEAR MORAN, WYOMING

STUDY 953-952 UPPER SNAKE RIVER OPERATION STUDIES (IDWR MODEL) 427 BASE, 400-280

UNITS ARE MEAN CUBIC FEET PER SECOND (CFS)

| YEAR | OCT   | NOV   | DEC   | JAN   | FEB   | MAR    | APR    | MAY    | JUN    | JUL    | AUG    | SEP    |
|------|-------|-------|-------|-------|-------|--------|--------|--------|--------|--------|--------|--------|
| 1928 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 50.0   | -52.0  | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 1929 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 50.0   | 0.0    | 0.0    | -51.0  | 0.0    | 0.0    | 0.0    |
| 1930 | 33.0  | 100.0 | 9.0   | 8.0   | 0.0   | 50.0   | 0.0    | 0.0    | -203.0 | 0.0    | 0.0    | 0.0    |
| 1931 | 0.0   | 0.0   | 75.0  | 71.0  | 100.0 | -93.0  | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | -145.0 |
| 1932 | 120.0 | 120.0 | 120.0 | 120.0 | 120.0 | 120.0  | 120.0  | 100.0  | -100.0 | -77.0  | -736.0 | 0.0    |
| 1933 | 5.0   | -5.0  | 100.0 | 100.0 | 100.0 | 120.0  | 120.0  | 100.0  | 0.0    | -344.0 | -275.0 | 0.0    |
| 1934 | 0.0   | 74.0  | 100.0 | 100.0 | 100.0 | 120.0  | -246.0 | -241.0 | 11.0   | 0.0    | -10.0  | 0.0    |
| 1935 | 120.0 | 120.0 | 120.0 | 120.0 | 120.0 | -44.0  | 120.0  | 100.0  | 100.0  | -612.0 | -31.0  | 0.0    |
| 1936 | 78.0  | 113.0 | 39.0  | 120.0 | 120.0 | 120.0  | 120.0  | 50.0   | 0.0    | 0.0    | -585.0 | 0.0    |
| 1937 | 0.0   | 86.0  | -36.0 | 100.0 | 100.0 | 120.0  | 120.0  | 50.0   | 0.0    | -540.0 | -124.0 | 0.0    |
| 1938 | 0.0   | 20.0  | 100.0 | 100.0 | 100.0 | 120.0  | 120.0  | 50.0   | -612.0 | 0.0    | 0.0    | 0.0    |
| 1939 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 50.0   | 0.0    | -49.0  | 0.0    | 0.0    | 0.0    | 0.0    |
| 1940 | 32.0  | 76.0  | -83.0 | 100.0 | 100.0 | 100.0  | 100.0  | 0.0    | -423.0 | 0.0    | 0.0    | 0.0    |
| 1941 | 0.0   | 0.0   | 100.0 | 100.0 | 100.0 | 120.0  | 120.0  | 50.0   | 0.0    | -570.0 | 0.0    | 0.0    |
| 1942 | 0.0   | 0.0   | 100.0 | 100.0 | 100.0 | 120.0  | 120.0  | 50.0   | 0.0    | 0.0    | -569.0 | 4.0    |
| 1943 | 0.0   | 0.0   | 100.0 | 100.0 | 100.0 | -296.0 | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 1944 | 0.0   | 0.0   | 0.0   | 38.0  | 5.0   | 50.0   | 0.0    | 0.0    | -96.0  | 0.0    | 0.0    | 0.0    |
| 1945 | 92.0  | -30.0 | 76.0  | 11.0  | 0.0   | 50.0   | -207.0 | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 1946 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 50.0   | -51.0  | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 1947 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 50.0   | -52.0  | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 1948 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 50.0   | 0.0    | 0.0    | -51.0  | 0.0    | 0.0    | 0.0    |
| 1949 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 1950 | 0.0   | 0.0   | 11.0  | 0.0   | 0.0   | 50.0   | -63.0  | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 1951 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 1952 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 27.0   | -28.0  | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 1953 | 66.0  | 100.0 | -63.0 | 0.0   | 0.0   | 50.0   | 0.0    | -149.0 | 0.0    | 0.0    | 0.0    | 0.0    |
| 1954 | 59.0  | -12.0 | -39.0 | 0.0   | 0.0   | 50.0   | -61.0  | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 1955 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 50.0   | 0.0    | 0.0    | -52.0  | 0.0    | 0.0    | 0.0    |
| 1956 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 1957 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 50.0   | -52.0  | 50.0   | -52.0  | 0.0    | 0.0    | 0.0    |
| 1958 | 0.0   | 32.0  | 0.0   | 0.0   | 0.0   | 50.0   | 0.0    | -61.0  | 0.0    | 0.0    | 0.0    | 0.0    |
| 1959 | 100.0 | -99.0 | 6.0   | 0.0   | 0.0   | 50.0   | -63.0  | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 1960 | 0.0   | 17.0  | 54.0  | 0.0   | 0.0   | 50.0   | 0.0    | 0.0    | -124.0 | 0.0    | 0.0    | 0.0    |
| 1961 | 100.0 | 79.0  | 6.0   | 100.0 | 100.0 | 120.0  | -145.0 | -377.0 | 0.0    | 27.0   | -27.0  | 0.0    |
| 1962 | 26.0  | 0.0   | 100.0 | 100.0 | 100.0 | 120.0  | 100.0  | 0.0    | -521.0 | 0.0    | 0.0    | 0.0    |
| 1963 | 0.0   | 0.0   | 10.0  | 0.0   | 0.0   | 50.0   | 0.0    | 0.0    | -61.0  | 0.0    | 0.0    | 0.0    |
| 1964 | 0.0   | 0.0   | 63.0  | 0.0   | 0.0   | 50.0   | -117.0 | 50.0   | -52.0  | 0.0    | 0.0    | 0.0    |
| 1965 | 51.0  | 12.0  | 0.0   | 0.0   | -70.0 | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 1966 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 50.0   | 0.0    | -50.0  | 0.0    | 0.0    | 0.0    | 0.0    |
| 1967 | 43.0  | -44.0 | 0.0   | 48.0  | 0.0   | 50.0   | -101.0 | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 1968 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 50.0   | 0.0    | -50.0  | 0.0    | 0.0    | 0.0    | 0.0    |
| 1969 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 1970 | 54.0  | 52.0  | -73.0 | 0.0   | 0.0   | 50.0   | -84.0  | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 1971 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 1972 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 1973 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 50.0   | 0.0    | 0.0    | -51.0  | 0.0    | 0.0    | 0.0    |
| 1974 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 50.0   | -52.0  | 25.0   | -26.0  | 0.0    | 0.0    | 0.0    |
| 1975 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 50.0   | -51.0  | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 1976 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 1977 | 0.0   | 96.0  | 34.0  | 0.0   | 34.0  | 50.0   | 0.0    | -206.0 | 0.0    | 1.0    | 0.0    | 0.0    |
| 1978 | 120.0 | 120.0 | 120.0 | 120.0 | 120.0 | 120.0  | 120.0  | 100.0  | 0.0    | 0.0    | -556.0 | -359.0 |
| 1979 | 79.0  | 37.0  | -36.0 | 0.0   | 0.0   | 50.0   | -134.0 | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 1980 | 100.0 | 100.0 | 100.0 | 0.0   | 0.0   | 50.0   | 0.0    | -346.0 | 0.0    | 0.0    | 0.0    | 0.0    |
| 1981 | 43.0  | 8.0   | -61.0 | 0.0   | 0.0   | 50.0   | 0.0    | 0.0    | -51.0  | 0.0    | 0.0    | 0.0    |
| 1982 | 66.0  | -60.0 | 0.0   | 0.0   | 0.0   | -7.0   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 1983 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 50.0   | -52.0  | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 1984 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 50.0   | -51.0  | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 1985 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 50.0   | -52.0  | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 1986 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 1987 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 50.0   | -52.0  | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 1988 | 0.0   | 100.0 | 100.0 | 100.0 | 100.0 | 100.0  | 100.0  | 0.0    | -28.0  | -555.0 | 0.0    | 3.0    |
| 1989 | 47.0  | 120.0 | 120.0 | 120.0 | 120.0 | 120.0  | 120.0  | 0.0    | -607.0 | 0.0    | -156.0 | 122.0  |
| AVG  | 23.1  | 21.5  | 22.2  | 30.3  | 28.5  | 47.2   | -4.3   | -12.5  | -48.2  | -46.3  | -49.5  | -6.0   |
| MAX  | 120.0 | 120.0 | 120.0 | 120.0 | 120.0 | 120.0  | 120.0  | 100.0  | 100.0  | 27.0   | 0.0    | 122.0  |
| MIN  | 0.0   | -99.0 | -83.0 | 0.0   | -70.0 | -296.0 | -248.0 | -377.0 | -612.0 | -612.0 | -736.0 | -359.0 |

TABLE D1

DISCHARGE, SNAKE RIVER NEAR MILNER, IDAHO  
 STUDY 953-952, UPPER SNAKE RIVER OPERATION STUDIES (IDWR MODEL) 427 BASE, 400-280  
 UNITS ARE MEAN CUBIC FEET PER SECOND (CFS)

| YEAR | OCT   | NOV   | DEC   | JAN   | FEB   | MAR   | APR    | MAY    | JUN   | JUL | AUG | SEP |
|------|-------|-------|-------|-------|-------|-------|--------|--------|-------|-----|-----|-----|
| 1928 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    | 0.0   | 0.0 | 0.0 | 0.0 |
| 1929 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    | 0.0   | 0.0 | 0.0 | 0.0 |
| 1930 | 0.0   | 0.0   | 0.0   | 147.0 | 0.0   | 0.0   | 0.0    | 0.0    | 0.0   | 0.0 | 0.0 | 0.0 |
| 1931 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    | 0.0   | 0.0 | 0.0 | 0.0 |
| 1932 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    | 0.0   | 0.0 | 0.0 | 0.0 |
| 1933 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    | 0.0   | 0.0 | 0.0 | 0.0 |
| 1934 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    | 0.0   | 0.0 | 0.0 | 0.0 |
| 1935 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    | 0.0   | 0.0 | 0.0 | 0.0 |
| 1936 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    | 0.0   | 0.0 | 0.0 | 0.0 |
| 1937 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | -27.0  | 0.0    | 0.0   | 0.0 | 0.0 | 0.0 |
| 1938 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    | 0.0   | 0.0 | 0.0 | 0.0 |
| 1939 | 0.0   | -88.0 | 0.0   | 0.0   | 0.0   | 0.0   | 52.0   | -50.0  | 0.0   | 0.0 | 0.0 | 0.0 |
| 1940 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    | 0.0   | 0.0 | 0.0 | 0.0 |
| 1941 | -22.0 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    | 0.0   | 0.0 | 0.0 | 0.0 |
| 1942 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    | 0.0   | 0.0 | 0.0 | 0.0 |
| 1943 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | -4.0  | 0.0    | 0.0    | 0.0   | 0.0 | 0.0 | 0.0 |
| 1944 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    | 0.0   | 0.0 | 0.0 | 0.0 |
| 1945 | 0.0   | 0.0   | 0.0   | 0.0   | 155.0 | 0.0   | -155.0 | 0.0    | 0.0   | 0.0 | 0.0 | 0.0 |
| 1946 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    | 0.0   | 0.0 | 0.0 | 0.0 |
| 1947 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    | 0.0   | 0.0 | 0.0 | 0.0 |
| 1948 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    | 0.0   | 0.0 | 0.0 | 0.0 |
| 1949 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    | 0.0   | 0.0 | 0.0 | 0.0 |
| 1950 | 0.0   | 0.0   | 0.0   | 11.0  | 0.0   | 0.0   | -12.0  | 0.0    | 0.0   | 0.0 | 0.0 | 0.0 |
| 1951 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    | 0.0   | 0.0 | 0.0 | 0.0 |
| 1952 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    | 0.0   | 0.0 | 0.0 | 0.0 |
| 1953 | 0.0   | 0.0   | 0.0   | 100.0 | 0.0   | 0.0   | 0.0    | -100.0 | 0.0   | 0.0 | 0.0 | 0.0 |
| 1954 | 0.0   | 50.0  | 0.0   | -39.0 | 0.0   | 0.0   | -9.0   | 0.0    | 0.0   | 0.0 | 0.0 | 0.0 |
| 1955 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    | 0.0   | 0.0 | 0.0 | 0.0 |
| 1956 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    | 0.0   | 0.0 | 0.0 | 0.0 |
| 1957 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    | 0.0   | 0.0 | 0.0 | 0.0 |
| 1958 | 0.0   | 0.0   | 31.0  | 0.0   | 0.0   | 0.0   | 0.0    | -31.0  | 0.0   | 0.0 | 0.0 | 0.0 |
| 1959 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    | 0.0   | 0.0 | 0.0 | 0.0 |
| 1960 | 0.0   | 0.0   | 0.0   | 0.0   | 75.0  | 0.0   | 0.0    | 0.0    | 0.0   | 0.0 | 0.0 | 0.0 |
| 1961 | 0.0   | 0.0   | -95.0 | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    | 0.0   | 0.0 | 0.0 | 0.0 |
| 1962 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | -41.0 | 89.0   | 0.0    | 0.0   | 0.0 | 0.0 | 0.0 |
| 1963 | 0.0   | -1.0  | 0.0   | 10.0  | 0.0   | 0.0   | -10.0  | 0.0    | 0.0   | 0.0 | 0.0 | 0.0 |
| 1964 | 0.0   | 0.0   | 0.0   | 64.0  | 0.0   | 0.0   | -66.0  | 0.0    | 0.0   | 0.0 | 0.0 | 0.0 |
| 1965 | 0.0   | 0.0   | 63.0  | 0.0   | -70.0 | 0.0   | 0.0    | 0.0    | 0.0   | 0.0 | 0.0 | 0.0 |
| 1966 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 51.0   | 0.0    | 0.0   | 0.0 | 0.0 | 0.0 |
| 1967 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | -50.0  | 0.0    | 0.0   | 0.0 | 0.0 | 0.0 |
| 1968 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    | 0.0   | 0.0 | 0.0 | 0.0 |
| 1969 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    | 0.0   | 0.0 | 0.0 | 0.0 |
| 1970 | 55.0  | 0.0   | 0.0   | -23.0 | 0.0   | 0.0   | -32.0  | 0.0    | 0.0   | 0.0 | 0.0 | 0.0 |
| 1971 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    | 0.0   | 0.0 | 0.0 | 0.0 |
| 1972 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    | 0.0   | 0.0 | 0.0 | 0.0 |
| 1973 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 50.0   | -51.0 | 0.0 | 0.0 | 0.0 |
| 1974 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    | 0.0   | 0.0 | 0.0 | 0.0 |
| 1975 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    | 0.0   | 0.0 | 0.0 | 0.0 |
| 1976 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    | 0.0   | 0.0 | 0.0 | 0.0 |
| 1977 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    | 0.0   | 0.0 | 0.0 | 0.0 |
| 1978 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    | 0.0   | 0.0 | 0.0 | 0.0 |
| 1979 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | -11.0  | 0.0    | 0.0   | 0.0 | 0.0 | 0.0 |
| 1980 | 0.0   | 0.0   | 0.0   | 0.0   | 318.0 | 0.0   | -306.0 | -1.0   | 0.0   | 0.0 | 0.0 | 0.0 |
| 1981 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    | 0.0   | 0.0 | 0.0 | 0.0 |
| 1982 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    | 0.0   | 0.0 | 0.0 | 0.0 |
| 1983 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    | 0.0   | 0.0 | 0.0 | 0.0 |
| 1984 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    | 0.0   | 0.0 | 0.0 | 0.0 |
| 1985 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    | 0.0   | 0.0 | 0.0 | 0.0 |
| 1986 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    | 0.0   | 0.0 | 0.0 | 0.0 |
| 1987 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    | 0.0   | 0.0 | 0.0 | 0.0 |
| 1988 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    | 0.0   | 0.0 | 0.0 | 0.0 |
| 1989 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    | 0.0   | 0.0 | 0.0 | 0.0 |
| AVG  | 0.5   | -0.6  | 0.0   | 4.4   | 7.7   | -0.7  | -8.2   | -2.1   | -0.8  | 0.0 | 0.0 | 0.0 |
| MAX  | 55.0  | 50.0  | 63.0  | 147.0 | 318.0 | 0.0   | 69.0   | 50.0   | 0.0   | 0.0 | 0.0 | 0.0 |
| MIN  | -22.0 | -88.0 | -95.0 | -39.0 | -70.0 | -41.0 | -306.0 | -100.0 | -51.0 | 0.0 | 0.0 | 0.0 |

TABLE D1

STUDY 953-852, UPPER SNAKE RIVER OPERATION STUDIES (IDWR MODEL) 427 BASE, 400-260

UNITS ARE 1000 ACRE-FEET

| YEAR | OCT   | NOV   | DEC   | JAN   | FEB   | MAR   | APR   | MAY   | JUN   | JUL   | AUG   | SEP   |
|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 1928 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1929 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1930 | 0.0   | 0.0   | 0.0   | -9.0  | -9.1  | -9.0  | -9.0  | -9.0  | -9.0  | -8.9  | -8.8  | -8.9  |
| 1931 | -8.8  | -8.8  | -8.9  | -8.8  | -8.8  | -8.8  | -8.8  | -8.8  | -8.8  | -8.7  | -8.7  | -8.7  |
| 1932 | -8.6  | -8.7  | -8.7  | -8.7  | -8.6  | -8.6  | -8.8  | -8.8  | -9.0  | -9.2  | -9.2  | -9.2  |
| 1933 | -8.9  | -9.0  | -9.0  | -9.0  | -8.9  | -9.0  | -9.0  | -8.8  | -17.2 | -16.9 | -16.8 | -16.8 |
| 1934 | -16.8 | -16.8 | -16.8 | -16.8 | -16.8 | -16.8 | -10.0 | -9.9  | -8.4  | -8.3  | 0.0   | 0.0   |
| 1935 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | -0.3  | -0.4  | -1.0  | -1.9  | -2.0  | 0.0   |
| 1936 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | -0.1  | -0.2  | -8.8  | -9.2  | -9.2  | -9.2  |
| 1937 | -9.2  | -9.2  | -9.2  | -9.2  | -9.2  | -9.2  | -7.6  | -7.5  | -7.6  | -7.6  | -7.6  | 0.0   |
| 1938 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | -0.8  | -0.6  | -5.4  | -5.4  | -5.3  | -5.2  |
| 1939 | -5.2  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | -3.1  | 0.0   | 0.0   | 0.0   | 0.0   | -1.4  |
| 1940 | -1.3  | -1.4  | -1.3  | -1.3  | -1.4  | -1.3  | -1.4  | -1.4  | -1.4  | -1.4  | -1.4  | -1.3  |
| 1941 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | -0.1  | -0.2  | -0.2  | 0.0   |
| 1942 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | -0.1  | -0.2  | -0.2  |
| 1943 | -0.2  | -0.2  | -0.2  | -0.3  | -0.2  | 0.0   | 0.0   | 0.0   | -0.7  | -0.7  | -0.7  | -0.7  |
| 1944 | -0.7  | -0.7  | -0.6  | -0.6  | -0.6  | -0.6  | -0.7  | -0.7  | -0.7  | -0.7  | -0.7  | -0.7  |
| 1945 | -0.6  | -0.6  | -0.7  | -0.6  | -0.2  | -0.2  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1946 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1947 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1948 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1949 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1950 | 0.0   | 0.0   | 0.0   | -0.7  | -0.6  | -0.7  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1951 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1952 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1953 | 0.0   | 0.0   | 0.0   | -6.2  | -6.2  | -6.1  | -6.1  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1954 | 0.0   | -2.9  | -2.9  | -0.5  | -0.5  | -0.5  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1955 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1956 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1957 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1958 | 0.0   | 0.0   | -1.9  | -1.9  | -1.9  | -1.9  | -1.9  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1959 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1960 | 0.0   | 0.0   | 0.0   | 0.0   | -4.3  | -4.3  | -4.3  | -4.3  | -4.2  | -4.3  | -4.2  | -4.2  |
| 1961 | -4.1  | -4.2  | 1.7   | 1.7   | 1.6   | 1.7   | 1.7   | 1.7   | 1.7   | 1.6   | 1.6   | 1.6   |
| 1962 | 1.6   | 1.6   | 1.6   | 1.6   | 1.6   | 4.1   | 0.0   | 0.0   | 0.0   | 0.0   | -0.1  | -0.1  |
| 1963 | -0.1  | 0.0   | 0.0   | -0.6  | -0.6  | -0.6  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1964 | 0.0   | 0.0   | 0.0   | -3.9  | -3.9  | -3.9  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1965 | 0.0   | 0.0   | -3.9  | -3.9  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1966 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | -3.1  | -3.1  | -3.1  | -3.0  | -3.0  | -3.0  |
| 1967 | -3.0  | -2.9  | -2.9  | -2.9  | -2.9  | -2.9  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1968 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1969 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1970 | -3.3  | -3.3  | -3.4  | -2.0  | -1.9  | -2.0  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1971 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1972 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1973 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | -3.1  | 0.0   | 0.0   | 0.0   | 0.0   |
| 1974 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1975 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1976 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1977 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | -0.1  | -0.1  | 0.0   | 0.0   |
| 1978 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.1   | -0.1  | -0.5  | -0.7  |
| 1979 | -0.6  | -0.6  | -0.7  | -0.6  | -0.6  | -0.6  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1980 | 0.0   | 0.0   | 0.0   | 0.0   | -16.2 | -16.3 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1981 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | -0.1  | 0.0   | 0.0   |
| 1982 | 0.0   | 0.0   | -0.1  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1983 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | -0.1  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1984 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1985 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1986 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1987 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 1988 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | -0.1  | -0.1  | -0.2  | -0.1  | -0.1  |
| 1989 | -0.1  | -0.2  | -0.1  | -0.2  | -0.2  | -0.1  | -0.1  | -10.4 | -11.2 | -9.1  | -9.2  | -7.3  |
| AVG  | -1.1  | -1.1  | -1.1  | -1.4  | -1.8  | -1.8  | -1.2  | -1.2  | -1.3  | -1.5  | -1.4  | -1.2  |
| MAX  | 1.6   | 1.6   | 1.7   | 1.7   | 1.6   | 4.1   | 1.7   | 1.7   | 1.7   | 1.6   | 1.6   | 1.6   |
| MIN  | -16.8 | -16.8 | -16.8 | -16.8 | -16.2 | -16.3 | -10.0 | -10.4 | -17.2 | -16.9 | -16.8 | -16.8 |

TABLE D1

STUDY 953-952 UPPER SNAKE RIVER OPERATION STUDIES (IDWR MODEL) 427 BASE, 400-280

UNITS ARE 1000 ACRE-FEET

| YEAR | OCT   | NOV   | DEC  | JAN  | FEB  | MAR  | APR  | MAY  | JUN  | JUL  | AUG   | SEP   |
|------|-------|-------|------|------|------|------|------|------|------|------|-------|-------|
| 1928 | 0.0   | 0.0   | 0.0  | 0.0  | 0.0  | 3.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   |
| 1929 | 0.0   | 0.0   | 0.0  | 0.0  | 0.0  | 3.1  | 3.0  | 3.1  | 0.0  | 0.0  | 0.0   | 0.0   |
| 1930 | 2.0   | 7.9   | 8.5  | 0.0  | 0.0  | 3.1  | 3.1  | 3.1  | -9.0 | -8.9 | -8.8  | -8.9  |
| 1931 | -8.8  | -8.8  | -4.3 | 0.2  | 5.7  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | -8.7  |
| 1932 | -1.2  | 5.8   | 13.2 | 20.6 | 27.6 | 35.0 | 41.8 | 47.8 | 41.3 | 36.2 | -9.2  | -9.2  |
| 1933 | -8.6  | -9.0  | -2.8 | 3.3  | 8.9  | 16.2 | 23.3 | 29.5 | 21.0 | 0.0  | -16.8 | -16.8 |
| 1934 | -16.8 | -12.4 | -6.2 | -0.1 | 5.4  | 12.8 | 4.8  | -9.9 | -7.7 | -7.6 | 0.0   | 0.0   |
| 1935 | 7.4   | 14.6  | 21.9 | 29.3 | 36.0 | 33.3 | 40.0 | 45.9 | 51.0 | 0.0  | -2.0  | 0.0   |
| 1936 | 4.8   | 11.6  | 13.9 | 21.3 | 28.2 | 35.6 | 42.6 | 45.4 | 36.7 | 36.1 | 0.0   | 0.0   |
| 1937 | 0.0   | 5.1   | 2.7  | 8.9  | 14.4 | 21.8 | 30.5 | 33.5 | 33.3 | 0.0  | -7.6  | 0.0   |
| 1938 | 0.0   | 1.2   | 7.4  | 13.5 | 19.0 | 26.4 | 32.9 | 35.9 | -5.4 | -5.4 | -5.3  | -5.2  |
| 1939 | -5.2  | 0.0   | 0.0  | 0.0  | 0.0  | 3.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | -1.4  |
| 1940 | 0.6   | 5.1   | 0.0  | 6.2  | 11.9 | 18.2 | 24.0 | 23.9 | -1.4 | -1.4 | -1.4  | -1.3  |
| 1941 | 0.0   | 0.0   | 6.2  | 12.3 | 17.8 | 25.2 | 32.3 | 35.3 | 35.0 | -0.2 | -0.2  | 0.0   |
| 1942 | 0.0   | 0.0   | 6.2  | 12.3 | 17.8 | 25.2 | 32.4 | 35.3 | 35.2 | 35.0 | -0.2  | 0.0   |
| 1943 | 0.0   | 0.1   | 6.2  | 12.2 | 17.9 | 0.1  | 0.0  | 0.0  | -0.7 | -0.7 | -0.7  | -0.7  |
| 1944 | -0.7  | -0.7  | -0.6 | 1.8  | 2.1  | 5.2  | 5.0  | 5.0  | -0.7 | -0.7 | -0.7  | -0.7  |
| 1945 | 5.0   | 3.2   | 7.8  | 8.6  | 0.1  | 3.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   |
| 1946 | 0.0   | 0.0   | 0.0  | 0.0  | 0.0  | 3.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   |
| 1947 | 0.0   | 0.0   | 0.0  | 0.0  | 0.0  | 3.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   |
| 1948 | 0.0   | 0.0   | 0.0  | 0.0  | 0.0  | 3.1  | 3.1  | 3.0  | 0.0  | 0.0  | 0.0   | 0.0   |
| 1949 | 0.0   | 0.0   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   |
| 1950 | 0.0   | 0.0   | 0.7  | 0.0  | 0.1  | 3.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   |
| 1951 | 0.0   | 0.0   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   |
| 1952 | 0.0   | 0.0   | 0.0  | 0.0  | 0.0  | 1.7  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   |
| 1953 | 4.0   | 9.9   | 6.1  | -0.1 | 0.0  | 3.1  | 3.1  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   |
| 1954 | 3.6   | 0.0   | -2.4 | 0.0  | 0.1  | 3.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   |
| 1955 | 0.0   | 0.0   | 0.0  | 0.0  | 0.0  | 3.1  | 3.1  | 3.0  | 0.0  | 0.0  | 0.0   | 0.0   |
| 1956 | 0.0   | 0.0   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   |
| 1957 | 0.0   | 0.0   | 0.0  | 0.0  | 0.0  | 3.1  | 0.0  | 3.0  | 0.0  | 0.0  | 0.0   | 0.0   |
| 1958 | 0.0   | 1.9   | 0.0  | 0.0  | 0.0  | 3.1  | 3.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   |
| 1959 | 6.1   | 0.2   | 0.6  | 0.6  | 0.7  | 3.7  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   |
| 1960 | 0.0   | 1.0   | 4.3  | 4.3  | 0.0  | 3.1  | 3.1  | 3.0  | -4.2 | -4.3 | -4.2  | -4.2  |
| 1961 | 2.1   | 6.6   | 12.9 | 19.1 | 24.5 | 32.0 | 23.3 | 0.0  | 0.0  | 1.8  | 0.0   | 0.0   |
| 1962 | 1.6   | 1.6   | 7.8  | 13.9 | 19.4 | 29.3 | 31.1 | 31.1 | 0.0  | 0.0  | -0.1  | -0.1  |
| 1963 | -0.1  | 0.0   | 0.6  | 0.0  | 0.0  | 3.1  | 3.7  | 3.7  | 0.0  | 0.0  | 0.0   | 0.0   |
| 1964 | 0.0   | 0.0   | 3.9  | 0.0  | 0.0  | 3.1  | -0.1 | 3.1  | 0.0  | 0.0  | 0.0   | 0.0   |
| 1965 | 3.1   | 3.8   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   |
| 1966 | 0.0   | 0.0   | 0.0  | 0.0  | 0.0  | 3.1  | 0.0  | -3.1 | -3.1 | -3.0 | -3.0  | -3.0  |
| 1967 | -0.4  | -2.9  | -2.9 | 0.1  | 0.0  | 3.1  | -0.1 | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   |
| 1968 | 0.0   | 0.0   | 0.0  | 0.0  | 0.0  | 3.1  | 3.1  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   |
| 1969 | 0.0   | 0.0   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   |
| 1970 | 0.0   | 3.1   | -1.5 | -0.1 | 0.1  | 3.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   |
| 1971 | 0.0   | 0.0   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   |
| 1972 | 0.0   | 0.0   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   |
| 1973 | 0.0   | 0.0   | 0.0  | 0.0  | 0.0  | 3.1  | 3.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   |
| 1974 | 0.0   | 0.0   | 0.0  | 0.0  | 0.0  | 3.1  | 0.0  | 1.5  | 0.0  | 0.0  | 0.0   | 0.0   |
| 1975 | 0.0   | 0.0   | 0.0  | 0.0  | 0.0  | 3.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   |
| 1976 | 0.0   | 0.0   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   |
| 1977 | 0.0   | 5.7   | 7.8  | 7.8  | 9.7  | 12.8 | 12.8 | 0.0  | -0.1 | -0.1 | 0.0   | 0.0   |
| 1978 | 7.4   | 14.5  | 21.9 | 29.3 | 36.0 | 43.3 | 50.4 | 56.4 | 56.2 | 55.8 | 20.9  | -0.7  |
| 1979 | 4.2   | 6.4   | 4.2  | 4.3  | 4.2  | 7.3  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   |
| 1980 | 6.1   | 12.1  | 18.2 | 18.2 | 0.0  | 3.0  | 21.3 | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   |
| 1981 | 2.6   | 3.1   | 0.0  | 0.0  | 0.0  | 3.1  | 3.1  | 3.0  | 0.0  | -0.1 | 0.0   | 0.0   |
| 1982 | 4.0   | 0.4   | 0.4  | 0.4  | 0.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   |
| 1983 | 0.0   | 0.0   | 0.0  | 0.0  | 0.0  | 3.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   |
| 1984 | 0.0   | 0.0   | 0.0  | 0.0  | 0.0  | 3.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   |
| 1985 | 0.0   | 0.0   | 0.0  | 0.0  | 0.0  | 3.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   |
| 1986 | 0.0   | 0.0   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   |
| 1987 | 0.0   | 0.0   | 0.0  | 0.0  | 0.0  | 3.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   |
| 1988 | 0.0   | 6.0   | 12.1 | 18.2 | 24.0 | 30.1 | 36.0 | 35.9 | 34.1 | -0.2 | -0.1  | 0.0   |
| 1989 | 2.9   | 9.9   | 17.4 | 24.7 | 31.4 | 38.8 | 45.9 | 35.5 | -1.6 | 0.5  | -9.2  | 0.0   |
| AVG  | 0.4   | 1.7   | 3.1  | 4.7  | 5.9  | 8.8  | 9.1  | 8.3  | 5.0  | 2.1  | -0.8  | -1.0  |
| MAX  | 7.4   | 14.6  | 21.9 | 29.3 | 36.0 | 43.3 | 50.4 | 56.4 | 56.2 | 55.8 | 20.9  | 0.0   |
| MIN  | -16.8 | -12.4 | -6.2 | -0.1 | 0.0  | 0.0  | -0.1 | -9.9 | -9.0 | -8.9 | -16.8 | -16.8 |

TABLE E1

## JACKSON LAKE

STUDY 965-952 UPPER SNAKE RIVER OPERATION STUDIES (IDWR MODEL) 427 BASE. Guide Level = 50 km

UNITS ARE 1000 ACRE-FEET

| YEAR | OCT  | NOV   | DEC   | JAN   | FEB   | MAR   | APR   | MAY   | JUN   | JUL  | AUG  | SEP  |
|------|------|-------|-------|-------|-------|-------|-------|-------|-------|------|------|------|
| 1928 | 5.9  | 8.8   | 8.8   | 8.8   | 8.8   | 0.3   | 0.0   | 0.0   | 0.0   | 0.0  | 30.0 | 50.0 |
| 1929 | 50.0 | 44.0  | 44.0  | 44.0  | 44.1  | 41.0  | 41.0  | 40.8  | 0.0   | 34.9 | 50.0 | 50.0 |
| 1930 | 47.9 | 42.0  | 35.3  | 34.8  | 34.7  | 31.7  | 31.7  | 31.6  | 0.0   | 18.7 | 50.0 | 50.0 |
| 1931 | 50.0 | 44.3  | 30.0  | 20.0  | 14.5  | 29.6  | 29.6  | 40.7  | 29.4  | 29.4 | 29.3 | 50.0 |
| 1932 | 42.5 | 35.4  | 28.0  | 20.6  | 13.7  | 6.3   | -0.8  | -6.9  | -6.9  | 0.3  | 0.0  | 50.0 |
| 1933 | 36.7 | 40.0  | 33.8  | 27.7  | 22.2  | 14.8  | 7.6   | 1.5   | 1.4   | 19.4 | 0.0  | 50.0 |
| 1934 | 50.0 | 40.0  | 33.8  | 27.7  | 22.2  | 14.8  | 0.0   | 0.0   | 41.8  | 19.7 | 50.0 | 50.0 |
| 1935 | 42.5 | 35.3  | 28.0  | 20.6  | 13.9  | 16.6  | 9.5   | 3.3   | -2.8  | 47.2 | 0.0  | 50.0 |
| 1936 | 45.2 | 38.0  | 30.7  | 23.3  | 16.4  | 9.0   | 1.8   | -1.2  | -1.3  | -1.2 | 37.8 | 37.8 |
| 1937 | 37.7 | 32.8  | 20.0  | 13.8  | 8.3   | 0.9   | -6.3  | -9.2  | -9.2  | 30.8 | 0.0  | 50.0 |
| 1938 | 50.0 | 40.0  | 33.8  | 27.7  | 22.2  | 14.8  | 7.6   | 4.5   | 0.0   | 0.0  | 50.0 | 50.0 |
| 1939 | 50.0 | 48.1  | 47.9  | 47.9  | 47.9  | 44.8  | 33.1  | 0.0   | 0.0   | 25.9 | 50.0 | 50.0 |
| 1940 | 48.0 | 43.5  | 31.7  | 25.5  | 12.8  | 6.6   | 0.6   | 0.6   | 40.0  | 50.0 | 4.5  | 50.0 |
| 1941 | 50.0 | 40.0  | 33.8  | 27.7  | 22.2  | 14.8  | 7.6   | 4.5   | 4.5   | 50.0 | 0.0  | 37.1 |
| 1942 | 50.0 | 40.0  | 33.8  | 27.7  | 22.2  | 14.8  | 7.6   | 4.5   | 4.5   | 4.5  | 18.6 | 29.4 |
| 1943 | 29.4 | 29.3  | 23.2  | 17.1  | 11.5  | 0.0   | 0.0   | 0.0   | 40.0  | 0.0  | 30.0 | 36.7 |
| 1944 | 40.0 | 39.9  | 40.0  | 37.6  | 37.3  | 34.2  | 34.2  | 34.1  | 0.0   | 0.0  | 50.0 | 50.0 |
| 1945 | 44.3 | 40.2  | 30.0  | 25.9  | 25.9  | 22.8  | 50.0  | 0.0   | 40.0  | 19.3 | 0.3  | 50.0 |
| 1946 | 50.0 | 50.0  | 50.0  | 50.0  | 50.0  | 38.2  | 0.0   | 0.0   | 0.0   | 2.7  | 50.0 | 50.0 |
| 1947 | 50.0 | 49.3  | 49.3  | 49.3  | 49.4  | 46.3  | 0.0   | 0.0   | 0.0   | 0.0  | 50.0 | 50.0 |
| 1948 | 50.0 | 49.8  | 45.9  | 45.9  | 45.9  | 42.8  | 42.8  | 13.2  | 0.0   | 31.5 | 50.0 | 50.0 |
| 1949 | 50.0 | 50.0  | 50.0  | 50.0  | 50.0  | 99.5  | 50.0  | 12.9  | 0.0   | 40.7 | 50.0 | 50.0 |
| 1950 | 50.0 | 47.1  | 40.3  | 40.3  | 19.9  | 16.8  | 0.0   | 0.0   | 34.5  | 0.0  | 30.0 | 38.4 |
| 1951 | 38.4 | 38.4  | 38.4  | 38.4  | 6.9   | 47.5  | 0.0   | 46.8  | 29.0  | 10.9 | 30.0 | 31.7 |
| 1952 | 31.7 | 31.7  | 31.7  | 31.7  | 3.8   | 0.0   | 50.0  | 27.4  | 0.0   | 0.0  | 46.7 | 50.0 |
| 1953 | 45.9 | 40.0  | 37.7  | 37.7  | 37.6  | 34.6  | 34.5  | 0.0   | 0.0   | 0.0  | 50.0 | 50.0 |
| 1954 | 48.3 | 41.1  | 37.3  | 37.3  | 37.3  | 34.2  | 0.0   | 8.6   | 40.0  | 9.9  | 50.0 | 50.0 |
| 1955 | 50.0 | 46.4  | 40.4  | 40.4  | 40.4  | 37.3  | 37.3  | 37.3  | 0.0   | 50.0 | 50.0 | 50.0 |
| 1956 | 50.0 | 50.0  | 50.0  | 22.1  | 40.0  | 0.0   | 0.0   | 50.0  | 0.0   | 0.0  | 30.0 | 50.0 |
| 1957 | 50.0 | 50.0  | 50.0  | 46.6  | 20.3  | 1.8   | 0.0   | -3.0  | 3.8   | 0.0  | 48.5 | 50.0 |
| 1958 | 50.0 | 42.1  | 42.1  | 42.1  | 42.2  | 39.1  | 39.1  | 0.0   | 0.0   | 0.0  | 35.8 | 50.0 |
| 1959 | 43.8 | 43.8  | 37.2  | 37.2  | 37.2  | 34.1  | 18.5  | 50.0  | 40.0  | 39.8 | 50.0 | 50.0 |
| 1960 | 50.0 | 43.0  | 33.6  | 33.6  | 33.6  | 30.5  | 30.5  | 30.5  | 0.0   | 0.0  | 0.0  | 50.0 |
| 1961 | 41.7 | 37.0  | 30.9  | 24.7  | 14.8  | 4.4   | 13.1  | 15.9  | 15.8  | 36.6 | 15.7 | 15.7 |
| 1962 | 36.4 | 40.0  | 33.8  | 27.7  | 22.2  | 14.8  | 8.8   | 8.8   | 0.0   | 0.0  | 50.0 | 50.0 |
| 1963 | 50.0 | 44.2  | 37.5  | 37.5  | 37.5  | 34.4  | 34.4  | 34.3  | 0.0   | 16.8 | 50.0 | 50.0 |
| 1964 | 50.0 | 47.9  | 37.9  | 37.9  | 37.9  | 34.6  | 0.1   | -3.1  | 30.6  | 14.1 | 25.2 | 50.0 |
| 1965 | 46.8 | 40.2  | 40.1  | 29.9  | 40.0  | 1.0   | 0.0   | 0.0   | 40.0  | 0.0  | 30.0 | 32.2 |
| 1966 | 35.2 | 35.1  | 35.2  | 35.2  | 35.2  | 32.1  | 32.1  | 0.0   | 0.0   | 0.0  | 50.0 | 50.0 |
| 1967 | 47.3 | 33.3  | 31.3  | 29.4  | 35.0  | 47.2  | 0.1   | 22.0  | 0.0   | 0.0  | 30.0 | 50.0 |
| 1968 | 49.9 | 47.8  | 45.9  | 45.9  | 45.9  | 42.8  | 42.8  | 26.6  | 0.0   | 0.0  | 29.9 | 32.7 |
| 1969 | 40.4 | 40.3  | 40.4  | 40.4  | 40.0  | 25.5  | 25.4  | 0.0   | 0.0   | 0.0  | 50.0 | 50.0 |
| 1970 | 46.6 | 40.0  | 38.4  | 38.4  | 31.3  | 28.2  | 5.0   | 38.6  | 0.0   | 0.0  | 17.7 | 36.5 |
| 1971 | 43.0 | 42.9  | 43.0  | 27.8  | 40.0  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0  | 30.0 | 31.0 |
| 1972 | 31.0 | 31.0  | 31.0  | 12.6  | 40.0  | 0.0   | 0.0   | 0.0   | 40.0  | 25.6 | 30.0 | 29.9 |
| 1973 | 29.9 | 29.9  | 29.9  | 20.0  | 10.0  | 3.6   | 3.7   | 3.6   | 0.0   | 0.0  | 50.0 | 50.0 |
| 1974 | 50.0 | 50.0  | 50.0  | 50.0  | 26.1  | 23.0  | 0.0   | -1.5  | 0.0   | 0.0  | 30.0 | 43.9 |
| 1975 | 46.8 | 46.7  | 44.0  | 44.0  | 44.0  | 40.9  | 0.0   | 0.0   | 0.0   | 0.0  | 30.0 | 44.7 |
| 1976 | 48.1 | 48.0  | 48.0  | 44.8  | 40.0  | 0.0   | 0.0   | 0.0   | 40.0  | 27.0 | 30.0 | 44.0 |
| 1977 | 50.0 | 40.0  | 31.8  | 31.8  | 29.8  | 26.7  | 26.8  | 50.0  | 0.0   | 35.4 | 43.4 | 50.0 |
| 1978 | 42.5 | 35.4  | 28.0  | 20.6  | 13.9  | 6.6   | -0.6  | -6.7  | -6.7  | -6.7 | 27.7 | 50.0 |
| 1979 | 45.1 | 40.0  | 40.0  | 40.0  | 40.0  | 36.9  | 13.9  | 13.9  | 0.0   | 21.8 | 50.0 | 50.0 |
| 1980 | 43.8 | 37.8  | 31.7  | 31.7  | 31.7  | 28.6  | 28.6  | 0.0   | 0.0   | 0.0  | 50.0 | 50.0 |
| 1981 | 47.3 | 40.9  | 38.5  | 38.5  | 38.5  | 35.4  | 35.4  | 30.5  | 0.0   | 0.0  | 31.4 | 44.3 |
| 1982 | 40.2 | 40.0  | 40.0  | 40.0  | 40.0  | 0.0   | 0.0   | 0.0   | 19.7  | 0.0  | 30.0 | 29.9 |
| 1983 | 29.9 | 29.9  | 29.9  | 30.0  | 15.4  | 2.9   | 41.5  | 41.4  | 0.0   | 0.0  | 30.0 | 36.5 |
| 1984 | 36.5 | 40.0  | 30.0  | 0.0   | 0.0   | -3.1  | 50.0  | 49.9  | 0.0   | 0.0  | 30.0 | 29.9 |
| 1985 | 29.9 | 29.9  | 29.9  | 26.6  | 16.5  | 1.3   | 0.0   | 0.0   | 0.0   | 0.0  | 50.0 | 50.0 |
| 1986 | 50.0 | 50.0  | 50.0  | 50.0  | 31.8  | 0.0   | 0.0   | 50.0  | 0.0   | 0.0  | 30.0 | 29.9 |
| 1987 | 29.9 | 29.9  | 29.9  | 30.0  | 23.6  | 13.4  | 0.0   | 0.0   | 40.0  | 38.8 | 0.1  | 0.0  |
| 1988 | 0.1  | -5.9  | -12.0 | -18.1 | -23.9 | -30.1 | -36.0 | -36.0 | -34.2 | 50.0 | 1.6  | 0.0  |
| 1989 | -2.9 | -10.0 | -17.4 | -24.8 | -31.5 | -38.8 | -45.9 | -45.8 | -9.5  | -9.4 | 20.4 | -7.1 |
| AVG  | 42.1 | 38.8  | 35.0  | 31.0  | 27.1  | 19.9  | 13.5  | 11.5  | 8.1   | 12.7 | 32.5 | 42.5 |
| MAX  | 50.0 | 50.0  | 50.0  | 50.0  | 50.0  | 99.5  | 50.0  | 50.0  | 41.8  | 50.0 | 50.0 | 50.0 |
| MIN  | -2.9 | -10.0 | -17.4 | -24.8 | -31.5 | -38.8 | -45.9 | -45.8 | -34.2 | -9.4 | 0.0  | -7.1 |



TABLE E1

## DISCHARGE, SNAKE RIVER NEAR MORAN, WYOMING

STUDY 955-952 UPPER SNAKE RIVER OPERATION STUDIES (IDWR MODEL) 427 BASE, Gauge Level + 50 kaf

UNITS ARE MEAN CUBIC FEET PER SECOND (CFS)

| YEAR | OCT    | NOV   | DEC   | JAN   | FEB    | MAR    | APR    | MAY    | JUN    | JUL     | AUG    | SEP    |
|------|--------|-------|-------|-------|--------|--------|--------|--------|--------|---------|--------|--------|
| 1928 | -95.0  | -49.0 | 0.0   | 0.0   | 0.0    | 137.0  | 5.0    | 0.0    | 0.0    | 0.0     | -488.0 | -337.0 |
| 1929 | -1.0   | 100.0 | 0.0   | 0.0   | 0.0    | 50.0   | 0.0    | 0.0    | 685.0  | -568.0  | -247.0 | -1.0   |
| 1930 | 33.0   | 100.0 | 109.0 | 8.0   | 0.0    | 50.0   | 0.0    | 0.0    | 529.0  | -305.0  | -509.0 | -1.0   |
| 1931 | -1.0   | 95.0  | 234.0 | 162.0 | 100.0  | -246.0 | 0.0    | -183.0 | 188.0  | 0.0     | 0.0    | -350.0 |
| 1932 | 120.0  | 120.0 | 120.0 | 120.0 | 120.0  | 120.0  | 120.0  | 100.0  | 0.0    | -118.0  | 5.0    | -840.0 |
| 1933 | 215.0  | -55.0 | 100.0 | 100.0 | 100.0  | 120.0  | 120.0  | 100.0  | 0.0    | -292.0  | 314.0  | -840.0 |
| 1934 | -1.0   | 168.0 | 100.0 | 100.0 | 100.0  | 120.0  | 248.0  | 0.0    | -703.0 | 355.0   | -494.0 | -3.0   |
| 1935 | 120.0  | 120.0 | 120.0 | 120.0 | 120.0  | -44.0  | 120.0  | 100.0  | 100.0  | -812.0  | 765.0  | -840.0 |
| 1936 | 77.0   | 120.0 | 120.0 | 120.0 | 120.0  | 120.0  | 120.0  | 50.0   | 0.0    | 0.0     | -635.0 | 0.0    |
| 1937 | 0.0    | 86.0  | 205.0 | 100.0 | 100.0  | 120.0  | 120.0  | 50.0   | 0.0    | -651.0  | 499.0  | -840.0 |
| 1938 | -1.0   | 168.0 | 100.0 | 100.0 | 100.0  | 120.0  | 120.0  | 50.0   | 76.0   | 0.0     | -813.0 | -2.0   |
| 1939 | -1.0   | 31.0  | 4.0   | 0.0   | 0.0    | 50.0   | 196.0  | 538.0  | 0.0    | -422.0  | -393.0 | -1.0   |
| 1940 | 32.0   | 76.0  | 192.0 | 100.0 | 222.0  | 100.0  | 100.0  | 0.0    | -661.0 | -165.0  | 738.0  | -765.0 |
| 1941 | -1.0   | 168.0 | 100.0 | 100.0 | 100.0  | 120.0  | 120.0  | 50.0   | 0.0    | -740.0  | 811.0  | -624.0 |
| 1942 | -210.0 | 168.0 | 100.0 | 100.0 | 100.0  | 120.0  | 120.0  | 50.0   | 0.0    | 0.0     | -229.0 | -183.0 |
| 1943 | 0.0    | 0.0   | 100.0 | 100.0 | 100.0  | 187.0  | 0.0    | 0.0    | -672.0 | 648.0   | -488.0 | -114.0 |
| 1944 | -54.0  | 0.0   | 0.0   | 38.0  | 5.0    | 50.0   | 0.0    | 0.0    | 572.0  | 0.0     | -814.0 | -2.0   |
| 1945 | 92.0   | 70.0  | 165.0 | 67.0  | 0.0    | 50.0   | -458.0 | 812.0  | -672.0 | 334.0   | 309.0  | -836.0 |
| 1946 | 0.0    | 0.0   | 0.0   | 0.0   | 0.0    | 191.0  | 642.0  | 0.0    | 0.0    | -45.0   | -768.0 | -2.0   |
| 1947 | -1.0   | 11.0  | 0.0   | 0.0   | 0.0    | 50.0   | 777.0  | 0.0    | 0.0    | 0.0     | -813.0 | -1.0   |
| 1948 | -1.0   | 3.0   | 84.0  | 0.0   | 0.0    | 50.0   | 0.0    | 481.0  | 221.0  | -512.0  | -303.0 | -1.0   |
| 1949 | -1.0   | 0.0   | 0.0   | 0.0   | 0.0    | -805.0 | 830.0  | 602.0  | 216.0  | -662.0  | -153.0 | -2.0   |
| 1950 | -1.0   | 48.0  | 111.0 | 0.0   | 367.0  | 50.0   | 283.0  | 0.0    | -579.0 | 559.0   | -488.0 | -142.0 |
| 1951 | 0.0    | 0.0   | 0.0   | 0.0   | 568.0  | -681.0 | 797.0  | -760.0 | 296.0  | 292.0   | -310.0 | -30.0  |
| 1952 | 0.0    | 0.0   | 0.0   | 0.0   | 485.0  | 81.0   | -840.0 | 366.0  | 460.0  | 0.0     | -760.0 | -57.0  |
| 1953 | 66.0   | 100.0 | 37.0  | 0.0   | 0.0    | 50.0   | 0.0    | 561.0  | 0.0    | 0.0     | -814.0 | -1.0   |
| 1954 | 59.0   | 88.0  | 81.0  | 0.0   | 0.0    | 50.0   | 574.0  | -140.0 | -528.0 | 488.0   | -654.0 | -2.0   |
| 1955 | -1.0   | 60.0  | 98.0  | 0.0   | 0.0    | 50.0   | 0.0    | 0.0    | 623.0  | -813.0  | -3.0   | -2.0   |
| 1956 | -1.0   | 0.0   | 0.0   | 453.0 | -311.0 | 651.0  | 0.0    | -813.0 | 838.0  | 0.0     | -488.0 | -337.0 |
| 1957 | -1.0   | 0.0   | 0.0   | 55.0  | 473.0  | 301.0  | 31.0   | 50.0   | -116.0 | 62.0    | -789.0 | -26.0  |
| 1958 | -1.0   | 132.0 | 0.0   | 0.0   | 0.0    | 50.0   | 0.0    | 634.0  | 0.0    | 0.0     | -582.0 | -240.0 |
| 1959 | 100.0  | 1.0   | 108.0 | 0.0   | 0.0    | 50.0   | 262.0  | -513.0 | 166.0  | 0.0     | -167.0 | -2.0   |
| 1960 | -1.0   | 117.0 | 154.0 | 0.0   | 0.0    | 50.0   | 0.0    | 0.0    | 510.0  | 0.0     | 0.0    | -840.0 |
| 1961 | 134.0  | 79.0  | 100.0 | 100.0 | 178.0  | 169.0  | -145.0 | -46.0  | 0.0    | -338.0  | 336.0  | 0.0    |
| 1962 | -337.0 | -60.0 | 100.0 | 100.0 | 100.0  | 120.0  | 100.0  | 0.0    | 147.0  | 0.0     | -813.0 | -1.0   |
| 1963 | -1.0   | 97.0  | 110.0 | 0.0   | 0.0    | 50.0   | 0.0    | 0.0    | 575.0  | -274.0  | -540.0 | -2.0   |
| 1964 | -1.0   | 34.0  | 163.0 | 0.0   | 0.0    | 50.0   | 584.0  | 50.0   | -566.0 | 266.0   | -180.0 | -418.0 |
| 1965 | 51.0   | 112.0 | 0.0   | 166.0 | -182.0 | 634.0  | 17.0   | 0.0    | -672.0 | 648.0   | -488.0 | -38.0  |
| 1966 | -49.0  | 0.0   | 0.0   | 0.0   | 0.0    | 50.0   | 0.0    | 521.0  | 0.0    | 0.0     | -814.0 | -2.0   |
| 1967 | 43.0   | 236.0 | 32.0  | 31.0  | -100.0 | -199.0 | 792.0  | -358.0 | 369.0  | 0.0     | -488.0 | -337.0 |
| 1968 | 0.0    | 37.0  | 30.0  | 0.0   | 0.0    | 50.0   | 0.0    | 262.0  | 448.0  | 0.0     | -486.0 | -49.0  |
| 1969 | -125.0 | 0.0   | 0.0   | 0.0   | 7.0    | 236.0  | 0.0    | 414.0  | 0.0    | 0.0     | -814.0 | -1.0   |
| 1970 | 54.0   | 111.0 | 27.0  | 0.0   | 127.0  | 50.0   | 391.0  | -547.0 | 647.0  | 0.0     | -288.0 | -317.0 |
| 1971 | -106.0 | 0.0   | 0.0   | 248.0 | -221.0 | 650.0  | 0.0    | 0.0    | 0.0    | 0.0     | -488.0 | -18.0  |
| 1972 | 0.0    | 0.0   | 0.0   | 299.0 | -477.0 | 651.0  | 0.0    | 0.0    | -672.0 | 232.0   | -72.0  | 0.0    |
| 1973 | 0.0    | 0.0   | 0.0   | 161.0 | 180.0  | 104.0  | 0.0    | 0.0    | 81.0   | 0.0     | -813.0 | -2.0   |
| 1974 | -1.0   | 0.0   | 0.0   | 0.0   | 430.0  | 50.0   | 386.0  | 25.0   | -26.0  | 0.0     | -488.0 | -235.0 |
| 1975 | -47.0  | 0.0   | 45.0  | 0.0   | 0.0    | 50.0   | 687.0  | 0.0    | 0.0    | 0.0     | -488.0 | -248.0 |
| 1976 | -55.0  | 0.0   | 0.0   | 53.0  | 84.0   | 651.0  | 0.0    | 0.0    | -672.0 | 209.0   | -50.0  | -236.0 |
| 1977 | -98.0  | 168.0 | 134.0 | 0.0   | 34.0   | 50.0   | 0.0    | -379.0 | 838.0  | -576.0  | -131.0 | -114.0 |
| 1978 | 120.0  | 120.0 | 120.0 | 120.0 | 120.0  | 120.0  | 120.0  | 100.0  | 0.0    | 0.0     | -558.0 | -376.0 |
| 1979 | 79.0   | 86.0  | 0.0   | 0.0   | 0.0    | 50.0   | 386.0  | 0.0    | 233.0  | -355.0  | -459.0 | -2.0   |
| 1980 | 100.0  | 100.0 | 100.0 | 0.0   | 0.0    | 50.0   | 0.0    | 464.0  | 0.0    | 0.0     | -813.0 | -1.0   |
| 1981 | 43.0   | 108.0 | 38.0  | 0.0   | 0.0    | 50.0   | 0.0    | 79.0   | 510.0  | 0.0     | -510.0 | -218.0 |
| 1982 | 66.0   | 3.0   | 0.0   | 0.0   | 0.0    | 651.0  | 0.0    | 0.0    | -332.0 | 320.0   | -488.0 | 0.0    |
| 1983 | 0.0    | 0.0   | 0.0   | 0.0   | 262.0  | 203.0  | -649.0 | 0.0    | 695.0  | 0.0     | -488.0 | -110.0 |
| 1984 | 0.0    | -59.0 | 163.0 | 488.0 | 0.0    | 50.0   | -692.0 | 0.0    | 836.0  | 0.0     | -488.0 | 0.0    |
| 1985 | 0.0    | 0.0   | 0.0   | 55.0  | 181.0  | 247.0  | 22.0   | 0.0    | 0.0    | 0.0     | -813.0 | -2.0   |
| 1986 | -1.0   | 0.0   | 0.0   | 0.0   | 328.0  | 517.0  | 0.0    | -813.0 | 838.0  | 0.0     | -488.0 | 0.0    |
| 1987 | 0.0    | 0.0   | 0.0   | 0.0   | 114.0  | 166.0  | 225.0  | 0.0    | -672.0 | 0.0     | 646.0  | 0.0    |
| 1988 | 0.0    | 100.0 | 100.0 | 100.0 | 100.0  | 100.0  | 100.0  | 0.0    | -28.0  | -1367.0 | 785.0  | 28.0   |
| 1989 | 47.0   | 120.0 | 120.0 | 120.0 | 120.0  | 120.0  | 120.0  | 0.0    | -607.0 | 0.0     | -486.0 | 462.0  |
| AVG  | 7.4    | 55.5  | 62.8  | 64.3  | 70.2   | 117.3  | 107.3  | 31.8   | 56.4   | -74.2   | -323.0 | -169.4 |
| MAX  | 215.0  | 236.0 | 234.0 | 488.0 | 568.0  | 651.0  | 830.0  | 812.0  | 838.0  | 648.0   | 811.0  | 462.0  |
| MIN  | -337.0 | -60.0 | 0.0   | 0.0   | -477.0 | -805.0 | -692.0 | -813.0 | -703.0 | -1367.0 | -814.0 | -840.0 |

TABLE E1

## DISCHARGE, SNAKE RIVER NEAR MILNER, IDAHO

STUDY 955-952 UPPER SNAKE RIVER OPERATION STUDIES (IDWR MODEL) 427 BASE. Gauge Level + 50 ksf

UNITS ARE MEAN CUBIC FEET PER SECOND (CFS)

| YEAR | OCT    | NOV    | DEC    | JAN    | FEB    | MAR    | APR    | MAY   | JUN  | JUL | AUG    | SEP    |
|------|--------|--------|--------|--------|--------|--------|--------|-------|------|-----|--------|--------|
| 1928 | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0   | 0.0  | 0.0 | 0.0    | 0.0    |
| 1929 | 0.0    | 0.0    | -713.0 | 0.0    | 0.0    | 0.0    | 0.0    | 714.0 | 0.0  | 0.0 | 0.0    | 0.0    |
| 1930 | 0.0    | 0.0    | 0.0    | -562.0 | 0.0    | 0.0    | 0.0    | 0.0   | 0.0  | 0.0 | 0.0    | 0.0    |
| 1931 | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 89.0   | 0.0    | 0.0   | 0.0  | 0.0 | 0.0    | 0.0    |
| 1932 | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0   | 0.0  | 0.0 | 0.0    | 0.0    |
| 1933 | -151.0 | 96.0   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0   | 0.0  | 0.0 | 0.0    | 0.0    |
| 1934 | 0.0    | -18.0  | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0   | 0.0  | 0.0 | 0.0    | 0.0    |
| 1935 | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0   | 0.0  | 0.0 | 0.0    | 0.0    |
| 1936 | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0   | 0.0  | 0.0 | 0.0    | 0.0    |
| 1937 | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 108.0  | 0.0   | 0.0  | 0.0 | 0.0    | 0.0    |
| 1938 | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0   | 0.0  | 0.0 | 0.0    | 0.0    |
| 1939 | 0.0    | -236.0 | 0.0    | 26.0   | 0.0    | 0.0    | 248.0  | 537.0 | 0.0  | 0.0 | 0.0    | 0.0    |
| 1940 | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | -8.0   | 0.0    | 0.0   | 0.0  | 0.0 | 0.0    | 0.0    |
| 1941 | -239.0 | 0.0    | -100.0 | 0.0    | 0.0    | 0.0    | 0.0    | 0.0   | 0.0  | 0.0 | 0.0    | 0.0    |
| 1942 | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0   | 0.0  | 0.0 | 0.0    | 0.0    |
| 1943 | 0.0    | 0.0    | 0.0    | 0.0    | -10.0  | 468.0  | 0.0    | 0.0   | 0.0  | 0.0 | 0.0    | 0.0    |
| 1944 | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0   | 0.0  | 0.0 | 0.0    | 0.0    |
| 1945 | 0.0    | 0.0    | 0.0    | 0.0    | -608.0 | 0.0    | 434.0  | 1.0   | 0.0  | 0.0 | 0.0    | 0.0    |
| 1946 | 0.0    | 0.0    | -908.0 | -1.0   | 0.0    | 535.0  | 287.0  | 0.0   | 0.0  | 0.0 | 0.0    | 0.0    |
| 1947 | 0.0    | 0.0    | -707.0 | -13.0  | -45.0  | 236.0  | 544.0  | 0.0   | 0.0  | 0.0 | 0.0    | 0.0    |
| 1948 | 0.0    | 0.0    | 0.0    | -737.0 | 0.0    | 0.0    | 0.0    | 748.0 | 0.0  | 0.0 | 0.0    | 0.0    |
| 1949 | 70.0   | -466.0 | 0.0    | -360.0 | 0.0    | 743.0  | 1.0    | 1.0   | 0.0  | 0.0 | 0.0    | 0.0    |
| 1950 | 0.0    | -789.0 | 0.0    | 111.0  | 368.0  | 198.0  | 129.0  | 0.0   | 0.0  | 0.0 | 0.0    | 0.0    |
| 1951 | 0.0    | -839.0 | 0.0    | 624.0  | 0.0    | 0.0    | 0.0    | 0.0   | 0.0  | 0.0 | 0.0    | 0.0    |
| 1952 | 0.0    | 0.0    | 0.0    | 4.0    | 0.0    | 0.0    | 0.0    | 1.0   | 0.0  | 0.0 | -340.0 | 0.0    |
| 1953 | -127.0 | 0.0    | 0.0    | -141.0 | 0.0    | 0.0    | 0.0    | 810.0 | 0.0  | 0.0 | 0.0    | 0.0    |
| 1954 | 0.0    | -678.0 | 0.0    | 61.0   | 0.0    | 104.0  | 519.0  | 0.0   | 0.0  | 0.0 | 0.0    | 0.0    |
| 1955 | 0.0    | 0.0    | 0.0    | -848.0 | 0.0    | 0.0    | 0.0    | 0.0   | 0.0  | 0.0 | 0.0    | 0.0    |
| 1956 | 0.0    | 0.0    | 0.0    | 429.0  | 217.0  | 0.0    | 0.0    | 0.0   | 1.0  | 0.0 | 0.0    | 0.0    |
| 1957 | 0.0    | 0.0    | -809.0 | 56.0   | 56.0   | 0.0    | 729.0  | 0.0   | 0.0  | 0.0 | -340.0 | 0.0    |
| 1958 | 0.0    | 0.0    | -340.0 | 0.0    | 0.0    | 0.0    | 0.0    | 663.0 | 0.0  | 0.0 | 0.0    | 0.0    |
| 1959 | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 2.0    | 0.0   | 0.0  | 0.0 | 0.0    | 0.0    |
| 1960 | 0.0    | 0.0    | 0.0    | 0.0    | -359.0 | 0.0    | 0.0    | 0.0   | 0.0  | 0.0 | 0.0    | 0.0    |
| 1961 | 0.0    | 0.0    | 0.0    | 0.0    | 79.0   | 0.0    | 0.0    | 0.0   | 0.0  | 0.0 | 0.0    | 0.0    |
| 1962 | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | -100.0 | 366.0  | 0.0   | 0.0  | 0.0 | 0.0    | 0.0    |
| 1963 | 0.0    | -828.0 | 0.0    | 204.0  | 0.0    | 0.0    | 629.0  | 0.0   | 3.0  | 0.0 | 0.0    | 0.0    |
| 1964 | 0.0    | 0.0    | -603.0 | -11.0  | 0.0    | 0.0    | 636.0  | 0.0   | 0.0  | 0.0 | 0.0    | 0.0    |
| 1965 | 0.0    | 0.0    | -450.0 | 359.0  | 324.0  | 0.0    | 0.0    | 0.0   | 0.0  | 0.0 | 0.0    | 0.0    |
| 1966 | -520.0 | 0.0    | 0.0    | 523.0  | 0.0    | 0.0    | -539.0 | 87.0  | 0.0  | 0.0 | 0.0    | 0.0    |
| 1967 | 0.0    | 0.0    | -61.0  | 0.0    | 0.0    | 0.0    | 494.0  | 0.0   | 0.0  | 0.0 | 0.0    | 0.0    |
| 1968 | 0.0    | 0.0    | -644.0 | 0.0    | 0.0    | 0.0    | 771.0  | 1.0   | 0.0  | 0.0 | 0.0    | 0.0    |
| 1969 | 0.0    | 0.0    | 0.0    | 3.0    | 0.0    | 0.0    | 0.0    | 1.0   | 0.0  | 0.0 | 0.0    | 0.0    |
| 1970 | -219.0 | 0.0    | 0.0    | -402.0 | 127.0  | 0.0    | 526.0  | 0.0   | 0.0  | 0.0 | 0.0    | 0.0    |
| 1971 | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0   | 0.0  | 0.0 | -133.0 | -382.0 |
| 1972 | 0.0    | 0.0    | 0.0    | 504.0  | 0.0    | 0.0    | 0.0    | 0.0   | 0.0  | 0.0 | 0.0    | 0.0    |
| 1973 | -480.0 | 0.0    | 0.0    | 486.0  | 0.0    | 0.0    | 0.0    | -59.0 | 60.0 | 0.0 | 0.0    | 0.0    |
| 1974 | 0.0    | 0.0    | -906.0 | 0.0    | 900.0  | 0.0    | 1.0    | 0.0   | 0.0  | 0.0 | 0.0    | 0.0    |
| 1975 | 0.0    | -731.0 | 0.0    | 614.0  | 110.0  | 0.0    | 1.0    | 0.0   | 0.0  | 0.0 | -173.0 | 0.0    |
| 1976 | -551.0 | 0.0    | 0.0    | 726.0  | 0.0    | 0.0    | 0.0    | 0.0   | 0.0  | 0.0 | 0.0    | 0.0    |
| 1977 | 0.0    | -731.0 | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0   | 0.0  | 0.0 | 0.0    | 0.0    |
| 1978 | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 697.0 | 0.0  | 0.0 | 0.0    | 0.0    |
| 1979 | 0.0    | 0.0    | -181.0 | -241.0 | 0.0    | 132.0  | 300.0  | 0.0   | 0.0  | 0.0 | 0.0    | 0.0    |
| 1980 | 0.0    | 0.0    | 0.0    | 0.0    | -408.0 | 0.0    | 401.0  | 1.0   | 0.0  | 0.0 | 0.0    | 0.0    |
| 1981 | -64.0  | 0.0    | 0.0    | -561.0 | 0.0    | 0.0    | 0.0    | 0.0   | 0.0  | 0.0 | 0.0    | 0.0    |
| 1982 | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 600.0  | 0.0    | 0.0   | 0.0  | 0.0 | 0.0    | 0.0    |
| 1983 | -483.0 | 0.0    | 0.0    | 467.0  | 0.0    | 0.0    | 0.0    | 1.0   | 1.0  | 0.0 | -488.0 | 0.0    |
| 1984 | -106.0 | -59.0  | 162.0  | 488.0  | 0.0    | 0.0    | 0.0    | 1.0   | 0.0  | 0.0 | -488.0 | 0.0    |
| 1985 | 0.0    | 0.0    | 0.0    | 467.0  | 0.0    | 0.0    | 0.0    | 0.0   | 0.0  | 0.0 | 0.0    | 0.0    |
| 1986 | 0.0    | -665.0 | 0.0    | -168.0 | 690.0  | 190.0  | 0.0    | 0.0   | 1.0  | 0.0 | 0.0    | 0.0    |
| 1987 | 0.0    | -497.0 | 0.0    | 486.0  | 0.0    | 0.0    | 0.0    | 0.0   | 0.0  | 0.0 | 0.0    | 0.0    |
| 1988 | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0   | 0.0  | 0.0 | 0.0    | 0.0    |
| 1989 | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0   | 0.0  | 0.0 | 0.0    | 0.0    |
| AVG  | -48.3  | -100.7 | -97.7  | 45.9   | 23.2   | 51.1   | 106.2  | 64.9  | 1.1  | 0.0 | -31.6  | -6.2   |
| MAX  | 70.0   | 96.0   | 162.0  | 726.0  | 900.0  | 743.0  | 771.0  | 745.0 | 60.0 | 0.0 | 0.0    | 0.0    |
| MIN  | -551.0 | -828.0 | -909.0 | -737.0 | -608.0 | -100.0 | -539.0 | -59.0 | 0.0  | 0.0 | -488.0 | -382.0 |

TABLE E1

STUDY 955-952 UPPER SNAKE RIVER OPERATION STUDIES (IDWR MODEL) 427 BASE, Guide Level + 50 km

UNITS ARE 1000 ACRE-FEET

| YEAR | OCT  | NOV  | DEC  | JAN  | FEB  | MAR  | APR  | MAY   | JUN   | JUL  | AUG  | SEP  |
|------|------|------|------|------|------|------|------|-------|-------|------|------|------|
| 1928 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   | 0.0  | 0.0  | 0.0  |
| 1929 | 0.2  | 0.3  | 44.0 | 44.1 | 44.0 | 44.1 | 44.0 | 0.0   | 0.1   | 0.1  | 0.1  | 0.2  |
| 1930 | 0.2  | 0.2  | 0.2  | 34.8 | 34.7 | 34.8 | 34.7 | 34.6  | 34.5  | 34.0 | 33.9 | 33.8 |
| 1931 | 33.9 | 33.8 | 33.8 | 33.8 | 33.8 | 29.6 | 29.5 | 29.5  | 29.4  | 37.4 | 29.2 | 36.9 |
| 1932 | 36.9 | 36.8 | 36.9 | 36.9 | 36.9 | 36.9 | 36.7 | 36.5  | 36.1  | 35.8 | 17.5 | 17.7 |
| 1933 | 27.1 | 27.1 | 27.1 | 27.1 | 27.1 | 27.7 | 27.7 | 27.7  | 19.2  | 19.4 | 19.4 | 31.0 |
| 1934 | 30.9 | 28.6 | 28.7 | 28.7 | 28.7 | 29.3 | 31.7 | 27.8  | 39.8  | 33.3 | 50.0 | 50.0 |
| 1935 | 49.9 | 49.9 | 49.9 | 49.9 | 49.9 | 49.9 | 49.5 | 49.2  | 48.3  | 47.2 | 47.0 | 50.2 |
| 1936 | 50.1 | 50.1 | 50.0 | 50.1 | 50.1 | 50.0 | 49.8 | 47.3  | 38.6  | 38.0 | 37.8 | 37.7 |
| 1937 | 37.7 | 37.7 | 37.7 | 37.7 | 37.7 | 37.7 | 31.2 | 31.1  | 31.0  | 30.8 | 34.2 | 45.4 |
| 1938 | 46.3 | 45.3 | 45.3 | 45.3 | 45.3 | 45.3 | 44.6 | 42.9  | 36.6  | 36.2 | 35.7 | 35.8 |
| 1939 | 35.8 | 49.9 | 49.9 | 47.9 | 47.9 | 47.9 | 33.1 | 0.0   | 0.0   | 0.0  | 0.0  | -1.3 |
| 1940 | -1.2 | -1.3 | -1.2 | -1.2 | -1.3 | -1.2 | -1.2 | -1.3  | -1.2  | -1.2 | -0.8 | 15.9 |
| 1941 | 30.5 | 30.6 | 36.7 | 36.7 | 36.7 | 36.7 | 36.6 | 36.6  | 36.5  | 36.4 | 29.3 | 37.1 |
| 1942 | 37.1 | 37.1 | 37.1 | 37.0 | 37.1 | 37.1 | 38.9 | 32.4  | 32.4  | 29.7 | 29.6 | 29.4 |
| 1943 | 29.4 | 29.4 | 29.4 | 29.3 | 29.4 | 0.0  | 0.0  | 0.0   | -6.0  | -6.4 | -6.4 | -6.1 |
| 1944 | -6.1 | -6.1 | -6.0 | -6.1 | -6.1 | -6.0 | -6.1 | -6.0  | -6.0  | -6.4 | -6.1 | -6.0 |
| 1945 | -7.9 | -7.9 | -8.0 | -7.9 | 25.9 | 25.9 | 0.0  | 0.0   | 0.0   | 0.0  | 0.0  | 0.0  |
| 1946 | 0.3  | 0.2  | 50.0 | 50.0 | 50.0 | 17.0 | 0.0  | 0.0   | 0.0   | 0.0  | 0.0  | 5.9  |
| 1947 | 5.9  | 5.9  | 49.3 | 49.3 | 49.3 | 32.4 | 0.0  | -0.1  | 0.0   | -0.1 | -0.1 | 0.3  |
| 1948 | 0.6  | 0.6  | 0.6  | 45.9 | 45.9 | 45.9 | 45.9 | 0.0   | 0.0   | 0.0  | 4.4  | 4.4  |
| 1949 | 0.2  | 27.9 | 27.9 | 50.0 | 50.0 | 0.0  | 0.0  | 0.0   | 0.0   | 0.0  | 0.1  | 0.1  |
| 1950 | 0.2  | 47.1 | 47.1 | 40.3 | 20.0 | 7.6  | 0.0  | 0.0   | 0.0   | 0.0  | 0.1  | 0.2  |
| 1951 | 0.4  | 38.3 | 38.3 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.1   | 0.0  | 0.0  | 0.2  |
| 1952 | 0.2  | 0.2  | 0.3  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   | 0.0  | 22.9 | 21.0 |
| 1953 | 29.0 | 29.0 | 29.0 | 37.6 | 37.6 | 37.7 | 37.6 | 0.0   | 0.0   | 0.0  | 0.0  | 0.5  |
| 1954 | 2.1  | 41.1 | 41.1 | 37.3 | 37.4 | 30.9 | 0.0  | 0.0   | 0.0   | 0.1  | 0.2  | 0.5  |
| 1955 | 0.6  | 0.6  | 0.5  | 40.4 | 40.4 | 40.4 | 40.4 | 40.3  | 40.0  | 39.6 | 39.2 | 38.9 |
| 1956 | 38.9 | 38.8 | 38.9 | 12.5 | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   | 0.0  | 0.0  | 0.0  |
| 1957 | 0.2  | 0.2  | 50.0 | 46.8 | 43.4 | 43.4 | 0.0  | 0.0   | 0.0   | 0.0  | 22.9 | 21.1 |
| 1958 | 21.2 | 21.3 | 42.1 | 42.1 | 42.1 | 42.1 | 42.1 | 0.0   | 0.0   | 0.0  | 0.0  | 0.0  |
| 1959 | 0.1  | 0.0  | 0.1  | 0.1  | 0.0  | 0.1  | 0.0  | 0.0   | 0.0   | 0.1  | 0.1  | 0.2  |
| 1960 | 0.2  | 0.2  | 0.2  | 0.1  | 20.8 | 20.9 | 20.8 | 20.8  | 20.8  | 20.4 | 20.4 | 20.1 |
| 1961 | 20.3 | 20.3 | 20.3 | 20.3 | 15.9 | 15.9 | 16.0 | 15.9  | 15.8  | 15.8 | 15.7 | 15.7 |
| 1962 | 15.6 | 15.7 | 15.7 | 15.7 | 15.7 | 21.8 | 0.0  | 0.0   | 0.1   | 0.0  | 0.0  | 0.4  |
| 1963 | 0.7  | 50.0 | 50.0 | 37.5 | 37.5 | 37.5 | 0.0  | 0.1   | 0.0   | 0.0  | 0.0  | 0.0  |
| 1964 | 0.1  | 0.1  | 37.2 | 37.9 | 37.9 | 37.9 | 0.0  | 0.0   | 0.0   | 0.1  | 12.3 | 12.3 |
| 1965 | 12.5 | 12.4 | 40.1 | 18.0 | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   | 0.0  | 0.0  | 0.2  |
| 1966 | 32.2 | 32.2 | 32.1 | 0.0  | 0.0  | 0.0  | 32.1 | 26.7  | 26.4  | 26.1 | 25.7 | 25.7 |
| 1967 | 25.7 | 25.7 | 29.5 | 29.5 | 29.4 | 29.4 | 0.0  | 0.0   | 0.0   | 0.0  | 6.1  | 8.1  |
| 1968 | 6.3  | 6.3  | 45.9 | 45.9 | 45.9 | 45.9 | 0.0  | 0.0   | 0.0   | 0.0  | 0.0  | 0.2  |
| 1969 | 0.3  | 0.3  | 0.2  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   | 0.0  | 0.0  | 0.0  |
| 1970 | 13.6 | 13.6 | 13.6 | 38.3 | 31.4 | 31.3 | 0.0  | 0.0   | 0.0   | 0.0  | 0.0  | 0.0  |
| 1971 | 0.0  | 0.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   | 0.0  | 8.1  | 31.0 |
| 1972 | 31.0 | 30.9 | 30.9 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   | 0.0  | 0.1  | 0.2  |
| 1973 | 29.9 | 29.9 | 29.9 | 0.0  | 0.0  | 0.0  | 0.1  | 3.6   | 0.0   | 0.0  | 0.0  | 0.2  |
| 1974 | 0.5  | 0.4  | 50.0 | 50.0 | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   | 0.0  | 0.0  | 0.1  |
| 1975 | 0.4  | 43.9 | 43.8 | 6.1  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   | 0.0  | 10.8 | 10.7 |
| 1976 | 44.7 | 44.7 | 44.6 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   | 0.1  | 0.0  | 0.3  |
| 1977 | 0.4  | 44.0 | 43.9 | 44.0 | 43.9 | 44.0 | 43.9 | 43.8  | 43.6  | 43.5 | 43.4 | 43.2 |
| 1978 | 43.1 | 43.1 | 43.2 | 43.1 | 43.2 | 43.2 | 43.0 | 0.0   | 0.0   | 0.0  | -0.1 | 0.0  |
| 1979 | 0.0  | 0.0  | 11.2 | 26.1 | 26.0 | 17.9 | 0.0  | 0.0   | 0.0   | 0.0  | 0.3  | 0.4  |
| 1980 | 0.4  | 0.3  | 0.4  | 0.4  | 23.9 | 23.8 | 0.0  | 0.0   | 0.0   | 0.0  | 0.0  | 0.4  |
| 1981 | 4.6  | 4.6  | 4.6  | 38.5 | 38.5 | 38.5 | 38.4 | 38.4  | 38.2  | 37.7 | 37.3 | 36.9 |
| 1982 | 36.9 | 36.9 | 36.9 | 36.9 | 36.9 | 0.0  | 0.0  | 0.0   | 0.0   | 0.0  | 0.0  | 0.2  |
| 1983 | 29.9 | 30.0 | 29.9 | 0.0  | 0.0  | -0.1 | 0.0  | 0.0   | 0.0   | 0.0  | 30.0 | 29.9 |
| 1984 | 36.5 | 40.0 | 30.0 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   | 0.0  | 30.0 | 30.0 |
| 1985 | 29.9 | 29.9 | 29.9 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0   | 2.0  | 0.1  | 0.1  |
| 1986 | 1.0  | 39.6 | 39.7 | 50.0 | 11.7 | 0.0  | 0.0  | 0.0   | 0.0   | 0.0  | 0.0  | 0.2  |
| 1987 | 0.3  | 29.9 | 29.9 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.1   | 0.0  | 0.0  | 0.0  |
| 1988 | 0.1  | 0.0  | 0.1  | 0.1  | 0.0  | 0.1  | 0.0  | 0.0   | 0.0   | -0.1 | 0.0  | 0.0  |
| 1989 | 0.0  | -0.1 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | -10.3 | -11.1 | -9.0 | -9.1 | -7.1 |
| AVG  | 15.3 | 21.3 | 27.3 | 24.4 | 23.1 | 19.9 | 13.6 | 9.2   | 8.8   | 8.7  | 10.8 | 12.2 |
| MAX  | 50.1 | 50.1 | 50.0 | 50.1 | 50.1 | 50.0 | 49.8 | 49.2  | 48.3  | 47.2 | 50.0 | 50.2 |
| MIN  | -7.9 | -7.9 | -8.0 | -7.9 | -6.1 | -6.0 | -6.1 | -10.3 | -11.1 | -9.0 | -9.1 | -8.0 |

TABLE E1

STUDY 955-952 . UPPER SNAKE RIVER OPERATION STUDIES (IDWR MODEL) 427 BASE. Guide Level + 50 ksf

UNITS ARE 1000 ACRE-FEET

| YEAR | OCT   | NOV   | DEC   | JAN   | FEB   | MAR   | APR   | MAY   | JUN   | JUL   | AUG   | SEP   |
|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 1928 | -5.9  | -8.8  | -8.8  | -8.8  | -8.8  | -0.3  | 0.0   | 0.0   | 0.0   | 0.0   | -30.0 | -50.0 |
| 1929 | -49.8 | -43.7 | 0.0   | 0.1   | -0.1  | 3.1   | 3.0   | -40.8 | 0.1   | -34.8 | -49.9 | -49.8 |
| 1930 | -47.7 | -41.8 | -35.1 | 0.0   | 0.0   | 3.1   | 3.0   | 3.0   | 34.5  | 15.3  | -16.1 | -16.2 |
| 1931 | -16.1 | -10.5 | 3.8   | 13.8  | 19.3  | 0.0   | -0.1  | -11.2 | 0.0   | 8.0   | -0.1  | -13.1 |
| 1932 | -5.6  | 1.4   | 8.9   | 16.3  | 23.2  | 30.6  | 37.5  | 43.4  | 43.0  | 35.5  | 17.5  | -32.3 |
| 1933 | -9.6  | -12.9 | -6.7  | -0.6  | 4.9   | 12.9  | 20.1  | 26.2  | 17.8  | 0.0   | 19.4  | -19.0 |
| 1934 | -19.1 | -11.4 | -5.1  | 1.0   | 6.5   | 14.5  | 31.7  | 27.8  | -2.2  | 13.8  | 0.0   | 0.0   |
| 1935 | 7.4   | 14.6  | 21.9  | 29.3  | 36.0  | 33.3  | 40.0  | 45.9  | 50.9  | 0.0   | 47.0  | 0.2   |
| 1936 | 4.9   | 12.1  | 19.3  | 26.8  | 33.7  | 41.0  | 48.0  | 48.5  | 39.9  | 39.2  | 0.0   | -0.1  |
| 1937 | 0.0   | 5.1   | 17.7  | 23.9  | 29.4  | 36.8  | 37.5  | 40.3  | 40.2  | 0.0   | 34.2  | -4.6  |
| 1938 | -3.7  | 5.3   | 11.5  | 17.8  | 23.1  | 30.5  | 37.0  | 38.4  | 36.6  | 36.2  | -14.3 | -14.2 |
| 1939 | -14.2 | 1.8   | 2.0   | 0.0   | 0.0   | 3.1   | 0.0   | 0.0   | 0.0   | -25.9 | -50.0 | -51.3 |
| 1940 | -49.2 | -44.8 | -32.9 | -26.7 | -14.1 | -7.8  | -1.8  | -1.9  | -41.2 | -51.2 | -5.1  | -34.1 |
| 1941 | -19.5 | -9.4  | 2.9   | 9.0   | 14.5  | 21.9  | 29.0  | 32.1  | 32.0  | -13.6 | 29.3  | 0.0   |
| 1942 | -12.9 | -2.9  | 3.3   | 9.3   | 14.9  | 22.3  | 31.3  | 27.9  | 27.9  | 25.2  | 11.0  | 0.0   |
| 1943 | 0.0   | 0.1   | 6.2   | 12.2  | 17.9  | 0.0   | 0.0   | 0.0   | -46.0 | -8.4  | -36.4 | -42.8 |
| 1944 | -46.1 | -46.0 | -46.0 | -43.7 | -43.4 | -40.2 | -40.3 | -40.1 | -6.0  | -6.4  | -58.1 | -58.0 |
| 1945 | -52.2 | -48.1 | -38.0 | -33.8 | 0.0   | 3.1   | -50.0 | 0.0   | -40.0 | -19.3 | -0.3  | -50.0 |
| 1946 | -49.7 | -49.8 | 0.0   | 0.0   | 0.0   | -21.2 | 0.0   | 0.0   | 0.0   | -2.7  | -50.0 | -44.1 |
| 1947 | -44.1 | -43.4 | 0.0   | 0.0   | -0.1  | -13.9 | 0.0   | -0.1  | 0.0   | -0.1  | -50.1 | -49.7 |
| 1948 | -49.4 | -49.2 | -45.3 | 0.0   | 0.0   | 3.1   | 3.1   | -13.2 | 0.0   | -31.5 | -45.6 | -45.6 |
| 1949 | -49.8 | -22.1 | -22.1 | 0.0   | 0.0   | -99.5 | -50.0 | -12.9 | 0.0   | -40.7 | -49.9 | -49.9 |
| 1950 | -49.8 | 0.0   | 6.8   | 0.0   | 0.1   | -9.2  | 0.0   | 0.0   | -34.5 | 0.0   | -29.9 | -38.2 |
| 1951 | -38.0 | -0.1  | -0.1  | -38.4 | -8.9  | -47.5 | 0.0   | -48.8 | -28.9 | -10.9 | -30.0 | -31.5 |
| 1952 | -31.5 | -31.5 | -31.4 | -31.7 | -3.8  | 0.0   | -50.0 | -27.4 | 0.0   | 0.0   | -23.8 | -29.0 |
| 1953 | -16.9 | -11.0 | -8.7  | -0.1  | 0.0   | 3.1   | 3.1   | 0.0   | 0.0   | 0.0   | -50.0 | -49.5 |
| 1954 | -44.2 | 0.0   | 3.8   | 0.0   | 0.1   | -3.3  | 0.0   | -8.8  | -40.0 | -9.8  | -49.8 | -49.5 |
| 1955 | -49.4 | -45.8 | -39.9 | 0.0   | 0.0   | 3.1   | 3.1   | 3.0   | 40.0  | -10.4 | -10.8 | -11.1 |
| 1956 | -11.1 | -11.2 | -11.1 | -9.8  | -40.0 | 0.0   | 0.0   | -50.0 | 0.0   | 0.0   | -30.0 | -50.0 |
| 1957 | -49.8 | -49.8 | 0.0   | 0.0   | 23.1  | 41.6  | 0.0   | 3.0   | -3.8  | 0.0   | -25.6 | -28.9 |
| 1958 | -28.8 | -20.8 | 0.0   | 0.0   | -0.1  | 3.0   | 3.0   | 0.0   | 0.0   | 0.0   | -35.8 | -50.0 |
| 1959 | -43.7 | -43.8 | -37.1 | -37.1 | -37.2 | -34.0 | -18.5 | -50.0 | -40.0 | -39.7 | -49.9 | -49.8 |
| 1960 | -49.8 | -42.8 | -33.4 | -33.5 | -12.8 | -9.6  | -9.7  | -9.7  | 20.8  | 20.4  | 20.4  | -29.9 |
| 1961 | -21.4 | -16.7 | -10.6 | -4.4  | 1.1   | 11.5  | 2.9   | 0.0   | 0.0   | -20.8 | 0.0   | 0.0   |
| 1962 | -20.8 | -24.3 | -18.1 | -12.0 | -6.5  | 7.0   | -8.8  | -8.8  | 0.1   | 0.0   | -50.0 | -49.8 |
| 1963 | -49.3 | 5.8   | 12.5  | 0.0   | 0.0   | 3.1   | -34.4 | -34.2 | 0.0   | -16.8 | -50.0 | -50.0 |
| 1964 | -49.9 | -47.8 | -0.7  | 0.0   | 0.0   | 3.1   | -0.1  | 3.1   | -30.8 | -14.0 | -12.9 | -37.7 |
| 1965 | -34.3 | -27.8 | 0.0   | -11.9 | -40.0 | -1.0  | 0.0   | 0.0   | -40.0 | 0.0   | -30.0 | -32.0 |
| 1966 | -3.0  | -2.9  | -3.1  | -35.2 | -35.2 | -32.1 | 0.0   | 26.7  | 26.4  | 26.1  | -24.3 | -24.3 |
| 1967 | -21.6 | -7.6  | -1.8  | 0.1   | -5.6  | -17.9 | -0.1  | 22.0  | 0.0   | 0.0   | -23.9 | -41.9 |
| 1968 | -43.6 | -41.5 | 0.0   | 0.0   | 0.0   | 3.1   | -42.8 | -26.8 | 0.0   | 0.0   | -29.9 | -32.5 |
| 1969 | -40.1 | -40.0 | -40.2 | -40.4 | -40.0 | -25.5 | -25.4 | 0.0   | 0.0   | 0.0   | -50.0 | -50.0 |
| 1970 | -33.0 | -26.4 | -24.8 | -0.1  | 0.1   | 3.1   | -6.0  | -38.8 | 0.0   | 0.0   | -17.7 | -36.5 |
| 1971 | -43.0 | -42.8 | -43.0 | -27.8 | -40.0 | 0.0   | 0.0   | -0.0  | 0.0   | 0.0   | -21.9 | 0.0   |
| 1972 | 0.0   | -0.1  | -0.1  | -12.8 | -40.0 | 0.0   | 0.0   | 0.0   | -40.0 | -25.6 | -29.9 | -29.7 |
| 1973 | 0.0   | 0.0   | 0.0   | -20.0 | -10.0 | -3.6  | -3.6  | 0.0   | 0.0   | 0.0   | -50.0 | -49.8 |
| 1974 | -49.5 | -49.6 | 0.0   | 0.0   | -26.1 | -23.0 | 0.0   | 1.5   | 0.0   | 0.0   | -30.0 | -43.8 |
| 1975 | -46.4 | -2.8  | -0.2  | -37.9 | -44.0 | -40.9 | 0.0   | 0.0   | 0.0   | 0.0   | -19.4 | -34.0 |
| 1976 | -3.4  | -3.3  | -3.4  | -44.8 | -40.0 | 0.0   | 0.0   | 0.0   | -40.0 | -26.9 | -30.0 | -43.7 |
| 1977 | -49.6 | 4.0   | 12.1  | 12.2  | 14.1  | 17.3  | 17.1  | -6.2  | 43.6  | 8.1   | 0.0   | -6.8  |
| 1978 | 0.6   | 7.7   | 15.2  | 22.5  | 29.3  | 36.8  | 43.6  | 6.7   | 6.7   | 6.7   | -27.8 | -50.0 |
| 1979 | -45.1 | -40.0 | -28.8 | -13.9 | -14.0 | -19.0 | -13.9 | -13.9 | 0.0   | -21.8 | -49.7 | -49.6 |
| 1980 | -43.4 | -37.5 | -31.3 | -31.3 | -7.8  | -4.8  | -28.8 | 0.0   | 0.0   | 0.0   | -50.0 | -49.8 |
| 1981 | -42.7 | -38.3 | -33.9 | 0.0   | 0.0   | 3.1   | 3.0   | 7.9   | 38.2  | 37.7  | 5.9   | -7.4  |
| 1982 | -3.3  | -3.1  | -3.1  | -3.1  | -3.1  | 0.0   | 0.0   | 0.0   | -19.7 | 0.0   | -30.0 | -29.7 |
| 1983 | 0.0   | 0.1   | 0.0   | -30.0 | -15.4 | -3.0  | -41.5 | -41.4 | 0.0   | 0.0   | 0.0   | -6.6  |
| 1984 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 3.1   | -50.0 | -49.9 | 0.0   | 0.0   | 0.0   | 0.1   |
| 1985 | 0.0   | 0.0   | 0.0   | -26.6 | -16.5 | -1.3  | 0.0   | 0.0   | 0.0   | 2.0   | -49.9 | -49.9 |
| 1986 | -49.0 | -10.4 | -10.3 | 0.0   | -20.1 | 0.0   | 0.0   | -50.0 | 0.0   | 0.0   | -30.0 | -29.7 |
| 1987 | -29.6 | 0.0   | 0.0   | -30.0 | -23.6 | -13.4 | 0.0   | 0.0   | -39.9 | -39.8 | -0.1  | 0.0   |
| 1988 | 0.0   | 5.9   | 12.1  | 18.2  | 23.9  | 30.2  | 36.0  | 36.0  | 34.2  | -50.1 | -1.6  | 0.0   |
| 1989 | 2.9   | 9.9   | 17.4  | 24.8  | 31.5  | 38.8  | 45.9  | 35.5  | -1.6  | 0.4   | -29.5 | 0.0   |
| AVG  | -26.8 | -17.6 | -7.7  | -6.6  | -4.0  | 0.0   | 0.1   | -2.4  | 0.6   | -3.9  | -21.7 | -30.3 |
| MAX  | 7.4   | 14.6  | 21.9  | 29.3  | 36.0  | 41.6  | 48.0  | 48.5  | 50.9  | 39.2  | 47.0  | 0.2   |
| MIN  | -52.2 | -49.8 | -46.0 | -44.8 | -44.0 | -99.5 | -50.0 | -50.0 | -46.0 | -51.2 | -58.1 | -58.0 |

# **ADDENDUM B**

## **Biology**

## Fish

The Jackson Lake/Snake River area supports a large population of game and nongame fish. The species are listed in Table B-1. The Jackson Lake fishery is dominated by lake trout, introduced in 1890, and Snake River cutthroat trout, the only trout native to the lake.

Lake trout prefer the deeper portions of Jackson Lake where, as adults, they feed almost entirely on other fish. They spawn on rocky shoals in shallower water during the fall season. A stable lake level is necessary during the fall and winter to provide adequate protection for lake trout eggs, which are deposited during October in gravels less than 4 feet below the water surface. Based on an agreement between Reclamation and the State of Wyoming, Jackson Lake is not lowered from October 1 to March 1, in order to protect lake trout spawning, egg incubation, and early rearing.

The Wyoming Department of Game and Fish (WDGF) has stated "it is important that lake levels remain as constant as possible during the fall and winter to minimize potential negative impacts to lake trout spawning and egg incubation. Minimizing impacts to this resource is important because the lake trout fishery in Jackson Lake is supported almost entirely by natural recruitment."<sup>1</sup>

The WDGF also indicates that, although their department has conducted studies of lake trout spawning in Jackson Lake, knowledge of spawning patterns is limited. However, the WDGF does indicate that "based on what we do know, a five foot reduction in the lake level between October and April will not significantly affect the majority of spawning in the lake, under most circumstances. This is especially true in years when the lake is near its normal fall elevation."<sup>2</sup>

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<sup>1</sup> Letter from Joseph R. White, Deputy Director for the Wyoming Department of Game and Fish, to John Keys, Regional Director, Pacific Northwest Regional Office, U.S. Bureau of Reclamation, Boise, ID. October 6, 1994.

<sup>2</sup> IBID

**Table B-1. Fish Species Occurring  
in the  
Jackson Lake-Snake River Area**

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| <b>Family</b> | <b>Common Name</b>                                                                                                    |
|---------------|-----------------------------------------------------------------------------------------------------------------------|
|               | <u>Game Fish</u>                                                                                                      |
| Salmonidae    | Snake River cutthroat<br>Lake trout<br>Brown trout<br>Rainbow trout<br>Brook trout<br>Mountain Whitefish              |
|               | <u>Nongame Fish</u>                                                                                                   |
| Cyprinidae    | Redside shiner<br>Speckled dace<br>Longnose dace<br>Utah chub<br>Leatherside chub<br>(Buffalo Fork and Pacific Creek) |
| Catostomidae  | Utah sucker<br>Bluehead sucker<br>Mountain sucker<br>Teton sucker                                                     |
| Cottidae      | Mottled sculpin<br>Paiute sculpin                                                                                     |

---

## **Wildlife**

The area surrounding Jackson Lake provides important and diverse habitat for a large variety of wildlife. The most commonly observed mammals include moose, elk, mule deer, beaver, muskrat, squirrels, chipmunk, porcupine, badger, and coyote. During winter, moose migrate from surrounding uplands to river bottom areas.

Waterfowl that can be expected in the Jackson Lake vicinity include Canada geese, mallard, trumpeter swan, white pelican, Barrow's goldeneye, teal, and common merganser. Other commonly seen birds are the mountain bluebird, western meadowlark, yellow-headed blackbird, barn swallow, tree swallow, great horned owl, red-tailed hawk, osprey, and the great blue heron.

Greater species diversity and numbers of birds occur in the river flood plain and adjacent to the flood plain, as compared to upland areas.

Increases in Jackson Lake storage capacity during the months of October through March may result in the temporary loss of aquatic vegetation important to fall staging redheaded ducks and trumpeter swans (late fall and early spring breeding periods).

## **Threatened and Endangered Species**

The U.S. Fish and Wildlife Service lists four animal species protected by the Endangered Species Act of 1973 as occurring in the vicinity of Jackson Lake. These are the American peregrine falcon, bald eagle, whooping crane, and grizzly bear. The spotted Snake River cutthroat trout is listed by the WDGF, and by the U.S. Fish and Wildlife Service as a Category II (Sensitive) Species.



## Snake River Instream Flow Studies

T.C. Annear, in his *Snake River Instream Flow Studies* (1987), conducted instream flow studies on the Snake River which were designed to address the impacts of various reservoir release rates on physical habitat for trout during the winter. These preliminary instream flow studies were further limited in scope to address impacts only in the 4.3 mile long segment of the river between Jackson Dam and Pacific Creek. This study recommended that "to minimize the potential impact of dewatering areas during low water years, releases not be less than 280 cfs at any time between October 1 and March 31." The Habitat Retention Method<sup>3</sup> utilized in Annear's study showed that a streamflow of 280 cfs was needed to maintain trout passage and adequate insect survival in the segment of the river between the dam and Pacific Creek.

Subsequent consideration and input from interested groups suggested that fishery impacts in more downstream segments of the Snake River were also important. In 1988, Annear (1989) conducted additional studies to evaluate stream flow/fish habitat dynamics. Annear summarizes that "different quantities of water may be needed to adequately manage the fishery in different segments of the river." If releases exceed inflows by too much for too long a period, some lake trout redds could be exposed, thus reducing recruitment.

Annear (1989) points out that the methodology used in the 1987 study (Habitat Retention Method) indicated a maintenance flow of 1,718 cfs needed to maintain trout passage and aquatic insect survival in the section of the river between Pacific Creek and Moose. The PHABSIM<sup>4</sup> analysis conducted in 1988 indicated that a streamflow of 400 cfs (a 280 cfs release from Jackson Lake Dam) maximizes physical habitat for adult trout (Annear, 1989). Annear summarized that the large differences in maintenance flow recommendations between the 1987 and 1988 study are an illustration of how the morphological characteristics of riffle habitats change significantly between these river segments. "Streamflow reductions have much more serious consequences for the river below Pacific Creek than above it (Annear, 1989)." These differences in streamflow requirements are potential indicators that even under natural streamflow conditions, hydraulic attributes important for maintaining the fishery are extremely limiting.

---

<sup>3</sup> The Habitat Retention Method identifies maintenance flows at all riffle transects (average depth, average velocity, and wetted perimeter).

<sup>4</sup> The PHABSIM model provides information on only one component of habitat used by trout in a river.

Annear's 1989 study illustrates "how the fishery is limited by natural winter streamflows and places an emphasis on the importance of ensuring that winter streamflows in the river do not fall below natural or average winter streamflow levels." Annear continues that instream flow studies "provide an indication that significantly greater releases of water from the dam than occur naturally are desirable for maintaining winter survival conditions. However, conflicts would most likely arise with such a scenario where water needed in excess of natural winter inflow is not readily available from Jackson Lake. Providing these quantities could seriously impair other resource values such as lake trout spawning success, recreational uses and downstream water users" (Annear, 1989).

Findings from Annear (1989) show that "management strategies should focus on maintaining a **base streamflow** during the winter equal to historic average monthly flows or the natural instantaneous winter inflow to the reservoir, whichever is less."

## Operation Studies

An analysis of the six operation studies (see Table B-2) using the Idaho Department of Water Resources monthly model was conducted to assess the impacts of meeting a 400 cfs minimum streamflow from Jackson Dam. The percentage of years for each study that the 400 cfs streamflow was not met and the percentage of years where Jackson Lake showed a decrease in lake elevation greater than 5 feet<sup>5</sup> during the October 1 through March 30 period were examined.

**Table B-2. Analysis of Operational Studies**

| <b>Study Number</b> | <b>Jackson Lake Minimum Streamflow</b> | <b>Jackson Lake Oct 1 Winter Flood Space<br/>(in thousand acre feet [kaf])</b> | <b>Salmon Flushing Flows</b> |
|---------------------|----------------------------------------|--------------------------------------------------------------------------------|------------------------------|
| 133 <sup>1</sup>    | 280 cfs                                | 200 kaf                                                                        | 0 kaf                        |
| 951                 | 400 cfs                                | 200 kaf                                                                        | 0 kaf                        |
| 956                 | 400 cfs                                | 150 kaf                                                                        | 0 kaf                        |
| 952 <sup>2</sup>    | 280 cfs                                | 200 kaf                                                                        | 427 kaf                      |
| 953                 | 400 cfs                                | 200 kaf                                                                        | 427 kaf                      |
| 955                 | 400 cfs                                | 150 kaf                                                                        | 427 kaf                      |

<sup>1</sup> 1990-level base study

<sup>2</sup> 427 kaf salmon flow base study

<sup>5</sup> The WDGF indicated that a reduction in Jackson Lake of more than 5 feet when the lake level is at normal fall operation could significantly affect the spawning and development of lake trout.

Table B-3 shows the percent of years the 400 cfs streamflows were not met when gauged at Moran, Wyoming (located immediately downstream from Jackson Dam), during the October 1 to March 30 period (1928-1989). Studies 133 (1990-level base study) and 952 (427 kaf salmon streamflow base study) did not meet the 400 cfs flow 84 percent and 82 percent of the time, respectively. Studies 953 and 955 indicated that 400 cfs would not be met two percent of the time. Streamflows of 400 cfs during the October 1 through March 30 period were met 100 percent of the time for studies 951 and 956.

**Table B-3. Years Streamflow Not Met**

| <u>Study</u> | <u>Years 400 cfs Streamflow Not Met<br/>(in Percent)</u> |                  |
|--------------|----------------------------------------------------------|------------------|
| 133          | 84                                                       | (52 of 62 years) |
| 951          | 0                                                        |                  |
| 956          | 0                                                        |                  |
| 952          | 82                                                       | (51 of 62 years) |
| 953          | 2                                                        | (1 of 62 years)  |
| 955          | 2                                                        | (1 of 62 years)  |

Table B-4 shows the percent of years where Jackson Lake experienced a decrease in lake elevation greater than 5 feet during the October-March period.

**Table B-4. Years With Decrease in Lake Elevation**

| <u>Study</u> | <u>Percentage of Years With Greater Than<br/>5 Foot Decline in Lake Elevation</u> |                  |
|--------------|-----------------------------------------------------------------------------------|------------------|
| 133          | 11                                                                                | (7 of 62 years)  |
| 951          | 11                                                                                | (7 of 62 years)  |
| 956          | 16                                                                                | (10 of 62 years) |
| 952          | 6                                                                                 | (4 of 62 years)  |
| 953          | 6                                                                                 | (4 of 62 years)  |
| 955          | 11                                                                                | (7 of 62 years)  |

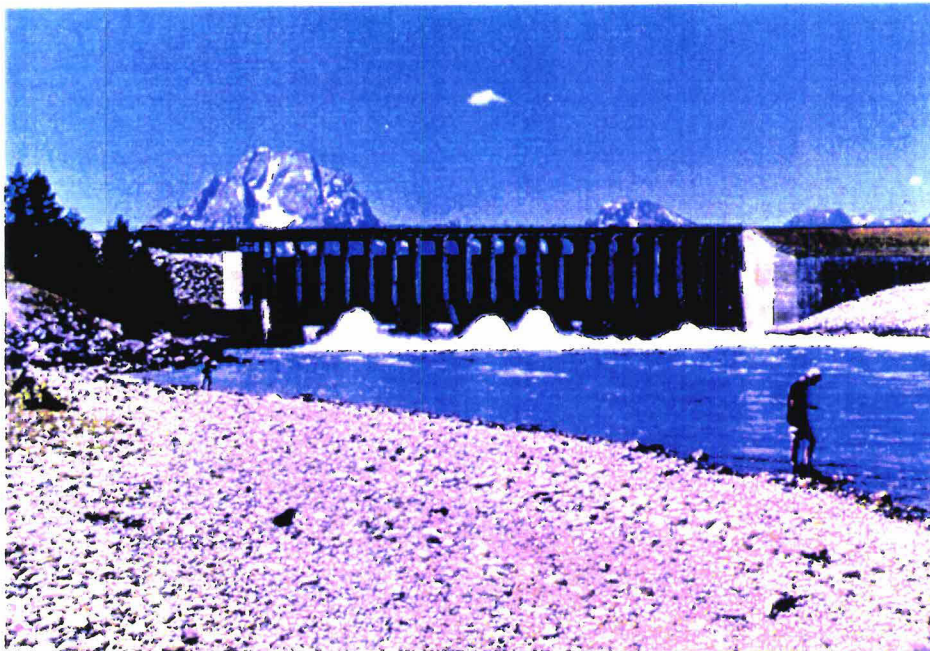
Table B-4 indicates that all studies (throughout a 62-year period) had years where the elevation of Jackson Lake declined more than 5 feet (range of 6 to 16 percent). In addition, all six studies showed a decline of greater than 5 feet for two consecutive years (1971-72); a situation which could significantly impact populations of lake trout.

Based on the results of both examinations, it appears that study 953 (given the provided scenarios) would meet the 400 cfs flow nearly 100 percent of the time, while allowing Jackson Lake to experience greater than 5 foot declines six percent of the time during the October to March period. It should be noted again that Annear (1987) recommended that a 280 cfs release from Jackson Lake during the October to March period would be needed to meet a 400 cfs downstream maintenance streamflow for fish below Pacific Creek.

## **ADDENDUM C**

### **Recreation Impact Assessment**

**Bureau of Reclamation**  
**Jackson Lake Dam Instream Flow Study**  
**Preliminary Recreation Impact Assessment**



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## Letter of Transmittal

This is a letter of transmittal of the study report titled: *Bureau of Reclamation, Jackson Lake Dam flow study: preliminary recreation impact assessment*. We are pleased to be able to say that this report represents a significant and sound synopsis of the thinking of a representative sample of key players in the Snake River Corridor study area.

This study did take more time than was projected due to:

1. The need to expand the study area to include all of Palisades Reservoir and the South Fork section of the Snake.
2. The necessity of visiting and viewing the resources and their problems and opportunities
3. The large number of interest groups in the study area, and the need to get a representative sample of key players in each group.

The latter meant talking in depth with many more people than expected. Even though this took more time it gives more validity to our findings. Furthermore, this proved to be very positive, not only for the validity of the study, but for the image of the Bureau of Reclamation. The people we talked with were very pleased to see the Bureau of Reclamation doing this study and considering their input. All of the professionals interviewed, from both the private and public sectors were very cooperative. Most seemed well informed and understanding of the extremely difficult task the Bureau has in balancing the water needs of so many different interests.

The scientific strength of this study lies in the fact that the professionals interviewed supported each others answers to our questions. Time after time the same problems, water levels and solutions to problems were given. This duplication of response is critical to providing some degree of validity to a study using the collaborative approach. However, we must point out that this is only a preliminary study and it should not take the place of research based on stronger scientific approaches. There are major questions that need more study. The affects of proposed changes in water regimes on recreation and tourism needs careful monitoring and study. We would be happy to help design and administer some of these recreation studies.

Finally, the Snake River Study Area is one of the premier scenic and recreational sites in the world. Recreation and tourism interests in the Snake River Study Area represent an industry which supports the entire region surrounding the study corridor. The industry is probably more significant economically and politically than any other industry within or downstream from the study corridor. The study area's national and international exposure further enhance its significance as a world class site requiring protection and enhancement for recreation and tourism. Therefore, it is in the best interests of the Bureau of Reclamation to continue to take every step possible to assure that its management decisions are correct, and in the best interests of all recreation and tourism parties involved. Optimizing water for recreation, tourism and the environment is the key.

With this study, the Bureau has made a good initial step. All of the professionals that we worked with in the area are anxious to work with the Bureau in the future. We found them sympathetic to the needs of all recreation and tourism interests, not just their own! The time seems right to put together a local team representing all recreation and tourism interests which can react with the Bureau to changes in water flows, releases, levels and needs on the study site. The idea is to work regularly together



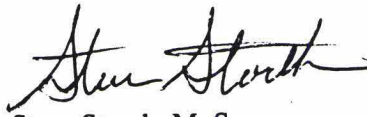
within a planning framework to optimize water for recreation and tourism as problems and opportunities arise. Success in doing this will depend on cooperation between recreation and tourism interests, downstream water rights owners and the Bureau managers. Success will also depend on informed decisions based on a scientific body of knowledge, and on sound planning. Some planning is progressing and this preliminary study is one of the beginnings to provide a body of knowledge for planning and management decision making.

We wish to thank the Bureau of Reclamation for including us in this study and for its good support throughout the study. We hope that our input will lead to improved recreation and tourism opportunities in the Snake River Study Area.

Sincerely,



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## Acknowledgments

We wish to acknowledge the Bureau of Reclamation for the opportunity to undertake this study. More specifically, we wish to thank Ron Golus and Dick Crysedale for providing considerable information and support. Thanks also goes to the 40 professionals listed in Appendix I, who spent their valuable time talking with us and taking us on site to see first hand the problems and opportunities of the Snake River region. Without this cooperation, accomplishment of this study would have been impossible.

Finally, we wish to acknowledge the Department of Natural Resources Recreation and Tourism which, through its continuing commitment to outreach and service, supported us in releasing our time and making its resources available to help accomplish this study.

## INTRODUCTION:

This study was undertaken by the Bureau of Reclamation to determine how newly proposed flow regimes from the Jackson Lake Dam in Grand Teton National Park, Moran, Wyoming might impact recreational activities of the upper Snake River Corridor. We determined that a collaborative research approach would provide the best scientifically accepted technique and the most defensible information given the limited time and resources. The most experienced, knowledgeable and interested parties were identified and selected to be interviewed. In fact we went beyond interviewing to spend quality time actually on-site with several professionals in order to see the resources and gain further understanding of the situations, problems and opportunities. This professional judgment technique is well documented as a preliminary technique for this type of study and provides a sound basis for initial management decisions and future resource evaluation (Whittaker, D., Shelby, B., Jackson, W. and Beschta, R, 1993).

## RECREATIONAL RESOURCE INVENTORY

The water resources and riparian areas most directly effected by water releases from the Jackson Lake Dam extend from Jackson Lake in northwest Wyoming through the South Fork canyon area of eastern Idaho. The full corridor covers approximately 120 miles and offers a broad spectrum of recreational opportunities helping to support a healthy tourism industry for this rural region. Fishing, boating and sightseeing are the three primary interests in this area. The most difficult of these to assess is the role of the Snake River as part of the popular scenic sightseeing attractions in and around Grand Teton National Park.

The corridor can be divided into twelve segments utilizing natural and man made boundaries (see diagram 2). Each segment has unique physical characteristics and user groups which seek the special recreational opportunities afforded by the area of interest. The following is a brief description of each segment, the physical characteristics and the recreational use each receives:

### JACKSON LAKE

#### Overview

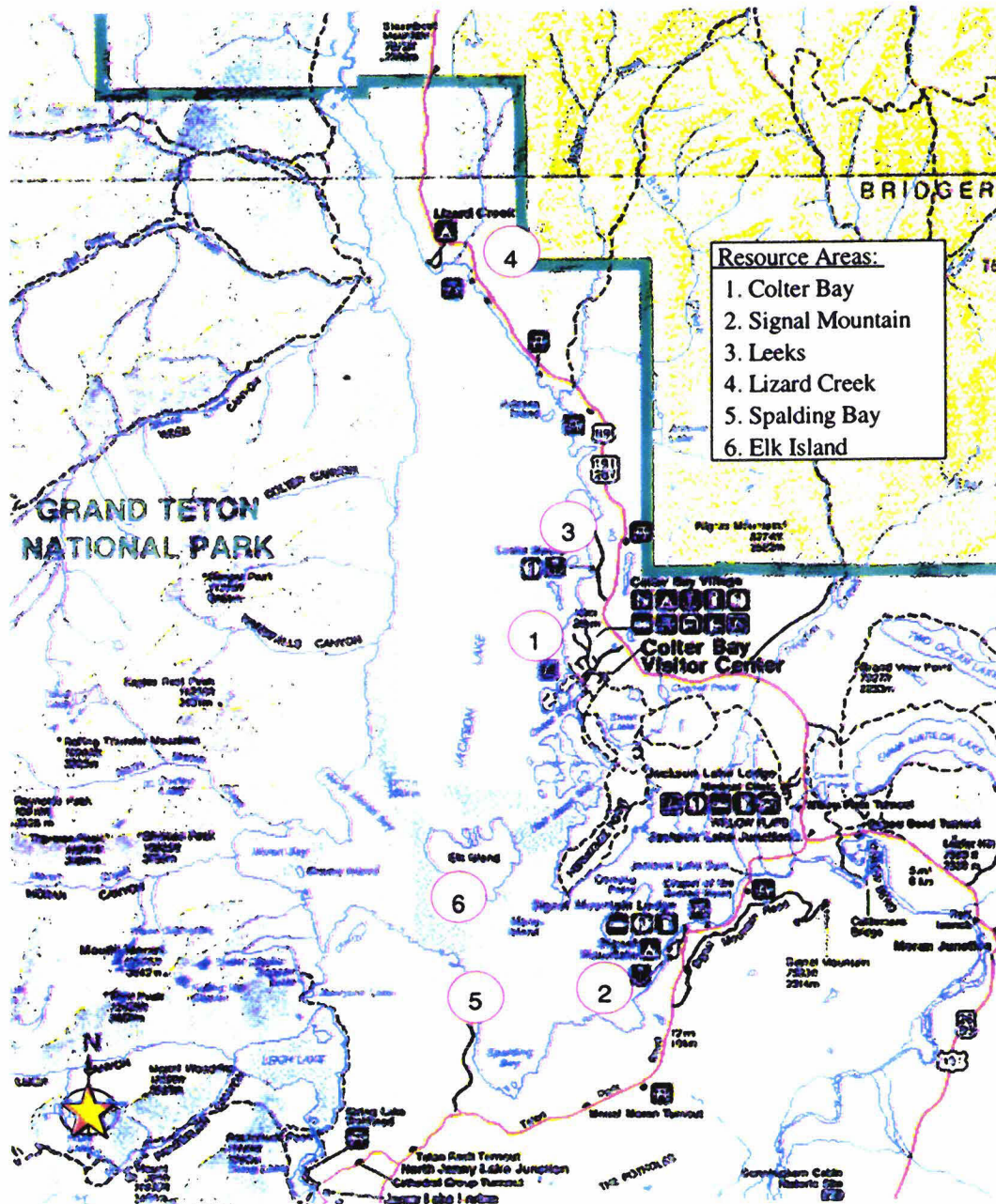
Located at the foot of Mt. Moran this high alpine lake offers unparalleled views of the Teton Mountain range. An average of 108.8 million, 12 hour visitor days were enjoyed annually by natural resource tourists visiting Grand Teton and Yellowstone National Parks between 1980 and 1992. Over seventy percent of this visitation occurred from May through September. The lake has numerous recreational facilities along its eastern shoreline, including 2 lodges, 3 marina complexes, 3 campground areas, several canoe and hiking trails, scenic overlooks and picnic areas (see diagram 1). The western shore is largely undeveloped providing opportunities for wilderness camping, hiking and boating.



**Figure 1: Colter Bay Marina, Jackson Lake, Grand Teton National Park**



**Diagram 1: Jackson Lake Recreational Facilities**



## Boating

Boating is a popular activity on the lake and includes power boating, jet skiing, sailing, wind surfing, canoeing, row boating and kayak touring. Approximately 400 private boats owned by local residents are kept on the lake through the summer season. In addition 13,000 visitors rented boats from on lake concessions and 2,750 visitors hired fishing guides with boats for lake fishing in 1994. There are approximately 270 boat mooring sites on the lake including docking facilities for 64 boats at Colter Bay. Grand Teton Lodge Company hosts 16,000 patrons annually on scenic boat cruises around the lake. Three times a day these cruises stop at Elk Island where meals are served in the shadow of the mountains..

## Fishing

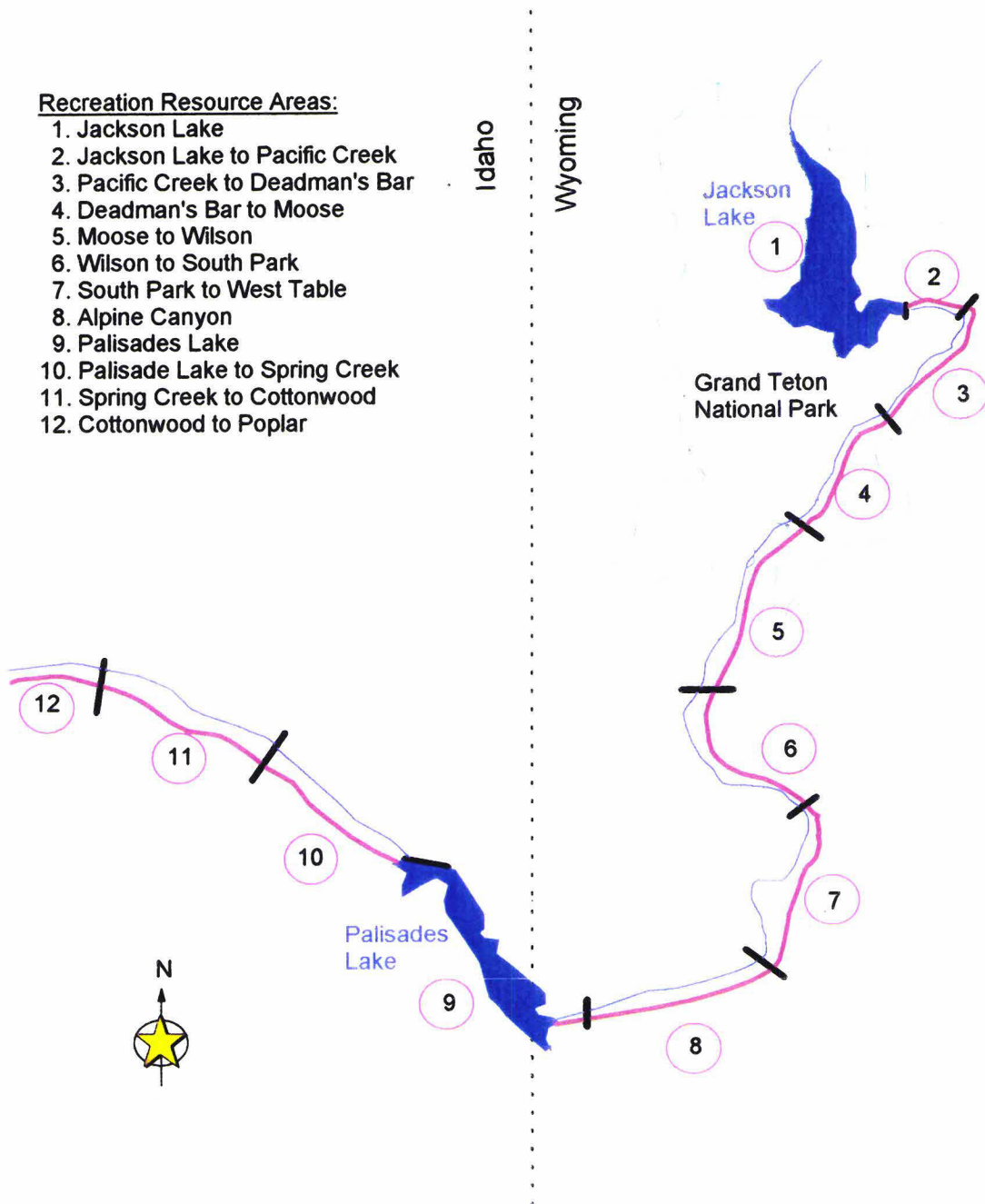
A 1991 Wyoming Game and Fish Department Creel Survey indicated that an estimated 20,560 anglers fished 75,662 hours on the lake from May through September of that year. An additional 6,548 anglers fishing 31,238 hours ice fished during the winter. Ice fisherman access the area by snow mobiles, cross country skis or snow planes. Hazardous ice conditions often restrict ice fishing. The primary lake sport fishery is the Lake Trout or Makinaw. The average Makinaw caught in 1991 was 18.4 inches and weighed 2.4 pounds. During the summer months these fish are primarily caught between 40 and 70 feet of water depending on water temperatures. Cutthroat and brown trout also inhabit the lake but make up less than 10% of the fish population.

## UPPER SNAKE RIVER CORRIDOR

### Overview

The upper snake river corridor extends from Jackson Lake Dam to Palisades Lake, approximately 69 miles. The nature of the river changes from a deep slow moving single channel, to a swifter heavily braided area, and then a steep single channel canyon whitewater section. The riparian area consists of a mix of pine, cottonwood and willow habitat which supports highly sought watchable wildlife species including moose, elk, osprey, and bald eagles. The fishery consists of the Snake River Cutthroat Trout, a unique species only found in this area, and the Whitefish. Three primary natural flow rivers supplement water released from Jackson Lake Dam-- the Buffalo, Gros Ventre, and Hoback rivers. Land holdings along the river consists of private, Grand Teton National Park, Bureau of Land Management, and Bridger-Teton National Forest. The Army Corps of Engineers also maintains a levee system between Moose and South Park (Sections 5 and 6). The heaviest recreational uses on the river are scenic raft floats on sections 4 and whitewater boating on section 8. Fishing is distributed throughout the system but is most concentrated in sections 3 and 6.

**Diagram 2: Snake River Corridor Recreation Resources Areas**





## Facilities

Eleven boat ramps provide access to the river:

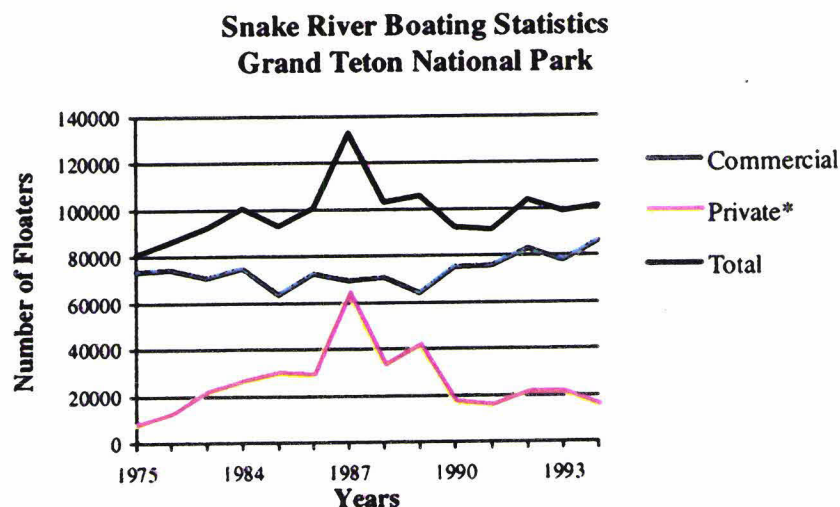
| Landing       | Agency | Section | Construction |
|---------------|--------|---------|--------------|
| Pacific Creek | GTNP   | 2       | Gravel       |
| Deadman's Bar | GTNP   | 3       | Concrete     |
| Schwabacher   | GTNP   | 4       | Gravel       |
| Moose         | GTNP   | 4       | Concrete     |
| Wilson        | BLM    | 5       | Gravel       |
| South Park    | WG&F*  | 6       | Gravel       |
| Astoria       | BTNF   | 7       | Gravel       |
| Pritchard     | BTNF   | 7       | Gravel       |
| East Table    | BTNF   | 7       | Gravel       |
| West Table    | BTNF   | 8       | Concrete     |
| Sheep's Gulch | BTNF   | 8       | Concrete     |

\* located on private land which is leased by Wyoming Game and Fish Department

**Table 1: Snake River Boat Landings**

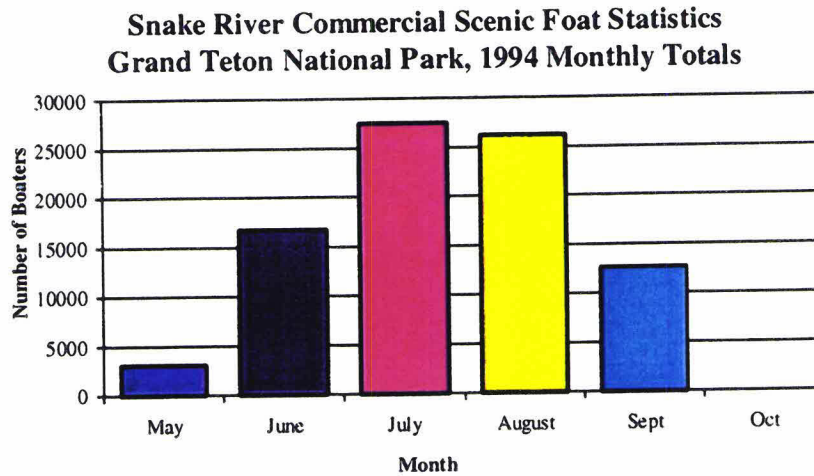
## Boating:

The following figures provide recreational use statistics for commercial and private boating on the Snake. The largest growth has been observed on the whitewater section in the Alpine Canyon area (Section 8). July and August are the two most popular boating months for all sections. The National Park Service, US Forest Service and Bureau of Land Management are all working on new river corridor management plans which will effect the way river use is managed and the number of commercial users.

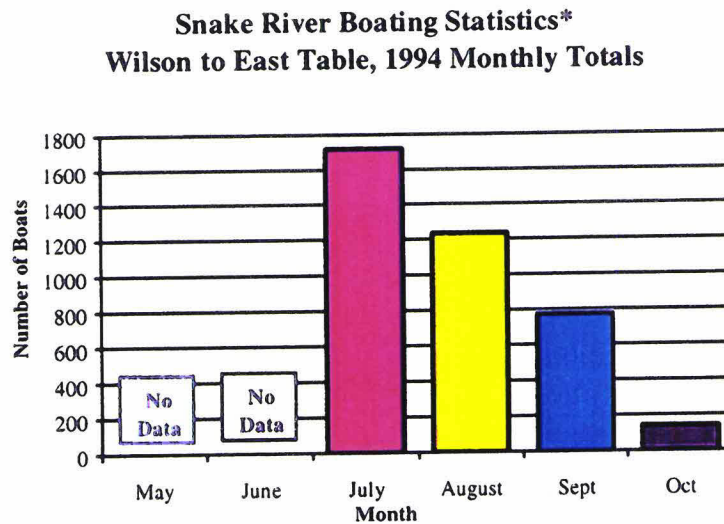


\* Estimates for private boat use from 1990 to present are underestimated due to participation in voluntary trip permit system. Estimated that only half of all private floaters actually register for voluntary trip permit. (Source: Grand Teton National Park Planning Office)

**Figure 2: Snake River Boating Statistics. Sections 2-5**



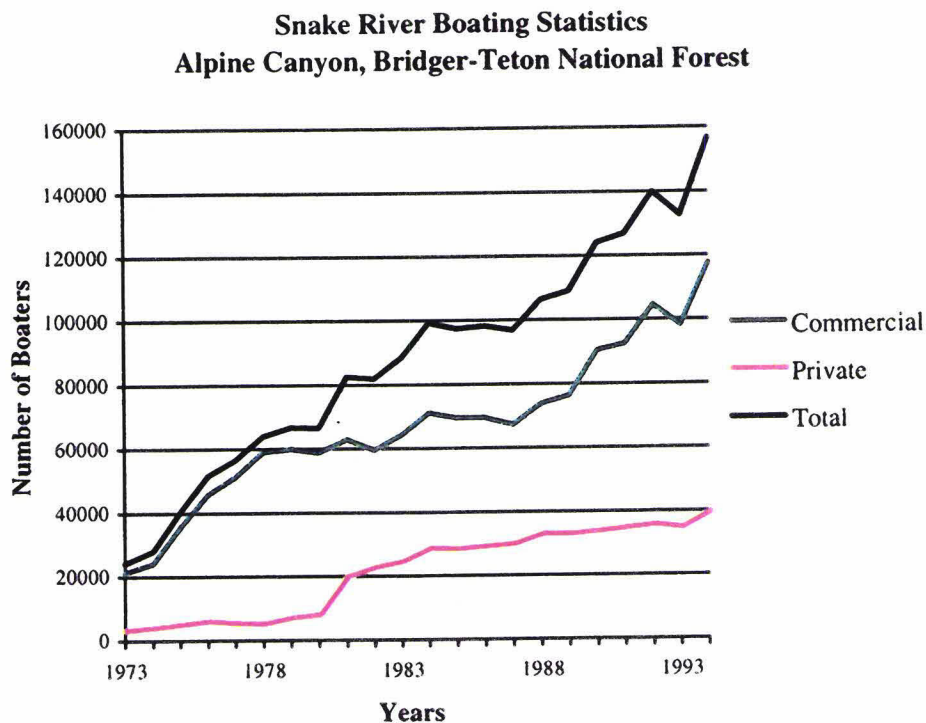
**Figure 3: Monthly Boating Use on Sections 2-5 of Snake River**



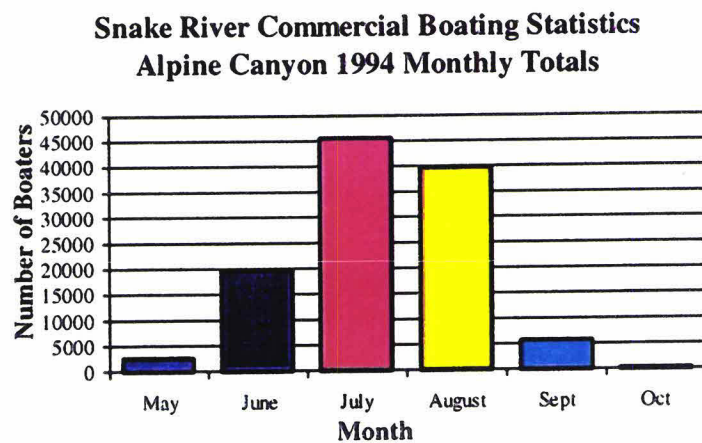
\*Note that these statistics represent numbers of Boats not individuals as in the previous figure. (Source: Wyoming Game and Fish Department)

**Figure 4: Monthly Summer Boat Traffic on Sections 6 & 7**





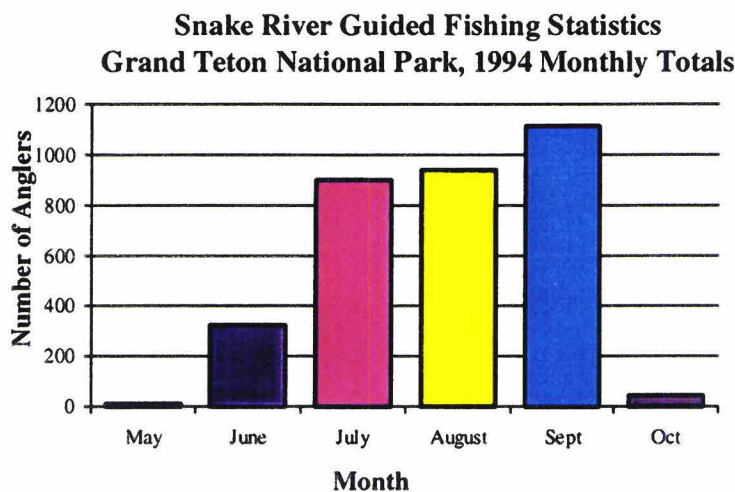
**Figure 5: Boating statistics, Snake River section 8**



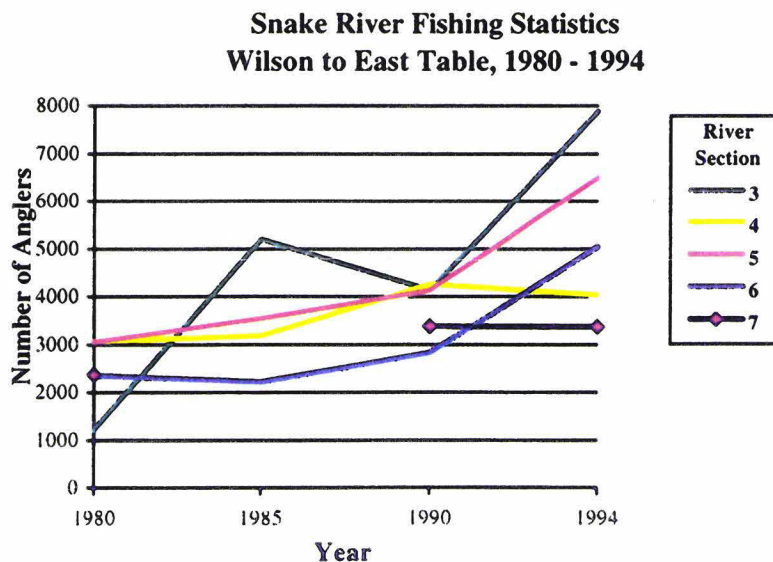
**Figure 6: Monthly commercial boating statistics Snake River section 8**

## Fishing

Fishing on the Snake River is done primarily from boats. Bank fisherman make up only 25% of all anglers. The fishing season on this section extends from July 1 through the end of October. Special regulations from Jackson Lake Dam to Wilson (Sections 2 through 5) limit creel numbers to 6 fish and require that all fish 11 to 18 inches be released. Only 1 fish may exceed 20 inches. Fifty-eight percent of all anglers used guide services in 1994, with 70% of all anglers using flies as their terminal tackle. Anglers fishing from Pacific Creek to East Table (sections 3 - 7) released 93% of all fish caught. Combined cutthroat trout catch rates for boat and bank anglers has dropped from .992 fish per hour in 1985 to .82 in 1994. The number of anglers has increased steadily in the last 15 years on all river segments except section 4. The highest angler concentration is in the month of September for all river sections. A three day "One-Fly" fishing contest is held during the second weekend of September attracting many professional level anglers.



**Figure 7: Monthly guided fishing on Snake River sections 2-5**



**Figure 8: Annual fishing statistics Snake River sections 3-7**

## PALISADES LAKE

### Overview

Located on the border of Idaho and Wyoming this long, narrow lake is a popular recreation site for residents of Idaho Falls, Idaho, approximately 50 miles to the east. Fishing, power boating, and jet skiing are popular recreational activities on the lake. The lake is bordered by Targhee National Forest to the north and Caribou National Forest to the south. There are also private lands located primarily to the north and east. Four public and three private boat ramps provide access to the lake (see diagram 3). All public launch sites are administered by the US Forest Service. In addition, the forest service provides two camping areas – Calamity (temporarily closed) and Big Elk Creek, located on the shores of the lake. The state of Idaho provides numerous floating docks around the lake for day use. No fueling services are available on the lake and very limited boat moorings or permanent dock slips are available.

### Fishing

Palisades is considered one of the top stillwater fisheries of eastern Idaho. The lake supports healthy populations of cutthroat and lake trout. Large brown trout also inhabit the lake. Fishing is most popular in early spring, fall and winter. Cutthroat average 18 inches in length. The summer season has traditionally shown low catch rates compared to other seasons. Ice fishing is popular on the lake and an annual contest is held during the early part of the year. While average hourly catch rates have increased from .30 in 1980 to .35 in 1993, angling hours have dropped dramatically in the last eight years.

Table 2: 15 Year Creel Survey Results  
Palisades Reservoir, Idaho

| Year | Total Effort (hrs) | Catch Rate |
|------|--------------------|------------|
| 1980 | 197,180            | .30        |
| 1985 | 107,660            | .33        |
| 1993 | 22,506             | .35        |

Source: 1993 Palisades Reservoir Creel Survey  
(Draft Report); Idaho Dept. of Fish & Game

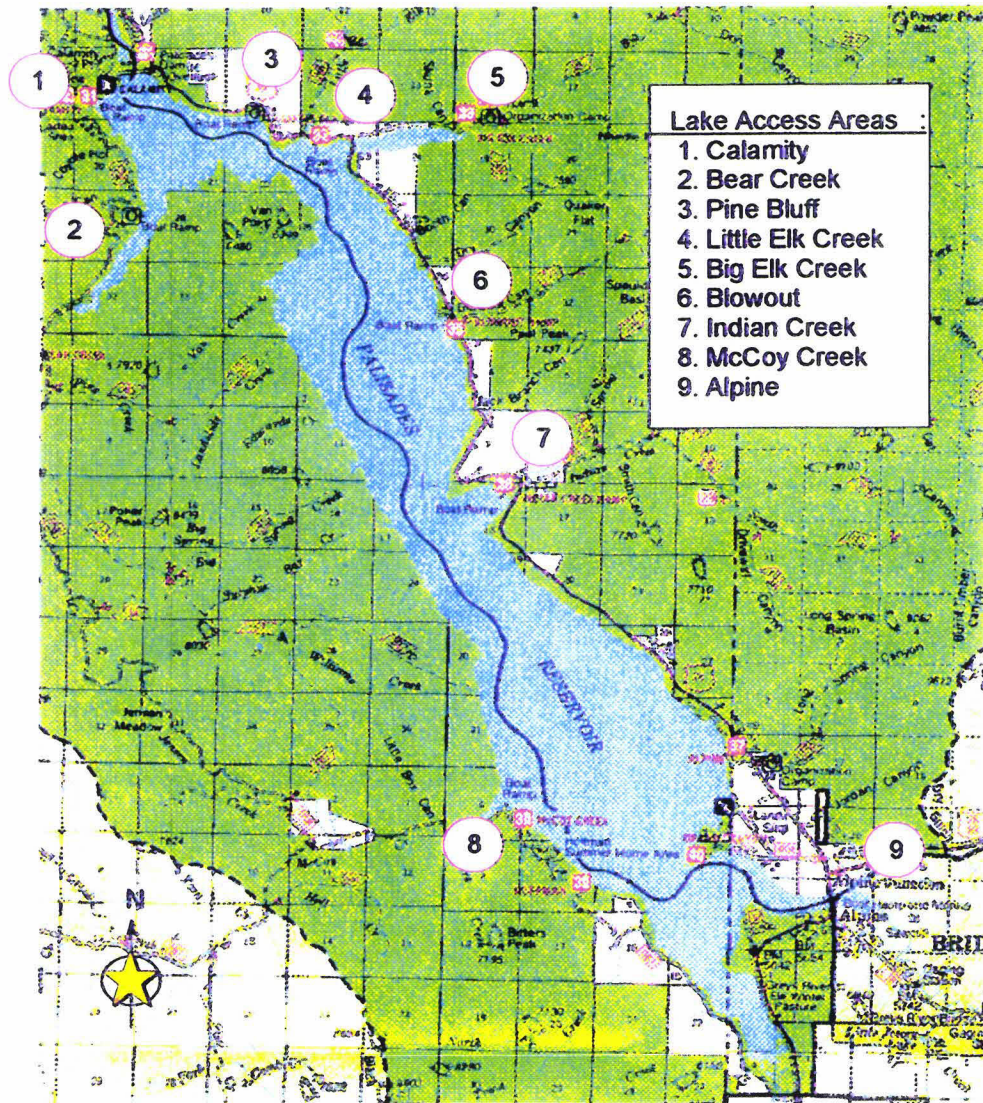
## SOUTH FORK

### Overview

The river below Palisades Lake is traditionally known as the South Fork (sections 10 - 12). The river consists of relatively flat water but may have hazardous whirlpools at higher levels. Section 10 of the river travels through Swan and Conant Valleys and offers good scenic views of this agricultural area. Sections 11 and 12 wind their way through scenic canyon with steep cliffs, cottonwood groves, and many islands. Access to the river is maintained by the Bureau of Land Management and the Forest Service. Day use of these sections is most popular although overnight trips are available.



**Diagram 3: Palisades Lake Recreational Facilities**



## Facilities

Seven landings provide access to this 40 mile stretch of the Snake:

| <b>Landing</b> | <b>Mile Point</b> | <b>Facilities</b>                                 |
|----------------|-------------------|---------------------------------------------------|
| Palisades Dam  | 0.0               | Concrete ramp, restroom, picnic area, and camping |
| Irwin          | 3.5               | Concrete ramp, restroom                           |
| Spring Creek   | 13.0              | Concrete ramp, restroom                           |
| Conant Valley  | 15.0              | Concrete ramp, restroom, picnic                   |
| Cottonwood     | 29.0              | Concrete ramp, restroom, camping                  |
| Wolf Flat      | 36.0              | None, bank launch                                 |
| Poplar         | 40.5              | Concrete ramp, restroom, picnic area              |

**Table 3: South Fork boat landings**

## Boating

Boating consists of fishing skiffs, rafts, jet boats and jet skis. Limited information was gathered regarding numbers of users on the South Fork due to time limitations on the study.

## Fishing

The South Fork is world renowned for its cutthroat and brown trout. The fishing season begins in late June and extends into November. One of the biggest attractions is the Salmon Fly hatch in early July which brings anglers from all across the country. The fishing industry and supporting services provide the primary economic inflow for this rural region. Commercial guiding is managed by the Bureau of Land Management. Only six companies are permitted on this section each with a four boat slot limit per day, per section. Assuming that most trips are booked between the last week of June through September, approximately 4000 guided fishermen use the South Fork. Anglers are primarily day users although the commercial outfitters do maintain base camps in the canyon for overnight trips.

## CARRYING CAPACITY

“Carrying capacity is the ability of a recreational resource to support a user population at a measurable threshold based on specific goals or objectives,” Pfister & Frenkel (1974). It has also been defined as the level of use beyond which impacts exceed levels specified by evaluative standards,” Shelby & Heberlein (1986). For this study, recreation carrying capacity is subdivided into four segments: physical, ecological, facility and social. These subdivisions allow for a more detailed analysis of the recreation carrying capacity of any given resource, and form the standard measuring rods for all such studies.

### Physical Carrying Capacity

Physical carrying capacity is the amount of space available for recreationists in a given resource area. The amount of space in natural areas is usually fixed. However physical capacity related to water can be increased or decreased through management of flow regimes when dams are within the system. Capacity can also be increased through more efficient utilization of space.

Today on the Snake in the canyon area (section 8) physical carrying capacity is being reached on a limited number of high use weekends in mid to late summer. For these times it is common for boats to



collide with one another and to interfere with river navigation. In all other areas, lakes and river, recreational physical carrying capacity is not being surpassed.

#### Ecological Carrying Capacity

The recreation use level effect on plants, animals, soil, insects, water, air...etc., is termed ecological carrying capacity. Another term used in the field is environmental impacts. Scientific study and very specific parameters are used to measure impacts, and to determine if carrying capacity is being reached. Although we were unable to take the necessary scientific measurements for this study we were able to identify several potential impacts which should be investigated further. Bank erosion and deterioration of island habitats in sections 5 and 6 appear to be affecting ecological systems such as insect populations, fish feeding patterns, siltation, and fish spawning. These ecological impacts may be due to water fluctuations, high sustained flow regimes combined with high recreational use such as fishing. Other ecological concerns identified by professionals interviewed in this study include:

- heavy angler use and scenic floating stressing wildlife utilizing the riparian areas.
- increased whitewater and scenic boating in eagle nesting and foraging areas.
- boaters accessing eagle nesting sites from river bank
- increased fishing pressure effecting trout survival and growth rates
- soil compaction and erosion around undeveloped river landing areas in the canyon and on the South Fork

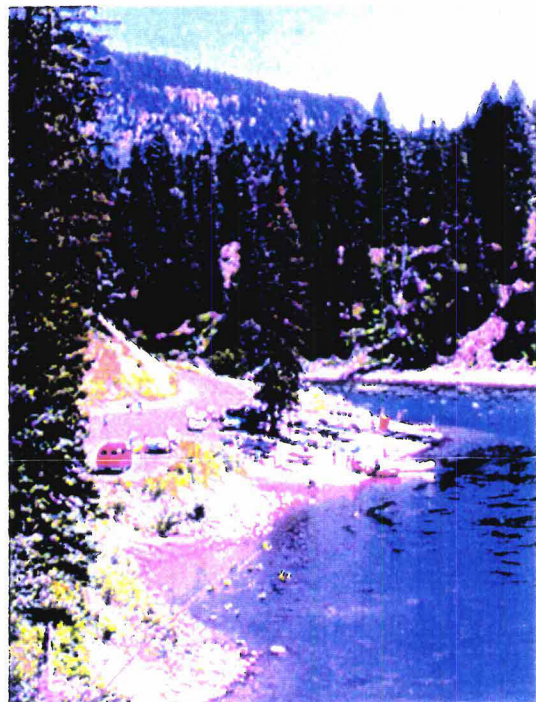
Water flow can have little effect on these concerns except where stream braiding occurs. Spring flushing flows can open braided channels allowing improved distribution of use throughout the riverbed thus relieving some of the pressure on wildlife. Higher flows during the high use times also moves boaters out of wildlife habitat quicker and discourages landing in fragile riparian areas.

#### Facility Carrying Capacity

This involves the ability of existing facilities to handle recreational use and demand. Facilities capacity can be viewed in terms of actual ability to physically carry a certain number of users, and in terms of physical impacts on the facility. Boat launch sites appear to be the only sites in the study corridor which are actually reaching facility carrying capacity. Conflicts have occurred at these sites both on the scenic sections and in the canyon primarily between commercial users and private boaters.

Water level changes on the Snake can and do impact facilities carrying capacity by increasing and decreasing demand for numbers of river trips and in dry years shutting off Colter Bay marina operations and scenic tours to Elk Island. More research is needed on effects of water on number of river trips to offer an optimum flow recommendation.

Lower and slower water means fewer opportunities for trips and more congestion on the water and at



**Figure 9: Alpine Canyon on a low volume day, Sheep's Gulch Landing**

the boat ramps. Faster-higher water means faster trip times but then commercial rafters take more trips and congestion also continues. This is a catch-22 situation which needs more study.

### Social Carrying Capacity

Social carrying capacity refers to impacts which impair or alter human experience. The number, type and location of recreationists encountered by other resource users affects their recreation experience. There are levels where these effects exceed acceptable levels. These levels are called social carrying capacity. It is very important to note that social carrying capacity differs depending on the type of experience being sought by an individual or group. For example: recreationists seeking solitude will tolerate fewer and different types of human encounters than will recreationists seeking thrills and excitement.

Social carrying capacity in the Snake River corridor appears to be a problem in isolated areas primarily at the river access points. Here congestion causes an increasing amount of conflict among users. Social carrying capacity viewed as overly large numbers of users is probably not being exceeded anywhere in the system because the thrill seeking whitewater users of the canyon and the tourist sightseeing floaters are mainly social and like groups of people. However, we say "probably not" because social carrying capacity is a matter of user perception, and can only be determined through careful scientific study. This scientific study is needed on our study section of the Snake. Although the scenic floater has a much lower threshold for seeing crowds of people than do the whitewater users, neither group appears to be over-crowded from a social carrying capacity standpoint at this time.

### Conflicts

Social carrying capacity can also be viewed in terms of conflicting uses. Several instances of user conflicts were reported and observed during the course of this investigation. Three conflict areas are discussed here:

1. Scenic float guides and customers on the river perceive increasing numbers of fisherman as impacting their pristine experience and ability to view wildlife. Fisherman are observed more on the river because they stop or slow down to fish and are passed by other boaters. Floaters are only impacting each other at the river put-ins. Since floaters move down river at the same speed as the current they seldom see each other.
2. Jet skiers and jet boats conflict with fisherman and rafters on sections of the river above and below Palisades (sections 8, & 10-12). We experienced this on the South Fork where a tranquil river trip became a noise filled day on the river. Jet skiers are also coming up river from Palisades into the whitewater reaches of section 8 on the river. This is dangerous and impacts the whitewater rafters.
3. The third conflict is between commercial outfitters and private rafters. Private rafters see outfitters as controlling and dominating the river opportunities while commercial rafters see private rafters as a threat due to growing numbers.

Problems of conflict can be solved through management schemes. Both problems 1&2 above can be solved through zoning of the water. The conflict between floaters and anglers can be somewhat reduced by providing early season (mid-June) high runoff flows combined with sustained releases of approximately two weeks. This type of flow rate would flush the river making multiple channels of the braided sections of river navigable. This would increase carrying capacity allowing floaters to see fewer fisherman and possibly more wildlife.

Jet boats and jet skis can be zoned out of certain river areas and given designated sections of river which may not be in as great of a demand by fisherman or river rafters. The simplest way to restrict the jet skis above Palisades is to keep Palisades low enough to make it physically impossible for the skiers to negotiate the narrows section of the river above the lake.

The third problem may be solved by designating time blocks for limited commercial rafting and for mainly private rafters. These time blocks for individual private rafters should be during off-peak times.

## RESOURCE ISSUES

The following are issues and concerns expressed by those individuals interviewed for this project. These comments relate to major effects of water levels and releases on recreation and tourism and possible solutions.

### Jackson Lake

The primary concerns on the lake occur at lower water levels. The income potential for Grand Teton Lodge Company is severely impacted when lake levels drop below 6755 feet. At this level their scenic tour boats cannot safely navigate the narrow entrance to Colter Bay and the floating docks located on Elk Island become unusable. Docks in the bay get too shallow to use without boat damage and the gas pump becomes inaccessible. At 6751 feet the boat ramp becomes unusable. These levels were reached on July 23 in 1994 resulting in a 20% reduction in revenues for Colter Bay Marina. Leeks Marina is the next site to be impacted although they are situated in deeper water adjacent to a channel. Signal Mountain is not effected until levels drop below 6740.

Aesthetics is the second major concern in the northern and eastern segments of the lake during low water. Large sections of mud flats appear in these areas detracting from the view of the Teton mountains. The area to the east is adjacent to Jackson Lake Lodge the primary resort on the lake which houses over 100,000 visitors during the summer months. The northern area is visible from the highway and surrounds the Lizard Creek campground making this area highly undesirable. Access to backcountry sites on the west shore across from Lizard Creek is completely cut off.

High water during any month causes few resource impacts. Rocky shores are able to absorb the water although some increased erosion may occur. Several channels open up between islands south of Colter Bay allowing access to isolated bays for canoeists and fisherman. For most areas this is a benefit, although access to Swan Lake is discouraged by the park service due to its unique habitat.

Rising water during the winter season contributes to hazardous ice conditions. As water seeps onto the ice, slush areas are formed as well as open water. Several accidents have occurred as a result of these conditions due to inexperienced users misreading the hazard signs.

### Upper Snake River Corridor

A combination of sustaining high flow rates during the summer months and other man-made features, primarily the Army Corps levee system is causing the destruction of instream habitat. The islands and vegetation which provide shelter for the cutthroat and forage/shelter areas for larger mammals have virtually disappeared from the Gros Ventre river to South Park (sections 5 and 6).



Another concern is the shifting of gravel into river access areas at all ramps above the canyon area. This affects the commercial and private boaters primarily. As a natural process this issue has raised some conflict between management agencies and the public.

Periodic spring flushing of side channels and isolated ponds along the river is considered to be of great benefit to the natural system as well as the recreational users. These high flows clear debris from channels making them navigable thus increasing the variety of fishing opportunities and wildlife viewing opportunities for scenic floaters. It also reduces conflicting encounters between rafters and fishermen. This high water also revitalizes the riparian systems providing nutrients and cleaning silt deposits from gravel beds. Additional mid-size gravel is moved by these flows into the mouths of side tributaries refreshing valuable cutthroat spawning habitat.

Below Astoria in the canyon section few resources problems occur due to fluctuations in water levels. The two boat landings do become difficult to use below 3000 CFS (alpine gauge) but due to the small size and weight of the boats this is not an insurmountable problem.

#### Palisades Lake

Palisades has similar concerns as Jackson Lake for ice fishing with rising water causing hazardous ice conditions. Rapid fluctuations of water during the summer has caused problems at the four docking areas. Increasing jet ski use out of Palisades up the Snake River leads to safety concerns and conflicts with whitewater rafters. Water access in the spring, fall and winter is important on the lake due to fishing at those times.

#### South Fork

The sustained high flows on this section of river in spring of 1995 severely impacted the fishing industry for the season. Large sections of the river banks were eroded as much as thirty feet from the original shoreline. In the lower canyon below cottonwood large log jams were formed from debris washed down the river. The concern again is not the high spring flush of the system but rather the sustained levels of high flow. Winter flows are still below the 1500 CFS recommended by the fish habitat studies conducted in 1992. Achieving these levels is crucial to reduce stress on the population which receives such heavy fishing pressure. As with the other fisheries, early and sustained stabilization of water levels between 7000 and 10,000 CFS is most desirable.

### OPTIMUM FLOWS FOR RECREATIONAL USE

Each professional interviewed was asked to provide their opinion on optimum water levels and water delivery timing that would best support their interest group. Having interviewed a number of long standing resource users and land managers, many with over ten years experience on the Snake, we were able to see some patterns in these suggestions. It was difficult to get exact gauge levels from the long time users as they go by geographic land marks to tell them what type of conditions they will find on the water.

An improved research model would have had individuals evaluate proposals utilizing one or more of the following approaches, viewing and rating photographs of various water levels, conducting on water evaluation at different water levels, reviewing detailed verbal descriptions of the conditions at different water levels, Shelby, Brown & Taylor (1992). As this was a preliminary study resources for these types of evaluation were not available. Future research such as that conducted by researchers in cooperation with the Bureau of Reclamation and other land management agencies on the South Fork of the Snake, Pratt (1992), the Colorado River below Glen Canyon, Shelby, Brown & Baumgartner (1992), Bishop, Boyle, Welsh, Baumgartner & Rathbun (1987); the Dolores, Vandas et al (1990), and Cache la Poudre, Brown & Daniel (1991), Williams (1991), rivers of Colorado, and many others would provide more reliable conclusions about the best flow conditions.

## Whitewater Boating

Flow rates as measured at the Alpine Narrows gauge

- A variety of flows provides a broad range of recreational opportunities at varying skill levels.
  - high spring flows challenge advanced boaters but is scary for tourist rafters
  - moderate flows offer good river running for a wide variety of users
  - low water provides a more scenic trip and makes for a much longer trip
- majority of season (July - August) maintain water flows between 4000 and 8000 CFS
  - best variety of fun rapids at these levels
  - trip times are reasonable (5000 CFS = 1.5 hr trip)
  - outfitters can run 4 to 6 trips/day at these levels
  - less conflict between kayakers and rafts because there are many waves and hydraulics for surfing
- end of season (mid-September) ~3000 CFS for more scenic trip/older crowd
  - ramps at West Table and Sheep's Gulch unusable below 3000 CFS
  - trips become slow and some rapids become hazardous due to exposed rocks

## Scenic Float Trips

Flow rates suggested refer to the gauge just below Jackson Lake Dam near Moran except where noted. Recommendations are for optimal scenic float trips between Pacific Creek and Wilson (Sections 2 - 5).

- High spring flow periodically to remove logs and other debris from side channels prior to season
  - 12,000 to 16,000 CFS for 7 to 10 days below Buffalo River improves navigability and increases usable side channels
- maximum water for safe operations of 1:12 ratios 12,000 CFS
- minimal level <2000 CFS, cannot easily get boats and guests to water
- optimum levels between 3000 & 4000 CFS
  - 2 to 2.5 hour float from Deadman's Bar to Moose good timing to guest ratios can maximize guide
  - easy access to water
  - variety of side channels which offer improved wildlife viewing

**\*\*Please provide advanced notice of changes in dam release to improve planning of trip schedules  
lower water slowly so channels have time to become defined**

## Fishing

Area of primary interest Jackson Lake Dam to South Park. Recommendations refer to dam discharge rates.

- maintain consistent flows
  - changes relocate fish and reduce visibility causing decreased catch rates
  - rapid lowering of flows greater than 300 CFS can isolate aquatic insects
- bring water levels down to fishable levels after the spring flushing flows, July 1

- change flows over a 24 hour period in a step fashion
- maintain winter flows of 400 to 700 CFS
  - keeps deep pools intact for resting fish
  - maintains ample habitat for fish and aquatic insects
- maintain winter flows on the South Fork below Palisades of 1500 CFS or greater
  - keeps deep pools intact for resting fish
  - maintains ample habitat for fish and aquatic insects
- have water on South Fork below 12,000 CFS by July 1 to support the Salmon fly hatch
- maintain summer levels between 1500 and 2500 CFS
  - maintains side channels, provides good habitat for fish

#### National Park Service

- manage water to simulate the natural historic flow regimes
  - high spring flow, diminishing flow through the season
  - match Jackson Lake inflow and discharge
- set flow rates to protect and preserve natural river systems
  - sustained high flow rates increasing erosion rates of river banks
- work with Army Corps of Engineers on better flood control management and modifications of the levee system

#### US Forest Service

- manage water to maintain riparian Cottonwood habitats
  - maintain status for wild and scenic consideration
  - provide habitat for eagle population

#### Jackson Lake

- maintain lake level above 6754 feet elevation from June through September
  - Colter Bay operations are closed below this level
- match inflow with outflow during the winter to reduce flooding of ice which causes very hazardous conditions
- mud flats reduce aesthetics of lake and limit access to backcountry areas on the north west shore
- south eastern portions of lake becomes segmented with bars starting around 6756
  - provides beach and landing areas for boaters
  - can increase boat damage due to exposed rocks
- provide for a variety of recreational opportunities

## ANALYSIS OF PROPOSED FLOW REGIMES

The suggestions given by all groups were considered in the evaluation of the four flow regimes proposed by the Bureau of Reclamation, studies #951, #953, #955, and #956. In addition to the suggestions above the following considerations were also taken into account in the evaluation process:

- Priority 1: Conditions should be optimized for the success and health of the Snake River Cutthroat recreational fishery and the environmental systems which support it.
- Priority 2: Conditions should maximize the physical, social, facility and ecological carrying capacity and variety of opportunities for recreational activity in all resource segments.
- Priority 3: Flow Regimes should support the land management mandates of the federal and state agencies which hold interests in the Snake River Corridor.
- Priority 4: Water levels and flows should minimize conflicts.

Given all criteria it was determined that the proposed flow regimes should be prioritized as follows with one being the most preferred and four being the least preferred for recreation and tourism:

1. Flow Study #956
2. Flow Study #951
3. Flow Study #955
4. Flow Study #953

### Discussion of Flow Studies (reference graphs in appendix II)

#### 1. Flow Study #956

This proposal provides improved winter instream flow rates in all scenarios (minimum, maximum and average) which should help support an improved cutthroat fishery. Slightly declining lake elevations during the winter months should improve the ice conditions providing greater safety and opportunities for winter recreation. Study #956 provides one of the highest spring flushing levels of all proposals. This was deemed a very important factor by all interest groups. A rapid decline and early season stabilization of lake discharge for the summer tourist and angling season helps to maximize the recreational opportunities of the system. Adequate lake elevations and instream flows near the end of the summer provide for the longest recreational season possible.

#### 2. Flow Study #951

This proposal provides slightly lower winter flows at average and maximum levels. Spring flush is not quite as high as other scenarios lessening the benefits. Higher river levels at the latter part of the summer is very positive although this must be weighed against the lower lake levels for the same time period.

#### 3. Flow Study #955

This proposal provides good winter instream flow rates and stability to declining winter lake levels. The high spring flush is good but the flow rates need to drop to a lower level to maximize fishing and scenic floating opportunities. Lower lake levels at the end of the season is also a disadvantage as are the rapidly declining instream flow rates of the minimum water level scenario.

#### 4. Flow Study #953

Study #953 provides good winter flows but rising winter lake levels are a disadvantage continuing the hazardous ice conditions presently observed. Delay in water delivery in the spring reduces the level of the flushing flow and extends the high flows for a longer period increasing the likelihood of resource damage due to erosion. Mid-summer flows are good but end of season flows and lake levels are generally lower than other proposals.

The above ranking represents our best judgment based upon the desired optimum conditions and management parameters provided by the professionals we interviewed and our own observations and experiences. It has been suggested that a planning committee of varying interest groups, recreationists, agriculture, and resource management agencies meet regularly to react to changing water conditions, problems, and opportunities and to negotiate acceptable minimum, maximum and average flow regimes. This would be a highly political process but one that has met with success in other agencies regarding allocations of limited natural resource (i.e. USFS Limits of Acceptable Change).

#### CONCLUSIONS

In 1994, 2.58 million tourists visited Grand Teton National Park. The primary draw to this area is its natural beauty. The Snake River has played an integral role in the development and maintenance of today's landscape as well as providing a base for the growing tourism industry of Jackson Hole. The river and lake provide more than just a scenic foreground to the majestic Tetons. The water provides an avenue which allows people to become part of the natural surroundings. The riverine and lake system provides a front country experience with a backcountry feel. If visitation increases as it has over the last 10 years, growing by over 75% since 1986, so will the recreational pressures on the Snake River Corridor.

In this report we have shown sharp increases in recreational use of the river over the last 10 years (whitewater boating, 60% increase since 1984, commercial scenic trips, 15% increase since 1984, and fishing, 60% increase since 1985). As recreation numbers and demands increase, resource specialists are reporting declining fish populations, loss of riparian habitat, and an eroding of the wilderness experience, once available along the waterways. Part of solving these problems lies in preparing an optimum flow model for the technical operation of marinas, boat ramps and rafting operations. This is not a difficult task. With the data provided in this report and given average precipitation levels, an agreeable flow regime can be determined. The true challenge of managing water within this system is working together with resource management agencies and professionals in the recreation industry to establish flow regimes which preserve the values which make this resource unique and desirable.

We have assessed the flow study proposals with these issues in mind and feel that our recommendations do reflect the opinions of those we interviewed as well as findings from previous research in other resource areas. Unfortunately the answer to the issue at hand is not a fixed solution. More detailed information is needed to support our findings and long-term monitoring of the relationships between flows and recreational impacts would greatly improve the balance of this system, if coupled with careful management action. The real difficulty lies in trying to balance the short term economic benefits to the commercial recreational industry with the long term social and ecological benefits of an intact riparian and aquatic ecosystem.

## **Appendix I: Contact List**

## **CONTACT LIST**

(Names listed alphabetically by group)

### **Bureau of Reclamation**

Dick Crysdale  
Recreation Research Director

Fred Goodsell  
Jackson Lake Dam Manager

Ron Golus  
Planning and Special Studies Officer

Roger Larson  
Water Resource Specialist

Karl Wirkus  
Resource Manager

### **US Forest Service**

#### **Bridger-Teton National Forest, Jackson District**

Jerry Ballint  
Range Manager  
(former river manager and whitewater guide  
service owner)

Jan Langerman  
River Manager

Linda Marigliano  
Planner  
Coordinator of the River Recreation  
Management Plan

Jack Scofield  
River Patrol

#### **Arapahoe-Roosevelt National Forest**

Martha Moran  
Recreation/River Manager

### **Grand Teton National Park**

Nancy Arkin  
Planner/Landscape Architect

Dan Burgette  
North District Manager

George Helfrich  
Concessions Manager

Martin Mire  
River Patrol Supervisor

Kit Mullen  
Planner

### **Wyoming Game and Fish Department**

Thomas C. Annear  
State Instream Flow Specialist

Rob Gipson  
Fisheries Biologist

John Kiefling  
District Manager, Fisheries

### **Idaho Department of Fish and Game**

Bill Schrader  
Fisheries Biologist

Mark Gamblin  
Regional Fishery Manager

### **Bureau of Land Management**

Medicine Lodge Resource Area  
Pat Kelch  
Bill Boggs

Pinedale Resource Area  
Dave Vesterby  
Recreation Planner

### **Commercial Outfitters**

Dick Barker  
Owner (Scenic Float Concession)  
Barker Ewing Raft Company

Jim Jones  
Owner/Guide  
High Country Flies

Paul Bruum  
Owner/Guide  
South Fork Fly Fishing

Bruce Roberts  
Guide  
Jack Dennis Fly Fishing

Arron Crouse  
Assistant Manager/River Manager  
Lone Eagle Guest Ranch

Jack Schimatta  
Marina Manager  
Grand Teton Lodge Company, Colter Bay

Tony Doonan  
Assistant Marina Manager  
Grand Teton Lodge Company, Colter Bay

Charlie Woodward  
Senior Guide  
Jackson Hole Whitewater

Bill Guheen  
Rafting Manager  
Grand Teton Lodge Company

Dick, Fishing Guide Colter Bay  
Grand Teton Lodge Company

Ed Ingold  
Owner/Guide  
Crescent-H Guest Ranch

Lyle, Fishing Guide  
and former Guide Service Owner  
South Fork Lodge



**Special Interest Groups**

Kathy Buckner  
Director Wyoming Council &  
Jackson Hole Chapter  
Trout Unlimited

Jay Buckner  
Board Member/Formal Guide  
Trout Unlimited

Tim Young  
Director  
Snake River Corridor Project

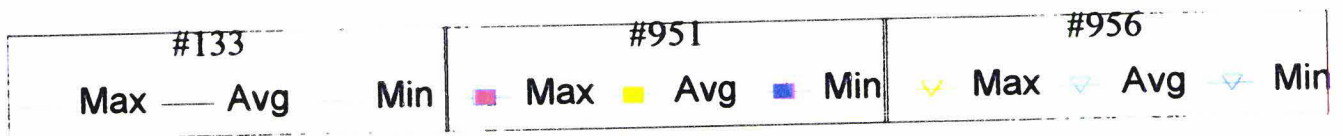
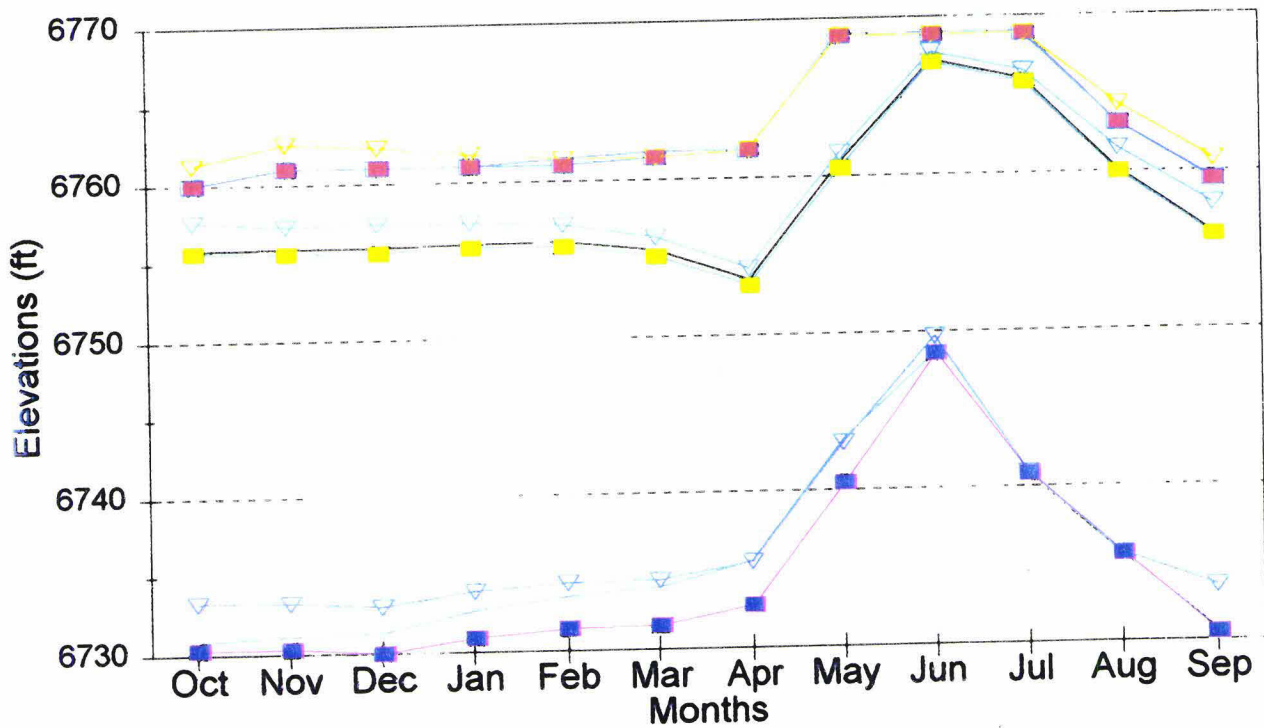
Office Manager  
Jackson Hole Chamber of Commerce

Site Manager  
Pine Bluff Yacht Club, Palisades Lake

## **Appendix II: Flow Study Graphs**

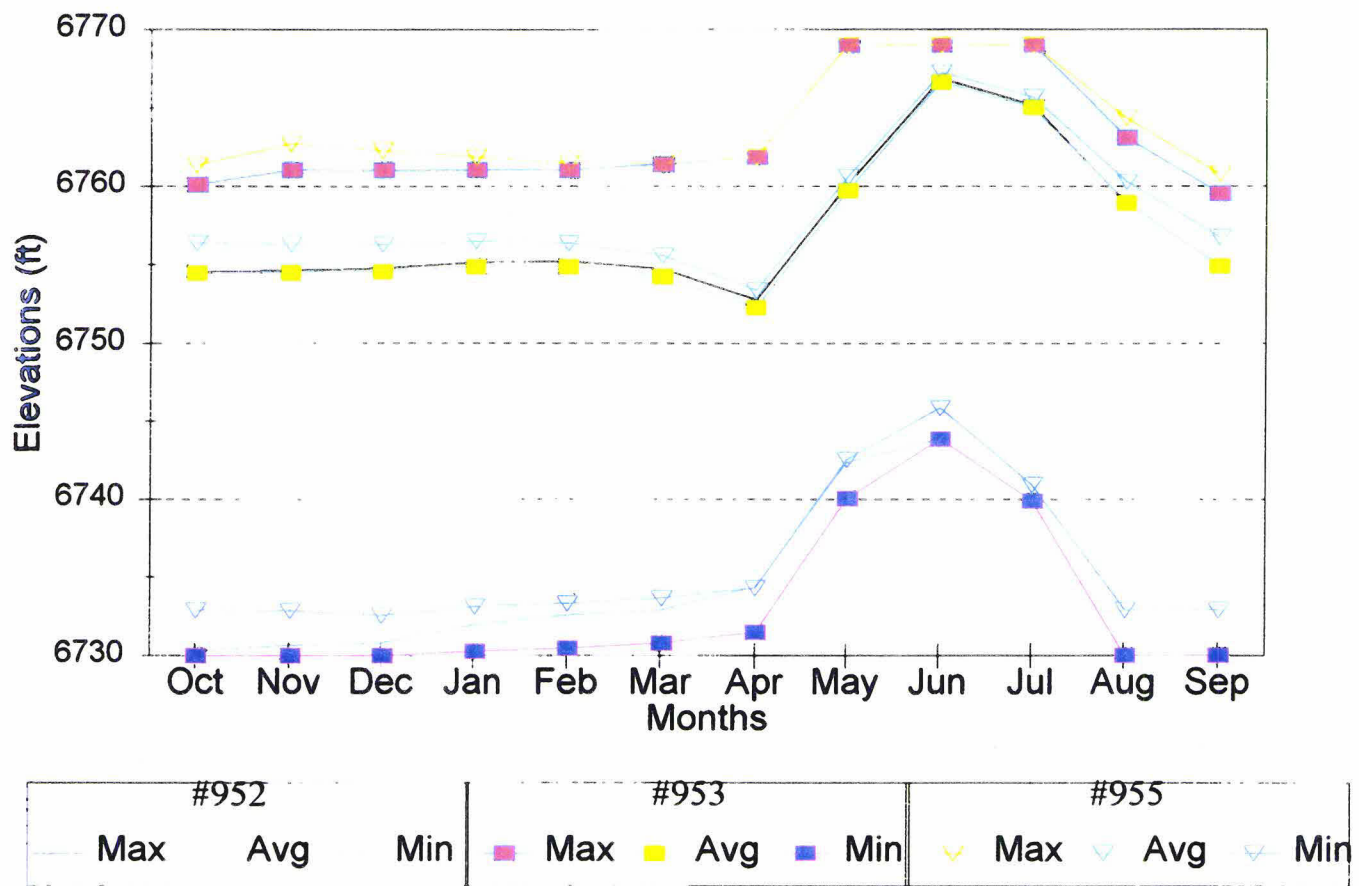
# Jackson Lake Elevations

Base Study #133 w/ #951& #956



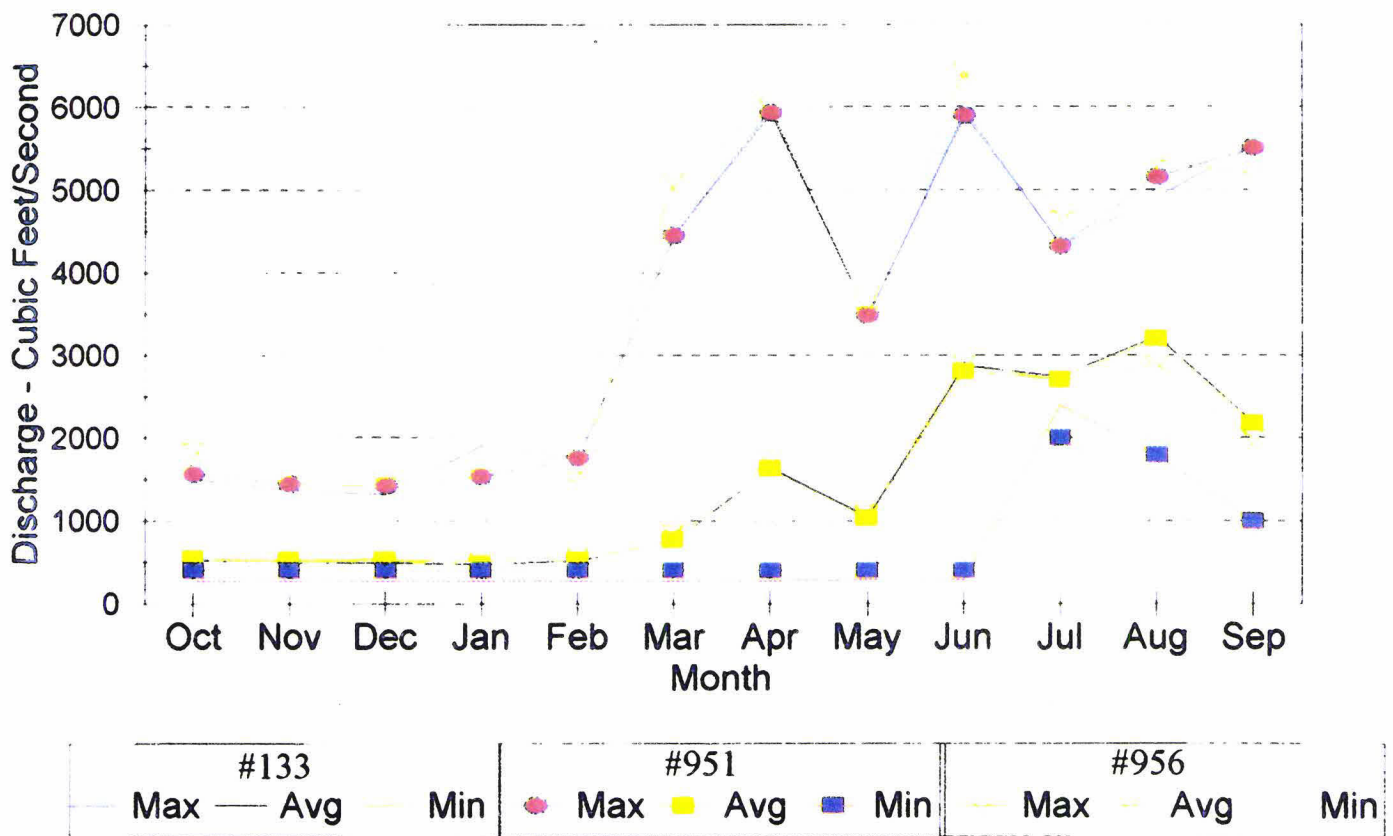
# Jackson Lake Elevations

Base Study #952 w/ #953 & #955



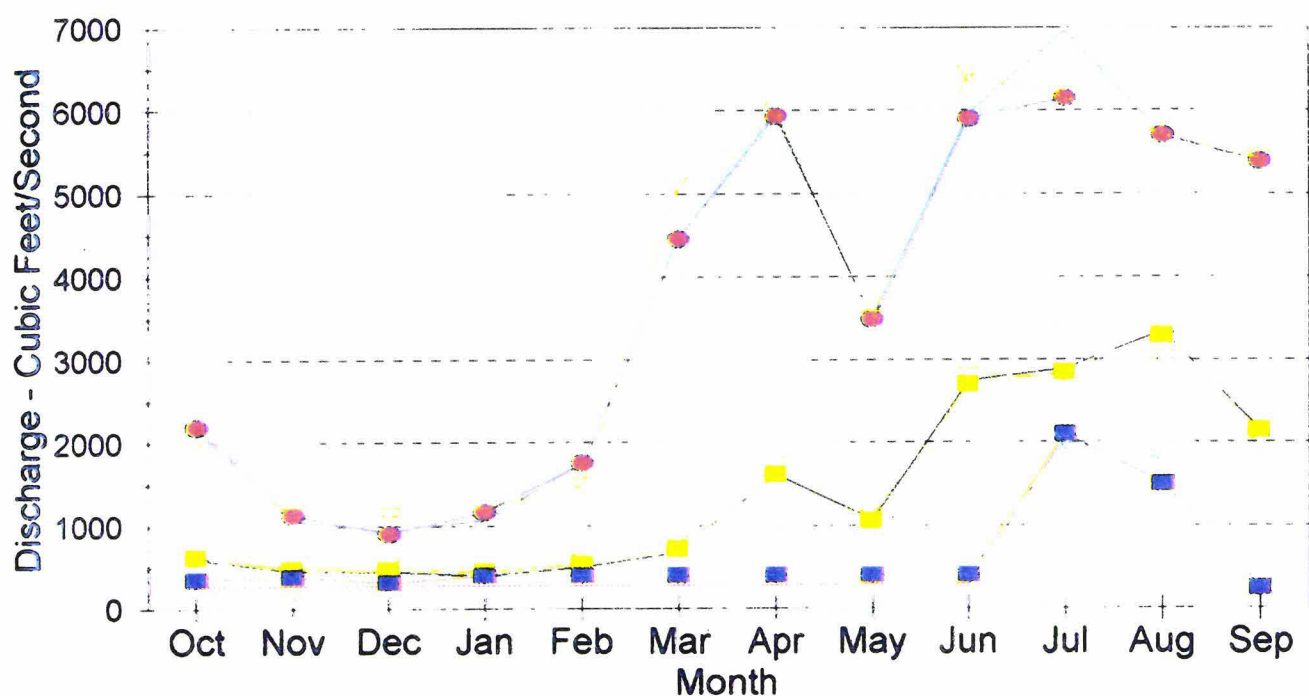
# Jackson Lake Discharge

Base Study #133 w/ #951 & #956



# Jackson Lake Discharge

Base Study #952 w/ #953 & #955



#952                      #953                      #955  
 Max   Avg   Min   Max   Avg   Min   Max   Avg   Min

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## **ADDENDUM D**

### **Other Alternative Solutions Identified**



## Alternatives

Several possible methods of raising the water surface elevation were explored. Possible solutions to the problem include the following:

- 1) Raise the crest of the dam. This alternative would be very complex and would require extensive modifications to the dam, spillway, slide gate operators, and radial gates. This alternative was considered the most expensive because of the large amount of work that would be required, and was therefore not given any further consideration.
- 2) Allow the water surface elevation to come up on the gates and use an air bubbler system to keep the gates ice free. Because of the extremely cold temperatures during the winter, there are serious doubts whether an air bubbler system would be able to function in the winter. Experience at Jackson Lake with air bubblers on the slide gates indicates this method would have a very low probability of success. Also, during the spring, strong winds blow ice flows towards the gates, against which an air bubbler would not offer protection. For these reasons, this option was considered non-viable and was not given any further consideration.
- 3) Allow the water surface to rise on the gates and use heating panels to keep the gates ice free. It was decided that the probability of success of this option is very low. Because of the extreme low winter temperatures, some areas would probably end up being too hot, while other areas would remain frozen. To make sure the entire area was protected from freezing would require extensive heating elements, and would therefore be very expensive with a low probability of success.
- 4) Install stoplog guides in the parapet walls and install stoplogs in front of the radial gates to increase the water surface elevation. Review of drawings and photographs of the dam indicate that stoplogs would be extremely difficult to place and remove in the guides due to the road deck over the dam. Extensive modifications to the road deck would be required to facilitate the placement or removal of the stoplogs. These modifications are considered quite expensive; therefore, this option is not considered feasible.
- 5) Install a temporary cofferdam in front of the radial gates. There is no room in front of the parapet walls to place a cofferdam. Therefore the dam would have to be placed in each bay. Because of the anticipated ice loading, extensive bracing would be required on the frame of the dam. This option would end up being quite similar to the stoplogs option, except a membrane liner would be used to back the water up instead of just stoplogs. The same problems associated with the option of using stoplogs would therefore be encountered.

- 6) Use an Obermeyer-type crest gate in front of the radial gates. Obermeyer gates slide up and down on guides that are in plates attached to the abutments. For cold weather operation these plates are heated to prevent icing. For the fairly extreme weather conditions found at Jackson Lake, it is doubtful the heating system would be able to adequately perform; therefore, this option was rejected.
- 7) Replace the wooden radial gates with gates that would be able to withstand the anticipated ice loading. This option would be very expensive. However, it may have some merit because the wooden radial gates will need to be replaced eventually anyway. If that is the case, it would make sense to design the gates so they would be capable of withstanding the additional ice loading that would be expected. Two potential alternatives have been considered for replacing the wooden gates. The first alternative is to replace the wood gates with steel gates which would have a high initial cost. The second option would be to replace the gates with an inflatable rubber dam in each bay. The initial cost would be less for the inflatable rubber dam; however, the useful life would be much less. Because of the high expense associated with these options, they were not given any further consideration.
- 8) Place a small inflatable rubber dam in front of the existing wooden radial gates. This alternative has been selected as the preferred alternative. It was judged to have a high probability of success at a moderate cost.