NOAA Technical Memorandum NMFS F/NWR-18

FISH TRANSPORTATION OVERSIGHT TEAM ANNUAL REPORT-FY 1986
TRANSPORT OPERATIONS ON THE SNAKE AND COLUMBIA RIVERS

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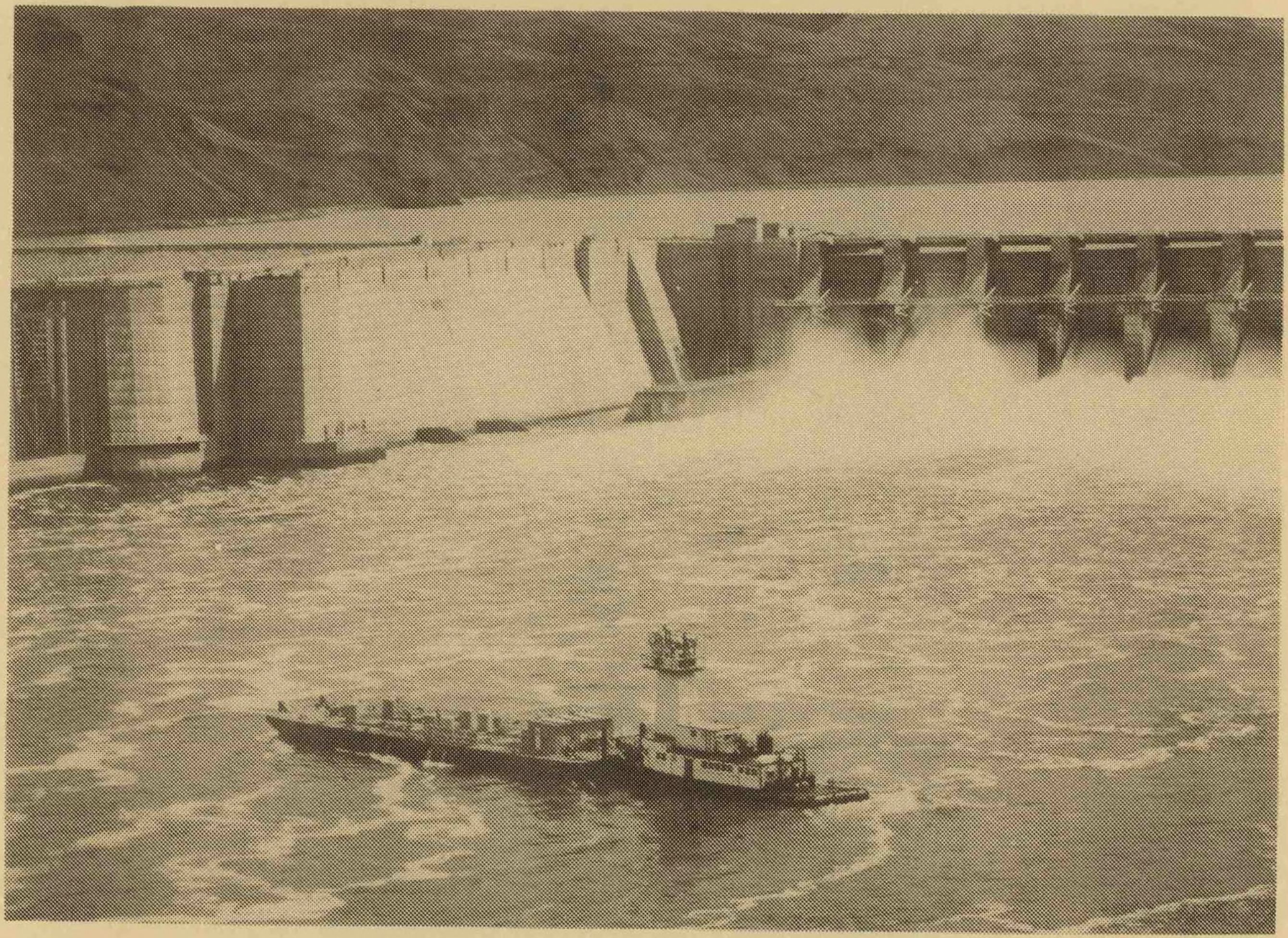
MARCH 1987



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service

NOAA Technical Memorandum NMFS F/NWR-18

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MARCH 1987

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At McNary Dam:

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Cover Photo

Barge and transport tug in
Lower Granite Dam tailrace

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SUMMARY

The 1986 transport season began March 26 and ended September 26. A total of 17,082,770 juveniles were collected, including 4,773,941 at Lower Granite, 2,093,232 at Little Goose, and 10,215,597 at McNary.

Total collection included 80,963 juveniles bypassed at Lower Granite, 32,405 at Little Goose and 3,306,666 at McNary. These included marked yearling chinook released back to the river as controls for transport evaluation.

Snake River flows peaked at 211 kcfs on June 1. Flows beyond powerhouse capacity occurred from May 27 thru June 11. Columbia River flows at McNary Dam peaked at 395 kcfs on June 1. McNary spilled for 80 days, from March 26 thru June 20, with peak spill of 181 kcfs occurring on June 7.

Lower Granite and Little Goose seasonal collection mortality was 0.19 percent and 0.36, percent respectively. This compares with 0.22 percent and 0.60 percent in 1985. Seasonal collection mortality was 1.45 percent at the McNary facility, slightly lower than the 1.75 percent recorded in 1985.

INTRODUCTION

Juvenile salmonids were collected and transported from the Snake River at Lower Granite (River Mile (RM) 107.5) and Little Goose (RM 70.3) dams, and from the Columbia River at McNary Dam (RM 292). The Snake, a major tributary to the Columbia, joins at RM 324.3. Collected juveniles were transported via truck or barge and released below Bonneville Dam (RM 146.1). Transported juveniles bypassed 4 to 8 dams and 146 to 280 miles of impounded river (Figure 1).

The Fish Transportation Oversight Team (FTOT) continued to manage the transport program and provided coordination between Walla Walla District, Corps of Engineers (NPW), fishery agencies, and tribes. The FTOT is composed of biologists from the National Marine Fisheries Service (NMFS), Idaho Department of Fish and Game (IDFG), Columbia River Inter-Tribal Fish Commission (CRITFC), and NPW. The IDFG member was chairman of the team. Line of authority and responsibilities for transporting salmonids is given in Figure 2.

The FTOT's goal is to maximize survival of Snake and Columbia River salmonids by improving collection, transport, and bypass conditions for juvenile migrants. Responsibilities include providing coordination, program oversight, developing an annual work plan, inspecting collection and transport facilities prior to, during, and after the season, and producing an annual report summarizing transport activities. A meeting is hosted by FTOT each summer for program participants and other interested individuals to discuss current season operation and recommend program and facility modifications for the following year.

Additional biological oversight is provided through cooperative agreements between NPW and the states of Idaho, Oregon, and Washington. Under these agreements NPW funds state fishery biologists at each collector project. Idaho's representatives were assigned to Lower Granite, Oregon's to Little Goose, and Washington's to McNary. Work loads were shared by State and NPW project biologists.

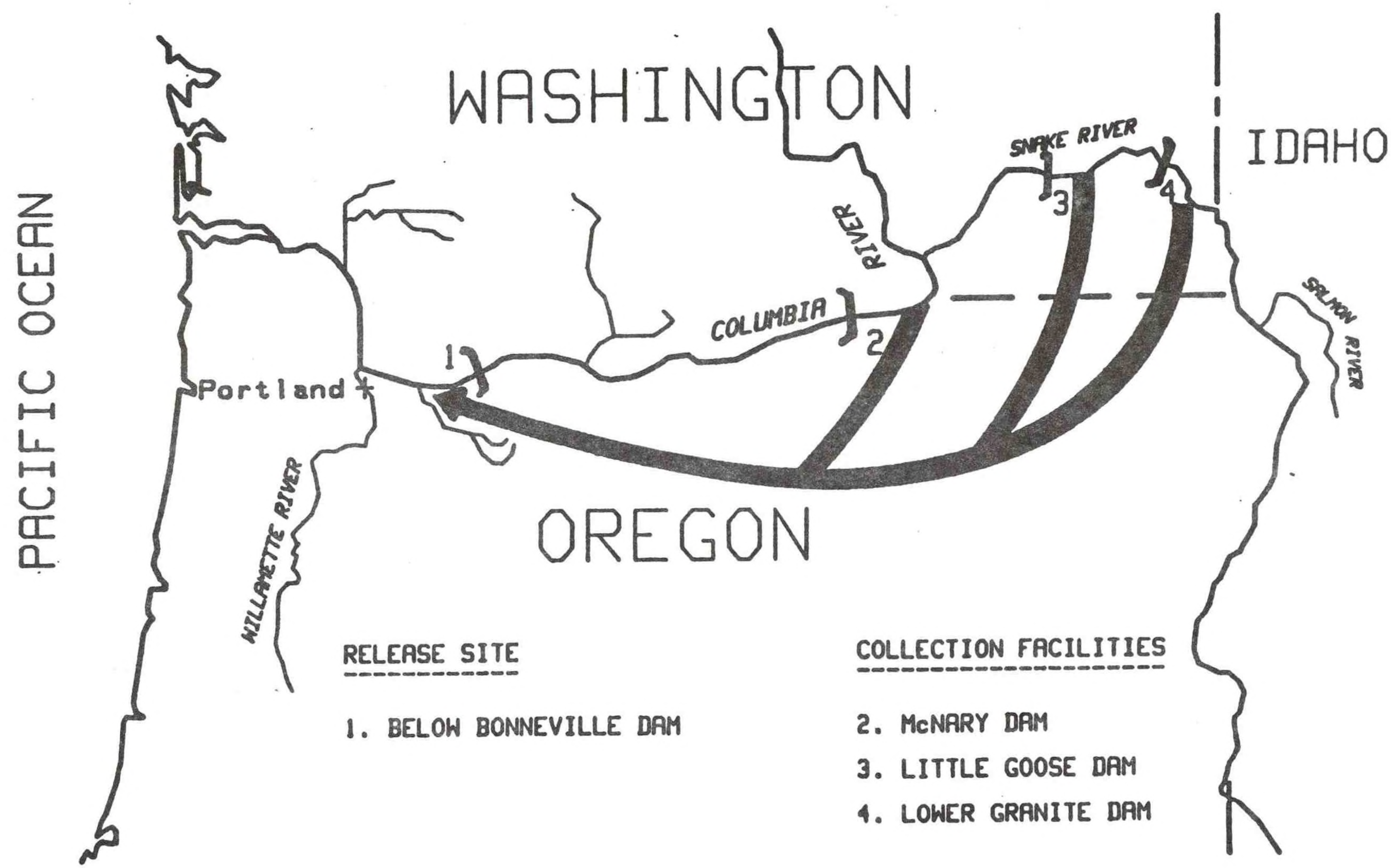
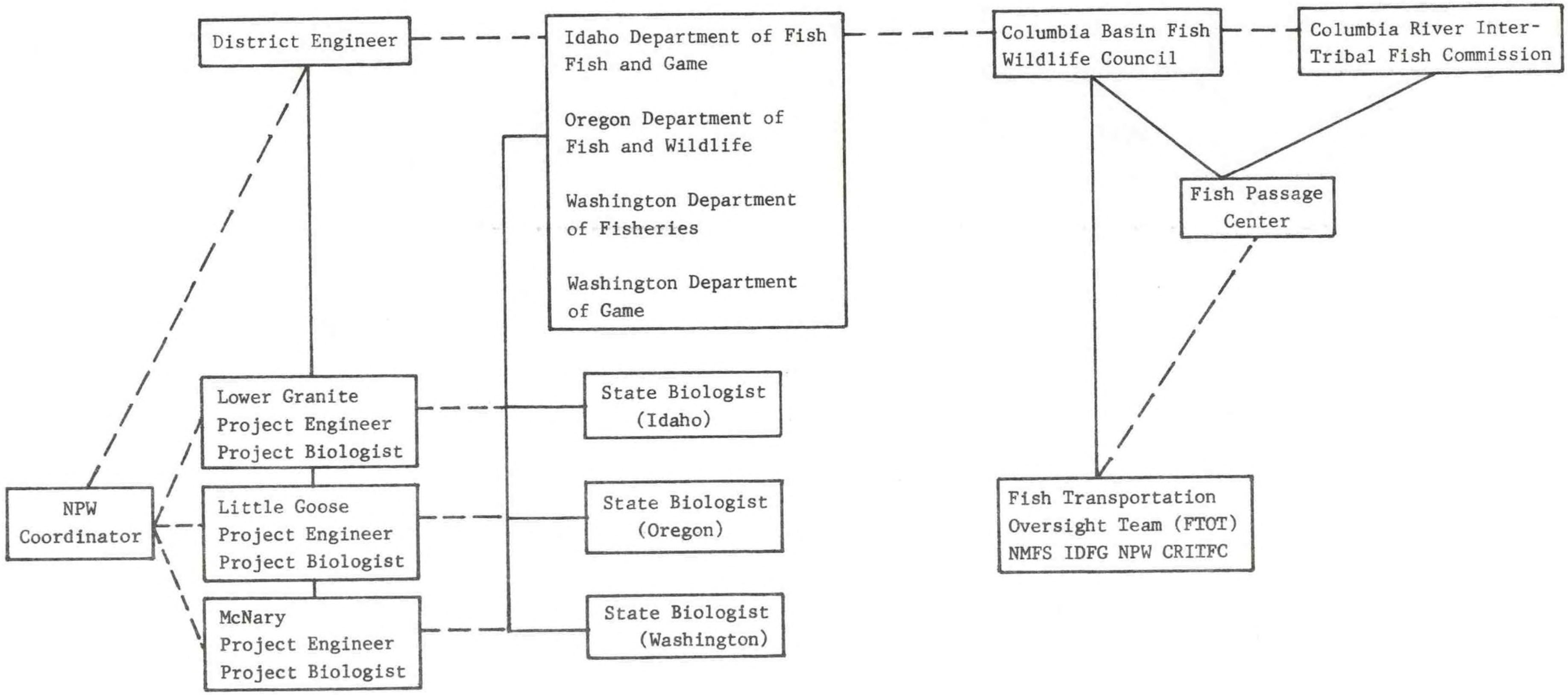


Figure 1. LOCATIONS OF FISH COLLECTION FACILITIES, TRANSPORTATION ROUTE, AND RELEASE SITE.

Figure 2. -- Line of authority and responsibilities for trapping and transportation of juvenile salmon and steelhead trout from collection points at Lower Granite, Little Goose, and McNary Lock and Dam projects to release sites below Bonneville Lock and Dam. Dotted line denotes line of communication and solid line is supervision.



Responsibilities

Maintenance of transportation, collection, bypass, holding facilities and equipment.

Operate and monitor collection and transportation equipment and facilities

Contact tug and tractor rental.

Administer cooperative agreements and task orders for State biologist

Responsibilities

Inspection and Quality Control collection and transportation equipment and facilities

Monitor fish sampling and handling

Monitor water quality and fish condition.

Compile data and write progress reports.

Responsibilities

Transport coordination and program oversight.

Prepare annual work plan.

Inspection and oversight of collection and transportation facilities and quality control.

Identify and recommend changes needed in facilities and equipment or their operation.

Assimilate data and write annual report.

A typical collection/bypass system consists of submersible traveling screens (STS), gatewell orifices, and a flume or pipe transport conduit (Figure 3). Fish are collected after they pass through trash racks and encounter a STS that intercepts and deflects them into a gatewell, away from the turbine. Fish then exit gatewells via 8- or 12-inch orifices into a transport conduit that carries them to a collection facility or to the tailrace.

This report summarizes 1986 transport operations including numbers of salmonids transported or bypassed by species, overall fish condition, river and flow conditions, and facility and equipment operations.

RIVER CONDITIONS[1]

The observed January - July Columbia River runoff at The Dalles was 96 percent of the 20 year (1961-1980) average[2], Grand Coulee 81 percent, and the Snake River below Lower Granite 119 percent. Flows at Lower Granite and McNary dams are compared with the juvenile outmigrations in figures 4 and 5.

Snake River

The observed April - August Snake River runoff measured at Lower Granite for 1986, was 22.8 million acre feet (MAF), 102 percent of the 1961 - 1980 average.

Flows peaked on the Snake River at 211 kcfs on June 1 compared to 124 kcfs on June 9, 1985. Spill occurred during late March and again from May 27 thru June 11 (Figure 6).

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[1]Alexander, Clyde. U.S. Geological Survey, 847 N.E. 19th Avenue, Suite 300, Portland, Oregon 97232. (pers. comm. 1986).

[2]Standard base period used by the Columbia River Water Management Group's Depletion Task Force.

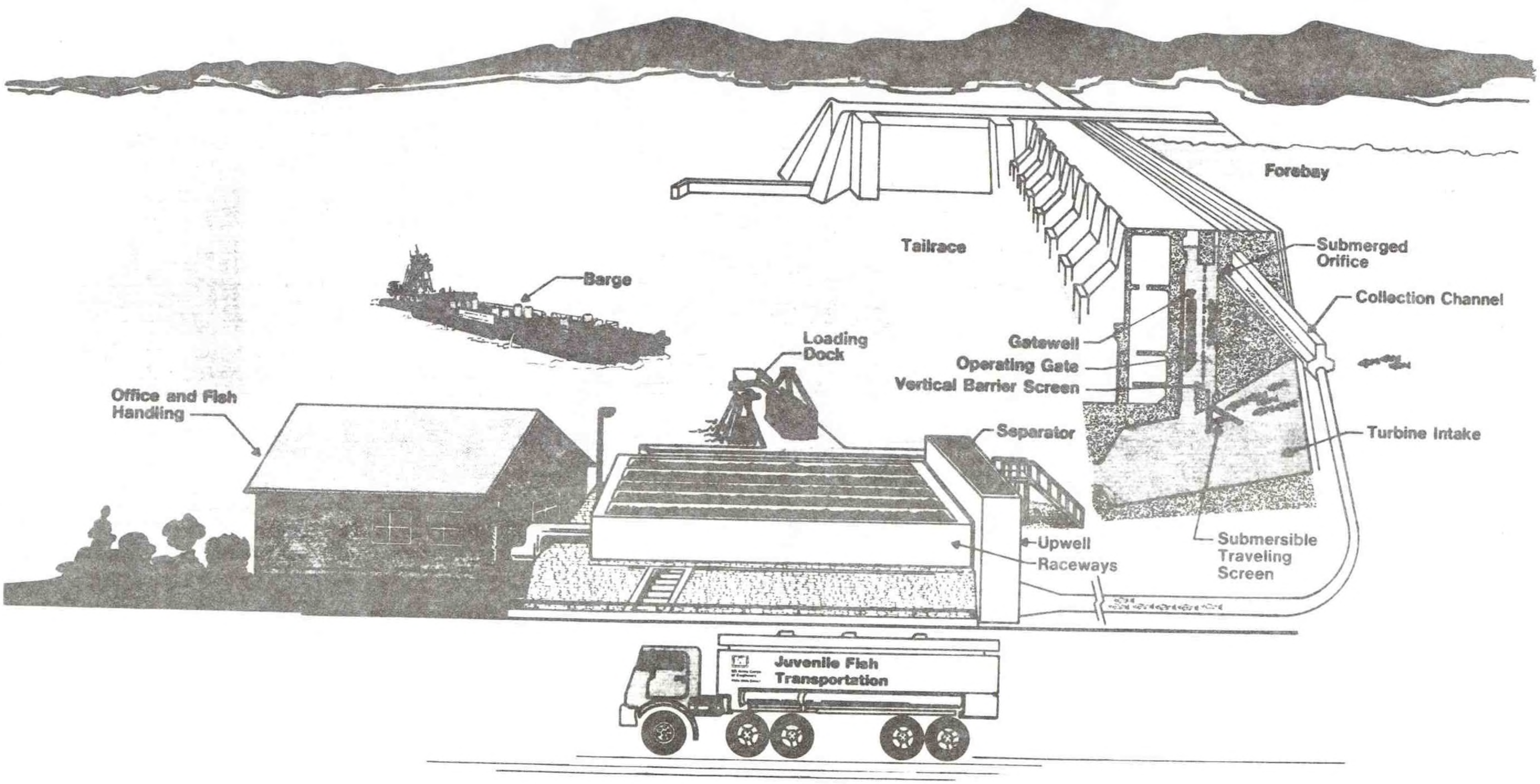


Figure 3. Juvenile salmonid collection and transportation system.

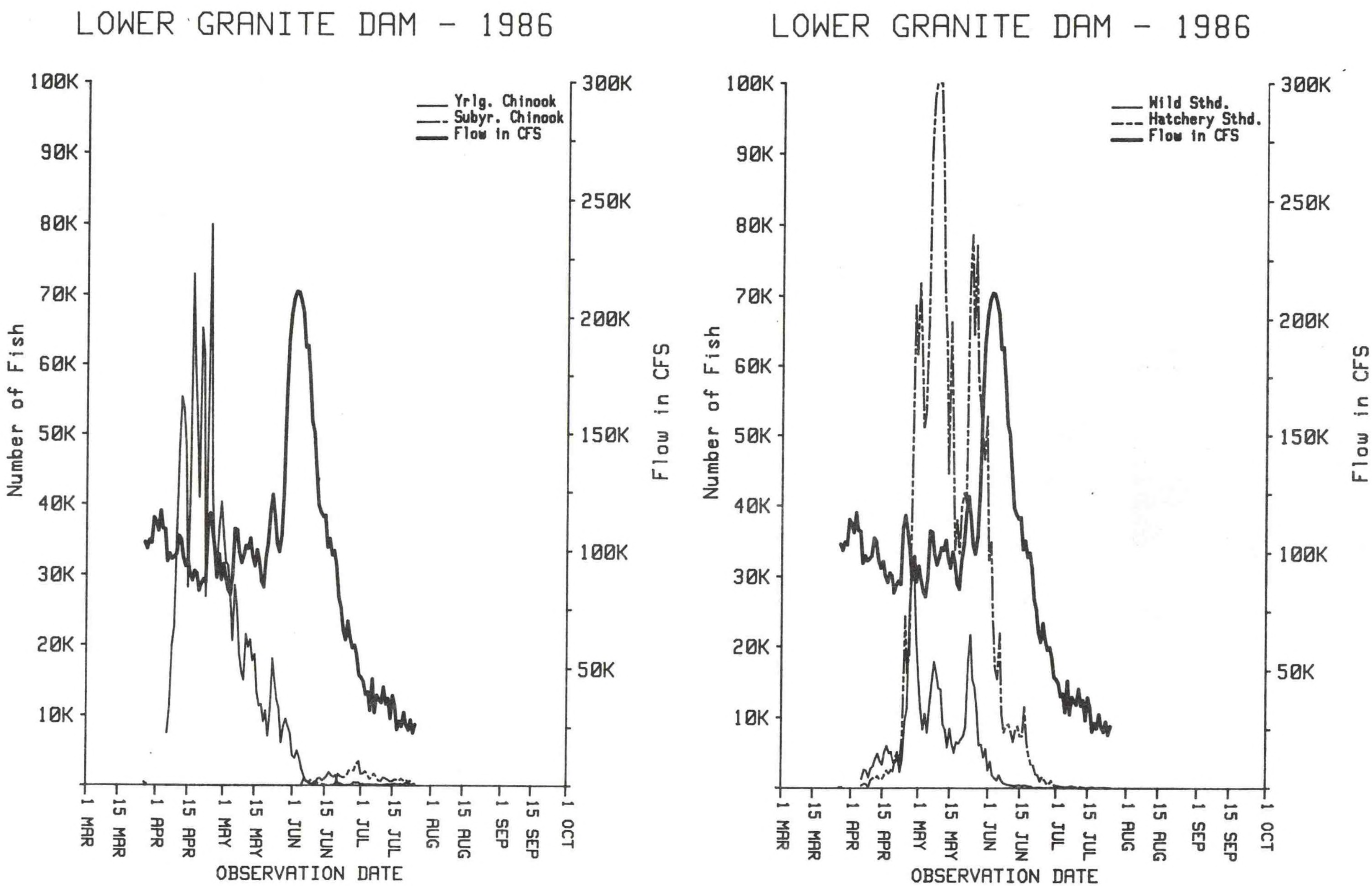
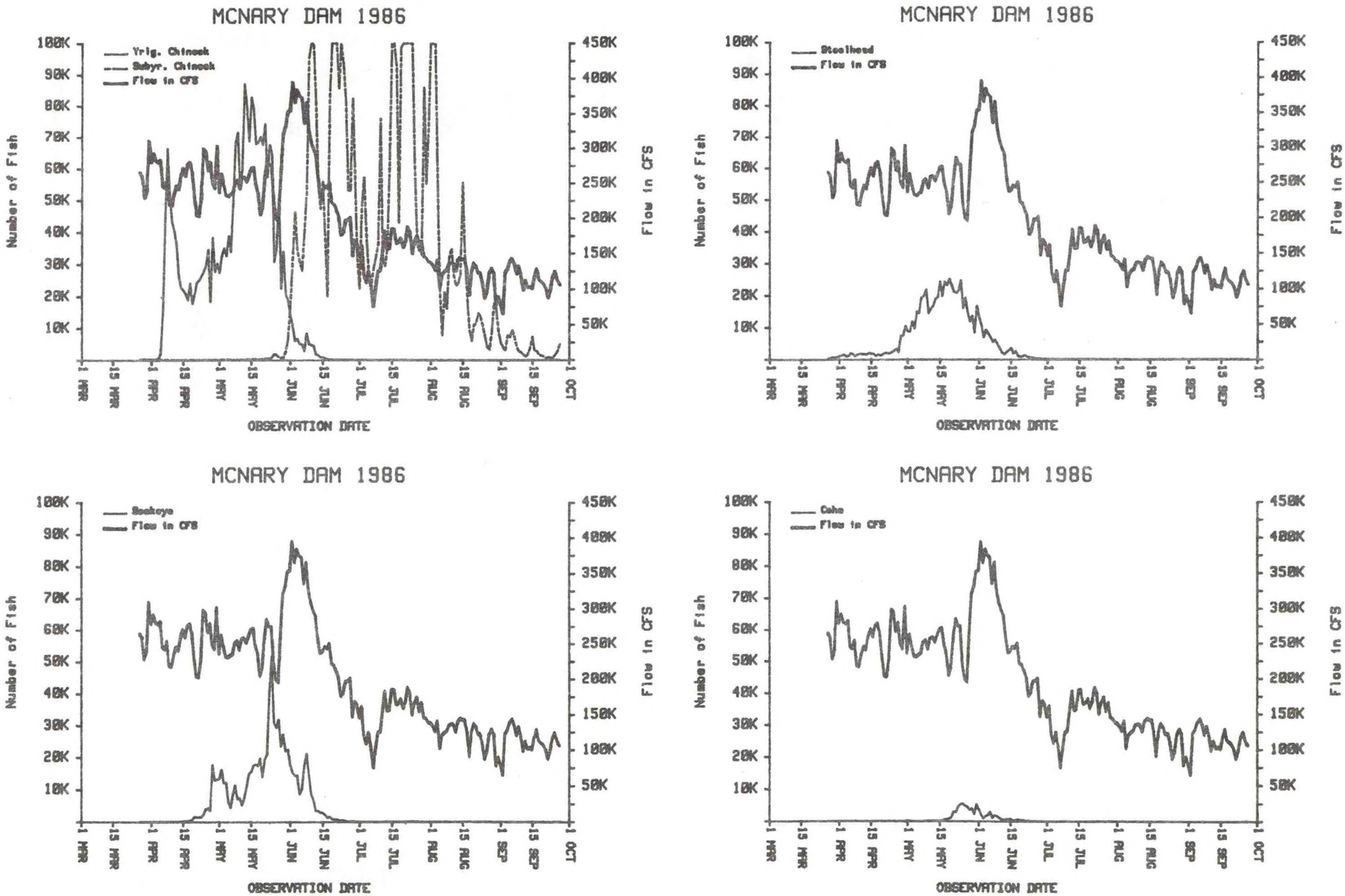


Figure 4. Snake River flows versus daily counts of yearling chinook, subyearling chinook, wild and hatchery steelhead during 1986 at Lower Granite Dam.

Figure 5. Columbia River flows versus daily counts of yearling chinook, subyearling chinook, steelhead, sockeye, and coho during 1986 at McNary Dam.



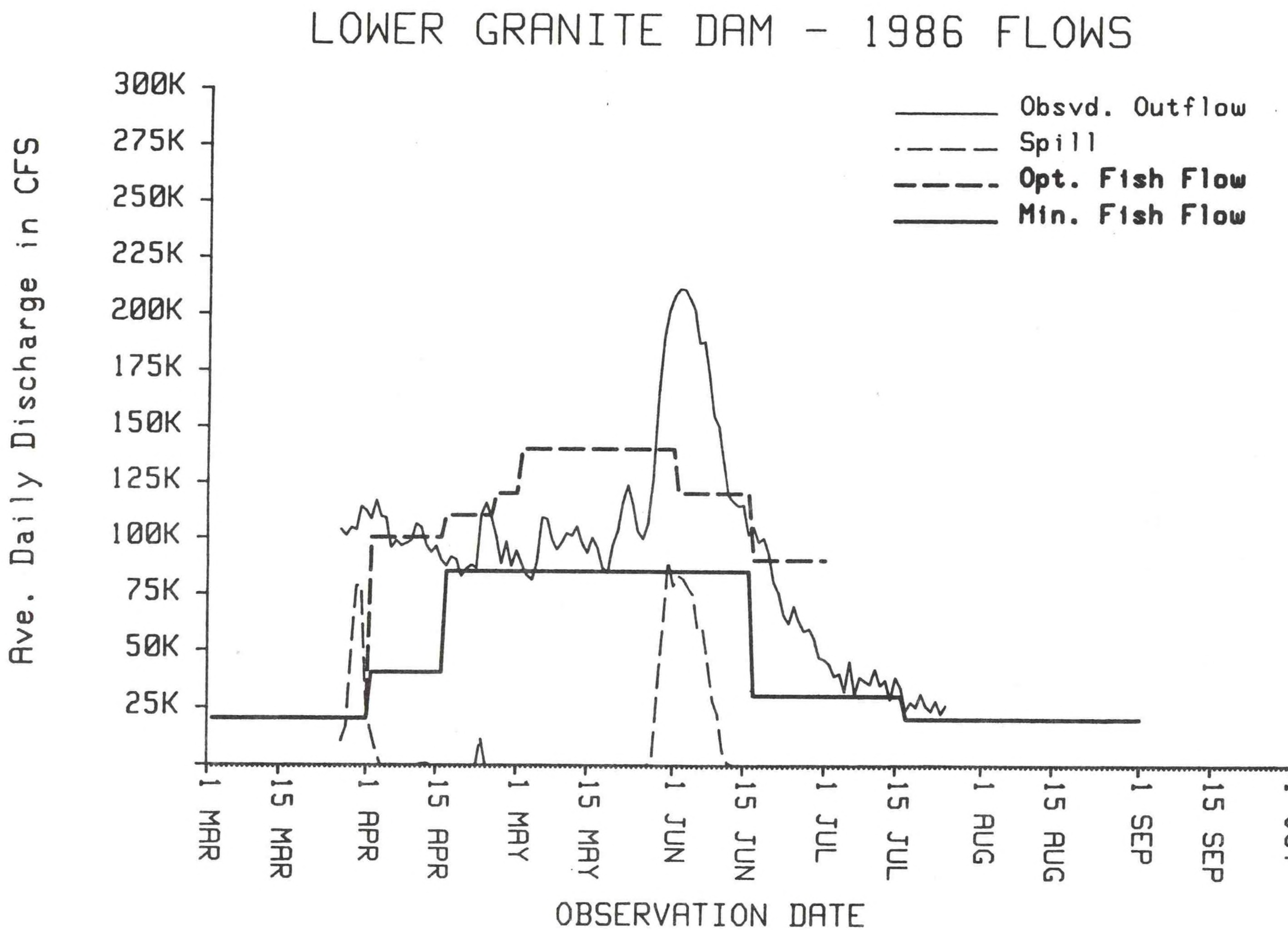


Figure 6. Observed flows and spill at Lower Granite Dam in 1986 and Columbia Basin Fish and Wildlife Council recommended optimum and minimum fish flows.

Columbia River

Observed Columbia River runoff measured at The Dalles for the 1986 water year (October - September) was 132.8 MAF (100 percent of the 1961 - 1980 average). Peak flow occurred at McNary Dam at 395 kcfs on June 1 compared with 255 kcfs on May 9, 1985. The highest spill occurred on June 5 with 180.6 kcfs, 48 percent of the total river flow. Spill occurred at McNary Dam from March 26 thru June 20, with the exception of 7 days. Flows were near or above minimum throughout the migration season (Figure 7).

EQUIPMENT

Transport Vehicles

Present criteria allows holding fish a maximum of two days in a raceway. Fish are loaded into trucks or barges for transport to below Bonneville Dam. Five fish hauling trucks were used prior to and after the peak outmigration period (Figure 8). Rated capacity is 3500 gallons of water per vehicle and, at the present hauling criterion of 0.5 pounds of fish per gallon, a fully-loaded truck contains approximately 1,750 pounds of fish. Driving time varied with distance traveled. An average trip to Bonneville from Lower Granite took about 8 hours, from Little Goose 6.5 hours, and from McNary 3.5 hours.

Four fish barges were on line at various times from April 10 thru August 7 (Figure 8). These periods correspond to the peak spring and summer migration periods. Two older barges, #2127 and #2817, have a capacity of 85,000 gallons of water and inflow of 5,200 gallons per minute (gpm). Two newer barges, #4382 and #4394, have a capacity of 100,000 gallons and inflow of 10,000 gpm. The barge holding criterion is 5 pounds of fish per gpm inflow. This allows a maximum 26,000 and 50,000 pounds of fish for the two older and two newer barges, respectively. Over the past several years, emphasis has shifted to a larger proportion of the total fish being barged rather than trucked (Figure 9).

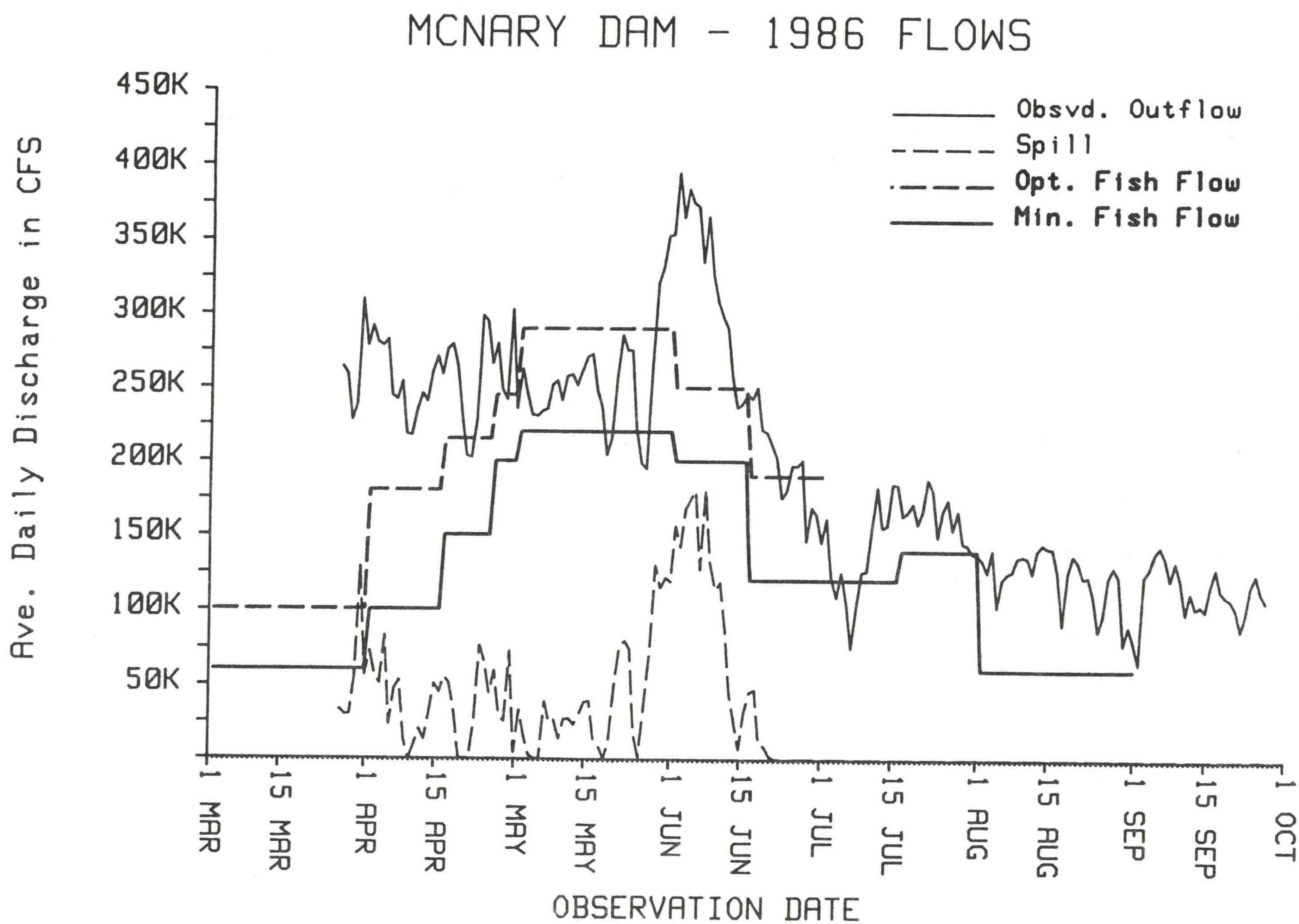
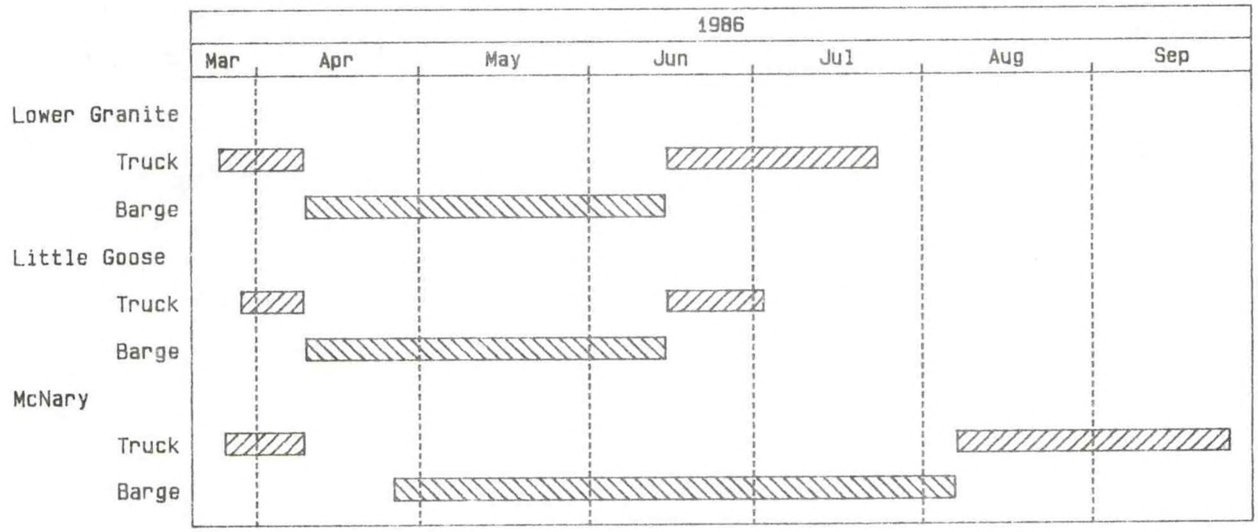


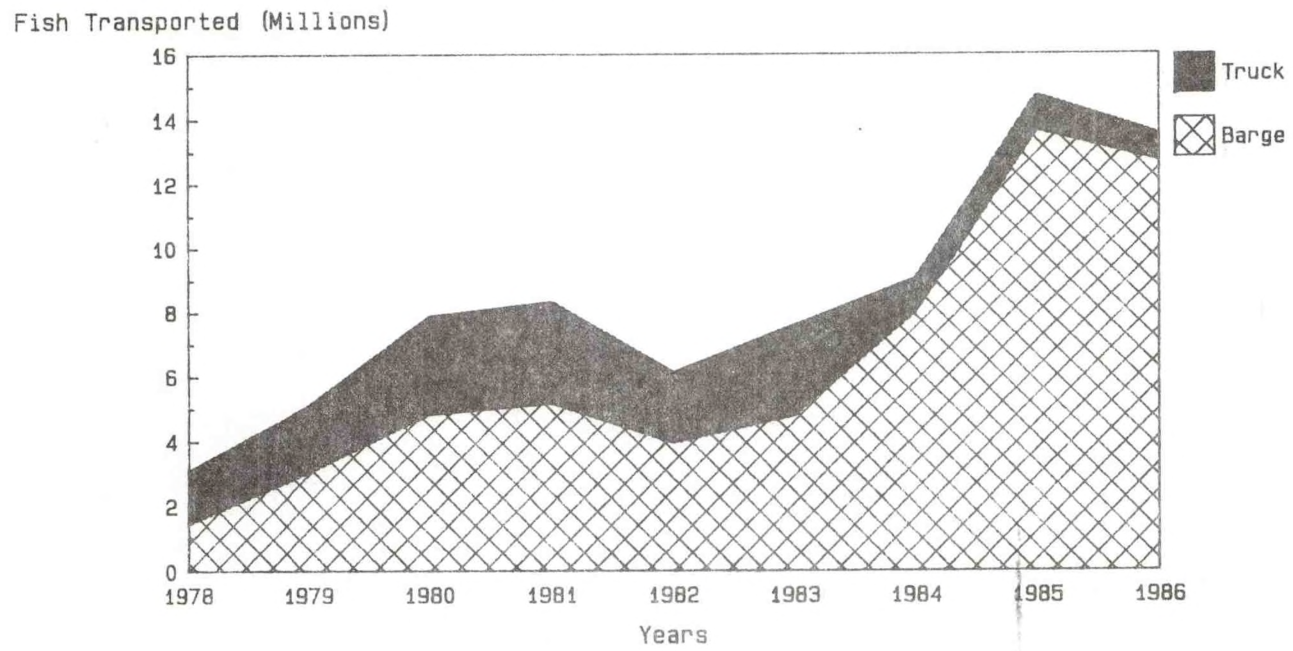
Figure 7. Observed Flows and spill at McNary Dam in 1986 and Columbia Basin Fish and Wildlife Council recommended optimum and minimum fish flows.

Figure 8. Operational dates for barge and truck transportation in 1986.



McNary facility in a full bypass mode from
April 10 through April 27, 1986.

Figure 9. Transport summary of juvenile fish trucked or barged from Lower Granite, Little Goose, and McNary Dams, 1978 through 1986.



Water temperatures in the fish trucks are kept within 3°F of ambient river temperature at the release site. Chillers are used to cool water if necessary during truck transport. Fish barges normally use a flow-through water supply system providing an ambient river temperature throughout the trip.

Wet Separators/Distribution Systems

At Lower Granite Dam, a new sample tank incorporating four pre-anesthetizing compartments was installed (Appendix 14). This affords project workers better control of fish numbers entering the sample building and helps alleviate overcrowding and stress related problems that have occurred there in the past. Impending Little Goose facility reconstruction pre-empted major modification there in 1986. Several minor improvements were made. The McNary upwell was heightened to allow more open (lower pressure) pinch-valve settings and thereby reduce incidence of fish injury, which has previously occurred there.

Submersible Traveling Screens

Screens were installed and operating by March 22. Snake River projects experienced minor screen-related problems in 1986. More frequent incidence of screen damage was seen at McNary, prompting a review of video inspection criteria and a decision to stop using "Christmas tree" clips to fasten screen mesh to link bars in 1987.

JUVENILE OUTMIGRATION

The 1986 season began March 26 and ended September 26. Total juvenile collection at all projects was 17,082,770 of which 13,495,834 were transported. The fishery agencies and tribes continued the policy of bypassing the majority of yearling chinook back to the river, which resulted in 80,963, 32,405, and 3,306,666 juveniles bypassed at Lower Granite, Little Goose, and McNary dams, respectively.

Table 1 presents numbers of juveniles transported by species, date, and mode from each project. Table 2 summarizes by dam juvenile fish transported from 1978 thru 1986. Table 3 summarizes all juvenile fish by transportation mode from 1978 thru 1986.

Estimates of juvenile salmonid numbers arriving at Lower Granite and McNary dams have been made in previous years. The reliability of these estimates has always been questionable, and year-to-year comparisons are of doubtful value because facilities are continually modified and collection techniques improved. Research at Lower Granite has shown that fish guidance efficiency (FGE) is variable over time and by species thus no single FGE is applicable throughout the season. It has also been demonstrated that spill may pass more fish than previously suspected, so the commonly applied 1:1 spill to powerhouse passage ratio may not be accurate. Because no recent research that would provide more dependable population estimates has been conducted we have discontinued the practice of estimating the percentage transported. These had been reported in Tables 4 and 5 in previous FTOT annual reports.

Fish Release Sites

Fish are loaded into trucks or barges for transport to below Bonneville Dam. Trucked fish were released during the spring at Dalton Point, approximately 12 miles below Bonneville Dam or at the release site located on Bradford Island (Photo 1). Releases from the trucks at these two sites during the spring were successful however, during the summer when flows were low, the Dalton Point site was not usable. The Bradford Island site became unusable because of extreme squawfish and gull predation. A third site was located at the boat ramp on Hamilton Island (Photo 2) on the Washington shore and the remainder of the trucked fish were released at this site with apparent success. The barge release site was approximately five miles below Bonneville Dam near the Skamania light buoy.

Table 1. Juvenile transport summary and dates of operation, 1986.

	Trucked	Barged	Total
Lower Granite			
March 27-July 24			
Yearling chinook	32,797	1,539,611	1,572,408
Subyearling chinook	45,193	5,242	50,435
Wild steelhead	6,331	524,022	530,353
Hatchery steelhead	44,005	2,478,633	2,522,638
Sockeye	309	7,033	7,342
Coho	0	84	84
Total	128,635	4,554,625	4,683,260
Little Goose			
March 29-July 3			
Yearling chinook	48,673	645,371	694,044
Subyearling chinook	1,355	1,240	2,595
Wild steelhead	11,538	210,366	221,904
Hatchery steelhead	17,153	1,114,284	1,131,437
Sockeye	669	1,504	2,173
Coho	0	0	0
Total	79,388	1,972,765	2,052,153
McNary			
March 27-September 26			
Yearling chinook	64,309	225,459	289,768
Subyearling chinook	496,335	5,352,212	5,848,547
Wild steelhead	5,354	72,705	78,059
Hatchery steelhead	1,438	265,357	266,795
Sockeye	899	243,371	244,270
Coho	249	32,733	32,982
Total	568,584	6,191,837	6,760,421
Grand Total	776,607	12,719,227	13,495,834

Table 2. Summary by dam of juvenile fish transported, 1978 - 1986.

	Lower Granite	Little Goose	McNary	Total
1978	1,980,600	996,285	82,211	3,059,906
1979	2,367,446	1,453,615	1,247,120	5,068,181
1980	3,830,747	2,282,987	1,740,545	7,854,279
1981	2,730,866	1,464,991	4,112,993	8,308,850
1982	1,851,616	1,234,110	3,003,853	6,089,579
1983	2,368,049	868,937	4,326,013	7,562,999
1984	2,046,020	2,274,307	4,708,632	9,028,959
1985	4,459,438	2,008,980	8,319,074	14,787,592
1986	4,683,260	2,052,153	6,760,421	13,495,834

Table 3. Summary of juvenile fish trucked or barged from Lower Granite, Little Goose, and McNary Dams, 1978 - 1986.

	Trucked	Barged	Total
1978	1,580,724	1,478,372	3,059,096
1979	2,031,212	3,036,969	5,068,181
1980	3,019,232	4,835,047	7,854,279
1981	3,145,980	5,162,860	8,308,850
1982	2,152,901	3,936,678	6,089,579
1983	2,780,487	4,782,512	7,562,999
1984	1,030,026	7,998,933	9,028,959
1985	549,175	14,238,417	14,787,592
1986	776,607	12,719,227	13,495,834

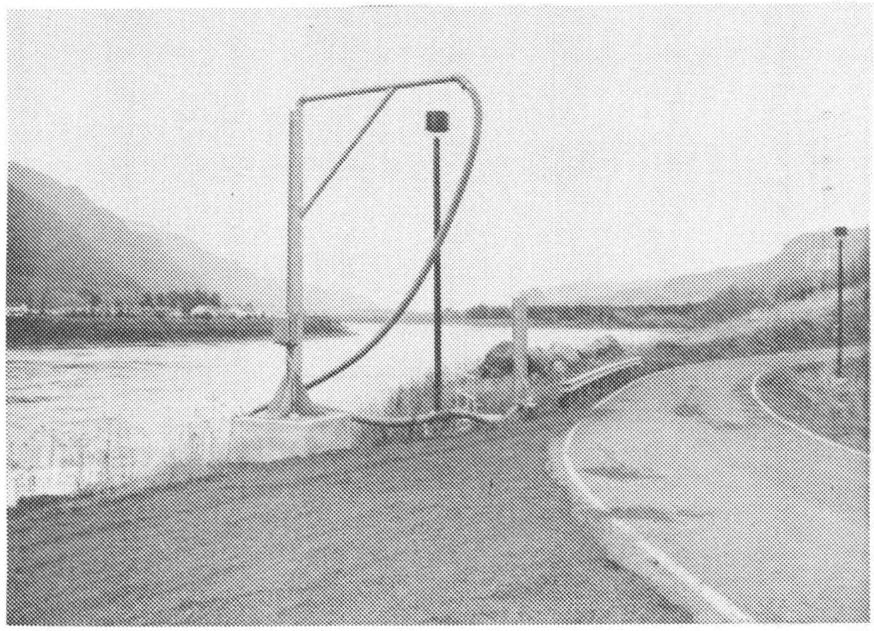


Photo 1. Bradford Island release site.

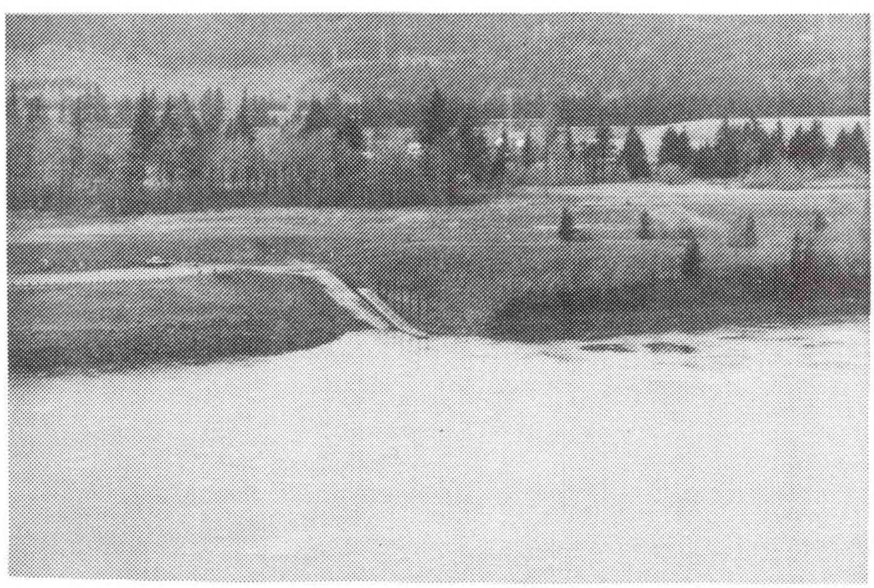


Photo 2. Hamilton Island release site.

Sampling Techniques

A daily random sample, not to exceed the lesser of either 3 percent of the estimated weekly outmigration or 10 percent of the weekly total of yearlings collected and/or bypassed, was taken by varying the sample time.

These fish were counted and examined for species composition, mortality, and marks. A random subsample of 100 fish of each species was taken to determine percent descaling and average length and weight.

TRANSPORT OPERATIONS - LOWER GRANITE, 1986

MODIFICATIONS

A number of pre-season facility modifications were made at Lower Granite. Project workers committed themselves to a major reconstruction of the juvenile sampling system by designing and building a new sample tank (Photo 3). The new tank replaced use of raceway 10, which had been plagued by control problems and often resulted in overcrowding the sample facility. Tank placement next to the sample building allowed close communication between fish sorters/markers and workers crowding fish. The tank's design, two 5,260-gallons compartments with a carrying capacity of 2,600 pounds of fish each, allowed increased flexibility in controlling the number of fish sent to the marking building. Four pre-anesthetizing compartments were located at one end of the tank. Fish entered thru 18-inch vertical knife gates (Photo 4) and were crowded by track-guided screens operated by workers walking along side the tank. Once crowded into the compartments, juveniles were anesthetized with a low concentration of MS-222 or a mixture of benzocaine and alcohol then transferred via gravity flow in a 6-inch PVC pipe to the sorting trough. Workers operated the four compartments in a serial rotation to maintain constant numbers of fish entering the sample room. During the season, spray bars, cover nets, and a metal roof were added to reduce stress on fish.

Additional facility modifications included:

1. The sample building water chillers were replaced and relocated into the main reservoir of the recirculation system. Temperature fluctuations, apparently caused by heat transferred from fish sorters' hands, were effectively eliminated with the new system. Water is now aerated and cooled simultaneously so that temperature differences remain within 3°F of river water.

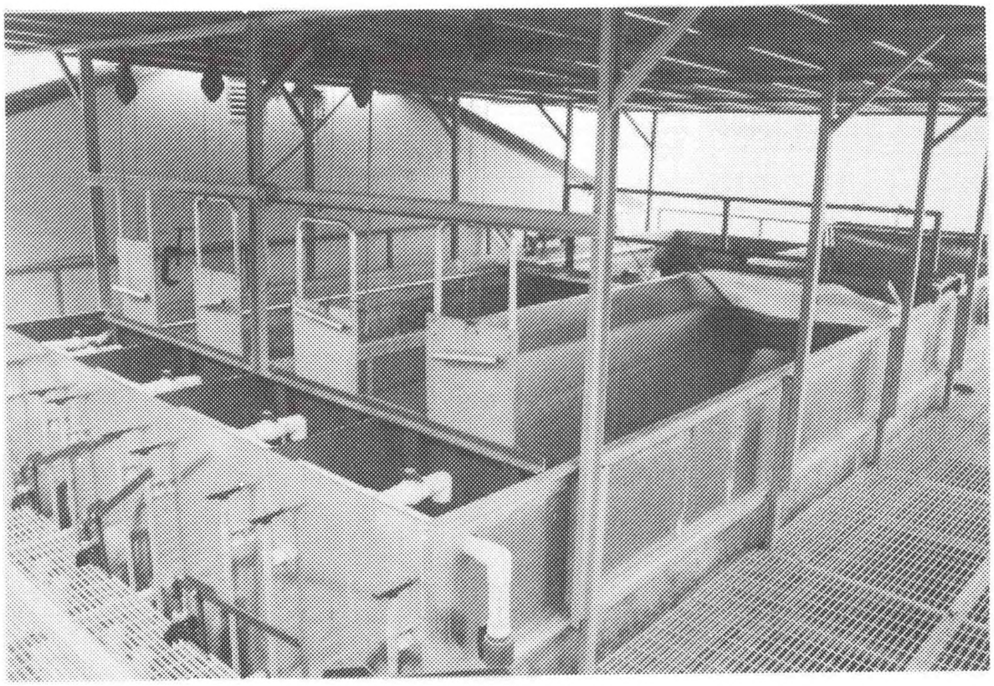


Photo 3. New sample tank at Lower Granite.

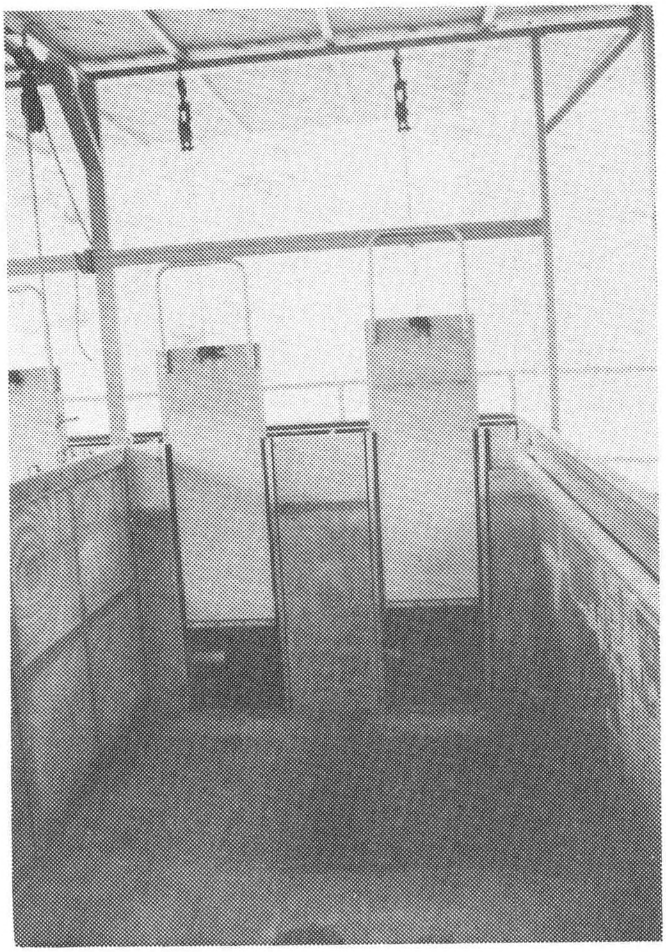


Photo 4. Pre-anesthetizing compartments' knife gates.

2. Passive Integrated Transponders (PIT) tag detectors were installed in the 10-inch sample line and the two loading flumes.

3. Ceiling-mounted lights were installed over the sorting trough to improve conditions for examining fish.

4. The port engine on barge #2127 was replaced with a new turbo engine.

COLLECTION OF JUVENILES

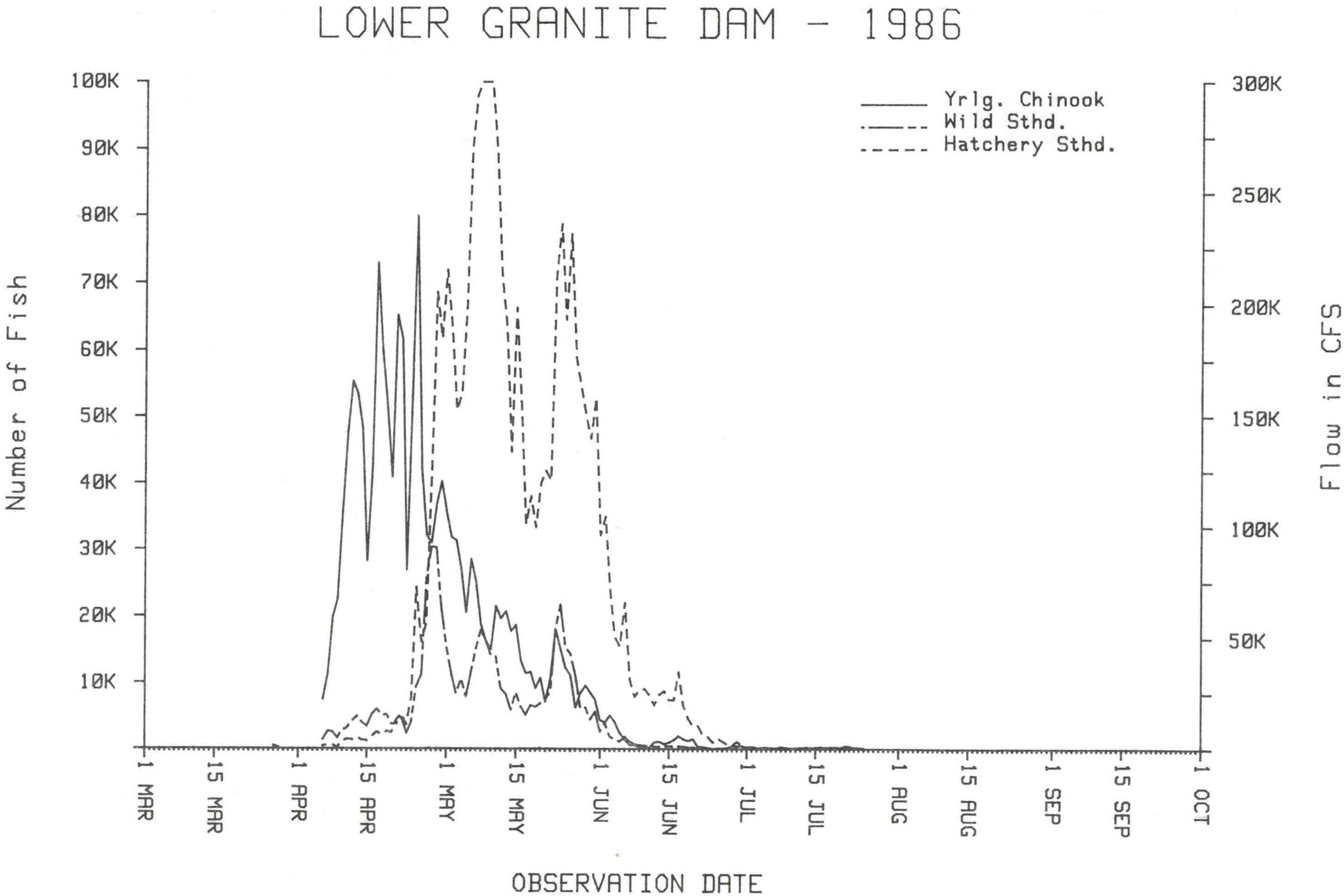
Migration and Collection

An estimated 1,625,352 yearling chinook were collected in 1986 compared to 828,330 and 1,742,244 in 1984 and 1985, respectively. Although fewer yearlings were collected in 1986 (down 7 percent) than in the previous year, totals may have been somewhat higher had there not been an early-April bypass operation (NMFS survival research) and periods of high spill in late May and early June.

Daily collection peaked on May 7 with a total of 152,322 juveniles. Chinook dominated the early collection and peaked on April 24 when approximately 79,895 were collected (Appendix Table 1). Steelhead predominated collection beginning April 26 and peaked May 7 and 8 when about 133,300 were collected each day. Chinook and hatchery steelhead population peaks were separated by approximately 14 days. Chinook migrants and wild steelhead peaked only three days apart, April 24 and 27, respectively (Figure 10).

Chinook became the predominant species again on June 23, and remained so for the rest of the season. This was largely because of a mid-June release of Irrigon Hatchery (ODFW) spring chinook subyearlings in the Grande Ronde River. These fish comprised 70 to 80 percent of the daily collection in late

Figure 10. Daily counts of juvenile yearling chinook, wild and hatchery steelhead collected during 1986 at Lower Granite Dam.



June and July (Appendix Table 1). Approximately 80 percent of the yearling chinook outmigration had been collected by May 9 (Figure 11).

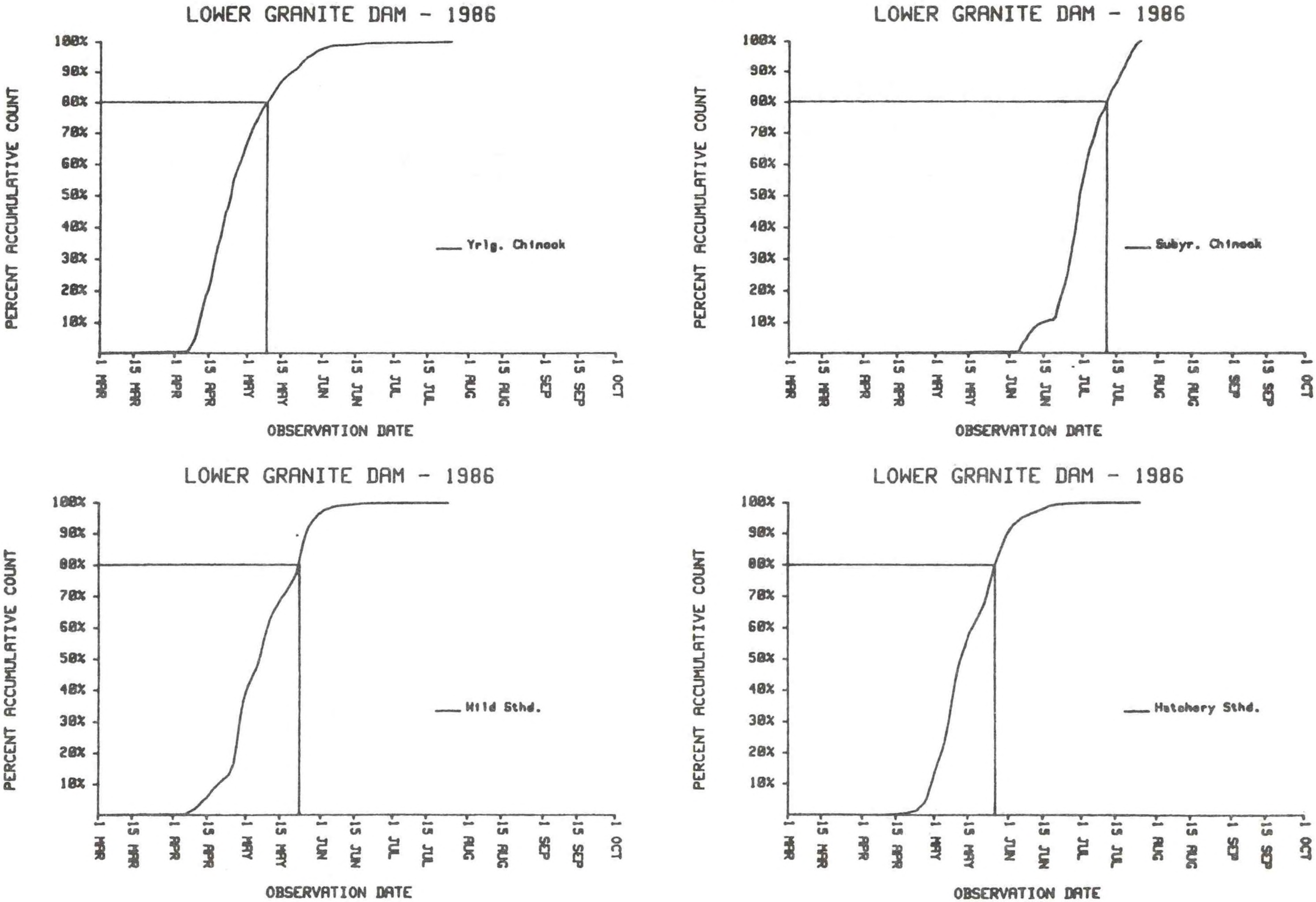
Workers attempting to distinguish yearling from subyearling chinook again experienced difficulty at Lower Granite. Because of the difficulties workers had identifying subyearlings in 1985 based on length (Koski et al. 1986), we attempted a subjective system using body shape and patterns and size of spots during 1986. For the first time in six years, there were no fall chinook released into the Snake river above Lower Granite and project workers were not prepared for the arrival of a large group of small spring chinook subyearling that exhibited a combination of external characteristics common to spring and fall chinook. FTOT attempted to standardize an identification system but, after field observation at Lower Granite, felt that little could be accomplished.

Based on past experience, reliable identification of chinook stocks at Snake River projects does not seem attainable. Therefore FTOT recommends that racial identification attempts be discontinued.

Hatchery steelhead releases in the upper Snake River were adipose clipped and were easily separable from their wild counterparts. Steelhead numbers remained below 10,000 per day until April 23 (Appendix Table 1). Wild steelhead peaked April 27, when 30,368 were collected. Hatchery steelhead peaked on May 8 (117,120) during a 3-day period when more than 100,000 were collected each day. Total steelhead collection for the season was estimated at 3,089,551 and the hatchery and wild components were 82 and 18 percent, respectively. Eighty percent of wild steelhead had been collected by May 21 and 80 percent of hatchery juveniles by May 26 (Figure 11).

Estimates of chinook passage percentile, needed to trigger maximized juvenile collection and transport, were again provided by the Fish Passage Center (FPC). The estimate was based on the last five years' trigger dates and the ratio of yearling chinook migrants to steelhead. This method indicated that approximately 80 percent of the yearling chinook had passed by

Figure 11. Time frame when 80 percent of yearling chinook, subyearling chinook, and steelhead were collected at Lower Granite Dam during 1986.



May 7. As in the previous year, the trigger process was largely academic at Lower Granite since no spill occurred until flows exceeded powerhouse capacity.

An estimated 7,410 sockeye migrants were collected at Lower Granite (Appendix Table 1). This compares to 11,952 and 6,467 juveniles in 1984 and 1985, respectively. Only 85 coho juveniles were collected.

Workers observed a record 8,309 steelhead adults on the separator. The majority appeared to be kelts, but some were unspawned and may have been part of a late-migrating population (7.0 percent of the 1985-86 steelhead run) that cross the Snake projects during the spring months. Workers also observed 198 chinook adults on the separator. All adult fish were returned to the tailrace.

Unlike the previous two transport seasons, there were no post-season sampling programs at Lower Granite.

Transportation

An estimated 4,773,941 juveniles were collected during the 1986 transport season (Appendix Table 1). Approximately 4,554,625 (97.3 percent) migrants were barged while 128,635 (2.7 percent) were trucked (Table 1). Daily truck and barge summaries are listed in Appendix Tables 2 and 3. Marked research fish used for transport evaluation were included in transport totals and accounted for 89,947 and 61,384 marked chinook and steelhead, respectively. Both groups were fin clipped, freeze branded, and coded wire tagged.

Yearling chinook accounted for 34 percent of the total collection; steelhead accounted for 64.7 percent. An estimated 18.0 percent of the steelhead collected were wild migrants. Subyearling chinook accounted for 1.1 percent of the total.

Truck transport started on March 27 but was curtailed for the next nine days during bypass research. Juveniles were hauled by truck again on April 6, then barging began (Figure 8). The first barge left the project on April 10, the second on April 14, and then every other day until April 28. Daily barging was initiated on April 28 and continued through June 1. Alternate-day barging resumed on June 3 and operated until June 15 when trucks were brought back into operation for an additional 29 days (June 16 to July 14).

Approximately 25,079 juveniles were transported during the early trucking phase, accounting for 1.2 percent of yearling chinook and 0.2 percent of steelhead. The early trucking phase accounted for 0.5 percent of the total transported from Lower Granite. Approximately 97.9 percent of the yearling chinook, 98.3 percent of the hatchery steelhead, 98.8 percent of wild steelhead, and 10.4 percent of the subyearling chinook were barged.

During the late trucking phase, 103,566 juveniles (80.5 percent of those trucked) were hauled. Approximately 12.8 percent were yearling chinook, 43.6 percent subyearling chinook, 41.3 percent hatchery steelhead, and 2.0 percent wild steelhead. These fish accounted for 0.8 percent, 89.6 percent, and 1.5 percent of yearling, subyearling, and combined steelhead, respectively.

Bypass

During the 1986 collection period, March 25 thru July 24, a total of 80,963 juveniles were bypassed. The bulk of these were research fish used as controls for transport evaluation tests carried out by NMFS. Approximately 50 percent of the marked yearling chinook and steelhead (89,947 and 61,384, respectively) were released back into the Snake River after being trucked below Little Goose. Bypass totals indicated that 48,645 yearling chinook, 20,813 hatchery steelhead, and 11,502 wild steelhead were returned to the river. Approximately 406 chinook equipped with radio transmitters were released in the forebay by NMFS workers. They also equipped 1,521 yearling chinook with PIT tags to check reliability of the detection system installed in the distribution flumes.

Unfortunately, no estimates are available to account for juveniles bypassed during NMFS's survival (bypass-spillway-powerhouse) investigation (March 27 thru April 4). During this study juveniles were bypassed via the direct-load barge line and no sampling took place.

Several separator malfunctions resulted in bypass conditions. The first occurred on April 12, when the juvenile separator flooded momentarily (operator gate malfunction) and an estimated 114 fish were washed into the river. On April 23 makeup water gates, which help control water level in the powerhouse gallery, began malfunctioning and resulted in rapid surging in the upwell. In an attempt to correct the problem, both gates were closed on April 24 and could not be reopened. This caused the water level in the gallery to drop below normal. As a result, a waterfall condition occurred in the bypass downwell at the gallery's south end. This entrained air and resulted in a supersaturated water condition. At the same time, violent surging forced upwell water over the top of the containing walls, down across the separator, and dislodged separator bars. It is not known how many fish were bypassed during the two hours it took to repair the damaged separator.

FISH CONDITION

Descaling

Juvenile descaling rates were measured daily at the facility sample tank. Descaling rates were not taken from gatewell samples during 1986. Descaling criteria used in 1985 were continued, including the "type-9" category (Koski et al. 1986). Overall fish condition remained good during the transport season, but some groups demonstrated higher descaling levels during peak river flows. Weekly yearling chinook descaling rate averaged 3.7 percent. The slight increase observed over the previous season's average (Table 4) was most likely an artifact of the higher flows and trash levels. The "type-9" descaling category comprised about 0.6 percent of the season's total for yearlings. Hatchery steelhead descaling averaged 4.7 percent, an increase of 0.9 percent from 1985. The "type-9" descaling comprised 0.4 percent of the season's weekly average and was seen only during the middle of the steelhead migration. Weekly average ranged between 1.9 and 7.0 percent and there was no apparent relationship between higher descaling rates and increased flows/debris. Wild steelhead descaling remained low all season with an average of 1.8 percent, up 0.8 percent from last year. The "type-9" category comprised less than 0.1 (0.03) percent of the average.

Table 4. Average seasonal descaling rates for juvenile chinook and steelhead sampled at Lower Granite facility, 1981-1986.

	Percent Descaled			
	Chinook		Steelhead	
Year	Yearling	Subyearling	Hatchery	Wild
1981	15.5		16.8	
1982	8.8		10.8	
1983	3.0		4.1	
1984	3.0		2.3	
1985	1.9	2.1	4.2	1.1
1986	3.7	-	4.7	1.8

Mortality

Seasonal mortality was extremely low and virtually identical to levels measured in 1985 (Table 5). Overall facility mortality for all species was 0.24 percent, the lowest recorded at the project. Mortality remained low until mid-July, when rising water temperatures approached 70°F. Unlike the previous year, facility mortality in 1986 included losses observed on the transport barges during the initial two hours after departing Lower Granite. Daily collection mortality for all species appears in Appendix Table 1.

Total chinook facility mortality was 0.3 percent (Table 5). Yearling and subyearling chinook mortality were 0.3 and 2.3 percent, respectively. Combined steelhead mortality was 0.1 percent and levels for hatchery and wild steelhead were 0.2 and less than 0.1 (0.03) percent, respectively. Average mortality was lowest during May and highest in July. Average mortality during the final week of collection was over 20 percent and approximately 75 percent of the yearly total subyearling chinook mortality occurred then also.

Table 5. Facility mortality rates at Lower Granite, 1980-1986.

Species	1986	1985	1984	1983	1982	1981	1980
Total chinook	0.3	0.3	0.5	0.7	0.8	0.7	0.6
Yearlings	0.3	0.3	0.4				
Subyearlings	2.3	2.3	0.7				
Total steelhead	0.1	0.2	0.1	0.2	0.1	0.1	0.3
Hatchery	0.2	0.2					
Wild	<0.1	<0.1					

FACILITY OPERATIONS AND MAINTENANCE

Debris/Trash Racks

Higher flows in 1986 resulted in normal debris accumulations in the Lower Granite forebay. The permanent trash boom again proved effective in preventing floating debris from entering the juvenile bypass-collection system. The trash collection in the forebay reached a maximum by mid-June, when approximately 18 acres had accumulated. Project workers periodically removed floating trash during the transport season, but the bulk of the material had to wait until after the migration when more time could be devoted to trash operations. Removal was completed by September 11.

The trashracks were initially raked prior to STS installation and again on April 15 and 16. Gatewells were dipped for trash accumulation when 25 percent or more of the surface was covered. The large amounts of debris experienced in 1986 had little effect on collection facility operation. Hatch covers installed on the direct loading line allowed workers to inspect it and prevent debris collection that had been a constant problem during the previous season.

Submersible Traveling Screens

No major modifications were made prior to the transport season since all STSs at Lower Granite had been retrofitted with improved components by the start of the 1985 season (Koski et al. 1986). STSs were inspected by FTOT prior to the transport season and installed in units 1 and 2 on March 11, units 3 and 4 on March 12, and in units 5 and 6 on March 13. Screens were cycled, running 4 minutes and off 20, until June 4. At this time, average chinook length had dropped to below 115 mm and screen operation switched to continuous run for the next 16 days. STSs were placed back on cycling mode on June 20 for the remainder of the season.

The first STS video inspection occurred on April 15 and 16. Two screens were thought to be in need of repair and pulled on April 17. One was inspected and no problems were found. The other required minor mesh repair around two attachment clips. Workers inspected the STSs again on May 13-15 and for a final time on June 16 and 17. No problems were located during either inspection. However, on June 19 project workers suspected unit 4C STS had stopped operating. Inspection revealed that all crossbars had been severely bent and the mesh separated from the frame. The damaged screen was replaced with a spare on the same day.

Wet Separator/Distribution System

The juvenile separator operated without major problems except for those associated with maintaining smooth operation of the bypass gallery. Workers had difficulty maintaining constant gallery water levels early in the season when the north shore make-up water gate failed to operate automatically. Several attempts were made to repair and modify the activator assembly, but these efforts worked only temporarily. As previously mentioned, the south-shore make-up gate failed on April 23 (at a time when the north gate was inoperative as well). The problem was not readily repairable since threads on the shaft adjustment nut were stripped. On April 24, the gate slammed shut. Because the condition resulted in an abnormally low gallery water level, air was entrained into the bypass pipe when water from the gallery began plunging into the downwell. At the upwell, entrained air caused a small number of fish to be flushed out over the containment walls and onto the roadway below, and supersaturated the entire system with dissolved gases. Gas supersaturation problems were minimized however since juveniles were being directly loaded onto a transport barge. Research fish (NMFS PIT tag studies) being held in one of the raceways at the time experienced severe mortality before the problem was corrected. Violent surging caused by entrained air also resulted in strong velocities in the juvenile separator and many of the PVC bars were forced out of their holding frame. Workers quickly corrected the situation and added welds to the metal frame to prevent similar dislodging in the future.

An hydraulic jack was used to lift the south gate, which increased the flow in the downwell and reduced the extreme surging at the upwell. Several days later the worn adjustment nut was replaced.

Direct Barge Loading Operations

In 1986 barging operations, 55.4 percent of juveniles were direct-loaded. This compared to 74.0 percent in 1985. There were several reasons for reduced direct-loading. First, workers on the night shift were not authorized to move the direct-load line from one compartment to another by themselves; second, direct-loading procedures were not possible during periods of major spill since it was too dangerous to tie up barges at the loading dock under turbulent tailrace conditions. Direct-loading was initially attempted during spill conditions and several docking cables were broken. During the 1985 season, there were no periods of spill and this allowed a greater proportion of the barged fish to be direct loaded.

RECOMMENDATIONS FOR 1987

1. In order to maintain direct-loading options at all times during the barging phase of transport, all project workers should receive specialized training enabling them to operate equipment necessary for barge loading (hydraulic boom, etc.).

2. Classify chinook as a single race at Snake River projects.

3. Enlarge gatewell orifices to 10" and install air-operated actuators.

4. Replace electronic fish counters and tunnels with a new and improved system.

5. Construct a direct-load system for the barges that will eliminate safety hazards of handling hose (will be coordinated with all three projects).

6. Install clear or translucent pipe from the new sample holding tank into the marking building to allow closer observation of fish passage.

7. Cut off the railing around the compartments on the old barges and cover them with grating. Cut existing grating on the new barges into smaller, more manageable sections.

Note: Due to a sample rate conversion error, the Lower Granite daily collection, trucking, and barging data reported last year (Koski et al. 1986) was incorrect. Appendices 15, 16, and 17 present corrected data.

TRANSPORT/BYPASS OPERATIONS - LITTLE GOOSE DAM, 1986

The 1986 juvenile fish transportation season at Little Goose Dam continued in a rather uneventful manner, similar to the trend established in recent years. The juvenile outmigration pattern mirrored that at Lower Granite but tapered off earlier than expected and resulted in facility shutdown on July 3. Descaling rates for both chinook and steelhead were up slightly from 1984 and 1985 levels, however, mortality rates for both species were the lowest ever recorded.

MODIFICATIONS

Impending construction of a new facility has pre-empted major modifications at Little Goose Dam. Several minor improvements were made as described below.

1. An air actuator for operating orifice gates was tested in anticipation of installing a full compliment prior to the 1987 season (Photo 5).

2. Two sections of worn inclined screen were replaced.

3. Additional supports were installed beneath the perforated plate leading into the separator to improve water flow patterns and separation of steelhead and chinook juveniles.

4. Pins were installed on the separator dump gate handles to prevent accidental opening.

5. A portable flume was built for raceway 1 to allow the raceway loading lateral Y in the sample line to be completely extended (Photo 6). This prevented fish from inadvertently entering the bypass sample tank.

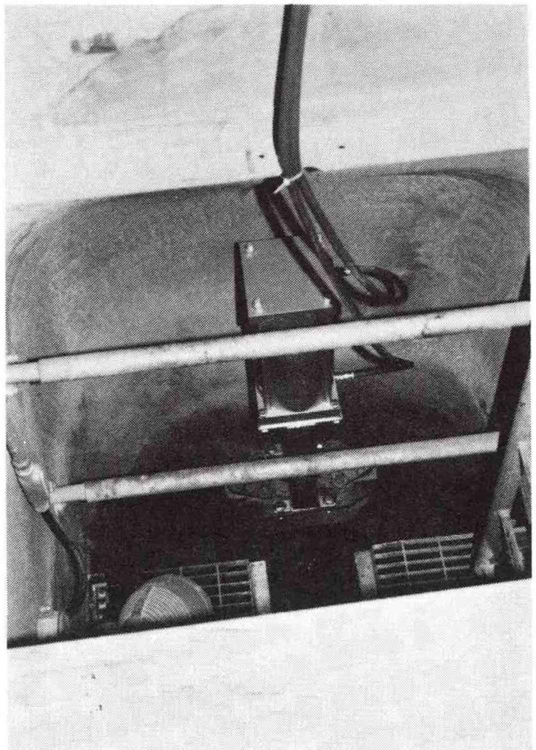


Photo 5. New air actuator for operating orifice gates at Little Goose Dam.

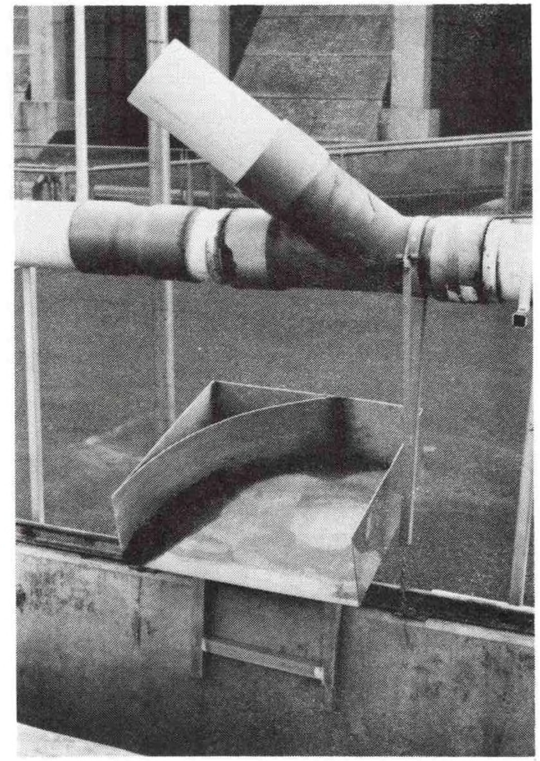


Photo 6. New portable flume for raceway loading lateral Y in the sample line at Little Goose Dam.

6. New, translucent electronic counting tunnels were installed. They provide an increased ability to observe fish exiting the separator and improve debris detection.

7. A separate water-elimination valve was installed in the distribution flume to improve water depth control.

8. The bypass sample tank drain was enlarged and connected to the headbox making it independent of the transport sample tank drain.

9. Larger air actuators for the raceway exit valves were installed. This allowed gates to be fully raised.

10. Nets were installed to prevent fish from jumping behind the raceway head screens.

11. Lights were installed on the crowder and above the distribution flume to facilitate night operations.

COLLECTION OF JUVENILES

Migration and Collection

Little Goose facilities were watered up on March 29 and operated in various modes until July 3. From March 20 until April 9, the facilities were maintained in a bypass mode to accommodate a NMFS research program. Raceways were watered up on April 3 so that steelhead captured in gatewells by NMFS workers could be held for transport. At the conclusion of their project on April 9, the collection facilities were operated to bypass chinook and transport steelhead. Low river flows (less than 100 kcfs) prompted maximized collection and transport beginning April 11. This operation continued until collection ceased on July 3 because of dwindling fish numbers.

A total of 2,093,232 juvenile salmonids were collected in 1986 (Table 6 and Appendix Table 5), a decline from 1984 (23.5 percent) and 1985 (7.8 percent) collections. This may be attributed to the record high collection at Lower Granite that reduced numbers available for collection at Little Goose, no release of hatchery fall chinook upstream of Little Goose, and/or possible under estimation of fish counts because fish counters malfunctioned early in the season (see Distribution/Sampling System, page 45).

Table 6. Summary of collection at Little Goose Dam, 1981 - 1986.

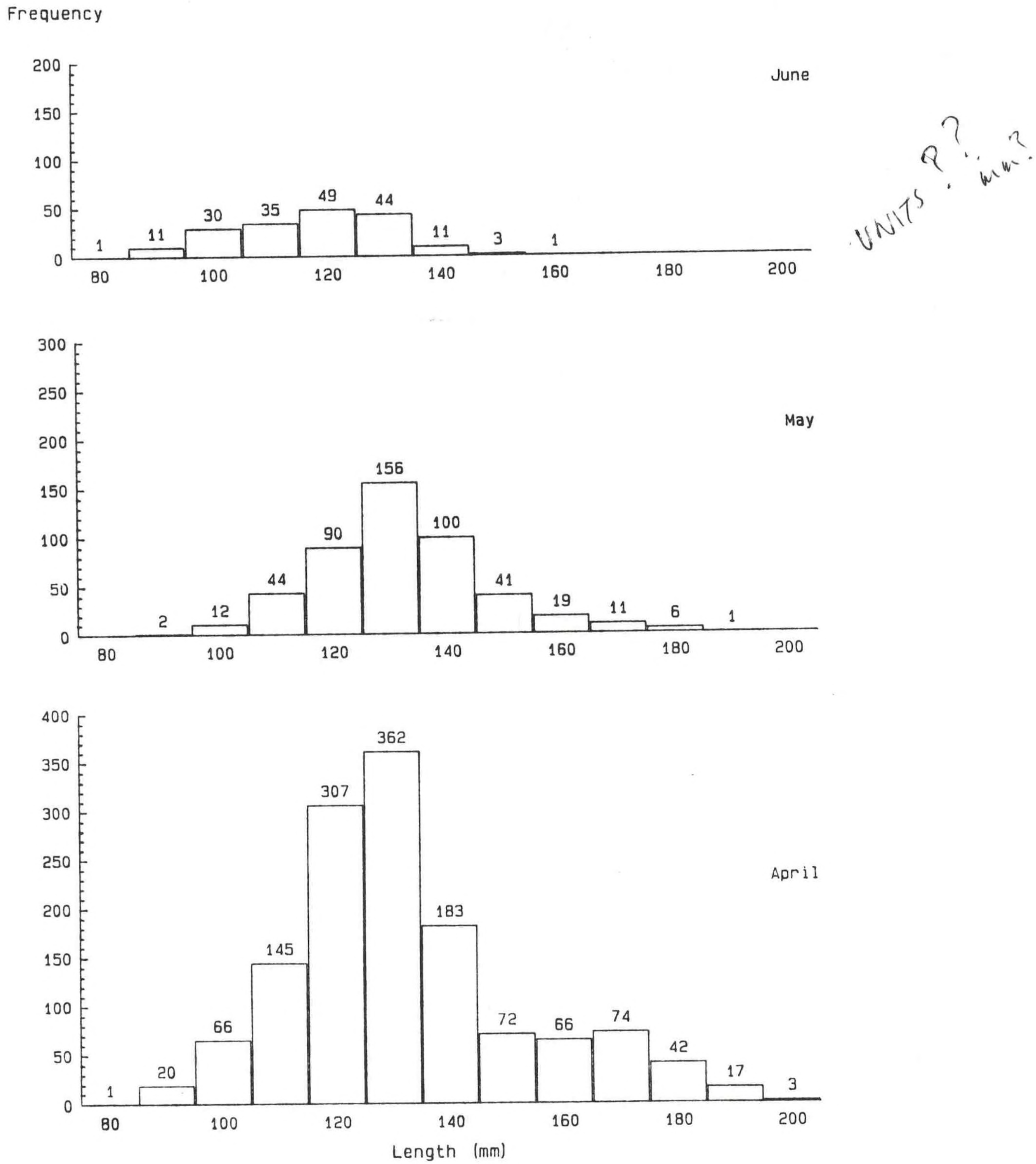
	Number of Fish Collected					
Species	1986	1985	1984	1983	1982	1981
Chinook	725,511	1,142,815	1,030,253	303,034	351,716	590,499
Steelhead	1,365,409 1/	1,124,083	1,695,494	689,119	908,541	899,739
Sockeye	2,312	3,721	11,677	3,432	5,031	
Coho	0	0	0	63	215	
Total	2,093,232	2,270,619	2,737,424	995,648	1,265,503	1,490,188

1/ Includes 220,973 wild and 1,144,436 hatchery steelhead

Species composition was 725,511 (34.6 percent) chinook, 1,365,409 (65.2 percent) steelhead, and 2,312 (0.1 percent) sockeye. Some 722,867 (99.6 percent) of the chinook were yearlings while 2,644 (0.4 percent) were subyearlings. Total chinook collection was down 36.5 percent from 1985 and sockeye collection was even poorer with a 37.9 percent reduction. Hatchery versus wild steelhead breakdown was 1,144,436 (83.8 percent) to 220,973 (16.2 percent). In contrast to chinook and sockeye, steelhead collection was 17.7 percent above the 1985 total.

Yearling and subyearling chinook were distinguished primarily on the basis of size. Although less subjective than using other characteristics (e.g. relative pupil size, spot size, and plumpness), project workers found this criterion unreliable because of its variability, particularly as the season progressed (Figure 12). Adipose fin clips, fin condition, and brands were used to identify wild and hatchery steelhead.

Figure 12. Length frequency of chinook collected at Little Goose Dam, 1986.



Peak daily collection occurred on April 26 for yearling chinook (49,380), April 29 for wild steelhead (15,615), May 10 for hatchery steelhead (43,672), and June 6 for subyearling chinook (453). Sockeye peaks occurred on April 24 (149) and June 8 (232). The initial peak was probably Dworshak kokanee and the latter group natural migrants.

The yearling chinook peak occurred about a week earlier than in 1985, the wild steelhead peak was a week later, and hatchery steelhead peaked within a day of that seen in 1985. The subyearling chinook peak was more than a month earlier than in 1985 while the sockeye peaks compared with May 4 in 1985. See Table 7 for a comparison of peak collection days in previous years.

Table 7. Summary of peak collection days at Little Goose Dam, 1981 - 1986.

Year	Chinook			Steelhead			Sockeye		
	Peak Day		Total	Peak Day		Total	Peak Day		Total
1981	5/5	(66,817)[1]	590,449	5/5	(171,817)	899,739			
1982	5/2	(20,723)	351,716	5/9	(37,619)	908,541	4/21	(267)	5,031
1983	4/23	(20,990)	303,034	5/11	(37,006)	689,119	6/2	(456)	3,432
1984	4/26	(38,828)	1,030,253	5/18	(95,652)	1,695,494	5/27	(1,176)	11,677
1985	5/4	(82,987)	1,142,815	5/9	(71,637)	1,124,083	5/4	(342)	3,721
1986	4/26	(49,380)	725,511	5/10[2]	(46,625)	1,365,409	6/8	(232)	2,312

1/ Number shown in parentheses is collection total for peak day.

2/ This date was also peak for hatchery steelhead (43,672). The daily total of 71,637 includes 2,953 wild steelhead. Wild steelhead peaked on April 29 (15,615).

Transportation

A total of 2,052,153 juvenile salmonids (98.0 percent of total collection) were transported in 1986. Even though collection was 7.8 percent lower this year than in 1985, more fish were transported as a result of the reduced bypass. Total number trucked was 79,388 (3.8 percent) compared to 1,972,765 (96.2 percent) barged. Species composition for both barge and truck transport modes is shown in Table 1. A comparison of transport modes is shown in Figure 9.

The first truck was dispatched from Little Goose Dam on April 5, followed by another on April 7. Both were loaded with steelhead from NMFS gatewell dipping. Barging commenced on April 10 and continued through June 16 on the same schedule as previously described for Lower Granite. Two trucks were loaded on April 17 and one on April 18 after a section of barge loading line ruptured. Trucking resumed on June 17 with alternate-day departures until July 3, when facility operation ceased.

Bypass

From March 29 to April 8, all chinook (24,488), sockeye (118), and some steelhead (5,255) captured in gatewells by NMFS workers were bypassed (Table 8 and Appendix Table 8). Between April 9 and 11 the collection facility was operated in a bypass mode, resulting in an additional 2,482 yearling chinook, 61 steelhead, and 1 sockeye being bypassed. Of the total collection, only 26,970 (3.7 percent) yearling chinook, 33 ($\leqslant$0.1 percent) wild steelhead, 5,283 (4.6 percent) hatchery steelhead, and 119 (5.1 percent) sockeye were bypassed in 1986 (1.5 percent of total collection). This was because low river flows prompted maximization of collection and transportation on April 12 and, by the time flows increased and remained above 100 kcfs, the yearling chinook outmigration had passed Little Goose Dam.

Table 8. Summary of fish bypass at Little Goose Dam, 1986.

Species	Number of Fish	Percent of Total Bypassed	Percent of Total Collection
Yearling Chinook	26,970	83.2	3.7
Subyearling Chinook	0	0.0	0.0
Wild Steelhead	33	0.1	0.1
Hatchery Steelhead	5,283	16.3	4.6
Sockeye	119	0.4	5.1
Total	32,405	100.0	1.5

As in previous years, a large number of adult salmonids passed through the collection system and had to be removed from the separator (Table 9). In 1986, 3,023 steelhead adults, 381 kelts, and 142 chinook adults were released into the tailrace.

Table 9. Summary of adult steelhead, kelts, and adult chinook removed from juvenile fish collections facilities at Little Goose Dam, 1984 - 1986.

	Steelhead	Kelts 1/	Chinook
1984		2,557	
1985		3,298	
1986	3,023	381	142

1/ Data compiled for 1984 and 1985 lumped all adult fallback fish as kelts.

FISH CONDITION

Descaling

Average seasonal descaling rates in 1986 rose slightly for the second year in a row with chinook at 8.8 percent, wild steelhead at 2.5 percent, and hatchery steelhead at 4.9 percent (Table 10). Although the increase is small, the trend will be monitored in 1987. Average weekly descaling rates were 4.0 to 16.1 percent for chinook and 0.0 to 9.7 percent for steelhead (Table 11). Wild steelhead ranged from 0.0 to 4.6 percent compared with 0.0 to 10.4 percent for their hatchery counterparts.

Table 10. Average percent facility descaling for chinook and steelhead collected at Little Goose Dam, 1981 - 1986.

Year	Chinook	Hatchery	Wild	Steelhead
1981	15.4			16.8
1982	26.0	24.9	6.1	21.6
1983	18.4	8.6	4.2	7.8
1984	7.1	3.5	1.1	2.9
1985	7.9 (0.4)[1/]	3.4 (0.6)	1.5 (0.0)	3.1 (0.3)
1986	8.8 (0.6)	4.9 (0.7)	2.5 (0.2)	4.4 (0.6)

1/ Numbers in parenthesis show juveniles descaled according to the "9" classification.

Table 11. Summary of weekly chinook and steelhead descaling rates at Little Goose Dam, 1986.

Date	Percent Descaled			
		Steelhead		
	Chinook	Hatchery	Wild	Hatchery-Wild
4/10-14	6.1 (0.2)1/	4.0	1.2	1.8
4/15-21	9.0 (0.5)	6.8 (1.0)	2.8	3.4 (1.1)
4/22-28	10.6 (0.6)	4.3	3.8 (0.3)	4.1 (1.1)
4/29-5/5	13.7 (1.5)	4.8 (0.1)	1.9 (0.1)	4.0 (0.0)
5/6-12	16.1 (1.1)	4.4 (0.1)	3.4 (0.4)	4.3 (1.1)
5/13-19	12.0 (1.6)	5.6 (0.9)	4.2	5.5 (0.8)
5/20-26	11.4 (0.4)	4.5 (0.4)	3.4	4.4 (0.4)
5/27-6/2	14.8	10.4 (2.7)	3.8 (1.6)	9.7 (2.5)
6/3-9	5.4 (0.9)	6.5 (1.3)	0.0 2/	6.0 (1.2)
6/10-16	4.0 (0.6)	7.2 (0.8)	4.6 2/	7.0 (0.7)
6/17-23	7.0	1.7	0.0 2/	1.6
6/24-30	4.3 (1.5)	4.5 (1.1) 2/	0.0 2/	4.2 (1.1)
7/1-3	6.0 2/	0.0 2/		0.0 2/

1/ Numbers in parentheses represent descaling rate of the "9" classification.

2/ Samples contained less than 100 fish.

Gatewells were not routinely dipped in 1986. On two occasions, May 1 and 10, increased chinook descaling prompted gatewell sampling for comparison to facility fish. On May 1 the gatewell fish descaling rate was 11.0 percent (209 fish sampled) compared to 14.5 percent (172 fish sampled) in the facility. The May 10 rates were 10.0 percent (65 fish sampled) versus 31.0 percent (56 fish sampled), respectively. It was speculated that the higher descaling rate in the facility sample tank could partially be explained by too large a sample being held in the tank (see also Debris/Trashracks, page 44). However, after sampling rates were adjusted to not exceed 400-fish samples, chinook descaling rates remained high. Caution should be used when making comparisons with gatewell-dipped fish because the sample is not random and, consequently, are not always a good indicator of overall condition of fish entering the facility.

Mortality

Unlike descaling rates, mortality continued to decline for the fifth year in a row (Table 12) and was the lowest ever recorded (0.4 percent). A breakdown by species is shown in Table 13. Daily mortality rate for chinook ranged from 0.1 to 4.0 percent and for steelhead 0.01 to 5.0 percent.

Table 12. Percent facililty mortality by species at Little Goose Dam, 1981-1986.

Year	Chinook	Steelhead	Sockeye	Total
1981	1.3	0.8		1.0
1982	6.2	0.4		2.1
1983	2.7	0.4		1.1
1984	1.5	0.2	6.2	0.7
1985	1.0	0.2	2.7	0.7
1986	0.9	0.1	1.0	0.4

Table 13. Seasonal mortality by species at Little Goose, 1986

Species	Number of Fish	Percent Of Total Collection	Percent Of Total Mortalities
Yearling chinook	6,213	0.9	81.4
Subyearling chinook	0	0.0	0.0
Hatchery Steelhead	1,247	0.1	16.3
Wild Steelhead	150	⩽0.1	2.0
Total Steelhead	1,397	0.1	18.3
Sockeye	23	1.0	0.3
Total	7,633	0.4	100.00

Average seasonal mortality for trucked chinook was 0.3 percent (range 0.0 to 3.5 percent) and for steelhead was 0.2 percent (range 0.0 to 5.3 percent) (Table 14). It was impossible to separately estimate mortality of fish barged from Little Goose if they were mixed with Lower Granite and McNary fish during transport. When segregation allowed estimates, Little

Goose chinook mortality averaged 0.2 percent and steelhead mortality averaged less than 0.1 (0.03) percent.

Table 14. Mortality of chinook and steelhead trucked from Little Goose Dam, 1986.

	Chinook			Steelhead		
Date	Number Trucked	Mortal-ities	Percent Mortal-ities	Number Trucked	Mortal-ities	Percent Mortal-ities
4/5	75	0	0.0	4,984	0	0.0
4/7	88	0	0.0	3,812	5	0.2
4/17	33,998	63	0.2	9,792	27	0.3
4/18	5,277	25	0.5	3,097	5	0.2
6/17	1,359	10	0.7	1,901	3	0.2
6/19	1,625	4	0.2	1,563	2	0.1
6/21	1,303	5	0.4	1,107	1	0.1
6/23	593	2	0.3	832	5	0.6
6/25	1,157	5	0.4	522	2	0.4
6/27	1,122	3	0.3	485	1	0.2
6/29	2,123	3	0.1	377	2	0.5
7/1	507	3	0.6	143	4	2.8
7/3	801	26	3.5	76	4	5.3
Total	50,028	151	0.3	28,691	61	0.2

FACILITY OPERATIONS AND MAINTENANCE

Debris/Trashracks

Trashracks were raked as follows: March 3 (units 1 and 2), April 5 (all units), April 9-10 (units 1 and 2), April 30 (units 1 and 2), and May 29 (unit 1 A, 2 B, and 3 B). In addition, racks in units 3 and 4 were pulled on April 9-10 for installation of hydroacoustic monitoring equipment. The gantry crane broke down during the May 29 raking and no additional units could be raked for the remainder of the season. Very little debris had been found so there was no apparent reason for concern.

Gatewells were checked daily for debris accumulation and cleaned as needed throughout the season. Following completion of fish guidance efficiency tests (early May), fyke net frames were left in gatewell slots for approximately one week and precluded debris removal. Debris accumulation while net frames remained in gatewells may have contributed to high descaling rates in early May.

Submersible Traveling Screens

STSs were installed on March 10 and 11 and operated throughout the season in a cycling mode (4 minutes on and 20 minutes off). Video inspections were conducted on April 22 to 24 and June 4 with no problems observed.

The only STS malfunction detected during the season was a grounding problem in unit 3 B. Screens were removed from unit 3 on August 20, from units 4 ,5, and 6 on August 21, and from units 1 and 2 on August 25. Upon removal, two mesh panels on the STS in unit 5 A were discovered attached at only one end.

Collection System

Orifices were rotated on a regular basis. Orifice lights burned out on several occasions and were usually replaced within a day after being reported. Switching lights on and off when orifices were rotated reduced bulb life so they were left on continuously. This appeared to prolong bulb life.

Distribution/Sampling System

Counters 1 and 2 for the A section of the separator malfunctioned at the beginning of the season. Counts from April 10 to 16 had to be estimated from adjacent counters. This was difficult because the daily collection was continually increasing. It is likely that during this time the numbers for daily collection, bypass, and transport were underestimated. All counters were adjusted by a technician on April 16 and they appeared to function reliably for the rest of the season.

Two PVC fittings in the barge loading line ruptured. One was a 45-degree bend at the east end of the raceways and the other a tee nearby. On both occasions the break occurred when debris was being swept from the raceways prior to barge loading. A sudden pressure change in the pipe when the raceway valve opened was suspected as causing the breaks. Structural fatigue may have also contributed to the problem. This was remedied by opening an adjacent raceway valve before flushing debris.

The first break occurred on April 16 and was repaired by April 18. Two trucks were dispatched on April 17 and another on April 18 to transport accumulated fish. The second break occurred on May 15 and was repaired by the following day. At the direction of FTOT, fish were held an extra day and loaded on the next barge.

Substantial spill occurred during late May and early June. On one occasion, May 29, turbulence in the tailrace was too severe for the barge to be safely docked. Fish were held until the next day when spill was reduced to allow safe conditions for barge loading.

RECOMMENDATIONS FOR 1987

Operations

1. Biological staffing for the collection and transportation facilities should be timely and adequate to assure safe and dependable operation of facilities.

2. A preventative maintenance program should be established to monitor and, when necessary, replace all PVC pipes and fittings. The Little Goose facility has operated for a number of years and it is reasonable to expect that PVC pipe exposed to the sun has deteriorated.

3. In case the facility is again shut down earlier than expected, STSs should continue to be inspected monthly as long as they are kept in service. This will help assure that STS damage is detected and can be repaired.

Facility Modifications

1. Four 10-inch PVC tees in the barge loading line should be replaced with double-sweep fiberglass-wrapped PVC tees. The 45-degree angle PVC fixture in the barge loading line that ruptured in 1986 should be replaced with the stronger fiberglass-wrapped PVC.

2. The buried portion of the barge loading line should be visually inspected for problem areas (such as rough spots) and replaced if necessary.

3. With the demonstrated successful operation of the air-actuated gatewell orifice control operator, all 35 remaining operators should be similarly retrofitted.

4. A slide gate should be installed downstream of the lateral Y fixture in the sample line to improve its performance as a distribution line to raceway 1.

TRANSPORT/BYPASS OPERATIONS - MCNARY DAM, 1986

Submersible traveling screen installation was completed by March 7 and the fingerlings bypass system operated thru March 26 when juvenile salmon and steelhead collection facilities began operation. This continued until September 26 when bypass to the ice/trash sluiceway resumed.

River flows remained above 220 kcfs throughout the spring migration, and yearling salmon were bypassed back to the river during this time. At the onset of total collection and transport of summer migrants on June 2 flows were high, remaining above 220 kcfs until June 19.

MODIFICATIONS

Modifications to the facility during 1986 were minor, the most notable being elevation of the upwell tank walls. This permitted a more open pinch valve setting without overflowing the upwell tank and it reduced injury to fish. Previously, fish apparently hit the upwell cover at open settings. Half the extended lid-cover was left open to allow observation and access, but was covered with netting to prevent fish from jumping out.

Slide gates were installed on the separator exits to allow shutting off the flow in the flumes without draining the separator. The 1985 location of PIT tag detectors at the separator exits, prevented debris detection and removal so the detectors were relocated further down the flume.

Safety conditions were improved by installing an overhead track and pully system for handling raceway head screens. This also improved barge loading operations.

COLLECTION OF JUVENILES

Migration and Collection

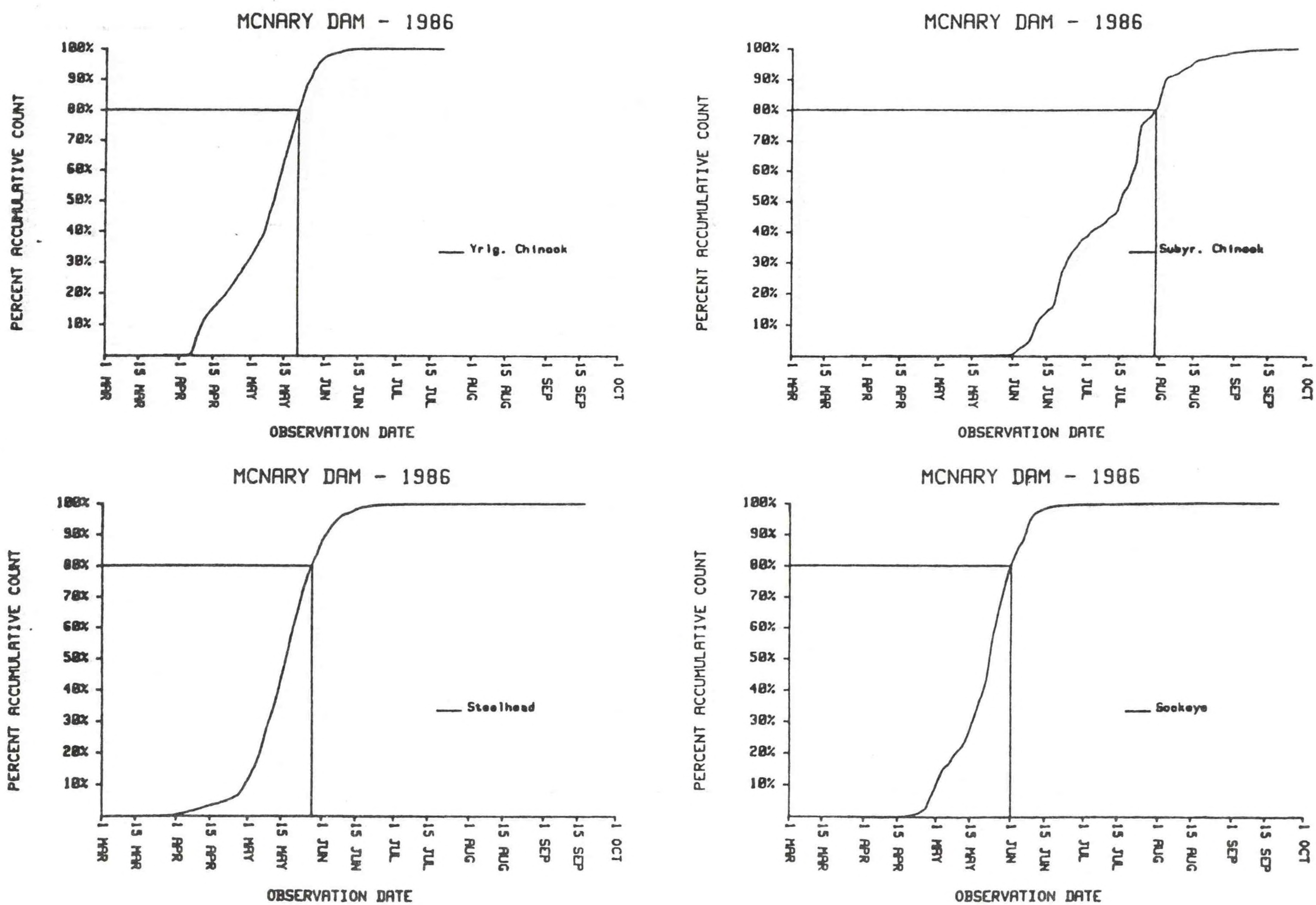
River flows remained above 220 kcfs throughout the spring migration. In keeping with previously established agency and tribal policy, during periods of above-minimum flows fish from the separator's "A" side were bypassed. Transport of fish from the separator's "B" side began March 26 and continued until April 10 when total bypass was initiated because large numbers of yearling chinook, small numbers of steelhead, and above-minimum flows were present. Full bypass continued until April 27 when increased steelhead numbers in the "B" side again warranted their being transported.

An estimated 10,215,597 juvenile were collected in 1986 compared to 11,457,358 in 1985. Yearling and subyearling chinook numbers dropped 15 and 7 percent, respectively, while steelhead showed a reduction of 15 percent compared to 1985. Sockeye experienced the greatest decrease (23 percent) while coho collection increased 12 percent. Sockeye collection totaled 797,040; only 80,436 coho were collected.

Yearling chinook predominated the early-season collection. Their estimated season total was 2,486,497 of which 80 percent (1,989,125) had passed the project by May 20 (Figure 13). During 1986, 6,135,379 subyearling chinook were collected, 1,171,371 of which arrived between June 1 and 18. Almost 42 percent (488,332) of these were fry ($\leqslant$ 70 mm). Coincidental with rising flow, fry numbers increased markedly beginning June 1. They comprised 26.4 percent of the subyearling collection on June 2, exceeded 50 percent by June 6, and remained high thru June 12, with the peak (82.7 percent) occurring June 8. By June 18 fry collection had declined to less than 2 percent of the total daily collection.

Hatchery and wild steelhead were easily separable during 1986, however only combined totals are presented (See Appendix Table 15). For the first

Figure 13. Time frame when 80 percent of yearling chinook, subyearling chinook, steelhead, and sockeye were collected at McNary Dam during 1986.



time, most hatchery reared steelhead were adipose fin-clipped. Unclipped fish were presumed wild. Based on this assumption, of the 344,854 steelhead transported 78,059 (22.7 percent) were wild while the remaining 266,795 (77.3 percent) were from hatcheries.

Transport

Trucking began on March 27 and barging began April 23 and ended August 8, at which time trucking resumed (Figure 8). During 1986 an estimated 6,760,421 juvenile salmonids were transported from McNary to below Bonneville Dam. Of the yearling chinook transported, 22.2 percent (64,309) were trucked and 77.8 percent (225,459) were barged. Ninety one and a half percent (5,352,212) of collected subyearling chinook were barged and 8.5 percent (496,335) were trucked. Only 0.4 percent (899) of the sockeye were trucked while 99.6 percent (243,371) were barged. Approximately 2.0 percent of all steelhead were trucked (6,792) and 98.0 percent (338,062) were barged. (Table 1).

Bypass

Bypass for inriver passage occurred from March 26 thru June 1. After June 1 bypass occurred only for research. During the inriver passage period separation of salmon remained fairly efficient with 87.0 percent of the yearling chinook, 84.0 percent of the subyearling chinook, 73.0 percent of the coho, and 74.0 percent of the sockeye separated for bypass back to the river. This compares to 1985 when separation of salmon was 85.0 percent for yearling chinook, 90.0 percent for subyearling chinook, 83.0 percent for coho, and 82.0 percent for sockeye (Table 15). Separation of steelhead for transport was less efficient in 1986 (43.0 percent) than in 1985 (57.0 percent).

Table 15. Numbers of fish bypassed through the McNary fingerling facility in 1986.

Month	Yearling Chinook	Subyearling Chinook	Hatchery Steelhead	Wild Steelhead	Coho	Sockeye	Total
Mar	718	98	287	1,594	0	16	2,713
Apr	691,107	746	21,832	39,121	436	69,527	822,769
May	1,483,817	27,383	206,459	95,127	45,283	457,753	2,315,822
Jun	8,940	56,082	3,020	1,200	1,650	11,230	82,122
Jul	0	74,979	0	0	0	0	74,979
Aug	0	8,261	0	0	0	0	8,261
TOTAL	2,184,582	167,549	231,598	137,042	47,369	538,526	3,306,666

Research Activities

An evaluation of fish transportation began in 1986. This involved marking 100,022 yearling and 230,383 subyearling chinook with a freeze brand, coded wire tag, and an adipose fin clip. Control groups were released into McNary's tailrace and experimental groups were transported to below Bonneville Dam. Difficulty was experienced in collecting enough markable fish from the sample because so many fish arriving at McNary had been previously marked or were otherwise unsuitable (e.g. descaled) for use in the research. Also, occasional equipment malfunctions caused some markable fish to be passed to the raceways before being marked.

When it became apparent that marking objectives might not be met, a temporary increase in sampling rate was granted by the agencies and tribes. This permitted the researchers to mark sufficient fish from which to expect statistically valid results.

An additional 6,620 yearling chinook, 6,200 subyearlings, and 420 steelhead were marked to further research of the PIT tag.

FACILITY OPERATIONS AND MAINTENANCE

Trash Removal

Debris levels were higher in 1986 than in 1985, likely because of increased 1986 runoff. Pre-season trash rack cleaning (trash "stomped" to bottom of rack) was completed by March 13. A drop in fish condition prompted trash rack cleaning again on April 4 - 7. Racks for slots 1 ABC, 2 B, 3 C, 7 A, 9 B, 10 A, 13 AB, and 14 ABC were cleaned during the April 22 - May 6 video inspection of screens.

The trash rake remained inoperable in 1986. It is, however, scheduled to be in use prior to the onset of the 1987 outmigration.

Submersible Traveling Screens

All fourteen units operated at McNary. Since three McNary screens were on loan to The Dalles for research, the project operated without spares and one slot (usually 13 C) operated with no screen. This occurred with the knowledge and approval of the fish agencies and tribes.

STSs were installed by March 7 and operated in cycling mode until April 7 when descaling was noted on yearling chinook. This caused a switch to continuous operation, which was maintained thru August 24 because descaling rates remained high and large numbers of small fish ($\leqslant$ 115 mm) continued to enter the collection system. Screens were returned to cyclic operation on August 25 when subyearling chinook mean length exceeded 115 mm and a decline in descaling was also apparent.

Numerous screen-related problems were seen in 1986. The first video inspection, April 22 to May 6, discovered a screen missing a complete mesh belt and drive chain. The inspection also revealed that link-bars were working loose (this may have caused the screen failure) and, as a result, all newly rebuilt screens employing the suspect link-bar attachment method were modified.

A second video inspection began June 5 and four damaged screens in two units were quickly discovered. Inspection was suspended to allow their removal and repair. After inspection resumed, three more damaged screens were found on June 13 and the inspection was again halted. It was reinitiated June 20 and completed June 26.

The third inspection started August 4 and was stopped August 6 after seven damaged screens were observed. Three additional screens were viewed on August 11; all were damaged. The inspection was completed August 14 after four more damaged screens were revealed. Screen damage observed during this inspection consisted of torn mesh panels, mostly resulting from failure of "Christmas tree" clips that secure mesh to the link-bars.

Unreliable video equipment hampered the 1986 screen inspections. This problem was compounded by conflicts between project operating criteria, screen inspection schedules, and the time required to remove, repair, and replace damaged screens. Further, manpower shortages and labor regulations contributed to preventing ongoing inspection and simultaneous repair of previously-located damage. As a result of these conflicts, project operators faced three options after locating a damaged screen: 1) suspend the inspection, thereby preventing discovery of additional damaged screens until after the first was repaired; 2) continue the inspection, immediately removing from service all units with damaged screens and; 3) continue the inspection, forgoing project-operation criteria, i.e. maintain unit operation despite screen status.

FTOT's project operation criteria expressly forbids operating a unit with a known damaged screen (Anon. 1986). Yet when screens malfunction as frequently as seen in 1986, inspections can reveal damage far more quickly than repairs can be made. To prevent future such conflicts FTOT drafted, for inclusion in its 1987 Work Plan (Anon. 1987), a new McNary screen inspection schedule. Designed to allow the project engineer more scheduling flexibility, it also increases inspection frequency.

Orifice Maintenance

Orifices are cycled to prevent debris in the gatewell from accumulating at the orifices' entrance and injuring fish as they pass from the gatewell to the bypass flume. The cycling procedure of first closing the north orifice, briefly opening its south counterpart to a flushing flow, then closing the south and reopening the north, was used in 1986 as it was in the latter half of 1985. At least two units per day were cycled to assure weekly coverage of the entire powerhouse. When a decline in fish condition was observed the orifice cycling rate was increased. Even so, twenty blockages were noted during the season. Fifteen occurred in units 3, 4, and 5. Prolonged blockages of up to a month or more were observed in north orifices of slots 4 A and 5 C. It is apparent that when trash levels are high, as in 1986, a more reliable flushing system is necessary.

Bypass Flume

The flume was visually inspected prior to onset of outmigration. No major operational problems were reported. Several aluminum flume screens were replaced with stainless steel counterparts.

Pinch Valve

To prevent fish from impacting the upwell ceiling under low-pressure pinch valve settings (desirable because they reduce chances of debris jams therein), the upwell tank walls were raised. Existing steel braces in the south corners were left in place to provide structural support. Initially the pinch valve was set at 9 psi. It quickly became apparent that fish were being stunned against the corner braces and on April 10 a setting of 10 psi was employed. Stunning continued even after the valve was set to 11 psi.

As in past years, the pinch valve was flushed each time a debris block was suspected or after each re-start of the collection system, which is typically accompanied by an influx of trash. No blockages were confirmed in 1986.

Separator

Separator configuration was similar to 1985. Early in the season, A-tank separator bars were raised to enhance separation of large, yearling chinook (Ringold releases) from steelhead. As the season progressed, the A-tank bars were lowered to facilitate separation of smaller chinook yearlings from steelhead. The ability to vary A-tank bar positions allowed flexibility in accommodating the predominant species.

FISH CONDITION

Descaling

Descaling criteria instituted in 1985 (Koski et al. 1986) were again used in 1986. Coho showed decreased descaling relative to that seen in 1985 while yearling and subyearling chinook and steelhead displayed moderate increases. Sockeye descaling increased considerably over 1985 levels (Table 16).

Table 16. Percent facility descaling at McNary Dam, 1985 and 1986.

	1985 Percent Descaled	1986 Percent Descaled
Yearling Chinook	6.0	7.0
Subyearling Chinook	1.5	3.2
Steelhead	2.2	4.4
Coho	8.5	3.6
Sockeye	8.8	21.1

Five gatewell samples were taken and descaling rates were similar to those observed in the collection facility. Such comparison is used to help determine descaling causes and sources.

Opercle tears were again observed in 1986. During May, 2 percent of the sampled fish displayed such damage. Simultaneously, gatewell samples showed 2.3 percent tears, thus indicating fish were either sustaining the damage before encountering McNary or during initial contacts with the project's screens or trashracks.

Mortality

Table 17 shows mortality by month in the collection system. Although summer mortality was relatively high, the overall season mortality remained consistent with other years with the exception of that for sockeye. Table 18 provides a reasonably consistent base for comparing 1986 sample tank mortality data with that collected in the previous five years. All species except subyearling chinook showed greater mortality than was seen in 1985. Sockeye losses in the sample were more than double those typically seen during the period 1982 thru 1984, and nearly twice the rate observed in 1985. Subyearling chinook mortality ranged from 1 to 2 percent until late July when water temperatures began rising. On July 30, sample tank mortality exceeded 5 percent, with large numbers of dead or moribund fish exiting the separator's upwell. On July 31, a request was made to load units 1 and 8 thru 14, as was done in 1985 (Koski et al. 1986). Although the mortality level remained high, an overall reduction (relative to 1985 late summer losses) was achieved.

Table 17. Percent Collection System mortality at McNary Dam, 1986.

Month	Yearling Chinook	Subyearling Chinook	Hatchery Steelhead	Wild Steelhead	Coho	Sockeye	Total
Mar	0.4	2.6	0.7	0.1	0	0	0.4
Apr	0.2	2.3	⩽ 0.1	⩽ 0.1	0.2	0.5	0.2
May	0.6	0.4	0.2	0.1	0.1	1.3	0.6
Jun	2.4	1.5	2.3	0.5	0.3	4.4	1.7
Jul	4.9	1.9	5.7	2.3	0.1	0.4	1.9
Aug	0	3.4	0.9	1.4	0.8	0	3.4
Sep	0	2.1	1.4	0	0	0	2.1
Average	0.5	1.9	0.5	0.1	0.1	1.8	1.5

Table 18. Percent sample tank mortality at McNary Dam, 1982 - 1986.

Year	Chinook	Chinook	(Hatch)		(Wild)	Coho	Sockeye	Total
1982	2.2	2.0		0.8		0.2	2.2	1.9
1983	1.3	0.9		0.4		$\leq$ 0.1	1.7	1.0
1984	0.8	1.2		0.3		0.3	2.5	1.0
1985	1.3	3.4		0.5		0.2	3.4	2.6
1986	1.5	2.5	0.8	0.7	0.5	0.5	6.0	2.4

Fish Size

Daily fork length measurements were taken from 100-fish samples of each species throughout the migration season. Yearling chinook lengths ranged from 90 to 235 mm with a mean of 156 mm. Two distinct size groups of subyearling chinook were apparent. Recently buttoned-up fry (mean length of 40 mm) appeared in early June. Larger (100 mm average) fish comprised the second population segment, which predominated collection thru August. Steelhead lengths ranged from 80 to 325 mm with a mean of 208 mm. Coho mean length was 154 mm, ranging between 110 and 210 mm. Sockeye varied from 75 to 210 mm and averaged 106 mm.

RECOMMENDATIONS FOR 1987

1. The sample tank should be modified to increase holding capacity and improve fish handling capabilities, including a system for pre-anesthetizing fish prior to handling.

2. STS inspections should be conducted independent of screen maintenance. Units with known damaged screens should not be operated or, if needed, should be prioritized thru FTOT.

3. Direct barge loading capability should be incorporated into the system.

4. The trashracks should be raked as early as possible before screen installation and waterup to avoid damaging screens from dislodged debris and avoid debris accumulation in the gatewells and sampling system.

5. Bracing within the upwell should be removed.

6. The slide gates for the gatewell orifices should be power operated to facilitate an increase in orifice cycling frequency.

7. The McNary project should continue collecting and transporting until FTOT criteria for shut down of operations is reached.

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Appendix Tables 1-15

Appendix Table 1.-- Daily Collection Counts of Chinook, Wild and Hatchery Steelhead, and Sockeye, Facility Mortalities, and Daily River Flows and Spills During 1986, at Lower Granite Dam.

DATE	YEARLING CHINOOK	SUB-YEARLING CHINOOK	WILD STEELHEAD	HATCHERY STEELHEAD	SOCKEYE	DAILY TOTAL	COLLECTION MORTALITY NUMBER	COLLECTION MORTALITY PERCENT	RIVER FLOW IN CFS	SPILL TOTAL	SPILL PERCENT
Mar 26	430	0	105	116	11	662	0	0.00	103,500	10,300	9.95
Mar 27	213	0	158	67	41	479	3	.63	100,900	16,300	16.15
Mar 28	0	0	0	0	0	0	0	0.00	104,500	50,400	48.23
Mar 29	0	0	0	0	0	0	0	0.00	103,300	78,600	76.09
Mar 30	0	0	0	0	0	0	0	0.00	114,100	78,700	68.97
Mar 31	0	0	0	0	0	0	0	0.00	112,000	23,700	21.16
Apr 1	0	0	0	0	0	0	0	0.00	108,400	14,200	13.10
Apr 2	0	0	0	0	0	0	0	0.00	117,000	6,200	5.30
Apr 3	0	0	0	0	0	0	0	0.00	109,400	0	0.00
Apr 4	0	0	0	0	0	0	0	0.00	108,900	0	0.00
Apr 5	7,519	0	1,360	391	47	9,317	10	.11	95,400	0	0.00
Apr 6	11,363	0	2,639	630	29	14,661	27	.18	98,700	0	0.00
Apr 7	19,813	0	2,531	598	69	23,011	39	.17	96,500	0	0.00
Apr 8	22,493	0	1,549	97	73	24,212	43	.18	97,500	0	0.00
Apr 9	35,425	40	2,807	1,186	79	39,537	32	.08	98,700	0	0.00
Apr 10	47,469	0	3,126	1,459	52	52,106	18	.03	106,300	0	0.00
Apr 11	55,325	0	4,182	1,345	12	60,864	27	.04	104,600	500	.48
Apr 12	53,446	0	4,901	1,750	42	60,139	80	.13	96,700	900	.93
Apr 13	48,182	0	3,908	1,285	161	53,536	48	.09	93,400	0	0.00
Apr 14	28,165	6	3,336	1,204	89	32,800	28	.09	96,300	0	0.00
Apr 15	42,317	0	5,133	1,889	114	49,453	39	.08	90,100	0	0.00
Apr 16	72,930	8	6,021	2,529	98	81,586	118	.14	87,400	0	0.00
Apr 17	59,973	0	4,983	2,066	47	67,069	49	.07	91,500	0	0.00
Apr 18	51,498	0	5,147	2,642	83	59,370	53	.09	90,300	0	0.00
Apr 19	40,844	0	3,675	2,403	9	46,931	23	.05	82,900	0	0.00
Apr 20	65,198	0	3,678	4,374	15	73,265	62	.08	86,300	0	0.00
Apr 21	61,540	7	4,674	5,203	43	71,467	27	.04	88,000	0	0.00
Apr 22	26,821	0	2,291	3,550	23	32,685	45	.14	86,500	0	0.00
Apr 23	52,550	0	4,051	7,773	26	64,400	54	.08	110,500	12,000	10.86
Apr 24	79,895	0	9,421	24,360	102	113,778	96	.08	115,900	0	0.00
Apr 25	41,970	0	11,161	16,122	28	69,281	75	.11	109,300	0	0.00
Apr 26	32,027	0	25,676	18,928	61	76,692	111	.14	100,800	0	0.00
Apr 27	30,914	0	30,368	41,640	21	102,943	32	.03	88,500	0	0.00
Apr 28	36,726	0	30,227	68,690	27	135,670	902	.66	98,500	0	0.00
Apr 29	40,261	0	21,134	61,653	36	123,084	119	.10	87,500	0	0.00
Apr 30	35,588	0	15,591	71,852	24	123,055	149	.12	94,400	0	0.00
May 1	31,759	21	11,286	63,410	96	106,572	122	.11	88,500	0	0.00
May 2	31,245	0	8,302	50,870	18	90,435	50	.06	83,300	0	0.00
May 3	26,908	0	10,561	53,470	27	90,966	72	.08	81,300	0	0.00
May 4	20,533	0	7,852	66,251	76	94,712	125	.13	89,700	0	0.00
May 5	28,492	0	11,587	90,142	117	130,338	130	.10	109,300	0	0.00
May 6	25,126	28	15,076	97,917	291	138,438	145	.10	108,600	0	0.00
May 7	18,752	0	17,928	115,414	228	152,322	81	.05	99,200	0	0.00
May 8	16,209	0	16,224	117,120	390	149,943	168	.11	94,800	0	0.00
May 9	14,988	0	14,116	109,056	235	138,395	105	.08	97,900	0	0.00
May 10	21,514	13	13,950	89,520	452	125,449	177	.14	102,200	0	0.00
May 11	19,615	0	9,063	70,945	300	99,923	156	.16	100,900	0	0.00
May 12	20,702	19	8,233	63,420	110	92,484	71	.08	105,300	0	0.00

Appendix Table 1.-- Continued.

DATE	YEARLING CHINOOK	SUB-YEARLING CHINOOK	WILD STEELHEAD	HATCHERY STEELHEAD	SOCKEYE	DAILY TOTAL	COLLECTION MORTALITY NUMBER	COLLECTION MORTALITY PERCENT	RIVER FLOW IN CFS	SPILL TOTAL	SPILL PERCENT
May 13	17,707	20	5,753	44,548	130	68,158	126	.18	97,600	0	0.00
May 14	18,670	0	8,488,	66,304	121	93,583	66	.07	93,400	0	0.00
May 15	13,373	21	6,393	51,732	72	71,591	44	.06	100,300	0	0.00
May 16	11,364	0	5,017	33,702	90	50,173	60	.12	95,700	0	0.00
May 17	11,590	0	6,585	38,004	56	56,235	91	.16	86,800	0	0.00
May 18	9,092	0	6,336	33,227	93	48,748	32	.07	84,500	0	0.00
May 19	10,716	0	6,908	39,931	58	57,613	41	.07	96,900	0	0.00
May 20	7,055	0	7,415	41,833	45	56,348	33	.06	103,300	0	0.00
May 21	10,624	12	8,657	40,326	167	59,786	64	.11	116,200	0	0.00
May 22	18,081	22	18,103	71,173	377	107,756	64	.06	124,000	0	0.00
May 23	15,072	0	21,698	78,683	394	115,847	176	.15	115,300	0	0.00
May 24	12,224	0	15,358	64,409	194	92,185	123	.13	102,900	0	0.00
May 25	11,011	0	14,288	77,190	226	102,715	140	.14	99,500	0	0.00
May 26	6,147	0	10,944	58,593	106	75,790	150	.20	106,400	0	0.00
May 27	8,447	0	6,087	54,266	214	69,014	255	.37	126,000	3,000	2.38
May 28	9,550	0	6,204	49,961	125	65,840	254	.39	165,900	35,100	21.16
May 29	8,468	0	4,362	46,532	149	59,511	208	.35	190,300	59,900	31.48
May 30	7,421	0	5,576	52,814	99	65,910	202	.31	202,000	90,300	44.70
May 31	4,280	0	2,517	32,046	66	38,909	147	.38	208,200	78,700	37.80
Jun 1	3,931	0	3,871	34,912	60	42,774	111	.26	211,200	83,100	39.35
Jun 2	5,020	0	1,797	23,987	68	30,872	55	.18	210,800	81,700	38.76
Jun 3	4,030	0	1,439	16,830	40	22,339	122	.55	206,900	77,700	37.55
Jun 4	2,399	0	1,078	15,413	61	18,951	34	.18	202,100	74,800	37.01
Jun 5	1,381	1,019	1,854	22,007	0	26,261	48	.18	187,200	59,000	31.52
Jun 6	586	727	1,105	10,434	0	12,852	28	.22	187,900	59,900	31.88
Jun 7	590	393	701	7,839	114	9,637	136	1.41	173,100	44,800	25.88
Jun 8	219	821	565	8,886	74	10,565	32	.30	154,900	27,700	17.88
Jun 9	299	456	472	9,079	64	10,370	111	1.07	150,200	22,100	14.71
Jun 10	155	609	421	8,135	17	9,337	18	.19	134,600	6,100	4.53
Jun 11	988	340	358	6,558	36	8,280	82	.99	119,100	1,000	.84
Jun 12	1,121	246	339	8,201	0	9,907	25	.25	116,300	0	0.00
Jun 13	730	183	427	8,773	49	10,162	139	1.37	114,400	0	0.00
Jun 14	976	164	442	7,375	21	8,978	23	.26	114,900	0	0.00
Jun 15	1,358	89	335	7,349	22	9,153	80	.87	101,300	0	0.00
Jun 16	1,942	152	419	11,662	38	14,213	7	.05	105,100	0	0.00
Jun 17	1,480	94	355	6,526	9	8,464	34	.40	98,100	0	0.00
Jun 18	1,209	42	234	4,550	31	6,066	19	.31	100,000	0	0.00
Jun 19	1,506	396	237	3,317	30	5,486	16	.29	93,400	0	0.00
Jun 20	345	1,707	71	3,454	0	5,577	16	.29	80,400	0	0.00
Jun 21	301	1,361	68	2,003	20	3,753	16	.43	75,800	0	0.00
Jun 22	150	1,192	64	1,837	11	3,254	20	.61	66,000	0	0.00
Jun 23	10	1,245	99	949	0	2,303	6	.26	61,900	0	0.00
Jun 24	116	1,519	70	1,635	0	3,340	25	.75	70,000	0	0.00
Jun 25	107	2,257	11	1,113	0	3,488	6	.17	62,900	0	0.00
Jun 26	172	2,265	40	675	13	3,165	23	.73	58,600	0	0.00
Jun 27	490	2,191	34	499	17	3,231	8	.25	59,700	0	0.00
Jun 28	410	3,131	82	1,094	0	4,717	60	1.27	55,500	0	0.00
Jun 29	484	3,509	54	538	22	4,607	17	.37	47,000	0	0.00

Appendix Table 1.-- Continued.

DATE	YEARLING CHINOOK	SUB-YEARLING CHINOOK	WILD STEELHEAD	HATCHERY STEELHEAD	SOCKEYE	DAILY TOTAL	COLLECTION MORTALITY NUMBER	COLLECTION MORTALITY PERCENT	RIVER FLOW IN CFS	SPILL TOTAL	SPILL PERCENT
Jun 30	210	1,700	28	301	0	2,239	31	1.38	46,000	0	0.00
Jul 1	278	1,749	28	305	0	2,360	8	.34	44,100	0	0.00
Jul 2	121	2,072	28	223	0	2,444	29	1.19	38,800	0	0.00
Jul 3	233	1,721	0	193	0	2,147	13	.61	40,000	0	0.00
Jul 4	207	967	9	132	0	1,315	44	3.35	32,100	0	0.00
Jul 5	150	1,192	38	163	0	1,543	7	.45	45,500	0	0.00
Jul 6	147	1,724	23	204	0	2,098	63	3.00	31,100	0	0.00
Jul 7	198	1,314	12	314	0	1,838	11	.60	38,600	0	0.00
Jul 8	100	724	8	170	0	1,002	23	2.30	36,700	0	0.00
Jul 9	103	651	11	137	0	902	7	.78	35,300	0	0.00
Jul 10	153	1,190	0	61	0	1,404	45	3.21	42,100	0	0.00
Jul 11	194	1,087	0	183	0	1,464	23	1.57	34,900	0	0.00
Jul 12	247	885	0	76	0	1,208	44	3.64	37,200	0	0.00
Jul 13	172	624	0	107	0	903	19	2.10	28,700	0	0.00
Jul 14	221	674	0	124	9	1,028	50	4.86	38,500	0	0.00
Jul 15	319	879	13	76	0	1,287	5	.39	34,200	0	0.00
Jul 16	215	890	21	153	0	1,279	84	6.57	23,900	0	0.00
Jul 17	249	692	0	74	0	1,015	22	2.17	27,600	0	0.00
Jul 18	251	1,017	0	66	0	1,334	248	18.59	25,300	0	0.00
Jul 19	147	764	0	49	0	960	92	9.58	31,300	0	0.00
Jul 20	421	937	0	48	0	1,406	380	27.03	25,800	0	0.00
Jul 21	398	548	21	65	0	1,032	117	11.34	23,700	0	0.00
Jul 22	201	699	0	53	0	953	263	27.60	28,200	0	0.00
Jul 23	177	373	20	10	0	580	155	26.72	22,500	0	0.00
Jul 24	105	230	0	21	0	356	153	42.98	26,200	0	0.00
TOTAL	1,625,352	51,628	542,002	2,547,549	7,410	4,773,941	9,240	.19			

APPENDIX TABLE 2.-- 1986 TRUCK TRANSPORTATION REPORT
AT LOWER GRANITE

	DAILY #'s TRUCKED						ACCUM. #'s TRUCKED					
	Yrlg. Chinook	Subyr. Chinook	Wild Steelhead	Hat. Steelhead	Sockeye	Daily Total	Yrlg. Chinook	Subyr. Chinook	Wild Steelhead	Hat. Steelhead	Sockeye	Accum. Total
27/ 3	643	0	263	182	50	1,138	643	0	263	182	50	1,138
28/ 3	0	0	0	0	0	0	643	0	263	182	50	1,138
29/ 3	0	0	0	0	0	0	643	0	263	182	50	1,138
30/ 3	0	0	0	0	0	0	643	0	263	182	50	1,138
31/ 3	0	0	0	0	0	0	643	0	263	182	50	1,138
1/ 4	0	0	0	0	0	0	643	0	263	182	50	1,138
2/ 4	0	0	0	0	0	0	643	0	263	182	50	1,138
3/ 4	0	0	0	0	0	0	643	0	263	182	50	1,138
4/ 4	0	0	0	0	0	0	643	0	263	182	50	1,138
5/ 4	0	0	0	0	0	0	643	0	263	182	50	1,138
6/ 4	18,849	0	3,997	1,021	74	23,941	19,492	0	4,260	1,203	124	25,079
7/ 4	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
8/ 4	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
9/ 4	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
10/ 4	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
11/ 4	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
12/ 4	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
13/ 4	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
14/ 4	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
15/ 4	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
16/ 4	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
17/ 4	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
18/ 4	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
19/ 4	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
20/ 4	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
21/ 4	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
22/ 4	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
23/ 4	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
24/ 4	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
25/ 4	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
26/ 4	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
27/ 4	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
28/ 4	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
29/ 4	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
30/ 4	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
1/ 5	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
2/ 5	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
3/ 5	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
4/ 5	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
5/ 5	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
6/ 5	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
7/ 5	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
8/ 5	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
9/ 5	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
10/ 5	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
11/ 5	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
12/ 5	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
13/ 5	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079

APPENDIX TABLE 2.-- Continued

	DAILY #'s TRUCKED						ACCUM. #'s TRUCKED					
	Yrlg. Chinook	Subyr. Chinook	Wild Steelhead	Hat. Steelhead	Sockeye	Daily Total	Yrlg. Chinook	Subyr. Chinook	Wild Steelhead	Hat. Steelhead	Sockeye	Accum. Total
14/ 5	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
15/ 5	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
16/ 5	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
17/ 5	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
18/ 5	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
19/ 5	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
20/ 5	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
21/ 5	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
22/ 5	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
23/ 5	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
24/ 5	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
25/ 5	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
26/ 5	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
27/ 5	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
28/ 5	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
29/ 5	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
30/ 5	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
31/ 5	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
1/ 6	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
2/ 6	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
3/ 6	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
4/ 6	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
5/ 6	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
6/ 6	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
7/ 6	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
8/ 6	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
9/ 6	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
10/ 6	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
11/ 6	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
12/ 6	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
13/ 6	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
14/ 6	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
15/ 6	0	0	0	0	0	0	19,492	0	4,260	1,203	124	25,079
16/ 6	1,941	152	417	11,658	38	14,206	21,433	152	4,677	12,861	162	39,285
17/ 6	1,478	92	353	6,498	9	8,430	22,911	244	5,030	19,359	171	47,715
18/ 6	1,208	42	231	4,537	29	6,047	24,119	286	5,261	23,896	200	53,762
19/ 6	1,504	394	234	3,310	28	5,470	25,623	680	5,495	27,206	228	59,232
20/ 6	340	1,707	70	3,444	0	5,561	25,963	2,387	5,565	30,650	228	64,793
21/ 6	0	0	0	0	0	0	25,963	2,387	5,565	30,650	228	64,793
22/ 6	444	2,549	132	3,819	27	6,971	26,407	4,936	5,697	34,469	255	71,764
23/ 6	0	0	0	0	0	0	26,407	4,936	5,697	34,469	255	71,764
24/ 6	124	2,761	167	2,560	0	5,612	26,531	7,697	5,864	37,029	255	77,376
25/ 6	0	0	0	0	0	0	26,531	7,697	5,864	37,029	255	77,376
26/ 6	271	4,518	51	1,773	11	6,624	26,802	12,215	5,915	38,802	266	84,000
27/ 6	0	0	0	0	0	0	26,802	12,215	5,915	38,802	266	84,000
28/ 6	879	5,310	112	1,564	15	7,880	27,681	17,525	6,027	40,366	281	91,880
29/ 6	0	0	0	0	0	0	27,681	17,525	6,027	40,366	281	91,880
30/ 6	674	5,199	79	827	19	6,798	28,355	22,724	6,106	41,193	300	98,678
1/ 7	0	0	0	0	0	0	28,355	22,724	6,106	41,193	300	98,678

APPENDIX TABLE 2.-- Continued

	DAILY #'s TRUCKED						ACCUM. #'s TRUCKED					
	Yrlg. Chinook	Subyr. Chinook	Wild Steelhead	Hat. Steelhead	Sockeye	Daily Total	Yrlg. Chinook	Subyr. Chinook	Wild Steelhead	Hat. Steelhead	Sockeye	Accum. Total
2/ 7	391	3,805	55	517	0	4,768	28,746	26,529	6,161	41,710	300	103,446
3/ 7	0	0	0	0	0	0	28,746	26,529	6,161	41,710	300	103,446
4/ 7	424	2,654	7	320	0	3,405	29,170	29,183	6,168	42,030	300	106,851
5/ 7	0	0	0	0	0	0	29,170	29,183	6,168	42,030	300	106,851
6/ 7	290	2,874	59	348	0	3,571	29,460	32,057	6,227	42,378	300	110,422
7/ 7	0	0	0	0	0	0	29,460	32,057	6,227	42,378	300	110,422
8/ 7	295	2,029	20	462	0	2,806	29,755	34,086	6,247	42,840	300	113,228
9/ 7	0	0	0	0	0	0	29,755	34,086	6,247	42,840	300	113,228
10/ 7	232	1,831	11	183	0	2,257	29,987	35,917	6,258	43,023	300	115,485
11/ 7	0	0	0	0	0	0	29,987	35,917	6,258	43,023	300	115,485
12/ 7	424	1,941	0	240	0	2,605	30,411	37,858	6,258	43,263	300	118,090
13/ 7	0	0	0	0	0	0	30,411	37,858	6,258	43,263	300	118,090
14/ 7	372	1,284	0	197	9	1,862	30,783	39,142	6,258	43,460	309	119,952
15/ 7	0	0	0	0	0	0	30,783	39,142	6,258	43,460	309	119,952
16/ 7	514	1,715	34	214	0	2,477	31,297	40,857	6,292	43,674	309	122,429
17/ 7	0	0	0	0	0	0	31,297	40,857	6,292	43,674	309	122,429
18/ 7	410	1,545	0	124	0	2,079	31,707	42,402	6,292	43,798	309	124,508
19/ 7	0	0	0	0	0	0	31,707	42,402	6,292	43,798	309	124,508
20/ 7	414	1,401	0	79	0	1,894	32,121	43,803	6,292	43,877	309	126,402
21/ 7	0	0	0	0	0	0	32,121	43,803	6,292	43,877	309	126,402
22/ 7	464	1,017	19	105	0	1,605	32,585	44,820	6,311	43,982	309	128,007
23/ 7	0	0	0	0	0	0	32,585	44,820	6,311	43,982	309	128,007
24/ 7	212	373	20	23	0	628	32,797	45,193	6,331	44,005	309	128,635

APPENDIX TABLE 3.-- 1986 BARGE TRANSPORTATION REPORT
AT LOWER GRANITE

	DAILY #'s BARGED						ACCUM. #'s BARGED					
	Yrlg. Chinook	Subyr. Chinook	Wild Steelhead	Hat. Steelhead	Sockeye	Daily Total	Yrlg. Chinook	Subyr. Chinook	Wild Steelhead	Hat. Steelhead	Sockeye	Accum. Total
10/ 4	122,832	40	10,006	3,337	271	136,486	122,832	40	10,006	3,337	271	136,486
11/ 4	0	0	0	0	0	0	122,832	40	10,006	3,337	271	136,486
12/ 4	0	0	0	0	0	0	122,832	40	10,006	3,337	271	136,486
13/ 4	0	0	0	0	0	0	122,832	40	10,006	3,337	271	136,486
14/ 4	178,109	6	16,317	5,575	302	200,309	300,941	46	26,323	8,912	573	336,795
15/ 4	0	0	0	0	0	0	300,941	46	26,323	8,912	573	336,795
16/ 4	0	0	0	0	0	0	300,941	46	26,323	8,912	573	336,795
17/ 4	111,201	8	10,711	4,416	212	126,548	412,142	54	37,034	13,328	785	463,343
18/ 4	107,370	0	9,856	4,702	128	122,056	519,512	54	46,890	18,030	913	585,399
19/ 4	0	0	0	0	0	0	519,512	54	46,890	18,030	913	585,399
20/ 4	103,172	0	7,165	6,772	24	117,133	622,684	54	54,055	24,802	937	702,532
21/ 4	0	0	0	0	0	0	622,684	54	54,055	24,802	937	702,532
22/ 4	83,944	7	6,698	8,745	66	99,460	706,628	61	60,753	33,547	1,003	801,992
23/ 4	0	0	0	0	0	0	706,628	61	60,753	33,547	1,003	801,992
24/ 4	126,790	0	13,003	31,534	126	171,453	833,418	61	73,756	65,081	1,129	973,445
25/ 4	0	0	0	0	0	0	833,418	61	73,756	65,081	1,129	973,445
26/ 4	71,185	0	36,088	35,027	89	142,389	904,603	61	109,844	100,108	1,218	1,115,834
27/ 4	0	0	0	0	0	0	904,603	61	109,844	100,108	1,218	1,115,834
28/ 4	65,252	0	58,385	110,285	47	233,969	969,855	61	168,229	210,393	1,265	1,349,803
29/ 4	37,844	0	19,708	59,723	36	117,311	1,007,699	61	187,937	270,116	1,301	1,467,114
30/ 4	35,499	0	15,589	71,794	24	122,906	1,043,198	61	203,526	341,910	1,325	1,590,020
1/ 5	29,792	21	10,863	61,844	96	102,616	1,072,990	82	214,389	403,754	1,421	1,692,636
2/ 5	31,220	0	8,301	50,846	18	90,385	1,104,210	82	222,690	454,600	1,439	1,783,021
3/ 5	25,532	0	10,253	52,791	27	88,603	1,129,742	82	232,943	507,391	1,466	1,871,624
4/ 5	20,441	0	7,849	66,219	76	94,585	1,150,183	82	240,792	573,610	1,542	1,966,209
5/ 5	28,432	0	11,583	90,076	117	130,208	1,178,615	82	252,375	663,686	1,659	2,096,417
6/ 5	23,700	28	14,586	96,224	291	134,829	1,202,315	110	266,961	759,910	1,950	2,231,246
7/ 5	18,630	0	17,928	115,026	227	151,811	1,220,945	110	284,889	874,936	2,177	2,383,057
8/ 5	15,644	0	15,873	116,007	390	147,914	1,236,589	110	300,762	990,943	2,567	2,530,971
9/ 5	14,932	0	14,116	109,007	235	138,290	1,251,521	110	314,878	1,099,950	2,802	2,669,261
10/ 5	20,660	13	13,489	87,473	452	122,087	1,272,181	123	328,367	1,187,423	3,254	2,791,348
11/ 5	19,512	0	9,062	70,895	298	99,767	1,291,693	123	337,429	1,258,318	3,552	2,891,115
12/ 5	20,665	19	8,232	63,387	110	92,413	1,312,358	142	345,661	1,321,705	3,662	2,983,528
13/ 5	16,309	20	5,478	43,019	128	64,954	1,328,667	162	351,139	1,364,724	3,790	3,048,482
14/ 5	18,630	0	8,488	66,279	120	93,517	1,347,297	162	359,627	1,431,003	3,910	3,141,999
15/ 5	12,359	21	6,022	49,317	72	67,791	1,359,656	183	365,649	1,480,320	3,982	3,209,790
16/ 5	11,349	0	5,016	33,658	90	50,113	1,371,005	183	370,665	1,513,978	4,072	3,259,903
17/ 5	10,732	0	6,222	36,605	56	53,615	1,381,737	183	376,887	1,550,583	4,128	3,313,518
18/ 5	9,087	0	6,334	33,203	92	48,716	1,390,824	183	383,221	1,583,786	4,220	3,362,234
19/ 5	10,707	0	6,908	39,899	58	57,572	1,401,531	183	390,129	1,623,685	4,278	3,419,806
20/ 5	6,580	0	7,015	40,415	45	54,055	1,408,111	183	397,144	1,664,100	4,323	3,473,861
21/ 5	10,611	12	8,655	40,277	167	59,722	1,418,722	195	405,799	1,704,377	4,490	3,533,583
22/ 5	16,886	22	17,149	69,325	377	103,759	1,435,608	217	422,948	1,773,702	4,867	3,637,342
23/ 5	14,976	0	21,698	78,603	394	115,671	1,450,584	217	444,646	1,852,305	5,261	3,753,013
24/ 5	11,399	0	14,533	62,806	193	88,931	1,461,983	217	459,179	1,915,111	5,454	3,841,944
25/ 5	10,989	0	14,286	77,076	224	102,575	1,472,972	217	473,465	1,992,187	5,678	3,944,519
26/ 5	6,136	0	10,942	58,456	106	75,640	1,479,108	217	484,407	2,050,643	5,784	4,020,159
27/ 5	7,884	0	5,766	52,482	213	66,345	1,486,992	217	490,173	2,103,125	5,997	4,086,504

APPENDIX TABLE 3.-- Continued

	DAILY #'s BARGED						ACCUM. #'s BARGED					
	Yrlg. Chinook	Subyr. Chinook	Wild Steelhead	Hat. Steelhead	Sockeye	Daily Total	Yrlg. Chinook	Subyr. Chinook	Wild Steelhead	Hat. Steelhead	Sockeye	Accum. Total
28/ 5	9,525	0	6,201	49,735	125	65,586	1,496,517	217	496,374	2,152,860	6,122	4,152,090
29/ 5	8,439	0	4,362	46,356	146	59,303	1,504,956	217	500,736	2,199,216	6,268	4,211,393
30/ 5	6,948	0	5,575	52,633	96	65,252	1,511,904	217	506,311	2,251,849	6,364	4,276,645
31/ 5	4,008	0	2,516	31,912	66	38,502	1,515,912	217	508,827	2,283,761	6,430	4,315,147
1/ 6	3,918	0	3,870	34,815	60	42,663	1,519,830	217	512,697	2,318,576	6,490	4,357,810
2/ 6	0	0	0	0	0	0	1,519,830	217	512,697	2,318,576	6,490	4,357,810
3/ 6	9,026	0	3,234	40,666	108	53,034	1,528,856	217	515,931	2,359,242	6,598	4,410,844
4/ 6	0	0	0	0	0	0	1,528,856	217	515,931	2,359,242	6,598	4,410,844
5/ 6	3,772	1,019	2,932	37,346	61	45,130	1,532,628	1,236	518,863	2,396,588	6,659	4,455,974
6/ 6	0	0	0	0	0	0	1,532,628	1,236	518,863	2,396,588	6,659	4,455,974
7/ 6	1,174	1,114	1,806	18,122	109	22,325	1,533,802	2,350	520,669	2,414,710	6,768	4,478,299
8/ 6	0	0	0	0	0	0	1,533,802	2,350	520,669	2,414,710	6,768	4,478,299
9/ 6	515	1,269	1,034	17,840	134	20,792	1,534,317	3,619	521,703	2,432,550	6,902	4,499,091
10/ 6	0	0	0	0	0	0	1,534,317	3,619	521,703	2,432,550	6,902	4,499,091
11/ 6	1,127	946	779	14,614	51	17,517	1,535,444	4,565	522,482	2,447,164	6,953	4,516,608
12/ 6	0	0	0	0	0	0	1,535,444	4,565	522,482	2,447,164	6,953	4,516,608
13/ 6	1,841	428	765	16,826	45	19,905	1,537,285	4,993	523,247	2,463,990	6,998	4,536,513
14/ 6	0	0	0	0	0	0	1,537,285	4,993	523,247	2,463,990	6,998	4,536,513
15/ 6	2,326	249	775	14,643	35	18,028	1,539,611	5,242	524,022	2,478,633	7,033	4,554,541

APPENDIX TABLE 4.-- 1986 BYPASS REPORT
AT LOWER GRANITE

	DAILY #'S BYPASSED						ACCUM. #'S BYPASSED					
	Yrlg. Chinook	Subyr. Chinook	Wild Steelhead	Hat. Steelhead	Sockeye	Daily Total	Yrlg. Chinook	Subyr. Chinook	Wild Steelhead	Hat. Steelhead	Sockeye	Accum. Total
9/ 4	2,248	0	0	0	0	2,248	2,248	0	0	0	0	2,248
10/ 4	0	0	0	0	0	0	2,248	0	0	0	0	2,248
11/ 4	3,379	0	0	0	0	3,379	5,627	0	0	0	0	5,627
12/ 4	101	0	9	3	1	114	5,728	0	9	3	1	5,741
13/ 4	3,354	0	0	0	0	3,354	9,082	0	9	3	1	9,095
14/ 4	0	0	0	0	0	0	9,082	0	9	3	1	9,095
15/ 4	3,898	0	436	0	0	4,334	12,980	0	445	3	1	13,429
16/ 4	0	0	0	0	0	0	12,980	0	445	3	1	13,429
17/ 4	3,898	0	272	0	0	4,170	16,878	0	717	3	1	17,599
18/ 4	67	0	0	0	0	67	16,945	0	717	3	1	17,666
19/ 4	2,749	0	184	0	0	2,933	19,694	0	901	3	1	20,599
20/ 4	0	0	0	0	0	0	19,694	0	901	3	1	20,599
21/ 4	4,328	0	262	0	0	4,590	24,022	0	1,163	3	1	25,189
22/ 4	0	0	0	0	0	0	24,022	0	1,163	3	1	25,189
23/ 4	3,508	0	230	0	0	3,738	27,530	0	1,393	3	1	28,927
24/ 4	2,009	0	226	583	2	2,820	29,539	0	1,619	586	3	31,747
25/ 4	2,655	0	743	0	0	3,398	32,194	0	2,362	586	3	35,145
26/ 4	0	0	0	0	0	0	32,194	0	2,362	586	3	35,145
27/ 4	1,518	0	2,192	0	0	3,710	33,712	0	4,554	586	3	38,855
28/ 4	0	0	0	0	0	0	33,712	0	4,554	586	3	38,855
29/ 4	2,314	0	1,424	1,916	0	5,654	36,026	0	5,978	2,502	3	44,509
30/ 4	0	0	0	0	0	0	36,026	0	5,978	2,502	3	44,509
1/ 5	1,890	0	422	1,522	0	3,834	37,916	0	6,400	4,024	3	48,343
2/ 5	0	0	0	0	0	0	37,916	0	6,400	4,024	3	48,343
3/ 5	1,332	0	307	652	0	2,291	39,248	0	6,707	4,676	3	50,634
4/ 5	0	0	1	1	0	2	39,248	0	6,708	4,677	3	50,636
5/ 5	0	0	0	0	0	0	39,248	0	6,708	4,677	3	50,636
6/ 5	1,335	0	490	1,639	0	3,464	40,583	0	7,198	6,316	3	54,100
7/ 5	0	0	0	0	0	0	40,583	0	7,198	6,316	3	54,100
8/ 5	449	0	350	1,062	0	1,861	41,032	0	7,548	7,378	3	55,961
9/ 5	0	0	0	0	0	0	41,032	0	7,548	7,378	3	55,961
10/ 5	781	0	457	1,947	0	3,185	41,813	0	8,005	9,325	3	59,146
11/ 5	0	0	0	0	0	0	41,813	0	8,005	9,325	3	59,146
12/ 5	0	0	0	0	0	0	41,813	0	8,005	9,325	3	59,146
13/ 5	1,303	0	274	1,501	0	3,078	43,116	0	8,279	10,826	3	62,224
14/ 5	0	0	0	0	0	0	43,116	0	8,279	10,826	3	62,224
15/ 5	999	0	370	2,387	0	3,756	44,115	0	8,649	13,213	3	65,980
16/ 5	0	0	0	0	0	0	44,115	0	8,649	13,213	3	65,980
17/ 5	831	0	360	1,338	0	2,529	44,946	0	9,009	14,551	3	68,509
18/ 5	0	0	0	0	0	0	44,946	0	9,009	14,551	3	68,509
19/ 5	0	0	0	0	0	0	44,946	0	9,009	14,551	3	68,509
20/ 5	471	0	399	1,390	0	2,260	45,417	0	9,408	15,941	3	70,769
21/ 5	0	0	0	0	0	0	45,417	0	9,408	15,941	3	70,769
22/ 5	1,177	0	953	1,803	0	3,933	46,594	0	10,361	17,744	3	74,702
23/ 5	0	0	0	0	0	0	46,594	0	10,361	17,744	3	74,702
24/ 5	783	0	820	1,528	0	3,131	47,377	0	11,181	19,272	3	77,833
25/ 5	0	0	0	0	0	0	47,377	0	11,181	19,272	3	77,833
26/ 5	0	0	0	0	0	0	47,377	0	11,181	19,272	3	77,833

APPENDIX TABLE 4.-- Continued

	DAILY #'S BYPASSED						ACCUM. #'S BYPASSED					
	Yrlg. Chinook	Subyr. Chinook	Wild Steelhead	Hat. Steelhead	Sockeye	Daily Total	Yrlg. Chinook	Subyr. Chinook	Wild Steelhead	Hat. Steelhead	Sockeye	Accum. Total
27/ 5	552	0	321	1,541	0	2,414	47,929	0	11,502	20,813	3	80,247
28/ 5	0	0	0	0	0	0	47,929	0	11,502	20,813	3	80,247
29/ 5	0	0	0	0	0	0	47,929	0	11,502	20,813	3	80,247
30/ 5	456	0	0	0	0	456	48,385	0	11,502	20,813	3	80,703
31/ 5	260	0	0	0	0	260	48,645	0	11,502	20,813	3	80,963

Appendix Table 5.-- Daily Collection Counts of Chinook, Wild and Hatchery Steelhead, and Sockeye, Facility Mortalities, and Daily River Flows and Spills During 1986, at Little Goose Dam.

DATE	YEARLING CHINOOK	SUB-YEARLING CHINOOK	WILD STEELHEAD	HATCHERY STEELHEAD	SOCKEYE	DAILY TOTAL	COLLECTION MORTALITY		RIVER FLOW IN CFS	SPILL	
							NUMBER	PERCENT		TOTAL	PERCENT
Mar 29	2,004	0	0	0	0	2,004	0	0.00	103,400	0	0.00
Mar 30	0	0	0	0	0	0	0	0.00	109,200	3,200	2.93
Mar 31	836	0	0	1,982	43	2,861	0	0.00	102,900	0	0.00
Apr 1	1,188	0	0	1,299	50	2,537	0	0.00	103,200	0	0.00
Apr 2	1,106	0	0	1,974	25	3,105	0	0.00	109,300	0	0.00
Apr 3	2,054	0	0	2,287	79	4,420	0	0.00	110,200	0	0.00
Apr 4	2,715	0	0	2,202	61	4,978	290	5.83	111,400	0	0.00
Apr 5	2,088	0	0	1,813	33	3,934	0	0.00	91,400	0	0.00
Apr 6	3,076	0	0	2,443	90	5,609	2	.04	100,800	0	0.00
Apr 7	4,903	0	0	2,619	75	7,597	23	.30	97,500	0	0.00
Apr 8	4,843	0	0	1,612	55	6,510	0	0.00	98,200	0	0.00
Apr 9	1,855	0	0	1,104	10	2,969	0	0.00	94,200	0	0.00
Apr 10	3,395	0	96	577	4	4,072	13	.32	104,200	0	0.00
Apr 11	4,125	0	446	313	28	4,912	2	.04	106,200	0	0.00
Apr 12	7,176	0	910	548	17	8,651	160	1.85	100,300	0	0.00
Apr 13	14,606	18	2,255	546	70	17,495	99	.57	94,800	0	0.00
Apr 14	16,161	59	2,032	1,231	59	19,542	362	1.85	92,800	0	0.00
Apr 15	13,356	0	2,143	1,047	66	16,612	129	.78	87,400	0	0.00
Apr 16	13,601	84	2,516	436	100	16,737	356	2.13	88,700	1,800	2.03
Apr 17	12,201	0	6,257	899	98	19,455	182	.94	93,200	0	0.00
Apr 18	9,351	0	7,985	1,234	65	18,635	72	.39	90,900	0	0.00
Apr 19	20,660	0	4,919	1,476	0	27,055	122	.45	83,400	0	0.00
Apr 20	25,256	0	5,367	947	0	31,570	125	.40	90,000	0	0.00
Apr 21	31,910	0	4,488	1,132	113	37,643	80	.21	90,700	0	0.00
Apr 22	41,004	0	5,803	1,055	0	47,862	106	.22	82,100	0	0.00
Apr 23	39,223	90	3,725	1,750	0	44,788	132	.29	103,800	6,100	5.88
Apr 24	39,526	0	3,783	6,173	149	49,631	300	.60	117,400	8,700	7.41
Apr 25	43,127	0	3,199	10,625	0	56,951	469	.82	110,300	0	0.00
Apr 26	49,380	0	5,516	11,564	0	66,460	388	.58	103,300	0	0.00
Apr 27	29,424	0	11,921	16,573	0	57,918	212	.37	90,000	0	0.00
Apr 28	26,193	0	9,616	14,173	0	49,982	129	.26	95,000	0	0.00
Apr 29	17,952	0	15,615	19,545	0	53,112	214	.40	94,500	0	0.00
Apr 30	13,378	0	11,119	20,610	90	45,197	184	.41	89,200	0	0.00
May 1	12,210	0	7,643	23,982	88	43,923	212	.48	89,400	0	0.00
May 2	13,703	0	7,051	23,282	0	44,036	220	.50	83,900	0	0.00
May 3	12,905	0	4,845	23,012	0	40,762	115	.28	83,500	0	0.00
May 4	14,806	0	3,677	30,250	0	48,733	258	.53	89,600	0	0.00
May 5	20,284	0	3,381	33,981	0	57,646	247	.43	102,700	0	0.00
May 6	23,214	0	5,118	31,561	0	59,893	297	.50	113,100	0	0.00
May 7	8,219	0	2,131	40,234	0	50,584	132	.26	103,900	0	0.00
May 8	5,330	0	2,460	29,484	0	37,274	117	.31	96,100	0	0.00
May 9	3,747	0	3,423	28,643	0	35,813	119	.33	91,700	0	0.00
May 10	5,025	0	2,953	43,672	0	51,650	94	.18	105,300	0	0.00
May 11	4,162	0	3,893	36,380	0	44,435	68	.15	98,800	0	0.00
May 12	4,575	0	5,415	31,987	0	41,977	88	.21	107,800	0	0.00
May 13	4,303	0	2,414	28,266	0	34,983	137	.39	99,800	0	0.00
May 14	4,988	0	3,019	35,659	0	43,666	79	.18	87,300	0	0.00
May 15	2,577	0	2,000	29,324	0	33,901	82	.24	99,000	0	0.00

Appendix Table 5.-- Continued.

DATE	YEARLING CHINOOK	SUB-YEARLING CHIN	WILD	HATCHERY	SOCKEYE	DAILY	COLLECTION		RIVER FLOW NUMBER	SPILL PERCENT	
May 16	3,871	0	2,937	26,430	0	33,238	108	.32	98,400	0	0.00
May 17	4,308	0	2,279	29,018	0	35,605	86	.24	89,000	0	0.00
May 18	4,675	0	1,517	24,489	0	30,681	48	.16	83,600	0	0.00
May 19	3,053	0	1,556	25,173	0	29,782	37	.12	103,100	0	0.00
May 20	3,294	0	901	26,667	0	30,862	63	.20	103,400	0	0.00
May 21	3,739	0	1,509	27,553	0	32,801	26	.08	116,600	0	0.00
May 22	3,790	0	1,313	24,648	0	29,751	31	.10	126,400	0	0.00
May 23	2,794	0	2,292	25,839	0	30,925	56	.18	116,600	0	0.00
May 24	6,082	0	2,568	25,137	0	33,787	33	.10	98,900	0	0.00
May 25	3,704	0	3,606	25,177	0	32,487	34	.10	93,800	0	0.00
May 26	3,268	0	3,166	27,541	0	33,975	33	.10	106,500	0	0.00
May 27	2,694	0	4,502	26,533	0	33,729	19	.06	126,200	0	0.00
May 28	3,908	0	3,610	29,067	0	36,585	71	.19	164,900	33,900	20.56
May 29	4,665	0	1,715	23,230	0	29,610	50	.17	189,000	65,700	34.76
May 30	2,590	0	2,384	22,629	88	27,691	51	.18	202,800	91,200	44.97
May 31	1,704	0	2,702	23,732	0	28,138	49	.17	212,300	81,700	38.48
Jun 1	1,185	0	3,267	21,569	0	26,021	56	.22	208,500	77,900	37.36
Jun 2	475	0	2,374	19,703	0	22,552	36	.16	204,900	75,900	37.04
Jun 3	1,515	113	1,515	17,980	113	21,236	31	.15	201,800	74,100	36.72
Jun 4	3,859	0	1,319	15,800	122	21,100	37	.18	199,300	81,400	40.84
Jun 5	3,046	0	788	12,762	0	16,596	42	.25	190,500	63,300	33.23
Jun 6	726	453	726	4,989	0	6,894	7	.10	182,800	54,900	30.03
Jun 7	802	78	405	5,867	78	7,230	12	.17	171,100	43,300	25.31
Jun 8	811	0	464	4,737	232	6,244	8	.13	152,200	24,900	16.36
Jun 9	157	0	426	5,468	0	6,051	6	.10	149,100	23,000	15.43
Jun 10	806	83	361	4,188	41	5,479	5	.09	135,900	11,100	8.17
Jun 11	1,255	234	545	3,675	76	5,785	11	.19	116,500	10,200	8.76
Jun 12	932	186	73	2,454	0	3,645	6	.16	116,700	0	0.00
Jun 13	761	0	273	1,742	0	2,776	8	.29	115,900	0	0.00
Jun 14	777	0	213	1,251	0	2,241	5	.22	114,000	0	0.00
Jun 15	401	66	135	971	0	1,573	7	.45	100,100	0	0.00
Jun 16	894	0	65	765	0	1,724	5	.29	104,900	0	0.00
Jun 17	633	0	36	1,299	0	1,968	17	.86	103,000	0	0.00
Jun 18	696	68	0	1,030	0	1,794	4	.22	94,600	0	0.00
Jun 19	798	0	21	567	0	1,386	7	.51	96,000	0	0.00
Jun 20	751	0	65	642	0	1,458	3	.21	78,900	0	0.00
Jun 21	318	220	48	341	0	927	27	2.91	78,800	0	0.00
Jun 22	167	56	37	371	37	668	1	.15	64,300	0	0.00
Jun 23	397	31	0	429	0	857	15	1.75	63,500	0	0.00
Jun 24	549	55	0	239	18	861	7	.81	66,800	0	0.00
Jun 25	474	45	12	248	0	779	11	1.41	61,600	0	0.00
Jun 26	302	36	24	193	0	555	2	.36	58,700	0	0.00
Jun 27	719	88	35	211	0	1,053	10	.95	59,700	0	0.00
Jun 28	1,034	125	42	207	15	1,423	4	.28	46,200	0	0.00
Jun 29	734	250	0	139	13	1,136	13	1.14	48,100	0	0.00
Jun 30	281	53	13	41	0	388	0	0.00	43,900	0	0.00
Jul 1	137	23	0	114	0	274	3	1.09	42,700	0	0.00
Jul 2	129	18	0	18	0	165	4	2.42	37,100	0	0.00

Appendix Table 5.-- Continued.

DATE	YEARLING CHINOOK	SUB-YEARLING CHINOOK	WILD STEELHEAD	HATCHERY STEELHEAD	SOCKEYE	DAILY TOTAL	COLLECTION MORTALITY NUMBER	COLLECTION MORTALITY PERCENT	RIVER FLOW IN CFS	SPILL TOTAL	SPILL PERCENT
Jul 3	486	112	0	57	11	666	12	1.80	42,600	0	0.00
TOTAL	722,867	2,644	220,973	1,144,436	2,312	2,093,232	7,633	.36			

APPENDIX TABLE 6.-- 1986 TRUCK TRANSPORTATION REPORT
AT LITTLE GOOSE

	DAILY #'s TRUCKED						ACCUM. #'s TRUCKED					
	Yrlg. Chinook	Subyr. Chinook	Wild Steelhead	Hat. Steelhead	Sockeye	Daily Total	Yrlg. Chinook	Subyr. Chinook	Wild Steelhead	Hat. Steelhead	Sockeye	Accum. Total
5/ 4	75	0	0	4,984	155	5,214	75	0	0	4,984	155	5,214
6/ 4	0	0	0	0	0	0	75	0	0	4,984	155	5,214
7/ 4	88	0	0	3,812	108	4,008	163	0	0	8,796	263	9,222
8/ 4	0	0	0	0	0	0	163	0	0	8,796	263	9,222
9/ 4	0	0	0	0	0	0	163	0	0	8,796	263	9,222
10/ 4	0	0	0	0	0	0	163	0	0	8,796	263	9,222
11/ 4	0	0	0	0	0	0	163	0	0	8,796	263	9,222
12/ 4	0	0	0	0	0	0	163	0	0	8,796	263	9,222
13/ 4	0	0	0	0	0	0	163	0	0	8,796	263	9,222
14/ 4	0	0	0	0	0	0	163	0	0	8,796	263	9,222
15/ 4	0	0	0	0	0	0	163	0	0	8,796	263	9,222
16/ 4	0	0	0	0	0	0	163	0	0	8,796	263	9,222
17/ 4	33,820	178	8,426	1,366	265	44,055	33,983	178	8,426	10,162	528	53,277
18/ 4	5,277	0	2,708	389	42	8,416	39,260	178	11,134	10,551	570	61,693
19/ 4	0	0	0	0	0	0	39,260	178	11,134	10,551	570	61,693
20/ 4	0	0	0	0	0	0	39,260	178	11,134	10,551	570	61,693
21/ 4	0	0	0	0	0	0	39,260	178	11,134	10,551	570	61,693
22/ 4	0	0	0	0	0	0	39,260	178	11,134	10,551	570	61,693
23/ 4	0	0	0	0	0	0	39,260	178	11,134	10,551	570	61,693
24/ 4	0	0	0	0	0	0	39,260	178	11,134	10,551	570	61,693
25/ 4	0	0	0	0	0	0	39,260	178	11,134	10,551	570	61,693
26/ 4	0	0	0	0	0	0	39,260	178	11,134	10,551	570	61,693
27/ 4	0	0	0	0	0	0	39,260	178	11,134	10,551	570	61,693
28/ 4	0	0	0	0	0	0	39,260	178	11,134	10,551	570	61,693
29/ 4	0	0	0	0	0	0	39,260	178	11,134	10,551	570	61,693
30/ 4	0	0	0	0	0	0	39,260	178	11,134	10,551	570	61,693
1/ 5	0	0	0	0	0	0	39,260	178	11,134	10,551	570	61,693
2/ 5	0	0	0	0	0	0	39,260	178	11,134	10,551	570	61,693
3/ 5	0	0	0	0	0	0	39,260	178	11,134	10,551	570	61,693
4/ 5	0	0	0	0	0	0	39,260	178	11,134	10,551	570	61,693
5/ 5	0	0	0	0	0	0	39,260	178	11,134	10,551	570	61,693
6/ 5	0	0	0	0	0	0	39,260	178	11,134	10,551	570	61,693
7/ 5	0	0	0	0	0	0	39,260	178	11,134	10,551	570	61,693
8/ 5	0	0	0	0	0	0	39,260	178	11,134	10,551	570	61,693
9/ 5	0	0	0	0	0	0	39,260	178	11,134	10,551	570	61,693
10/ 5	0	0	0	0	0	0	39,260	178	11,134	10,551	570	61,693
11/ 5	0	0	0	0	0	0	39,260	178	11,134	10,551	570	61,693
12/ 5	0	0	0	0	0	0	39,260	178	11,134	10,551	570	61,693
13/ 5	0	0	0	0	0	0	39,260	178	11,134	10,551	570	61,693
14/ 5	0	0	0	0	0	0	39,260	178	11,134	10,551	570	61,693
15/ 5	0	0	0	0	0	0	39,260	178	11,134	10,551	570	61,693
16/ 5	0	0	0	0	0	0	39,260	178	11,134	10,551	570	61,693
17/ 5	0	0	0	0	0	0	39,260	178	11,134	10,551	570	61,693
18/ 5	0	0	0	0	0	0	39,260	178	11,134	10,551	570	61,693
19/ 5	0	0	0	0	0	0	39,260	178	11,134	10,551	570	61,693
20/ 5	0	0	0	0	0	0	39,260	178	11,134	10,551	570	61,693
21/ 5	0	0	0	0	0	0	39,260	178	11,134	10,551	570	61,693
22/ 5	0	0	0	0	0	0	39,260	178	11,134	10,551	570	61,693

APPENDIX TABLE 6.-- Continued

	DAILY #'s TRUCKED						ACCUM. #'s TRUCKED					
	Yrlg. Chinook	Subyr. Chinook	Wild Steelhead	Hat. Steelhead	Sockeye	Daily Total	Yrlg. Chinook	Subyr. Chinook	Wild Steelhead	Hat. Steelhead	Sockeye	Accum. Total
23/ 5	0	0	0	0	0	0	39,260	178	11,134	10,551	570	61,693
24/ 5	0	0	0	0	0	0	39,260	178	11,134	10,551	570	61,693
25/ 5	0	0	0	0	0	0	39,260	178	11,134	10,551	570	61,693
26/ 5	0	0	0	0	0	0	39,260	178	11,134	10,551	570	61,693
27/ 5	0	0	0	0	0	0	39,260	178	11,134	10,551	570	61,693
28/ 5	0	0	0	0	0	0	39,260	178	11,134	10,551	570	61,693
29/ 5	0	0	0	0	0	0	39,260	178	11,134	10,551	570	61,693
30/ 5	0	0	0	0	0	0	39,260	178	11,134	10,551	570	61,693
31/ 5	0	0	0	0	0	0	39,260	178	11,134	10,551	570	61,693
1/ 6	0	0	0	0	0	0	39,260	178	11,134	10,551	570	61,693
2/ 6	0	0	0	0	0	0	39,260	178	11,134	10,551	570	61,693
3/ 6	0	0	0	0	0	0	39,260	178	11,134	10,551	570	61,693
4/ 6	0	0	0	0	0	0	39,260	178	11,134	10,551	570	61,693
5/ 6	0	0	0	0	0	0	39,260	178	11,134	10,551	570	61,693
6/ 6	0	0	0	0	0	0	39,260	178	11,134	10,551	570	61,693
7/ 6	0	0	0	0	0	0	39,260	178	11,134	10,551	570	61,693
8/ 6	0	0	0	0	0	0	39,260	178	11,134	10,551	570	61,693
9/ 6	0	0	0	0	0	0	39,260	178	11,134	10,551	570	61,693
10/ 6	0	0	0	0	0	0	39,260	178	11,134	10,551	570	61,693
11/ 6	0	0	0	0	0	0	39,260	178	11,134	10,551	570	61,693
12/ 6	0	0	0	0	0	0	39,260	178	11,134	10,551	570	61,693
13/ 6	0	0	0	0	0	0	39,260	178	11,134	10,551	570	61,693
14/ 6	0	0	0	0	0	0	39,260	178	11,134	10,551	570	61,693
15/ 6	0	0	0	0	0	0	39,260	178	11,134	10,551	570	61,693
16/ 6	0	0	0	0	0	0	39,260	178	11,134	10,551	570	61,693
17/ 6	1,359	0	90	1,811	0	3,260	40,619	178	11,224	12,362	570	64,953
18/ 6	0	0	0	0	0	0	40,619	178	11,224	12,362	570	64,953
19/ 6	1,570	55	25	1,538	0	3,188	42,189	233	11,249	13,900	570	68,141
20/ 6	0	0	0	0	0	0	42,189	233	11,249	13,900	570	68,141
21/ 6	1,096	207	114	993	0	2,410	43,285	440	11,363	14,893	570	70,551
22/ 6	0	0	0	0	0	0	43,285	440	11,363	14,893	570	70,551
23/ 6	501	92	45	787	46	1,471	43,786	532	11,408	15,680	616	72,022
24/ 6	0	0	0	0	0	0	43,786	532	11,408	15,680	616	72,022
25/ 6	1,053	104	13	509	13	1,692	44,839	636	11,421	16,189	629	73,714
26/ 6	0	0	0	0	0	0	44,839	636	11,421	16,189	629	73,714
27/ 6	1,001	121	61	424	0	1,607	45,840	757	11,482	16,613	629	75,321
28/ 6	0	0	0	0	0	0	45,840	757	11,482	16,613	629	75,321
29/ 6	1,752	371	40	337	26	2,526	47,592	1,128	11,522	16,950	655	77,847
30/ 6	0	0	0	0	0	0	47,592	1,128	11,522	16,950	655	77,847
1/ 7	427	80	16	127	0	650	48,019	1,208	11,538	17,077	655	78,497
2/ 7	0	0	0	0	0	0	48,019	1,208	11,538	17,077	655	78,497
3/ 7	654	147	0	76	14	891	48,673	1,355	11,538	17,153	669	79,388

APPENDIX TABLE 7.-- 1986 BARGE TRANSPORTATION REPORT
AT LITTLE GOOSE

	DAILY #'s BARGED						ACCUM. #'s BARGED					
	Yrlg. Chinook	Subyr. Chinook	Wild Steelhead	Hat. Steelhead	Sockeye	Daily Total	Yrlg. Chinook	Subyr. Chinook	Wild Steelhead	Hat. Steelhead	Sockeye	Accum. Total
11/ 4	1,559	0	85	5,579	155	7,378	1,559	0	85	5,579	155	7,378
12/ 4	0	0	0	0	0	0	1,559	0	85	5,579	155	7,378
13/ 4	0	0	0	0	0	0	1,559	0	85	5,579	155	7,378
14/ 4	0	0	0	0	0	0	1,559	0	85	5,579	155	7,378
15/ 4	41,754	101	4,947	2,897	167	49,866	43,313	101	5,032	8,476	322	57,244
16/ 4	0	0	0	0	0	0	43,313	101	5,032	8,476	322	57,244
17/ 4	0	0	0	0	0	0	43,313	101	5,032	8,476	322	57,244
18/ 4	0	0	0	0	0	0	43,313	101	5,032	8,476	322	57,244
19/ 4	9,590	0	8,266	1,277	68	19,201	52,903	101	13,298	9,753	390	76,445
20/ 4	0	0	0	0	0	0	52,903	101	13,298	9,753	390	76,445
21/ 4	46,794	0	10,526	2,467	0	59,787	99,697	101	23,824	12,220	390	136,232
22/ 4	0	0	0	0	0	0	99,697	101	23,824	12,220	390	136,232
23/ 4	77,923	0	11,038	2,149	52	91,162	177,620	101	34,862	14,369	442	227,394
24/ 4	0	0	0	0	0	0	177,620	101	34,862	14,369	442	227,394
25/ 4	76,393	93	7,341	8,367	185	92,379	254,013	194	42,203	22,736	627	319,773
26/ 4	0	0	0	0	0	0	254,013	194	42,203	22,736	627	319,773
27/ 4	92,585	0	8,647	22,418	0	123,650	346,598	194	50,850	45,154	627	443,423
28/ 4	0	0	0	0	0	0	346,598	194	50,850	45,154	627	443,423
29/ 4	54,040	0	21,287	30,780	0	106,107	400,638	194	72,137	75,934	627	549,530
30/ 4	17,415	0	15,350	19,211	0	51,976	418,053	194	87,487	95,145	627	601,506
1/ 5	13,784	0	11,578	21,458	93	46,913	431,837	194	99,065	116,603	720	648,419
2/ 5	11,521	0	7,287	22,897	84	41,789	443,358	194	106,352	139,500	804	690,208
3/ 5	13,979	0	7,263	23,980	0	45,222	457,337	194	113,615	163,480	804	735,430
4/ 5	11,928	0	4,534	21,541	0	38,003	469,265	194	118,149	185,021	804	773,433
5/ 5	14,639	0	3,707	30,513	0	48,859	483,904	194	121,856	215,534	804	822,292
6/ 5	11,453	0	1,928	19,380	0	32,761	495,357	194	123,784	234,914	804	855,053
7/ 5	34,765	0	7,444	49,134	0	91,343	530,122	194	131,228	284,048	804	946,396
8/ 5	4,294	0	1,131	21,356	0	26,781	534,416	194	132,359	305,404	804	973,177
9/ 5	7,940	0	2,909	42,109	0	52,958	542,356	194	135,268	347,513	804	1,026,135
10/ 5	4,817	0	4,457	37,308	0	46,582	547,173	194	139,725	384,821	804	1,072,717
11/ 5	4,522	0	2,691	39,804	0	47,017	551,695	194	142,416	424,625	804	1,119,734
12/ 5	3,592	0	3,416	31,916	0	38,924	555,287	194	145,832	456,541	804	1,158,658
13/ 5	4,407	0	5,317	31,393	0	41,117	559,694	194	151,149	487,934	804	1,199,775
14/ 5	4,384	0	2,502	29,337	0	36,223	564,078	194	153,651	517,271	804	1,235,998
15/ 5	4,599	0	2,832	33,434	0	40,865	568,677	194	156,483	550,705	804	1,276,863
16/ 5	0	0	0	0	0	0	568,677	194	156,483	550,705	804	1,276,863
17/ 5	7,039	0	5,477	57,343	0	69,859	575,716	194	161,960	608,048	804	1,346,722
18/ 5	4,294	0	2,290	29,161	0	35,745	580,010	194	164,250	637,209	804	1,382,467
19/ 5	4,311	0	1,405	22,679	0	28,395	584,321	194	165,655	659,888	804	1,410,862
20/ 5	2,974	0	1,521	24,567	0	29,062	587,295	194	167,176	684,455	804	1,439,924
21/ 5	3,249	0	897	26,549	0	30,695	590,544	194	168,073	711,004	804	1,470,619
22/ 5	3,705	0	1,499	27,382	0	32,586	594,249	194	169,572	738,386	804	1,503,205
23/ 5	3,850	0	1,338	25,109	0	30,297	598,099	194	170,910	763,495	804	1,533,502
24/ 5	2,895	0	2,386	26,990	0	32,271	600,994	194	173,296	790,485	804	1,565,773
25/ 5	6,043	0	2,556	25,025	0	33,624	607,037	194	175,852	815,510	804	1,599,397
26/ 5	3,642	0	3,548	24,746	0	31,936	610,679	194	179,400	840,256	804	1,631,333
27/ 5	3,261	0	3,165	27,538	0	33,964	613,940	194	182,565	867,794	804	1,665,297
28/ 5	2,708	0	4,529	26,696	0	33,933	616,648	194	187,094	894,490	804	1,699,230

APPENDIX TABLE 7.-- Continued

	DAILY #'s BARGED						ACCUM. #'s BARGED					
	Yrlg. Chinook	Subyr. Chinook	Wild Steelhead	Hat. Steelhead	Sockeye	Daily Total	Yrlg. Chinook	Subyr. Chinook	Wild Steelhead	Hat. Steelhead	Sockeye	Accum. Total
29/ 5	4,150	0	3,857	31,029	0	39,036	620,798	194	190,951	925,519	804	1,738,266
30/ 5	0	0	0	0	0	0	620,798	194	190,951	925,519	804	1,738,266
31/ 5	6,245	0	4,052	43,086	108	53,491	627,043	194	195,003	968,605	912	1,791,757
1/ 6	1,859	0	2,973	26,072	0	30,904	628,902	194	197,976	994,677	912	1,822,661
2/ 6	1,013	0	2,812	18,532	0	22,357	629,915	194	200,788	1,013,209	912	1,845,018
3/ 6	0	0	0	0	0	0	629,915	194	200,788	1,013,209	912	1,845,018
4/ 6	1,899	94	4,005	38,345	90	44,433	631,814	288	204,793	1,051,554	1,002	1,889,451
5/ 6	0	0	0	0	0	0	631,814	288	204,793	1,051,554	1,002	1,889,451
6/ 6	6,690	0	2,078	27,752	122	36,642	638,504	288	206,871	1,079,306	1,124	1,926,093
7/ 6	0	0	0	0	0	0	638,504	288	206,871	1,079,306	1,124	1,926,093
8/ 6	1,430	483	1,047	10,251	81	13,292	639,934	771	207,918	1,089,557	1,205	1,939,385
9/ 6	0	0	0	0	0	0	639,934	771	207,918	1,089,557	1,205	1,939,385
10/ 6	721	0	882	10,549	141	12,293	640,655	771	208,800	1,100,106	1,346	1,951,678
11/ 6	0	0	0	0	0	0	640,655	771	208,800	1,100,106	1,346	1,951,678
12/ 6	1,932	269	858	8,103	110	11,272	642,587	1,040	209,658	1,108,209	1,456	1,962,950
13/ 6	0	0	0	0	0	0	642,587	1,040	209,658	1,108,209	1,456	1,962,950
14/ 6	1,596	150	364	3,902	0	6,012	644,183	1,190	210,022	1,112,111	1,456	1,968,962
15/ 6	0	0	0	0	0	0	644,183	1,190	210,022	1,112,111	1,456	1,968,962
16/ 6	1,188	50	344	2,173	48	3,803	645,371	1,240	210,366	1,114,284	1,504	1,972,765

APPENDIX TABLE 8.-- 1986 BYPASS REPORT
AT LITTLE GOOSE

	DAILY #'S BYPASSED						ACCUM. #'S BYPASSED					
	Yrlg. Chinook	Subyr. Chinook	Wild Steelhead	Hat. Steelhead	Sockeye	Daily Total	Yrlg. Chinook	Subyr. Chinook	Wild Steelhead	Hat. Steelhead	Sockeye	Accum. Total
29/ 3	2,004	0	0	0	0	2,004	2,004	0	0	0	0	2,004
30/ 3	0	0	0	0	0	0	2,004	0	0	0	0	2,004
31/ 3	836	0	0	1,982	43	2,861	2,840	0	0	1,982	43	4,865
1/ 4	1,188	0	0	1,299	50	2,537	4,028	0	0	3,281	93	7,402
2/ 4	1,106	0	0	1,974	25	3,105	5,134	0	0	5,255	118	10,507
3/ 4	2,054	0	0	0	0	2,054	7,188	0	0	5,255	118	12,561
4/ 4	2,660	0	0	0	0	2,660	9,848	0	0	5,255	118	15,221
5/ 4	2,068	0	0	0	0	2,068	11,916	0	0	5,255	118	17,289
6/ 4	3,006	0	0	0	0	3,006	14,922	0	0	5,255	118	20,295
7/ 4	4,883	0	0	0	0	4,883	19,805	0	0	5,255	118	25,178
8/ 4	4,683	0	0	0	0	4,683	24,488	0	0	5,255	118	29,861
9/ 4	1,816	0	0	0	0	1,816	26,304	0	0	5,255	118	31,677
10/ 4	491	0	33	14	0	538	26,795	0	33	5,269	118	32,215
11/ 4	175	0	0	14	1	190	26,970	0	33	5,283	119	32,405

Appendix Table 9.-- Daily Collection Counts of Chinook, Coho, Steelhead, and Sockeye, Facility Mortalities, and Daily River Flows and Spills During 1986, at McNary Dam.

DATE	YEARLING CHINOOK	SUB-YEARLING CHINOOK	COHO	STEELHEAD	SOCKEYE	DAILY TOTAL	COLLECTION MORTALITY		RIVER FLOW IN CFS	SPILL	
							NUMBER	PERCENT		TOTAL	PERCENT
Mar 26	157	14	0	186	0	357	4	1.12	263,900	32,800	12.43
Mar 27	236	106	0	358	16	716	1	.14	258,400	29,400	11.38
Mar 28	271	35	0	659	47	1,012	2	.20	227,700	29,400	12.91
Mar 29	212	35	0	447	0	694	7	1.01	238,400	55,100	23.11
Mar 30	158	0	0	800	32	990	0	0.00	309,800	130,200	42.03
Mar 31	170	0	0	1,000	0	1,170	4	.34	278,100	56,000	20.14
Apr 1	250	20	0	1,250	50	1,570	2	.13	291,900	72,600	24.87
Apr 2	179	32	0	1,463	0	1,674	0	0.00	280,400	56,900	20.29
Apr 3	242	53	0	926	21	1,242	1	.08	278,100	50,300	18.09
Apr 4	2,256	56	0	1,033	22	3,367	9	.27	282,400	82,900	29.36
Apr 5	15,200	20	0	1,960	30	17,210	23	.13	244,200	22,700	9.30
Apr 6	42,907	13	0	1,587	27	44,534	54	.12	241,800	47,400	19.60
Apr 7	66,350	30	10	980	30	67,400	110	.16	254,000	52,500	20.67
Apr 8	51,580	40	0	1,440	40	53,100	108	.20	218,100	11,900	5.46
Apr 9	43,141	59	0	1,694	82	44,976	98	.22	217,200	0	0.00
Apr 10	40,371	29	0	1,600	29	42,029	45	.11	234,100	8,700	3.72
Apr 11	35,886	71	0	1,671	100	37,728	21	.06	245,900	19,700	8.09
Apr 12	26,038	63	0	1,375	88	27,564	18	.07	240,300	12,800	5.33
Apr 13	22,600	38	0	1,900	138	24,676	18	.07	260,000	30,200	11.62
Apr 14	21,813	80	0	1,733	227	23,853	16	.07	270,900	50,400	18.60
Apr 15	20,663	0	0	1,705	284	22,652	28	.12	258,800	44,600	17.23
Apr 16	18,720	10	10	960	230	19,930	40	.20	276,300	55,200	19.98
Apr 17	24,144	22	0	1,444	489	26,099	41	.16	279,400	50,700	18.15
Apr 18	17,670	60	0	1,170	600	19,500	41	.21	264,800	31,500	11.90
Apr 19	20,657	71	0	1,500	1,571	23,799	35	.15	231,200	0	0.00
Apr 20	24,514	29	0	2,000	1,414	27,957	27	.10	203,200	0	0.00
Apr 21	25,086	29	14	1,886	1,471	28,486	30	.11	202,200	0	0.00
Apr 22	26,429	0	0	1,786	1,486	29,701	54	.18	227,800	25,400	11.15
Apr 23	27,857	0	43	2,243	2,343	32,486	63	.19	298,800	76,100	25.47
Apr 24	29,933	33	33	2,722	3,967	36,688	72	.20	294,600	65,400	22.20
Apr 25	34,667	56	22	3,256	4,333	42,334	132	.31	266,100	43,800	16.46
Apr 26	18,288	25	13	2,225	3,500	24,051	72	.30	280,000	59,600	21.29
Apr 27	38,340	50	10	7,390	17,620	63,410	134	.21	248,800	28,800	11.58
Apr 28	27,613	138	38	7,475	12,813	48,077	204	.42	241,700	24,900	10.30
Apr 29	30,350	50	88	10,463	13,150	54,101	286	.53	303,000	72,700	23.99
Apr 30	27,363	63	275	8,788	13,300	49,789	277	.56	235,600	3,700	1.57
May 1	32,656	144	100	8,589	16,167	57,656	303	.53	263,000	32,700	12.43
May 2	35,143	257	71	11,914	11,971	59,356	400	.67	245,800	15,100	6.14
May 3	32,592	167	33	9,458	12,167	54,417	499	.92	231,300	2,200	.95
May 4	38,900	150	158	15,008	6,050	60,266	372	.62	230,600	0	0.00
May 5	33,867	100	117	14,508	4,317	52,909	368	.70	234,200	0	0.00
May 6	48,522	78	50	19,500	8,544	76,694	326	.43	235,800	38,600	16.37
May 7	68,100	89	94	19,856	11,361	99,500	286	.29	252,100	24,400	9.68
May 8	71,780	110	100	21,980	7,120	101,090	718	.71	255,000	26,200	10.27
May 9	53,770	210	250	14,370	7,450	76,050	774	1.02	241,300	13,300	5.51
May 10	59,540	120	220	15,880	5,020	80,780	653	.81	257,800	26,800	10.40
May 11	87,300	80	180	16,710	7,440	111,710	662	.59	259,100	27,200	10.50
May 12	79,960	230	300	19,080	10,800	110,370	861	.78	251,600	22,900	9.10

Appendix Table 9.-- Continued.

DATE	YEARLING CHINOOK	SUBYEARLING CHINOOK	COHO	STEELHEAD	SOCKEYE	DAILY TOTAL	COLLECTION MORTALITY NUMBER	COLLECTION MORTALITY PERCENT	RIVER FLOW IN CFS	SPILL TOTAL	SPILL PERCENT
May 13	68,780	250	200	19,530	14,880	103,640	741	.71	261,400	28,900	11.06
May 14	82,960	320	270	24,420	15,580	123,550	763	.62	271,300	38,200	14.08
May 15	79,390	320	290	19,760	17,350	117,110	833	.71	272,900	39,100	14.33
May 16	67,910	440	720	24,410	17,800	111,280	600	.54	248,300	12,600	5.07
May 17	68,590	250	760	23,240	17,250	110,090	627	.57	236,800	8,800	3.72
May 18	70,380	220	930	25,190	19,610	116,330	691	.59	204,400	0	0.00
May 19	67,620	360	1,280	23,170	13,830	106,260	473	.45	215,900	11,700	5.42
May 20	74,610	530	3,110	21,170	19,350	118,770	609	.51	257,400	50,600	19.66
May 21	57,450	490	2,900	20,730	20,960	102,530	641	.63	285,800	75,700	26.49
May 22	67,710	470	4,790	21,540	40,800	135,310	478	.35	275,400	79,200	28.76
May 23	64,640	980	5,520	24,840	51,780	147,760	492	.33	275,300	73,600	26.73
May 24	30,780	1,790	5,590	15,960	30,810	84,930	413	.49	221,500	17,600	7.95
May 25	35,042	1,684	4,895	19,263	29,126	90,010	443	.49	198,800	1,500	.75
May 26	50,747	893	4,493	14,760	31,853	102,746	402	.39	195,200	35,400	18.14
May 27	22,440	630	3,560	11,790	23,350	61,770	456	.74	264,300	71,800	27.17
May 28	34,080	800	4,050	13,550	27,130	79,610	862	1.08	321,600	130,300	40.52
May 29	20,650	2,600	2,190	8,250	21,870	55,560	573	1.03	332,000	114,900	34.61
May 30	18,780	6,470	5,400	16,780	22,400	69,830	470	.67	353,200	121,700	34.46
May 31	14,300	16,650	3,750	13,370	17,530	65,600	448	.68	354,300	119,200	33.64
Jun 1	10,790	31,580	2,090	10,720	15,170	70,350	648	.92	395,300	156,700	39.64
Jun 2	5,980	46,370	1,010	6,820	14,250	74,430	2,099	2.82	365,150	142,330	38.98
Jun 3	6,730	34,380	1,630	9,270	14,270	66,280	1,675	2.53	384,500	168,900	43.93
Jun 4	5,050	30,600	2,020	8,130	8,430	54,230	2,442	4.50	375,200	174,600	46.54
Jun 5	4,810	27,960	3,040	6,940	10,290	53,040	1,581	2.98	372,600	180,600	48.47
Jun 6	2,820	40,350	1,100	5,460	17,430	67,160	1,356	2.02	335,400	126,900	37.84
Jun 7	8,380	52,390	1,900	6,060	21,120	89,850	1,703	1.90	366,000	181,500	49.59
Jun 8	4,980	95,850	1,690	4,670	14,730	121,920	3,581	2.94	326,600	131,000	40.11
Jun 9	4,690	128,650	1,100	3,340	8,550	146,330	3,174	2.17	308,700	113,500	36.77
Jun 10	4,460	110,910	730	2,000	6,660	124,760	3,256	2.61	298,500	118,800	39.80
Jun 11	1,700	81,140	420	1,430	3,420	88,110	1,839	2.09	290,700	86,900	29.89
Jun 12	1,450	54,860	730	2,280	3,420	62,740	1,133	1.81	258,000	43,900	17.02
Jun 13	871	47,388	835	2,800	2,847	54,741	723	1.32	236,900	25,100	10.60
Jun 14	824	56,400	882	3,600	2,906	64,612	817	1.26	239,600	6,500	2.71
Jun 15	475	38,450	250	1,838	2,150	43,163	544	1.26	246,100	32,000	13.00
Jun 16	162	20,028	423	2,577	1,252	24,442	506	2.07	243,000	45,300	18.64
Jun 17	100	82,756	622	1,011	1,633	86,122	1,166	1.35	250,900	46,900	18.69
Jun 18	67	222,889	400	778	867	225,001	2,721	1.21	221,700	10,400	4.69
Jun 19	80	211,360	400	980	760	213,580	2,244	1.05	219,800	8,700	3.96
Jun 20	15	206,456	265	1,294	779	208,809	3,061	1.47	211,300	2,300	1.09
Jun 21	53	85,760	213	853	413	87,292	995	1.14	202,200	0	0.00
Jun 22	57	125,586	229	600	400	126,872	1,155	.91	175,400	0	0.00
Jun 23	53	93,360	53	560	480	94,506	1,140	1.21	180,500	0	0.00
Jun 24	53	81,293	80	400	107	81,933	1,503	1.83	197,600	0	0.00
Jun 25	27	53,187	93	213	213	53,733	577	1.07	197,600	0	0.00
Jun 26	57	53,286	14	271	186	53,814	932	1.73	201,500	0	0.00
Jun 27	14	82,643	86	214	286	83,243	935	1.12	146,500	0	0.00
Jun 28	29	57,743	43	100	86	58,001	761	1.31	169,300	0	0.00
Jun 29	29	32,086	14	129	71	32,329	283	.88	164,100	0	0.00

Appendix Table 9.-- Continued.

DATE	YEARLING CHINOOK	SUBYEARLING CHINOOK	COHO	STEELHEAD	SOCKEYE	DAILY TOTAL	COLLECTION MORTALITY NUMBER	COLLECTION MORTALITY PERCENT	RIVER FLOW IN CFS	SPILL TOTAL	SPILL PERCENT
Jun 30	57	22,357	0	86	43	22,543	294	1.30	145,600	0	0.00
Jul 1	29	48,286	14	29	71	48,429	498	1.03	161,900	0	0.00
Jul 2	57	57,800	14	143	86	58,100	634	1.09	121,700	0	0.00
Jul 3	14	39,214	0	14	0	39,242	346	.88	108,900	0	0.00
Jul 4	0	27,029	0	71	29	27,129	398	1.47	125,500	0	0.00
Jul 5	0	22,986	14	14	14	23,028	389	1.69	104,900	0	0.00
Jul 6	29	28,686	14	0	57	28,786	420	1.46	74,800	0	0.00
Jul 7	0	32,314	0	29	14	32,357	399	1.23	102,800	0	0.00
Jul 8	0	36,429	71	57	43	36,600	612	1.67	126,000	0	0.00
Jul 9	0	76,114	14	43	29	76,200	917	1.20	126,500	0	0.00
Jul 10	0	31,386	0	14	14	31,414	544	1.73	154,700	0	0.00
Jul 11	0	29,314	14	0	57	29,385	872	2.97	183,300	0	0.00
Jul 12	0	34,871	0	43	43	34,957	655	1.87	155,800	0	0.00
Jul 13	29	62,429	29	43	57	62,587	1,826	2.92	157,400	0	0.00
Jul 14	14	174,200	57	43	43	174,357	3,035	1.74	185,400	0	0.00
Jul 15	0	139,729	29	43	43	139,844	1,761	1.26	185,000	0	0.00
Jul 16	14	92,814	43	57	43	92,971	1,519	1.63	164,000	0	0.00
Jul 17	0	42,786	0	14	14	42,814	519	1.21	166,800	0	0.00
Jul 18	29	98,829	29	57	57	99,001	1,003	1.01	172,400	0	0.00
Jul 19	29	178,871	57	43	100	179,100	1,933	1.08	158,500	0	0.00
Jul 20	0	120,443	29	29	100	120,601	2,151	1.78	167,500	0	0.00
Jul 21	0	140,214	114	0	157	140,485	2,486	1.77	188,500	0	0.00
Jul 22	0	517,585	62	46	138	517,831	8,764	1.69	181,000	0	0.00
Jul 23	0	229,371	43	29	229	229,672	3,113	1.36	149,700	0	0.00
Jul 24	0	60,986	14	43	71	61,114	1,203	1.97	167,400	0	0.00
Jul 25	0	39,129	29	14	57	39,229	1,035	2.64	174,900	0	0.00
Jul 26	0	37,486	0	14	14	37,514	1,055	2.81	154,500	0	0.00
Jul 27	0	32,929	14	0	0	32,943	658	2.00	167,400	0	0.00
Jul 28	0	86,014	29	29	29	86,101	2,148	2.49	145,600	0	0.00
Jul 29	0	55,200	0	0	0	55,200	2,013	3.65	144,300	0	0.00
Jul 30	0	73,814	0	14	14	73,842	2,385	3.23	138,600	0	0.00
Jul 31	0	196,729	14	0	43	196,786	8,319	4.23	137,900	0	0.00
Aug 1	0	158,357	29	0	71	158,457	8,173	5.16	134,000	0	0.00
Aug 2	0	154,143	29	29	57	154,258	2,597	1.68	126,200	0	0.00
Aug 3	0	55,400	0	57	29	55,486	2,797	5.04	141,200	0	0.00
Aug 4	0	21,043	0	0	14	21,057	548	2.60	102,400	0	0.00
Aug 5	0	7,729	43	14	0	7,786	981	12.60	121,800	0	0.00
Aug 6	0	21,443	14	0	57	21,514	1,065	4.95	125,600	0	0.00
Aug 7	0	16,057	43	0	14	16,114	731	4.54	127,100	0	0.00
Aug 8	0	32,386	14	0	14	32,414	905	2.79	136,200	0	0.00
Aug 9	0	35,057	0	14	14	35,085	839	2.39	137,100	0	0.00
Aug 10	0	26,700	0	0	14	26,714	997	3.73	136,000	0	0.00
Aug 11	0	23,271	14	0	0	23,285	754	3.24	125,600	0	0.00
Aug 12	0	24,157	0	14	43	24,214	690	2.85	141,200	0	0.00
Aug 13	0	26,857	29	0	14	26,900	1,000	3.72	145,000	0	0.00
Aug 14	0	55,814	14	14	57	55,899	1,219	2.18	142,500	0	0.00
Aug 15	0	31,029	14	0	14	31,057	610	1.96	142,100	0	0.00
Aug 16	0	19,414	0	0	71	19,485	553	2.84	125,700	0	0.00

Appendix Table 9.-- Continued.

DATE	YEARLING CHINOOK	SUBYEARLING CHINOOK	COHO	STEELHEAD	SOCKEYE	DAILY TOTAL	COLLECTION MORTALITY NUMBER	COLLECTION MORTALITY PERCENT	RIVER FLOW IN CFS	SPILL TOTAL	SPILL PERCENT
Aug 17	0	8,986	14	0	14	9,014	282	3.13	91,000	0	0.00
Aug 18	0	5,914	43	0	14	5,971	214	3.58	126,100	0	0.00
Aug 19	0	11,100	0	14	29	11,143	319	2.86	137,600	0	0.00
Aug 20	0	11,657	0	0	57	11,714	374	3.19	132,800	0	0.00
Aug 21	0	14,729	29	0	0	14,758	323	2.19	122,300	0	0.00
Aug 22	0	13,957	14	0	14	13,985	412	2.95	123,500	0	0.00
Aug 23	0	11,000	0	0	14	11,014	420	3.81	110,400	0	0.00
Aug 24	0	7,686	0	0	43	7,729	363	4.70	87,000	0	0.00
Aug 25	0	4,043	0	0	29	4,072	0	0.00	97,300	0	0.00
Aug 26	0	3,271	0	0	14	3,285	187	5.69	122,900	0	0.00
Aug 27	0	8,657	14	0	0	8,671	245	2.83	129,600	0	0.00
Aug 28	0	17,914	0	29	0	17,943	372	2.07	123,000	0	0.00
Aug 29	0	16,186	0	0	14	16,200	388	2.40	77,800	0	0.00
Aug 30	0	8,957	0	0	29	8,986	237	2.64	90,100	0	0.00
Aug 31	0	5,443	29	0	0	5,472	158	2.89	79,500	0	0.00
Sep 1	0	3,900	0	0	14	3,914	202	5.16	64,900	0	0.00
Sep 2	0	2,829	0	0	0	2,829	213	7.53	123,900	0	0.00
Sep 3	0	7,800	14	14	0	7,828	216	2.76	128,700	0	0.00
Sep 4	0	7,257	0	29	14	7,300	175	2.40	139,000	0	0.00
Sep 5	0	9,371	0	0	43	9,414	351	3.73	143,600	0	0.00
Sep 6	0	7,229	0	0	0	7,229	103	1.42	135,700	0	0.00
Sep 7	0	4,143	0	0	0	4,143	87	2.10	120,800	0	0.00
Sep 8	0	2,714	0	0	0	2,714	53	1.95	133,000	0	0.00
Sep 9	0	2,357	0	0	14	2,371	39	1.64	120,600	0	0.00
Sep 10	0	1,614	0	0	0	1,614	49	3.04	98,200	0	0.00
Sep 11	0	1,129	0	0	0	1,129	34	3.01	112,600	0	0.00
Sep 12	0	1,900	0	14	29	1,943	36	1.85	101,700	0	0.00
Sep 13	0	3,843	0	0	29	3,872	43	1.11	103,800	0	0.00
Sep 14	0	7,471	0	29	14	7,514	43	.57	100,300	0	0.00
Sep 15	0	2,714	0	0	0	2,714	21	.77	117,800	0	0.00
Sep 16	0	2,729	0	0	0	2,729	28	1.03	128,800	0	0.00
Sep 17	0	1,457	0	14	0	1,471	20	1.36	113,800	0	0.00
Sep 18	0	1,429	0	0	14	1,443	17	1.18	109,800	0	0.00
Sep 19	0	1,071	0	0	14	1,085	3	.28	107,500	0	0.00
Sep 20	0	614	0	0	0	614	6	.98	101,500	0	0.00
Sep 21	0	929	0	0	0	929	16	1.72	87,100	0	0.00
Sep 22	0	729	0	0	0	729	8	1.10	98,400	0	0.00
Sep 23	0	786	0	0	0	786	13	1.65	117,300	0	0.00
Sep 24	0	1,743	0	0	0	1,743	11	.63	124,800	0	0.00
Sep 25	0	2,814	0	0	0	2,814	15	.53	112,600	0	0.00
Sep 26	0	5,083	0	0	0	5,083	15	.30	106,300	0	0.00
TOTAL	2,486,407	6,135,379	80,436	716,335	797,040	10,215,597	148,338	1.45			

APPENDIX TABLE10.-- 1986 TRUCK TRANSPORTATION REPORT
AT MCNARY

	DAILY #'s TRUCKED						ACCUM. #'s TRUCKED					
	Yrlg. Chinook	Subyr. Chinook	Coho	Steelhead	Sockeye	Daily Total	Yrlg. Chinook	Subyr. Chinook	Coho	Steelhead	Sockeye	Accum. Total
27/ 3	198	56	0	287	0	541	198	56	0	287	0	541
28/ 3	0	0	0	0	0	0	198	56	0	287	0	541
29/ 3	139	32	0	467	47	685	337	88	0	754	47	1,226
30/ 3	0	0	0	0	0	0	337	88	0	754	47	1,226
31/ 3	143	0	0	807	32	982	480	88	0	1,561	79	2,208
1/ 4	0	0	0	0	0	0	480	88	0	1,561	79	2,208
2/ 4	153	52	0	1,282	40	1,527	633	140	0	2,843	119	3,735
3/ 4	0	0	0	0	0	0	633	140	0	2,843	119	3,735
4/ 4	1,288	108	0	933	31	2,360	1,921	248	0	3,776	150	6,095
5/ 4	4,939	0	0	518	10	5,467	6,860	248	0	4,294	160	11,562
6/ 4	12,843	13	0	691	0	13,547	19,703	261	0	4,985	160	25,109
7/ 4	17,526	10	10	365	19	17,930	37,229	271	10	5,350	179	43,039
8/ 4	11,903	24	0	435	0	12,362	49,132	295	10	5,785	179	55,401
9/ 4	10,387	23	0	657	23	11,090	59,519	318	10	6,442	202	66,491
10/ 4	4,790	21	0	168	0	4,979	64,309	339	10	6,610	202	71,470
11/ 4	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
12/ 4	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
13/ 4	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
14/ 4	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
15/ 4	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
16/ 4	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
17/ 4	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
18/ 4	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
19/ 4	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
20/ 4	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
21/ 4	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
22/ 4	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
23/ 4	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
24/ 4	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
25/ 4	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
26/ 4	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
27/ 4	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
28/ 4	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
29/ 4	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
30/ 4	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
1/ 5	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
2/ 5	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
3/ 5	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
4/ 5	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
5/ 5	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
6/ 5	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
7/ 5	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
8/ 5	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
9/ 5	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
10/ 5	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
11/ 5	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
12/ 5	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
13/ 5	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470

APPENDIX TABLE10.-- Continued

	DAILY #'s TRUCKED						ACCUM. #'s TRUCKED					
	Yrlg. Chinook	Subyr. Chinook	Coho	Steelhead	Sockeye	Daily Total	Yrlg. Chinook	Subyr. Chinook	Coho	Steelhead	Sockeye	Accum. Total
14/ 5	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
15/ 5	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
16/ 5	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
17/ 5	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
18/ 5	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
19/ 5	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
20/ 5	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
21/ 5	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
22/ 5	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
23/ 5	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
24/ 5	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
25/ 5	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
26/ 5	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
27/ 5	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
28/ 5	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
29/ 5	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
30/ 5	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
31/ 5	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
1/ 6	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
2/ 6	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
3/ 6	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
4/ 6	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
5/ 6	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
6/ 6	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
7/ 6	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
8/ 6	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
9/ 6	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
10/ 6	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
11/ 6	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
12/ 6	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
13/ 6	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
14/ 6	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
15/ 6	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
16/ 6	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
17/ 6	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
18/ 6	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
19/ 6	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
20/ 6	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
21/ 6	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
22/ 6	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
23/ 6	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
24/ 6	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
25/ 6	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
26/ 6	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
27/ 6	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
28/ 6	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
29/ 6	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
30/ 6	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
1/ 7	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470

APPENDIX TABLE10.-- Continued

	DAILY #'s TRUCKED						ACCUM. #'s TRUCKED					
	Yrlg. Chinook	Subyr. Chinook	Coho	Steelhead	Sockeye	Daily Total	Yrlg. Chinook	Subyr. Chinook	Coho	Steelhead	Sockeye	Accum. Total
2/ 7	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
3/ 7	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
4/ 7	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
5/ 7	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
6/ 7	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
7/ 7	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
8/ 7	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
9/ 7	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
10/ 7	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
11/ 7	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
12/ 7	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
13/ 7	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
14/ 7	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
15/ 7	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
16/ 7	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
17/ 7	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
18/ 7	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
19/ 7	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
20/ 7	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
21/ 7	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
22/ 7	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
23/ 7	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
24/ 7	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
25/ 7	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
26/ 7	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
27/ 7	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
28/ 7	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
29/ 7	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
30/ 7	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
31/ 7	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
1/ 8	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
2/ 8	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
3/ 8	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
4/ 8	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
5/ 8	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
6/ 8	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
7/ 8	0	0	0	0	0	0	64,309	339	10	6,610	202	71,470
8/ 8	0	31,481	14	0	14	31,509	64,309	31,820	24	6,610	216	102,979
9/ 8	0	34,218	0	14	14	34,246	64,309	66,038	24	6,624	230	137,225
10/ 8	0	25,703	0	0	14	25,717	64,309	91,741	24	6,624	244	162,942
11/ 8	0	22,517	14	0	0	22,531	64,309	114,258	38	6,624	244	185,473
12/ 8	0	23,468	0	13	43	23,524	64,309	137,726	38	6,637	287	208,997
13/ 8	0	25,857	29	0	14	25,900	64,309	163,583	67	6,637	301	234,897
14/ 8	0	54,596	13	14	57	54,680	64,309	218,179	80	6,651	358	289,577
15/ 8	0	30,419	14	0	14	30,447	64,309	248,598	94	6,651	372	320,024
16/ 8	0	18,861	0	0	71	18,932	64,309	267,459	94	6,651	443	338,956
17/ 8	0	8,704	14	0	14	8,732	64,309	276,163	108	6,651	457	347,688
18/ 8	0	5,700	43	0	14	5,757	64,309	281,863	151	6,651	471	353,445
19/ 8	0	0	0	0	0	0	64,309	281,863	151	6,651	471	353,445

APPENDIX TABLE10.-- Continued

	DAILY #'s TRUCKED						ACCUM. #'s TRUCKED					
	Yrlg. Chinook	Subyr. Chinook	Coho	Steelhead	Sockeye	Daily Total	Yrlg. Chinook	Subyr. Chinook	Coho	Steelhead	Sockeye	Accum. Total
20/ 8	0	22,065	0	13	86	22,164	64,309	303,928	151	6,664	557	375,609
21/ 8	0	0	0	0	0	0	64,309	303,928	151	6,664	557	375,609
22/ 8	0	27,951	43	0	14	28,008	64,309	331,879	194	6,664	571	403,617
23/ 8	0	0	0	0	0	0	64,309	331,879	194	6,664	571	403,617
24/ 8	0	17,903	0	0	57	17,960	64,309	349,782	194	6,664	628	421,577
25/ 8	0	0	0	0	0	0	64,309	349,782	194	6,664	628	421,577
26/ 8	0	6,955	0	0	43	6,998	64,309	356,737	194	6,664	671	428,575
27/ 8	0	0	0	0	0	0	64,309	356,737	194	6,664	671	428,575
28/ 8	0	25,954	14	29	0	25,997	64,309	382,691	208	6,693	671	454,572
29/ 8	0	15,798	0	0	14	15,812	64,309	398,489	208	6,693	685	470,384
30/ 8	0	8,720	0	0	29	8,749	64,309	407,209	208	6,693	714	479,133
31/ 8	0	0	0	0	0	0	64,309	407,209	208	6,693	714	479,133
1/ 9	0	8,985	27	0	14	9,026	64,309	416,194	235	6,693	728	488,159
2/ 9	0	0	0	0	0	0	64,309	416,194	235	6,693	728	488,159
3/ 9	0	10,201	14	13	0	10,228	64,309	426,395	249	6,706	728	498,387
4/ 9	0	0	0	0	0	0	64,309	426,395	249	6,706	728	498,387
5/ 9	0	16,102	0	29	57	16,188	64,309	442,497	249	6,735	785	514,575
6/ 9	0	0	0	0	0	0	64,309	442,497	249	6,735	785	514,575
7/ 9	0	11,182	0	0	0	11,182	64,309	453,679	249	6,735	785	525,757
8/ 9	0	0	0	0	0	0	64,309	453,679	249	6,735	785	525,757
9/ 9	0	4,979	0	0	14	4,993	64,309	458,658	249	6,735	799	530,750
10/ 9	0	0	0	0	0	0	64,309	458,658	249	6,735	799	530,750
11/ 9	0	2,660	0	0	0	2,660	64,309	461,318	249	6,735	799	533,410
12/ 9	0	0	0	0	0	0	64,309	461,318	249	6,735	799	533,410
13/ 9	0	5,664	0	14	58	5,736	64,309	466,982	249	6,749	857	539,146
14/ 9	0	0	0	0	0	0	64,309	466,982	249	6,749	857	539,146
15/ 9	0	10,121	0	29	14	10,164	64,309	477,103	249	6,778	871	549,310
16/ 9	0	0	0	0	0	0	64,309	477,103	249	6,778	871	549,310
17/ 9	0	4,138	0	14	0	4,152	64,309	481,241	249	6,792	871	553,462
18/ 9	0	0	0	0	0	0	64,309	481,241	249	6,792	871	553,462
19/ 9	0	2,480	0	0	28	2,508	64,309	483,721	249	6,792	899	555,970
20/ 9	0	0	0	0	0	0	64,309	483,721	249	6,792	899	555,970
21/ 9	0	1,521	0	0	0	1,521	64,309	485,242	249	6,792	899	557,491
22/ 9	0	0	0	0	0	0	64,309	485,242	249	6,792	899	557,491
23/ 9	0	1,494	0	0	0	1,494	64,309	486,736	249	6,792	899	558,985
24/ 9	0	0	0	0	0	0	64,309	486,736	249	6,792	899	558,985
25/ 9	0	4,531	0	0	0	4,531	64,309	491,267	249	6,792	899	563,516
26/ 9	0	5,068	0	0	0	5,068	64,309	496,335	249	6,792	899	568,584

APPENDIX TABLE11.-- 1986 BARGE TRANSPORTATION REPORT
AT MCNARY

	DAILY #'s BARGED						ACCUM. #'s BARGED					
	Yrlg. Chinook	Subyr. Chinook	Coho	Steelhead	Sockeye	Daily Total	Yrlg. Chinook	Subyr. Chinook	Coho	Steelhead	Sockeye	Accum. Total
23/ 4	1,634	0	3	155	159	1,951	1,634	0	3	155	159	1,951
24/ 4	0	0	0	0	0	0	1,634	0	3	155	159	1,951
25/ 4	5,243	5	5	529	703	6,485	6,877	5	8	684	862	8,436
26/ 4	0	0	0	0	0	0	6,877	5	8	684	862	8,436
27/ 4	4,619	3	2	914	1,989	7,527	11,496	8	10	1,598	2,851	15,963
28/ 4	0	0	0	0	0	0	11,496	8	10	1,598	2,851	15,963
29/ 4	10,545	155	25	7,181	4,908	22,814	22,041	163	35	8,779	7,759	38,777
30/ 4	2,580	51	74	2,784	1,627	7,116	24,621	214	109	11,563	9,386	45,893
1/ 5	2,357	35	39	3,426	3,289	9,146	26,978	249	148	14,989	12,675	55,039
2/ 5	0	0	0	0	0	0	26,978	249	148	14,989	12,675	55,039
3/ 5	9,712	230	16	7,900	4,831	22,689	36,690	479	164	22,889	17,506	77,728
4/ 5	8,906	75	52	5,262	1,583	15,878	45,596	554	216	28,151	19,089	93,606
5/ 5	3,094	56	25	4,306	818	8,299	48,690	610	241	32,457	19,907	101,905
6/ 5	0	0	0	0	0	0	48,690	610	241	32,457	19,907	101,905
7/ 5	10,122	36	27	13,381	1,887	25,453	58,812	646	268	45,838	21,794	127,358
8/ 5	0	0	0	0	0	0	58,812	646	268	45,838	21,794	127,358
9/ 5	10,118	59	130	15,912	1,319	27,538	68,930	705	398	61,750	23,113	154,896
10/ 5	4,634	29	80	6,560	454	11,757	73,564	734	478	68,310	23,567	166,653
11/ 5	6,564	22	50	7,295	837	14,768	80,128	756	528	75,605	24,404	181,421
12/ 5	5,506	100	70	9,207	956	15,839	85,634	856	598	84,812	25,360	197,260
13/ 5	5,629	20	100	8,907	1,843	16,499	91,263	876	698	93,719	27,203	213,759
14/ 5	8,442	85	40	13,004	3,486	25,057	99,705	961	738	106,723	30,689	238,816
15/ 5	7,628	130	130	9,983	4,446	22,317	107,333	1,091	868	116,706	35,135	261,133
16/ 5	5,305	149	280	12,297	4,099	22,130	112,638	1,240	1,148	129,003	39,234	283,263
17/ 5	5,372	67	150	9,111	3,823	18,523	118,010	1,307	1,298	138,114	43,057	301,786
18/ 5	5,113	39	210	12,068	3,099	20,529	123,123	1,346	1,508	150,182	46,156	322,315
19/ 5	3,852	90	400	10,181	2,424	16,947	126,975	1,436	1,908	160,363	48,580	339,262
20/ 5	6,403	127	750	10,245	3,766	21,291	133,378	1,563	2,658	170,608	52,346	360,553
21/ 5	4,624	107	580	10,923	3,705	19,939	138,002	1,670	3,238	181,531	56,051	380,492
22/ 5	3,663	59	820	9,084	6,446	20,072	141,665	1,729	4,058	190,615	62,497	400,564
23/ 5	3,679	89	767	12,052	4,991	21,578	145,344	1,818	4,825	202,667	67,488	422,142
24/ 5	2,306	544	750	7,524	3,853	14,977	147,650	2,362	5,575	210,191	71,341	437,119
25/ 5	2,912	355	1,053	9,933	4,093	18,346	150,562	2,717	6,628	220,124	75,434	455,465
26/ 5	4,338	92	746	6,282	3,714	15,172	154,900	2,809	7,374	226,406	79,148	470,637
27/ 5	3,724	117	730	6,448	5,195	16,214	158,624	2,926	8,104	232,854	84,343	486,851
28/ 5	3,668	114	1,079	5,774	7,893	18,528	162,292	3,040	9,183	238,628	92,236	505,379
29/ 5	3,068	746	427	3,194	5,382	12,817	165,360	3,786	9,610	241,822	97,618	518,196
30/ 5	3,624	2,042	955	8,423	5,396	20,440	168,984	5,828	10,565	250,245	103,014	538,636
31/ 5	1,856	4,722	620	7,243	3,241	17,682	170,840	10,550	11,185	257,488	106,255	556,318
1/ 6	1,751	8,782	436	6,371	3,622	20,962	172,591	19,332	11,621	263,859	109,877	577,280
2/ 6	5,475	45,763	1,005	6,514	13,574	72,331	178,066	65,095	12,626	270,373	123,451	649,611
3/ 6	0	0	0	0	0	0	178,066	65,095	12,626	270,373	123,451	649,611
4/ 6	11,547	63,521	3,635	16,799	20,891	116,393	189,613	128,616	16,261	287,172	144,342	766,004
5/ 6	0	0	0	0	0	0	189,613	128,616	16,261	287,172	144,342	766,004
6/ 6	7,353	66,999	4,127	12,207	26,577	117,263	196,966	195,615	20,388	299,379	170,919	883,267
7/ 6	0	0	0	0	0	0	196,966	195,615	20,388	299,379	170,919	883,267
8/ 6	13,214	144,488	3,573	10,606	34,605	206,486	210,180	340,103	23,961	309,985	205,524	1,089,753
9/ 6	0	0	0	0	0	0	210,180	340,103	23,961	309,985	205,524	1,089,753

APPENDIX TABLE11.-- Continued

	DAILY #'s BARGED						ACCUM. #'s BARGED					
	Yrlg. Chinook	Subyr. Chinook	Coho	Steelhead	Sockeye	Daily Total	Yrlg. Chinook	Subyr. Chinook	Coho	Steelhead	Sockeye	Accum. Total
10/ 6	9,089	233,976	1,825	5,281	14,489	264,660	219,269	574,079	25,786	315,266	220,013	1,354,413
11/ 6	0	0	0	0	0	0	219,269	574,079	25,786	315,266	220,013	1,354,413
12/ 6	3,099	131,290	1,147	3,659	6,547	145,742	222,368	705,369	26,933	318,925	226,560	1,500,155
13/ 6	0	0	0	0	0	0	222,368	705,369	26,933	318,925	226,560	1,500,155
14/ 6	1,596	100,605	1,715	6,341	5,540	115,797	223,964	805,974	28,648	325,266	232,100	1,615,952
15/ 6	0	0	0	0	0	0	223,964	805,974	28,648	325,266	232,100	1,615,952
16/ 6	613	55,922	672	4,391	3,257	64,855	224,577	861,896	29,320	329,657	235,357	1,680,807
17/ 6	0	0	0	0	0	0	224,577	861,896	29,320	329,657	235,357	1,680,807
18/ 6	148	294,920	1,022	1,756	2,392	300,238	224,725	1,156,816	30,342	331,413	237,749	1,981,045
19/ 6	0	0	0	0	0	0	224,725	1,156,816	30,342	331,413	237,749	1,981,045
20/ 6	87	405,619	664	2,253	1,487	410,110	224,812	1,562,435	31,006	333,666	239,236	2,391,155
21/ 6	0	0	0	0	0	0	224,812	1,562,435	31,006	333,666	239,236	2,391,155
22/ 6	102	205,902	442	1,426	790	208,662	224,914	1,768,337	31,448	335,092	240,026	2,599,817
23/ 6	0	0	0	0	0	0	224,914	1,768,337	31,448	335,092	240,026	2,599,817
24/ 6	103	168,865	132	948	565	170,613	225,017	1,937,202	31,580	336,040	240,591	2,770,430
25/ 6	0	0	0	0	0	0	225,017	1,937,202	31,580	336,040	240,591	2,770,430
26/ 6	82	102,673	107	480	394	103,736	225,099	2,039,875	31,687	336,520	240,985	2,874,166
27/ 6	0	0	0	0	0	0	225,099	2,039,875	31,687	336,520	240,985	2,874,166
28/ 6	42	135,487	128	305	372	136,334	225,141	2,175,362	31,815	336,825	241,357	3,010,500
29/ 6	0	0	0	0	0	0	225,141	2,175,362	31,815	336,825	241,357	3,010,500
30/ 6	85	52,364	14	213	112	52,788	225,226	2,227,726	31,829	337,038	241,469	3,063,288
1/ 7	0	0	0	0	0	0	225,226	2,227,726	31,829	337,038	241,469	3,063,288
2/ 7	86	102,481	28	166	156	102,917	225,312	2,330,207	31,857	337,204	241,625	3,166,205
3/ 7	0	0	0	0	0	0	225,312	2,330,207	31,857	337,204	241,625	3,166,205
4/ 7	14	63,858	0	82	29	63,983	225,326	2,394,065	31,857	337,286	241,654	3,230,188
5/ 7	0	0	0	0	0	0	225,326	2,394,065	31,857	337,286	241,654	3,230,188
6/ 7	28	49,514	28	6	71	49,647	225,354	2,443,579	31,885	337,292	241,725	3,279,835
7/ 7	0	0	0	0	0	0	225,354	2,443,579	31,885	337,292	241,725	3,279,835
8/ 7	0	65,806	71	81	56	66,014	225,354	2,509,385	31,956	337,373	241,781	3,345,849
9/ 7	0	0	0	0	0	0	225,354	2,509,385	31,956	337,373	241,781	3,345,849
10/ 7	0	103,578	14	53	43	103,688	225,354	2,612,963	31,970	337,426	241,824	3,449,537
11/ 7	0	0	0	0	0	0	225,354	2,612,963	31,970	337,426	241,824	3,449,537
12/ 7	0	62,155	14	43	100	62,312	225,354	2,675,118	31,984	337,469	241,924	3,511,849
13/ 7	0	0	0	0	0	0	225,354	2,675,118	31,984	337,469	241,924	3,511,849
14/ 7	41	225,619	86	80	100	225,926	225,395	2,900,737	32,070	337,549	242,024	3,737,775
15/ 7	0	0	0	0	0	0	225,395	2,900,737	32,070	337,549	242,024	3,737,775
16/ 7	13	222,769	72	96	86	223,036	225,408	3,123,506	32,142	337,645	242,110	3,960,811
17/ 7	0	0	0	0	0	0	225,408	3,123,506	32,142	337,645	242,110	3,960,811
18/ 7	28	136,111	29	70	71	136,309	225,436	3,259,617	32,171	337,715	242,181	4,097,120
19/ 7	0	0	0	0	0	0	225,436	3,259,617	32,171	337,715	242,181	4,097,120
20/ 7	23	286,502	86	66	200	286,877	225,459	3,546,119	32,257	337,781	242,381	4,383,997
21/ 7	0	0	0	0	0	0	225,459	3,546,119	32,257	337,781	242,381	4,383,997
22/ 7	0	627,833	175	42	292	628,342	225,459	4,173,952	32,432	337,823	242,673	5,012,339
23/ 7	0	220,528	43	29	228	220,828	225,459	4,394,480	32,475	337,852	242,901	5,233,167
24/ 7	0	57,442	14	42	71	57,569	225,459	4,451,922	32,489	337,894	242,972	5,290,736
25/ 7	0	37,235	29	14	57	37,335	225,459	4,489,157	32,518	337,908	243,029	5,328,071
26/ 7	0	35,480	0	13	14	35,507	225,459	4,524,637	32,518	337,921	243,043	5,363,578
27/ 7	0	0	0	0	0	0	225,459	4,524,637	32,518	337,921	243,043	5,363,578
28/ 7	0	113,093	43	29	29	113,194	225,459	4,637,730	32,561	337,950	243,072	5,476,772

APPENDIX TABLE11.-- Continued

	DAILY #'s BARGED						ACCUM. #'s BARGED					
	Yrlg. Chinook	Subyr. Chinook	Coho	Steelhead	Sockeye	Daily Total	Yrlg. Chinook	Subyr. Chinook	Coho	Steelhead	Sockeye	Accum. Total
29/ 7	0	0	0	0	0	0	225,459	4,637,730	32,561	337,950	243,072	5,476,772
30/ 7	0	120,928	0	12	14	120,954	225,459	4,758,658	32,561	337,962	243,086	5,597,726
31/ 7	0	0	0	0	0	0	225,459	4,758,658	32,561	337,962	243,086	5,597,726
1/ 8	0	329,098	43	0	114	329,255	225,459	5,087,756	32,604	337,962	243,200	5,926,981
2/ 8	0	0	0	0	0	0	225,459	5,087,756	32,604	337,962	243,200	5,926,981
3/ 8	0	202,862	29	86	86	203,063	225,459	5,290,618	32,633	338,048	243,286	6,130,044
4/ 8	0	0	0	0	0	0	225,459	5,290,618	32,633	338,048	243,286	6,130,044
5/ 8	0	26,494	43	14	14	26,565	225,459	5,317,112	32,676	338,062	243,300	6,156,609
6/ 8	0	0	0	0	0	0	225,459	5,317,112	32,676	338,062	243,300	6,156,609
7/ 8	0	35,100	57	0	71	35,228	225,459	5,352,212	32,733	338,062	243,371	6,191,837

APPENDIX TABLE12.-- 1986 BYPASS REPORT
AT MCNARY

	DAILY #'S BYPASSED						ACCUM. #'S BYPASSED					
	Yrlg. Chinook	Subyr. Chinook	Coho	Steelhead	Sockeye	Daily Total	Yrlg. Chinook	Subyr. Chinook	Coho	Steelhead	Sockeye	Accum. Total
26/ 3	71	14	0	43	0	128	71	14	0	43	0	128
27/ 3	122	49	0	212	16	399	193	63	0	255	16	527
28/ 3	176	0	0	412	0	588	369	63	0	667	16	1,115
29/ 3	165	35	0	224	0	424	534	98	0	891	16	1,539
30/ 3	84	0	0	410	0	494	618	98	0	1,301	16	2,033
31/ 3	100	0	0	580	0	680	718	98	0	1,881	16	2,713
1/ 4	170	0	0	630	10	810	888	98	0	2,511	26	3,523
2/ 4	105	0	0	800	0	905	993	98	0	3,311	26	4,428
3/ 4	137	0	0	537	10	684	1,130	98	0	3,848	36	5,112
4/ 4	1,066	0	0	489	0	1,555	2,196	98	0	4,337	36	6,667
5/ 4	10,240	20	0	1,440	20	11,720	12,436	118	0	5,777	56	18,387
6/ 4	30,013	0	0	893	27	30,933	42,449	118	0	6,670	83	49,320
7/ 4	48,720	20	0	610	10	49,360	91,169	138	0	7,280	93	98,680
8/ 4	39,580	10	0	1,000	40	40,630	130,749	148	0	8,280	133	139,310
9/ 4	32,659	35	0	1,035	59	33,788	163,408	183	0	9,315	192	173,098
10/ 4	35,540	6	0	1,430	29	37,005	198,948	189	0	10,745	221	210,103
11/ 4	35,865	71	0	1,671	100	37,707	234,813	260	0	12,416	321	247,810
12/ 4	26,021	63	0	1,375	87	27,546	260,834	323	0	13,791	408	275,356
13/ 4	22,586	36	0	1,898	138	24,658	283,420	359	0	15,689	546	300,014
14/ 4	21,797	80	0	1,733	227	23,837	305,217	439	0	17,422	773	323,851
15/ 4	20,637	0	0	1,703	284	22,624	325,854	439	0	19,125	1,057	346,475
16/ 4	18,685	9	10	960	226	19,890	344,539	448	10	20,085	1,283	366,365
17/ 4	24,105	22	0	1,444	487	26,058	368,644	470	10	21,529	1,770	392,423
18/ 4	17,633	59	0	1,170	597	19,459	386,277	529	10	22,699	2,367	411,882
19/ 4	20,630	71	0	1,497	1,566	23,764	406,907	600	10	24,196	3,933	435,646
20/ 4	24,489	29	0	2,000	1,412	27,930	431,396	629	10	26,196	5,345	463,576
21/ 4	25,064	29	14	1,882	1,467	28,456	456,460	658	24	28,078	6,812	492,032
22/ 4	26,381	0	0	1,783	1,483	29,647	482,841	658	24	29,861	8,295	521,679
23/ 4	26,167	0	40	2,086	2,179	30,472	509,008	658	64	31,947	10,474	552,151
24/ 4	27,347	30	30	2,477	3,610	33,494	536,355	688	94	34,424	14,084	585,645
25/ 4	31,862	51	20	2,963	3,943	38,839	568,217	739	114	37,387	18,027	624,484
26/ 4	16,997	23	12	2,047	3,220	22,299	585,214	762	126	39,434	21,247	646,783
27/ 4	34,866	45	9	6,651	15,858	57,429	620,080	807	135	46,085	37,105	704,212
28/ 4	22,349	25	38	5,012	10,162	37,586	642,429	832	173	51,097	47,267	741,798
29/ 4	24,775	0	63	5,737	10,713	41,288	667,204	832	236	56,834	57,980	783,086
30/ 4	24,621	12	200	6,000	11,563	42,396	691,825	844	436	62,834	69,543	825,482
1/ 5	30,112	109	61	5,153	12,772	48,207	721,937	953	497	67,987	82,315	873,689
2/ 5	30,180	106	66	7,599	9,486	47,437	752,117	1,059	563	75,586	91,801	921,126
3/ 5	27,267	88	22	5,837	9,534	42,748	779,384	1,147	585	81,423	101,335	963,874
4/ 5	29,780	73	106	9,738	4,319	44,016	809,164	1,220	691	91,161	105,654	1,007,890
5/ 5	30,550	42	92	10,183	3,375	44,242	839,714	1,262	783	101,344	109,029	1,052,132
6/ 5	44,400	68	28	13,394	7,500	65,390	884,114	1,330	811	114,738	116,529	1,117,522
7/ 5	61,722	61	89	12,561	10,306	84,739	945,836	1,391	900	127,299	126,835	1,202,261
8/ 5	65,410	100	70	13,350	6,360	85,290	1,011,246	1,491	970	140,649	133,195	1,287,551
9/ 5	48,840	160	150	7,020	6,650	62,820	1,060,086	1,651	1,120	147,669	139,845	1,350,371
10/ 5	54,360	90	140	9,290	4,490	68,370	1,114,446	1,741	1,260	156,959	144,335	1,418,741
11/ 5	80,260	40	130	9,390	6,460	96,280	1,194,706	1,781	1,390	166,349	150,795	1,515,021
12/ 5	73,750	130	230	9,850	9,710	93,670	1,268,456	1,911	1,620	176,199	160,505	1,608,691

APPENDIX TABLE12.-- Continued

	DAILY #'S BYPASSED						ACCUM. #'S BYPASSED					
	Yrlg. Chinook	Subyr. Chinook	Coho	Steelhead	Sockeye	Daily Total	Yrlg. Chinook	Subyr. Chinook	Coho	Steelhead	Sockeye	Accum. Total
13/ 5	62,670	220	100	10,590	12,820	86,400	1,331,126	2,131	1,720	186,789	173,325	1,695,091
14/ 5	74,050	230	230	11,360	11,860	97,730	1,405,176	2,361	1,950	198,149	185,185	1,792,821
15/ 5	71,290	190	160	9,740	12,580	93,960	1,476,466	2,551	2,110	207,889	197,765	1,886,781
16/ 5	62,310	290	440	12,080	13,430	88,550	1,538,776	2,841	2,550	219,969	211,195	1,975,331
17/ 5	62,950	180	610	14,090	13,110	90,940	1,601,726	3,021	3,160	234,059	224,305	2,066,271
18/ 5	64,880	180	720	13,090	16,240	95,110	1,666,606	3,201	3,880	247,149	240,545	2,161,381
19/ 5	63,520	270	880	12,940	11,230	88,840	1,730,126	3,471	4,760	260,089	251,775	2,250,221
20/ 5	67,870	400	2,360	10,890	15,350	96,870	1,797,996	3,871	7,120	270,979	267,125	2,347,091
21/ 5	52,480	380	2,320	9,770	17,000	81,950	1,850,476	4,251	9,440	280,749	284,125	2,429,041
22/ 5	63,850	410	3,970	12,420	34,110	114,760	1,914,326	4,661	13,410	293,169	318,235	2,543,801
23/ 5	60,820	890	4,750	12,750	46,480	125,690	1,975,146	5,551	18,160	305,919	364,715	2,669,491
24/ 5	28,400	1,240	4,840	8,390	26,670	69,540	2,003,546	6,791	23,000	314,309	391,385	2,739,031
25/ 5	32,000	1,326	3,842	9,295	24,758	71,221	2,035,546	8,117	26,842	323,604	416,143	2,810,252
26/ 5	46,266	800	3,747	8,426	27,933	87,172	2,081,812	8,917	30,589	332,030	444,076	2,897,424
27/ 5	18,600	510	2,830	5,310	17,850	45,100	2,100,412	9,427	33,419	337,340	461,926	2,942,524
28/ 5	30,280	680	2,970	7,720	18,570	60,220	2,130,692	10,107	36,389	345,060	480,496	3,002,744
29/ 5	17,490	1,850	1,760	5,010	16,060	42,170	2,148,182	11,957	38,149	350,070	496,556	3,044,914
30/ 5	15,080	4,380	4,440	8,310	16,710	48,920	2,163,262	16,337	42,589	358,380	513,266	3,093,834
31/ 5	12,380	11,890	3,130	6,040	14,030	47,470	2,175,642	28,227	45,719	364,420	527,296	3,141,304
1/ 6	8,940	22,700	1,650	4,220	11,230	48,740	2,184,582	50,927	47,369	368,640	538,526	3,190,044
2/ 6	0	0	0	0	0	0	2,184,582	50,927	47,369	368,640	538,526	3,190,044
3/ 6	0	0	0	0	0	0	2,184,582	50,927	47,369	368,640	538,526	3,190,044
4/ 6	0	0	0	0	0	0	2,184,582	50,927	47,369	368,640	538,526	3,190,044
5/ 6	0	0	0	0	0	0	2,184,582	50,927	47,369	368,640	538,526	3,190,044
6/ 6	0	0	0	0	0	0	2,184,582	50,927	47,369	368,640	538,526	3,190,044
7/ 6	0	0	0	0	0	0	2,184,582	50,927	47,369	368,640	538,526	3,190,044
8/ 6	0	0	0	0	0	0	2,184,582	50,927	47,369	368,640	538,526	3,190,044
9/ 6	0	0	0	0	0	0	2,184,582	50,927	47,369	368,640	538,526	3,190,044
10/ 6	0	0	0	0	0	0	2,184,582	50,927	47,369	368,640	538,526	3,190,044
11/ 6	0	1,139	0	0	0	1,139	2,184,582	52,066	47,369	368,640	538,526	3,191,183
12/ 6	0	997	0	0	0	997	2,184,582	53,063	47,369	368,640	538,526	3,192,180
13/ 6	0	992	0	0	0	992	2,184,582	54,055	47,369	368,640	538,526	3,193,172
14/ 6	0	1,024	0	0	0	1,024	2,184,582	55,079	47,369	368,640	538,526	3,194,196
15/ 6	0	0	0	0	0	0	2,184,582	55,079	47,369	368,640	538,526	3,194,196
16/ 6	0	1,700	0	0	0	1,700	2,184,582	56,779	47,369	368,640	538,526	3,195,896
17/ 6	0	2,056	0	0	0	2,056	2,184,582	58,835	47,369	368,640	538,526	3,197,952
18/ 6	0	4,942	0	0	0	4,942	2,184,582	63,777	47,369	368,640	538,526	3,202,894
19/ 6	0	3,460	0	0	0	3,460	2,184,582	67,237	47,369	368,640	538,526	3,206,354
20/ 6	0	3,514	0	0	0	3,514	2,184,582	70,751	47,369	368,640	538,526	3,209,868
21/ 6	0	1,687	0	0	0	1,687	2,184,582	72,438	47,369	368,640	538,526	3,211,555
22/ 6	0	1,665	0	0	0	1,665	2,184,582	74,103	47,369	368,640	538,526	3,213,220
23/ 6	0	1,921	0	0	0	1,921	2,184,582	76,024	47,369	368,640	538,526	3,215,141
24/ 6	0	1,262	0	0	0	1,262	2,184,582	77,286	47,369	368,640	538,526	3,216,403
25/ 6	0	1,402	0	0	0	1,402	2,184,582	78,688	47,369	368,640	538,526	3,217,805
26/ 6	0	900	0	0	0	900	2,184,582	79,588	47,369	368,640	538,526	3,218,705
27/ 6	0	2,149	0	0	0	2,149	2,184,582	81,737	47,369	368,640	538,526	3,220,854
28/ 6	0	1,065	0	0	0	1,065	2,184,582	82,802	47,369	368,640	538,526	3,221,919
29/ 6	0	871	0	0	0	871	2,184,582	83,673	47,369	368,640	538,526	3,222,790
30/ 6	0	636	0	0	0	636	2,184,582	84,309	47,369	368,640	538,526	3,223,426

APPENDIX TABLE12.-- Continued

	DAILY #'S BYPASSED						ACCUM. #'S BYPASSED					
	Yrlg. Chinook	Subyr. Chinook	Coho	Steelhead	Sockeye	Daily Total	Yrlg. Chinook	Subyr. Chinook	Coho	Steelhead	Sockeye	Accum. Total
1/ 7	0	1,007	0	0	0	1,007	2,184,582	85,316	47,369	368,640	538,526	3,224,433
2/ 7	0	1,473	0	0	0	1,473	2,184,582	86,789	47,369	368,640	538,526	3,225,906
3/ 7	0	969	0	0	0	969	2,184,582	87,758	47,369	368,640	538,526	3,226,875
4/ 7	0	675	0	0	0	675	2,184,582	88,433	47,369	368,640	538,526	3,227,550
5/ 7	0	559	0	0	0	559	2,184,582	88,992	47,369	368,640	538,526	3,228,109
6/ 7	0	799	0	0	0	799	2,184,582	89,791	47,369	368,640	538,526	3,228,908
7/ 7	0	881	0	0	0	881	2,184,582	90,672	47,369	368,640	538,526	3,229,789
8/ 7	0	1,051	0	0	0	1,051	2,184,582	91,723	47,369	368,640	538,526	3,230,840
9/ 7	0	2,242	0	0	0	2,242	2,184,582	93,965	47,369	368,640	538,526	3,233,082
10/ 7	0	223	0	0	0	223	2,184,582	94,188	47,369	368,640	538,526	3,233,305
11/ 7	0	181	0	0	0	181	2,184,582	94,369	47,369	368,640	538,526	3,233,486
12/ 7	0	322	0	0	0	322	2,184,582	94,691	47,369	368,640	538,526	3,233,808
13/ 7	0	983	0	0	0	983	2,184,582	95,674	47,369	368,640	538,526	3,234,791
14/ 7	0	5,174	0	0	0	5,174	2,184,582	100,848	47,369	368,640	538,526	3,239,965
15/ 7	0	3,784	0	0	0	3,784	2,184,582	104,632	47,369	368,640	538,526	3,243,749
16/ 7	0	2,715	0	0	0	2,715	2,184,582	107,347	47,369	368,640	538,526	3,246,464
17/ 7	0	1,007	0	0	0	1,007	2,184,582	108,354	47,369	368,640	538,526	3,247,471
18/ 7	0	2,977	0	0	0	2,977	2,184,582	111,331	47,369	368,640	538,526	3,250,448
19/ 7	0	6,128	0	0	0	6,128	2,184,582	117,459	47,369	368,640	538,526	3,256,576
20/ 7	0	2,612	0	0	0	2,612	2,184,582	120,071	47,369	368,640	538,526	3,259,188
21/ 7	0	4,247	0	0	0	4,247	2,184,582	124,318	47,369	368,640	538,526	3,263,435
22/ 7	0	14,477	0	0	0	14,477	2,184,582	138,795	47,369	368,640	538,526	3,277,912
23/ 7	0	5,731	0	0	0	5,731	2,184,582	144,526	47,369	368,640	538,526	3,283,643
24/ 7	0	2,342	0	0	0	2,342	2,184,582	146,868	47,369	368,640	538,526	3,285,985
25/ 7	0	859	0	0	0	859	2,184,582	147,727	47,369	368,640	538,526	3,286,844
26/ 7	0	952	0	0	0	952	2,184,582	148,679	47,369	368,640	538,526	3,287,796
27/ 7	0	813	0	0	0	813	2,184,582	149,492	47,369	368,640	538,526	3,288,609
28/ 7	0	2,231	0	0	0	2,231	2,184,582	151,723	47,369	368,640	538,526	3,290,840
29/ 7	0	1,557	0	0	0	1,557	2,184,582	153,280	47,369	368,640	538,526	3,292,397
30/ 7	0	2,133	0	0	0	2,133	2,184,582	155,413	47,369	368,640	538,526	3,294,530
31/ 7	0	3,875	0	0	0	3,875	2,184,582	159,288	47,369	368,640	538,526	3,298,405
1/ 8	0	5,621	0	0	0	5,621	2,184,582	164,909	47,369	368,640	538,526	3,304,026
2/ 8	0	1,287	0	0	0	1,287	2,184,582	166,196	47,369	368,640	538,526	3,305,313
3/ 8	0	0	0	0	0	0	2,184,582	166,196	47,369	368,640	538,526	3,305,313
4/ 8	0	714	0	0	0	714	2,184,582	166,910	47,369	368,640	538,526	3,306,027
5/ 8	0	35	0	0	0	35	2,184,582	166,945	47,369	368,640	538,526	3,306,062
6/ 8	0	604	0	0	0	604	2,184,582	167,549	47,369	368,640	538,526	3,306,666

Appendix Table 13. Hatchery versus wild steelhead data for McNary Dam in 1986.

Date	Hatchery Steelhead				Wild Steelhead			
	Collect	Bypass	Truck	Barge	Collect	Bypass	Truck	Barge
Mar 26	57	29	0	0	129	14	0	0
Mar 27	98	41	83	0	260	171	204	0
Mar 28	106	82	0	0	553	330	0	0
Mar 29	82	12	92	0	365	212	375	0
Mar 30	211	63	0	0	589	347	0	0
Mar 31	160	60	246	0	840	520	561	0
Apr 01	220	60	0	0	1,030	570	0	0
Apr 02	147	21	285	0	1,316	779	997	0
Apr 03	53	21	0	0	873	516	0	0
Apr 04	89	44	77	0	944	445	856	0
Apr 05	250	130	118	0	1,710	1,310	400	0
Apr 06	160	53	105	0	1,427	840	586	0
Apr 07	170	60	110	0	810	550	255	0
Apr 08	230	110	115	0	1,210	890	320	0
Apr 09	141	70	71	0	1,553	965	586	0
Apr 10	100	89	9	0	1,500	1,341	159	0
Apr 11	71	71	0	0	1,600	1,600	0	0
Apr 12	113	113	0	0	1,262	1,262	0	0
Apr 13	238	236	0	0	1,662	1,662		0
Apr 14	120	120	0	0	1,613	1,613	0	0
Apr 15	116	116	0	0	1,589	1,587	0	0
Apr 16	160	160	0	0	800	800	0	0
Apr 17	199	199	0	0	1,245	1,245	0	0
Apr 18	260	260	0	0	910	910	0	0
Apr 19	315	315	0	0	1,185	1,182	0	0
Apr 20	472	472	0	0	1,528	1,528	0	0
Apr 21	358	357	0	0	1,528	1,525	0	0
Apr 22	371	371	0	0	1,415	1,412	0	0
Apr 23	1,043	970	0	73	1,200	1,116	0	82
Apr 24	700	637	0	0	2,022	1,840	0	0

Appendix Table 13. Continued

Date	Hatchery Steelhead				Wild Steelhead			
	Collect	Bypass	Truck	Barge	Collect	Bypass	Truck	Barge
Apr 25	989	900	0	152	2,267	2,063	0	377
Apr 26	1,001	921	0	0	1,224	1,126	0	0
Apr 27	4,212	3,793	0	499	3,178	2,858	0	415
Apr 28	4,739	3,075	0	0	2,736	1,937	0	0
Apr 29	7,788	4,188	0	5,259	2,675	1,549	0	1,922
Apr 30	5,763	3,900	0	1,862	3,025	2,100	0	922
May 01	5,832	2,975	0	2,850	2,757	2,178	0	576
May 02	6,214	3,959	0	0	5,700	3,640	0	0
May 03	5,051	3,066	0	4,210	4,407	2,771	0	3,690
May 04	8,708	5,287	0	3,416	6,300	4,451	0	1,846
May 05	8,492	5,642	0	2,835	6,016	4,541	0	1,471
May 06	11,388	7,822	0	0	8,112	5,572	0	0
May 07	12,789	7,505	0	8,839	7,067	5,056	0	4,542
May 08	14,850	8,400	0	0	7,130	4,950	0	0
May 09	10,470	4,640	0	12,227	3,900	2,380	0	3,685
May 10	11,670	6,470	0	5,171	4,210	2,820	0	1,389
May 11	12,600	6,340	0	6,238	4,110	3,050	0	1,057
May 12	13,340	6,500	0	6,825	5,740	3,350	0	2,382
May 13	14,410	7,490	0	6,891	5,120	3,100	0	2,016
May 14	17,040	7,550	0	9,451	7,380	3,810	0	3,553
May 15	14,760	6,950	0	7,777	5,000	2,790	0	2,206
May 16	19,560	9,290	0	10,241	4,850	2,790	0	2,056
May 17	19,170	11,140	0	7,992	4,070	2,950	0	1,119
May 18	20,450	10,060	0	10,362	4,740	3,030	0	1,706
May 19	18,190	9,910	0	8,233	4,980	3,030	0	1,948
May 20	16,220	7,810	0	8,380	4,950	3,080	0	1,865
May 21	15,680	6,770	0	8,877	5,050	3,000	0	2,046
May 22	16,030	8,830	0	7,164	5,510	3,590	0	1,920
May 23	19,230	9,400	0	9,796	5,610	3,350	0	2,256
May 24	12,450	6,160	0	6,247	3,510	2,230	0	1,277

Appendix Table 13. Continued

Date	Hatchery Steelhead				Wild Steelhead			
	Collect	Bypass	Truck	Barge	Collect	Bypass	Truck	Barge
May 25	15,053	6,737	0	8,283	4,210	2,558	0	1,650
May 26	11,653	6,386	0	5,218	3,107	2,040	0	1,064
May 27	9,180	3,910	0	5,240	2,610	1,400	0	1,208
May 28	10,020	5,580	0	4,386	3,530	2,140	0	1,388
May 29	6,110	3,550	0	2,520	2,140	1,460	0	674
May 30	12,740	5,880	0	6,817	4,040	2,430	0	1,606
May 31	10,300	4,450	0	5,773	3,070	1,590	0	1,470
Jun 01	8,550	3,020	0	5,407	2,170	1,200	0	964
Jun 02	5,390	0	0	5,107	1,430	0	0	1,407
Jun 03	7,450	0	0	0	1,820	0	0	0
Jun 04	6,720	0	0	13,591	1,410	0	0	3,208
Jun 05	5,770	0	0	0	1,170	0	0	0
Jun 06	4,360	0	0	9,948	1,100	0	0	2,259
Jun 07	5,150	0	0	0	910	0	0	0
Jun 08	3,860	0	0	8,888	810	0	0	1,718
Jun 09	2,630	0	0	0	710	0	0	0
Jun 10	1,720	0	0	4,296	280	0	0	985
Jun 11	1,130	0	0	0	300	0	0	0
Jun 12	1,850	0	0	2,931	430	0	0	728
Jun 13	2,224	0	0	0	576	0	0	0
Jun 14	2,847	0	0	5,014	753	0	0	1,327
Jun 15	1,491	0	0	0	347	0	0	0
Jun 16	1,887	0	0	3,356	690	0	0	1,035
Jun 17	789	0	0	0	222	0	0	0
Jun 18	567	0	0	1,324	211	0	0	432
Jun 19	800	0	0	0	180	0	0	0
Jun 20	1,059	0	0	1,839	235	0	0	414
Jun 21	706	0	0	0	147	0	0	0
Jun 22	443	0	0	1,123	157	0	0	303
Jun 23	467	0	0	0	93	0	0	0

Appendix Table 13. Continued

Date	Hatchery Steelhead				Wild Steelhead			
	Collect	Bypass	Truck	Barge	Collect	Bypass	Truck	Barge
Jun 24	320	0	0	776	80	0	0	172
Jun 25	186	0	0	0	27	0	0	0
Jun 26	157	0	0	339	114	0	0	141
Jun 27	171	0	0	0	43	0	0	0
Jun 28	100	0	0	262	0	0	0	43
Jun 29	115	0	0	0	14	0	0	0
Jun 30	86	0	0	199	0	0	0	14
Jul 01	29	0	0	0	0	0	0	0
Jul 02	86	0	0	109	57	0	0	57
Jul 03	14	0	0	0	0	0	0	0
Jul 04	71	0	0	82	0	0	0	0
Jul 05	14	0	0	0	0	0	0	0
Jul 06	0	0	0	6	0	0	0	0
Jul 07	29	0	0	0	0	0	0	0
Jul 08	57	0	0	81	0	0	0	0
Jul 09	43	0	0	0	0	0	0	0
Jul 10	14	0	0	53	0	0	0	0
Jul 11	0	0	0	0	0	0	0	0
Jul 12	43	0	0	43	0	0	0	0
Jul 13	43	0	0	0	0	0	0	0
Jul 14	43	0	0	80	0	0	0	0
Jul 15	43	0	0	0	0	0	0	0
Jul 16	29	0	0	69	28	0	0	27
Jul 17	14	0	0	0	0	0	0	0
Jul 18	57	0	0	70	0	0	0	0
Jul 19	43	0	0	0	0	0	0	0
Jul 20	29	0	0	66	0	0	0	0
Jul 21	0	0	0	0	0	0	0	0
Jul 22	15	0	0	11	31	0	0	31
Jul 23	29	0	0	29	0	0	0	0
Jul 24	43	0	0	42	0	0	0	0

Appendix Table 13. Continued

Date	Hatchery Steelhead				Wild Steelhead			
	Collect	Bypass	Truck	Barge	Collect	Bypass	Truck	Barge
Jul 25	14	0	0	14	0	0	0	0
Jul 26	14	0	0	13	0	0	0	0
Jul 27	0	0	0	0	0	0	0	0
Jul 28	15	0	0	15	14	0	0	14
Jul 29	0	0	0	0	0	0	0	0
Jul 30	14	0	0	12	0	0	0	0
Jul 31	0	0	0	0	0	0	0	0
Aug 01	0	0	0	0	0	0	0	0
Aug 02	29	0	0	0	0	0	0	0
Aug 03	29	0	0	58	28	0	0	28
Aug 04	0	0	0	0	0	0	0	0
Aug 05	0	0	0	0	14	0	0	14
Aug 06	0	0	0	0	0	0	0	0
Aug 07	0	0	0	0	0	0	0	0
Aug 08	0	0	0	0	0	0	0	0
Aug 09	14	0	14	0	0	0	0	0
Aug 10	0	0	0	0	0	0	0	0
Aug 11	0	0	0	0	0	0	0	0
Aug 12	0	0	0	0	14	0	13	0
Aug 13	0	0	0	0	0	0	0	0
Aug 14	14	0	14	0	0	0	0	0
Aug 15	0	0	0	0	0	0	0	0
Aug 16	0	0	0	0	0	0	0	0
Aug 17	0	0	0	0	0	0	0	0
Aug 18	0	0	0	0	0	0	0	0
Aug 19	14	0	0	0	0	0	0	0
Aug 20	0	0	13	0	0	0	0	0
Aug 21	0	0	0	0	0	0	0	0
Aug 22	0	0	0	0	0	0	0	0
Aug 23	0	0	0	0	0	0	0	0

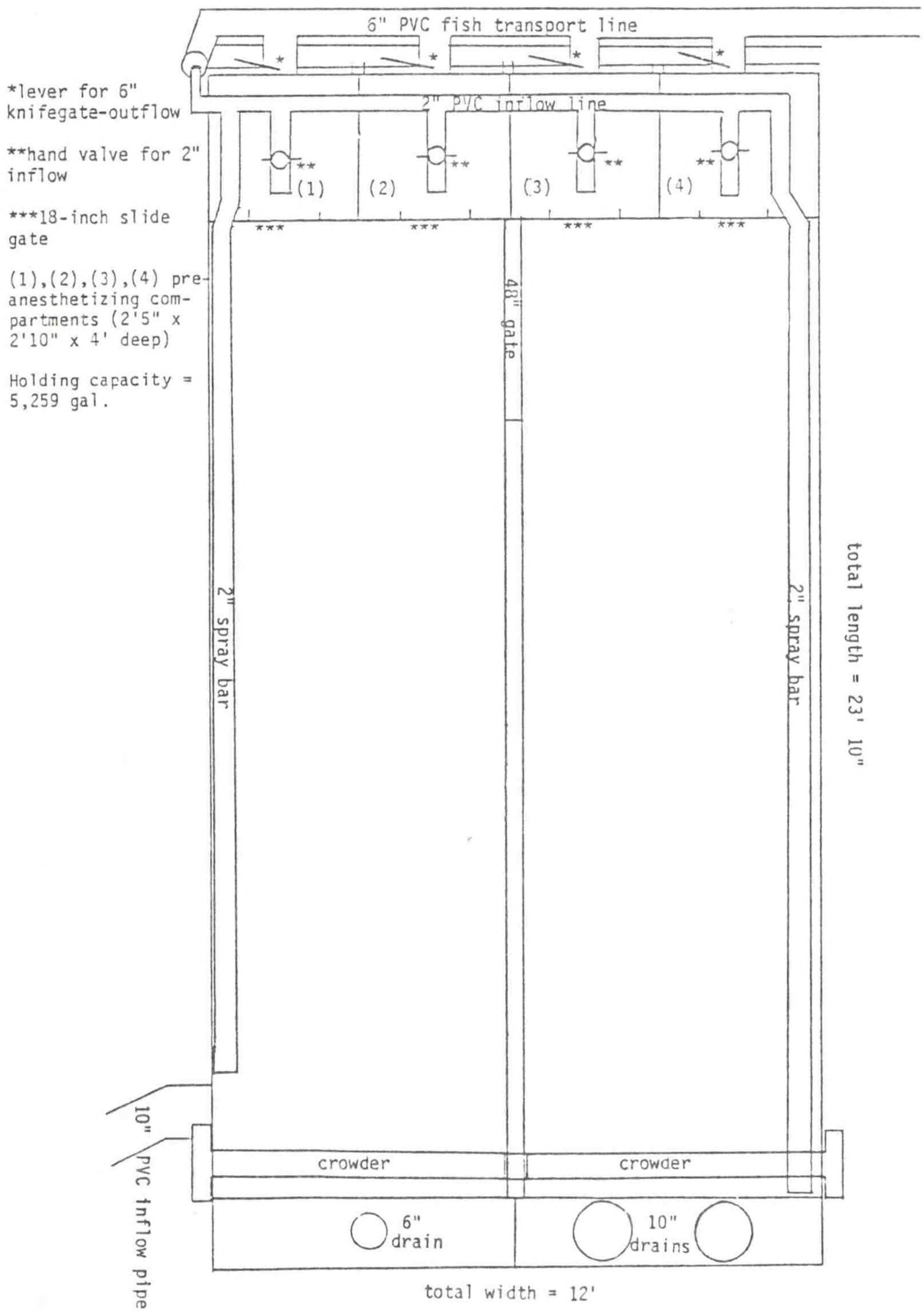
Appendix Table 13. Continued

Date	Hatchery Steelhead				Wild Steelhead			
	Collect	Bypass	Truck	Barge	Collect	Bypass	Truck	Barge
Aug 24	0	0	0	0	0	0	0	0
Aug 25	0	0	0	0	0	0	0	0
Aug 26	0	0	0	0	0	0	0	0
Aug 27	0	0	0	0	0	0	0	0
Aug 28	15	0	15	0	14	0	14	0
Aug 29	0	0	0	0	0	0	0	0
Aug 30	0	0	0	0	0	0	0	0
Aug 31	0	0	0	0	0	0	0	0
Sep 01	0	0	0	0	0	0	0	0
Sep 02	0	0	0	0	0	0	0	0
Sep 03	14	0	13	0	0	0	0	0
Sep 04	15	0	0	0	14	0	0	0
Sep 05	0	0	15	0	0	0	14	0
Sep 06	0	0	0	0	0	0	0	0
Sep 07	0	0	0	0	0	0	0	0
Sep 08	0	0	0	0	0	0	0	0
Sep 09	0	0	0	0	0	0	0	0
Sep 10	0	0	0	0	0	0	0	0
Sep 11	0	0	0	0	0	0	0	0
Sep 12	0	0	0	0	14	0	0	0
Sep 13	0	0	0	0	0	0	14	0
Sep 14	29	0	0	0	0	0	0	0
Sep 15	0	0	29	0	0	0	0	0
Sep 16	0	0	0	0	0	0	0	0
Sep 17	14	0	14	0	0	0	0	0
Sep 18	0	0	0	0	0	0	0	0
Sep 19	0	0	0	0	0	0	0	0
Sep 20	0	0	0	0	0	0	0	0
Sep 21	0	0	0	0	0	0	0	0

Appendix Table 13. Continued

Date	Hatchery Steelhead				Wild Steelhead			
	Collect	Bypass	Truck	Barge	Collect	Bypass	Truck	Barge
Sep 22	0	0	0	0	0	0	0	0
Sep 23	0	0	0	0	0	0	0	0
Sep 24	0	0	0	0	0	0	0	0
Sep 25	0	0	0	0	0	0	0	0
Sep 26	0	0	0	0	0	0	0	0
Total	500,979	231,598	1,438	265,357	215,356	137,042	5,354	72,705

Appendix 14. Drawing of new sample tank at Lower Granite Dam, showing pre-anesthetizing compartments.



Appendix Table 15.-- Daily Collection Counts of Chinook, Wild and Hatchery Steelhead, and Sockeye, Facility Mortalities, and Daily River Flows and Spills During 1985, at Lower Granite Dam.

DATE	YEARLING CHINOOK	SUB-YEARLING CHINOOK	WILD STEELHEAD	HATCHERY STEELHEAD	SOCKEYE	DAILY TOTAL	COLLECTION MORTALITY NUMBER	COLLECTION MORTALITY PERCENT	RIVER FLOW IN CFS	SPILL TOTAL	SPILL PERCENT
Mar 27	831	0	52	0	156	1,039	4	.38	50,200	0	0.00
Mar 28	667	0	42	0	125	834	6	.72	43,300	0	0.00
Mar 29	631	0	35	0	73	739	0	0.00	48,800	0	0.00
Mar 30	380	0	21	0	20	421	3	.71	46,100	0	0.00
Mar 31	525	0	13	0	73	611	0	0.00	45,800	0	0.00
Apr 1	1,550	0	0	0	61	1,611	4	.25	54,000	0	0.00
Apr 2	812	0	13	0	26	851	5	.59	60,800	0	0.00
Apr 3	1,357	0	23	0	59	1,439	10	.69	71,700	0	0.00
Apr 4	2,032	0	79	0	25	2,136	1	.05	80,400	0	0.00
Apr 5	3,361	0	195	0	43	3,599	20	.56	77,300	0	0.00
Apr 6	4,809	0	431	12	20	5,272	6	.11	72,600	0	0.00
Apr 7	6,210	13	489	34	55	6,801	27	.40	67,900	0	0.00
Apr 8	5,768	0	793	32	13	6,606	11	.17	78,300	0	0.00
Apr 9	11,345	0	1,015	41	25	12,426	36	.29	84,300	0	0.00
Apr 10	15,402	0	1,029	120	0	16,551	40	.24	93,000	0	0.00
Apr 11	13,514	0	1,699	166	31	15,410	72	.47	103,700	0	0.00
Apr 12	23,427	0	2,068	208	23	25,726	24	.09	110,100	0	0.00
Apr 13	33,503	0	1,826	302	11	35,642	61	.17	97,200	0	0.00
Apr 14	19,216	0	2,996	615	22	22,849	31	.14	95,700	0	0.00
Apr 15	46,194	9	5,125	624	37	51,989	50	.10	104,700	0	0.00
Apr 16	31,670	10	2,960	686	71	35,397	243	.69	106,500	0	0.00
Apr 17	49,040	0	5,103	2,177	113	56,433	109	.19	112,500	0	0.00
Apr 18	56,327	0	6,491	3,083	132	66,033	173	.26	108,800	0	0.00
Apr 19	61,425	0	8,025	5,811	15	75,276	334	.44	108,400	0	0.00
Apr 20	54,474	17	7,576	8,462	0	70,529	65	.09	99,600	0	0.00
Apr 21	38,116	0	6,776	12,105	63	57,060	182	.32	89,100	0	0.00
Apr 22	38,822	0	1,774	8,304	0	48,900	30	.06	81,100	0	0.00
Apr 23	53,881	0	6,500	10,695	7	71,083	72	.10	77,400	0	0.00
Apr 24	34,990	0	6,710	9,373	97	51,170	49	.10	80,100	0	0.00
Apr 25	64,179	0	8,973	12,833	0	85,985	165	.19	80,800	0	0.00
Apr 26	71,274	0	11,259	13,934	19	96,486	44	.05	74,600	0	0.00
Apr 27	45,276	0	4,153	5,911	17	55,357	98	.18	65,200	0	0.00
Apr 28	34,076	0	4,261	3,265	0	41,602	31	.07	53,000	0	0.00
Apr 29	35,084	0	4,281	5,597	0	44,962	29	.06	73,700	0	0.00
Apr 30	34,303	0	4,200	5,544	44	44,091	26	.06	75,100	0	0.00
May 1	54,111	0	5,345	6,613	0	66,069	72	.11	74,800	0	0.00
May 2	52,439	0	6,742	11,829	14	71,024	79	.11	82,500	0	0.00
May 3	57,179	0	12,245	31,961	51	101,436	87	.09	94,000	0	0.00
May 4	70,998	0	22,194	113,796	62	207,050	102	.05	90,800	0	0.00
May 5	44,389	0	18,404	101,882	33	164,708	464	.28	91,800	9,000	9.80
May 6	20,401	0	19,535	91,646	40	131,622	91	.07	89,600	35,600	39.73
May 7	16,904	0	15,154	65,624	29	97,711	141	.14	81,400	17,600	21.62
May 8	22,290	0	18,865	71,526	68	112,749	139	.12	80,800	0	0.00
May 9	31,943	0	16,446	93,266	0	141,655	308	.22	89,700	0	0.00
May 10	26,764	0	11,294	60,414	69	98,541	240	.24	88,500	0	0.00
May 11	25,449	0	11,044	65,651	102	102,246	218	.21	83,800	0	0.00
May 12	20,257	0	6,891	51,212	126	78,486	105	.13	74,900	0	0.00
May 13	21,133	0	7,189	53,427	107	81,856	87	.11	68,500	0	0.00

Appendix Table 15.-- Continued.

DATE	YEARLING CHINOOK	SUB-YEARLING CHINOOK	WILD STEELHEAD	HATCHERY STEELHEAD	SOCKEYE	DAILY TOTAL	COLLECTION MORTALITY NUMBER	COLLECTION MORTALITY PERCENT	RIVER FLOW IN CFS	SPILL TOTAL	SPILL PERCENT
May 14	22,080	0	9,421	57,874	161	89,536	130	.15	72,400	0	0.00
May 15	18,279	16	6,262	35,210	373	60,140	41	.07	72,600	0	0.00
May 16	22,095	0	6,731	46,266	113	75,205	84	.11	68,200	0	0.00
May 17	11,539	0	5,083	40,137	29	56,788	75	.13	73,500	0	0.00
May 18	21,759	0	7,826	55,034	442	85,061	76	.09	86,000	0	0.00
May 19	14,255	86	9,873	47,260	337	71,811	116	.16	83,500	0	0.00
May 20	16,570	32	12,317	49,640	157	78,716	87	.11	89,200	0	0.00
May 21	23,511	19	16,661	69,222	285	109,698	137	.12	95,600	0	0.00
May 22	21,709	0	18,831	93,997	135	134,672	112	.08	104,700	0	0.00
May 23	16,585	0	16,029	77,982	122	110,718	101	.09	112,100	0	0.00
May 24	15,721	32	5,742	57,292	95	78,882	99	.13	122,200	0	0.00
May 25	18,248	0	7,407	78,919	178	104,752	57	.05	119,900	0	0.00
May 26	13,262	0	10,228	85,809	33	109,332	84	.08	119,100	0	0.00
May 27	11,287	0	3,469	74,831	63	89,650	113	.13	107,500	0	0.00
May 28	11,179	0	6,268	76,208	131	93,786	349	.37	98,400	0	0.00
May 29	11,245	0	4,112	40,101	100	55,558	126	.23	102,800	0	0.00
May 30	11,999	0	5,025	59,395	107	76,526	159	.21	105,000	0	0.00
May 31	11,141	0	2,950	35,867	0	49,958	127	.25	102,600	5,600	5.46
Jun 1	5,430	0	2,205	23,739	28	31,402	31	.10	100,500	20,000	19.90
Jun 2	4,097	0	1,741	16,862	0	22,700	38	.17	92,100	19,200	20.85
Jun 3	3,505	0	1,720	18,188	30	23,443	34	.15	98,500	300	.30
Jun 4	2,494	0	1,115	11,914	65	15,588	38	.24	89,900	0	0.00
Jun 5	3,069	0	1,501	9,976	200	14,746	7	.05	91,200	0	0.00
Jun 6	2,844	0	1,321	11,068	46	15,279	84	.55	99,200	0	0.00
Jun 7	7,665	410	984	14,485	33	23,577	274	1.16	109,800	0	0.00
Jun 8	5,036	1,592	1,234	13,874	96	21,832	104	.48	122,900	0	0.00
Jun 9	5,841	1,154	1,495	15,926	103	24,519	90	.37	124,000	0	0.00
Jun 10	4,120	777	1,322	11,894	38	18,151	35	.19	105,500	0	0.00
Jun 11	2,866	672	1,220	10,178	120	15,056	77	.51	93,600	0	0.00
Jun 12	2,712	819	983	9,155	84	13,753	28	.20	88,400	0	0.00
Jun 13	1,891	426	396	6,431	61	9,205	43	.47	85,100	0	0.00
Jun 14	4,335	1,024	851	9,530	35	15,775	24	.15	79,000	0	0.00
Jun 15	2,654	359	359	5,991	0	9,363	38	.41	73,500	0	0.00
Jun 16	2,038	503	212	3,891	53	6,697	20	.30	65,500	0	0.00
Jun 17	2,436	343	419	4,682	76	7,956	39	.49	66,500	0	0.00
Jun 18	1,563	440	228	4,802	49	7,082	30	.42	62,100	0	0.00
Jun 19	1,258	274	193	3,370	16	5,111	8	.16	63,900	0	0.00
Jun 20	1,221	418	96	2,396	32	4,163	31	.74	57,300	0	0.00
Jun 21	1,307	668	57	1,094	14	3,140	19	.61	57,400	0	0.00
Jun 22	986	1,255	93	612	11	2,957	16	.54	56,400	0	0.00
Jun 23	542	1,367	94	553	0	2,556	13	.51	54,300	0	0.00
Jun 24	704	1,296	98	704	13	2,815	34	1.21	46,800	0	0.00
Jun 25	438	927	42	532	20	1,959	13	.66	46,600	0	0.00
Jun 26	74	1,141	21	406	0	1,642	31	1.89	49,900	0	0.00
Jun 27	45	1,321	89	655	22	2,132	12	.56	43,300	0	0.00
Jun 28	199	1,043	50	994	13	2,299	34	1.48	41,300	0	0.00
Jun 29	200	441	16	417	25	1,099	15	1.36	38,000	0	0.00
Jun 30	534	631	33	206	0	1,404	17	1.21	38,400	0	0.00

Appendix Table 15.-- Continued.

DATE	YEARLING CHINOOK	SUB-YEARLING CHINOOK	WILD STEELHEAD	HATCHERY STEELHEAD	SOCKEYE	DAILY TOTAL	COLLECTION MORTALITY NUMBER	COLLECTION MORTALITY PERCENT	RIVER FLOW IN CFS	SPILL TOTAL	SPILL PERCENT
Jul 1	288	589	47	287	24	1,235	19	1.54	36,600	0	0.00
Jul 2	497	682	12	382	12	1,585	13	.82	40,100	0	0.00
Jul 3	654	956	49	508	13	2,180	19	.87	46,100	0	0.00
Jul 4	750	1,098	0	751	22	2,621	45	1.72	36,100	0	0.00
Jul 5	662	767	19	374	0	1,822	21	1.15	23,800	0	0.00
Jul 6	345	867	12	262	0	1,486	70	4.71	27,400	0	0.00
Jul 7	295	581	37	304	0	1,217	25	2.05	37,300	0	0.00
Jul 8	462	1,685	37	463	0	2,647	65	2.46	35,000	0	0.00
Jul 9	810	4,234	57	685	0	5,786	50	.86	29,200	0	0.00
Jul 10	468	2,893	20	490	11	3,882	167	4.30	31,200	0	0.00
Jul 11	252	2,286	26	572	0	3,136	82	2.61	30,400	0	0.00
Jul 12	236	1,565	0	577	9	2,387	189	7.92	33,900	0	0.00
Jul 13	252	1,106	12	421	0	1,791	93	5.19	26,800	0	0.00
Jul 14	124	751	19	466	10	1,370	156	11.39	16,300	0	0.00
Jul 15	152	488	11	196	0	847	54	6.38	20,700	0	0.00
Jul 16	57	426	12	482	0	977	181	18.53	18,800	0	0.00
Jul 17	35	670	0	497	12	1,214	87	7.17	25,600	0	0.00
Jul 18	48	509	0	463	0	1,020	161	15.78	26,900	0	0.00
Jul 19	87	500	0	259	0	846	78	9.22	29,800	0	0.00
Jul 20	21	446	0	298	0	765	199	26.01	22,900	0	0.00
Jul 21	44	186	11	449	0	690	119	17.25	14,300	0	0.00
Jul 22	0	139	19	109	0	267	158	59.18	19,100	0	0.00
Jul 23	11	161	11	139	0	322	54	16.77	16,000	0	0.00
TOTAL	1,729,846	43,120	453,168	2,233,784	6,434	4,466,352	9,649	.22			

APPENDIX TABLE16.-- 1985 TRUCK TRANSPORTATION REPORT
AT LOWER GRANITE

	DAILY #'s TRUCKED						ACCUM. #'s TRUCKED					
	Yrlg. Chinook	Subyr. Chinook	Wild Steelhead	Hat. Steelhead	Sockeye	Daily Total	Yrlg. Chinook	Subyr. Chinook	Wild Steelhead	Hat. Steelhead	Sockeye	Accum. Total
28/ 3	1,443	0	94	0	273	1,810	1,443	0	94	0	273	1,810
29/ 3	0	0	0	0	0	0	1,443	0	94	0	273	1,810
30/ 3	1,052	0	56	0	100	1,208	2,495	0	150	0	373	3,018
31/ 3	0	0	0	0	0	0	2,495	0	150	0	373	3,018
1/ 4	2,071	0	13	0	133	2,217	4,566	0	163	0	506	5,235
2/ 4	0	0	0	0	0	0	4,566	0	163	0	506	5,235
3/ 4	2,154	0	36	0	85	2,275	6,720	0	199	0	591	7,510
4/ 4	0	0	0	0	0	0	6,720	0	199	0	591	7,510
5/ 4	5,375	0	273	0	66	5,714	12,095	0	472	0	657	13,224
6/ 4	0	0	0	0	0	0	12,095	0	472	0	657	13,224
7/ 4	10,986	13	920	46	75	12,040	23,081	13	1,392	46	732	25,264
8/ 4	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
9/ 4	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
10/ 4	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
11/ 4	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
12/ 4	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
13/ 4	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
14/ 4	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
15/ 4	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
16/ 4	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
17/ 4	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
18/ 4	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
19/ 4	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
20/ 4	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
21/ 4	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
22/ 4	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
23/ 4	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
24/ 4	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
25/ 4	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
26/ 4	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
27/ 4	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
28/ 4	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
29/ 4	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
30/ 4	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
1/ 5	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
2/ 5	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
3/ 5	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
4/ 5	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
5/ 5	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
6/ 5	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
7/ 5	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
8/ 5	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
9/ 5	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
10/ 5	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
11/ 5	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
12/ 5	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
13/ 5	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
14/ 5	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264

APPENDIX TABLE16.-- Continued

	DAILY #'s TRUCKED						ACCUM. #'s TRUCKED					
	Yrlg. Chinook	Subyr. Chinook	Wild Steelhead	Hat. Steelhead	Sockeye	Daily Total	Yrlg. Chinook	Subyr. Chinook	Wild Steelhead	Hat. Steelhead	Sockeye	Accum. Total
15/ 5	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
16/ 5	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
17/ 5	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
18/ 5	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
19/ 5	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
20/ 5	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
21/ 5	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
22/ 5	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
23/ 5	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
24/ 5	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
25/ 5	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
26/ 5	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
27/ 5	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
28/ 5	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
29/ 5	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
30/ 5	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
31/ 5	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
1/ 6	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
2/ 6	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
3/ 6	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
4/ 6	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
5/ 6	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
6/ 6	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
7/ 6	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
8/ 6	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
9/ 6	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
10/ 6	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
11/ 6	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
12/ 6	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
13/ 6	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
14/ 6	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
15/ 6	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
16/ 6	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
17/ 6	0	0	0	0	0	0	23,081	13	1,392	46	732	25,264
18/ 6	1,560	439	227	4,782	44	7,052	24,641	452	1,619	4,828	776	32,316
19/ 6	1,258	274	193	3,363	15	5,103	25,899	726	1,812	8,191	791	37,419
20/ 6	1,213	416	95	2,380	28	4,132	27,112	1,142	1,907	10,571	819	41,551
21/ 6	1,306	667	57	1,080	11	3,121	28,418	1,809	1,964	11,651	830	44,672
22/ 6	985	1,250	93	604	9	2,941	29,403	3,059	2,057	12,255	839	47,613
23/ 6	0	0	0	0	0	0	29,403	3,059	2,057	12,255	839	47,613
24/ 6	1,234	2,652	188	1,241	9	5,324	30,637	5,711	2,245	13,496	848	52,937
25/ 6	0	0	0	0	0	0	30,637	5,711	2,245	13,496	848	52,937
26/ 6	505	2,058	63	912	19	3,557	31,142	7,769	2,308	14,408	867	56,494
27/ 6	0	0	0	0	0	0	31,142	7,769	2,308	14,408	867	56,494
28/ 6	238	2,344	139	1,629	35	4,385	31,380	10,113	2,447	16,037	902	60,879
29/ 6	0	0	0	0	0	0	31,380	10,113	2,447	16,037	902	60,879
30/ 6	726	1,065	49	608	23	2,471	32,106	11,178	2,496	16,645	925	63,350
1/ 7	0	0	0	0	0	0	32,106	11,178	2,496	16,645	925	63,350
2/ 7	779	1,261	58	654	36	2,788	32,885	12,439	2,554	17,299	961	66,138

APPENDIX TABLE16.-- Continued

	DAILY #'s TRUCKED						ACCUM. #'s TRUCKED					
	Yrlg. Chinook	Subyr. Chinook	Wild Steelhead	Hat. Steelhead	Sockeye	Daily Total	Yrlg. Chinook	Subyr. Chinook	Wild Steelhead	Hat. Steelhead	Sockeye	Accum. Total
3/ 7	0	0	0	0	0	0	32,885	12,439	2,554	17,299	961	66,138
4/ 7	1,389	2,040	49	1,224	35	4,737	34,274	14,479	2,603	18,523	996	70,875
5/ 7	0	0	0	0	0	0	34,274	14,479	2,603	18,523	996	70,875
6/ 7	987	1,614	30	586	0	3,217	35,261	16,093	2,633	19,109	996	74,092
7/ 7	0	0	0	0	0	0	35,261	16,093	2,633	19,109	996	74,092
8/ 7	747	2,246	72	709	0	3,774	36,008	18,339	2,705	19,818	996	77,866
9/ 7	0	0	0	0	0	0	36,008	18,339	2,705	19,818	996	77,866
10/ 7	1,276	7,054	74	1,036	11	9,451	37,284	25,393	2,779	20,854	1,007	87,317
11/ 7	0	0	0	0	0	0	37,284	25,393	2,779	20,854	1,007	87,317
12/ 7	466	3,567	24	950	9	5,016	37,750	28,960	2,803	21,804	1,016	92,333
13/ 7	0	0	0	0	0	0	37,750	28,960	2,803	21,804	1,016	92,333
14/ 7	358	1,741	30	773	10	2,912	38,108	30,701	2,833	22,577	1,026	95,245
15/ 7	0	0	0	0	0	0	38,108	30,701	2,833	22,577	1,026	95,245
16/ 7	201	783	15	590	0	1,589	38,309	31,484	2,848	23,167	1,026	96,834
17/ 7	0	0	0	0	0	0	38,309	31,484	2,848	23,167	1,026	96,834
18/ 7	82	1,068	0	827	12	1,989	38,391	32,552	2,848	23,994	1,038	98,823
19/ 7	0	0	0	0	0	0	38,391	32,552	2,848	23,994	1,038	98,823
20/ 7	104	805	0	425	0	1,334	38,495	33,357	2,848	24,419	1,038	100,157
21/ 7	0	0	0	0	0	0	38,495	33,357	2,848	24,419	1,038	100,157
22/ 7	43	189	25	420	0	677	38,538	33,546	2,873	24,839	1,038	100,834
23/ 7	10	128	11	119	0	268	38,548	33,674	2,884	24,958	1,038	101,102

APPENDIX TABLE17.-- 1985 BARGE TRANSPORTATION REPORT
AT LOWER GRANITE

	DAILY #'s BARGED						ACCUM. #'s BARGED					
	Yrlg. Chinook	Subyr. Chinook	Wild Steelhead	Hat. Steelhead	Sockeye	Daily Total	Yrlg. Chinook	Subyr. Chinook	Wild Steelhead	Hat. Steelhead	Sockeye	Accum. Total
11/ 4	45,660	0	4,535	359	69	50,623	45,660	0	4,535	359	69	50,623
12/ 4	0	0	0	0	0	0	45,660	0	4,535	359	69	50,623
13/ 4	0	0	0	0	0	0	45,660	0	4,535	359	69	50,623
14/ 4	0	0	0	0	0	0	45,660	0	4,535	359	69	50,623
15/ 4	122,024	9	12,012	1,747	93	135,885	167,684	9	16,547	2,106	162	186,508
16/ 4	0	0	0	0	0	0	167,684	9	16,547	2,106	162	186,508
17/ 4	79,613	10	8,044	2,856	184	90,707	247,297	19	24,591	4,962	346	277,215
18/ 4	0	0	0	0	0	0	247,297	19	24,591	4,962	346	277,215
19/ 4	117,272	0	14,511	8,872	147	140,802	364,569	19	39,102	13,834	493	418,017
20/ 4	0	0	0	0	0	0	364,569	19	39,102	13,834	493	418,017
21/ 4	91,429	17	14,352	20,543	61	126,402	455,998	36	53,454	34,377	554	544,419
22/ 4	0	0	0	0	0	0	455,998	36	53,454	34,377	554	544,419
23/ 4	91,515	0	8,273	18,966	7	118,761	547,513	36	61,727	53,343	561	663,180
24/ 4	0	0	0	0	0	0	547,513	36	61,727	53,343	561	663,180
25/ 4	97,737	0	15,680	22,148	96	135,661	645,250	36	77,407	75,491	657	798,841
26/ 4	0	0	0	0	0	0	645,250	36	77,407	75,491	657	798,841
27/ 4	114,870	0	15,409	19,826	36	150,141	760,120	36	92,816	95,317	693	948,982
28/ 4	0	0	0	0	0	0	760,120	36	92,816	95,317	693	948,982
29/ 4	68,367	0	8,541	8,843	0	85,751	828,487	36	101,357	104,160	693	1,034,733
30/ 4	0	0	0	0	0	0	828,487	36	101,357	104,160	693	1,034,733
1/ 5	88,335	0	9,545	12,138	44	110,062	916,822	36	110,902	116,298	737	1,144,795
2/ 5	52,370	0	6,742	11,819	14	70,945	969,192	36	117,644	128,117	751	1,215,740
3/ 5	56,757	0	12,245	31,946	51	100,999	1,025,949	36	129,889	160,063	802	1,316,739
4/ 5	70,768	0	22,194	113,784	62	206,808	1,096,717	36	152,083	273,847	864	1,523,547
5/ 5	43,998	0	18,398	101,815	33	164,244	1,140,715	36	170,481	375,662	897	1,687,791
6/ 5	20,340	0	19,535	91,616	40	131,531	1,161,055	36	190,016	467,278	937	1,819,322
7/ 5	16,830	0	15,030	65,043	27	96,930	1,177,885	36	205,046	532,321	964	1,916,252
8/ 5	22,206	0	18,730	70,968	66	111,970	1,200,091	36	223,776	603,289	1,030	2,028,222
9/ 5	31,690	0	16,446	93,211	0	141,347	1,231,781	36	240,222	696,500	1,030	2,169,569
10/ 5	26,590	0	11,166	59,836	69	97,661	1,258,371	36	251,388	756,336	1,099	2,267,230
11/ 5	25,289	0	10,951	65,046	102	101,388	1,283,660	36	262,339	821,382	1,201	2,348,618
12/ 5	20,189	0	6,891	51,175	126	78,381	1,303,849	36	269,230	872,557	1,327	2,446,999
13/ 5	21,082	0	7,113	52,827	107	81,129	1,324,931	36	276,343	925,384	1,434	2,528,128
14/ 5	21,983	0	9,331	57,291	161	88,766	1,346,914	36	285,674	982,675	1,595	2,616,894
15/ 5	18,258	16	6,261	35,191	373	60,099	1,365,172	52	291,935	1,017,866	1,968	2,676,993
16/ 5	21,940	0	6,731	46,232	113	75,016	1,387,112	52	298,666	1,064,098	2,081	2,752,009
17/ 5	11,497	0	5,011	39,536	29	56,073	1,398,609	52	303,677	1,103,634	2,110	2,808,082
18/ 5	21,708	0	7,786	54,729	442	84,665	1,420,317	52	311,463	1,158,363	2,552	2,892,747
19/ 5	14,212	86	9,871	47,189	337	71,695	1,434,529	138	321,334	1,205,552	2,889	2,964,442
20/ 5	16,532	32	12,253	49,335	157	78,309	1,451,061	170	333,587	1,254,887	3,046	3,042,751
21/ 5	23,447	19	16,596	68,894	285	109,241	1,474,508	189	350,183	1,323,781	3,331	3,151,992
22/ 5	21,651	0	18,801	93,814	134	134,400	1,496,159	189	368,984	1,417,595	3,465	3,286,392
23/ 5	16,520	0	16,027	77,948	122	110,617	1,512,679	189	385,011	1,495,543	3,587	3,397,009
24/ 5	15,668	32	5,737	57,251	95	78,783	1,528,347	221	390,748	1,552,794	3,682	3,475,792
25/ 5	18,225	0	7,402	78,890	178	104,695	1,546,572	221	398,150	1,631,684	3,860	3,580,487
26/ 5	13,223	0	10,224	85,768	33	109,248	1,559,795	221	408,374	1,717,452	3,893	3,689,735
27/ 5	0	0	0	0	0	0	1,559,795	221	408,374	1,717,452	3,893	3,689,735
28/ 5	22,354	0	9,716	150,711	193	182,974	1,582,149	221	418,090	1,868,163	4,086	3,872,709

APPENDIX TABLE17.-- Continued

	DAILY #'s BARGED						ACCUM. #'s BARGED					
	Yrlg. Chinook	Subyr. Chinook	Wild Steelhead	Hat. Steelhead	Sockeye	Daily Total	Yrlg. Chinook	Subyr. Chinook	Wild Steelhead	Hat. Steelhead	Sockeye	Accum. Total
29/ 5	0	0	0	0	0	0	1,582,149	221	418,090	1,868,163	4,086	3,872,709
30/ 5	23,152	0	9,123	99,303	206	131,784	1,605,301	221	427,213	1,967,466	4,292	4,004,493
31/ 5	0	0	0	0	0	0	1,605,301	221	427,213	1,967,466	4,292	4,004,493
1/ 6	16,493	0	5,149	59,525	28	81,195	1,621,794	221	432,362	2,026,991	4,320	4,085,688
2/ 6	0	0	0	0	0	0	1,621,794	221	432,362	2,026,991	4,320	4,085,688
3/ 6	7,588	0	3,458	34,995	30	46,071	1,629,382	221	435,820	2,061,986	4,350	4,131,759
4/ 6	0	0	0	0	0	0	1,629,382	221	435,820	2,061,986	4,350	4,131,759
5/ 6	5,556	0	2,612	21,856	265	30,289	1,634,938	221	438,432	2,083,842	4,615	4,162,048
6/ 6	0	0	0	0	0	0	1,634,938	221	438,432	2,083,842	4,615	4,162,048
7/ 6	10,468	404	2,291	25,257	78	38,498	1,645,406	625	440,723	2,109,099	4,693	4,200,546
8/ 6	0	0	0	0	0	0	1,645,406	625	440,723	2,109,099	4,693	4,200,546
9/ 6	10,823	2,728	2,722	29,685	199	46,157	1,656,229	3,353	443,445	2,138,784	4,892	4,246,703
10/ 6	0	0	0	0	0	0	1,656,229	3,353	443,445	2,138,784	4,892	4,246,703
11/ 6	6,963	1,434	2,540	22,011	147	33,095	1,663,192	4,787	445,985	2,160,795	5,039	4,279,798
12/ 6	0	0	0	0	0	0	1,663,192	4,787	445,985	2,160,795	5,039	4,279,798
13/ 6	4,595	1,244	1,378	15,525	145	22,887	1,667,787	6,031	447,363	2,176,320	5,184	4,302,685
14/ 6	0	0	0	0	0	0	1,667,787	6,031	447,363	2,176,320	5,184	4,302,685
15/ 6	6,987	1,378	1,208	15,468	35	25,076	1,674,774	7,409	448,571	2,191,788	5,219	4,327,761
16/ 6	0	0	0	0	0	0	1,674,774	7,409	448,571	2,191,788	5,219	4,327,761
17/ 6	4,460	846	628	8,534	126	14,594	1,679,234	8,255	449,199	2,200,322	5,345	4,342,355