February 2005

APPENDIX A

SPECIAL PROJECT OPERATIONS AND STUDIES

February 2005

APPENDIX A: BONNEVILLE

February 2005

Bonneville Dam[1]

1. Special Project Operations.

RCC will coordinate needed changes with the projects and authorize operations in teletype regulations.

1.1. Spring Creek Hatchery Release. The first hatchery release is expected to occur in early March, followed by special operations for juvenile fish passage as coordinated with the fish agencies through TMT. Project operations for fish passage will be defined by RCC teletype prior to the release.

1.2. Spill. Spill for fish passage will be provided during the spring and summer outmigration seasons in accordance with spill specifications in Appendix E and as coordinated through TMT. Alternative spill patterns to control dissolved gas levels or change fish passage conditions will be coordinated through the FPOM.

2. Studies.

2.1. Bonneville Rehab Biological Testing (also testing under the Turbine Survival Program.

2.2. Lower Columbia River Adult Studies.

2.3. PIT Detection Evaluation. As part of the Washington shore ladder adult PIT tag detection system evaluations, 200-250 fall Chinook, Steelhead, and Coho will be radio-tagged in the AFF and release back into the ladder during the peak of the run from late August to mid September. To prepare for this work antennae systems will be relocated during the winter work period when the WA shore ladder is dewatered.

2.4. Lamprey Passage Evaluations. From early June to the end of August, 1000 adult Lamprey will be captured and tagged with half-plex PIT tags and released below the dam to evaluate overall passage, including use of the prototype Lamprey Auxiliary Passage Systems (LAPS). During the winter maintenance period preliminary set up for installation of half-plex PIT detection systems and a new prototype LAPS at the

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downstream WA shore ladder entrance will occur and final installation will occur by the middle of May. The Bradford Island Auxiliary water supply channel LAPS will also be installed by the middle of May and run until at least October 1.

2.5. Adult Studies Evaluations. South Fork Salmon River hatchery summer Chinook, PIT-tagged for future spawning success evaluations in previous years, will be separated by code at the AFF, morphometircally measured, and a subsample will have a miniature temperature recorder attached to the dorsal fin. Resampling of these fish will occur on the spawning grounds.

2.7. Evaluation of a gatewell modifications at Bonneville Second Powerhouse.
As part of the continuing effort to improve FGE at B2 units the Corps plans to install newly designed VBSs in unit 17 in FY04. The Corps plans to measure FGE in this modified unit by installing hydroacoustic transducers in all three slots. In addition, main units 11-14 may have extra hydroacoustics installed prior to the fish passage season to strengthen FGE data sets. This will require the units to be shut down to install transducers on STS as well as trashracks prior to the start of the FPP. In-season repairs may also be needed and planned for. Units 17 and 13 will also be monitored for 3 days each in the spring with the aid of the DIDSON camera to measure gap loss. This will require the sampling unit to be shut down during DIDSON frame installation and removal and when the frame is moved between units.

2.8. All dates shown are approximate and could be advanced or delayed by a week or so depending on various factors such as river flows, contractor schedules, equipment failures, etc. Some evaluations may not proceed. Therefore, a final description of studies and outages being conducted will be coordinated with the region through AFEP (FFDRWG and SRWG), prior to April 1. All special operation requests or schedule changes will be coordinated with the fisheries agencies and tribes through the AFEP and with RCC and BPA.

APPENDIX A: THE DALLES

The Dalles Dam[1]

1. Special Project Operations

RCC will coordinate needed changes with the projects and authorize operations in teletype regulations.

1.1. Spill. Spill for fish passage will be provided during the spring and summer outmigration seasons in accordance with spill specifications in Appendix E and as coordinated through TMT. Alternative spill patterns to control dissolved gas levels or change fish passage conditions will be coordinated through the FPOM. New spill patterns were developed in 2003 for the modified spillway that will put most of the spill discharge through Bays 1-6.

2. Studies.

Two major research efforts will take place in 2005. The first is a post-construction evaluation of the modified spillway. The second is a forebay behavior study that will provide information on the operation of ice and trash sluiceway gates.

2.1. Spillwall Post Construction Evaluation. Yearling and subyearling Chinook salmon survival rates will be estimated using radio telemetry. Radio-tagged fish will also be used to estimate passage distribution through the dam and to assess tailrace egress behavior following passage. Pending regional discussion, a direct survival and injury evaluation for yearling Chinook released into Bay 6 may occur as well. The radio-telemetry study will start in late April and conclude around July 20. BRZ access to track fish in the tailrace and release control would be required. The balloon-tag study would occur for approximately 7 days in late April. Autonomous sensors will also be released through the Bay 6 release hose and recaptured in the spillway tailrace.

2.2. Sluice Operations Evaluation
Pending discussion with the region and funding availability, alternative sluiceway operation may be evaluated in 2005. Fixed gear hydroacoustics and radio telemetry will be used to estimate sluice passage. The schedule and operation is still under development. Approximate dates: mid-April through end of July.

[1] The purpose of this section is to notify regional interests of planned activities that will or may affect fish passage. Further coordination may occur as needed.

2.3. Adult White Sturgeon Passage Evaluations. Combined radio and acoustic telemetry will be used to monitor adult white sturgeon in the vicinity of The Dalles Dam. Fish will be captured and tagged by line fishing in the tailrace and forebay areas of the dam and by using fish obtained from salvage operations during maintenance. Placement of additional underwater hydrophones at sites along the powerhouse and at exit areas above and below the dam will be accomplished by February.

2.4. Equipment Installation and Maintenance. Installation of hydroacoustic transducers and radio telemetry equipment will begin in January at The Dalles Dam. Installation of hydroacoustic transducers in turbine unit intakes will be performed by divers and thus require appropriate outages of adjacent units. Additionally, limited pre-season inspection of radio telemetry equipment may be necessary during these dives. Dates for these installations and inspections are pending. In-season outages may also be required to repair or replace damaged equipment.

Equipment will be removed in early August with procedures and outages similar to the installation outages discussed above. If removal cannot be accomplished without manipulating the spill schedule, equipment removal will be delayed until after the spill season to prevent interruptions to other ongoing evaluations.

Geotechnical evaluation and exploration of potential anchor locations for a BGS prototype will be performed during the in water work period in TDA forebay starting in February. This work will require barge mounted drill rig for borings and may require in-season outages.

2.5. All dates shown are approximate and could be advanced or delayed by a week or so depending on various factors such as river flows, contractor schedules equipment failures, etc. Some evaluations may not proceed. Therefore, a final description of studies and outages being conducted will be coordinated with the region through AFEP (FFDRWG and SRWG) prior to April 1. All special operation requests or schedule changes will be coordinated with the fisheries agencies and tribes through the AFEP and with RCC and BPA.

APPENDIX A: JOHN DAY

February 2005

John Day Dam[1]

1. Special Project Operations.

1.1. Spill. Spill for fish passage will be provided during the spring and summer outmigration seasons in accordance with spill specifications in Appendix E and as coordinated through TMT. Alternative spill patterns to control dissolved gas levels or change fish passage conditions will be coordinated through the FPOM. Planning dates for spill are from April 10 through August 31 for spring and summer migrants as required in the UPA. Between May 15 and June 20 (planning dates), spill will occur from 1900 to 0600 hours (11 hours total). Before that time period, spill will be for 12 hours nightly, from 1800 to 0600 hours. From April 10 to June 20 (planning dates), spill discharges will be 60% of instantaneous project flow at project flows up to 300,000 cfs. Above 300,000 cfs project flow, spill discharges will be 180,000 cfs (up to the hydraulic limit of the powerhouse). From June 21 through August 31, spill will be 30% of instantaneous project flow 24-hours per day. Spill will be provided in a manner consistent with TDG management to avoid excessive gas supersaturation conditions.

2. Studies.

2.1. No fish passage studies are planned for 2005 at John Day Dam.

2.2. Water velocity data will be collected in turbine Unit 16 draft tube and in the tailrace area over a range of operating conditions. The purpose of this data collection is to provide information that will aid in correcting the 1:80 scale physical model of the dam and serve as verification data sets for other hydraulic modeling efforts. The hydraulic data collection from the draft tube is scheduled to take place in February of 2005. The draft tube data collection will require 10% and 20% spill for 6 hours a day over two days. It also calls for Unit 15 and Unit 16 outages on two days to install and remove equipment. A final day of data collection will involve operating Unit 16 over a range of discharges.

Longer term hydraulic monitoring of the John Day tailrace is also proposed during the 2005 spill season. The purpose of the monitoring effort is to determine entrained flow levels during spill operations. This data will provide information for

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verifying hydraulic models and will provide a data set to improve dissolved gas modeling at the John Day project. The study is still being developed at this time but currently calls for installation of instruments prior to spill commencing and passive monitoring through the spill season and therefore does not call for any special operations as of this draft.

2.3. All dates shown are approximate and could be advanced or delayed by a week or so depending on various factors such as river flows, contractor schedules, equipment failures, etc. Some evaluations may not proceed. Therefore, a final description of studies and outages being conducted will be coordinated with the region through AFEP (FFDRWG and SRWG), prior to April 1. All special operation requests or schedule changes will be coordinated with the fisheries agencies and tribes through the AFEP and with RCC and BPA.

APPENDIX A: MCNARY

McNary Dam[1]

1. Special Project Operations.

1.1. Spill. Spill for fish passage will be provided during the spring outmigration season in accordance with spill specifications in Appendix E and as coordinated through TMT. Alternative spill patterns to control dissolved gas levels or change fish passage conditions will be coordinated through the FPOM.

1.2. Doble Tests. Four transformer banks and their respective turbine units will be taken out of service for Doble testing in 2005: T1, units 1 and 2; T3, units 5 and 6; T6, units 11 and 12; and T7, units 13 and 14. The outages are tentatively scheduled for September and early October 2005.

1.3. Dam Safety Inspection. The Corps will inspect concrete and embankment riprap upstream and downstream of McNary Dam on April 5 and 6, 2005. Low pool elevations will be needed during the inspection and this will be coordinated through the RCC.

1.4. Rehabilitation of Spillway Gates. Rehab of four spillway gates began in October 2004. This involves resurfacing wheels, installing low-friction seals, and painting. Work is scheduled for completion by February 10, 2005, allowing for the use of all 22 spillway bays. One or more additional gates may be rehabbed if funding is available.

1.5. Rehabilitation of Auxiliary Water Supply (AWS) Pumps. Two of the three south shore AWS pumps have experienced bearing failure. In 2003, bearing failure on pump 3 caused significant damage to the guide bearings and pump shaft. Plans and specifications are in progress for a major rehabilitation of the pump. The pump will be out of service for the 2005 fish passage season. In 2004, pump 2 began exhibiting unusual levels of vibration. The pump was removed from service and disassembled for inspection. Bearings were damaged beyond repair but damage to the shaft was minimal. An emergency repair contract was executed and the pump was placed back in service in November 2004. During acceptance testing of the repaired bearings, unacceptable levels of lateral movement of the shaft were documented. Pump 2 was removed from service and the Corps is investigating the problem. It is anticipated that pumps 1 and 2 will be available for the 2005 fish passage season.

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1.6. Rewind of Turbine Unit 6. A rewind of the generator on turbine unit 6 is planned. This will require an outage of unit 6 from approximately September 1, 2005 through March 31, 2006.

1.7. Automated Turbine Index Testing. Proof of concept testing of the new turbine control system with an automated turbine index function called an Index Test Box (ITB) will occur beginning in February 2005. It is estimated that the testing will occur over about three months of operation during the testing period and will ultimately be unattended. Testing will occur on unit 5 and potentially other units as well. The system will operate within the existing operational 1% limits but may experience intended excursions near the upper 1% operating limit to confirm the location of the upper 1% limit. The purpose of the index testing is to determine turbine unit performance so that the unit can be operated at peak efficiency.

2. Studies.

2.1. Evaluation of Juvenile Fish Transportation Versus In-River Survival. Juvenile fish transportation will be evaluated at McNary Dam in 2005. Juvenile steelhead will be PIT tagged at mid-Columbia River hatcheries and either transported by barge or bypassed at McNary Dam. In the spring and early summer, the juvenile bypass facility operations will be alternated between full flow primary bypass and transportation modes by switching the primary bypass gate on an every-other-day schedule. During the transport mode of operation, only designated PIT tagged research fish will be transported while all remaining PIT tagged and run-of-river fish will be bypassed to the river. A potential summer study on fall Chinook transportation may be conducted under the routine Bi-Op operations.

2.2. Evaluation of Adult Salmon and Steelhead Migration Past the Snake and Columbia River Dams. The Idaho Cooperative Fisheries Research Unit will continue to monitor the passage of adult salmonids through the hydrosystem. The study requires the installation of radio receivers and data loggers throughout the fishways and at various locations on the dam. The installation of equipment will take place prior to the fish season and is not anticipated to require special project operations.

2.3. McNary Turbine Upgrade Study. Biological studies related to upgrading the turbine units at McNary Dam will continue in 2005. A new split prototype VBS will be evaluated in the A-slot gatewell of turbine unit 4. PIT tagged fish will be released in the A-slot of the unit, as well as near the trashracks. This unit will be operated in a 2-day blocked study design. Test

operations will be at 1% operation and maximum discharge during the testing period. Details of operations and timing will be coordinated prior to the fish passage season.

2.4. McNary Survival Study. A radio telemetry survival study to evaluate 12-hour (UPA) versus 24-hour spill will be conducted at McNary Dam during the spring of 2005. Radio telemetry equipment setup will begin in February and continue until mid-April. Juvenile salmonids will be radio tagged, released upstream of the project, and monitored as they pass the project beginning in mid-April. Regional coordination will be ongoing to determine an appropriate 24-hour spill level.

2.5. Evaluation of Adult Pacific Lamprey Passage Success at McNary and the Lower Snake River Dams. The Idaho Cooperative Fisheries Research Unit will monitor the passage success of adult Pacific lamprey at McNary and Ice Harbor dams. The study requires the installation of half-duplex PIT tag antennas and data loggers throughout the fishways and at various locations on the dam. Antenna cables (1cm diameter) will be placed as to avoid interfering with salmon and other fish passage, and will bracket existing radio telemetry antennas. The installation of equipment will take place in January and February.

The study requires the installation of a lamprey trap near weir number 285 in the Oregon shore fishway at McNary Dam. The trapping and tagging operation will occur only at night from sundown to sunup (approximately 2100 hrs through 0700 hrs) from July 1 until September 30. At night, the trap will be placed along one wall of the fishway then lowered down until a portion of the trap rests on the crest of the overflow weir. The trap will remain in this position and collect fish attempting to pass the weir. The following morning the trap will be completely removed from the fishway. This work is not anticipated to require special project operations, or impact adult salmon and steelhead moving upstream in the ladder.

APPENDIX A: ICE HARBOR

Ice Harbor Dam[1]

1. Special Project Operations.

1.1. Spill. Spill for fish passage will be provided during the spring and summer outmigration seasons in accordance with spill specifications in Appendix E and as coordinated through TMT. Alternative spill patterns to control dissolved gas levels or change fish passage conditions will be coordinated through the FPOM. However, see paragraph 2.1 below for scheduled testing of the new removable spillway weir.

1.2. Doble Tests. To complete Doble testing in 2005, line 2 and turbine units 3 and 4 will be taken out of service from August 16 to 18.

1.3. Index Testing. Index testing of two turbine units is tentatively scheduled for 2005. The testing would likely be scheduled for mid-December and involve one unit per "family." Units 1 to 3 are in one family, and units 4 to 6 in another. The purpose of index testing is to determine turbine unit performance so that the unit can be operated at peak efficiency.

1.4. Installation of Full-Flow PIT Tag Detector. A full-flow PIT tag detector will be installed on the juvenile fish facility's bypass pipe in the January to March timeframe. A new section of pipe will be installed by March 1, followed by the electronics. Fish bypass will begin in March as usual.

2. Studies.

2.1. Removable Spillway Weir (RSW) Passage and Survival Evaluation. A new RSW will be installed in spillbay 2 at Ice Harbor. Radio telemetry, hydroacoustic and balloon tag studies will estimate the passage and survival rates of fish passing over the RSW, spillway and through the powerhouse. The tainter gate at spillbay 2, when operated, will be either fully open or fully closed. The flow over the RSW will be regulated by the project forebay elevation and not by the tainter gate. Projected flow through the RSW at the anticipated forebay elevation of MOP + 1 foot will be around 8,000 cfs. Project operations (spill levels and possibly patterns) will change according to a randomized block schedule. Details of the schedule and operations are not available at this time, but will be developed through the SRWG

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and FFDRWG. Spill operation will likely involve two operations including the RSW and varying levels of “training” spill. Specifics will be coordinated with the fishery agencies and others as needed.

2.2. Evaluation of Adult Salmon and Steelhead Migration Past the Snake and Columbia River Dams. The Idaho Cooperative Fisheries Research Unit will continue to monitor the passage of adult salmonids through the hydrosystem. The study requires the installation of radio receivers and data loggers throughout the fishway and at various locations on the dam. The installation of equipment will take place prior to the fish passage season and is not anticipated to require special project operations.

2.3. Adult Fishway Evaluation. The Walla Walla District will continue evaluating operational characteristics of the adult fishways in 2005. The purpose is to analyze existing operating conditions and investigate alternatives to improve fish passage, especially during times of low tailwater. This may involve adjusting diffuser gates, entrance weirs, and AWS pump settings. Efforts will be made to stay within criteria, although occasional deviations will likely occur.

2.4. Evaluation of Adult Pacific Lamprey Passage Success at McNary and the Lower Snake River Dams. The Idaho Cooperative Fisheries Research Unit will monitor the passage success of adult Pacific lamprey at McNary and Ice Harbor dams. The study requires the installation of half-duplex PIT tag antennas and data loggers throughout the fishways and at various locations on the dam. Antenna cables (1cm diameter) will be placed as to avoid interfering with salmon and other fish passage in fishways, and will bracket existing radio telemetry antennas. The installation of equipment will take place prior to the fish passage season and is not anticipated to require special project operations.

APPENDIX A: LOWER MONUMENTAL

Lower Monumental Dam[1]

1. Special Project Operations.

1.1. Spill. Spill for fish passage will be provided during the spring outmigration season in accordance with spill specifications in Appendix E and as coordinated through TMT. Alternative spill patterns to control dissolved gas levels or change fish passage conditions will be coordinated through the FPOM. During periods of high river flow, spill volumes and the elevation of Lower Monumental reservoir may need to be manipulated on a daily or every-other-day basis to provide safe conditions for loading the fish barge at the juvenile fish facility below the dam.

1.2. Reconstruction of Fish Counting Station. The fish counting station in the north shore ladder will be reconstructed from January 3 to February 28, requiring a ladder outage during this time. The south shore ladder will continue to provide fish passage, except from January 10 to 22 when it will also be out of service for maintenance.

1.3. Construction of Parapet Walls. Parapet walls will be constructed below the dam on both sides of the spillway in the January to March timeframe. The walls will prevent water and fish from splashing from the river, as occurred in 2003 after spillway deflectors were added to bays 1 and 8. Those bays have been restricted to 3 stops or less since the problem arose. The new parapet walls will allow for normal use of the spillway.

1.4. Replacement of Barge Loading Dewatering Unit. The existing dewatering unit, partly consisting of bar screen on the flume floor, will be replaced with a half-pipe perforated plate unit in the January to March timeframe. This will provide for more stable flows through this section of the barge loading system.

1.5. Rehabilitation of AWS Pumps. The turbine for AWS pump 3 will be pulled, rehabbed, and reinstalled. The gearbox for AWS pump 2 will be replaced. This work will require most of January and February to complete.

[1] The purpose of this section is to notify regional interests of planned activities that will or may affect fish passage. Further coordination may occur as needed.

2. Studies.

2.1. Lower Monumental Survival Study. A radio telemetry survival study will be conducted at Lower Monumental Dam during the spring of 2005. Radio telemetry equipment setup will begin in February and continue until mid-April. Juvenile salmonids will be radio tagged, released upstream of the project, and monitored as they pass the project beginning in mid-April. UPA spill using the high-gate opening configuration as tested in 2004 will be evaluated to confirm acceptable spillway survival under this operation.

2.2. Near-field Study of Total Dissolved Gas Exchange and Evaluation of Added Spillway Deflector Performance. As part of the COE Fastrack Gas Abatement Program, total dissolved gas abatement alternatives are being developed to reduce the TDG exchange associated with spill operations and to provide greater flexibility in scheduling spillway operations. Additional spillway deflectors for bays 1 and 8 were constructed in late 2002 and early 2003, and now all spillway bays are so equipped. A field study to address the TDG exchange associated with the modified spillway and associated operations under a wide range of operating conditions was initiated in 2004. However, due to a low runoff year, voluntary spill was limited and insufficient data was collected. Therefore, an additional long-term monitoring program will be initiated in April 2005 prior to the spill season and continue through the end of spill, typically in June.

This three month sampling period will provide for the widest range of operating and environmental conditions. This study will primarily focus on determining the total dissolved gas exchange characteristics associated with spillway operation for discharges up to the design spill for a 7-day, 10-year frequency flood. The incorporation of specific operations could significantly enhance study findings. These special operations could include scheduled spill outage to maintain TDG instruments, alternative spill patterns including bulk spill, management of tailwater stage through storage in Lake Sacagawea, and constant spill with and without powerhouse flows. Circulation patterns below the dam will also be described through a variety of sampling devices. This information will support the interpretation of study TDG data and related issues concerning fish passage through this river reach.

2.3. Evaluation of Adult Salmon and Steelhead Migration Past the Snake and Columbia River Dams. The Idaho Cooperative Fisheries Research Unit will continue to monitor the passage of adult salmonids through the hydrosystem. Installation of radio

receivers and data loggers throughout the fishway and various locations on the dam will be required. The installation of equipment will take place prior to the fish passage season and is not anticipated to require special project operations.

2.4. Adult Fishway Evaluation. The Walla Walla District will continue evaluating operational characteristics of the adult fishways in 2005. The purpose is to analyze existing operating conditions and investigate alternatives to improve fish passage, especially during times of low tailwater. This may involve adjusting diffuser gates, entrance weirs, and AWS pump settings. Efforts will be made to stay within criteria, although occasional deviations will likely occur.

APPENDIX A: LITTLE GOOSE

Little Goose Dam[1]

1. Special Project Operations.

1.1. Spill. Spill for fish passage will be provided during the spring outmigration season in accordance with spill specifications in Appendix E and as coordinated through TMT. Alternative spill patterns to control dissolved gas levels or change fish passage conditions will be coordinated through the FPOM.

1.2. Doble Tests. Transformer bank T1 will be Doble tested in 2005. This will involve all generation of all six turbine units. The plant will be off line from 0600–1700 hours each day from August 22 to 26. One turbine unit will be running at speed-no-load to provide station service.

2. Studies.

2.1. Evaluation of Adult Salmon and Steelhead Migration Past the Snake and Columbia River Dams. The Idaho Cooperative Fisheries Research Unit will continue to monitor the passage of adult salmonids through the hydrosystem. Installation of radio receivers and data loggers throughout the fishway and various locations on the dam will be required. The installation of equipment will take place prior to the fish season and are not anticipated to require special project operations.

2.2. Little Goose Fish Passage Study. Radio-tagged juvenile salmonids tagged and released above Lower Granite Dam for the purpose of evaluating RSW/BGS operation will be monitored as they pass Little Goose dam to estimate fish passage metrics including fish passage efficiency, spill passage efficiency, fish guidance efficiency, and spill effectiveness. Radio telemetry equipment setup will begin in February and continue until mid-April.

2.3. Adult Fishway Evaluation. The Walla Walla District will continue evaluating operational characteristics of the adult fishway in 2005. The purpose is to analyze existing operating conditions and investigate alternatives to improve fish passage, especially during times of low tailwater. This may involve adjusting diffuser gates, entrance weirs, and AWS pump settings. Efforts will be made to stay within criteria, although occasional deviations will likely occur.

[1] The purpose of this section is to notify regional interests of planned activities that will or may affect fish passage. Further coordination may occur as needed.

APPENDIX A: LOWER GRANITE

Lower Granite Dam[1]

1. Special Project Operations.

1.1. Spill. Spill for fish passage will be provided during the spring outmigration season in accordance with spill specifications in Appendix E and as coordinated through TMT. Alternative spill patterns to control dissolved gas levels or change fish passage conditions will be coordinated through the FPOM. During periods of high river flow, spill volumes and the elevation of Lower Granite reservoir may need to be manipulated on a daily or every-other-day basis to provide safe conditions for loading the fish barge at the juvenile fish facility below the dam.

1.2. Doble Tests. Transformer bank T2 will be Doble tested in 2005. This will involve all generation of units 5 and 6. The units will be off line continuously each day from March 3 to 6. A short outage (2 hours) will be needed March 3 to isolate T2 bank from the system and hang clearance cards. Afterwards, the line will be restored.

1.3. Repair of Turbine Unit 1. Turbine unit 1 has been out of service since December 2002. Repair work, including generator rewind and cavitation repair, is scheduled for completion by August 2005.

2. Studies.

2.1. Evaluation of Adult Salmon and Steelhead Migration Past the Snake and Columbia River Dams. The Idaho Cooperative Fisheries Research Unit will continue to monitor the passage of adult salmonids through the hydrosystem. The study requires the installation of radio receivers and data loggers throughout the fishway and at various locations on the dam. The installation of equipment will take place prior to the fish passage season and is not anticipated to require special project operations. As part of this study, the fish trap in the ladder will be operated from early July through late October to take measurements on fish tagged at the Bonneville trap, bound for McCall Hatchery.

2.2. Removable Spillway Weir Operation. The Removable Spillway Weir (RSW) was installed in the summer of 2001. It underwent extensive biological testing in spring 2002 and 2003. During

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February and March 2004, the Behavioral Guidance Structure was moved to the north two units and the depth decreased along part of its length. The 2005 biological test will likely take place between mid-April and early June. The expected forebay elevation during testing will be between 734 and 735 feet, providing approximately 6,700 to 7,700 cfs over the RSW. A specific study design has not been finalized at this time, but will likely involve 24 hour per day operation of the RSW, along with some level of "training spill", most likely around 12 kcfs. Monitoring will likely consist of radio-telemetry and hydroacoustics. Monitoring will focus on RSW efficiency and effectiveness, and fish behavior in the vicinity of the RSW and relocated BGS. The evaluation may involve periodic removal of the BGS, which would likely result in short-term (1 – 3 hours) outages at units 5 and 6. A summer test of the RSW and BGS may also take place in 2005. This would occur sometime between mid-June and late July and would most likely run for 3 or 4 weeks. Radio-telemetry and hydroacoustics would again be used to assess RSW performance. Project operations would most likely include the RSW (between 6,000 and 7,700 cfs) and some level of training spill, 24 hours per day.

2.3. Adult Fishway Evaluation. The Walla Walla District will continue evaluating operational characteristics of the adult fishway in 2005. The purpose is to analyze existing operating conditions and investigate alternatives to improve fish passage, especially during times of low tailwater. This may involve adjusting diffuser gates, entrance weirs, and AWS pump settings. Efforts will be made to stay within criteria, although occasional deviations will likely occur.

2.4. Evaluation of Juvenile Fish Transportation Versus In-River Survival. This study involving fall Chinook is currently being considered for potential implementation in 2005. Details are still being worked out and will be coordinated with the fishery agencies, tribes, and others as appropriate.

2.5. Evaluation of Transporting Wild Yearling Chinook Salmon Smolts in the Presence of Steelhead Smolts (Barge Density Study). In 2005, NOAA Fisheries will PIT tag 26,220 wild yearling Chinook salmon to evaluate transportation of these fish in the presence of steelhead smolts. The study will require one group be transported in a barge hold along with steelhead smolts. The other group will be transported in a barge hold with no other fish until release. This will require an increase in the normal facility sampling rate in order to get the required number of fish on marking days. The study will require coordination among researchers and the project biologist.

2.6. Early Life History of Snake River Fall Chinook Salmon. In 2005, as part of the study to compare SARs of Snake River fall Chinook salmon under alternative transportation and dam operational strategies, NOAA Fisheries will collect scale samples and fork length data from PIT tagged fall Chinook salmon at the adult trap from mid-August through the fall trapping season. Prior to the return of adult fall Chinook salmon, PIT tag codes of all tagged juveniles will be added to the SbyC. Coordination with operations for adult collection will be required at Lower Granite Dam when adults are collected. All activities will be coordinated with other researchers to minimize impacts from this research.