

2011 Fish Passage Plan Change Form

Change Request Number: 11LWG001_Navigation Spill Operations

Date: October 22, 2010

Proposed by: Doug Baus, Corps, NWD

Location of Change:

Delete Appendix A Lower Granite (SPO-LWG-1) section “1.3 Navigation at Lower Granite Dam” that currently reads:

1.3 Navigation at Lower Granite Dam. When spill at Lower Granite Dam is greater than 60 kcfs, there is a danger of having the fish barge being pushed upstream into the dam, causing a hazardous situation. Under these conditions, spill is reduced to 60 kcfs when fish transport barges approach or leave the barge dock. This reduction should be limited to no more than 1 hour. The project biologist will notify the control room prior to a barge leaving the loading dock so that spill can be reduced.

Proposed Change:

Move Appendix A 1.3 Navigation at Lower Granite Dam (as stated above) to a new section titled “2.4 Navigation Spill Operations” and place it in the LWG narrative portion of the 2011 Fish Passage Plan (FPP). Spill adjustments for navigation happen frequently and this information is easier for readers to find in the narrative section rather than Appendix A. The new section (2.4 Navigation Spill Operations) should include some of the existing information included in “1.3 Navigation at Lower Granite” but it will also include additional details regarding spill adjustments that occurred in 2010 for navigation safety.

2.4 Navigation Spill Operations. Short-term adjustments in spill are required for navigation safety. This may include changes in spill patterns, reduction in spill discharges rates, or short-term spill stoppages. These adjustments take approximately an hour but under some situations may take up to three hours. Listed below are two examples of the types of navigation situations that may occur that require short-term spill adjustments. Actual operations will vary due to conditions such as spill patterns, turbine unit operations, experience of boat captains, etc. The Corps will make short-term adjustment in spill as appropriate in real-time to provide safe navigation conditions.

2.4.1. Fish Barge Transit Across the Tailrace

Spill may create hydraulic conditions that are unsafe for fish barges: crossing the tailrace, moorage at fish loading facilities, and navigation in and out of the barge storage area. If a tug boat operator determines hydraulic conditions are unsafe they will contact the Lower Granite Dam (LWG) control room and the project operator will reduce or stop spill temporarily when fish transport barges approach or leave the barge dock or are

moored at loading facilities. If conditions warrant a spill adjustment, the Minimum Operating Pool (MOP) elevation range at Lower Granite may be exceeded temporarily to enable the barge to exit the tailrace safely. Spill reductions will utilize the existing spill pattern.

2.4.2. All Navigation (fish barges, commercial, non-commercial, etc.) Entering and Exiting the Tailrace Navigation Lock

When flows are less than 32 kcfs spill at Lower Granite Dam can create hydraulic conditions (eddies) that cause navigation safety concerns. Eddies cause boat and/or barge collisions with the guide wall as boats enter and or exit the tailrace navigation lock. Non-fish barge navigation does not involve traversing the tailrace, but eddies still cause collisions with the guide wall. If a boat captain has a navigation safety concern they will contact the Lower Granite operator and request a short-term adjustment in spill. This will occur when boats are traveling upstream to, or departing from, the tailrace navigation lock. The operator will shut off spill at the RSW and redistribute all scheduled spill evenly through the remaining bays. The operator will implement this operation for the shortest period of time necessary to allow safe navigation. After boats have safely passed the project the project will revert back to normal spill operation.

Reason for Change:

The Corps would like to prevent navigation guide wall collisions in 2011. In 2010 a fish barge collided with the navigation guide wall (Attachment 1). Navigators also expressed navigation safety concerns at Lower Granite in 2006 (Attachment 2). The Corps presented the navigation safety concern to TMT (Attachment 3) and FPOM resulting from the collisions that occurred in 2010 (Attachment 4). In coordination with the region the Corps developed and implemented a modified spill operation (temporarily shutting off spillway weir and spilling in a uniform pattern) to provide safe navigation conditions in the LWG tailrace. No additional collisions with the guide wall occurred after the Corps implemented the modified spill operation for navigation safety. To avoid collisions in the future the Corps would like to include the modified spill operation implemented in 2010 in the FPP. This change form updates the existing fish barge navigation discussion by adding additional details to clarify operations associated with navigation.

Additional Information Regarding Navigation Spill Adjustments:

Due to navigation (non fish barge) safety concerns (see Attachment 1), on August 12, the Corps modified the spill patterns at Lower Granite. This was continued through the end of spill season (August 31). Consistent with the 2010 Summer FOP, the Corps presented the navigation safety concerns to TMT on August 11 and informed TMT that spill patterns may temporarily be adjusted in order to provide safe conditions for navigation. TMT members recommended that the Corps coordinate this operation with FPOM at the August 12 meeting. FPOM recommended temporarily closing the RSW at Lower Granite and redistributing the spill pattern across the remaining open spillbays. Following FPOM's recommendation, the Corps implemented this operation. The Corps further coordinated this operation with TMT on August 13 and TMT members either supported or did not object to this operation. At the request of boat captains the Corps implementing this special operation approximately 10 times at Lower Granite Dam between August 12 and August 31.

Comments from others:

Lower Granite Chief of Ops Rich Hilt and Operator Brain Badgewell provided the following comments on Sept 28, 2010. If the intent of the operational change authorized on August 13 (temporary shutting off the SW and spilling a uniform pattern) was to improve navigation safety then additional steps may need to be taken in order to achieve this desired outcome. Additional coordination between the Corps and towboaters may be needed. The operators expectation was the skipper would provide the operator with an accurate arrival time and at least 30 minutes prior to arrival. It takes 30 minutes for the operator to shut off the SW, change to a uniform pattern, have tailrace hydraulics adjust to the new spill operation, and walk down to the control room to operate the navigation lock.

Due to topography radio contact is limited between the tug and LWG therefore a skipper must contact LWG at least 1 hour prior to arrival or approximately 10 minutes before arrival. The lack of ability for a skipper to radio LWG and provide a more accurate estimated arrival time creates a significant challenge to implement this operation. Frequently a skipper would contact the control room with an expected arrival time. If a skipper had not arrived in within 30 minutes of the expected arrival time then the project operator would revert back to the normal spill operation. If the operator had reverted back to the normal spill operation by the time the tug had arrived the tug operator would have to wait an additional 30 minutes for the operator to implement the modified spill operation.

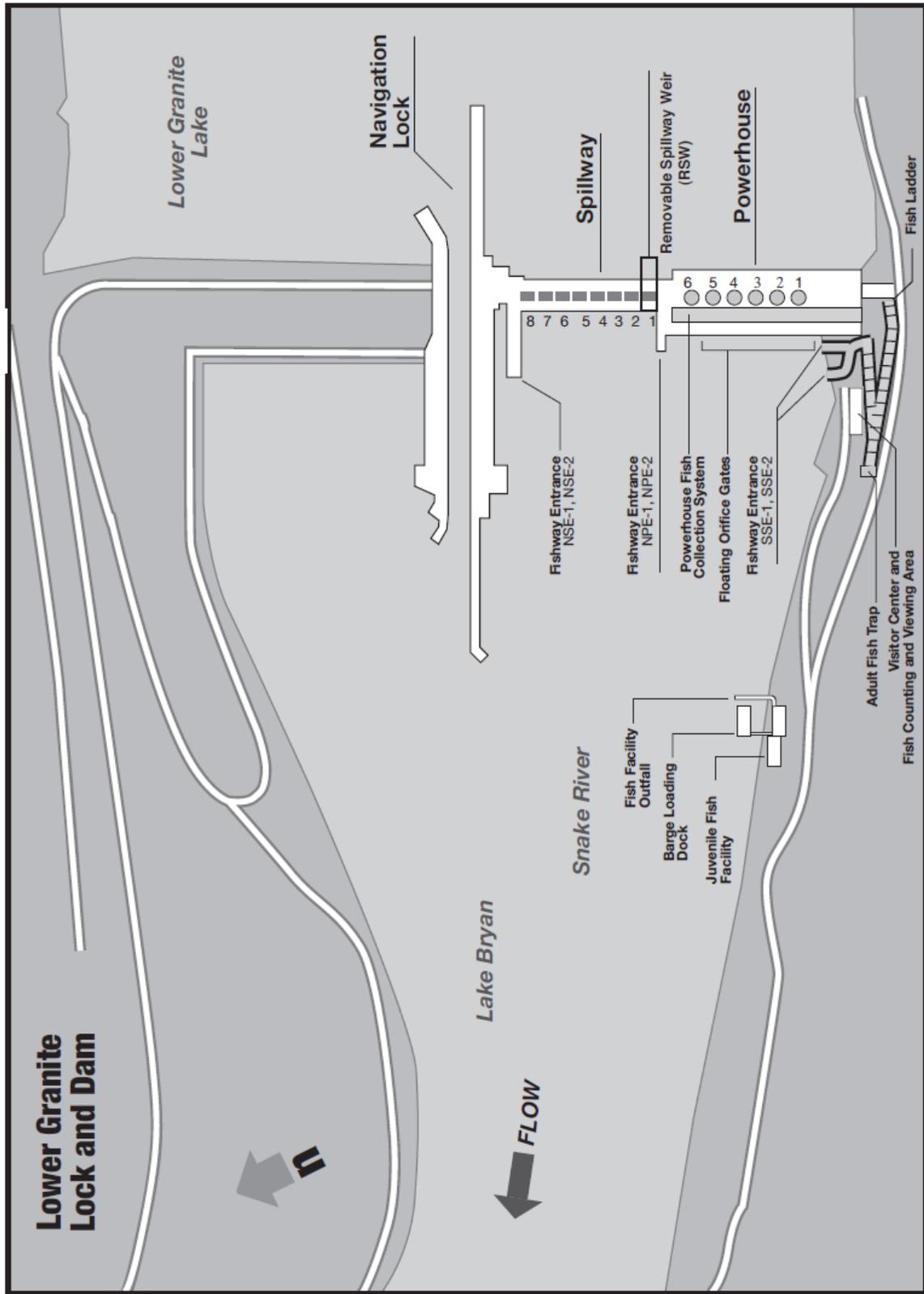
Generally, the skipper would be unwilling to wait 30 minutes and would proceed to lock the vessel without the modified spill operation. Generally, if this situation transpired then skippers would not wait the 30 minutes for the tailrace hydraulics to adjust.

If this operation continues in 2011 LWG Operators would prefer to shut the gates and leave RSW open. This would be a quicker operation.

On August 12, 2010, FPOM recommended shutting down the RSW temporarily and going to a uniform pattern to provide safe navigation conditions as necessary.

Record of Final Action: approved 21 January 2011.

Attachment 1: Lower Granite Lock and Dam



Attachment 2: System Operation Request Regarding Lower Granite Spillway Operations

SYSTEM OPERATIONAL REQUEST: #2006-06

The following Navigation Interests have participated in the preparation and support this SOR: Columbia River Towboat Association,

TO:

Brigadier General Gregg F. Martin COE-NWD
James D. Barton COE-Water Management
Cathy Hlebechuk COE-RCC
Witt Anderson COE-PDD
LTC Randy L. Glaeser COE-Walla Walla District
J. William McDonald USBR-Boise Regional Director
Stephen J. Wright BPA-Administrator
Steve Oliver BPA-PG

FROM: John Pigott, Columbia River Towboat Association

DATE: April 17, 2006

SUBJECT: Lower Granite Spillway Operations for April through August

Navigation Objectives

The objective of this SOR is to provide spill relief at Lower Granite Dam for departing down bound vessel traffic during the period of time when pool levels are required to be kept at MOP, for the juvenile salmonid outmigration, and stream flows exceed 75KCFS.

Specifications

This SOR recommends that the special operation of the Lower Granite spillways, to accommodate outmigrating salmonids, be modified to allow for a more navigation friendly spill pattern and the reduction or cessation of spill, for the period of time it takes a vessel to depart the lock and clear the obstructing point of land, on the north shore, approximately one half mile below the dam. This is estimated to be approximately twenty minutes.

Justification

We find ourselves facing a problematic set of circumstances with mandated MOP's for all the Snake River pools and a water year that is producing threateningly high stream flows. This combination of events has now created an unacceptably high safety risk for river system navigators. The low pools have reduced under keel clearances to one foot over the lower sill (sill height is 15 feet at MOP) at Lower Granite Dam. This combined with shallow water in the lower basin acts to retard acceleration out of the lock. This delay in reaching optimum speed out of the lock chamber now means the vessel will have to spend more time trying to cross the adverse spillway current. This current is actively

trying to push the vessel onto the point of land, on the north shore, just below the dam. Currently Q, through Lower Granite, is in the 150KCFS range with spill in the high 60KCFS range. Expectations are that Q will certainly increase and should be expected to top 200KCFS. Barge tows are currently leaving half their tow back in Wilma and are only locking through with two barges. Even with this modified configuration we are getting perilously close to the shore as vessels depart Lower Granite down bound. Our concern is that without a spill modification protocol in place rising stream flows will eventually surprise a tow causing a wreck. We also feel that the infrequent nature of this requirement (perhaps 4-6 times a week), and the brief duration of the spill modification (approx 20 minutes), argues for your approval of this request to protect human life, the environment and the safety of cargo and equipment.

Near miss reports from Tidewater Barge Lines, and Foss Maritime have driven this request. Boat operators report they are just getting by with reduced tow sizes, but fear that even with those modifications in place, safety margins are being whittled away by a continually rising river. Our concern is that without a safety intervention some vessel trying to get by will eventually be overwhelmed. Thank you for your kind consideration of this request.

John Pigott
Chairman
Columbia River Towboat Association

Attachment 3: Technical Management Team 2010 Coordination Regarding Lower Granite Dam Spill Adjustment for Navigation

From: Barton, Steven B NWD

Sent: Friday, August 13, 2010 9:53 AM

To: Allgood, Tiffany; Barquin, Billy; Baus, Douglas M NWD; Brandt, Scott; Denny, Lytle; Hovenkotter, Joe; Kiefer, Russ; Kruger, Rick; LeFleur, Cindy; Litchfield, Jim; Lorz, Tom; Lovtang, Jens; Marotz, Brian; Norris, Tony; Ogan, John; Pavlik-Kunkel, Deanne; Roche, John; Rose, Bob; Sears, Sheri; Spurgin, Pat; Statler, Dave; Sue Ireland; Wagner, Paul; Wills, Dave; Bettin, Scott; Boyce, Ron; Dittmer, Kyle; Domingue, Rich; Haeseker, Steve; Haller, Greg; Hassemer, Pete; MacKay, Robyn; Mellema, Mary; Steve Smith

Cc: Lear, Gayle N NWD; Peters, Rock D NWD; Feil, Dan H NWD; Kanbergs, Karlis NWD; English, Scott E NWD; Dykstra, Timothy A NWW; Donna Silverberg; Erin Halton; Robin Gumpert

Subject: Official TMT Coordination: LWG & LMN Spill Pattern Adjustments for Navigation

TMT Members and Alternates:

The Corps stated their concern over recent navigation safety issues in the Lower Snake River during the August 11 TMT meeting. The Corps also stated that, consistent with the 2010 Summer Fish Operations Plan, spill may be adjusted for the time it takes to allow for safe passage. The FPOM recommended a preferred adjustment to spill if this becomes necessary. If needed for safe entrance to the navigation locks at Lower Monumental and Lower Granite Dams, FPOM members recommended spill be adjusted such that the RSW will be shut off and spill will be distributed flat across the spillway for the duration needed. The Corps endorses this recommendation and issued guidance stating at the request of a tow boat Captain or other large vessel captain traveling upbound to the Lower Granite or Lower Monumental lock, or downbound departing the Lower Granite Lock, the project operator is authorized to shut off spill at the RSW and to increase spill evenly through all remaining bays to approximately maintain scheduled spill. The operation is to be done for the shortest period of time necessary to allow safe passage. After safe passage, the project should revert back to normal spill patterns. TMT Members are encouraged to respond with feedback, comments or concerns regarding this operation at their earliest convenience.

Steven B. Barton, P.E.
Chief, Reservoir Control Center
Northwestern Division
U.S. Army Corps of Engineers
Portland, Oregon
Phone: 503-808-3945
E-mail: Steven.B.Barton@usace.army.mil

**Attachment 4: Lower Snake Project – Navigation Issues Associated with
Late Season Spill Operations**

**U.S. Army Corps of Engineers
Steve Burrell, CENWD-PDW-RC**

18 August 2010

SUBJECT: Lower Snake Project - Navigation Issues Associated with Late Season Spill Operations

MEMORANDUM For Distribution: Tim Dykstra (NWW), Greg Moody (NWW)

This memorandum describes navigation issues encountered by tug boat operators during the first two week period in August, and was requested at the August 12, 2010 FPOM meeting by FPOM. The tables and figures below summarize incidents at Lower Monumental and Lower Granite dams during low spill conditions. The RCC recognizes and is grateful for the assistance of Mr. Brian Fletcher of Tidewater barging in preparation of this summary.

Data in Table 1 show the spill settings and incidence that have occurred at Lower Monumental Dam prior to implementing a more navigation friendly spill pattern. The table lists date and time of incident, the tug boat name, owner of the tug boat, a brief description of the barges in tow, total spill discharge, the spill bays in use for the discharge, the discharge for power generation, the generation unit in use at the reported incident time, and a reference number for notes following the table that provide incident details. The first section of the table is for the pre-navigation friendly spill, and the second table section is for the uniform, navigation friendly spill specified by RCC at approximately 1200 on 12 August, 2010.

Table 2 is the same as Table 1, but for Lower Granite. The incidence at Lower Granite will be further revised as detailed incident reports become available.

Table 1. Recent Lower Monumental Navigation Incidents during Low Spill

LOWER MONUMENTAL TUG/TOW INCIDENT SUMMARY PRIOR TO UNIFORM SPILL SPECIAL OPERATIONS													
DATE/TIME	TUG	OWNER ENTITY	TOW	TOTAL SPILL DISCH. (kcfs)	SPILL DISCHARGE (kcfs)						POWER DISHC. (kcfs)	GEN. UNIT NO.	INCIDENT REF. NOTE
					SPILL BAY NUMBER								
					1	6	8 (RSW)						
05AUG2010 19:10	Defiance	Tidewater	1 full (840,000 gal LSD), 4 empty	13.57	3.86	6.40	7.17				16	5	1
08AUG2010 unknown time	Capt Bob	Tidewater	1 full (wood products), 3 empty	11.03	3.86	0.00	7.17				14.4	5	2
10AUG2010 02:25	Defiance	Tidewater	1 empty	10.19	3.02	0.00	7.17				14.4	5	3
10AUG2010 05:30	Cascade	Shaver	2 empty	10.06	2.99	0.00	7.17				14.4	5	4
11AUG2010 19:30	Hurricane	Tidewater	4 empty	17.54	4.01	6.36	7.17				14.3	4*	5
LOWER MONUMENTAL TUG/TOW INCIDENT SUMMARY AFTER UNIFORM SPILL SPECIAL OPERATIONS													
					SPILL BAY NUMBER								
					1	2	3	4	5	6			
12AUG2010 12:00	Outlaw	Tidewater	4 empty	10.20	0.64	1.96	1.87	1.88	1.94	1.91	14.3	4*	6

*Revision made on October 28, 2010 to the original memo (August 18, 2010), based on updated information provided by Lower Monumental Dam

Incident Descriptions (number referenced in last column of Table 1)

1. Upon approach to the lower basin (lock entrance), eddy currents forced the bow of the tow towards the outer (north) guide wall. The tug had to burn to get the tow around the corner of the guide wall and safely into the lower basin. Figure 1 shown on page 4 shows the angle of the barges on the approach.
2. Tug Capt. Bob also had a full tow but with a loaded chip barge (wood product). Capt. Bob had basically the same approach as Defiance incident in 1.), above. The operator had to steer towards the south bank to keep the bow of the tow on the good side of the lower basin. This action forces the stern section of the tow to swing to the north which produces the angle you see in the diagram (Figure 1).
3. Similar set by eddy towards guide wall 2 and 3 above, but no difficulty in entering lower basin.
4. On approach, the tow was pulled into the guide wall by eddy current. The port bow of the barge sustained a seven-inch long puncture, but proceeded through lockage for repairs at destination. No damage reported to guide wall. Angle of approach similar to Figure 1, but with tow bow impacting guide wall before entering.
5. No difficulties reported.
6. No difficulties reported – “mill pond conditions”.

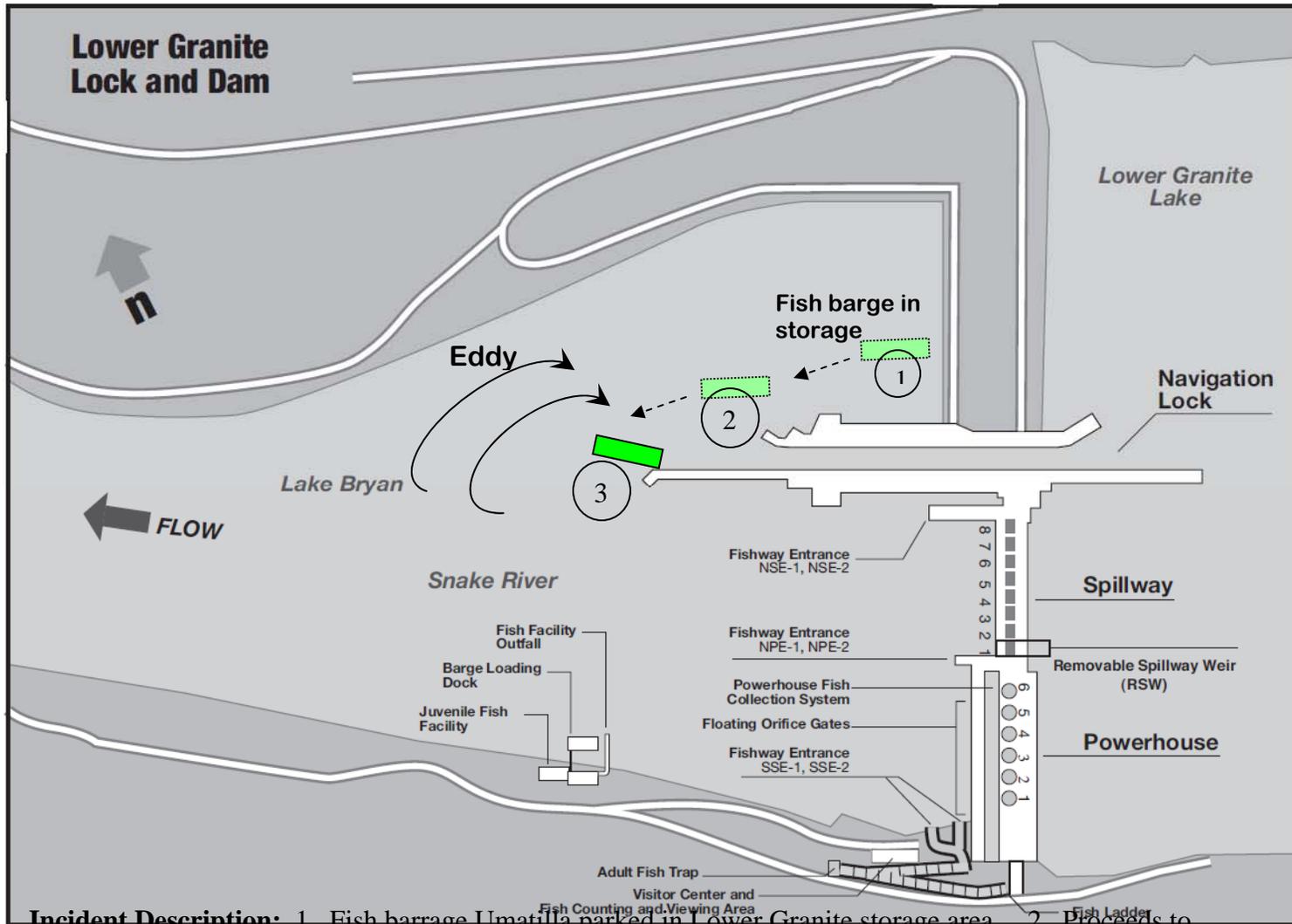
Table 2. Recent Lower Monumental Navigation Incidents during Low Spill

LOWER GRANITE TUG/TOW INCIDENT SUMMARY PRIOR TO UNIFORM SPILL SPECIAL OPERATIONS													
DATE/TIME	TUG	OWNER ENTITY	TOW	TOTAL SPILL DISCH. (kcfs)	SPILL DISCHARGE (kcfs)						POWER DISCH. (kcfs)	GEN. UNIT NO.	INCIDENT REF. NOTE
					SPILL BAY NUMBER								
					1 (RSW)			6					
08AUG2010 06:30	Umatilla	USACE	1 empty (fish)	12.15	6.75			5.40			12.1	1	1
10AUG2010 03:30	-	-	n/a – cruise vessel	11.03	6.73			6.04			12.4	1	2
LOWER GRANITE TUG/TOW INCIDENT SUMMARY AFTER UNIFORM SPILL SPECIAL OPERATIONS													
					SPILL BAY NUMBER								
					1	2	3	6	7	8			
12AUG2010 18:00	Outlaw	Tidewater	4 empty	18.55	6.73	0.00	6.88	1.64	1.64	1.68	14.3	5	3

Incident Descriptions (number referenced in last column of Table 2)

1. Umatilla 8106 fish barge backing out of storage area at Lower Granite collided with guide wall when rounding corner tip of wall (See Figure 2 on page 5). Note that incident details were compiled from dam operator, awaiting official incident report.
2. Cruise vessel possibly entering upper navigation lock and struck guide wall. Details will be finalized after official incident report is completed.
3. No known difficulties.

Figure 2. Lower Granite Incident Diagram.



Incident Description: 1. Fish barge Umatilla parked in Lower Granite storage area. 2. Proceeds to back out of storage area and maneuver to juvenile fish facility on south shore. 3. Eddy current forces starboard side bow into guide wall

Figure LWG-1 Lower Granite Lock and Dam general site plan.

SYSTEM OPERATIONAL REQUEST:

2006-NAV-01

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SOR: Columbia River Towboat Association,*

TO:

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60KCFS range. Expectations are that Q will certainly increase and should be expected to top 200KCFS. Barge tows are currently leaving half their tow back in Wilma and are only locking through with two barges. Even with this modified configuration we are getting perilously close to the shore as vessels depart Lower Granite down bound. Our concern is that without a spill modification protocol in place rising stream flows will eventually surprise a tow causing a wreck. We also feel that the infrequent nature of this requirement (perhaps 4-6 times a week), and the brief duration of the spill modification (approx 20 minutes), argues for your approval of this request to protect human life, the environment and the safety of cargo and equipment.

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