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-Docket(s) No.: P-2149-156
-Filed By: Public Utility District No. 1 of Douglas County, Washington
-Signed By: Amber Nealy
-Filing Type: Environmental and Recreational Compliance Report
-Filing Desc: Public Utility District No. 1 of Douglas County, Washington submits the Final 2022 Total Dissolved Gas Abatement Plan Annual Report for the Wells Hydroelectric Project under P-2149.
-Submission Date/Time: 2/16/2023 2:21:13 PM
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Public Utility District No. 1 of Douglas County

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Via Electronic Filing

Honorable Kimberly D. Bose
Secretary
Federal Energy Regulatory Commission
888 1st Street N.E.
Washington, D.C. 20426

February 16, 2023

Subject: 2022 Annual Report - Total Dissolved Gas Abatement Plan – Wells Hydroelectric Project – FERC License Article 401 (b)

Dear Secretary Bose:

Pursuant to Article 401(b) of the Federal Energy Regulatory Commission (FERC) license for the Wells Hydroelectric Project (Wells Project), the Public Utility District No. 1 of Douglas County (Douglas PUD) hereby submits the final Total Dissolved Gas Abatement Plan Annual Report (TDG Report) for calendar year 2022. Article 401(b) requires Douglas PUD to file an annual TDG Report with the FERC by February 28th during each year of the license.

The final 2022 TDG Report is attached as Appendix A to this letter. A draft version of this 2022 TDG report was distributed on January 9, 2023 to the Washington State Department of Ecology (Ecology) and all of the other parties to the Aquatic Settlement Agreement (ASA) including the United States Fish and Wildlife Service (USFWS), Washington State Department of Fish and Wildlife (WDFW), the Confederated Tribes of the Colville Reservation (CTCR) and the Confederated Tribes and the Bands of the Yakama Nation (Yakama Nation). No comments were received during the 30 day comment period. Following review, all parties present during the February 8, 2023 Aquatic Settlement Work Group (Aquatic SWG) meeting approved the 2022 TDG Report. The USFWS approved the 2022 TDG Report on February 9, 2023 by email, having missed the February 8, 2023 conference call. The pre-filing consultation record supporting the review and approval of the 2022 TDG Report can be found in Appendix B.

The enclosed 2022 TDG Report is consistent with (1) the Water Quality Management Plan that is contained within the ASA, (2) Condition 6.7(2)(c)(iii) of Ecology's Clean Water Act Section 401 Water Quality Certification (401 Certification), and (3) the National Marine Fisheries Service Endangered Species Act Incidental Take Statement (ITS) Reasonable and Prudent Measure No. 2 for the Wells Project.

If you have any questions or require further information regarding the enclosed report, please feel free to contact me at (509) 881-2323, andrewg@dcpud.org or John Rohrback at (509) 881-2265, john.rohrback@dcpud.org.

Sincerely,

Andrew Gingerich
Natural Resources Supervisor

Enclosure:

1) Appendix A – 2022 Annual Report - Total Dissolved Gas Abatement Plan - Wells Hydroelectric Project

2) Appendix B – Pre-filing Consultation Record for the 2022 Annual Report – Total Dissolved Gas Abatement Plan - Wells Hydroelectric Project

Cc: Breean Zimmerman – Ecology, Union Gap
Scott Carlon – NMFS, Portland
Wells Aquatic Settlement Work Group
Tom Kahler – Douglas PUD
John Rohrback – Douglas PUD
Shane Bickford – Douglas PUD

APPENDIX A

2022 ANNUAL REPORT TOTAL DISSOLVED GAS ABATEMENT PLAN FOR THE WELLS HYDROELECTRIC PROJECT

2022 Annual Report
Total Dissolved Gas Abatement Plan

Wells Hydroelectric Project

Public Utility District No. 1 of Douglas County
1151 Valley Mall Parkway
East Wenatchee, WA 98802-4331

Prepared for:

Washington Department of Ecology
1250 Alder St, Union Gap, WA 98903

And

Aquatic Settlement Work Group

February 2023

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1 INTRODUCTION

The 2022 Wells Hydroelectric Project (Wells Project) Gas Abatement Plan (GAP) was approved by the Washington State Department of Ecology (Ecology) via conference call on February 9, 2022 and subsequently submitted to the Federal Energy Regulatory Commission (FERC) on February 24, 2022. The FERC approved the GAP on June 29, 2022. The GAP and its associated measures represent a long-term strategy to achieve compliance with the Washington State Water Quality Standard (WQS) criteria for total dissolved gas (TDG) downstream of the Wells Project while continuing to provide safe passage for downstream migrating juvenile salmonids. This annual report summarizes the results from the 2022 monitoring season and describes the background, operations, and results of GAP implementation at the Wells Project in 2022. In addition, this report contains TDG performance for the Wells Project during the 2022 fish passage season, and TDG performance outside of the fish passage season. Data summarized in this report includes monitoring from January 1, 2022 to December 31, 2022.

1.1 Project Description

The Wells Project is owned and operated by Public Utility District No. 1 of Douglas County (Douglas PUD) and is located at river mile (RM) 515.6 on the Columbia River in the State of Washington (Figure 1). Wells Dam is located approximately 30 river miles downstream from the Chief Joseph Hydroelectric Project, owned and operated by the United States Army Corps of Engineers (USACE), and 42 miles upstream from the Rocky Reach Hydroelectric Project, owned and operated by Public Utility District No. 1 of Chelan County. The nearest town is Pateros, Washington, which is located approximately 8 miles upstream of Wells Dam.

The Wells Project is the chief generating resource for Douglas PUD. It includes ten generating units with a nameplate rating of 774,300 kW and a peaking capacity of approximately 840,000 kW. The design of the Wells Project is unique in that the generating units, spillways, switchyard, and fish passage facilities were combined into a single structure referred to as the hydrocombine. The hydrocombine is 1,130 feet long, 168 feet wide and has a top of dam elevation of 795 feet above mean sea level (msl). Upstream fish passage facilities are located on both sides of the hydrocombine.

The Methow and Okanogan rivers are tributaries to the Columbia River, which drain into the Wells Reservoir. The Wells Project boundary extends 1.5 miles up the Methow River and 15.5 miles up the Okanogan River. The surface area of the reservoir is 9,740 acres with a gross storage capacity of 331,200 acre-feet and usable storage of 97,985 acre-feet at the normal maximum water surface elevation of 781 feet msl.

1.2 Fixed Monitoring Site Locations

Fixed monitoring stations (FMS) for TDG are located above and below Wells Dam. The forebay station (WEL) is located midway across the deck of Wells Dam (47° 56’ 50.28” N, 119° 51’ 54.78” W). The tailrace station (WELW) is located on the left bank of the Columbia River 2.6 miles downstream of Wells Dam (47° 54’ 46.86” N, 119° 53’ 45.66” W). In the spring of 2014, Douglas PUD installed a third FMS at

Washburn Island (WSBW; 48° 5' 17.15" N, 119°40' 33.82" W), located approximately 7 miles downstream of Chief Joseph Dam. Hach® or Hydrotech HYDROLAB MiniSonde (MS5) instruments equipped with TDG and temperature probes are deployed approximately 15 feet below normal surface water elevation and are calibrated monthly. Data from the three stations are automatically transmitted by radio to Wells Dam, stored, forwarded to the USACE, and posted to the Douglas PUD public webpage (www.douglaspud.org). Weather data are recorded by Global Water, Inc. instrumentation, including an electronic barometer located on the deck of Wells Dam at 810 feet elevation. All three FMS are geographically represented by yellow pins in Figure 1.

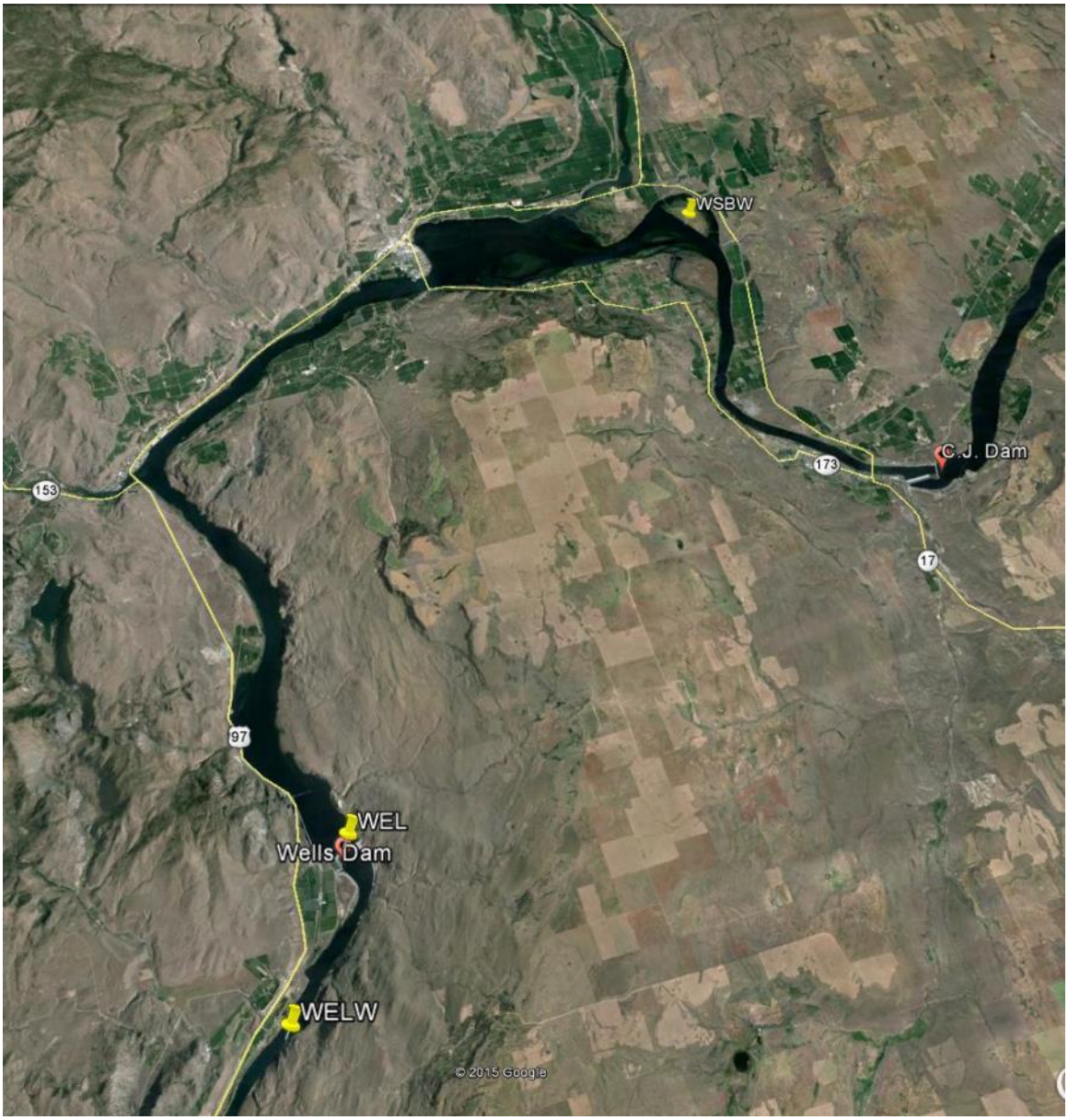

Figure 1. TDG fixed monitoring stations (yellow pins) above and below Wells Dam

1.3 Regulatory Framework

Washington Administrative Code (WAC) Chapter 173-201A identifies the WQS for surface waters in Washington State. Per the WQS, TDG measurements shall not exceed 110% saturation at any point of measurement in any state water body. The WQS provide for two exceptions to this rule: (1) for spill over dams to increase survival of downstream migrating juvenile salmon; and (2) during natural flood flows. Further, in 2019 the WAC was revised to allow for increased spill during the spring smolt migration period generally recognized by Ecology to be occurring between April and June. The revised WAC is written as follows:

(i) The water quality criteria established in this chapter for TDG shall not apply when the stream flow exceeds the seven-day, ten-year frequency flood (7Q-10 flow). The 7Q-10 flow for the Wells Project is 246,000 cubic feet per second (cfs), based on the hydrologic records from 1930 to 1998 and the USGS Bulletin 17B, "Guidelines for Determining Flood Flow Frequency" (Pickett et al. 2004). When river flow volume exceeds 7Q-10 flows, the WQS established in the WAC do not apply.

(ii) The TDG criteria may be adjusted to aid fish passage over hydroelectric dams that spill for anadromous juvenile fish as of the 2020 spill season. The elevated TDG levels are intended to allow increased fish passage via spill without causing more harm to fish populations than caused by turbine fish passage. The following special fish-passage exemptions for the Snake and Columbia rivers apply when spilling water at dams is necessary to aid fish passage:

(A) TDG must not exceed:

- An average of 115% as measured in the forebays of the next downstream dams and must not exceed an average of 120% as measured in the tailraces of each dam (these averages are calculated as an average of the twelve highest hourly readings in a calendar day, relative to atmospheric pressure); and

- A maximum TDG saturation level of 125% calculated as an average of the two highest hourly TDG measures in a calendar day during spillage for fish passage.

(B) To further aid fish passage during the spring spill season (generally from April through June), spill may be increased up to the following levels as measured at the tailrace fixed-site monitoring location:

- A maximum TDG saturation level of 125% calculated as an average of the twelve highest hourly TDG measures in a calendar day; and

- A maximum TDG saturation level of 126% calculated as an average of any two consecutive hourly TDG measures.

These TDG criteria may be applied in place of (A) of this subsection (above; see WAC 173-201A-200) during spring spill operations when applied in accordance with the following conditions:

- In addition to complying with the requirements of WAC Chapter 173-201A, the tailrace maximum TDG criteria at hydropower dams shall be applied in accordance with Endangered Species Act consultation documents associated with spill operations on the Snake and Columbia rivers, including operations for fish passage. The Endangered Species Act consultation documents are those by which dams may legally operate during the time that the adjusted criteria in (B) of this subsection are in use.

- Application of the tailrace maximum TDG criteria must be accompanied by a department approved biological monitoring plan designed to measure impacts of fish exposed to increased TDG conditions throughout the spring spill season. Beginning in the year 2021, plans must include monitoring for nonsalmonid fish species and must continue for a minimum of five years, and thereafter as determined by the department.

- TDG must be reduced to allowances specified in (A) of this subsection if the calculated incidence of gas bubble trauma in salmonids (with a minimum sample size of 50 fish required weekly) or nonsalmonids (with a minimum sample size of 50 fish required weekly) exceeds:

    - Gas bubble trauma in nonpaired fins of 15%; or

    - Gas bubble trauma in nonpaired fins of 5% and gas bubbles occlude more than 25% of the surface area of the fin.

If gas bubble trauma exceeds these biological thresholds, additional monitoring must demonstrate the incidence of gas bubble trauma below biological thresholds before TDG can be adjusted to allowances specified in this subsection. Gas bubble trauma monitoring data shall be excluded from comparison to biological thresholds when higher than normal river flow contributes to excess spill above the ability to meet (B) above. This monitoring data exclusion shall apply for one full calendar day after reduced river flow allows attainment of (B) above.

1.4 Gas Abatement Plan Approach

1.4.1 Structural

No permanent structural modifications were proposed or conducted in the 2022 monitoring season. Spill Gate 7 was unavailable during the 2022 bypass period and most of the 2022 non-bypass period due to scheduled maintenance work. It will become available again in 2023.

1.4.2 Consultation

Consistent with prior consultation requirements, Douglas PUD directs all correspondence related to TDG compliance to Ecology's Hydropower Projects Manager located in the Central Region Office (Union Gap, Washington 98903). In addition, Douglas PUD annually consults with the Aquatic Settlement Work

Group (Aquatic SWG) and Habitat Conservation Plan Coordinating Committee (HCP CC) for specific TDG and WQS documents pursuant to Douglas PUD's 401 Water Quality Certification (401 Certification). Final documents that have received committee and stakeholder approval are submitted to the FERC for approval and towards complying with the consultation and approval requirements contained within the FERC license for the Wells Project.

2 OPERATIONS

2.1 Description of Fish-Passage Season Flow

The Wells Anadromous Fish Agreement and HCP required Douglas PUD to provide juvenile fish bypass passage opportunities for greater than 95% of the downstream migrating juvenile fish covered by the HCP (Plan Species). The HCP-defined juvenile fish passage season starts April 1st and runs through August 31st of each year. Douglas PUD annually reviews fish passage statistics and uses that information to tune operation during subsequent years toward ensuring that greater than 95% of the juvenile outmigration is afforded a non-turbine passage route through Wells Dam. Based upon prior-year information, the juvenile fish bypass was started on April 9 (0:00 hrs.) and ended at 24:00 on August 9. As required, TDG performance was monitored during this period and transmitted to the USACE, Northwest Division on a real-time basis (www.nwd-wc.usace.army.mil) and made available on Douglas PUD's public webpage (https://douglaspud.org/environmental-stewardship/for-regulatory-agencies/total-dissolved-gas-and-temperature-monitoring/). Historical data continues to be available for download at both of these websites.

Data from 1969 to 2022 show that average monthly flows at Wells Dam range from a September low of 74.1 kcfs to a June high of 163.3 kcfs (Table 1; Figure 2). The ten-year average shows higher flows in May through July compared to the historical means recorded during the same months. Flows at the run-of-river Wells Project are determined by upstream storage releases at the Grand Coulee Hydroelectric Project and Canadian storage projects, with typically less than 10% of the total river flow provided by the two rivers that flow into the Columbia River within the Wells Project (Okanogan and Methow Rivers). Tributary inputs from the Methow and Okanogan River are often referred to as "side-flows," which enter the Columbia River within the Project area.

Table 1. Monthly average river discharge (kcfs) from the Wells Project, 1969-2022.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
2022	140.4	127.0	103.4	86.0	137.1	235.2	177.7	131.2	72.6	57.4	95.4	94.4	121.5
Average since 1969	109.5	108.9	105.8	117.0	152.8	164.7	134.3	106.0	74.1	74.0	88.2	101.2	
Minimum since 1969	67.4	69.9	56.0	51.9	55.2	73.7	53.4	63.9	53.3	55.4	63.8	72.6	
Maximum since 1969	159.2	180.7	193.9	203.8	266.3	348.7	253.8	181.3	123	108.9	110.	149.0	
10YR mean (2013-2022)	115.6	112.1	103.0	123.0	167.9	165.5	131.2	106.8	66.4	64.1	90.4	103.0	118.0

Observed flows at Wells Dam in 2022 were slightly above historic averages. Flows in January and February were higher than average. Below average flows from March – May can be partly attributable to a both a delayed freshet caused by a relatively cool spring, and water storage by the Federal Columbia River Power System (FCRPS) in Lake Roosevelt. June through August saw above average flows at Wells Dam, and 7Q-10 flood flows were observed on 17 days mainly in the second half of June and first part of July (Table 1; Figure 2).

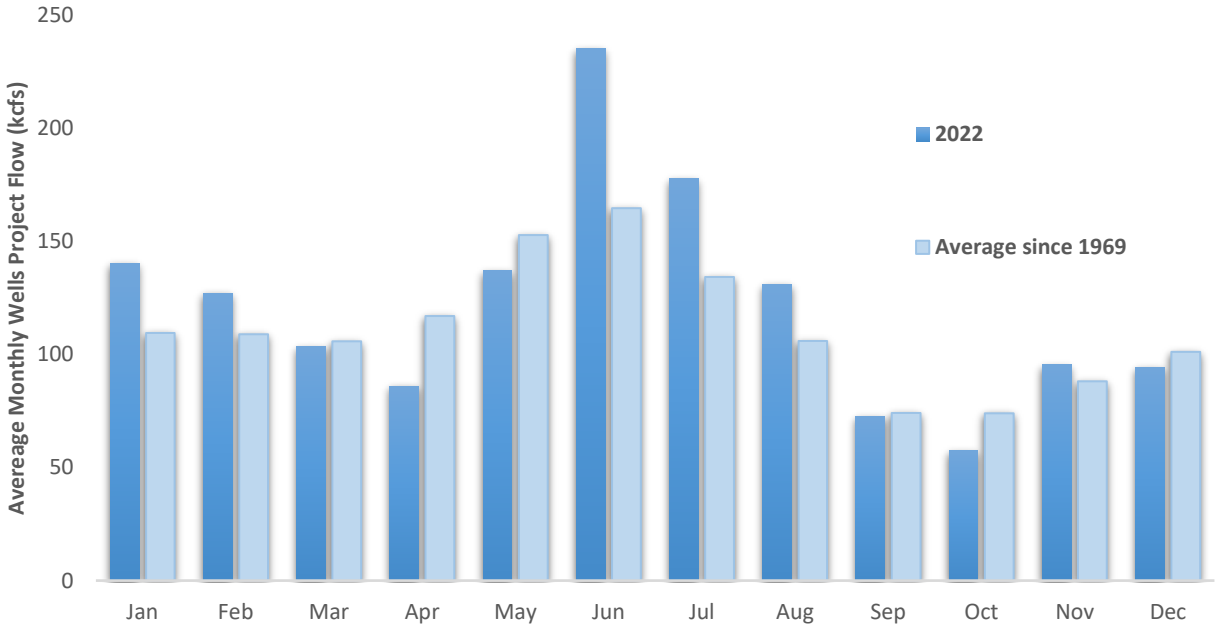

Figure 2. 2022 average monthly flows compared to overall monthly average since 1969.

2.2 Fish Bypass Program

Wells Dam is a hydrocombine, and the spillbays are located directly above the turbine intakes. Research at Wells Dam in the mid-1980s demonstrated that a modest amount of spill could effectively guide a high proportion of downstream migrating juvenile salmon away from turbines and into a surface oriented bypass system. A Juvenile Bypass System (JBS) was subsequently developed at Wells in the late 1980s. The Wells Dam JBS was engineered based on biological research and hydraulic modeling, and utilizes flow-constricting barriers deployed in five of the eleven spillbays to effectively attract and safely guide fish through the Wells Project. The JBS has since proven to be the most efficient system on the mainstem Columbia River, providing high levels of fish protection and survival that has met approval from various fisheries agencies and tribes (Skalski et al. 1996). The passage and survival performance measures contained within the FERC-approved HCP have been consistently exceeded for spring migrating plan species (Bickford et al. 2001; Gingerich et al. 2020; see Section 3.1.2 below).

2.3 Fish Bypass Spill Quantities and Duration

The Wells Dam JBS uses up to 2,200 cfs of water for each of the five bypass/spillbays. Under normal conditions, the JBS will use roughly five to eight percent of the total river flow for fish guidance. The bypass spill has a small influence on TDG production (~0-2%) while providing a safe and highly effective, non-turbine passage route for over 92% of the spring-migrating and 96% of the summer-migrating juvenile salmonids. The HCP-defined juvenile fish migration period runs from April 1st to August 31st of each year. The HCP CC retains annual operating oversight that includes the potential to operate the JBS as early as April 1 and as late as August 31 to ensure that at least 95% of the spring and summer migrations of juvenile salmonids are provided a safe, non-turbine passage route over Wells Dam. Any spill that occurs between April 1st and August 31st is deemed to have a beneficial effect on migrating juvenile salmonids.

From 2003 to 2011, the HCP CC directed the District to operate the JBS on a fixed schedule between April 12 and August 26 in an effort to provide a non-turbine passage route for at least 95% of the spring and summer migrations of juvenile salmonids. In 2012, Douglas PUD evaluated past performance of the Wells Dam JBS operating dates relative to observed annual run timing (at the Rocky Reach Bypass) for both spring and summer migrants. With that data, a request was made to and granted by the HCP CC to revise the bypass operating dates in 2012 to start April 9 and end August 19. These new dates were therefore used in 2012-2020 to operate the JBS for migrating juvenile salmonids. Again in 2020, after nine more years of data collection, Douglas PUD requested that the bypass window end ten days earlier on August 9 in 2021. Given the long history of data collection and analysis, the HCP CC approved the request to have the bypass period operate between April 9 and August 9 in 2021, and JBS operation within those dates readily provided JBS passage for greater than 95% of the spring and summer migrants. In 2022, a retrospective analysis of the Wells Dam smolt passage dates estimated that more than 95% of the spring migrants passing Wells Dam were afforded a bypass opportunity at Wells Dam. However, the same analysis showed that the bypass should have ran two more days to August 11th to provide 95% bypass operations coverage for summer migrant salmonids. Given the limitations of the retrospective analysis and the failure in 2022 to provide a non-turbine passage route to 95% of summer migrating salmonids, the HCP CC will consider the use of RealTime Forecasters for estimating cumulative passage of juvenile salmonids at Wells Dam in the future, and to end the JBS each year once 95% passage has been reached at Rocky Reach Dam[1], rather than on a fixed date. RealTime Forecasters is a publicly available program created by University of Washington School of Aquatic and Fishery Sciences staff associated with the Columbia Basin Research office and available online at https://www.cbr.washington.edu/analysis/rt. Juvenile anadromous salmonids that pass Wells Dam

[1] Using Rocky Reach Dam JBS index counts and program RealTime Forecasters will be a conservative approach since it will not correct for the passage date delay between Wells Dam and Rocky Reach Dam. If 95% of the run is completed at Rocky Reach, then some value greater than 95% will have passed Wells Dam given that travel times for summer Chinook between the two projects are more than 1 day and had a median of 13 days in the most recent analysis (Buchanan and Townsend 2022).

before and after the bypass system is shut down for the year benefit from spill at the Wells Project and therefore Douglas PUD annually develops a GAP and conducts biological and physical monitoring in order to obtain an Ecology approved TDG adjustment for the entire juvenile salmonid migration period (April 1st to August 31st).

3 IMPLEMENTATION RESULTS

3.1 Fisheries Management

3.1.1 Fish Passage Efficiencies

No new fish passage efficiency studies were conducted at the Wells Project in 2022. However, three years of bypass efficiency studies have shown the Wells Dam JBS to be the most efficient juvenile salmonid collection system in the Columbia River with fish passage efficiencies averaging 92% for spring migrants (steelhead, Sockeye Salmon, and spring Chinook Salmon) and averaging over 96% for summer migrants (summer/fall Chinook Salmon [Skalski et al. 1996]).

3.1.2 Run-Timing Evaluation

Based on analysis conducted by Drs. Rebecca Buchanan and Richard Townsend of Columbia Basin Research, in 2022 Douglas PUD surpassed the HCP requirement to provide bypass operations during at least 95% of the juvenile salmon and steelhead migration taking place at Wells Dam for all salmonid groups except subyearling summer Chinook (Buchanan and Townsend 2022). Prior to 2022, a 10-year evaluation of the estimated historical Wells Dam passage timing of outmigrating salmonids showed that no less than 95% of all Wells HCP Plan Species pass Wells Dam between April 9 and August 9. Responding to the data, Douglas PUD secured the permission of the HCP to reduce the JBS operating period to those dates beginning in 2021, and readily achieved the 95% standard. In 2022, Douglas PUD operated the JBS between April 9 and August 9 and the bypass operations provided non-turbine passage routes for 100% of the migration of Sockeye Salmon, 99.83% of yearling Chinook Salmon, 99.93% of Coho Salmon, 99.89% of steelhead, and 93.83% of subyearling Chinook Salmon (Buchanan and Townsend, 2022). The stop date necessary to have covered at least 95% of the PIT-tagged subyearling Chinook Salmon outmigration in 2022 was August 11, two days after the bypass stop date. Because of the failure to meet the 95% passage requirement, and given the limitations of a retrospective analysis, the HCP CC will consider in-season identification of the termination date for JBS operations using RealTime Forecasters tool that will indicate when 95% of subyearling Chinook outmigrants have passed Rocky Reach Dam.

3.1.3 Survival Studies

No Survival Studies were conducted in 2022. The average project survival estimate of all five survival studies on yearling spring migrants is 0.9604 (SE=0.0098). As such, the Wells Project has the highest rate of project survival for spring migrating fish on the Columbia and Snake Rivers.

3.2 Biological Monitoring

The 2022 Wells Project GAP and the biological monitoring requirement of the WAC governing TDG adjustments for juvenile fish passage call for biological monitoring. Pursuant to the 2022 GAP, weekly GBT monitoring occurred at the Rocky Reach JBS and in the Wells Dam tailrace. Further, additional monitoring occurred when observed TDG levels were above 125%, consistent with the National Marine Fisheries Service (NMFS) recommendations (NMFS 2000). GBT monitoring began on April 6 and continued through July 12, 2022 at Rocky Reach Dam consistent with the 2022 GAP. In total, 679 smolts and 62 resident fish were encountered in the Rocky Reach JBS and examined for GBT (see Table 2 and Table 3). Within the Wells Tailrace, 39 smolts and 1078 resident fish were examined for GBT (see Table 4 and Table 5). In 2022, no GBT was observed at the Rocky Reach JBS, but two instances of minor GBT were observed in the fins of Largescale Suckers in the Wells Tailrace on June 28 (see Table 4 and Figure 3). Each week, Douglas PUD endeavored to examine no fewer than 50 resident and 50 anadromous fish for GBT. However, due to low passage rates at the Rocky Reach JBS, fewer than 50 anadromous fish were observed during the weeks of April 4, April 11, April 18, July 4, and July 11. Presumably, this is because the majority of juvenile outmigration did not begin until after the week of April 18, and concluded prior to the week of July 4. TDG exceedances during the month of July in the Wells Tailrace resulted in an extension of GBT monitoring at the Rocky Reach JBS during the month of July. A summary of juvenile GBT sampling at Rocky Reach JBS is provided below in Table 2 and Table 3.

Table 2. Gas Bubble Trauma sampling on juvenile salmonids and other fish captured at the Rocky Reach JBS in April and May, 2022. No GBT was detected on any examined fish.

	6-Apr	12-Apr	19-Apr	26-Apr	3-May	10-May	17-May	24-May	31-May
Species	**Number Sampled**								
Chinook (yearling)	5	4	32	62	38	30			35
Chinook (subyearling)	16	17	3	3					
Steelhead	4	3	10	1	9	9			
Sockeye	0	0	0	0		11	52	50	15
Coho	2	9	1	3	7	1			6
Kokanee					1	1			
Stickleback	15	17	8	2					2
Total	42	50	54	71	55	52	52	50	58

Table 3. Gas Bubble Trauma sampling on juvenile salmonids and other fish captured at the Rocky Reach JBS in June and July, 2022. No GBT was detected on any examined fish.

	6-Jun	13-Jun	20-Jun	28-Jun	5-Jul	12-Jul
Species			**Number Sampled**			
Chinook (yearling)	6	1	1			
Chinook (subyearling)	42	37	33	52	5	27
Steelhead					2	
Sockeye	9	3	15			
Coho	7		1			
Kokanee			2			
Redside Shiner			1			
Stickleback	3	3	1	1	3	
Chiselmouth		1	1			
Total	67	45	55	53	10	27

In addition, resident fish sampling took place via boat electroshocking in the first two miles below Wells Dam weekly from April through July 15, 2022. A summary of resident fish sampling is provided in Table 4 and Table 5.

Table 4. **Gas Bubble Trauma sampling on fish captured via boat electroshocking in the Wells Dam tailrace in April and May, 2022. No GBT was detected on any examined fish in April or May.**

	6-Apr	12-Apr	19-Apr	26-Apr	3-May	10-May	17-May	24-May	31-May
Species					**Number Sampled**				
Redside Shiner	47	42	37	71	62	23	34	39	13
Peamouth	2			4					1
Chiselmouth	9	5	2	2			2		
Northern Pikeminnow	7	5	3	2	1	6	1	2	22
Largescale Sucker	18	16	11	14	13	25	18	17	24
O. mykiss		1		1					
Cutthroat/Rainbow Hybrid		1							
Sucker spp.				1		2	1		
Kokanee					1		1		
Stickleback		3	7	7				1	3
Bluegill		2							
Mountain Whitefish		3	7	1	2		1		
Smallmouth bass									1
Walleye						2			
Bridgelip Sucker						2			
Cutthroat Trout							1		
Sculpin spp.							1		
Carp								2	1
Steelhead					2				
Chinook (yearling)				3					2
Chinook (subyearling)							3		
Coho								1	
Total	83	78	67	106	81	60	63	62	67

Table 5. **Gas Bubble Trauma sampling on fish captured via boat electroshocking in the Wells Dam tailrace in June and July, 2022. Minor GBT (<5% of an unpaired fin) was detected on two Largescale Suckers on June 28, 2022.**

	2-Jun	6-Jun	13-Jun	20-Jun	28-Jun	5-Jul	12-Jul
Species				**Number Sampled**			
Redside Shiner		16	43			42	39
Peamouth		14	15	2		2	
Chiselmouth		1	4				1
Brook Trout			1				
Cutthroat/Rainbow Hybrid		1					
Sucker spp.		3	7			1	4
Largescale Sucker		12	10	42	52*	9	7
Stickleback		3	4		1	4	1
Bluegill			1				
Mountain Whitefish		2					
Northern Pikeminnow	1	12	6			7	23
Walleye		1		1			
Bridgelip Sucker		2			2	1	
Carp		1		2	1		
Smallmouth bass	14	2		2			
Chinook (yearling)		1	2				
Chinook (subyearling)		6	7	1	5	1	
Coho			1				
Sockeye (adult)							4
Total	15	77	101	50	61	67	79

*** Two Largescale Suckers were observed to have minor GBT (see Figure 3).**

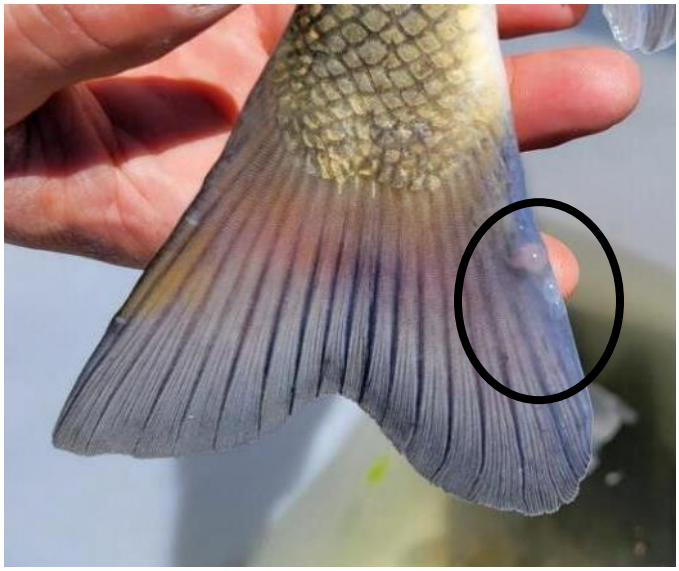

Figure 3. An example of GBT seen in <5% of the caudal fin in a Largescale Sucker sampled below Wells Dam on June 28, 2022.

3.3 Water Quality Forums

Douglas PUD has actively participated in regional water quality forums with Ecology, Washington Department of Fish and Wildlife, NMFS, Tribal Agencies, the U.S. Fish and Wildlife Service, the USACE, and other Mid-Columbia PUDs (i.e., Grant and Chelan counties). Notably, in 2022, Douglas PUD participated in monthly water supply webinars provided by the Northwest River Forecast Center from January-June. Since 2020 and the onset of the Covid-19 pandemic, there has been some reduction in regional coordination of water quality issues and topics. At the end of 2020, the USACE cancelled their regional review of TDG monitoring in the Snake and Columbia Rivers normally held in Portland each year. Douglas PUD looks forward to participating in these forums again in the future.

3.4 Physical Monitoring

3.4.1 Overview

TDG monitoring at the Wells Project has occurred since 1984 when forebay stations were first established. TDG monitoring in the tailrace of Wells Dam began in 1997 by actively collecting data at four points across the width of the river. Based on these data, the location for a FMS was established in 1998. Subsequent analysis verified that both monitoring station locations are appropriate and representative of mixed river condition, particularly during high flows (EES et al. 2007; Politano et al. 2009). TDG monitoring at the Wells Project currently occurs year round as required by Douglas PUD's Wells Project 401 Certification. As required by Douglas PUD's Quality Assurance Project Plan for TDG, FMS sensors are serviced and calibrated at least once per month or sooner if calibration issues are observed in the data.

In 2014, an additional reservoir monitoring station was installed at Washburn Island (RM 537.5) to collect TDG data representative of water quality entering the Wells Project from Chief Joseph Dam. The current Chief Joseph Dam tailwater station (CHQW) minisonde TDG sensor is deployed along the right bank of the Columbia River, 0.75 miles downstream from Chief Joseph Dam. The river right location of the USACE TDG sensor precludes it from collecting bulk flow data, and instead the sensor monitors spillbay water disproportionally. Under some conditions, water coming from Chief Joseph Dam spillbays is of lower TDG concentration than the powerhouse. For example, when the Chief Joseph Dam forebay has high concentrations of TDG (e.g. greater than 120%) as a result of high spill volumes from Grand Coulee Dam and limited degassing through Rufus Woods Reservoir, water sent through the spillbays at Chief Joseph Dam may actually be stripped of gas via the spill deflectors. However, powerhouse TDG concentrations are essentially identical to those in the forebay and can be missed by the CHQW sensor since powerhouse flows orient to river left rather than river right where the TDG sensor resides. As a result of the CHQW location and the orientation of spill and powerhouse flows, bulk flows leaving the federal system and entering the Wells Project are not accurately monitored. The Washburn Island location installed and operated by Douglas PUD allows water quality managers and the Aquatic SWG Parties to:

1) Better understand TDG degassing in the Wells Project and expected TDG saturation in the Wells forebay.

2) Assure data quality at the Wells forebay TDG sensor since Washburn Island TDG values should correlate predictably with Wells forebay TDG values. Based on the comparison of the sensors at these two locations, technicians can ensure reliable data collection by scheduling sensor servicing when data appears to be erroneous.

3) More accurately assess TDG production from the federal power system upstream of Wells Dam, which may support improved management towards minimizing TDG production in the Columbia River.

3.4.2 Data Evaluation and Analyses

Hourly TDG monitoring data were retrieved from the USACE, Northwest Division for three monitoring locations: the forebay of Wells Dam (WEL), tailrace of Wells Dam (WELW), and forebay of Rocky Reach Dam (RRH), or from the DCPUD.org dataset. The data were partitioned to include only readings obtained during specific time periods of non-bypass (January – March and September – December), spring bypass (April - June), and summer bypass (July and August). Data were stratified by monitoring site, ascending date, and ascending time. Data quality review included ensuring TDG sensor data was responding to each data request and not simply repeating data from the previous time interval or relaying inaccurate data as the result of a system failure (e.g., a failed membrane on the TDG sensor). Where data was perceived to be frozen or otherwise inaccurate, it was removed and, when feasible, replaced with accurate data collected by the adjacent, redundant sonde.

3.5 TDG Compliance

During the non-fish passage season, the TDG criterion in the Wells Tailrace is 110% (January–March and September–December). During the spring bypass (April–June) season, compliance was calculated using the new regulatory criteria as adopted by Ecology in 2019. Additionally, there are five compliance criteria for the 2022 fish passage adjustment that must be met in association with operation at the Wells Project as described in the 2022 GAP and reviewed in Section 1.3. These five compliance criteria apply differently between spring bypass (April–June) and summer bypass (July–August) seasons, but are waived when flows exceed the 7Q-10 value for the Wells Project (246 kcfs). For more information refer to WAC 173-201A-200.

3.5.1 Non-Fish Passage Season Compliance (Wells Tailrace 110%)

Pursuant to Douglas PUD's FERC Operating License and 401 Certification, in August 2013 Douglas PUD started collecting TDG data during the non-fish passage season. Non-spill flows at Wells Dam (through the turbine units and fishways) generate little to no additional dissolved gas, and spill outside the fish passage adjustment period is uncommon. There were fifteen hourly instances over the course of seven different days in which TDG values were observed higher than 110% outside of the fish bypass season during 2022 (Figure 4). These exceedances were largely associated with acute instances in which turbine unit availability was temporarily reduced and incoming flows to the Wells Project exceeded turbine capacity during periods of high forebay elevation.

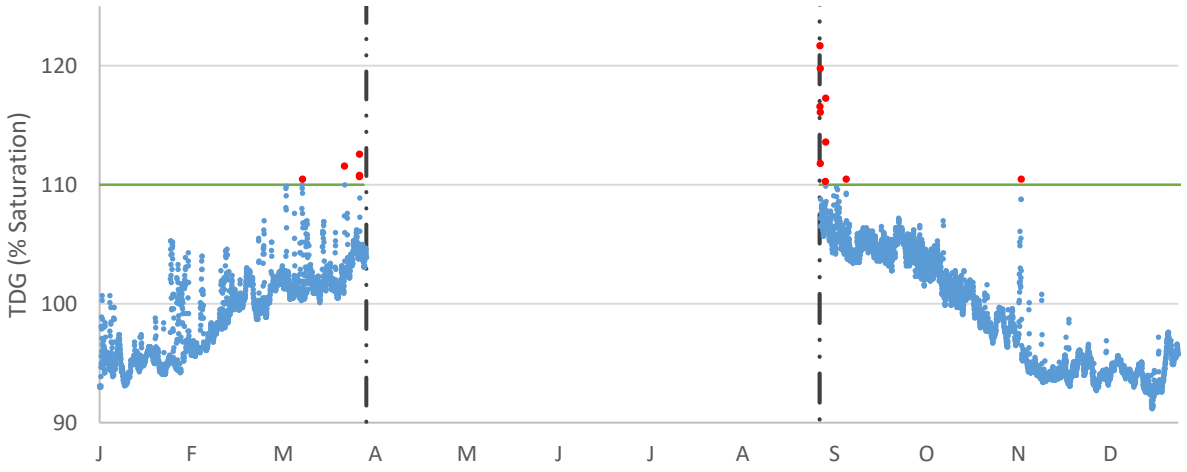

Figure 4. Hourly TDG data for the Wells tailrace during the non-fish bypass season in 2022. Values colored red and appearing above the horizontal green line represent exceedances of the standard.

3.5.2 Spring Fish Passage Season (April through June) Compliance

Wells Tailrace 125% 12-Hour Standard

In 2022, TDG in the Wells tailrace exceeded the 125% 12-hour standard on 16 instances during the April – June period, but only during instances of 7Q-10 flows.

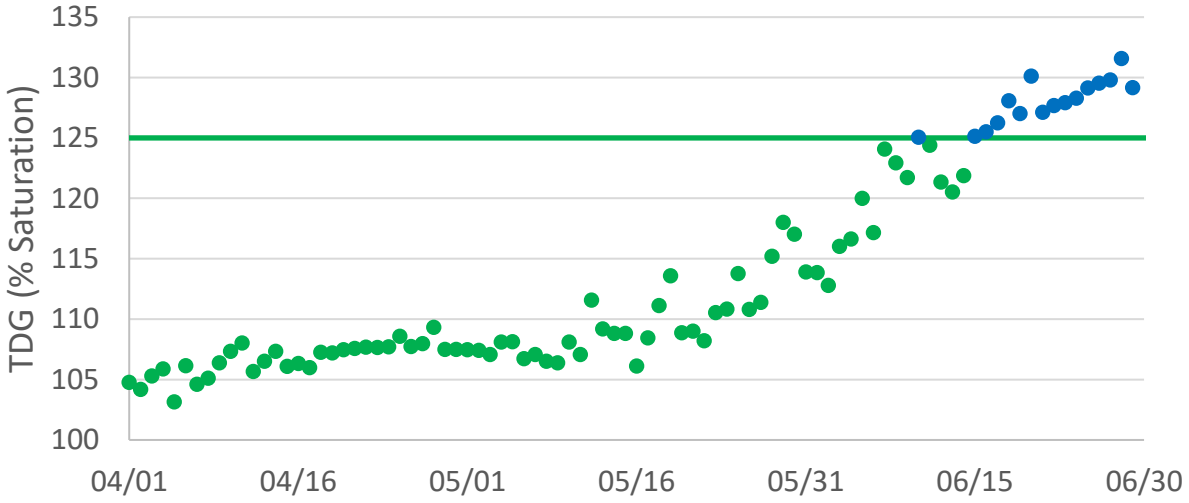

Figure 5. Wells tailrace TDG Compliance with the 125% 12-hour standard April through June 2022. The green dots are instances of compliance, the horizontal green line represents the compliance threshold, and the blue dots are instances above the 125% 12-hour standard, but that occurred during 7Q-10 flows when the 125% 12-hour standard is waived.

Wells Tailrace 126% 2-Hour Standard

In 2022, there was one exceedance of the 126% 2-hour standard in the Wells tailrace during the April-June period. This noncompliance occurred on June 13, at 2:00 PM after a period of prolonged spill while one or more generating units were taken offline, incoming flows exceeded hydraulic capacity, and, had spill not occurred, forebay elevations could have exceeded the forebay elevation levels permitted by Douglas PUD's FERC license. There were 273 other exceedances of this standard, all of which occurred during 7Q-10 flows.

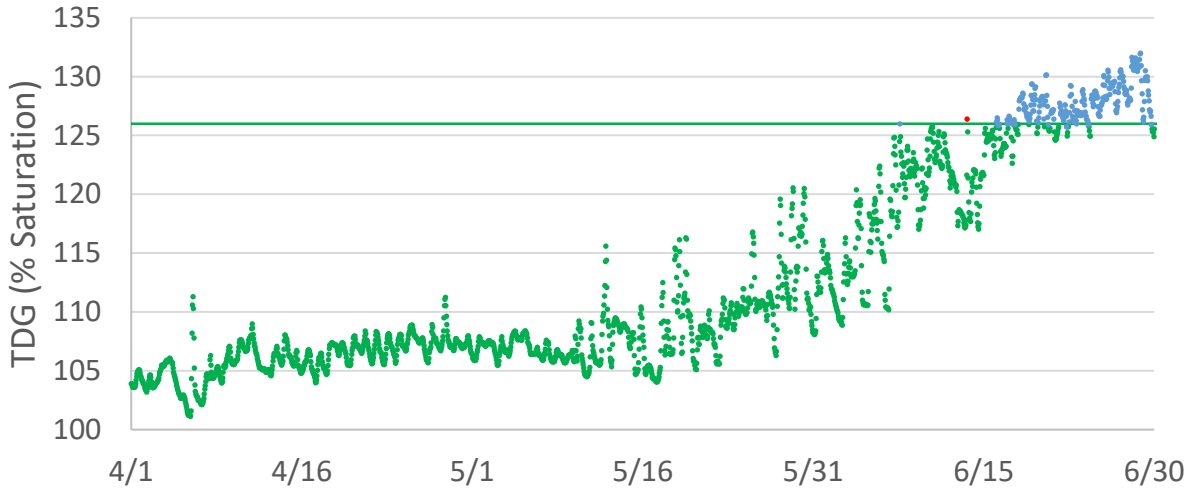

Figure 6. **Wells tailrace TDG Compliance with the 126% 2-hour standard April through June 2022. The green dots are instances of compliance, the blue dots are instances above the 126% 2-hour standard that occurred during 7Q-10 flows, the red dot is the instance of noncompliance, and the horizontal green line represents the compliance threshold.**

3.5.3 Summer Fish Passage Season (July and August) Compliance

Wells Tailrace 125% Hourly Standard

In 2022, TDG in the Wells tailrace exceeded the 125% hourly standard in the July – August period on four instances, one of which occurred during 7Q-10 flows. The noncompliant events for this standard occurred when flows were high and incoming TDG concentrations were above the WQS entering the Wells Project because of the operations of the FCRPS above Wells Dam.

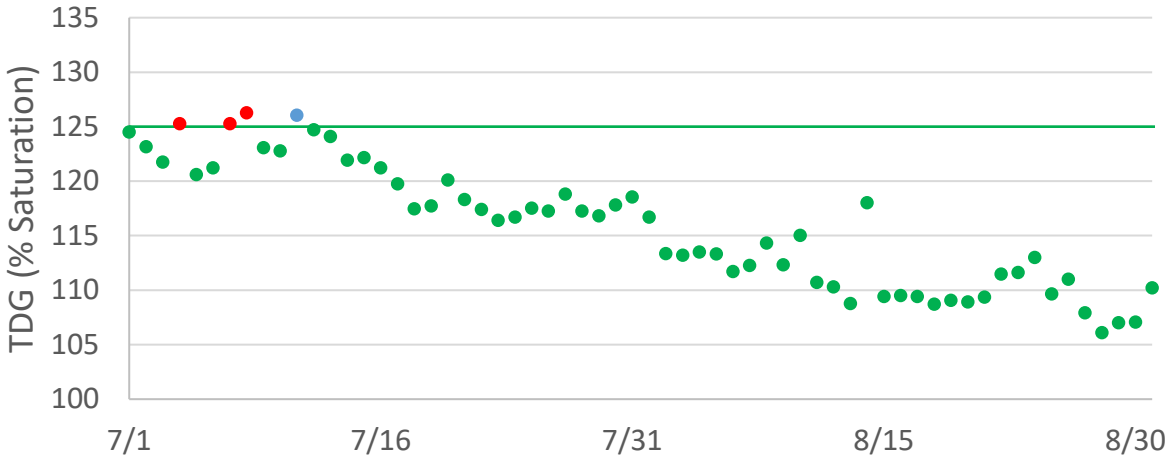

Figure 7. Wells tailrace TDG Compliance with the 125% hourly standard July through August 2022. The green dots are instances of compliance, the blue dot is an instance above the 125% hourly standard that occurred during 7Q-10 flows, the red dots are the instances of noncompliance, and the horizontal green line represents the compliance threshold.

Wells Tailrace 120% 12C-High Standard

In 2022, TDG in the Wells tailrace exceeded the 120% 12C-high standard on 16 instances during the July – August period, one of which occurred during 7Q-10 flows. Noncompliant events for this standard occurred when flows were high and incoming TDG concentrations were above the WQS entering the Wells Project because of the operations of the FCRPS above Wells Dam.

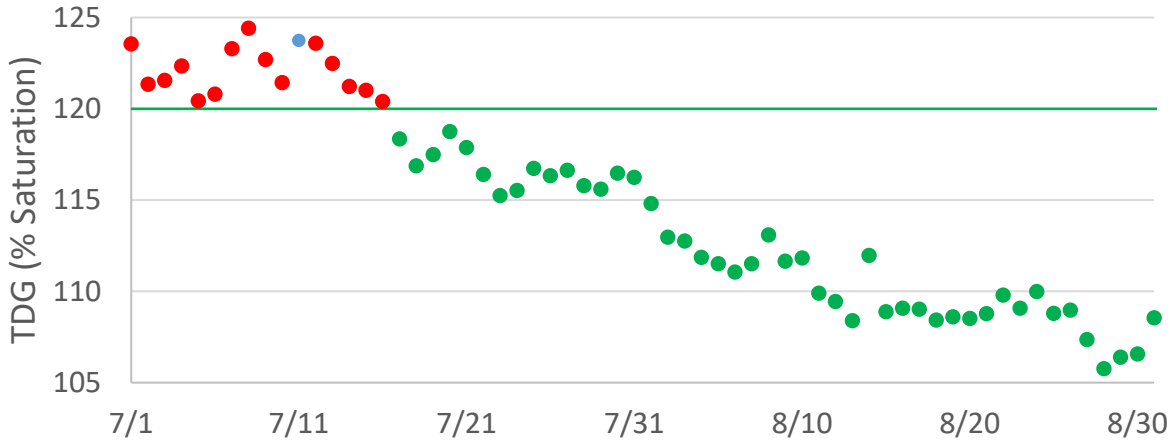

Figure 8. **Wells tailrace TDG Compliance with the 120% 12C-high standard July through August 2022. The green dots are instances of compliance, the blue dot is an instance above the 125% 12C-high standard that occurred during 7Q-10 flows, the red dots are the instances of noncompliance, and the horizontal green line represents the compliance threshold.**

Rocky Reach Forebay 115% 12C-High Standard

In 2022, TDG in the Rocky Reach forebay exceeded the 115% 12C-high standard on 24 instances during the July - August period, one of which occurred during 7Q-10 flows. Noncompliant events for this standard occurred when flows were high and incoming TDG concentrations were above the WQS entering the Wells Project because of the operations of the Federal Columbia River Power System (FCRPS) above Wells Dam.

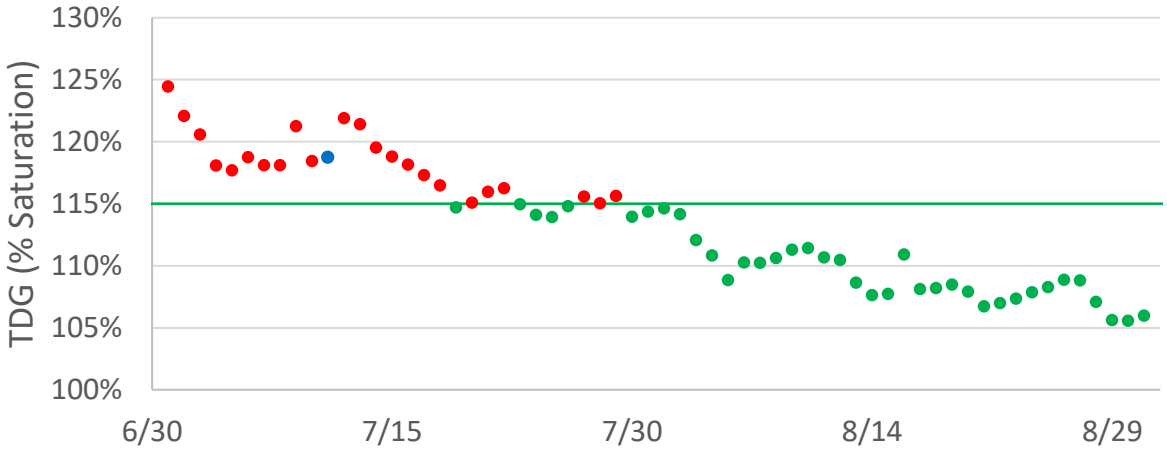

Figure 9. **Rocky Reach Forebay TDG compliance with the 115% 12C-high standard July through August 2022. The green dots are instances of compliance, the blue dot is an instance above the 115% 12C-high standard that occurred during 7Q-10 flows, the red dots are the instances of noncompliance, and the horizontal green line represents the compliance threshold.**

Wells Forebay TDG Compliance

The Wells Project's level of compliance in 2022 with the WQS for TDG was lower than it has been in previous years, especially with regard to the 120% Wells tailrace standard and the 115% Rocky Reach forebay standard during the month of July. Higher than average flows during the month of July (see Figure 2) often exceeded the hydraulic capacity of Wells Dam, necessitating spill, which resulted in elevated TDG levels downstream, and instances at or near the 7Q-10 flows threshold in early July complicating compliance. Additionally, received water in the Wells forebay was consistently above the compliance threshold and occasionally higher than 115% (Figure 10). The TDG standards are set values that do not vary based on incoming levels of TDG saturation received in the Wells forebay. Because the amount of spill Douglas can release from Wells Dam while remaining in compliance with the WQS depends on the TDG saturation of the waters in its forebay, elements outside of the control of Douglas PUD can severely influence its ability to maintain compliance. In 2022, the combination of high flows and highly gasified water received in the Wells forebay during the month of July prevented Douglas from remaining in constant compliance with all of the WQS.

Figure 10. Wells forebay TDG during the month of July. The green line represents the compliance threshold of waters received by Wells Dam and as discharged from the FCRPS above Wells Dam.

Yearly TDG Compliance Summary

Table 6 TDG compliance at the Wells Project for the entire 2022 season.

		Compliance
April - June	**Wells Tailrace 125% - Mean 12 Highest Hourly / Day**	
	Non-compliant measurements	0
	7Q-10 flow measurements	16
	Total measurements	91
	DCPUD compliance	**100%**
	Wells Tailrace 126% - Two Consecutive Hourly Values	
	Non-compliant measurements	1
	7Q-10 flow measurements	273
	Total measurements	2184
	DCPUD compliance	**99.9%**
July & August	**Wells Tailrace 125% Hourly Standard**	
	Non-compliant measurements	3
	7Q-10 flow measurements	1
	Total measurements	62
	DCPUD compliance	**95.2%**
	Wells Tailrace 120% 12C-High Standard (one day)	
	Non-compliant measurements	15
	7Q-10 flow measurements	1
	Total measurements	62
	DCPUD compliance	**75.8%**
	Rocky Reach Forebay 115% 12C-High Standard (one day)	
	Non-compliant measurements	23
	7Q-10 flow measurements	1
	Total measurements	62
	DCPUD compliance	**62.9%**
Jan - Mar & Sept - Dec	**Wells Tailrace <110% Standard**	
	Non-compliant measurements	15
	Total measurements	5086
	DCPUD compliance	**99.7%**

4 DISCUSSION OF GAS ABATEMENT MEASURES

4.1 Water Quality Attainment Plan Activities

As required by the Wells Project 401 Certification, Douglas PUD developed a Water Quality Attainment Plan (WQAP) that was approved by Ecology and the FERC in 2013. The WQAP provides a detailed strategy for achieving compliance with the TDG state WQS within a required ten-year timeframe (i.e., compliance schedule). The compliance schedule outlines a step-wise approach toward meeting compliance with the TDG WQS. In 2022 (Year 9), the WQAP called for continued adaptive management and implementation of the Spill Playbook, biological monitoring (i.e., GBT monitoring in biota, as needed), and the identification of key Project operating parameters that could be used towards developing a database that would house fine-scale operation data. Future year's data would be used to identify fine-scale operation changes that might improve TDG compliance.

In 2022, modifications were made to the Spill Playbook to accommodate the unavailability of Spill Gate 7, which was undergoing maintenance activities for a prolonged period of time. Biological monitoring (i.e., GBT monitoring in biota, as needed) continued in 2022 toward determining the impact on salmonids and resident fish pursuant to the Biological Monitoring Plan portion of the 2022 Wells Dam GAP.

Notably, in the spring of 2016 (Year 3) Douglas PUD reviewed Wells Project operations data collection with Wells Dam Hydro Operations staff and the Information Systems Department. The objective of this analysis was to conduct a comprehensive evaluation of both operational and structural data collection that could ultimately improve compliance with the TDG WQS criteria. A fine-scale spill-data collection database was completed in 2017 (Year 4). New data includes spillbay "openness" indication on nine of the eleven spillways (most frequently used). In addition, a new energy accounting system was developed in 2017. This new data collection process should allow for Douglas PUD to collect robust operations data over the balance of the WQAP. This new data can be used for subsequent modeling, if necessary, and towards improving compliance. As of 2017, data was being collected to meet the schedule of the WQAP Implementation Plan.

The IIHR TDG model suite (i.e., rigid lid and VOF models) developed during the Wells Project relicensing process in 2008 was operated under a set of assumptions (as required for all quantitative predictive models) for hydrodynamic characteristics such as gas volume fraction, bubble size, various free-surface features, and incoming TDG levels. However, Douglas PUD has no data that support improving or modifying model assumptions. Rather, over the last several years, spill volume seems to be the most important variable in determining TDG addition at Wells Dam. Improved turbine unit reliability and improved turbine unit capacity is expected to occur once the rebuild of the 10 units at Wells Dam is complete. Having 10 units available is expected to improve TDG performance over the coming years, potentially allowing the District to become fully complaint with the WQS when flows are below 7Q-10 volumes. Since 2013, Wells Dam has never had 10 units available, because at least one unit has been out for extended unit rebuild each year.

In 2022, Douglas acquired the assistance of staff at the University of Washington School of Aquatic & Fishery Sciences office of Columbia Basin Research (CBR) to produce a regression model that could forecast tailrace TDG using parameter values for Columbia River flow, project spill, and forebay TDG saturation (Beer 2022). The model is publicly available on the CBR website https://www.cbr.washington.edu/analysis/rt. At times when incoming flows are forecast to exceed the hydraulic capacity of Wells Dam, Douglas staff consult the model to guide decision making as to spill quantity, maintenance scheduling that would reduce hydraulic capacity further, Project participant minimum generation requirements, and duration of spill, with the intent of eliminating any downstream TDG violations. Staff expect that the tool will improve TDG performance, which has shown high compliance since the Water Quality Attainment Plan was approved in 2013.

4.2 Operational

In 2022, a delayed freshet flow caused below average flow at Wells Dam in April and May, which was followed by a higher than average peak in June and a period of above average flow that lasted until the late-summer (Table 1; Figure 2, and Figure 11). Bypass barriers were removed in Spillbay 8 from June 3 until July 20, Spillbay 10 from June 8 until July 13, and Spillbay 4 from June 16 until July 1, because a sustained period of flow in excess of 175 kcfs triggered a JBS barrier removal criteria. With the bypass system and Spill Playbook operating normally, Douglas PUD was able to demonstrate high TDG compliance with Washington State WQS in 2022. System Operator training and additional Energy Accounting System (EAS) enhancements are expected to further improve TDG performance outside of the bypass period when the WQS is 110%.

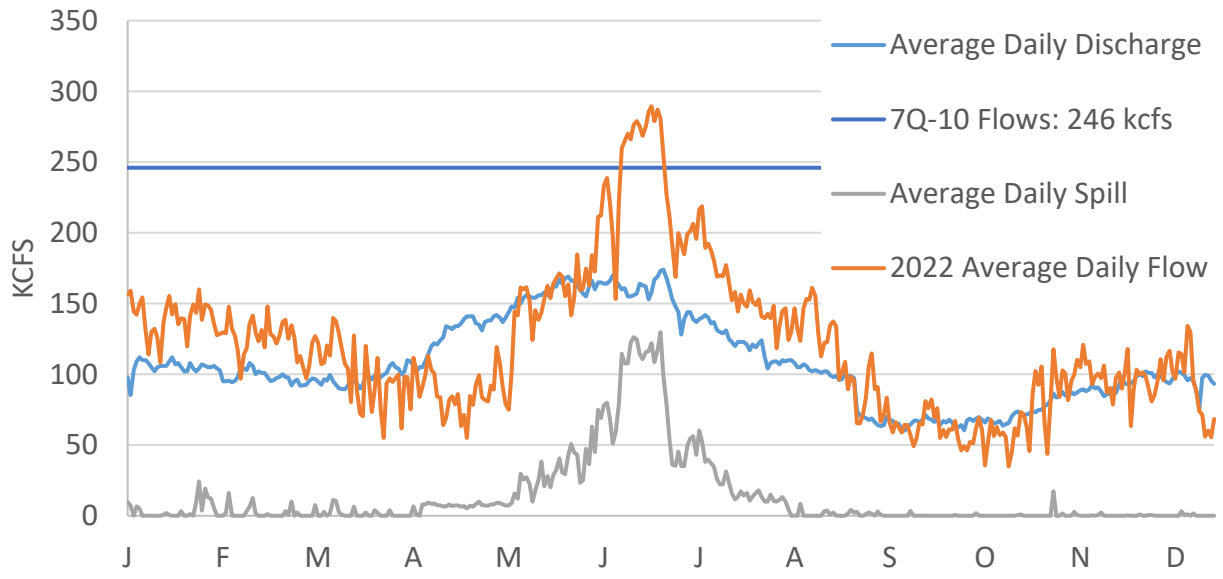

Figure 11. Average daily flow and average daily spill at Wells Dam during 2022 relative to the twenty-year average flow.

4.3 Structural

No permanent structural modifications were proposed or completed during the 2022 monitoring season. Continued maintenance work on Spill Gate 7 precluded the release of spill through Spillbay 7 for the duration of the fish bypass period. Although influencing the Spill Playbook, the reduced operational flexibility caused by the maintenance activity did not adversely affect compliance with TDG standards.

5 CONCLUSIONS

TDG performance at Wells Dam during the 2022 season was good overall, but high flows and highly gasified water received in the Wells forebay made maintaining compliance with the Wells tailrace 120% standard and the Rocky Reach forebay 115% standard difficult during the first two weeks of July. Results support the continued implementation of the Spill Playbook to manage TDG production through operational means, and suggest future operational performance should return to extremely high rates of compliance with TDG standards under average flow conditions. There were a handful of exceedances of the 110% TDG standard occurring outside the bypass period that were avoidable, and these events are expected to continue to decrease as Douglas maintains its emphasis on system operator training, utilization of the CBR's TDG RealTime Forecaster model, EAS accounting, and coordination with control room operators. Douglas PUD will emphasize testing the Spill Playbook in years where ten units are available 95% of the time (expectation of reliability). The ongoing turbine rebuild project currently only provides 9 out of 10 units for operation during the peak hydrograph, thereby reducing the amount of water that can be passed through the turbine units by approximately 15-20 kcfs. This increases the challenge with maintaining compliance because when Wells Project inflow exceeds the reduced turbine capacity, the amount of spilled water must increase. Despite this challenge, overall, Douglas PUD has maintained high TDG compliance with WQS. Douglas PUD will continue to work closely with Ecology towards meeting year round TDG standards in subsequent years.

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APPENDIX B

PRE-FILING CONSULTATION RECORD FOR THE 2022 ANNUAL REPORT TOTAL DISSOLVED GAS ABATEMENT PLAN FOR THE WELLS HYDROELECTRIC PROJECT

NOTICE TO AQUATIC SETTLEMENT WORK GROUP TO REVIEW THE TOTAL DISSOLVED GAS ABATEMENT PLAN 2022 ANNUAL REPORT

From: Kristi Geris <kgeris@anchorqea.com>
Sent: Monday, January 9, 2023 4:24 PM
To: Andrew Gingerich; Blanchard, Monica R (DFW); Chas Kyger; Donella Miller (mild@yakamafish-nsn.gov); Jason McLellan; John Ferguson; John Rohrback; Judy Neibauer; Kristi Geris; Laura.Heironimus@dfw.wa.gov; Peterschmidt, Mark F. (ECY); Verhey, Patrick M (DFW); Ralph Lampman (lamr@yakamafish-nsn.gov); RD Nelle; Tara Callaway; bzim461
Subject: FW: 2022 Wells Dam TDG Annual Report
Attachments: 2023_01_09 Douglas - Draft Wells Dam TDG GAP 2022 Annual Report.docx

Hi ASWG Reps: please see the email below from John R and the attached draft 2022 TDG/GAP Annual Report, which is available for review. Douglas PUD hopes to request approval of this document during the Aquatic SWG meeting on February 8, 2023.

The attached draft report is also available for download from the Aquatic SWG Extranet site, under: Documents > All by Mtg Date > 1/11/2023 (instructions below). Thanks! –kristi 😊

Instructions:

To gain access to the Aquatic SWG Extranet Homepage, please use the following procedure:

* Visit: https://extranet.dcpud.net/sites/nr/aswg/
* Login using "Forms Authentication" (for non-Douglas PUD employees)

You should now be at the Aquatic SWG homepage.

If you encounter problems, or need a login username and password to access the site:
Please feel free to contact me, Andrew Gingerich, or Julene McGregor [jmcgregor@dcpud.org; (509) 881-2236] and we will gladly assist you with questions or issues.

Kristi Geris

ANCHOR QEA, LLC
kgeris@anchorqea.com
C 360.220.3988

From: John Rohrback <john.rohrback@dcpud.org>
Sent: Monday, January 9, 2023 16:14
To: Kristi Geris <kgeris@anchorqea.com>
Subject: 2022 Wells Dam TDG Annual Report

CAUTION: This email originated from outside of Anchor QEA. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Good afternoon,

Kristi, please share this email and document with the Aquatic SWG.

Please find attached Douglas PUD's 2022 Total Dissolved Gas Abatement Plan (GAP) Report. I shared much of this information during the December 2022 Aquatic SWG Meeting as part of Agenda Item II(D) :PRESENTATION: Water

Quality Update. This is the accompanying written report, which also includes information from November and December, 2022.

We ask that committee members please review this document and provide comments in a timely fashion, such that the report may be adjusted as necessary and approved during the February committee meeting, in order that it may be filed with the FERC by the Feb. 28, 2023 deadline.

Please let me know if you have any questions.

Thanks very much,

John Rohrback
509-634-1068

FINAL AQUATIC SETTLEMENT WORK GROUP ACTION ITEMS SHOWING APPROVAL OF TOTAL DISSOLVED GAS ABATEMENT PLAN 2022 ANNUAL REPORT

FINAL

Conference Call Action Items

Aquatic Settlement Work Group

To: Aquatic SWG Parties **Date:** February 9, 2023

From: John Ferguson, Chair, Anchor QEA, LLC

Re: **Final Action Items of the February 8, 2023, Aquatic SWG Conference Call**

Below is a summary of Action Items from the Aquatic Settlement Work Group (SWG) meeting that was held by conference call on Wednesday, February 8, 2023, from 10:00 a.m. to 11:50 a.m. Attendees are listed in Attachment A. These action items include the following:

Summary of Action Items

1. Anchor QEA, LLC (Anchor QEA) will request from U.S. Fish and Wildlife Service (USFWS) a vote via email on the *2022 Annual Report Total Dissolved Gas Abatement Plan* (2022 TDG/GAP Annual Report) and *2023 Total Dissolved Gas Abatement Plan* and appended *Wells Bypass Operating Plan* (2023 GAP/BOP), which were approved by Aquatic SWG members present during today's Aquatic SWG conference call (Item II-A and Item II-B). *(Note: Kristi Geris sent this request following the Aquatic SWG conference call on February 8, 2023, and USFWS approved via email on February 9, 2023.)*
2. Douglas PUD will verify that juvenile Pacific Lamprey collected and passive integrated transponder (PIT)-tagged at the Carlton rotary screw trap are released upstream of the trap, to help monitor trap efficiency and estimate overall run size (Item II-C).
3. The Yakama Nation (YN) will let The River Mile Network know that Douglas PUD is supportive of sharing crayfish monitoring data collected in the Wells Reservoir, upon request (Item II-C).
4. The YN will provide a lamprey bait flyer to Douglas PUD for posting around the Wells Project (Item II-C).
5. Washington Department of Fish and Wildlife (WDFW) will ask internally about the timeline and schedule for releasing the Northern Pike Rapid Response Statewide Plan (Item II-C).
6. Anchor QEA will notify USFWS that Douglas PUD plans to request approval of the *2023 Aquatic Settlement Agreement and Workgroup Action Plan* during the Aquatic SWG conference call on March 8, 2023, and to reach out to Douglas PUD with questions (Item II-C). *(Note: Kristi Geris sent this notification following the Aquatic SWG conference call on February 8, 2023.)*

7. Douglas PUD will coordinate with Wells Dam mechanical staff to: 1) ask about the feasibility of widening the 3-inch plating around diffuser gratings with regards to hydraulics through the area; 2) request any additional photographs taken of reducing gaps in the east fishway during the 2022/2023 Wells Dam winter maintenance period; and 3) make note to recheck measurements of the areas depicted in the photographs shared during today's Aquatic SWG conference call (Attachment B to the meeting minutes; Item II-D).
8. Douglas PUD will resend or provide the location of the latest photographs taken of the Pacific Lamprey improvements installed in the Wells Dam count window areas (Item II-D).
9. Douglas PUD will follow-up with USFWS regarding PIT-tagging of Bull Trout incidental captures in the Methow River basin for inclusion in the *Bull Trout Movement and Life History Investigation 2022* (2022 Bull Trout PIT Study) (Item II-F).
10. The Aquatic SWG meeting on March 8, 2023, will be held by conference call (Item III-A).

Summary of Decisions

1. Aquatic SWG members present approved the 2022 TDG/GAP Annual Report (Item II-A). *(Note: USFWS approved via email on February 9, 2023.)*
2. Aquatic SWG members present approved the 2023 GAP/BOP (Item II-B). *(Note: USFWS approved via email on February 9, 2023.)*

Agreements

1. There were no agreements discussed during today's conference call.

Review Items

1. The draft *2023 Aquatic Settlement Agreement and Workgroup Action Plan* was distributed to the Aquatic SWG by Kristi Geris on February 7, 2023. Douglas PUD will request approval of the action plan during the Aquatic SWG conference call on March 8, 2023 (Item II-C).

Documents Finalized

1. There are no documents that have been recently finalized.

Attachment A – List of Attendees

Name	Role	Organization
John Ferguson	Aquatic SWG Chairman	Anchor QEA, LLC
Kristi Geris	Administration/Technical Support	Anchor QEA, LLC
Andrew Gingerich	Aquatic SWG Technical Representative	Douglas PUD
Chas Kyger	Aquatic SWG Technical Alternate	Douglas PUD
John Rohrback	Aquatic SWG Technical Support	Douglas PUD
Patrick Verhey	Aquatic SWG Technical Representative	Washington Department of Fish and Wildlife
Laura Heironimus	Aquatic SWG Technical Alternate	Washington Department of Fish and Wildlife
Breean Zimmerman*	Aquatic SWG Technical Representative	Washington State Department of Ecology
Jason McLellan	Aquatic SWG Technical Representative	Confederated Tribes of the Colville Reservation
Ralph Lampman	Aquatic SWG Technical Representative	Yakama Nation

Notes:
* Left the meeting after Item II-B.

From: Nelle, RD <rd_nelle@fws.gov>
Sent: Thursday, February 9, 2023 8:56 AM
To: Kristi Geris; Neibauer, Judy
Cc: Andrew Gingerich; Chas Kyger; John Rohrback; John Ferguson
Subject: Re: [EXTERNAL] [VOTE] 2022 TDG/GAP Report & 2023 GAP/BOP; 2023 Action Plan (fyi)

Kristi,
USFWS approves.

Thank you
RD

From: Kristi Geris <kgeris@anchorqea.com>
Sent: Wednesday, February 8, 2023 2:47 PM
To: Nelle, RD <rd_nelle@fws.gov>; Neibauer, Judy <Judy_Neibauer@fws.gov>
Cc: Andrew Gingerich (andrewg@dcpud.org) <andrewg@dcpud.org>; Chas Kyger <chask@dcpud.org>; John Rohrback <john.rohrback@dcpud.org>; John Ferguson <jferguson@anchorqea.com>
Subject: [EXTERNAL] [VOTE] 2022 TDG/GAP Report & 2023 GAP/BOP; 2023 Action Plan (fyi)

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Hi RD and Judy!

Sorry to have missed you both, today!

All other ASWG representatives were present, and unanimously approved the attached 2022 TDG/GAP Annual Report and 2023 GAP/BOP. I have an action item to request from you, USFWS, a vote via email on both documents. If you would like, please submit your vote via email by next **Wed 2/15**. As always, please feel free to reach out to Douglas PUD with questions! If you prefer not to vote, we'll leave the record as stands (i.e., ASWG representatives present approved the documents).

Additionally, the Aquatic SWG reviewed the attached draft 2023 Action Plan. Comments and edits are incorporated, as discussed today. Douglas PUD will request approval of the draft action plan during next month's ASWG 3/8 conference call. Again, please reach out to Douglas PUD with questions or comments.

Hope you both feel better soon! -kristi ☺

Kristi Geris | ANCHOR QEA, LLC
Senior Scientist

kgeris@anchorqea.com
Tri-Cities WA
C 360.220.3988

ANCHOR QEA,LLC

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