

Appendix D

2021 Summary of TDG Exceedance Tracking

INTRODUCTION

The U.S. Army Corps of Engineers (Corps) tracks the number of days when the percent TDG exceeds the Oregon (set by Oregon Department of Environmental Quality, ODEQ) and Washington (set by Washington Department of Ecology, WDOE) water quality standards (WQS). During spill for fish passage, April through August, WDOE's and ODEQ's WQSs use the same method for calculating a daily value of TDG: the average of the 12 highest hourly readings in a calendar day. TDG is also tracked during spill for adult steelhead, which occurs in October, November, and March, during which time the method used to compute a daily TDG value is the maximum instantaneous reading for both WDOE and ODEQ. This appendix provides the TDG tracking system results. A description of each table follows.

Table D- 1 provides a definition of TDG instances (including exceedance types, 7Q10 flows, and data quality events) with the associated format used to identify the type. Table D-2 through D-9 identify the daily TDG regulatory value (computed using the methods described in the previous paragraph) and exceedance type if applicable (as defined in Table D- 1) by project forebay and tailwater.

Table D- 10 and Table D-11 provide the total number of TDG exceedances by type for each project for the lower Snake River projects and lower Columbia River projects, respectively.

Oregon and Washington also specify that April through August, the maximum two consecutive hour TDG must not exceed 127 percent and 126 percent, respectively. Table D- 12 breaks down the maximum two-hour consecutive TDG value, the number of days that exceed 126 percent Washington TDG standard, and the number of days that exceed the 127 percent Oregon TDG standard.

Table D- 13 provides a list of TDG gauges that malfunctioned during the 2021 spill season, which resulted in six hours or more of either missing or erroneous data. Malfunctioning gauge TDG instances are noted as data quality event in Table D-2 through Table D-9.

Table D- 1: TDG instance definitions

<p>Forced Spill Exceedance (FSE)</p>	<p>TDG WQS exceedance due to spill above the BiOp fish spill levels. This includes exceedances due to:</p> <ul style="list-style-type: none"> • High runoff flows and flood risk management efforts. • Periods when BPA load requirements are lower than actual powerhouse capacity or project is carrying system-wide reserves. • Involuntary spill at Mid-Columbia River dams resulting in high TDG levels entering the lower Columbia River. • Involuntary spill at Snake River dams resulting in high TDG levels entering the lower Columbia River. • Planned and unplanned outages of hydro power equipment including generation unit, intertie line, or powerhouse outages.
<p><u>Mechanical Exceedance (ME)</u></p>	<p>TDG WQS exceedance due to the operation or mechanical failure of non-generating equipment. This includes exceedances due to:</p> <ul style="list-style-type: none"> • Spill gates stuck in open position or inadvertently left open. • Increased spill in a bulk spill operation to pass debris or other special operations. • Communication errors, such as teletype were transmitted but change was not timely made or misinterpretation of intent of teletype by Project operator.
<p><i>Uncertainty Exceedance (UE)</i></p>	<p>TDG WQS exceedance due to uncertainties when using best professional judgment, SYSTDG model and forecasts. This includes exceedances due to:</p> <ul style="list-style-type: none"> • Uncertainties when using best professional judgment to apply the spill guidance criteria, e.g., travel time, degassing, and spill patterns. • Uncertainties when using the SYSTDG model to predict the effects of various hydro system operations, temperature, degassing, and travel time. • Uncertainties when using forecasts for flows, temperature and wind. • Unanticipated sharp rise in water temperature (a 1.5 degree F. or greater change in a day).
<p>Transition Exceedance (TE)</p>	<p>TDG WQS exceedance due to change in the WQS from spring spill to summer spill.</p> <ul style="list-style-type: none"> • Because spring WQS are higher than summer WQS and travel time between projects can be greater than a week, there may be a transition period while the system degasses subsequent to the spring spill operation.
<p>Data Quality Event (-)</p>	<p>Malfunctioning FMS gauge that resulted in missing or erroneous data. The TDG cannot be evaluated for these days.</p>
<p>7Q10 Flow (*)</p>	<p>TDG above the WQS during project flow higher than 7Q10 flows. These instances are not counted towards the total number of exceedances.</p>
<p>Gauge Not Yet Installed (•)</p>	<p>Data not collected at forebay gauges during the spring as the 125% TDG WQS applies only to the tailwater gauges.</p>

Table D- 2: Daily TDG instances in October 2020

Station:	LWG	LGNW	LGSA	LGSW	LMNA	LMNW	IHRA	IDSW	MCNA	MCPW	JDY	JHAW	TDA	TDDO	BON	WRNO
10/1/2020	•	110	•	107	•	111	•	102	•	104	•	102	•	102	•	102
10/2/2020	•	99	•	97	•	-	•	108	•	101	•	101	•	102	•	103
10/3/2020	•	99	•	99	•	-	•	101	•	106	•	102	•	103	•	103
10/4/2020	•	107	•	108	•	-	•	109	•	102	•	102	•	102	•	102
10/5/2020	•	100	•	99	•	-	•	100	•	101	•	101	•	102	•	103
10/6/2020	•	108	•	108	•	99	•	102	•	102	•	102	•	103	•	103
10/7/2020	•	102	•	102	•	112	•	110	•	109	•	102	•	103	•	103
10/8/2020	•	112	•	108	•	102	•	102	•	103	•	-	•	103	•	102
10/9/2020	•	101	•	100	•	113	•	109	•	108	•	-	•	103	•	103
10/10/2020	•	100	•	99	•	101	•	102	•	102	•	102	•	103	•	102
10/11/2020	•	109	•	107	•	111	•	107	•	106	•	101	•	102	•	101
10/12/2020	•	98	•	99	•	100	•	101	•	100	•	101	•	101	•	101
10/13/2020	•	112	•	108	•	101	•	100	•	107	•	101	•	102	•	101
10/14/2020	•	97	•	97	•	110	•	105	•	98	•	99	•	101	•	101
10/15/2020	•	107	•	104	•	97	•	97	•	105	•	99	•	101	•	100
10/16/2020	•	97	•	98	•	111	•	107	•	99	•	100	•	102	•	101
10/17/2020	•	97	•	101	•	99	•	100	•	105	•	100	•	102	•	101
10/18/2020	•	108	•	107	•	111	•	107	•	99	•	100	•	102	•	101
10/19/2020	•	98	•	98	•	98	•	99	•	105	•	100	•	102	•	101
10/20/2020	•	102	•	101	•	98	•	99	•	100	•	100	•	102	•	100
10/21/2020	•	98	•	97	•	102	•	102	•	106	•	100	•	102	•	100
10/22/2020	•	100	•	100	•	97	•	-	•	98	•	99	•	100	•	100
10/23/2020	•	98	•	97	•	101	•	-	•	105	•	100	•	101	•	101
10/24/2020	•	97	•	96	•	96	•	98	•	98	•	100	•	101	•	101
10/25/2020	•	101	•	100	•	101	•	103	•	96	•	98	•	99	•	99
10/26/2020	•	95	•	95	•	95	•	97	•	96	•	99	•	100	•	99
10/27/2020	•	99	•	99	•	97	•	97	•	102	•	98	•	99	•	99
10/28/2020	•	96	•	96	•	101	•	101	•	98	•	99	•	100	•	101
10/29/2020	•	108	•	106	•	98	•	99	•	105	•	99	•	101	•	101
10/30/2020	•	98	•	97	•	111	•	107	•	102	•	99	•	101	•	101
10/31/2020	•	96	•	96	•	96	•	98	•	106	•	98	•	100	•	101
Exceedances:		2				7										
DQE:						4		2				2				

Table D- 3: Daily TDG instances in November 2020

Station:	LWG	LGNW	LGSA	LGSW	LMNA	LMNW	IHRA	IDSW	MCNA	MCPW	JDY	JHAW	TDA	TDDO	BON	WRNO
11/1/2020	•	108	•	106	•	109	•	106	•	101	•	98	•	99	•	100
11/2/2020	•	98	•	97	•	97	•	99	•	102	•	99	•	100	•	101
11/3/2020	•	108	•	105	•	98	•	99	•	102	•	100	•	100	•	101
11/4/2020	•	-	•	97	•	111	•	106	•	-	•	99	•	100	•	101
11/5/2020	•	111	•	107	•	100	•	99	•	104	•	99	•	100	•	101
11/6/2020	•	102	•	99	•	111	•	108	•	107	•	101	•	101	•	101
11/7/2020	•	102	•	99	•	100	•	101	•	104	•	101	•	101	•	101
11/8/2020	•	109	•	106	•	111	•	106	•	106	•	101	•	100	•	100
11/9/2020	•	100	•	97	•	99	•	99	•	99	•	99	•	99	•	99
11/10/2020	•	108	•	104	•	100	•	99	•	104	•	100	•	100	•	99
11/11/2020	•	100	•	97	•	110	•	105	•	98	•	99	•	100	•	100
11/12/2020	•	106	•	104	•	98	•	99	•	103	•	99	•	100	•	101
11/13/2020	•	101	•	100	•	110	•	106	•	101	•	101	•	102	•	102
11/14/2020	•	99	•	98	•	98	•	99	•	103	•	100	•	100	•	101
11/15/2020	•	111	•	108	•	111	•	107	•	99	•	100	•	100	•	100
11/16/2020	•	99	•	98	•	99	•	99	•	101	•	100	•	101	•	101
11/17/2020	•	100	•	99	•	100	•	101	•	102	•	101	•	102	•	101
11/18/2020	•	99	•	99	•	100	•	100	•	101	•	100	•	101	•	101
11/19/2020	•	98	•	98	•	100	•	98	•	100	•	98	•	99	•	100
11/20/2020	•	97	•	97	•	98	•	99	•	99	•	97	•	98	•	100
11/21/2020	•	98	•	97	•	98	•	98	•	99	•	98	•	98	•	100
11/22/2020	•	99	•	99	•	99	•	99	•	101	•	99	•	99	•	101
11/23/2020	•	100	•	99	•	101	•	99	•	101	•	99	•	100	•	100
11/24/2020	•	101	•	99	•	100	•	99	•	103	•	100	•	100	•	101
11/25/2020	•	100	•	99	•	99	•	98	•	102	•	99	•	100	•	100
11/26/2020	•	99	•	97	•	98	•	97	•	101	•	98	•	102	•	99
11/27/2020	•	99	•	98	•	99	•	98	•	99	•	99	•	100	•	100
11/28/2020	•	99	•	97	•	98	•	97	•	98	•	98	•	99	•	100
11/29/2020	•	99	•	97	•	98	•	97	•	98	•	99	•	99	•	100
11/30/2020	•	100	•	98	•	100	•	98	•	98	•	99	•	100	•	100
Exceedances:		2				4										
DQE:		1								1						

Table D- 4: Daily TDG instances in March 2021

Station:	LWG	LGNW	LGSA	LGSW	LMNA	LMNW	IHRA	IDSW	MCNA	MCPW	JDY	JHAW	TDA	TDDO	BON	WRNO
3/1/2021	•	101	•	102	•	110	•	107	•	103	•	104	•	105	•	105
3/2/2021	•	107	•	107	•	103	•	104	•	107	•	105	•	106	•	106
3/3/2021	•	102	•	104	•	111	•	108	•	105	•	106	•	107	•	107
3/4/2021	•	105	•	107	•	103	•	104	•	107	•	105	•	106	•	106
3/5/2021	•	103	•	104	•	110	•	108	•	106	•	105	•	105	•	106
3/6/2021	•	103	•	107	•	105	•	104	•	108	•	104	•	105	•	106
3/7/2021	•	107	•	102	•	111	•	108	•	105	•	104	•	104	•	106
3/8/2021	•	103	•	103	•	104	•	105	•	108	•	104	•	105	•	106
3/9/2021	•	106	•	106	•	104	•	105	•	105	•	105	•	105	•	106
3/10/2021	•	102	•	104	•	112	•	109	•	107	•	105	•	106	•	107
3/11/2021	•	105	•	107	•	103	•	105	•	104	•	104	•	105	•	106
3/12/2021	•	101	•	103	•	110	•	108	•	107	•	105	•	105	•	106
3/13/2021	•	102	•	102	•	104	•	106	•	105	•	106	•	106	•	107
3/14/2021	•	106	•	107	•	111	•	108	•	107	•	106	•	106	•	106
3/15/2021	•	103	•	103	•	109	•	105	•	108	•	105	•	105	•	105
3/16/2021	•	105	•	106	•	105	•	105	•	106	•	104	•	104	•	106
3/17/2021	•	104	•	102	•	111	•	107	•	108	•	104	•	106	115	106
3/18/2021	•	108	•	119	•	105	•	105	•	106	•	106	•	106	115	107
3/19/2021	•	102	•	103	•	110	•	108	•	107	•	105	•	105	114	105
3/20/2021	•	101	•	102	•	104	•	105	•	105	•	104	•	105	115	105
3/21/2021	•	105	•	106	•	111	•	107	•	104	•	103	•	104	115	103
3/22/2021	•	102	•	103	•	104	•	104	•	105	•	104	•	104	115	104
3/23/2021	•	104	•	120	•	102	•	103	•	106	•	104	•	104	114	104
3/24/2021	•	102	•	102	•	110	•	107	•	105	•	105	•	106	115	105
3/25/2021	•	106	•	118	•	106	•	105	•	108	•	105	•	105	115	104
3/26/2021	•	101	•	104	•	110	•	107	•	105	•	104	•	104	114	106
3/27/2021	•	101	•	101	•	104	•	103	•	107	•	103	•	104	115	107
3/28/2021	•	116	•	103	•	111	•	106	•	105	•	104	•	105	115	107
3/29/2021	•	102	•	101	•	103	•	103	•	106	•	102	•	103	114	106
3/30/2021	•	110	•	117	•	101	•	102	•	102	•	101	•	103	114	108
3/31/2021	•	102	•	101	•	108	•	104	•	106	•	104	•	105	114	108
Exceedances:		1		4		7									15	
DQE:																

Table D- 5: Daily TDG Instances in April 2021

Station:	LWG	LGNW	LGSA	LGSW	LMNA	LMNW	IHRA	IDSW	MCNA	MCPW	JDY	JHAW	TDA	TDDO	BON	CCIW
4/1/2021	•	103	•	105	•	102	•	105	•	104	•	104	•	105	•	114
4/2/2021	•	102	102	102	103	103	•	104	•	105	•	104	•	104	•	114
4/3/2021	•	116	102	118	102	-	•	115	•	105	•	104	•	104	•	114
4/4/2021	•	117	103	118	103	-	•	115	•	105	•	103	•	104	•	113
4/5/2021	•	117	103	118	105	-	•	114	•	106	•	103	•	104	•	115
4/6/2021	•	118	102	119	114	-	•	115	•	107	•	104	•	105	•	115
4/7/2021	•	118	109	119	116	-	•	114	•	108	•	105	•	105	•	113
4/8/2021	•	117	110	119	115	-	•	115	•	106	•	104	•	104	•	113
4/9/2021	•	117	110	119	115	-	•	115	•	107	•	104	•	105	•	113
4/10/2021	•	116	110	118	114	-	•	113	•	115	•	115	•	110	•	116
4/11/2021	•	117	108	118	114	116	•	113	•	115	•	115	•	114	•	116
4/12/2021	•	116	108	118	114	115	•	113	•	115	•	115	•	117	•	117
4/13/2021	•	116	109	117	112	115	•	113	•	115	•	114	•	116	•	117
4/14/2021	•	116	109	117	113	113	111	113	105	115	•	114	•	117	•	117
4/15/2021	•	116	109	118	113	114	111	113	106	116	•	114	•	117	•	117
4/16/2021	•	115	111	118	114	-	110	113	106	115	•	113	•	117	•	117
4/17/2021	•	116	112	118	114	115	111	113	107	116	•	114	•	118	•	117
4/18/2021	•	117	113	118	117	114	113	113	108	116	•	114	•	118	•	117
4/19/2021	•	116	112	118	116	114	113	113	108	116	•	115	•	117	•	117
4/20/2021	•	116	113	118	116	116	114	114	109	116	•	115	•	117	•	117
4/21/2021	•	116	114	119	117	115	114	114	109	117	•	116	•	119	•	119
4/22/2021	•	116	115	119	118	116	115	114	110	117	•	117	•	117	•	118
4/23/2021	•	116	114	118	119	114	116	114	110	116	•	116	•	116	•	117
4/24/2021	•	116	114	118	119	115	116	114	110	117	•	117	•	118	•	120
4/25/2021	•	117	113	118	117	115	115	115	110	117	•	117	•	119	•	120
4/26/2021	•	116	113	118	116	115	114	114	109	117	•	117	•	118	•	120
4/27/2021	•	116	111	117	115	114	112	114	108	117	•	116	•	116	•	120
4/28/2021	•	116	110	119	115	114	112	114	109	117	•	117	•	118	•	120
4/29/2021	•	116	113	118	117	115	114	114	110	117	•	117	•	119	•	119
4/30/2021	•	117	114	119	118	116	115	114	111	117	•	118	•	118	•	119
Exceedances:																
DQE:						9										

Table D- 6: Daily TDG Instances in May 2021

Station:	LWG	LGNW	LGSA	LGSW	LMNA	LMNW	IHRA	IDSW	MCNA	MCPW	JDY	JHAW	TDA	TDDO	BON	CCIW
5/1/2021	•	119	115	121	119	117	116	116	111	117	•	118	•	118	•	120
5/2/2021	•	121	114	123	117	120	115	116	110	117	•	118	•	116	•	120
5/3/2021	•	121	114	123	118	119	116	116	111	118	•	119	•	118	•	120
5/4/2021	•	120	114	122	119	120	117	116	110	118	•	120	•	119	•	120
5/5/2021	•	120	116	121	121	118	118	116	111	118	•	119	•	121	•	120
5/6/2021	•	120	117	121	122	118	119	117	112	118	•	119	•	121	•	120
5/7/2021	•	120	115	121	121	118	117	116	110	118	•	119	•	118	•	119
5/8/2021	•	122	113	122	117	120	114	116	107	118	•	119	•	117	•	119
5/9/2021	•	120	112	122	117	119	114	116	108	118	•	120	•	119	•	120
5/10/2021	•	119	113	120	120	118	117	117	110	119	•	120	•	121	•	120
5/11/2021	•	118	115	120	121	117	118	117	112	119	•	120	•	121	•	120
5/12/2021	•	118	117	120	122	117	119	115	113	119	•	120	•	122	•	120
5/13/2021	•	118	117	120	122	117	119	117	113	118	•	119	•	121	•	120
5/14/2021	•	118	118	119	121	117	118	116	113	118	•	119	•	122	•	120
5/15/2021	•	119	119	121	122	118	119	117	115	119	•	119	•	122	•	120
5/16/2021	•	120	120	122	122	118	119	117	115	118	•	119	•	122	•	120
5/17/2021	•	122	120	123	123	121	119	118	115	118	•	119	•	121	•	120
5/18/2021	•	122	117	124	120	120	117	117	111	117	•	118	•	117	•	119
5/19/2021	•	123	114	124	120	121	117	117	109	119	113	119	•	119	•	120
5/20/2021	•	122	113	123	122	120	118	117	109	118	111	119	114	118	•	119
5/21/2021	•	120	114	121	122	118	118	117	109	118	109	118	116	119	110	119
5/22/2021	•	119	113	120	121	118	117	116	109	118	108	118	117	119	111	119
5/23/2021	•	118	116	120	121	117	116	116	110	117	107	118	116	119	113	119
5/24/2021	•	118	114	119	118	117	115	116	108	117	107	117	113	117	112	119
5/25/2021	•	118	112	119	116	116	112	115	106	117	108	118	114	118	112	120
5/26/2021	•	118	111	119	115	116	112	115	107	117	107	118	115	118	113	119
5/27/2021	•	119	112	120	118	118	114	116	109	118	107	119	117	120	113	120
5/28/2021	•	119	112	120	116	118	112	116	107	117	106	118	114	118	112	119
5/29/2021	•	118	114	120	116	118	113	116	108	118	107	118	116	119	114	120
5/30/2021	•	119	114	120	119	117	115	116	109	118	109	120	120	121	118	120
5/31/2021	•	119	116	120	121	117	117	116	111	118	110	120	121	122	118	120
Exceedances:																
DQE:																

Table D- 7: Daily TDG Instances in June 2021

Station:	LWG	LGNW	LGSA	LGSW	LMNA	LMNW	IHRA	IDSW	MCNA	MCPW	JDY	JHAW	TDA	TDDO	BON	CCIW
6/1/2021	•	119	119	121	122	117	118	117	113	119	112	119	122	122	121	120
6/2/2021	•	121	120	123	123	118	119	117	114	119	114	120	122	122	121	121
6/3/2021	•	122	120	123	124	120	120	118	114	119	115	119	119	121	116	121
6/4/2021	•	122	120	124	123	120	120	118	113	122	115	119	117	120	113	121
6/5/2021	•	122	117	124	121	120	119	117	112	121	113	124	116	120	113	122
6/6/2021	•	122	114	124	118	119	116	117	109	120	110	125	119	121	114	122
6/7/2021	•	120	112	122	119	118	116	116	110	120	109	123	119	121	116	122
6/8/2021	•	118	112	120	120	116	116	115	111	120	108	123	118	120	117	121
6/9/2021	•	117	114	119	120	116	116	116	111	123	108	123	116	119	115	120
6/10/2021	•	116	113	119	120	116	115	115	111	123	108	121	115	119	113	120
6/11/2021	•	118	114	120	118	117	115	116	111	121	109	121	116	119	114	120
6/12/2021	•	117	113	119	118	116	115	116	112	119	111	120	118	120	117	120
6/13/2021	•	116	114	118	118	114	116	114	111	117	111	120	117	120	118	120
6/14/2021	•	117	113	119	119	115	116	114	112	118	111	120	115	118	116	121
6/15/2021	•	117	113	119	118	116	116	115	111	118	111	120	115	118	114	120
6/16/2021	•	118	114	119	116	116	114	115	110	117	113	116	114	119	114	117
6/17/2021	•	117	115	119	117	115	115	114	110	118	114	116	115	119	117	117
6/18/2021	102	117	115	119	120	115	116	114	113	118	114	116	114	118	116	117
6/19/2021	102	115	116	118	121	117	118	115	113	118	112	115	111	116	111	117
6/20/2021	102	117	116	118	120	118	118	115	113	118	113	116	113	117	111	117
6/21/2021	104	115	116	118	120	118	118	116	113	118	114	116	115	119	114	117
6/22/2021	104	116	-	118	120	118	118	115	114	118	114	116	114	118	115	117
6/23/2021	103	115	-	117	119	118	118	116	113	118	113	116	112	116	113	117
6/24/2021	103	114	116	116	118	117	117	115	111	118	111	116	111	116	110	117
6/25/2021	101	114	115	115	116	118	117	114	111	118	111	115	113	117	112	117
6/26/2021	100	114	115	113	116	117	116	114	112	118	113	115	114	118	115	118
6/27/2021	102	114	115	113	117	118	116	114	113	118	113	115	114	118	117	117
6/28/2021	104	114	115	113	117	117	116	114	113	118	114	115	114	118	117	117
6/29/2021	105	114	114	112	117	115	116	114	115	118	116	115	114	117	116	118
6/30/2021	106	115	114	112	116	114	115	-	114	118	114	116	112	116	110	117
Exceedances:			2		10		9				1				5	
DQE:			2					1								

Table D- 8: Daily TDG Instances in July 2021

Station:	LWG	LGNW	LGSA	LGSW	LMNA	LMNW	IHRA	IDSW	MCNA	MCPW	JDY	JHAW	TDA	TDDO	BON	CCIW
7/1/2021	105	115	113	113	115	114	114	113	114	117	112	116	109	115	107	117
7/2/2021	104	115	112	113	114	114	113	113	111	118	110	115	108	115	106	117
7/3/2021	104	114	112	113	114	114	112	113	109	117	108	115	109	115	107	117
7/4/2021	104	115	112	113	113	114	111	112	110	117	107	115	108	114	107	117
7/5/2021	103	115	111	113	113	114	110	112	110	116	105	115	107	114	107	117
7/6/2021	103	114	112	113	114	116	111	112	110	118	105	115	108	115	107	117
7/7/2021	103	116	112	113	114	117	112	112	110	117	105	115	108	114	106	117
7/8/2021	103	116	111	112	114	117	111	112	109	116	105	115	106	113	106	117
7/9/2021	102	114	110	116	114	116	111	112	108	116	105	115	107	114	107	117
7/10/2021	103	115	110	110	113	113	112	108	108	116	105	114	110	114	106	116
7/11/2021	102	116	110	110	113	113	111	108	108	116	105	115	107	114	107	116
7/12/2021	101	115	110	110	113	115	112	108	109	117	105	115	108	114	106	117
7/13/2021	101	117	110	113	112	114	113	109	109	117	106	115	107	115	105	117
7/14/2021	102	115	111	111	111	114	113	108	110	117	105	115	108	114	105	117
7/15/2021	102	114	111	110	109	111	112	106	109	117	105	115	106	113	104	117
7/16/2021	102	114	111	110	109	113	111	106	108	115	104	114	105	112	104	117
7/17/2021	102	115	110	110	108	113	110	107	106	116	104	114	105	113	105	117
7/18/2021	102	115	109	110	107	110	109	106	106	116	104	115	107	114	106	117
7/19/2021	102	115	109	110	107	113	109	106	106	116	103	114	106	113	106	117
7/20/2021	101	115	109	110	106	113	107	106	107	116	103	115	104	113	105	117
7/21/2021	101	115	109	109	107	110	107	105	107	115	102	115	104	112	104	117
7/22/2021	101	116	108	109	107	111	107	106	106	114	102	115	105	112	104	117
7/23/2021	100	116	107	109	106	113	107	106	106	116	102	115	107	114	104	116
7/24/2021	101	116	109	109	105	109	107	106	106	115	103	116	108	114	107	117
7/25/2021	101	115	109	110	105	111	108	107	107	116	104	115	108	115	107	117
7/26/2021	101	115	109	109	107	111	107	107	108	116	105	116	107	114	107	117
7/27/2021	101	116	108	108	107	111	107	107	108	116	105	116	107	114	106	117
7/28/2021	100	115	108	110	107	113	108	108	108	115	105	115	108	114	107	117
7/29/2021	101	110	108	109	107	111	108	108	108	115	107	115	110	115	110	117
7/30/2021	101	109	109	110	107	111	108	107	107	115	109	115	111	116	111	117
7/31/2021	102	-	109	109	107	109	108	107	107	114	109	115	110	115	110	115
Exceedances:																
DQE:		1														

Table D- 9: Daily TDG Instances in August 2021

Station:	LWG	LGNW	LGSA	LGSW	LMNA	LMNW	IHRA	IDSW	MCNA	MCPW	JDY	JHAW	TDA	TDDO	BON	CCIW
8/1/2021	101	-	108	109	107	112	108	107	107	114	109	115	110	115	109	113
8/2/2021	100	-	108	109	107	110	108	108	108	116	109	116	111	-	108	114
8/3/2021	101	-	108	109	108	112	109	108	107	115	109	116	113	117	109	117
8/4/2021	101	-	108	109	108	113	108	108	107	116	109	116	111	116	109	117
8/5/2021	101	-	108	109	108	112	108	107	108	115	109	116	111	115	108	117
8/6/2021	100	-	106	109	107	110	108	107	108	114	107	115	107	113	105	116
8/7/2021	101	-	105	108	107	110	109	107	107	114	106	114	107	112	105	113
8/8/2021	101	-	104	107	107	110	108	107	106	113	104	114	106	112	104	113
8/9/2021	101	-	103	107	105	113	107	108	103	114	103	115	106	113	105	114
8/10/2021	100	-	104	108	104	112	107	107	104	115	104	115	110	115	106	116
8/11/2021	101	-	102	108	103	110	105	107	105	116	105	115	111	116	110	117
8/12/2021	100	120	102	107	104	112	105	106	107	115	106	115	110	116	112	117
8/13/2021	99	116	102	108	104	113	106	106	108	117	107	115	110	116	113	117
8/14/2021	99	117	104	108	105	114	108	107	108	117	106	115	109	115	112	117
8/15/2021	99	115	104	109	104	109	108	107	108	112	106	113	108	112	109	113
8/16/2021	102	115	110	109	104	108	109	107	109	112	107	114	107	111	107	113
8/17/2021	101	118	109	108	103	108	108	107	108	111	106	113	104	109	104	113
8/18/2021	100	115	108	109	105	109	109	108	105	110	105	113	104	109	102	113
8/19/2021	100	115	108	109	107	109	109	108	105	110	105	113	107	111	103	113
8/20/2021	101	115	107	109	103	108	108	107	104	109	104	112	105	110	103	113
8/21/2021	101	115	107	109	-	108	107	107	104	110	103	112	104	109	103	113
8/22/2021	101	115	107	109	104	109	105	107	105	110	103	111	104	108	103	113
8/23/2021	100	115	105	109	104	109	105	-	103	109	101	111	103	109	102	113
8/24/2021	100	115	106	109	104	109	105	107	103	109	102	111	105	111	104	113
8/25/2021	100	115	106	109	103	109	104	107	103	109	101	110	106	111	106	113
8/26/2021	100	114	105	108	103	108	103	107	103	109	100	109	105	110	105	113
8/27/2021	99	114	105	108	103	109	103	107	103	109	100	111	103	109	105	113
8/28/2021	99	109	105	109	104	109	104	107	103	110	100	111	104	110	105	113
8/29/2021	100	115	106	109	105	109	105	107	103	109	101	111	107	112	107	113
8/30/2021	100	115	107	109	104	108	106	106	104	109	101	111	106	110	106	113
8/31/2021	101	114	106	108	104	108	106	106	103	109	101	111	103	108	104	113
Exceedances:																
DQE		11			1			1						1		

Table D- 10¹: Total juvenile fish passage season exceedances by project and type for the Lower Snake River

TDG Exceedance Type	LWG	LGNW	LGSA	LGSW	LMNA	LMNW	IHRA	IDSW	Total
FSE	0	0	0	0	0	0	0	0	0
ME	0	0	0	0	0	0	0	0	0
UE	0	0	0	0	4	0	3	0	7
TE	0	0	2	0	6	0	6	0	14
Total	0	0	2	0	10	0	9	0	21

Table D-11: Total juvenile fish passage season TDG exceedances by project and type for the Lower Columbia River

TDG Exceedance Type	MCNA	MCPW	JDY	JHAW	TDA	TDDO	BON	CCIW	Total
FSE	0	0	0	0	0	0	0	0	0
ME	0	0	0	0	0	0	0	0	0
UE	0	0	1	0	0	0	5	0	6
TE	0	0	0	0	0	0	0	0	0
Total	0	0	1	0	0	0	5	0	6

¹ TDG thresholds are 125% Tailwater during Spring Spill and 115% Forebay; 120% Tailwater during Summer Spill

Table D- 12²: Maximum two consecutive hour TDG, number of days with two consecutive hour TDG above 126%, number of days with two consecutive hour TDG above 127% at project tailwaters

Station	Gauge ID	Maximum two consecutive hour % TDG	126% Exceedance Days (WA)	127% Exceedance Days (OR)
Lower Granite Tailwater	LGNW	123.5	0	0
Little Goose Tailwater	LGSW	124.4	0	0
Lower Monumental Tailwater	LMNW	122.7	0	0
Ice Harbor Tailwater	IDSW	118.1	0	0
McNary Tailwater	MCPW	124.9	0	0
John Day Tailwater	JHAW	125.7	0	0
The Dalles Tailwater	TDDO	122.8	0	0
Bonneville Tailwater	CCIW	122.0	0	0
		Total Exceedance Days:	0	0

Table D- 13³: Malfunctioning TDG gauges

Project	Gauge ID	Dates	Days of Missing or Erroneous Data	Reason for Erroneous Data
Lower Monumental Tailwater	LMNW	4/3-4/10	8	Barometric pressure sensor failed
Lower Monumental Tailwater	LMNW	4/16	1	Station rebuilt
Little Goose Forebay	LGSA	6/22-6/23	2	Defective sonde
Ice Harbor Tailrace	IDSW	6/30	1	Defective sonde
Lower Granite Tailrace	LGNW	7/31-8/11	12	Defective sonde
The Dalles Tailrace	TDDO	8/2	1	Ruptured Membrane
Lower Monumental Forebay	LMNA	8/21	1	Defective Cable
Ice Harbor Tailrace	IDSW	8/23	1	Ruptured Membrane

² April through August were assessed for TDG values greater than 126%. TDG instances were not included when project flow exceeded 7Q10 flows.

³ Table D-5 includes only days when there is 6 hours or more of either missing or erroneous gauge data.