U.S. Army Corps of Engineers Portland District Quality-Assurance and Quality-Control Evaluation of the 2024-2025 Total Dissolved Gas and Water Temperature Data in the Lower Columbia River

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Significant Findings

An analysis of total-dissolved-gas (TDG) pressure, barometric pressure, and water-temperature data collected at seven fixed monitoring stations on the lower Columbia River in Oregon and Washington in water year 2025 indicated the following:

- Data received in real-time from the seven individual monitoring sites ranged from 87.1 percent (Bonneville forebay – faulty barometer) to 99.9 percent complete (Cascade Island).
- Criteria for real-time data completeness (95 percent) were met at all monitoring stations except Bonneville forebay (87.1 percent). A slow increase in amplitude of barometric pressure measurements was initially addressed by changes to the barometric pressure offset, rewiring, and finally replacement of the barometer which resolved the erroneous BP data. BP data from Cascade Island, less than 500 ft immediately downstream from Bonneville forebay, can be used as a surrogate for BP at Bonneville forebay. Although 602 BP data were eventually deleted, excluding that period, data completeness was 100 percent at the Bonneville forebay site.
- Fifteen of the 91 barometric pressure field checks (excluding 2 faulty barometer field checks) had comparison data larger than ±1.0 mmHg of primary standard values. BP discrepancies larger than ±1.0 mmHg are the result of the difference in precision of the digital reference and field barometers, where the reference barometers measures barometric pressure to a level of precision of 0.1 mmHg, whereas the field barometers measure barometric pressure to a level of precision of 1 mmHg.
- All 89 water-temperature field checks were within ±0.2 °C of a secondary standard, ranging from -0.16 to +0.11 °C.
- 73 of 89 TDG sensor field checks were within approximately ±0.5 percent saturation of a secondary standard sensor, and 15 sensor field checks exceeded this guideline. After deployment in the river, seven comparisons outside of the criteria were likely because of incomplete equilibration of the reference sensor after deployment for 50 to 107 minutes during periods of low to no spill. No data were deleted or corrected. Eight checks exceeded the criteria because of ruptured TDG membranes that resulted in deleted data at five of the seven stations. Three ruptured membranes occurred during a 25-day period at The Dalles tailwater, and appear to be the result of aquatic wildlife web-building.
- All 128 TDG sensor laboratory checks performed after field deployment were within ±0.3 percent saturation of a primary standard at ambient air pressure and at ambient air pressure plus 300 mmHg.
- Large woody debris at Bonneville forebay and macrophytes at The Dalles forebay prevented the retrieval of the deployed site sondes from June 12 and August 13, respectively, until after the end of the spill season. Site visits during this time consisted of typical field check procedures, excluding removing and replacing the deployed site sonde with another checked and calibrated sonde. All comparisons of the secondary standard temperature and TDG sensors with the field temperature and TDG sensors were within ±0.20 °C, and ±3 mmHg, respectively.

1.0 Introduction

The U.S. Army Corps of Engineers (USACE) operates several dams in the lower Columbia River Basin in Oregon and Washington (fig. G-1), which encompasses 259,000 mi^2 of the Pacific Northwest. These dams are multipurpose structures that fulfill regional needs for flood control, navigation, irrigation, recreation, hydropower production, fish and wildlife habitat, water-quality maintenance, and municipal and industrial water supply. When water is released through the spillways of these dams (instead of being routed through the turbines to generate electricity), ambient air is entrained in the water. This results in an increase in the concentration of dissolved gases (referred to here as "total dissolved gas," or "TDG") in the water downstream of the spillways. The USACE regulates streamflow and spill from its dams on the lower Columbia River to minimize the production of excess TDG downstream of the dams, with the additional goal of providing fish passage through the spillways.

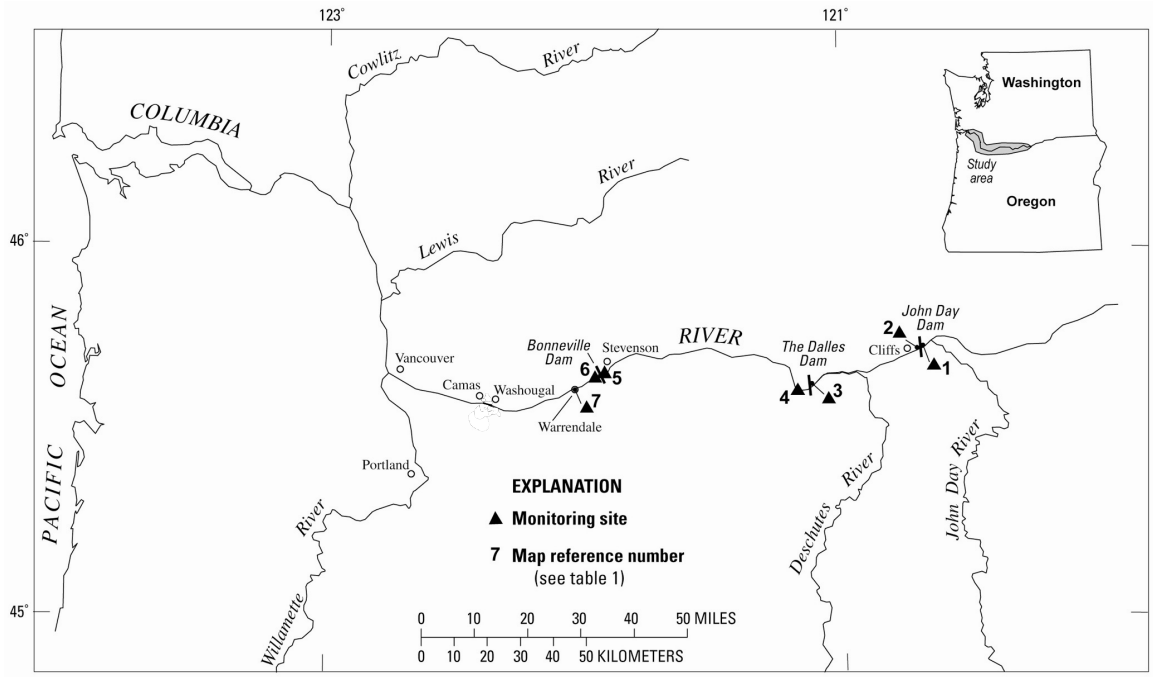

Figure G-1. Location of U.S. Army Corps of Engineers dams and total-dissolved-gas monitoring stations, lower Columbia River, Oregon and Washington, water year 2025.

Real-time TDG, barometric pressure, and water-temperature data are vital to the USACE for dam operation and for monitoring compliance with environmental regulations. The data are used by water managers to maintain water-quality conditions that facilitate fish passage and ensure their survival in the lower Columbia River. The U.S. Geological Survey (USGS), in cooperation with the Portland District of the USACE, has collected TDG and related data in the lower Columbia River each year since 1996. The hourly values are stored in both the USGS database and in a USACE database and are available online within approximately one hour of the time of collection. The current and historical TDG and water-temperature data in the USGS database can be accessed at *https://waterdata.usgs.gov/favorites/#locationId=USGS-454314120413701,USGS-*

454249120423500,USGS-453712121071200,USGS-14105700,USGS-453845121562000,USGS-453845121564001,USGS-453630122021400 (accessed November 29, 2025). The USACE database also includes hourly river discharge and spill data at *https://www.nwd.usace.army.mil/CRWM/Water-Quality/* (accessed November 29, 2025).

This data summary presents the TDG, barometric pressure, and water temperature quality-assurance and quality-control data that demonstrate the USACE Portland District compliance with the 2021 TDG monitoring plan. To assure the accuracy and integrity of the data needed for managing and modeling TDG in the lower Columbia River, hourly values are reviewed relative to concurrent field measurements, laboratory sensor calibrations, and inter-site comparisons. All deleted or missing data are explained in detail.

2.0 Data Collection

Seven monitoring stations, from the navigation lock of the John Day Dam (river mile [RM] 215.7) to Dodson, Oregon (RM 140.3) (fig. G-1, sites 1-7; table G-1), were operated on the lower Columbia River. Data for water year 2025 (October 1, 2024 - September 30, 2025) include hourly measurements of TDG pressure, barometric pressure, water temperature, and sensor depth. The John Day tailwater, The Dalles tailwater, and Warrendale stations are operated year-round. Warrendale is used to provide backup data for Cascade Island during the spill season and assists in monitoring TDG levels in relation to chum redds below Bonneville Dam during the winter. Four seasonal stations were operated from mid-March through late-September 2025, encompassing the usual period for Lower Columbia dam spill operations (April 10 to August 31).

Instrumentation at each monitoring station consists of a Hydrolab or HydroTech water-quality sonde, a Vaisala electronic barometer, and a Sutron SatLink2 or SatLink3 data-collection platform (DCP). The instruments at each station are powered by a 12-volt battery that is charged by a solar panel. Measurements are collected, logged, and transmitted every hour. The DCP transmits the four most recent hours of logged data to the Geostationary Operational Environmental Satellite system (GOES). The data are transferred and automatically decoded to the USACE and USGS databases.

Station visits were completed every 4-5 weeks (27-34 days) at the three year-round tailwater stations from October 2024 through early-April 2025. A 51-day site visit interval (September 23 to November 13) at John Day tailwater and The Dalles tailwater is directly attributable to the lapse in appropriations and the cessation of federal operations from October 1 to November 12. Cascade Island and the three forebay stations were installed March 13-14, 2025. All seven sites were then typically visited every 3-4 weeks (19-26 days) until late September 2025. Cascade Island measured TDG data from September 2 until site removal on September 4, 2025, may be non-representative of TDG after spill from Bonneville Dam ends. The three forebay sites were removed September 23-24, 2025.

The field check procedure is as follows: The reference Hydrolab MiniSonde, checked and calibrated (if necessary) before the field trip for use as a secondary standard, is deployed alongside the site-deployed instrument and allowed to equilibrate to obtain comparison

measurements of TDG and water temperature. The site instrument (which is typically deployed for 3-5 weeks) is then removed and replaced with another recently laboratory-checked and -calibrated (if necessary) sonde. After the newly deployed instrument equilibrates, the secondary standard sonde is again used to compare TDG and water temperature values.

The sonde removed from the field is then checked in the laboratory. The integrity and responsiveness of the TDG membrane is tested, and the membrane is removed and air-dried. The TDG sensor, without the membrane attached, is tested at a range of pressures spanning the expected range of TDG in the river. If necessary, the TDG sensor is recalibrated after this test. The membrane is then installed on the TDG sensor and final TDG, air temperature, and depth readings are recorded.

Previously, any needed adjustment to the water temperature offset was made within the DCP program. Beginning Water Year 2024, water temperature corrections are no longer applied within the DCP programming. All reference and deployed water temperature sensors are checked in the lab against an NIST-certified thermometer over the range of expected temperatures to verify accuracy within ±0.20 °C. During Water Year 2025, all water temperature sensors were accurate within ±0.20 °C for all measured water temperatures.

The electronic barometer at the monitoring station is checked against a portable digital manometer, Meriam Instruments model ZM2000N-A10030, calibrated annually to National Institute of Standards and Technology (NIST) standards. Except for the faulty barometer at the Bonneville forebay site (4/11/25, 4/25/25, 5/6/25, and 9/4/25), no other changes to the barometric pressure (BP) offsets were required during water year 2025. The reference barometers measure barometric pressure to a level of precision of 0.1 mmHg, and the field barometers measure barometric pressure to a level of precision of 1 mmHg. Because there is a difference in precision between the digital reference and field barometers, changes to the BP offset are warranted if the difference between the reference and the field barometers is greater than 2 mmHg. Although the BP difference was less than 2 mmHg, BP offsets were changed at the following sites during water year 2025: John Day navigation lock (8/12/25), John Day tailwater (8/12/25), and The Dalles tailwater (4/10/25).

Table G-1. Total-dissolved-gas monitoring stations, lower Columbia River, Oregon and Washington, water year 2025.

[Map reference number refers to figure G-1; River mile is distance from the mouth of the Columbia River.]

Map reference number	USACE station identifier	River mile	USGS station number	USGS station name (and abbreviated station name)	Latitude (NAD27)	Longitude (NAD27)	Period of Record in water year 2025
1	JDY	215.7	454314120413701	Columbia River at John Day navigation lock, Washington (John Day navigation lock)	45° 43’ 14”	120° 41’ 37”	03/13/25–09/23/25
2	JHAW	214.8	454249120423500	Columbia River, right bank, near Cliffs, Washington (John Day tailwater)	45° 42’ 49”	120° 42’ 35”	10/01/24–09/30/25
3	TDA	192.4	453712121071200	Columbia River at The Dalles Dam forebay, Washington (The Dalles forebay)	45° 37’ 12”	121° 07’ 12”	03/13/25-09/24/25
4	TDDO	189.1	14105700	Columbia River at The Dalles, Oregon (The Dalles tailwater)	45° 36’ 27”	121° 10’ 20”	10/01/24–09/30/25
5	BON	146.1	453845121562000	Columbia River at Bonneville Dam forebay, Washington (Bonneville forebay)	45° 38’ 45”	121° 56’ 20”	03/14/25–09/24/25
6	CCIW	145.9	453845121564001	Columbia River at Cascade Island, Washington (Cascade Island)	45° 38’ 45”	121° 56’ 40”	03/14/25–09/04/25
7	WRNO	140.3	453630122021400	Columbia River, left bank, near Dodson, Oregon (Warrendale)	45° 36’ 30”	122° 02’ 14”	10/01/24–09/30/25

3.0 Data Completeness

To assure the accuracy and integrity of the TDG data in the lower Columbia River, hourly values are reviewed relative to concurrent field measurements, laboratory instrument calibrations, and daily inter-site comparisons. A summary of the completeness of the TDG percent saturation data is shown in table G-2. Data are based on the total number of hourly TDG and barometric pressure data values that could have been collected during the monitoring season. TDG saturation values are considered meeting quality-assurance standards if they are within ±1 percent saturation of the expected value.

Table G-2. Completeness and quality of real-time total-dissolved-gas (TDG) or barometric pressure (BP) data, lower Columbia River, Oregon and Washington, water year 2025.

Abbreviated station name (USACE station identifier)	Planned monitoring hours	Number of missing or deleted hourly data	Percent of real-time TDG percent saturation data passing quality assurance criteria
John Day navigation lock (JDY)	4,655	129	97.2
John Day tailwater (JHAW)	8,760	80	99.1
The Dalles forebay (TDA)	4,676	24	99.5
The Dalles tailwater (TDDO)	8,760	179	98.0
Bonneville forebay (BON)	4,654	602 (BP only)	87.1
Cascade Island (CCIW)	4,172	3	99.9
Warrendale (WRNO)	8,760	16	99.8

Periods for which TDG or barometric pressure data were missing from the database are listed in table G-3. Deletions associated with the equilibration of newly deployed sensors during site visits are not included in the table. A brief description of the reason for the missing or deleted data is given in the table, with additional details provided in the following text.

A faulty DCP transmission at the John Day navigation lock site resulted in one erroneous TDG transmission on March 25, 2025, and the data was recovered from the electronic data log.

Table G-3. Periods of missing, or deleted real-time total-dissolved-gas (TDG) or barometric pressure (BP) data, lower Columbia River, Oregon and Washington, water year 2025.

Date(s)	USACE station identifier	Reason – Note
03/25/25	JDY	Erroneous TDG (1 data) – Faulty DCP transmission: data recovered
08/13/25 to 08/18/25	JDY	Erroneous TDG (128 data) – Ruptured membrane
10/09/24 to 10/11/24	JHAW	Erroneous TDG (55 data) – Ruptured membrane
07/31/25 to 08/01/25	JHAW	Erroneous TDG (17 data) – Ruptured membrane
04/24/25 to 04/25/25	TDA	Erroneous TDG (22 data) – Ruptured membrane
08/13/25 to 08/14/25	TDDO	Troubleshooting DCP transmission error messages (21 TDG, water temperature, BP, and depth data not transmitted) –faulty DCP: all data except 2 recovered
08/15/25 to 08/18/25	TDDO	Erroneous TDG (71 data) – Ruptured membrane
09/02/25 to 09/03/25	TDDO	Erroneous TDG (24 data) – Ruptured membrane
09/06/25 to 09/08/25	TDDO	Erroneous TDG (53 data) – Ruptured membrane
04/10/25 to 04/25/25, 04/26/25 to 05/06/25	BON	Erroneous BP (602 data) – Faulty barometer: CCIW BP data can be used as surrogate data for BON BP, no TDG data loss
05/06/25	WRNO	Erroneous TDG (13 data) – Ruptured membrane

TDG data from previous years indicate non-spill factors may affect water circulation at the John Day tailwater deployment pipes and consequently, the TDG measurements. To reduce stagnant conditions or a buildup of sediment in the deployment pipes during the spill season, both the reference and site sonde pipes were flushed with compressed air on August 16, 2025.

Investigation of transmission error messages from the DCP at The Dalles tailwater site resulted in transmission loss of 21 TDG, water temperature, BP, and depth data beginning August 13, until the site antenna was resecured on August 14, 2025. The site DCP was replaced on September 3, 2025, which resolved the DCP transmission error messages issue.

A faulty barometer at the Bonneville forebay site resulted in 602 erroneous BP data. Initial adjustments to the barometric pressure offset, and rewiring the barometer did not resolve the erroneous data, and the barometer was replaced on May 6, 2025. No TDG data was missing or deleted at the Bonneville forebay site during water year 2025.

A total of eight membranes ruptured during water year 2025 at the following sites: John Day navigation lock, John Day tailwater, The Dalles forebay, The Dalles tailwater (3, in quick succession over 25 days), and Warrendale. In each ruptured membrane case at The Dalles tailwater site, a mucus netting connecting the membrane to the probe shield was present and may indicate the membrane ruptures resulted from atypical aquatic animal activity.

4.0 Quality-Assurance Data

The collection of accurate data for TDG, barometric pressure, and water temperature involves several quality-assurance procedures, including side-by-side instrument comparisons in the field, sensor calibrations in the laboratory, daily checks of the data, and data review and archiving. The results of the quality-assurance procedures for water year 2025 are presented in this section.

After field deployment, TDG instruments are tested and calibrated (if needed) in the laboratory. First, the sensor is tested, with the gas-permeable membrane in place, for response to supersaturated conditions in soda water. The membrane is then cleaned, removed from the sensor, and allowed to dry for at least 24 hours. Before the membrane is replaced, the TDG sensors are examined independently by comparing the reading of the TDG sensor to barometric pressure (100-percent saturation). A certified digital pressure gage (primary standard) is used to make comparisons at a pressure 300 mmHg greater than barometric pressure (approximately 139-percent saturation). The accuracy of the TDG sensors is calculated as the difference between the primary standard and the TDG sensor reading (expected minus actual) for the two test conditions divided by the barometric pressure and multiplied by 100 to obtain a percent difference. All 128 TDG sensor laboratory checks performed after field deployment were within ±0.3 percent saturation of a primary standard at both test conditions (fig. G-2).

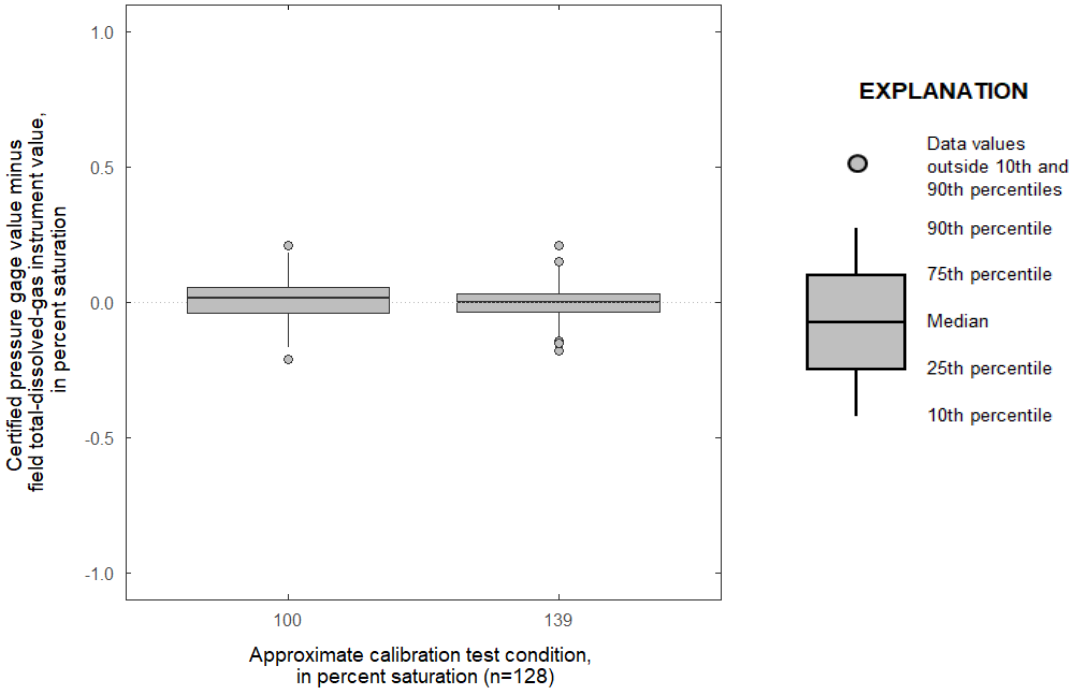

Figure G-2. Accuracy of total-dissolved-gas sensors in the laboratory after 1 or more weeks of field deployment at seven monitoring stations in the lower Columbia River, Oregon and Washington, water year 2025 (number of comparison values = 128).

The differences in barometric pressure, water temperature, and TDG between the reference instruments and the station monitors at the end of their field deployment are measured and recorded as part of every field inspection. These differences, calculated as the standard values minus the field instrument values, are used to compare, and quantify the accuracy and precision between the two instruments. For water temperature and TDG, the measurements are made with the secondary standard (a lab checked Hydrolab or HydroTech MiniSonde) positioned alongside the monitor deployed in the river. NIST-certified digital barometers (all calibration due dates are past the date of the lab check) serve as the primary standard for barometric pressure. The distribution of quality-assurance data for each of the three parameters from the seven stations is shown in figures G-3, G-4, and G-5. The data used to generate the boxplots in figures G-2–5 are shown in tables G-4 and G-5.

After excluding site visit readings from the faulty barometer, comparisons of the digital reference barometer and the field barometers are shown in figure G-3. Fifteen of the 91 field check comparison data were larger than ±1.0 mmHg of primary standard values, ranging from -1.8 mmHg to +0.8 mmHg. The reference barometer measures barometric pressure to a level of precision of 0.1 mmHg, whereas the field barometers measure barometric pressure to a level of precision of 1 mmHg. BP discrepancies larger than ±1.0 mmHg are the result of the difference in precision, and because the precision of the digital reference and field barometers is not the same, changes to the BP offset are warranted if the difference between the reference and the field barometers readings is larger than ±2 mmHg.

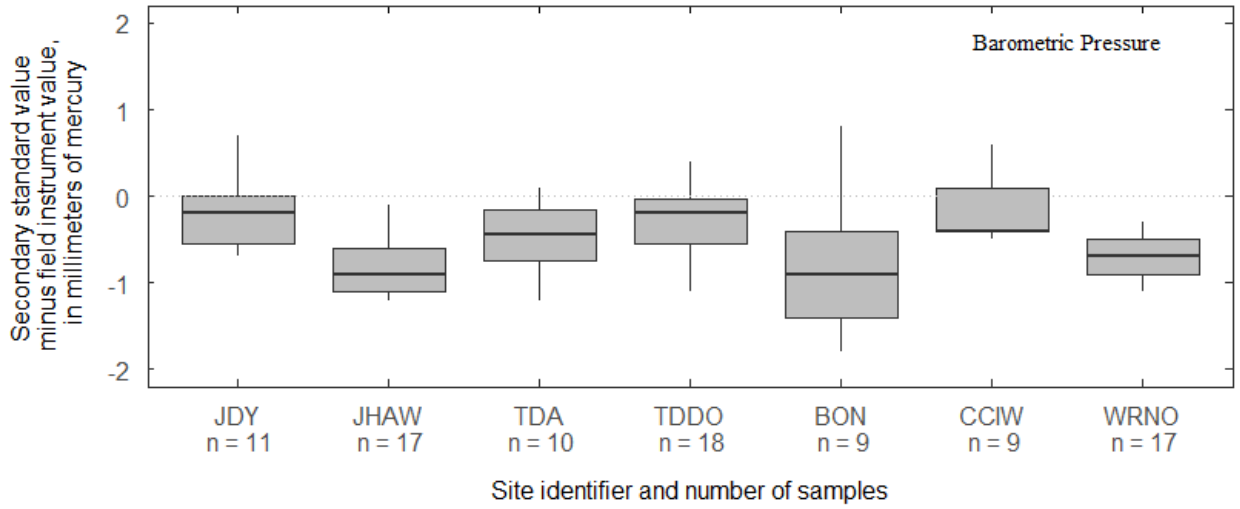

Figure G-3. Difference between the primary standard and the field barometers in the field after deployment at seven stations in the lower Columbia River, Oregon and Washington, water year 2025. See figure G-2 for explanation of boxplots and table G-1 for definitions of station identifiers.

The comparisons of the secondary standard temperature sensor and the field temperature sensors are presented in figure G-4. The differences of all 89 field checks were within ±0.20 °C, ranging from -0.16 to +0.11 °C.

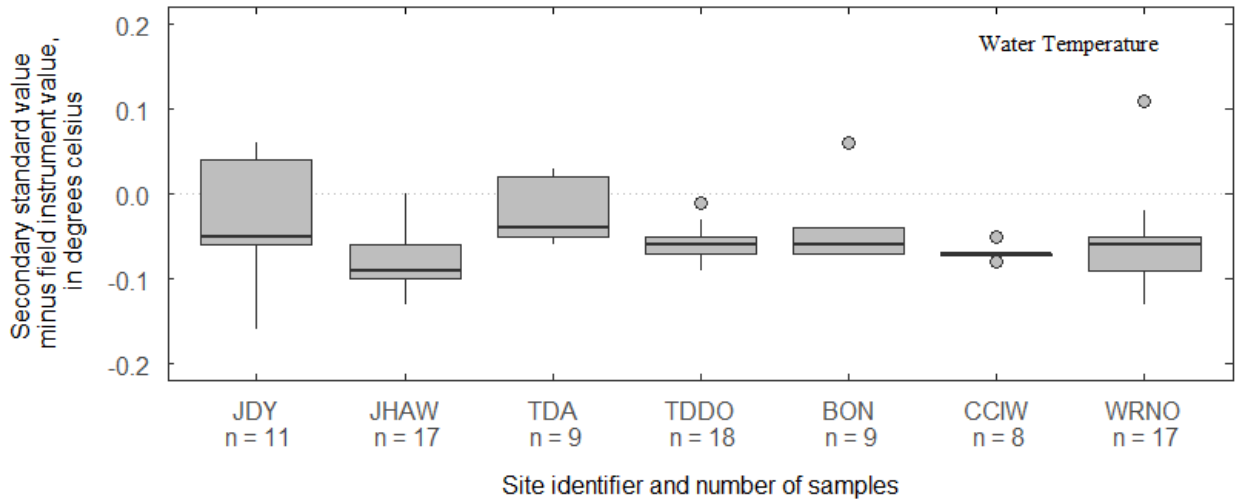

Figure G-4. Difference between the secondary standard and the field temperature instruments in the field after deployment at seven stations in the lower Columbia River, Oregon and Washington, water year 2025. See figure G-2 for explanation of boxplots and table G-1 for definitions of station identifiers.

Differences between the secondary standard TDG sensor and field TDG sensors were computed following equilibration of the secondary standard instrument to site conditions before removing the field instrument. The equilibrium was generally considered complete after a minimum of 20 minutes (and a maximum of 2 hours) when the TDG values for the sensors were within 3-4 mmHg (approximately ±0.5 percent saturation). A total of 89 TDG field checks were done at the seven monitoring sites, and 15 checks exceeded this guideline. Six of these comparisons were within +0.53 to +1.58 percent saturation, and an additional comparison was at -1.06 percent saturation. The discrepancy is likely because of incomplete equilibration of the reference sensor after deployment for 50 to 107 minutes, during periods of low to no spill, and no data were deleted or corrected.

Eight checks exceeded the criteria (and one did not exceed the criteria) because of ruptured TDG membranes that resulted in deleted data at five of the seven stations. Three ruptured membranes occurred during a 25-day period at The Dalles tailwater, and appear to be the result of aquatic wildlife web-building. These nine comparison readings are not included in the distribution analysis (fig. G-5). because these data do not represent the TDG sensor's accuracy during normal function.

Of note, large woody debris at Bonneville forebay and macrophytes at The Dalles forebay prevented the retrieval of the deployed site sondes from June 12 and August 13, respectively,

until after the end of the spill season. The sonde and encasing vegetation at The Dalles forebay site became too heavy to lift to the project deck as of August 13, and was not retrievable until November 13, 2025, when USACE personnel recovered the sonde. The sonde at Bonneville forebay became entangled in large woody material as of June 12, and was not retrievable until September 24, 2025, when USACE personnel used a grappling hook to free and recover the sonde. Site visits during this time consisted of typical field check procedures, excluding removing and replacing the deployed site sonde with another calibrated and checked sonde. All comparisons of the secondary standard temperature and TDG sensors with the field temperature and TDG sensors were within ±0.20 °C, and ±3 mmHg. Differences between the secondary standard and the deployed field sondes ranged from -0.07 to +0.6 °C and -2 to +3 mmHg for water temperature and TDG, respectively, at Bonneville forebay during the 15-week (104 days) period; and -0.05 to -0.01 °C and -1 to +3 mmHg for water temperature and TDG, respectively, at The Dalles forebay during the 6-week (42 days) period.

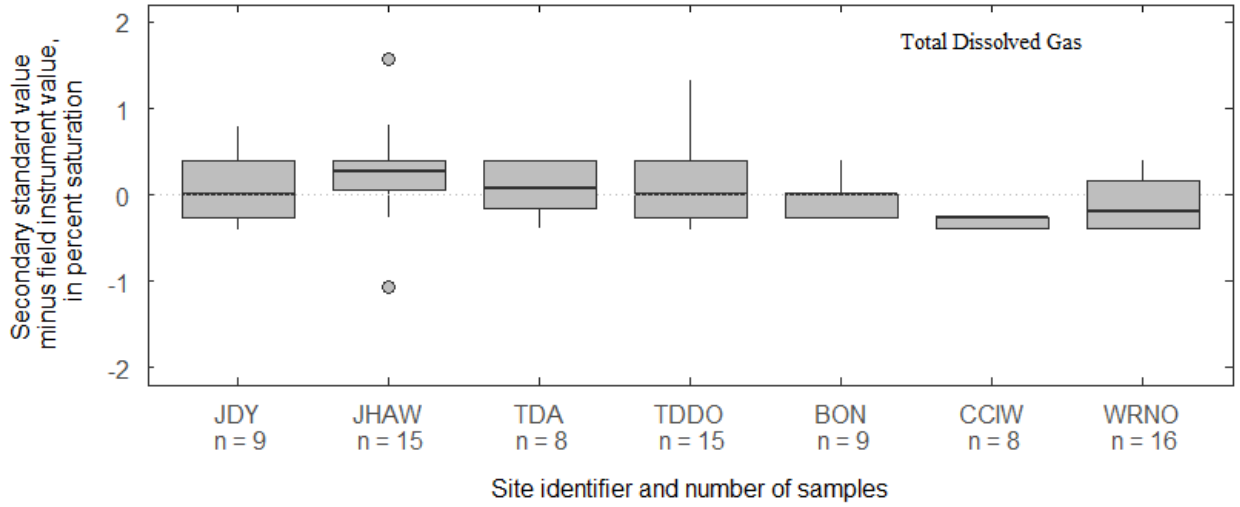

Figure G-5. Difference between the secondary standard and the field total-dissolved-gas instruments in the field after deployment at seven stations in the lower Columbia River, Oregon and Washington, water year 2025. See figure G-2 for explanation of boxplots and table G-1 for definitions of station identifiers.

Table G-4. Summary of total-dissolved-gas side-by-side reference and field instrument comparisons, water year 2025.

Date	Reference sonde number.	Site sonde number	Barometric pressure (mmHg)				Water temperature (°C)				Pressure, total dissolved gas (mmHg)				
			Reference barometer	Site barometer	Differ -ence	Absolute difference	Reference sensor	Site sensor	Differ-ence	Absolute difference	Reference sensor	Site sensor	Differ-ence	Absolute difference	Difference in percent saturation
John Day navigation lock (JDY)															
3/13/2025	65426	--	744.4	745	-0.6	0.6	-	-	-	-	-	-	-	-	-
4/10/2025	65426	64961	755.4	756	-0.6	0.6	9.31	9.26	0.05	0.05	813	816	-3	3	-0.40
4/29/2025	65426	66625	755.9	756	-0.1	0.1	11.64	11.71	-0.07	0.07	842	844	-2	2	-0.26
5/20/2025	65426	64961	758.6	759	-0.4	0.4	13.41	13.36	0.05	0.05	810	807	3	3	0.40
6/10/2025	65426	66625	749.5	750	-0.5	0.5	18.41	18.57	-0.16	0.16	893	893	0	0	0.00
6/30/2025	65426	64961	751.1	751	0.1	0.1	19.05	19.03	0.02	0.02	810	812	-2	2	-0.27
7/21/2025	65426	66625	750.8	751	-0.2	0.2	21.95	22.00	-0.05	0.05	789	789	0	0	0.00
8/12/2025	65426	64961	750.3	751	-0.7	0.7	22.77	22.71	0.06	0.06	806	801	5	5	0.67
8/14/2025	65426	--	-	750	-	-	22.33	22.39	-0.06	0.06	781	821	-40	40	-5.33
8/18/2025	65426	66625	751.9	752	-0.1	0.1	22.44	22.50	-0.06	0.06	779	923	-144	144	-19.15
9/3/2025	65426	65427	751.5	751	0.5	0.5	22.88	22.85	0.03	0.03	791	789	2	2	0.27
9/23/2025	65426	66625	757.7	757	0.7	0.7	21.62	21.68	-0.06	0.06	749	743	6	6	0.79
Mean					-0.17	0.41			-0.02	0.06			-15.9	18.8	-2.12
Median					-0.20	0.50			-0.05	0.06			0.0	3.0	0.00
Minimum					-0.70	0.10			-0.16	0.02			-144.0	0.0	-19.15
Maximum					0.70	0.70			0.06	0.16			6.0	144.0	0.79

Date	Reference sonde number.	Site sonde number	Barometric pressure (mmHg)				Water temperature (°C)				Pressure, total dissolved gas (mmHg)				
			Reference barometer	Site barometer	Differ-ence	Absolute difference	Reference sensor	Site sensor	Differ-ence	Absolute difference	Reference sensor	Site sensor	Differ-ence	Absolute difference	Difference in percent saturation
John Day tailwater (JHAW)															
10/11/2024	65426	67480	759.9	761	-1.1	1.1	18.40	18.41	-0.01	0.01	761	1068	-307	307	-40.40
11/14/2024	65426	66626	755.7	756	-0.3	0.3	11.92	12.01	-0.09	0.09	749	746	3	3	0.40
12/16/2024	65426	67857	756.5	757	-0.5	0.5	7.68	7.78	-0.10	0.10	735	733	2	2	0.26
1/15/2025	65426	66626	769.1	770	-0.9	0.9	6.07	6.17	-0.10	0.10	752	749	3	3	0.39
2/11/2025	65425	67857	766.9	768	-1.1	1.1	3.54	3.67	-0.13	0.13	758	755	3	3	0.39
3/13/2025	65426	66626	747.0	748	-1.0	1.0	5.93	6.03	-0.10	0.10	786	780	6	6	0.80
4/10/2025	65426	67857	758.1	759	-0.9	0.9	9.46	9.56	-0.10	0.10	855	863	-8	8	-1.06
4/29/2025	65426	66626	758.9	760	-1.1	1.1	11.67	11.76	-0.09	0.09	868	868	0	0	0.00
5/20/2025	65426	67857	760.8	762	-1.2	1.2	13.54	13.62	-0.08	0.08	861	861	0	0	0.00
6/10/2025	65426	66626	750.9	752	-1.1	1.1	18.00	18.02	-0.02	0.02	859	856	3	3	0.40
6/30/2025	65426	67857	752.4	753	-0.6	0.6	19.31	19.38	-0.07	0.07	875	877	-2	2	-0.27
7/21/2025	65426	66626	753.2	754	-0.8	0.8	22.06	22.13	-0.07	0.07	866	864	2	2	0.27
8/1/2025	65426	67857	757.9	759	-1.1	1.1	22.20	22.25	-0.05	0.05	821	1081	-260	260	-34.31
8/12/2025	65426	67480	753.9	755	-1.1	1.1	22.09	22.09	0.00	0.00	843	842	1	1	0.13
9/3/2025	65426	66626	752.9	753	-0.1	0.1	22.94	23.00	-0.06	0.06	800	797	3	3	0.40
9/23/2025	65426	67857	761.5	762	-0.5	0.5	21.58	21.67	-0.09	0.09	758	746	12	12	1.58
11/13/2025	65426	66626	748.4	749	-0.6	0.6	12.59	12.68	-0.09	0.09	749	748	1	1	0.13
Mean					-0.82	0.82			-0.07	0.07			-31.6	36.2	-4.17
Median					-0.90	0.90			-0.09	0.09			2.0	3.0	0.26
Minimum					-1.20	0.10			-0.13	0.00			-307.0	0.0	-40.40
Maximum					-0.10	1.20			0.00	0.13			12.0	307.0	1.58

Date	Reference sonde number.	Site sonde number	Barometric pressure (mmHg)				Water temperature (°C)				Pressure, total dissolved gas (mmHg)				
			Reference barometer	Site barometer	Differ-ence	Absolute difference	Reference sensor	Site sensor	Differ-ence	Absolute difference	Reference sensor	Site sensor	Differ-ence	Absolute difference	Difference in percent saturation
The Dalles forebay (TDA)															
3/13/2025	65426	--	747.5	748	-0.5	0.5	-	-	-	-	-	-	-	-	-
4/10/2025	65426	66362	758.8	760	-1.2	1.2	9.51	9.57	-0.06	0.06	818	819	-1	1	-0.13
4/25/2025	65426	65427	751.9	752	-0.1	0.1	11.01	10.99	0.02	0.02	876	1194	-318	318	-42.29
5/21/2025	65426	66362	762.0	762	0.0	0.0	13.77	13.82	-0.05	0.05	836	839	-3	3	-0.39
6/11/2025	65426	65427	753.1	753	0.1	0.1	17.96	17.93	0.03	0.03	851	849	2	2	0.27
6/30/2025	65426	66362	754.7	755	-0.3	0.3	19.12	19.16	-0.04	0.04	839	841	-2	2	-0.27
7/21/2025	65426	65427	753.4	754	-0.6	0.6	21.41	21.38	0.03	0.03	800	797	3	3	0.40
8/13/2025	65426	66362	752.2	753	-0.8	0.8	22.36	22.40	-0.04	0.04	813	810	3	3	0.40
9/3/2025	65426	66362	755.0	756	-1.0	1.0	22.82	22.83	-0.01	0.01	782	783	-1	1	-0.13
9/24/2025	65426	66362	758.6	759	-0.4	0.4	21.10	21.15	-0.05	0.05	754	751	3	3	0.40
Mean					-0.48	0.50			-0.02	0.04			-34.9	37.3	-4.64
Median					-0.45	0.45			-0.04	0.04			-1.0	3.0	-0.13
Minimum					-1.20	0.00			-0.06	0.01			-318.0	1.0	-42.29
Maximum					0.10	1.20			0.03	0.06			3.0	318.0	0.40

Date	Reference sonde number.	Site sonde number	Barometric pressure (mmHg)				Water temperature (°C)				Pressure, total dissolved gas (mmHg)				
			Reference barometer	Site barometer	Differ-ence	Absolute difference	Reference sensor	Site sensor	Differ-ence	Absolute difference	Reference sensor	Site sensor	Differ-ence	Absolute difference	Difference in percent saturation
The Dalles tailwater (TDDO)															
10/11/2024	65426	67858	761.8	762	-0.2	0.2	18.03	18.06	-0.03	0.03	768	766	2	2	0.26
11/14/2024	65426	64596	757.2	758	-0.8	0.8	11.93	12.00	-0.07	0.07	762	759	3	3	0.40
12/16/2024	65426	67858	758.6	759	-0.4	0.4	7.61	7.69	-0.08	0.08	738	737	1	1	0.13
1/15/2025	65426	64596	772.2	773	-0.8	0.8	6.04	6.12	-0.08	0.08	753	753	0	0	0.00
2/11/2025	65426	67858	766.7	767	-0.3	0.3	3.66	3.75	-0.09	0.09	766	758	8	8	1.04
3/13/2025	65426	64596	750.3	751	-0.7	0.7	6.12	6.20	-0.08	0.08	783	786	-3	3	-0.40
4/10/2025	65426	67858	761.9	763	-1.1	1.1	9.55	9.62	-0.07	0.07	868	869	-1	1	-0.13
4/29/2025	65426	64596	762.0	762	0.0	0.0	11.81	11.87	-0.06	0.06	881	883	-2	2	-0.26
5/21/2025	65426	67858	763.1	763	0.1	0.1	13.90	13.96	-0.06	0.06	886	886	0	0	0.00
6/10/2025	65426	64596	752.1	752	0.1	0.1	18.20	18.26	-0.06	0.06	885	887	-2	2	-0.27
6/30/2025	65426	67858	752.6	753	-0.4	0.4	19.54	19.57	-0.03	0.03	874	877	-3	3	-0.40
7/21/2025	65426	64596	754.4	755	-0.6	0.6	21.59	21.64	-0.05	0.05	848	851	-3	3	-0.40
8/12/2025	65426	67858	752.8	753	-0.2	0.2	22.47	22.48	-0.01	0.01	850	840	10	10	1.33
8/18/2025	65426	64596	757.4	757	0.4	0.4	22.21	22.26	-0.05	0.05	831	828	3	3	0.40
9/3/2025	65426	66363	757.8	758	-0.2	0.2	22.80	22.87	-0.07	0.07	799	946	-147	147	-19.40
9/8/2025	65426	64596	757.9	758	-0.1	0.1	22.59	22.62	-0.03	0.03	791	941	-150	150	-19.79
9/23/2025	65426	67858	760.1	760	0.1	0.1	21.21	21.27	-0.06	0.06	775	771	4	4	0.53
11/13/2025	65426	64596	749.8	750	-0.2	0.2	12.51	12.58	-0.07	0.07	756	753	3	3	0.40
Mean					-0.29	0.37			-0.06	0.06			-15.4	19.2	-2.03
Median					-0.20	0.25			-0.06	0.06			0.0	3.0	0.00
Minimum					-1.10	0.00			-0.09	0.01			-150.0	0.0	-19.79
Maximum					0.40	1.10			-0.01	0.09			10.0	150.0	1.33

Date	Reference sonde number.	Site sonde number	Barometric pressure (mmHg)				Water temperature (°C)				Pressure, total dissolved gas (mmHg)				
			Reference barometer	Site barometer	Differ-ence	Absolute difference	Reference sensor	Site sensor	Differ-ence	Absolute difference	Reference sensor	Site sensor	Differ-ence	Absolute difference	Difference in percent saturation
Bonneville forebay (BON)															
3/14/2025	65426	-	747.6	748	-0.4	0.4	-	-	-	-	-	-	-	-	-
4/11/2025	65426	64598	766.1	769	-2.9	2.9	9.56	9.60	-0.04	0.04	832	834	-2	2	-0.26
4/25/2025	65426	66360	753.1	756	-2.9	2.9	11.10	11.16	-0.06	0.06	907	907	0	0	0.00
5/6/2025	-	-	759.8	759	0.8	0.8	-	-	-	-	-	-	-	-	-
5/22/2025	65426	64598	761.1	762	-0.9	0.9	14.03	14.07	-0.04	0.04	865	865	0	0	0.00
6/12/2025	65426	66360	759.8	761	-1.2	1.2	17.80	17.86	-0.06	0.06	810	812	-2	2	-0.26
7/1/2025	65426	66360	755.5	756	-0.5	0.5	19.51	19.45	0.06	0.06	852	853	-1	1	-0.13
7/22/2025	65426	66360	758.5	760	-1.5	1.5	20.98	21.05	-0.07	0.07	789	791	-2	2	-0.26
8/15/2025	65426	66360	757.6	759	-1.4	1.4	22.18	22.24	-0.06	0.06	789	789	0	0	0.00
9/4/2025	65426	66360	756.2	758	-1.8	1.8	22.51	22.58	-0.07	0.07	787	786	1	1	0.13
9/24/2025	65426	66360	759.7	760	-0.3	0.3	20.56	20.63	-0.07	0.07	758	755	3	3	0.39
Mean					-1.18	1.33			-0.05	0.06			-0.3	1.2	-0.04
Median					-1.20	1.20			-0.06	0.06			0.0	1.0	0.00
Minimum					-2.90	0.30			-0.07	0.04			-2.0	0.0	-0.26
Maximum					0.80	2.90			0.06	0.07			3.0	3.0	0.39

Date	Reference sonde number.	Site sonde number	Barometric pressure (mmHg)				Water temperature (°C)				Pressure, total dissolved gas (mmHg)				
			Reference barometer	Site barometer	Differ-ence	Absolute difference	Reference sensor	Site sensor	Differ-ence	Absolute difference	Reference sensor	Site sensor	Differ-ence	Absolute difference	Difference in percent saturation
Cascade Island (CCIW)															
3/14/2025	65426	--	748.8	749	-0.2	0.2	-	-	-	-	-	-	-	-	-
4/11/2025	65426	13022A	767.5	768	-0.5	0.5	9.54	9.62	-0.08	0.08	929	932	-3	3	-0.39
4/30/2025	65426	13022B	765.6	766	-0.4	0.4	11.60	11.67	-0.07	0.07	926	929	-3	3	-0.39
5/22/2025	65426	13022A	761.6	762	-0.4	0.4	14.10	14.17	-0.07	0.07	920	923	-3	3	-0.39
6/12/2025	65426	13022B	761.6	761	0.6	0.6	17.84	17.91	-0.07	0.07	902	904	-2	2	-0.26
7/1/2025	65426	66363	757.1	757	0.1	0.1	19.37	19.44	-0.07	0.07	890	892	-2	2	-0.26
7/22/2025	65426	13022B	759.6	760	-0.4	0.4	21.01	21.08	-0.07	0.07	870	872	-2	2	-0.26
8/15/2025	65426	13022A	758.6	759	-0.4	0.4	22.21	22.26	-0.05	0.05	861	863	-2	2	-0.26
9/4/2025	65426	13022B	756.1	756	0.1	0.1	22.57	22.65	-0.08	0.08	820	822	-2	2	-0.26
Mean					-0.17	0.34			-0.07	0.07			-2.4	2.4	-0.31
Median					-0.40	0.40			-0.07	0.07			-2.0	2.0	-0.26
Minimum					-0.50	0.10			-0.08	0.05			-3.0	2.0	-0.39
Maximum					0.60	0.60			-0.05	0.08			-2.0	3.0	-0.26

Date	Reference sonde number.	Site sonde number	Barometric pressure (mmHg)				Water temperature (°C)				Pressure, total dissolved gas (mmHg)				
			Reference barometer	Site barometer	Differ-ence	Absolute difference	Reference sensor	Site sensor	Differ-ence	Absolute difference	Reference sensor	Site sensor	Differ-ence	Absolute difference	Difference in percent saturation
Warrendale (WRNO)															
10/11/2024	65426	67856	761.9	763	-1.1	1.1	17.52	17.59	-0.07	0.07	782	780	2	2	0.26
11/14/2024	65426	67855	760.6	761	-0.4	0.4	11.89	11.96	-0.07	0.07	771	772	-1	1	-0.13
12/16/2024	65426	67856	761.1	762	-0.9	0.9	7.59	7.48	0.11	0.11	768	765	3	3	0.39
1/15/2025	65426	67855	772.9	774	-1.1	1.1	6.00	6.09	-0.09	0.09	771	769	2	2	0.26
2/11/2025	65426	67856	766.3	767	-0.7	0.7	3.59	3.72	-0.13	0.13	780	779	1	1	0.13
3/14/2025	65426	67855	749.4	750	-0.6	0.6	6.02	6.12	-0.10	0.10	791	793	-2	2	-0.27
4/10/2025	65426	67856	763.7	764	-0.3	0.3	9.35	9.45	-0.10	0.10	905	907	-2	2	-0.26
4/29/2025	65426	67855	767.5	768	-0.5	0.5	11.46	11.52	-0.06	0.06	920	923	-3	3	-0.39
5/6/2025	65425	67856	760.3	761	-0.7	0.7	12.75	12.85	-0.10	0.10	921	943	-22	22	-2.89
5/20/2025	65426	67480	767.1	768	-0.9	0.9	13.54	13.56	-0.02	0.02	920	923	-3	3	-0.39
6/11/2025	65426	67855	761.3	762	-0.7	0.7	18.30	18.35	-0.05	0.05	904	907	-3	3	-0.39
6/30/2025	65426	67856	760.0	761	-1.0	1.0	19.07	19.13	-0.06	0.06	895	898	-3	3	-0.39
7/22/2025	65426	67855	760.5	761	-0.5	0.5	21.10	21.14	-0.04	0.04	878	880	-2	2	-0.26
8/15/2025	65426	67856	759.3	760	-0.7	0.7	22.29	22.36	-0.07	0.07	883	886	-3	3	-0.40
9/3/2025	65426	67855	761.5	762	-0.5	0.5	22.52	22.55	-0.03	0.03	806	803	3	3	0.39
9/24/2025	65426	67856	761.1	762	-0.9	0.9	20.62	20.68	-0.06	0.06	780	780	0	0	0.00
10/22/2025	65426	67855	761.0	762	-1.0	1.0	15.97	16.02	-0.05	0.05	776	775	1	1	0.13
Mean					-0.74	0.74			-0.06	0.07			-1.9	3.3	-0.25
Median					-0.70	0.70			-0.06	0.07			-2.0	2.0	-0.26
Minimum					-1.10	0.30			-0.13	0.02			-22.0	0.0	-2.89
Maximum					-0.30	1.10			0.11	0.13			3.0	22.0	0.39

Table G-5. Summary of reference and site TDG sensor comparisons measured during lab calibrations, water year 2025.

USACE Station identifier	Site sonde number	Date checked	Soda test (Pass/Fail/N/A)	Reference Barometric pressure (mmHg)		Site sensor Total pressure (mmHg)		Difference between reference pressure and site sensor total pressure (percent saturation)		Calibrated (Y/N)	Pressure test (Pass/Fail/N/A)
				+0	+300	+0	+300	+0	+300		
JDY	64961	9/10/2024	P	752.4	1052.4	752	1053	0.05	-0.06	N	P
JDY	66625	10/18/2024	P	764.2	1064.2	764	1064	0.03	0.02	N	P
JDY	64961	2/6/2025	P	756.5	1056.5	756	1057	0.07	-0.05	N	P
JDY	66625	3/12/2025	P	744.9	1044.9	745	1045	-0.01	-0.01	N	P
JDY	64961	4/15/2025	P	756.6	1056.6	757	1058	-0.05	-0.13	N	P
JDY	66625	5/8/2025	P	764.2	1064.2	764	1064	0.03	0.02	N	P
JDY	64961	5/30/2025	P	761.3	1061.3	762	1062	-0.09	-0.07	N	P
JDY	66625	6/18/2025	P	758.4	1058.4	758	1058	0.05	0.04	N	P
JDY	64961	7/9/2025	P	760.8	1060.8	761	1062	-0.03	-0.11	Y	P
JDY	66625	8/5/2025	P	759.1	1059.1	759	1061	0.01	-0.18	N	P
JDY	64961	8/20/2025	P	763.0	1063.0	763	1063	0.00	0.00	N	P
JDY	66625	8/20/2025	F	763.0	1063.0	763	1063	0.00	0.00	N	P
JDY	65427	9/5/2025	P	752.6	1052.6	753	1053	-0.05	-0.04	N	P
JDY	66625	9/30/2025	P	750.2	1050.2	751	1051	-0.11	-0.08	N	P
JHAW	67480	9/10/2024	P	752.4	1052.4	752	1052	0.05	0.04	N	P
JHAW	67857	9/10/2024	P	752.4	1052.4	752	1052	0.05	0.04	N	P
JHAW	66626	10/10/2024	F	757.3	1057.3	757	1057	0.04	0.03	N	P
JHAW	67857	10/10/2024	P	757.3	1057.3	757	1057	0.04	0.03	N	P
JHAW	67480	10/18/2024	F	764.0	1064.0	764	1064	0.00	0.00	N	P
JHAW	66626	11/19/2024	P	751.0	1051.0	751	1051	0.00	0.00	N	P
JHAW	67857	12/27/2024	P	751.2	1051.2	751	1051	0.03	0.02	N	P
JHAW	66626	1/27/2025	P	764.8	1064.8	764	1064	0.10	0.08	N	P
JHAW	67857	2/20/2025	P	766.7	1066.7	767	1067	-0.04	-0.03	N	P
JHAW	66626	3/28/2025	P	750.3	1050.3	750	1050	0.04	0.03	N	P
JHAW	67857	4/15/2025	P	756.6	1056.6	757	1057	-0.05	-0.04	N	P
JHAW	66626	5/8/2025	P	764.3	1064.3	763	1064	0.17	0.03	N	P
JHAW	67857	5/30/2025	P	761.3	1061.3	762	1062	-0.09	-0.07	N	P
JHAW	66625	6/18/2025	P	758.4	1058.4	758	1058	0.05	0.04	N	P
JHAW	67857	7/9/2025	P	760.8	1060.8	761	1061	-0.03	-0.02	N	P

USACE Station identifier	Site sonde number	Date checked	Soda test (Pass/Fail/N/A)	Reference Barometric pressure (mmHg)		Site sensor Total pressure (mmHg)		Difference between reference pressure and site sensor total pressure (percent saturation)		Calibrated (Y/N)	Pressure test (Pass/Fail/N/A)
				+0	+300	+0	+300	+0	+300		
JHAW	66626	8/5/2025	P	759.1	1059.1	758	1058	0.14	0.10	N	P
JHAW	67857	8/7/2025	F	762.7	1062.7	763	1063	-0.04	-0.03	N	P
JHAW	67480	8/20/2025	P	763.0	1063.0	763	1064	0.00	-0.09	N	P
JHAW	66626	9/5/2025	P	752.6	1052.6	752	1052	0.08	0.06	N	P
JHAW	67857	9/30/2025	P	750.1	1050.1	751	1051	-0.12	-0.09	N	P
JHAW	66626	11/14/2025	P	754.2	1054.2	753	1053	0.16	0.11	N	P
TDA	66362	9/10/2024	P	752.4	1052.4	752	1052	0.05	0.04	N	P
TDA	65427	10/18/2024	P	763.9	1063.9	764	1064	-0.01	-0.01	N	P
TDA	66362	2/6/2025	P	756.4	1056.4	757	1056	-0.08	0.04	N	P
TDA	65427	2/20/2025	N/A	766.8	1066.8	767	1067	-0.03	-0.02	N	P
TDA	66362	4/15/2025	P	756.7	1056.7	757	1057	-0.04	-0.03	N	P
TDA	65427	5/8/2025	F	764.4	1064.4	765	1065	-0.08	-0.06	N	P
TDA	66362	5/30/2025	P	761.3	1061.3	761	1061	0.04	0.03	N	P
TDA	65427	6/18/2025	P	758.4	1058.4	759	1059	-0.08	-0.06	N	P
TDA	66362	7/9/2025	P	760.8	1060.8	761	1061	-0.03	-0.02	N	P
TDDO	67858	9/10/2024	P	752.4	1052.4	752	1052	0.05	0.04	N	P
TDDO	64596	10/10/2024	P	757.3	1057.3	758	1058	-0.09	-0.07	N	P
TDDO	67858	10/18/2024	P	764.1	1064.1	764	1064	0.01	0.01	N	P
TDDO	64596	11/19/2024	P	750.9	1050.9	752	1052	-0.15	-0.10	N	P
TDDO	67858	12/27/2024	P	751.1	1051.1	751	1051	0.01	0.01	N	P
TDDO	64596	1/27/2025	P	765.1	1065.1	766	1066	-0.12	-0.08	Y	P
TDDO	67858	2/20/2025	P	766.8	1066.8	767	1067	-0.03	-0.02	N	P
TDDO	64596	3/28/2025	P	750.4	1050.4	752	1051	-0.21	-0.06	N	P
TDDO	67858	4/15/2025	P	756.8	1056.8	756	1057	0.11	-0.02	N	P
TDDO	64596	5/8/2025	P	764.3	1064.3	765	1064	-0.09	0.03	N	P
TDDO	67858	5/30/2025	P	761.3	1061.3	761	1061	0.04	0.03	N	P
TDDO	64596	6/18/2025	P	758.4	1058.4	759	1058	-0.08	0.04	N	P
TDDO	67858	7/9/2025	P	760.8	1060.8	761	1061	-0.03	-0.02	N	P
TDDO	64596	8/5/2025	P	759.1	1059.1	760	1059	-0.12	0.01	N	P
TDDO	64596	8/20/2025	P	763.0	1063.0	764	1062	-0.13	0.09	N	P
TDDO	67858	8/20/2025	P	763.0	1063.0	763	1063	0.00	0.00	N	P

USACE Station identifier	Site sonde number	Date checked	Soda test (Pass/Fail/N/A)	Reference Barometric pressure (mmHg)		Site sensor Total pressure (mmHg)		Difference between reference pressure and site sensor total pressure (percent saturation)		Calibrated (Y/N)	Pressure test (Pass/Fail/N/A)
				+0	+300	+0	+300	+0	+300		
TDDO	66363	9/5/2025	F	752.7	1052.7	752	1053	0.09	-0.03	N	P
TDDO	64596	9/22/2025	F	761.3	1061.3	762	1061	-0.09	0.03	N	P
TDDO	67858	9/30/2025	P	750.0	1050.0	750	1050	0.00	0.00	N	P
TDDO	64596	11/14/2025	P	754.3	1054.3	754	1053	0.04	0.12	N	P
BON	64598	9/10/2024	P	752.3	1052.3	752	1052	0.04	0.03	N	P
BON	66360	10/18/2024	P	763.9	1063.9	763	1063	0.12	0.08	N	P
BON	64598	3/11/2025	P	-	-	-	-	-	-	N/A	N/A
BON	66360	3/28/2025	P	750.5	1050.5	751	1052	-0.07	-0.14	N	P
BON	64598	4/15/2025	P	756.6	1056.6	757	1057	-0.05	-0.04	N	P
BON	66360	5/8/2025	F	764.4	1064.4	765	1065	-0.08	-0.06	N	P
BON	64598	5/30/2025	P	761.5	1061.5	762	1062	-0.07	-0.05	N	P
BON	66360	9/30/2025	P	750.0	1050.0	751	1051	-0.13	-0.10	N	P
CCIW	013022A	9/10/2024	P	752.3	1052.3	751	1052	0.17	0.00	N	P
CCIW	013022B	10/18/2024	P	764.2	1064.2	764	1064	0.03	0.02	N	P
CCIW	013022A	2/20/2025	N/A	766.7	1066.7	766	1066	0.09	0.07	N	P
CCIW	013022B	2/20/2025	N/A	766.8	1066.8	767	1066	-0.03	0.08	N	P
CCIW	013022A	4/15/2025	P	756.6	1056.6	756	1056	0.08	0.06	N	P
CCIW	013022B	5/8/2025	P	764.2	1064.2	764	1064	0.03	0.02	N	P
CCIW	013022A	5/30/2025	P	761.1	1061.1	760	1061	0.14	0.01	N	P
CCIW	013022B	6/18/2025	P	758.4	1058.4	759	1058	-0.08	0.04	N	P
CCIW	66363	7/9/2025	P	760.8	1060.8	761	1061	-0.03	-0.02	N	P
CCIW	13022B	8/5/2025	P	759.0	1059.0	759	1058	0.00	0.09	N	P
CCIW	013022A	8/20/2025	P	762.9	1062.9	762	1063	0.12	-0.01	N	P
CCIW	013022B	9/5/2025	P	752.6	1052.6	753	1052	-0.05	0.06	N	P
WRNO	67856	9/10/2024	P	752.3	1052	752	1052	0.04	0.03	N	P
WRNO	67855	10/10/2024	P	757.2	1057	757	1056	0.03	0.11	N	P
WRNO	67856	10/18/2024	P	764.0	1064	764	1064	0.00	0.00	N	P
WRNO	67855	11/19/2024	P	750.9	1051	750	1050	0.12	0.09	N	P
WRNO	67856	12/27/2024	P	751.1	1051	751	1051	0.01	0.01	N	P
WRNO	67855	1/27/2025	P	765.2	1065	764	1064	0.16	0.11	Y	P
WRNO	67856	2/20/2025	P	766.6	1066.6	767	1067	-0.05	-0.04	N	P
WRNO	67855	3/28/2025	P	750.1	1050.1	750	1051	0.01	-0.09	N	P

USACE Station identifier	Site sonde number	Date checked	Soda test (Pass/Fail/N/A)	Reference Barometric pressure (mmHg)		Site sensor Total pressure (mmHg)		Difference between reference pressure and site sensor total pressure (percent saturation)		Calibrated (Y/N)	Pressure test (Pass/Fail/N/A)
				+0	+300	+0	+300	+0	+300		
WRNO	67856	4/15/2025	P	756.8	1056.8	757	1057	-0.03	-0.02	N	P
WRNO	67855	5/8/2025	P	764.4	1064.4	764	1065	0.05	-0.06	N	P
WRNO	67856	5/8/2025	F	763.7	1063.7	764	1064	-0.04	-0.03	N	P
WRNO	67480	5/30/2025	P	761.3	1061.3	761	1061	0.04	0.03	N	P
WRNO	67855	6/18/2025	P	758.6	1058.6	758	1059	0.08	-0.04	N	P
WRNO	67856	7/9/2025	P	760.9	1060.9	761	1061	-0.01	-0.01	N	P
WRNO	67855	8/5/2025	P	759.0	1059.0	758	1059	0.13	0.00	N	P
WRNO	67856	8/20/2025	P	762.9	1062.9	763	1063	-0.01	-0.01	N	P
WRNO	67855	9/5/2025	P	752.8	1052.8	752	1053	0.11	-0.02	N	P
WRNO	67856	9/30/2025	P	749.9	1049.9	750	1050	-0.01	-0.01	N	P
WRNO	67855	11/13/2025	P	747.2	1047.2	746	1047	0.16	0.02	Y	P
REFERENCE	65425	9/10/2024	P	752.5	1052.5	752	1052	0.07	0.05	N	P
REFERENCE	65425	10/10/2024	P	757.2	1057.2	757	1057	0.03	0.02	N	P
REFERENCE	65425	2/20/2025	P	766.8	1066.8	767	1066	-0.03	0.08	N	P
REFERENCE	65425	5/19/2025	P	758.0	1058.0	758	1058	0.00	0.00	N	P
REFERENCE	65426	9/10/2024	P	752.5	1052.5	752	1053	0.07	-0.05	N	P
REFERENCE	65426	10/10/2024	P	757.2	1057.2	757	1057	0.03	0.02	N	P
REFERENCE	65426	11/19/2024	P	751.2	1051.2	750	1051	0.16	0.02	N	P
REFERENCE	65426	12/27/2024	P	751.3	1051.3	751	1052	0.04	-0.07	Y	P
REFERENCE	65426	1/27/2025	P	765.3	1065.3	765	1064	0.04	0.12	Y	P
REFERENCE	65426	2/20/2025	P	766.7	1066.7	768	1068	-0.17	-0.12	N	P
REFERENCE	65426	3/28/2025	P	750.4	1050.4	751	1052	-0.08	-0.15	Y	P
REFERENCE	65426	4/15/2025	P	756.6	1056.6	755	1055	0.21	0.15	N	P
REFERENCE	65426	5/8/2025	P	764.4	1064.4	763	1063	0.18	0.13	Y	P
REFERENCE	65426	5/30/2025	P	761.3	1061.3	761	1061	0.04	0.03	N	P
REFERENCE	65426	6/18/2025	P	758.4	1058.4	758	1058	0.05	0.04	N	P
REFERENCE	65426	7/9/2025	P	760.9	1060.9	761	1061	-0.01	-0.01	N	P
REFERENCE	65426	8/7/2025	P	762.7	1062.7	762	1062	0.09	0.07	N	P
REFERENCE	65426	8/20/2025	P	763.0	1063.0	763	1063	0.00	0.00	N	P
REFERENCE	65426	9/5/2025	P	752.6	1052.6	753	1053	-0.05	-0.04	N	P
REFERENCE	65426	9/30/2025	P	749.9	1049.9	750	1050	-0.01	-0.01	N	P
REFERENCE	65426	11/14/2025	P	754.2	1054.2	753	1052	0.16	0.21	Y	P