



# Public Utility District No. 1 of Douglas County

Wells Hydroelectric Project \* PO Box 549 \* 375 Azwell Rd. \* Chelan, WA 98816 \* 509/923-2226 \* FAX 509/884-0553 \* [www.douglaspud.org](http://www.douglaspud.org)

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April 18, 2024

WA State Department of Ecology  
Central Regional Office  
1250 West Alder Street  
Union Gap, WA 98903-0009

Subject: **Wells Hydroelectric Project NPDES Waste Discharge Permit No. WA0991031;  
2023 Oil and Grease Annual Report**

Dear Ecology,

The Public Utility District No. 1 of Douglas County (Douglas PUD) respectfully submits to Washington State Department of Ecology (Ecology) the 2023 Oil and Grease Annual Report, pursuant to requirements within Section S10.C. of the National Pollutant Discharge Elimination System (NPDES) Wastewater Discharge Permit No. WA0991031 issued to the Wells Hydroelectric Project on March 7, 2022.

Various sections of the Permit require Douglas PUD to submit plans and/or reports for Ecology's review and approval. As such, please indicate your receipt of this document and provide comments and/or suggested revisions, should they exist, within 30 days of receipt. If Ecology has no comments, please indicate approval of the document attached herein toward meeting the terms and conditions of Section S10 of the permit. In the absence of receiving formal comment(s) from Ecology, Douglas PUD will assume the document to be final. If you have any questions, please contact me at 509-881-2323.

Respectfully,

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Attachment A. 2023 Oil and Grease Annual Report dated April 2024 for the Wells Hydroelectric  
Project No. 2149

**NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)  
WASTE DISCHARGE PERMIT NO. WA0991031**

**ATTACHMENT A**

**2023 OIL AND GREASE ANNUAL REPORT DATED APRIL 2024  
FOR THE WELLS HYDROELECTRIC PROJECT NO. 2149**

**NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)  
WASTE DISCHARGE PERMIT NO. WA0991031**

**2023 OIL AND GREASE ANNUAL REPORT**

**WELLS HYDROELECTRIC PROJECT  
FERC NO. 2149**



**April 2024**

Prepared by:

Public Utility District No. 1 of Douglas County  
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Prepared for:

Washington Department of Ecology  
Central Regional Office  
1250 West Alder Street  
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## 1.0 INTRODUCTION

Public Utility District No. 1 of Douglas County (Douglas PUD), owner and operator of the Wells Hydroelectric Project (Wells Project), was issued a National Pollutant Discharge Elimination System (NPDES) Permit No. WA0991031 (Permit) on March 7, 2022, in compliance with Section 402 of the Clean Water Act (CWA).

Pursuant to requirements of Section S10.C. in the Permit, Douglas PUD is required to submit an Annual Oil and Grease Report to the State of Washington Department of Ecology (Ecology) by May 1 annually, beginning in 2023. This report addresses oils and greases used at the Wells Project in 2023 to lubricate components that may contact the Columbia River and/or discharge to the permitted outfalls.

## 2.0 SUMMARY OF FACILITY WORK ORDERS

The following information is provided consistent with Section S10.C. of the Wells Project issued NPDES Permit.

An Oil and Grease Accountability Plan (OGAP) is being drafted in 2024 and will be submitted to Ecology on or before May 1, 2025, pursuant to Section S10.A. of the Permit.

### 2.1 Equipment with High or Low Levels or Alarms Work Orders

In 2023, Wells Project work orders resulting from equipment with high or low levels or alarms were addressed according to the Wells Project operations and maintenance protocols. Table 1 outlines the work order descriptions and the actions taken by Douglas PUD staff.

**Table 1. 2023 Equipment with High or Low Levels or Alarms Summary**

Equipment	Work Completed Date	Description
Units 6 and 9 TGB Oil Level Low	3/7/2023	Oil levels looked adequate; no oil added.
Sump Oil Detection	3/15/2023	No oil detected; sensor inspected, cleaned, and returned to service.
Units 1 and 8 Farvals	3/24/2023	Farval levels low; filled with Mobile SHC 101 EAL grease.
West Fish Pump/Silo 1 Farval	3/24/2023	Farval level low; filled with Panolin Biogrease W EP 1.
East Fish Farval	4/4/2023	Farval level low; filled with Panolin Biogrease W EP 1.
East Fish Pump/Silo 1	6/7/2023	Pump oil low. Checked for leaks and four gallons of Shell Turbo T68 added.
Unit 2 Farval	7/10/2023	Barrel grease low; changed barrel with Mobile SHC 101 EAL grease.
Station Sump Oil Detector	8/11/2023	Broken wire found; no oil added or

Equipment	Work Completed Date	Description
		discharged into sump.
Unit 10 Farval	8/16/2023	Barrel grease low; changed barrel with Mobile SHC 101 EAL grease.
West Fish Pump 1	9/6/23	Alarm sensor malfunctioned and was replaced.
Unit 1 TGB Oil Level Low	9/15/2023	Turbine guide bearing was low on sight glass. Five gallons of Shell Turbo T68 added.
Unit 3 Farval	10/16/2023	Pump lost pressure. Air caught in pump and was reprimed.
Unit 3 Farval	10/24/2023	Barrel grease low; changed barrel with Mobile SHC 101 EAL grease.
Unit 5 Farval	10/26/2023	Barrel grease low; changed barrel with Mobile SHC 101 EAL grease.
Unit 4 Farval	11/2/2023	Barrel grease low; changed barrel with Mobile SHC 101 EAL grease.
West Fish Pump Silo 1	12/3/2023	Farval collar low; filled with Panolin Biogrease W EP 1.
West Fish Pump Silo 1 Farval	12/13/2023	Farval collar low; filled with Panolin Biogrease W EP 1.
East Fish Farvals 1 and 2	12/14/2023	Barrel grease low; changed barrel with Mobile SHC 101 EAL grease.

## 2.2 Malfunctioning Automated Grease Systems Work Orders

In 2023, Wells Project work orders resulting from malfunctioning automated grease systems were addressed according to the Wells Project operations and maintenance protocols. The units with work orders on hold are designated to be fixed during the next biannual maintenance opportunity and do not compromise oil and grease management at the Wells Project. Table 2 outlines the work order descriptions and the action taken by Douglas PUD staff.

**Table 2. 2023 Malfunctioning Automated Grease Systems Work Orders Summary**

Equipment	Work Completed Date	Description
Unit 1 Farval	2/1/2023	Bled off air.
West Fish Pump Silo 2	2/15/2023	Farval leak detected and repaired.
Unit 2 Farval Pin Block	3/29/2023	Leaks detected and grease lines tightened.



Equipment	Work Completed Date	Description
East and West Fish Farvals	4/21/2023	Recalibrated timers and replaced timer in West Fish Pump #2.
Unit 1 Wicket Gate Arm	5/12/2023	Wicket gate arm Farval hose leaking and fitting was replaced.
Unit 4 Farval	5/16/2023	Not building pressure. Replaced valve.
West Fish Silo 2 Farval	6/1/2023	Timer replaced.
Unit 7 Farval	6/2/2023	Farval block leaking and repaired.
Unit 4 Farval	7/27/2023	Low pressure detected; pressure increased.
Unit 4 Farval	8/9/2023	Air in the system; bled off air.
Unit 9 Farval	10/26/2023	Grease line came apart at swivel. Threaded back on and tightened.
Unit 5 Farval	HOLD	Warranty item to be fixed during inspection in April 2024.
Unit 3 Wicket Gate Arm B	HOLD	Farval hose leaking onto head cover, captured with rags. Hose with EAL grease will be fixed during next biannual.

### 2.3 Emergency Maintenance or Unplanned Work Orders

In 2023, there were no work orders written at the Wells Project for emergency maintenance on components that may contact the Columbia River or discharge to the permitted outfalls. Although, there were no reportable work orders in accordance with the Wells Project NPDES Permit, Douglas PUD has appended a summary table describing all emergency or unplanned work orders, regardless of potential for oil discharge, that is included as Appendix A.

### 3.0 TOTAL PROCUREMENT OF TURBINE OIL, TRANSFORMER OIL, OTHER OIL, AND GREASE

This information is provided consistent with Section S10.C.2 of the Wells Project issued NPDES Permit.

Table 3 provides a summary of the oil and grease obtained in 2023 for the use at Wells Dam for components that may contact the Columbia River and/or discharge to the permitted outfalls. All oil and grease used at the Wells Project are logged by the Wells warehouse and maintenance staff.

**Table 3. 2023 Oil and Grease Procurement Summary**

Location	Amount	Type	Uses
Wells Dam	0 (55 Gal)	Shell Tellus S2 VS 46 (699-04-031)	Fish Ladder Vickers Oil Pumps
Wells Dam	9 (55 Gal)	Shell Omala S4 GXV 220 (699-04-008)	Spillway Gate Hoists/ Crane Gear Box
Wells Dam	0 (55 Gal)	Lloyds 'Loobit' No. 32045 (699-06-002)	Crane, Wire Rope
Wells Dam	0 (5 Gal)	Shell Turbo T68 (699-04-050)	Draft Tube Gate Hoists, Gear Box, Sump Pump motors
Wells Dam	8 (55 Gal)	Mobil SCH 101 EAL (699-03-016)	Farval Lubrication System
Wells Dam	6 (55 Gal)	Panolin 'EP 1' EAL (699-03-029)	Farval Lubrication System
Wells Dam	3500 (Gal)	Bulk Shell Turbo T 68	Turbines, Fish Pumps

#### **4.0 OIL AND GREASE LOST, UNACCOUNTED, NON-RECOVERABLE, AND SPILL CLEANUP**

This information provided is consistent with Section S10.C.3 of the Wells Project issued NPDES Permit.

In 2023, the Wells Project had no recorded oil and grease lost, unaccounted, non-recoverable or spill cleanup. Trouble reports (TR) leading to the addition of oil to systems normally follow small amount of weeping from systems that occur over time. Drips like these are collected via PIGS and absorbent pads. Any within plant discharge not collected by absorbent pads may be processed by the oil water separator (OWS). The OWS is cleaned quarterly and collected oil removed and processed offsite per Douglas PUD's Solid Waste Management Plan. These oil management features are not considered work order processes, nor are they considered unaccounted, rather routine solid waste management processes.

#### **5.0 ESTIMATED GENERATOR OIL LOSS**

This information is provided consistent with Section S10.C.4 of the Wells Project issued NPDES Permit.

There is no measurable generator oil loss to the river. Occasionally, oil may drip from certain components and fittings. This oil makes its way to the head covers and is then pumped via head cover pumps into the oil water separator system. The oil-water separator is cleaned every quarter and the oily water from that cleaning is vacuumed out of the containment and hauled to a treatment plant for

disposal. The oil-water separator outflow is one of the Wells Dam permitted outfalls to the Columbia River and is tested monthly for hexane extractable material concentrations, as a condition of the Wells NPDES Permit.

There were four instances of generator turbine oil loss that was recovered during 2023, with oil being absorbed, pumped to disposal, or sent to the oil-water separator. These are described in Table 4.

**Table 4. 2023 Estimated Generator Turbine Oil Loss and Recovery**

<b>Estimated generator turbine oil loss in gallons</b>	<b>Description</b>
<b>16.7 gallons</b>	Estimated generator oil loss from Trouble Report work orders or emergency maintenance. Oil was recovered with absorbent pads or added to generating units.
<b>410 gallons</b>	Estimated generator oil loss recovered from oily water sent to oil water separator system. 4100 gallons were pumped into disposal truck from containment. Out of the 4100 gallons and estimated 10% was oil. The oil water separator outfall is tested monthly for hexane extractable material.
<b>3000 gallons</b>	Oil pumped from generator 6 runner into disposal truck for runner refurbishment.
<b>60 gallons</b>	Estimated generator oil loss recovered after U3 oil head servo packing leak.

In 2023, there were four instances in which the oil-water separator outfall exceeded the effluent limitation of 5.0 mg/L of HEM; February 2023 (5.2 mg/L), March 2023 (5.6 mg/L), April 2023 (6.4 mg/L), and August 2023 (5.2 mg/L). Secondary samples were collected within seconds of the primary samples in all four of these instances and all were less than 5.9 mg/L, indicating that exceedances were not repeatable. Moreover, following laboratory results that indicated values over 5.0 mg/l, follow-up samples were collected, and those results did not reproduce total HEM concentrations above permit limits. As such, the four instances of total HEM above 5.0 mg/l at the oil-water separator are considered spurious.

## **6.0 EAL SUBSTITUTIONS**

This information is provided consistent with Section S10.C.5 of the Wells Project issued NPDES Permit.

In the past, a non-Environmentally Acceptable Lubricant (EAL) grease was used in the Wells Project turbine driven fish pumps and turbine driven generator wicket gate automatic greasing systems. In 2010, the Wells Project switched to Mobil SHC 101 EAL grease for these same systems. Currently, the Wells Project is switching from Mobil SHC 101 EAL to Panolin Bio grease W EP 1 by the end of this year, consistent with the amount of the Mobil product remaining in the Wells Warehouse. EAL substitutions will be considered routinely and more formally summarized in the submitted Environmentally Acceptable Lubricants Reports (April 2024; see S10.B. of the Permit).

## **7.0 SUMMARY OF OIL, GREASE, AND LUBRICANT MANAGEMENT**

The responsibility of environmental stewardship and accountability with respect to oil, grease and lubricants used at the Wells Project is a high priority for Douglas PUD. The Wells Project oil and grease maintenance and inspections are operated in accordance with applicable regulations and adherence to the NPDES Permit conditions S10.C.

In accordance with the NPDES Permit Section S10.A., Douglas PUD will submit an OGAP to Ecology by May 1, 2025, on behalf of the Wells Project.

## APPENDIX A: EMERGENCY OR UNPLANNED WORK ORDERS

Emergency or Unplanned Oil Work Orders	Work Completion Date	Description	Amount of Oil Absorbed
<b>Sump</b>	1/23/2023	Oil detected on sensor, sump oil skimmer ran, sump inspected with no oil detected, sensor inspected cleaned and returned to service. No discharge into river.	No oil discharge
<b>Unit 4</b>	2/17/2023	Old capped of instrumentation lines. Fittings were tightened and lines will be removed during next biennial maintenance period. Oil captured with absorbent pads. No discharge into river.	.25 gallons absorbed
<b>U1 West Servo</b>	2/22/2023	Pumped out servo pocket. Returned oil to system and changed packing. No discharge into river.	2 gallons absorbed
<b>Oil/Water Tank 3</b>	3/6/2023	Replaced check valve cleaned out lines and returned to service. Pumps were continually running. No discharge into river.	No oil discharge
<b>Oil Water Separator</b>	3/8/2024	Used secondary valve to close the line and replaced the check valve. Check valve is for containment sump pump. Extended lead time on the replacement check valve. No discharge into river.	No oil discharge
<b>Oil Water Separator</b>	3/8/2023	Pipe was unplugged, Changed out skimmer rope. System is located within oil water separator containment. No discharge into river.	No oil discharge
<b>Unit 9</b>	5/15/2023	Oil was vacuumed out and put back into oil system. No discharge into river.	2 gallons absorbed
<b>Unit 5 Oil Head</b>	6/28/2023	Door gasket was missing from unit rebuild. Gasket was put on door. Oil captured by absorbent pads. No discharge into river.	.25 gallons absorbed
<b>Oil water Tank</b>	6/29/2023	Took tank out of service. Pumped containment back into system to clear alarm and fixed valve. No discharge into river.	No oil discharge
<b>Unit 3 Oil Head</b>	7/7/2023	Small seepage, problem will be fixed during next biennial. Oil is cleaned with absorption pads. Oil captured with absorbent pads. No discharge into river.	.25 gallons absorbed
<b>Oil Water Separator Tank 6</b>	7/14/2023	Pipe leak was patched and pipe section eventually replaced by contractors. No discharge into river.	No oil discharge
<b>Oil Water Separator Tank 6</b>	7/21/2023	Pipe leak was fixed by contractors who installed it. Water was mopped up and disposed of in proper container. No discharge into river.	No oil discharge
<b>Unit 3 Oil Head Drain Line</b>	8/8/2023	Union fitting in line was dripping. Tightened union that was loose. Oil captured by absorbent pads. No discharge into river.	.15 gallons absorbed
<b>Transformer 4 Cooler 2 pump leaking Oil</b>	9/19/2023	Catch bag was full. Changed catch bag out and disposed old one in proper container. No discharge into river.	1 gallon (transformer oil)

<b>Emergency or Unplanned Oil Work Orders</b>	<b>Work Completion Date</b>	<b>Description</b>	<b>Amount of Oil Absorbed</b>
<b>Transformer 3 Pump 1</b>	10/13/2023	Catch bag was full. Changed catch bag out and disposed old one in proper container. No discharge into river.	3.5 gallons absorbed (transformer oil)
<b>Unit 3 Oil Head Leak</b>	10/16/2023	Bolts on oil head were loose. Retorqued them. Oil captured with absorbent pads. No discharge into river.	.15 gallons absorbed
<b>Unit 2 Oil Head Leaking</b>	10/16/2023	Stainless tubing was leaking and tightened. Blade position indicator was also weeping. Oil captured by absorbent pads. No discharge into river.	.15 gallons absorbed
<b>U5 Thrust Bearing</b>	On Hold	Wrote up on 7/25/2013 Will be fixed during warranty inspection on 4/8/2024. Oil is collected with absorption pads. No discharge into river.	2 gallons absorbed
<b>Unit 3 Oil Head</b>	On Hold	Small weeping leak out of blade angle indicator, will be fixed during outage in 2024. Oil is captured with absorption pads and disposed of in proper container. No discharge into river.	.5 gallons absorbed