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# Technical Memorandum

Prepared for: Darigold, Inc.

Project Title: Darigold Lynden Temperature Study

Project No.: 159307

## Technical Memorandum

Subject: Temperature Monitoring Study Technical Memorandum

Date: February 14, 2024

To: Maia Hoffman, Washington State Department of Ecology

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## Section 1: Introduction

Section 1 provides background regarding Darigold’s new river outfall and summarizes the temperature monitoring study performed between June and October 2023.

### 1.1 Background

The City of Lynden (City) and Darigold’s Lynden, Washington, milk processing facility were previously authorized by the Washington State Department of Ecology (Ecology) to discharge treated wastewater through a combined outfall owned and operated by the City to the Nooksack River (National Pollutant Discharge Elimination System [NPDES] Permit WA-0022578). To support City potable water supply planning efforts and receive credit for river withdrawal of “foreign water” produced by Darigold, the City and Darigold separated the Darigold condensate of whey wastewater discharge (authorized under NPDES Permit WA-0002470) and installed a new industrial condensate pipeline (ICP) and river outfall. The outfall discharges approximately 0.6 miles upstream of the existing City wastewater treatment plant (WWTP) outfall, just upstream of the Hannegan Road bridge and directly across the river from the City’s drinking water facility intake. Construction of the new outfall and diffuser took place in the summer of 2022. The new outfall began discharging to the Nooksack River in November 2022.

Design analyses, drawings, and specifications for the new outfall are included in the *Outfall Design Technical Memorandum* (Brown and Caldwell [BC], 2021) prepared in support of the overall ICP design prepared by Reichhardt & Ebe Engineering, Inc. Figure 1 shows the existing City WWTP and outfall and the new ICP outfall location within the overall project vicinity.



Figure 1 Project vicinity, existing City WWTP, City outfall, and new ICP outfall

## 1.2 Temperature Monitoring Study

BC performed a temperature monitoring study to meet the requirements of Condition S13 of NPDES Permit No. WA-0002470 issued to Darigold (effective date January 1, 2019) and encompassing the new ICP outfall. BC staff installed data loggers (thermistors) to monitor temperature of the condensate of whey discharge flow (at the terminal conveyance manhole just prior to offshore outfall pipe) and Nooksack River, both upstream of the new ICP outfall and at the chronic mixing zone boundary. Additional temperature data was recorded by Darigold staff using existing continuous monitoring equipment at the facility compliance point (effluent flow measurement flume). Per the NPDES Permit, temperature data collection was scheduled for June 1 through October 31, 2023.

Temperature monitoring study protocol and procedures are documented in the Ecology-approved Darigold *Temperature Monitoring Study Quality Assurance Project Plan (QAPP)* (BC 2022). Deviations from the QAPP are discussed in Section 2.

## Section 2: Data Collection

Section 2 discusses temperature data collection and identifies deviations (with respect to the data collection dates) from the approved QAPP. Survey forms for the upstream and downstream river locations are provided in Attachment A.

### 2.1 Thermistor Deployment

As described in the QAPP, thermistors were deployed (see Figure 2) to best represent ambient water temperature upstream of the discharge and at the plume centerline downstream of the discharge at the designated mixing zone boundary.

- Upstream: Located approximately 50 feet upstream of the diffuser discharge
- Downstream: Located approximately 300 feet downstream of the diffuser discharge
- Effluent: Located at the ICP terminal manhole





**Figure 2. Thermistor deployment locations**

Due to recreational use of the river (boating, fishing, and general water access) in the vicinity of the thermistor locations, deployment methods were selected to minimize potential equipment vandalism/interference. Thermistors were attached with zip ties to concrete anchor blocks, with the attachment set to place the thermistor approximately 6 inches above the streambed. Two independent thermistor/anchor block systems were deployed at both the upstream and downstream locations to provide redundancy. The redundant thermistors were located approximately 10 feet apart from each other. Data discussed in Section 3 references “inshore” and “offshore” data at the upstream and downstream locations. Figure 3 shows photographs of the river deployment configuration.



**Figure 3. River thermistor deployment configuration**

The effluent thermistor was deployed at the terminal manhole using a cable and weight to maintain the thermistor in the effluent flow just above the ICP outlet pipe invert. The terminal manhole was secured with a sealed lid and was not subject to interference. Figure 4 shows photographs of the terminal manhole deployment configuration.



**Figure 4. Terminal manhole deployment configuration**

All described deployments were made on May 18, 2023 (to take advantage of dry weather conditions). Thermistors were pre-programmed to begin recording on May 29 at 30-minute intervals. Due to high early season snow melt conditions, river stage during deployment was at a seasonal high (elevation 45 feet) as measured

at United States Geological Survey Gage 12211500. Following the initial snow melt surge, river stage returned to more stable early summer values of 42 feet by June 1. River stage gradually decreased from 42 feet to 39 feet over the course of the deployment period.

During high river stage conditions on May 18, safety concerns limited the deployment of thermistors to land-based methods from the riverbank rather than by wading out into the river or by boat. As the river stage receded, a seasonal gravel bar formed upstream (typical of historical conditions) of the outfall and required repositioning of the upstream thermistors farther from shore than was possible during the initial deployment. Upstream/ambient thermistors were first repositioned on June 2 and then again on July 14 as river stage decreased. Repositioning was intended to maintain the thermistors at locations approximately 10 to 20 feet from the observed riverbank and at water depths of at least 1 foot. Despite repositioning efforts, the upstream thermistors were exposed to air temperature for the periods of June 1 through June 2 and September 9 through September 13. The data summary in Section 3 reflects no upstream data for these periods.

The downstream deployment location riverbank was less impacted by changes in river stage (no gravel bar). However, as river stage receded, more bank was available to recreational user access and water depth over the thermistors decreased. On September 20, the downstream thermistors were found by Darigold staff on the bank along with four-wheeler tracks. The thermistors were repositioned subsequently, but all data between mid-August and mid-September indicates that the thermistors were exposed to air temperature. The data summary in Section 3 reflects no downstream/mixing zone boundary data for this period.

## 2.2 Thermistor Recovery

In-river and effluent manhole thermistors were recovered on October 5 after consultation with Ecology (Hoffman, 2023). The data collection period was truncated early (NPDES Permit requirement through October 31) to allow safe thermistor recovery prior to increasing river stages with the onset of wet season conditions. Furthermore, Ecology indicated that data from other temperature monitoring locations showed that peak summer water temperatures had already occurred in Water Year 2023 and were unlikely to re-occur later in October. Temperature data in Section 3 confirms this assumption.

## Section 3: Data Summary and Interpretation

Section 3 summarizes and interprets collected temperature data. Additional tabular data is provided in Attachment B.

### 3.1 Data Summary

Figures 5 and 6 summarize daily maximum water temperature at the in-river and effluent monitoring locations, respectively, over the deployment period. Figure 5 does not include data for periods when thermistors were exposed to air temperature. Figure 6 shows both the effluent temperature measured via thermistor at the terminal manhole and the compliance point effluent temperature measured at the Darigold facility. Table 1 summarizes the 7-DADMax temperature calculated from the daily maximum values and also notes periods of no available data (thermistors exposed to air temperature) discussed in Section 2. Attachment B provides a tabular summary of thermistor data, noting periods when thermistors were exposed (i.e., measured air temperature). Attachment B provides calculated 7-DADMax temperature.

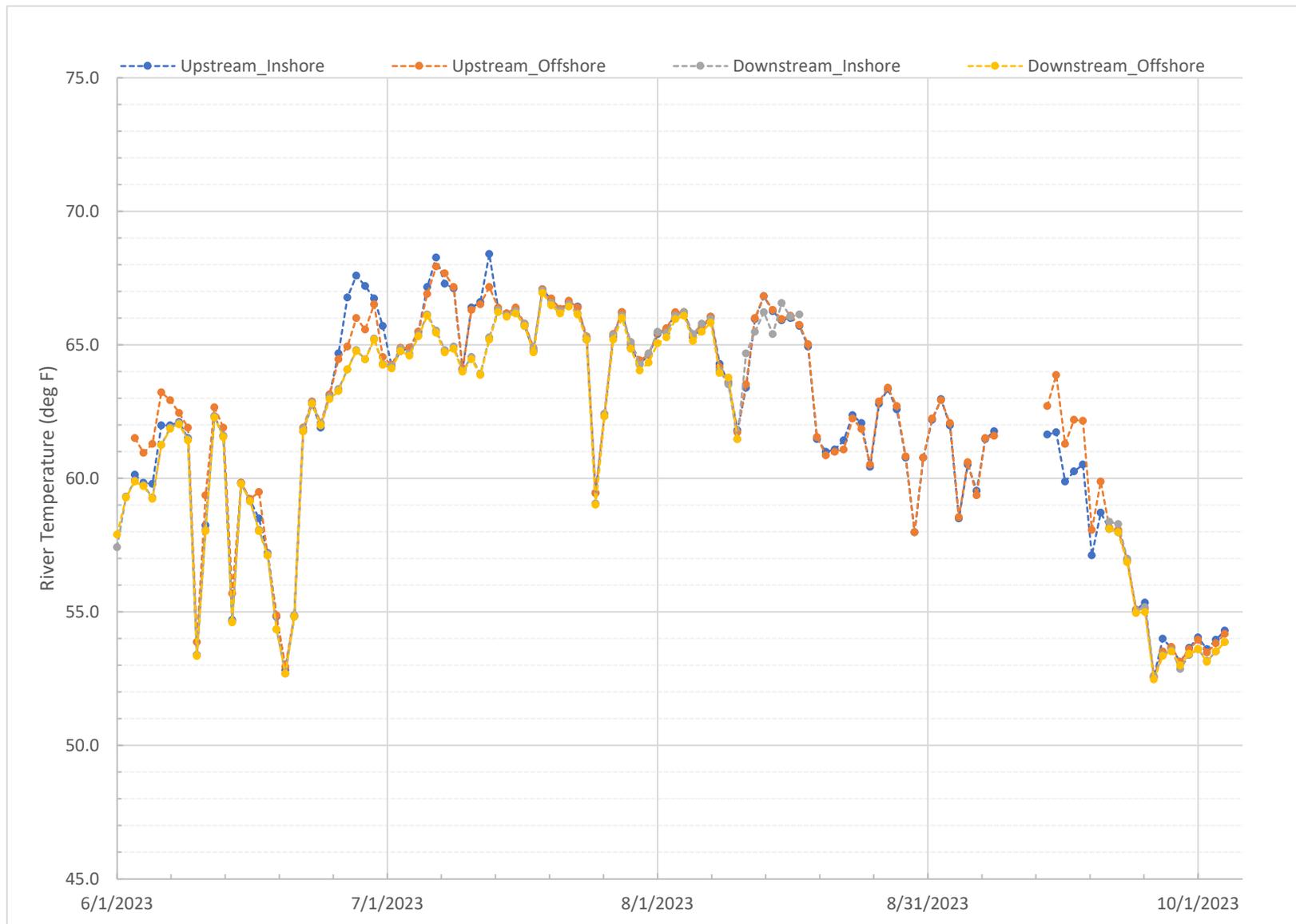


Figure 5. River daily maximum water temperature



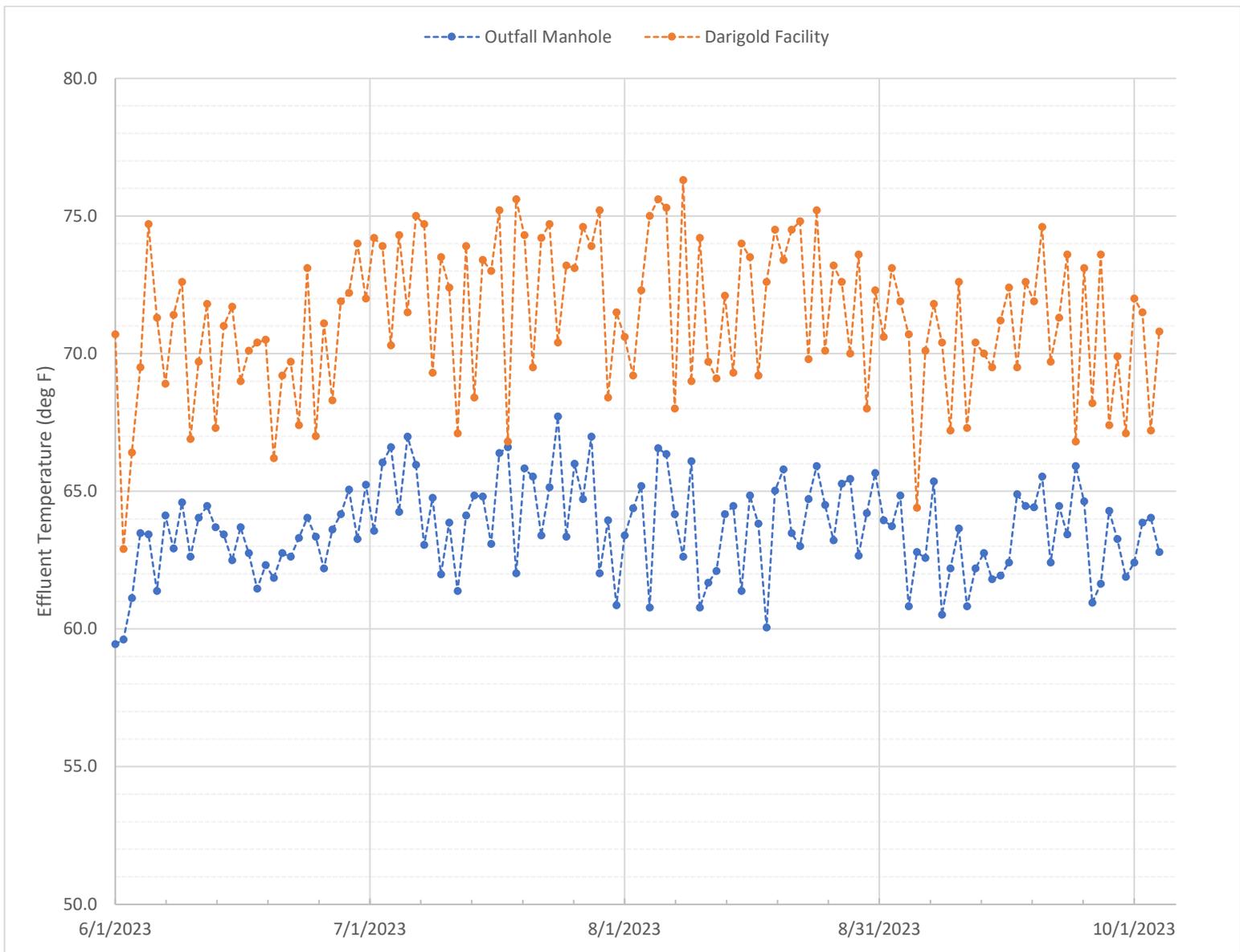


Figure 6. Effluent daily maximum water temperature



Table 1. 7-DADMax Temperature Summary		
Sample Location	7-DADMax Temperature (deg F)	Notes
Upstream/ambient inshore	66.9	No data June 1–2 and September 9–13
Upstream/ambient offshore	66.7	No data June 1–2 and September 9–13
Downstream/mixing zone boundary inshore	66.2	No data August 18–September 20
Downstream/mixing zone boundary offshore	66.1	No data August 11–September 20
Outfall manhole	65.5	
Darigold facility	73.6	

### 3.2 Data Interpretation

BC made the following observations based on a review of the collected data:

- Where concurrent daily data are available, upstream and downstream temperatures are proximate with each other. However, there are brief periods in late June and early July where measured upstream temperatures exceed downstream temperatures. Calculated 7-DADMax temperatures and the dates for when they occur for the upstream and downstream sampling locations also reflect these differences. After the upstream thermistors were repositioned on July 14, upstream and downstream temperature data do not show significant differences. It is likely that higher temperatures measured upstream are the result of the shallower upstream location. There is no indication that the ICP outfall discharge is causing a measurable temperature increase above the ambient temperature at the downstream mixing zone boundary, including during the periods of the 7-DADMax. As noted, differences in river temperatures upstream and downstream are more likely a result of the physical characteristics of the temperature monitoring locations.
- Maximum daily effluent temperatures measured at the terminal manhole, on average, are approximately 7 to 8 degrees lower than measured at the Darigold facility compliance point. There is a marked cooling of the industrial condensate with passage through the ICP outfall. Any analysis of compliance with in-river water temperature standards using Darigold facility compliance point data would be very conservative.
- The monitoring data, despite lacking a complete downstream record, appears to have captured both peak upstream and downstream seasonal temperatures in July 2023. Based on upstream data, a secondary, but slightly lower, peak water temperature period occurred in mid-August 2023. For reference, the 7-DADMax temperature calculated from Nooksack River temperature data collected upstream at United States Geological Survey Gage 12213100 (Ferndale, Washington) occurred in the first week of August 2023.

## Section 4: Mixing Zone Study Addendum

The temperature data collected as part of the Temperature Monitoring Study and presented herein meet the requirements of Condition 13 of NPDES Permit No. WA-0002470 with respect to the Mixing Zone Study Addendum and confirm the mixing and water quality analyses performed previously. The Mixing Zone Study (BC, 2021) concluded there was “no reasonable potential for the proposed Darigold ICP discharge to exceed water quality criteria” and the predicted “incremental temperature increase is within the 0.3°C allowable measurable change for antidegradation temperature criteria.” Based on the river and effluent temperature data collected, there is no indication that the ICP outfall discharge is causing a measurable temperature increase above the ambient temperature at the downstream mixing zone boundary, including during the periods of the 7-DADMax.



## References

- Brown and Caldwell, 2021. *Outfall Design Technical Memorandum*. Prepared for Reichhardt & Ebe Engineering, Inc. November 2021.
- Brown and Caldwell, 2022. *Darigold Temperature Monitoring Study Quality Assurance Project Plan*. Prepared for Darigold, Inc. by Brown and Caldwell. December 2022.
- Hoffman, 2023. Personal e-mail communication. Hoffman, Maia (Ecology). "RE: Darigold Lynden Temperature Study (WA0002470)". Received by Matt DeBoer (BC). September 27, 2003.



## **Attachment A: Survey Forms**

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## **Attachment B: Tabular Daily Maximum Temperature Data**



Date/Time	Upstream Inshore		Upstream Offshore		Downstream Inshore		Downstream Offshore		Outfall Manhole		Darigold Facility	
	Daily Max Temp (deg F)	7-DADMax (deg F)	Daily Max Temp (deg F)	7-DADMax (deg F)	Daily Max Temp (deg F)	7-DADMax (deg F)	Daily Max Temp (deg F)	7-DADMax (deg F)	Daily Max Temp (deg F)	7-DADMax (deg F)	Daily Max Temp (deg F)	7-DADMax (deg F)
6/1/2023	71.4		69.7		57.4		57.9		59.4		70.7	
6/2/2023	68.0		69.9		59.3		59.3		59.6		62.9	
6/3/2023	60.1		61.5		59.9		59.9		61.1		66.4	
6/4/2023	59.8		60.9		59.7	59.8	59.7	59.9	63.5	61.8	69.5	69.2
6/5/2023	59.8		61.3		59.3	60.5	59.2	60.5	63.4	62.3	74.7	69.3
6/6/2023	62.0	61.0	63.2	62.0	61.2	60.8	61.2	60.8	61.4	63.0	71.3	70.7
6/7/2023	62.0	60.1	62.9	60.9	61.9	59.9	61.8	59.8	64.1	63.2	68.9	70.8
6/8/2023	62.1	59.9	62.4	60.7	62.1	59.6	62.0	59.6	62.9	63.3	71.4	70.8
6/9/2023	61.5	60.2	61.9	60.9	61.5	60.1	61.4	60.0	64.6	63.4	72.6	70.4
6/10/2023	53.4	60.2	53.9	60.7	53.4	60.1	53.3	60.1	62.6	63.8	66.9	69.8
6/11/2023	58.2	59.1	59.4	59.7	58.1	59.1	58.0	59.0	64.0	63.7	69.7	70.1
6/12/2023	62.3	58.8	62.7	59.3	62.3	58.8	62.3	58.7	64.5	63.6	71.8	70.1
6/13/2023	61.6	58.5	61.9	58.9	61.6	58.4	61.5	58.4	63.7	63.5	67.3	69.6
6/14/2023	54.7	59.2	55.7	59.7	54.6	59.1	54.6	59.1	63.4	63.5	71.0	70.1
6/15/2023	59.8	59.0	59.8	59.4	59.8	59.0	59.8	58.9	62.5	63.1	71.7	70.2
6/16/2023	59.2	58.0	59.2	58.3	59.1	57.8	59.1	57.8	63.7	62.8	69.0	70.0
6/17/2023	58.5	56.7	59.5	57.0	58.1	56.5	58.0	56.5	62.7	62.6	70.1	69.8
6/18/2023	57.2	56.7	57.1	56.9	57.2	56.6	57.1	56.6	61.5	62.5	70.4	69.6
6/19/2023	54.8	57.0	54.9	57.2	54.3	56.9	54.3	56.8	62.3	62.5	70.5	69.3
6/20/2023	52.8	57.5	52.9	57.7	52.7	57.4	52.7	57.4	61.8	62.4	66.2	69.1
6/21/2023	54.8	58.0	54.9	58.1	54.9	58.0	54.8	57.9	62.7	62.6	69.2	69.5
6/22/2023	61.8	58.9	61.9	58.9	61.8	58.8	61.8	58.8	62.6	62.9	69.7	69.0
6/23/2023	62.8	60.3	62.9	60.3	62.8	60.1	62.8	60.0	63.3	62.9	67.4	69.1
6/24/2023	61.9	62.3	62.1	62.0	62.0	61.7	62.0	61.7	64.0	63.1	73.1	69.4
6/25/2023	63.1	64.1	63.1	63.6	63.0	63.1	63.0	63.1	63.3	63.3	67.0	69.8
6/26/2023	64.7	64.9	64.5	64.1	63.3	63.5	63.3	63.5	62.2	63.7	71.1	70.1
6/27/2023	66.8	65.4	64.9	64.7	64.1	63.9	64.1	63.8	63.6	63.7	68.3	71.1
6/28/2023	67.6	66.0	66.0	65.0	64.8	64.2	64.8	64.1	64.2	63.8	71.9	70.9
6/29/2023	67.2	66.1	65.6	65.2	64.5	64.3	64.5	64.3	65.1	63.9	72.2	72.0
6/30/2023	66.7	66.1	66.5	65.2	65.2	64.6	65.2	64.5	63.3	64.4	74.0	72.4
7/1/2023	65.7	65.9	64.5	65.2	64.3	64.6	64.2	64.6	65.2	64.8	72.0	72.6
7/2/2023	64.2	65.6	64.2	65.2	64.2	64.7	64.1	64.7	63.6	64.9	74.2	73.0
7/3/2023	64.8	65.6	64.9	65.4	64.8	65.0	64.8	64.9	66.0	65.1	73.9	72.9
7/4/2023	64.9	65.8	64.9	65.6	64.7	65.0	64.6	64.9	66.6	65.5	70.3	73.0
7/5/2023	65.5	66.0	65.5	66.0	65.4	65.1	65.3	65.0	64.2	65.2	74.3	73.4
7/6/2023	67.2	66.4	66.9	66.4	66.1	65.2	66.1	65.1	67.0	65.4	71.5	72.7
7/7/2023	68.3	66.3	67.9	66.3	65.5	65.1	65.4	65.0	66.0	64.8	75.0	72.7
7/8/2023	67.3	66.5	67.7	66.5	64.8	65.0	64.7	65.0	63.0	64.4	74.7	73.0
7/9/2023	67.1	66.7	67.2	66.7	64.9	64.8	64.8	64.8	64.8	64.0	69.3	71.9
7/10/2023	64.1	66.9	64.1	66.7	64.0	64.7	64.0	64.6	62.0	63.6	73.5	72.3
7/11/2023	66.4	66.6	66.3	66.5	64.5	64.8	64.5	64.8	63.9	63.4	72.4	71.3
7/12/2023	66.6	66.4	66.5	66.3	63.9	65.0	63.9	64.9	61.4	63.7	67.1	71.1
7/13/2023	68.4	66.3	67.2	66.1	65.3	65.2	65.2	65.1	64.1	63.4	73.9	71.7
7/14/2023	66.3	66.6	66.4	66.4	66.3	65.5	66.2	65.4	64.8	64.1	68.4	71.9
7/15/2023	66.2	66.3	66.2	66.2	66.1	65.5	66.0	65.4	64.8	64.5	73.4	71.1
7/16/2023	66.3	66.4	66.4	66.3	66.3	65.9	66.2	65.9	63.1	64.6	73.0	72.3
7/17/2023	65.7	66.2	65.8	66.2	65.8	66.1	65.7	66.0	66.4	64.8	75.2	72.4
7/18/2023	64.8	66.1	64.9	66.2	64.8	66.1	64.7	66.0	66.6	64.9	66.8	72.5

Thermistor exposed to air

Thermistor exposed to air

Maximum calculated 7-DADMax

Maximum calculated 7-DADMax

Maximum calculated 7-DADMax

Date/Time	Upstream Inshore		Upstream Offshore		Downstream Inshore		Downstream Offshore		Outfall Manhole		Darigold Facility	
	Daily Max Temp (deg F)	7-DADMax (deg F)	Daily Max Temp (deg F)	7-DADMax (deg F)	Daily Max Temp (deg F)	7-DADMax (deg F)	Daily Max Temp (deg F)	7-DADMax (deg F)	Daily Max Temp (deg F)	7-DADMax (deg F)	Daily Max Temp (deg F)	7-DADMax (deg F)
7/19/2023	67.1	66.2	67.1	66.3	67.0	66.2	66.9	66.1	62.0	64.7	75.6	72.7
7/20/2023	66.7	66.2	66.7	66.3	66.6	66.2	66.5	66.1	65.8	65.0	74.3	72.9
7/21/2023	66.3	66.1	66.3	66.2	66.3	66.1	66.2	66.0	65.5	65.2	69.5	72.2
7/22/2023	66.6	65.4	66.6	65.4	66.5	65.3	66.4	65.2	63.4	64.7	74.2	73.1
7/23/2023	66.4	64.7	66.4	64.8	66.2	64.6	66.1	64.5	65.1	65.3	74.7	72.8
7/24/2023	65.2	64.5	65.3	64.6	65.3	64.4	65.2	64.3	67.7	65.1	70.4	72.8
7/25/2023	59.4	64.5	59.4	64.5	59.1	64.4	59.0	64.3	63.3	65.3	73.2	73.4
7/26/2023	62.3	64.3	62.4	64.3	62.4	64.2	62.3	64.1	66.0	65.1	73.1	73.6
7/27/2023	65.3	64.0	65.4	64.0	65.4	63.9	65.2	63.8	64.7	65.0	74.6	72.7
7/28/2023	66.2	63.9	66.2	63.9	66.1	63.8	66.0	63.7	67.0	64.0	73.9	72.8
7/29/2023	64.9	64.7	65.0	64.8	65.1	64.8	64.8	64.5	62.0	64.0	75.2	72.5
7/30/2023	64.3	65.2	64.4	65.2	64.2	65.2	64.0	65.0	63.9	63.8	68.4	71.9
7/31/2023	64.6	65.3	64.6	65.4	64.7	65.3	64.3	65.1	60.9	63.8	71.5	71.6
8/1/2023	65.4	65.3	65.4	65.4	65.5	65.3	65.1	65.1	63.4	62.9	70.6	71.7
8/2/2023	65.6	65.4	65.6	65.4	65.4	65.4	65.3	65.1	64.4	63.6	69.2	71.8
8/3/2023	66.2	65.6	66.2	65.6	66.1	65.6	66.0	65.3	65.2	63.9	72.3	72.8
8/4/2023	66.2	65.8	66.2	65.8	66.2	65.8	66.1	65.5	60.8	64.4	75.0	72.3
8/5/2023	65.3	65.6	65.4	65.6	65.4	65.6	65.1	65.4	66.6	64.3	75.6	73.1
8/6/2023	65.6	65.3	65.7	65.3	65.8	65.3	65.5	65.2	66.3	64.5	75.3	73.1
8/7/2023	66.0	64.7	66.0	64.7	66.0	64.6	65.8	64.5	64.2	63.9	68.0	73.3
8/8/2023	64.3	64.3	64.2	64.3	64.0	64.4	63.9		62.6	64.0	76.3	72.6
8/9/2023	63.6	64.4	63.6	64.4	63.5	64.4	63.8		66.1	63.4	69.0	71.7
8/10/2023	61.8	64.6	61.7	64.6	61.5	64.5	61.5		60.8	63.1	74.2	71.2
8/11/2023	63.4	64.6	63.5	64.6	64.7	64.4			61.7	63.1	69.7	71.4
8/12/2023	66.0	64.8	66.0	64.8	65.5	64.8	72.1		62.1	62.9	69.1	71.1
8/13/2023	66.8	65.2	66.8	65.2	66.2	65.1	78.7		64.2	62.8	72.1	71.7
8/14/2023	66.3	65.7	66.3	65.8	65.4	65.8	89.2		64.5	63.2	69.3	71.0
8/15/2023	65.9	65.9	66.0	66.0	66.6		82.4		61.4	63.0	74.0	71.4
8/16/2023	66.0	65.3	66.1	65.4	66.0		72.7		64.8	63.4	73.5	72.2
8/17/2023	65.7	64.5	65.7	64.5	66.1		75.9		63.8	63.6	69.2	72.4
8/18/2023	64.9	63.7	65.0	63.7	66.2		77.6		60.0	63.5	72.6	73.1
8/19/2023	61.5	63.1	61.5	63.0	79.0		72.1		65.0	63.7	74.5	73.2
8/20/2023	61.0	62.6	60.9	62.5	80.1		81.0		65.8	63.7	73.4	72.7
8/21/2023	61.1	62.0	61.0	61.9	74.5		79.3		63.5	64.0	74.5	73.5
8/22/2023	61.4	61.4	61.1	61.3	73.4		74.0		63.0	64.6	74.8	73.2
8/23/2023	62.4	61.6	62.2	61.5	71.4		71.6		64.7	64.4	69.8	73.0
8/24/2023	62.1	61.9	61.8	61.8	73.4		70.7		65.9	64.3	75.2	72.9
8/25/2023	60.4	62.1	60.5	62.1	83.6		81.2		64.5	64.6	70.1	72.2
8/26/2023	62.8	62.0	62.9	62.1	74.6		73.6		63.2	64.5	73.2	72.1
8/27/2023	63.3	61.4	63.4	61.4	93.6		90.7		65.3	64.5	72.6	71.8
8/28/2023	62.6	61.2	62.7	61.3	89.6		89.7		65.4	64.4	70.0	71.4
8/29/2023	60.8	61.5	60.8	61.5	70.4		72.2		62.7	64.3	73.6	71.5
8/30/2023	58.0	61.5	58.0	61.5	61.4		63.5		64.2	64.4	68.0	71.5
8/31/2023	60.8	61.3	60.8	61.4	62.2		67.8		65.7	64.4	72.3	71.4
9/1/2023	62.2	60.7	62.2	60.8	75.7		71.7		63.9	63.7	70.6	71.5
9/2/2023	63.0	60.7	62.9	60.7	89.5		87.8		63.7	63.7	73.1	70.1
9/3/2023	62.0	60.9	62.1	60.9	90.1		88.2		64.8	63.5	71.9	70.4
9/4/2023	58.5	61.0	58.5	61.0	70.6		73.7		60.8	63.4	70.7	70.4
					60.3		65.1					

Maximum calculated 7-DADMax

Maximum calculated 7-DADMax

Maximum calculated 7-DADMax

Thermistor exposed to air

Thermistor exposed to air

Date/Time	Upstream Inshore		Upstream Offshore		Downstream Inshore		Downstream Offshore		Outfall Manhole		Darigold Facility	
	Daily Max Temp (deg F)	7-DADMax (deg F)	Daily Max Temp (deg F)	7-DADMax (deg F)	Daily Max Temp (deg F)	7-DADMax (deg F)	Daily Max Temp (deg F)	7-DADMax (deg F)	Daily Max Temp (deg F)	7-DADMax (deg F)	Daily Max Temp (deg F)	7-DADMax (deg F)
9/5/2023	60.5	61.0	60.6	60.9	80.7		73.6		62.8	62.9	64.4	70.3
9/6/2023	59.5		59.4		84.0		74.6		62.6	62.7	70.1	69.5
9/7/2023	61.5		61.5		76.1		75.4		65.4	62.6	71.8	69.6
9/8/2023	61.8		61.6		79.1		76.4		60.5	62.6	70.4	69.1
9/9/2023	78.0		76.6		86.8		85.4		62.2	62.5	67.2	70.0
9/10/2023	71.3		77.7		81.2		82.6		63.6	62.5	72.6	70.0
9/11/2023	70.3		70.0		73.3		71.7		60.8	62.0	67.3	69.6
9/12/2023	65.7		66.9		66.1		66.1		62.2	62.2	70.4	69.7
9/13/2023	76.4		77.4		83.2		84.3		62.7	62.2	70.0	70.5
9/14/2023	61.6		62.7		89.0		88.0		61.8	62.4	69.5	70.0
9/15/2023	61.7		63.9		97.2		98.0		61.9	62.9	71.2	70.8
9/16/2023	59.9		61.3		81.7		91.6		62.4	63.2	72.4	71.0
9/17/2023	60.3	60.0	62.2	61.4	75.9		92.3		64.9	63.6	69.5	71.7
9/18/2023	60.5	59.5	62.1	60.8	76.3		83.7		64.5	63.7	72.6	71.7
9/19/2023	57.1	58.9	58.1	60.0	67.6		69.1		64.4	64.1	71.9	71.7
9/20/2023	58.7	58.5	59.9	59.3	78.5		81.3		65.5	64.2	74.6	71.9
9/21/2023	58.1	57.8	58.2	58.3	58.4		58.1		62.4	64.4	69.7	71.5
9/22/2023	58.0	57.0	58.1	57.3	58.3		58.0		64.5	64.4	71.3	71.6
9/23/2023	56.9	56.4	56.9	56.5	57.0		56.9		63.4	63.9	73.6	71.0
9/24/2023	55.1	55.7	55.1	55.6	55.0	55.7	55.0	55.5	65.9	63.3	66.8	70.9
9/25/2023	55.3	55.1	55.1	55.0	55.2	55.0	55.0	54.9	64.6	63.6	73.1	70.6
9/26/2023	52.6	54.4	52.6	54.3	52.6	54.2	52.5	54.2	60.9	63.4	68.2	70.4
9/27/2023	54.0	53.9	53.5	53.8	53.4	53.7	53.3	53.7	61.6	63.2	73.6	69.4
9/28/2023	53.6	53.8	53.7	53.7	53.6	53.5	53.5	53.5	64.3	62.7	67.4	70.2
9/29/2023	53.1	53.5	53.1	53.4	52.9	53.2	53.0	53.2	63.3	62.6	69.9	70.0
9/30/2023	53.6	53.7	53.6	53.6	53.4	53.4	53.4	53.4	61.9	63.1	67.1	69.8
10/1/2023	54.0	53.8	54.0	53.7	53.6	53.4	53.6	53.4	62.4	63.2	72.0	69.4
10/2/2023	53.6		53.5		53.2		53.1		63.9		71.5	
10/3/2023	54.0		53.8		53.5		53.5		64.0		67.2	
10/4/2023	54.3		54.2		53.9		53.9		62.8		70.8	

Thermistor exposed to air

Thermistor exposed to air