



## King County

Department of Natural Resources and Parks

### Wastewater Treatment Division

South Treatment Plant  
1200 Monster Road SW  
Renton, WA 98057

July 25, 2023

Sean Wilson, P.E.  
Washington Department of Ecology  
Northwest Regional Office  
PO Box 330316  
Shoreline, WA 98133-9716

Jun Naotsuka  
Public Health – Seattle and King County  
401 5th Avenue  
Seattle, WA 98104

Re: Residual Chlorine, Carnation Wastewater Treatment Plant, July 20, 2023

Dear Mr. Wilson and Mr. Naotsuka:

On July 20, 2023, King County Wastewater Treatment Division (WTD) measured a residual chlorine in the prior day's 24-hour composite effluent sample that exceeded 8.8 mg/L. At the time of discovery, WTD was discharging effluent via Outfall 002 to the Chinook Bend Wetland. The Carnation Wastewater Treatment Plant is located at 4405 Larson Avenue, Carnation, WA. This was reported to the Washington State Department of Ecology and assigned ERTS #724239.

Operations and Process staff immediately mobilized to Carnation and initiated an investigation. A grab sample collected from the outfall vault on the morning of July 20 showed a residual chlorine of 0.04 mg/L. Using 0.019 mg/L as the allowable limit for residual chlorine to Chinook Bend Wetland, WTD redirected discharge to the Snoqualmie River (Outfall 100) at approximately 11 a.m. on July 20. WTD continues to direct treated effluent to Outfall 100 and will do so until we can confirm residual chlorine drops below 0.019 mg/L. The daily maximum residual chlorine allowed to the river is 0.741 mg/L.

The Carnation Wastewater Treatment Plant accomplishes disinfection of wastewater via an ultraviolet (UV) system and residual chlorine is not a daily compliance parameter for discharge of effluent and no continuous monitoring instrumentation for residual chlorine is in place. On July 18, the effluent tower and UV system were disinfected using sodium hypochlorite. At the end of the procedure, the effluent tower residual chlorine was non-detect and the effluent composite sample for July 18 showed no indication of residual chlorine.

In addition to the 24-hour composite effluent sample for July 19, the composite influent sample for July 20 showed a high residual chlorine at 7.7 mg/L. It is believed that both of these high composite

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Jun Naotsuka  
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sample results are due to inadequate cleaning of sample carboys that were used to transport sodium hypochlorite on July 18 for the effluent tower and UV system disinfection procedure.


Throughout the in-plant investigation and persisting today, low level residual chlorine has been detected throughout the treatment plant and in the effluent (0.02 to 0.14 mg/L). Each step of the maintenance cleaning operation was reviewed in depth on July 23 and no potential source of residual chlorine to the treatment plant was identified.

Until late morning today, all of the in-plant residual chlorine tests have been run using a handheld Hach colorimeter. The Hach methods and procedures documentation states that positive interferences are feasible for this colorimetric method. Today, two additional instruments were mobilized to the Carnation Wastewater Treatment Plant. The first is an ultra-low range Hach colorimeter. The second leverages an amperometric titration method to measure residual chlorine.

Testing the same water, the handheld Hach colorimeter yielded a 0.04 mg/L result. The ultra-low range Hach colorimeter yielded a 0.033 mg/L result. The amperometric titration method yielded a non-detect result (detection limit 0.0057 mg/L). WTD will run some additional tests and further investigate potential interferences.

If you have any questions about this event, please feel free to contact me at 206-477-5600.

Sincerely,

DocuSigned by:  
  
6971F10C62DA49E...


Rebecca Singer  
Operations Manager


cc: Kamuron Gurol, Director, Wastewater Treatment Division (WTD), Department of Natural Resources and Parks (DNRP)  
Bruce Kessler, Deputy Director, WTD, DNRP  
Jeff Lafer, Project/Program Manager IV, WTD, DNRP  
Norm Cook, East Offsite Plant Manager, WTD, DNRP  
Chapin Brackett, O&M Process and Environmental Compliance Manager, WTD, DNRP


RE: Carnation | Update from Ecology





Truong, Phuong

To  Stiltner, Tyler;  Dyda, Rachael;  Macdonald, Matthew D;  Harris, Dustin;  Brackett, Chapin

 Reply

 Reply All

 Forward



Mon 8/14/2023 1:21 PM

Basically, the readings today were below detection limit of 5.7ug/L using 0.00564N PAO (4500 Cl D method) and also below detection limit of 4ug/L using 0.000564N PAO (4500 Cl E method)

Phuong Truong  
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**From:** Stiltner, Tyler <[tstiltner@kingcounty.gov](mailto:tstiltner@kingcounty.gov)>  
**Sent:** Monday, August 14, 2023 1:00 PM  
**To:** Dyda, Rachael <[Rachael.Dyda@kingcounty.gov](mailto:Rachael.Dyda@kingcounty.gov)>; Macdonald, Matthew D <[mamacdonald@kingcounty.gov](mailto:mamacdonald@kingcounty.gov)>; Harris, Dustin <[Dustin.Harris@kingcounty.gov](mailto:Dustin.Harris@kingcounty.gov)>; Brackett, Chapin <[cbrackett@kingcounty.gov](mailto:cbrackett@kingcounty.gov)>  
**Cc:** Truong, Phuong <[Phuong.Truong@kingcounty.gov](mailto:Phuong.Truong@kingcounty.gov)>  
**Subject:** RE: Carnation | Update from Ecology

Correction..... **Effluent** to the wetland..... It's Monday

**From:** Stiltner, Tyler  
**Sent:** Monday, August 14, 2023 12:33 PM  
**To:** Dyda, Rachael <[Rachael.Dyda@kingcounty.gov](mailto:Rachael.Dyda@kingcounty.gov)>; Macdonald, Matthew D <[mamacdonald@kingcounty.gov](mailto:mamacdonald@kingcounty.gov)>; Harris, Dustin <[Dustin.Harris@kingcounty.gov](mailto:Dustin.Harris@kingcounty.gov)>; Brackett, Chapin <[cbrackett@kingcounty.gov](mailto:cbrackett@kingcounty.gov)>  
**Cc:** Truong, Phuong <[Phuong.Truong@kingcounty.gov](mailto:Phuong.Truong@kingcounty.gov)>  
**Subject:** RE: Carnation | Update from Ecology

Hello everyone,

A big thank you to Phuong for her continued assistance in this issue. Phuong received a .0018 on the amperometric method today which put us back within permit requirements to return to the wetland. I will be valving our influent from the river to the wetland before my departure today. I have collected an effluent sample and prepared the fecal coliform test to satisfy our weekly requirement.

**Tyler Stiltner**  
Primary Plant Operator  
Carnation Treatment Plant  
East Section Offsite  
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