



December 6, 2022

Client File No.: 1069.10
Our File Nos.: S-928, EMS
020-17-08-11-00
020-17-08-11-0N

Environment, Climate and Parks
Environmental Stewardship Division
Environmental Approvals Branch
1007 Century Street
Winnipeg, MB R3H 0W4

Attention: James Capotosto, Director

Dear Mr. Capotosto:

**RE: NOTICE OF ALTERATION – CITY OF WINNIPEG SOUTH END WATER POLLUTION
CONTROL CENTRE (SEWPCC) – ENVIRONMENT ACT LICENCE NO. 2716RR**

Please find attached Notice of Alteration request for City of Winnipeg South End Water Pollution Control Centre (SEWPCC) – Environment Act Licence No. 2716RR. Included in this submission is the Notice of Alteration Form and a letter report describing the details of the Notice of Alteration request. Payment for the NOA will be submitted separately.

Please contact Mr. Colin Javra at 204-986-4480 or cjavra@winnipeg.ca for any clarifications or questions you may have concerning this proposal.

Sincerely,



Chris Carroll
Manager Wastewater Services

Attachment

CWC

c:

K. Harman., Environment, Climate and Parks (email)
Yvonne Hawryliuk, MSc, Environment, Climate and Parks (email)



Siobhan Burland Ross, M. Eng., P.Eng., Environment, Climate and Parks (email)
C. Wiebe, P. Eng., Water and Waste Department (email)
T. W. Shanks, P. Eng., Water and Waste Department (Email)
C. Javra, P.Eng., Water and Waste Department (Email)
T. Josephson, P.Eng., Water and Waste Department (Email)
R. Dewitt, P. Eng., Water and Waste Department (email)

Notice of Alteration Form



File No. : 1069.10	Environment Act Licence No. : 2716RR
Legal name of the Licencee: City of Winnipeg	
Name of the development: South End Water Pollution Control Centre	
Category and Type of development per Classes of Development Regulation: Waste Treatment and Disposal <input type="button" value="v"/> <SELECT>	
Licencee Contact Person: Chris Carroll, P.Eng Mailing address of the Licencee: 1199 Pacific Ave City: Winnipeg Province: Manitoba Postal Code: R3E 3S8 Phone Number: Fax: Email:	
Name of proponent contact person for purposes of the environmental assessment (e.g. consultant):	
Phone:	Mailing address:
Fax:	
Email address:	
Short Description of Alteration (max 90 characters):	
Alteration fee attached: Yes: <input type="checkbox"/> No: <input checked="" type="checkbox"/>	
If No, please explain:	
Date: 2022-12-06	Signature:  Printed name: Chris Carroll
<p>A complete Notice of Alteration (NoA) consists of the following components:</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Cover letter <input checked="" type="checkbox"/> Notice of Alteration Form <input checked="" type="checkbox"/> 1 hard copy and 1 electronic copy of the NoA detailed report (see "Information Bulletin - Alteration to Developments with Environment Act Licences") <input type="checkbox"/> \$500 Application fee, if applicable (Cheque, payable to the Minister of Finance) 	
<p>Submit the complete NoA to: Director, Environmental Approvals Branch Manitoba Environment, Climate and Parks 1007 Century Street Winnipeg, Manitoba R3H 0W4 EABDirector@gov.mb.ca</p> <p>For more information: Phone: (204) 945-8321 Fax: (204) 945-5229 https://www.gov.mb.ca/sd/permits/licenses_approvals/eal/licence/index.html</p>	
<p>Note: Per Section 14(3) of the Environment Act, Major Notices of Alteration must be filed through submission of an Environment Act Proposal Form (see "Information Bulletin – Environment Act Proposal Report Guidelines")</p>	



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Environment, Climate and Parks
Environmental Stewardship Division
Environmental Approvals Branch
100 Century Street
Winnipeg, MB R3H 0W4

Attention: James Capotosto, Director

**E: NOTICE OF ALTERATION – CITY OF WINNIPEG SOUTH END WATER POLLUTION
CONTROL CENTRE (SEWPCC) ENVIRONMENTAL ACT LICENCE NO. 2716RR**

The City of Winnipeg (City) is requesting a Notice of Alteration (NOA) for the South End Water Pollution Control Centre (SEWPCC) Environmental Act Licence No. 2716RR to allow for a twenty (20) day bypass of the ultraviolet (UV) disinfection system to allow for upgrade works required to meet the prescribed flow as stated in the licence. The planned shutdown is expected to commence on or about January 23, 2023, contingent on construction schedules.

The following information summarizes the ultraviolet (UV) upgrade work required to meet licence conditions to support the request to shutdown UV treatment. The UV bypass period is required to install the downstream modulating gates and confirm the control logic with the UV system. During the upgrade, all upstream processes including headworks, primary treatment, biological nutrient removal, and secondary clarifiers will be operational. The UV system is the final step in the secondary treatment.

Scope of Work

The scope of work involves replacing the aging UV disinfection systems in the two existing UV channels at SEWPCC. The upgrades are required to replace end of life equipment and to increase the UV final secondary treatment capacity to 225 ML/d from the current 100 ML/d. The upgrade will be carried out in four successive stages to maintain as much disinfection as possible throughout the construction work. Flow schematics for each stage are attached to this letter.

• **Stage 1**

In the first phase, the contractor will isolate the south channel and remove the existing UV equipment and replace with the new equipment including the new control system, electrical, mechanical and concrete works. During this, the north UV channel continues to provide disinfection to the secondary effluent up to 50-55 ML/d. Once the new UV equipment in the south channel is installed and tested for functionality, stage 2 will start.

- **Stage 2**

The second stage consists of the installation of two automatic motorized modulating gates that are critical for the functionality of the UV system in both south and north channels. At this point, the full UV bypass is required for approximately 20 days. During this period, the contractor will isolate both UV channels to install the new gates and do the final commissioning of the south UV channel. Both gates have to be upgraded at the same time as the aging gate controls will not operate with the new programmable logic controls (PLC). Once the gates are installed and tested, flow will be directed through the south channel with the upgraded equipment at a treatment capacity of 112.5 ML/d. At this point, stage 3 will commence.

- **Stage 3**

Includes replacement of the north channel equipment, similar to Stage 1.

- **Stage 4**

Returning full flow through the upgraded UV.

Review of Alternates to Full UV Bypass

The following alternatives to a full bypass were considered prior to start of work. In each case, the overall risk and uncertainty associated with each option outweighed its advantage.

1. **Isolation and upgrade of one UV channel at a time**

This option would require multiple full bypass events to upgrade the isolation bulkhead on the UV channel. In addition to multiple days of bypass and substantial effort required, installation of the bulkheads may not be completely successful in isolating the UV channel due to the concrete and structural limitations, including two control systems that would require one gate to be operated in a manual mode. Overall, this approach risked extending the schedule into early spring high flows when the risk of bypass is significantly higher.

2. **Installation of a temporary chlorination-dechlorination system on the secondary effluent**

Injecting the secondary effluent with chlorine upstream of the UV channel and dechlorinating (using sodium bisulphite) downstream of the UV chamber (e.g., sampling building) was also considered as a temporary option. Significant concerns associated with this option included:

- Ability to implement a robust and reliable solution for chlorination and, more importantly, dechlorination of the secondary effluent prior to discharge to the Red River
- Chemical handling in common areas
- Considerable construction efforts for temporary equipment, instrumentation, and control systems

Overall, the inherent risks of this approach, specifically related to reliability, robustness, and safety, made it unviable.

As a result of the uncertainties and risks associated with each of these options, the full bypass solution was selected as the preferred option for the UV upgrade. This option had the lowest overall risk due to its process reliability, known bypass time, and schedule certainty.

Contingency

A risk mitigation plan has been developed that includes the following:

- The contractor’s construction schedule and inspection test plans (ITPs) are in place to monitor and drive the work as close to the schedule as possible
- Rigorous functional testing will be carried out by the vendor and the commissioning team ahead of the bypass period to mitigate the risk of equipment commissioning issues during the start up of the UV system
- In the event of an unforeseen issue that cannot be rectified in timely manner, temporary option 1 can be considered. If the issue happened before commencing construction work in the north UV channel, reverting back to manual operation of the north UV channel could be accommodated but would require extensive monitoring and staff resources. As mentioned above, it may also result in an extended bypass period

Flow and Bypass Information

Table 1 provides a summary of the average raw sewage flow to the plant over the low flow period of 2021-2022. Based on this, one UV channel with a treatment capacity of 50-55 ML/d is expected to provide sufficient disinfection to the secondary effluent during the phase 1 upgrade works. During the 20-day bypass period, anticipated to take place between mid-January and mid-February, approximately 917 ML of secondary treated effluent will not receive UV treatment (this is based on a daily average flow of 45.8 ML/d).

Table 1, Average Monthly Flow (ML/d) for Low Flow Period 2021-2022

November-21	December-21	January-22	February-22
52.9	43.8	44.7	41.9

Should you have any questions on the SEWPCC Biological Nutrient Removal and Upgrade Project, please contact Colin Javra at 204-986-4480 or by email at cjavra@winnipeg.ca.

Sincerely,



Cynthia Wiebe P. Eng., CAMP
Manager Engineering Services

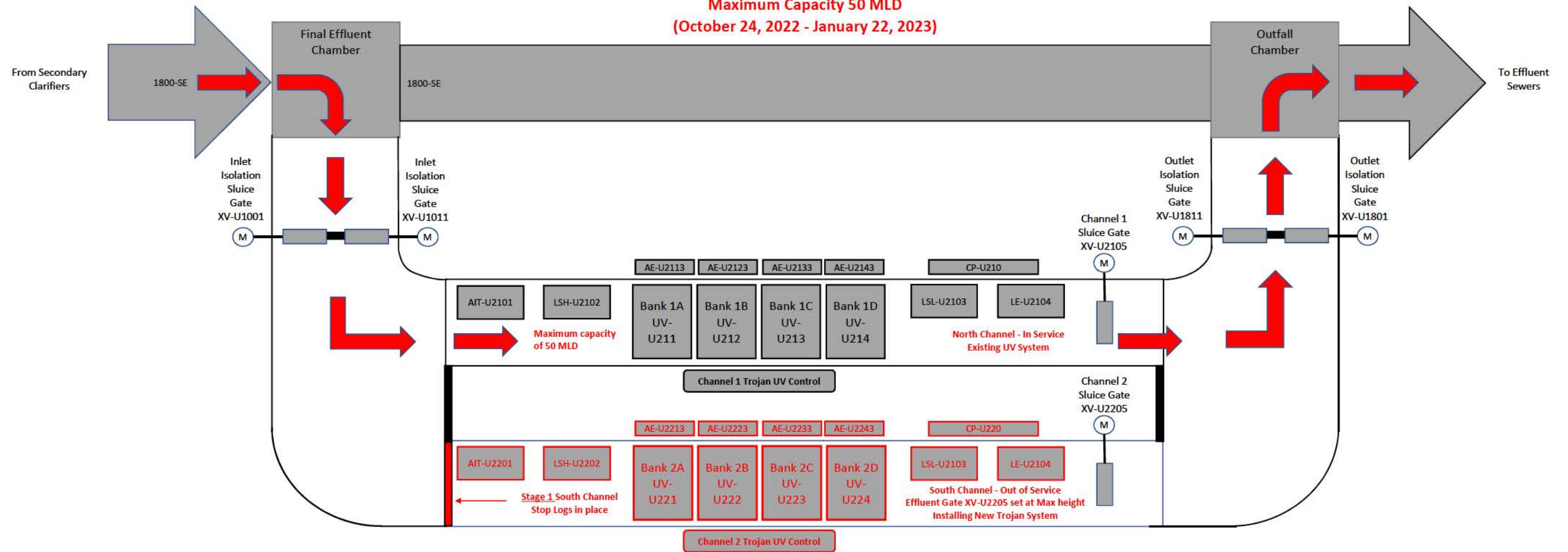
Attachment

CJ/mw

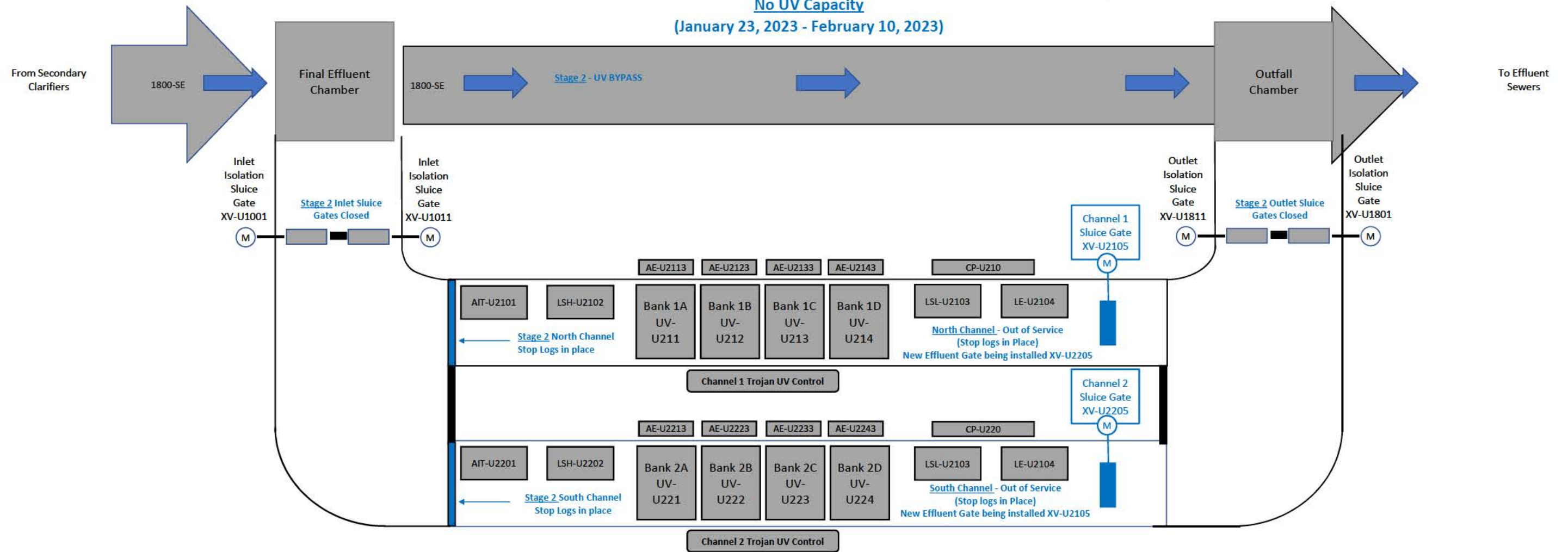
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C. Javra, P. Eng., Water and Waste Department (Email)
M. Paetkau, P. Eng., Water and Waste Department (email)

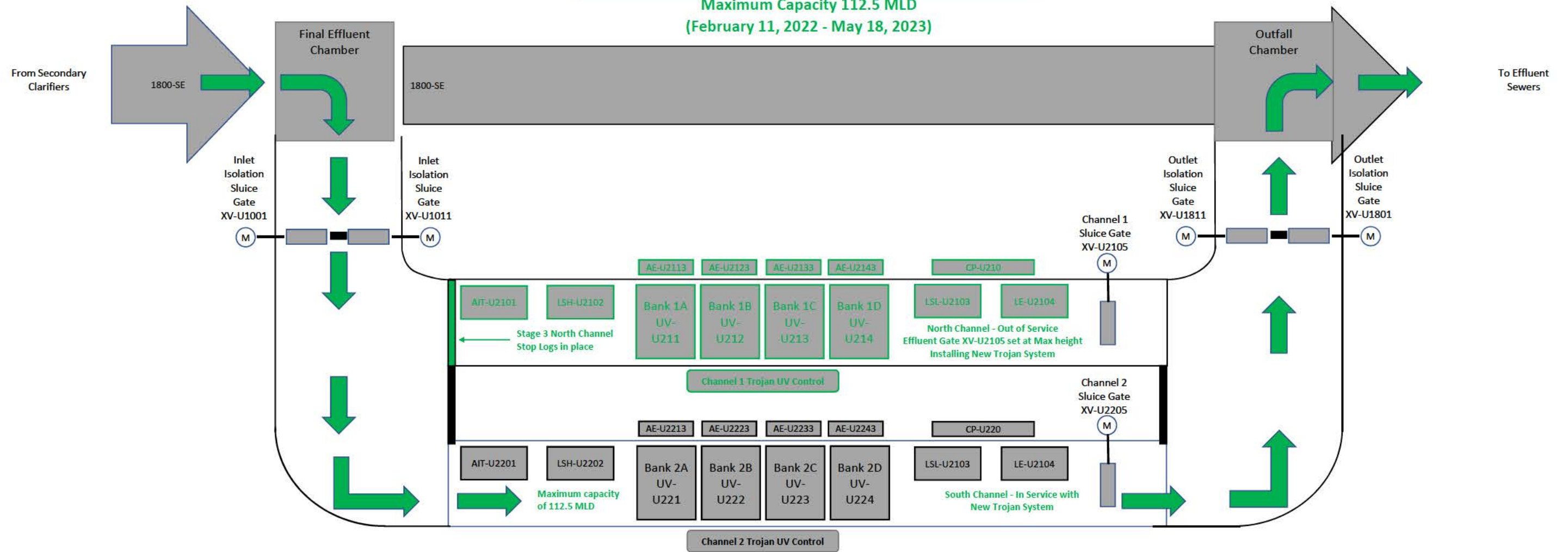
Stage 1 - North Channel in Service
South Channel Out of Service - New Trojan System Being Installed
Maximum Capacity 50 MLD
(October 24, 2022 - January 22, 2023)



Stage 2 - System in By-Pass
North & South Channel Out of Service - Weir Gates in Both Channels Being Replaced
No UV Capacity
(January 23, 2023 - February 10, 2023)



Stage 3 - South Channel in Service
North Channel Out of Service - New Trojan System Being Installed
Maximum Capacity 112.5 MLD
(February 11, 2022 - May 18, 2023)



Stage 4 - North & South Channel in Service
New Trojan System Installed
Maximum Capacity 225 MLD
(May 18, 2023)

