



**DATE:**

Wednesday, March 6, 2024

**TO:**

Mr. Chris Kostik  
City of Credit River  
18985 Meadow View Boulevard  
Prior Lake, MN 55372

**RE:**

2023 Year End Report for CSTS Systems  
Monterey Heights/South Passage  
City of Credit River, Minnesota

Dear Honorable Mr. Mayor Kostik,

Natural Systems Utilities (herein referred to as NSU) is providing wastewater operation and maintenance services for the South Passage and Monterey Heights wastewater treatment facilities. Attached is a summary of system performance, flow monitoring, interpretation of analytical results and a summary of anticipated future capital replacement and maintenance needs.

**Description of System**

Monterey Heights and South Passage consist of 29 and 20 homes, respectively. All homes have individual septic tanks and a septic tank effluent pumping (STEP) system which discharges water into a pressurized forcemain. The homes in Monterey Heights discharge water via a forcemain to the Monterey Heights wastewater treatment facility. The homes in South Passage discharge to the South Passage wastewater treatment facility. Water from Monterey Heights development is treated by a recirculating gravel filter, Water from South Passage also used a gravel filter system until October of 2023 when the gravel filter was replaced with three AdvanTex Pod aerobic treatment units (ATU's). Treated water from both sites is disposed of in a bank of mounds (12 mounds for South Passage and 18 mounds for Monterey Heights).



## Repairs and Service Calls

There were alarms at the MHSP wastewater treatment facility that required service calls in 2023. Below is a breakdown of the alarms by two categories, STEP alarms and Community Subsurface Treatment System (CSTS) alarms, as well as details on repairs completed at the facility.

### STEP Alarm and Repair Breakdown:

- On 4/19 NSU replaced a damaged lid at 21355 Ridgewood Trl.
- On 5/9 NSU responded to STEP alarm at 21275 Ridgewood Trail and found clogged pump screen and filter. NSU unclogged and cleaned pump to fix the issue.
- On 6/28 NSU received call from homeowner about alarming STEP system at 21095 Ridgewood Trl and determined the motor contactor was failing, NSU order and replaced the component on 7/27.
- On 7/13 NSU received call from homeowner at 21080 Ridgewood Trl. unable to flush their toilets. Upon troubleshooting on the phone it was determined that recent storm had tripped power going to the septic system. Once the breaker was reset the pumps activated and fixed the issue.
- On 7/25 NSU troubleshoot system at STEP address 21016 France Blvd and cleaned filter to help fix issue, however on 7/28 homeowner advised pump was not working and system was pumped. NSU retested system on 7/29 and determined the pump screen was blocked, cleaning the screen resolved the issue.
- On 12/7 NSU checked a previous alarm at STEP system on 21355 Ridgewood trail and confirmed no issues.
- On 12/7 NSU troubleshoot STEP system at 9160 Amber drive and cleaned filter.

### CSTS Alarm and Repair Breakdown:

#### *Monterey Heights Facility:*

- On 5/3 NSU received complaints regarding sand on the walking path leading to the facility, NSU assessed and confirmed sand was not from nearby drainfield mounds and swept and cleared the path leading to the site.
- In July NSU weed whipped around lids for better access and treated the gravel filter with herbicide to eliminate vegetation.
- In August NSU weed whipped around lids for better access.
- In September NSU completed STEP inspections in the Monterey Heights neighborhood.
- In September NSU cleared vegetation growing over the lids and panel at the treatment site.
- On 11/28 NSU replaced a failed dose pump at the treatment site.



#### *South Passage Facility:*

- In June NSU and treated the gravel filter with herbicide to eliminate vegetation.
- On 6/27 NSU attended an onsite bid meeting about upcoming site upgrades and provided info about the site as needed.
- On 8/22 NSU mowed and trimmed the treatment area to allow access.
- In September NSU completed STEP inspections in the South Passage neighborhood.
- On 10/26/23 NSU Installed new filter in recirculation pump basket, rebuilt handle and modified float tree.

#### **Septic Tank Pumping/Maintenance:**

In 2023, 23 STEP Systems were pumped due to accumulation of solids in the septic tank. *Mikes Septic* completed the pumping for these STEP systems.

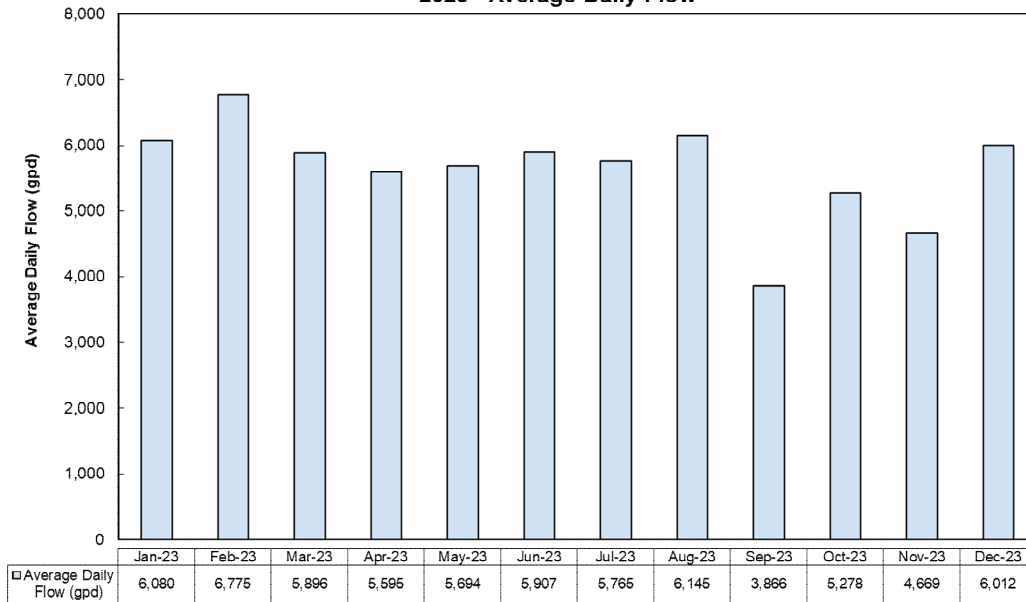
#### **Flow Monitoring:**

NSU monitors the flows for both systems to ensure they are within the design parameters. The flows for 2023 were both within parameters and were reasonable for the number of homes that are currently connected to the system. South Passage continues to trend higher in flow per home than Monterey Heights. This may be due to iron filter settings, individual water fixture units installed, having a higher population per home on average, an unidentified source of inflow and infiltration, or another unidentified factor. Despite this, there are no current concerns with the flow numbers. Further, the flow numbers are very consistent with past years. Below is a summary of flows for 2023:

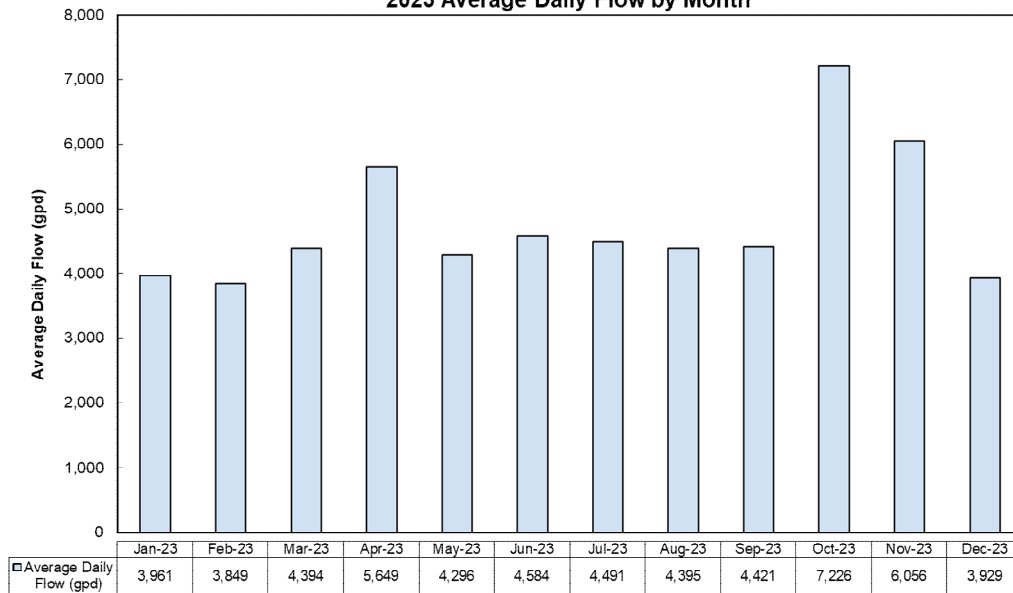


WATER REIMAGINED

### Credit River - Monterey Heights 2023 - Average Daily Flow



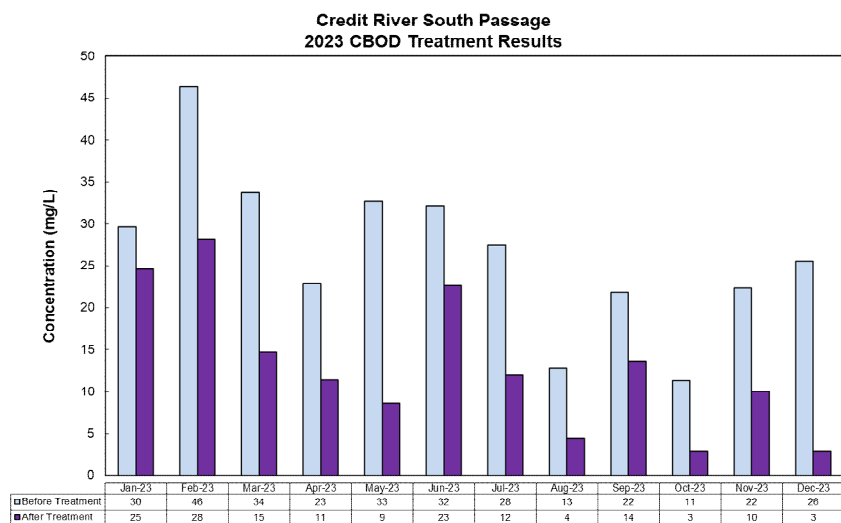
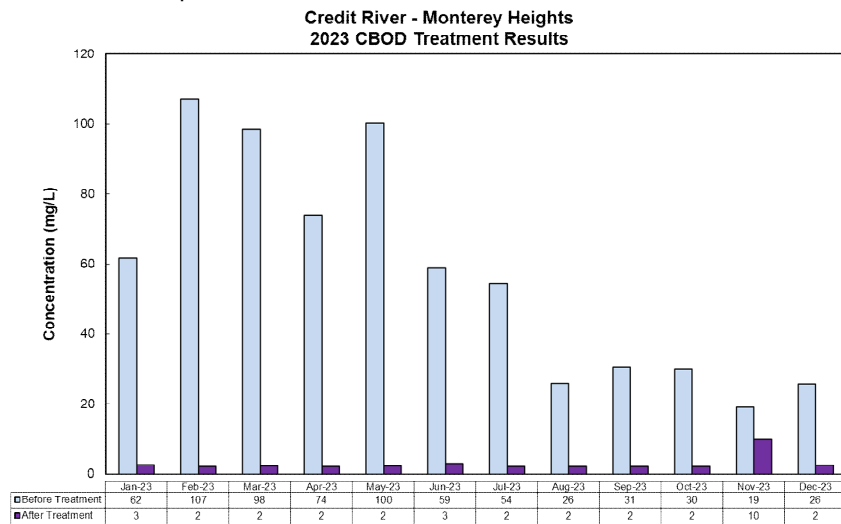
### Credit River - South Passage 2023 Average Daily Flow by Month





## Summary of Analytical Results:

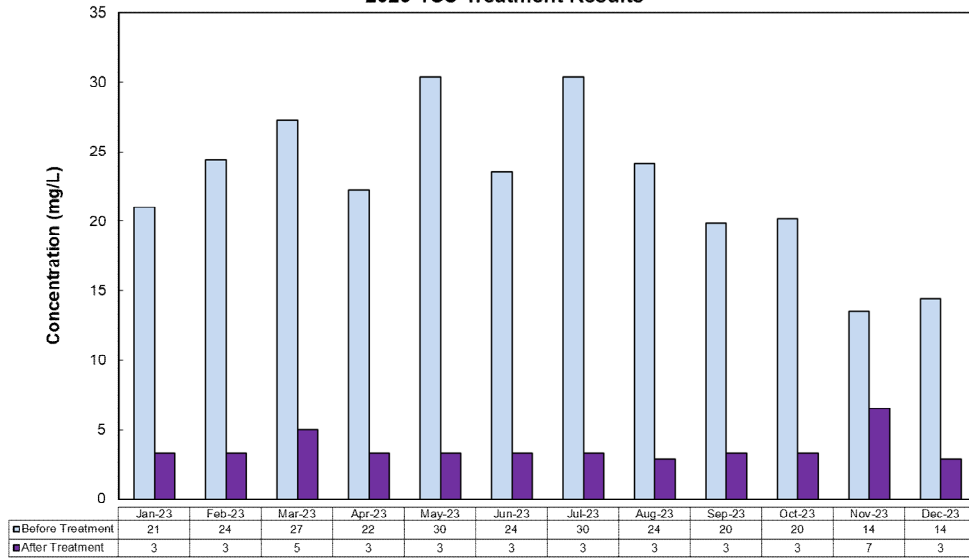
Routine analytical sampling is conducted twice per month as required by the MPCA permit. Overall treatment at the Monterey Heights facility was very good in 2023 with regard to carbonaceous biochemical oxygen demand (CBOD; organic strength) and total suspended solids (TSS). South Passage influent numbers were not accurately sampled January – September due to the influent pipe frequently below the water level of the tank in 2023. This was done to allow the gravel bed recirculation time to rest between doses and prevent surfacing of water in the wetlands. In October South Passage replaced the gravel filter with AdvanTex Pods. Both the facilities have groundwater monitoring wells to monitor the Total Nitrogen as well as chloride. Total nitrogen (TN) is measured as the sum of total Kjeldahl nitrogen (TKN) and nitrate plus nitrite (N+N). Charts of treatment performance are included below:



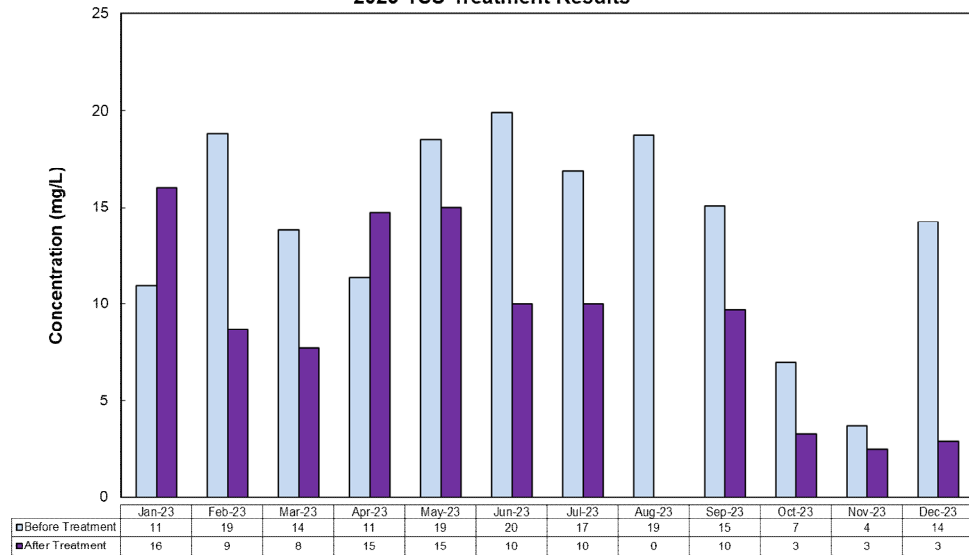


WATER REIMAGINED

**Credit River - Monterey Heights  
2023 TSS Treatment Results**



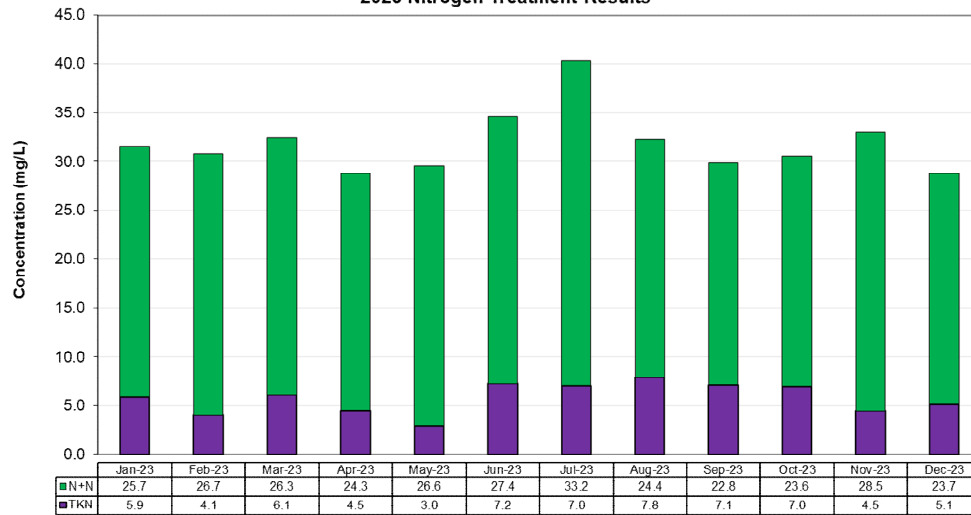
**Credit River - South Passage  
2023 TSS Treatment Results**



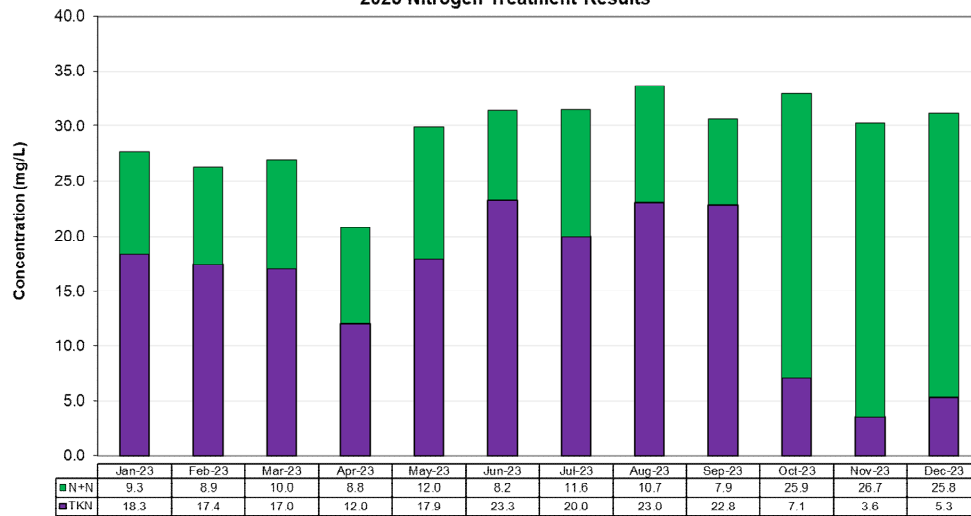


WATER REIMAGINED

**Credit River - Monterey Heights  
2023 Nitrogen Treatment Results**



**Credit River - South Passage  
2023 Nitrogen Treatment Results**



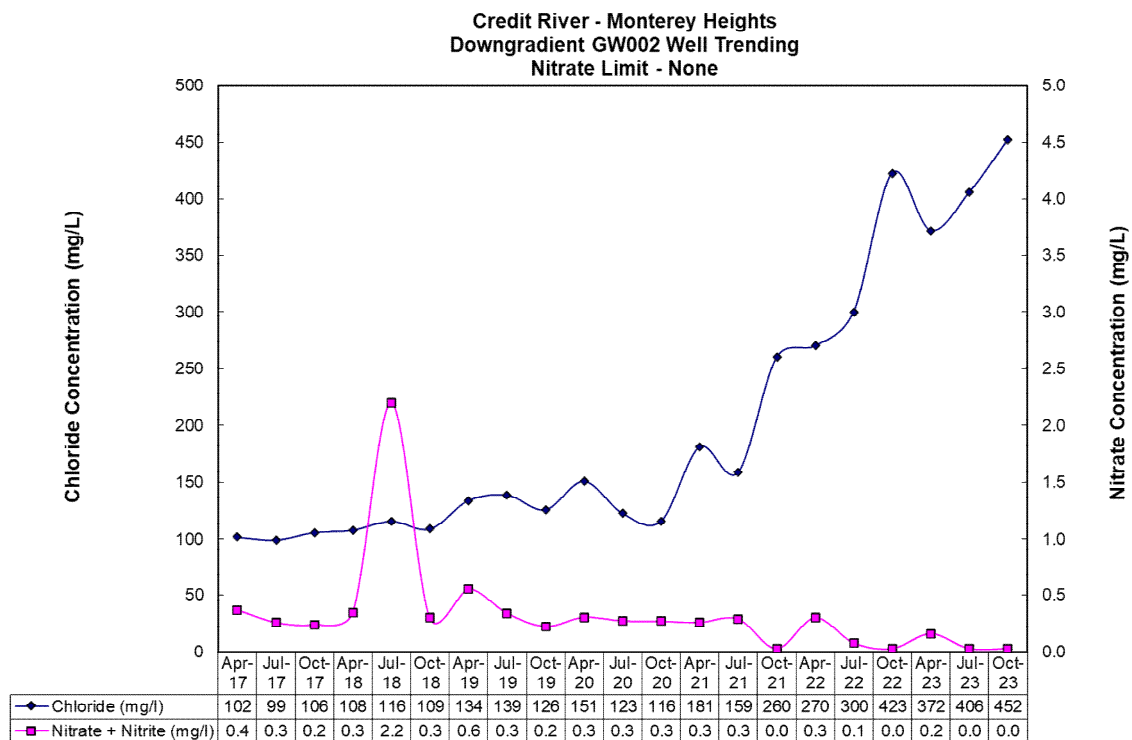




### Groundwater monitoring Wells:

Performance of the wastewater system is monitored monthly influent and effluent sampling along with seven groundwater monitoring wells. Three wells monitor groundwater impacts at South Passage (GW005, GW006, GW007), and four wells monitor the system for Monterey Heights (GW002, GW004, GW009, GW010). The monitoring well data is consistent with results from previous years. Monitoring wells for both systems are within permit requirements.

One groundwater monitoring well in South Passage (GW007) is in close proximity to the WWTF and that continues to get significant hits of nitrates and chlorides. This was discussed with the Minnesota Pollution Control Agency during a fall 2008 Compliance Monitoring Survey and in subsequent meetings through 2010, and again in the spring of 2012. The MPCA concurred that the monitoring well is located too close to the existing wastewater disposal system. Graphs of monitoring well performance are shown below:

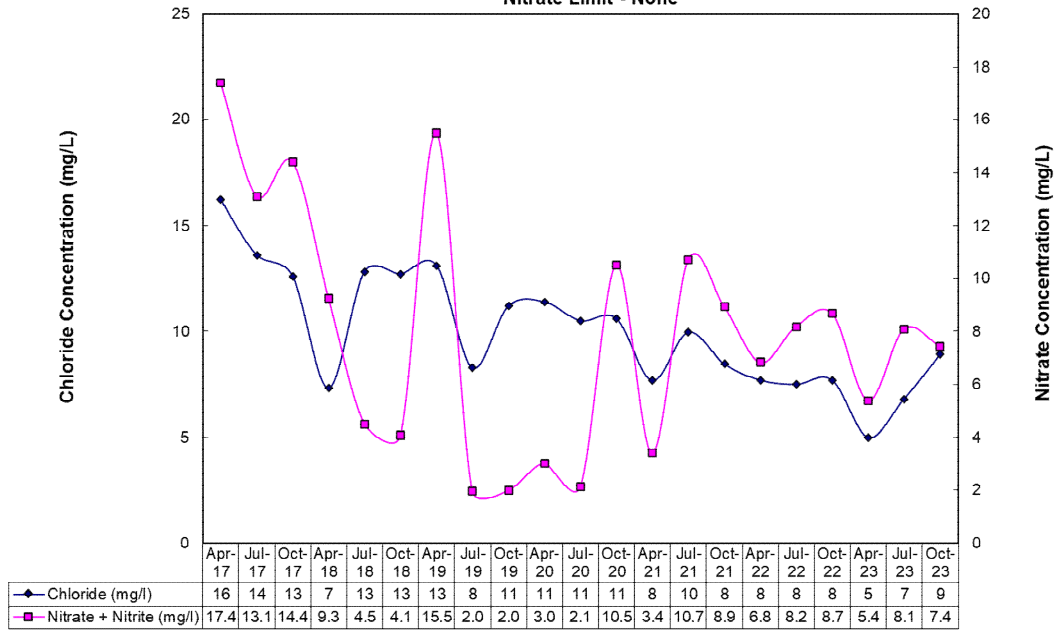




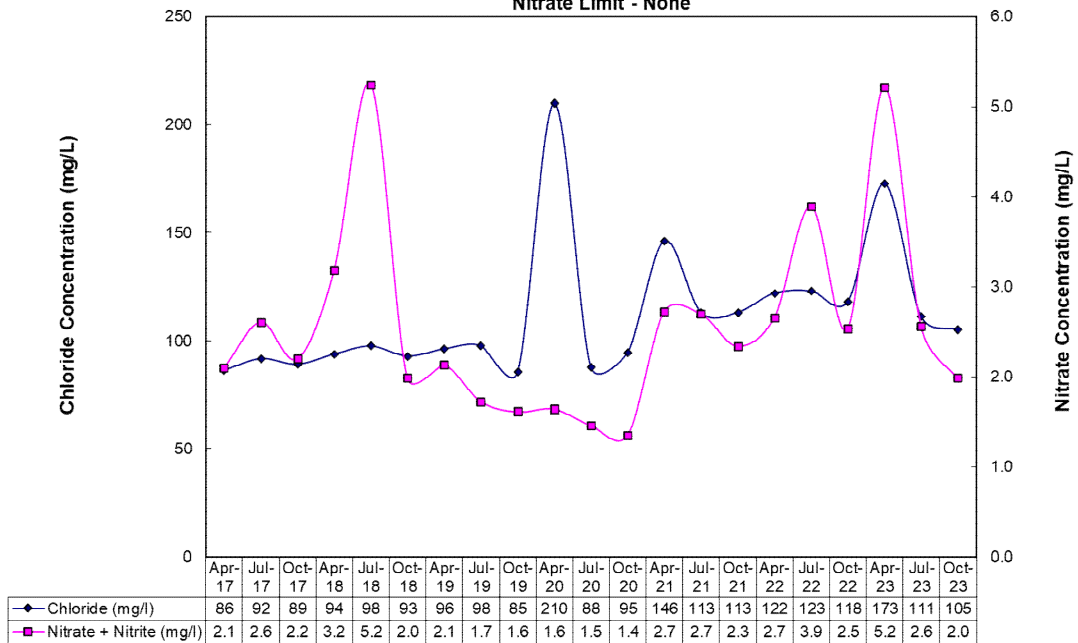


WATER REIMAGINED

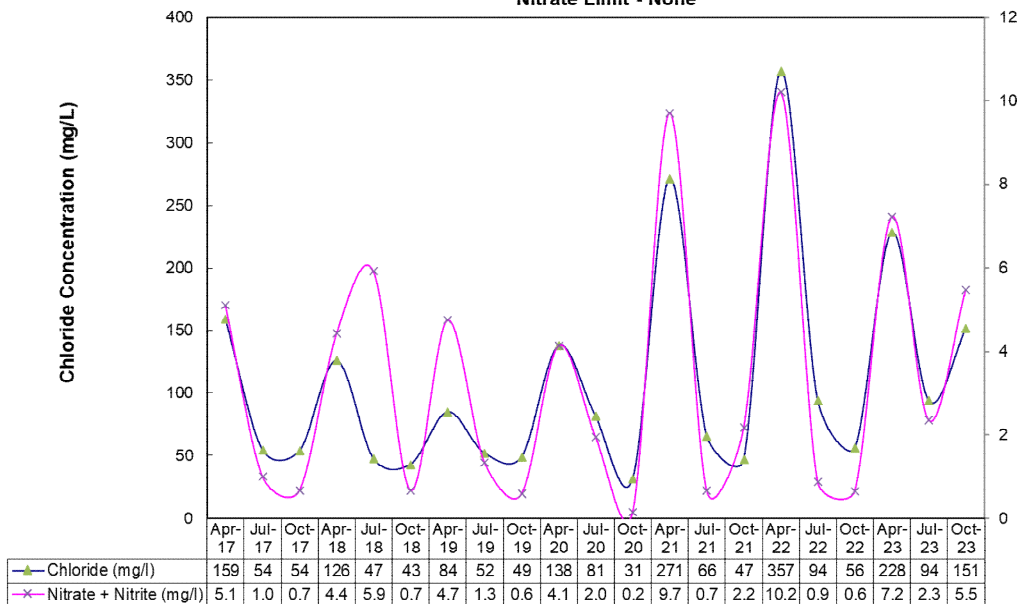
**Credit River - Monterey Heights  
Downgradient GW004 Well Trending  
Nitrate Limit - None**



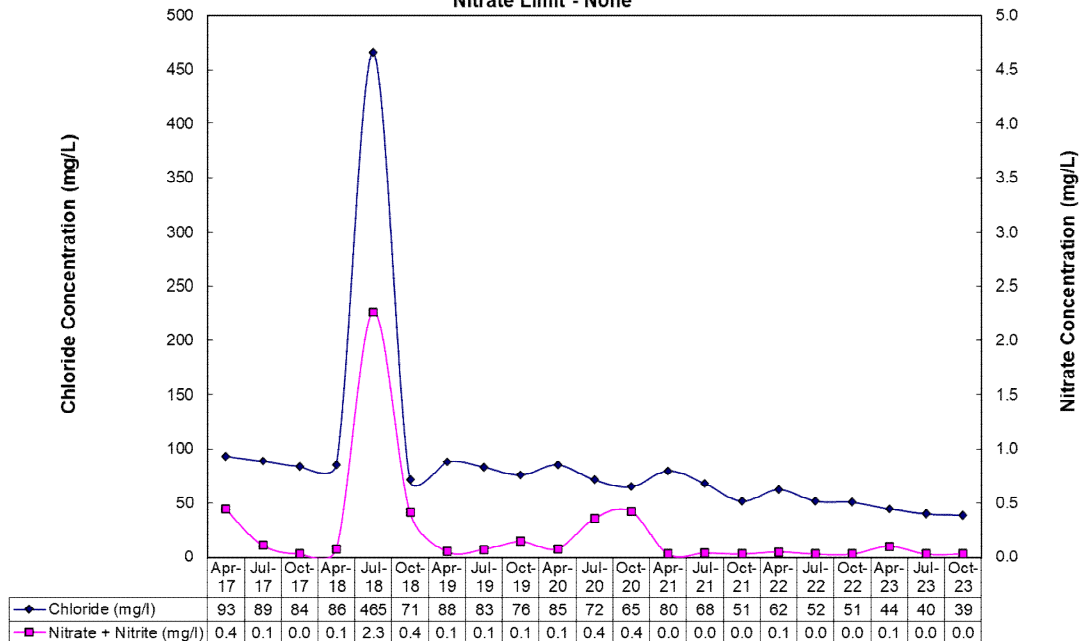
**Credit River - Monterey Heights  
Downgradient GW009 Well Trending  
Nitrate Limit - None**



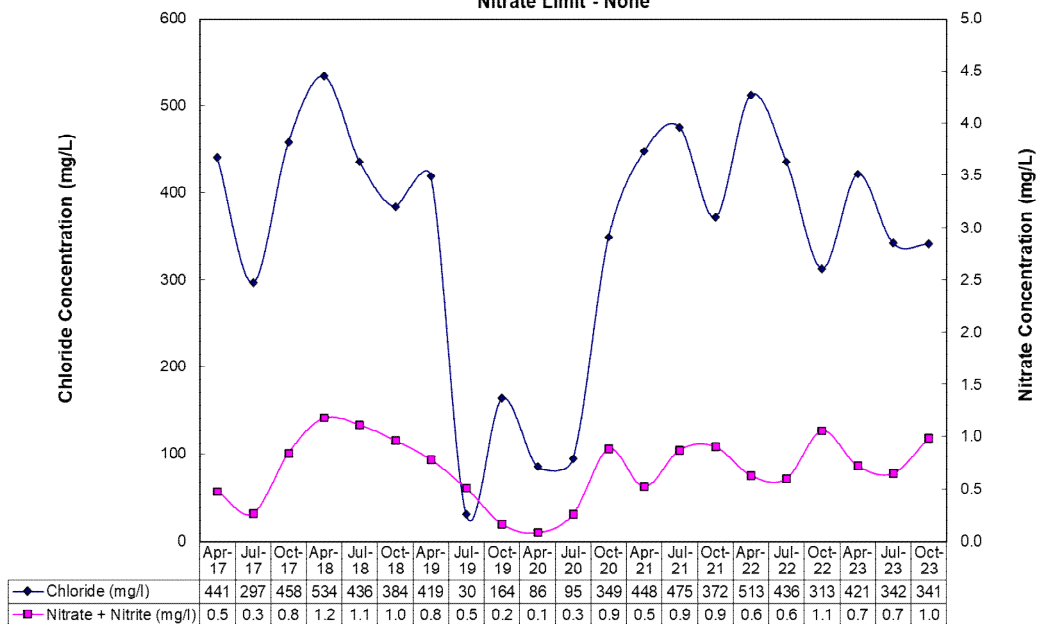
**Credit River - Monterey Heights  
Downgradient GW010 Well Trending  
Nitrate Limit - None**



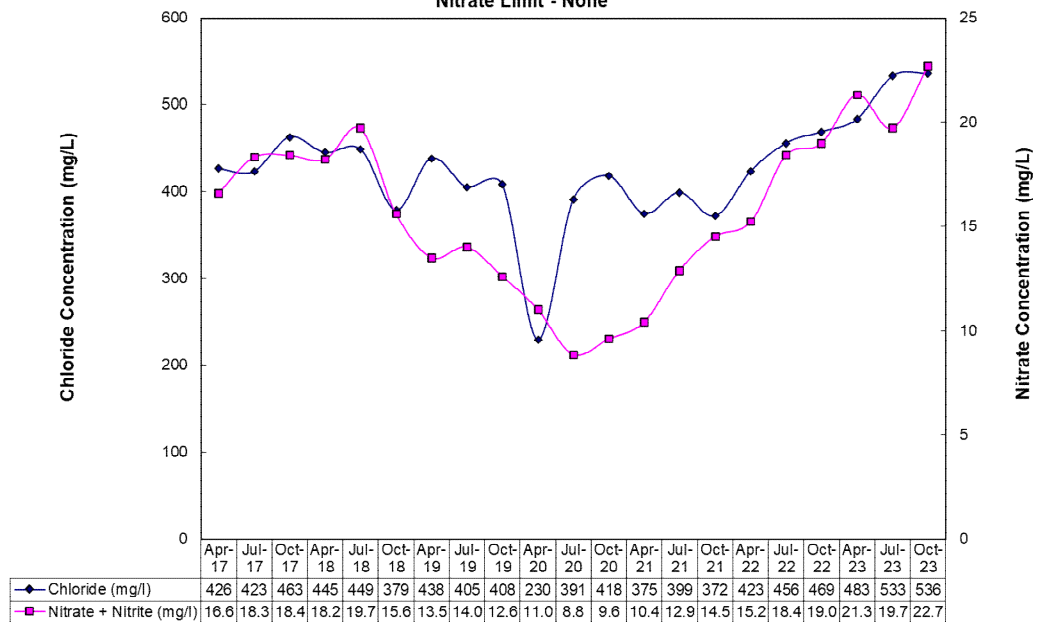
**Credit River - South Passage  
Downgradient GW005 Well Trending  
Nitrate Limit - None**



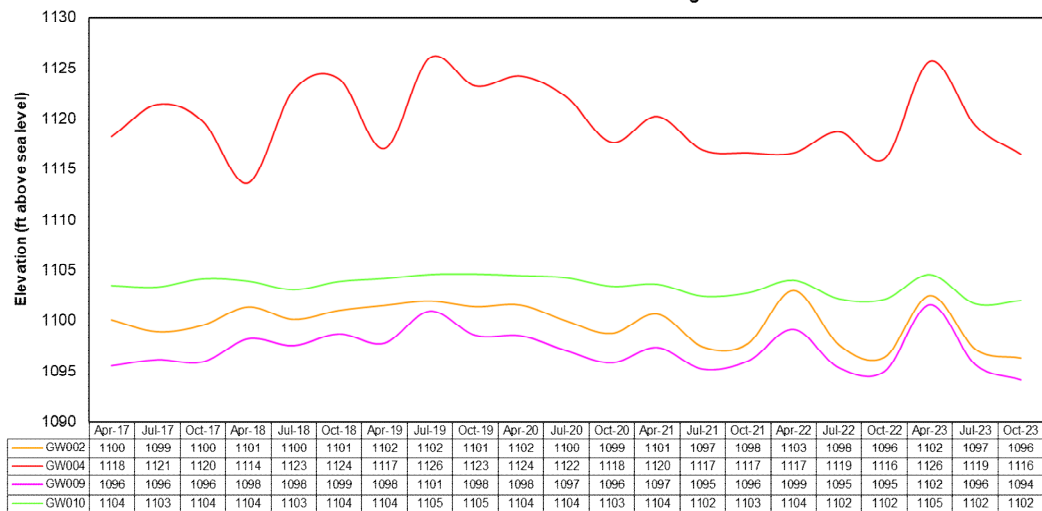
**Credit River South Passage  
Upgradient GW006 Well Trending  
Nitrate Limit - None**



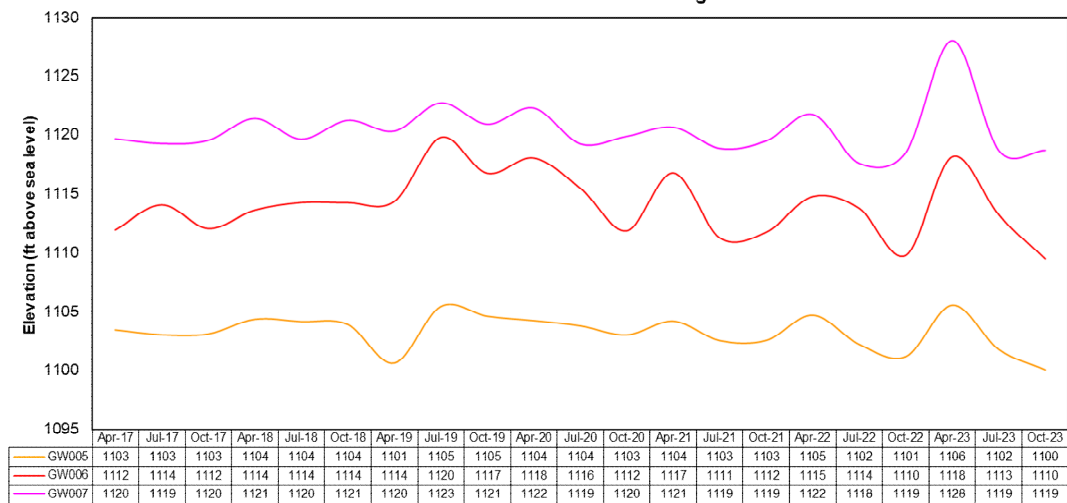
**Credit River South Passage  
Downgradient GW007 Well Trending  
Nitrate Limit - None**



**Credit River - Monterey Heights  
Groundwater Elevation Trending**



**Credit River- South Passage  
Groundwater Elevation Trending**





## 2024 Repair, Maintenance and Permit Considerations:

- **Tree Removal** – The previously removed gravel filter at South Passage was found to have large roots wrapped around the treatment area. NSU recommended tree removal and met with a tree removal specialist in the fall to remove trees nearby the sites. NSU recommends continuing to move forward with the removal of trees near the Monterey Heights and South Passage treatment sites, and the trees growing on top of Monterey heights drainfield mound #1.
- **AdvanTex Pod Latch Protection** – The recently installed AdvanTex pods in South Passage are latched down. Experience has shown that these latches will be covered in soil over time which will make access difficult. NSU is awaiting the ground to thaw then will install modified valve boxes to prevent future soil intrusion.
- **Drainfield Jetting** – NSU recommends having the drainfields jetted and cleared to maintain effective dispersal among the drainfield mounds

If you have any questions regarding the annual report, please feel free to contact me at 612-283-1796.

Sincerely,

A handwritten signature in black ink, appearing to read 'Robb Chung', is positioned above the printed name.

Robb Chung  
Mobile Wastewater Operator