

**CLEAN WATER ACT INSPECTION REPORT
U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION 5**

Purpose: Pretreatment Industrial User (IU) Inspection

Facility: Capron Manufacturing Company
200 North Burr Oak Road
Capron, Illinois 61012

Date of Inspection: December 6, 2023

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Facility Representatives: Patrick Stanley, Director of Manufacturing
Armando Morales, Production Chemist

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Inspector Signature: Bush, Jennifer Digitally signed by Bush, Jennifer
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Report Date: 1/25/2024

Approver Name and Title: Molly Smith, Section 1 Supervisor, Water Enforcement and Compliance Assurance Branch

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Date: 2024.01.26 08:45:55 -06'00'

Approval Date: 1/26/2024

Purpose of Inspection:

The purpose of the inspection performed by the U.S. Environmental Protection Agency (EPA) was to describe and document elements of the Clean Water Act (CWA) and associated pretreatment regulations with respect to Capron Manufacturing Company (Capron Manufacturing or Facility), located at 200 North Burr Oak Road Capron, Illinois 61012.

Background:

Capron Manufacturing is a metal finishing facility, predominately for residential and commercial kitchen products, located in Capron, Illinois. Capron Manufacturing discharges process wastewater to the Capron Wastewater Treatment Plant. The Capron Wastewater Treatment Plant does not run a Federally approved pretreatment program. In addition, the Illinois Environmental Protection Agency (IEPA) does not run an approved pretreatment program. Therefore, the EPA is both the Approval Authority and the Control Authority for the Capron Manufacturing facility, as defined in 40 C.F.R. § 403.3(c) and (f).

Capron Manufacturing submits periodic monitoring reports to the EPA, Region 5 office on a semi-annual basis.

Capron Manufacturing provided the EPA with the most recent Water Pollution Control Permit issued from the State of Illinois for the discharge of the facility's wastewater (IEPA Permit Number 2019-EP-64770, which has an effective date of December 16, 2019, and an expiration date of November 30, 2024). Capron Manufacturing also discharges Reverse Osmosis (RO) reject water to a detention basin and provided the most recent Water Pollution Control Permit issued from the State of Illinois for the discharge of the RO reject water (IEPA Permit Number IL0077585, which has an effective date of February 1, 2019, and an expiration date of January 31, 2024). Patrick Stanley stated the RO reject water has a separate discharge location, which is discharged to a detention basin, then flows offsite into an unnamed receiving stream. The wastewater and RO reject water do not comeingle and discharge separately.

Inspection:

Opening Conference

Jennifer Bush and Joseph Forth of EPA arrived at the facility on December 6, 2023, at 9:31 a.m. CST and were met at the front desk by Patrick Stanley (Director of Manufacturing). Jennifer Bush and Joseph Forth showed their credentials and began the Opening Conference at 9:40 a.m. CST. The Opening Conference ended at 10:25 a.m. CST. The following information was provided to EPA by Capron Manufacturing staff:

- **General Plant Information:**
 - The Capron Manufacturing Company facility in Capron, Illinois opened in 1990.

- Prior to 1990, Capron Manufacturing was located at a different building in downtown Capron, but the operations outgrew the previous facility.
- There are approximately 150 employees, but Capron Manufacturing has had up to 200 employees in recent years (during COVID-19).
- The facility operates five days a week, Monday through Friday. On Monday to Thursday, there are two 10-hour shifts. The first shift is from 5:00 a.m. – 2:00 p.m., and the second shift is 2:00 p.m. – 12:00 a.m. In the hours that metal finishing operations are not occurring, (12:00 a.m. – 5:00 a.m.), there are employees onsite conducting chemical maintenance. On Friday, Capron Manufacturing has a 5 – 7-hour shift for preventative maintenance only.
- There are no scheduled shutdowns and production is typically steady throughout the year. Patrick Stanley stated the facility was significantly busier during COVID-19 due to higher customer demands.
- Final products are shipped to customers nationwide, but primarily to the Midwest region. Customers are typically equipment manufacturers providing to restaurants and some housing (residential).
- Manufacturing Process:
 - Capron Manufacturing is predominately a metal finishing facility for commercial and residential kitchen products, but also will finish medical and military products on an as-needed basis. Additionally, Capron Manufacturing conducts fabricating, vinyl coating, and porcelain enameling.
 - The majority of incoming products received by the Facility are pre-made/fabricated kitchen items, such as fry baskets, kitchen grates for ovens or refrigerators, etc. For the fabricating process, the Facility receives sheets of steel which are then formed, welded, and coated. These sheets of steel are typically made for kitchen products as well, such as oven doors. The facility also receives chemicals for components of the plating, vinyl, and porcelain enameling processes. There is also a pickling operation onsite for stainless steel for corrosion prevention.
 - Until 2000, Capron Manufacturing was only a metal finishing facility. Now, it is estimated 95% of the process onsite is in metal finishing and 5% is fabrication. By volume, it is estimated 70% of the metal finishing is plating, and 25% is porcelain enameling. A small portion of the operations are for vinyl coating. At the time of the Inspection, all processes were being conducted except for the vinyl coating process. The fabrication and vinyl process lines do not use water.
 - There are two lines, referred to as Line 1 and Line 2, that complete metal finishing onsite. Each line has approximately 40 stages.
 - The porcelain enameling operation has a spray water used in the process that is discharged to a holding tank, which is continuously pumped to the waste treatment area.
 - There is some chemical storage on site in order to replenish process lines as needed. Chemicals arrive in approximately 300-gallon totes. These totes are kept in the storage area, which does not have floor drains and is an enclosed area.

- Waste Generation:
 - All processes/lines onsite that use water are drained to the waste treatment area, except for the electropolishing area. Electropolishing wastewater is pumped out and hauled offsite with SET Environmental.
 - The metal finishing nickel and chrome plating areas are referred to as Plating Line 1 and Plating Line 2.
 - In each line, there are approximately 40 stages, which includes rinse stages. Primarily, wastewater that is treated onsite is the rinse water.
 - On Line 1, rinse tanks are connected to pipes in the floor drains. These are not connected to the sanitary line, but flow through an enclosed system that feed into a sump at the end of Line 1. Once the sump is filled, wastewater is pumped overhead to the waste treatment system. (Photos 1 – 3).
 - On Line 2, floor drains are not utilized as a collection feature. All wastewater is contained and is held in above ground sumps before being pumped to the waste treatment system. (Photos 6 – 7). Line 2 has two identical above ground sumps on opposite sides of the Line, one on the plating side of Line 2 and one on the cleaning side of Line 2. (Photo 11).
 - The rinse process throughout the approximately 40 stages is a 3-tank system. Rinse tanks that are immediately after a plating tank will discharge to the waste treatment system. The first rinse tank in the 3-rinse system is referred to as the “dirtiest”.
 - In Line 2, the second and third rinse tanks are back flowed into the first rinse tank without discharge to the waste treatment system. This allows the second and third rinse tanks to replenish the first rinse tank, which is being discharged to waste treatment. In Line 1, the second and third rinse tanks in each process are not connected and get drained as needed. In both Line 1 and Line 2, rinse tank water in the second and third tanks in the rinse systems is used until it can no longer be utilized. Patrick Stanley estimates this is approximately 1 year, then the rinse tanks are completely drained to the waste treatment system. The second and third rinse tanks in all the rinse processes are not connected to the sump/drains.
 - On Line 2, there is a plating side of the Line and a cleaning side of the Line. The cleaning side of Line 2 has a 2-rinse tank system after each cleaning (instead of a 3-rinse system). The cleaning is an electro-acid cleaning, which is used to address carbon build up.
 - In the porcelain enameling department of Capron Manufacturing, products are hung on a line to go through the dry-spray powder process, which utilizes a powder paint application gun. Following the dry-spray process, the products move through a 4-stage rinse. Wastewater discharge occurs from the first stage of the 4-stage process. Similar to the rinse tanks in metal plating Line 1 and Line 2, the water from stages 2-4 are back flowed to the first stage of the enameling rinse process, and stage 1 is referred to as the “dirtiest”. Any overflow from Stage 1 is discharged to an underground holding tank, which is then automatically pumped to the waste treatment system. (Photo 12). Every one-

two months, the water in Stage 1 will be hauled offsite by SET Environmental and Stage 1 will be replenished from back flow from Stage 2, Stage 3 back flowed to Stage 2, and Stage 4 into Stage 3. RO water replenishes the water in Stage 4.

- Pretreatment:
 - Process wastewater is generated by the Facility's metal plating Line 1 and Line 2, and the porcelain enameling rinse.
 - All the holding tanks within the warehouse are pumped to the waste treatment system area.
 - Patrick Stanley said the goal of the waste treatment system is to reduce the metals concentration to the permit limits.
 - In the waste treatment area, there are three rinse holding tanks. Two holding tanks are approximately 10,000 gallons, the other rinse holding tank is approximately 7,000 gallons. Each holding tank is connected to a different sump holding tank from the warehouse floor.
 - In the waste treatment process, a floc is generated to remove chrome and nickel and pH is adjusted.
 - The floc is sent to a filter press and a filter cake is generated. The filter cake is stored in a dumpster and hauled off site by SET Environmental every other week.
 - In the wastewater treatment, Patrick Stanley stated chrome settles out at a lower pH, but nickel needs higher pH for suspension, which is needed for floc to capture the metals. There are 2 pH adjustment tanks prior to clarifiers to make these pH adjustments.
 - Caustic is used for pH adjustment.
 - The wastewater is discharged to the Village of Capron Wastewater Treatment Plant.
- Wastewater Sampling:
 - Capron Manufacturing has a production chemist on site, Armando Morales. Armando has a team of 4-5 working in the onsite laboratory.
 - There is one discharge location, which Armando collects samples from every hour in order to review wastewater pH, temperature, nickel, and chrome on a daily basis. Temperature and pH are analyzed at the sample location, not transported to the onsite laboratory. All parameters required in the permit are sampled for on a semi-annual basis.
 - For permit sampling submissions and requirements, Capron Manufacturing utilizes a third party for sample analysis.
 - Scientific Control Laboratories (SCL) sends Capron Manufacturing a sampling kit, and Armando Morales will complete sample collections. Armando will ship the samples overnight to SCL, or he will drive samples to the laboratory on the same day. Time-based composite sampling is completed, which are collected manually by Armando.
 - There is no flow meter on site, but the Village of Capron has a meter on the sanitary line prior to the Capron Manufacturing's connection to the public line. The service line for the process water discharge is separated before it comingles with sanitary waste from Capron Manufacturing. The Village's flow meter is

before any comingling of the sanitary waste.

Plant Walk Through

Capron Manufacturing staff showed EPA inspectors the following during the plant walkthrough:

- Onsite Laboratory
 - Atomic Absorption (AA) machine used to test metals (nickel and chrome).
- Metal Finishing Line 1
 - Chemical replenishment occurs on the lines. Capron Manufacturing employees will pump chemicals directly out of totes with a spill pan under the valve. A peristaltic pump is used for pumping the chemicals into the lines. At the time of the inspection, this was observed near Line 1 and Line 2. (Photos 4 - 5).
- Metal Finishing Line 2
- Fabrication
 - At the time of the inspection, EPA observed a flat steel weld and induction welder. There is no water used in the fabrication department.
- Reverse Osmosis
 - RO water is used right after and right before the plating tanks in Metal Finishing Line 1, Metal Finishing Line 2, and Stage 4 of the Porcelain Enameling process.
 - The RO process has a discharge of reject RO water.
 - The RO system pumps to a holding tank, which is then discharged into a detention basin on site. (Photo 10).
- Porcelain Enameling
 - Products go through a dry spray powder process prior to the 4-stage rinse process.
 - Stage 1: Cleaning Chemistry
 - Stage 2: Cleaning
 - Stage 3: Pure Rinse
 - Stage 4: Pure Rinse
 - After the 4-stage rinse, products move through the dry-off oven prior to powder application.
 - Following the powder application, products go to the furnace line.
 - Products are then cooled down and go through a quality review before shipping.
- Vinyl Coating
 - The main final product from the vinyl coating department is handles for kitchen appliances utilized for operator comfort. There is no water used in this process. At the time of the inspection, the vinyl coating department was not running.
- Storage Area
 - Previously a shipping dock area.
 - There are no floor drains in the area. (Photo 13).

- Waste Treatment System
 - All processes are controlled and monitored through an online system. The treatment process will automatically shut down if the online system detects it is not running properly (i.e. pH is out of range, pump failure, etc.).
 - Holding tanks feed to Reaction Tank 1, then Reaction Tank 2. These tanks begin the flocculation development by adjusting pH as needed. Then wastewater flows to the floc tank, followed by the clarifier for floc to settle out, and floc is pumped to sludge thickening. Overflow water from the clarifier flows to the holding tank to be pumped for discharge to the sanitary line. Armando Moralez stated the wastewater samples are collected from the clarifier overflow.

Closing Conference

EPA and Capron Manufacturing staff discussed the following:

- At the time of the Inspection, EPA observed the pH buffers near the waste treatment system. The pH buffers being used were expired, with an expiration date of June 2022 (Photo 20).
- Capron Manufacturing collects wastewater samples as a time-based composite and not a flow-based composite sample.
- At the time of the Inspection, Capron Manufacturing staff was not able to confirm if the wastewater discharge qualified as batch or continuous discharge.
- At the time of the inspection, Capron Manufacturing is classified as a categorical industrial user, subject to 40 C.F.R. § 433 for the Metal Finishing Point Source Category. EPA requested additional information from Capron Manufacturing on when the porcelain enameling department began at the facility.
- EPA requested these documents to be provided by Capron Manufacturing following the Inspection:
 - Effective Illinois Environmental Protection Agency Permit for the RO reject discharge;
 - Diagram of the Capron Manufacturing facility; and
 - The last two semi-annual sampling results.
- Capron Manufacturing provided EPA staff with a physical copy of the effective Illinois Environmental Protection Agency Permit for the wastewater discharge.

EPA staff completed the Closing Conference and left the facility at 12:30 p.m. CST.

Post-Inspection Activities

Patrick Stanley provided the following documents to EPA via email on December 7, 2023, and December 12, 2023:

1. Plating Line 1- General Map;

2. Capron Mfg – General Dept Map; and
3. National Pollutant Discharge Elimination Systems (NPDES) Permit – Feb-1-2019.

Records Review

After the Inspection, EPA staff reviewed laboratory reports from the semi-annual monitoring reports submitted in 2022 and 2023, which included a total of five wastewater sampling results. The samples reviewed by EPA staff are listed below by date of report received by EPA and the reporting period. The effective NPDES permit at Capron Manufacturing does not contain a pH range for the wastewater discharge; however, 40 C.F.R. § 403.5(b)(2) states discharge with pH lower than 5.0 shall not be introduced into a publicly owned treatment works unless the public works is specifically designed to accommodate such discharges. Chain of Custody (COC) pH results are provided under each report description:

1. Report Date: February 16, 2022; Reporting Period: December 2021
 - a. There are four COCs included with this report. The first COC lists two samples, one with a pH of 1.73 and the second sample with a pH of 12.83. The second COC lists two samples, one with a pH of 1.66 and the second sample with a pH of 12.91. The third COC lists two samples, one with a pH of 1.65, and the second sample with a pH of 12.90. The fourth COC lists two samples, one with a pH of 1.68 and the second sample with a pH of 12.93. The sample location of both samples on all four COCs is listed as the final discharge.
2. Report Date: April 21, 2022; Reporting Period: June 2020
 - a. There are four COCs included with this report. The first COC lists two samples, one with a pH of 1.62 and the second sample with a pH of 12.16. The second COC lists two samples, one with a pH of 1.45 and the second sample with a pH of 12.09. The third COC lists two samples, one with a pH of 1.53, and the second sample with a pH of 12.15. The fourth COC lists two samples, one with a pH of 1.58 and the second sample with a pH of 12.23. The sample location of both samples on all four COCs is listed as the final discharge.
 - b. Note samples collected in April 2020 were submitted to EPA on April 21, 2022.
3. Report Date: June 30, 2022; Reporting Period: June 2022
 - a. There are four COCs included with this report. The first COC lists two samples, one with a pH of 1.46 and the second sample with a pH of 12.90. The second COC lists two samples, one with a pH of 1.70 and the second sample with a pH of 12.90. The third COC lists two samples, one with a pH of 1.67, and the second sample with a pH of 12.95. The fourth COC lists two samples, one with a pH of 2.00 and the second sample with a pH of 12.36. The sample location of both samples on all four COCs is listed as the final discharge.
 - b. The fourth COC is not completed with sampling times included for grab and composite samples.
4. Report Date: January 17, 2023; Reporting Period: December 2022
 - a. There are four COCs included with this report. The first COC lists two samples, one with a pH of 1.31 and the second sample with a pH of 13.20. The second

COC lists two samples, one with a pH of 1.37 and the second sample with a pH of 13.18. The third COC lists two samples, one with a pH of 1.37, and the second sample with a pH of 13.11. The fourth COC lists two samples, one with a pH of 1.43 and the second sample with a pH of 13.16. The sample location of both samples on all four COCs is listed as the final discharge.

5. Report Date: June 1, 2023; Reporting Period: June 2023

- a. There are four COCs included with this report. The first COC lists two samples, one with a pH of 1.28 and the second sample with a pH of 13.05. The second COC lists two samples, one with a pH of 1.23 and the second sample with a pH of 13.24. The third COC lists two samples, one with a pH of 1.28, and the second sample with a pH of 13.28. The fourth COC lists two samples, one with a pH of 1.33 and the second sample with a pH of 13.23. The sample location of both samples on all four COCs is listed as the final discharge.

All reports listed above include a TTO certification state for facilities with no toxic organics.

Attachments

- A. Photo Log: Photos taken during U.S. Environmental Protection Agency Inspection of Capron Manufacturing (December 6, 2023)
- B. Capron Manufacturing General Department Map

**Capron Manufacturing Company
EPA Inspection December 6, 2023**

**All photos taken by Jennifer Bush, Environmental Scientist, U.S. EPA
Camera: Ricoh WG-4 SR Adventure Proof, Serial No. 3101181**



1: RIMG0101

Description: Nickel and Chrome line piped to floor discharge

Location: Capron Manufacturing – Metal Finishing Area

Date: December 6, 2023



2: RIMG0102

Description: Close up of pipes in floor drain

Location: Capron Manufacturing – Metal Finishing Area

Date: December 6, 2023



3: RIMG0103

Description: Floor drain system leading to holding tank prior to being pumped to waste treatment

Location: Capron Manufacturing – Metal Finishing Area

Date: December 6, 2023



4: RIMG0104

Description: Totes used with peristaltic pump on Line 1

Location: Capron Manufacturing – Metal Finishing Area

Date: December 6, 2023



5: RIMG0105

Description: Totes with peristaltic pump on Line 2 – Nickel tank

Location: Capron Manufacturing – Metal Finishing Area

Date: December 6, 2023



6: RIMG0106

Description: Overview of above ground holding tank on Line 2

Location: Capron Manufacturing – Metal Finishing Area

Date: December 6, 2023



7: RIMG0107

Description: Close up of sump system (automatic) with above ground discharge to waste treatment system

Location: Capron Manufacturing – Metal Finishing Area

Date: December 6, 2023



8: RIMG0108

Description: An example of the 3-rinse system. Rinse Tank 44 (right) – Rinse Tank 46 (left). Rinse Tank 45 and Rinse Tank 46 backflow into Rinse Tank 44. Rinse Tank 44 discharges into waste treatment system after tri-chrome.

Location: Capron Manufacturing – Metal Finishing Area

Date: December 6, 2023



9: RIMG0109

Description: Underground collection pit used to collect floor drain wash from Line 2 Area.

Location: Capron Manufacturing – Metal Finishing Area

Date: December 6, 2023

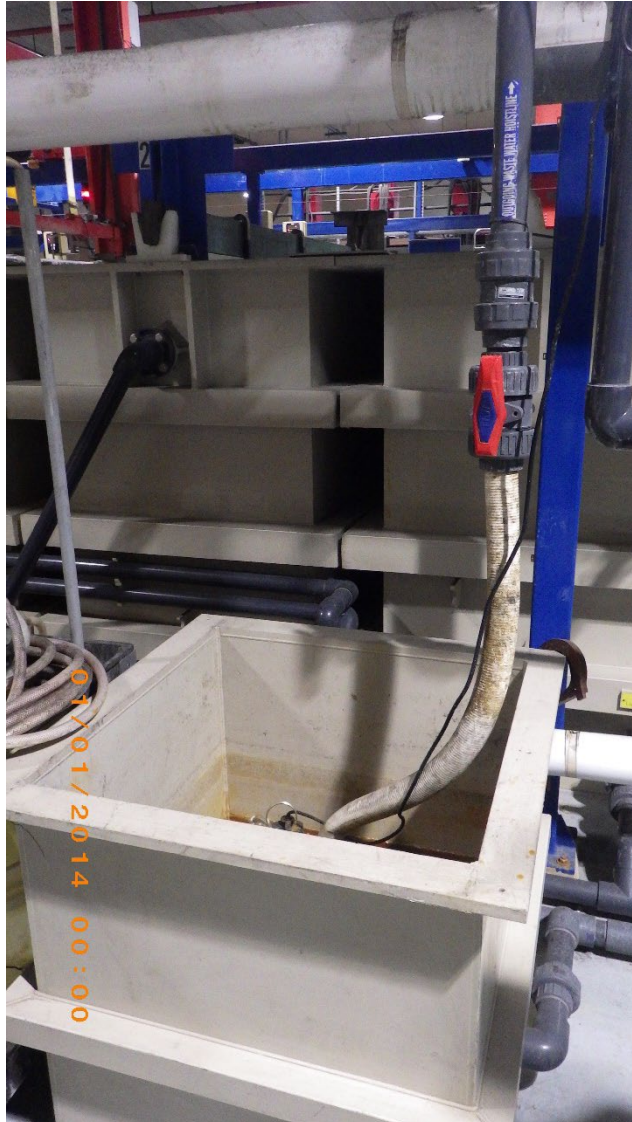


10: RIMG0110

Description: RO reject water to be pumped to detention basin

Location: Capron Manufacturing – Metal Finishing Area

Date: December 6, 2023



11: RIMG0111

Description: Sump tank above ground from cleaning side of Line 2

Location: Capron Manufacturing – Metal Finishing Area

Date: December 6, 2023



12: RIMG0112

Description: Underground holding tank for 4 stages – overflow is drained here and automatically pumped to waste treatment system.

Location: Capron Manufacturing – Metal Finishing Area

Date: December 6, 2023

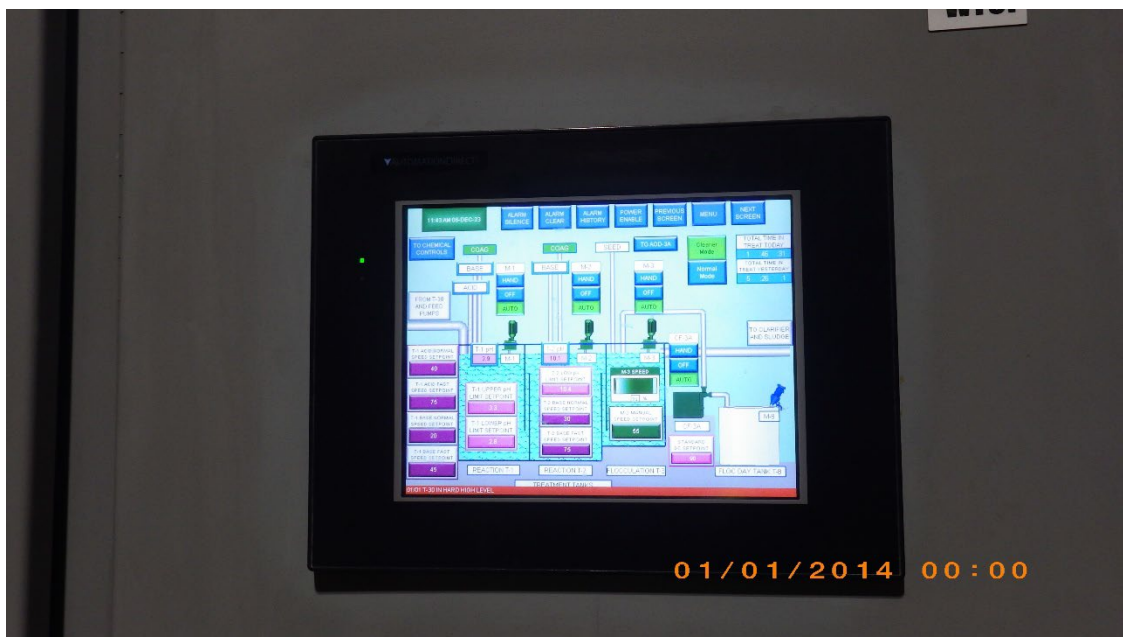


13: RIMG0113

Description: Overview of chemical storage area. No drains in this area – enclosed.

Location: Capron Manufacturing – Storage Area

Date: December 6, 2023



14: RIMG0114

Description: Screen on online control system

Location: Capron Manufacturing – Waste Treatment Area

Date: December 6, 2023

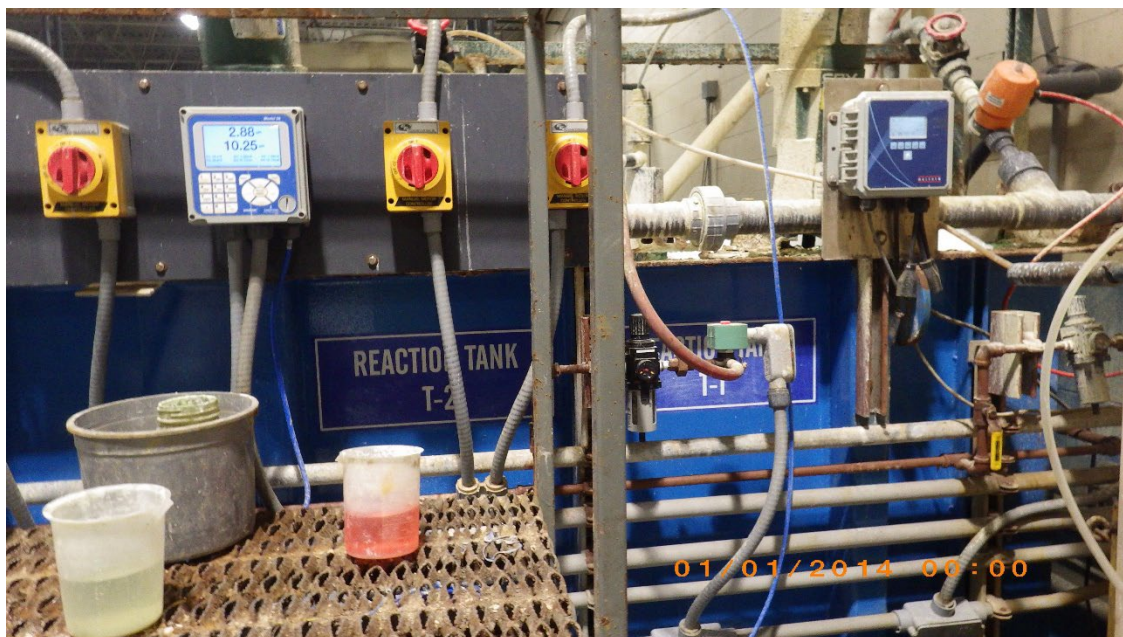


15: RIMG0115

Description: Rinse holding tank with cleaning holding tank on right side being pumped to pH adjustment.

Location: Capron Manufacturing – Waste Treatment Area

Date: December 6, 2023



16: RIMG0116

Description: Reaction Tank 1 (right) and Reaction Tank 2 (left)

Location: Capron Manufacturing – Waste Treatment Area

Date: December 6, 2023



17: RIMG0117

Description: Flocculation tank with clarifier in background

Location: Capron Manufacturing – Waste Treatment Area

Date: December 6, 2023



18: RIMG0118

Description: Overview of flocculation tank, clarifier in background

Location: Capron Manufacturing – Waste Treatment Area

Date: December 6, 2023

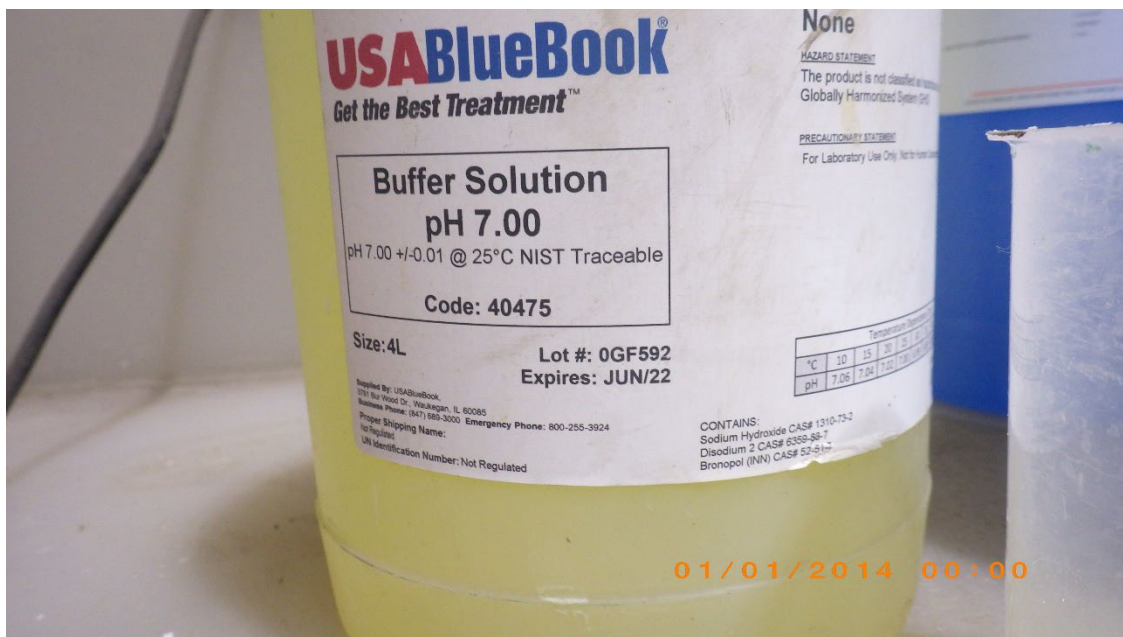


19: RIMG0119

Description: pH Buffers

Location: Capron Manufacturing – Waste Treatment Area

Date: December 6, 2023



20: RIMG0120

Description: pH Buffer – expiration date of June 2022

Location: Capron Manufacturing – Waste Treatment Area

Date: December 6, 2023



21: RIMG0121

Description: Clarifier overflow

Location: Capron Manufacturing – Waste Treatment Area

Date: December 6, 2023



22: RIMG0122

Description: Pipe to holding tank/lift station to city sewer

Location: Capron Manufacturing – Waste Treatment Area

Date: December 6, 2023

**Capron Mfg. –
Building Map**

NORTH

