California Regional Water Quality Control Board
Central Coast Region
895 Aerovista Place, Suite 101
San Luis Obsipo, CA 93401
**Submit this Self Monitoring Report to:** centralcoast@waterboards.ca.gov

**Document Date:** 1/30/2023

**FACILITY NAME:** Carmel Area Wastewater District Wastewater Treatment Plant

**FACILITY ADDRESS:** 26900 State Route One
Carmel, CA 93923

**CONTACT PERSON:** Edward Waggoner

**JOB TITLE:** Operations Superintendent

**PHONE NUMBER:** (831) 257-0437

**EMAIL:** waggoner@cawd.org

**WDR ORDER (Permit) Number:** 93-72

**WDID NUMBER:** 3 270101001

**PERMITTED FLOW (see facility WDR Permit):** 1,800,000 gpd

**AVERAGE WASTEWATER FLOW (over monitoring period):** 0.982,000 gpd

**TYPE OF REPORT:** ■ Annual ☐ Semiannual ☐ Quarterly ☐ Monthly ☐ Other: ______

**REPORTING PERIOD:** 01/01/2022 **TO** 12/31/2022

**MONITORING PERFORMED DURING THIS PERIOD (check all that apply):**

- ☐ Groundwater
- ☐ Treatment System Effluent
- ☐ Treatment System Influent
- ☐ Source Water Monitoring
- ☐ Lab Reports
- ☐ Solids Disposal
- ☐ Water Supply
- ☐ Other: ______
- ■ Recycled Water
- ☐ Disposal Area
- ☐ Use Area

**Violation(s) during this monitoring period?** ☐ YES ☐ NO

**Parameter(s) in Violation:** *Pursuant to Standard Provisions[1] see footnote on next page, monitoring reports must contain date of violation, explanation of cause and corrective actions planned or taken to prevent recurrence. Please include parameter(s) and date(s) of violation in space provided below. If space is insufficient, include an independent discussion containing explanation of cause and corrective action within monitoring report.*

**Discharger Comments:**

See Section B: Complinace and Performance

***Submit this self-monitoring report to centralcoast@waterboards.ca.gov in searchable PDF format. Include attached cover sheet and signature page. DO NOT submit via US mail.***

In accordance with the Standard Provisions[1] and Reporting Requirements, I certify under penalty of law that this document and all attachments were prepared under my direction or supervision following a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my knowledge of the person(s) who manage the system, or those directly responsible for data gathering, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Print Name: Edward Waggoner    Title: Operations Superintendent

Signature:* Edward Waggoner    Date: 1/31/2023

*All reports shall be signed by one of the following:

a. For a corporation: by a principle executive officer of at least the level of vice president.

b. For a partnership or sole proprietorship: by a general partner or the proprietor, respectively.

c. For a public agency: by either a principle executive officer or ranking elected official.

d. For a LLC: either a member or manager given signing authority by the operating agreement of LLC.

e. a "duly authorized representative" of one of the above.

## Table of Contents

# Introduction

**Facility Objective:** Carmel Area Wastewater District protects public health and enhances the environment by collecting and treating wastewater while recycling valuable resources for golf course irrigation in the Carmel Bay region.

## Treatment Technologies Used

The CAWD Wastewater Treatment Plant (WWTP) has a permitted capacity of 3.0 million gallons per day (MGD) of dry weather flow. Current average dry weather flow (ADWF) is approximately 1.1 MGD which represents 37% of the permitted capacity. Of the 1.1 MGD, approximately two-thirds are from CAWD customers, and the remaining one-third is from Pebble Beach Community Service District customers.

During large storm events the inflows can increase up to eight times the dry-weather rates. This requires the plant equipment and processes designed to handle large hydraulic loads during the winter months.

### Influent Pumping

The purpose of influent pumping is to lift the incoming untreated sewage from the terminus of the several interceptor sewers up and into the headworks from where the sewage can flow by gravity through the other treatment processes. Approximately 97% of the influent sewage is pumped at the influent pump station; the remaining 3% is discharged directly into the headworks from the Calle La Cruz pump station in the Carmel Meadows subdivision.

During power outages, a dual standby generator system automatically provides backup power to all three influent pumps. There is always at least a 7-day supply of fuel onsite to power the standby generator.

### Headworks

The headworks structure, together with the adjacent influent manhole, contains essentially all the pretreatment processes of the plant. Unit processes located within the headworks are influent flow measuring, mechanical bar screening, grit removal and washing.

The mechanical bar screen removes rags and other large solids from the raw sewage and into a hopper which stores the screenings until they are removed and disposed of at the landfill.

Grit (i.e. sand, coffee grounds, etc.) is removed from the raw sewage by means of settling in an agitated tank. The agitation keeps the lighter organic solids in suspension and allows the heavier solids to drop out and be removed by pumping the contents from the bottom of the tank into a grit classifier and washer. The grit washer further separates the heavier grit particles from the lighter organic matter and the grit is then disposed of into a bin for disposal at the landfill.

## Primary Sedimentation Tanks

The Primary Clari-Thickener tanks remove the majority of suspended solids from the wastewater by gravity settling. CAWD has two primary Clari-Thickener tanks for redundancy. The Clari-Thickener combines the feature of a Primary clarifier for removing settleable solids and floating matter (scum) and a thickening well for concentrating sludge prior to withdrawal for further treatment. Each tank has a mechanical scraper which rotates around the sloping bottom and pushes settled sludge to a sludge thickening zone and a sludge sump. Sludge is withdrawn from the tanks and is transported to the anaerobic digestion tanks. Floating matter is mechanically skimmed into collecting hoppers and is also transported to the anaerobic digestion tanks.

The primary sedimentation process is basically a physical process utilizing gravitational forces. Settleable and suspended solids, which are the major components of sludge and are heavier than water, settle out of the sewage along with any grit carryover from the headworks. Scum, which is lighter than water, floats to the surface and is removed by skimming. Approximately 60 to 65 percent of the suspended solids will be removed by gravitational forces as part of primary sedimentation.

Effluent from the primary sedimentation tanks overflows into double sided circumferential launders and then flows into either the primary equalization system or the aeration basins.

## Primary Equalization

The flow equalization basins are designed to reduce flow to the treatment plant during daytime periods of high influent flow. Wastewater stored in the flow equalization basins is reintroduced into the normal wastewater stream at the option of the operator in order to maintain operation of the Reclamation facility when influent flows are low. This operation also ensures that influent flow can be prioritized for reclamation uses over discharge to the outfall.

The reintroduced flow is pumped back to the Headworks.

Diffusers are located in the basin to prevent stored wastewater from becoming septic.

## Anoxic Selector

The Anoxic Selector mixes the return activated sludge (RAS) from the secondary clarifiers with effluent from the primary clarifiers and equally distributes the combined flow to Aeration Basins No. 4, 5, and 6.

## Aeration (Biological Activated Sludge Process)

The aeration structures (basins) are designed to promote the growth of helpful bacteria organisms which consume the nutrients in the sewage. This is called the "activated sludge" process. By injecting large amounts of oxygenated air, these bacteria thrive and consume the biological oxygen demand, ammonia, carbohydrates, fats, etc. in the sewage and convert it into bacterial mass or "sludge" for removal in the Secondary Sedimentation Tanks.

The aeration structures can hold about 1.15 million gallons total divided into three separate basins. The helpful bacteria population is maintained in the basins by returning a portion of the sludge separated out of the water downstream in the Secondary Sedimentation Tanks back to the front of the Aeration Basins. This allows the helpful bacteria to live out their life cycle in the treatment process, all the while providing a beneficial service to the treatment process.

CAWD utilizes A2O process which creates different zones in the aeration basins, some with oxygen (aerobic), and some without oxygen (anoxic/anaerobic). The different zones allow for selecting the types of bacteria that are the most beneficial and to enhance the nitrification process.

Aeration in each basin is accomplished by air blowers feeding fine bubble diffusers at the bottom of each basin. Air flow is regulated by automatic dissolved oxygen (DO) control systems.

### Mixed Liquor Distribution Structure

The Mixed Liquor Distribution Structure receives and combines the flows exiting the Aeration Basins. Combined flow is then gravity-fed to the Secondary Clarifiers. Two gates are used to control flow to each of the two Secondary Clarifiers.

### Secondary Sedimentation Tanks

The Secondary Sedimentation Tanks are similar to the Primary Sedimentation Tanks except they are designed to remove lighter suspended solids. There are two tanks, each equipped with rotating mechanical sludge and scum collectors. The effluent from the Aeration Basins enters each tank through the bottom, rises up through the center column, and then is distributed into the sedimentation zone. Settled sludge is removed from the tank and clean water flows over weirs to the next step in the process (disinfection). The sludge is pumped back to the Aeration process to maintain the helpful microorganism population or wasted to the solid’s treatment process. Scum is collected from the surface of the wastewater in each tank and returned to a sump in the Aeration Structure, from which it is then pumped to the solid’s treatment process.

The clean water coming out of the Secondary Sedimentation Tanks is clear and has very low concentrations of bacteria and ammonia. The water is so nice it is common to see ducks enjoying the water in the clarifier! Disinfection/Dechlorination is next and is the final treatment step before this water is sent to the Reclamation Facility or to the Ocean.

### Secondary Effluent Diversion Structure

The Secondary Effluent Diversion Structure serves two purposes:

1. Aiding in downstream disinfection - Secondary flow enters the structure where an injection of chlorine gas and aqueous ammonia is used for disinfection leading into the chlorine contact channels at the Chlorination Building. When ammonia is introduced under the appropriate conditions, it reacts with hypochlorous acid to produce monochloramine. Monochloramine is used as a disinfectant rather than free chlorine because free chlorine is detrimental to the Reverse Osmosis membranes at the Reclamation Facility. The amount of chlorine and ammonia required to produce monochloramine is based on the ideal weight ratio of 5:1.The desired ratio is controlled, monitored, and driven by programmable logic controllers at the gas chlorine system in the Chlorination Building and the ammonia injection system at the Tertiary Facilities.

2. Flow Management – The Secondary Diversion Structure also receives the effluent flow from the Chlorination Building and either directs the flow to the holding basin at the Tertiary Building prior to reclamation or to the Outfall Building for ocean discharge.

### Disinfection/Dechlorination

The final step to clean the water is disinfection/dechlorination. Disinfection is accomplished using liquid chlorine (i.e. bleach) which kills bacteria and deactivates viruses and protozoa that may be harmful to human health. A small concentration of chlorine is maintained in the water for about 2 hours to make sure all of the harmful pathogens are killed or deactivated. The residual chlorine is then removed using liquid sodium bisulfite. At this point the water is safe to send out to the ocean, but most of the time it is sent to the Reclamation Facility for further treatment to allow the water to be reused for irrigating golf courses in Pebble Beach.

### Treated Water Pump Station and Ocean Outfall

The treated water is pumped to Carmel Bay, or it is treated further in the Reclamation Facility and sent to Pebble Beach golf courses. The water that is pumped to the ocean the majority of the year is concentrated brine which is the water left after treatment through the Reverse Osmosis (RO) system in the Reclamation Facility. The RO system removes dissolved solids (i.e. salts), which are collected in the brine. This brine is then pumped to the ocean. The salt content of the brine is lower than the salt content in the ocean and so there are no detrimental effects associated with the brine. During winter storms, when flows increase, a portion of the treated water is not sent to the Reclamation Facility and goes directly out of the outfall.

A pipeline carries the treated water or brine to the ocean. The existing ocean outfall is a 24-inch diameter, concrete encased pipe with 10 diffuser ports along the pipe. Each port has a rubber “duckbill” type valve to prevent debris from entering the outfall pipe during periods of low flow. The diffusers are designed to quickly disperse the treated water into the receiving water so that there is no environmental degradation around the outfall.

### Solids Treatment and Disposal

There are several individual processes that are utilized to handle and treat the solids generated from the wastewater treatment process. These are: Sludge Thickening, Anaerobic Digestion, and Dewatering.

## Sludge Thickening

The lighter sludge generated by the Secondary Sedimentation Tanks and the Microfiltration Membranes (Reclamation) are sent to the Dissolved Air Flotation Sludge Thickener to thicken the sludge before sending it to the Anaerobic Digesters.

Thickening is achieved by adding fine air bubbles into a tank containing the light sludge. The air lifts the sludge particles to the surface so they can coalesce at the surface and be skimmed off in a more concentrated/thick state. This thicker sludge that is collected is sent to the Anaerobic Digesters. The liquid that the solids are separated from is returned to the Headworks to be treated again through the plant.

This is not required for the sludge from the Primary Sedimentation Tanks which is already thick enough to send straight to the digesters.

## Anaerobic Digestion

The solids treatment process takes sludge and other solids and places them in an anaerobic digester where the sludge is kept at about 95 degrees and anaerobic bacteria are utilized to stabilize the sludge and remove pathogens. The detention time in the anaerobic digesters is maintained at around 20 days or more.

A byproduct of the anaerobic digestion process is methane. CAWD uses the methane produced to generate electricity using two microturbines. The microturbines can produce about 15% of the power demand required by the wastewater treatment plant (not including the Reclamation Facility).

After the solids have been stabilized sufficiently by the digestion process the solids are held in a holding tank before they are sent to the dewatering equipment.

## Dewatering and Land Application

Dewatering is a physical/mechanical process used to reduce the moisture in digested sludge (biosolids). There are several reasons for dewatering sludge. In general, it is more economical to dispose of the dewatered sludge than it is to pump or haul liquid sludge to disposal sites because by reducing the moisture content, the sludge volume and weight are reduced.

The CAWD plant uses a belt filter press or a screw press to dewater the digested sludge. This equipment presses out the moisture from the sludge to create a dry material that is essentially dirt that can be land applied.

The dewatered sludge is hauled by truck to Kern County where it is used as a compost amendment for nonfood crops.

## Reclamation Plant

### Overview

On an average day about 90% of the water that comes into the CAWD wastewater treatment plant is reclaimed and sent to Pebble Beach golf courses for irrigation. CAWD owns the Reclamation Treatment Facility which is a part of a larger project including storage and conveyance infrastructure that was created in partnership with the Pebble Beach Community Services District (PBCSD), and the Monterey Peninsula Water Management District (MPWMD). Collectively the Reclamation Project offsets about 1,000-acre feet per year of potable water that would otherwise be drawn from the Carmel River aquifer. This 1,000-acre feet per year is an important part of the water supply portfolio for the greater Monterey Peninsula, Seaside, and Carmel Area. For reference, the total annual water taken from the Carmel River is about 3,000-acre feet per year.

The original reclamation plant, constructed in 1994, consisted of a large storage basin, and a sand filtration process to remove fine particulates from the water to meet California recycled water treatment requirements.

In 2008 a more advanced treatment facility was added to treat the water to an even higher quality. The new facility contains microfiltration (MF) and reverse osmosis (RO) membranes to filter out dissolved ions (salts) from the water.

The MF/RO system has a capacity to produce 1.8 million gallons per day (MGD) of recycled wastewater. Based on current average flows, the average output of reclaimed water is about 1.0 MGD.

### Pretreatment of Secondary Effluent

Secondary effluent is diverted by gravity from the secondary process flow stream to the tertiary plant flow equalization basin. The flow equalization basin provides adequate storage of secondary effluent to allow the reclamation facilities to operate at full capacity during nighttime periods of low secondary effluent flow. The tertiary facilities

Tertiary influent is pumped to the coagulant rapid mix chamber for addition of Cerium Chloride for phosphorus and colloidal solids removal. The coagulated flow is then routed to one or two two-stage flocculation chambers.. The flocculated flow is divided to flow through four continuous backwash filters. Feed water is passed upwards through the sand bed, exiting from the top of the filter media as clean water. While at the same time, sand is continuously moved from the bottom of the filter bed, cleaned by air scouring, and returned to the top of the filter.

Following filtration the clean water is pumped through strainers and into the Microfiltration system.

### Microfiltration (MF)

Microfiltration membranes filter very small particles out of the water (smaller than the diameter of a human hair). The membranes can physically block individual microorganisms such as bacteria from passing through.

Due to the small pore sizes in the membranes the microfiltration membranes provide a slightly better product than traditional filters such as sand filters. Microfiltration provides pre-filtration prior to the water being sent to the Reverse Osmosis System to remove dissolved ions.

The microfiltration membranes are submerged in a basin that is filled with the treated water from the wastewater treatment plant. The water is pulled through thousands of small straw-like membranes with microscopic pores to filter the water. The dirty water is left in the basin to be backwashed and removed to the solid's treatment process in the wastewater treatment plant.

## Reverse Osmosis (RO)

Reverse osmosis membranes physically remove even smaller particles than MF. The RO membranes remove ions at the atomic level (i.e. ions dissolved in the water). This also provides physical removal of viruses in addition to further removal of bacteria in the water.

The water that does not pass through the RO membranes becomes a concentrated brine that contains all of the dissolved ions, and cells that are rejected by the membranes. This brine is disinfected and dechlorinated to deactivate and kill viruses and bacteria before the water is sent to the ocean outfall for disposal.

## Disinfection

Similar to drinking water the state requires that recycled water be disinfected prior to distribution, and that a chlorine residual be maintained in the distribution system to mitigate regrowth of harmful bacteria in the piping.

CAWD utilizes sodium hypochlorite and aqueous ammonia to create chloramines for disinfection and to maintain a disinfectant residual in the distribution system. Chloramines are also commonly used in drinking water systems because they have less carcinogen developing properties than free chlorine.

## Conveyance

CAWD pumps the water from the treatment plant to Pebble Beach using vertical turbine pumps. The water must travel about 5 miles and up in elevation about 250 feet to get to the Pebble Beach storage infrastructure.

## Targeted Removals of Main Pollutants

- BOD target removal 85% of influent average BOD per month.
- TSS  target removal 85% of influent average TSS per month.
- Oil and Grease target removal 85% of influent average SS per month.

## Overview of Any Liquid or Solid Waste Produced

- Liquids see Section C Flow Evaluation
- Solid Waste see Section G Sludge Management

## Upgrades Since the 2014 Permit was Issued

## New Structures:

- Anaerobic Digester #2 -450,000 gallons.
- Control Building for Anerobic Digester #2 with future space for cogeneration equipment.
- Ferric Chloride Storage and Dosing for Sulfide control in digesters.
- Sodium Hypochlorite/Sodium Bisulfite storage 9,000 gallons of each product, new chemical dosing pumps (with redundancy).
- Storm water pump station to retain all storm water collected on facility site and treated in the plant flow stream.
- Waste gas burner to meet the stricter clean air requirements.

## Existing Structures that Received Upgrades

- Dewatering Building received new screw-press and polymer systems.
- Blower Building received new energy blower and air diffuser membranes.
- Dissolved Air Floatation Thickener received new solids collector and drive, sludge pumps, and air compression systems.
- Operations Building received new Motor Control Center, Programable Logical (PLC) Computer and Supervisory Control and Data Acquisition System (SCADA).
- Fresh Water System (#1 water system) Air Gap System with dual repressurization pumps.
- Return Activated Sludge (RAS)/Waste Activated Sludge (WAS) building received new Motor Control Center, Programable Logical (PLC) Computer and Supervisory Control and Data Acquisition System (SCADA).
- The Chlorination Building removed all Chlorine ($CL_2$) gas system.

# Section A: Data Tables and Graphs

TABULAR SUMMARY OF 2022 RECLAMATION NPDES REPORTABLE DATA

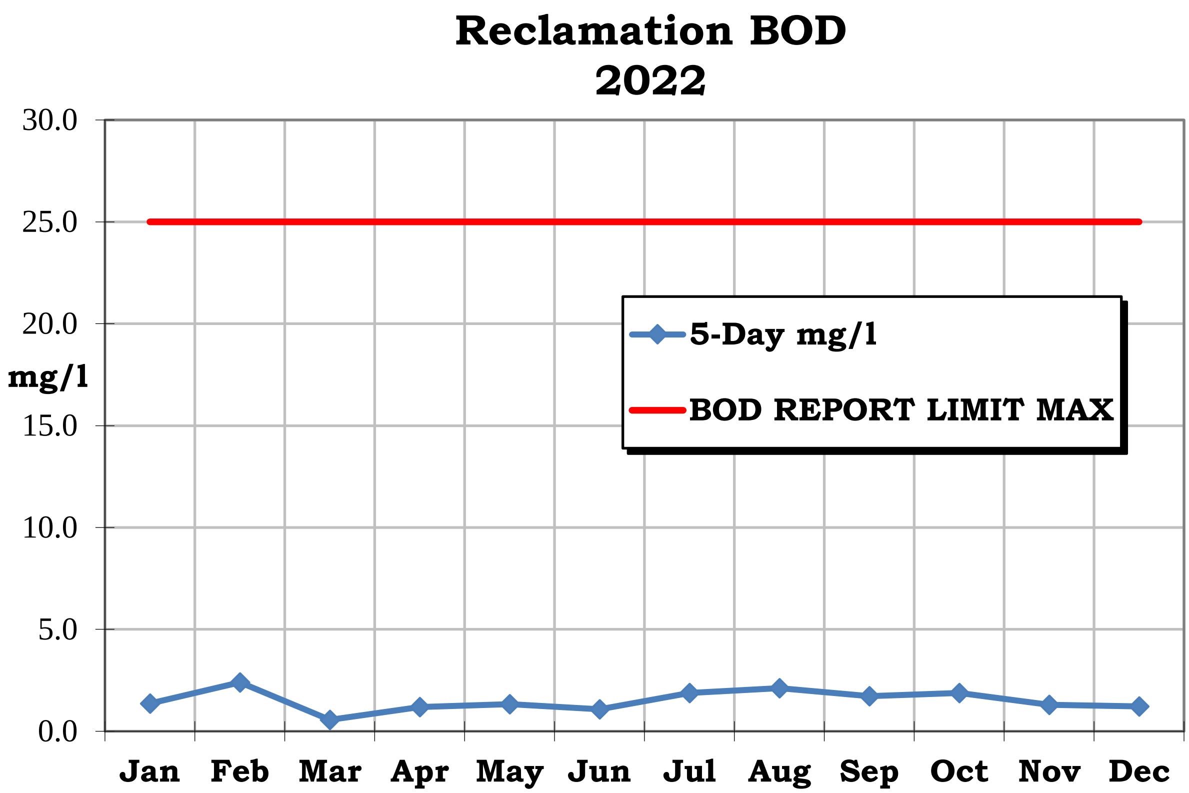
| | Reclaimed Flows | | $CBOD_5$ | Total Suspended Solids | Turbidity | |
|---|---|---|---|---|---|---|
| Month | Monthly Total Flow MG | Daily Avg MGD | 5-Day mg/l | Total Residue mg/l | Metered NTU's Avg | Max |
| Jan | 25.497 | 0.879 | 1.36 | 0.01 | 0.02 | 0.03 |
| Feb | 22.463 | 1.121 | 2.40 | 0.60 | 0.03 | 0.04 |
| Mar | 27.006 | 0.965 | 0.56 | 0.10 | 0.03 | 0.02 |
| Apr | 25.631 | 0.915 | 1.19 | 0.04 | 0.02 | 0.02 |
| May | 31.153 | 1.005 | 1.32 | 0.03 | 0.02 | 0.03 |
| Jun | 30.014 | 1.000 | 1.08 | 0.05 | 0.02 | 0.03 |
| Jul | 32.026 | 1.033 | 1.87 | 0.18 | 0.02 | 0.02 |
| Aug | 32.014 | 1.033 | 2.12 | 0.06 | 0.02 | 0.02 |
| Sep | 29.721 | 0.991 | 1.73 | 0.04 | 0.02 | 0.02 |
| Oct | 28.117 | 0.907 | 1.88 | 0.05 | 0.02 | 0.03 |
| Nov | 29.480 | 0.983 | 1.30 | 0.01 | 0.02 | 0.03 |
| Dec | 36.035 | 1.162 | 1.23 | 0.06 | 0.02 | 0.03 |

Lab Data 1

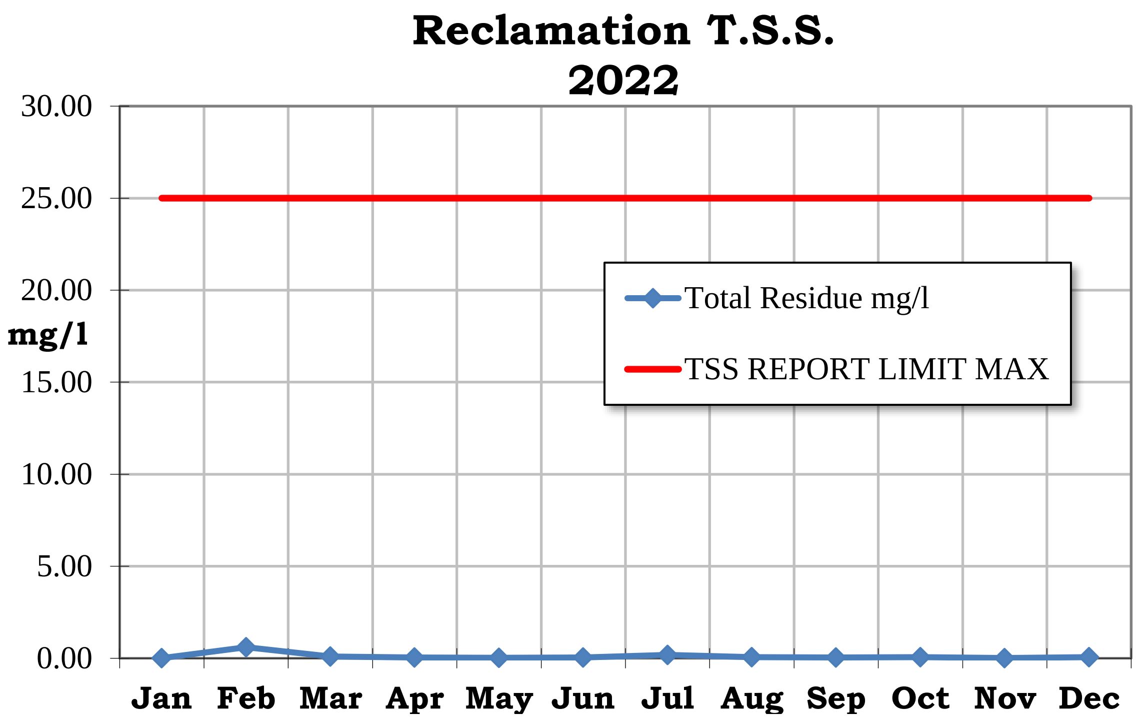
| | CL2 Residual | | pH | Total Coliforms | Sett. Solids | TDS |
|---|---|---|---|---|---|---|
| Month | Metered mg/l Min | Max | Grab Daily Units | mpn / 100 ml | ml/l | mg/l |
| Jan | 7.2 | 8.4 | 7.2 | <1.0 | <0.1 | 57 |
| Feb | 8.3 | 9.6 | 7.5 | <1.0 | <0.1 | |
| Mar | 7.3 | 9.0 | 7.2 | <1.0 | <0.1 | |
| Apr | 6.8 | 8.2 | 7.2 | <1.0 | <0.1 | 248 |
| May | 7.2 | 8.5 | 7.1 | <1.0 | <0.1 | |
| Jun | 6.7 | 9.2 | 7.1 | <1.0 | <0.1 | |
| Jul | 7.2 | 9.3 | 7.0 | <1.0 | <0.1 | 227 |
| Aug | 7.6 | 8.5 | 7.1 | <1.0 | <0.1 | |
| Sep | 7.3 | 8.8 | 7.1 | <1.0 | <0.1 | |
| Oct | 7.3 | 8.3 | 7.0 | <1.0 | <0.1 | 234 |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Nov** | **7.4** | **8.6** | **7.1** | **<1.0** | **<0.1** | |
| **Dec** | **7.8** | **9.4** | **7.1** | **1.0** | **<0.1** | |

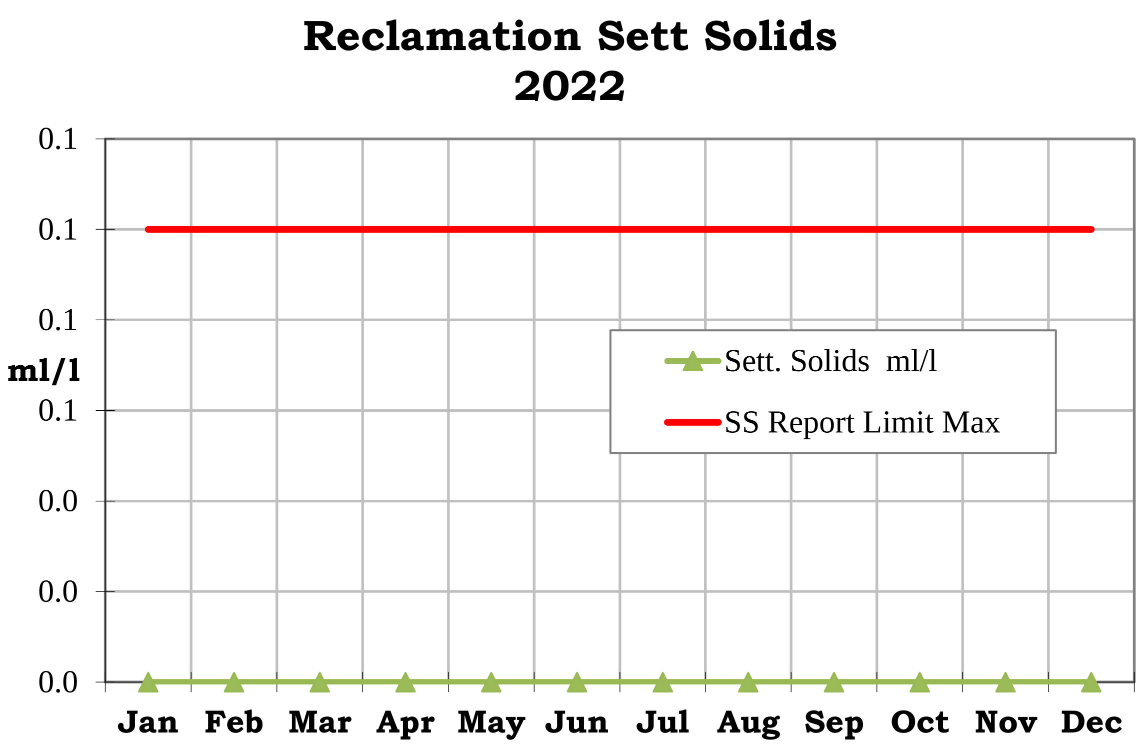
Lab Data 2



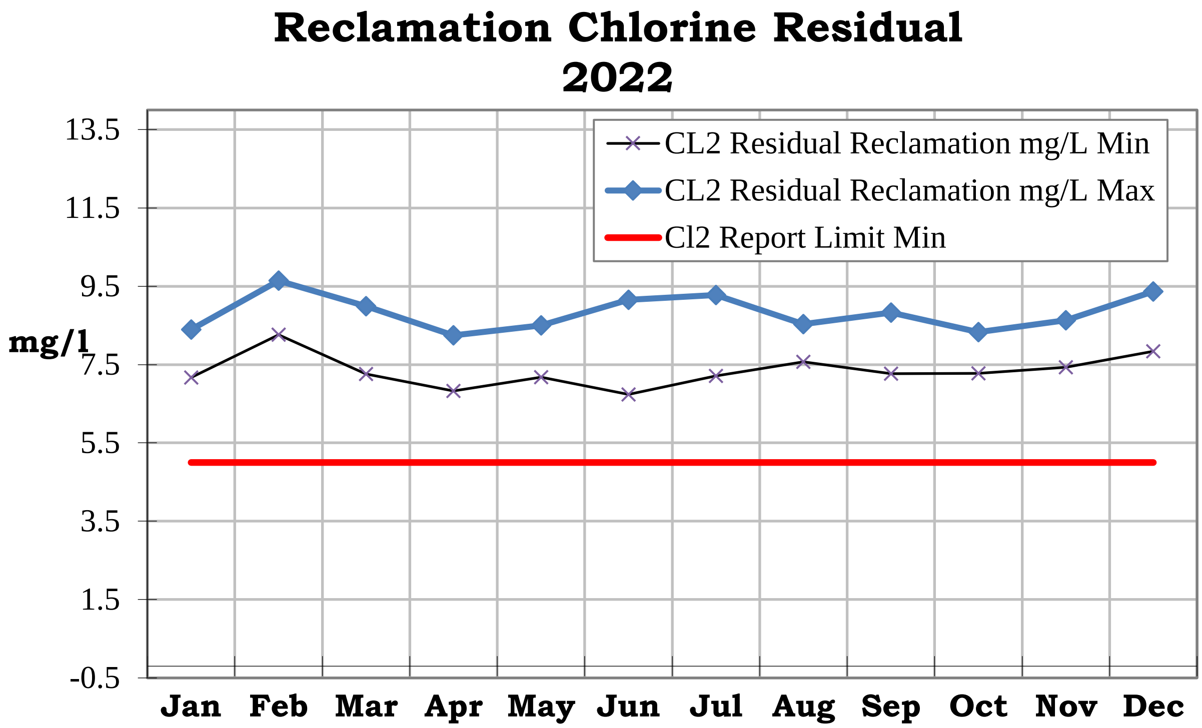

Graph 1



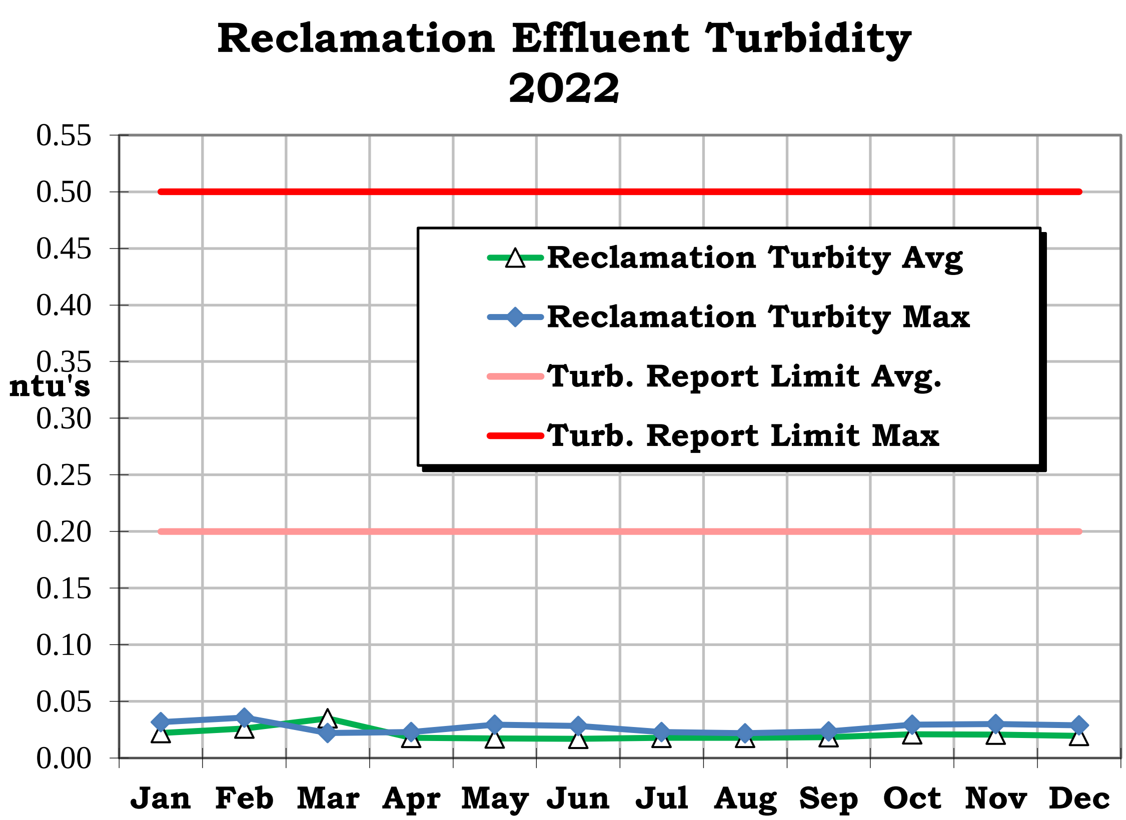

Graph 2



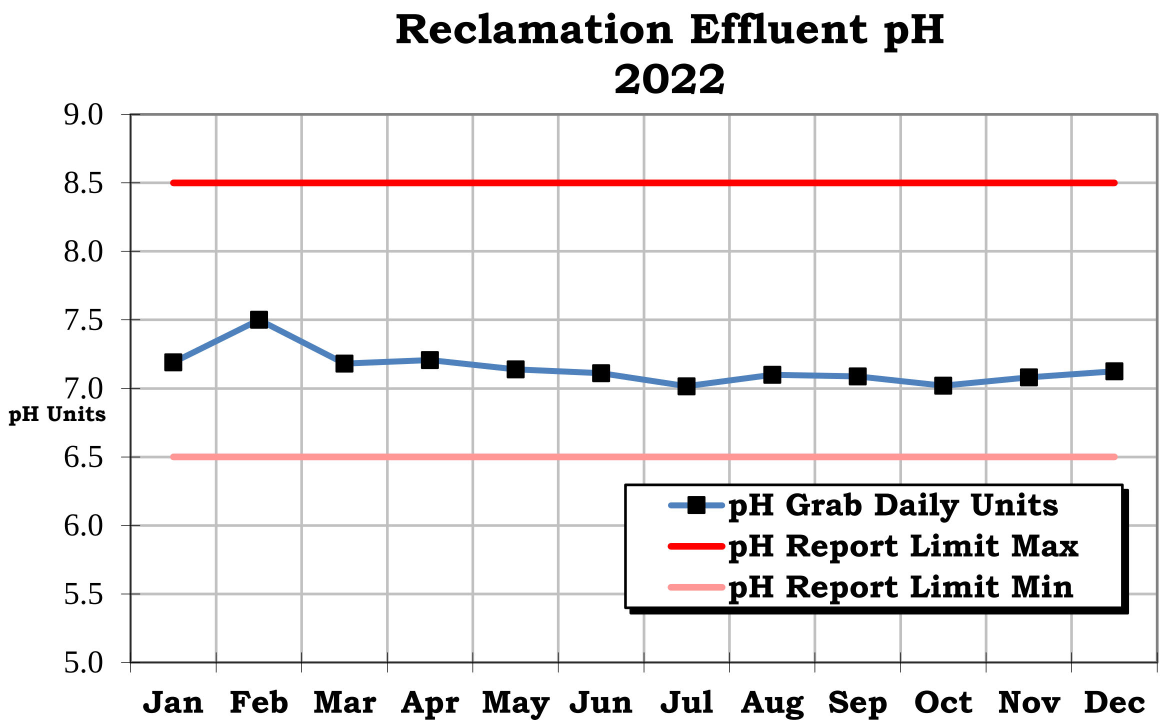

Graph 3



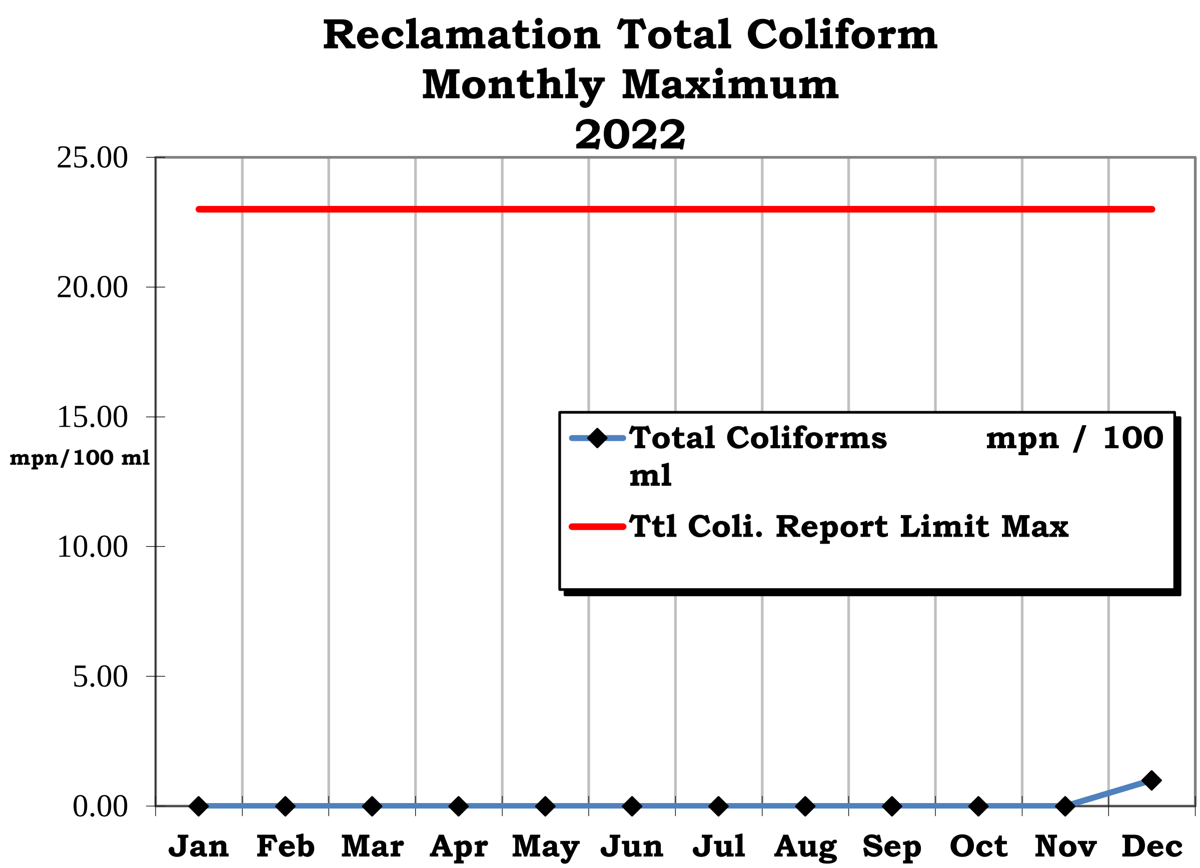

Graph 4




Graph 5


Reclamation Effluent pH
2022
9.0
8.5
8.0
7.5
7.0
pH Units
6.5
6.0
5.5
5.0
pH Grab Daily Units
pH Report Limit Max
pH Report Limit Min
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

Graph 6


Reclamation Total Coliform
Monthly Maximum
2022
25.00
20.00
15.00
mpn/100 ml
10.00
5.00
0.00
Total Coliforms mpn / 100 ml
Ttl Coli. Report Limit Max
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

Graph 7

## Section B: Compliance and Performance

- Treatment facility performance through percent removal of main pollutants.
  - BOD removal for the year percentage wise for 2022 was 99+%
  - TSS removal for the year percentage wise for 2022 was 99+%
  - Settleable Solids removal for the year percentage wise for 2022 was 99+%
  - Coliform inactivation for the year percentage wise for 2022 was 99+%
- Discussion of the previous year's compliance record.

  Carmel Area Wastewater District (CAWD) had one incident of noncompliance for the year 2022 for WDR order No. 93-72 (B) Reclamation Specifications, Section 5 states, "Chlorine residual in reclaimed water shall equal or exceed 5 mg/L, as measured within the chlorine contact zone at the end of the chlorine contact chamber".

  At 1517 hours on May 10th the Final Chlorine residual went below 5 mg/L as trended on the Supervisor Control and Data Acquisition (SCADA) because of the lack of Ammonium Hydroxide dosage. Trending shows the Chlorine residual lowest value as 1.69 mg/L.
  This situation reoccurred from 2050 until 2230 hours as trended on SCADA.

- Identify the possible situations that contributed to the noncompliance of the system.

  Alarm Notification Events:

  The on-call operator was not notified of any alarms from the Reclamation facility till 1745 hours when receiving Zone 3 via First Alarm. Based on the alarm log listed in Ignition, it was for a Low pH alarm condition.

  The on-call operator access SCADA remotely to determine the problem and any corrective actions. It was recognized that a low pH alarm existed but noticed the reclaim pumps were still sending water to the Poppy Hills storage tank. The operator attempted to manipulate the reclaim pump start/stop control set points to stop the pumps, but the pumps failed to stop.

  The operator returned to the plant and manually turned off the reclaim pumps. After checking manually checking the pH in the reclaim wet well, the on-line meter was found to be reading low. The on-line meter was reading 6.4 pH and the water tested at 6.7 pH thus the water was within the WDR requirements of ≥6.5pH thus no violation for this parameter.

The operator then realized when reviewing the process trend history that there was a low Final Chlorine residual condition that had existed, but he had not received any notification from either First Alarm or Ignition. By the time the operator arrived at the plant for the pH alarm, the low Final Residual condition had already corrected itself thus no alarm was present.

The on-call operator reviewed the RS view alarm Enable/Disable screens for the Low Final residual, and it was enabled on RS View. The operator then contacted his supervisor to discuss the situation. The plant superintendent was then texted, and the violation was verified the next morning after further review through SCADA.

SCADA Notification Failure:

There were two primary causes for the on-call operator not receiving any notification for the Low Final Residual alarm condition which resulted in the discharge violation:

1. The operator assigned to the Reclamation Facility didn't enable all the required alarms on both RS View and Ignition SCADA platforms after the system was placed back into operation at the end of the day thus no notification was sent to operational staff and/or to the on-call Operator for the low Final Chlorine residual.

2. As part of the Reclamation SCADA upgrade Frish Engineering set up many of the alarm blocks for Reclamation from RS View (old SCADA platform) to Ignition (new SCADA platform) as part of the SCADA upgrade. It was operations understanding that these alarms run in parallel (with both RS View and Ignition) thus if either SCADA system receives an alarm the operation staff would be notified. This did not happen on the day in question.

In addition, when Frish Engineering set-up the alarm (enable/disable) functions they made it where the alarm set points effected the process control (was not that way in the past) and not used only for alarm notification purposes.

The previous SCADA programming was set-up to where if the alarm was in the disabled mode, the PLC would continue to automatically turn off the required equipment to prevent any out of compliance water quality event from discharging from the facility. This would ensure that no out of water quality parameters would cause a discharge violation of Carmel Area Wastewater District Discharger Permit.

- Any nuisance conditions or system problems.
    - None at this time.

- Corrective actions

  1. CAWD staff have updated the Standard Operating Procedures (SOP) to ensure all system start-up requirements are met and all process alarms are enabled. This includes a new operational check list and training as part of the SOP's.
  2. Reclamation duty operator on May 10th has received updated training on system start-up, chemical injection, and was assigned the task for updating the SOP's. Management has reviewed and approved the SOP update.
  3. The recent alarm Enable/Disable function for the upgraded SCADA system is being reviewed by CAWD staff and Frish Engineering to prevent any future alarm condition from shutting down the processes.
  4. Due to the recent Ammonium Hydroxide supply issues CAWD staff in investigating the possibility of increasing the existing on-site storage as a long-term goal. Engineering review is currently under way.
  5. CAWD staff and Frish Engineering have corrected the control programming issue related to the reclaim pump level control. This has been field tested and is operating correctly.

- Are there any changes or that were made to improve plant performance?
    - Reclamation SCADA from RS View (old SCADA platform) to Ignition (new SCADA platform) as part of the SCADA upgrade which is scheduled to be completed during the month of February 2023.

**For Facilities That Measure Groundwater**

This Facility does not have requirements to perform groundwater measurements – Not applicable.

## Section C: Flow Evaluation

| 2020 | Max Monthly Daily Flow | Monthly Total |
|---|---|---|
| January | 1.657 | 25.854 |
| February | 1.041 | 15.126 |
| March | 1.069 | 6.358 |
| April | 1.4 | 16.054 |

| | | |
|---|---|---|
| May | 1.25 | 32.746 |
| June | 1.225 | 30.692 |
| July | 1.225 | 32.631 |
| August | 1.128 | 32.099 |
| September | 1.18 | 30.402 |
| October | 1.077 | 28.503 |
| November | 1.165 | 28.472 |
| December | 1.035 | 27.085 |
| Total annual flow | | 306.022 |

Flow Data 1

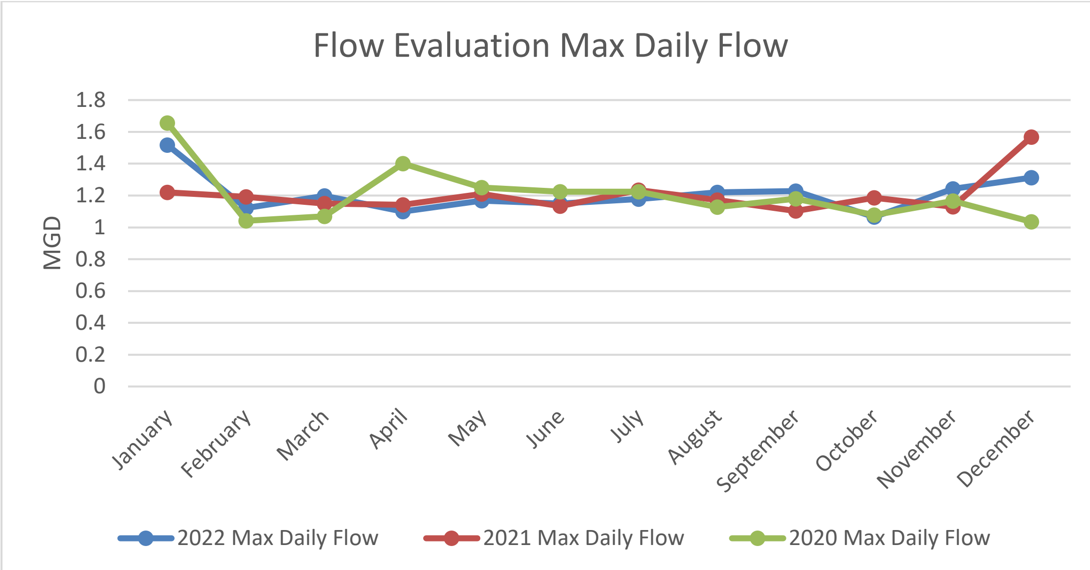
| 2021 | Max Monthly Daily Flow | Monthly Total |
|---|---|---|
| January | 1.22 | 27.456 |
| February | 1.191 | 30.843 |
| March | 1.15 | 13.835 |
| April | 1.142 | 30.749 |
| May | 1.211 | 32.439 |
| June | 1.133 | 31.322 |
| July | 1.234 | 32.799 |
| August | 1.172 | 32.334 |
| September | 1.103 | 28.143 |
| October | 1.185 | 29.2 |
| November | 1.13 | 29.85 |
| December | 1.568 | 37.845 |
| Total annual flow | | 356.815 |

Flow Data 2

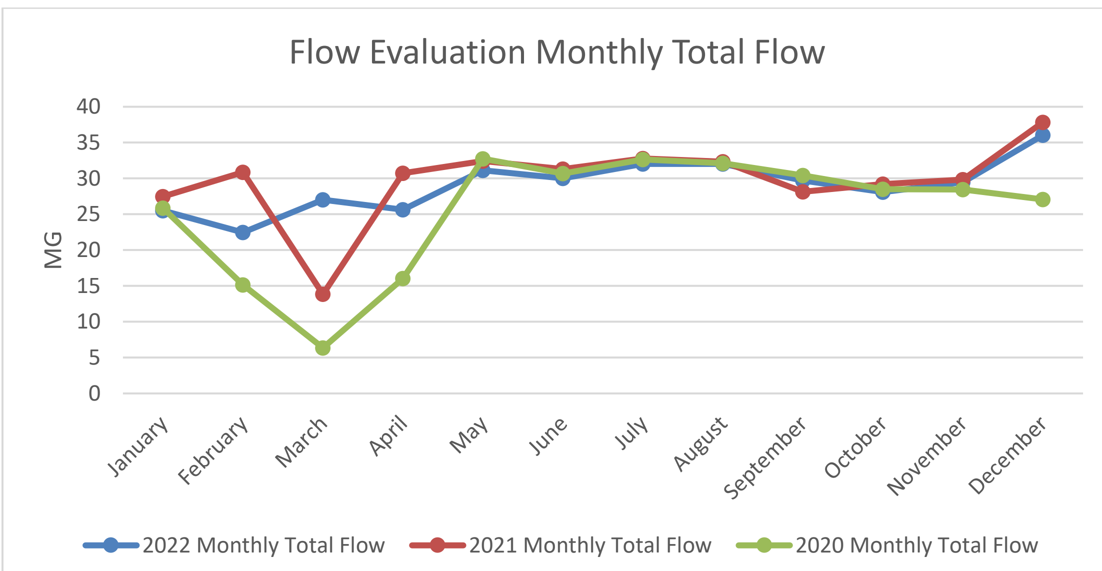
| 2022 | Max Monthly Daily Flow | Monthly Total |
|---|---|---|
| January | 1.518 | 25.497 |
| February | 1.121 | 22.463 |
| March | 1.198 | 27.006 |
| April | 1.099 | 25.631 |
| May | 1.168 | 31.153 |
| June | 1.15 | 30.014 |
| July | 1.177 | 32.026 |
| August | 1.22 | 32.014 |
| September | 1.228 | 29.721 |
| October | 1.065 | 28.117 |
| November | 1.243 | 29.48 |

| | | |
|---|---|---|
| December | 1.313 | 36.035 |
| Total annual flow | | 349.157 |

Flow Data 3




Graph 8




Graph 9

## Section D: Operator Certification

| Name | Operations Position | SWRCB Certification Level Maintained | License No. |
|---|---|---|---|

| | | | |
|---|---|---|---|
| **Edward Waggoner** | **Operations Superintendent** | **V** | **4011** |
| **Kevin Young** | **Operations Supervisor** | **V** | **9660** |
| **Christian Schmidt** | **Senior Operator** | **III** | **28643** |
| **Chris Dixon** | **Senior Operator** | **III** | **40697** |
| **Michael Hooks** | **Senior Operator** | **III** | **41183** |
| **Michael Garrison** | **Operator II** | **III** | **10674** |
| **Charles DayEngel** | **Operator II** | **II** | **41894** |
| **Rommel Lopez** | **OIT** | **OIT** | |
| **Greg Ange** | **Staff** | **III** | **43245** |
| **Fanny Mui** | **Staff** | **III** | **41872** |

## Section E: Operation and Maintenance

The Carmel Area Wastewater District's Reclamation Operation and Maintenance Manual was first written and submitted to the District on 12 August, 1994 following a review and comment period. Corrections/amendments were made and the final version of the Tertiary Operations and Maintenance Manual was submitted to the Carmel Area Wastewater District on 14 March, 1995

The Tertiary Operations and Maintenance Manual was updated in 2007 as part of the Micro Filtration Reverse Osmosis (MF RO) Project. This was done by a joint effort with the Pebble Beach Community Service District.

The Reclamation Operations and Maintenance Manual, as submitted to the District by the design engineer, exist, by contract, as a hardbound copy as well as in an electric version such that Carmel Area Wastewater District Operations/Maintenance/Lab staff can modify procedures/drawings as required by experience/knowledge and system modifications. Thusly modifications occur on an on-going basis.

## Section F: Laboratory Information

1 Monterey Bay Analytical Services
4 Justin Court, Suite D
Monterey , CA 93940

CA ELAP # 2385

2 Aquatic Bioassay & Consulting Laboratories, Inc.

29 North Olive Street
Ventura, CA 93001

CA ELAP# 1907

3 Carmel Area Wastewater Distrct (CAWD)
Highway One & Carmel River
Carmel, CA 93923
(831) 257-0432 -Phone
(831) 624-1478 -Fax

CA ELAP # 1804

4 Fruit Growers Laboratories (FGL)
853 Corporation St
San Luis Obispo, CA 93401

CA ELAP # 1573

## Section G: Sludge Management

Sludge Management is handled by the Carmel Area Wastewater District NPDES permit CA0047996 and is addressed in that annual report. – Not Applicable.

## Section H: Pretreatment

| **1** | **Influent Characteristics** | **Date** | **Result** | **Date** | **Result** | **Units** |
|---|---|---|---|---|---|---|
| | Arsenic | **2/8/2022** | 1.87 | **8/2/2022** | 2.12 | ug/L |
| | Cadmium | **2/8/2022** | 2.05 | **8/2/2022** | 0.115 | ug\L |
| | Total Chromium | **2/8/2022** | 3.11 | **8/2/2022** | 8.86 | ug\L |
| | Lead | **2/8/2022** | 1.44 | **8/2/2022** | 1.1 | ug\L |
| | Copper | **2/8/2022** | 95.5 | **8/2/2022** | 68.3 | mg/L |
| | Mercury | **2/8/2022** | ND | **8/2/2022** | ND | ug\L |
| | Nickel | **2/8/2022** | 5.98 | **8/2/2022** | 9.34 | ug\L |
| | Silver | **2/8/2022** | 0.138 | **8/2/2022** | 0.2 | ug\L |
| | Zinc | **2/8/2022** | 263 | **8/2/2022** | 388 | ug\L |

**2** Number of Inspections Performed:
Pretreatment Inspections annual-(109)

Number of Enforcement Actions:
Notice of Violations of the Pretreatment Ordinance – (2 Warnings)
(0 NOVs)

**3** Number of Major Industry Contributors- None (0)

**4** All New dischargers- (0)

**5** All New Dischargers constitute a Major Industry- None (0)

**6** Man power and funds to run Source Control Program
Environmental Compliance Supervisor (1)
Environmental Compliance Inspectors (2)
Funds for Source Control Program are from User Fees (Connection Permit, Construction Fees, and Source Control Application/ Permit, and Source Control Fines). -$450

| | | | |
|---|---|---|---|
| WARNING NOV | | No fee | |
| Class | Appl | $150 x 98 | |
| IV | Permit | = | $14,700 |
| Class | Appl | $150 x 10 | |
| IV CMO | Permit | = | $1,500 |
| Class III | Appl | $150 x 1 | |
| | Permit | = | $150 |
| | | Total | $14,400 |

**7** Summary of changes to Pretreatment Program

A new Carmel Area Wastewater District Pretreatment Ordinance 2022-02 was adopted on March 31, 2022 and in effect on April 22, 2022.

## Section I: Salt and Nutrient Management Plan

This facility does not need a salt and nutrient management plan. – Not Applicable.

## Section J: Collection System Management Plan

Collection System Management Plan is handled by the Carmel Area Wastewater District NPDES permit CA0047996 and is addressed in that annual report. – Not Applicable.

## Section K: Mercury Seals

This facility does not use Mercury Seals – Not Applicable.

## Section L: Figures

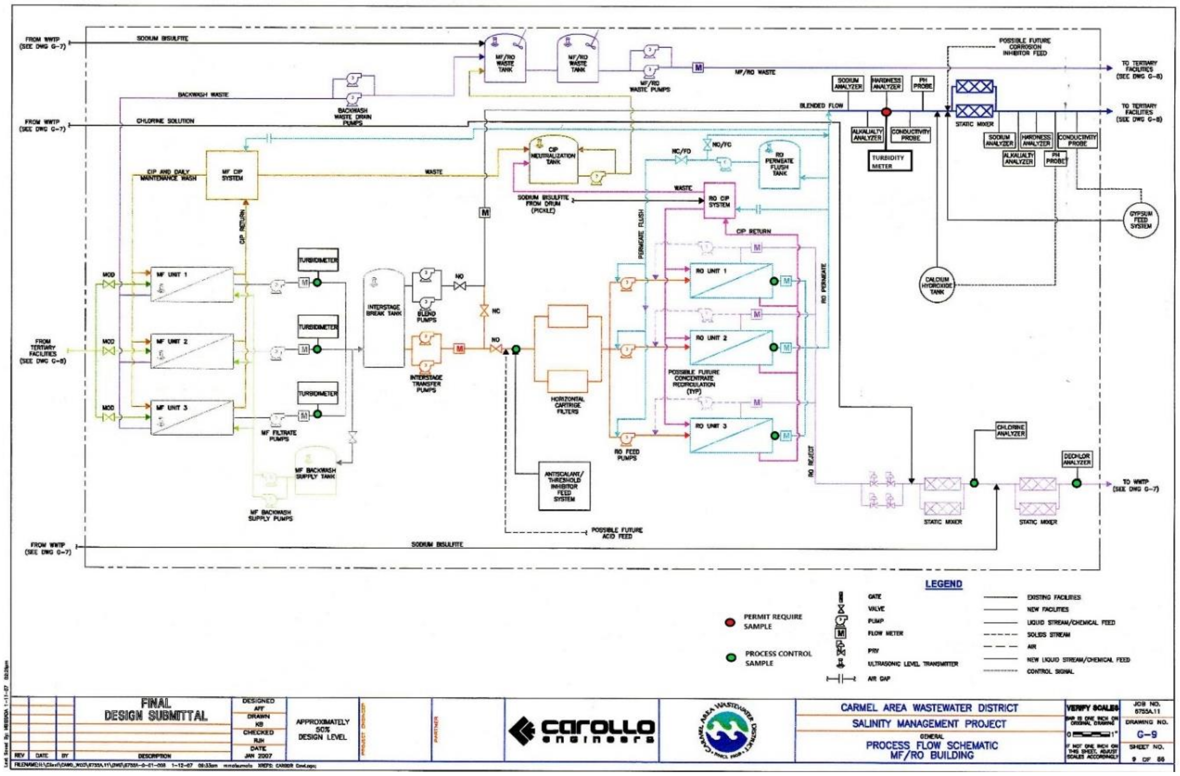



Fig 1

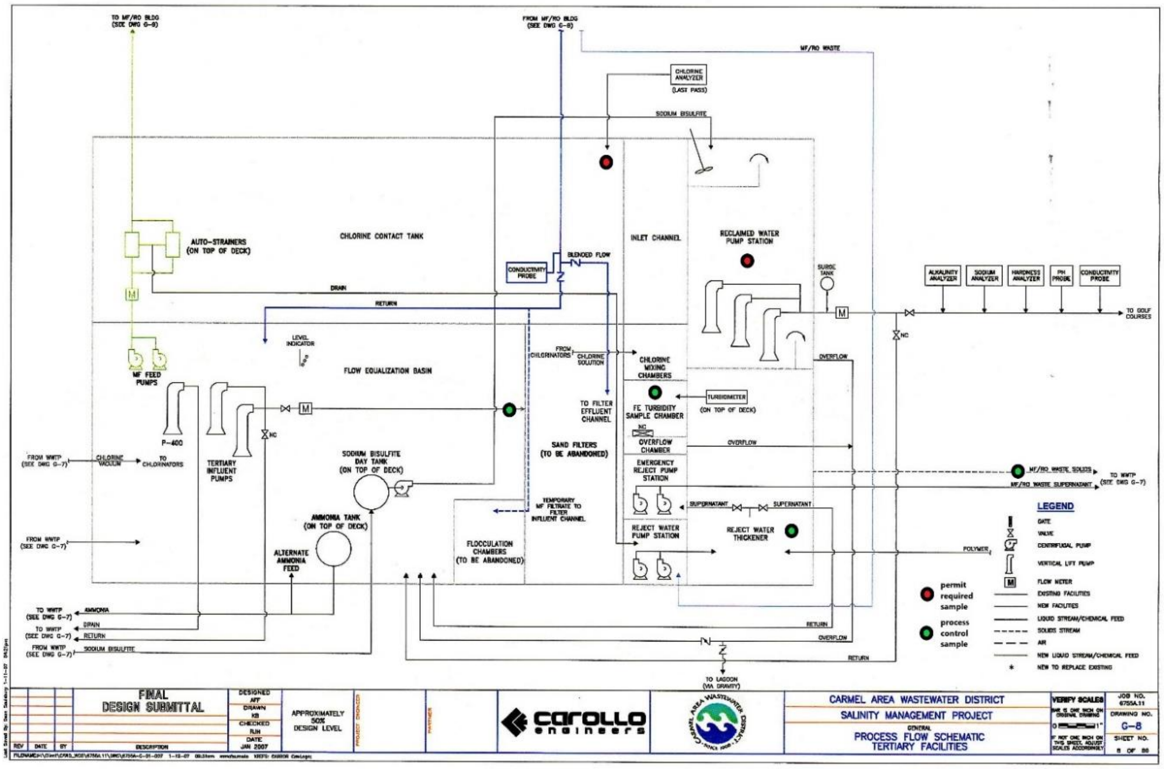

CHLORINE CONTACT TANK
AUTO-STRAINERS (ON TOP OF DECK)
INLET CHANNEL
RECLAIMED WATER PUMP STATION
FLOW EQUALIZATION BASIN
MF FEED PUMPS
TERTIARY INFLUENT PUMPS
SODIUM BISULFITE DAY TANK (ON TOP OF DECK)
AMMONIA TANK (ON TOP OF DECK)
ALTERNATE AMMONIA FEED
SAND FILTERS (TO BE ABANDONED)
FLOCCULATION CHAMBERS (TO BE ABANDONED)
CHLORINE MIXING CHAMBERS
FE TURBIDITY SAMPLE CHAMBER
OVERFLOW CHAMBER
EMERGENCY REJECT PUMP STATION
REJECT WATER PUMP STATION
REJECT WATER THICKENER
TO GOLF COURSES
TO LAGOON
LEGEND
permit required sample
process control sample
FINAL DESIGN SUBMITTAL
CARMEL AREA WASTEWATER DISTRICT
SALINITY MANAGEMENT PROJECT
PROCESS FLOW SCHEMATIC TERTIARY FACILITIES
carollo engineers

Fig 2

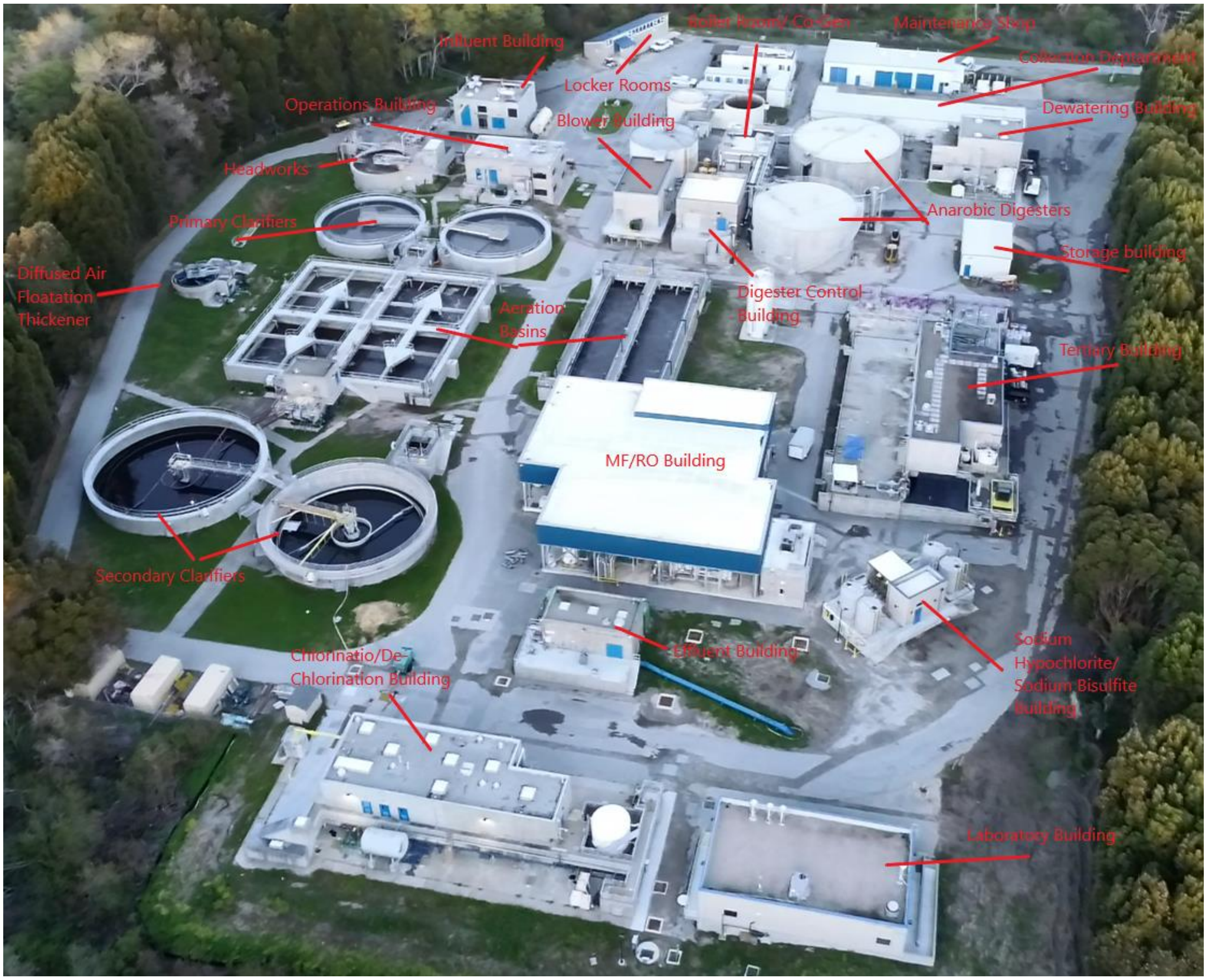



Fig 3

## Lab Reports

This facility’s Monitoring and Reporting Program requirements do not have specific annual monitoring.