Northport Village Corporation

Wastewater Collection and Treatment System
“Owner’s Manual”

What you need to know about your wastewater treatment system to maintain environmental compliance with optimal operational, maintenance, and economic efficiency

NVC MEPDES 301(h) discharge Permit ME0100901, issued 02/19/2025

- "301(h) waiver" discharge permits require primary settling and disinfection only. They do not require secondary or more advanced treatment processes. Compared to secondary treatment systems, "primary-only" systems are simpler and far less expensive to operate. There are only a handful of these systems still licensed in Maine.
- 301(h) permits are issued by the U.S. EPA along with Maine DEP, and are subject to federal review each time they are renewed. In the 21st century most municipal wastewater treatment systems are sufficiently advanced as to provide secondary treatment, so EPA scrutinizes the performance of each 301(h) permit renewal application carefully before deciding to re-authorize the waiver. U.S. EPA's willingness to re-issue a 301(h) waiver to a wastewater treatment facility ***is discretionary***, and very much subject to a facility's ability to consistently demonstrate compliance with its discharge permit.
- As primary-only municipal wastewater treatment facilities represent the 20th century's lowest acceptable level of performance, 301(h) waivers will not be issued to any new facilities requiring discharge permits.

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- Flow – Limited to a maximum of 63,000 gallons per day. Flow is recorded daily
- BOD – Biological Oxygen Demand is limited to a monthly average daily discharge limit of 107# and 203 mg/l and a minimum of 30% removal. BOD is sampled once a week
- TSS – Total Suspended Solids are limited to a monthly average daily discharge limit of 76# and 145 mg/l and a minimum of 50% removal. TSS is sampled once a week
- Fecal coliform bacteria are limited year-round to a monthly discharge geomean of 14 cfu and a daily maximum of 31 cfu. Fecal coliform are sampled once a week
- Enterococci bacteria are limited April 15th – October 31st to a monthly discharge geomean of 8 cfu and a daily maximum of 54 cfu. Enterococci are sampled once a week in season
- TRC – The Total Residual Chlorine daily discharge is limited to 0.3 mg/l. TRC is measured on-site daily

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- pH – pH is a measure of the acidity/alkalinity of the wastewater. pH is limited to a range of 6.0 – 9.0 s.u., and is measured on-site daily
- Low Level Mercury is limited to a lifetime average of 33.4 ng/l and a daily maximum of 50.1 ng/l. Low level mercury is sampled once annually
- Due to the limitations of the design of the NVC treatment system, BOD and TSS % removal *is not* derived by comparing effluent composite samples to influent composite samples, as is typically the case. Instead, engineering table values are substituted for the influent concentrations. As currently constructed it would be very difficult to take a valid composite sample from the influent manhole structure. The default influent concentration value for both BOD and TSS is 290 mg/l.

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- The NVC primary treatment system consists of three lines – “trains” – of 4 x 8,000 gallon in-ground settling tanks, in parallel. There is a distribution chamber ahead of the settling tanks that contains weirs to the three trains; each channel has a shut-off valve that allows any combination of 0 – 3 trains to be operating at one time.
- Disinfection. Effluent from the trains flows over a weir in the chlorination chamber (flow is measured and sodium hypochlorite is added here) and into the 8,000 gallon chlorine contact tank. The dwell time in this tank allows the disinfectant to achieve or better the permit bacteria limits. Being a primary-only system requires a substantial addition of disinfectant to achieve the necessary “kill”, typically 4 – 6 times per gallon more than what is normally required at a secondary plant.

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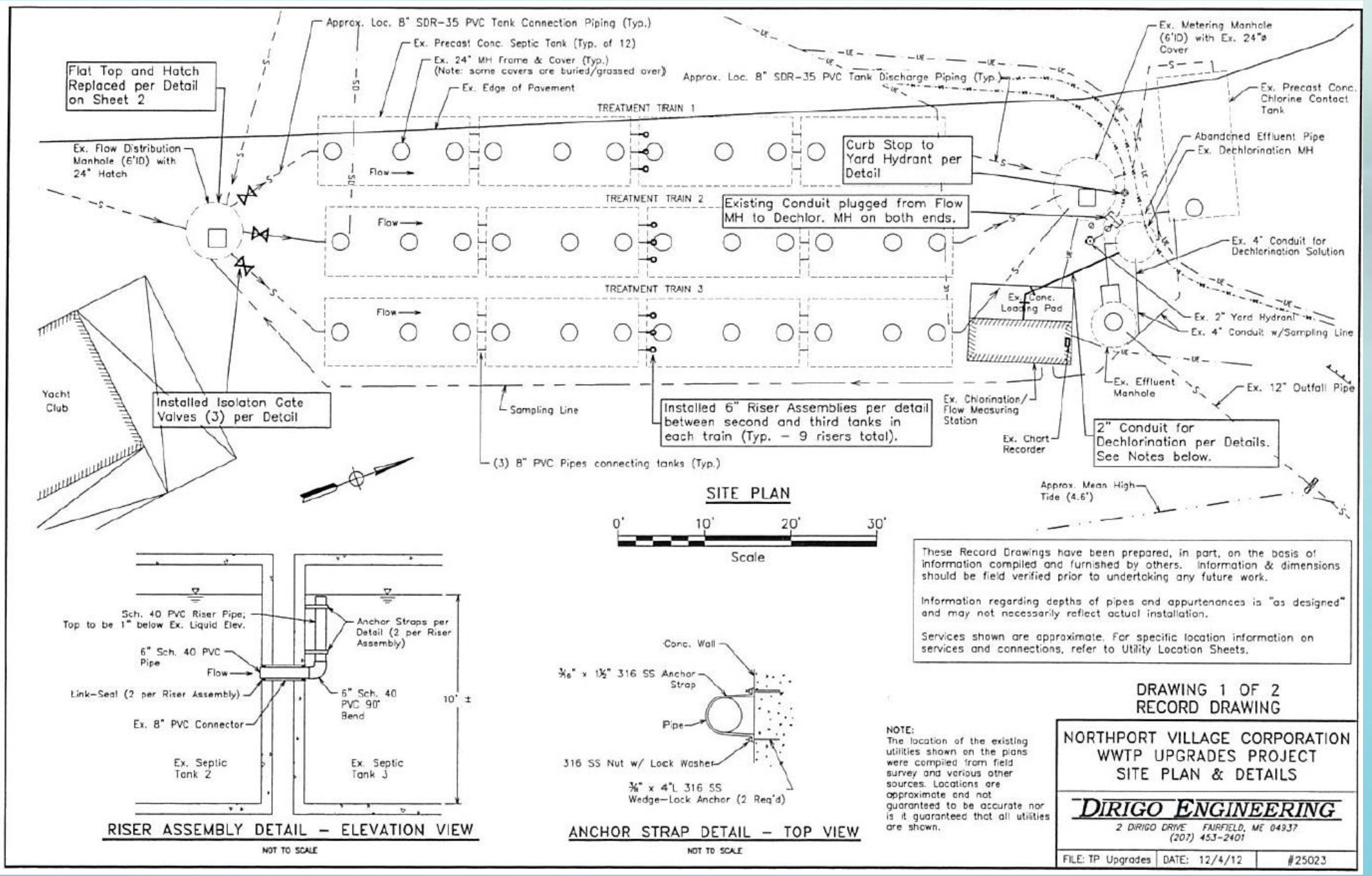
- Effluent Flow exits the chlorine contact tank and enters the “de-chlorination” manhole. Here it comes in contact with sodium bisulfite tablets, which chemically consume virtually all of the residual active hypochlorite. This is necessary to meet the permit Total Residual Chlorine limit.
- From here the effluent flows through one more manhole, and then out into Belfast Bay through a 760’ 12” diameter HDPE pipe.
- Due to the sea level-related hydraulic discharge head, high tides often result in effluent backing up in the final manhole and the de-chlorination manhole. King tides and storm surges may further restrict the effluent flow, backing it up as far as the chlorine contact tank, chlorination chamber, or even in extreme cases into the treatment trains.

Four Critical Process Control Procedures!

- *The three weirs and channels in the Influent chamber must be kept clear of obstructions, otherwise influent will not be effectively distributed across the three treatment trains! This is currently a manual task.*
- *Under most operating conditions, flow should be distributed evenly across the three trains to allow for maximum settling efficiency. This is a must during high flows!*
- *Accumulated solids must be removed from the treatment train settling tanks before they have a chance to re-suspend during high flows, solubilize BOD or TSS back into suspension, or become septic!*
- *"Super" chlorination must be maintained to provide the necessary bacterial "kill" effect!*



These Record Drawings have been prepared, in part, on the basis of information compiled and furnished by others. Information & dimensions should be field verified prior to undertaking any future work.

Information regarding depths of pipes and appurtenances is "as designed" and may not necessarily reflect actual installation.

Services shown are approximate. For specific location information on services and connections, refer to Utility Location Sheets.

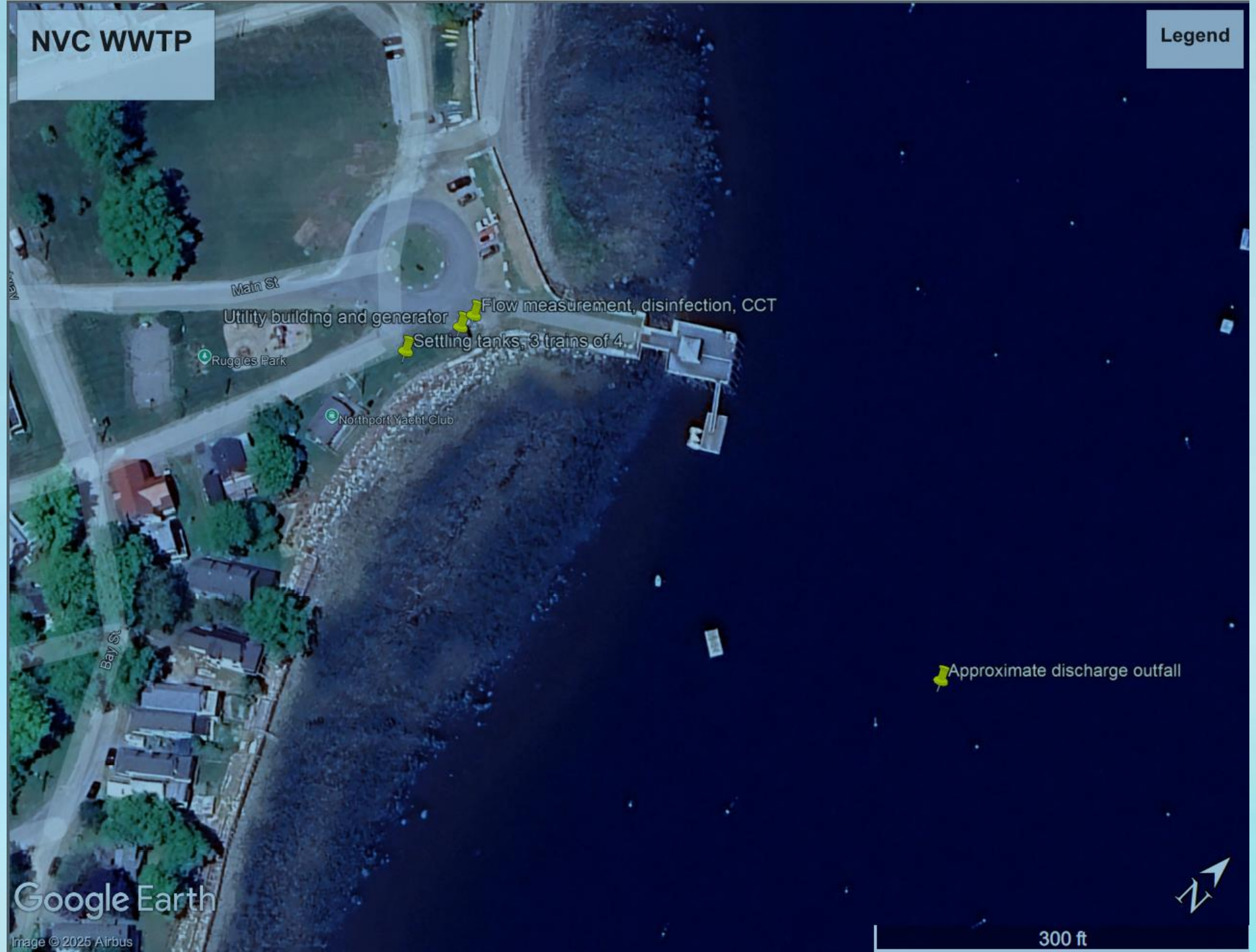
NOTE:
The location of the existing utilities shown on the plans were compiled from field survey and various other sources. Locations are approximate and not guaranteed to be accurate nor is it guaranteed that all utilities are shown.

DRAWING 1 OF 2
RECORD DRAWING

NORTHPORT VILLAGE CORPORATION
WWTP UPGRADES PROJECT
SITE PLAN & DETAILS

DIRIGO ENGINEERING
2 DIRIGO DRIVE FAIRFIELD, ME 04937
(207) 453-2401

FILE: TP Upgrades | DATE: 12/4/12 | #25023


NVC WWTP
Legend
Main St
Utility building and generator
Flow measurement, disinfection, CCT
Settling tanks, 3 trains of 4
Ruggles Park
Northport Yacht Club
Bay St
Approximate discharge outfall
Google Earth
Image © 2025 Airbus
300 ft

NVC Wastewater Treatment System

Headworks and Treatment Trains

Distribution chamber hatch in foreground, three parallel trains of 4 x 8,000 gallon in-ground settling tanks

Distribution Chamber Hatch Open

Interior of the Distribution Chamber

One weir plate, v-notched for each of the three channels to the treatment train settling tanks.

The weirs are prone to blockage with wastewater solids and must be kept clear!

Utility Building, Flow Measurement, Disinfection, Dechlorination

- Chemical storage, effluent sampler, flow meter readout, electronics and power distribution
- Effluent weir and hypochlorite addition chamber, square hatch
- Tablet dichlorination chamber, round hatch
- Emergency generator

Interior of the Effluent Flow Measurement and Hypochlorite Addition Chamber

- Hypochlorite solution added upstream of the v-notch weir
- Ultrasonic transducer continuously measures flow at the weir
- Disinfected effluent flows into the 8,000 gallon chlorine contact tank, then through the tablet de-chlorinator and out to Belfast Bay

Interior of the Utility Building

Wastewater Treatment System User's "Code of Conduct"

- **Only Flush Toilet Paper:** Only toilet paper should be flushed down the toilet. Everything else — including extinguished cigarette butts, cleaning wipes, baby wipes, facial tissue, paper towels, and feminine hygiene products (even if they are labeled flushable) — should be tossed in the garbage.

- **Reduce Water Usage:** The less water and waste that goes into the sewer system, the better. Help us reduce consumption and support treatment capacity by doing things like turning off water while brushing and shaving, and limiting the duration of showers. Constantly leaking toilet tank float-controlled fill risers or tank drain flap valves can result in substantial discharges over time. At the discretion of the homeowner, residents may consider not flushing after every #1 use 😊 If you are going to leave your residence unoccupied for an extended length of time and your water supply is not connected to a heating/air conditioning or fire suppression system, consider shutting off your town water main line or well pump.

- **Use of Garbage disposals is prohibited!** Garbage disposals are damaging to the collection and treatment systems; they add organic matter and solids that increase strain on the sewers, pump stations, and treatment system, leading to discharge violations. Garbage should always be thrown out, or food waste composted, not washed down the drain. Dry scrape pots and dishes into a compost bin or trash container, as appropriate, prior to washing. Place a strainer in the sink drain to catch small food scraps, then empty into the trash or compost, as appropriate. There are community resources available to provide curb-side pickup of compostable materials.

Wastewater Treatment System User's "Code of Conduct"

- **Don't Wash Oils, Grease, Dairy Products, Grains, or Coffee Grounds Down the Drain:** Fatty foods and cooking by-products harden inside pipes and create sewage backup. Don't run water over dishes or cookware to wash oil or grease down the sink. Instead, wipe them with a paper towel and throw the towel into compost. Never pour cooking oil, pan drippings, gravy, bacon grease, lard, shortening, butter, margarine, salad dressings, mayonnaise, creams, or sauces down the sink or toilet; again, please place this into compost. Dairy products contain fats that can congeal in pipes, and they add excess bacteria into our wastewater — they should never be dumped down the drain. The same goes for grains (like pasta, noodles and rice), bones, and coffee grounds! In general, plant-based waste, fats, and oils are compostable, while animal-based wastes, fats, and oils are not.

- **Never Pour Chemicals Down the Drain!** Paints (including latex-based), fuels, chemicals, solvents, herbicides/pesticides, fertilizer, and other similar compounds should never be flushed down the drain or toilet. They should always be safely disposed of in the trash, at the transfer station or at a designated hazardous waste disposal site. Local communities such as Belfast, Camden, and Rockland may hold annual household hazardous waste days.

Wastewater Treatment System User's "Code of Conduct"

- **Roof, foundation and cellar drains are not to be connected to the sanitary sewer system;** existing connections of this kind should be removed and re-routed. If the homeowner has connected washing machine drains or any other gray or blackwater discharges into a groundwater or stormwater conveyance, they need to be removed.

- **Fuel oil storage tanks and appurtenances, indoors and outside:** In a basement, fuel oil tanks, fuel lines, valves, and filter housings can leak, sometimes catastrophically. If fuel oil can reach a sump, drain or even cracks in the floor, and from there contaminate either the ground, a storm drain or a sanitary wastewater line, the environment, treatment plant, or both will be impacted. If placed close enough to the residence foundation, an outdoor tank leak or an over-fill event can permeate the foundation drainage.

- It is possible that some permanent (or even temporary) residents might undertake a hobby or cottage industry producing a discharge that could potentially impact the sanitary sewer or wastewater treatment plant more substantially than normal residential wastewater. Examples of such sources of "problem" wastewater include but are not limited to beer & wine making, bakeries, confectioners, dairy hobbies (ice cream, cheese, or yogurt making), fish, shellfish, or crustacean processing, commercial-scale food preparation, silk-screening, vehicle maintenance, and others. Residents who undertake these or other wastewater generating activities outside of the residential norm should contact Northport Village Corporation Utility management for a consultation on preferred disposal practices.

Your best economic and environmental strategy is

100 % Compliance 100% of the time!

Water Quality & Compliance Services, Inc. 47 Gardiner Road Wiscasset, Maine 207-882-6291 waterqualityservicesme.com