



Carson Dorn, Inc.

212 West 12th Street Juneau, Alaska 99801

Mr. Scott Forgue
Alaska Department of Environmental Conservation
Suite 11, 43335 Kalifonsky Beach Rd.
Soldotna, AK 99669

April 4, 2018

RECEIVED

APR 10 2018

ADEC
Kenai Area Office

Re: AMHS 2018 Haines Ferry Terminal Water Improvements
ADEC Plan Review Authorization to Construct Application
PWSID #110855

Dear Mr. Forgue:

As you know, the Alaska Department of Transportation and Public Facilities Marine Highway System (AMHS) has been working with Mr. David Khan to address some issues with contact time provided by the existing pressure-contact tanks at the Haines Ferry Terminal. These existing tanks have a volume of about 270 gallons and in accordance with the latest sanitary survey, they are to be treated as a "flow through system" with a baffling factor of 0.05 instead of a "batch type system" taking full advantage of the 270 gallon volume of the pressure tanks. This means they only have an effective storage volume of 13.5 gallons. This effective flow through volume does not provide sufficient contact time for inactivation of Giardia and viruses. As a result, we are submitting for your review and approval a two-tank batch type chlorine contact system that will allow the chlorinated water to sit unused until the required contact time is achieved.

The Strainrite filters currently in use at the Haines Ferry Terminal have been given credit for 2.0-log removal of Cryptosporidium and a 2.5-log removal of Giardia by ADEC. Chlorine disinfection and chlorine contact time is needed to provide an additional 0.5-log inactivation of Giardia to achieve a combined 3.0-log removal/inactivation of Giardia and a 4.0 log inactivation of viruses as required by the Surface Water Treatment Rule (SWTR) and the Long Term 1 Enhanced Surface Water Treatment Rule (LT1).

Based on a water temperature of 0.5° C, a pH less than 8.0 and chlorine concentration ≤ 0.4 mg/l, the required CT (chlorine concentration x time) for Giardia inactivation, according to the USEPA's tables for 0.5-log Inactivation of Giardia Cysts by Free Chlorine, is 46 min-mg/l. At a chlorine concentration of 0.2 mg/l, this CT would require a contact time of 230 minutes ($0.2 \text{ mg/l} \times 230 \text{ minutes} = 46 \text{ min-mg/l}$). If the chlorine concentration was increased to 0.4 mg/l, the required contact time to achieve a CT of 46 would be shortened to 115 minutes ($0.4 \text{ mg/l} \times 115 \text{ minutes} = 46 \text{ min-mg/l}$).

Based on a water temperature of 0.5° C and a pH of 6.0-9.0, the required CT, according to the USEPA's table for 4-log Inactivation of Viruses by Free Chlorine for virus inactivation, is 12 min-mg/l. Since the required CT for 4-log virus inactivation is only

about 25% of the required CT for Giardia, providing the necessary CT for Giardia will also provide sufficient CT for virus inactivation.

We have prepared a spreadsheet of the daily flow information submitted to ADEC for 2017 by the AMHS for the Haines Ferry Terminal (see attached spreadsheet). This spreadsheet shows the total daily water usage was less than 300 gallons/day on all days except for 5 days. The peaks days on April 10, July 28 and July 30 were the result of maintenance on the system. The peak day on May 22 was the result of a faucet being left on accidentally. The final peak day on August 13th was possibly the result of high demand.

I have also attached the 2018 Haines Ferry Terminal Schedule for April-October. There is a period of at least 8 hours each night where no ferry is at the terminal.

The general concept for chlorine contact is to provide two new tanks that will be filled with chlorinated water each night and allowed to sit all night providing the necessary contact time. Each morning the tanks will be isolated from the fill piping and water from the tanks will be used to meet the daily water demand. This process will be repeated each day.

We have very limited space at the ferry terminal and so are suggesting two 210 gallon tanks be used for chlorine contact with two water booster pumps to provide operating pressure of about 40 psi. The actual operating volume of each tank will be about 175 gallons due to installation of overflow piping so the total volume of available treated water each day will be 350 gallons. More treated water could be provided each day if the tanks are alternated every 4 hours. The required CT is met with 4 hours of contact time with a chlorine concentration ≥ 0.2 mg/l. The tanks could be alternated every 2 hours if the chlorine concentration in the tanks is increased to ≥ 0.4 mg/l.

With 8 hours of contact time the CT at a chlorine concentration of 0.2 mg/l will be 96. With a chlorine concentration of 0.4 mg/l and a contact time of 8 hours the CT will be 192. Both are in excess of the required CT of 46.

The following is provided in support of the request for Authorization to Construct this project:

- 1) Haines Ferry Terminal Daily Water Usage 2017
- 2) Alaska Marine Highway Haines Arrival and Departures 4/18 – 10/18
- 3) USEPA Table C-1 Values for Inactivation of Giardia Cysts by Free Chlorine at 0.5° C or Lower
- 4) USEPA Table C-7 Values for Inactivation of Viruses by Free Chlorine, pH 6.0-9.0
- 5) ADEC Plan Review Application Checklist 0.0

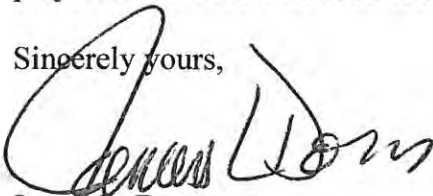
- 6) ADEC Plan Review General Checklist 1.0
- 7) ADEC Plan Review Storage Checklist 4.0
- 8) Plans- Alaska Marine Highway System 2018 Haines Terminal Water Improvements
- 9) Grundfos SCALA2 Pump Information, Pump Curves, Operation Description and NSF listing.
- 10) Norwesco 210 Gallon Tank Information and NSF listing.
- 11) Kerick Float Valve Information and NSF listing.
- 12) Operational Narrative

I have also mailed a hardcopy of the application for Authorization to Construct to you.

In accordance with ADEC Checklist 1.0 Item 2 Plan Review Fee, once the Department has calculated the fee for this Plan Review, please email the invoice to Ms. Christy Harrington, Environmental Program Specialist, ADOTPF Alaska Marine Highway System, 7559 North Tongass Highway, Ketchikan AK 99901, (907) 228-6825, christen.harrington@alaska.gov.

If any questions or concerns come up as you conduct your review, please let me know and we will be sure to address them as quickly as possible. Thanks for your help on this project and we look forward to receipt of an Authorization to Construct.

Sincerely yours,



James L. Dorn
Project Engineer

cc:

Christy Harrington, ADOTPF AMHS



Alaska Department of Environmental Conservation
Division of Environmental Health

Drinking Water Program - Engineering Plan Review
Facility Information Form

I. Public Water System Owner

First Name: JOHN Last Name: FALVEY JR Phone: 907-766-2111
Company Name: ADOTPF Alaska Marine Highway System Fax: _____
Mailing Address: P.O. Box 791
City: Haines State: AK Zip Code: 99827
Email Address: edith_vonstauffenberg@alaska.gov

II. Public Water System Primary Operator

First Name: Edith Last Name: Von Stauffenberg Phone: 907-766-2111
Certification: _____ Fax: _____
Mailing Address: P.O. Box 791
City: Haines State: AK Zip Code: 99801
Email Address: edith_vonstauffenberg@alaska.gov

III. Public Water System Facility

Facility Name: Haines Ferry Terminal Phone: 907-766-2111
AKA: _____ Fax: _____
Physical Address: Lutak Road, Haines Alaska
Legal Description: Lot: _____ Block: _____ Subdivision: _____ Addition: _____
or
Location: Meridian: CRM Section: 10 Township: 30S Range: 59E Tax Lot: _____

IV. Owner's Statement

Project Name: 2018 Haines Terminal Water Improvements
☐ DEC Municipal Grants and Loan Funded Project

I have authorized submittal of the enclosed items for the above referenced project. I acknowledge the public water system's responsibility at all times for the quality of the water served by it. By my signature, I certify the information above is correct and my authority to sign this statement (18 AAC 15.030) as the owner of the public water system and applicant for approval of the above listed project is based on one of the following:

- ☐ **Corporation:** I am a principal executive officer of at least the level of vice president or his/her duly authorized representative, if the representative is responsible for the overall management of the project or operation.
- ☐ **Partnership:** I am a general partner.
- ☐ **Sole proprietorship:** I am the proprietor.
- ☒ **Municipal, State, Federal, or other public facility:** I am either a principal executive officer, ranking elected official or other duly authorized employee.

[Signature] 4-5-18 JOHN F FALVEY JR GM/AMHS
Owner's Signature Date Printed Name Title



Alaska Department of Environmental Conservation
Division of Environmental Health

Drinking Water Program - Engineering Plan Review Project Information Form

This form must be attached to a completed and signed Facility Information Form. See the Checklist Instructions.

I. Project Engineer

First Name: Jim Last Name: Dorn Phone: 907-723-4717
Company Name: Carson Dorn, Inc. Fax: _____
Mailing Address: 712 West 12th Street
City: Juneau State: AK Zip Code: 99801
Email Address: jdorn@carsondorn.com AK P.E. License No.: AELC5323

II. Public Water System Information

PWSID: 110855 System Classification: (18 AAC 80.1990)
(for existing water systems)

- ☐ Community Water System (CWS)
☐ Non-Transient Non-Community (NTNC)
☒ Transient Non-Community (TNC)

Number of Service Connections in PWS: 1 (including proposed)

Days per Year of Operation: 365 (number of days)

Dates of Operation: N/A (if seasonal)

Resident Population Served (daily average*): _____ (PWS serves primary place of abode via pipes, delivery, or self-haul)

Non-Transient Population Served (daily average*): 3 (> 6 months/year of PWS use such as students and workers)

Transient Population Served (daily average*): 25 (<6 months/year of PWS use such as customers)

Length of Extension or Replacement (ft): _____ (for projects proposing distribution or transmission main work)

* Daily average refers to an average population that includes only the days water is made available to the public.

Systems Using Hauled Water

PWSID(s) water is obtained from: _____

PWSID(s) of water hauler(s) used: _____

Does or will the facility treat the water it receives?

III. Plan Review Checklist: Identify the checklists required for submittal.

Checklist		New PWS	Modify Existing PWS	Distribution	Waiver
No.	Title				
1.0	General	☐	☒	☐	
2.0	Capacity Development (CWS/NTNC)	☐	☐		
3.0	Source - Groundwater	☐	☐		
3.1a	Source - GWUDISW Determination	☐	☐		
3.1b	Source - Surface Water / GWUDISW	☐	☐		
3.2a	Source - Other / Rain Catchment	☐	☐		
3.2b	Source - Other / Seawater	☐	☐		
4.0	Storage	☐	☒		
4.1	Storage - Tracer Study Application - DRAFT	☐	☐	☐	
5.0	Distribution - Piped	☐	☐	☐	
5.1	Water Haul Vehicle	☐	☐	☐	
6.0	Treatment - Surface Water /GWUDISW	☐	☐		
6.1	Treatment - Corrosion Control	☐	☐		
6.2	Treatment - POU and POE	☐	☐		
6.3	Treatment - Membrane Filtration	☐	☐		
6.4	Treatment - Ozone	☐	☐		
6.5	Treatment - Media Filtration	☐	☐		
6.6a	Treatment - UV Disinfection Validation Report	☐	☐		
6.6b	Treatment - UV Disinfection System	☐	☐		
6.7	Treatment - Other	☐	☐		
7.0	Waiver - Source	☐	☐		☐
7.1	Waiver - Piped Distribution	☐	☐	☐	☐
8.0	Additive - Fluoride	☐	☐		



Drinking Water Program - Engineering Plan Review General Checklist

Project Name: 2018 Haines Ferry Terminal Water
Improvements

Date: 4/2/2018

Engineer Name: Jim Dorn

AK P.E. License No.: AELC5323

Use of this guide is required for construction of new and modifications to existing public water systems. Plans must be sealed, signed, and dated by an Alaska registered P.E. and submitted in hardcopy and on 11-inch by 17-inch or 8.5-inch by 11-inch paper, if legible. If additional electronic copies are allowed by the reviewing engineer, they should be in Adobe PDF format. Incomplete submittals will not be forwarded to engineering staff for review.

Note: When completing this checklist, please include where in the submittal the information is found for each submittal requirement. Please be as specific as possible (specify document name, page number, section number, paragraph, etc.). This will expedite the approval process.

Submittal Requirements

Regulatory Reference

- 1. Cover Letter and Project Report:** Does the cover letter state what approval is requested from DEC? Is the engineer's report sealed, signed, and dated by an Alaska registered P.E.? Does the engineer's report include a narrative summarizing the project (where, what, why, when, and how) and a description of the basis for design?

18 AAC 80.200(b)
18 AAC
80.205(a)(4)

Please see attached cover letter for project description and report.

- 2. Plan Review Fee:** Has the correct plan review fee payment been included? Assistance determining the fee may be obtained by downloading a blank invoice from DEC's website at <http://dec.alaska.gov/eh/docs/dw/engineering-forms/plan-review-invoice.pdf> or by contacting the DEC office that will be receiving the submittal. If the plan review fee is received with the submittal and the fee calculation is incorrect, the check will be returned to the payer or be shredded per the payer's preference. If the applicant has requested that, upon receipt of the submittal, the Department calculate the fee and send or email an invoice for payment, the submittal must include the contact information for the person, agency, or company that will be responsible for the fee payment, including their name, mailing address, telephone number, and email address. This may necessitate prior arrangement with the office receiving the submittal. A plan submittal will not be reviewed until payment is received (We have had issues with unpaid invoices).

18 AAC 80.1910

Please contact Christy Harrington, Environmental Program Specialist with the AMHS (907) 228-6825, christen.harrington@alaska.gov, for payment once the plan review fee has been determined.

General Checklist (continued)

Submittal Requirements	Regulatory Reference
3. Project Drawings: Are the construction drawings and specifications included in the submittal? The construction drawings must be sealed, signed, and dated by an Alaska registered P.E. and in hardcopy format unless previous arrangements have been made. <i>Yes. A project drawing has been prepared and a hard copy has been submitted to ADEC's Soldotna office.</i>	18 AAC 80.205(a)(2) 12 AAC 36.185
4. Master Meter: Does the project comply with the need for a master meter? <i>No changes have been made to the master meter for this system.</i>	18 AAC 80.235
5. Asbestos Pipe: If the system is a new community or non-transient non-community public water system, does the submittal include an application for a one time asbestos sampling waiver? Contact the DEC office for a copy of the form. If this is an existing system, are specifications included for any asbestos pipe proposed for the project? <i>If a new or existing system finds asbestos-cement pipe anywhere in the distribution or treatment system, DEC must be notified within 48 hours.</i> <i>There is no known asbestos pipe in the system.</i>	18 AAC 80.315(b)(2)
6. Contact Information for Engineer Submitting Record Drawings: What is the name and contact information for the Alaska registered P.E. that will sign, date, and seal the <i>record drawings</i> for operational approval? <i>It is anticipated that James L. Dorn, P.E. will sign, date and seal the record drawings for operational approval.</i>	18 AAC 80.210(j)(1)
7. Design Criteria and Calculations: Does the submittal include design criteria, calculations, flow analysis, and other computations (e.g. treatment sizing, disinfection, etc.) as appropriate? <i>The project only makes changes to chlorine contact time and so there are no changes in flow rates. The contact time calculation is included in the cover letter.</i>	18 AAC 80.205(a)(4)
8. Corrosivity: If the project proposes to make any change to the source or long-term water treatment, how did the engineer address the potential for each change to affect the corrosiveness of the distributed water and any mitigation that may be necessary? How does the treatment system design accommodate the future needs of adding corrosion control (i.e. space for equipment and chemical injection points)? <i>No changes.</i>	18 AAC 80.205(c)(5)

General Checklist (continued)

Submittal Requirements	Regulatory Reference
9. Manufacturers' Specifications: Does the submittal include the manufacturer's specifications for major components of the project and performance curves for the proposed pumps? <i>Manufacturer's information is included as an attachment to the cover letter for the booster pumps and for the contact tanks.</i>	18 AAC 80.205(a)(2)
10. Backflow and Cross-Connection: Has the engineer submitted the backflow and cross-connection evaluations? <i>No changes.</i>	18 AAC 80.025
11. Lead Free: Do the plans specify the design meets the new lead requirements including: (A) not containing more than 0.2 percent lead when used with respect to solder and flux; and (B) not having more than a weighted average of 0.25 percent lead when used with respect to the wetted surfaces of pipes, pipe fittings, plumbing fittings, and fixtures? <i>Yes. They also require compliance with NSF 372.</i>	Reduction of Lead in Drinking Water Act (amendment of the Safe Drinking Water Act, Section 1417)
12. Additives NSF 60: Is documentation attached confirming chemical additives and products proposed for use in the public water system (e.g. disinfectants, coagulants, oxidizing agents, anti-scalants, membrane or UV cleaning chemicals, lubricants, drilling fluids, etc.) are certified by an ANSI accredited organization (e.g. NSF International, UL, CSA, WQA, etc.) to ANSI/NSF Standard 60 for use in potable water systems? If there are any which are not certified in this manner, what is the engineer's justification for their use? <i>Yes. Chlorine used for disinfection is specified to be NSF 60 listed.</i>	18 AAC 80.010(b)(9) 18 AAC 80.30(a)
13. Acrylamide and Epichlorohydrin: Has the engineer verified the sum of acrylamide and epichlorohydrin in products proposed for use and products proposed for continued use in the public water system does not exceed the regulated percentages at the dose and monomer level? Are lists of ingredients from the manufacturers included? Will the operator be trained and have the means to measure, record, and annually certify to the Department, in writing, that the amount of acrylamide and epichlorohydrin is maintained within the regulated percentages? <i>There are no known components that have acrylamide or epichlorohydrin in them. All products that are in contact with the drinking water are to be NSF 61 listed.</i>	18 AAC 80.045(a) 40 CFR 141.111

General Checklist (continued)

Submittal Requirements	Regulatory Reference
14. Materials in Contact NSF: Is documentation attached verifying all components proposed for direct contact with water are <u>certified</u> by an ANSI accredited organization (e.g. NSF International, UL, CSA, WQA, etc.) to ANSI/NSF Standard 61 or an ANSI/NSF standard with equivalent materials health effects evaluation? If there are any components which are not certified in this manner, what is the engineer's justification for their use? Has the engineer conducted an exhaustive search for certified alternative components that would be appropriate for the application? If none exists, how did the engineer show the proposed non-certified component(s) would be protective of public health? This may include a discussion of materials used in wetted surfaces/parts (i.e. Are they ANSI/NSF Standard 61 certified or made of stainless steel as listed in NSF 61 Annex C?), time in contact with the water, other certifications, etc.. <i>Yes.</i>	18 AAC 80.010(b) 18 AAC 80.030(b)
15. Operational Narrative: Does the operational narrative for the proposed project include both a description of all unit processes and the operational logic to be followed by the operator or the automated control and alarm systems? <i>Yes. See attached operational narrative.</i>	18 AAC 80.205(b)(9)
16. Operational Control Points: Where are pressure gages, flow meters, rate of flow controllers, sample points, valves, etc. which assist the operator with operating and monitoring the system in compliance with the requirements of 18 AAC 80? Which drawings show where each is located? <i>No changes.</i>	18 AAC 80.205(a)(2)
17. Monitoring Operation: How will the operator monitor the system? What data will the operator collect? How will the data be viewed by the operator (i.e. software)? <i>There are no significant changes to the operational monitoring plan. The operator will now need to record the time when a tank fill is started and when a tank is placed on-line to provide water to the ferry terminal bathrooms.</i>	
18. Disinfectant Discharge: Has the project been authorized by DEC to discharge the highly chlorinated water used for disinfecting the project or determined that the water, independent of volume, will meet State water quality standards in 18 AAC 70 and the required effluent limits? Information can be obtained by visiting DEC Division of Water webpages at http://dec.alaska.gov/water/wnpspc/stormwater/edhsgp.html <u>and</u> http://dec.alaska.gov/water/wnpspc/stormwater/docs/AKG003000_Hydrostatic_GP_Permit.pdf. <i>Disinfectant discharges will be to the ferry terminal sewer system.</i>	APDES 18 AAC 70

General Checklist (continued)

Submittal Requirements	Regulatory Reference
19. Operator Training and Certification: Is documentation included demonstrating the DEC Operator Training and Certification Program has been provided a project schematic and list of proposed additives in order to determine the anticipated system class? Does the submittal have documentation demonstrating that the system is working with the Program to ensure compliance with 18 AAC 74 after construction according the proposed design?	18 AAC 80.007 18 AAC 74
<i>No changes.</i>	
20. Emergency Preparedness: If the submittal involves a community or a non-transient non-community PWS or if it involves a transient non-community PWS serving 1,000 or more people per day, is the name and contact information provided for the person that will submit the documentation to satisfy the regulatory emergency preparedness requirements? Documentation will be required for final approval to operate the system.	18 AAC 80.055
<i>No changes.</i>	
21. Wastewater Discharges from Drinking Water Treatment Facilities: If the submittal involves conventional, direct, or membrane filtration or ion exchange, is the disposal of backwash and reject waters from the treatment facility addressed? Information on permitting the discharge of contained water can be found at http://dec.alaska.gov/Applications/Water/WaterPermitSearch/Search.aspx .	18 AAC 72 18 AAC 60 APDES
<i>No changes.</i>	
22. Service Pressure: How do the engineer's calculations demonstrate that as designed, the proposed distribution will be capable of maintaining at least 20 psi of service pressure at the highest elevation or pressure zone under peak demand flow conditions?	18 AAC 80.205(a)(5)
<i>Each of the two water booster pumps are able to provide approximately 13 gpm at 40 psi.</i>	
23. Chemical Mixing Water Source: What is the water source for mixing chemicals? Which drawing includes the water supply lines/taps used for chemical mixing solutions and the backflow prevention for the water supply?	18 AAC 80.205(b)(9)
<i>No changes.</i>	
24. Instrument Air Gaps: Has the engineering design assured air gaps for the instruments are within view of the instrument panel?	18 AAC 80.025
25. Raw Water Sample Tap: Which drawing sheet shows the required raw water sample tap?	18 AAC 80.655 18 AAC 80.205(c)(6)
<i>No changes.</i>	

General Checklist (continued)

Submittal Requirements	Regulatory Reference
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- 26. New Public Water System:** Has documentation been included showing the existence or formation of a local government organization, a homeowner's association, a private utility, a commercial entity, or other entity, to operate and maintain the system?

*18 AAC
80.205(b)(10)*



Drinking Water Program - Engineering Plan Review Storage Checklist

Project Name: 2018 Haines Terminal Water Improvements

Date: 4/2/2018

Engineer Name: Jim Dorn

AK P.E. License No.: AELC5323

Use of the guide is required for the construction of new or the modification of existing storage systems. Storage includes water holding tanks and hydropneumatic pressure tanks used for storage capacity.

Note: When completing this checklist, please include where in the submittal the information is found for each submittal requirement. Please be as specific as possible (specify document name, page number, section number, paragraph, etc.). This will expedite the approval process.

Submittal Requirements

Regulatory Reference

- 1. Storage Drawings and Specifications:** Do the drawings and specifications for construction of the storage system include details for baffling and inlet and outlet piping?

18 AAC 80.205(a)(2)

No. This is a batch system that will provide contact time by allowing the chlorinated water to sit between uses.

- 2. Interior Coating Curing:** What measures will be used to prevent potential taste and odor problems associated with elevated VOCs resulting from inadequate curing?
This issue can be more pronounced when tanks hold water for long detention times.

18 AAC 80.030(b)

The tanks are prefabricated high density polyethylene and so there is no interior tank coating.

- 3. Compressed Air:** If compressed air is proposed to pressurize hydropneumatic tanks, what information is provided to prove source air quality will not add contaminants to the water?

18 AAC 80.205(b)(8)

No compressed air is used for the system.

- 4. Safe Access:** How does the design provide safe access for operation, maintenance, and inspection such as ladder cages and railings around hatches?

18 AAC 80.205(b)(9)

The tanks are too small to provide access to the interior of the tanks.

- 5. Vent and Overflow Screens:** Is a drawing provided showing that vents and overflow lines are screened and down-turned?

18 AAC 80.025

Overflow lines are shown and routed outside of the building. The overflow line is provided with an insect screen and is facing down.

Storage Checklist (continued)

Submittal Requirements	Regulatory Reference
6. Overflow Air Gap: Does the drawing sheet show that the tank overflow discharge has an air gap of at least two overflow discharge pipe diameters above the surrounding area or discharge point?	18 AAC 80.025
<i>The tank overflow is located over 5' above the outside pavement.</i>	
7. Tank Safety: What design elements mitigate the potential for erosion and other factors that may put the tank foundation at risk for failure?	18 AAC 80.025
<i>The tanks are located inside a building and so there is no potential for putting the tank foundation at risk due to erosion.</i>	
8. Storage Disinfection: Which specifications address disinfection of the new storage tank(s) before use? If AWWA Standard C652 is not specified, does the proposed method include adequate detail for the contractor to implement?	18 AAC 80.010(d)(2)
<i>The tanks are about 210 gallons each and are being disinfected in accordance with AWWA C651 and AWWA C653 for water plants.</i>	
9. Storage Capacity: How does the engineer's calculation demonstrate the source capacity will be adequate for instantaneous peak demand or that the proposed storage capacity is adequate?	18 AAC 80.205(a)(4)
<i>Storage capacity is discussed in the cover letter.</i>	
10. Raw Water Tank Maintenance: If a raw water tank(s) is proposed, did the engineer consider staff time and materials for tank cleaning in the maintenance costs analysis? Raw water storage tanks may require frequent cleaning. The O&M manual will need to contain information on frequency and method of storage tank cleaning needed to control biological growth.	18 AAC 80.205(b)(9)
<i>The tanks are not raw water tanks.</i>	

HAINES FERRY TERMINAL DAILY WATER USAGE 2017

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	60	40	30	0	50	40	50	15	80	100	30	40
2	80	50	40	0	20	30	40	15	70	200	130	0
3	20	80	30	0	20	40	60	25	50	130	20	40
4	50	40	40	0	0	90	30	15	150	150	20	50
5	50	50	110	0	100	60	20	70	60	20	40	150
6	20	120	110	0	40	20	90	80	70	130	80	30
7	30	10	20	0	30	60	60	60	50	21	0	50
8	40	40	10	0	30	60	40	100	50	59	10	70
9	70	60	50	0	60	20	40	150	45	180	50	20
10	70	60	60	590	60	50	100	290	65	110	0	20
11	30	20	50	10	0	30	20	90	4	230	100	260
12	40	70	40	10	70	100	20	240	6	20	70	30
13	60	60	40	40	20	10	50	520	10	40	70	0
14	60	30	10	10	50	30	40	80	5	40	10	160
15	30	30	10	40	40	50	110	60	18	170	20	210
16	110	80	50	40	10	60	80	80	5	120	50	60
17	40	70	50	80	30	60	100	270	6	60	40	130
18	30	180	60	50	20	100	40	30	10	50	40	60
19	70	80	80	10	160	90	60	35	7	100	40	40
20	60	70	90	0	10	40	40	85	4	100	30	30
21	20	30	20	60	0	50	60	60	5	20	10	30
22	40	70	0	40	510	70	90	90	6	40	30	20
23	70	50	0	60	40	70	110	200	5	290	60	20
24	30	60	0	110	20	80	60	50	16	50	30	30
25	10	70	0	130	30	110	40	0	39	60	10	70
26	50	50	0	40	30	90	10	140	80	10	20	40
27	60	50	0	10	30	20	30	50	60	10	120	30
28	20	20	0	20	50	20	1210	110	80	20	70	220
29	50		0	40	160	50	130	40	130	100	10	30
30	120		0	10	70	40	810	40	60	100	50	10
31	0		0		30		50	40		120		40
Avg.	48	59	48	41	41	55	58	87	42	92	42	64



Arrivals and Departures

April 2018:
Haines

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1 11:30am LEC Ar fr JNU 12:00pm LEC Dp to SGY 03:00pm LEC Ar fr SGY 04:00pm LEC Dp to JNU	2 09:15am COL Ar fr JNU 10:45am COL Dp to SGY 03:15pm COL Ar fr SGY 05:15pm COL Dp to JNU	3 11:30am LEC Ar fr JNU 12:00pm LEC Dp to SGY 03:00pm LEC Ar fr SGY 04:00pm LEC Dp to JNU	4	5	6 11:30am LEC Ar fr JNU 12:00pm LEC Dp to SGY 03:00pm LEC Ar fr SGY 04:00pm LEC Dp to JNU	7
8 11:30am LEC Ar fr JNU 12:00pm LEC Dp to SGY 03:00pm LEC Ar fr SGY 04:00pm LEC Dp to JNU	9	10 02:30am COL Ar fr JNU 04:00am COL Dp to SGY 08:30am COL Ar fr SGY 10:30am COL Dp to JNU	11	12	13 11:30am LEC Ar fr JNU 12:00pm LEC Dp to SGY 03:00pm LEC Ar fr SGY 04:00pm LEC Dp to JNU	14
15	16 02:45pm COL Ar fr JNU 04:15pm COL Dp to SGY 08:45pm COL Ar fr SGY 10:45pm COL Dp to JNU	17	18 11:30am LEC Ar fr JNU 12:00pm LEC Dp to SGY 03:00pm LEC Ar fr SGY 04:00pm LEC Dp to JNU	19	20 11:30am LEC Ar fr JNU 12:00pm LEC Dp to SGY 03:00pm LEC Ar fr SGY 04:00pm LEC Dp to JNU	21
22 11:30am LEC Ar fr JNU 01:00pm LEC Dp to SGY 04:30pm LEC Ar fr SGY 05:30pm LEC Dp to JNU	23 10:45am COL Ar fr JNU 12:15pm COL Dp to SGY 04:15pm COL Ar fr SGY 06:15pm COL Dp to JNU	24	25	26	27 11:30am LEC Ar fr JNU 12:00pm LEC Dp to SGY 03:00pm LEC Ar fr SGY 04:00pm LEC Dp to JNU	28
29 11:30am LEC Ar fr JNU 12:00pm LEC Dp to SGY 03:00pm LEC Ar fr SGY 04:00pm LEC Dp to JNU	30 03:45pm COL Ar fr JNU 05:15pm COL Dp to SGY 09:15pm COL Ar fr SGY 10:45pm COL Dp to JNU					



Arrivals and Departures

May 2018:
Haines

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1 11:30am LEC Ar fr JNU 12:00pm LEC Dp to SGY 03:15pm LEC Ar fr SGY 04:15pm LEC Dp to JNU	2 08:15pm MAL Ar fr JNU 10:15pm MAL Dp to SGY	3 02:15am MAL Ar fr SGY 04:15am MAL Dp to JNU	4 11:30am LEC Ar fr JNU 12:00pm LEC Dp to SGY 03:00pm LEC Ar fr SGY 04:00pm LEC Dp to JNU	5 10:15am FWX Ar fr JNU 11:00am FWX Dp to SGY 01:15pm FWX Ar fr SGY 02:00pm FWX Dp to SGY
6 11:30am LEC Ar fr JNU 12:00pm LEC Dp to SGY 03:00pm LEC Ar fr SGY 04:00pm LEC Dp to JNU	7 11:45am COL Ar fr JNU 01:15pm COL Dp to SGY 06:15pm COL Ar fr SGY 08:15pm COL Dp to JNU	8 11:30am LEC Ar fr JNU 12:00pm LEC Dp to SGY 03:00pm LEC Ar fr SGY 04:00pm LEC Dp to JNU	9 02:15pm MAL Ar fr JNU 04:15pm MAL Dp to SGY 09:15pm MAL Ar fr SGY 11:15pm MAL Dp to JNU	10 11:30am LEC Ar fr JNU 12:00pm LEC Dp to SGY 03:00pm LEC Ar fr SGY 04:00pm LEC Dp to JNU	11 11:30am LEC Ar fr JNU 12:00pm LEC Dp to SGY 03:00pm LEC Ar fr SGY 04:00pm LEC Dp to JNU	12 10:15am FWX Ar fr JNU 11:00am FWX Dp to SGY 01:15pm FWX Ar fr SGY 02:00pm FWX Dp to SGY
13 11:30am LEC Ar fr JNU 12:00pm LEC Dp to SGY 03:00pm LEC Ar fr SGY 04:00pm LEC Dp to JNU	14 01:15pm COL Ar fr JNU 02:45pm COL Dp to SGY 06:15pm COL Ar fr SGY 08:15pm COL Dp to JNU	15 11:30am LEC Ar fr JNU 12:00pm LEC Dp to SGY 03:00pm LEC Ar fr SGY 04:00pm LEC Dp to JNU	16 02:15pm MAL Ar fr JNU 03:45pm MAL Dp to SGY 07:45pm MAL Ar fr SGY 09:45pm MAL Dp to JNU	17 10:15am FWX Ar fr JNU 11:00am FWX Dp to SGY 01:15pm FWX Ar fr SGY 02:00pm FWX Dp to SGY	18 11:30am LEC Ar fr JNU 12:00pm LEC Dp to SGY 03:00pm LEC Ar fr SGY 04:00pm LEC Dp to JNU	19 10:15am FWX Ar fr JNU 11:00am FWX Dp to SGY 01:15pm FWX Ar fr SGY 02:00pm FWX Dp to SGY
20 11:30am LEC Ar fr JNU 12:00pm LEC Dp to SGY 03:00pm LEC Ar fr SGY 04:00pm LEC Dp to JNU	21 11:45am COL Ar fr JNU 01:15pm COL Dp to SGY 06:15pm COL Ar fr SGY 08:15pm COL Dp to JNU	22 11:30am LEC Ar fr JNU 12:00pm LEC Dp to SGY 03:00pm LEC Ar fr SGY 04:00pm LEC Dp to JNU	23 02:00pm MAL Ar fr JNU 04:00pm MAL Dp to SGY 08:30pm MAL Ar fr SGY 10:30pm MAL Dp to JNU	24 10:15am FWX Ar fr JNU 11:00am FWX Dp to SGY 01:15pm FWX Ar fr SGY 02:00pm FWX Dp to SGY	25 09:15am FWX Ar fr JNU 10:00am FWX Dp to JNU 11:30am LEC Ar fr JNU 01:00pm LEC Dp to SGY 03:15pm FWX Ar fr JNU 04:00pm FWX Dp to JNU 04:30pm LEC Ar fr SGY 05:30pm LEC Dp to JNU	26 10:15am FWX Ar fr JNU 11:00am FWX Dp to SGY 01:15pm FWX Ar fr SGY 02:00pm FWX Dp to SGY
27 09:15am FWX Ar fr JNU 10:00am FWX Dp to JNU 11:30am LEC Ar fr JNU 01:00pm LEC Dp to SGY 03:15pm FWX Ar fr JNU 04:00pm FWX Dp to JNU 04:30pm LEC Ar fr SGY 05:30pm LEC Dp to JNU	28 01:45pm COL Ar fr JNU 03:15pm COL Dp to SGY 07:45pm COL Ar fr SGY 09:45pm COL Dp to JNU	29 11:30am LEC Ar fr JNU 12:00pm LEC Dp to SGY 03:00pm LEC Ar fr SGY 04:00pm LEC Dp to JNU	30 10:45am MAL Ar fr JNU 12:45pm MAL Dp to SGY 05:45pm MAL Ar fr SGY 07:45pm MAL Dp to JNU	31 10:15am FWX Ar fr JNU 11:00am FWX Dp to SGY 01:15pm FWX Ar fr SGY 02:00pm FWX Dp to SGY		



Arrivals and Departures

June 2018:

Haines

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
3 10:15am FWX Ar fr JNU 11:00am FWX Dp to SGY 01:15pm FWX Ar fr SGY 02:00pm FWX Dp to SGY	4 11:00am COL Ar fr JNU 01:00pm COL Dp to SGY 06:00pm COL Ar fr SGY 08:00pm COL Dp to JNU	5 11:30am LEC Ar fr JNU 01:00pm LEC Dp to SGY 04:30pm LEC Ar fr SGY 05:30pm LEC Dp to JNU	6 04:45pm MAL Ar fr JNU 06:45pm MAL Dp to SGY 11:45pm MAL Ar fr SGY	7 01:45am MAL Dp to JNU 10:15am FWX Ar fr JNU 11:00am FWX Dp to SGY 01:15pm FWX Ar fr SGY 02:00pm FWX Dp to SGY	1 11:30am LEC Ar fr JNU 01:00pm LEC Dp to SGY 04:30pm LEC Ar fr SGY 05:30pm LEC Dp to JNU	2 12:00pm FWX Ar fr SGY 12:45pm FWX Dp to SGY 03:00pm FWX Ar fr SGY 03:45pm FWX Dp to JNU
10 10:15am FWX Ar fr JNU 11:00am FWX Dp to SGY 01:15pm FWX Ar fr SGY 02:00pm FWX Dp to SGY	11 12:15pm COL Ar fr JNU 01:45pm COL Dp to SGY 06:15pm COL Ar fr SGY 08:15pm COL Dp to JNU	12 11:30am LEC Ar fr JNU 01:00pm LEC Dp to SGY 04:30pm LEC Ar fr SGY 05:30pm LEC Dp to JNU	13 03:30pm MAL Ar fr JNU 05:00pm MAL Dp to SGY 09:30pm MAL Ar fr SGY 11:30pm MAL Dp to JNU	14 10:15am FWX Ar fr JNU 11:00am FWX Dp to SGY 01:15pm FWX Ar fr SGY 02:00pm FWX Dp to SGY	15 09:15am FWX Ar fr JNU 10:00am FWX Dp to JNU 11:30am LEC Ar fr JNU 01:00pm LEC Dp to SGY 03:15pm FWX Ar fr JNU 04:00pm FWX Dp to JNU 04:30pm LEC Ar fr SGY 05:30pm LEC Dp to JNU	16 12:00pm FWX Ar fr SGY 12:45pm FWX Dp to SGY 03:00pm FWX Ar fr SGY 03:45pm FWX Dp to JNU
17 09:15am FWX Ar fr JNU 10:00am FWX Dp to JNU 11:30am LEC Ar fr JNU 01:00pm LEC Dp to SGY 03:15pm FWX Ar fr JNU 04:00pm FWX Dp to JNU 04:30pm LEC Ar fr SGY 05:30pm LEC Dp to JNU	18 09:45am COL Ar fr JNU 11:15am COL Dp to SGY 04:15pm COL Ar fr SGY 06:15pm COL Dp to JNU	19 11:30am LEC Ar fr JNU 01:00pm LEC Dp to SGY 04:30pm LEC Ar fr SGY 05:30pm LEC Dp to JNU	20 01:45pm MAL Ar fr JNU 03:45pm MAL Dp to SGY 08:15pm MAL Ar fr SGY 10:15pm MAL Dp to JNU	21 10:15am FWX Ar fr JNU 11:00am FWX Dp to SGY 01:15pm FWX Ar fr SGY 02:00pm FWX Dp to SGY	22 11:30am LEC Ar fr JNU 01:00pm LEC Dp to SGY 04:30pm LEC Ar fr SGY 05:30pm LEC Dp to JNU	23 12:00pm FWX Ar fr SGY 12:45pm FWX Dp to SGY 03:00pm FWX Ar fr SGY 03:45pm FWX Dp to JNU
24 10:15am FWX Ar fr JNU 11:00am FWX Dp to SGY 01:15pm FWX Ar fr SGY 02:00pm FWX Dp to SGY	25 12:15pm COL Ar fr JNU 01:45pm COL Dp to SGY 06:15pm COL Ar fr SGY 08:15pm COL Dp to JNU	26 11:30am LEC Ar fr JNU 01:00pm LEC Dp to SGY 04:30pm LEC Ar fr SGY 05:30pm LEC Dp to JNU	27 05:15pm MAL Ar fr JNU 07:15pm MAL Dp to SGY 11:45pm MAL Ar fr SGY	28 01:45am MAL Dp to JNU 10:15am FWX Ar fr JNU 11:00am FWX Dp to SGY 01:15pm FWX Ar fr SGY 02:00pm FWX Dp to SGY	29 11:30am LEC Ar fr JNU 01:00pm LEC Dp to SGY 04:30pm LEC Ar fr SGY 05:30pm LEC Dp to JNU	30 12:00pm FWX Ar fr SGY 12:45pm FWX Dp to SGY 03:00pm FWX Ar fr SGY 03:45pm FWX Dp to JNU



Arrivals and Departures

July 2018:

Haines

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1 10:15am FWX Ar fr JNU 11:00am FWX Dp to SGY 01:15pm FWX Ar fr SGY 02:00pm FWX Dp to SGY	2 11:15am COL Ar fr JNU 12:45pm COL Dp to SGY 05:15pm COL Ar fr SGY 07:15pm COL Dp to JNU	3 11:30am LEC Ar fr JNU 01:00pm LEC Dp to SGY 04:30pm LEC Ar fr SGY 05:30pm LEC Dp to JNU	4 02:15pm MAL Ar fr JNU 04:15pm MAL Dp to SGY 09:15pm MAL Ar fr SGY 11:15pm MAL Dp to JNU	5 10:15am FWX Ar fr JNU 11:00am FWX Dp to SGY 01:15pm FWX Ar fr SGY 02:00pm FWX Dp to SGY	6 11:30am LEC Ar fr JNU 01:00pm LEC Dp to SGY 04:30pm LEC Ar fr SGY 05:30pm LEC Dp to JNU	7 12:00pm FWX Ar fr SGY 12:45pm FWX Dp to SGY 03:00pm FWX Ar fr SGY 03:45pm FWX Dp to JNU
8 10:15am FWX Ar fr JNU 11:00am FWX Dp to SGY 01:15pm FWX Ar fr SGY 02:00pm FWX Dp to SGY	9 11:15am COL Ar fr JNU 12:45pm COL Dp to SGY 05:15pm COL Ar fr SGY 07:15pm COL Dp to JNU	10 11:30am LEC Ar fr JNU 01:00pm LEC Dp to SGY 04:30pm LEC Ar fr SGY 05:30pm LEC Dp to JNU	11 12:00pm MAL Ar fr JNU 02:00pm MAL Dp to SGY 06:30pm MAL Ar fr SGY 08:15pm MAL Dp to JNU	12 10:15am FWX Ar fr JNU 11:00am FWX Dp to SGY 01:15pm FWX Ar fr SGY 02:00pm FWX Dp to SGY	13 11:30am LEC Ar fr JNU 01:00pm LEC Dp to SGY 04:30pm LEC Ar fr SGY 05:30pm LEC Dp to JNU	14 12:00pm FWX Ar fr SGY 12:45pm FWX Dp to SGY 03:00pm FWX Ar fr SGY 03:45pm FWX Dp to JNU
15 10:15am FWX Ar fr JNU 11:00am FWX Dp to SGY 01:15pm FWX Ar fr SGY 02:00pm FWX Dp to SGY	16 10:30am COL Ar fr JNU 12:00pm COL Dp to SGY 04:30pm COL Ar fr SGY 06:30pm COL Dp to JNU	17 11:30am LEC Ar fr JNU 01:00pm LEC Dp to SGY 04:30pm LEC Ar fr SGY 05:30pm LEC Dp to JNU	18 01:45pm MAL Ar fr JNU 03:45pm MAL Dp to SGY 08:45pm MAL Ar fr SGY 10:45pm MAL Dp to JNU	19 10:15am FWX Ar fr JNU 11:00am FWX Dp to SGY 01:15pm FWX Ar fr SGY 02:00pm FWX Dp to SGY	20 11:30am LEC Ar fr JNU 01:00pm LEC Dp to SGY 04:30pm LEC Ar fr SGY 05:30pm LEC Dp to JNU	21 12:00pm FWX Ar fr SGY 12:45pm FWX Dp to SGY 03:00pm FWX Ar fr SGY 03:45pm FWX Dp to JNU
22 10:15am FWX Ar fr JNU 11:00am FWX Dp to SGY 01:15pm FWX Ar fr SGY 02:00pm FWX Dp to SGY	23 11:15am COL Ar fr JNU 12:45pm COL Dp to SGY 05:15pm COL Ar fr SGY 07:15pm COL Dp to JNU	24 11:30am LEC Ar fr JNU 01:00pm LEC Dp to SGY 04:30pm LEC Ar fr SGY 05:30pm LEC Dp to JNU	25 02:15pm MAL Ar fr JNU 04:15pm MAL Dp to SGY 09:15pm MAL Ar fr SGY 11:15pm MAL Dp to JNU	26 10:15am FWX Ar fr JNU 11:00am FWX Dp to JNU 04:15pm FWX Ar fr JNU 05:00pm FWX Dp to JNU	27 09:15am FWX Ar fr JNU 10:00am FWX Dp to JNU 11:30am LEC Ar fr JNU 01:00pm LEC Dp to SGY	28 12:00pm FWX Ar fr SGY 12:45pm FWX Dp to SGY 03:00pm FWX Ar fr SGY 03:45pm FWX Dp to JNU
29 05:45am MAL Ar fr JNU 08:45am MAL Dp to JNU 09:15am FWX Ar fr JNU 10:00am FWX Dp to JNU 11:30am LEC Ar fr JNU	30 09:45am COL Ar fr JNU 11:15am COL Dp to SGY 03:45pm COL Ar fr SGY 05:45pm COL Dp to JNU	31 11:30am LEC Ar fr JNU 01:00pm LEC Dp to SGY 04:30pm LEC Ar fr SGY 05:30pm LEC Dp to JNU				



Arrivals and Departures

August 2018:

Haines

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
5	6	7	8	9	10	11
10:15am FWX Ar fr JNU	10:15am COL Ar fr JNU	11:30am LEC Ar fr JNU	12:45pm MAL Ar fr JNU	10:15am FWX Ar fr JNU	11:30am LEC Ar fr JNU	12:00pm FWX Ar fr SGY
11:00am FWX Dp to SGY	11:45am COL Dp to SGY	01:00pm LEC Dp to SGY	02:45pm MAL Dp to SGY	11:00am FWX Dp to SGY	01:00pm LEC Dp to SGY	12:45pm FWX Dp to SGY
01:15pm FWX Ar fr SGY	03:45pm COL Ar fr SGY	04:30pm LEC Ar fr SGY	07:15pm MAL Ar fr SGY	01:15pm FWX Ar fr SGY	04:30pm LEC Ar fr SGY	03:00pm FWX Ar fr SGY
02:00pm FWX Dp to SGY	05:45pm COL Dp to JNU	05:30pm LEC Dp to JNU	09:15pm MAL Ar fr JNU	02:00pm FWX Dp to SGY	05:30pm LEC Dp to JNU	03:45pm FWX Dp to JNU
12	13	14	15	16	17	18
10:15am FWX Ar fr JNU	04:15pm COL Ar fr JNU	12:15am COL Dp to JNU	12:30pm MAL Ar fr JNU	10:15am FWX Ar fr JNU	11:30am LEC Ar fr JNU	12:00pm FWX Ar fr SGY
11:00am FWX Dp to SGY	05:45pm COL Dp to SGY	11:30am LEC Ar fr JNU	02:30pm MAL Dp to SGY	11:00am FWX Dp to SGY	01:00pm LEC Dp to SGY	12:45pm FWX Dp to SGY
01:15pm FWX Ar fr SGY	10:15pm COL Ar fr SGY	01:00pm LEC Dp to SGY	07:30pm MAL Ar fr SGY	01:15pm FWX Ar fr SGY	04:30pm LEC Ar fr SGY	03:00pm FWX Ar fr SGY
02:00pm FWX Dp to SGY		04:30pm LEC Ar fr SGY	09:30pm MAL Dp to JNU	02:00pm FWX Dp to SGY	05:30pm LEC Dp to JNU	03:45pm FWX Dp to JNU
19	20	21	22	23	24	25
10:15am FWX Ar fr JNU	09:45am COL Ar fr JNU	11:30am LEC Ar fr JNU	02:00pm MAL Ar fr JNU	10:15am FWX Ar fr JNU	11:30am LEC Ar fr JNU	12:00pm FWX Ar fr SGY
11:00am FWX Dp to SGY	11:15am COL Dp to SGY	01:00pm LEC Dp to SGY	04:00pm MAL Dp to SGY	11:00am FWX Dp to SGY	01:00pm LEC Dp to SGY	12:45pm FWX Dp to SGY
01:15pm FWX Ar fr SGY	03:45pm COL Ar fr SGY	04:30pm LEC Ar fr SGY	09:00pm MAL Ar fr SGY	01:15pm FWX Ar fr SGY	04:30pm LEC Ar fr SGY	03:00pm FWX Ar fr SGY
02:00pm FWX Dp to SGY	05:45pm COL Dp to JNU	05:30pm LEC Dp to JNU	11:00pm MAL Dp to JNU	02:00pm FWX Dp to SGY	05:30pm LEC Dp to JNU	03:45pm FWX Dp to JNU
26	27	28	29	30	31	
10:15am FWX Ar fr JNU	03:15pm COL Ar fr JNU	11:30am LEC Ar fr JNU	11:15am MAL Ar fr JNU	10:15am FWX Ar fr JNU	11:30am LEC Ar fr JNU	
11:00am FWX Dp to SGY	04:45pm COL Dp to SGY	01:00pm LEC Dp to SGY	01:15pm MAL Dp to SGY	11:00am FWX Dp to SGY	01:00pm LEC Dp to SGY	
01:15pm FWX Ar fr SGY	09:15pm COL Ar fr SGY	04:30pm LEC Ar fr SGY	06:15pm MAL Ar fr SGY	01:15pm FWX Ar fr SGY	04:30pm LEC Ar fr SGY	
02:00pm FWX Dp to SGY	11:15pm COL Dp to JNU	05:30pm LEC Dp to JNU	08:15pm MAL Dp to JNU	02:00pm FWX Dp to SGY	05:30pm LEC Dp to JNU	

For Reservations and information: visit FerryAlaska.com or call toll-free 1-800-642-0066



Arrivals and Departures

September 2018:

Haines

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
2 10:15am FWX Ar fr JNU 11:00am FWX Dp to SGY 01:15pm FWX Ar fr SGY 02:00pm FWX Dp to SGY	3 11:45am COL Ar fr JNU 02:15pm COL Dp to SGY 07:15pm COL Ar fr SGY 09:15pm COL Dp to JNU	4 11:30am LEC Ar fr JNU 01:00pm LEC Dp to SGY 04:30pm LEC Ar fr SGY 05:30pm LEC Dp to JNU	5 09:00am MAL Ar fr JNU 11:00am MAL Dp to SGY 04:00pm MAL Ar fr SGY 05:00pm MAL Dp to JNU	6 10:15am FWX Ar fr JNU 11:00am FWX Dp to SGY 01:15pm FWX Ar fr SGY 02:00pm FWX Dp to SGY	7 11:30am LEC Ar fr JNU 01:00pm LEC Dp to SGY 04:30pm LEC Ar fr SGY 05:30pm LEC Dp to JNU	1 12:00pm FWX Ar fr SGY 12:45pm FWX Dp to SGY 03:00pm FWX Ar fr SGY 03:45pm FWX Dp to JNU
9 01:00am MAL Ar fr JNU 03:00am MAL Dp to SGY 07:45am MAL Ar fr SGY 09:45am MAL Dp to JNU 11:30am LEC Ar fr JNU 01:00pm LEC Dp to SGY 04:30pm LEC Ar fr SGY 05:30pm LEC Dp to JNU	10 03:00pm COL Ar fr JNU 04:30pm COL Dp to SGY 09:00pm COL Ar fr SGY 11:00pm COL Dp to JNU	11 11:30am LEC Ar fr JNU 01:00pm LEC Dp to SGY 04:30pm LEC Ar fr SGY 05:30pm LEC Dp to JNU	12 10:45am MAL Ar fr JNU 12:45pm MAL Dp to SGY 05:45pm MAL Ar fr SGY 07:45pm MAL Dp to JNU	13 11:30am LEC Ar fr JNU 01:00pm LEC Dp to SGY 04:30pm LEC Ar fr SGY 05:30pm LEC Dp to JNU	14 11:30am LEC Ar fr JNU 01:00pm LEC Dp to SGY 04:30pm LEC Ar fr SGY 05:30pm LEC Dp to JNU	15 12:00pm FWX Ar fr SGY 12:45pm FWX Dp to SGY 03:00pm FWX Ar fr SGY 03:45pm FWX Dp to JNU
16 11:30am LEC Ar fr JNU 12:00pm LEC Dp to SGY 03:00pm LEC Ar fr SGY 04:00pm LEC Dp to JNU	17 11:45am COL Ar fr JNU 02:15pm COL Dp to SGY 07:15pm COL Ar fr SGY 09:15pm COL Dp to JNU	18 11:30am LEC Ar fr JNU 12:00pm LEC Dp to SGY 03:00pm LEC Ar fr SGY 04:00pm LEC Dp to JNU	19 02:15pm MAL Ar fr JNU 04:15pm MAL Dp to SGY 09:15pm MAL Ar fr SGY 11:15pm MAL Dp to JNU	20 02:15pm MAL Ar fr JNU 04:15pm MAL Dp to SGY 09:15pm MAL Ar fr SGY 11:15pm MAL Dp to JNU	21 11:30am LEC Ar fr JNU 01:00pm LEC Dp to SGY 04:30pm LEC Ar fr SGY 05:30pm LEC Dp to JNU	22
23 11:30am LEC Ar fr JNU 12:00pm LEC Dp to SGY 03:00pm LEC Ar fr SGY 04:00pm LEC Dp to JNU	24 02:15pm COL Ar fr JNU 03:45pm COL Dp to SGY 08:15pm COL Ar fr SGY 10:15pm COL Dp to JNU	25 02:15pm LEC Ar fr JNU 03:45pm COL Dp to SGY 08:15pm COL Ar fr SGY 10:15pm COL Dp to JNU	26 09:00am MAL Ar fr JNU 11:00am MAL Dp to SGY 04:00pm MAL Ar fr SGY 06:00pm MAL Dp to JNU	27 09:00am MAL Ar fr JNU 11:00am MAL Dp to SGY 04:00pm MAL Ar fr SGY 06:00pm MAL Dp to JNU	28 11:30am LEC Ar fr JNU 01:00pm LEC Dp to SGY 04:30pm LEC Ar fr SGY 05:30pm LEC Dp to JNU	29
30 11:30am LEC Ar fr JNU 01:00pm LEC Dp to SGY 04:30pm LEC Ar fr SGY 05:30pm LEC Dp to JNU						



Arrivals and Departures

October 2018:
Haines

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1 10:15am COL Ar fr JNU 11:45am COL Dp to SGY	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

For Reservations and information: visit FerryAlaska.com or call toll-free 1-800-642-0066

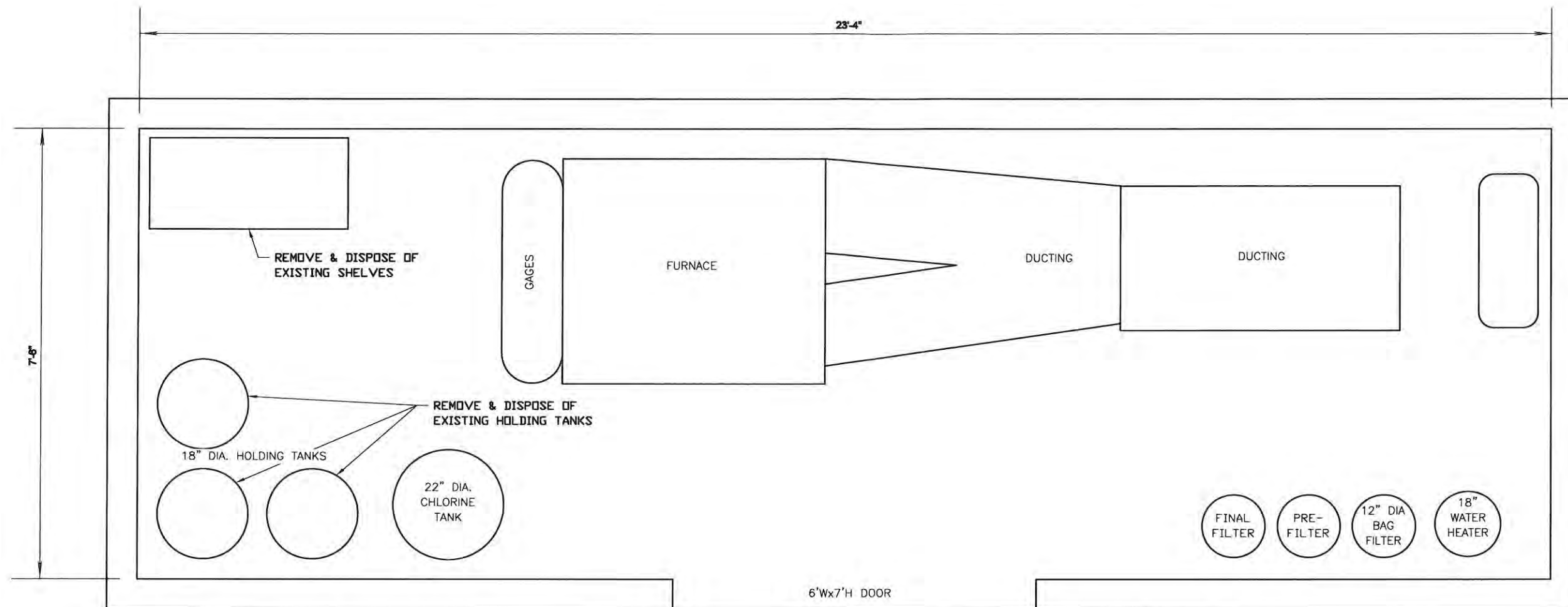
Table C-1. CT Values for Inactivation of *Giardia* Cysts by Free Chlorine at 0.5°C or Lower

CHLORINE CONCENTRATION (mg/L)	pH≤6					pH=6.5					pH=7.0					pH=7.5								
	Log Inactivation					Log Inactivation					Log Inactivation					Log Inactivation								
	0.5	1.0	1.5	2.0	2.5	3.0	0.5	1.0	1.5	2.0	2.5	3.0	0.5	1.0	1.5	2.0	2.5	3.0	0.5	1.0	1.5	2.0	2.5	3.0
<=0.4	23	46	69	91	114	137	27	54	82	109	136	163	33	65	98	130	163	195	40	79	119	158	198	237
0.6	24	47	71	94	118	141	28	56	84	112	140	169	33	67	100	133	167	200	40	80	120	159	199	239
0.8	24	48	73	97	121	145	29	57	86	115	143	172	34	68	103	137	171	205	41	82	123	164	205	246
1	25	49	74	99	123	148	29	59	88	117	147	176	35	70	105	140	175	210	42	84	127	169	211	253
1.2	25	51	76	101	127	152	30	60	90	120	150	180	36	72	108	143	179	215	43	86	130	173	216	259
1.4	26	52	78	103	129	155	31	61	92	123	153	184	37	74	111	147	184	221	44	89	133	177	222	266
1.6	26	52	79	105	131	157	32	63	95	126	155	189	38	75	113	151	188	226	46	91	137	182	228	273
1.8	27	54	81	108	135	162	32	64	97	129	161	193	39	77	116	154	193	231	47	93	140	186	233	279
2	28	55	83	110	138	165	33	66	99	131	164	197	39	79	118	157	197	236	48	95	143	191	238	286
2.2	28	56	85	113	141	169	34	67	101	134	169	201	40	81	121	161	202	242	50	99	149	198	248	297
2.4	29	57	86	115	143	172	34	68	103	137	171	205	41	82	124	165	206	247	50	99	149	199	248	298
2.6	29	58	88	117	146	175	35	70	105	139	174	209	42	84	126	168	210	252	51	101	152	203	253	304
2.8	30	59	89	119	148	178	36	71	107	142	178	213	43	86	129	171	214	257	52	103	155	207	258	310
3	30	60	91	121	151	181	36	72	109	145	181	217	44	87	131	174	218	261	53	105	158	211	263	316

CHLORINE CONCENTRATION (mg/L)	pH=8.0					pH=8.5					pH=9.0							
	Log Inactivation					Log Inactivation					Log Inactivation							
	0.5	1.0	1.5	2.0	2.5	3.0	0.5	1.0	1.5	2.0	2.5	3.0	0.5	1.0	1.5	2.0	2.5	3.0
<=0.4	46	92	139	185	231	277	55	110	165	219	274	329	65	130	195	260	325	390
0.6	48	95	143	191	238	286	57	114	171	228	285	342	68	136	204	271	339	407
0.8	49	98	148	197	246	295	59	113	177	236	295	354	70	141	211	281	352	422
1	51	101	152	203	253	304	61	122	183	243	304	365	73	146	219	291	364	437
1.2	52	104	157	209	261	313	63	125	188	251	313	376	75	150	226	301	376	451
1.4	54	107	161	214	268	321	65	129	194	258	323	387	77	155	232	309	387	464
1.6	55	110	165	219	274	329	66	132	199	265	331	397	80	159	239	318	398	477
1.8	56	113	169	225	282	338	68	136	204	271	339	407	82	163	245	326	408	489
2	55	115	173	231	288	346	70	139	209	278	348	417	83	167	250	333	417	500
2.2	59	118	177	235	294	353	71	142	213	284	355	426	85	170	256	341	426	511
2.4	60	120	181	241	301	361	73	145	218	290	363	435	87	174	261	348	435	522
2.6	61	123	184	245	307	368	74	148	222	296	370	444	89	178	267	355	444	533
2.8	63	125	188	250	313	375	75	151	226	301	377	452	91	181	272	362	453	543
3	64	127	191	255	318	382	77	153	230	307	383	460	92	184	276	369	460	552

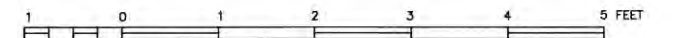
Source: AWWA, 1991.

Source: AWWA, 1991. Modified by linear interpolation between 5°C increments.



1. PROJECT SUMMARY: CONTRACTOR IS TO REMOVE AND DISPOSE OF 3 STEEL PRESSURE TANKS AND REPLACE THEM WITH 2 HIGH DENSITY POLYETHYLENE TANKS AND 2 WATER BOOSTER PUMPS FOR THE HAINES FERRY TERMINAL WATER SYSTEM.
2. THIS IS A DRINKING WATER SYSTEM. ALL PIPING, FITTINGS, EQUIPMENT, TANKS, PUMPS ETC. MUST BE NSF 61 LISTED. ALL BRASS OR BRONZE FITTINGS, VALVES, PIPING ETC. MUST MEET THE DEFINITION OF "LEAD FREE" AND BE NSF 372 LISTED.
3. THE CONTRACTOR SHALL PROVIDE ALL LABOR, EQUIPMENT, TOOLS AND MATERIALS NECESSARY TO INSTALL ALL EQUIPMENT, PIPING, FITTINGS, VALVES, PIPE SUPPORTS, TANKS, PUMPS AND OTHER MISCELLANEOUS ITEMS IN ACCORDANCE WITH THE EQUIPMENT MANUFACTURER'S REQUIREMENTS AND AS SHOWN ON THE PLANS.
4. THE CONTRACTOR SHALL COORDINATE THE ASSEMBLY AND FABRICATION OF THE PIPING, VALVES AND FITTINGS AND THEIR CONNECTION TO EQUIPMENT TO ENSURE THE COMPLETED ASSEMBLY MEET THE REQUIREMENTS OF THE MANUFACTURERS AND RESULT IN A COMPLETE AND OPERATING SYSTEM.
5. PROVIDE METAL VALVE IDENTIFICATION TAGS FOR EACH VALVE AS INDICATED ON THE PLANS.
6. ALL PIPING SHALL BE PRESSURIZED TO 100 PSI AND INSPECTED FOR ANY LEAKS. ANY LEAKS DISCOVERED SHALL BE REPAIRED AND THE SYSTEM RETESTED UNTIL NO LEAKS ARE EVIDENT.

					SCALE	GRAPHIC
					DESIGNED	JLD
					DRAWN	GDM
					CHECKED	JLD
REV	DATE	BY	DESCRIPTION		DATE	3/31/2017



					SCALE	GRAPHIC
					DESIGNED	JLD
					DRAWN	GDM
					CHECKED	JLD
REV	DATE	BY	DESCRIPTION		DATE	3/31/2018

STATE OF ALASKA
49TH
James L. Dorn
JAMES L. DORN
CE 6322
31/2017
REGISTERED PROFESSIONAL ENGINEER

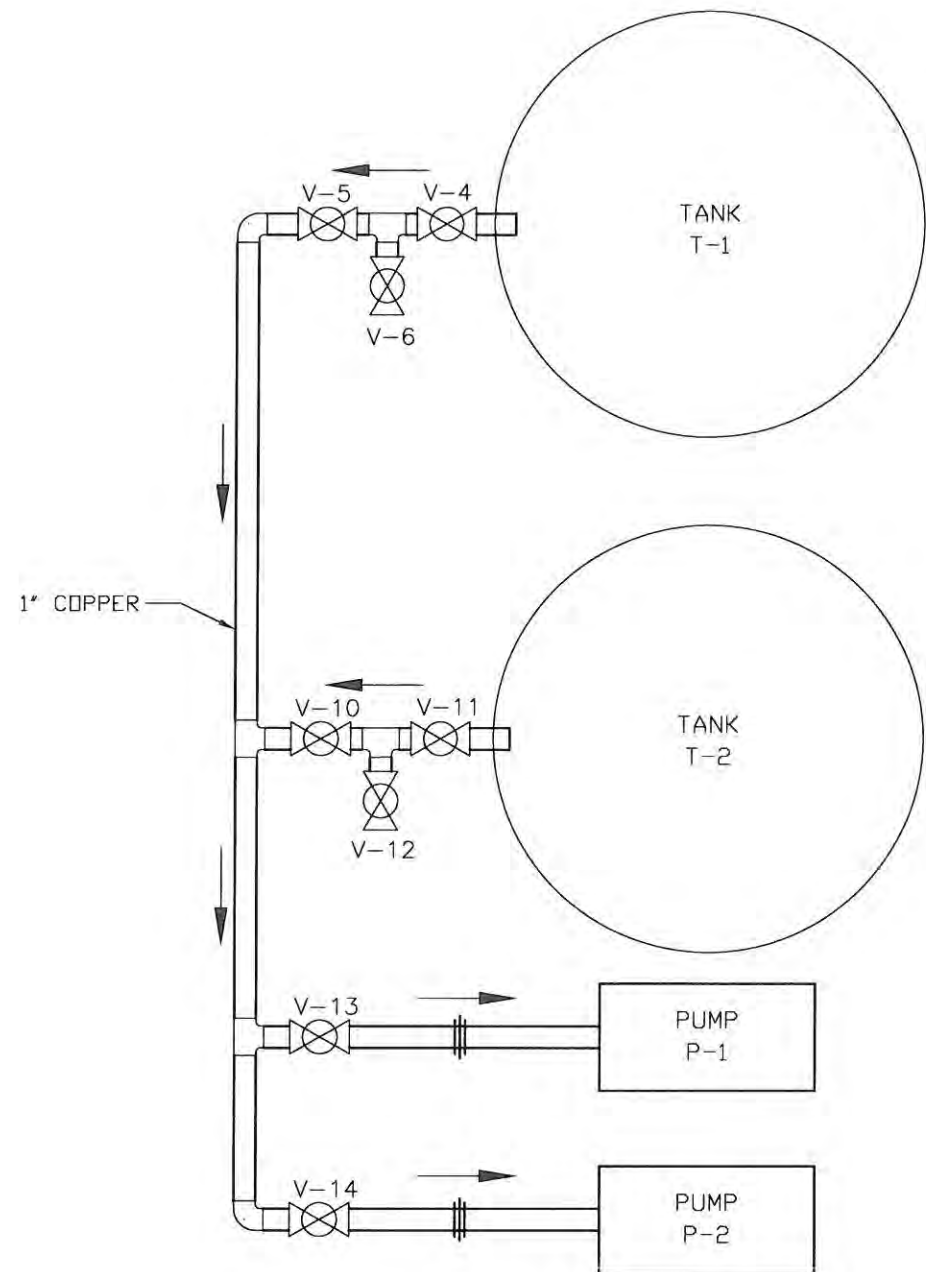


712 WEST 12TH STREET
JUNEAU, ALASKA 99801
(907) 588-4447

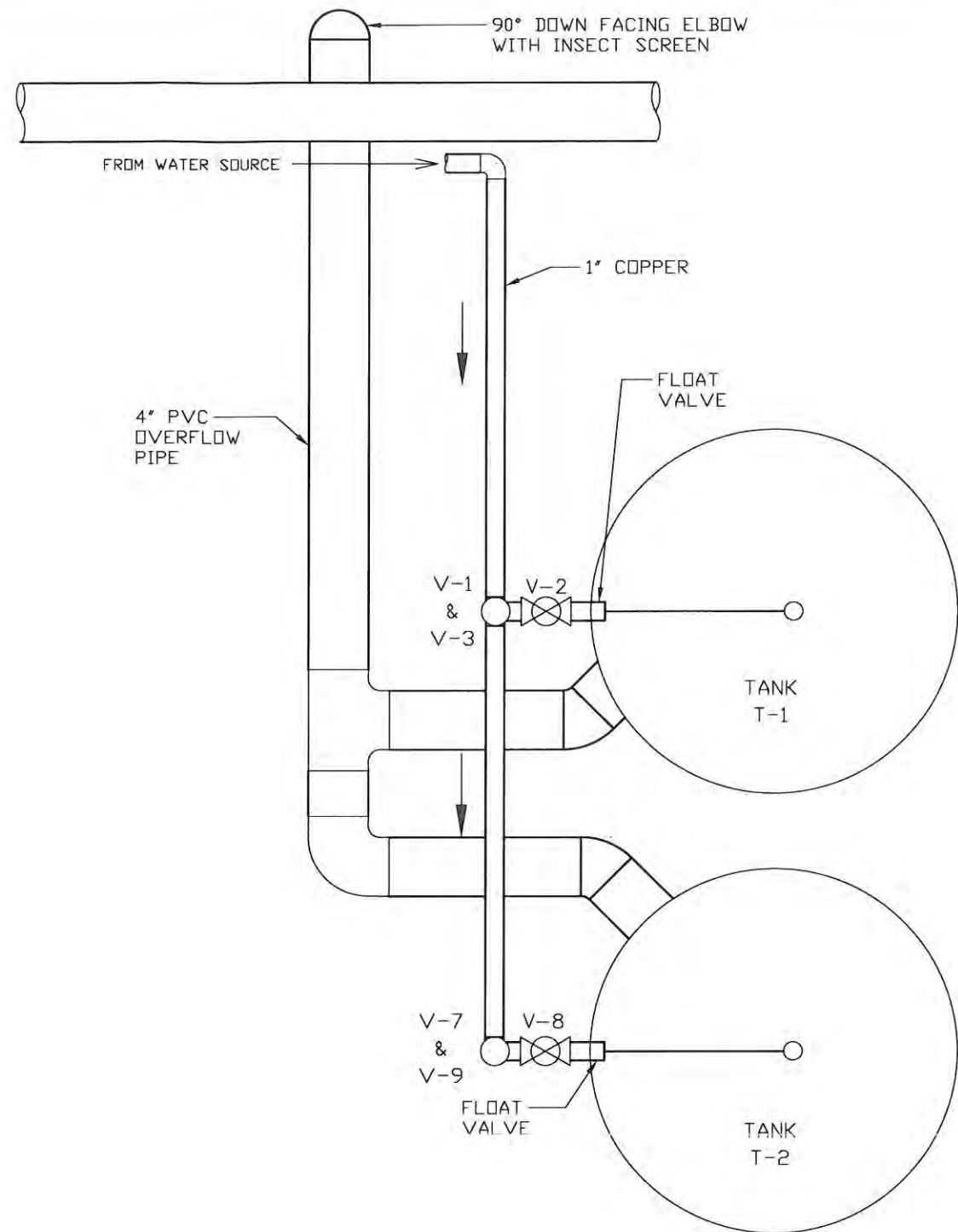
DRAWING
Figure
2

SHEET No.
2 of 5

3/31/2018 12:40:08 PM AST
E:\GDM\20CAD\SE-AL\HAINES\FERRY TERMINAL\FIG. 4.DWG



TANK OUTLET PIPING PLAN VIEW

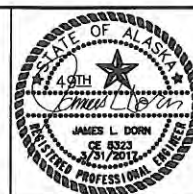


TANK INLET PIPING PLAN VIEW

REV	DATE	BY	DESCRIPTION

SCALE	GRAPHIC
DESIGNED	JLD
DRAWN	GDM
CHECKED	JLD
DATE	3/31/2018

PIPING PLAN



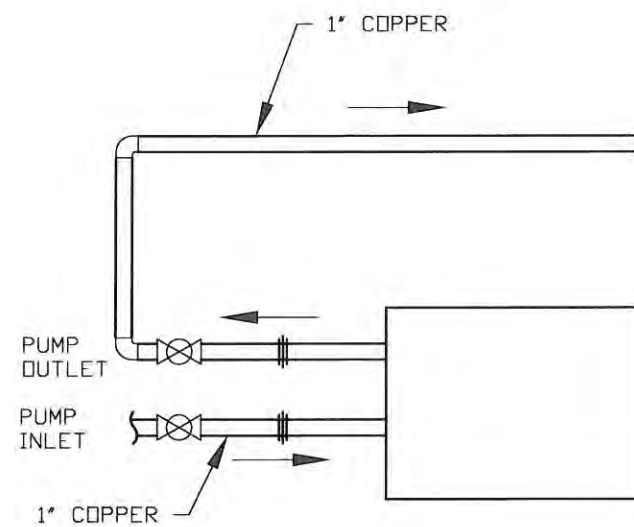
Carson Dorn Inc.

712 WEST 12TH STREET
JUNEAU, ALASKA 99801
(907) 586-4447

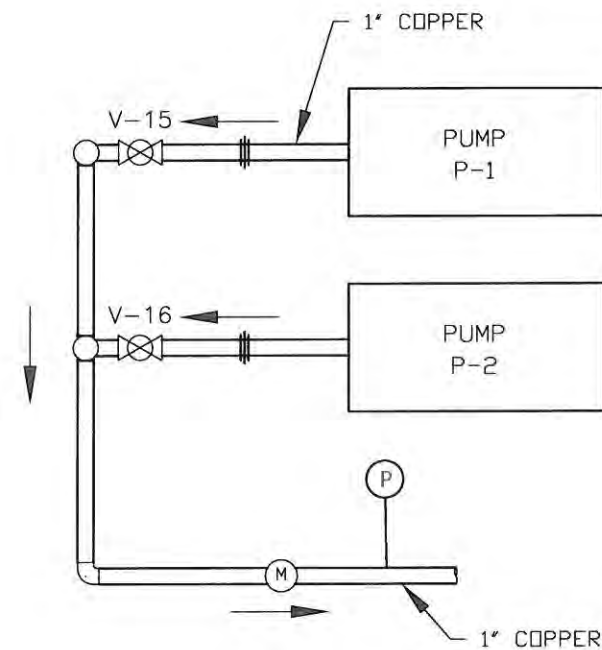
ALASKA MARINE HIGHWAY SYSTEM
2018 HAINES TERMINAL
WATER IMPROVEMENTS

DRAWING
Figure
4
SHEET No.
4 of 5

3/31/2018 12:40:08 PM AST
ENGINEERING\AK\HAINES\FERRY TERMINAL\FIG. 5.DWG



PUMP PIPING ELEVATION

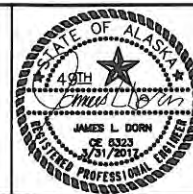


PUMP OUTLET PIPING PLAN VIEW

REV	DATE	BY	DESCRIPTION

SCALE GRAPHIC
DESIGNED JLD
DRAWN GDM
CHECKED JLD
DATE 3/31/2018

PUMP PIPING



Carson Dorn Inc.

712 WEST 12TH STREET
JUNEAU, ALASKA 99801
(907) 586-4447

ALASKA MARINE HIGHWAY SYSTEM
2018 HAINES TERMINAL
WATER IMPROVEMENTS

DRAWING
Figure
5
SHEET No.
5 of 5

PROJECT: _____	UNIT TAG: _____	QUANTITY: _____
REPRESENTATIVE: _____	TYPE OF SERVICE: _____	DATE: _____
ENGINEER: _____	SUBMITTED BY: _____	DATE: _____
CONTRACTOR: _____	APPROVED BY: _____	DATE: _____
	ORDER NO.: _____	DATE: _____

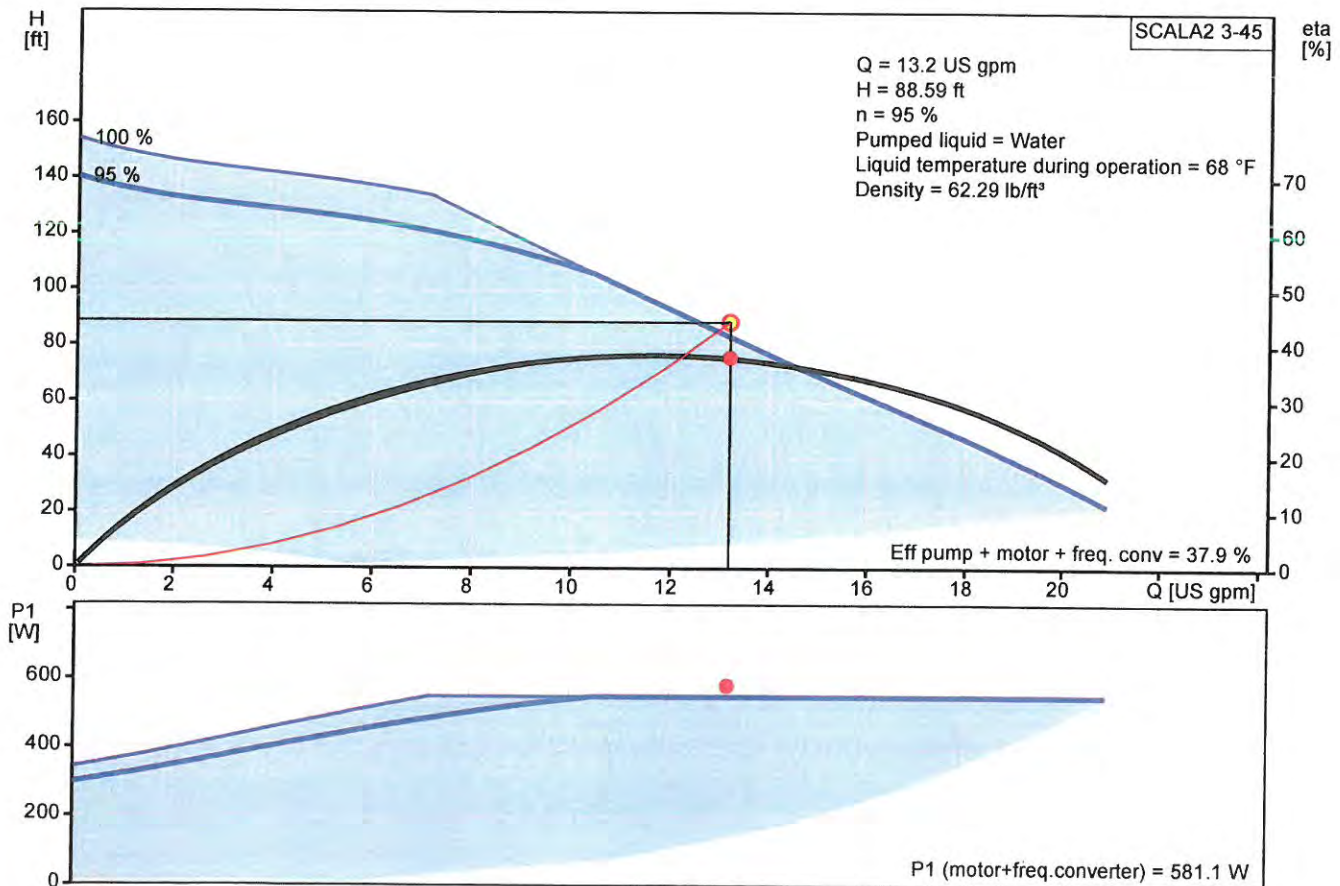


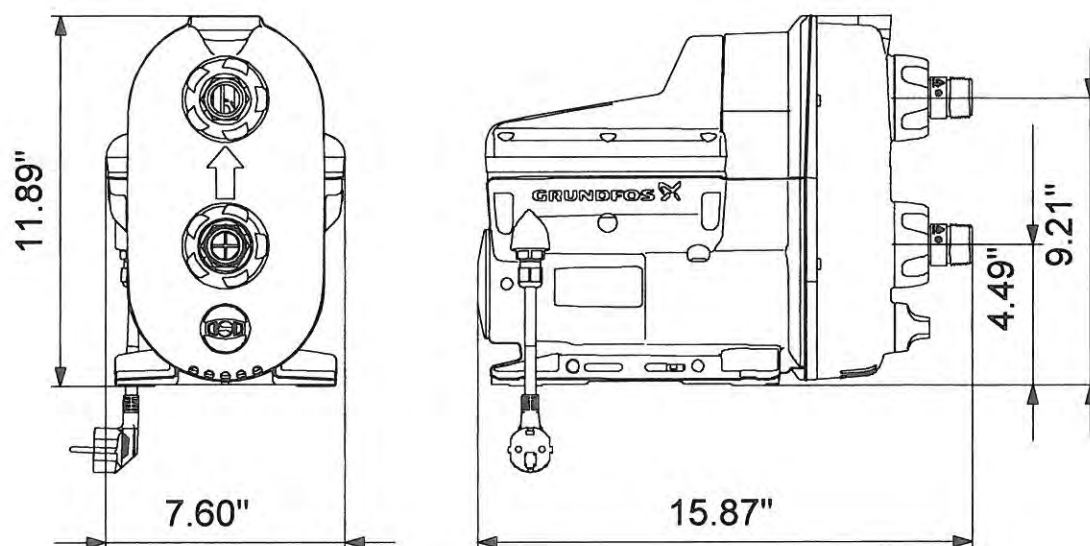
SCALA2 3-45

Grundfos SCALA is a fully integrated, self-priming, compact waterworks for pressure boosting in domestic applications, designed for pressure boosting in one- and two-family houses and apartments.

Product photo could vary from the actual product

Conditions of Service	Pump Data	Motor Data
Flow: 13.2 US gpm	Maximum operating pressure: 145 psi	Rated voltage: 115 V
Head: 88.59 ft	Liquid temperature range: 32 .. 113 °F	Main frequency: 60 Hz
Efficiency: 37.9 %	Maximum ambient temperature: 113 °F	Enclosure class: ENCLOSURE TYPE 3
Liquid: Water	Approvals: cULus	Insulation class: F
Temperature: 68 °F	Pipe connection: NPT 1 Composite	
NPSH required: ft	Product number: 98562818	
Viscosity: _____		
Specific Gravity: 1.000		





Materials:

Pump housing: NORYL FE1630PW
PPE+PS-GS30

Impeller: NORYL FE1630PW
PPE+PS-GS30

Material code: A

Project:
Reference number:

Client:
Client number:
Contact:

Tender Text



Product No.: 98562818
SCALA2 3-45 A

Grundfos SCALA2 is a fully integrated, self-priming, compact waterworks for pressure boosting in domestic applications. SCALA2 incorporates integrated speed control enabling the keeping of the perfect pressure at the taps, meaning that the pump performance will increase with increasing demand.

SCALA2 can be installed in three easy steps:

1. Connect the pipes.
2. Prime the pump.
3. Plug the pump into the power outlet and the pump will start.

Grundfos SCALA2 has all the components necessary to ensure a comfortable pressure:

- intelligent controller
- integrated speed-controlled drive
- integrated tank
- integrated sensors
- integrated non-return valves.

As it is self-priming, the SCALA2 is able to pump water from a level below the pump. Provided it is filled with water, the pump is able to lift water from a depth of 8 m in less than 5 minutes. This facilitates easy installation and start-up of the pump and provides more reliable water supply in installations where there is a risk of dry running and leakages in suction hose or pipes.

If exposed to dry running, water shortage or excessive temperature, blocked pump, for example in case of seizure or overload, the pump will stop automatically, thus preventing a motor burnout.

The pump features an automatic reset function. In case of dry running or similar alarm, the pump will stop. Restarting will be attempted every 5 minutes 8 times, there after new restart attempts will occur every 24 hours. The automatic reset function can be deactivated.

Thanks to its hydraulic design, permanent magnet motor and water cooling, the pump is extremely low-noise, 47 dB(A) in typical use, which makes it suitable for indoor as well as outdoor use. □Max. Noise level at full load are 53 dB(A)

The built-in pressure tank reduces the number of starts and stops in case of leakages in the pipe system, causing less wear on the pump.

SCALA2 require no maintenance, but it is recommended to keep the pump clean, check the non-return valves and keep the ventilation holes free of dust

Liquid:



Company name: ALASKA PUMP & SUPPLY
Created by: Randy Moon
Phone: 9075633424
Email: randy.moon@dxpe.com
Date: 3/27/2018

Project:
Reference number:

Client:
Client number:
Contact:

Pumped liquid: Water
Liquid temperature range: 32 .. 113 °F
Liquid temperature during operation: 68 °F
Density: 62.29 lb/ft³

Technical:

Actual calculated flow: 13.2 US gpm
Resulting head of the pump: 88.59 ft
Primary shaft seal: CARBON/CERAMIC
Approvals on nameplate: cULus
Approvals for drinking water: cULus NSF372, cULus DW NSF61
Curve tolerance: ISO9906:2012 3B

Materials:

Pump housing: NORYL FE1630PW PPE+PS-GS30
Impeller: NORYL FE1630PW PPE+PS-GS30

Installation:

Range of ambient temperature: 32 .. 113 °F
Maximum operating pressure: 145 psi
Maximum permissible inlet pressure: 87 psi
Pipe connection: NPT 1 Composite

Electrical data:

Power input - P1: 550 W
Main frequency: 60 Hz
Rated voltage: 1 x 115 V
Rated current: 4.9 A
Enclosure class (IEC 34-5): ENCLOSURE TYPE 3
Insulation class (IEC 85): F
Length of cable: 6.562 ft
Power plug: Type B (NEMA 5-15)

Others:

Net weight: 21.2 lb
Gross weight: 26.2 lb
Shipping volume: 1.55 ft³
Storage temperature range: -40 .. 158 °F
Country of origin: RS
Custom tariff no.: 8413.70.2004

Project:
 Reference number:

Client:
 Client number:
 Contact:

Position	Count	Description
	1	SCALA2 3-45 A  Product No.: 98562818 Grundfos SCALA2 is a fully integrated, self-priming, compact waterworks for pressure boosting in domestic applications. SCALA2 incorporates integrated speed control enabling the keeping of the perfect pressure at the taps, meaning that the pump performance will increase with increasing demand. SCALA2 can be installed in three easy steps: 1. Connect the pipes. 2. Prime the pump. 3. Plug the pump into the power outlet and the pump will start. Grundfos SCALA2 has all the components necessary to ensure a comfortable pressure: • intelligent controller • integrated speed-controlled drive • integrated tank • integrated sensors • integrated non-return valves. As it is self-priming, the SCALA2 is able to pump water from a level below the pump. Provided it is filled with water, the pump is able to lift water from a depth of 8 m in less than 5 minutes. This facilitates easy installation and start-up of the pump and provides more reliable water supply in installations where there is a risk of dry running and leakages in suction hose or pipes. If exposed to dry running, water shortage or excessive temperature, blocked pump, for example in case of seizure or overload, the pump will stop automatically, thus preventing a motor burnout. The pump features an automatic reset function. In case of dry running or similar alarm, the pump will stop. Restarting will be attempted every 5 minutes 8 times, there after new restart attempts will occur every 24 hours. The automatic reset function can be deactivated. Thanks to its hydraulic design, permanent magnet motor and water cooling, the pump is extremely low-noise, 47 dB(A) in typical use, which makes it suitable for indoor as well as outdoor use. □Max. Noise level at full load are 53 dB(A) The built-in pressure tank reduces the number of starts and stops in case of leakages in the pipe system, causing less wear on the pump. SCALA2 require no maintainance, but it is recommended to keep the pump clean, check the non-return valves and keep the ventilation holes free of dust



Product No.: 98562818

Grundfos SCALA2 is a fully integrated, self-priming, compact waterworks for pressure boosting in domestic applications.

SCALA2 incorporates integrated speed control enabling the keeping of the perfect pressure at the taps, meaning that the pump performance will increase with increasing demand.

SCALA2 can be installed in three easy steps:

1. Connect the pipes.
2. Prime the pump.
3. Plug the pump into the power outlet and the pump will start.

Grundfos SCALA2 has all the components necessary to ensure a comfortable pressure:

- intelligent controller
- integrated speed-controlled drive
- integrated tank
- integrated sensors
- integrated non-return valves.

As it is self-priming, the SCALA2 is able to pump water from a level below the pump. Provided it is filled with water, the pump is able to lift water from a depth of 8 m in less than 5 minutes. This facilitates easy installation and start-up of the pump and provides more reliable water supply in installations where there is a risk of dry running and leakages in suction hose or pipes.

If exposed to dry running, water shortage or excessive temperature, blocked pump, for example in case of seizure or overload, the pump will stop automatically, thus preventing a motor burnout.

The pump features an automatic reset function. In case of dry running or similar alarm, the pump will stop. Restarting will be attempted every 5 minutes 8 times, there after new restart attempts will occur every 24 hours. The automatic reset function can be deactivated.

Thanks to its hydraulic design, permanent magnet motor and water cooling, the pump is extremely low-noise, 47 dB(A) in typical use, which makes it suitable for indoor as well as outdoor use. □Max. Noise level at full load are 53 dB(A)

The built-in pressure tank reduces the number of starts and stops in case of leakages in the pipe system, causing less wear on the pump.

SCALA2 require no maintainance, but it is recommended to keep the pump clean, check the non-return valves and keep the ventilation holes free of dust

Project:
Reference number:

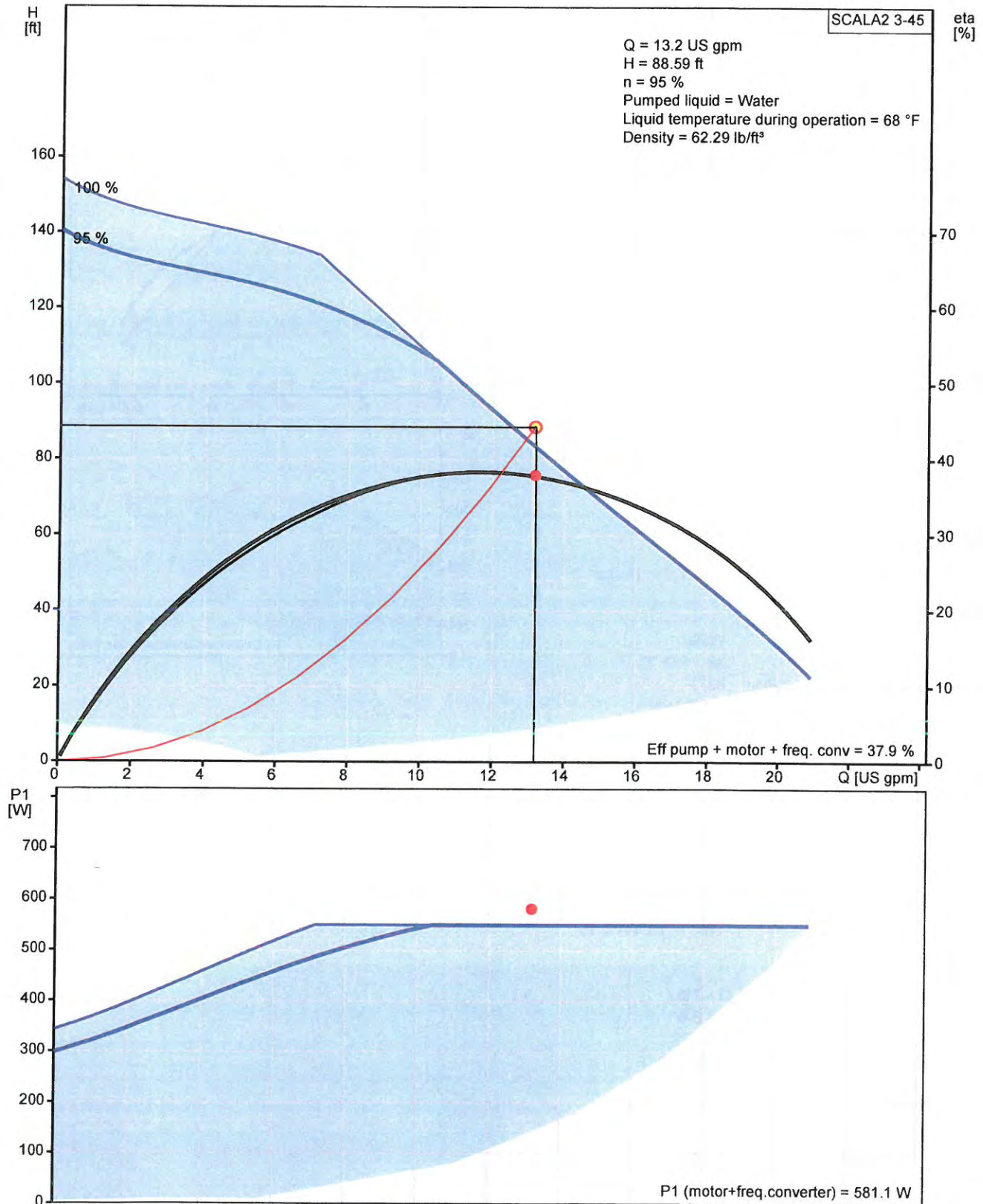
Client:
Client number:
Contact:

Position	Count	Description
		Liquid: Pumped liquid: Water Liquid temperature range: 32 .. 113 °F Liquid temperature during operation: 68 °F Density: 62.29 lb/ft³ Technical: Actual calculated flow: 13.2 US gpm Resulting head of the pump: 88.59 ft Primary shaft seal: CARBON/CERAMIC Approvals on nameplate: cULus Approvals for drinking water: cULus NSF372,cULus DW NSF61 Curve tolerance: ISO9906:2012 3B Materials: Pump housing: NORYL FE1630PW PPE+PS-GS30 Impeller: NORYL FE1630PW PPE+PS-GS30 Installation: Range of ambient temperature: 32 .. 113 °F Maximum operating pressure: 145 psi Maximum permissible inlet pressure: 87 psi Pipe connection: NPT 1 Composite Electrical data: Power input - P1: 550 W Main frequency: 60 Hz Rated voltage: 1 x 115 V Rated current: 4.9 A Enclosure class (IEC 34-5): ENCLOSURE TYPE 3 Insulation class (IEC 85): F Length of cable: 6.562 ft Power plug: Type B (NEMA 5-15) Others: Net weight: 21.2 lb Gross weight: 26.2 lb Shipping volume: 1.55 ft³ Storage temperature range: -40 .. 158 °F Country of origin: RS Custom tariff no.: 8413.70.2004

Project:
Reference number:

Client:
Client number:
Contact:

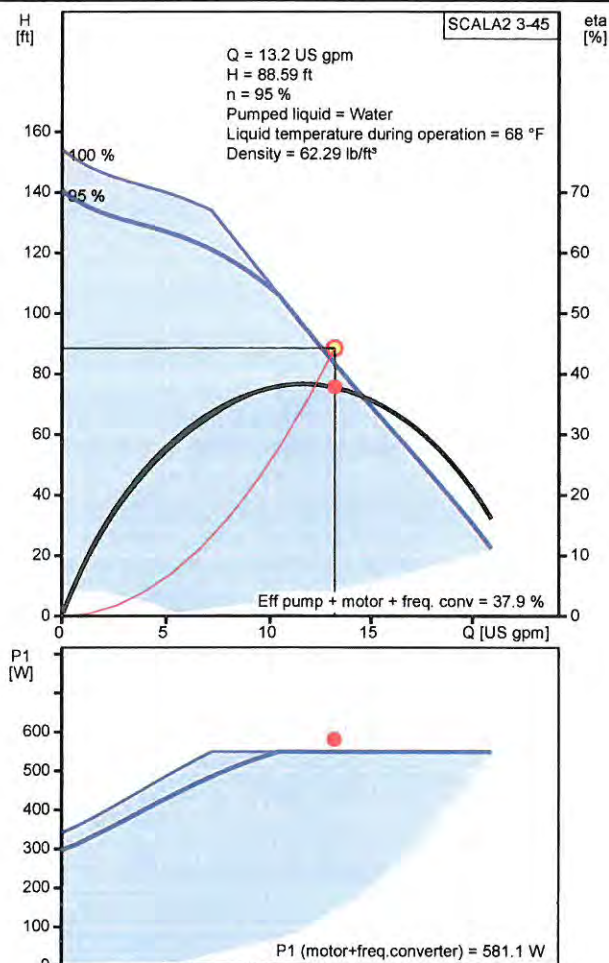
98562818 SCALA2 3-45 60 Hz



Project:
Reference number:

Client:
Client number:
Contact:

Description	Value
General information:	
Product name:	SCALA2 3-45 A
Product No.:	98562818
EAN:	5711497233875
Technical:	
Actual calculated flow:	13.2 US gpm
Resulting head of the pump:	88.59 ft
Head max:	147.6 ft
Primary shaft seal:	CARBON/CERAMIC
Approvals on nameplate:	cULus
Approvals for drinking water:	cULus NSF372, cULus DW NSF61
Curve tolerance:	ISO9906:2012 3B
Model:	A
Materials:	
Pump housing:	NORYL FE1630PW PPE+PS-GS30
Impeller:	NORYL FE1630PW PPE+PS-GS30
Material code:	A
Installation:	
Range of ambient temperature:	32 .. 113 °F
Maximum operating pressure:	145 psi
Maximum permissible inlet pressure:	87 psi
Pipe connection:	NPT 1 Composite
Liquid:	
Pumped liquid:	Water
Liquid temperature range:	32 .. 113 °F
Liquid temperature during operation:	68 °F
Density:	62.29 lb/ft³
Electrical data:	
Power input - P1:	550 W
Main frequency:	60 Hz
Rated voltage:	1 x 115 V
Rated current:	4.9 A
Enclosure class (IEC 34-5):	ENCLOSURE TYPE 3
Insulation class (IEC 85):	F
Length of cable:	6.562 ft
Power plug:	Type B (NEMA 5-15)
Others:	
Net weight:	21.2 lb
Gross weight:	26.2 lb
Shipping volume:	1.55 ft³
Storage temperature range:	-40 .. 158 °F
Country of origin:	RS
Custom tariff no.:	8413.70.2004



Quickly find, specify, or verify UL Certified products for your projects.

1. HOW DO YOU WANT TO SEARCH?



Drinking Water System Components

See General Information for Drinking Water System Components

GRUNDFOS HOLDING A/S
POUL DUE JENSENS VEJ 7
8850 BJERRINGBRO, DENMARK

MH26400

NSF/ANSI 61

Plant at: Plant #1

Mechanical Devices

Trade Dsg	Water Contact Temp (°C)	Water Contact Mtl	Surface Area to Volume Ratio
4" Submersible Pump End			

UPS 26-99XXXX (7) [Annex G]	60	Multiple	-
UPS15-49XXXX(5)	23	-	-
Pump			
SCALA1 3-45 and SCALA2 3-45	23	Multiple	-

Plant at: Plant #2

Mechanical Devices

Trade Dsg	Water Contact Temp (°C)	Water Contact Mtl	Surface Area to Volume Ratio
Centrifugal Pump			
CR(a)32 (b)(c)(d)(e)(f)(g) E KUHE [Annex G]	23	Multiple	-
CR(a)32(b)(c)(d)(e)(f)(g) E KUBE [Annex G]	23	-	-
CR(a)45 (b)(c)(d)(e)(f)(g) E KUHE [Annex G]	23	Multiple	-
CR(a)45(b)(c)(d)(e)(f)(g) E KUBE [Annex G]	23	-	-
CR(a)64 (b)(c)(d)(e)(f)(g) E HQQE [Annex G]	23	Multiple	-
CR(a)64 (b)(c)(d)(e)(f)(g) E KUHE [Annex G]	23	Multiple	-
CR(a)64(b)(c)(d)(e)(f)(g) E KUBE [Annex G]	23	-	-
CR(a)90 (b)(c)(d)(e)(f)(g) E KUHE [Annex G]	23	Multiple	-
CR(a)90(b)(c)(d)(e)(f)(g) E KUBE [Annex G]	23	-	-
CRH/CRNH (a)(32, 45, 64, 90) (b)(c)(d)(e)(f)(g)E HQQE [Annex G]	23	-	-
CRN(a)32 (b)(c)(d)(e)(f)(g) E KUHE [Annex G]	23	Multiple	-
CRN(a)32(b)(c)(d)(e)(f)(g) E KUBE [Annex G]	23	-	-
CRN(a)45 (b)(c)(d)(e)(f)(g) E KUHE [Annex G]	23	Multiple	-

Trade Dsg	Water Contact Temp (°C)	Water Contact Mtl	Surface Area to Volume Ratio
chlorine dioxide chemical generator, "Oxiperm Pro Systems"			
OCD-162-10-S/H3 (PWTF)			
OCD-162-30-P/H3 (CD)	-	Multiple	-
OCD-162-5-S/H3 (PWTF)	-	Multiple	-
OCD-162-60-P/H3 (CD)	-	Multiple	-

[Annex G] - Product is certified to NSF/ANSI 372 and conforms to the lead content requirements for "lead free" plumbing as defined by California, Louisiana, Maryland and Vermont state law, and the U.S. Safe Drinking Water Act.

- Suffix designates numeric code of 000-999 for horsepower

(14) - Model may be followed by; Pipe Connection (F-Flange, U-Union), Pump Housing material (N-Stainless Steel, None-Cast Iron), Chec Valve (C-with Check Valve, None-No Check Valve), Port to Port Length (180mm or 165mm), Control Feature (Auto, PWM, VDC, LIN, MOD, or other Alpha-Numeric characters).

(5) - UP-15 models followed by "RES" are rated for 23C applications only

(6) - Alpha 15-48 models followed by "RES" are rated for 23C applications only

(7) - Models may contain the following Prefix - ;S - 3 Speed (for suffix 18, 42, 58, and 99 models only) Blank - 1 Speed; Models may contain any combination of the following suffixes - ;S,N - Stainless steel housing;B - Bronze housing;R - Composite;F - Flanged fitting (cast or stainless); flanges perpendicular to axis of pump shaft; FR - Flanged fitting (cast or stainless); flanges parallel to axis of pump shaft; U - Union fitting (stainless, composite or bronze) ;3 - 3/8 in. fitting (bronze); 5 - 1/2 in. fitting (bronze); 7 - 3/4 in. fitting (bronze);UC5 - Inlet Discharge: 1/2 in. sweat fitting; UC7 - Inlet Discharge: 3/4 in. sweat fitting; 7P - 3/4 in. NPT (male); C - Check Valve; ES - End suction; CIL 2 - Same as RU

(a) - with or without E

(b) - with or without S

(c) - Numeric # of stages CR, CRN,CRI 1 and 1s = 2-27; CR, CRN,CRI 3 = 2-25; CR, CRN,CRI 5 = 2-24; CR, CRN,CRI 10 = 1-17; CR, CRN,CRI 15 = 1-12; CR, CRN,CRI 20 = 1-10; CR, CRN,CRI 32 = 1-11; CR, CRN,CRI 45 = 1-8; CR, CRN,CRI 64 = 1-5;

CR, CRN, CRI 90 = 1-5; CR, CRN 120 = 1-5; CR, CRN 150 = 1-4; CR, CRN 95 = 1 to 8; CR, CRN 125 = 1 to 9; CR, CRN 155 = 1 to 8; CR, CRN 185 = 1 to 6; CR, CRN 215 = 1 to 5; CR, CRN 255 = 1 to 4

(CD) - Certification is based on a dose rate that yields a maximum chlorine dioxide concentration of 0.8 mg/L in potable water.

(d)(e)(f) - Blank or Any alphanumeric character

(g) - A, G, GI, I, or II

(h) - Code for control variant - (Examples of codes for control variant A = Standard, AR = Standard + alarm relay, AP = Standard + Profibus, AG = Standard + GENIbus, B = Basic)

(i) - Code for dosing head material - (Examples of codes for dosing head material PP = Polypropylene, PV = PVDF)

(q) - Seal assembly type KUHE, HQQE, KUBE, or HBQE

+ - Suffix designates code of 0-99 for stages

11 - Only the Systems that are marked with the NSF 61 Listing mark are considered to be NSF 61 Listed.

12 - All System designations are followed by the quantity and Grundfos Type/Size pumps in the system.

@ - Water Contact Temperature is 60 deg C

CRH/CRNH - Horizontal variation of CR/CRN centrifugal pumps

NOTE - Models may contain the following Prefix: S - 3 Speed (for suffix 18, 42, 58, and 99 models only) or Blank - 1 Speed. Models may contain any combination of the following suffixes: S - Stainless steel housing, B - Bronze housing, R - Composite Housing, F - Flanged fitting (cast or stainless); flanges perpendicular to axis of pump shaft, FR - Flanged fitting (cast or stainless); flanges parallel to axis of pump shaft, U - Union fitting (stainless, Composite or Bronze), 3 - 3/8 in. fitting (bronze), 5 - 1/2 in. fitting (bronze), 7 - 3/4 in. fitting (bronze), UC5 - Inlet Discharge: 1/2 in. sweat fitting, UC7 - Inlet Discharge: 3/4 in. sweat fitting 7P-3/4 in NPR (male).

PWTF - These chemical generators are certified for use exclusively at public water treatment facilities. Products installed at public water treatment facilities are considered to be used in high flow applications. Certification of this product has been performed to the health effects requirements of NSF/ANSI 61, which assesses the acceptability of potential extractants from the chemical generator. No evaluation has been performed on the strength or efficacy of the chemical generated under this certification. The generated chemical has not been certified by UL to NSF/ANSI 60. The operation, maintenance, and the consistency of the source

ingredients may affect the performance of the chemical generator and by-products in the chemical being generated. Consult the manufacturer's product literature for proper usage.

XX - 00-99 for model 5008XX

yy - followed by E, ED, ES, F, EF, EDF, S

[10] - For use with well diameters 6" or greater.

[13] - Installation kits are not covered under this listing

[8] - Certification is based upon a dose rate that yields a sodium hydroxide (NaOH) concentration in potable water that does not exceed 100 mg/L and a sodium hypochlorite (NaOCl) concentration in potable water that does not exceed 80 mg/L.

[9] - Certification of this product has been performed to the health effects requirements of NSF/ANSI Standard 61, which assesses the acceptability of potential extractants from the dosing pump. No evaluation has been performed on the strength or efficacy of the chemicals fed. The specified chemicals are not certified by UL to NSF/ANSI Standard 60, so the operation, maintenance and the consistency of the source ingredients may affect the performance of the dosing pump.

[FS] - Fitting Sets have not been evaluated as part of a total pumping system, consult Grundfos for product compatibility

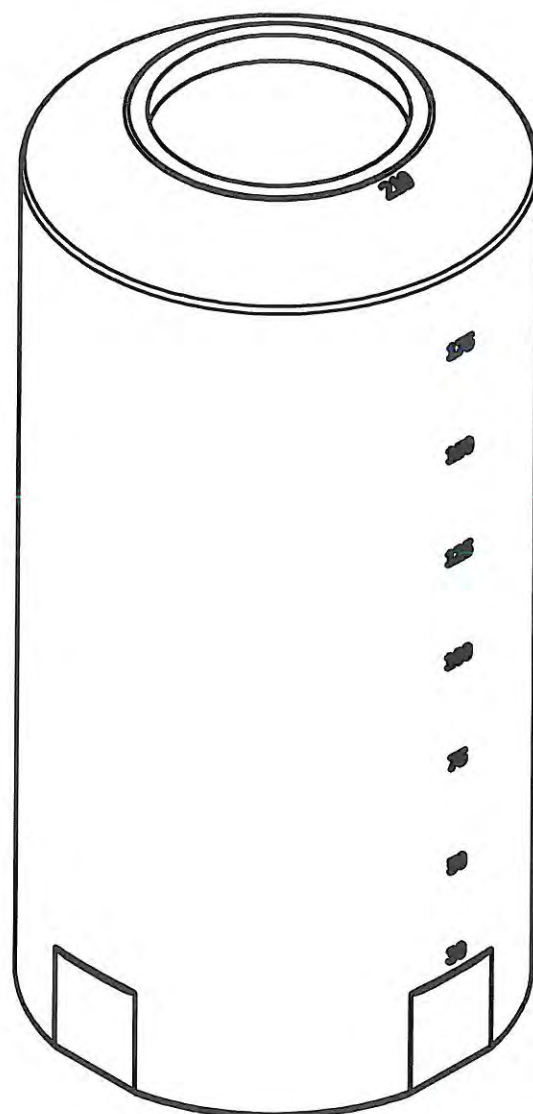
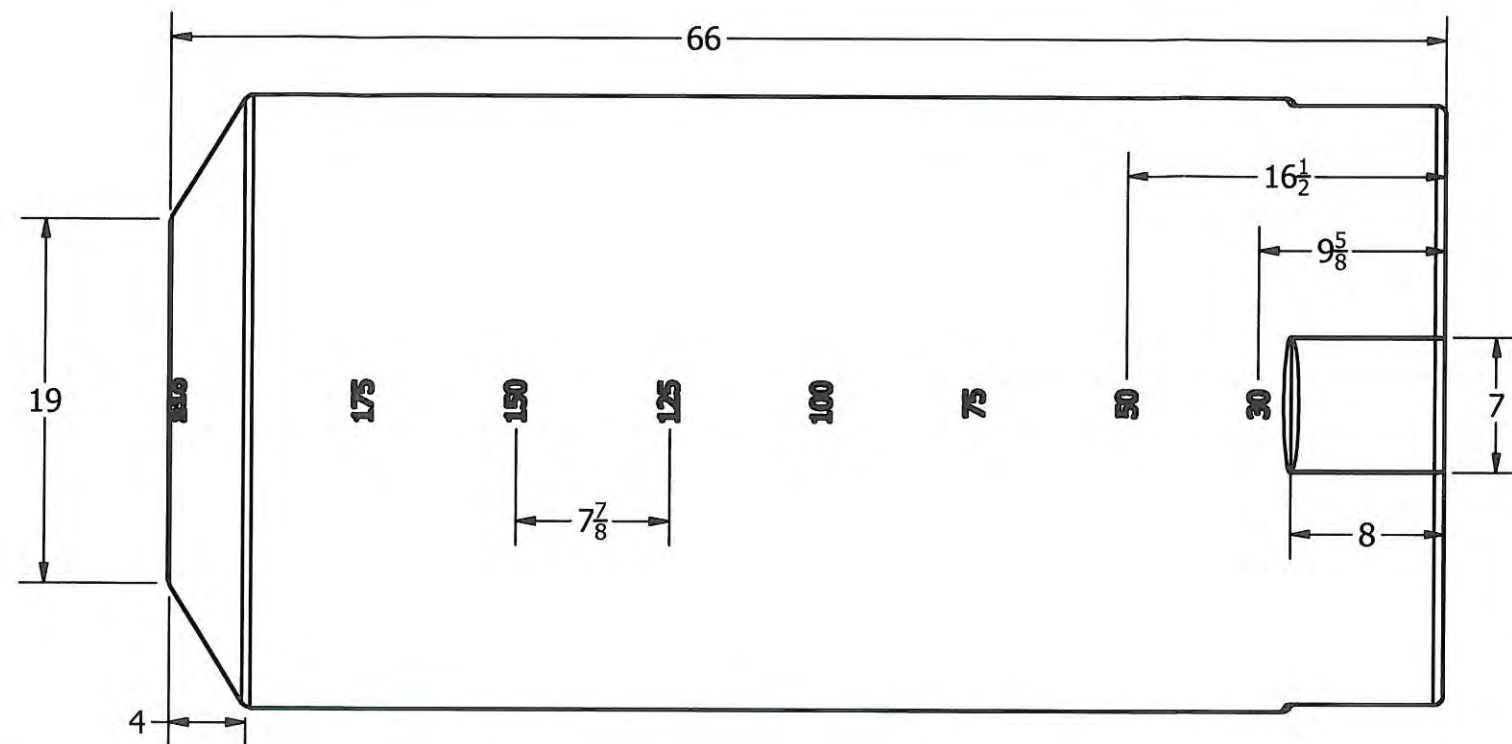
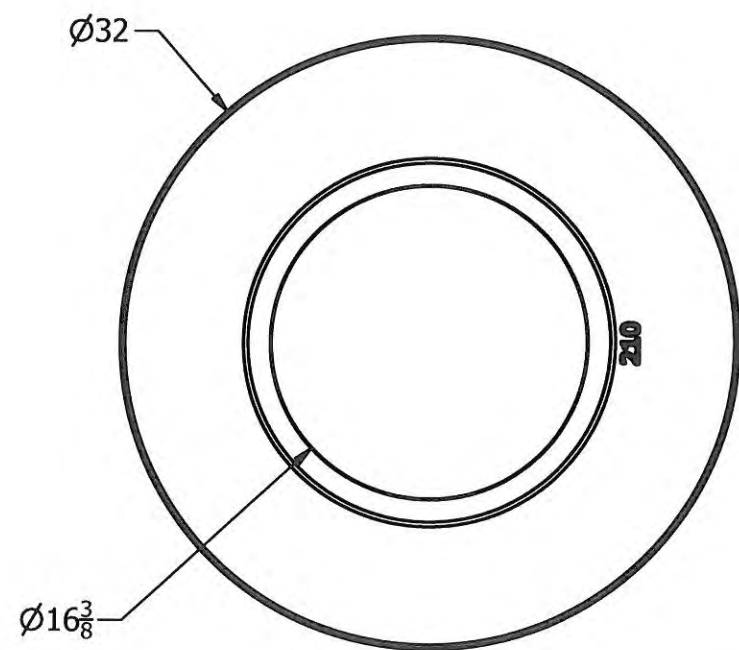
[t] - Product names may be followed by additional alpha characters. This is for additional nomenclature features that do not contact water.

Last Updated on 2018-01-06

The appearance of a company's name or product in this database does not in itself assure that products so identified have been manufactured under UL's Follow-Up Service. Only those products bearing the UL Mark should be considered to be Certified and covered under UL's Follow-Up Service. Always look for the Mark on the product.

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Request a Field Evaluation



REVISION HISTORY					
REV	DESCRIPTION		DATE		AUTHOR
A	WAS 200 GAL X 31 DIA		7/31/2003		
B	REDRAWN		7/1/2013		Michael Holden
DRAWN Jerry Paulson		9/21/2001	 NORWESCO, INC. SAINT BONIFACIUS, MN TITLE 210 GALLON VERTICAL TANK		
CHECKED					
QA					
MFG					
APPROVED					
		SIZE B	DWG NO		REV B
		SCALE: 1/16		SHEET 1 OF 1	



The Public Health and Safety Organization

NSF Product and Service Listings

These NSF Official Listings are current as of **Monday, April 02, 2018** at 12:15 a.m. Eastern Time. Please contact [NSF International](#) to confirm the status of any Listing, report errors, or make suggestions.

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NSF/ANSI 61 Drinking Water System Components - Health Effects

NOTE: Unless otherwise indicated for Materials, Certification is only for the Water Contact Material shown in the Listing. Click here for a list of Abbreviations used in these Listings. Click here for the definitions of Water Contact Temperatures denoted in these Listings.

Norwesco, Inc.

4365 Steiner Street

St. Bonifacius, MN 55375

United States

800-328-3420

952-446-1945

Visit this company's website (<http://www.norwesco.com>).

(<http://www.norwesco.com>).

Facility : Hanford, CA**Protective (Barrier) Materials**

Trade Designation	Water Contact Size Restriction	Water Contact Temp	Water Contact Material
Tanks[1]			
Applicator Tanks	20 - 500 gal.	CLD 23	PE
Applicator Tanks (Slim Line)	150 - 200 gal.	CLD 23	PE
Below Ground Holding Tanks	2000 gal.- 5100 gal.	CLD 23	PE
Cistern	>= 500 gal.	CLD 23	PE
Cistern DL[2]	>= 600 gal.	CLD 23	PE
Cistern Sphere	250 - 325 gal.	CLD 23	PE
Cistern Sphere DL[2]	>= 325 gal.	CLD 23	PE
Cone Bottom	125 - 10,000 gal.	CLD 23	PE
Drainable Leg	710 - 3210 gal.	CLD 23	PE
Elliptical	200 - 1600 gal.	CLD 23	PE
Elliptical Leg Tanks	135 - 4035 gal.	CLD 23	PE
Flat Bottom Utility	7 - 200 gal.	CLD 23	PE
Horizontal	35 - 6025 gal.	CLD 23	PE
Inductor Tanks	15 - 80 gal.	CLD 23	PE
Loaf Tanks	50 - 1050 gal.	CLD 23	PE
Mini Bulk	>= 120 gal.	CLD 23	PE
PCO	30 gal. - 300 gal.	CLD 23	PE
Pickup	>= 210 gal.	CLD 23	PE
Specialty Water	525 - 1100 gal.	CLD 23	PE

Specialty Water Tanks / Free Standing Tanks
Specialty Water Tanks (w/Steel Frame)
Spot Sprayers
Total Drain
Tuna Can
Vertical
Water Hauling Tanks

100 - 4200 gal.	CLD 23	PE
375 gal.	CLD 23	PE
14 - 25 gal.	CLD 23	PE
5 - 12 gal.	CLD 23	PE
5000 gal.	CLD 23	PE
10 - 20,000 gal.	CLD 23	PE
1250 gal.- 2400 gal.	CLD 23	PE

[1] Certified tanks are available in black, blue, green, or white.
[2] DL - Domed lid.

Facility : Lancaster, OH

Protective (Barrier) Materials

Trade Designation	Water Contact Size Restriction	Water Contact Temp	Water Contact Material
Tanks[1] [2]			
Applicator Tanks	20 gal. - 500 gal.	CLD 23	PE
Applicator Tanks (Slim Line)	150 gal. - 200 gal.	CLD 23	PE
Below Ground Holding Tanks	2000 gal.- 5100 gal.	CLD 23	PE
Cistern	>= 500 gal.	CLD 23	PE
Cistern DL	>= 600 gal.	CLD 23	PE
Cistern Sphere	250 gal. - 325 gal.	CLD 23	PE
Cistern Sphere DL	>= 325 gal.	CLD 23	PE

Cone Bottom	125 gal.-10,000 gal.	CLD 23	PE
Drainable Leg	710 gal. - 3210 gal.	CLD 23	PE
Elliptical	200 gal. - 1600 gal.	CLD 23	PE
Elliptical Leg Tanks	135 gal. - 4035 gal.	CLD 23	PE
Flat Bottom Utility	7 gal. - 200 gal.	CLD 23	PE
Horizontal	35 gal. - 6025 gal.	CLD 23	PE
Inductor Tanks	15 gal. - 80 gal.	CLD 23	PE
Loaf Tanks	50 gal - 1050 gal.	CLD 23	PE
Mini Bulk	>= 120 gal.	CLD 23	PE
PCO	30 gal. - 300 gal.	CLD 23	PE
Pickup	>= 210 gal.	CLD 23	PE
Specialty Water	525 gal. - 1100 gal.	CLD 23	PE
Specialty Water Tanks (w/Steel Frame)	375 gal.	CLD 23	PE
Specialty Water Tanks / Free Standing Tanks	100 gal. - 4200 gal.	CLD 23	PE
Spot Sprayers	14 gal. - 25 gal.	CLD 23	PE
Total Drain	5 gal. - 12 gal.	CLD 23	PE
Tuna Can	5000 gal.	CLD 23	PE
Vertical	10 gal.-20,000 gal.	CLD 23	PE
Water Hauling Tanks	1250 gal.-2400 gal.	CLD 23	PE

[1] DL - Domed Lid

[2] Certified tanks are blue, black, green, or white.

Facility : Fairfield, TX

Protective (Barrier) Materials

Trade Designation	Water Contact		Water	
	Size Restriction		Contact	Contact
			Temp	Material
Tanks[1]				
Applicator Tanks	20 gal. - 500 gal.		CLD 23	PE
Applicator Tanks (Slim Line)	150 gal. - 200 gal.		CLD 23	PE
Below Ground Holding Tanks	2000 gal.- 5100 gal.		CLD 23	PE
Cistern	>= 500 gal.		CLD 23	PE
Cistern DL[2]	>= 600 gal.		CLD 23	PE
Cistern Sphere	250 gal. - 325 gal.		CLD 23	PE
Cistern Sphere DL[2]	>= 325 gal.		CLD 23	PE
Cone Bottom	125 gal.-10,000 gal.		CLD 23	PE
Drainable Leg	710 gal. - 3210 gal.		CLD 23	PE
Elliptical	200 gal. - 1600 gal.		CLD 23	PE
Elliptical Leg Tanks	135 gal. - 4035 gal.		CLD 23	PE
Flat Bottom Utility	7 gal. - 200 gal.		CLD 23	PE
Horizontal	35 gal. - 6025 gal.		CLD 23	PE
Inductor Tanks	15 gal. - 80 gal.		CLD 23	PE
Loaf Tanks	50 gal. - 1050 gal.		CLD 23	PE
Mini Bulk	>= 120 gal.		CLD 23	PE
PCO	30 gal. - 300 gal.		CLD 23	PE
Pickup	>= 210 gal.		CLD 23	PE
Specialty Water	525 gal. - 1100 gal.		CLD 23	PE
Specialty Water Tanks (w/Steel Frame)	375 gal.		CLD 23	PE
Specialty Water Tanks / Free Standing Tanks	100 gal. - 4200 gal.		CLD 23	PE
Spot Sprayers	14 gal. - 25 gal.		CLD 23	PE
Total Drain	5 gal. - 12 gal.		CLD 23	PE
Tuna Can	5,000 gal.		CLD 23	PE
Vertical	10 gal.-20,000 gal.		CLD 23	PE

Water Hauling Tanks

1250 gal.- 2400 gal. CLD 23 PE

- [1] Certified Tanks are White, Black, Green, or Blue.
 [2] DL - Domed Lid.

Facility : Tooele, UT

Protective (Barrier) Materials

Trade Designation	Water Contact Size Restriction	Water Contact Temp	Water Contact Material
Tanks[1]			
Applicator Tanks	20 - 500 gal.	CLD 23	PE
Applicator Tanks (Slim Line)	150 - 200 gal.	CLD 23	PE
Below Ground Holding Tanks	2000 gal.- 5100 gal.	CLD 23	PE
Cistern	> = 500 gal.	CLD 23	PE
Cistern DL[2]	> = 600 gal.	CLD 23	PE
Cistern Sphere	250 - 325 gal.	CLD 23	PE
Cistern Sphere DL[2]	> = 325 gal.	CLD 23	PE
Cone Bottom	125 - 10,000 gal.	CLD 23	PE
Drainable Leg	710 - 3210 gal.	CLD 23	PE
Elliptical	200 - 1600 gal.	CLD 23	PE
Elliptical Leg Tanks	135 - 4035 gal.	CLD 23	PE
Flat Bottom Utility	7 - 200 gal.	CLD 23	PE
Horizontal	35 - 6025 gal.	CLD 23	PE

Inductor Tanks	15 - 80 gal.	CLD 23	PE
Loaf Tanks	50 - 1050 gal.	CLD 23	PE
Mini Bulk	>= 120 gal.	CLD 23	PE
PCO	30 gal. - 300 gal.	CLD 23	PE
Pickup	>= 210 gal.	CLD 23	PE
Specialty Water	525 - 1100 gal.	CLD 23	PE
Specialty Water Tanks / Free Standing Tanks	100 gal. - 4200 gal.	CLD 23	PE
Specialty Water Tanks (w/Steel Frame)	375 gal.	CLD 23	PE
Spot Sprayers	14 - 25 gal.	CLD 23	PE
Total Drain	5 - 12 gal.	CLD 23	PE
Tuna Can	5000 gal.	CLD 23	PE
Vertical	10 - 20,000 gal.	CLD 23	PE
Water Hauling Tanks	1250 gal.- 2400 gal.	CLD 23	PE

[1] Certified tanks are available in black, blue, green, or white.

[2] DL - Domed lid.

Facility : Washougal, WA

Protective (Barrier) Materials

	Water	Water	Water
	Contact	Contact	Contact
	Temp	Temp	Material

Trade Designation

Tanks[1]

Applicator Tanks

CLD 23 PE

20 - 500 gal.

Applicator Tanks (Slim Line)

Below Ground Holding Tanks

Cistern

Cone Bottom

Cistern DL[2]

Cistern Sphere

Cistern Sphere DL[2]

Drainable Leg

Elliptical

Elliptical Leg Tanks

Flat Bottom Utility

Horizontal

Inductor Tanks

Loaf Tanks

Mini Bulk

PCO

Pickup

Specialty Water

Specialty Water Tanks / Free Standing Tanks

Specialty Water Tanks (w/Steel Frame)

Spot Sprayers

Total Drain

Tuna Can

Vertical

Water Hauling Tanks

150 - 200 gal.	CLD 23	PE
2000 gal.-5100 gal.	CLD 23	PE
>= 500 gal.	CLD 23	PE
125 - 10,000 gal.	CLD 23	PE
>= 600 gal.	CLD 23	PE
250 - 325 gal.	CLD 23	PE
>= 325 gal.	CLD 23	PE
710 - 3210 gal.	CLD 23	PE
200 - 1600 gal.	CLD 23	PE
135 - 4035 gal.	CLD 23	PE
7 - 200 gal.	CLD 23	PE
35 - 6025 gal.	CLD 23	PE
15 - 80 gal.	CLD 23	PE
50 - 1050 gal.	CLD 23	PE
>= 120 gal.	CLD 23	PE
30 gal. - 300 gal.	CLD 23	PE
>= 210 gal.	CLD 23	PE
525 - 1100 gal.	CLD 23	PE
100 - 4200 gal.	CLD 23	PE
375 gal.	CLD 23	PE
14 - 25 gal.	CLD 23	PE
5 - 12 gal.	CLD 23	PE
5000 gal.	CLD 23	PE
10 - 20,000 gal.	CLD 23	PE
1250 gal.- 2400 gal.	CLD 23	PE

[1] Certified tanks are available in black, blue, green, or white.

[2] DL - Domed lid.

4/2/2018

Number of matching Manufacturers is 1

Number of matching Products is 130

Processing time was 0 seconds

Plumbing | Plumbing Valves | Float Valves and Accessories | Float Valves
| Bulkhead-Mount Float Valve with Threaded Outlet, 1/4"-20 Rod Thread, PVC

Email Print

KERICK

Bulkhead-Mount Float Valve with Threaded Outlet, 1/4"-20 Rod Thread, PVC

Item # 4DME4 Mfr. Model # PT100SS Catalog Page # 2911 UNSPSC # 40141610

Web Price ⓘ
\$33.40 / each

☒ One Time Delivery
☐ Auto Reorder

☒ Shipping ☐ Pickup

Expected to arrive **Fri, Apr 06.**

Ship To **99501** (Change)



+ Add to List

☆☆☆☆☆ Be the first to write a review

Shipping Weight **0.49 lbs.**

Country of Origin **USA** | Country of Origin is subject to change.

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Note: Product availability is real-time updated and adjusted continuously. The product will be reserved for you when you complete your order. [More](#)

☐ Compare

PRODUCT DETAILS

[View More](#) 

TECHNICAL SPECS

Item	Float Valve with Threaded Outlet			Valve Flow - Flow (1)	69 gpm
Mounting	Bulkhead			Valve Flow - Pressure (2)	40 psi
Size	1"			Valve Flow - Flow (2)	60 gpm
Connection Type	MNPT			Max. Pressure	100 psi
Rod Thread	1/4"-20			Features	0.70" Orifice
Body Material	PVC			Compliance	NSF/ANSI 61, Standard 169
Valve Flow - Pressure (1)	50 psi			Valve Material	PVC



How can we improve our [Technical Specifications?](#)

COMPLIANCE AND RESTRICTIONS

This product has been certified by a third party to be compliant with the "Safe Drinking Water Act" requirements for low lead in potable (human consumption - drinking and cooking) and non-potable water applications (non-human consumption).

ALTERNATE SEARCH TERMS

Certified Lead Free Valves (1766)

CUSTOMERS ALSO PURCHASED



GRAINGER APPROVED
Pipe-Mount Float Valve
with Threaded Outlet,
ITEM # 6AMA1

Web Price **\$25.70** /
each

Qty

ADD TO CART



GRAINGER APPROVED
Pipe-Mount Float Valve,
3/8"-16 Rod Thread,
ITEM # 6AMA6

Web Price **\$99.00** /
each

Qty

ADD TO CART



WATTS
Pipe-Mount Heavy Duty
Float Valve, 3/8"-16 Rod ...
ITEM # 46A989

Web Price **\$95.50** /
each

Qty

ADD TO CART



GRAINGER APPROVED
Pipe-Mount Float Valve
with Threaded Outlet,
ITEM # 6AMA2

Web Price **\$30.00** /
each

Qty

ADD TO CART



BOB
Pipe-Mount Float Valve,
3/8"-16 Rod Thread, Lead
ITEM # 30UN55

Web Price **\$124.00**
/ each

Qty

ADD TO CART

CUSTOMER REVIEWS

WRITE REVIEWS

Product Reviews Disclaimer:

Grainger is neither responsible for, nor does it endorse, the content of any product review or statement posted. Any statements posted constitute the statements of the poster and are not the statements of Grainger. The statements posted by Grainger employees with the Grainger employee badge represent the views of such employees and are not the statements of Grainger. Grainger makes no representations as to the appropriateness, accuracy, completeness, correctness, currentness, suitability, or validity of any product review or statements posted, including those posted by employees with the Grainger employee badge, and is not liable for any losses, injuries or damages which may result from any such product review or statements. Use of any linked web site provided in a product review or post is at the user's own risk.



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NSF/ANSI 61 Drinking Water System Components - Health Effects

NOTE: Unless otherwise indicated for Materials, Certification is only for the Water Contact Material shown in the Listing. Click here for a list of [Abbreviations](#) used in these Listings. Click here for the definitions of [Water Contact Temperatures](#) denoted in these Listings.

Control Devices, LLC DBA Kerick Valve
1555 Larkin Williams Road
Fenton, MO 63026
United States
904-732-2258

Visit this company's website (<http://www.floatvalve.com>).

Facility : Fenton, MO

Mechanical Devices

Trade Designation	Water		Material
	Contact	Temp	
Miscellaneous Process Devices/Components			
PFXX-K		CLD 23	MLTPL
PFXXX[1] [G]		CLD 23	MLTPL
PFXXXX[1] [G]		CLD 23	MLTPL
PFXXXXXX[1] [G]		CLD 23	MLTPL
PFXXXXXXXX[1] [G]		CLD 23	MLTPL
SRXX[2] [G]		CLD 23	MLTPL

[1] P Series Float:

XX, XXX, XXXX, XXXXX, XXXXXX - Size of the floats in inches

[2] P Series Rod:

XX - Length of rod in inches

[G] Product is Certified to NSF/ANSI 372 and conforms with the lead content requirements for “lead free” plumbing as defined by California, Vermont, Maryland, and Louisiana state laws and the U.S. Safe Drinking Water Act.

Valves

281811P1[3]		CLD 23	MLTPL
281867P1[3]		CLD 23	MLTPL
HTI(A)(B)(C)(D)(E)(F) Float Valves[3] [G]			
I(A)(B)(C)(D)(E)(F) Float Valves[3] [G]	[4]	CLD 23	MLTPL
M(A)(B)(C)(D)(E)(F) Float Valves[3] [G]	[4]	CLD 23	MLTPL
P(I)(J)(K)(L)(M) Valves[3] [5] [G]	[3]	CLD 23	MLTPL
VTI(A)(B)(C)(D)(E)(F) Float Valves[3] [G]	[4]	CLD 23	MLTPL

[3] For all valves:

[2] May represent the following suffixes when present:

- 316 - 316 grade stainless steel
- BMP - Bent pin
- R - Reversed arm
- V - Vertical
- P - Polyfort FPP 1601-11
- G - Geon 4M4110 TRANS 9492
- NT - Natural (P Series only)
- BK - Black (P Series only)

[4] M, I, HT and VT Series Float Valves:

I - I Series

M - M Series

HT - Horizontal Tank

VT - Vertical Tank

(A) Valve type:

A - Adjustable

blank - Non-adjustable

(B) Inlet size:

25 - 1/4" tubing inlet

2P - 1/4" pipe inlet

2S - 1/4" short pipe inlet

38 - 3/8" tubing inlet
3P - 3/8" pipe
05 - 1/2" pipe
I2 - Index 1/4" tubing
B2 - Bayonet 1/4" tubing
32 - 3/8" step 1/4" tubing
T5 - 1/2" tapped with 1/4"

(C) Material:

2 - HR 5009
7 - Polyfort FPP 1606-11
8 - Geon M4110

(D) Orifice size:

Blank - 0.093 #4

1 - .042
2 - .052
3 - .062
4 - .093
6 - .125
10 - .1719
12 - .188

(E) Float:

Blank - PF154-NT
AN - PF152-NT
AB - PF152-BK
IB - PF1525-BK
IN - PF1525-NT
BN - PF153-NT
BB - PF153-BK
GB - PF154-BK
CN - PF1753-NT

CB - PF1753-BK
DN - PF222-NT
DB - PF222-BK
EN - PF224-NT
EB - PF224-BK
FN - PF1752-NT
FB - PF1752-BK
NT - Natural
BK - Black

(F) Arm:

Blank - Reg. Arm
S - s-arm
IH00 - Hoz 0" drop
IH07 - Hoz .75" drop
IH12 - Hoz 1.2" drop
IH20 - Hoz 2" drop
IV01 - Vert 1" drop

[5] P Series Valves:

(I) Mount:

S - Standard
T - Tank
X - Extended

(J) Inlet size:

38 - 3/8"
05 - 1/2"
75 - .75"
100 - 1"
125 - 1.25"
150 - 1.5"

(K) Outlet size:

38 - 3/8"

Ø5 - 1/2"

Blank - Inlet size

(L) Orifice size:

L - Low flow

S - Standard flow

187 - .187"

25 - .25"

312 - .312"

(M) Trim hardware:

S - Stainless

This character may be blank

[G] Product is Certified to NSF/ANSI 372 and conforms with the lead content requirements for "lead free" plumbing as defined by California, Vermont, Maryland, and Louisiana state laws and the U.S. Safe Drinking Water Act.

Number of matching Manufacturers is 1

Number of matching Products is 13

Processing time was 0 seconds

HAINES FERRY TERMINAL CONTACT TANK OPERATION NARRATIVE

TANK FILL/DRAW OPERATION

- 1) FILL BOTH TANKS AT THE END OF EACH DAY. TANKS MAY BE FILLED AT THE SAME TIME OR ONE AT A TIME.
- 2) FLOW RATE TO THE TANKS IS SET AT LESS THAN 20 GPM TO ENSURE THE FILTER CAPACITY IS NOT EXCEEDED. CONFIRM FLOW RATE IS LESS THAN 20 GPM WHEN FILLING TANKS. IF IT IS GREATER THAN 20 GPM, USE VALVE NEAR FILTERS TO REDUCE FLOW RATE TO LESS THAN 20 GPM.
- 3) A FLOAT VALVE IN EACH TANK WILL AUTOMATICALLY STOP FLOW INTO THE TANK WHEN THE TANK IS FULL.
- 4) AT A CHLORINE CONCENTRATION ≥ 0.2 MG/L THE WATER MUST SIT A MINIMUM OF 4 HOURS IN THE TANKS BEFORE USE. AT A CHLORINE CONCENTRATION OF ≥ 0.4 MG/L THE WATER MUST SIT IN THE TANK A MINIMUM OF 2 HOURS BEFORE USE.
- 5) VALVES AT THE TANKS PROVIDE FLEXIBILITY TO FILL OR PLACE A TANK INTO USE IN THE FOLLOWING COMBINATIONS:
 - A. ONE TANK CAN BE FILLING WHEN THE OTHER IS IN USE.
 - B. BOTH TANKS CAN ALSO BE SET TO FILL AT THE SAME TIME.
 - C. BOTH TANKS CAN ALSO BE PLACED INTO USE AT THE SAME TIME.
 - D. **DO NOT FILL A TANK AT THE SAME TIME IT IS BEING USED TO PROVIDE WATER.**
- 6) TO FILL OR USE TANKS SET VALVES AS FOLLOWS. VALVE TAGS ARE ON EACH VALVE AT THE TANKS TO IDENTIFY VALVES.

VALVE SETTINGS TO FILL TANK T-1

- 1) CLOSE VALVE V-4
- 2) CLOSE VALVE V-5
- 3) OPEN VALVE V-6
- 4) CLOSE VALVE V-3
- 5) OPEN VALVE V-2
- 6) OPEN VALVE V-1

VALVE SETTINGS TO FILL TANK T-2

- 1) CLOSE VALVE V-11
- 2) CLOSE VALVE V-10
- 3) OPEN VALVE V-12
- 4) CLOSE VALVE V-9
- 5) OPEN VALVE V-8
- 6) OPEN VALVE V-7

VALVE SETTINGS TO USE WATER FROM TANK T-1

(MIN 4 HOURS AFTER FILLING WHEN OPERATING AT CHLORINE RESIDUAL ≥ 0.2 MG/L)

(MIN 2 HOURS AFTER FILLING WHEN OPERATING AT CHLORINE RESIDUAL ≥ 0.4 MG/L)

- 1) CLOSE VALVE V-2
- 2) CLOSE VALVE V-1
- 3) OPEN VALVE V-3
- 4) CLOSE VALVE V-6
- 5) OPEN VALVE V-4
- 6) OPEN VALVE V-5

VALVE SETTINGS TO USE WATER FROM TANK T-2

(MIN 4 HOURS AFTER FILLING WHEN OPERATING AT CHLORINE RESIDUAL ≥ 0.2 MG/L)

(MIN 2 HOURS AFTER FILLING WHEN OPERATING AT CHLORINE RESIDUAL ≥ 0.4 MG/L)

- 1) CLOSE VALVE V-8
- 2) CLOSE VALVE V-7
- 3) OPEN VALVE V-9
- 4) CLOSE VALVE V-12
- 5) OPEN VALVE V-11
- 6) OPEN VALVE V-10

PUMP OPERATION

(REFER TO PUMP INSTALLATION AND OPERATING INSTRUCTION MANUAL)

- 1) PUMPS ARE SET TO AUTOMATICALLY MAINTAIN A CONSTANT WATER SYSTEM PRESSURE OF ABOUT 44 PSI.
- 2) IF WATER TANKS ARE EMPTY, THE PUMPS WILL AUTOMATICALLY STOP RUNNING AND INDICATE "DRY RUNNING". PUMP WILL TRY TO RESET AUTOMATICALLY IN A SEQUENCE OF THREE ATTEMPTS IN THE FIRST MINUTE. AFTER THIS, EIGHT ATTEMPTS WITHIN AN HOUR AND THEN REPEATEDLY ONCE EVERY 24 HOURS.
- 3) PUMP ALARM CAN BE RESET MANUALLY ONCE WATER IS AVAILABLE.