



202301030072

01/03/2023 02:23 PM Pages: 1 of 15 Fees: \$217.50
Skagit County Auditor

Return to:

Lisser & Associates, PLLC
PO Box 1109
Mount Vernon WA 98273
Phone: (360) 419-7442
Fax: (360) 419-0581

Document Title(s) (or transactions contained herein):

Residential Well Arsenic Removal Plan, Design, Equipment Manual and As-built Verification

() Additional Reference Numbers on page ____ of document

Grantor(s) (Last name, first name and initials):

1. Dykstra, Henry
2. Dykstra, Charlotte
- 3.
- 4.

() Additional names on page ____ of document

Grantee(s) (Last name, first name and initials):

1. Skagit County
- 2.
- 3.
- 4.

() Additional names on page ____ of document

Legal Description (Abbreviated: i.e. lot, block, plat or quarter, section, township and range):

Portion SW 1/4 SE 1/4 Sec 32, Twp 35 N, Rge 3 E W.M.
(Lot 1, Short Plat No. PL-20-0484)

() Additional legal(s) on page ____ of document

Assessor's Parcel/Tax I.D. Number:

P-35287

() Tax Parcel Number(s) for additional legal(s) on page ____ of document

DAHLMAN Pump & Well Drilling. Inc.

SALES • PUMPS • SERVICE • WELL DRILLING



DAHLMFW123LC

Scott J. Fowler
President

Bruce M. Fowler
CEO

December 15, 2022

17313 Cook Road, Bow
P.O. Box 422
Burlington, WA 98233

(360) 757-6666
Fax (360) 757-7353
1-800-277-4898

Henry Dykstra
12542 Gwen Drive Unit 7
Burlington, WA 98233

RE: 11854 Ten Acres Lane
Burlington

On November 16, 2022, an arsenic system was installed at 11854 Ten Acres Lane. The equipment was installed per Carl Garrison's design and equipment manual requirements.

If you have any questions, please contact our office.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Bruce M. Fowler'.

Bruce M. Fowler, CWD/PI



Member of Washington State Ground Water Association





August 25th, 2022

Henry Dykstra
6218 NE 137th St,
Kirkland WA 98034

Re: Residential Arsenic Removal Design (GEC # 22039)

Henry:

Garrison Engineering has examined the existing equipment for the subject residence and is recommending it's use for arsenic treatment. This system will also treat other co-contaminates from the drinking water for the property listed below.

WELL AND PROJECT LOCATION:

Site:
11854 Ten Acres Lane
Mount Vernon, WA 98273

DOE Well ID # BPA 119

DESIGN AND SPECIFICATIONS:

To comply within 10 parts per billion (ppb) of arsenic for domestic water used for drinking and cooking, Garrison Engineering recommends using a combination of a Nelson A-10 point of entry (POE) filter as well as a reverse osmosis (RO) point of use (POU) filter. The RO filter shall be installed under the kitchen sink. See the attached schematic, specifications, and manufacturer information for additional details.

We have also included the following equipment to pre-treat the co-contaminants present in the raw water:

- Fleck 2510 SXT 1054 Water Softener sold by Aqua Science

The Nelson A-10 oxidation/filtration iron filter will remove sulfur smell, iron, and some arsenic from the raw water. The water softener will remove hardness and manganese. If the pretreatment equipment malfunctions for an extended period of time, water quality will become noticeably poor.

DESIGN CRITERIA:

1. Expected Water Supply:

From the Nelson A-10 Filter:

- The Nelson A-10 water filter a service rate of 10 gpm, with a peak flow of 15 gpm.

From the Fleck 2510 SXT 1054 Water Softener:

- The Water Right Impression water conditioner has a continuous flow rate of 7 gpm, with a peak of 17 gpm.

From the RO POU filter:

- .5 gpm service rate.
- Over 100,000 gallons of treated water total are expected prior to filter element replacement.

2. Locations where treated water will be supplied:

From the Nelson A-10 and Fleck 2510 SXT 1054 Water Softener:

- Pretreated water will be supplied to the entire residence.

From the RO POU filter:

- Water treated for arsenic and other impurities will only be available at kitchen sink and refrigerator (if applicable).

3. Water quality parameters considered in the design of the treatment process:

- A sample of water was taken on 8/12/21 from the subject property that contained arsenic levels of 0.0193 mg/L as tested by Edge Analytical in Burlington, WA. Ref.# 21-27949 Lab#046-53747.
- Edge Analytical also tested secondary contaminants. The following contaminants of concern are iron at .97 mg/L, manganese at 0.0513 mg/L, hardness at 162.2 mg/L, and a sulfur smell was reported by the owner.
- Treatment of the secondary parameters for iron is necessary to assist in the reduction of arsenic via the co-precipitation process. The other contaminants being removed will eliminate staining of fixtures and odor issues. See the attached Water Analysis for more information.
- Garrison Engineering's arsenic removal design is based on the water analyses attached. If conditions change, or if there are other constituents in the water that are unknown at this time, treatment techniques may need to be modified.
- The designed system is considered by Garrison Engineering as a full-scale pilot test. The final treated water system must be tested for compliance with 10.0-ppb arsenic at a Washington State certified laboratory.

4. Minimum operation and maintenance requirements for the treatment process:

For the Nelson A-10 Sulfur, Iron, Arsenic Filter:

- The media should last for 10+ years. If the water quality degrades over time, it is recommended to have a water treatment professional re-bed the media in the filter.
- It is recommended that a qualified service technician check the equipment operation a minimum of once a year to help ensure the system is working properly. This includes verifying the backwash frequency and verifying that the backwash cycle performs as intended.
- The frequency of service by a qualified technician other than the owner is dependent upon how well the owner understands the treatment system and how well the owner monitors, adjusts, and maintains the system to meet the specified requirements. If the homeowner is ever unsure about the system, its operation, maintenance schedule, etc. Garrison Engineering recommends contacting a qualified technician for routine maintenance and service assistance.

For the Water Softener:

- To ensure the treatment system operates properly it is important to maintain a sufficient level of salt in the brine tanks. It is recommended to check the level of salt in each brine tank at least once a week and refill as necessary with water softener salt.
- If the treated water quality changes, check the operation of the water softener. Also, check to see that brine is being used during the regeneration cycle of the softener. Sometimes, the brine injector can become plugged, preventing brine from being drawn into the control head during back washing. Clean the brine tube, as necessary. Review the manufacturer's troubleshooting guide for additional information.
- It is recommended that a qualified service technician check the equipment operation a minimum of once a year to help ensure the system is working properly. This includes verifying the backwash frequency and verifying that the backwash cycle performs as intended.
- The frequency of service by a qualified technician other than the owner is dependent upon how well the owner understands the treatment system and how well the owner monitors, adjusts, and maintains the system to meet the specified requirements. If the homeowner is ever unsure about the system, its operation, maintenance schedule, etc. Garrison Engineering recommends contacting a qualified technician for routine maintenance and service assistance.

For the RO POU Arsenic filter:

- The minimum maintenance of the proposed arsenic filter system is periodic replacement filters and RO element. The carbon and particle filters should be replaced annually. The RO element should be replaced every 4 years.

5. Method of treatment process and residuals management:

From the Nelson A-10 Filter and from the Water Softener:

- The regeneration water from the softener should be disposed of in a nearby grassy area, i.e., pasture or drainage swale, or its own drain field downstream and at least 100 feet away from any existing wells.
- It is not recommended to place the backwash water in a septic system without approval from a licensed septic designer.

From the Arsenic POU filter:

- The concentrate from the RO shall be plumbed to the kitchen drain.

6. Minimum ongoing testing requirements:

For the Nelson A-10 Sulfur, Iron, Arsenic Filter:

- It is recommended to have a qualified technician test annually at Test Port # 8 for iron. If iron or sulfur smell is ever above 0.3 mg/L or present respectively, that is an indication that the filter is not functioning properly. If that happens, have a trained professional service the unit. The homeowner may also test the water by taking a water sample to any State certified laboratory.

From the Fleck 2510 Water Softener:

- It is recommended to have a qualified technician test annually for hardness and/or manganese at **Test Port #11**. If hardness or manganese is above 30 mg/L or 0.05 mg/L respectively, the softener should be taken apart, evaluated, and cleaned as necessary. At some point in the future (10-15 years) the media will need to be replaced.
- The homeowner may also test the water by taking a water sample to any State certified laboratory.

From the RO POU filter under the kitchen sink:

- It is recommended to test for arsenic quarterly. The homeowner is encouraged to use a field test kit each quarter to test the water for arsenic using a Hach EZ Arsenic Test Kit, Cat. # 28228-00 or equal. However, since field test kits are not perfectly accurate, it is highly recommended to also have at least one sample per year analyzed for arsenic at a State certified laboratory.
- It is further recommended to test for arsenic after RO filter replacement to ensure that the new filter has been installed properly.

After the project is completed, have the installing contractor take a sample of the treated water and have it analyzed by Edge Analytical in Burlington to ensure there is no arsenic present. Submit to the County if requested.

Sincerely,



Carl Garrison, PE
Attachments



Date Signed: 08/31/2022

WATER WELL REPORT DEPARTMENT OF **ECOLOGY**
State of Washington

Type of Work:
 Construction
 Decommission Original installation NOI No. _____

Proposed User: Domestic Industrial Municipal
 Dewatering Irrigation Test Well Other _____

Construction Type: New well Alteration Driven Jetted Cable Tool
 Deepening Other _____ Method: Air- Mud-Rotary

Dimensions: Diameter of boring 6 in., to 154.5 ft.
Depth of completed well 154.5 ft.

Casing	Liner	Diameter	From	To	Thickness	Steel	PVC	Welded	Thread
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>6</u>	<u>in.</u>	<u>0</u>	<u>144.5</u>	<u>.25</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	_____	_____	_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	_____	_____	_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	_____	_____	_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Perforations: Yes No Type of perforator used _____
No. of perforations _____ Size of perforations _____ in. by _____ in.
Perforated from _____ ft. to _____ ft. below ground surface

Screens: Yes No K-Packer Depth _____ ft.
Manufacturer's Name _____
Type STAINLESS STEEL Model No. _____
Diameter 6 in. Slot size #10 in. from 144.5 ft. to 149.5 ft.
Diameter 6 in. Slot size #15 in. from 149.5 ft. to 154.5 ft.

Sand/Filter pack: Yes No Size of pack material _____ in.
Materials placed from _____ ft. to _____ ft.

Surface Seal: Yes No To what depth? 18 ft.
Material used in seal BENTONITE
Did any strata contain unusable water? Yes No
Type of water? _____ Depth of strata _____
Method of sealing strata off _____

Pump: Manufacturer's Name _____ Type: _____
H.P. _____ Pump intake depth: _____ ft. Designed flow rate: _____ gpm

Water Levels: Land-surface elevation above mean sea level _____ ft.
Stick-up of top of well casing _____ ft. above ground surface
Static water level 72 ft. below top of well casing Date 7/21/2021
Artesian pressure _____ lbs. per square inch Date _____
Artesian water is controlled by _____ (cap, valve, etc.)

Well Tests:
Was a pumping test performed? No Yes by whom? _____
Yield _____ gpm with _____ ft. drawdown after _____ hrs.
Yield _____ gpm with _____ ft. drawdown after _____ hrs.
Yield _____ gpm with _____ ft. drawdown after _____ hrs.
Recovery data (time = zero when pump is turned off - water level measured from well top to water level)
Time Water Level Time Water Level Time Water Level

Date of pumping test _____
Bailey test _____ gpm with _____ ft. drawdown after _____ hrs.
Air test 10 gpm with stem set at 143 ft. for 1 hrs. Date 7/21/2021
Artesian flow _____ gpm
Temperature of water _____ °F Was a chemical analysis made? Yes No

Notice of Intent No. WE45035

Unique Ecology Well ID Tag No. BPA 119

Site Well Name (if more than one well): _____

Water Right Permit/Certificate No. _____

Property Owner Name HENRY DYKSTRA

Well Street Address 11854 TEN ACRES LANE

City MOUNT VERNON County SKAGIT

Tax Parcel No. 350332-4-012-0014

Was a variance approved for this well? Yes No

If yes, what was the variance for? _____

Location (see instructions on page 2): WWM or EWM

SE $\frac{1}{4}$ - $\frac{1}{4}$ of the SE $\frac{1}{4}$; Section 32 Township 35 Range 3

Latitude (Example: 47.12345) _____

Longitude (Example: -120.12345) _____

Driller's Log/Construction or Decommission Procedure
Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each layer penetrated, with at least one entry for each change of information. Use additional sheets if necessary.

Material	From	To
BROWN CLAY	0	14
GREY CLAY	14	30
BROWN CLAY	30	35
GREY CLAY AND GRAVEL	35	55
GRAVEL SAND AND GREY CLAY	55	110
GRAVEL SAND AND SILTY WATER	110	114
GRAVEL SAND AND GREY CLAY	114	142
TIGHT GREY SAND GRAVEL AND WATER	142	155
GRAVEL SAND AND GREY CLAY	155	160

WELL LOCATED ACCORDING TO SKAGIT COUNTY ORDINANCE # 12.48

Start Date 7/20/2021 Completed Date 7/21/2021

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Driller Trainee PE - Print Name RALPH RIGGLES
Signature _____
License No. 2043
IF TRAINEE: Sponsor's License No. _____
Sponsor's Signature _____

Drilling Company DAHLMAN PUMP & WELL DRILLING INC
Address P O BOX 422
City, State, Zip BURLINGTON WA 98233
Contractor's
Registration No. DAHLMPW123LC Date 7/22/2021



Burlington, WA Corporate Laboratory (a)
1620 S Walnut St - Burlington, WA 98233 - 800.755.9295 - 360.757.1400
Bellingham, WA Microbiology (b)
805 Orchard Dr Ste 4 - Bellingham, WA 98225 - 360.715.1212

Portland, OR Microbiology/Chemistry (c)
915D SW Pioneer Ct Ste W - Wilsonville, OR 97070 - 503.682.7802
Corvallis, OR Microbiology/Chemistry (d)
1100 NE Circle Blvd, Ste 150 - Corvallis, OR 97330 - 541.753.4848
Bend, OR Microbiology (e)
20332 Empire Blvd Ste 4 - Bend, OR 97701 - 541.639.8425



Drinking Water Report

Client Name: **Dahlman Pump**
PO BOX 422
Burlington, WA 98233

Reference Number: **21-27949**

Report Date: **8/12/21**

Approved By: **bj,bsp,srf**

Authorized by: *Lawrence J Henderson*

Lawrence J Henderson, PhD
Director of Laboratories, Vice President

Project: **Henry Dykstra**

Field ID:

Sample Description: **BPA 119**

Sample Date: **7/28/21 14:20**

Lab Number: **046-53747**

Date Received: **7/28/21**

Sampled By: **BB**

Sampler Phone:

CAS Number	Analyte	Result	MCL	Pass ^a	Lab QL	Units	Analyzed
7440-38-2	ARSENIC	0.0193	0.01	Fail	a 0.001	mg/L	8/2/21
7440-36-0	ANTIMONY	ND	0.006	Pass	a 0.001	mg/L	8/2/21
7440-39-3	BARIUM	0.0454	2	Pass	a 0.001	mg/L	8/4/21
7440-47-3	CHROMIUM	0.0012	0.1	Pass	a 0.001	mg/L	8/2/21
16984-48-8	FLUORIDE	0.27	4	Pass	a 0.10	mg/L	7/28/21
7439-97-8	MERCURY	ND	0.002	Pass	a 0.0001	mg/L	8/11/21
14787-55-8	NITRATE-N	ND	10	Pass	a 0.1	mg/L	7/28/21
7782-49-2	SELENIUM	ND	0.05	Pass	a 0.005	mg/L	8/2/21
16887-00-6	CHLORIDE	8.79	250	Pass	a 0.1	mg/L	7/28/21
E-10184	ELECTRICAL CONDUCTIVITY	394	700	Pass	a 10	uS/cm	7/28/21
7439-89-6	IRON	0.97			a 0.05	mg/L	8/8/21
7439-82-1	LEAD	ND			a 0.001	mg/L	8/2/21
E-11778	HARDNESS as Calcium Carbonate	162.2			a 10	mg/L	8/8/21
7439-98-5	MANGANESE	0.0513			a 0.001	mg/L	8/4/21
E-10139	HYDROGEN ION (pH)	8.01			a	pH Units	7/28/21 Temp (C): 24.4
7440-23-5	SODIUM	21.8			a 1	mg/L	8/8/21
E-10173	TOTAL DISSOLVED SOLIDS (TDS)	235	500	Pass	a 10	mg/L	8/8/21
E-10817	TURBIDITY	38			a 0.10	NTU	7/28/21

Notation:
MCL = Maximum Contaminant Level, maximum permissible level of a contaminant in water established by EPA; Federal Action Levels are 0.015 mg/L for Lead and 1.3 mg/L for Copper. Sodium has a recommended limit of 20 mg/L. A blank MCL value indicates a level is not currently established.
QL = Quantitation Limit is the lower calibration concentration.
ND = Not detected above the listed specified reporting limit (QL).
CAS Number = Chemical Abstract Service Number is a unique identifier of the chemical tested.
^a = 'PASS', indicates that the parameter tested meets EPA, State, or local jurisdiction MCL.
An * in front of the parameter name indicates it is not NELAP accredited but it is accredited through OR DEQ or USEPA Region 10.



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Bend, OR Microbiology (e)
20332 Emore Blvd Ste 4 - Bend, OR 97701 - 541.639.8426



Washington State Department of Health
WATER BACTERIOLOGICAL ANALYSIS

Client Name: Dahiman Pump
P.O. Box 422
Burlington, WA 98233

Reference Number: 21-33351
Project: Henry D

System Name:
System ID Number:
DOH Source Number:
Sample Type: D - Drinking Water
Sample Purpose: Investigative or Other
Sample Location: Well BPA 119
County:
Sampled By: Bruce
Sampler Phone: 3607576666

Repeat Sample Number:
Lab Number: 164-64371
Field ID: Bacteria
Date Collected: 9/2/21 09:35
Date Received: 9/2/21
Date Set: 9/2/21 12:13
Date Analyzed: 9/3/21 10:07
Report Date: 9/3/21
Comment:
Approved By: ckk,clh

Authorized by: *C. K. Knox*
Ceann K Knox
Lab Manager, Bellingham

DOH#	PARAMETER	RESULT	Qualifier	UNITS	Analyst	METHOD	Batch	COMMENT
1	TOTAL COLIFORM	Satisfactory, Coliforms Absent		per 100mL	jln	SM9223 B	m_210902a	
3	E. COLI	Absent		per 100mL		SM9223 B	m_210902a	

If the sample is unsatisfactory you can get information at the following health department websites or phone numbers:

- Island Co: <http://www.islandcounty.net/health/Envh/DrinkingWater/index.htm>
- San Juan Co: <http://www.sanjuanco.com/health/ehswater.aspx>
- Skagit Co: <http://www.skagitcounty.net/drinkingwater> or 360-336-9380
- Snohomish Co: 425-339-5250
- Whatcom Co: http://www.co.whatcom.wa.us/health/environmental/drinking_water/index.jsr
- WSDOH: <http://www.doh.wa.gov/ehp/dw/Programs/coliform.htm>

NOTES:

If the result is Unsatisfactory, Item (3) repeat samples and groundwater source samples are required for Group A Public Water Systems. Private individuals should investigate the cause of the unsatisfactory result and recamp.
If E. Coli or Fecal Coliform are present in sample do not drink the water until it is properly treated.
*If total coliforms are present, see accompanying Qualifier Definition report.



	5600AIO SXT	2510AIO SXT
Inlet/Outlet Fittings	3/4", 1"	3/4", 1"
Cycles	3	4
Valve Material	Fiber-reinforced polymer	Fiber-reinforced polymer
Service Flow Rates	2.5 - 6.3 GPM	2.5 - 10.0 GPM
Operating Pressures	20-75 PSI	20-75 PSI
Operating Temperatures	34-110 Degrees	34-110 Degrees
Electrical Specification	24V - 50/60 Hz	24V - 50/60 Hz

Professional Series AIO Control Valve

- Water use is monitored for peak efficiency
- Built in backup of settings during power outages
- Simple diagnostics and design provide for easy maintenance

Oxidation Air Pocket

- An air pocket is introduced into the top of the filter tank
- As water passes through this pocket the iron and sulfur in the water are oxidized

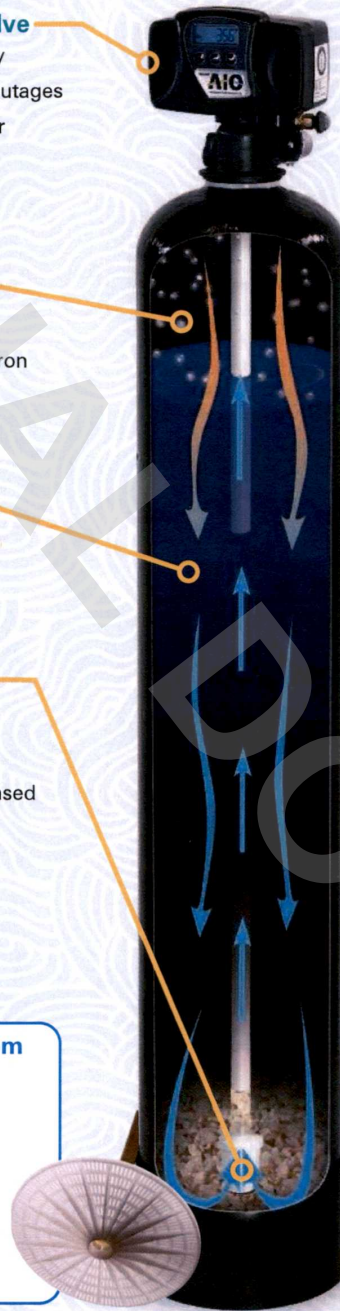
Exclusive Filter Media Bed

- Custom blends of media for efficient reduction of iron, sulfur and manganese

Basket Style Distribution System

- Delivers evenly distributed and high quality flows
- Optional Enpress® Vortech™ Plate Tank style distribution system, providing increased backwash efficiency using less water and saving money

Ready to get rid of iron and sulfur from your water? Contact:



SYSTEM FEATURES & OPTIONS

5600AIO SXT Key Features

- Large LCD display with 48 hours of internal power backup capacitor
- LCD display alternates between time of day, volume remaining or days to regeneration
- Down-flow regeneration
- Backwash capacity handles tanks up to 13" for filter applications

2510AIO SXT Key Features

- Top mount control with adjustable cycles delivers controlled up-flow backwash, air draw, rapid rinse, and down-flow service
- Time-tested hydraulically balanced piston, seal and spacer concept to control service flow and regeneration
- Non-corrosive, high-tech material construction
- Excellent flow rates - 2.5 GPM continuous, 10.0 GPM peak
- Backwash capacity handles tanks up to 14" diameter

System Options

- Corrosion free fiber-reinforced polymer or stainless steel bypass valve
- Auxiliary switches
- Optional stylish tank jackets help reduce tank condensation

Arrows indicate water flow through the system as it oxidizes and filters.

**RED-OXY TREATMENT****FILTRATION**

KATALOX LIGHT
CRYSTOLITE

ADSORPTION

CATALYTIC CARBON
TITANSORB
FERROLOX

FILTERSORB

FILTERSORB CT
SORBEX
FILTERSORB SP3
SPECIAL FILTER

INSTANT PRODUCTS

ISOFT CHEMICALS
OXYDES
OXYDES-P
OXYSORB
BIOXIDE
SCALE-OVER
GREEN-ACID

Media in A10 Filter

Composition of Katalox Light®

Compounds	Typical value	Specifications
ZEOSORB (Naturally Mined)	85 %	> 85 %
Manganese dioxide	10 %	> 9.5 %
Hydrated Lime	5 %	< 5 %

Regeneration / Dosing*

for 1.0 mg/l of

	Fe ²⁺	Mn ²⁺	H ₂ S
H ₂ O ₂	0.9 mg/l	1.8 mg/l	4.5 mg/l
KMnO ₄ /Cl	1.0 mg/l	2.0 mg/l	5.0 mg/l

* Optional: Only if the water doesn't have sufficient ORP (Oxidation Reduction Potential) to oxidize the contaminants. OXYDES-P helps to keep the media surface clean and could be used during backwash.

Warning: Do NOT exchange pressure vessel media from one pressure vessel to another. Reason for inadequate sanitation during the exchange of media. Wet media will absorb nitrogen and oxygen in the air which will immediately kick off the bacteria growth. Biofouling on surface of media and other contaminants are present during the exchange. Media is designed only for iron manganese, hydrogen sulfide and other heavy metals. Media containing biofouling cannot be reused as it is harmful for drinking water. Replacing new media is highly suggested.

To know and learn more about this huge potential of **KATALOX LIGHT®** please contact us:



Physical Properties

Appearance	Granular black beads
Odor	none
Mesh size	US 14 x 30 SI 0.6 - 1.4 mm
Uniformity Coefficient	≤ 1.75
Bulk density	US 66 lb / ft ³ SI 1060 kg / m ³
Moisture Content	< 0.5 % as shipped
Filtration	< 3 micron
Loading Capacity	for Fe ²⁺ alone 3000 mg / l 85000 mg / ft ³ (aprx)
	for Mn ²⁺ alone 1500 mg / l 42500 mg / ft ³ (aprx)
	for H ₂ S alone 500 mg / l 14000 mg / ft ³ (aprx)

Recommended System Operating Conditions

Inlet water pH	5.8 - 10.5
Freeboard	40 %
Minimal Bed Depth	US 29.5 inches SI 75 cm
Optimal Bed Depth	US 47 inches SI 120 cm
Service flow	US 4 - 8 gpm / ft ² SI 10 - 20 m / h
Backwash velocity**	US 10 - 12 gpm / ft ² SI 25 - 30 m / h
Backwash time**	10 - 15 minutes
Rinse time**	2 - 3 minutes

** Note: Stated parameters could be more or less in some cases depending on inlet parameters.



Watch-Water® GmbH
Fahrlachstraße 14
68165 Mannheim, Germany
Tel. +49 621 87951-0
Fax +49 621 87951-99
info@watchwater.de



800-767-8731
www.aquascience.net

Fleck 5600 SXT Digital Water Softener System

Installation Manual



Fleck 5600 SXT Digital Water Softener System Installation Manual

Parts List

Note: **Softening salt sold separately.** Available at most home good stores. We suggest [2 to 3], 40 lb bags. We do sell salt on our website www.aquascience.net if you are having trouble finding it locally.



Fleck 5600 Digital Control Valve



3/4" or 1" Stainless Steel Bypass



Fiberglass Mineral Tank



Riser Tube and Cap



Resin
 (See Chart Below for amounts)



Brine Tank & Brine Tank Cover
 (12" + Tanks Only)



Salt Grid Base w/ (4) Legs* (*assembly required)



Float Tube



Float Tube Assembly



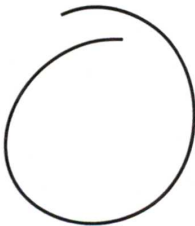
Brine Hose to Fleck Valve Connection Assembly



Upper Basket
 (12" + Tanks Only)



Funnel



Brine Hose
 (Colored Tube 3/8")



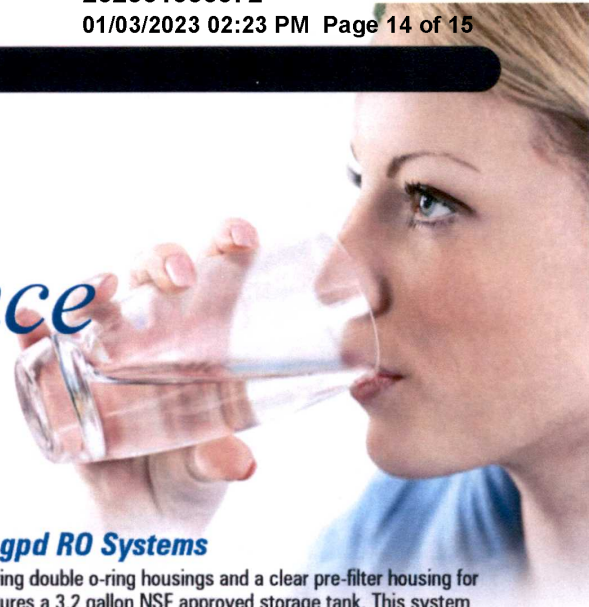
Backwash Line
 (Clear 1/2")



Gravel Sleeve
 (for 12x52 Tanks/Systems)

Grain Capacity	Tank Size	Filtration Media
32,000	9x48	1 cubic foot of Resin [1 Bag]
48,000	10x54	1.5 cubic feet of Resin [1 & 1/2 Bags]
64,000	12x52	2 cubic feet of Resin [2 Bags] & 1 sleeve of gravel (as base)

Taste the Difference



NRO4-50



NRO5-50

Nelsen Filtration Solutions 50 gpd RO Systems

4-Stage and 5-Stage 50 gpd RO Systems featuring double o-ring housings and a clear pre-filter housing for quick inspection of the sediment filter. Also features a 3.2 gallon NSF approved storage tank. This system utilizes 1/4" compression fittings, 1/4" tubing, and a chrome long-reach, lead-free faucet. Also includes filter wrench.

NRO4-50	4-Stage, 50 gpd RO	\$385.00
NRO5-50	5-Stage, 50 gpd RO	\$392.00
NRO-LIT	Nelsen Filtration RO Literature	\$1.00
NF-RO-WRENCH	NRO Sump Wrench	\$6.00

Optional Faucet Package For Reverse Osmosis Systems

Faucet package include air gap faucet, drain saddle, feed valve, fittings and tubing needed to install the Aqua Classic and Aqua Elite RO Systems.

AIR-GAP FAUCET PACKAGE

LR-AG	Faucet, Long Reach	Add	\$9.70
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NRO Refrigerator Kit

Includes JG02UT (1/4" Tee) to splice into faucet tubing with a JG0302RU (Reducing Union) with 50 feet of 3/8" tubing. Also includes JG03UNSF (Faucet Connector) for the connection at the Refrigerator.

RO-FRIDGE-KIT	Refrigerator Kit for Nelsen NRO	\$50.25
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NRO Filter Replacement Packs

Includes all the filters for a complete replacement. Set includes - (1) NP5 5-Micron Sediment, (1) 32-250-125-975 Matrikx Carbon Block, (1) NINCF-10-QC In-Line Carbon w/Quick Connect fittings. NRO5 includes (2) of the Matrikx Carbon Block filters

NRO4-FILTERPACK	Set of Replacement Filters for NRO4	\$24.30
NRO5-FILTERPACK	Set of Replacement Filters for NRO5	\$35.25

Replacement RO Tank Assemblies

Reverse Osmosis tank assemblies are ready for a quick replacement.

NSF-3.2-SC	Blue RO Tank Kit	\$124.00
FRO-122P-SC	White RO Tank Kit	\$142.00
NSF-6.5-SC	White 6.5 gallon RO Tank Kit	\$234.00

Extended Contact Carbon Adsorption Filter

This "In-Line" style carbon adsorption filter is an excellent replacement for the ECF Module on the Aqua Classic or Aqua Elite Reverse Osmosis Systems.

ECF-10	2" x 10"	\$15.40
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Reverse Osmosis



NRO FILTER PACK



NSF-3.2-SC

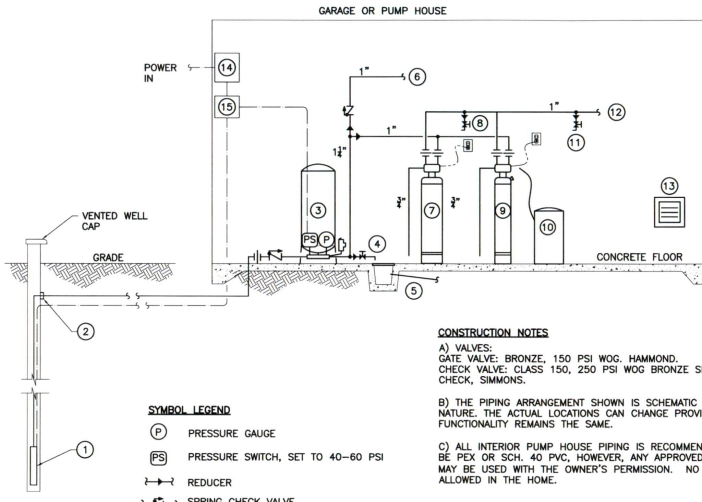
FRO-122P



ECF-10

EQUIPMENT LIST

- 1 EXISTING WELL, DOE ID# BPA-119. ASSUMED TO PROVIDE 10+ GPM AT 40-60 PSI.
- 2 EXISTING FITLESS ADAPTER.
- 3 CONTRACTOR TO CHECK EXISTING PRESSURE TANK, REPLACE ONLY IF NECESSARY. IF REPLACING TANK, USE 82 GAL. FLEXCON FLEX-LITE MODEL FL-28
- 4 RAW WATER SAMPLE TAP AND SYSTEM DRAIN.
- 5 RECOMMENDED DRAIN IF NONE EXISTS. 12"x12" CATCH BASIN, NDS #1200 WITH GRATED LID, #1211 AND UNIVERSAL ADAPTER PLUG #1206. SLOPE CONCRETE FLOOR TO DRAIN. USE 3" OR 4" DRAIN PIPE TO SWALE, DITCH, OR DRAIN FIELD. IT IS NOT RECOMMENDED TO PLACE REGENERATION WATER INTO A SEPTIC DRAIN FIELD WITHOUT APPROVAL FROM A LICENSED SEPTIC DESIGNER.
- 6 OPTIONAL UNTREATED WATER FOR IRRIGATION.
- 7 USE EXISTING NELSON A-10 IRON FILTER. 1054 WITH KATALOX MANGANESE DIOXIDE COATED MEDIA AND STANDARD GRAVEL UNDER BEDDING. FILTER HEAD TO BE THE TYPE THAT DRAWS AIR DURING BACK WASHING FOR SULFUR SMELL REMOVAL. CONTRACTOR TO SET TO BACKWASH EVERY 7 DAYS OR 3,000 GALLONS (ADJUSTABLE).
- 8 PRE-TREATED WATER SAMPLE TAP.
- 9 USE EXISTING AQUA SCIENCE 1.5 CF WATER SOFTENER, MODEL FLECK 2510 SXT 1054. SET TO BACKWASH EVERY 2,500 GALLONS OR 7 DAYS WHICHEVER OCCURS FIRST.
- 10 WATER SOFTENER BRINE TANK.
- 11 PRE-TREATED WATER SAMPLE TAP.
- 12 PRE-TREATED WATER TO RESIDENCE, USE EXISTING RO SYSTEM FOR ARSENIC TREATMENT. NELSON NRO5-50, 50 GPD.
- 13 RECOMMENDED OPTION FOR FREEZE PROTECTION (ONLY IF APPLICABLE): WALL MOUNTED, FAN POWERED 1.0 KW ELECTRIC HEATER WITH THERMOSTAT, MOUNT ON HARDI BACKER BOARD FOR IMPROVED FIRE SAFETY. INSTALL KING PFC-WAIT OR EQUAL.
- 14 ELECTRICAL PANEL, BY ELECTRICIAN.
- 15 EXISTING WELL PUMP CONTROL PANEL, BY ELECTRICIAN.



CONSTRUCTION NOTES

- A) VALVES:
GATE VALVE: BRONZE, 150 PSI WOG, HAMMOND.
CHECK VALVE: CLASS 150, 250 PSI WOG BRONZE SPRING CHECK, SIMMONS.
- B) THE PIPING ARRANGEMENT SHOWN IS SCHEMATIC IN NATURE. THE ACTUAL LOCATIONS CAN CHANGE PROVIDED THE FUNCTIONALITY REMAINS THE SAME.
- C) ALL INTERIOR PUMP HOUSE PIPING IS RECOMMENDED TO BE PEX OR SCH. 40 PVC, HOWEVER, ANY APPROVED PIPING MAY BE USED WITH THE OWNER'S PERMISSION. NO PVC ALLOWED IN THE HOME.

SYMBOL LEGEND

- (P) PRESSURE GAUGE
- (PS) PRESSURE SWITCH, SET TO 40-60 PSI
- ↔↔↔ REDUCER
- ↔↔↔ SPRING CHECK VALVE
- ↔↔↔ UNION
- ↔↔↔ PIPE TEE
- ↔↔↔ HOSE BIBB, SYSTEM DRAIN, AND RAW WATER SAMPLE TAP
- ↔↔↔ 3" OR LARGER ASME PRESSURE RELIEF, FACTORY SET TO 100 PSI.

<p>ARRISON ENGINEERING 1997 PARK LANE, BURLINGTON, WA 98233 PHONE (360) 707-5656 FAX (360) 707-5858</p>		HENRY DYKSTRA		DATE: 8/25/22	FILENAME: AS-TMT-PLAN-DYKSTRA.
		11854 TEN ACRES LANE MOUNT VERNON, WA ARSENIC TREATMENT		BY: CG	JOB NUMBER: 22039
REVISION		PUMP HOUSE SCHEMATIC		SHEET	1 OF 1

