



DIVISION OF INDUSTRY SERVICES  
 PO BOX 7162  
 MADISON WI 53707-7162  
 Contact Through Relay  
[www.dps.wi.gov/sb/](http://www.dps.wi.gov/sb/)  
[www.wisconsin.gov](http://www.wisconsin.gov)

Scott Walker, Governor  
 Dave Ross, Secretary

May 15, 2014

CUST ID No. 1180641

ATTN: Plumbing Inspector

JILL MCDONALD  
 HELLENBRAND INC  
 404 MORAVIAN VALLEY RD  
 WAUNAKEE WI 53597

MUNICIPAL CLERK  
 TOWN OF PINE RIVER  
 W2857 COUNTY ROAD P  
 MERRILL WI 54452

**CONDITIONAL APPROVAL**  
**PLAN APPROVAL EXPIRES: 05/15/2016**

Identification Numbers
<b>Transaction ID No. 2382389</b>
<b>Site ID No. 168214</b>
Please refer to both identification numbers, above, in all correspondence with the agency.

**SITE:**

Pine River Elementary School  
 W4165 Hwy 64  
 Town of Pine River, 54452  
 Lincoln County

**FOR:**

Facility: 169943 PINE RIVER ELEMENTARY SCHOOL  
 W4165 HWY 64  
 MERRILL 54452  
 Plan Type: Addition-Alteration; 1 Interior Fixture(s)

Object Type: Commercial Water Treatment Device Regulated Object ID No.: 1475533

The submittal described above has been reviewed for conformance with applicable Wisconsin Administrative Codes and Wisconsin Statutes. The submittal has been **CONDITIONALLY APPROVED**. The owner, as defined in chapter 101.01(10), Wisconsin Statutes, is responsible for compliance with all code requirements.

**No person may engage in or work at plumbing in the state unless licensed to do so by the Department per s.145.06, stats.**

The following conditions shall be met during construction or installation and prior to occupancy or use:

- The chemical injection pump has undergone sufficient testing to document the device's ability to properly inject a chemical into a water supply system as specified in this approval letter:

<http://dps.wi.gov/sb/docs/sb-ppalopp/20120155.pdf>

- For buildings not served by a municipal water supply, Department of Natural Resources (DNR) written approval may be required prior to installation of this product to inject a chemical into a water supply system. For more information contact the DNR Private Water Systems Section, P.O. Box 7921, Madison, WI 53707, telephone (608) 266-3415.

- The sodium carbonate (aka soda ash) injected into this water supply system shall conform to NSF Standard 60 and shall not exceed its listed maximum use concentration. The maximum use concentration of "Neutra 7", manufactured by Pro Products LLC, is 100 mg/l:

<http://info.nsf.org/Certified/PwsChemicals/Listings.asp?CompanyName=pro+products&TradeName=&ChemicalName=&ProductFunction=&PlantState=&PlantCountry=&PlantRegion=>

Cross connection control is optional.

- Only a locking bypass shall be installed on the chemical injection system.
- All water distribution piping shall be marked as required by SPS Table 82.40-1a.
- The finished installation must undergo a final inspection prior to the treated water being used for consumptive purposes. The Plumbing Consultant having jurisdiction in this area is Bruce Meiners. Mr. Meiners can be reached via the following:

Phone: 608-399-4156

E-mail: bruce.meiners@wi.gov

If the treated water is used for consumptive purposes prior to passing the final inspection, then this approval may be rendered null and void and the devices ordered removed. The Plumbing Consultant shall provide a written indication of the results of the final inspection to the system owner.

When the final inspection has been passed, the Plumbing Consultant will notify the Wisconsin Department of Natural Resources (WDNR) Field Staff having authority over the well. The WDNR will then monitor the quality of the treated water to its satisfaction. Monitoring advice, which the WDNR is free to accept or reject, is provided elsewhere in this letter. The WDNR Field Staff having authority over this well is David Carriveau. Mr. Carriveau can be contacted via the following:

Phone: 715-365-8925

E-mail: david.carriveau@wisconsin.gov

- The suggested monitoring interval for this installation is monthly until a stable passivating layer has formed on the internal pipe surfaces which can be inferred from copper and lead concentrations dropping off to below detectable limits. The following tests should be performed:
  1. dissolved lead;
  2. dissolved copper;
  3. pH
  4. alkalinity

The water quality samples should be collected at a time of day when the chemical injection system is as close to peak demand as possible. Untreated and treated water samples should be collected together in sets, the untreated samples taken upstream of all water treatment devices and the treated samples from the most remote outlet. The sampling should be "first draw" as is normally required under the EPA's Lead and Copper Rule.

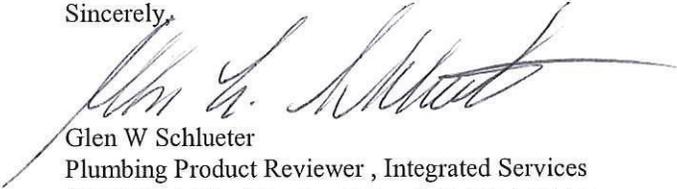
- Any wall hydrant that is not served by the chemical treatment system shall have one, or more, of the following:
  - a. the handles of the hydrant shall be removed;
  - b. the hydrant shall be capped and sealed using solder; or
  - c. signage shall be posted immediately above the hydrant indicating the water is unfit for human consumption

A full size copy of the approved plans, specifications and this letter shall be on-site during construction and open to inspection by authorized representatives of the Department, which may include local inspectors. If plan index sheets were submitted in lieu of additional full plan sets, a copy of this approval letter and index sheet shall be attached to plans that correspond with the copy on file with the Department. If these plans were submitted in an electronic form, the designer is responsible to download, print, and bind the full size set of plans along with our approval letter. A department electronic stamp and signature shall be on the plans which are used at the job site for construction. All permits required by the state or the local municipality shall be obtained prior to commencement of construction/installation/operation.

In granting this approval the Division of Industry Services reserves the right to require changes or additions should conditions arise making them necessary for code compliance. As per state stats 101.12(2), nothing in this review shall relieve the designer of the responsibility for designing a safe building, structure, or component.

Inquiries concerning this correspondence may be made to me at the telephone number listed below, or at the address on this letterhead.

Sincerely,



Glen W Schlueter  
Plumbing Product Reviewer , Integrated Services  
(608)267-1401 , Monday-friday 7:15AM-4:00PM  
glen.schlueter@wisconsin.gov

Fee Required \$  
  
This Amount Will Be Invoiced.  
When You Receive That Invoice,  
Please Include a Copy With Your  
Payment Submittal.  
WiSMART code: 7657

cc: Bruce E Meiners, Plumbing Consultant, (608) 399-4156 , Mon - Fri 8:00 am - 4:30 pm  
David Zettler  
Bryan Plautz, Pine River Elementary

**Note: Effective January 1, 2012**, all codes under the jurisdiction of the Division of Industry Services (formerly Safety & Buildings) will be modified. Code references with prefixes starting with "Comm" have been replaced with "SPS" to recognize the relocation of the Division of Industry Services from the former Department of Commerce to the Department of Safety & Professional Services. Additionally, all IS (formerly S&B) codes have been renumbered and addressed in a "300" series. For future reference, the Wisconsin Commercial Building Code will be addressed by SPS Chapters 360-366.

**Conditionally  
APPROVED**  
DIVISION OF SAFETY AND BUILDINGS  
  
**SEE CORRESPONDENCE**

INFORMATION REQUIRED TO SIZE WATER SERVICE AND WATER DISTRIBUTION:		
1-	Demand of building in water supply fixture units (WSFU);	(WSFU) <u>75.5</u>
1.a.	Demand of building in WSFU converted to Gallons Per Minute: (Table SPS 382.40-3)	(GPM) <u>37</u>
2-	Elevation difference from main or external pressure tank to building control valve; (feet)	<u>-</u>
3-	Size of water meter (when required) 5/8" <u>    </u> 3/4" <u>    </u> 1" <u>    </u> other <u>1 1/2</u>	<u>    </u>
4-	Developed length from main or external pressure tank to building control valve; (feet)	<u>-</u>
5-	Low pressure at main in street or external pressure tank. (psi)	<u>-</u>

**CALCULATE WATER SERVICE PRESSURE LOSS**

(unnecessary for internal pressure tanks)

6-	Low pressure at main in street or external pressure tank. (value of # 5 above)	<u>    </u>
7-	Determine pressure loss due to friction in <u>    </u> inch diameter water service. Water service piping material is <u>    </u> Pressure loss per 100 ft. = <u>    </u> X <u>    </u> (decimal equivalent of service length, i.e. 65 ft = 0.65)	<u>    </u>
		<b>Subtotal</b>
8-	Determine pressure loss or gain due to elevation, (multiply the value of # 2 above by .434)	<u>    </u>
		<b>Subtotal</b>
9-	Available pressure after the bldg. control valve.	<u>    </u>
		<b>Subtotal</b>

**CALCULATE THE PRESSURE AVAILABLE FOR UNIFORM LOSS (VALUE OF "A")** PRESSURE TANK

B.	Available pressure after the bldg. control valve. (from "9" above)	Value of "B" <u>40</u>
C.	Pressure loss of water meter (when meter is required)	<b>Subtract value of "C"</b> <u>2.5</u>
		<b>Subtotal</b> <u>37.5</u>
D.	Pressure at controlling fixture*. <u>PRESSURE ASSISTED</u> (Controlling fixture is: <u>WATER CLOSET</u> ). (*Controlling fixture is the fixture with the most demanding pressure to operate properly which includes the following when determining fixture performance; loss due to instantaneous water heaters, water treatment devices, and backflow preventers which serve the controlling fixture.)	<b>Subtract value of "D"</b> <u>20</u>
		<b>Subtotal</b> <u>17.5</u>
E.	Difference in elevation between building control valve and the <u>controlling fixture in feet</u> ; <u>3</u> X .434 psi/ft.	<b>Subtract value of "E"</b> <u>1.3</u>
		<b>Subtotal</b> <u>16.2</u>

Water Calc Worksheet

PINE RIVER SCHOOL

Name of Project

F. Pressure loss due to water treatment devices and backflow preventers which serve the controlling fixture. (Water softeners, filters, etc.)

(Pressure loss due to; MIXING TANK).

F1. WSFU Downstream of Water Treatment Device; 75.5

F2. Convert wsfu to GPM using **Table 382.40-3**: 37

or  
F3. Convert wsfu to GPM using **Table 382.40-3e\*** -  
(For individual dwellings only)

F4. Refer to manuf. graph to obtain pressure loss: 5.9

(If no water treatment device enter "0")

PER JILL McDONALD - HELLENBRAND

Subtotal value of F4 5.9

Subtotal 10.3

G. Pressure loss through tankless water heaters, combination boiler / hot water heaters, heat exchangers which serve the controlling fixture;

Hot water WSFU's; \_\_\_\_\_ convert to; GPM = \_\_\_\_\_ (Table 382.40-3)  
Refer to manufacturer's pressure loss graph to determine loss at the required GPM;

\_\_\_\_\_ pressure loss. Subtract value of "G" -

Subtotal 10.3

H. Developed length from building control valve to controlling fixture in feet 70 X 1.5

Divide by value "H" 105

Subtotal .098

Multiply by: 100

A. Pressure available for uniform loss

"A" = 9.8

Water distribution piping is: TYPE K AND L COPPER

\*Note: The "A" value obtained by using Table 382.40-3e can only be used for an individual dwelling when sizing the water treatment device (water softeners, etc) and no hose bibbs, hydrants, or high flow fixtures are being served by the water treatment device.

Note: High flow fixtures are defined as fixtures that exceed a flow rate of 4 gpm @ 80 psi and water velocity not exceeding 8 ft. per second.

**Conditionally APPROVED**

DIVISION OF SAFETY AND BUILDINGS

SEE CORRESPONDENCE



## RAISING pH WITH A NEUTRALIZING COMPOUND

### Instructions for Solution Mixing

Neutra-7 Compound and Soda Ash are used to increase the pH of a water supply and neutralize acidic water conditions. Neutra-7 is used for most residential applications. If correcting pH is required prior to an Iron Curtain, Soda Ash is recommended. Every application will need to be properly adjusted by means of testing the pH of the water supply before and after the neutralizing compound has been added. These instructions are designed for a residential application where the typical well pump produces 10-12 gallons per minute of well water.

We recommend using a 40-gallon per day chemical feed pump with a pump control module (PCM) along with a 35-gallon chemical solution tank and a 40-gallon retention/mixing tank. Based on average domestic water use for a family of four, 30 gallons of solution will last approximately 48 days using the above settings. Due to varying water conditions and usage patterns, in some applications, a higher gallon per day output feed pump is needed to effectively raise the pH to the desired level.

**For the first batch of solution to be mixed, we recommend mixing a small batch approximately 5 gallons in case the concentration is too strong for the application and needs to be diluted.** If dilution is needed, make sure to keep track of how many gallons of water is used to achieve the desired dilution and pH correction level. **We suggest a starting mixture of 2.5 lbs. of Neutralizing Compound with 5 gallons of water.** Fill the plastic measuring cup (p/n 100158) to equal 5 cups, this equals approximately 2.5 lbs. of Neutralizing Compound. The easiest way to mix Neutra-7 Compound is with **warm water** in a 5-gallon pail as follows:

- Step 1) Mix 2.5 lbs. of Neutralizing Compound with 3 gallons of warm soft water in a 5 gallon pail and stir for 2 minutes. Pour this solution into the chemical solution tank. Do not be concerned if all the Neutralizing Compound has not dissolved at this point.
- Step 2) Now add 2 gallons of warm soft water to the pail to dissolve any residual Neutra-7 Compound left in the bottom of the pail. Add this to the solution tank. Mix thoroughly to dissolve all Neutralizing Compound.
- Step 3) With the chemical feed pump installed and wired to run when the well pump runs (or when water to be treated is used if using an electronic metering device to operate feed pump), turn on two or three cold water faucets and allow water to run at least **15 minutes.**
- Step 4) Test the treated water with a pH test kit. **The typical desired pH level is between 7.0 and 8.0 pH units,** however some applications require a higher pH level. If the pH is below the desired pH level, increase the pump setting; if the pH is above the desired pH level, decrease PCM run time.

Once the proper dilution and pH correction is achieved, write the recipe of how much Neutra-7 Compound or Soda Ash is used with how much water on the side of the solution tank for replenishing the solution when needed in the future (Example: Recipe for mixing solution: Five cups of Neutra-7 Compound with 5 gallons of water; 30 cups of Neutra-7 Compound with 30 gallons of water).

Step 5) Fill the solution tank to the 30-gallon mark using the same formula as used during start-up.

\*If water supply contains 0.3 mg/L or more iron, use Soda Ash instead of Neutra-7 Compound and follow directions the same as if using Neutra-7 Compound. Also, in applications where manganese is to be reduced with an oxidizing filter, treated water pH should be between 8.5 and 9.0 pH units.

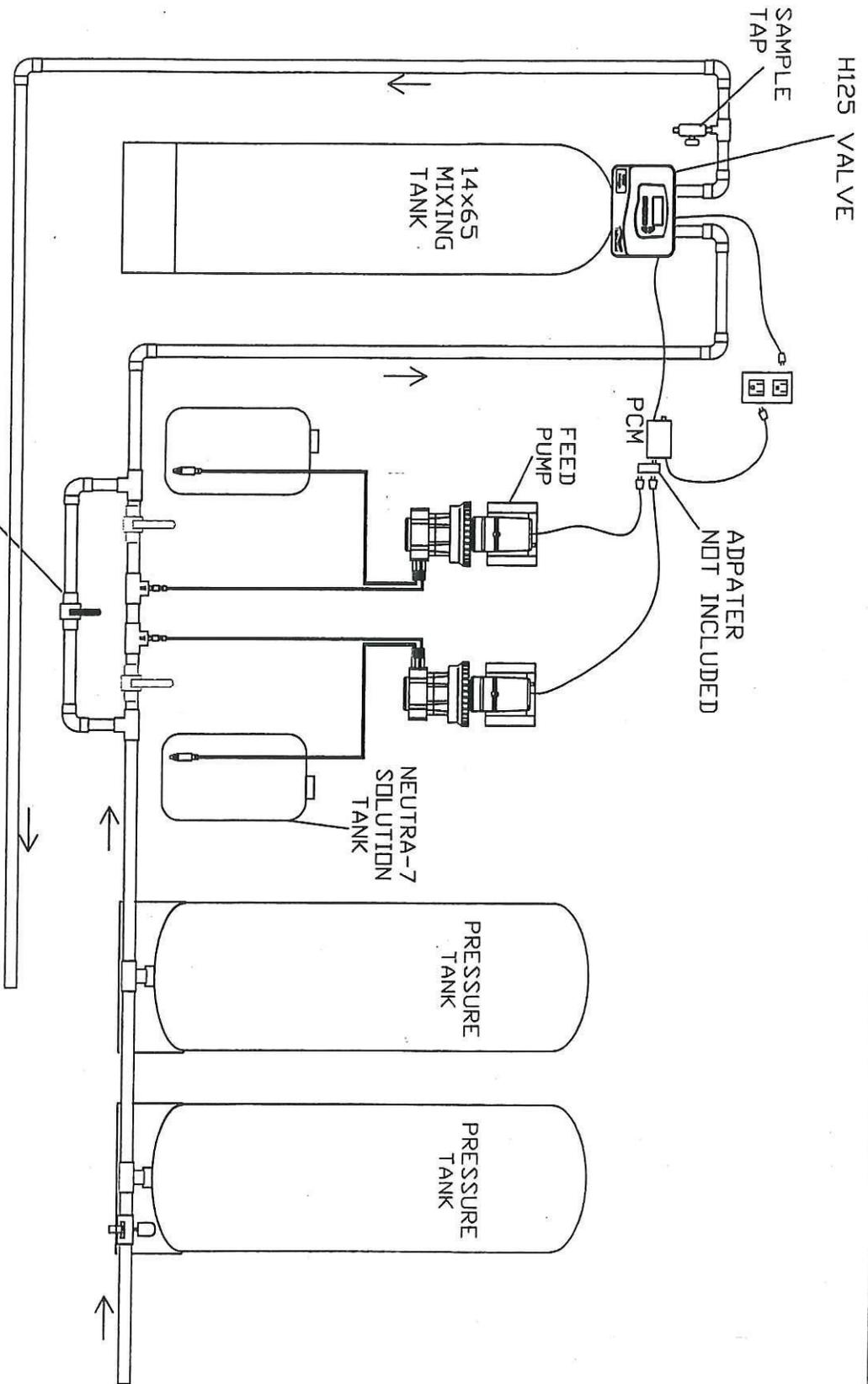
If the recommended starting recipe on Page 1 doesn't need to be modified to achieve desired pH level, the following chart will simplify the mixing process:

	Per 5 Gallons	Per 10 Gallons	Per 15 Gallons	Per 20 Gallons	Per 25 Gallons	Per 30 Gallons
Lbs. Neutra-7 needed	2.5	5.0	7.5	10.0	12.5	15.0
Number of cups needed (2-cup measuring cup included 2 cups/lb.)	5	10	15	20	25	30

The following chart shows the estimations of how long solution will last. This is based on a family of 4 with average water usage, operating at the recommended starting settings:

Gallons of Solution Mixed	5	10	15	20	25	30
Estimated Days Solution will last	10	20	30	40	50	60

Neutra-7 is composed of U.S.P. and food grade materials.



BYPASS NEEDED FOR RECOMMENDED INJECTION POINT SERVICE

*Conditionally*

**APPROVED**

DIVISION OF SAFETY AND HYDRAULICS

SEE CORRESPONDENCE

NEUTRA-7 FEED PUMP SYSTEM	
DWG #	73-N23
dwg by:	J.WAACK
Approved by	J. McDONALD Engineer
Waunakee, WI 53597 (608)849-3050	

Pressure drop-Flow Rate Testing on Empty Clack 80 gallon contact tank. # 10293  
Date code 6/18/2008 -716917  
Tested at 35-60 psi

Flow (gpm)	Pressure drop, corrected to 60 degrees F (delta psi)	
2.05	0.1	
4.07	0.3	
5.97	0.5	
8.04	0.8	
9.96	1.2	
12.05	1.7	
13.97	2.0	
16.04	2.4	
17.94	2.9	
20.08	3.02	Can't maintain 35 psi inlet pressure, increased to 50 psi
22.10	3.68	Can't maintain 50 psi inlet pressure, increase to 60 psi
24.10	4.04	Inlet pressure 60 psi
26.08	4.87	Inlet pressure 60 psi
28.05	5.22	Inlet pressure 60 psi
30.20	5.63	Inlet pressure 60 psi
35.16	5.82	Inlet pressure 60 psi
40.61	6.45	Inlet pressure 60 psi