

Memorandum

Date: April 10, 2015

To: Ms. Camron Harry, P.E.; Environmental Engineer
Division of Drinking Water; Department of Environmental Quality
195 North 1950 West
Salt Lake City, UT 84114

Re: **Cobble Creek Camp (System # 29089, File # 9971)**

This memo is written in response to comments provided by Camron Harry from the Division of Drinking Water (DDW), regarding the Cobble Creek RCMP Water System Improvements project in Weber County, UT.

Forsgren Associates responses are shown below each from DDW. Please see also the attached construction drawings incorporating noted addendum items.

R309-550 Distribution

1. Might want to think about additional isolation valves downstream of the PRV station to allow for system isolation during repairs/maintenance

Response: Modifications to include isolation valves within the camp will be made during construction.

2. R309-550-6(1) & (3) ANSI/NSF Standard 61 (NSF logo stamp) added to the list in Specification 33 02 05 Section 2.5

Response: The ANSI/NSF Standard 61 pipe markings shall be shown on all pipes. This notation will be added to the specification and clarified with the selected contractor.

3. R309-550-6(7) Drain to daylight not specified for PRV vault

Response: A floor drain with pipe to daylight will be installed in the PRV vault.

4. R309-550-8(2) the 6-inches of bedding below the bottom of water line is not specified in Detail #3, Sheet C-02

Response: Detail 3/C-02 has the dimension and notation place incorrectly. The detail should callout 6" of bedding below the pipe not above it.

5. R309-550-8(8) Looks like a surface water crossing on Sheet C-103, what special provisions are being done for crossings

Response: Piping within the camp will be re-routed to eliminate this surface water crossing.

6. R309-550-8(9) Specifications/drawings do not specify open ends of pipeline during construction be covered and effectively sealed at the end of the day's work.

Response: Specification 33 02 01-3.1.L – Piping General Requirements states:

“At the close of each workday the end of the pipeline shall be tightly sealed with a cap or plug. This plug shall be kept in place until laying of pipe is resumed.”

7. R309-550-9 Are there any connections between the irrigation and potable system

Response: There are no connections between the irrigation and potable system.

R309-515 Source Development

1. R309-515-7(7)(a) and (b) Does not look like the spring collection box has a 10-foot cover on the downhill side (required 15 feet in all directions). However, in place of this cover there is a proposed liner but R309-515-7(7)(b)(ii), (iv) and (v) are not specified and the liner does not extend the 15 feet on the downhill side

Response: Annotation will be placed on Sheet C-102 to include:

- *All seams in the liner shall be folded or welded to prevent leakage*
- *The liner shall be installed in a manner as to assure its integrity. No stones, 2-inches or larger or sharp edged, shall be located within 2-inches of the liner.*
- *A minimum of 2-feet of relatively impervious soil cover shall be placed over the impermeable liner.*

We would ask that a variance be given to extending the liner 15 feet on the downhill side of the spring.

The liner is anchored to concrete cut off walls on the downhill side of the spring collection area. The cut off walls extend down to the natural impermeable layer at the bottom of the spring formation, and so a liner on the downhill side of the spring is not needed. This is our usual method of liner installation.

2. R309-515-7(7)(e) The fence should extend 50 feet above and 15 feet below – drawings do not specify

Response: The fence will extend a minimum of 50 feet in all directions above the collection pipes and 15 feet below the outlet box. Annotation will be placed on Sheet C-101 noting this. Final fence location will be field coordinated with the selected contractor.

3. R309-515-7(f) and (g) removal of deep rooted vegetation and diversion channel not specified in plans

Response: A callout is shown on Sheet C-101 from Addendum 1 stating:

“Contractor shall remove existing pine tree (and any other trees in immediate area of spring) including roots and stump”

R309-545 Tank & Spring Boxes

1. Sheet C-02 Detail #2 indicates a 2-inch overflow drain line but Detail #5 indicates a 4-inch tank drain line; are their two lines (2-inch drain, 4-inch overflow) or just one line? If just one line, what size is it?

Response: There are both 2-inch and 4-inch drain lines on the project. In order to ensure that the overflow detail is usable for all cases, detail 2/C-02 was modified in Addendum 1 to say “HDPE pipe, size as shown on plans”.

2. R309-545-13 The manufacturer's drawing on Sheet C-02 indicates an overflow option (B) and Sheet C-101 calls out tank drain to spring. Sheet C-02 Detail 2 calls out an overflow line (not a drain line) but the plan view of the tank does not show any overflow piping connecting to or following in parallel to the tank drain line. Make the overflow obvious in the Plan & Section view of the tanks.

Response: The overflow and drain piping on detail 2/C-02 was modified in Addendum 1 to more clearly identify each.

3. R309-545-14 No tank hatch detail, Specification 05 53 00 addresses hatches but not the state requirements (height, shoebox lid, or locking device)

Response: The tank hatch typically provided by Xerxes meets the requirements of this rule. Refer to the attached detail from the manufacturer.

4. R309-515-15(1) What's going on with E-201, to different tank air vent lines? One is not down turned (or detailed) to 2-inches below. Same view on Sheet C-02 only shows one vent with turn down. Error in E-201 drawing? If you had a specific detail and called it out for the tank vents it would clarify what should be installed.

Response: E-201 does not show the tank correctly as this sheet is only for electrical components at the tank, please refer to the tank detail on sheet C-02.

5. R309-545-15(4) #14 mesh or finer non-corrodible screen not specified

Response: A callout has been placed on the vent outlet on detail 5/C-02 stating:

“4” Gooseneck assembly w/ bolt on or screw on stainless steel #14 mesh bug screen, 1.5 times the diameter of pipe”

6. R309-545-15(5) size of the air vents specified where?

Response: See response on item #5.

7. R309-545-19 Could not find tank disinfection specifications (initial disinfection)

Response: The following note will be added to specification 06 65 00.

“Contractor shall disinfect tank in accordance with AWWA C652-11. Cleaning water shall be properly disposed of in accordance with state and local jurisdiction rules.”

R309-520 Disinfection

1. Please explain the chlorination process in detail, the drawings are not clear about how the system operates and how it complies with the requirements outlined below.

Response: Concentrated sodium hypochlorite liquid, contained in 5 gallon drums, is pumped by a Grundfos DDA chemical feed pump to the injection point inside the metering vault upstream of the storage tanks. Level switches are located inside the storage tanks to turn the dosing pump on and off and dosing is paced by a flowmeter. The chemical feed system and sodium hypochlorite drums are housed inside a 6'x6' precast concrete building, venting is provide on the building. See calculations below.

2. R309-520-7(1)(c) Chlorination capacity

Response: Design Criteria:

<i>Peak Instantaneous Demand:</i>	<i>47 gpm</i>
<i>Minimum dosage requirement:</i>	<i>2 mg/l</i>
<i>Chlorine Daily Usage:</i>	<i>1.1 lbs/day</i>
<i>Chemical Concentration:</i>	<i>5%</i>
<i>Chemical Daily Usage:</i>	<i>22.6 lbs/day</i>
	<i>2.26 gpd (0.10 gph)</i>

Grundfos DDA 7.5-16 - 0.0006 to 2 gph is the selected dosing pump. This is the smallest pump available for the church's preferred pump.

3. R309-520-7(1)(e) Is there a screen and a way to flush the screen as required

Response: The injector piping is the same size as the chemical piping, so we normally do not put a screen on the chemical piping.

4. R309-520-7(1)(f) Contact Time calculations need to be provided

Response: Currently this water system is not under the influence of surface water, but the camp has had historical issues with positive bacteria tests. In order to address the dated nature of the camp's water system and source, the spring is being completely rehabilitated and an entire new water distribution system put into place. We believe that installation of these two components will provide the needed protection against bacteria contamination. However, in order to deliver additional protection, a disinfection system is provided.

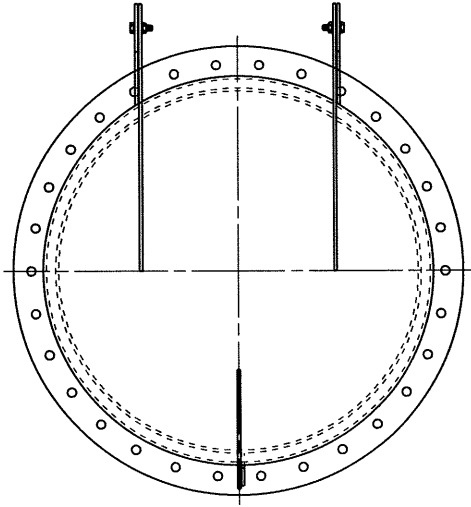
The peak instantaneous demand used for pressure calculations is 47 gpm, which is based on the IPC fixture count calculations. However, we have used 20 gpm which we feel is a more realistic peak flow to use for the CT calculations. Based on the system configuration and flow rate, nearly 5-log removal is achieved. CT calculations are attached, using the Utah Disinfection Profile Calculator.

5. R309-520-7(1)(j) Residual testing equipment

Response: A CL17 chlorine analyzer will be located inside the new restroom. See sheet C-103 for callout from Addendum 1.

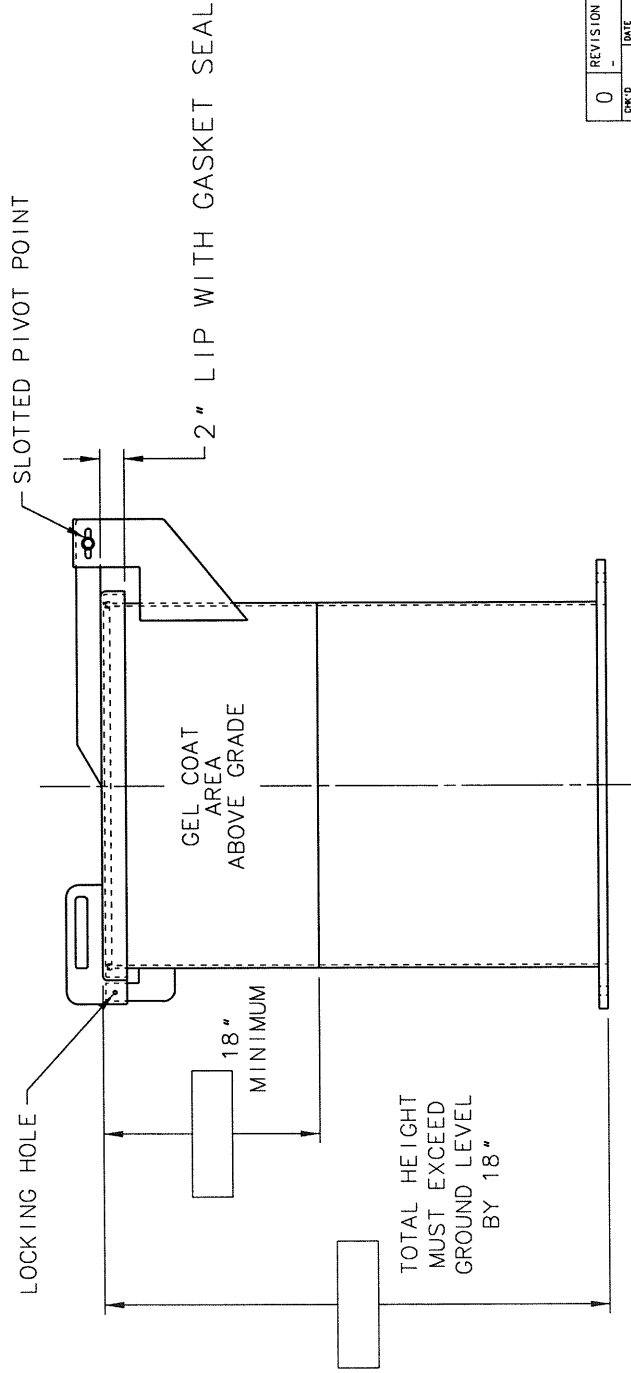
6. R309-520-7(3) Hypochlorite Systems: Sodium or calcium hypochlorite? Where is the hypochlorite being stored (tablets?)? Concentration of the hypochlorite?

Response: The system will use sodium hypochlorite stored in 5 gallon drums. The concentration will be 5-12%.



GEL COAT

- WHITE
- TAN
- GREEN



REVISION DESCRIPTION				BY DATE	
CHK'D	DATE	STD'S	DATE	APPR'D	DATE
0					

XERXES [®]		CORPORATION	
DRN	DATE	DR. SIZE	DR. NUMBER
DAG	9-15-09	C	635-526
CHK'D	DATE	30" DIA MANWAY EXTENSION	
STD'S	DATE	HINGED & LOCKABLE TOP	
APPR'D	DATE	STATE OF IDAHO, STANDARD	
SCALE:	1/8	NEXT ASS'Y: -	
			SHT 1 OF 1

System Name Cobble Creek RCMP

System Number 0

Treatment Plant Name 0

Sequence Description:

Select Contactor Type: Clear Well

Check box if basin is circular.

Vessel Width (ft): 6

Vessel Depth (ft): 6

Vessel Length (ft): 37.15

Applied Baffling Factor: 0.2

State Assigned Baffling Factor: 0.2

Select Disinfectant: Free Chlorine

Profile for: January-00

Date	Flow Rate (gpm)	Water Depth (ft)	Volumes		Contact Time Calculated (min)	Tracer (min)	Disinfectant Residual (mg/L)	pH	Temperature (°C)	CT		Inactivation Provided CT Ratio	Logs
			Total (gal)	Effective (gal)						Allowed (gal)	Provided (mg*min/L)		
1	20	6.0	10004	10004	100.0	100.0	2.00	7.0	10	200.08	124.07	1.61	4.84
2			10004	0	0.0	0.0				0.00	0.00	0.00	0.00
3			10004	0	0.0	0.0				0.00	0.00	0.00	0.00
4			10004	0	0.0	0.0				0.00	0.00	0.00	0.00
5			10004	0	0.0	0.0				0.00	0.00	0.00	0.00
6			10004	0	0.0	0.0				0.00	0.00	0.00	0.00
7			10004	0	0.0	0.0				0.00	0.00	0.00	0.00
8			10004	0	0.0	0.0				0.00	0.00	0.00	0.00
9			10004	0	0.0	0.0				0.00	0.00	0.00	0.00
10			10004	0	0.0	0.0				0.00	0.00	0.00	0.00
11			10004	0	0.0	0.0				0.00	0.00	0.00	0.00
12			10004	0	0.0	0.0				0.00	0.00	0.00	0.00
13			10004	0	0.0	0.0				0.00	0.00	0.00	0.00
14			10004	0	0.0	0.0				0.00	0.00	0.00	0.00
15			10004	0	0.0	0.0				0.00	0.00	0.00	0.00
16			10004	0	0.0	0.0				0.00	0.00	0.00	0.00
17			10004	0	0.0	0.0				0.00	0.00	0.00	0.00
18			10004	0	0.0	0.0				0.00	0.00	0.00	0.00
19			10004	0	0.0	0.0				0.00	0.00	0.00	0.00
20			10004	0	0.0	0.0				0.00	0.00	0.00	0.00
21			10004	0	0.0	0.0				0.00	0.00	0.00	0.00
22			10004	0	0.0	0.0				0.00	0.00	0.00	0.00
23			10004	0	0.0	0.0				0.00	0.00	0.00	0.00
24			10004	0	0.0	0.0				0.00	0.00	0.00	0.00
25			10004	0	0.0	0.0				0.00	0.00	0.00	0.00
26			10004	0	0.0	0.0				0.00	0.00	0.00	0.00
27			10004	0	0.0	0.0				0.00	0.00	0.00	0.00
28			10004	0	0.0	0.0				0.00	0.00	0.00	0.00
29			10004	0	0.0	0.0				0.00	0.00	0.00	0.00
30			10004	0	0.0	0.0				0.00	0.00	0.00	0.00
31			10004	0	0.0	0.0				0.00	0.00	1.61	4.84
											Averages	1.61	4.84