



State of Idaho

DEPARTMENT OF WATER RESOURCES

322 East Front Street • P.O. Box 83720 • Boise, Idaho 83720-0098

Phone: (208) 287-4800 • Fax: (208) 287-6700 • Website: www.idwr.idaho.gov

C.L. "BUTCH" OTTER
Governor

GARY SPACKMAN
Director

November 7, 2013

CITY OF MERIDIAN
33 E BROADWAY AVE
MERIDIAN ID 83642

Re: Injection Well Permit Application for City of Meridian Well 22 – Water Right Review

Dear Mr. Radek:

Brian Ragan from IDWR's Ground Water Protection section asked the Water Rights Section to comment on your October 21, 2013, letter concerning an injection well permit for Meridian Well 22. The specific proposal is to pump water from some of the City's wells, treat the water, inject the water into other city-owned wells for in-situ remediation of unwanted minerals, and re-pump the water later for delivery to the City's customers. The question for the Water Rights Section is whether there is a need for the City to make additional water rights filings in order to accomplish the plan outlined in the letter. IDWR thinks that the following logic would determine whether another water right filing would be required.

As long as a municipal water right authorizes the diversion from the well providing the treated water, another water right is not necessary to divert, treat, and inject the water. Treating water and injecting it for a specific purpose related to municipal water use is within the scope of a municipal water right. Water diverted for this treatment process and any water diverted for immediate use in the municipal water system will be subject to the limitations of the water right authorizing diversion from the well. If the water right holder wants to increase pumping above the existing municipal water right to satisfy the need for oxygenation and injection, another water right will be required.

Once the oxygenated water is injected into the receiving well, it is indistinguishable from the public ground water resource and, therefore, becomes part of the public ground water resource once again. Since a right to divert water from this well is necessary to authorize diversion and use of the public resource, a municipal water right must authorize the diversion of water from the well receiving the treated water. Pumping is subject to the limitations of the water right authorizing diversion from the well. The right holder is not entitled to both pump the amount listed on the water right and the injected amount. If the municipality wants to pump both quantities, another water right would be required.

The October 21, 2013, letter proposes to pump up to a maximum of 2,000 gallons per minute from wells 11, 14, and 25 for injection into Well 22. **Table 1** below shows a summary of the water rights/permits, and the authorized diversion rates, associated with wells 11, 14, 25, and 22.

Table 1

Well # 11			Well #14			Well # 22			Well #25		
		gpm			gpm			gpm			Gpm
63-2893	Water Right	350	63-11737	Water Right	1346	63-31138	Water Right	2244	63-31630	Permit	2244
63-3252	Water Right	745	63-31858	Permit	2199	63-31858	Permit	2199	63-31858	Permit	2199
63-7105	Water Right	314									
63-7978	Water Right	857									
63-8331	Water Right	848									
63-8332	Water Right	898									
63-9849	Water Right	750									
63-10105	Water Right	1257									
63-32567	Water Right	750									
Total gpm = 6768			Total gpm = 3546			Total gpm = 4443			Total gpm = 4443		

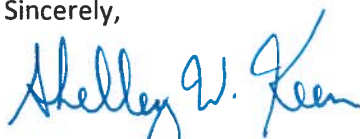
The water rights identifying wells 11, 14, and 25 as points of diversion authorize a diversion rate over 2,000 gpm. Therefore, as long as the city does not exceed the rate authorized to be diverted, then no additional water right is needed for diversion and treatment prior to injection into well 22.

The water rights identifying well 22 as a point of diversion authorize diversion of up to 4,443 gpm. As long as the total diversion from well 22 does not exceed 4,443 gpm, no additional water right is needed.

If, in the future, the City of Meridian intends to divert for injection, or divert for recovery, more than the rate authorized by existing water rights/permits for a particular well, then another water right would be required.

Please feel free to contact this office if you have further questions.

Sincerely,



Shelley W. Keen, Manager
Water Rights Section

cc: Kevin Boggs of CH2M Hill
Brian Ragan of IDWR



State of Idaho

DEPARTMENT OF WATER RESOURCES

322 East Front Street • P.O. Box 83720 • Boise, Idaho 83720-0098

Phone: (208) 287-4800 • Fax: (208) 287-6700 • Website: www.idwr.idaho.gov

C.L. "BUTCH" OTTER
Governor

GARY SPACKMAN
Director

November 7, 2013

Kyle Radek, P.E.
City of Meridian
33 East Broadway Avenue
Meridian, Idaho 83642

Re: Approval of Recharge Cycles 1 through 3 for Pilot Injection Test at City Well #22

Dear Mr. Radek,

The Idaho Department of Water Resources (IDWR) Underground Injection Control Program (UIC) will allow the use of the City of Meridian (City) well #22 for the first three recharge cycles included in the injection well permit application (Attachment B-1) and the October 2013 document "Aquifer Storage and Recovery Pilot Test Work Plan: Well 22 Aquifer Conditioning, City of Meridian, Idaho". As described, the details of the first three recharge cycles are identical and consist of injecting approximately 1-million gallons at 500 gallons per minute over 1.4 days followed by a 12-hour residence time and ending with the withdrawal of approximately 11-million gallons at 1,500 gallons per minute over a 5-day period.

The monitoring of ground water levels and water quality must be conducted as described in the documents referenced above. The IDWR UIC Program shall be notified as soon as the City becomes aware of any water level measurements that indicate mounding of water which intercepts the land surface or negatively affects production wells in the radius of influence of the injection well. The IDWR UIC Program shall be notified as soon as the City becomes aware of any water quality data which indicates the potential to degrade or contaminate the drinking water aquifer or negatively affect production wells within the radius of influence of the injection well.

The fourth recharge cycle and the full-scale operational phase of injection will not be allowed until the injection well permit application has been processed and approved.

Regards,

Brian Ragan, P.G.
UIC Program

Cc: file
Kevin Boggs, CH2M Hill
Shelley Keen, IDWR Water Rights Section Manager



RECEIVED

OCT 25 2013

DEPARTMENT OF
WATER RESOURCES

Mayor Tammy de Weerd
City Council Members:

Keith Bird
Brad Hoaglund
Charles Rountree
David Zaremba

October 21, 2013

Mr. Brian Ragan
Idaho Department of Water Resources
322 E. Front Street
Boise, ID 83702

Subject: Injection Well Permit Application for City of Meridian Well 22

Dear Brian:

Attached is an injection well permit application for City of Meridian Well 22 (Attachment A). The City would like to inject water from our potable supply system into Well 22 for a portion of the year in order to reduce concentrations of iron and manganese in water pumped from Well 22 later in the year. We chlorinate the water in our potable system. In addition to chlorination, we may want to increase the pH of the injected water using sodium hydroxide to optimize the control of iron and manganese in the subsurface.

We propose to inject water into Well 22 during the winter months and to pump water from the well during the summer months. The maximum weekly average injection rate proposed is 2,000 gallons per minute (gpm). In the short term, we request approval to conduct the first three pilot testing cycles described in Attachment B. Each of the three cycles are identical, and includes injection of approximately one million gallons, storage for approximately 12 hours, followed by pumping of approximately 10 million gallons. We do not plan to proceed with the fourth cycle described in Attachment B until the injection well permit application has been approved by IDWR.

For monitoring purposes, we propose to monitor water levels in three City-owned permanent monitoring wells, Wells 14, 17, and 25, per the monitoring schedule provided in Attachment B. Monitoring Wells 17 and 25 are multi-level monitoring wells, as described in Figure 4 in Attachment A. These three wells provide a total of seven depth-discrete monitoring locations.

We propose to pump water from Wells 11, 14, and 25 under water rights 63-2893 (license), 63-11737 (license), and 63-31630 (permit), respectively. This water will be injected into Well 22 and subsequently produced from Well 22 under water right (license) 63-31138.

Sincerely,

City of Meridian

A handwritten signature in black ink, appearing to read 'Kyle Radek'.

Kyle Radek, PE
Assistant City Engineer

c: Phil Brown/GSI, Kevin Boggs/CH2M HILL

City of Meridian
Well 22 Geochemical Conditioning ASR Pilot Test Program

Cycle 1	Confirmation Period	Cycle 2	Cycle 3	Cycle 4	Data Analysis and Reporting
Begin 3-cycle Initial Phase Repeating the Modeled Cycle. Purpose is geochemical confirmation and trend analysis	Receive and Review Laboratory Results to Assess Recovered Water Quality Prior to Cycle 2	Repeat Cycle 1, Track Changes with Repeated Cycles	Repeat Cycle 1, Track Changes with Repeated Cycles, Establish Long Term Performance Trend Projections	Larger Scale Evaluation of Effects of Heterogeneity and Longer Storage. Utilize Remainder of Recharge Season	Develop Recommendations for Year 2 Operations
1.4 day @ 500 gpm = 1MG	--	1.4 day @ 500 gpm = 1MG	1.4 day @ 500 gpm = 1MG	January 6 through April 7: 91 days @ 1,000 gpm = 137MG	
Overnight	--	Overnight	Overnight	April through May 5 = 28 days	--
5 days @ 1,500 gpm = 10MG	--	5 days @ 1,500 gpm = 10MG	5 days @ 1,500 gpm = 10MG	May 5 - August 5 @ 1,500 gpm = 138MG	
7 days	3 weeks	7 days	7 days	38 weeks*	8 weeks
Nov 4 - 10	Nov 11 - 29	December 2 - 8	December 9 - 15	January 6 - September 26, 2014	October - November 2014
Pump to Waste	--	?	?	Recover to System	--
Schedule*					
Recovered Water					

* - Assumed

Sampling Program

Cycle 1	Cycles 2 and 3	Cycle 4
Recharge	1 GC, 1 FS	3 GC, 1 FS
Storage	--	1 FS
Recovery	4 GC, 2 FS	2 GC, 2 FS

Note: Field parameters will be measured daily during the first three cycles, and coincident with each sample collected.

Field Parameters: Temperature, pH, DO, EC, and/or ORP

GC: Geochemical Suite

FS: Full Suite: GC plus DBPs, plus Misc.

DBP: Disinfection by-products

Notes

By: Shelley W. Keen

Date: October 20, 2013

Subject: City of Meridian Plan to Pump, Treat, Inject, and Re-Pump Water

On October 17, 2013, I met with Jeff Peppersack, Garrick Baxter, Brian Ragan, and Craig Saxton to discuss a plan by the City of Meridian to pump water from some of its wells, oxygenate the water, inject the water into other iron and manganese-laden wells for in-situ attenuation of the unwanted minerals, and re-pump the water later for delivery to its customers. Injection of oxygenated water into the problem wells will, at least in theory, promote precipitation of iron and manganese oxides to reduce the levels of mobile iron and manganese. This plan is very similar to what United Water Idaho does with manganese laden water diverted from its Swift wells near Lake Harbor in Boise. The City of Meridian wants to know what additional water right filings might be necessary to carry out its plan. After some discussion, we agreed that the following logic would determine whether another water right filing would be required.

As long as a municipal water right authorizes the diversion from the well providing the oxygenated water, another water right is not necessary to divert, oxygenate, and inject the water. Treating water and injecting it for a specific purpose related to municipal water use is within the scope of a municipal water right. Water diverted for this treatment process and any water diverted for immediate use in the municipal water system will be subject to the limitations of the water right authorizing diversion from the well. If the water right holder wants to increase pumping above the existing municipal water right to satisfy the need for oxygenation and injection, another water right will be required.

Once the oxygenated water is injected into the receiving well, it is indistinguishable from the public ground water resource and, therefore, becomes part of the public ground water resource once again. Since a right to divert water from this well is necessary to authorize diversion and use of the public resource, a municipal water right must authorize the diversion of water from the well receiving the oxygenated water. Pumping is subject to the limitations of the water right authorizing diversion from that well. The right holder is not entitled to both pump the amount listed on the water right and the injected amount. If the municipality wants to pump both quantities, another water right would be required.