Issue/Title: Pilgrim Nuclear Power Station (PNPS): Tritium in Groundwater Monitoring Wells

Topic: PNPS Updates as of March 15, 2013

Previous Plans: Results from groundwater monitoring well samples collected during the weeks of February 4, 2013 and February 18, 2013 were reported by Entergy. Split sample results for the weeks of February 4, 2013 and February 18, 2013 were also reported by MERL.

Current Status:

Table 1[1]: Week of February 4th

Location	Date	MERL pCi/L	GEL pCi/L
MW 201	02/04/2013	720	447
MW 202	02/04/2013	-	-
MW 202 I	02/04/2013	-	-
MW 203	02/04/2013	-	-
MW 204	02/04/2013	-	-
MW 205	02/04/2013	2,090	2,020
MW 206	02/04/2013	2,805	3,590
MW 207	02/04/2013	-	-
MW 208-S	02/04/2013	-	-
MW 208-I	02/04/2013	-	-
MW 209	02/04/2013	1,114	824
MW 210	02/04/2013	-	-
MW 211	02/04/2013	1,395	1,250
MW 212	02/04/2013	-	-
MW 213	02/04/2013	-	-
MW 214	02/04/2013	-	-
MW 215	02/04/2013	1,099	1,120
MW 216	02/04/2013	5,368	5,410
MW 217	02/04/2013	-	-
MW 3	02/04/2013	-	-
MW 4	02/04/2013	-	-
SW-boat ramp	02/04/2013	-	-
SW-intake	02/04/2013	NDA(300)*	NDA(439)*

Table 2: Week of February 18th

Location	Date	MERL pCi/L	GEL pCi/L
MW 201	02/18/2013	487	481
MW 202	02/18/2013	1,124	1,010
MW 202 I	02/18/2013	505	644
MW 203	02/18/2013	NDA(300)*	NDA(425)*
MW 204	02/18/2013	360	NDA(427)*
MW 205	02/18/2013	677	851
MW 206	02/18/2013	1,506	1,350
MW 207	02/18/2013	455	NDA(424)*
MW 208-S	02/18/2013	NDA(300)*	NDA(427)*
MW 208-I	02/18/2013	NDA(300)*	NDA(426)*
MW 209	02/18/2013	898	886
MW 210	02/18/2013	1,875	1,580
MW 211	02/18/2013	1,086	1,080
MW 212	02/18/2013	556	560
MW 213	02/18/2013	NDA(300)*	NDA(423)*
MW 214	02/18/2013	NDA(300)*	NDA(427)*
MW 215	02/18/2013	1,121	796
MW 216	02/18/2013	1,658	1,430
MW 217	02/18/2013	518	492
MW 3	02/18/2013	NDA(300)*	NDA(426)*
MW 4	02/18/2013	519	607
SW-boat ramp	02/18/2013	NDA(300)*	NDA(425)*
SW-intake	02/18/2013	NDA(300)*	NDA(421)*

*** NDA = not detected at less than activity value listed**

\- not analyzed this week

[1] PNPS screening level for tritium in groundwater monitoring wells is 3,000 pCi/L, which is 1/10th of the NRC-approved Pilgrim Offsite Dose Calculation Manual standard for tritium in non-drinking water sources. The EPA drinking water standard is 20,000 pCi/L. The nearest drinking water wells are approximately 2.5 miles from the plant.

The groundwater monitoring results reported by Entergy show MW205 increased to a level of 2,020 pCi/L of tritium detected during the week of February 4th and decreased to a level of 851 pCi/L of tritium detected during the week of February 18th (the previous result during the week of January 21st was 1,090 pCi/L). Entergy results show that MW206 increased to a level of 3,590 pCi/L of tritium detected during the week of February 4th and decreased to a level of 1,350 pCi/L of tritium detected during the week of February 18th (the previous result during the week of January 21st was 2,000 pCi/L). Weekly sampling results for MW216 are discussed below. Results for the other wells sampled during the weeks of February 4th and February 18th were within typical ranges detected since the groundwater monitoring for tritium began. It should be noted that February 18th was a comprehensive round, which included all wells. Split sample results from MERL for the weeks of February 4th and February 18th were generally consistent with Entergy results (see tables). Samples collected from all wells on February 18th are also being analyzed for hard-to-detects by Entergy's contract lab. These results will be provided once they are received by Entergy. Entergy had groundwater samples from all groundwater monitoring wells analyzed for hard-to-detects in March 2012 and none were detected.

To date, weekly sampling results from Entergy for MW216 indicate fluctuations between 1,430 pCi/L to 7,620 pCi/L of tritium detected for the weeks of September 17th through February 18th. The most recent results for MW216 were 4,940 pCi/L of tritium detected the week of February 11th and 1,430 pCi/L of tritium detected the week of February 18th. MERL split sample results for MW216 for September 17th through February 18th have also been generally consistent with Entergy's results. MDPH is continuing to closely monitor tritium levels in MW216 and in MW206 which appear to be fluctuating with similar trends. MW201, which is down-gradient of MW206 and MW216 also seems to be weakly fluctuating along with these two wells, although at much lower levels (see Figure 1 below). As previously noted, possible sources of tritium to groundwater in the vicinity of these monitoring wells that continue to be evaluated include the radwaste discharge line and a preferential pathway along the deep foundation of the reactor building upstream of MW216 and MW206, a legacy spill (i.e. the 1988 spill in the vicinity

of MW216 and MW206 discussed in a previous update), and roof drain dry wells in the area. MW216 continues to be sampled weekly.

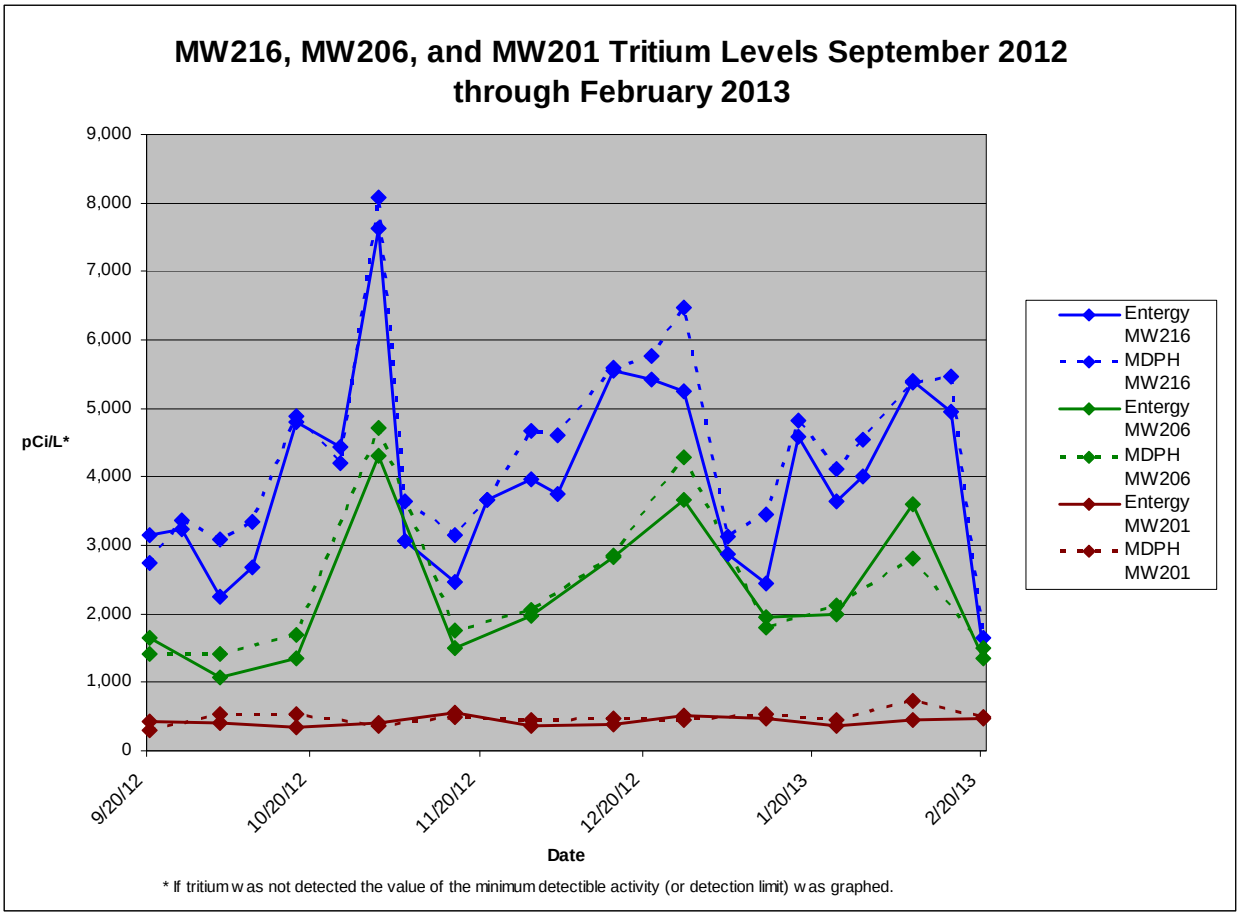
Entergy surface water sampling results for the intake canal downstream of MW205 for the weeks of February 4th and February 18th indicated no detectable tritium. February 18th was also a comprehensive sampling round and surface water sampling results from the boat ramp area also indicated no detectable tritium. MERL split sample results for surface water also indicated no detectable tritium for samples collected during the weeks of February 4th and February 18th.

As previously noted, Entergy and their consultant are nearing completion of their detailed summary of potential tritium sources that have been investigated during the past 2.5 years and their likely relationship to detections of tritium in groundwater at PNPS. MDPH and MEMA anticipate receiving the report from Entergy in early spring, 2013.

Looking Forward:

MDPH will continue to closely follow all investigational activities that are currently underway at PNPS.

Figure 1.


MW216, MW206, and MW201 Tritium Levels September 2012 through February 2013
pCi/L*
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
9/20/12
10/20/12
11/20/12
12/20/12
1/20/13
2/20/13
Date
Entergy MW216
MDPH MW216
Entergy MW206
MDPH MW206
Entergy MW201
MDPH MW201
* If tritium was not detected the value of the minimum detectible activity (or detection limit) was graphed.