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

Topic: PNPS Updates as of July 10, 2013

Previous Plans: Results from groundwater monitoring well samples collected during the weeks of May 13, 2013 and May 27, 2013 were reported by Entergy. Split sample results for the weeks of May 13, 2013 and May 27, 2013 have also been reported by MERL.

Current Status:

Table 1[1]: Week of May 13th

Location	Date	MERL pCi/L	GEL pCi/L
MW 201	05/13/2013	NDA(300)*	NDA(384)*
MW 202	05/13/2013	833	923
MW 202 I	05/13/2013	369	614
MW 203	05/13/2013	NDA(300)*	NDA(422)*
MW 204	05/13/2013	363	NDA(422)*
MW 205	05/13/2013	2,088	1,630
MW 206	05/13/2013	NDA(300)*	426
MW 207	05/13/2013	428	NDA(453)*
MW 208-S	05/13/2013	NDA(300)*	NDA(420)*
MW 208-I	05/13/2013	NDA(300)*	NDA(425)*
MW 209	05/13/2013	611	700
MW 210	05/13/2013	932	694
MW 211	05/13/2013	1,159	1,040
MW 212	05/13/2013	495	419
MW 213	05/13/2013	NDA(300)*	NDA(412)*
MW 214	05/13/2013	NDA(300)*	NDA(421)*
MW 215	05/13/2013	879	805
MW 216	05/13/2013	3,451	2,730
MW 217	05/13/2013	423	429
MW 3	05/13/2013	NDA(300)*	NDA(426)*
MW 4	05/13/2013	500	525
SW-boat ramp	05/13/2013	NDA(300)*	NDA(413)*
SW-intake	05/13/2013	NDA(300)*	NDA(432)*

Table 2: Week of May 27th

Location	Date	MERL pCi/L	GEL pCi/L
MW 201	5/27/2013	NDA(300)*	NDA(375)*
MW 202	5/27/2013	-	-
MW 202 I	5/27/2013	-	-
MW 203	5/27/2013	-	-
MW 204	5/27/2013	-	-
MW 205	5/27/2013	574	389
MW 206	5/27/2013	312	NDA(339)*
MW 207	5/27/2013	-	-
MW 208-S	5/27/2013	-	-
MW 208-I	5/27/2013	-	-
MW 209	5/27/2013	685	459
MW 210	5/27/2013	-	-
MW 211	5/27/2013	1,175	959
MW 212	5/27/2013	-	-
MW 213	5/27/2013	-	-
MW 214	5/27/2013	-	-
MW 215	5/27/2013	995	587
MW 216	5/27/2013	4,520	3,710
MW 217	5/27/2013	-	-
MW 3	5/27/2013	-	-
MW 4	5/27/2013	-	-
SW-boat ramp	5/27/2013	-	-
SW-intake	5/27/2013	NDA(300)*	**

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

**** Results pending**

- 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 1,630 pCi/L of tritium detected during the week of May 13th, and decreased to a level of 389 pCi/L of tritium detected during the week of May 27th (the previous result during the week of April 29th was 701 pCi/L). Entergy results show that MW206 decreased slightly to a level of 426 pCi/L of tritium detected during the week of May 13th and no tritium was detected during the week of May 27th (the previous result during the week of April 29th was 503 pCi/L). Weekly sampling results for MW216, MW209, and MW211 are discussed below. Results for the other wells sampled during the weeks of May 13th and May 27th were within typical ranges detected since the groundwater monitoring for tritium began. MERL split sample results for the weeks of May 13th and May 27th were generally consistent with Entergy's results.

To date, weekly sampling results from Entergy for MW216 indicate fluctuations between 630 pCi/L to 7,620 pCi/L of tritium detected for the weeks of September 17, 2012 through June 3, 2013. The most recent results for MW216 were 3,710 pCi/L of tritium detected during the week of May 27, 2013 and 4,270 pCi/L of tritium detected during the week of June 3, 2013 continuing an increasing trend over the last six weekly sampling rounds. MERL split sample results for MW216 for September 17, 2012 through June 3, 2013 have also been generally consistent with Entergy's results. MDPH is continuing to closely monitor tritium levels in MW216, MW206, and MW201 which appear to be fluctuating with similar trends. MW209 and MW211 on the other side of the plant also seemed to be fluctuating along with MW216 until the most recent sampling rounds. It is possible that some of these patterns may be attributed to the recently discovered separation in the neutralization sump discharge line. Use of this line has been discontinued. Levels of tritium in MW216 also have other potential sources that have been previously discussed, including the radwaste discharge line, rainwater from building roof drains, and historic spills. MW211 has been sampled weekly since the week of April 8, 2013 with results through the week of June 4, 2013 ranging from 935 pCi/L to 1,420 pCi/L of tritium detected. MW209 has been sampled weekly since the week of May 27, 2013 with results through the week of June 4, 2013 ranging from 424 pCi/L to 559 pCi/L of tritium detected.

Entergy surface water sampling results for the intake canal downstream of MW205 for the week of May 13th indicated no detectable tritium, and Entergy results for the intake canal downstream of MW205 for the week of May 27th are currently being analyzed. May 13th was also a comprehensive sampling round and Entergy surface water sampling results from the boat ramp area also indicated no detectable tritium. MERL split sample results for surface water for the weeks of May 13th and May 27th indicated no detectable tritium.

As previously described, Entergy has reported that the neutralization sump discharge line, which serves as a permitted discharge line to the discharge canal, was separated below grade. Soft-digs down to the area of the separation and two other areas where the pipe may have had potential leaks, using a vacuum excavator at all three locations, are currently planned for the week of July 15th. Necessary preparation work, such as ground penetrating radar and pavement removal, will be conducted in advance of the soft-dig. MDPH will be on site to observe the soft-dig to the separation area. Soil samples will be collected during the excavations and split soil samples will be analyzed at MERL.

Entergy's contractor continues to work to determine how long the neutralization sump discharge line has been separated/leaking, how much discharge water may have been released, how much tritium the water may have contained, and which monitoring wells it would reach or may have reached in the past. Entergy indicated that this line was also used to discharge clean, non-tritiated water on a more frequent basis on the order of every two weeks, in addition to the once per year tritiated discharges. Entergy and their consultant are currently evaluating the potential role the previous discharges of non-tritiated water may have played in transporting tritium to groundwater.

Looking Forward:

MDPH will continue to closely follow all investigational activities that are currently underway at PNPS, especially the new developments concerning the neutralization sump discharge line.

MDPH plans to visit PNPS during planned soft-dig activities the week of July 15th.