Nuclear Decommissioning Citizens Advisory Panel

DRAFT Advisory Opinion for Discussion at 11.12.15 NDCAP Meeting

Submitted on 10.28.15

Vermont Department of Health Groundwater Monitoring through License Termination

It is the opinion of the Vermont Nuclear Decommissioning Citizens Advisory Panel (NDCAP) that the current groundwater monitoring program at the shutdown Vermont Yankee Nuclear Power Station be a joint and collaborative effort between the licensee, Entergy Vermont Yankee, LLC, and the Vermont Department of Health (VDH) as opposed to the redundant, resource intensive and inconsistent programs currently in effect.

In the way of background, Entergy Vermont Yankee (ENVY) has a comprehensive network of groundwater monitoring wells (31 in total) that were installed during operation of the site in compliance with both the Nuclear Energy Institute's (NEI) Groundwater Protection Initiative (GPI) (NEI 07-07) and the USNRC's regulations and inspection procedures. NEI 07-07, "*Industry Ground Water Protection Initiative"* is a voluntary initiative embraced by the nuclear industry and has been endorsed by the NRC. The following are excerpts from NEI 07-07:

> *"NEI 07-07 was developed to describe the industry's Ground Water Protection Initiative. The Ground Water Protection Initiative identifies actions to improve utilities' management and response to instances where the inadvertent release of radioactive substances may result in low but detectible levels of plant-related materials in subsurface soils and water. The inadvertent releases addressed by this Initiative fall outside the current requirements of the Nuclear Regulatory Commission (NRC) and are well below the NRC's limits that ensure protection of public health and safety."*
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> *"The Ground Water Protection Initiative identifies those actions necessary for implementation of a timely and effective ground water protection program. In addition, objectives are specified to accomplish each action and the acceptance criteria to demonstrate that the objectives have been met."*
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> *"It is expected that this Initiative will be implemented by each member company currently operating or decommissioning a nuclear power plant and by each member company constructing a new plant after year 2006."*

In 2010, when elevated tritium concentrations were discovered in several of the monitoring wells at ENVY, groundwater samples collected from the well network were split with the Vermont Department of Health and duplicate analysis costs were funded by ENVY. This cooperative effort was an informal agreement between ENVY and VDH and is redundant with the efforts that are currently ongoing at the site. There is also a substantial cost associated with this duplicate program and as significant, no benefit

to public health and safety as evidenced by the eight annual Vermont Department of Health reports entitled "Report on Public Health Monitoring" from 2006-2013 available on the VDH website.

The VDH monitoring program for groundwater analyzes the same samples collected and analyzed by ENVY and has shown both consistent and predictable results. That is the case as long as the same standards and methodology are used by the certified laboratories for analyzing certain plant-related radionuclides. As an example, all samples are analyzed for gamma emitting radionuclides and tritium. When certain criteria are met based upon the analysis results (presence of both gamma radionuclides and tritium), certain hard- to-detect radionuclides are also analyzed for at certified national laboratories. This analysis which includes radionuclides such as Iron-55, Nickel-63 and Strontium-90, is very expensive, time intensive and follows standards set forth by various regulatory agencies such as the USNRC and USEPA.

In 2014, the VDH changed the laboratory contracted for groundwater sample analyses and the criteria for determining whether certain radionuclides were considered a "positive" indication of that radionuclide present in the sample. This is also known as the Lower Limit of Detection or "LLD". Prior to 2014 and as documented in the annual Vermont Department of Health "Report on Public Health Monitoring" (referencing the latest 2013 report), the VDH used a LLD of 2 picocuries per liter (pCi/L) for Strontium-90. This was lowered to 1 pCi/L sometime in 2014 according to information received by ENVY from the Department. This change is inconsistent with the LLD used by ENVY and required by Vermont Yankee's operating license. The LLD required for monitoring for Strontium-90 at Vermont Yankee has been and is currently 3.5 pCi/L. This is important to understand because relying on a lower LLD, below industry accepted standards does not increase public health and safety. The reason LLDs are established for all applicable radionuclides is to differentiate actual "positive" indications and background or erroneous results. It should also be noted that the EPA drinking water limit for Strontium-90 is 8 pCi/L.

There is also a corresponding increase in cost to analyze these samples. The total number of samples currently analyzed by the VDH for hard-to-detect radionuclides and subsequently paid for by ENVY far exceeds the regulatory requirements imposed by the NRC and EPA. More importantly, the results provided in the VDH annual reports conclude there is no incremental impact on public health and safety from the operation of Vermont Yankee. What is more important today is that the plant is not operating and the likelihood of any future release has decreased substantially. In fact, a focused water management plan is being implemented to consolidate the storage of any water used on-site and disposal options are being evaluated as part of the comprehensive decommissioning plan. Finally, the elevated tritium discovered at Vermont Yankee in 2010 has steadily declined and all wells are currently below the EPA limit for tritium in for drinking water (20,000 pCi/L). The wells being monitored at ENVY are not drinking water wells.

In conclusion, the Vermont Nuclear Decommissioning Citizens Advisory Panel (NDCAP) recommends that the current groundwater monitoring program at Vermont Yankee Nuclear Power Station be a joint and collaborative effort between the licensee, Entergy Vermont Yankee, LLC, and the Vermont Department of Health (VDH) thus eliminating the redundant, resource intensive and inconsistent programs currently in effect. The NDCAP encourages a program that shares the results of any groundwater samples

collected, establish a uniform set of acceptance criteria, select a laboratory that serves both entities and ensures compliance with all state and federal regulations as long as required.