



THE WEST VALLEY CITIZEN TASK FORCE

July 27, 2015

Amy M. Snyder, Senior Project Manager
U.S. Nuclear Regulatory Commission
Office of Nuclear Material Safety and Safeguards
Division of Decommissioning, Uranium Recovery, and Waste Programs
Mail Stop T-8F5
11555 Rockville Pike, Rockville, MD 20852

RE: Incorporating Climate Change into West Valley Demonstration Project Decisionmaking

Dear Ms. Snyder,

For almost two decades the West Valley Citizen Task Force (CTF) has advocated for the safe, responsible and timely cleanup of the nuclear wastes at the West Valley Demonstration Project and Western New York Nuclear Service Center. Substantial progress has been made at the site by the U.S. Department of Energy (DOE) and New York State Energy Research and Development Authority (NYSERDA), but much work remains to be done and important decisions about site cleanup have not yet been made.

Erosion at the West Valley site will be a crucial factor in these ongoing cleanup decisions. The site is vulnerable to severe future erosion that would release wastes in a catastrophic manner into Cattaraugus Creek with devastating impact on downstream communities and Lake Erie, contaminating waterfront resources and affecting drinking water supplies for more than one million people. Erosion has been and continues to be studied at the site. With climate change the frequency and severity of extreme weather events will increase. Recent events near the site such as the 2009 rain-induced landslide in Buttermilk Creek demonstrate the severity of potential erosion. Engineered barriers, no matter how robust, are short-term in comparison to the duration of the on-site radionuclides. Funding and budget difficulties will only extend the cleanup process.

Deliberative planning and preparation for climate change is occurring in many places at the local, state and national level, in response to federal Executive Orders and the Community Risk and Resiliency Act. However, at the West Valley site, the Citizen Task Force is very concerned that the decommissioning planning has not sufficiently incorporated climate change planning and that this lack of attention to climate impacts will skew agency assessments of the risk of leaving wastes in a place where there can be no successful long-term containment of the unlined burial grounds over a period of 1,000 years or longer.

We encourage DOE and NYSERDA to engage with local government, the community and others in a deliberative, open and timely planning process for climate preparedness and community resilience that can be incorporated into the planned 2019 Supplemental EIS for the West Valley site. If this is not done the public will be left to comment only after a decision has been arrived at and released in draft form as part of the Supplemental EIS.

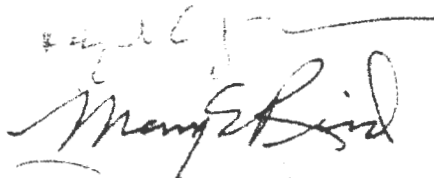
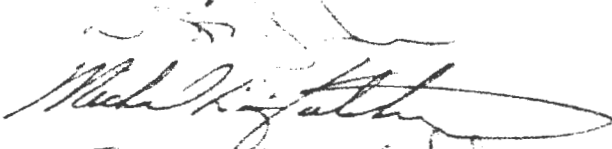
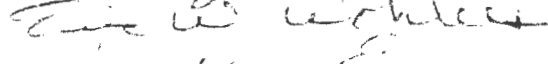
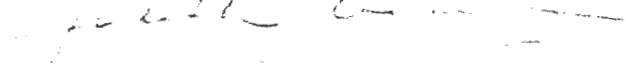


West Valley Citizen Task Force
c/o The Logue Group
PO Box 270270 – West Hartford, CT 06127
860-521-9122


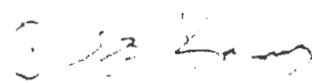
The attached memo provides our detailed thinking on this. In our conclusions we recommend:

- A climate vulnerability assessment and climate resiliency plan, directed toward waste removal, be prepared by DOE and NYSERDA for the West Valley nuclear waste site. This should start in early 2016 to facilitate an iterative Phase 1 study process that includes substantial participation and feedback from CTF and others and integration with the "performance assessment" currently planned as part of the Supplemental
- All assessments that are prepared, including but not limited to exposure and health, erosion, climate vulnerability and performance, be completely transparent, with all factors, assumptions and steps detailed and explained for the public in advance of the draft Supplemental EIS.
- Some local government entities may decide to work individually or in collaboration with other government entities to assess the vulnerability of the nuclear wastes at West Valley to severe weather events associated with climate change, by seeking available grants in order to provide an independent review.

We are sending this information to you as an official who either has specific interest in the West Valley site or represents areas that are downstream from the site along Cattaraugus Creek or the Lake Erie shoreline. Feel free to pass this information on to others, and please let us know if you have any questions or would like additional information.

Sincerely,

The West Valley Citizen Task Force



THE WEST VALLEY CITIZEN TASK FORCE

TO:

Bryan Bower, WVDP, DOE	Paul Bembia, WVSMP, NYSEDA
Amy Snyder, NRC	Paul Giardina, EPA
Patrick Concannon, NYSDEC	Stephen Gavitt, NYSDOH
Debra John, Seneca Nation of Indians	Mark Poloncarz, Erie County
John R. Searles, Cattaraugus County	Christopher Gerwitz, Town of Ashford
Gary A. Eppolito, Town of Concord	Ronald Wasmund, Town of Otto
James Beach, Town of East Otto	David F. Tessmer, Town of Collins
Paula Schueler, Town of Persia	Dennis Stopen, Town of Perrysburg
Katherine Tampio, Town of Hanover	Leonard K. Pero, Town of Brant
Keith E. Dash, Town of Evans	Steven J. Walters, Town of Hamburg
William Krebs, Village of Springville	Heather M. McKeever, Village of Gowanda
Byron W. Brown, City of Buffalo	Geoffrey Szymanski, City of Lackawanna
Honorable Charles Schumer, US Senate	Honorable Kirsten Gillibrand, US Senate
Honorable Tom Reed, US House of Representatives	Honorable Brian Higgins, US House of Representatives
Honorable Chris Collins, US House of Representatives	Honorable Patrick M. Gallivan, NYS Senate
Honorable Marc Panepinto, NYS Senate	Honorable Catharine Young, NYS Senate
Honorable Timothy M. Kennedy, NYS Senate	Honorable Joseph M. Giglio, NYS Assembly
Honorable Sean Ryan, NYS Assembly	Honorable David DiPietro, NYS Assembly
Honorable Andy Goodell, NYS Assembly	

FROM: West Valley Citizen Task Force

DATE: July 27, 2015

RE: Actions Needed Related to Potential Change Impacts

The Citizen Task Force believes the West Valley nuclear waste site, if not cleaned up, poses a significant hazard to downstream communities, Cattaraugus Creek, Lake Erie, and the drinking water for over a million people. Downstream communities include Gowanda, the Seneca Nation's Cattaraugus Territory, and much of Erie County including Buffalo.¹ We have known for some time that the West Valley site is highly vulnerable to erosion and that

¹ There is good evidence that radioactive contamination released from the West Valley site will continue past Buffalo into the Niagara River and Lake Ontario. See especially two articles by S.R. Joshi, "West-Valley-Derived Radionuclides in the Niagara River Area of Lake Ontario," *Water, Air, and Soil Pollution* **37**, 111-120 (1988), and "West Valley Plutonium and Americium-241 in Lake Ontario Sediments Off the Mouth of Niagara River," *Water, Air, and Soil Pollution* **42**, 159-168 (1988), and also NWS Buffalo information on the August 2009 storm that affected southern Erie, northern Chautauqua, and northern Cattaraugus Counties (http://www.erh.noaa.gov/buf/svrwx/web_080809_Derecho/indexderecho_1.html; http://www.erh.noaa.gov/buf/svrwx/web_090810_Flashflood/indexflood.html), where the sediment plume from Cattaraugus Creek can be considered a reasonable surrogate for dissolved and suspended radioactive contamination. Note, however, that mixing in the Niagara River, and mixing and deposition in Lake Ontario, would substantially dilute such contamination relative to the contaminant concentrations affecting the nearer downstream communities such as Gowanda, the Seneca Nation's Cattaraugus Territory, and much of Erie County including Buffalo.

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said future climate damage costs will amount to \$10 Billion annually by mid-century.⁵ DEC maintains extensive climate resources on its website including resources related to climate resilience or climate preparedness. These extensive resources can be accessed at the DEC Office of Climate Change. See <http://www.dec.ny.gov/about/43166.html>

Climate Preparedness or Community Resilience Planning relative to the West Valley Site

Unfortunately all this climate activity appears completely disconnected from the decommissioning of the West Valley nuclear waste facility with agencies considering leaving radioactive waste in place as a viable option. Failing to integrate climate change impacts into cleanup plans will skew agency assessments of the risk of leaving radioactive waste in place. In fact, there can be no successful containment of radionuclides over thousands of years in degrading containers in unlined dumps, nor in corroding tanks on an erosion-prone plateau. As we stated in our 1998 Final Report:

The CTF does not believe (based on currently available information) the Site is suitable for the long term, permanent storage or disposal of long-lived radionuclides (such as carbon-14 with a half life of 5,730 years, uranium-238 with a half life of more than 4 billion years, plutonium-239 with a half life of 24,100 years, and Technetium-99 with a half life of 217,000 years).

The site is in an area that:

- *has an average rainfall of 40 inches,*
- *has a relatively high and mobile water table which is hydrologically connected to the surface and perhaps in the future to subsurface aquifers,*
- *has sand lenses that are irregularly distributed through the clay on which the site sits,*
- *is on or near active earthquake faults, and*
- *is located on a tributary of Lake Erie...⁶*

We have seen little evidence that climate impacts are being appropriately incorporated into the agencies' evaluations of site integrity over the next 1,000 or 10,000 years. Recently we have been told that climate change impacts will be considered in a 2019 Supplemental EIS. However, we need a more deliberative, open, and timely planning process for climate preparedness and community resilience, particularly a process that involves local government officials and other parties as is strongly recommended by federal and state governments. The preparation of a draft EIS occurs in the offices of an agency or contractor and does not see the light of day until it is released briefly for public comment. Analyses that are missing or incomplete will only be subject to public comment with no guarantee that additional analysis will be done.

The necessary analyses should generate 1) a reliable estimate of the baseline rainfall intensity-frequency relationship for the West Valley site and upstream watersheds, reflecting current climate or recent climate conditions of the past few decades and 2) robust predictions of how the rainfall intensity-frequency relationship will change over the next 1,000 or 10,000 years as a result of climate change. Both tasks are complicated by limited data and by the sporadic (temporally and spatially variable) distribution of historic and future rainfall. The end result, in any case, should be a vulnerability assessment that evaluates the potential health and environmental damage associated with severe weather events, flooding and loss of radioactive materials from the site. The habitability of the watershed for people and wildlife as well as the potential economic impacts should be included.

The August 2009 rainfall and flooding provide a useful example. This event resulted in the total loss of a local hospital in Gowanda, due to extensive damage beyond repair, in addition to other widespread damage in the village

⁵ NYSERDA Draft NYS Energy Plan, Vol. 2, p. 25, referencing Climaid report, *Responding to Climate Change in New York State: The ClimAID Integrated Assessment for Effective Climate Change Adaptation*. <http://www.nysesda.ny.gov/climaid>

⁶ West Valley Citizen Task Force, Final Report to NYSERDA and DOE, July 29, 1998, § III.3.

This type of data exclusion would produce an erroneous estimate of the intensity-frequency relationship for rainfall at the West Valley site or any other nearby site. For example, such a procedure could effectively suppress or censor the localized storm that delivered more than 30 inches of rain in about 4.5 hours to Smethport, PA, on July 17-18, 1942. This extreme storm event is crucially important to climate science and dam safety in the northeastern United States,¹² and the proximity of Smethport to West Valley makes the 1942 Smethport storm an important benchmark for the intensity-frequency relationship for rainfall at the West Valley site.¹³

In our Appendix we list a variety of rainfall events, most being localized storms rather than widespread events, that have occurred near the West Valley site and in the surrounding region. The list provides examples; it is not a complete or comprehensive list. It illustrates both the complexity and the importance of drawing on regional data to develop a reliable intensity-frequency relationship for rainfall at the West Valley site. Data from a single site such as the NWS Buffalo weather station is simply too sparse, given the short period of record (~150 years) and the need to generate a reliable baseline intensity-frequency relationship that can support 1,000-year or 10,000-year projections of West Valley rainfall for purposes of assessing site integrity.¹⁴

The August 2009 storm which delivered roughly 5 inches of rain to the West Valley site has been considered a rainfall event with a return interval of approximately 100 years, as can be inferred from either the 2010 West Valley FEIS¹⁵ or the 2012 *Climate Guidance for Phase 1 Studies*.¹⁶ However, there is other evidence that suggests a shorter (more frequent) baseline return interval for a rainfall event comparable to the August 2009 storm:

The peak flow in Cattaraugus Creek at Gowanda was computed, using the slope-area method, to be 33,200 cubic feet per second with an annual exceedance probability of 2.2 percent (recurrence interval of 45 years).¹⁷

Peak flow is obviously not the same measure as depth of rainfall, yet the two measures must be closely related, especially given the relatively uniform depth of rainfall over the Cattaraugus Creek watershed above Gowanda.¹⁸ Thus, at the very least, we need better resolution of whether the August 2009 storm is an event with a return interval of 45 years or 100 years. This is a particularly obvious gap in the baseline rainfall intensity-frequency relationship for the West Valley site.

How the Rainfall Intensity-Frequency Relationship Will Change Due to Climate Change

Robust predictions are needed for *how the rainfall intensity-frequency relationship will change* over the next 1,000 or 10,000 years as a result of climate change. This task is complicated by limited data and by the sporadic (temporally and spatially variable) distribution of past, present, and future rainfall. The necessary climate-change analyses

¹² For example, see J. Harrison, "Extreme Events: Graphs, Photos, Videos," in *Dam Safety 2006: Proceedings of the 2006 Annual Conference of the Association of State Dam Safety Officials*, Lexington, KY, September 10-14, 2006 (<http://www.schnabel-eng.com/wp-content/uploads/2013/12/Extreme-Events.pdf>), and E. Tomlinson, B. Kappel, and D.D. Hoare, "Evaluation of the Rainfall Reports and Storm Analysis of the Smethport, Pennsylvania Storm July 17-18, 1942," Northeast ASDSO Conference, State College, PA, June 14-16, 2009 (<http://www.appliedweatherassociates.com/uploads/1/3/8/1/13810758/ne-region-asdso-smethport-reanalysis.pdf>).

¹³ Smethport, PA, is only a few miles further from the West Valley site than the NWS Buffalo weather station is, and the West Valley site's topography is intermediate between the flat terrain of the NWS Buffalo site and the dissected Allegheny Plateau terrain of the Smethport area.

¹⁴ Methods using temporal-spatial tradeoffs may be capable of generating a reliable baseline intensity-frequency relationship and should be evaluated for this purpose. See, for example, J.R.M. Hosking and J.R. Wallis, *Regional frequency analysis: an approach based on L-moments* (Cambridge University Press, 1997).

¹⁵ Final EIS (2010), at F-83, showing a 100-year return period for a 24-hour rainfall of 5.2 inches, based on 1986 USDA maps. The relationship of these USDA-based return periods listed in the FEIS to the return periods produced by the stochastic rainfall generator used in the FEIS erosion model (CHILD) is unclear. See generally *Climate Guidance for Phase 1 Studies*, West Valley Demonstration Project, (November 2012), Appendix C, and Vaughan, op. cit., comment 172.

¹⁶ *Climate Guidance for Phase 1 Studies*, op. cit., at 9, showing a 100-year return period for a 24-hour rainfall of 5.35 inches.

¹⁷ Szabo et al., op. cit., at 1.

¹⁸ This is discussed by Vaughan, op. cit., comments 210-215.

Recommendations:

- We recommend that a climate vulnerability assessment and climate resiliency plan, directed toward waste removal, be prepared by DOE and NYSERDA for the West Valley nuclear waste site. Agencies must do what is necessary to protect public health and the environment, including addressing climate change. Impacts considered in the assessment and climate resiliency plan should include not only potential health and environmental damage associated with severe weather events, flooding and loss of radioactive materials from the site, but also the habitability of the watershed for people and wildlife as well as associated economic impacts.
- We recommend an early start in 2016 to facilitate an iterative Phase I study process that includes substantial participation and feedback from CTF and others. In addition, the climate vulnerability assessment and resiliency plan will eventually need to be integrated with the “performance assessment” currently planned as part of the Supplemental EIS.
- We recommend that all assessments that are prepared, including but not limited to exposure and health, erosion, climate vulnerability and performance, be completely transparent, with all factors, assumptions and steps detailed and explained for the public in advance of the draft Supplemental EIS.
- Some local government entities may decide to work individually or in collaboration with other government entities to assess the vulnerability of the nuclear wastes at West Valley to severe weather events associated with climate change, by seeking available grants in order to provide an independent review.

July 27, 2014: Southern Ontario, several locations: Reportedly about 4.5 inches rain in 24 hours at Burford, Ontario, with the localized distribution and approximate magnitude of this storm event being clearly evident on Buffalo NEXRAD weather radar.

July 13-14, 2015: Chautauqua, Cattaraugus, and Allegany Counties, NY: Reportedly more than 5 inches of rain in a 2-hour period in northern Chautauqua County, causing severe flooding in the villages of Brocton, Westfield, and Silver Creek, as well as the towns of Portland and Westfield; also heavy rain in northern Cattaraugus County which was measured as 3.90" rainfall at NYSERDA's SDA meteorological station at the West Valley site; also heavy rain and flooding in parts of Allegany County; with the localized distribution and approximate magnitude of this storm event being clearly evident on Buffalo NEXRAD weather radar.