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Attached please find revised comments of the New York State Energy Research and Development Authority (NYSERDA) on the NRC's *Disposal of Greater-than-Class C (GTCC) and Transuranic Waste, Draft Regulatory Basis for Public Comment*. These comments will supersede the previous comments sent earlier today.

Please contact Paul Bembia, NYSERDA's West Valley Site Management Director, at (716) 942-9960 ext. 4900 with any questions or concerns.




Thank you.

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# **Comments of the New York State Energy Research and Development Authority on *Disposal of Greater-than-Class C (GTCC) and Transuranic Waste, Draft Regulatory Basis for Public Comment***

On July 22, 2019, the U.S. Nuclear Regulatory Commission (NRC) published a request for comment on the *Disposal of Greater-than-Class C (GTCC) and Transuranic Waste, Draft Regulatory Basis for Public Comment* (the “Regulatory Basis”).<sup>1</sup> The NRC is seeking public comments on the Regulatory Basis to support the potential development of a rulemaking for the disposal of certain types of greater-than-Class-C (GTCC) waste in a low-level radioactive waste (LLRW) land disposal facility instead of in deeper geologic repositories. In short, the Regulatory Basis aims to explore whether there are achievable disposal pathways for certain kinds of nuclear waste that would enable the cleanup of certain sites around the country faster than current disposal pathways, or lack thereof, allow.

## **Summary of the NRC’s LLRW Classification Framework for Disposal**

The NRC classifies low-level radioactive waste based on the types and concentrations of radionuclides present in the waste and the potential hazards associated with those wastes. The NRC’s regulations identify three classes of LLRW suitable for near surface disposal (Class A waste, with the lowest hazard, Class B waste, with a higher hazard, and Class C waste, with the highest hazard), and the regulations identify progressively more stringent disposal requirements based on the hazards associated with each class of waste. A fourth type of low-level radioactive waste, called “Greater-than-Class-C waste” (GTCC), contains radionuclides at concentrations that exceed the limits for Class C waste. The NRC’s regulations stipulate that GTCC waste is generally not suitable for near-surface disposal, and as such, must be disposed in a geologic repository, unless the Commission approves an alternative disposal approach. The U.S. Department of Energy (DOE) has been assigned the responsibility for developing a disposal facility for GTCC waste, but it has not yet developed any such facility. Consequently, all GTCC waste generated to date is stored at nuclear power plants and at interim storage facilities.

## **Purpose of the NRC’s Regulatory Basis Document**

The draft Regulatory Basis provides NRC’s evaluation of whether an alternative disposal approach could be safely implemented for the disposal of GTCC wastes and “GTCC-like”<sup>2</sup> waste in a near-surface LLRW disposal facility under the regulatory authority of state agencies, rather than the NRC, under authorized “agreement state” programs. The Regulatory Basis explains how changes in the regulations could resolve the GTCC waste disposal issues, identifies different approaches that could address regulatory issues, and provides the scientific, policy, legal, and technical information used to support the evaluation.

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<sup>1</sup> *Greater-Than-Class-C and Transuranic Waste, Draft Regulatory Basis; Request for Comment*, 84 FR 35037, July 22, 2019.

<sup>2</sup> The term “GTCC-like” is not defined in any statute or regulation and appears to be a term created by DOE and used for the first time in the DOE Draft Environmental Impact Statement (EIS) for the Disposal of Greater-Than-Class-C (GTCC) Low-Level Radioactive Waste and GTCC Like Waste (DOE/EIS-0375-D).

## **The Impact of the Regulatory Basis on West Valley**

A substantial portion of the draft Regulatory Basis entails discussion, analyses, and consideration of waste at the Western New York Nuclear Service Center (“West Valley”) site in Western New York. The New York State Energy and Research Development Authority (NYSERDA) holds title to the West Valley site in trust for the People of the State of New York. The United States Department of Energy (DOE), pursuant to the West Valley Demonstration Project (WVDP) Act, operates the West Valley Demonstration Project at West Valley, aiming to take specific cleanup actions with particular kinds of waste on a roughly 200-acre portion of the site. DOE and NYSERDA are currently evaluating cleanup options for the West Valley waste through a Supplemental Environmental Impact Statement, addressing waste present on the WVDP portion of the site, as well as on the NYSERDA-controlled areas of the site like the State-Licensed Disposal Area. The Draft Regulatory Basis has significant implications for the ultimate disposal pathways for these wastes.

### **Generation and Disposition of WVDP Wastes**

The WVDP generates LLRW, high-level radioactive waste (HLW) and transuranic waste<sup>3</sup> (TRU) at West Valley. Of these three waste types, only LLRW is presently sent offsite for disposal. The HLW is stored on site because a deep geologic repository for the disposal of the nation’s HLW and spent nuclear fuel has not yet been developed. In contrast to the situation for the HLW, DOE has developed a national repository for disposal of TRU (the Waste Isolation Pilot Plant near Carlsbad, NM), but DOE is choosing not to dispose of the West Valley TRU at this facility because DOE considers West Valley waste to be commercial in origin, and WIPP is limited by statute to the disposal of TRU from “atomic energy defense activities” as defined in the Nuclear Waste Policy Act of 1982. Records in NYSERDA’s possession, however, show irrefutably that the operator of the West Valley site in the 1960s and 1970s, Nuclear Fuel Services, Inc. (NFS), conducted atomic energy defense activities at the site, making the West Valley TRU defense waste and eligible for disposal at WIPP. NYSERDA also notes that the majority of the 30,000 cubic feet of existing WVDP TRU has been generated, characterized, sorted, and packaged by the WVDP to meet the Waste Acceptance Criteria for disposal at WIPP.

### **Evaluation of the Disposal of the West Valley TRU as GTCC Waste**

The Regulatory Basis evaluates a proposal for changing the nation’s radioactive waste disposal regulations in a manner that may open a pathway for the disposal of the nation’s GTCC and GTCC-like waste. It is important to note that the evaluation of this approach includes consideration of the disposal of the entire inventory of WVDP TRU that has been generated to date, along with the estimated inventory of West Valley TRU and GTCC waste that may be generated through future decommissioning actions at the site. The Regulatory Basis and

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<sup>3</sup> Section 5(b)(5) of the West Valley Demonstration Project Act states: “Transuranic waste means material contaminated with elements which have an atomic number greater than 92, including neptunium, plutonium, americium, and curium, and which are in concentrations greater than 10 nanocuries per gram, or in such other concentrations as the Commission may prescribe to protect the public health and safety.”

the related DOE National Environmental Policy Act documents<sup>4</sup> do not, however, evaluate the disposal of the West Valley TRU as TRU. Rather, the West Valley TRU is renamed as either “GTCC waste” or “GTCC-like waste” for the purpose of these evaluations. In regard to this renaming, the Regulatory Basis carries forward the following information from the DOE Draft EIS for the Disposal of GTCC waste<sup>5</sup>:

*“The NRC LLRW classification system does not apply to wastes generated or owned by DOE and disposed of in DOE facilities. However, DOE owns or generates LLRW and non-defense generated TRU radioactive waste, which have characteristics similar to those of GTCC LLRW and for which there may be no disposal path. DOE has included these wastes for evaluation in the EIS because similar approaches may be used to dispose of both types of radioactive waste. For the purposes of this EIS, DOE is referring to this waste as GTCC-like waste.”*

The disposal approach evaluated in the Regulatory Basis may have positive implications for the WVDP and West Valley site if it results in a rulemaking that enables most or all of the evaluated wastes to be disposed of in a LLRW disposal site. This means that the TRU that is now “stranded” at the site due to DOE’s refusal to dispose of the waste at WIPP would have a pathway to disposal if eligible disposal sites are identified and would allow such disposal. However, as NYSERDA notes in the comments below, the purpose and necessity for renaming the West Valley TRU as GTCC or GTCC-like waste is unclear, and we caution that the renaming of the West Valley TRU for the purpose of this evaluation should not in any way result in a permanent change in the classification of this waste or in any way make it more difficult to dispose of the West Valley TRU at the WIPP facility.

The implications of the Regulatory Basis on the West Valley site are broad; as such, NYSERDA offers the following comments for consideration by the NRC.

### **SPECIFIC NYSERDA COMMENTS**

#### **1) Renaming of West Valley TRU as “GTCC-like” Waste**

NYSERDA notes that Table 3-1 of the Regulatory Basis Document identifies decommissioning waste from the West Valley Main Plant Process Building and Tank Farm and decontamination waste from the Main Plant Process Building as “GTCC-like” waste. NYSERDA notes that the term “GTCC-like” has no basis in statute, and it does not provide a distinction between waste streams that are different in some way based on radionuclide content or hazard. This DOE term propagates an unhelpful distinction between waste streams based only upon source, rather than on hazard -- indeed, “GTCC-like waste” is defined by DOE as “DOE-owned or generated LLW and *non-defense* TRU.” NYSERDA notes that DOE is currently in the process

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<sup>4</sup> DOE Final Environmental Impact Statement for the Disposal of Greater-Than-Class C (GTCC) Low-Level Radioactive Waste and GTCC-Like Waste (DOE/EIS-0375); DOE Draft Environmental Impact Statement (EIS) for the Disposal of Greater-Than-Class-C (GTCC) Low-Level Radioactive Waste and GTCC Like Waste (DOE/EIS-0375-D); and DOE/EA-2082. Environmental Assessment for the Disposal of Greater-Than-Class C (GTCC) Low-Level Radioactive Waste and GTCC-Like Waste at Waste Control Specialists, Andrews County, Texas.

<sup>5</sup> DOE Draft Environmental Impact Statement (EIS) for the Disposal of Greater-Than-Class-C (GTCC) Low-Level Radioactive Waste and GTCC Like Waste (DOE/EIS-0375-D).

of asserting a reinterpretation of the definition of HLW at every site in the DOE Complex except for West Valley, aiming to define waste and disposal pathways by characteristics instead of origin; in keeping with that sensible approach to waste, the same principles should apply here. Finally, as noted above, the historic record does not support DOE's position that West Valley waste, including the TRU, is "commercial" or "non-defense," and NYSERDA strongly objects to renaming the waste in a manner that reinforces an improper "commercial" or "non-defense" origin for this waste.

## **2) Renaming of West Valley TRU as "GTCC" Waste**

Table 3-1 of the Regulatory Basis Document identifies West Valley decommissioning waste from the exhumation of the NDA that is identified as GTCC waste. While this term does have a basis in statute, NYSERDA believes that waste generated through the exhumation of material from the NDA would be DOE-generated WVDP waste, and as such, any such waste from the NDA exceeding 100 nCi/g of transuranic elements should be classified as TRU rather than GTCC waste<sup>6</sup>.

In addition, NYSERDA sees no reason to draw a distinction between different TRU streams generated by DOE at the WVDP. Table 3-1 identifies West Valley Decommissioning waste from the exhumation of the NDA that is identified as GTCC waste, and it also shows WVDP decommissioning waste from the Main Plant Process Building and Tank Farm that is identified as GTCC-like waste. In reality, these wastes have the same source – the NFS reprocessing operation – and there is no technical reason to separate these wastes into two separate categories. There is no difference between wastes that have been generated by the WVDP to date and wastes that may be generated by the WVDP in the future, regardless of whether those wastes are generated through MPPB decommissioning activities or exhumation of wastes from the NDA.

## **3) Future Generation of GTCC Waste at West Valley**

NYSERDA recognizes that if West Valley Phase 2 decommissioning decisions involve the exhumation of waste from the State-Licensed Disposal Area, that waste, which presumably would not be generated by the WVDP, would likely be the one and only waste stream at West Valley that may be appropriately classified as GTCC waste if the radionuclide content exceeds the concentration limits for Class C LLRW waste<sup>7</sup>. We note that Table 3-1 in the Regulatory Basis does indeed identify SDA exhumation waste as GTCC waste.

## **4) The WVDP is not outside of the Nuclear Fuel Cycle.**

The Regulatory Basis describes WVDP as being outside the nuclear fuel cycle. This statement is somewhat confusing. The West Valley facility was created to address the back end

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<sup>6</sup> As noted above, the WVDP Act defines waste contaminated with elements which have an atomic number greater than 92, including neptunium, plutonium, americium, and curium, and which are in concentrations greater than 10 nanocuries per gram, as TRU.

<sup>7</sup> Approximately 30% of the waste disposed in the SDA has its origin in the Nuclear Fuel Services West Valley Reprocessing Plant, which conducted atomic energy defense activities. It is not clear whether the defense nature of some of the waste disposed in the SDA could impact its classification if exhumed (GTCC waste vs. TRU).

of the fuel cycle by reprocessing spent nuclear fuel. Further, the TRU generated by the WVDP is not a result of reprocessing HLW (as stated in the Regulatory Basis) but is a result of reprocessing spent nuclear fuel.

**5) The NRC Should Conduct a Rulemaking**

NYSERDA supports the NRC conducting a rulemaking. In the Regulatory Basis, the NRC considers three alternatives for implementation – no regulatory changes; issue guidance that describes acceptable methods to meeting the requirements of 10 CFR Part 61; or conduct a rulemaking (promulgate regulations to establish a regulatory framework for the disposal of GTCC waste). NYSERDA believes that the preferable alternative is to conduct a rulemaking, which would provide clear and consistent technical and security requirements that would apply to the disposal of these wastes at appropriate disposal facilities. It would also provide the basis for Agreement States to regulate the disposal of the waste to the extent allowable and avoid the potential of dual regulation by NRC and an agreement state. A rulemaking is the most efficient and effective way to address all of the issues cited by the NRC staff.

**6) Disposal of GTCC Waste From Commercial Waste Generators**

NYSERDA notes that, if an appropriate rulemaking were completed to enact the changes to the LLRW regulations as described in the Regulatory Basis, it would establish a path for the disposal of GTCC waste from commercial facilities and generators in the nuclear power, industrial, medical, and academic sectors. We note that this would resolve one of the nation's long-standing orphan waste issues.

**7) Physical Protection**

The Regulatory Basis discusses whether 10 CFR §150.14 will be amended to change the requirement regarding physical protection. As discussed by the NRC Staff, a rulemaking may provide Agreement States with the option to address physical security under their own regulations that are compatible with the NRC's regulations in 10 CFR Part 37, "Physical Protection of Category 1 and Category 2 Quantities of Radioactive Material" in lieu of complying with 10 CFR §73.67. NYSERDA recognizes this as an issue that must be addressed, and we encourage NRC to obtain specific input from agreement states should the proposal proceed to rulemaking.

**8) Regulation of Persons Under 10 CFR 150.15**

NRC staff notes that a rulemaking, if conducted, could modify the requirements of 10 CFR §150.15 to permit the disposal in Agreement State regulated sites of GTCC waste resulting from the separation in a production facility of Special Nuclear Material from irradiated nuclear reactor fuel (10 CFR §150.15(a)(4)), and reactor-related GTCC waste (10 CFR §150.15(a)(8)). It appears that modification of this requirement would be needed to authorize disposal of West Valley GTCC waste or TRU in a shallow-land disposal configuration.

**9) Agreement State Regulation of the Disposal of Special Nuclear Material**

As noted in the Regulatory Basis, NRC cannot relinquish to an Agreement State the authority to license a near-surface disposal facility that can accept GTCC waste streams that have U-233, Pu, enriched U-235 or a combination of these isotopes or elements above the current 10 CFR 150.11 mass thresholds. NYSERDA agrees with the NRC staff conclusion that a "conservative and prudent approach" in any potential rulemaking would be to limit the scope of Agreement State licensing to those near-surface disposal facilities that can accept only those waste streams that do not exceed the mass thresholds of 10 CFR 150.11.

**10) NRC's Evaluation of Near-Surface Disposal of West Valley Wastes**

NYSERDA disagrees with the NRC conclusion that certain West Valley waste streams discussed in the Regulatory Basis can be identified at this time as not suitable for near-surface disposal. In the Regulatory Basis, NRC states that "remote-handled other waste" from decontamination activities of the West Valley Demonstration Project are not suitable for near-surface disposal. NRC bases this conclusion on the long-term protection of the inadvertent intruder and the potential for significant exposures due to operational accidents. NYSERDA does not believe it is possible to justify either of these conclusions at this stage using a generic evaluation. NYSERDA believes that the determination of whether the GTCC waste and TRU at the WVDP may be suitable for near surface disposal should be based on waste characteristics and the site-specific performance of a particular disposal site. WVDP waste is not different than any other similar waste present throughout the country, and until the waste is packaged for final disposal, the exact characteristics and suitability for near surface disposal will not be known. As such, these wastes should not be excluded from consideration for near surface disposal at this time.

**11) Protection of the Inadvertent Intruder**

Regarding the protection of the inadvertent intruder, this should be a matter of a site-specific analysis to demonstrate whether a given site can provide the protection needed to satisfy the requirements of 10 CFR 61 Subtitle C. NYSERDA does not agree with identifying categories of WVDP waste as being unsuitable for near-surface disposal based on this generic analysis. Well-designed and well-sited near-surface disposal cells – in particular, disposal at greater depths and/or disposal facilities with certain characteristics like low infiltration rates – may be sufficient to meet the performance objectives in Subtitle C. As noted in the Regulatory Basis, the technical analyses required under §61.13 should be relied upon to demonstrate the suitability of a waste stream for disposal.

**12) Disposal of Waste with Greater than 10,000 nCi/g of Transuranic Elements**

It is not clear that a limitation on "TRU waste in concentrations greater than 10,000 nCi/g" is necessary to ensure safe disposal of GTCC waste. This appears to be an arbitrary limit that does not ensure compliance with the performance objectives in Subpart C. The ongoing rulemaking to revise 10 CFR Part 61 would make Part 61 less prescriptive and more performance based, and that same approach should apply to the evaluation of the disposal of

GTCC waste. If a licensee can demonstrate through a performance assessment, including inadvertent intruder analysis, that the site-specific conditions and operational approaches result in compliance with Subpart C for wastes with greater than 10,000 nCi/g of transuranic elements, then these wastes should not be arbitrarily excluded from consideration for near-surface disposal.

Further, it should be noted that the characterization of WVDP Decontamination wastes is ongoing and WVDP wastes should not be singled out as unsuitable for near-surface disposal. The final determination of suitability for disposal at a specific facility will occur when there is an appropriate waste acceptance criteria (WAC) against which to evaluate final waste packages and waste forms. This Regulatory Basis document is not the appropriate vehicle to determine which WVDP wastes can or can't be disposed of in a near-surface configuration.

### **13) Intruder Dose Limit**

NYSERDA believes that an annual intruder dose limit should be set through the amendment of 10 CFR 61.42 for the disposal of GTCC waste streams in a shallow-land configuration. The dose limit should be determined as part of the rulemaking process.

### **14) Dropping the Exclusion of TRU from the 10 CFR Part 61.2 Definition of LLRW**

The current 10 CFR 61.2 definition of LLRW excludes TRU; however, as noted in the Regulatory Basis, the LLRWPAA's definition of LLRW does not expressly exclude TRU, and the Regulatory Basis states that the definition of 10 CFR Part 61.2 could be amended to remove the exclusion of TRU and thereby effectively redefining TRU as a category of LLRW. NYSERDA recognizes that a revision of the 10 CFR 61.2 LLRW waste definition by deleting the reference that excludes TRU from the definition of LLRW would result in a Part 61.2 definition that is consistent with the LLRWPAA. Beyond that, the rationale and advantage of making this change are not clearly discussed in the Regulatory Basis. The Regulatory Basis provides no detailed consideration of the disposal of TRU in a shallow-land configuration beyond the WVDP TRU, which is included in the evaluation by calling it GTCC-like waste. NYSERDA believes there is a need for additional clarity and discussion beyond what is presented in the Regulatory Basis in regard to the implications of changing the definition of Part 61 to include TRU.

### **15) Stipulation of Minimum Disposal Depth and Intruder Barrier**

One of the assumptions for the NRC Hazards Analysis is that "...GTCC waste would be disposed at a minimum depth of 5 meters below the surface of the earth and must also be disposed with a 500-year intruder barrier in place." Proper siting, waste form and radionuclide content, along with engineered features, and natural geologic features of the disposal site are all components of an integrated disposal system that work in concert to provide the level of protectiveness needed to meet the performance objectives of 10 CFR Part 61, Subpart C. NYSERDA believes that the need for both the minimum depth requirement and the 500-year intruder barrier should not be determined through a generic analysis, but should be included as part of the site-specific technical basis, and should not be imposed as a requirement in the rulemaking.



**16) Response to the NRC's Request for Comment on Cumulative Effects**

Finally, in the Federal Register Notice seeking comments on the Regulatory Basis, the NRC specifically solicits comments on the Cumulative Effects of Regulation. NYSERDA believes that any rulemaking to address the disposal of these wastes would be best addressed as part of the ongoing Part 61 rulemaking.

The NRC currently has underway a rulemaking that would update the requirements of 10 CFR Part 61 to permit the use of a performance assessment (PA) for the purposes of establishing safe disposal limits in lieu of the concentrations in 10 CFR §61.55. Since we also believe it would be reasonable to use a PA to demonstrate the suitability of a given site for the disposal of GTCC and TRU wastes, and specifically what waste streams (in terms not only of activity, but heat generation, the potential for criticality, and issues related to security) could safely be disposed, it appears that close coordination between a rulemaking to address the wastes addressed in this Regulatory Basis and the ongoing Part 61 rulemaking would be essential to avoid inconsistent requirements.