

1 **Foreword**

2 **The View of the New York State Energy Research and**
3 **Development Authority on the Final Environmental Impact**
4 **Statement for Decommissioning and/or Long-Term**
5 **Stewardship at the West Valley Demonstration Project and**
6 **Western New York Nuclear Service Center**

7 **Introduction**

8 The New York State Energy Research and Development Authority (NYSERDA) would like to
9 thank you for participating in this very important Environmental Impact Statement (EIS). This
10 Final EIS presents alternatives for the critical next steps in the cleanup of the Western New York
11 Nuclear Service Center and completion of the West Valley Demonstration Project (WVDP), and
12 assesses the environmental impacts from those alternatives. It is important for the agencies
13 and the public to be properly informed of the potential environmental impacts associated with
14 each of these alternatives; and, it is equally as important for members of the public to provide
15 their input to the agencies on the alternatives.

16 Because of the importance of the decisions that will soon be made regarding the next steps in
17 the cleanup, NYSERDA requested the opportunity to present our agency's view on the analyses
18 and results that are included in this Final EIS.

19 **NYSERDA's Role in the West Valley EIS**

20 NYSERDA owns the Western New York Nuclear Service Center on behalf of New York State, and
21 is a joint lead agency with the U.S. Department of Energy (DOE) in this EIS process. NYSERDA
22 and DOE are joint lead agencies because both agencies are planning to make decisions on the
23 future of the West Valley site. Federal and state regulations require these decisions to be
24 assessed through an EIS.

25 In terms of the EIS preparation, DOE managed and directed the EIS contractor (Science
26 Applications International Corporation), and NYSERDA provided input on the EIS content,
27 analyses and results through consultations with DOE.

28 **The Preferred Alternative – An Approach to Allow Important Near-Term Work to Proceed**

29 An interagency working group¹ was established by DOE in late 2006 to resolve a number of
30 outstanding technical issues that were identified during agency reviews of early versions of the
31 Draft EIS. The working group was tasked with finding ways to come to concurrence on almost
32 1,700 comments on the EIS, many of which were related to the long-term analysis of the site.
33 The comments also included input from an independent Peer Review Group that was convened
34 by DOE and NYSERDA in early 2006². Although the interagency working group did not resolve
35 all issues to the satisfaction of all participating agencies, the group did identify a preferred
36 cleanup alternative that would allow the near-term removal of several very significant site
37 facilities and areas of contamination (the Main Plant Process Building, the Low-Level Waste
38 Treatment System Lagoons and the source area of the North Plateau groundwater plume). The
39 alternative put forth by the interagency working group also included a period, of up to 30 years,
40 for making decisions for certain other key facilities (e.g., the High-Level Waste [HLW] Tanks³,
41 the NRC-Licensed Disposal Area [NDA] and the State-Licensed Disposal Area [SDA]). This 30-
42 year time period was considered necessary to allow for, among other things, improvements in
43 the technical basis of the long-term performance analysis. The preferred alternative was
44 presented in the Draft EIS, which was issued in December 2008.

45 In response to public comments over the length of time that could elapse between Phase 1 and
46 Phase 2 decisions, DOE and NYSERDA have reconsidered the time frame for making Phase 2
47 decisions. As a result, the Phased Decisionmaking Alternative presented in this Final EIS
48 specifies that the Phase 2 decisions would be made no later than 10 years after issuance of the
49 initial DOE Record of Decision and NYSERDA Findings Statement documenting selection of the
50 alternative.

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¹ This interagency working group, called the Core Team, is composed of representatives from DOE, NYSERDA, U.S. Nuclear Regulatory Commission (NRC), New York State Department of Environmental Conservation (NYSDEC), U.S. Environmental Protection Agency (EPA) and New York State Department of Health (NYSDOH).

² This 2006 independent review group, known as the Peer Review Group, documented its findings in a report presented to NYSERDA and DOE dated April 25, 2006 (PRG, 2006). This report is available on the internet at <http://www.nyserda.org/publications/westvalleypeerreviewgroup.pdf>. Paper copies can be requested from NYSERDA at END@nyserda.org, or by calling Elaine DeGiglio at (716) 942-9960, extension 2423.

³ The HLW Tanks are referred to in the EIS as “the Waste Tank Farm.”

52 NYSERDA continues to support the Phased Decisionmaking Alternative because it allows
53 substantial facilities and contamination to be removed from the site in the near term. This
54 removal work represents very important progress in the cleanup of the Western New York
55 Nuclear Service Center and completion of the WVDP. The alternative also provides the
56 opportunity to improve EIS long-term technical analyses so the agencies can be better informed
57 when considering the decision with respect to the remaining facilities. Due to the very large
58 costs associated with removing these facilities and the potential for significant long-term risk
59 from leaving them in place, NYSERDA believes the long-term decision with respect to these
60 facilities must be supported by a thorough and scientifically defensible long-term analysis. We
61 also continue to believe that this scientifically defensible long-term analysis does not exist, even
62 in this FEIS.

63

64 **Independent Expert Review of the Draft and Final EIS**

65 In the spring of 2008, NYSERDA convened a group of nationally and internationally recognized
66 scientists to review a Preliminary Draft of the DEIS (PDEIS). These distinguished scientists,
67 collectively called the Independent Expert Review Team (IERT), are experts in the disciplines of
68 geology, erosion, groundwater hydrology, nuclear science and engineering, health physics, risk
69 assessment, and environmental science and engineering (see the second-to-last section of this
70 *Foreword* for a list of the members and their respective affiliations). The scope of their review
71 was to assess the technical basis and scientific defensibility of the analyses presented in the
72 PDEIS. The review was initiated in May 2008 and was completed in September 2008⁴. A final
73 report was submitted to NYSERDA on September 23, 2008 (IERT, 2008).

74 In preparation for the issuance of the Final EIS in October 2009, NYSERDA convened a subteam
75 of the IERT to review an early (“Pre-Concurrence”) draft of the FEIS. This IERT subteam was
76 tasked with reviewing the document to identify noteworthy changes since the Draft EIS (issued
77 December 2008), and assessing the implications of these changes to the defensibility and
78 outcome of the analyses.

79

⁴ The report from the Independent Expert Review Team is available on the internet at:
<http://www.nyserda.org/publications/westvalleyindependentreview.pdf>. Paper copies can be requested at
END@nyserda.org, or by calling Elaine DeGiglio at (716) 942-9960, extension 2423.

80 While the IERT subteam acknowledged the additional work and effort put forth by DOE (and its
81 contractor) to improve the analyses in the FEIS, they also concluded that many of the technical
82 issues identified in the Preliminary Draft EIS, remain valid in the Final EIS. The results of the
83 Independent Expert Review Team’s review, along with NYSERDA staff’s own review of this Final
84 EIS, allowed NYSERDA to develop an overall “view” on the Final EIS analyses and results. The
85 NYSERDA “View” is presented below.

86 **NYSERDA’s View on the Final EIS Analyses and Results**

87 NYSERDA’s view on the Final EIS analyses and results is as follows:

88 1. **The Final EIS Analysis of Soil Erosion is Not Scientifically Defensible and Should Not Be** 89 **Used for Long-Term Decisionmaking**

90 The Final EIS soil erosion analysis, which is intended to show how soil erosion by water will
91 impact the site and site facilities over the next 10,000 years, is not scientifically defensible
92 and should not be used for long-term decisionmaking.

93 The Final EIS presents the results from a computer program (also called a landscape
94 evolution model) that is used to calculate changes to the existing land surface from soil
95 erosion. The model uses mathematical equations and input parameter values (e.g., rainfall
96 amount and intensity, soil type, vegetation, the slope of the land surface, etc.) to predict
97 how the topography of the land will be shaped by natural erosion processes over very long
98 time frames (i.e., thousands of years). These computer-predicted changes in the land
99 surface were then combined with the conceptual designs for facilities that are proposed to
100 be closed-in-place to determine how critical facilities and areas of contamination would be
101 impacted by the computer-predicted erosion for each of the EIS alternatives.

102 NYSERDA recognizes DOE’s efforts in trying to develop a defensible erosion analysis, yet it is
103 apparent that the science of landscape evolution modeling is still in its infancy. Although
104 these models are used to recreate many complex individual processes, they necessarily
105 represent nature in a very abstract, simplistic way. While current state-of-the-art landscape
106 evolution models are capable of recreating very basic, gross aspects of a stream network or
107 watershed, they admittedly cannot: (1) predict the location of streams, gullies, landslides,
108 etc.; (2) address the wandering or meandering nature observed in local streams; or (3)
109 explicitly account for the knickpoint erosion that is actively causing downcutting (downward
110 erosion) of stream channels and advancement of gullies. As such, we cannot rely on the
111 results from these models to make decisions regarding the long-term future of the West
112 Valley site.

113 The limited graphical information provided to support the long-term modeling results is
114 incomplete and makes it impossible for the general public to distinguish, for example,
115 between areas predicted to erode 25 centimeters or 1700 centimeters. Further, NYSERDA
116 staff believe these results are not only unrealistic, but overly optimistic given the 10,000-
117 year time frame. With the exception of one modeling scenario, the simulation results show
118 **no gully erosion of the South Plateau over the next 10,000 years.** Even more astonishing,
119 these results show streams surrounding the South Plateau filling in with sediment over the
120 same time period. These results are wholly inconsistent with what is being observed at
121 these locations today. The streams themselves are actively downcutting dramatically in
122 some locations, and the stream valley walls contain actively eroding gullies. The modeling
123 results for the North Plateau predict tremendous downcutting (up to 30 meters or 100 feet)
124 on Quarry Creek, which borders the WVDP to the north, yet relatively little gully erosion
125 protruding into the plateau. Again, this predicted landscape is not representative of
126 observed site or regional topography. Where local streams have incised the landscape,
127 deep gullies extend many hundreds of feet into the landscape on either side of the stream.
128 These discrepancies suggest the modeling results are neither meaningful nor reliable.

129 Also included in the EIS are short-term erosion predictions, based on four separate
130 commonly used computer models that have been used to provide perspective on the
131 reasonableness of the landscape evolution predictions. The results from these models
132 provide very little useful information with regard to erosion rates at the West Valley site
133 because gullies are the principal surface erosion threat at the site, and none of the models
134 are capable of predicting gully erosion.

135 After reviewing the erosion modeling presented in the Final EIS, the Independent Expert
136 Review Team offered the following observations:

137 “While the current version of the EIS (dated October 5, 2009) offers some refinements
138 over the previous version (2008), especially with regard to modeling the surface
139 processes, deficiencies still remain, and these include the following:

140 (1) A serious disconnect exists between model parameterization and the
141 hydrologic and geomorphic characteristics of the site;

142 (2) No verification or validation of any models is presented in the context of
143 comparing model output with actual field data;

144 (3) Many of the model components, especially with regard to the gully erosion
145 and landscape evolution, are unjustifiable and unsupported by scientific
146 evidence; and

147 (4) No uncertainty analysis of any model predictions is provided.”

148 Based on the IERT subteam's recent review of the erosion modeling work, coupled with
149 NYSERDA staff's review of the Final EIS, NYSERDA believes that the erosion modeling results
150 presented in the Final EIS are unrealistic and not scientifically-based, and therefore should
151 not be used for long-term decisionmaking. Accordingly, predictions of radiation doses to
152 the public and all other site impacts that were calculated using the erosion models
153 presented in this Final EIS should not be used to support long-term decisionmaking for the
154 West Valley site cleanup. Until both lead agencies and the scientific community conclude
155 that a defensible erosion analysis for the site is achievable and has been prepared, decisions
156 will need to focus on actions that are not dependent on having scientifically defensible
157 estimates of erosion impacts over thousands of years.

158 2. The Final EIS Analysis of Contaminant Transport by Groundwater Needs Improvement

159 The analysis of the potential for transport of contaminants by groundwater, as presented in
160 Appendix E and Appendix G of the Final EIS, needs improvement.

161 The groundwater transport analyses are presented in the Final EIS in two appendices.
162 Appendix E presents a description of three-dimensional groundwater flow-and-contaminant
163 transport models that were used to estimate the flow of groundwater through the soils and
164 bedrock beneath the site, and to assess the release and transport of contaminants by
165 groundwater from any facilities and contamination that might be closed-in-place. Appendix
166 G describes simpler, one-dimensional groundwater flow-and-contaminant transport models
167 that were used in the calculations of impacts to the public that are presented in other
168 sections in the DEIS.

169 NYSERDA recognizes the significant effort that was employed by DOE and its consultants to
170 develop and run a three-dimensional flow-and-transport model for this site, and we note
171 that this work represents an improvement over earlier groundwater modeling efforts. In its
172 review of the 2008 Draft EIS, the IERT noted that "the general approach to groundwater
173 flow and transport modeling described in Appendix E is acceptable but could be improved."
174 The IERT also made specific recommendations to improve the model. The
175 recommendations called for (1) a more comprehensive evaluation of uncertainties using a
176 probabilistic approach, and (2) a more convincing demonstration that one-dimensional
177 models in Appendix G are derived from and supported by the three-dimensional models
178 presented in Appendix E.

179 After completing its review of the 2009 FEIS, the IERT subteam concluded that there are no
180 substantive changes to the 2009 FEIS compared to the 2008 version. There continues to be
181 no compelling argument for why the modelers have chosen to use simplified one-
182 dimensional flow-and-transport models for the purposes of calculating long-term dose (as

183 opposed to the three-dimensional model presented in Appendix E). Similarly, the IERT
184 subteam believes that the deterministic analysis presented in the EIS may not be realistic or
185 conservative. They concluded that it should be possible to propagate uncertainties in the
186 model inputs using Monte Carlo methods to generate a probabilistic range of outcome.
187 Unfortunately, the modelers chose not to perform such calculations.

188 The Final EIS uses a deterministic approach (i.e., single values are used for model inputs and
189 model parameters), and asserts that these values are conservative⁵. NYSERDA shares the
190 belief of the IERT—that additional documentation is needed to substantiate the assertion
191 that the deterministic treatment of groundwater flow and transport is truly conservative.
192 According to the IERT, the sensitivity analyses presented are a very small subset of the
193 potentially important analyses, and do not provide a comprehensive evaluation of
194 uncertainty in groundwater flow and transport.

195 Based on the IERT’s review of the groundwater modeling work, and on NYSERDA staff’s
196 review of the same information, NYSERDA opposes using the groundwater modeling results
197 presented in the Final EIS for long-term decisionmaking. Accordingly, predictions of
198 radiation doses to the public and all other site impacts that were calculated using the
199 groundwater modeling approach presented in the Final EIS should not be used to support
200 long-term decisionmaking for the West Valley site cleanup.

201 3. **The Final EIS Assumptions Used for the Performance of Engineered Barriers have not been**
202 **Substantiated and may be Overly Optimistic**

203 The assumptions used in the Final EIS analysis to predict the performance of engineered
204 features such as caps, slurry walls, grout, and other engineered materials intended to keep
205 contamination physically and chemically bound in place for tens of thousands of years, have
206 not been substantiated and may be overly optimistic. Additional analysis and verification
207 are required for the performance of engineered barriers that are used in the Final EIS site
208 closure alternatives.

209 In the Final EIS analysis, the physical properties of engineered barriers are assigned a level
210 of performance that is said to represent a degraded condition to account for barrier
211 subsidence, cracking and clogging. The engineered barriers are then assumed to perform at
212 that level, without further reduction in performance, for the duration of the analysis
213 (100,000 years). An important factor for the physical performance of engineered barriers in
214 the Final EIS is the assumption that the barriers used to protect the North Plateau facilities

⁵ “Conservative” means that the values chosen would not likely lead to an underestimate of impacts.

215 will not be physically disturbed by natural processes (e.g., erosion). Given the presence of
216 significant erosion features (gullies and slumps) that are actively changing and impacting
217 the North Plateau today, this assumption seems implausible, and if this assumption is going
218 to be used in the Final EIS, it must be supported by convincing evidence. Our review of
219 Appendix H shows that this assumption is based solely on the results of the Final EIS erosion
220 modeling, and, as stated above, we believe this modeling is not scientifically defensible.
221 Consequently, the assumption in the Final EIS that the engineered barriers would be
222 physically stable for 100,000 years on the North Plateau is not adequately supported.

223 The chemical properties of engineered barriers (which are intended to chemically bind
224 contaminants and prevent their migration) are also said to be assigned degraded values,
225 and are then assumed to remain at that level for the 100,000-year-analysis period without
226 further reduction in performance. The assumption that chemical properties of man-made
227 engineered barriers will remain constant over tens of thousands of years is implausible.
228 Even though a “natural” material may be stable and retain certain properties in one
229 geologic and hydrologic setting, that same natural material may not be stable or retain
230 those same chemical properties indefinitely in another setting, particularly when combined
231 with other natural and man-made materials over time frames as long as 100,000 years. If
232 the Final EIS is going to use this assumption, the Final EIS must also provide adequate
233 references to properly support and defend this assumption.

234 The IERT noted that text had been added to supporting documents to this Final EIS (see
235 *Sitewide Close-In-Place Technical Report*) stating that “erosion control installations in
236 Western New York had been reviewed to gain a better understanding of the various types
237 of structures used, the successes and failures, and the mechanisms for failure, for these
238 structures.” However, the IERT could not find where that information had been used to
239 improve the analyses anywhere in the Final EIS or the supporting documents. They also
240 noted that no engineered barrier uncertainties were accounted for in the Final EIS.

241 The sensitivity analysis information presented in Appendix H in the Final EIS shows that the
242 assumptions used for engineered barriers in the long-term performance calculations, even
243 in the “degraded” state, are critical to the outcome of performance for facilities that are
244 closed-in-place. As such, it is very important that the Final EIS provide clear support for all
245 assumptions used for engineered barriers, and provide additional information on the

246 impacts from complete- and partial-barrier failure as well as on the importance of
247 engineered barriers in each alternative's ability to meet the decommissioning criteria⁶.

248 Based on the IERT's review of the engineered barrier assumptions, and based on NYSERDA
249 staff's review of the Final EIS, NYSERDA has concluded that the assumptions used for
250 engineered barriers in this Final EIS are not adequately supported, and may lead to
251 underestimates of dose and other impacts. Accordingly, predictions of long-term radiation
252 doses to the public and all other site impacts that were calculated based on the engineered
253 barrier assumptions presented in this Final EIS should not be used to support long-term
254 decisionmaking for the West Valley cleanup.

255 4. **The Uncertainties in the Final EIS Long-Term Performance Analyses are not Adequately**
256 **Presented or Discussed**

257 The Final EIS does not address uncertainty in a manner that provides decisionmakers with
258 information on the critical contributors to uncertainty, or the importance of uncertainty in
259 site cleanup decisions.

260 All long-term analyses in the Final EIS are deterministic, which means that they use single
261 models and single values for model input parameters. The IERT subteam, in their
262 assessment of the Final EIS, concluded the following:

263 "There have been no significant changes in the approach to uncertainty analysis from
264 the 2008 review. The models are generally void of probability-based information that
265 would be the basis for meaningful uncertainty analysis. The absence of a probability-
266 based uncertainty analysis also greatly compromises any attempt at making the
267 assessments risk-informed or having a high level of confidence in the quality of the dose
268 modeling. The approach to considering uncertainty is based on alleged use of
269 conservative assumptions. No attempt was made to quantify the uncertainties."

270 The IERT noted that the multiple sources of uncertainty inherent in this analysis are largely
271 unacknowledged, and there is no systematic discussion of how uncertainty has been
272 characterized. Impacts of uncertainties on decisionmaking are supposed to be accounted
273 for by conservative choices in scenario selection and modeling, and by limited deterministic
274 sensitivity analyses. In practice, however, the Final EIS does not demonstrate that the

⁶ Under the WVDP Act, the U.S. Congress required the U.S. Nuclear Regulatory Commission to prescribe decommissioning criteria for the WVDP. Those criteria were issued by NRC in a "Policy Statement" that was published in the Federal Register on February 1, 2002.

275 deterministic analysis is either conservative, or that it has appropriately incorporated or
276 bounded uncertainty.

277 The IERT concluded that some potentially significant uncertainties have not been evaluated.
278 In addition, assertions that other uncertainties have been conservatively bounded are not
279 justified. Transparency of the long-term analysis is poor, and it is not possible to
280 independently replicate the analyses or to otherwise understand how the results were
281 derived. Given these observations, the IERT stated that the quantitative results of the long-
282 term analysis presented should not be used to support decisionmaking associated with the
283 Final EIS.

284 Based on the IERT's review of the treatment of uncertainty, and based on NYSERDA staff's
285 review of the Final EIS, NYSERDA has concluded that the approach used to identify, analyze,
286 and present uncertainty in the Final EIS is not adequate. The sensitivity analyses in
287 Appendix H show that varying the values of certain important parameters could make the
288 difference between whether an alternative meets the decommissioning criteria or fails to
289 meet the criteria. Consequently, a more comprehensive and transparent analysis and
290 presentation of uncertainty is needed to support long-term decisionmaking for the West
291 Valley site cleanup.

292 5. **The Connection between the Final EIS Analyses and the Applicable Regulatory Framework**
293 **Must be Strengthened**

294 The long-term analysis for the site, as described in Appendix D of the Final EIS, should be
295 closely structured and clearly tied to the NRC's License Termination Rule (LTR). The LTR is
296 the applicable regulatory framework for decommissioning the WVDP and for the
297 termination of the 10 CFR 50 License.

298 The Final EIS identifies several regulations that were used to develop the framework for the
299 long-term performance assessment analysis. One of these regulations is the License
300 Termination Rule, which is the applicable regulatory framework for the West Valley
301 Demonstration Project cleanup. Another regulation that was relied upon extensively in the
302 development of the Final EIS analytical approach is 10 CFR 61 (Part 61), the NRC's Low Level
303 Waste disposal regulations. We are concerned that using portions of the Part 61 guidance,
304 absent other critical parts of the Part 61 regulations (such as the facility siting
305 requirements), may result in a nonconservative performance assessment.

306 Part 61 requires a disposal site to be located in a geologic setting that is essentially stable,
307 or alternatively, in an area where active features, events, and processes (such as erosion)
308 will not significantly affect the ability of the site and design to meet the Part 61

309 performance objectives. The Part 61 performance assessment guidance is intended to be
310 applied to a facility that is sited in accordance with the site suitability requirements. In such
311 a setting, an engineered cap might not be substantially disturbed by natural processes, and
312 it may be reasonable to assume that the cap would provide adequate protection to an
313 intruder for the needed time period. At the West Valley site, however, the facilities were
314 not sited in accordance with the Part 61 site suitability requirements, and as such, the Final
315 EIS analysis should not take credit for site stability and the passive functioning of
316 engineered barriers in perpetuity unless this assumption can be justified.

317 Although DOE has a standard approach for preparing National Environmental Policy Act
318 (NEPA) documents, the LTR (and its implementing guidance, NUREG-1757), are directly
319 applicable to the West Valley Demonstration Project decommissioning activities and
320 alternatives, and the LTR requirements and guidance should form the framework for the
321 Final EIS analysis. The NRC's West Valley Policy Statement prescribes the LTR as the
322 decommissioning criteria for the WVDP, and states:

323 "The environmental impacts from the application of the criteria will need to be
324 evaluated for the various alternative approaches being considered in the
325 process before NRC decides whether to accept the preferred alternative for
326 meeting the criteria of the LTR. NRC intends to rely on the DOE/NYSERDA EIS
327 for this purpose."

328 While DOE has stated that the Decommissioning Plan, not the EIS, is the proper document
329 to conduct the LTR compliance analysis, it does not seem logical to prepare an EIS to assess
330 the impacts from decommissioning actions that must meet the requirements of the NRC's
331 LTR, and use regulations and guidance that are not part of the LTR regulatory framework to
332 structure the analyses. As such, NYSERDA believes that the Final EIS analyses are not
333 adequately framed to reflect the requirements of the NRC's analytical requirements for
334 decommissioning. The Part 61 guidance should not be used as part of the analytical
335 framework for the Final EIS unless there is a specific reason under the requirements of the
336 LTR or WVDP Act to do so.

337 6. **The Final EIS Approach for Exhumation may be Overly Conservative**

338 The approach described in the Final EIS and its supporting documents for exhumation of the
339 SDA, the NDA and the Waste Tank Farm appears to be overly conservative, and based on
340 extreme conditions, rather than on conditions that are more likely to be encountered
341 during exhumation. As a result, there is significant uncertainty in the cost estimates in the
342 Final EIS for the exhumation of the Waste Tank Farm and the disposal areas.

343 The SDA and NDA exhumation processes are conducted using very large, hard-walled
344 concrete secondary containment structures. Primary containment structures are located
345 within the larger secondary containment structures. While this may be an effective
346 approach to provide containment, it may also be more containment than what is ultimately
347 needed to safely exhume some or all of the wastes. Further, the Final EIS assumes that 100
348 percent of the waste resulting from demolition of these massive containment structures
349 must be disposed of as radioactive waste. We believe this assumption to be unnecessarily
350 conservative.

351 An alternative approach to the use of hard-walled containment structures would be the use
352 of Sprung Structures™, which consist of UV-resistant fabric and PVC membrane over an
353 aluminum support system. Sprung Structures™ have lasted 15-20 years through harsh
354 winters, and they can be fitted with the ventilation and air filtering systems that would be
355 needed to contain contamination within the structure. Similar structures were used at the
356 WVDP in the 1980s during the excavation of the solvent tanks from the NDA, and are
357 currently employed in waste exhumation projects at Idaho National Laboratory and Los
358 Alamos National Laboratory.

359 NYSERDA acknowledges DOE's efforts to clarify the large uncertainty of the cost for disposal
360 of Greater than Class C (GTCC) wastes. It is projected that approximately 150,000 cubic feet
361 of waste exhumed from the SDA and NDA will be classified as GTCC waste. The disposal
362 cost for GTCC waste will not be known until there is a disposal facility for GTCC waste. In an
363 effort to bound the costs for disposal of GTCC waste, DOE has included a range of costs
364 based on the cost of disposal of TRU waste at the Waste Isolation Pilot Plant (WIPP) and an
365 estimated cost for disposal at a high-level waste repository using cost for disposal at Yucca
366 Mountain.

367 For the Waste Tank Farm, the IERT questioned the high cost of constructing and operating
368 the Waste Tank Farm Waste Processing Facility. They suggested that by considering
369 alternative exhumation approaches for the tanks, cost savings could be realized.

370 Based on the IERT's review of the exhumation approach, and based on NYSERDA staff's
371 review of the Final EIS and supporting documents, we believe that the exhumation
372 approaches in the Final EIS could be successful. It is however, recommended that current
373 industry practices and innovations be applied in an effort to lower costs. NYSERDA
374 acknowledges that DOE's revised approach reuses some modular components of the
375 environmental containment to lower waste volumes but we believe these changes do not
376 adequately address the issues previously identified. Significant uncertainty remains in the
377 costs used in the Final EIS for disposing of exhumed waste from the SDA and NDA.

378 NYSERDA believes that the approach identified in the Final EIS for exhuming the disposal
379 areas and Waste Tank Farm should be reassessed to determine whether less conservative,
380 but still protective, methods of exhumation could be identified that would significantly
381 reduce the cost of exhumation.

382 **7. Current Methods for Assessing Nonradiological Risk from Transportation Have Limitations**
383 **and are Likely to Overestimate Fatalities**

384 NYSERDA recognizes the DOE's revisions to evaluating human health impacts from
385 transportation. In previous versions of this EIS, DOE relied on national average accident
386 fatality rates to determine the number of predicted fatalities from rail transportation under
387 each decommissioning alternative. In the Final EIS, DOE uses state-specific fatality rates
388 (published for the years 1994 to 1996) along the designated transportation routes shown in
389 Figure J-2 of Appendix J. This change, which is consistent with previous DOE guidance on
390 transportation risk assessment (DOE, 2002), resulted in a 50 percent reduction in predicted
391 rail transportation fatalities in the Final EIS.

392 While the current approach for assessing nonradiological transportation risk is consistent
393 with DOE guidance and other published DOE Environmental Impact Statements (e.g., the
394 Yucca Mountain FEIS released in 2002), it does have limitations. In its evaluation of
395 nonradiological risk from rail transportation, the Final EIS uses "railcar-kilometers" to assess
396 the number of expected traffic accident fatalities. The main purpose for adopting this
397 approach is that readily available data exists for State-specific accident rates provided in
398 units of fatalities per railcar-kilometer. NYSERDA believes that a better measure for
399 assessing impacts from rail transportation would be train-kilometers that would assume a
400 single shipment consists of multiple railcars. The accident risk would be assigned to the
401 entire train, rather than each individual railcar on the train. In regard to this issue, in 2008,
402 the IERT offered the following observation:

403 "The railcar-kilometer metric implies that one or a few waste laden railcars are part of a
404 larger variable construct train. (See Saricks and Tompkins, 1999 cited in Appendix J of
405 the 2008 DEIS for a discussion of variable-construct versus dedicated trains.) If these
406 waste-laden railcars are a small part of a much larger train (Saricks and Tompkins
407 estimate 68 cars in an average train), then the non-radiological risk is already inherently
408 included in the train that would run whether the few additional waste-laden railcars
409 were present or not. This is another difference between variable-construct train and
410 truck risks – the truck would not travel if not for the waste cargo; the same is not true for
411 variable-construct trains. One could argue that the incremental non-radiological rail
412 transportation risk due to an additional waste-laden railcar is negligible."

413 To further illustrate the point that train-kilometers represent a more accurate measure, it
414 has been reported that approximately half of all rail transportation injuries and fatalities
415 occur at rail crossings in which the lead locomotive is involved in the collision (DOT, 1997).
416 This would suggest that injury and fatality rates are independent of train length (Cashwell et
417 al., 1986).

418 However, despite the arguments for expressing fatality rates in terms of train-kilometers,
419 NYSERDA recognizes that this is not the common industry practice because statistics on
420 train-kilometers are not readily available. As Saricks and Thompkins (1999) point out,
421 converting a unit railcar rate to a unit train rate requires application of statistical
422 information available only for trains of an average length (estimated to be 68 cars). They
423 advise against this approach because they do not consider it to be statistically defensible.
424 Other uncertainties associated with available transportation statistical data are summarized
425 in Section J.11.5 of the Final EIS. Also mentioned in that section is the more recent trend
426 (based on limited available data for the years 2000 through 2004) toward lower rail
427 transportation fatality rates.

428 Given the limitations on available statistical data cited above, NYSERDA believes that the
429 calculation of fatalities based on train-kilometers is not, at this time, defensible.
430 Consequently, we believe that the rail fatality rates presented in the Final EIS are adequate
431 for decisionmaking, but are likely to be overestimates of actual fatality rates. This
432 conclusion is supported by the fact that, as stated in the Final EIS, in 50 years of moving
433 radioactive and hazardous materials, DOE and its predecessor agencies have not incurred a
434 single fatality.

435 8. **The Existing Long-Term Performance Assessment is not Adequate to Support the In-Place**
436 **Closure of the Waste Tank Farm or any Other Facilities**

437 The Final EIS includes an analysis that attempts to quantify and present the impacts from
438 the in-place closure of all major facilities on the site. Much of the discussion in this “View”
439 presents NYSERDA’s concerns with that long-term, in-place closure analysis. As discussed
440 above, NYSERDA believes that the Final EIS long-term performance assessment for the in-
441 place closure alternative is seriously flawed and scientifically indefensible. As such, the
442 Final EIS long-term performance assessment should not be used to support a decision to
443 close the Waste Tank Farm, or any other facilities, in place.

444 In response to public comments received on the Draft EIS, DOE has stated that they will
445 seek public input prior to a Phase 2 decision regardless of the exact NEPA process utilized.
446 NYSERDA also believes that before a decision is made to close the Waste Tank Farm in
447 place, DOE should prepare and make available for public and agency comment, an EIS with

448 a revised and scientifically defensible long-term performance assessment that would fully
449 analyze, identify and disclose the impacts from this alternative.

450 **NYSERDA's Quantitative Risk Assessment for the State-Licensed Disposal Area**

451 NYSERDA's preferred alternative for the SDA is to manage the facility in place for up to 10 more
452 years while we complete needed scientific studies and collect data to make an informed
453 decision on the future of the SDA. At the end of the 10-year period (also referred to as "Phase
454 1" of the preferred alternative), NYSERDA, with input from the public and stakeholders, will
455 make a decision to either continue active management of the site (under a State-issued permit
456 and license), close-in-place or exhume part or all of the disposal area.

457 For implementation of Phase 1 of the preferred alternative, NYSERDA is required under the
458 State Environmental Quality Review Act (SEQR) to identify and mitigate potential
459 environmental impacts from that action. Through early discussions with DOE regarding the
460 content of the EIS, NYSERDA learned that the EIS would not include a quantitative analysis of
461 impacts from the in-place management of the SDA for the next several decades. To meet its
462 requirements under SEQR, NYSERDA tasked Dr. B. John Garrick to provide the analysis needed
463 to assess NYSERDA's preferred alternative for the SDA. Dr. Garrick, who is the current
464 Chairperson of the U.S. Nuclear Waste Technical Review Board, and a former President of the
465 Society for Risk Analysis, recommended that the SDA short-term analysis consist of a
466 quantitative risk assessment (QRA).

467 The Quantitative Risk Assessment for the State-Licensed Disposal Area (QRA 2008) evaluates
468 the risk from continued operation of the SDA for the next 30 years with its current physical and
469 administrative controls. With the current change to the time period between Phase 1 and
470 Phase 2 decisions (10 years versus 30 years) as identified in the Final EIS, NYSERDA determined
471 that a 30-year analysis for the SDA would be bounding and conservative. The scope of this risk
472 assessment is limited to quantification of the radiation dose received by a member of the
473 public, represented by two potential receptors - a permanent resident farmer located near the
474 confluence of Buttermilk Creek and Cattaraugus Creek, and a transient recreational hiker /
475 hunter who traverses areas along Buttermilk Creek and the lower reaches of Frank's Creek.

476 The study evaluates potential releases of liquid, solid, and gaseous radioactive materials from
477 the 14 waste disposal trenches at the SDA site. It examines a broad spectrum of potential
478 natural and human-caused conditions that may directly cause or contribute to these releases.

479 The QRA includes detailed models for the mobilization, transport, distribution, dilution, and
480 deposition of released radioactive materials throughout the environment surrounding the SDA

481 site, including the integrated watershed formed by Erdman Brook, Frank's Creek and Buttermilk
482 Creek.

483 Appendix P of this Draft EIS contains a summary of the QRA for the SDA, and the supporting
484 models, data, and analyses for the QRA are available as a separate document from NYSERDA⁷.

485

⁷ The complete QRA report is available on the internet at <http://www.nyserda.org/publications/sdaqantitativeveriskassessment.pdf>. Paper copies can be requested from NYSERDA at END@nyserda.org, or by calling Elaine DeGiglio at (716) 942-9960, extension 2423.

486 **The Composition of the Independent Expert Review Team**

487 NYSERDA selected a distinguished group of nationally and internationally recognized scientists
488 and engineers to conduct an independent review of the Draft EIS for the West Valley
489 Demonstration Project and the Western New York Nuclear Service Center. The basis of their
490 selection was to select individuals who have distinguished themselves in the disciplines
491 believed important to the scope of the review. The disciplines included on the IERT are
492 geology, erosion, groundwater hydrology, nuclear science and engineering, health physics, risk
493 assessment, and environmental science and engineering.

494 Dr. B. John Garrick, Chairman, U.S. Nuclear Waste Technical Review Board and an independent
495 consultant in the nuclear and risk sciences, was named as the initial member and chairman of
496 the Independent Expert Review Team. Dr. Garrick assisted NYSERDA in selecting the review
497 team, and he had the responsibility for integrating the reviews and leading the preparation of
498 the team's report. The full membership and their affiliations are listed below.

499 **James T. Bell, Ph.D.**, Retired, Oak Ridge National Laboratory, Oak Ridge, Tennessee

500 **Sean J. Bennett, Ph.D.**, Professor, State University of New York at Buffalo, Buffalo, New York

501 **Robert H. Fakundiny, Ph.D.**, New York State Geologist Emeritus, Rensselaer, New York

502 **B. John Garrick, PhD.**, Chairman, U.S. Nuclear Waste Technical Review Board, Laguna Beach,
503 California

504 **Shlomo P. Neuman, Ph.D.**, Regents' Professor, University of Arizona, Tucson, Arizona

505 **Frank L. Parker, Ph.D.**, Distinguished Professor, Vanderbilt University, Nashville, Tennessee

506 **Michael T. Ryan, Ph.D.**, Principal, Michael T. Ryan Associates, Lexington, South Carolina

507 **Peter N. Swift, Ph.D.**, Yucca Mountain Lead Laboratory Chief Scientist, Sandia National
508 Laboratory, Albuquerque, New Mexico

509 **Chris G. Whipple, Ph.D.**, Principal, ENVIRON International Corporation, Emeryville, California

510 **Michael P. Wilson, Ph.D.**, Professor, State University of New York at Fredonia, Fredonia, New
511 York

512 As a follow-up to their comprehensive review of the Draft EIS, a smaller team of experts (IERT
513 subteam) reviewed critical chapters and appendices in the Final EIS. The purpose of this review
514 was to identify substantive changes to the EIS (from the draft that was published in 2008), and
515 assess the implications of these changes to the defensibility and outcome of the analyses.

516 Members of the subteam included Drs. Bennett, Fakindiny, Garrick, Neuman, Ryan and
517 Whipple.

518

519 **References**

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