To whom it may concern (and Anna),

Please find attached NRDC's comments on the Nuclear Regulatory Commission's *Draft Interim Standard Review Plan for DOE Waste Determinations*. If you have any difficulty downloading or opening this file, please do not hesitate to contact me at the number below. Thank you for your assistance with this matter.

Geoff Fettus

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NATURAL RESOURCES DEFENSE COUNCIL

July 31, 2006

COMMENTS OF THE NATURAL RESOURCES DEFENSE COUNCIL ON THE NUCLEAR REGULATORY COMMISSION'S STANDARD REVIEW PLAN FOR ACTIVITIES RELATED TO U.S. DEPARTMENT OF ENERGY WASTE DETERMINATIONS

Introduction and summary

On May 31, 2006, the Nuclear Regulatory Commission (NRC) issued its *Standard Review Plan for Activities Related to U.S. Department of Energy Waste Determinations, Draft Report for Interim Use and Comments* (hereinafter the "SRP"). We appreciate the opportunity to offer comments on a draft plan and we hope that these recommendations will improve several objectionable aspects of the document. We commend the NRC's effort to standardize its agency review of the Department of Energy's (DOE) high-level waste reclassifications. These are necessarily complex decisions about highly dangerous radioactive waste that will affect the human environment for thousands of years.

DOE has repeatedly demonstrated that its objective is to save money by relaxing disposal standards and avoiding removal and vitrification of high-level radioactive waste (HLW). And unless this SRP is aggressively rewritten to provide a more thorough review for the NRC staff, DOE will continue to manipulate the following facts and parameters: the use of key terms such as "highly radioactive," watering down the definition of the phrase "to the maximum extent practicable," delisting key radionuclides that have to be removed to the maximum extent practicable, ignoring basic tenets of health physics principles like "As Low As Reasonably Achievable" (ALARA), extending compliance boundaries to allow for dilution of the waste in order to meet standards, and playing games with the time of dose assessment to allow for disposal of more waste. In addition, DOE and the NRC continue to rewrite the history of the incidental waste concept and restrict necessary information that should be made available to the public, states and tribes about these waste determinations (such as the modeling data that underlies the performance assessment for a waste determination). These concerns guide our subsequent comments.

Another important concern is that there be adequate opportunity provided for the public to review, understand and comment on both NRC's and DOE's actions. While we support the stated effort that the agency will make transparent the technical basis for its decisions regarding waste determination reviews under the National Defense Authorization Act for Fiscal Year 2005 (NDAA) (*see* SRP at 9-2), the NRC's Technical Evaluation Report (TER) process should be issued to the public in *draft* form for public comment prior to the final issuance of a TER, with supporting documentation and the models and underlying assumptions, parameters, and data of the performance assessment provided upon request. An appropriately timed draft period of public comment and scrutiny would of course commence after the NRC has had full opportunity to receive the waste determination, submit requests and receive responses to Requests for Additional Information (RAI). This opportunity for affected states and interested members of the public to fully analyze the effectiveness of the cleanup as it progresses, the assumptions and uncertainties,

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and the supporting documentation are necessities if the agency has any interest in obtaining public acceptance of agency action in what has been the most contentious of cleanup issues.

Specific Comments on the SRP
Comments on Introductory sections (pp. xiii-xx)

In these introductory sections, the NRC continues historical revision regarding the incidental waste concept. At xvi, the SRP first points to paragraphs 6 and 7 of a 1969 Atomic Energy Commission ("AEC") Proposed Statement of Policy on the *Siting of Commercial Fuel Reprocessing Plants and Related Waste Management Facilities* as a basis for the concept that certain items associated with reprocessing plant operations are "incidental" and need not be treated as HLW. The cited language, however, is nowhere to be found in the final rule. The SRP even acknowledges that the word "incidental" does not appear, nor does the list of items include any reference to direct reprocessing HLW, such as would be disposed of via the evaluation method of DOE's original incidental waste exemption. *See* 34 *Fed. Reg.* 8712; 35 *Fed. Reg.* 17530.[1] Moreover, while perhaps a theoretical starting point for the DOE's waste incidental to reprocessing citation method (which addresses the trash, such as laboratory items, clothing and tools that may become radioactively contaminated as a result of secondary exposure to highly radioactive reprocessing operations), the proposed rule cited by the NRC has no application to the highly radioactive waste in the tanks.[2]

Next, the SRP cites the NRC's consideration of a similar, though far narrower, exemption in an Advanced Notice of Proposed Rulemaking in 1987. The NRC withdrew this proposal, however, because of concerns that a numerical definition of HLW was "an invitation to dilute or fractionate wastes solely to alter their classification." 53 *Fed. Reg.* 17709 (Proposed Rule); *see also* 54 *Fed. Reg.* 22578 (Final Rule).

Finally, at xvii the SRP notes the 1993 Denial of a Petition by the NRC. 58 *Fed. Reg.* 12,342, 12,346 (1993). Here, NRC reviewed DOE plans to remove HLW from the double-shelled tanks at Hanford (a plan which would separate most of the waste for disposal at a geologic repository and residual salts for onsite disposal in another facility). *Id.* at 12343. This is inapplicable to the broad set of circumstances covered under the SRP, most clearly the where HLW will simply be abandoned in place, not removed from the tanks and treated. And more importantly, NRC specifically declined to promulgate a general rule governing incidental waste determinations. *Id.*

Indeed, the dubiousness of justifying the incidental waste concept on this unsteady platform resulted in serious internal criticism within DOE during the promulgation of Order 435.1:

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[1] Aside from the fact that the AEC proposed policy cited in the SRP relates to commercial fuel reprocessing (which has not taken place in this country since the Ford administration), the Final Rule makes the AEC's intentions for the waste in the tanks abundantly clear: "The Commission does not now regard the storage of liquid high-level wastes in tanks as constituting an acceptable method of long-term storage. Commission experience with its tank storage of liquid high-level wastes is extensive and while tank design, construction and maintenance have improved, the fact remains that tanks can deteriorate and leak ... Over periods of centuries one cannot assure the continuity of surveillance and care which tank storage requires ... However, the requirement to solidify such wastes, within 5 years of their generation, into a form suitable for off-site shipment and long-term storage will assure that liquid wastes do not accumulate on-site in large quantities." 35 *Fed. Reg.* 17531.

[2] Also, at no point has NRDC challenged the use of the citation method under DOE's Order 435.1.

> The paper purports to establish three definitive criteria, satisfaction of which, at any site, will allow waste to be determined to be not high-level. The source cited for these criteria is a discussion of historical background information in a NRC Federal Register notice denying a petition for rulemaking. However, this denial ... did not establish generic criteria for determining if waste is high-level. In fact, it did just the opposite. It should be noted that the statutory and regulatory justification for the whole concept of the "incidental waste" approach is extremely tenuous. It ultimately rests on language in a proposed rule for Appendix F of 10 CFR 50, which language was **not** included in the final rule. This is not a firm foundation for a declaration that waste is outside NRC's licensing jurisdiction. Thus, care must be taken to avoid stretching this concept past the breaking point, if it is not there already.

DOE Office of Env. Safety & Health Comment on High-Level Waste Issue Paper.

We need not recite the entire history of the matter here, but the NRC's characterization of the issue contains gross inaccuracies. The agency describes in detail the purported evolution of the incidental waste concept and states that incidental waste as applied to the HLW in the tanks is a long-standing, NRC-sanctioned category of waste that DOE's Order 435.1 in some manner formalized. The documents and actions the NRC cites do not support this contention, as they rely on a series of proposed rules and agency decisions that were either never finalized or specifically declined to provide general criteria for classifying such a thing as "waste incidental to reprocessing." Importantly, until DOE created the incidental waste provisions of Order 435.1, the term incidental waste had never been applied to HLW. The fact that the incidental waste concept has now been codified under the NDAA is another matter, and one that is certain to evolve yet again.

In sum, secondarily derived low-radioactivity wastes have been, on an *ad hoc* basis, treated as low-level waste on a very limited basis (*i.e.*, the laboratory trash that is handled through the citation method), which the neither NRDC nor the affected states have challenged at any time. *See, e.g.*, 54 Fed. Reg. 22,578, 22,580 (1989); 58 Fed. Reg. 12,342 (1993). The evaluation method for reclassifying HLW is another matter altogether and expressly violates the NWPA's directive that HLW be disposed of in a repository. 42 U.S.C. §§ 10101(9), 10107(b). Both DOE and the NRC should cease efforts to justify the incidental waste concept as anything other than a recently created fiction.

At xix, the SRP accurately states that Hanford is not covered by the NDAA, but then inaccurately states that the requirements of DOE Order 435.1 could be used for a waste determination (*i.e.*, reclassification of HLW). When the 9th Circuit vacated *NRDC v. Abraham*, 388 F.3d 701 (9th Cir. 2004), it did so only on the basis of ripeness. The waste incidental to reprocessing evaluation criteria are in plain violation of the Nuclear Waste Policy Act, 42 U.S.C. § 10101 *et seq.*, and may not be "used" to reclassify HLW.

Comments on site specific criteria

At 1-1, the SRP notes that DOE may provide its waste determination and technical bases for these decisions in one or more summary documents. These documents should be made publicly available on the NRC's website at the earliest possible time, and at least in time for a draft comment stage on the NRC's TER for the applicable waste determination.

At 1-2, we concur with the criteria listed for assessment of compliance with the applicable waste criteria, and all of this information should be publicly available at the earliest possible time, and at least in time for a draft comment stage on the NRC's TER for the applicable waste determination. This admonition on the timeliness of the public availability of information should be applied to all the DOE and NRC generated documents and analysis throughout the waste determination process.

At 1-9, we strongly concur with the NRC that prior waste determinations and the information gleaned from those efforts should provide a guide for the agency's review. Importantly, the inventory of radioactive waste disposed of on the site must be factored into the assessment and the modeling of each and every waste determination in cumulative fashion. In addition, the NDAA – along with establishing DOE's waste determination and NRC's concurrent review – required a report from the National Academy of Sciences that was concluded in the spring of 2006. Many of the Academy's conclusions and recommendations either run directly counter to DOE's plans or express significant pessimism that DOE is on the right track with respect to HLW cleanup. As one example, when writing about the estimated doses from the predicted waste residuals in the F Tank Farm at the Savannah River Site, the NAS states:

> In estimating the residual tank inventories for its performance assessment calculations for the T tank farm, DOE assumes that future efforts to clean out tanks will be much more effective than they were for most of the tanks that have already been cleaned out. The committee views this assumption as both optimistic and unsupported. Without a technical basis for the inventory estimates, the committee does not have confidence in the results of the performance assessment for the F Tank Farm.

See NAS Study at 10. Taking into account the full set of directions from Congress, in order for the NRC to make an informed decision on these waste determinations, the NRC must analyze and address whether DOE's plan is in full compliance with the recommendations of the NAS. And if the NRC finds that DOE's plans are not in full compliance with the NAS, it should not recommend going forward with the waste determination.

Comments on incidental waste criteria

At 2-4 (2.4.2), if the definition of highly radioactive is going to be dose-based rather than based on the actual meaning of the words "highly" and "radioactive" *(e.g.*, those radionuclides that have the highest rate of disintegrations), then what contributes significantly to the dose depends on the time of the dose assessment and which radionuclides, if any, are assumed to have been removed prior to that time. To meet the performance objectives of 10 CFR Part 61, there should be no radionuclides that were *not* identified as "highly radioactive" that still may contribute significantly to the dose after all "highly radioactive" radionuclides have been removed to the maximum extent practicable. And this statement should be true over all time periods of assessment.

In 2.4.3, "scheduling" and "programmatic" considerations are not legitimate or lawful bases for avoiding protection of the public health. It is grossly inappropriate to allow DOE to rely on such considerations that are beyond the bounds of the fundamental principles of health physics and one of its basic tenets, the ALARA principle. This is plainly another huge loophole for DOE to abandon in place more dangerous radioactive waste than it would otherwise be required to remove under the law, including the historical interpretation of ALARA.

At 2-5 (2.4.4), the commission should recognize that the Class C limits were derived based on modeling a conventional commercial low-level waste disposal facility. The amounts and concentrations of radionuclides that DOE contemplates leaving on site in tanks and in the saltstone facility far exceed the boundaries of the modeling done for establishing the Class C limits. The NRC must reopen the Class C rulemaking to determine whether these limits should apply to tank and saltstone disposal. Congress did not address these issues when it passed the NDAA and the NRC should do so now.

At 2-5, we agree that with respect to the states covered under the NDAA, the law does not allow for safety requirements that are comparable to 10 CFR Part 61, but rather that waste will be disposed of in compliance with 10 CFR Part 61. However, we disagree, with the NRC's characterization that DOE may implement Order 435.1's waste incidental to reprocessing (WIR) evaluation criteria to reclassify HLW in state's not covered by the NDAA.

Comments on radionuclide removal and concentration limits

At 3-2, the information comprising the areas of review should be available to the public at the earliest possible point in the process, and certainly by the time a draft TER is released.

At 3-5 in the conclusion of review procedures, the SRP should make clear the NRC reviewer should prepare a concise, clear statement of the uncertainties associated with the waste inventory and whether or not DOE has an adequate technical basis for estimating the volume of waste. This comment should be read into the next several sections – including the identification and removal of highly radioactive radionuclides.

At 3-9 and 3-10, we are troubled by the SRP's discussion of removal activities that will not begin until several years after a waste determination has been submitted. DOE should not be submitting waste determinations until such time as it can demonstrably prove that its actions comply with the provisions of the NDAA, including 10 CFR Part 61. To ask the NRC to comment and review hypothetical actions years down the road (and also assess the cumulative effects of a number of related waste reclassifications) is inappropriate and technically indefensible. This section of the SRP should be immediately withdrawn and the NRC should explicitly refuse any request by DOE to make hypothetical conjectures about actions removal and treatment actions that will not occur for several years. This objectionable scenario is again mentioned at 3-11 and should be removed.

At 3-17, the SRP cites the NRC's 1995 branch technical position on concentration averaging (BTP) and fails to mention the NRC's *Draft Interim Concentration Averaging Guidance for Waste Determinations*. 70 Fed. Reg. 74846 (Dec. 16, 2005). We agree with the NRC that the BTP is an inappropriate vehicle to address DOE's WIR determinations. We incorporate here by reference our January 2006 comments on the NRC's *Draft Interim Concentration Averaging Guidance*.

At 3-18, the SRP proposes that:

> Credit can be taken for stabilizing materials added for the purpose of immobilizing the waste (not for stabilizing the contaminated structure) even if it can not be demonstrated that the waste and stabilizing materials are reasonably well-mixed, when the radionuclide concentrations are likely to approach uniformity in the context of applicable intruder scenarios.

Taking credit for things that are not mixed is inappropriate. As we stated in January, average concentration," as DOE uses the term, is not the same as and should not be confused with "actual concentration." Mathematical "averaging," as performed by DOE, does not imply dilution through mixing, and therefore does not imply a reduction in the concentration. Under this SRP, the residual sludge at the bottom of an as yet undefined tank will contain radioisotopes in concentrations that dramatically exceed the Class C limits. As we demonstrated in our January 2006 comments, literally dozens of tanks at the Savannah River Site or at the Hanford site in Washington contain millions of curies in minimal amounts of waste resting in the heels of the tanks. Allowing for mathematical averaging, "taking grout credit," renders meaningless the objective of establishing concentration limits for Class C and other waste categories in 10 CFR 61.55. DOE could just as well average the residual radioactivity in the tanks with arbitrary volumes (or mass) of earth under the tanks or the groundwater adjacent to the tanks. DOE cannot reduce the actual concentration of residual waste by averaging the radioactivity over arbitrary volumes (or masses) of materials with which the wastes are not thoroughly mixed and the NRC should not approve a process for doing so in any venue or any forum.

Comments on performance assessment

With respect to the performance assessment, the NRC should provide the models and all model parameters and assumptions to states and interested members of the public upon request. Many states and public interest groups have the technical ability to perform confirmatory modeling with the advances in computers and associated programs. If there are any licensing issues with provision of such data, then the NRC should work with the interested state or member of the public to appropriately address such licensing issues under applicable law (*i.e.*, provide quick and immediate access to the company that owns the model).

At 4-8, the SRP should be explicit that the buffer zone should in no instance be drawn to allow for dilution of the waste in order to meet regulatory compliance, including compliance with applicable drinking water standards, and in no instance be more than 100 feet from the waste. Additionally, any dose to the public in the buffer zone, including an inadvertent intruder, should not assume institutional controls beyond 100 years.

At 9-4, the SRP discusses public availability of these and other related documents. Again, we reiterate the need for a draft TER, with appropriate time for comment (at least 60-90 days), prior to any set of final conclusions by the NRC on a DOE waste determination.

If you have any questions please do not hesitate to call us at the number listed below. Thank you very much for your consideration of these matters.

Sincerely,

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