

POLICY ISSUE
(Notation Vote)

April 7, 2010

SECY-10-0043

FOR: The Commissioners

FROM: R. W. Borchardt
Executive Director for Operations

SUBJECT: BLENDING OF LOW-LEVEL RADIOACTIVE WASTE

PURPOSE:

To provide the Commission with the results of the staff's analysis of issues associated with the blending of low-level radioactive waste (LLRW), as directed in Chairman Jaczko's October 8, 2009, memorandum to the staff. The closure of the Barnwell waste disposal facility to most U.S. generators of Class B and C LLRW has caused industry to examine methods for reducing the amount of these wastes, including the blending of some types of Class B and C waste with similar Class A wastes to produce a Class A mixture that can be disposed of at a currently licensed facility. This paper identifies policy, safety, and regulatory issues associated with LLRW blending, provides options for a U. S. Nuclear Regulatory Commission (NRC) blending position, and makes a recommendation for a future blending policy. This paper does not address any new commitments.

SUMMARY:

In this paper, the staff examines the blending or mixing of LLRW with higher concentrations of radionuclides with LLRW with lower concentrations of radionuclides to form a final homogeneous mixture. While recognizing that some mixing of waste is unavoidable, and may even be necessary and appropriate for efficiency or dose reduction purposes, NRC has historically discouraged mixing LLRW to lower the classification of waste in other circumstances.

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With the closure of the Barnwell LLRW disposal facility on June 30, 2008, to most U.S. generators of Class B and C wastes, licensees and industry are exploring blending higher concentration wastes with lower concentration wastes to produce a final mixture of Class A waste. Such mixing could promote the goal of disposal of waste, rather than its storage onsite, since Class A waste can be disposed of at a currently operating disposal facility. The agency's previous policies and positions on blending of LLRW are evaluated in this paper in light of these new circumstances, and options for new agency positions on blending are provided for Commission consideration. The assumption that blending is *a priori* undesirable is examined in light of risk-informed, performance-based regulation that focuses on the safety hazard of blending and the blended materials. Other alternatives for a blending position are also considered, including several that would impose additional constraints. The Enclosure is a detailed analysis of blending of LLRW. Section 4.0 of the Enclosure addresses the specific topics contained in the Chairman's October 9, 2009, memorandum.

The staff believes that the current LLRW blending guidance would be improved if it were risk-informed and performance-based, consistent with NRC's overall policy for regulation. This change could be accomplished in part through revisions to two guidance documents, the Branch Technical Position on Concentration Averaging and Encapsulation¹ (CA BTP) and the Commission's Policy Statement on Low-Level Waste Volume Reduction (Policy Statement).² In addition, the staff would clarify that large quantities of blended waste are considered a unique waste stream and included in NRC's ongoing rulemaking on this topic. These changes would ensure continued safety by requiring that disposal of large-scale blended waste is subjected to a site-specific intruder analysis as part of the overall performance assessment of a disposal facility. The changes would also improve NRC openness and effectiveness by clarifying the agency's LLRW blending policy and its bases.

BACKGROUND:

On June 30, 2008, the Barnwell disposal facility closed to most LLRW generators in the U.S. Now, only generators in the Atlantic Compact — the States of South Carolina, Connecticut, and New Jersey — can dispose of their LLRW at that facility. Although the EnergySolutions disposal facility in Clive, Utah remains available for Class A waste disposal by the generators that lost access to Barnwell, these generators have no disposal option for their Class B and C waste.

Licensees and industry are considering the blending of certain types of LLRW to help mitigate the impact of Barnwell's closure. One type of waste being considered for blending is ion exchange resins from nuclear power plants, which can be blended into a relatively uniform mixture. These resins account for about half of the volume of Class B and C waste generated each year. Resins are also the focus of a waste processor's expanded LLRW blending at its facility in the State of Tennessee. The waste processor has received approval for testing from its Agreement State regulator, and is continuing to develop a process for large-scale blending. Because disposal options were available for all classes of LLRW in the recent past, the agency's positions on blending were not challenged and required no further clarification.

¹ Final Branch Technical Position on Concentration Averaging and Encapsulation, January 17, 1995.

² Policy Statement on Low-Level Waste Volume Reduction, 46 FR 51100, October 16, 1981.

However, the proposal to perform large-scale off-site blending has generated significant interest in the subject of blending and NRC's position on this practice. Objectives of this paper include the identification of specific safety, policy, and regulatory considerations that underlie the positions in the staff blending guidance to better inform potential revisions, as well as to identify and address concerns raised by stakeholders on blending.

Blending, as the staff uses the term in this paper, is the mixing of LLRW with different concentrations of radionuclides, which results in a relatively homogeneous mixture that may be appropriate for disposal in a licensed facility. The concentration of the resulting mixture is the total radioactivity in the mixture divided by its volume or weight. The types of waste may include those that are physically and chemically similar (such as ion-exchange resins from nuclear power plant systems), but could also include different waste types that can be made into a relatively homogeneous final mixture, such as soil and ash. Blending, as used in this paper, does not include placement of discrete wastes of varying concentrations into a disposal container, or the averaging of concentrations of radioactivity of a discrete component over its volume. Blending, as discussed in this paper, is confined to waste types that have physical properties that result in a homogeneous final waste form (the degree of homogeneity of the final waste form would be considered as part of the staff's analysis of this issue).

In the past, NRC has discouraged the blending or dilution of radioactive waste, without distinguishing between the two practices. Among the reasons given are not increasing "the burden on society" by increasing waste volume, and therefore the number of waste shipments for disposal. However, mixing or blending of waste with Class B or C concentrations with Class A would not increase the volume of waste.

This paper does not use the term "blending" in the sense of dilution (i.e., the intentional mixing of waste with clean or uncontaminated material to lower its waste classification or to release it into the general environment). The release of waste to the general environment could cause members of the public to be exposed to a hazard, however small. The use of dilution to facilitate disposal at a lower waste class would increase waste volumes, which has historically been considered undesirable. The staff notes that the terms "blending" and "dilution" are frequently used synonymously. The staff differentiates these terms as defined above.

The terms "mixing," "blending," and "dilution" are neither defined nor used in the Commission's regulations that relate to reducing a potential waste classification, or to disposal requirements for waste. Blending, including blending that lowers the waste classification, is neither prohibited nor explicitly addressed in NRC regulations.

NRC staff's guidance on LLRW blending is contained in the CA BTP. The CA BTP provides guidance to licensees on blending of LLRW, and on methods of radionuclide concentration averaging, such as encapsulation of sealed sources and the mixing of components with different waste concentrations in containers. With respect to the blending of wastes into a homogeneous final waste form, the staff in the CA BTP recommends restrictions on blending by applying a "factor of 10" provision, whereby the concentrations of batches of LLRW to be mixed should be within a factor of 10 of the average concentration of the final mixture. This limits the amount of blending that should be performed. Applying a risk-informed, performance-based approach would define the uniformity of concentration in the waste after mixing, rather than the CA BTP's approach of placing concentration limits on the wastes before they are mixed. By placing limits on the amount of mixing, however, the "factor of 10 rule" furthers the position that mixing should

not be used solely to reduce waste classification. The staff in the CA BTP recommends exceptions to the “factor of 10 rule” when operational efficiency or worker dose reductions can be demonstrated. The staff’s positions are based on a combination of: (1) practical considerations in the operation of a facility, whereby wastes are routinely combined or mixed for operational efficiency; (2) NRC’s general policy that discourages mixing for the purposes of reducing the waste class; and (3) safety considerations mainly associated with protection of an individual who inadvertently intrudes into a disposal facility 100 years or more after its closure. The CA BTP attempts to balance these objectives.

Part 61 of 10 CFR establishes the procedures, criteria, and terms and conditions for the issuance of licenses for the disposal of LLRW. Four performance objectives, including protection of an inadvertent intruder into the waste disposal site, define the overall level of safety to be achieved by disposal.³ Intruder protection is provided in part by the waste classification concentration limits in 10 CFR § 61.55, which are designed to ensure that an inadvertent intruder is not exposed to unsafe levels of radiation. Any blended LLRW must be classified in accordance with the waste classification tables in 10 CFR § 61.55. If batches of waste were not blended into a relatively homogeneous⁴ final mixture, hot spots above the concentration limits for a particular waste class might expose an inadvertent intruder to unsafe levels of radiation. Concentrations of radionuclides that are used to determine the waste classification may be averaged over the volume or weight of the waste, in accordance with 10 CFR § 61.55(a)(8), and the staff has published guidance that defines acceptable approaches for such averaging. This guidance would have to be revised to address large-scale blending of waste. Blended waste, like any waste, must not affect a disposal facility’s ability to meet any of the performance objectives in 10 CFR § Part 61.

DISCUSSION:

This section identifies a number of different options for addressing blending in NRC’s LLRW regulatory framework. The options are designed to address the policy, technical (safety), and regulatory issues discussed in the Enclosure. The policy issues the staff evaluated include (a) NRC’s past statements on blending to reduce waste class; (b) facilitation of waste disposal through blending; (c) the impact on the LLRW management program in the U.S.; (d) impacts of blending on disposal capacity; (e) impacts on volume reduction; (f) unintended consequences of changing the Commission’s blending position; and (g) blending of greater-than-Class C LLRW. The safety issues evaluated include (a) protection of an offsite member of the public (10 CFR § 61.41); (b) protection of an inadvertent intruder into a disposal facility after the institutional control period ends (10 CFR § 61.42); (c) waste characterization and homogeneity; and (d) stability of the waste form. Regulatory issues include (a) the method for issuing an NRC position on blending; (b) National Environmental Policy Act (NEPA) compliance; and (c) the applicability of NRC’s guidance to waste processors.

³ The others are protection of the general population from releases of radioactivity; protection of individuals during the operation of the facility (as opposed to after the facility is closed) and stability of the disposal site.

⁴ Because hot spots are a concern primarily with respect to protection of an individual who may inadvertently intruder into the waste after the end of the institutional control of the site, the CA BTP defines a “homogeneous waste type” as one in which the radionuclide concentrations are likely to approach uniformity in the context of intruder scenarios.

Options

The staff has identified four options for regulatory actions that NRC could undertake regarding blending of different types and classes of LLRW. These range from maintaining the status quo, to constraining all blending, to a risk-informed, performance-based approach. Each option also includes a discussion of how the staff believes that option can be effectively implemented (i.e., whether by rulemaking or guidance). In developing these options, the staff's goal was to provide the Commission with a broad range of options for a policy on blending, and to identify an appropriate means to implement that policy.

Option 1: Maintain current NRC positions on blending of homogeneous waste streams (status quo).

Under this option, the Commission would not change its existing positions on the use of blending as discussed in the CA BTP. This guidance recommends constraints on blending through the use of the "factor of 10" provision, which limits mixing of homogeneous waste streams to batches of waste that are within a factor of 10 of the average concentration after mixing. But the current staff position also acknowledges that blending is appropriate without the constraints of the CA BTP if it results in operational efficiencies or worker dose reductions.

NRC staff responses to three letters from industry representatives in late 2009 provide additional clarification on blending, and these clarifications are also part of the status quo.⁵ These letters include the following clarifications: (a) blending is neither prohibited nor explicitly addressed in NRC regulations; (b) while the staff has stated that wastes should not be mixed *solely* to lower the waste classification, NRC guidance acknowledges that blending, including some blending that may lower the waste classification, may be appropriate under certain circumstances; (c) waste classification is related to the safety of the disposed waste, and NRC regulations do not require waste to be classified prior to its shipment for disposal, including when it is shipped to waste processors; and (d) NRC's blending guidance applies to all NRC licensees, including waste processors.

This option would be implemented by updating the CA BTP and issuing a Regulatory Issue Summary that documents staff positions in recent letters to industry. For the CA BTP, the staff would simply clarify terms, and better describe the bases for its positions. Among the advantages of this option are that licensees and Agreement States are familiar with the current averaging provisions in the CA BTP and use them extensively, and issuing guidance uses fewer resources to update the agency policy than the other options. Among the disadvantages are that this option could lead to inconsistent treatment of LLRW that could vary according to where the waste is generated, processed, and/or disposed, because guidance lacks the potential compatibility requirements of a rule. Nearly all waste processors and disposal facilities are regulated by Agreement States that are not required to follow NRC guidance. Waste blended and classified in accordance with the requirements of the State in which the generator or processor is located may not be accepted for disposal at a site in another State that has adopted different waste classification and blending criteria. Another disadvantage is that the

⁵ August 27, 2009, letter from Larry Camper to Thomas Magette, EnergySolutions. (ML092170561); October 30, 2009, letter from Larry Camper to Joseph DiCamillo, Studsvik, Inc.. (ML092930251); October 30, 2009, letter from Larry Camper to Scott Kirk, Waste Control Specialists. (ML092920426).

existing positions are not risk-informed and performance-based. Finally, there is a potential safety concern for an inadvertent intruder involving disposal of large-scale blended waste that would need to be evaluated on a case-by-case basis. While the need to protect an inadvertent intruder is specified in 10 CFR Part 61, there is some confusion concerning the requirement to conduct an analysis to ensure protection of an inadvertent intruder that may not be clarified if the status quo is maintained. The safety of an inadvertent intruder is typically ensured by the waste classification system and the disposal requirements imposed for each class of waste, and not necessarily or typically by a site-specific analysis.

Option 2: Revise blending positions to be risk-informed and performance-based.

Under this option, the agency's position on blending of waste streams would become risk-informed, performance-based, rather than, for example, relying on the "factor of 10" provision in the current guidance. The principal consideration would be whether a final blended waste form could be safely disposed of. Among the changes and clarifications that would be made to the existing blending positions are the following: (a) clarify that a site-specific intruder analysis must be performed to determine whether an intruder could be protected, or the conditions necessary for such protection; (b) develop criteria defining acceptable homogeneity and sampling considerations; and (c) eliminate the "factor of 10 rule" for mixing of wastes that can be blended into a homogeneous mixture, because the concentration of final mixture will be relatively uniform in the context of a site-specific intruder scenario.

This option would be consistent with the Commission's policy on risk-informed, performance-based regulation. In 1997, the Commission addressed risk-informed performance-based regulation as one of the 20 direction setting issues in its overall Strategic Assessment of the agency's programs at that time, deciding that NRC ". . . will have a regulatory focus on those licensee activities that pose the greatest risk to the public." In the last decade, increased use of risk-informed performance-based regulation has been a continuing agency policy and is one of the safety strategies in the NRC Strategic Plan⁶ that guides work in all NRC programs.

This option would be implemented through a combination of rulemaking and issuance of guidance. The requirement for a site-specific intruder analysis, which is a risk-informed, performance-based approach to addressing blending, would be mandated in the rulemaking for unique waste streams, which the Commission directed the staff to start in its March 18, 2009, staff requirements memorandum for SECY-08-0147. The rulemaking would explicitly require a site-specific analysis for an inadvertent intruder. Under this approach, disposal of large amounts of blended waste would have to be evaluated for intruder protection on a site-specific basis. As part of the NEPA analysis for this rulemaking, disposal of blended ion exchange resins from a central processing facility would be compared to direct disposal of the resins, onsite storage of certain wastes when disposal is not possible and further volume reduction of the Class B and C concentration resins. The regulatory basis document for this rulemaking is scheduled to be completed in September 2010, and the staff would begin work on the proposed rule at that time. The staff does not believe that the addition of blended waste to the regulatory basis will require significant resources or time to complete. Nevertheless, if the Commission decision on this paper occurs late in Fiscal Year (FY) 2010 or in FY 2011, the regulatory basis document or proposed rulemaking schedules may have to be revised somewhat to

⁶ "Strategic Plan, Fiscal Years 2009-2013. NUREG-1614, Volume 4. February 2008.

accommodate the addition of blended waste to the rulemaking. The staff will take steps to mitigate any impacts in the meantime. There would be no impact on the schedule for the unique waste streams rulemaking if the Commission chooses any of the other options.

Two documents would be updated as part of this option — the Volume Reduction Policy Statement and the CA BTP. The Policy Statement, published in 1981, encourages licensees to take steps to reduce the amount of waste generated and to reduce its volume once generated. That position was issued when disposal space was scarce since two of the three operating LLRW disposal sites had threatened to close at that time, and one had recently reduced the annual amount authorized for disposal by half. Further, volume reduction techniques were not yet in widespread use and NRC's Policy Statement was meant to encourage the use of such techniques. Although the Policy Statement does not address blending directly, some stakeholders have argued that blending is contrary to the policy and to the goal of achieving reduced waste volumes. Notwithstanding NRC's policy, volume reduction is widely practiced today, in large part because disposal costs have risen significantly in the last 30 years and it is economical to reduce disposal volumes. The staff believes that the Policy Statement could be updated to recognize the progress that has been achieved, and to acknowledge that other factors may be used by licensees in determining how best to manage their LLRW. Specifically, the Policy Statement could be revised to acknowledge that volume reduction continues to be important, but that risk-informed, performance-based approaches to managing waste are also appropriate in managing LLRW safely and that volume reduction should be evaluated in this light. For the CA BTP, risk-informed, performance-based blending guidance would be specified and existing guidance that is not consistent with such approaches, such as the "factor of 10 rule," would be removed.

The staff would also issue interim guidance to Agreement States on how to evaluate proposed disposal of large quantities of blended waste until the rulemaking is completed. The guidance would recommend a case-by-case evaluation of blended waste for each site that plans to accept this type of waste for disposal. Factors such as intruder protection, the need for mitigative measures, and homogeneity would need to be evaluated by the appropriate regulator. The staff's preliminary independent analysis indicates that current practices at existing disposal facilities may safely accommodate an increase in the amount of disposed waste at or just below the Class A limits.

Among the advantages of this option are: (a) use of risk-informed, performance-based criteria, which would be consistent with NRC's overall policy of risk-informed regulation; and (b) use of fewer staff resources than options 3 and 4 by piggybacking onto a rulemaking that is already underway. Among the disadvantages are that existing licensee and applicable Agreement State regulations and guidance may have to be changed, and some stakeholders may perceive this new blending policy as a reduction in protection of public health and safety.

Option 3: Revise agency blending policy to further constrain blending.

Under this option, the Commission would develop a policy and promulgate a rule that would require that the in-process concentrations of waste determine waste classification, rather than the waste being classified when it is ready for disposal, the current requirement. The rulemaking would initially propose that radioactive material that has been blended as a result of stabilization, mixing, or treatment, or for any other reason, would be subject to the disposal regulations it would have been subject to prior to blending. This rule would require classification

at points prior to the preparation of waste for disposal. A Regulatory Issue Summary would be published soon after the Commission decision to inform licensees that a revised blending policy was under development. Among the advantages of this option are (a) it would eliminate some stakeholder concerns over blending to reduce waste classification; (b) it would eliminate any ambiguity about blending for purposes of lowering the waste classification — any blending under this option could not lower the waste classification; (c) it would provide for more measures to isolate and contain waste than the current requirements in 10 CFR Part 61, since the classification of some wastes under this approach would be higher than current practice (a corresponding “con” is that measures unnecessary for adequate protection of public health and the environment would be required in some cases). Among the disadvantages are: (a) it may result in larger occupational exposures because of the need to sample and characterize waste more frequently; (b) it would not be risk-informed and performance-based, since classification of waste would be based on the as-generated waste, not of the concentrations of waste at the time of disposal; and (c) it would require more LLRW storage by creating more Class B and C waste.

Option 4: Prohibit large-scale blending at off-site processor.

NRC could prohibit large-scale blending that lowers the waste classification at a waste processor⁷ because it is tantamount to intentional mixing to lower the waste classification. This option would be implemented through a rulemaking. A Regulatory Issue Summary would also be issued after a Commission decision, but before the rulemaking was completed, to notify licensees of the planned change. An important part of the rulemaking would be differentiating between the routine blending that currently occurs at waste processors, and large-scale blending to lower the waste classification, such as has been proposed for ion-exchange resins from nuclear power plants. Among the advantages of this option are: (a) it would address concerns raised by stakeholders opposed to blending in general and potentially increase public confidence that their health and safety are being protected; and (b) it would continue to allow for individual waste generators to blend waste as part of normal operations. Among the disadvantages are that (a) it is not a risk-informed, performance-based position; (b) there is no clear health and safety basis for discouraging this type of blending; and (c) generators could still produce resin waste similar to blended waste by removing resins from service before Class B concentrations are reached, which would increase LLRW volumes by requiring more resin to accomplish the same task.

STAKEHOLDER INPUT

The staff solicited stakeholder input in developing this paper. On November 30, 2009, the staff issued a *Federal Register* notice requesting public comments on LLRW blending. Fourteen organizations and individuals provided comments. In December 2009, the staff met individually with three companies that had written to NRC expressing their views on LLRW blending. The meetings were open to the public, and opportunities for public comment were provided. On January 14, 2010, the staff held an all day public meeting in Rockville, Maryland, to provide the public with an opportunity to comment on LLRW blending. Stakeholders commenting at the meeting included representatives from States and Compacts, advocacy groups, the waste processing industry, waste generators, and DOE. The staff reviewed and considered all of the comments received in developing this paper.

⁷ Included in the scope of this prohibition would be waste processors that are designated as LLRW generators through waste attribution. See Section 3.1.3 of the Enclosure for a discussion of attribution.

Stakeholders hold a wide variety of views on blending, and there was significant controversy about the appropriate policy for blending in the public meetings. Appendix B of the Enclosure lists the organizations that commented on the November 30, 2009, *Federal Register* Notice soliciting public comments, the Adams accession number for the letters received in response to the notice, the presentations given in the four public meetings, as well as a transcript of the January 14, 2010, public meeting. Most of the issues addressed in this paper were identified and discussed in the public meetings. They include the potential safety impacts of large-scale blending, the impact of blending on LLRW volume reduction, how NRC's blending position should be documented (i.e., whether in guidance or rulemaking), and the potential unintended consequences of a new NRC blending position. The staff intends to prepare and implement a communication plan after the Commission decides on an option to help ensure that NRC's position, its bases, and the process for policy development are understood.

AGREEMENT STATE VIEWS

In preparing this paper, the staff consulted with Agreement States that are significantly involved in the regulation of waste processing and disposal facilities. The staff reviewed the contents of the paper with the Agreement States of Washington, South Carolina, Texas, Utah, Tennessee, and Pennsylvania. States were generally satisfied with the issues addressed and the options presented for Commission consideration. One State official was concerned that joining the site-specific intruder assessment requirement for blending with the unique waste streams rulemaking would delay that effort. Another noted that assuring homogeneity is more important for large-scale blended waste than for smaller amounts from individual generators, because it will be closer to the limits for Class A waste. Some States, but not all, argued for flexibility in implementing any new regulations on blending. Texas in particular has a regulation that addresses waste dilution and believes that any NRC regulation on blending should allow their existing regulation to remain in place. A related issue for this State is its concern about ensuring that out-of-State generators that might dispose of waste in the State disposal facility comply with their dilution regulation. The staff will have further discussions with Texas on this issue.

Two of the above States also commented formally on blending in response to the staff's *Federal Register* Notice of November 30, 2009. Utah, among other comments, is opposed to blending if the intent is to alter the waste classification for the purposes of disposal site access. For allowable blending, the State believes that requirements should be contained in performance-based regulations addressing sampling and radiological characterization standards. The Pennsylvania Department of Environmental Protection also provided comments in a January 28, 2010, submittal. The Department would not oppose intentional blending of LLRW if it results in a change of classification of waste to a lower classification and only for access to a LLRW disposal facility and not for release to the environment. The Department also recommended that NRC clearly define blending (and to prohibit dilution). The State also believes that the original generator of blended waste should be maintained in records, and that an evaluation of the potential benefits and risks associated with blending be conducted.

In the January 14, 2010, public meeting, a representative from the Tennessee Department of Environment and Conservation had no technical opinion on blending. The representative noted that if large-scale blending was determined to be commercially viable, their responsibility is to

license a blending operation if protection of public health and safety and the environment are demonstrated.

The Utah and Pennsylvania comments can be found in ADAMS under the accession numbers identified in Appendix B of the Enclosure. The Tennessee comments are contained in the transcript for the January 14, 2010, meeting, which is also listed in Appendix B.

RECOMMENDATIONS:

The staff believes that the current blending positions would be improved if they were risk-informed and performance based, and were specified in regulation and further clarified in guidance. The staff recommends the Commission approve:

Option 2 — to adopt a risk-informed, performance-based LLRW blending policy.

RESOURCES:

Option 1 - (Status Quo) would require 0.6 Full Time Equivalent (FTE) and \$50,000 to complete, with 0.40 FTE and \$25,000 in FY 2011.

Option 2 - (Risk-Informed, Performance-Based) will require 1.0 FTE and \$50K for tasks unique to blending. Blended waste is also considered a unique waste stream under this option. The unique waste streams rulemaking has already been approved by the Commission in the Staff Requirements Memorandum for SECY-08-0147. The total resources, both for tasks unique to blending and for the unique waste streams rulemaking, would be 7.3 FTE and \$1,550K, with 4.2 FTE and \$775K for FY 2011.

Option 3 - (Further constrain blending) will require 3.5 FTE and \$250,000 to complete with 0.2 FTE in FY 2011.

Option 4 - (Prohibit large scale blending) will require 3.3 FTE and \$250,000 to complete with 0.2 FTE in FY 2011.

FY 2011 resources are available in the rulemaking product line within the Decomm/LLRW business line for the preferred Option #2. If the Commission determines one of the other options should be implemented (numbers 1, 3 or 4), the staff will need to redirect resources from the Oversight product line to the rulemaking product line. Resources for FY 2012 and beyond will be addressed through the Planning, Budgeting, and Performance Management process.

The Commissioners

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COORDINATION:

The Office of the General Counsel has no legal objection concerning this paper. The Office of the Chief Financial Officer has reviewed this paper for resource implications and has no objections.

/RA by Martin Virgilio for/

R. W. Borchardt
Executive Director
for Operations

Enclosure:
Analysis of Blending of Homogeneous
Low-Level Radioactive Waste

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ML090410531

EDATS: SECY-2009-0456/WITS 200900186

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| OFC | EPPAD | EPPAD | MSSA | DILR | OGC | CFO | NRR |
| NAME | JKennedy | GSuber | TReis | MShaffer | BJones | RMitchell | FBrown |
| DATE | 03/15/10 | 03/24/10 | 03/23/10 | 03/19/10 | 03/24/10 | 03/24/10 | 03/19/10 |
| OFC | EPPAD | DWMEP | DWMEP | TechEd | FSME | EDO | |
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