

APPENDIX C

ANALYSIS AND EVALUATION OF PROPOSED NRC LLW ACTIVITIES

This appendix provides detailed information on proposed U.S. Nuclear Regulatory Commission (NRC) low-level radioactive waste (LLW) activities and the evaluation and ranking of each as part of this strategic assessment. The staff evaluated each specific activity in terms of the LLW programmatic needs and the strategic objective of the agency as well as other attributes. Table C-I summarizes each task, its rank (high, medium, or low), and the resources needed to complete it. Table C-II contains a description of each task and a detailed evaluation of each task against the following criteria:

- activity—identification and brief description of proposed LLW staff work effort,
- description—brief explanation of scope, rationale for consideration in this assessment, and potential result of the proposed activity,
- scenario applicability—identification of the difference in value of the activity given the different possible future scenarios (optimistic, realistic, pessimistic), such as the likelihood that updating storage guidance will be more important given the realistic and pessimistic scenarios,
- impact on agency strategic goals—identification of relevant impacts, including the following:
 - safety and security, which means no significant safety or security events (overexposures, significant adverse environmental impacts, or use of materials in a manner hostile to the United States), as defined in the NRC Strategic Plan, which also includes a risk-informed, performance-based regulatory framework as a strategy for meeting this goal;
 - openness, which includes informing and involving stakeholders in NRC processes, as appropriate, and
 - effectiveness, which means: (1) generally that LLW licensing and regulatory issues are not significant impediments to the safe and beneficial uses of radioactive materials; (2) more specifically that the LLW regulatory framework is stable, reliable, and adaptable, providing predictability for licensees, yet anticipating changes in the generation and disposal of LLW that may require revisions to the NRC's LLW regulatory program; and, (3) that risk-informed, performance-based regulation and the elimination of unnecessary jurisdictional overlap are in use,
- need—brief articulation and explanation of the timeframe in which the activity is needed (near term, medium term, or long term) given the evolution of events or circumstances that it may impact,
- level of effort—approximation of the quantity of direct staff resources over a specific time period that would need to be applied to accomplish the activity,

- benefit—the direct benefit (and beneficiary) that would be derived from accomplishing the activity,
- additional considerations—articulation of indirect benefits, costs, unintended consequences, or external factors that may impact, or be impacted by, the completion of an activity, and
- summary/ranking—a concise summation of the major factors that lead the staff to the final prioritization of an activity and the priority ranking itself (high, medium, or low).

Table C-1 LLW Strategic Assessment: Summary of Tasks Evaluated by the NRC Staff

Task No.	Activity	Rank (L, M, H)	Required Resources, FTE
1	Evaluate potential changes to LLW regulatory program as a result of severe curtailment of disposal capacity	L	0.3
2	Develop internal procedure and Standard Review Plan for waste import/export license reviews	H	0.1/0.9
3	Promulgate rule for disposal of low-activity waste	L	3.6 - 4.3
4	Determine if disposal of large quantities of depleted uranium from enrichment plants warrants change in uranium waste classification	H	1.4
5	Review and update guidance on extended storage of LLW for materials and fuel cycle licensees and review industry guidance for reactors	H	1.2
6	Develop licensing criteria for greater-than-Class-C disposal facility	M	1.4
7	Develop internal procedure/Standard Review Plan for 10 CFR 20.2002 requests	H	0.4/0.9
8	Identify and evaluate potential legislative changes	L	0.15 per year
9	Consolidate LLW guidance	M	4.3
10	Implement major revisions to 10 CFR Part 61	L	10.8
11	Coordinate with other agencies on consistency in regulating LAW disposal	M	0.3 per year
12	Develop guidance that summarizes disposition options for low-end materials and waste	M	0.1
13	Identify new waste streams	M	0.2
14	Develop standard review plan for 10 CFR 61.58	H	3.6 - 4.3
15	Develop waste acceptance criteria for LLW disposal in uranium mill tailings impoundments	L	1.4
16	Update concentration averaging branch technical position	H	2.0
17	Develop information notice on waste minimization	M	0.15
18	Examine need for guidance on defining when radioactive material becomes LLW	L	0.15
19	Perform scoping study on financial assurance	H	0.3
20	Develop and implement national waste tracking system	L	3.6

Table C-II Analysis and Evaluation of Specific NRC LLW Activities

Activity	Description	Scenario Applicability	Impact on Strategic Goals	Need (near term, medium term, long term)	Level of Effort	Benefit	Additional Considerations	Summary/ Ranking
1. Perform a scoping study of potential changes to the Materials Licensing and Enforcement Program in the event of severe curtailment of disposal capacity	The LLW staff would determine what, if any, new provisions and limitations might be required for the issuance of radioactive materials licenses and for related inspection and enforcement in the absence of an identifiable path to ultimate disposal at the time of license issuance. These may include, but are not limited to, prospective financial assurance mechanisms, material takeback provisions, third-party commitments to take title, and provisions for long-term storage.	This task primarily responds to the pessimistic scenario. However, some provisions, such as financial assurance, would apply to other scenarios.	<p>The scoping study would have no immediate impact on safety and security goals. However, completion of the work that might ultimately result from this task has the potential for significant positive impact. The provisions ultimately envisioned would contribute to assurance that radioactive material lacking a disposal path would be maintained in a safe, secure manner, with the burden born by the beneficiary.</p> <p>The scoping study would have a very limited impact on openness goals. Some small increment of openness would be achieved by informing the study through dialogue with some stakeholders. However, significant increases in contribution to openness goals might accrue from mechanisms (e.g., rulemaking, guidance development) that would later flow from the scoping study.</p> <p>The scoping study would have a very limited impact on effectiveness goals. However, significant increases in contribution to effectiveness goals might ultimately accrue from mechanisms such as rulemaking, guidance development, or other regulatory tools that might evolve from the study. As with many new regulatory regimes, effectiveness and efficiency might decrease in the short term as the regulated and regulatory communities sort out the meaning and implications of new requirements or guidance. In the long term, however, clarity and uniform application of new requirements would result in increased efficiency.</p>	A scoping study to anticipate needs associated with severe curtailment of disposal capacity could be useful in the near-term. However, until the possibility of severe curtailment or elimination of disposal options comes closer to reality, it might be difficult to justify the significant resources necessary to implement the regulatory framework necessary to deal with such a circumstance.	The scoping study would require approximately 0.3 FTEs of staff effort. If the results of the scoping study and future driving circumstances in the regulated community indicate that additional regulatory tools, including rulemaking, are necessary, this would necessitate a substantial commitment of resources.	A scoping study would provide an overview of the types and utility of the regulatory tools necessary to ensure safe, secure disposition of radioactive material in the absence of disposal capacity. The study can then be used as a basis to advance the development of individual regulatory tools as needed. The benefit is derived from the regulatory tools that provide a transparent, uniform regulatory mechanism for full life-cycle consideration of LLW disposition options. This would enable users of radioactive material to preplan for all aspects of the use of this material.	<p>It may be difficult to justify the significant resources required for the development of regulations that might be necessary for rulemaking, particularly if no crisis is imminent. Guidance development would be somewhat easier to justify because the level of required resources would be much lower. However, guidance implementation would be optional.</p> <p>It may be prudent practice to establish and account for total life-cycle costs for radioactive material (which would ultimately result in the creation of radioactive waste) early in the licensing process and assuming this kind of scenario could occur.</p>	<p>Because the task is a scoping study, it would address a broad range of licensing activities with a modest commitment of resources. However, the scoping study itself would have a limited impact on the overall NRC mission. Furthermore, benefits are heavily weighted toward the pessimistic future.</p> <p>Ranking: Low</p>

Activity	Description	Scenario Applicability	Impact on Strategic Goals	Need (near term, medium term, long term)	Level of Effort	Benefit	Additional Considerations	Summary/ Ranking
<p>2. Develop (a) internal procedures (IPs) and (b) a guidance document (GD) for reviewing waste import and export applications submitted under 10 CFR Part 110.</p>	<p>The staff would develop an IP as well as a GD (NUREG or branch technical position (BTP)) to delineate Division of Waste Management and Environmental Protection (DWMEP) roles and responsibilities related to the review of applications for licenses to import or export radioactive material/radioactive waste. The IP would include the process for vetting and resolving complex issues as well as a summary of issues previously resolved. The guidance would include a description of the technical and regulatory analyses necessary to respond to the Office of International Programs (OIP) in its processing of import/export license applications.</p>	<p>This task applies equally to all scenarios because the import and export of radioactive waste into and out of the United States is somewhat independent of the domestic waste disposal situation.</p>	<p>(a) The staff IP would have no impact on agency safety and security goals.</p> <p>Development of the IP would have little impact on openness goals.</p> <p>Completion of the IP would significantly enhance the efficiency with which the technical staff responds to requests. By incorporating precedents, it would allow rapid resolution of requests similar to those already undertaken. Completion of this task would also contribute to the NRC's knowledge management initiative.</p> <p>(b) The GD would have little, if any, impact on agency safety and security goals.</p> <p>There would be an opportunity for public scrutiny during the development of the GD. The end product would increase transparency for the benefit of licensees and applicants.</p> <p>Completion of the GD would significantly enhance the efficiency with which the technical staff responds to requests. By incorporating precedents, it would allow rapid resolution of requests similar to those already undertaken. In some cases, it might allow processing by OIP without significant DWMEP involvement. Completion of this task would also contribute to the NRC's knowledge management initiative.</p>	<p>Near-term need.</p>	<p>(a) Cost to develop the procedure anticipated herein would be modest (approximately 0.1 FTE).</p> <p>(b) Development of the GD, integration with the IP, and full implementation, including training, would require a resource commitment of approximately 0.9 FTE.</p>	<p>(a) When available, the IP would enable more efficient use of both OIP and DWMEP staff time. It would also increase the likelihood of consistency of review and outcome.</p> <p>(b) The GD would improve understanding of expectations by licensees, applicants, and regulators alike. It would probably have the corollary benefit of a more streamlined information request process as well as improved understanding of the overall review process among stakeholders.</p>		<p>Completion of this task would yield a significant near-term benefit with a modest commitment of resources. It significantly increases efficiency and effectiveness. It is germane to all futures. Ranking: High</p>

Activity	Description	Scenario Applicability	Impact on Strategic Goals	Need (near term, medium term, long term)	Level of Effort	Benefit	Additional Considerations	Summary/ Ranking
<p>3. Promulgate a rule that would define the conditions under which low-activity radioactive waste (LAW), including mixed waste, could be disposed of in Resource Conservation and Recovery Act (RCRA) Subtitle C hazardous waste facilities. The NRC would exempt the materials authorized for disposal.</p>	<p>This task would be similar to the rulemaking that the U.S. Environmental Protection Agency (EPA) considered in its November 2003 <i>Federal Register</i> advance notice of proposed rulemaking on the disposal of LAW (68 FR 65120, November 18, 2003), but could be independent of any EPA decision regarding rulemaking. The NRC would develop generic criteria for the disposal of radioactive materials in RCRA hazardous waste facilities. If EPA were to revise its RCRA hazardous waste regulations, the NRC rule would need to be compatible and consistent with the EPA requirements. For this rulemaking, the NRC would specify concentrations of radioactive waste that could be disposed of without any action by EPA or additional measures or controls at the RCRA facility. The NRC would exempt the materials authorized for disposal,</p>	<p>This task applies to all scenarios.</p>	<p>This task would not significantly affect safety and security.</p> <p>This task would contribute to openness by obtaining additional stakeholder input on the disposal of radioactive materials in landfills. Although the Commission has directed the staff to increase openness and transparency for the case-specific approvals of RCRA disposals that are now authorized under 10 CFR 20.2002, a rulemaking would provide extensive opportunities for public input.</p> <p>These types of disposals have been authorized under 10 CFR 20.2002, which requires staff reviews of safety assessments and approximately 6 months to process. A rulemaking would eliminate the need for case-specific approvals and thus would significantly increase effectiveness for specific requests. Currently, the NRC receives only about 3 to 6 requests each year, but a rulemaking that simplifies the process could increase the use of these types of disposals.</p>	<p>Long-term need.</p>	<p>This would require 3.6 to 4.3 FTE</p>	<p>Such a rulemaking would eliminate the need for case-specific reviews under 10 CFR 20.2002 and would provide predictability for licensees, especially those that are planning for decommissioning of facilities where large amounts of LAW are generated.</p>	<p>A number of members of the public and environmental groups oppose any disposal of radioactive materials in non-AEA licensed facilities. Special efforts would be required to address concerns related to this practice.</p>	<p>This task would facilitate the overall goal of risk-informing LLW disposal, particularly for LAW, and might be especially useful in future decommissioning of facilities with large quantities of waste. The cost to implement is relatively high, however, and the current need is not urgent.</p> <p>Ranking: Low</p>

Activity	Description	Scenario Applicability	Impact on Strategic Goals	Need (near term, medium term, long term)	Level of Effort	Benefit	Additional Considerations	Summary/ Ranking
4. Determine if disposal of large quantities of depleted uranium from enrichment plants warrants change in uranium waste classification.	<p>This is a Commission directed task contained in Order CLI-05-20 (October 19, 2005). This could include the following steps</p> <p>(a) determine if current regulations, policies and practices adequately ensure that large quantities of DU will be disposed of in a manner that meets 10 CFR Part 61.</p> <p>(b) determine whether the 10 CFR 61.42 performance objective and associated dose limit for intruder protection can be met at a <i>generic</i> disposal site if large quantities of DU are disposed of under conditions currently allowed for Class A waste.</p> <p>(b) If current Class A disposal requirements are insufficient, determine specific conditions under which DU can be disposed of in a near-surface LLW disposal facility and meet the performance objectives in Part 61</p>	This task applies to all scenarios.	<p>This task might facilitate the disposal of some large quantities of DU and therefore would have a significant potential impact on safety.</p> <p>This task's contribution to openness is uncertain because it would depend on details and on the degree of stakeholder involvement.</p> <p>This task would improve effectiveness by resolving a regulatory issue in a risk-informed manner.</p>	Near-term need because of Commission interest (Commission memorandum and order, dated October 19, 2005, regarding Atomic Safety and Licensing Board decision on Louisiana Energy Services environmental contentions) and potential impact on licensee with regard to future cost of operations and associated financial assurance decisions.	Task (a) would require approximately 1.4 FTE. Tasks (b) and (c) resources will be determined later if they need to be conducted.	This activity resolves uncertainty concerning disposal of DU in a near-surface LLW disposal facility.	<p>(1) This activity may have unequal impact on disposal entities.</p> <p>(2) Depending on the results of tasks (a) and (b) in column 2, if these were found to be necessary to implement, this activity could point to the necessity of taking additional actions that could have significant resource requirements (e.g., rulemaking).</p>	<p>Heightened Commission interest is evident in disposal issues regarding large DU waste streams associated with uranium enrichment.</p> <p>Ranking: High</p>

Activity	Description	Scenario Applicability	Impact on Strategic Goals	Need (near term, medium term, long term)	Level of Effort	Benefit	Additional Considerations	Summary/ Ranking
5. Review and update guidance on extended storage of LLW for materials and fuel cycle licensees and review industry guidance for reactors.	Perform a comprehensive review of all current NRC LLW storage guidance in the context of the current regulatory environment to ascertain whether there are gaps in safety or security considerations. Also, review and endorse industry LLW storage guidance applicable to reactors.	This task primarily responds to the realistic and pessimistic scenarios because these scenarios assume that disposal of LLW would be somewhat problematic and that long-term nondiscretionary storage of LLW would be necessary.	<p>This task would contribute to agency safety and security goals related to LLW that might be created and possessed by users of radioactive materials and for which long-term storage is necessary because of a loss of disposal capacity.</p> <p>The process through which guidance would be developed would contribute to openness. The data-gathering process would expand the dialogue among NRC headquarters and regions, States, and licensees regarding specific needs to facilitate regulatory aspects of long-term LLW storage.</p> <p>The magnitude of the contribution to agency effectiveness can only be determined after reviewing all existing guidance. However, carried to conclusion, this task should have a positive impact on agency effectiveness.</p>	There is a near-term need to update LLW storage guidance for licensees for Class B and C wastes in conjunction with the closure of the Barnwell LLW facility in mid-2008 to out-of-compact waste generators.	Review, update, and consolidation of LLW long-term storage guidance would require approximately 1.2 FTE, including review of industry guidance.	Storage guidance review and update would identify and eliminate gaps in knowledge related to storage principles and techniques applicable to the needs of various classes of licensees. It would also eliminate out-of-date guidance as well as any ambiguity that might impede the inspection of licensee LLW storage facilities. An increased focus on the security of nuclear materials in storage is consistent with agency security goals.	<p>Although there are no examples of health, safety, or security problems attributable to deficiencies in current storage practices or associated guidance, the staff believes that review and update of LLW storage guidance is forward-thinking, proactive, and wholly consistent with the regulatory landscape that the agency is likely to confront in the near future. It is better to anticipate problematic circumstances rather than react after they occur.</p> <p>The Nuclear Energy Institute is preparing guidance (in conjunction with the Electric Power Research Institute) for storage at reactors. NEI will submit it to NRC for review. This review should eliminate any need for NRC to revise reactor LLW storage guidance.</p>	Ranking: High

Activity	Description	Scenario Applicability	Impact on Strategic Goals	Need (near term, medium term, long term)	Level of Effort	Benefit	Additional Considerations	Summary/ Ranking
6. Develop licensing criteria for greater-than-Class-C (GTCC) waste, if necessary	Develop licensing criteria for GTCC disposal in facilities other than those of the deep geologic type. This could include the identification of necessary site and waste characteristics as well as facility baseline design criteria. Whether this task is necessary depends upon whether DOE chooses a non-geologic repository for GTCC disposal.	This task applies to the optimistic and realistic scenarios.	<p>This activity could contribute to both safety and security in that it would provide a clear regulatory pathway for the disposal of material in a non-geologic repository, if DOE were to choose that option.</p> <p>This activity, if it were necessary, would require continuous interaction with, and input from, stakeholders and would thus make a significant contribution to openness.</p> <p>This activity would significantly affect the U.S. Department of Energy (DOE) as well as industry generators/possessors of GTCC waste if DOE chooses a non-repository option.</p>	Potentially medium-term need. Depends upon DOE's selection and timing of disposal alternatives for GTCC, which may or may not include non-repository options. DOE's July 31, 2006 report to Congress states that a final EIS for GTCC disposal is to be published in late 2008. This date has likely slipped somewhat because an earlier milestone (issuing a Notice of Intent) was delayed.	This would require 0.2 to 1.8 FTE, depending on the disposal option that DOE selects.	In addition to increasing the effectiveness and efficiency of licensing, this activity has the potential to reduce GTCC volumes in storage. It would foster a more efficient use of resources for DOE by informing the DOE staff about the NRC's expectations and thereby focusing DOE efforts more directly on developing and providing the information needed for licensing, should DOE choose a non-geologic repository for disposal of GTCC.	The process would benefit from early communication with DOE on plans and proposed methodology. It would be premature to proceed with this activity until there is some certainty regarding the type of facility that DOE intends to recommend. DOE's EIS for GTCC disposal is scheduled for late 2008.	<p>The timing for this activity is related to DOE actions regarding GTCC disposition and when they occur.</p> <p>Ranking: Medium (Based on current DOE schedules).</p>

Activity	Description	Scenario Applicability	Impact on Strategic Goals	Need (near term, medium term, long term)	Level of Effort	Benefit	Additional Considerations	Summary/ Ranking
<p>7. (a) Develop and implement an internal procedure for reviewing and processing 10 CFR 20.2002 requests (which allow for case-by-case NRC approvals for disposals in a facility other than a conventional LLW facility) and requests to dispose of "unimportant quantities" of source material (b) Develop a standard review plan for these proposed disposals for use by licensees</p>	<p>To improve consistency of reviews, to provide guidance to licensees who plan to submit such requests, and to implement the Commission's direction on improving transparency for 10 CFR 20.2002 disposals, the staff would prepare an internal procedure that describes roles and responsibilities, documentation of the reviews in a safety evaluation report and environmental assessment, review criteria, dose modeling considerations, and coordination with stakeholders. The staff also would prepare a standard review plan for licensee use and would base it on the guidance in the internal procedure. Both 10 CFR 20.2002 requests and requests for disposals of unimportant quantities of source material would be addressed.</p>	<p>This task applies to all scenarios.</p>	<p>A documented procedure and standard review plan would ensure consistency in reviews of alternative disposal requests. Safety and security impacts would be minimal, however, because these disposals currently are being accomplished safely and securely. The dose limits used are consistent or more conservative than those used internationally and in the United States (10 CFR 20.2002 disposals in fact use a dose standard that is a small fraction of the limits in 10 CFR Part 20). There is no security risk because the materials addressed by these procedures have very low concentrations of radionuclides.</p> <p>Developing a standard review plan would significantly improve openness and transparency by identifying in one place the review criteria, dose modeling considerations, and external coordination required. These are not readily available to the public at this time. The agency would issue a draft standard review plan for public comment.</p> <p>This task would significantly contribute to the effectiveness goal for individual requests by enhancing the consistency of reviews. It is also expected to result in fewer resources needed for reviews and faster review times because criteria and processes would be documented in one place. However, the NRC receives a relatively small number of these requests (3-6) each year, so the overall contribution to effectiveness is moderate.</p>	<p>Near-term need.</p> <p>A number of stakeholders support the completion of this task, and the NRC continues to receive requests for alternate disposals, at a greater rate than in previous years.</p>	<p>(a) Development of the IP would require approximately 0.4 FTE and 6 months.</p> <p>(b) Development of a standard review plan would require 0.9 FTE and 1 year (after completion of internal procedure).</p>	<p>This task would benefit licensees with large quantities of slightly contaminated material that can be safely disposed of in a facility other than a licensed LLW site. It would also foster risk-based, rather than origin-based, LAW disposal by providing for enhanced consistency and transparency in the internal review process that the NRC uses for such approvals. This task has the support of a number of stakeholders that have requested standardization of the approval processes.</p>	<p>In moving away from origin-based disposal of waste and toward risk-based disposals, licensees are use the alternative disposal provisions of 10 CFR 20.2002 as well as the Commission's policy on the disposal of unimportant quantities of source material, which is contained in its staff requirements memorandum (SRM) on SECY-00-0201. These disposals typically occur in RCRA facilities, although other types of disposal methods are not prohibited if safety can be demonstrated. The NRC has no formal, documented procedure for reviewing and processing such requests at this time. The Commission, by way of its SRM on SECY-06-0056, directed the staff to improve consistency and transparency in 10 CFR 20.2002 reviews. Although many stakeholders strongly supported improvements in the LAW disposal approval processes, almost half of the commenters on the LLW strategic assessment (all individual members of the public or environmental groups) either directly or indirectly opposed (1) risk-based disposals, (2) any additional potential for exposures to radioactive materials from nuclear fuel cycle wastes, or (3) disposal of any materials, irrespective of their concentration or hazard, in anything but an AEA-licensed facility.</p>	<p>This task would significantly improve effectiveness because there is currently no documented process for 10 CFR 20.2002 authorizations. In addition, this effort would contribute to the Commission's goal of increasing the transparency of these authorizations. This task would also assist in facilitating risk-based disposals, rather than origin-based disposals.</p> <p>Ranking: High</p>

Activity	Description	Scenario Applicability	Impact on Strategic Goals	Need (near term, medium term, long term)	Level of Effort	Benefit	Additional Considerations	Summary/ Ranking
<p>8. Examine the desirability and benefits of legislative changes. One alternative to be considered would be the use of DOE facilities for non-DOE waste. NRC would identify any regulatory obstacles to such an approach as part of this activity.</p>	<p>Take initiatives to examine the desirability and benefits of implementing legislative changes that would improve the Nation's system for the disposition of LLW. This task would involve the following:</p> <p>(a) identification of potential new legislation</p> <p>(b) coordination with senior management and the Commission on potential changes</p> <p>(c) communication with Federal and State agencies</p> <p>(d) coordination with the Office of Congressional Affairs in contacting and working with appropriate congressional committees</p> <p>(e) depending on the outcome of the above, a Commission paper or other document that might be appropriate</p>	<p>This task is not applicable; (i.e., not relevant to, or dependent on, disposal availability scenarios).</p>	<p>This task by itself would have little effect on safety and security because it precedes any actual legislative changes. If new legislation were passed that enabled all LLW to have a reliable disposal path, the effect on safety and security could be significant.</p> <p>This task would not contribute much to openness initially, but would later if follow-on efforts involving interactions with stakeholders on draft legislation are needed. The task, as defined, would of necessity involve communications with other Federal and State agencies.</p> <p>The impact of this task on effectiveness would be potentially high if legislative changes are eventually made that allow similar types of waste to be disposed of similarly and on a risk-informed basis.</p>	<p>Medium-term need.</p> <p>Wastes are being disposed of under the current system of laws</p>	<p>This task would require approximately 0.15 FTE per year.</p>	<p>The ultimate benefits of this effort would be potentially large with respect to effectiveness (e.g., improvement in regulatory flexibility, elimination of regulatory overlap) as well as the cost of disposal, and potentially safety and security as well by eliminating any need for long-term storage of LLW.</p>	<p>This activity has significant political and public policy challenges because there is likely to be very large resistance to change in the current system; resistance to change is fairly common in situations in which an established system has been in place for an extended period of time.</p>	<p>The difficulty and low likelihood of effecting legislative change offset the potential benefits.</p> <p>Ranking: Low</p>

Activity	Description	Scenario Applicability	Impact on Strategic Goals	Need (near term, medium term, long term)	Level of Effort	Benefit	Additional Considerations	Summary/ Ranking
9. Update and consolidate LLW guidance into one NUREG.	This task would be similar to the guidance consolidation that was conducted for the materials licensing program (resulting in NUREG-1556) and the decommissioning program (resulting in NUREG-1757).	This task applies to all scenarios, but would be particularly useful for licensing of new facilities.	<p>This task would not affect safety and security.</p> <p>This task would significantly enhance openness by making readily available and understandable the information contained in dozens of LLW guidance documents (e.g., BTPs, NUREGs, information notices, generic letters) that the NRC has issued over the last 25 years and by identifying and describing the relationship of each to the regulations in 10 CFR Part 61 and to each other.</p> <p>This task would increase effectiveness by ensuring that future LLW staff members have all of the relevant documents and understand their interrelationships and that the positions in such documents are up to date, risk-informed, and performance based. This effort would be a major contributor to knowledge management in LLW by ensuring that the knowledge relevant to the NRC's LLW responsibilities is transferred to new staff members.</p>	<p>Medium- to long-term need.</p> <p>Although completion of this task will facilitate access to LLW guidance for those needing it in the future, the guidance is currently available and accessible in some form. Therefore, the need is not acute.</p>	<p>This task would require 4.4 FTE.</p> <p>Some of this task effort could be accomplished with contractor assistance. (For updating the concentration averaging BTP and developing 10 CFR 61.58 guidance, see those tasks in this table.)</p>	<p>This effort would help to ensure that the many staff positions on LLW issues are readily available to licensees, States, future developers of LLW disposal sites, and other stakeholders. It could also play a role in future licensing of any such disposal facilities by ensuring that staff GDs, which are often used as the licensing review criteria, are risk-informed. In addition, such a consolidation would advance knowledge management by centrally locating all relevant NRC LLW guidance.</p>	<p>Since the promulgation of 10 CFR Part 61 in 1982, the NRC staff has issued numerous GDs that describe staff positions on various LLW issues. Many of these could benefit from insights gained during the last two decades, particularly regarding risk-informed, performance-based regulation. In addition, many of the documents are not readily available to stakeholders because they predate the Agencywide Document Access and Management System (ADAMS).</p>	<p>Although this task could significantly contribute to effectiveness if new LLW sites undergo licensing, it is a long-term effort that requires significant resources to accomplish.</p> <p>Ranking: Medium</p>

Activity	Description	Scenario Applicability	Impact on Strategic Goals	Need (near term, medium term, long term)	Level of Effort	Benefit	Additional Considerations	Summary/ Ranking
10. Develop and implement major revisions to 10 CFR Part 61	<p>This task would address major changes to 10 CFR Part 61 that cannot be implemented through guidance. Some examples of the types of revisions that could be considered are the following:</p> <p>(a) developing more risk-based criteria, including, but not limited to, specific criteria for LAW, and using more realism and up-to-date dosimetry in the inadvertent intruder scenarios that define waste classification.</p> <p>(b) allowing credit for more than 100 years reliance on active institutional controls</p> <p>(c) allowing credit for engineered barriers for waste form, waste packaging, disposal site design, and cover design that are not explicitly included in 10 CFR Part 61</p>	This task applies to all scenarios.	<p>This task would not significantly affect safety and security.</p> <p>This task would significantly affect openness. Conducting rulemakings to significantly revise 10 CFR Part 61 would increase awareness of the underlying 10 CFR Part 61 assumptions and manipulations thereto.</p> <p>A more risk-informed 10 CFR Part 61 would likely facilitate any future licensing reviews for 10 CFR Part 61 facilities.</p>	Long-term need.	This task would require 11 FTE over 5 years.	Although it is difficult to predict all of the benefits that might result, some might include the potential for facilitating future licensing of LLW sites by eliminating some current requirements, and eliminating unnecessary conservatism and thereby facilitating disposal of more types of waste.	States have previously noted to the NRC that the agency should not undertake 10 CFR Part 61 revisions when a new license application is anticipated or under review. The provisions of 10 CFR Part 61 provide for adequate protection of public health and safety, but any changes to it have the potential to disrupt the ongoing review of an application.	<p>Although the existing 10 CFR Part 61 could be made more risk-informed, as the Advisory Committee on Nuclear Waste and Materials (ACNW&M) has noted, there is no need for change at this time.</p> <p>Furthermore, the staff can develop or revise guidance to address any emerging LLW issues, such as the use of alternate waste classification provisions in 10 CFR 61.58.</p> <p>Ranking: Low</p>

Activity	Description	Scenario Applicability	Impact on Strategic Goals	Need (near term, medium term, long term)	Level of Effort	Benefit	Additional Considerations	Summary/ Ranking
<p>11. Coordinate with other Federal and State agencies on improving the consistency of regulation of LAW, including the low end of LLW and AEA 11e.(2) byproduct material, Formerly Utilized Sites Remedial Action Program waste, and technologically enhanced naturally occurring radioactive material (TENORM)</p>	<p>The effort would involve, working through the Interagency Steering Committee on Radiation Standards (ISCORS) initially, the identification of LAW disposal regulations and practices for different agencies and programs, specific improvements that can be made within the existing legislative and regulatory framework to effect the needed changes, and identification of potential legislative changes. Coordination with States would be both through ISCORS and the National Materials Program.</p> <p>Specific products would depend on the results of discussions with other Federal agencies and States. The staff would prepare a Commission paper every 2 years that would summarize work on this task.</p>	<p>This task applies to all scenarios.</p>	<p>This task would not significantly affect the safety and security of AEA-related materials, but could improve the safety of TENORM management and disposal. It would contribute to the risk-informed management and disposal of AEA materials.</p> <p>This task would not significantly contribute to openness, but, if it leads to greater awareness of LAW regulation in general (e.g., through proposed legislation), it could significantly increase understanding and awareness of LAW regulation in the United States. The National Academy of Sciences (NAS) and other stakeholders commenting on the national LLW program have noted that the complex, origin-based system of regulating radioactive waste is difficult to understand.</p> <p>This task would not contribute to effectiveness, but potential long-term improvements in regulation (e.g., resulting from legislative changes) would result in significant improvements in effectiveness.</p>	<p>Near-term need.</p>	<p>This task would require .3 to .4 FTE per year of coordination through ISCORS and with States.</p> <p>There is a potential for higher resource commitments if specific improvements are identified and implemented through interagency coordination.</p>	<p>The lack of consistency in the regulation and management of LAW of all types in the United States is widely recognized. This effort could lead to the improved protection of public health and safety regarding certain wastes, such as TENORM, that are not consistently regulated now. It could also facilitate the disposal of materials by ensuring that safe options that are available for one type of waste are also available for other types of waste with similar associated radiological hazards.</p>	<p>This task would address the inconsistency in LAW regulation that has been highlighted in recent years in a variety of reports, including National Council on Radiation Protection (NCRP) Report No. 139 and the NAS study, "Improving the Regulation and Management of Low-Activity Radioactive Wastes." The NAS report specifically recommended that government agencies continue to harmonize their regulations for LAW so that those wastes would be controlled consistently according to their radiological hazards rather than their origins. This task would implement that recommendation. The NRC has taken a number of steps to implement regulation of LAW disposal based on the hazard posed, including authorizing 10 CFR 20.2002 disposals and, in the near future, standardizing and ensuring the transparency of the process for review and approval.</p>	<p>Moving from an origin-based system for radioactive waste disposal to a more risk-informed system has widespread support among many stakeholders (although some groups and individuals oppose not only any radiation exposures from nuclear fuel cycle materials, but also the adoption of risk-informed regulation in general).</p> <p>Ranking: Medium</p>

Activity	Description	Scenario Applicability	Impact on Strategic Goals	Need (near term, medium term, long term)	Level of Effort	Benefit	Additional Considerations	Summary/ Ranking
12. Develop and issue guidance that summarizes the existing disposition options for low-activity materials and waste	A number of different documents contain the NRC's positions on dispositioning low-activity materials and waste. This task would be to issue a regulatory issue summary (RIS) that contains all of the existing staff positions in one document.	This task applies to all scenarios.	<p>This task would not have any significant effect on safety and security because it would document existing practices.</p> <p>This task would enhance openness by making clear, in a single document, all of the NRC's options for addressing low-end radioactive material. Currently, the options appear in a number of different documents that are not readily available to stakeholders.</p> <p>This task would increase effectiveness by ensuring that all licensees and other stakeholders are aware of NRC policies and procedures for dispositioning low-end radioactive material.</p>	Near-term need.	This task would require 0.1 FTE over 6 months.	This effort would help to ensure that licensees and other stakeholders know and understand the various staff positions on dispositioning low-end materials.	The existing documents containing these positions include Regulatory Guide 1.86, staff positions on implementing 10 CFR 20.2002 requests for alternate disposals, all Agreement State letters, information notices, and Commission SRMs (e.g., for unimportant quantities of source material disposals). This effort would facilitate knowledge management.	<p>Although this task involves relatively few resources to implement, it would have little impact on safety and security, and many waste generators are already aware of applicable staff positions.</p> <p>Ranking: Medium</p>
13. Identify new waste streams	Engage in interaction with other NRC offices and other Federal agencies to identify potential new waste streams that have different radionuclide and/or radionuclide concentrations (compared to waste that has been disposed of before) or that have not been addressed or accounted for in existing regulations, such as the waste classification tables in 10 CFR 61.55. This task would require communication with DOE and industry representatives.	This task is not applicable to, or dependent on, any disposal site scenario; (i.e., it is not dependent on near-term disposal availability).	<p>This task would have no effect on safety and security in the near term, but would potentially have effects in the long term.</p> <p>This task would make a small contribution to openness. DOE and industry stakeholders would be involved to the extent that they would be contacted for information.</p> <p>This task would make a significant contribution to effectiveness. The information gained from this effort would be used to identify preparatory efforts that would be required to ensure that the necessary regulatory framework is in place when new waste streams appear. Such efforts could, for example, include rulemaking and/or guidance development.</p>	The need for this task is not urgent.	This task would require approximately 0.15 hours over 1 year.	This activity positions the NRC to be better prepared to address future issues. It also would benefit the nuclear industry by ensuring that the regulatory framework would be in place when needed.	This task would necessitate interactions with other NRC offices as well as other Federal agencies.	<p>Although the level of effort would be small, there is no immediate need for this task, nor would it have a near-term impact on safety goals.</p> <p>Ranking: Medium</p>

Activity	Description	Scenario Applicability	Impact on Strategic Goals	Need (near term, medium term, long term)	Level of Effort	Benefit	Additional Considerations	Summary/ Ranking
14. Develop guidance for implementing 10 CFR 61.58	Develop and implement guidance that explains how to meet the provisions of 10 CFR 61.58 regarding the alternative means for classifying and characterizing waste on a case-specific basis.	This task mainly applies to the realistic and pessimistic scenarios, within which paths-forward to waste disposal become increasingly problematic. It is assumed that, within the optimistic scenario, other (e.g., economic, competitive) drivers would facilitate the path to disposal.	<p>Although a guidance document, such as a standard review plan, is not necessary to access the provisions of 10 CFR 61.58, such a tool would facilitate the process and foster common expectations. Therefore, the staff anticipates that the completion of this task would have a small, but positive, impact on safety and security goals because it would facilitate the safe disposal an increment of waste that might otherwise have to be stored. (The realistic and pessimistic scenarios envision some difficulty in the development of GTCC disposal capacity by DOE.)</p> <p>The GD development process would be subject to stakeholder review, comment, and critique.</p> <p>The staff believes that once significant adoption by State regulators and other stakeholders occurs, overall cost-effectiveness and efficiency in the regulatory process of LLW disposal would accrue as a result of a uniform, transparent process for considering alternative characterization and classification strategies. Because the level of such use by Agreement States is difficult to predict, it also is difficult to assess the overall contribution to effectiveness. One of the States in which a disposal site is located does not currently have a provision in its regulations equivalent to 61.58.</p>	Subject to the caveats discussed herein, the staff concludes that there is a near-term need for this standard review plan. The increased flexibility in disposal options implied by such an effort might both facilitate disposal availability and reduce the average cost of disposal at the upper end of the activity spectrum.	Because of the technical and regulatory issues involved, resource requirements would be significant (3.6 - 4.3 FTE). The development and vetting of conceptual approaches that are acceptable to the NRC, as well as the development of compatible analysis tools would be very resource-intensive activities.	The potential benefits of this task are very significant. It would afford industry and regulators a consistent framework for proposing and evaluating alternative classification and characterization strategies. Ultimately, this may lead to expanded flexibility in disposal practices as well as waste isolation (and disposal costs) consistent with risk. Implementation might allow a reduction in the classification of some waste streams and thus might enhance flexibility in disposal options (both location and method).	<p>The utility of this effort is closely related to the willingness of host States to adopt it. It is noteworthy that not all disposal site host States have adopted a 10 CFR 61.58 provision in their regulations.</p> <p>Stakeholder involvement is imperative to counter the perception of reduced protection of health, safety, and the environment associated with implementation.</p>	<p>Potential benefits and contributions are high, subject to licensing States' adoption.</p> <p>Ranking: High</p>

Activity	Description	Scenario Applicability	Impact on Strategic Goals	Need (near term, medium term, long term)	Level of Effort	Benefit	Additional Considerations	Summary/ Ranking
<p>15. Define LLW that is acceptable for disposal in uranium mill tailings impoundments to facilitate the approval of such disposals in the future</p>	<p>Develop generic waste acceptance criteria for the disposal of LLW in AEA 11e.(2) mill tailings impoundments. Alternatively, if generic criteria are not feasible, develop performance-based license conditions for specific licensees for the disposal of such wastes.</p>	<p>This task is not applicable (i.e., not relevant to, or dependent on, disposal availability scenarios).</p>	<p>This task would make a small to moderate contribution to safety. Depending on the costs of disposal, the task could lead to the potential elimination of legacy decommissioning sites (i.e., sites that do not have the funds to fully decommission the site).</p> <p>This activity would involve/require substantial and continuous stakeholder involvement and would thus make a significant contribution to openness.</p> <p>This activity would make a moderate contribution to agency effectiveness. Defining the waste characteristics in advance would eliminate uncertainty for licensees considering the disposal of LLW in tailings impoundments. At the same time, other significant steps need to be taken for such disposals to occur, including DOE agreement that it would take custody of, and provide long-term care for, a site that accommodates the disposal of other than 11e.(2) material.</p>	<p>Near-term to medium-term need.</p> <p>However, licensees currently have disposal options for the types of waste suitable for disposal at mill tailings impoundments.</p>	<p>This task would require approximately 1.5 FTE.</p>	<p>This task has the potential to greatly increase the flexibility of disposal of certain types of LLW, such as some DU and other waste streams that behave similarly and offer an equivalent risk when disposed of as 11e.(2) byproduct material.</p>	<p>RIS-00-023 contains guidance on the disposal of non-11e.(2) byproduct material in uranium mill tailings impoundments. It defines a number of other conditions for NRC approval, including concurrence by DOE or the State that would assume long-term care responsibilities and by the regional LLW compact. Thus, although completion of this task could facilitate approvals, it could not guarantee them.</p>	<p>Although this task would make a small to medium contribution to safety, it would require a relatively significant amount of resources.</p> <p>Ranking: Low</p>

Activity	Description	Scenario Applicability	Impact on Strategic Goals	Need (near term, medium term, long term)	Level of Effort	Benefit	Additional Considerations	Summary/ Ranking
16. Update the BTP on concentration averaging and encapsulation	Update the BTP guidance by, for example, revisiting the "Factor of 10" rule, allowing some blending of waste to lower the waste class, and providing needed clarification of complex sections in the current BTP as well as articulating the bases/rationales for the positions in these sections.	This task is not applicable (i.e., not relevant to, or dependent on, disposal availability scenarios).	<p>This task would have a low but not insignificant impact on safety and security, in the sense that making the BTP easier to understand would help avoid situations in which waste could be misclassified and thereby not be disposed of adequately from a safety or security standpoint. It could potentially enhance safety and security by enabling disposal of waste that would otherwise have to be stored.</p> <p>The contribution to openness would be high because this activity would involve/require substantial and continuous stakeholder involvement.</p> <p>This task would have a significantly high impact on agency effectiveness because it would resolve waste classification and concentration issues in a risk-informed manner.</p>	Near-term need. Comments received at the ACNW&M workshop as well as in response to the staff's <i>Federal Register</i> notices (FRNs) indicate that stakeholders have considerable interest in this subject.	This task would require approximately 2.0 FTE over 2 years. The resources and time required to accomplish this task are not trivial, in part because of the need to perform some fundamental health physics analyses to determine the bases for current or potentially new provisions in the BTP. In addition, by its very nature, a guidance development activity requires a significant quantity of resources and time for interaction with stakeholders.	This task has the potential to greatly increase the flexibility of disposal of certain types of LLW, particularly sealed sources and irradiated hardware. This task would use risk-informed approaches and knowledge that were not available at the time of the last update.	There is general agreement that many statements in the current BTP are difficult to interpret and that the underlying rationales for many if not most are not self-evident. This continues to require the staff to respond to requests from licensees for interpretation of certain provisions and is an inefficient use of staff resources that would be available for other work if the BTP were more transparent. It may be possible to benefit from industry reports submitted to NRC on this topic for review. If so, the time needed to complete the task and the magnitude of the NRC staff effort would both decrease. Finally, any new positions on blending, averaging, etc. may need to be addressed in other BTPs (waste classification, e.g.) as well, depending upon the specific changes.	<p>This task responds to stakeholder requests and would yield significant benefits in clarifying classification allowances and expanding flexibility.</p> <p>Ranking: High</p>

Activity	Description	Scenario Applicability	Impact on Strategic Goals	Need (near term, medium term, long term)	Level of Effort	Benefit	Additional Considerations	Summary/ Ranking
17. Develop and issue an information notice on waste minimization	Develop and issue to 10 CFR Part 30 and 10 CFR Part 40 byproduct and materials licensees an information notice that describes techniques and methods that small institutional waste generators (e.g., laboratories and hospitals) could use to minimize the volumes of waste that they generate.	This task applies to the status quo as well as pessimistic scenarios.	<p>Reducing the volume of waste that might otherwise have to be stored contributes positively to both safety and security.</p> <p>Compared to the efforts needed for developing GDs such as BTPs and standard review plans, development of an information notice does not necessitate significant stakeholder involvement.</p> <p>This effort has the potential to facilitate the safe and effective use of radioactive materials by small materials licensees that currently face issues related to waste storage and associated costs.</p>	Near-term need. Comments received in response to the staff's FRNs, coupled with remarks from speakers at the ACNW&M workshop, indicate that stakeholders have an interest in this subject and would benefit from this information.	<p>This task would require approximately 0.2FTE.</p> <p>The resources and time required to accomplish this task should be modest, especially if NCRP Report No. 143 (mentioned in a response to the staff's FRN) or other publically available documents, such as an NRC policy statement issued in 1981 (46 FR 51100) and Information Notice 89-13 can be used as sources of information and/or cited as references.</p>	This task has the potential to (1) reduce the quantity of LLW generated and thereby contribute to safety and security as well as (2) relieve regulatory burden and cost for materials licensees.	Although 10 CFR Part 50 utility licensees have extensive waste management (including storage) expertise and resources, some small institutional waste generators would benefit from having additional detailed information on how to minimize the amount of waste produced during their operations. Some industry spokespeople have expressed the opinion, however, that any reduction in the quantity of waste requiring disposal would (1) adversely affect the economic viability of existing sites and (2) reduce incentives to develop new sites. This activity should have some appeal for those stakeholders who oppose the use of radioactive materials and their release into the environment.	<p>This task would yield modest benefits to some licensees in the overall LLW management system. Required resources also would be modest.</p> <p>Ranking: Medium</p>

Activity	Description	Scenario Applicability	Impact on Strategic Goals	Need (near term, medium term, long term)	Level of Effort	Benefit	Additional Considerations	Summary/ Ranking
18. Examine the need for guidance on defining when radioactive material becomes LLW	Determine whether a need exists for the NRC staff to provide guidance to licensees on when radioactive material becomes LLW. Radioactive material that is LLW can be subject to measures, such as storage guidance and/or financial assurance provisions, that differ from those for radioactive materials for which there is an intended use.	This task applies to all scenarios.	<p>This task could have an impact on the type of safety and security measures that are needed for different types of radioactive material.</p> <p>This task would contribute to the agency's openness goal because it provides transparency to the interpretation of the concept of "waste."</p> <p>This task would contribute to effectiveness because it would help to provide consistency in the management of radioactive waste as radioactive waste.</p>	<p>Near-term need.</p> <p>This issue is relevant as waste generators, processors, and brokers deal with the numerous challenges associated with the creation, management, and disposition of radioactive waste.</p>	This task would require only 0.1 to 0.2 FTE, but would necessitate significant coordination with individual State radiation control programs.	This task would provide national consistency and clarity regarding the point of genesis of radioactive waste. It could help clarify State/compact responsibilities regarding waste disposition. It also could help to clarify liability issues associated with radioactive waste.		<p>This activity would improve consistency and potentially reduce the likelihood of financial assurance concerns for some licensees.</p> <p>Ranking: Low</p>

Activity	Description	Scenario Applicability	Impact on Strategic Goals	Need (near term, medium term, long term)	Level of Effort	Benefit	Additional Considerations	Summary/ Ranking
19. Perform a scoping study of the need to revise/expand byproduct material financial assurance to account for total life-cycle (operational) cost, including dispositioning	Review the adequacy of the financial assurance requirements of 10 CFR 30.35 to determine whether regulatory changes are warranted to adjust front-end requirements to anticipate the ultimate costs of disposing of/dispositioning radioactive sources not addressed by the Task Force on Control of Radioactive Sources (which addressed Categories 1 and 2) and other radioactive material.	This task addresses the realistic and pessimistic scenarios. Financial assurance becomes more acute as a function of the high cost and problematic availability of disposal.	This task could affect safety and security. Any rulemaking that might result from this task would require public involvement and would thus be consistent with the openness goal. This task would have a significant impact on agency effectiveness because it would reduce or eliminate the need for using DOE or Conference of Radiation Control Program Directors source recovery programs and would ensure that licensee funds are available for the disposal of all waste.	Near-term need.	The staff resources needed for a scoping review/study are projected to be less than approximately 0.2 to 0.4 FTE. If a subsequent rulemaking were deemed appropriate, time and cost would be very significant.	If additional financial assurance requirements are needed, they would be crafted to eliminate or minimize the likelihood of orphaned, abandoned, or stolen radioactive material (particularly sealed sources) by ensuring funding availability for disposal activities during the total life cycle.	Any rulemaking to expand 10 CFR 30.35 requirements would necessitate extensive interaction with the affected stakeholders.	A scoping study to determine whether financial assurance measures are sufficient for the future could be accomplished by expending modest resources. Ranking: High
20. Develop and implement a national tracking system for LLW disposed of and in storage	Promulgate regulation that would identify the data necessary to track the origin, management, and disposition of all LLW. Require the promulgation of a compatible State regulation by all Agreement States with licensees that produce LLW. By these regulations, require that licensees provide necessary information to regulatory authorities on a regular, prescribed basis. A national tracking system has been suggested by GAO.	This task applies to all scenarios.	The NRC and Agreement States already have regulatory programs in place to ensure the safe, secure use of all radioactive material, including LLW. With respect to openness, this task would make available to the public information about licensees' waste that is disposed of and in storage. This task would not contribute to the NRC's effectiveness goal.	Near-term need.	The staff resources necessary to develop and implement a regulatory framework for a national tracking system would be very significant, estimated at 3.7 FTE.	This task would provide transparency on quantities and locations of LLW in storage and disposed of by licensees in the United States. It would also enable forecasting of future waste volumes.	The regulatory burden would be significant on thousands of NRC and Agreement State licensees. Efforts would go well beyond the recently implemented National Source Tracking System. See also the NRC May 25, 2004, letter and comments regarding GAO-04-604, contained in an appendix to that report.	This activity does not significantly contribute to safety, security, effectiveness, or openness Ranking: Low