

Docket No. PR-61

PDR

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LISTING OF COMMENTS ON SPECIFIC SECTIONS
OF PRELIMINARY DRAFT REGULATION 10 CFR PART 61

(DRAFT DATED NOVEMBER 5, 1979)

A total of 33 formal comments were received on the preliminary draft regulation (draft dated November 5, 1979). A list of the commenters follows:

LIST OF COMMENTERS ON PRELIMINARY DRAFT REGULATION
10 CFR Part 61 (11/5/79) - 45 FR 13104 (2/28/80)

1. Nevada Division of Health
2. Florida Department of Environmental Regulation
3. Department of Energy, Division of Waste Products
4. Nuclear Safety Associates
5. Natural Resources Defense Council
6. California Energy Resources Conservation and Development Commission
7. West Virginia Geological and Economic Survey
8. Kansas Department of Health and Environment
9. U.S. Geological Survey
10. Tennessee Valley Authority
11. Penberthy Electromelt International, Inc.
12. Travenol Laboratories
13. Arkansas Power & Light Company
14. Duke Power Company
15. North Carolina State University
16. United States Steel Corporation - Texas Uranium Operations
17. Pennsylvania Power & Light Company
18. American Hospital Association
19. Ford, Bacon & Davis Utah, Inc.
20. Department of Energy - Clinch River Breeder Reactor Plant Project Office
21. Atomic Industrial Forum/Utility Nuclear Waste Management Group

22. Consumers Power Company
23. Los Alamos Scientific Laboratory (University of California)
24. Pharmaceutical Manufacturers Association
25. Chem-Nuclear Systems, Inc.
26. Yale University
27. Ralston Purina Company
28. Illinois Department of Public Health
29. Wisconsin Division of Emergency Government
30. Vermont Legislative Council
31. Connecticut Department of Business Regulation
32. U.S. Ecology, Inc.
33. Marvin I. Lewis

Comments received on specific sections of the preliminary draft regulation are enumerated below. Commenters are identified by the number designation above.

SUBPART A: GENERAL PROVISIONS

61.10 Purpose

Number 24 suggested that this section specifically state that the regulations are intended to promote the efficient use of any newly licensed burial capacity.

61.12 Scope

Number 32 suggested that the scope should address "brokers" and others who may perform decontamination or dismantling for others but use their own license.

61.14 Definitions

Number 3 stated that the definition of "low-activity bulk solid wastes" needs clarification and that the major criterion is low concentration, regardless of the volume.

Number 9 stated that the definition of "low-activity bulk solids" needs some further specifications.

Number 10 questioned the definition of "low-activity bulk solids" pointing out that "heterogeneously dispersed" is achievable, but "homogeneously dispersed" is possible only with solutions.

Number 14 stated that the definition of "low-activity bulk solids" does not provide enough information to determine how it differs from low-level waste.

Number 28 stated that, in regard to "low-activity bulk solids," fuel fabrication plants do not generate tailings.

Number 28 stated that "low-activity bulk solid waste" is not defined, nor is "low activity."

Number 4 objected to the concept of "the best" in "candidate sites" since words to that effect assure that no site will ever survive the intervention process.

Number 21 stated that the concept of "the best" should be discouraged in the definition of "candidate sites," instead the concept of "adequate for the

intended purpose," based upon detailed analysis should be encouraged, otherwise no site will survive the intervention process.

Number 25 suggested that the intent associated with the requirement for identifying "candidate sites" be clarified in the sections where the term is used. It believes that the applicant's selection process should prevail.

Number 32 stated that to require in the definition of "candidate sites" that the candidate sites be "among the best" places an open-ended burden on an applicant. The requirement should be "to be adequate for the intended purpose."

Number 4 stated that the definition of "disposal" is particularly poor in its misuse of the word "isolation" considering the fact that shallow land burial hardly "removes waste from mankind and his environment."

Number 21 stated that the definition of "disposal" should be modified to read "means confinement with no provisions made for subsequent retrieval." Shallow land burial will hardly meet the proposed definitions.

Number 32 stated that the definition of "disposal" precludes shallow land burial. It recommended deletion of the words "permanent isolation, or removal of radioactive waste from mankind and his environment."

Number 16 stated that the definition of "LLW" be clarified in regard to byproduct material that is not mill tailings.

Number 20 said in reference to the definition of "low-level waste" that uranium mill tailings appear not to be defined in Part 40.

Number 20 asked, in regard to the definition of "low-level waste," about byproduct activity which contains low-level radium and/or accelerator produced radionuclides.

Number 26 suggested that an additional category of LLW be defined--i.e., the waste from institutions such as hospitals, universities, biomedical research units, etc. should be defined as "low-level radioactive institutional waste." The site criteria, disposal criteria and packaging criteria should be considerably less stringent than for reactor low-level waste. If necessary a listing of isotopes and quantities per container should be used in the definition.

Number 30 stated that because of the definition of "low-level waste," 61.24 becomes meaningless.

Number 32 asked in regard to the definition of "low-level radioactive waste"--(1) whether all irradiated fuels are prohibited and (2) about the status of natural uranium used in sub-critical piles. It also indicated that (1) irradiated fuel needs a definition and (2) naturally occurring and accelerator produced material must be addressed.

Number 19 said clarification of "site monitoring" is needed since the wording suggests site monitoring ends when site operations end while the last sentence indicates that monitoring does extend to the post-operational period.

Number 23 stated that the definition of "site monitoring" is deficient in respect to the establishment of criteria or conditions of "significant release." Without an "action level," what interpretation is to be given to any monitoring results?

Number 14 stated that "dry" is redundant in the definition "of waste solidification."

Number 32 stated that the definition of "waste solidification" is too broad. Biologically and radiolytically stable solid may not be achievable or provable for any waste.

Number 26 questioned whether low-level waste must be in a "free-standing form."

Number 32 asked how contaminated sand, such as zirconium sand, is incorporated into the definition of "free-standing" waste form.

Number 4 is disturbed by the requirement of presenting "(at least 3) alternative sites" in the definition of "slate of candidate sites." The definition should make clear that the same level of information is not required for the alternative sites.

Number 32 indicated that "slate of candidate sites" needs a maximum as well as a minimum.

Number 32 asked if (3) in the definition of "decommissioning" implies that an operator will be permitted to operate the disposal of waste without stabilizing emplaced waste until final closure.

Number 32 asked why there was an emphasis on water in the definition of "engineered barriers." NUREG-0456 identified the airborne pathway as the most important.

Number 32 stated that the definition of "environmentally preferred alternative site" leaves too much to question. It should require clear and convincing evidence that that alternative site is substantially superior.

Number 29 inquired as to the duration of the funding and inflation factor. It recommended that the amount of the performance bonds be reevaluated every five years to reflect technology and inflation.

Number 14 stated that definitions of "homogeneous," "low-level resins," and "high-integrity containers" should be included in the draft.

Number 22 suggested that the definition of "dewatering" should be more specific as to the extent of dewatering required.

Number 16 stated that the definitions should include the NRC concept of a LLW disposal site (e.g. is it for on-land burial or just SLB).

Number 22 suggested that the definition of de minimus concentrations be added so that qualifying waste need not be directed to licensed waste disposal facilities.

Number 19 said "controlled" in the definition of "buffer zone" should be more clearly defined.

Number 30 said that the definition of "byproduct material" should also include accelerator generated wastes.

Number 4 stated that the words "or its heirs and assigns" should be added to the definition of "Commission" since Part 61 speaks to some actions which will be taken more than a century from now.

Number 13 stated that the definition of a "license" or "licensee" is ambiguous in that it is not clear whether reference is being made to the waste disposal facility operator or to all licensees as used in the definition.

Number 19 said "institutional controls" should be defined more precisely as to what constitutes it and give examples.

Number 29 stated that "Director" should be followed by "(or Successor)" since Congress could abolish this position.

Number 30 suggested editorial corrections to the definitions of "natural barriers" and "person."

61.20 General Disposal Requirement

Number 3 stated that the apparent intent of 61.20(b) is to implement the IRG recommendation that the States may, on a voluntary basis, transfer control over existing LLW sites to the Federal government. However, the present language of this part implies a mandatory transfer. It recommended changing the language in the third sentence to imply a voluntary transfer.

Number 4 asked whether authorizing legislation should be opposed enabling transfer of State land to the Federal government at closure.

Number 17 did not agree with 61.20(b) that waste sites shall be sited only on Federal or State lands. Instead, there should be a provision that allows turning the site over to the Federal government when the user can no longer perform monitoring and secure access to the land.

Number 16 took exception to the provision in 61.20(b) that all LLW disposal facilities be situated on public lands, particularly if they consist of deep disposal wells.

Number 32 felt that the siting criteria in 61.20(b) is too restrictive. The criteria should permit siting anywhere but title must be transferred to the State or Federal government prior to issuance of a license. Provision should be made to notify the applicant of the intent to issue a license so that title can be passed as the final act prior to license issuance.

Number 32 asked, in regard to 61.20(a)(2), (1) whether Part 71 should also be referenced and (2) about Agreement State licenses.

Number 9 asked for clarification of the width of the buffer zone in 61.20(b). It also asked for clarity in other aspects (as when the license is terminated).

Number 28 stated, in regard to 61.20(b), that a minimum buffer zone is needed. This could be defined in terms of the worst case species migration over a 100 year period.

Number 29 stated that the size of the buffer zone should be specified in 61.20(b). Also, the question of surface and/or subsurface rights was unclear in the first sentence. Surface and mineral estates should be vested in either the State or Federal government, but not divided between both.

Number 8 noted that this section does not speak to mineral rights of the sites.

Number 19 asked if ownership, in 61.20(b), includes mineral rights and if this was needed.

Number 30 wondered if 61.20 was duplicative of 61.24.

61.22 Exemptions

Number 6 stated that this section should be deleted since no rationale is provided for the need to grant an exemption from the regulatory requirements, and

no criteria are provided to specify the process by which an exemption would be granted.

Number 29 stated that the statement is too broad. It is not clear on what basis exemptions will be granted. The exemptions (and guidelines) should be clearly spelled out.

Number 31 expressed concern about the discretionary authority afforded the Commission to grant exemptions from these rules. It stated that the regulations should specify what limits the Commission may consider in granting exemptions.

Number 32 felt this was too open-ended. Exemptions should be emergency based, as when a declared emergency exists. Such declaration should be made only by the President or the Commission itself. The Commission should not delegate this responsibility.

SUPPORT B: LICENSE APPLICATION AND ACTIONS ON APPLICATION

61.24 Activities Requiring License

Number 32 stated that 61.24 appears to include other than disposal site operators within its scope, which would appear to be unnecessary in that they are adequately treated in other parts of Chapter 1 of 10 CFR.

61.26 Notice of Intent

Number 4 asked "what does the notice of intent accomplish?"

Number 21 stated that it failed to see what this section would accomplish.

Number 32 did not see any necessity for the requirement for submission of a notice of intent to the NRC three months prior to tending of an application.

Number 25 was concerned that the method used in 61.26(a) to aim toward early identification of siting activities for the purpose of ensuing participation by all interested parties may be counter-productive. It suggested deletion of 61.26(a)(2) and revision of 61.26(b) to delete reference to "detailed studies."

Number 20 stated that 61.26(b) is difficult to understand.

Number 3 stated that it did not understand the difference in the months to docketing of an application specified in 61.26(b). It appears to have the sole result of delaying the time to issuance of a license.

Number 21 suggested a change in 61.26(c)(6) as follows: "(Reconnaissance level information obtained from a reasonable investigation of alternative sites can ---)."

Number 28 suggested a change in 61.26(c)(6) as follows: "A general description of the decision process including the criteria used to select ---."

Number 14 asked why three alternative sites must be included in 61.26(c)(6).

Number 19 asked if "plans" include methods in 61.26(c)(7).

Number 29 stated that the affected State should also be notified in 61.26(a).

Number 29 asked (1) whether "onsite waste processing activities" mean chemical treatment in 61.26(c)(5) and (2) whether States would be able to comment on the criteria used to find sites in 61.26(c)(6). It also asked for a definition of "local government" in 61.26(c)(8) since public involvement is unclear.

Number 28 stated that the last sentence in 61.26(b) should be a separate subsection under 61.26(a).

Number 10 stated that storage facilities should also be addressed or a statement should be made that storage facilities are excluded from this rulemaking.

61.28 Application for License--Financial Information

Number 6 stated that requiring the licensee to provide financial surety covering all costs to safely terminate the facility and to monitor the facility after shutdown is appropriate and necessary. It offered several suggestions to improve 61.28(b) (in re funds for decommissioning) such as (1) clarify the ambiguities such as "open-ended" and (2) consider removing the use of letters or lines of credit as acceptable financial surety. It also suggested changing the wording of 61.28(c) to make its intent somewhat clearer (in re the charge sufficient to cover the costs of post-operational surveillance and monitoring by the site owner).

Number 25 stated that the requirement of 61.28(a) lacks specificity and therefore will be difficult if not impossible to review and administer. It

suggested that 61.28(a) be revised to require specific performance criteria or that the requirement be eliminated altogether.

Number 25 stated that the requirements of 61.28(b) also lack specificity in the language used and appear to be impossible to comply with in determining the amount of funds required to be available for the closure and stabilization activities. It suggested that 61.28(b) be revised to provide the details of a "Site Stabilization and Closure Plan" which includes the specific financial arrangement requirements.

Number 20 stated that both the requirements and financial amounts appear to be reasonable.

Number 4 noted that some of the proposed requirements for funding could well lead to prohibitively high front end costs.

Number 25 stated that the requirement in 61.28(c) that post-operational surveillance and monitoring be financed and carried on for a period of 100 years following site closure seems excessive, based upon the typical radioisotopes and their half-lives. It suggested that the period for post-operational surveillance and monitoring could be reduced perhaps to as few as 50 years.

Number 26 stated that the condition in 61.28(c) seemed prohibitively expensive and would prevent any company from operating a site. Serious consideration should be given to revise this draft to make it strictly a Federal responsibility to license, own the land, and ultimately be responsible for perpetual care. This problem must be removed from State control.

Number 9 questioned the use of 100 years in 61.28(c).

Number 22 stated that the basing of a financial charge on 100 years in 61.28(c) appears to be arbitrary. It suggested that the time period be chosen on a case-by-case basis, depending upon the time it takes the waste in a given facility to decay to a preselected concentration.

Number 16 recommended exemption of any by-product waste systems (such as deep underground injection wells utilized for the disposal of LLW waste water at a mill site) that can exhibit adequate long-term containment--from requirements for ownership, transfer, site inspections, and long-term surveillance fees.

Number 4 stated that the basis for the assumption of 1% real interest in 61.28(c) should be documented.

Number 28 stated that financial surety arrangements in 61.28(a) could include a user-paid fund, i.e., \$/ft³ buried--set aside in a special account dedicated to decommissioning/post-operation surveillance. Such a fund would have to be evaluated periodically and updated as necessary.

Number 32 stated that 61.28(a) requires submission of financial information far beyond that which could conceivably be necessary to the licensing process. Inasmuch as NRC requires ownership of a site by either a Federal or a State government, any perpetual care and maintenance program or closure plan should be left to the government agency which owns the site and the lessee as a matter of contractual negotiation. There have been several legislative proposals in Congress to establish a fund expressly for the purpose, and it

certainly is not within NRC's authority to review such agreements as may be developed under such legislative programs.

Number 32 stated in regard to 61.28(b) that it is not known whether such surety arrangements are available.

Number 32 stated in regard to 61.28(c) that this is a major change and asked if the operator must maintain the site for 100 years. A 1% real rate of interest is unrealistic. Two percent is a more reasonable figure and justifiable on historic grounds.

61.30 Application for License--Safety and Environmental Report

Number 4 objected to the requirement in 61.30(a)(3)(ii) of "diversity" in the applicant's slate of candidate sites.

Number 21 stated that the emphasis should be on adequacy, rather than a diversity of sites in 61.30(a)(3)(ii).

Number 25 stated that the intent of 61.30(a)(3)(ii) is not evident by its wording. "Sufficient diversity" seems to be a poor qualifier for approving a list of candidate sites. It is suggested changing the wording of 61.30(a)(3)(ii) to specify the acceptable diversities that are expected, i.e. location, geology, hydrology, etc.

Number 26 said it is unclear in 61.30(a)(3) why a "slate of candidate sites" must be presented.

Number 26 said it is unnecessary in 61.30(a)(3)(ii) to determine that sufficient diversity exists in the candidate sites.

Number 9 said 61.30(d)(3) also needs a description of the nonradiological composition of waste received in terms of toxics, flammables, explosives, etc.

Number 29 asked, regarding 61.30(d)(3), how the applicant will anticipate new medical and scientific techniques developing during the life of the facility (and possibly involving forms of low-level waste).

Number 29 stated that, in regard to 61.30(d)(4), the assessment should also include transportation impact and topographical/ecological features, i.e., burrowing animals and the succession of plants after closure.

Number 6 stated that the 61.30(d)(6) should be enlarged to require submittal both of the design criteria for engineered structures and facilities and of the justification and rationale for criteria selection.

Number 3 suggested that, in the light of the post-TMI concern with State emergency preparedness plans, a requirement that such plans exist may be necessary.

Number 9 inquired about plans for coping with nonradiological hazardous emergencies from toxics, flammables, and explosives in 61.30(d)(11).

Number 14 said that the requirements for detailed emergency planning in 61.30(d)(11) seem overly stringent based on the packaging requirements of 61.86.

Number 17 stated that the plans for coping with emergencies in 61.30(d)(11) should not be addressed by "appropriate elements" contained in Appendix E to Part 50 since this is too subjective.

Number 29 stated that 61.30(d)(11) include coordination planning with State and local emergency response teams.

Number 29 asked, regarding 61.30(d)(12)(VI), what "other uses" either historically or in the future would be compatible. Co-location at a site allowing the emplacement of other types of materials (i.e. hazardous waste) will expand into a whole new set of concerns and difficulties.

Number 6 inquired as to what constitutes sufficient "commitment" in 61.30(d)(12)(VII).

Number 2 suggested that 61.30(f)(2)(ii) be modified for consistency as follows: "Information sufficient to assure that releases of nonradioactive liquid or gaseous effluents meet pertinent air and water quality standards promulgated by Federal or State agencies."

Number 6 noted that 61.30(f)(2)(i) (A) and (B) are largely irrelevant unless there are validated methodologies and models to be used in the estimates of radionuclides expected to be released annually to unrestricted areas.

Number 14 wondered if trench requirements (based on siting requirements) wouldn't eliminate the need for 61.30(f)(2) which requires a description of equipment installed to control liquid and gaseous effluents.

Number 31 expressed concern regarding the discretionary authority afforded the Commission in 61.30(f) to require or not require information regarding adequacy of design and of equipment installed to control radioactive effluents. It stated that the regulations should further require equipment adequacy information for all designs, thus assuring a complete record for public review.

Number 29 asked, regarding 61.30(a)(2), if there are any guidelines which specify this involvement.

Number 29 asked regarding 61.30(f)(2); (1) what the trade-offs are concerning occupational exposures, (2) whether temporary workers will be employed, and (3) what exposures are expected during equipment maintenance.

Number 29 stated that 61.30(f)(3) does not acknowledge a mechanism for the State's concerns.

Number 9 asked about quantities of nonradioactive toxics and hazardous substances released in 61.34(f)(2)(i).

Number 10 stated that some requirements should be given for the operation of incinerators as well as for calciners in 61.34(f)(2).

Number 32 stated that this section seems to emphasize multiple sites and that NRC will decide which one will be used. This is inconsistent with good regulatory practice which says that the regulators will approve, make recommendations or disapprove a proposed applicant action, but will not make decisions for an applicant.

Number 26 said that it is not logical in 61.30(d)(8) to require the licensee to list proposed license conditions. It would appear more logical for the NRC to suggest the license conditions.

61.32 Application for License--Site Operations Manual

Number 25 felt that requiring NRC approval of the site operations manual and all changes thereto would delay implementation and discourage initiative toward routine improvement of the manual and its procedures. Ultimately, this could impact directly on the safe and efficient operation of the disposal facilities. It was suggested that 61.32 be changed to require that the operations manual and all changes be reviewed and approved by an independent and objective safety review committee appointed by the chief executive of the operating company. Also, that copies of the original manual and all subsequent revisions be provided to the NRC, prior to implementation, for review and comment.

Number 32 asked if this section restricts periodic changes to properly update the manual to current operational and safety practices, or must these necessary changes await the normal long time frame approval process.

Number 4 noted the requirement for NRC approval of the site operations manual and "any subsequent revisions."

61.34 Application for License--Site Closure and Decommissioning Plan

Number 6 thought it is an excellent idea to require at least a preliminary plan at the time of the license application even though uncertainties will

ensure that the final plan will look somewhat different. A preliminary plan provides a common basis from which the licensor and licensee can work.

Number 32 asked why this is a separate application. This should be part of the operational license application and be invoked at the discretion of the owner and operator acting in concert.

61.36 Filing of Applications for Licensee; Oath or Affirmation

Number 25 stated that the requirement of 61.36(c) that 150 copies of the safety and environmental report be provided, seems arbitrary and unnecessary. It is suggested that the requirement be standardized at 25 copies each of the necessary documents.

Number 32 felt that if a generic finding on the Commission's part is intended that security plans are exempt as stated in footnote (c), then that should be made clear and not be an additional burden placed on the licensee to make application and justification thereof.

SUBPART C: PARTICIPATION BY STATE GOVERNMENTS

Number 6 stated that this subpart restricts the role of State governments in siting and that their role should extend considerably beyond facilitating local government and citizen participation, the only State function explicitly included.

Number 10 stated that onsite storage, i.e. storage in the exclusion area of the nuclear plant, should be excluded from any licensing procedures by the States. Licensing or approval to store radioactive wastes generated at the nuclear plant site should rest with the NRC.

61.44 Early Notice

Number 29 asked, with respect to 61.44(a), how the National Environmental Policy Act will be related to State environmental impact legislation patterned after NEPA. The verbs "shall," "consult," "inform," and "notify" do not permit action on the part of the State. "Representatives of State governments" should include a Governor's designee or a legislatively-mandated committee.

61.46 Filing of Proposals for State Participation

Number 6 stated that, in regard to 61.46(b), 120 days may not be sufficient time for a State to submit a detailed request for participation.

Number 6 stated that 61.46(c)(1) and (2) should not be used to limit State involvement to those issues initially identified. Item 61.46(c)(5) is the responsibility of the proponent, not of the State. The State's responsibility is to assure, through NRC participation in NRC proceedings, that the proponent has submitted an adequate impact assessment.

Number 26 stated, in regard to 61.46(a), that although the States should be informed of the notice of intent, the NRC should retain the authority to

license waste disposal sites on federally owned land. States should not license sites and State lands should not be used. Control must be at the national level.

Number 29 stated that, in regard to 61.46(c), the "Governor" should also include a Governor's designee or a legislatively-mandated committee.

Number 29 asked, in regard to 61.46(c)(5), who in the State is to make these estimates.

Number 30 noted (1) if the State is to own the land, shouldn't there be some procedure to determine the political issue of whether the State land is to be used for this purpose, (2) if the U.S. owns the land, the State should have to discuss how it plans to decide if it wants the facility, and (3) if the U.S. is the planned but not current owner, the State has to give consent for the U.S. to acquire the land, so the State should be asked how it will decide this issue.

61.48 Approval of Proposals

Number 6 stated that 61.48 makes no provision for appeal of the Director's decision on a proposal.

Number 29 asked, in regard to 61.48(c), whether a State can veto use of State land.

61.50 Assistance to Agreement States

Number 6 stated that 61.50 gives the Director discretion in providing technical assistance to the State. Thus, NRC assistance is at the discretion of the Director.

Number 29 asked, with regard to 61.50(a)(1), where this is done and how, for non-Agreement States.

SUBPART D: CONDITIONS AND ACTIONS ON LICENSE

61.52 Issuance of Licenses

Number 9 suggested that the applicant's plans for potential emergencies in 61.52(b)(11) include chemical as well as radiological emergencies.

Number 29 stated, in regard to 61.52(b), that post-operational maintenance must include the provision for extended site monitoring to ensure proper containment of wastes.

Number 30 stated that 61.52(b)(5) should include post-closure plans for the site, such as for forestry resource uses, and any necessary limitations on uses.

Number 14 asked if this section precludes Agreement States from licensing burial facilities.

Number 25 said that this section infers the possibility that a construction permit may be issued separate from and prior to the issuance of an operating license. It wants this clarified and suggests that authorization to commence construction be a component part of a license to operate, or contain a binding commitment that an operating license will be issued within a maximum time period (i.e., 90 days).

61.54 Receipt of Waste

Number 17 noted that 61.54(a)(3) is too open-ended, e.g., what constitutes a demonstration program needs clarification. It was suggested that demonstration program guidelines be delineated and applied in the application stage.

Number 30 stated that States ought to be able, with permission of Congress, to limit where waste comes from.

61.56 General License Conditions

Number 14 asked if this section precludes Agreement States from licensing burial facilities.

Number 31 inquired as to the provisions for financing, operating, and managing a facility upon revocation of a license.

Number 32 asked if 61.56(b)(1) precludes a licensee from going out of business.

Number 32 asked if 61.56(b)(5) means that NRC will approve training in Agreement States.

61.58 Specific License Conditions

Number 14 said that 61.58(b) states the categories of license conditions to be considered but does not state acceptable criteria or numerical guidance for these conditions and is therefore much too vague.

Number 20 suggested the following change to 61.58(b)(4): "--- considering the physical, chemical and radioisotopic ---."

Number 30 suggested, in regard to 61.58(b)(1), that restrictions as to the physical and chemical form and radioisotopic content and concentration of radioactive waste include requirements on segregation of particular kinds of waste by reactivity level and chemical and isotopic composition.

Number 14 asked if there would be a need for 61.94 and 61.98 if 61.58 had specific siting requirements instead of siting considerations.

61.60 Changes, Tests, and Experiments

Number 25 stated that the prior notification requirement of 61.60(a)(2) for changes in operating procedures is of no real benefit and unnecessarily restrictive. A properly conceived and implemented management control system would be much more effective in achieving the intended purpose of this requirement. It

is suggested that this section be reviewed and objectives such as this removed and replaced with more effective requirements in other pertinent sections.

Number 25 said the use of the word "potential" in 61.60(b)(2) seems inappropriate and adds ambiguity. It suggested deletion of the word "potential" and rewording the subsection to specify measurable impact.

Number 29 stated that appropriate State agencies should receive copies of the information in 61.60(c).

Number 32 stated that this is a well thought out section and workable but it appears to conflict with 61.32.

61.62 License Renewals

Number 9 suggested in 61.62(1) that a ____ year interval would be better.

Number 21 stated that annual reports on 61.62(a) and 61.62(b) may be more desirable. It proposed license changes on an "as required" basis in 61.62(c) and submittals required in 61.62(d) and 61.62(e) at five year intervals.

It also stated that the term of a license "not to exceed 5 years" is not compatible with the requirement to be able to generate the perpetual care funds over the life of the site. Reasonable assurance must be provided that, once a site is properly licensed and operated, it will be able to continue to operate over its projected lifetime.

Number 25 said that the maximum license period of five years seems unduly restrictive, while requiring a summary report of disposal quantities every five years appears too liberal. Also, the information required in the summary should be specified. It was suggested that summary information be provided to the NRC on an annual basis and that the period for which an operating license is issued be extended to the expected life of the site. Requiring a license review and update every 3 to 5 years would appear to be a reasonable and satisfactory approach. It was suggested that the information expected in the radioactive material summary be specified.

Number 29 stated that appropriate State agencies should receive copies of information requested in 61.62.

61.64 Amendment of License

Number 29 stated that appropriate State agencies should receive copies of an amendment of license.

61.66 Application for Closure

Number 14 stated that this is a section that would not be as open-ended if specific licensing conditions were stated.

Number 29 stated that appropriate State agencies should receive copies of information requested in 61.66.

Number 30 suggested that the application for closure should include information on compatible and incompatible land uses.

Number 32 questioned the need for an application and stated that (1) all of this information should be committed to the initial closure plan and (2) the licensee should notify NRC of its intent to implement closure.

Number 19 said substitute "all results" for "the results" in 61.66(a)(2).

61.68 Post-closure Observation and Maintenance

Number 14 asked if the five year post-closure period of observation and maintenance has any technical basis.

Number 25 stated that the post-closure observation and maintenance period of five years may be excessive in some cases and too liberal in other cases, depending on the nature of the site and its location, the amount of activity in the months prior to closure and the waste type and form. It suggested that the post-closure observation and maintenance period be required to be sufficient to demonstrate stability of the LLW site disposal areas commensurate with the disposal methods utilized, waste type and form, as well as the geological and climatic conditions of the region where the site is located.

Number 29 stated that the five year observation and maintenance period (especially maintenance) is far too short.

Number 16 does not feel, once injection has ceased for a particular waste disposal well, that post-closure observation should be initiated, much less for a period of five years; rather, such disposal wells should be plugged and abandoned in a fashion similar to other industrial disposal wells.

Number 3 stated that the requirement for a period of post-closure observation and maintenance in 61.68 is an excellent way to assure that the decommissioning actions were adequate.

Number 9 said use of "minimal" needed clarification.

61.70 Termination of License

Number 9 stated that 61.70(c)(2) is not specific or quantitative.

Number 21 stated, in regard to 61.70(c)(5), that the funds need only "to be available" not "transferred" to the site owner.

Number 16 asked why, for the termination of a LLW disposal well, can't the plugging and abandonment procedures be incorporated within the license.

SUBPART E: TESTS, INSPECTION, AND ENFORCEMENT

61.72 Tests at Licensed Disposal Facilities

Number 4 stated that there ought to be some test of "reasonableness" in the tests the Commission may require in 61.72(a).

Number 21 recommended replacing "or necessary" with "and reasonable" in the second line of 61.72(a).

Number 32 stated that this section was too broad and that such tests must be permitted to interface with operations or utilize operator personnel, unless NRC pays for the service or loss of business.

Number 29 stated that the affected State (regardless of its status as an Agreement or non-Agreement State) must be allowed to do its own monitoring and inspection. Thus the appropriate State agencies will also need site access authorization.

61.74 Commission Inspections of Disposal Facilities

Number 4 stated that the Commission right to inspect waste which has been "disposed of" implies the right to dig it up. It expressed doubt about this.

Number 21 suggested that the inference should be removed from 61.74(a) that disposal of waste will be inspected.

Number 29 suggested that 61.74(a) should be amended to read, "--- shall afford to the Commission and the affected State ---."

Number 30 stated that this section should also authorize State inspection.

SUBPART F: MANIFESTS, RECORDS, REPORTS, QUALITY ASSURANCE, AND AUDITS

61.78 Manifests

Number 6 observed that these regulations cannot meet the goals proposed unless the generator to disposer path is controlled at the point of generation and initial packaging.

Number 25 said, regarding specifications in 61.78(c), that having a detailed slate of information with regard to the waste recorded on the shipment manifest may not be possible due to available space on the manifest. It suggested in the third line of 61.78(c), and after the word "manifest," adding the words "or on a special form attached to the manifest."

Number 25 suggested that 61.78(e) be changed so that the shipping manifest be used exclusively for the record of shipment and receipt and that a waste disposal report form be used to report package condition and disposal information to the waste generator. Transport discrepancies only would be reported to the waste transporter.

Number 9 suggested that 61.78(a) require the manifest to also list the methods used to determine the radionuclide and chemical content of the waste.

Number 9 suggested that 61.78(c) include in "the relative location in the facility where the waste is disposed of" such items as trench number and location within the trench. It also suggested noting any discrepancy between observed conditions or content of waste and that listed on the manifest.

Number 26 stated that to ask for a rigid listing of chemical content in 61.78(a) is rather difficult in some cases.

Number 25 said 61.78(b) requires very specific wording for the waste generator certification. To add some degree of flexibility and compliance with existing requirements in some Agreement States, it suggested that "or words to that effect" be added following the specified certification statement.

Number 26 stated that the certification in 61.78(b) is considerably more realistic than the one used at present by the State of Washington.

Number 4 asked why NRC needs a copy of each shipment manifest as stipulated in 61.78(e)(3).

Number 29 stated that 61.78(e) include one copy of the manifest to the appropriate State agency.

Number 16 asked how this rule applies in their case where the operator of the LLW disposal site is the sole generator of the waste.

Number 32 stated that any manifest required under NRC regulation should be uniform across all sites, even those in Agreement States, and should be compatible with existing DOT and EPA regulations.

61.80 Maintenance of Records and Reports

Number 4 asked if all material required in subparts (a) through (f) has to be transferred to local officials as stated in 61.80(g).

Number 6 stated, with respect to 61.80(g), that until a mechanism is established to determine that local agencies have or are provided the requisite expertise and until a mechanism for cost reimbursement is provided, NRC should refrain from placing unnecessary and unwanted burdens as though doing so will in some way assure the protection of local interests.

Number 20 said that 61.80(g) is commendable in that records will be deposited locally with county and city officials.

Number 21 stated, regarding 61.80(g), that only one set of those records is necessary and that the registry of deeds might be the repository for those records.

Number 29 stated, regarding 61.80(c), that a copy should also be sent to the appropriate State agency.

Number 32 stated that 61.80(c) requires the filing of certified financial statements, which is wholly unjustified.

Number 28 asked if the financial report required in 61.80(c) is for the LLW disposal site or overall company. Many companies may treat this as proprietary information.

Number 9 suggested, under 61.80(a)(5), a new requirement for accurate maps and descriptions of buried trenches, or other disposal facilities, including dimensions, slopes, etc.

61.82 Quality Assurance Program

Number 9 asked if this will be a written QA plan. It asked for clarification if this is so.

61.84 Audit Requirements for Disposal Facility Operators

Number 29 stated, in regard to 61.84(b), that the key is management attitude, i.e., look for trouble and suggest solution.

Number 29 stated that 61.84(c) should be changed to read "--- and be available for NRC and State inspection;---"

SUBPART G: WASTE PERFORMANCE

61.86 Waste Form and Packaging

Number 9 suggested that the last sentence in 61.86(e) be clarified by changing "or soluble" to "or soluble in water."

Number 9 said that 61.86(1) is very vague.

Number 17 suggested that the last sentence in 61.86(e) be rewritten to read "The solidified product shall be an acceptable matrix ---."

Number 17 asked, in regard to 61.86(e) and 61.86(g), at what pH a liquid is considered to be noncorrosive.

Number 17 wanted to know what is the criteria that will be used in 61.86(f) for determining the time a liquid waste remains a radiological hazard.

Number 22 stated, in regard to 61.86(g), that the permitted liquid content of dewatered resins must be clearly defined and requested that the intent of this paragraph be clarified by restricting the requirements to pourable liquids.

Number 22 stated that the phrase "--- or when ignited burns so vigorously" in 61.86(h) is unacceptably vague and requested that an effort be made to quantify volatility, flash point, and other similar limits.

Number 26 felt the section is mislabeled since waste cannot "perform."

Number 6 stated that the intent of 61.86(e) is unclear with respect to the permissible volume of free liquid per container. "Container" must be defined if this paragraph is to have meaning with respect to enforcement. "Free liquid" should be defined or clarified.

Number 6 recommended deletion of 61.86(f) (or redrafting) because it effectively removes some of the requirements of the regulation. In addition "disposal facility" is not defined.

Number 9 thought that 61.86(g) was vague as to what is meant by a "high-integrity container." This should be specified.

Number 10 stated that the term "high-integrity container" should be defined in 61.86(g). Also, acceptance of dewatered resins is contrary to ETSB Branch Tech Pos 11.3 which states that resins must be solidified.

Number 21 felt that 61.86(g) might be the place to put the concept of a type A package. A definition of a "high-integrity container" is needed (possibly a Type A container expected to last five years in the burial environment).

Number 13 stated that the use of the term "homogeneous" in describing the solidified product in 61.86(e) is not clear and should be removed.

Number 22 had particular concern respecting 61.86(e) over the requirement that waste be "homogeneous" and "monolithic" and requested removal of these terms.

Number 25 stated, in regard to 61.86(e), that the requirement for homogeneity for solidified waste product may be by strict definition somewhat questionable in most, if not all, solidification processes. It suggested that the term "homogeneous" be preceded by the word "essentially."

Number 13 stated that the terms "low activity" and "high-integrity" container in 61.86(g) need to be defined.

Number 28 stated, in regard to 61.86(e), that it is difficult for the site operator to determine if a LLW container contains "not more than 0.5% (1 qt

in a 55 gallon drum) or one gallon of free liquid per container, whichever is less, of noncorrosive liquids." This should be a requirement on the shipper. It also suggested that "noncorrosive" should be defined.

Number 23 thought that the criteria identified here are a step in the right direction.

Number 24 suggested that packaging requirements for low-level radioactive wastes should be consolidated in a single section concerning compaction, solidification of liquids, inactivation of biohazards and similar matters. These requirements should be consistent with DOT requirements and should be uniform for all Commission-licensed facilities.

Number 4 disagreed with the proposed requirement to solidify dewatered resin on the grounds that there is probably no rational technical basis for that requirement. Further this would seriously add to the in-plant exposure of reactor personnel vastly more than anything which might be saved by mitigation of a transport accident which breached the container.

Number 4 stated, in regard to 61.86(g), that dewatered resins are acceptable for low activity. It is the high activity resins for which this provision is needed. Failure to provide it will seriously increase in-plant exposure at reactors.

Number 13 stated that a very careful analysis of the requirement to solidify all LLW is required, taking into account increased volumes of wastes which would be

generated by solidification and the current and future volume requirements that will be implemented by the burial site operators and the Agreement States.

Number 20 stated that the limit for liquid remaining in solid waste appears to be reasonable. Also, the conditional inclusion of liquids only, as stated in 61.86(f), is agreed to as being reasonable.

Number 4 stated (1) it is not practical to dewater resins to one gallon for any container size greater than about a 55 gallon drum, (2) the additional dollar costs associated with solidifying resins are significant, and (3) there is as yet little real data to prove how much in-plant exposure will increase, but it will be a substantial increase. It also stated that if NRC sticks to its position requiring one gallon of residual liquid, it will indeed eliminate the options of dewatering resins--at least for larger containers--and it will also have totally eliminated the high-integrity cost concept. A high-integrity container will cost at least \$10/ft³ and no one is going to be so foolish as to make that expenditure if he gets nothing for it. Further it is not clear what is accomplished by reducing residual water from 1% to one gallon, particularly for dewatered resins.

Number 4 stated that it continues to believe that NRC insistence on one gallon or 0.5%, whichever is less, will effectively eliminate the dewatered resin option. There is no question that NRC will eliminate the high-integrity container (HIC) option. The commenter expects the cost of HIC to be in the order of \$10/ft³ to --- a factor of ten or so less than solidification. But simple common sense will tell one that unless the HIC buys something, no one is going to pay for the HIC. So the argument as to whether or not one gallon

or 0.5% can be met practicably is meaningless, if that is the limit both with and without the HIC. If NRC maintains that position, there will be no HIC. There will be solidification at significant increase in cost and no HIC.

Number 4 stated, in regard to 61.86(e), that there is no technical reason to prohibit the burial of "liquids that have been immobilized by only the addition of absorbent materials such as diatomaceous earth or vermiculite."

Number 6 stated, in regard to 61.86(e), that immobilization only by means of the addition of absorbent materials is unacceptable.

Number 27 objected to the section of 61.86(e) which states "Liquids that have been immobilized by only the addition of absorbent materials such as diatomaceous earth or vermiculite are not acceptable waste forms for disposal." As is the case with many research facilities, etc., the volume of LLW generated does not justify the installation of elaborate facilities for solidifying liquid waste. The only practical way for certain facilities to dispose of such liquids is by the use of absorbent materials. The use of absorbent materials should be permitted and the above sentence should be struck from the regulation.

Number 26 felt that the exclusion of absorbed liquids from burial sites in 61.86(e) is unnecessarily restrictive on institutional waste.

Number 26 stated that requiring institutional waste to be in a free-standing form in 61.86(b)(1) is unnecessarily too restrictive. When the level of activity and potential release and resulting hazard are evaluated, the low-level institutional radioactive waste does not need to be in a free-standing form.

Number 9 thought that 61.86(f) was a mistake since any liquid can be solidified in some way. It also stated that this section could be misused and expressed concern regarding liquids that are also chemically hazardous.

Number 10 said that consideration should be given for the disposal of contaminated oil in 61.86(f). The present guideline makes oil disposal virtually impossible.

Number 16 said, in reference to 61.86(b), that it is somewhat impossible to put its low-level radwaste water into high-integrity containers as stated in 61.86(f) and shove them down a deep disposal well. It recommended NRC review alternative methods of LLW containment.

Number 10 said, in regard to 61.86(b), that dry compacted trash "shall" be exempted from the free-standing form requirement instead of "may" be exempted. However, the compacted trash shall have a definitive boundary such as a metal box or drum.

Number 14 asked if 61.86(b) should read "--- dry compacted trash is exempt" rather than "--- may be exempt."

Number 1 said that LLW site operators: (1) should be allowed to receive radioactive waste packaged in accordance with DOT regulations or in NRC approved packaging; (2) should be required to bury the waste within 24 hours after receipt; (3) should not be allowed to open any waste shipment; (4) should not be allowed to package waste except to place damaged shipments in overpacks prior

to burial; and (5) should not allow operations to give rise to any effluents containing radioactive materials.

Number 9 asked that applicable State regulations be included in 61.86(a).

Number 21 felt that 61.86(a) and 61.86(c) are applying transportation criteria to waste packages which may be irrelevant or unreasonable.

Number 25 suggested that 61.86(c) is overly restrictive to require that disposable (secondary) containers meet the last criteria and consequently the design specifications of a primary transport container. It suggested that this section be reworded to require that all materials arriving at the LLW site be transported in specification or licensed containers and that the ultimate disposal container meet package requirements of the site disposal criteria.

Number 32 stated that 61.86 seems to be duplicative of existing DOT regulations. Every attempt should be made to minimize regulations, and particularly, conflicting requirements between DOT and NRC regulations.

Number 10 stated that packaged waste which burns slowly when subjected to an open flame in excess of 1000⁰F should be an acceptable material according to 61.86(h).

Number 10 stated, in regard to 61.86(k), that contaminated or compressed radioactive gases should be excluded from common burial ground facilities. They should be processed at specially designed facilities.

Number 19 stated that "not readily dispersible" and "or soluble" as used in 61.86(b) may aggravate reclaimer-intruder consequences.

Number 25 suggested regarding 61.86(d)--which specifies that a license amendment be obtained for disposal of any unpackaged large solid items--that this section be revised to allow that, once the authority has been provided, via a license amendment, for the disposal of a specific type of equipment under specific conditions, then like equipment under like conditions may subsequently be disposed of without further license amendments.

Number 26 stated that 61.86(h) seems to restrict toluene from burial. It must be revised to permit vials of liquid packed in absorbent.

Number 26 stated, regarding 61.86(l), that uniform site criteria for disposal of animals must be developed.

Number 11 stated that by application of industrial glass melting technology to the problem of radioactive waste disposal, many of the concerns addressed in this and other subparts can be greatly abbreviated.

Number 10 believed that some guidance should be given on (1) leachability; (2) radiation stability of solidification agents (~5-10 years); and (3) consideration of radiation induced decomposition of organic solidifying agents generally producing hydrogen --- in cases of defined storage facilities such as caves, mines, etc.

61.88 Volume Reduction

Number 3 stated that although enforcement may be difficult, the requirement in 61.88 to reduce volumes is commendable.

Number 31 asked if "volume reduction to the extent practicable" is defined anywhere in NRC regulations. It stated that, if not, it should be.

Number 9 stated this was very vague and not of much use. It suggested specifics such as minimum allowable density, types of compactors, etc.

Number 17 stated that 61.88 should not be applied to the disposal facility. It is incumbent upon the NRC and the licensee that produces the waste to provide volume reduction techniques at the source of the waste.

Number 10 noted that this section makes volume reduction mandatory which is at various (cross purposes) with the definition of low-activity bulk solids. It wondered if this section can be interpreted as being a vehicle to exclude all non-volume reduced wastes.

Number 21 stated that the requirement for solidification is at cross purposes with volume reduction.

Number 6 noted the vagueness of "the extent practicable." It also noted that if volume reduction techniques are employed, existing regulations or guides regarding dose rate or curie control limitations might preclude volume reduction by any of the existing methods.

61.90 Content of LLW

Number 32 stated that the phrase "eliminate the potential" is inappropriate in any regulation since it requires the absolute prohibition of the action perceived or expected. As such, this cannot be achieved at any nuclear facility unless all radioactive material is eliminated from such facilities. A more appropriate phrase might be "minimize the potential to the extent practicable."

Number 9 asked if a minimum level would be specified. It also suggested that chelating or organic material be "separated or treated ---."

Number 26 stated that by restricting chelating agents, the NRC realizes a site may not be able to take reactor waste. Most reactors use decontaminating agents which contain chelating agents.

SUBPART H: TECHNICAL REQUIREMENTS FOR A LLW DISPOSAL FACILITY

61.94 Long-term Performance Objectives

Number 4 thought that the second line of this paragraph contradicts 61.94(b).

Number 7 said that NPDWS or EPA maximum confinement levels should be added or referenced to 61.94(b).

Number 17 said 61.94(b) contains too many references to potential EPA standards. The NRC should set the numerical standards using EPA guidance.

Number 29 felt that 61.94(b) does not reflect Wisconsin State DNR standards, which may be stricter.

Number 19 said it would be useful to define "site maintenance" in 61.94(a).

Number 23 suggested, in regard to 61.94(b), that some recommendation should be made as to how the "calculated contaminant levels in groundwater" are made.

Number 23 suggested, in regard to 61.94(c), that some recommendation should be made as to how "calculated potential exposures to individuals, etc." are made.

Number 30 stated, in regard to 61.94(c), that 100 years should be a variable on request of the applicant so long as the termination standard can be met.

61.96 Site Suitability

Number 4 indicated displeasure with 61.96(d)(5).

Number 25 stated that 61.96(d)(6) uses the term "mask" which is somewhat ambiguous. It recommended deleting the word "mask" and substituting the phrase "reduce the reliability of the environmental monitoring and surveillance program."

Number 28 stated that 61.96(a) is too generalized.

Number 7 agreed with 61.96(d)(1) that no part of the facility is located in a 500 year flood plain.

Number 7 did not agree with 61.96(d)(4) that one can demonstrate with "reasonable assurance" that a site will not contaminate a sole source aquifer during the short or long-term operation and closure.

Number 9 suggested, in regard to 61.96(c), replacing the phrase "long groundwater residence time, low groundwater flow rates ---" with "long groundwater flow path to nearest potential user and low potential for precipitation and surface water infiltration---."

Number 9 suggested, in regard to 61.96(d)(2), the change "---integrity of the disposal facility within the period of concern for the site."

Number 9 suggested, in regard to 61.96(d)(3), the change "--- is improbable during the period of concern for the site."

Number 21 stated that the items in 61.96(d)(9) need only be "considered" since migration is not limiting.

Number 29 inquired as to what specific factors will be used to make the determinations in 61.96(d)(9).

Number 32 stated that 61.96(d)(9) is overly restrictive in that a large area site may only have small areas that are acceptable for burial. However, the entire land area is defined as the site. Such land areas may well have ponding areas or saturated soil areas but these areas do not directly affect buried waste. However, these areas may well affect any surface or subsurface migration of radionuclides once the radionuclides have migrated from the trench to these

particular areas. The overriding criteria should be those of meeting the specified limits at the site boundary and not that these topographical features may cause an "increase in potential" for migration.

Number 7 suggested that shale may be an excellent rock. Therefore the site need not be free of it as stated in 61.96(d)(8).

Number 28 asked, in regard to 61.96(d)(8), how once can determine that bedrock doesn't contain some fractures.

Number 28 stated, in regard to 61.96(d)(11), that the note is incorrect. It should read: "(note: a 500 year --- will not be exceeded in 500 years)" instead of "(--- in 50 years)."

Number 32 stated that the definition of the facility site in 61.96(d)(8) must be further defined since this section would appear to eliminate any location in the United States if any of the listed formations appear at any depth--at 100 feet or 5000 feet below the site.

Number 7 stated that 61.96(a) is confusing and asked for clarification as to what constitutes a "complex" site.

Number 23 asked what form of "reasonable assurance" is envisioned in 61.96(d)(4).

Number 7 questioned what is meant by an "unseated fault" in 61.96(d)(8). It suggested using the word "fault."

Number 7 questioned what is meant by "capable fault" in 61.96(d)(10). It suggested simply using the word "fault."

Number 9 asked for the definition of "capable faults" in 61.96(d)(10).

Number 21 stated that 61.96(c) places undue emphasis on migration. This should be dismissed on a generic basis.

Number 23 stated that 61.96(c) places heavy emphasis on groundwater transport as a major pathway.

Number 29 inquired as to what constitutes a "capable fault" in 61.96(d)(10).

Number 4 felt that 61.96(d)(7) would rule out any site in the northern States.

Number 9 asked for clarification of the time period contemplated in 61.96(d)(7) since almost any site is subject to these processes.

Number 9 said that 61.96(d)(8) needs complete revision.

Number 21 stated that 61.96(d)(7), taken literally, could preclude the location of any site in the United States for shallow land burial.

Number 23 stated that the recommendation in 61.96(d)(7) would be more meaningful if some time period were provided. Also the phrase "LLW transport" is improper since it is the contaminants in the LLW which are transported, rather than the waste itself.

Number 29 asked as to what time periods will be used to plan for the various processes in 61.96(d)(7).

Number 4 questioned the necessity for 61.96(d)(11).

Number 6 noted that no rationale is provided for choosing the recurrence interval of 500 years in 61.96(d)(11).

Number 7 suggested adding the maximum Richter Scale to 61.96(d)(11).

Number 9 asked for the rationale for 61.96(d)(11).

Number 17 stated that the requirements in 61.96(d)(6) may rule out sites on or near a waste producing facility. It asked why not simply include the effluent technical specifications for such a facility in the burial license.

Number 32 stated that 61.96(d)(6) may preclude the co-location of a disposal facility with other nearby nuclear facilities and substantially increase the siting difficulties for the low-level waste disposal facility. The low-level waste facility may well be the least environmentally significant facility. However, the requirement to not mask the environmental monitoring and surveillance program may well preclude such co-location of facilities.

Number 23 stated that it would seem preferable to avoid prejudgements indicated in 61.96(d)(3), since it presumes that the stated performance objectives cannot be met if such a groundwater intrusion should occur. Also, the impact of site operations on the water level should also be determined.

Number 16 noted, in regard to 61.96(d)(3), that since their facilities inject into groundwater aquifers, the rule should be restructured. Groundwater is always in contact with their waste, hence the rule could adversely apply to deep disposal wells.

61.98 Facility Design and Operation

Number 9 asked for clarification of "specified limits" in 61.98(f)(2).

Number 9 asked for clarification of "specified limits" in 61.98(h)(2).

Number 23 asked for clarification of " " in 61.98(c).

Number 23 asked for clarification of "minimize" in 61.98(d).

Number 23 asked for clarification of "minimize" in 61.98(e).

Number 6 felt that 61.98(a)(2) was vague. It inquired as to what is considered the safe "minimized" level for the nonradiological materials. It also wondered why there is concern for noxious materials. It suggested broadening the base of materials covered if there is such concern.

Number 23 noted that it would seem preferable to reference applicable standards in 61.98(a)(2).

Number 32 stated that the requirement in 61.98(c) that the facility be required to "improve" the ability of the natural characteristics is burdensome. Many

areas such as the Armagosa Desert or the Hanford Reservation have sufficient natural characteristics to adequately confine the waste. The requirement to improve should not be imposed on these facilities. Other topography may require improvement. The requirement should be to enhance or improve the natural characteristics, if necessary, to ensure continued and adequate confinement of the waste.

Number 23 presumed that 61.98(h)(1) implies inspections every day of the year.

Number 25 stated that while 61.98(f)(4) specifies inspection of incoming packages to all license conditions and regulatory requirements, in reality this would require that all packages be opened and inspected as well as performing other detailed evaluations and analyses. It was suggested that this subsection revised to require that external visual inspection and accompanying objective evidence be used to determine waste and waste package compliance with the applicable requirements.

Number 9 asked for clarification of "training" in 61.98(f)(6).

Number 32 noted with respect to 61.98(h)(1) that daily inspections should be on workdays only and not on holiday or weekend periods.

Number 24 stated, in regard to 61.98(g), that the educational and safety criteria for employees at LLW disposal facilities should be those already established in 10 CFR Parts 19 and 20. Duplicative or slightly different requirements are unnecessary and create the possibility of confusion.

Number 29 noted that many of the operational aspects in this part will need coordination with appropriate State agencies.

61.102 Environmental Monitoring--Applicant

Number 23 asked, in regard to 61.102(a), if just one year of preoperational monitoring was automatically adequate for all sites.

Number 21 thought, in regard to 61.102(a), that one year prior to site construction is overly restrictive; one year prior to accepting any radioactive waste on the site is more realistic.

Number 9 stated, in regard to 61.102(a), that one year may not be enough. It suggested three years.

Number 32 stated that the requirement in 61.102(a) for one full year of environmental data prior to any construction is overly burdensome. The background data could be adequately obtained prior to the handling of any radioactive material. The requirement for one year of data is reasonable; however, the site construction period should be permitted during the one year of collecting environmental data.

Number 9 asked what action levels are left up to the applicant in 61.102(d).

Number 9 suggested including geological characteristics in 61.102(b)(1).

Number 29 stated that this program and results should be coordinated with the appropriate State agencies.

Number 16 noted that the requirement in 61.102(a) appears applicable to SLB but wondered if it would be necessary for the deep disposal well method.

61.104 Site Closure and Stabilization

Number 4 stated that "background" in 61.104(a)(4) needs definition since it is not constant and, as worded, this would be hard to meet.

Number 17 stated that 61.104(a)(4) should be changed to twice background which is the same as the radon standard for mill tailings.

Number 21 stated that 61.104(a)(4) is not possible to reasonably implement. Background must first be defined and some minor increment must be allowed.

Number 23 asked, in regard to 61.104(a)(4), if this is the background value determined during preoperational environmental studies.

Number 31 recommended that 61.104(a)(4) be changed to read "--- facility is at or below background levels."

Number 32 stated that the background level in 61.104(a)(4) has not been defined. It should be noted that the emplacement of any gamma emitting source will increase the radiation level above the level existing at the time the

radioisotopes were emplaced or entombed. As such, this paragraph would prohibit the burial of any waste.

Number 9 asked how big the buffer zone should be in 61.104(a)(6).

Number 23 stated that 61.104(a)(6) should be clarified since the definition of site included a buffer zone.

Number 23 asked, in regard to 61.104(a)(5), if some sort of duplicate land use record keeping system is preferable to a presumed "long-lasting" marking device.

Number 29 asked, in regard to 61.104(a)(2), assuming ownership remains within the jurisdiction of the Federal government (based on a non-Agreement States status): (1) Who will absorb the cost for continual site monitoring?; (2) If the the State requests monitoring above and beyond that undertaken by the Federal government, will the Federal government extend or expand monitoring?; and (3) Will the Federal government allow the State to monitor (provide access, etc.) at its own expense, on the low-level waste site?

Number 16 asked that if a site can be shown to exhibit long-term containment integrity in the manner provided in 61.104(a)(1), why is it necessary to provide financial surety arrangements as contained in 61.28(b) and 61.28(c).

SUBPART I: PHYSICAL SECURITY

61.106 Physical Security

Number 1 asked why physical security is required during site operations and not after site closure. Security patrols or watchmen for the site may have to be used, at least for several years after the site is closed.

Number 29 asked, in regard to 61.106(b)(1), if the fences surrounding the low-level waste site remain after plant decommissioning.

Number 6 noted that 61.106(b)(4) was vague and does not necessarily imply or direct an applicant to develop and maintain an offsite assistance/response program.

Number 9 suggested including equipment in 61.106(b)(3).

Number 16 noted that the hazard present at a deep disposal well site is minimal from a radiological standpoint and does not justify the action called for in 61.106(b)(2) and 61.106(b)(3).

SUBPART J: REQUIREMENTS ON WASTE PROCESSORS AND INDEPENDENT WASTE PROCESSORS

Number 1 said that regulations concerning radioactive waste packaging by licensees should be placed in 10 CFR Parts 20, 40, 50, and 70.

Number 17 said the NRC should deal with the waste processor requirements when it handles the processor's license; not when a disposal company is attempting to obtain a license.

Number 1 said that waste generators should solidify all liquid waste by methods that will leave no "free-standing" liquid.

Number 20 stated that all disposal sites should also be waste processing sites. The chief means for volume reduction shall be the incineration of combustibles with subsequent burial of the immobilized ash.

61.112 Operating Procedures

Number 21 stated that the word "solidifying" should be omitted in 61.112(a)(1) since, in accordance with Subpart G, solidification may not be appropriate in all cases.

Number 4 stated that it is not possible to comply with 61.112(a)(3) with respect to trash.

Number 21 stated that in 61.112(a)(3), "assurances of solidification" should either be omitted or followed by "where required," since, in accordance with Subpart G, solidification may not be appropriate in all cases.

61.114 Tests

Number 14 stated that this section is vague and needs specifics.

Number 4 stated that a test for reasonableness should be added.

61.116 Audits

Number 29 stated that copies of audits should be sent to the appropriate State agencies.

Number 1 said that waste generators should advise the Commission one month in advance of any packaging of waste so that Commission inspectors may observe their packaging operations.

Number 1 said that waste generators should also submit to the Commission a QA program to assure conformance of their waste quality and packaging methods with the requirements of "Subpart G."

MISCELLANEOUS COMMENTS

Overall Approach

Number 5 stated that the general approach taken in these preliminary procedures and criteria is encouraging. It is pleased with the requirements under 61.28, "Financial Information," and the strong emphasis on disposal methods which require only passive care following site decommissioning.

Number 1 stated that the majority of the verbiage should be withdrawn from the proposed regulation and placed in the introduction or technical basis for support. The regulation should be written in plain language.

Number 3 stated that a careful elimination of unnecessary repetition between various subparts could reduce the length of the draft regulation and minimize confusion.

Number 26 stated that waste disposal criteria should be clearly defined and based on scientific requirements, not local political requirements. Waste disposal is a national problem and demands a national solution.

Number 14 suggested that these regulations should state requirements that, if met or exceeded, would provide reasonable assurance of LLW confinement.

Number 6 felt that 10 CFR 61 is too general, i.e., lacking sufficient specificity to ensure that any application will contain sufficient information to make a defensible finding of adequacy.

Number 29 stated that detailed descriptions of the interaction processes with State governments needs to be included with equal treatment for Agreement and non-Agreement States.

Number 31 stated that the regulations appear comprehensive and apparently offer ample opportunity for local public participation in the siting of a LLW facility. Notwithstanding the authority of the NRC in matters radiological, it would seem appropriate that the regulation spell out in greater detail the rights and role of States in a LLW facility siting proceeding.

It also stated that three conditions regarding a LLW disposal site appear to be new subsidies of the nuclear industry. These are the requirements that a

facility be sited on State or Federal property, that title to the facility be transferred to the Federal government at license termination, and that waste processors must provide funds for only 100 years of post-closure monitoring, surveillance and management.

It also asked (1) for an explanation of the justification for the 100 year liability limit on waste processors, and (2) who will fund necessary maintenance and protection after 100 years.

Number 28 stated that the draft does not address the State building and operating a site. It does not address what type of assistance the Federal government will furnish the State in developing a waste site.

Number 24 stated that the new sites should be established as promptly as possible, not only to preclude the possibility of an acute shortage of disposal capability, but also to provide for more widely distributed sites and thereby reduce the cost of waste transportation. The regulations governing the licensing of such sites should be written to allow licenses to be reviewed and approved as promptly as possible, consistent with the protection of the public health and the environment.

Number 22 questioned the need for regulations as complex and restrictive as those proposed. It stated that the complex licensing process for waste disposal facilities (proposed by this document) and its associated high costs are simply not worth the relatively small incremental benefits which might be realized when the proposed program is compared to the smaller costs of simply designed

above-ground storage facilities which would provide a comparable assurance of safety.

Number 14 noted that these proposed regulations would not speed up the licensing of burial facilities--it would take at least five years.

Number 25 stated that a LLW site established under 10 CFR Part 61 will cost \$10-15 million exclusive of salary and overhead expenses of company personnel during the siting activity. A new site could cost 20 to 30 times more than any existing site and it is possible that it could cost much more. On amortization alone, the costs of disposing of wastes in new sites are going to be much higher than at existing sites. In addition, operating constraints in the draft regulation will greatly increase the cost of operations.

Number 28 believed that the number of private companies in this field will be limited because of (1) financial reporting, (2) five year onsite care, (3) long-term care, (4) a minimum of four sites for evaluation, (5) concern over other sites in neighboring States, and (6) Federal and State regulations.

Number 26 stated that most of the institutional low-level radioactive waste could safely be disposed of in regional secure landfills. This would reduce the hazard to the public as the waste would not have to be shipped completely across the country.

Number 20 proposed an alternative to the draft regulation, namely regional waste processing centers, government-owned, contractor-operated, and licensed by the NRC, affording State participation to the fullest extent possible

according to NRC's cooperative programs. The centers should be capable of among others, waste segregation, compaction of combustible and noncombustible waste, liquid waste concentration, incineration, etc.

Number 24 stated that the Federal and State governments should assume a more active role in stimulating the development of additional low-level radioactive waste disposal sites. It said that the Commission might also develop an overall plan for the establishment of regional sites which would correlate the needs of each area with the availability of appropriate sites and take into consideration such matters as efficient transportation routes.

Number 22 requested that the licensing of low-level waste disposal be greatly simplified and that allowances be made which permit the alternative of above-ground storage for relatively low concentration, low toxicity or short half-life radioactive material.

Number 28 observed that the rule does not address alternatives to SLB such as volume reduction and engineered-type storage facilities.

Number 16 believed that the regulations in their presently drafted form will have an effect on disposal of low-level radioactive waste water generated by in-situ leach uranium facilities. Accordingly comments have been submitted as to how the regulations would affect in-situ leach operations.

Technical Content

Number 9 noted that the earth-science aspects of the regulation tend to agree with the USGS philosophy and findings but still need some beefing up.

Number 7 suggested that the geological and hydrological evaluation of any site should be carried out by a professional geologist and so indicated in these regulations.

Number 9 suggested that the regulation should require more detailed and specific information on hydrogeologic characterizations of potential sites before they are licensed.

Number 9 stated that considerably more attention is needed in the regulation on capping methodology and demonstrations so that there will be little or no significant "bathtub" effect. The regulation can specify a maximum acceptable trench cap permeability and thickness, and the water flow rate through the trench cap. Use of bentonite, asphalt, durable plastic pond liners or other possibilities could be specified to reduce trench cap permeability.

Number 22 noted that the proposed technical requirements for solidified radwaste are, for the most part, lacking much needed quantitative specificity.

Number 17 stated that this proposed regulation does not provide sufficient flexibility for a waste producer to bury his waste at the site origin.

Number 29 stated that a systems approach that can take advantage of the present geotechnical knowledge should be used instead of the arbitrary limitation approach.

Number 23 stated that the performance objectives should be accompanied by recommended or required methods for demonstrating compliance and that performance objectives are far more valuable than specific site properties.

Number 23 suggested that care should be taken not to preclude potential disposal sites or site characteristics through prejudgement of what specific site properties will meet the performance objectives.

Number 23 observed that the concept of containing LLW while at the same time allowing for compliance with existing or proposed release limits is somewhat contradictory. A management approach which recognizes and identifies small, acceptable releases is preferable, more realistic, and technically more feasible than an attempt at "containment."

Number 23 stated that the technical section, as well as much of the procedures and objectives sections, place strong emphasis on controlling offsite transport by groundwater or erosion. This document should place far more emphasis on measures needed to restrict the onsite reclaimer (excavation), onsite contamination of groundwater, and onsite contamination of foodstuffs.

Number 4 noted that the entire proposed Part 61 is written as though the limiting (and almost only) problem was waste migration with water. A more

balanced approach to the problem would seem to be in order based on NRC's own studies.

Number 21 stated that the myth of waste migration through groundwater paths still exists.

Number 20 stated that notwithstanding the pertinent statements of 61.100, the regulations ought to require categorization (segregation) at the origin.

Number 20 noted that all disposal sites should also be waste processing sites. The chief means for volume reduction shall be the incineration of combustibles with subsequent burial of the immobilized ash.

Number 21 stated that if the intent of the proposed regulations is to apply transport requirements in addition to disposal requirements, it should be clearly stated.

Number 21 suggested that the requirement (with minor exceptions) that evaporator bottoms, filter sludge, resins and slurries all be immobilized by solidification may not always be needed.

De Minimus Levels

Number 12 discussed the matter of establishing a de minimus level for short half-lived substances used in medical research and other applications. It recommended exemptions for (a) solid and absorbed liquid wastes in concentrations of less than 0.5 microcuries per gram for isotopes having half-lives

less than 180 days and (b) absorbed organic liquids (e.g., those used in scintillation counting vials) containing longer-lived isotopes with concentrations of less than 0.005 microcuries per milliliter prior to absorption.

Number 14 stated that the de minimus concept should be developed in these regulations to minimize the volume of waste buried.

Number 15 stated that the regulation should establish a de minimus level to be used for waste disposal purposes for certain radioisotopes used in research in medicine. It emphasized that consideration of de minimus levels include ^{14}C and ^3H even though these isotopes are long-lived.

Number 18 noted that a de minimus radioactivity level should be set for radionuclides because it eliminates costly disposal procedures for waste that is radioactive for only a short time.

Number 20 said that the idea of the de minimus level is reasonable. The regulation ought to allow, in fact require, that the waste generators, including hospitals and research institutes, by representative sampling surveys, determine that part of their waste which is insignificantly radioactive and dispose of it as ordinary trash. The volume of waste handled will then be reduced, which is a very reasonable and necessary step toward reduced environmental impact.

Number 22 stated that the rule should define a de minimus concentration of radioactive material.

Number 24 strongly supported establishing a de minimus level of radioactivity in waste that was sufficiently low that the waste could be disposed of as ordinary nonradioactive trash. Such an approach, particularly in the case of low-level radioactive wastes generated by the health care sector, could significantly reduce the amount of low-level radioactive waste requiring regulated disposal. Such techniques as temporary storage of short half-life isotopes for decay as well as incineration of low-level wastes such as scintillation vials, certain animal carcasses and certain solid wastes, could significantly reduce the volume of LLW requiring SLB.

Institutional Wastes

Number 18 stated that there needs to be clear distinctions between the radiological and chemical properties and physical forms of low-level wastes generated by hospitals and medical research facilities and those low-level wastes generated by all other originators, including nuclear power plants. Thus, for example, there is no need to attempt to solidify the low-activity and low-volume liquid wastes generated by hospitals and medical research institutions.

Number 18 said that appropriate treatment for institutional low-level waste should take into account that (a) the expectation that alternative techniques such as decay, diffusion, and incineration will be used when possible to do so safely; (b) packaging regulations will not be "over-engineered" for institutional waste so as to treat it as though the hazard were equivalent to other low-level wastes, and (c) the concept of a de minimus level will be agreed upon with the originators that it would most concern, i.e., institutions.

DRAFT TECHNICAL BASIS FOR SUPPORTING ADDITIONAL TECHNICAL CRITERIA AND
REGULATORY GUIDES TO IMPLEMENT 10 CFR PART 61 FOR LAND BURIAL OF
LOW-LEVEL WASTES

Number 4 stated that this document (Draft Technical Basis) needs very considerable expansion to document the bases upon which the many (apparently) arbitrary numbers contained therein were derived.

Number 6 stated that this document lacked the technical documentation necessary for classification as a "technical basis." The technical basis, and to a lesser extent the regulation proper, is a mixture of quantitative and qualitative criteria without a rationale for the quantitative criteria and without a statement as to how and by whom the qualitative criteria will be quantified on a site specific basis. Some of the quantitative criteria are ambiguous.

Number 23 stated that all of the specific requirements regarding site characteristics, trench design, operation procedures, etc., should be well supported, or omitted.

Number 3 stated it was confused over the purpose of this section--e.g., does NRC intend to include this in the advance notice to "test the water" on numerical value for the criteria in the regulations?

Number 14 stated that the Draft Technical Basis should be incorporated in the regulations, if requirements.

Number 20 stated that waste processing ought to be a function at each site and all proven methods, in addition to waste segregation and compaction, ought to be included.

Number 29 stated that the interrelationship between this and other environmental laws or regulations such as the National Environmental Policy Act (NEPA) should be described.

Number 33 asked how requirements for a LLW site could be specified when the LLW is not defined as to volume, curies, etc.

Introduction

Number 5 stated that the NRC needs to provide the empirical or experimental basis for the "3 meters" and "15 meters" cited in the opening paragraph.

Number 9 asked where "three meters of cover material" came from.

Number 23 stated that several values for the thickness of required cover are applied to various possible modes of disposal without strong justification. Required cover thicknesses should be well thought out and documented.

Number 29 asked in regard to those materials requiring additional cover materials: (1) What is the maximum height of the amount of mounded materials? (High groundwater tables might demand a mound exceeding 20 feet high.); and (2) What is the allowable slope (%) on mounded materials? (The height of the mound will impact the distance between disposal trenches.)

Number 29 stated that, hopefully, passive care does not include short-term monitoring of the low-level waste site following closure. An active monitoring program is essential to ensure that wastes are being adequately contained and are not being mobilized into air and water environments.

Number 29 stated that artificial liners have not been approved for hazardous waste as the only barrier in Wisconsin. It also inquired as to whether artificial liners will be used in low-level waste disposal.

Siting

Number 7 suggested changing "small topographic relief" in I(a) to "low topographic relief." It also suggested that this is a vague terminology since it doesn't specify the extent of the area to be evaluated nor numerical values.

Number 7 stated that the sentence on subsurface flow in I(a) is contradictory as worded since it implies the presence of fracture zones and the possibility that flow lines could be "away" from fracture zones.

Number 5 said I(b) and I(d) discuss retention of radionuclides for "long residence times" and "several hundred years" without a clear explanation of how these time frames were determined or their implications for the definition of low-level waste.

Number 29 asked in regard to I(b)--is the ion exchange capacity applicable to all nuclides? It also asked for a definition of long residence time as well as how the highest recorded depth of the groundwater table will be documented. It

also asked if the three meter depth is an arbitrary number as well as adequate. It made inquiry as to what type of soil is between the waste and the groundwater.

Number 29 stated that the phrase "devoid of surface waters" in I(c) should be defined and the magnitude of flow specified. It also asked if the flow is to be intermittent, continuous or seasonal.

Number 29 asked in regard to I(a) if there are guidelines that define "low population areas." It also asked what the allowable maximum rate of ground water movement is beneath a low-level waste site. In other words, what is the magnitude of a low hydraulic gradient?

Number 23 stated that some thought should be given in I(a) to site characteristics (or added barriers) which will predispose against other future uses of the site.

Number 23 stated that ambiguous words or unsupported numbers in I(b) are less valuable than statements of how ion exchange or retardation properties should be determined and applied.

Number 23 said the statement on predictability of percolating groundwater should be strengthened and that there are many implications to the concept of ready predictability of the movement of percolating groundwater which would be very rewarding if more fully explored and detailed here.

Number 3 stated that the first complete sentence on page 3 of I(c) is confusing and needs clarification.

Number 5 said that the requirement for "3 meters" in I(c) needs to be justified.

Number 29 stated that the method used to document the underlying site media should be described in I(c).

Number 9 made extensive technical corrections to the text.

Design and Operations

Number 23 stated, in regard to II(a), that it is a great deal more difficult to provide a positive seal above the waste than it is to provide for deflection of the bulk of infiltrated precipitation away from the waste. Trenches should be designed to restrict the infiltration to some value below that of the natural site conditions, but ensure that movement out of the trench can occur at some rate higher than the natural rate. It is then a simple matter to monitor that preferred flow path, and if deemed necessary ahead of time, place some "in situ" treatment systems in that path.

Number 29 stated, in regard to II(a)(2), that depending on the unknown intent of this part, it disagrees that "the need for active site maintenance by the site owner is eliminated." Many monitoring programs encompassing a variety of functions are needed.

Number 5 asked for the technical basis for the selected permeability in II(b). It also suggested that a mandatory performance criterion for permeability may clear up confusion over issues of compliance which are inevitable with the existing criterion.

Number 6 stated that the criterion in II(b) on permeability was ambiguous.

Number 29 asked in regard to II(b)(2): (1) What tests will be performed to determine soil permeabilities?; (2) How will determinations be made on both the type and amount of sealing materials?; (3) Can artificial materials be used for lining the walls?; (4) How stable will these materials be over time?; and, (5) What kind of quality assurance techniques can be used?

Number 5 stated that issues in II(c) such as siting in humid environments (weighing increased transportation to arid sites in the west against potential exposure from contact with water) need greater discussion.

Number 14 stated, in regard to II(c), that any water contacting the LLW shall be collected, analyzed, treated to meet effluent requirements, and released or solidified or disposed of onsite.

Number 29 stated that a more specific design should be described in II(c). It asked if engineering will be patterned after the existing technology developed for leachate collection systems. It stated that the practice of placing a one foot thick layer of highly permeable material beneath the waste requires active maintenance and is therefore contradictory to the goal of eliminating maintenance. It stated that the criteria in the last sentence of (c) should be that no water reaches the waste.

Number 9 made extensive technical corrections to the text. It pointed out that there are two ways of keeping water out of buried wastes: (1) try to enclose the waste in an impermeable envelope, and (2) construct the surrounding trenches

such that the surrounding media has a "wick" effect to draw water away from the trench.

Number 29 asked in regard to II(e): (1) What is the design of these mounds (% slopes, heights, etc.)?; (2) At humid sites will "worst case" rainfall events be used for design purposes? If so, what frequency?; (3) What other specifications for clay moisture barriers other than permeabilities less than or equal to 1×10^{-7} cm/sec will be required?; and (4) In the last sentence, is the word "may" meant to imply that this is an option?

Number 23 stated, in regard to II(b,c,e,f), that specific values are assigned to such things as soil permeabilities, cover thickness, thickness of sand drains, etc. It would be valuable to demonstrate the basis for these particular values. Further, there is a need to show that real sites exist which can meet the stated criteria (with appropriate engineering).

Number 29 stated, in regard to II(h), that the location of low-level waste sites should also be recorded with the appropriate register of deeds as is done with hazardous waste sites. It asked about the duration of the markers and what sorts of hazards they will be designed to withstand.

Number 3 asked whether the units for the increased depth of cover for arid sites specified in II(e) on page 5 should be in feet.

Number 29 stated with respect to II(f) that the words "should normally" in sentence three be replaced with "must." It also stated that in most of the east, usual "old field succession" means shrubs and trees invade grass in

about 15 to 30 years. The only way to maintain a prairie is to burn the site occasionally (again requiring active maintenance). It doesn't know of any such hardy local grass except nature prairie grasses, which have very deep roots.

Waste Segregation

Number 4 stated that the radionuclide concentrations given on page 7 should be better defined. It should be made clear that page 7 represents average concentrations, not maxima.

Number 5 stated that the radionuclide concentrations on page 7 should be correlated to the disposal techniques and required isolation times.

Number 20 suggested that, if feasible, LLW containing radium and accelerator produced isotopes should be included in the table on page 7.

Number 14 stated that the radionuclide concentrations in the table on page 7 do not agree with the median value levels of the AIF/NESP study.

Number 9 thought that the Ci/m³ caption for the radionuclide concentrations in the table on page 7 is very high, especially for long-lived ¹²⁹I, ²⁴²Pu, etc.

Number 20 stated that judgement regarding the burial of transuranic waste should be made by rational consideration of the potential for risk to the public. Then it may be appropriate to raise the allowable concentration limits to 10, 100, or even 1000 times the 10nCi/gram limit.

Number 22 suggested that only those nuclides present at the generation site in the table on page 7 need be entered on the manifest and that manifest entries indicating calculated upper bound concentrations of those nuclides difficult to identify are sufficient.

Number 5 stated that the basis for the radionuclide concentrations on page 7 requires further elaboration, including specification of the total concentrations allowable at any one site at any specific time during operation.

Number 4 stated that no recognition is given to the fact that not a single limit given in the table of radionuclide concentrations on page 7 is even remotely dictated by water migration, rather they are dictated by predisposal operations (for short-lived isotopes) or post-closure intrusional scenarios (for long-lived isotopes).

Number 9 suggested consideration also be given to physical form as well as chemical and radionuclide content of the waste.

Number 23 stated in regard to III(a), that a stronger definition of typical "sufficient barriers" is in order in the phrase, "--- higher concentrations may be acceptable provided that sufficient barriers to reclaimer intrusion ---."

Number 29 suggested a definition should be given for "another disposal method" in III(b) or reference it to something else. It also noted that it will be extremely difficult to find suitable areas in many "humid" climates in order to dispose of intermediate depth burial wastes and still maintain a three meter

clearance to groundwater. It also raised the issue of additional separation from the aquifer.

Number 26 asked why the waste should be segregated as indicated in III(c). One must assume that all reactor waste will contain chelating agents. The bulk of institutional waste currently is toluene based. Once the reactor waste is segregated from the institutional waste, very little is left.

Environmental Monitoring Program--Applicant

Number 23 stated that the types of data collection recommended herein are all desirable. However, a strong statement should be included regarding how the data will be applied as well as the guidelines on "action levels."

Number 29 noted, in reference to IV(a), that Subtitle C of the Resource Conservation and Recovery Act and rules promulgated thereto specify monitoring requirements in much greater detail than indicated here (statistical analysis, etc.). It also inquired as to how many groundwater monitoring wells will be constructed. It recommended replacing "encouraged" with "required" in sentence 3 and "should be" with "must" in sentence 4.

Number 9 made some technical corrections to the text particularly in IV(a) where it suggested that baseline and background measurements should be collected for at least two years prior to waste emplacement. It also wondered if only one continuous air monitor, as indicated in IV(e), is sufficient during waste disposal operations.

Number 29 asked in reference to IV(e): (1) Does this statement imply only one continuous air monitor?; and (2) What about monitoring after disposal (during normal hours)? It stated that this monitoring program should be extended into the long-term program of the site owner.

Monitoring--Site Owner

Number 29 emphasized the need for long-term site monitoring to ensure that the site is operating as designed. Unless the site is adequately monitored, the low-level waste site performance will not be known nor collective measures implemented.

Number 9 wondered if NRC, EPA, or the State should not also have inspection rights.

Site Closure and Decommissioning Plan

Number 3 wanted clarification of the requirement in VI(c)(3) on page 10 to "document the agreement, if any, of State or Federal governments to participate in, or accomplish, any objective."

Number 9 wanted VI(c)(4) clarified to read "essentially background at the ground surface."

Number 29 stated that the statement in VI(c)(4) is vague and inquired as to how often the gamma radiation will be measured.

Number 5 stated that a definition of "passive care" is needed to clarify the type of "management system" which is alluded to in VI(c)(8).

Number 29 stated, in reference to VI(c)(8), that elimination of potential for erosion or loss of site is impossible. The statement leaves two problems: (1) the potential for erosion or loss cannot be eliminated but its effects can be minimized; and (2) the process of minimizing the effects will require active maintenance (contrary to the goal of low maintenance).

Number 6 stated, in reference to VI(c)(11) and VI(c)(16), that 100 feet may be too narrow for a buffer zone, especially if mitigation actions become necessary. By limiting the size of the buffer zone and by confining licensee responsibility to the land under its control, responsibility for corrective action may be transferred from the licensee to private property owners and government jurisdictions.

Number 9 wanted VI(c)(11) clarified to read "--- would not compromise emplaced LLW or site integrity or monitoring system ---."

Number 29 asked in regard to VI(c)(11): (1) What is the basis for the 100 foot minimum size for the buffer zone?; and (2) Is this figure consistent with regulation for hazardous waste sites? It also suggested deleting the word "generally" from the last sentence.

Number 29 asked in regard to VI(c)(6), what the duration of the "planned custodial care" will be.

Number 29 asked, in regard to VI(c)(10), who will get copies of this information.

Number 29 noted that VI(c)(14) needs clarification. It is far too vague and general (i.e., which set of statistical equations?).

Number 29 asked, in reference to VI(c)(16), for an explanation of the terms "evaluate" and "take reasonable action."

Number 29 stated, in reference to VI(b), that the site closure and decommissioning plan should also include the appropriate State input. It also suggested replacing the word "encourages" with "requires" in sentence 3.

Number 29 noted, in regard to VI(c)(5), that the Wisconsin DNR is currently developing proposed groundwater protection rules. It asked if appropriate State regulations will be used within this determination.

Number 29 requested reference be made to all previous comments made regarding post low-level waste site operations and monitoring.

Number 29 stated, in reference to VI(c)(15), that it may not be possible to eliminate the need for active water management measures. This factor should definitely be considered.

Number 19 said a line is missing in last sentence of VI(c)(8).