Mr. Benito J. Garcia, Bureau Chief  
New Mexico Environment Department  
Hazardous and Radioactive Waste Bureau  
525 Camino de los Marquez  
P.O. Box 26110  
Santa Fe, NM 87502

Dear Mr. Garcia:

The purpose of this letter is to provide the New Mexico Environment Department (NMED) with a copy of our responses to comments from the Environmental Protection Agency (EPA) Region 6. The EPA comments pertain to Chapter C, Revision 3 of DOE/WIPP 91-005, "RCRA Part B Permit Application for the Waste Isolation Pilot Plant."

The EPA Region 6 letter of April 16, 1993, "EPA's Comments on the Part B Application Pertaining to TC Wastes", requested that the Department of Energy (DOE) revise the permit application to include the sampling and analytical methods for Groups II and III wastes. Based on the EPA's comments, the WIPP Project wishes to withdraw Groups II and III wastes from further consideration for the RCRA Part B permit. When the Part B permit application (Revision 3) was submitted in January 1993, these waste groups were to be included in the Type 1 Bin Test Program. However, subsequent revision of the test plan shows that Groups II and III wastes will not be a part of any Type 1 bin tests.

The enclosed WIPP Project response advised the EPA that the Part B permit application will not be amended unless specifically requested by the NMED.

If you have any questions on this matter, please contact Dr. James A. Mewhinney of my staff at (505) 887-8143.

Sincerely,

Arlen Hunt, Manager  
WIPP Project Site Office

Enclosure
Mr. Benito J. Garcia

cc w/enclosure:
C&C File
J. Mewhinney, WPSO
M. Bennington, WPSO
E. Preciado, WTAC
R. Kehrman, WID
RESPONSE TO EPA REGION 6 COMMENTS

Cover Letter

The region does feel that the methodology described in Appendix C4 of the application is an acceptable alternative in determining DOE’s TC wastes. However, using this methodology is only acceptable when DOE’s waste characterization plan (for determining total concentrations of hazardous constituents in the waste) in the application is approvable, the plan is currently deficient as it applies to waste categories II and III.

RESPONSE: Waste Groups II and III are no longer being pursued by the DOE in the permit application due to recent changes in the WIPP Type 1 Bin-scale test program strategy. However, the DOE has identified conventional RCRA methods contained in SW-846 (8240 for volatile organics, 8270 for semivolatile organics, 6010 and 7471 for metals) for analysis of inorganic waste water treatment sludges which are part of Groups II and III wastes. Conventional sampling methods will be used for these wastewater treatment sludges, as described in response to the EPA’s comment on Volume 3, Page C4-4 (sic); Sludge and Solidified Waste Sampling Methods. In contrast to the remaining Group II and III waste forms, inorganic wastewater treatment sludges are chemically and physically similar to their industrial counterparts, and are amenable to characterization methods developed by the EPA.

Comments on the Waste Characterization Plan for the Part B Application for TC Wastes

Volume 1, Chapter C

Page C-22; On-site Generated Waste (Derived):

A. If TC waste drums are spilled or leaked, will that material be automatically classified as a TC waste or will that material be tested for total hazardous constituents? Please clarify in the application.

B. In addition, the Region agrees with DOE that radiation detection equipment and techniques will adequately detect chemical (co-detection) contamination in most scenarios. However, any event in which liquid TRU mixed waste is spilled/leaked into a semi-permeable media, such as natural materials, the co-detection principle may not be effective in determining the extent of contamination. Please clarify or amend the application.
A. The statement on lines 15-19, which indicates that any waste spilled or leakage will be treated as TRU mixed waste and managed as such, applies to both characteristic and listed wastes. No sampling or analysis will be conducted on that waste. The majority of TRU mixed waste is heterogeneous and not amenable to sampling and analysis. Characterization of derived waste is established by the generator’s waste analysis. The DOE will use this characterization information for any wastes generated as a result of leakage or spilling.

B. The codetection principle will always be followed in that the first tool to be used will be radiation detection. After that or when an area composed of permeable or semipermeable materials has been decontaminated to the point of detecting no more radioactivity, there could be hazardous material residue. The text defining sampling and analyses for contamination at the time of closure is found on page I-14, Section I-1(e)(2)b, Soils. That section refers to Table I-2, which is a list of analytical procedures to be used for characterizing the salt taken from random grid locations to compare with background samples previously taken. The WIPP will utilize these procedures as appropriate to determine if additional non-radioactive contaminants exist. The text will be revised in Chapter C to include similar wording as that in Chapter I if the NMED so requests.

Page C-23; Line 8 & 9: Will the free liquid waste generated in an off-normal or accident situation be analyzed for TC using the TCLP procedure? If so, there is no sampling plan in the application to describe how these samples would be taken. Please clarify in the application.

RESPONSE: The free liquid suggested here is liquid used for cleanup, not liquid waste. All cleanup materials and residue are checked for radioactivity first. If there is any indication of radioactivity, the material is considered to be derived waste and are therefore managed as TRU mixed waste. Should there be no indication of radioactivity, the decontamination liquid would then be sampled and analyzed as stated in the application. Required analyses would be selected based upon the characterization data accompanying the waste container or containers involved in the contamination event plus any hazardous constituents known to be in the decontamination fluid. Table I-2 contains a list of methods to be used to analyze the liquid for the hazardous materials previously known to be in the waste. Chapter C will be revised to add this procedure, if the NMED requests it. Otherwise, that text will be revised in the first permit modification.
Page C-23; Lines 19-21: Region 6 was under the impression that no free liquids is allowed in containers to be shipped to the WIPP during the Test Phase since every container will be visually checked (revision 4 of the WIPP WAC). Please clarify in the application.

RESPONSE: The WAC prohibits free liquid as a waste form, but allows up to 1 percent by volume of residual liquid in well-drained bottles, cans, or other internal containers. This can be referenced at the WAC document location cited by the EPA. The WAC reference is stated in footnote 1 on page C-3, but does not repeat all of the criteria. Visual inspection evaluates the volume of free liquid, if it is observed, for comparison with the volume estimated by using the Real-Time Radiography (RTR) system, and to validate the waste as meeting the WAC, including shipping limits. Chapter C will be revised to clarify this point upon request by the NMED.

Page C-23; Lines 27-35: EPA is not sure what DOE is saying in this paragraph. DOE states that any material excavated at closure will be characterized as containing all the hazardous waste constituents that were contained in the container/bin that spilled the waste. Does this mean that this excavated material/waste will automatically be classified as hazardous waste or will it be tested to determine if it is hazardous waste? Please clarify in the amended application.

RESPONSE: This paragraph refers to waste that has been put in derived waste containers as it was generated and then closed and stored as derived waste, (i.e., managed just as though it had been received from one of the waste generators). The derived waste is automatically classified as having the same constituents as the waste containers had that were involved in the generation of the derived waste. That may seem cumbersome, but it is a simple way to manage the waste in a conservative fashion. Using the assumption that derived waste has all the constituents of the original waste container(s), a conservative position is taken and is consistent with EPA guidance for characterization of mixed wastes as it results in both sound waste management under the RCRA and is consistent with the As Low As Reasonably Achievable (ALARA) concept for radiation exposure.

Concerning closure, as stated above, Chapter I states that when there is no radioactivity detected, the media that may have come into contact with hazardous waste will be analyzed for the parameters listed in Table I-2. Chapter C will be revised to add this information if the NMED requests it. Otherwise, that text will be revised in the first permit modification.
Page C-29; Line 34: EPA disagrees with this statement. It is the regulatory authority's responsibility to approve sampling or analytical methods used for waste characterization which are contained in the permit application. Therefore, a complete application should include the sampling procedures and analytical methods used to characterize all wastes permitted for WIPP.

RESPONSE: The statement was not intended to imply that the regulator has no authority to approve sampling or analytical methods contained in the permit application. Rather, the statement refers to the fact that there is not a mandatory process for agency approval of individual sampling or analytical methods. The analytical methods listed in the permit application (Tables C-7, -8, -10, and -11) include EPA SW-846 methods which are presumed to have full regulatory agency concurrence. SW-846 allows flexibility in method execution in accordance with the goal of meeting the performance criteria. The procedure for demonstration of equivalence to referenced methods is also provided in the permit application (i.e., meeting the quality assurance/quality control requirements specified in SW-846). The statement was intended to convey the concept that there is not a clearly defined process for a facility to submit privately developed sampling and analytical methods to the EPA for approval within a reasonable time period (one year or so). The EPA developed the SW-846 methods and approved them.

Page C-30; Lines 5-13:

A. EPA has no problems with the equivalent performance based method to meet or exceed QA objectives, however, a complete permit application must have this information "set in stone" at the time the application is deemed approvable. "Moving targets/objectives" are not acceptable. DOE can always amend the permit at a later time to take into account changes in methods which are superior in performance.

B. In addition, a complete permit application must have a complete QAPP in the application, not referenced. Furthermore, since NMED is authorized for the base RCRA permitting program, NMED must approve changes to the QAPP. Please amend the application accordingly.

RESPONSE:

A. The DOE's statement was not intended to imply a "moving target" approach, but rather a method to be developed or modified that would meet specific Quality Assurance Objectives (QAOs). The EPA's published guidelines for application of the Data Quality
Objective (DQO) process, as implemented in the QA Program Plan (QAPP) require that analytical QAOs be developed to satisfy the data needs of programmatic DQOs. The WIPP program documents these analytical QAOs in the QAPP and although the means of achieving them may be subject to change, the QAOs effectively establish a mandatory performance standard for programmatic measurements. In effect, the target is "set in stone," but the means of hitting that target are not. QAOS would only be changed in the event that there were significant changes in basic programmatic DQOs; this in turn would require that the permit be amended.

The DOE anticipates that the analytical performance characteristics (i.e., matrix-specific detection limit, accuracy, and precision) of SW-846 methods applied to the characterization of inorganic wastewater treatment sludges will be comparable to those specified in SW-846 for the analysis of waste matrices.

B. The NMED and the EPA are given the QAPP for review and comment every time a change is made and the DOE considers NMED's comments when finalizing the change. The QAPP is the DOE's vehicle for controlling waste characterization for the Test Phase experiments to be conducted at the WIPP. As such, the QAPP reaches far beyond the requirements of the RCRA to also address regulations mandated in DOE Orders and to provide the information necessary to support the analysis of and interpretation of experimental data. Therefore, the QAPP was designed to be flexible enough to meet the needs of an evolving test program. The application has the list of sampling and analysis methods identified and the NMED has authority to approve or disapprove those. Thus, the QAPP as an entity, should stay separate from the application and the modification process.

Page C-34: Solidified/Stabilized Waste Sampling and Analysis: What percentage of the Group II & III waste will be sampled? The procedure for determining representative drums to be sampled must also be in waste analysis plan. Stating that this procedure is "in the works" is not acceptable. See comments on Page C-30, for lines 20 thru 26.

RESPONSE: The NMED asked for the sampling percentage in their Notice of Deficiency and the DOE responded with the statement that for the Type 1 bin-scale tests there will be 100 percent sampling. That includes Groups II and III wastes that may be included in those tests. The DOE had earlier agreed with the NMED to 100 percent sampling of all drums used in the Type 1 bin-scale tests which would include the wastewater treatment sludges that may have been planned for the Type 1 bin-scale tests. When other tests (e.g., alcoves) are defined, the permit will be modified to address the
specific sampling frequencies for both Groups II and III. As mentioned previously, the current test program does not include Groups II and III wastes as a part of the Type 1 bin-scale test program.

Volume 3, Appendix C

Appendix C5-1; Quality Assurance Program: A complete QAPP and a complete site specific QAPJP should be included in the application for sites which send waste to be permitted at the WIPP (waste categories II & III, for possible TC wastes during Test Phase). Please revise the application to include this information.

RESPONSE: As stated above, the DOE does not think the QAPP is appropriate for inclusion as a whole in this application. The QAPP is driven by many requirements: the test program, nuclear safety requirements, transportation safety, and RCRA. As such, it contains a high level of detail, much of which is necessary to meet non-RCRA requirements. Tables C-7, 8, 10, 11, and 12 specify sampling and test methods. Site-specific QA Project Plans (QAPjP) are specific operations' implementation of the QAPP as applied to their site functions and thus are at a level of too much detail for them to be appropriate for the NMED to approve within the application. The NMED has reviewed and commented on every QAPjP (and revision) that has been submitted to the WIPP facility for approval. Sampling and analyses for all wastes have to meet the QAOs contained in the application, the QAPP, and SW-846.

Page C4-4 (sic); Sludge and Solidified Waste Sampling Methods:

A. For lines 2 thru 7, same comment as Appendix C5-1.

B. Also, for Waste Categories II and III, a more detailed description of how these wastes are sampled is needed. A more detailed discussion of the following information is needed:

1. Sludge and solid sampling techniques of the material within the drums

2. Sampling intervals within drums

3. Sample containers used

4. Sample chain of custody program
5. Material compositions of sampling devices and associated equipment

6. Sampling QA/QC plan

RESPONSE:

A. (This is on page C5-3.) Same as above response to Appendix C5-1.

B. Inorganic wastewater treatment sludge will be sampled by coring into the waste, as briefly described in the next paragraph (lines 15-20 of the cited text). More detail on the sectioning and layering of drums to get random sludge samples is provided for your information under item 1 below.

1. Solidified TRU wastewater treatment sludges will be sampled using solid waste sampling procedures developed or demonstrated by the EPA and the American Society for Testing and Materials (ASTM). Because the WIPP sampling procedures must be implemented in an alpha containment environment, sampling materials and techniques must be compatible with remote operations. Solidified wastewater treatment sludges contained in drums will be sampled using augers attached to the drill string of a hydraulically powered drill system. The drill rods will be interfaced to the sampling hardware through an alpha containment interface, allowing placement of the hydraulic drilling system outside the contamination zone. Consolidated wastewater treatment sludges contained in gallon cans will be sampled by manual collection with small coring tools. Unconsolidated masses in gallon cans will be manually sampled with a scoop.

The TRU wastewater treatment sludges to be characterized in the WIPP program are physically and chemically similar to waste forms generated by wastewater treatment processes in more common industrial settings. Because of these inherent similarities in matrix, it is anticipated that conventional core sampling procedures will be utilized for obtaining samples for RCRA characterization of TRU wastewater treatment sludges.

2. In the case of solidified waste forms suitable for core sampling, the WIPP Project will utilize sampling techniques which are consistent with Chapter 9 of SW-846 and will require, at a minimum, one sample per drum. Heterogeneity in the vertical dimension will be addressed through the collection of core samples that extend all the way to the bottom of the drum.

3. The WIPP Project will not require the use of specific manufacturer or models of sample containers. In order to preserve the integrity of contained sample materials, the WIPP
will require that the materials which come in contact with sample materials (e.g., the interior of sample containers) be designed and constructed of materials or treated in such a manner that the sample container does not compromise the quality of the sample for purposes of analysis. For example, plastic materials must not be allowed to contact samples intended for determination of semivolatile organics, and glass containers used for storage of samples intended for determination of metals should be acid-leached.

4. Chain of Custody (COC) on field samples (including field QC samples) shall be initiated immediately after sample collection or preparation. Sample custody will be maintained until the associated analyses are completed and the data have been validated at the project level. Alternatively, sample custody shall be maintained until the sample is expended or until the sample is removed from the program. An example COC form for samples is provided in Figure 5.3 (attached). Site QA Project Plans (QAPjP) must include a copy of the form used to document COC for samples; this form shall include provisions for the following:

- Signature of individual initiating custody control, along with the date and time;
- Documentation of sample numbers for each sample under custody;
- Signatures of custodians relinquishing and receiving custody, along with date and time of the transfer; and
- Comment section.

5. Selection of materials used for sampling devices and associated equipment will be made in consideration of two key criteria. First, the materials must not compromise the quality of the sample material in consideration of the intended analytical measurements. Materials that introduce analytical contaminants or interferents must be excluded, and materials that sorb or otherwise allow the removal of contaminants from the sample matrix must be excluded. Second, the materials must be compatible with prolonged use or remote applications in a high-alpha containment environment. It is unacceptable to select sampling equipment that may have very limited lifetime without consideration of mixed waste minimization objectives.

6. Each site QAPjP must describe a system for documenting the correlation of field QC samples with their associated field samples, and for controlling this information in such a manner that field duplicates and field reference standards are submitted blind to the analytical laboratory. Field reference standards collected during bin sampling do not
have to be submitted blind to the analytical laboratory. An example of a QC sample record form is provided in Figure 5-6 (attached). Site QAPs must include a copy of the form used to record QC samples, and the form must include the following information:

- Sample identification numbers of each sample collected from each waste container or bin, where waste containers or bins are identified by waste container or bin number;
- Date and time of collection for each field and field QC sample;
- Correlation between QC sample numbers and the type of QC sample (e.g., field duplicate) they represent;
- Signature of the individual completing the form;
- Comment section; and
- Sample type designator.

The QC sample record form must be completed at the time samples are generated and shall be submitted to the site project QA officer on completion.

Page C5-4: Sludge and Solidified Waste Analysis: See comment for Page C-30. It appears that these waste types are not ready to be permitted at this time due to numerous uncertainties in waste characterization.

RESPONSE: Sampling and analyses for wastewater treatment sludges in Groups II and III wastes have to meet the QAOs described above.

Appendix C6: It appears that waste categories II & III are not ready to be permitted at this time due to numerous uncertainties in waste characterization analytical methods.

RESPONSE: As indicated by the responses given above, the DOE is no longer pursuing wastewater treatment sludges in Groups II and III wastes to be included in this permit, since these wastes are not included in the current Type 1 bin-scale test program.