

DEC 21 1993

Ms. Wanda Stokes, Head of Reference  
Anne Arundel County Public Library  
North County Branch  
1010 Eastway  
Glen Burnie, Md. 21060

Dear Ms. Stokes:

Enclosed please find the following documents concerning the remediation of the Anne Arundel County property in Curtis Bay, Maryland:

1. Letter from Dominick A. Orlando to Kevin Reilly, dated October 25, 1993, transmitting the Nuclear Regulatory Commission staffs comments on the Defense Logistics Agency's (DLA's) groundwater assessment.
2. Letter from Dominick A. Orlando to Kevin Reilly, dated December 7, 1993, transmitting NRC staffs comments on DLA's remediation plan.

Please include these documents with the material on this remediation that the library is maintaining for public inspection.

If you have any questions, please contact me at (301) 504-2566.

Sincerely,

ORIGINAL SIGNED BY

Dominick A. Orlando, Project Manager  
Decommissioning and Regulatory  
Issues Branch  
Division of Low-Level Waste Management  
and Decommissioning  
Office of Nuclear Material Safety  
and Safeguards

Enclosures: As stated

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UNITED STATES  
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

OCT 25 1993

License STC-133  
Docket # 040-00341

Mr. Kevin Reilly  
DLA/DNSC-0  
1745 Jefferson Davis Highway  
Suite 100, Crystal City Square #4  
Arlington, VA 22204

Dear Mr. Reilly:

I am responding to your October 8, 1993, letter that transmitted the results of a groundwater assessment for the Anne Arundel County property adjacent to the Defense National Stockpile Center (DNSC) Curtis Bay Depot, Curtis Bay, Maryland. The Nuclear Regulatory Commission staff has determined that this assessment is not sufficient to demonstrate that radioactive contamination from past Defense Logistics Agency (DLA) activities is limited to the floors of the former warehouse buildings and adjacent soils.

If hydrogeologic arguments are used to determine the status of groundwater contamination beneath the site, more extensive hydrogeologic information and analysis would be necessary to determine whether thorium nitrate storage has adversely affected groundwater quality. Your June 15, 1993 assessment does not include the basic hydrogeologic information required for assessing potential source terms for groundwater contamination, the presence and characteristics of hydrogeologic units beneath the site, rates and directions of groundwater flow and contaminant transport, and the extent and concentrations of contaminants in the groundwater. In addition, the assessment relies on water quality data for water samples collected from monitoring wells that are of unknown design and integrity. Detailed comments and information needs are described in the enclosure. Because of the scope of NRC staff's comments, it may be appropriate for NRC and DLA staffs, as well as the staffs from the Maryland Department of the Environment and Anne Arundel County to meet to discuss your groundwater report. Please contact me as soon as possible if you feel this meeting would be appropriate.

The comments in the enclosure, when viewed collectively, appear to require a substantial effort by DLA to investigate the hydrogeology of the Curtis Bay area and potential groundwater transport of thorium from past activities at the depot. Instead of conducting an intensive investigation, the NRC staff believes that the following approach may be more effective in attempting to resolve the comments in the enclosure:

- 1) Identify past and present potential sources of groundwater contamination;
- 2) Install a limited number of boreholes in the locations of the potential sources of groundwater contamination; collect and analyze soil samples and groundwater samples in these boreholes to establish a contaminant profile;

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OCT 25 1993

- 3) Estimate, if thorium released from the potential sources was mobile, where such contamination would be found today using simple calculations of groundwater transport rates using best estimate values for hydrogeologic variables; drill and sample a limited number of boreholes in the locations to determine thorium concentrations;
- 4) Integrate existing knowledge of the hydrogeologic characteristics of the Curtis Bay site with existing literature of the hydrogeology of the surrounding area; and
- 5) Determine the construction and completion details of the existing monitoring wells at the site and confirm that they provide representative samples of groundwater and water levels.

NRC staff expects that this information could then be presented by DLA in a brief report that assesses the potential for groundwater contamination from past storage of thorium nitrate at the Curtis Bay site.

I am also concerned about the relatively long time lag that occurred between your apparent receipt of the assessment in June 1993 and its submission to NRC in October 1993. Despite repeated inquiries from NRC about the status of this assessment and recommendations to forward the report to NRC as soon as it was available, it appears to have required more than four months for your review and transmittal. If we had an opportunity to review the assessment in June, you would have been able to respond to our concerns at a much earlier date.

Please review the enclosed comments and respond to me, in writing, within 30 days of the date of this letter regarding DLA's plans for assessing whether there is any groundwater contamination beneath the site that was caused by storage of the thorium nitrate or other licensed activities.

Sincerely,

*151*  
Dominick A. Orlando, Project Manager  
Decommissioning and Regulatory  
Issues Branch  
Division of Low-Level Waste Management  
and Decommissioning  
Office of Nuclear Material Safety  
and Safeguards

Enclosure: As stated  
cc: Attached list

OCT 25 1993

3

cc:

Tom Ferguson, Health Physicist  
Maryland Department of the Environment  
Radiological Health Program  
2500 Broening Highway  
Baltimore, MD 21224

Mike Leahy, Land Use Coordinator  
Anne Arundel County  
Office of Planning and Zoning  
2664 Riva Road MS-6401  
Annapolis, MD 21401

OCT 25 1993

Nuclear Regulatory Commission Comments on  
the Defense Logistics Agency's Groundwater Evaluation for the  
Anne Arundel County Property at  
Curtis Bay, Maryland

October 1993

General Comments

More extensive hydrogeologic information and analysis are necessary to determine whether storage of thorium nitrate has adversely affected groundwater quality at the Anne Arundel County site and to assess the extent, if any, of groundwater contamination beneath the site. The October 1993 groundwater evaluation does not include the basic hydrogeologic information required for assessing potential source terms for groundwater contamination, the presence and characteristics of hydrogeologic units beneath the site, rates and directions of groundwater flow and contaminant transport, and the extent and concentrations of contaminants in the groundwater. In addition, the evaluation relies on water quality data for water samples collected from monitoring wells that are of unknown design and integrity.

Specific Comments

1. Page 2, Groundwater Levels

The groundwater evaluation assumes an arbitrary datum elevation of 30 feet for well E. The elevations of the other well heads were then determined relative to this assumed datum and groundwater elevations were measured from the tops of the well casings. Thus, the groundwater elevations are, at best, approximate, and have been estimated based on an arbitrary datum.

However, the actual elevations of the groundwater in the few wells on site may be extremely important because they affect the direction and rate of groundwater flow beneath the site. In addition, due to the proximity of the site to Curtis Bay and its tributaries, groundwater elevations (and gradients) may be significantly affected by variations in the water levels of the Bay and its tributaries. Further, the measured elevations have not been compared with any groundwater level measurements from reconnaissance studies of the area surrounding the site. Therefore, DLA should determine the absolute elevations of the tops of the well casings and measure the groundwater elevations with reference to the elevations of the well heads. The measurements should also be accompanied by measurements of the elevations of water levels in Curtis Bay and its tributary channels and be compared with other water levels that have been measured in the vicinity of the site in other studies.

Enclosure

## 2. Page 2, Hydrogeologic Units

The groundwater evaluation does not mention or describe the characteristics of the hydrogeologic units beneath the site. It is not clear from the information presented in the report whether all of the wells have been completed in the same hydrogeologic unit or whether they are completed in different units. The limited groundwater elevation data cannot be interpreted with confidence unless the distribution and characteristics of hydrogeologic units are sufficiently known and their effects on the hydraulic gradients have been assessed. General, reconnaissance level information of this type should be readily available in studies that have been performed in the vicinity of the site. For example, studies performed by the U.S. Geological Survey or the Maryland State Geological Survey should provide a starting point for characterizing the hydrogeology of the site. Additional information can probably be gleaned from the drilling records or well logs for the limited number of wells on site. Additional information may be obtained from private wells completed in the vicinity of the site, which may be available through the State agencies. Once assembled, DLA should integrate this information into a conceptual model of the hydrogeologic system at the site as the basis for making projections about the rates and directions of groundwater flow and contaminant transport, if any, beneath the site. This model should then be used to determine the fate of contaminants that may have been released into the groundwater.

## 3. Page 2, Hydraulic Gradients

The groundwater evaluation does not assess hydraulic gradients or describe the nature of the groundwater system beneath the site (unconfined, semi-confined, confined). It is important to determine the present hydraulic gradient at the site to determine if groundwater contamination is present, where it would be expected to be found and at what rate is it migrating. Information on existing hydraulic gradients would also be necessary to design a groundwater corrective action program, if remediation of groundwater is necessary at the site. In addition, information on the existing gradient may be useful in inferring historic gradients that would significantly influence the rate and direction of transport of any groundwater contamination. DLA should determine the present hydraulic gradient at the site based on reliable measurements of water table elevations or hydraulic heads and the conceptual model described above. In addition, DLA should develop a water table/piezometric surface map using data points that extend beyond the site itself (e.g., by measuring water levels in adjacent domestic wells, if available). If there is a reason to believe that vertical gradients may be significant at this site, DLA should also assess the direction and magnitude of these gradients to determine whether they may have affected the rate and direction of potential contaminant transport.

## 4. Page 2, Potential Sources of Contamination

The groundwater evaluation does not identify or consider the potential locations and release rates of sources of thorium contamination at the site. Coupled with information on the hydraulic gradients and the conceptual model, the location and release rates of potential contaminant sources should be

considered in determining whether any contamination would even be expected to be found at the location of the wells used in the evaluation. If the potential source of contamination were limited to the areas near the storage warehouses, for example, it may be unlikely that any contamination would be expected to be found in the wells because of their distance and direction from the warehouses. The groundwater evaluation should include calculations of groundwater travel and contaminant transport times to various locations as the basis for showing that the wells are properly located to provide a reasonably high likelihood that contamination, if it was caused by thorium nitrate releases at the site, would be detected.

In addition, at the May 1993 public meeting about the remediation of the site, concerns were raised about other potential releases of thorium at or near the site. For example, one individual identified a washdown area used for cleaning up rail cars used for transporting the thorium nitrate. Given historical inferences about hydraulic gradients, hydraulic characteristics of the unit(s) beneath the site, and the approximate time of the potential release, the groundwater evaluation could identify a potentially affected zone of contamination attributed to this potential source. The groundwater evaluation should then investigate this area through installation and sampling of additional wells, if necessary, to determine if any groundwater contamination exists in that location. As an alternative, the evaluation could demonstrate through a bounding calculation that even if such releases had occurred, it would be highly unlikely that the groundwater would have become contaminated and additional wells are not necessary.

#### 5. Page 2, Monitoring Well Integrity

The groundwater evaluation does not present any information on the integrity or completion of the wells that were relied upon to estimate groundwater elevations and collect representative groundwater samples. Without such information, the groundwater elevations and water quality data are of extremely limited value. For example, the monitoring wells could have been completed in different hydrogeologic units and, therefore, there may be little, if any spatial relationship between the water level measurements. Alternatively, the wells could be completed in deeper hydrogeologic units than the uppermost aquifer at the site. This hypothesis is supported somewhat by observations of standing water around the site, even though the depth to water in the wells ranged from 10 to 34 feet below the top of the casing. If the wells were completed in a deeper aquifer, the water sampling program may show no contamination from thorium and its decay products in the deeper aquifer, even though the uppermost aquifer may have been adversely impacted by thorium releases at the site. The authors of the report even discounted the groundwater elevation in one well (Well B) because it appeared "suspect" and did not fit with the conceptual model of the site. However, the other data points may be equally "suspect" without knowledge of the completion of the wells and confidence that the integrity of the wells has not been compromised. DLA needs to assess the completion and integrity of the wells to ensure that they are providing reliable water level data for the uppermost aquifer and representative groundwater samples.

#### 6. Page 4, Determination of Screen Depth

The groundwater elevation states that the water level in Well B was near the bottom of the screen. However, nothing in the report indicates that the authors knew the design and completion specifications for the well or that the screened interval was determined through some other method. The evaluation should be amended to describe how the elevation of the bottom of the screen in Well B was determined.

#### 7. Page 4, Alpha Spectroscopy

The groundwater evaluation states that thorium concentrations in groundwater samples were determined using alpha spectroscopy (spectrometry?). However, the text does not present sufficient detail on the analyses to ensure that the results are reliable. The text does not describe how the samples were prepared prior to analysis or the analytical variables that affect the reliability of the data (e.g., count times, size of the evaporated sample, etc.). It does not appear that any blanks, spikes, or splits were submitted as part of the analytical program. In addition, although the analytical certificate of analysis states that the laboratory was certified, it does not indicate that the lab is certified to perform analyses of radioactive materials. Further, the certificate reports "accuracy" for the three dominant thorium isotopes. It is not clear whether "accuracy" refers to a Minimum Detectable Activity or some other standard measure. The "accuracy" reported for most analyses as "0.00 pCi/l" or very close, which is a meaningless number for a gamma spectrometric analysis. Beyond these limitations, the groundwater analyses do not include the dominant cationic and anionic dissolved species to determine the gross chemistry, pH, Ec, Eh, and temperature of the sample, which is necessary to assess the likely mobility of the thorium and decay products, if present, in the groundwater at the site. The groundwater evaluation should be supplemented with sufficient analytical information to demonstrate the reliability of the sample analyses.





UNITED STATES  
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

DEC 07 1993

Kevin Reilly  
DLA/DNSC-0  
1745 Jefferson Davis Highway  
Suite 100, Crystal Square #4  
Arlington, VA 22204

Dear Mr. Reilly:

Nuclear Regulatory Commission staff has reviewed your remediation plan for the former Defense Logistics Agency (DLA) property in Curtis Bay, Maryland transmitted by letter dated October 14, 1993. Our comments are enclosed. Development of this letter and the enclosed comments have been coordinated with the Maryland Department of the Environment.

In general, the plan lacks sufficient detail to enable NRC staff to determine if the procedures described in the plan are adequate to ensure remediation of the site, while maintaining radiation exposures to workers and the public as low as reasonably achievable. This is due in large part to the extensive reliance within the plan on your remediation contractor's referenced materials and procedures, which were not provided to NRC staff for review. While it is appropriate to reference NRC documents such as Regulatory Guides, NUREGs and NRC contractor reports, it is impossible for NRC staff to evaluate the adequacy of your contractor's internal procedures, unless these procedures are provided with, or described in, the remediation plan. We suggest that instead of referencing these procedures, the remediation plan incorporate the relevant portions of the procedures in the plan.

Also, there appears to be some confusion as to the use of characterization and termination surveys for the buildings at the site. The results of characterization surveys of the buildings may be used to support the assertion that the buildings meet the unrestricted release criteria (i.e., as a termination survey) so long as residual radioactivity in excess of unrestricted release criteria is not found. In the event that residual radioactive contamination is located during characterization surveys, the building would have to be remediated and undergo a termination survey prior to reclassification as meeting the unrestricted use guidelines.

In addition, it appears that you plan to remediate the site using the radiation protection criteria outlined in the old version of 10 CFR Part 20 (10 CFR 20.1 - 20.602). The old version of 10 CFR Part 20 will be replaced by 10 CFR 20.1001 - 20.2401 on January 1, 1994. As such, compliance with 10 CFR 20.1001 - 20.2401 is mandatory for all NRC licensees on January 1, 1994, unless an exemption has been granted by the NRC. Because remedial activities are not scheduled to commence until January 1994, remediation of the site should be carried out using the regulations contained in 10 CFR 20.1001 - 20.2401.

Finally, previous discussions with DLA staff, and the conceptual remediation plan submitted to NRC in February 1993, indicated that the intent of the remediation activities was to remove all residual radioactive material above

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NRC STAFF COMMENTS ON THE  
DEFENSE LOGISTICS AGENCY'S D & D PLAN  
FOR THE ANNE ARUNDEL COUNTY PROPERTY IN CURTIS BAY, MD  
December 1993

1. Page 3-2, statements indicate that all site specific procedures will be approved prior to implementation. It is unclear who will approve the procedures and what the process for approval of the procedures will be. Please clarify the process for approving procedures at the site.
2. Page 3-2, it is unclear if the radiologically controlled area (RCA) will encompass the 9 contaminated buildings or merely be set up at the entrance to the county property at the Defense Logistics Agency (DLA) fence. Please indicate how the RCA will be established and maintained.
3. Page 3-2, the description of the maintenance of the RCA references an internal RUST document ENWD-RP-001, Radiological Control Procedure for Field Projects. This document was not provided with the remediation plan and, as such, Nuclear Regulatory Commission staff cannot determine if the procedure is adequate to ensure that the RCA will be maintained. Please provide a copy of the document or include the procedures in the remediation plan.
4. Page 3-3, statements indicate that the roofs and walls will be removed concurrent with the characterization survey. Prior to removal, roofs and walls should be classified as affected or unaffected areas in accordance with NUREG/CR-5849. Termination surveys should then be performed on those portions of the roofs and walls that are determined to be unaffected areas, such as the exterior surfaces of the roofs and walls. Only after the termination surveys are completed and the exterior surfaces are shown to meet NRC's unrestricted release criteria should the roofs and walls be removed for disposal as non-radioactive waste. If residual radioactive contamination in excess of NRC's unrestricted release criteria is discovered during the termination survey, the affected roof or wall would have to be reclassified as an affected area and remediated according to the procedures outlined in the remediation plan.
5. Page 3-3, statements indicate that the characterization survey results will be submitted to NRC upon completion. It is unclear if NRC approval of the characterization survey results will be requested before the characterization survey is used to prepare the Final Status Survey Plan. NRC does not typically review and approve characterization survey results, although this information should be maintained for review during the remedial activities. Please indicate whether NRC approval of the characterization survey results will be sought prior to beginning remediation activities.
6. Page 3-3, statements indicate that the Final Status Survey of outdoor areas at the site will be performed after approval of the Final Status Survey Plan. This survey will be used to demonstrate that soil

Enclosure

(exclusive of that beneath the building footprint) is not contaminated. As remedial activities that could contaminate soil at the site will continue after this survey is completed, the rationale for performing this survey at this time is unclear. In addition, statements on page 3-4 indicate that contaminated material will remain onsite until NRC confirms that remedial activities have removed radioactive contamination to guideline levels. As the potential for recontamination of the site exists until all radioactive material is removed, it would be more appropriate to perform the confirmatory survey only after contaminated soil and debris have been removed from the site. Please clarify the rationale for storing the waste on-site.

7. Page 3-4, statement 2 under section 3.3 indicates that the site specific health plan will be approved before decommissioning activities begin. However, it is not clear how or by what method the review and approval of the plan will be accomplished, as the approval procedure is referenced to a document that was not provided with the remediation plan. Please describe the approval process or provide a copy of the referenced document.
8. Page 3-5, the first paragraph states that site specific plans may be prepared by RUST personnel at the Curtis Bay site. However, as the approval procedure is referenced to a RUST internal procedure it is not clear how approval will be accomplished. In addition, some procedures, such as those involving the potential for radiation exposure, may require review and approval by NRC. The method for NRC review and approval of these procedures is not specified. Please clarify the approval process for these documents or provide a copy of the referenced document.
9. Page 3-6, the descriptions of the remediation personnel do not include a description of the qualifications necessary for the positions outlined in the remediation plan. In addition, there is no indication of the type or number of health physics, radiation safety or industrial hygiene technicians that will be involved at the site. Please provide this information.
10. Page 3-7, it appears that several of the individuals responsible for ensuring site radiological and industrial hygiene safety will only be at the site during the startup and shutdown phases. As the greatest risk to workers and members of the public would reasonably be expected to occur during remediation operations, the rationale for this limited oversight should be explained. In addition, the Radiological Control Supervisor/Site Safety and Health Supervisor appears to report to 3 individuals: the Project Manager, the Division Industrial Hygienist, and the Corporate Health Physicist. In that the Division Industrial Hygienist and Corporate Health Physicist will not be onsite during remediation activities, there is a potential for miscommunication or misunderstanding of any problems encountered during remediation activities. Please provide assurance that a sufficient number of

qualified management personnel will be present during remediation to ensure that site safety and health issues are addressed in an expeditious and efficient manner.

11. Page 3-9, statements indicate that some training records will not be maintained onsite. During inspections of the remediation activities NRC or Maryland Department of the Environment personnel may request these records. As such, it may be more appropriate to maintain copies of these records onsite during remediation activities.
12. Page 3-9, statements indicate that buildings will be razed after decontamination, surveyed and released for unrestricted use. This is inconsistent with statements made on page 3-3 which indicate that the walls and roofs will be removed as part of the characterization survey. Please clarify how the characterization and razing of the buildings will be accomplished.
13. Page 4-1, the description of the method for preparing the Site Safety and Health Plan is inadequate as it relies on references that were not provided as part of the remediation plan. Please include a description of this procedure in the remediation plan or provide a copy of the referenced document.
14. Page 4-1, the description of the elements of the Site Safety and Health Plan does not indicate that the requirements of 10 CFR Parts 19 and 20 will be met. Please clarify that the radiation protection and training requirements in 10 CFR Parts 19 and 20 will be met.
15. Page 4-1, statements indicate that the Site Safety and Health Plan will be reviewed prior to being put into practice. However, there is no indication of the approval process or the individuals involved in the plan review and approval. Please provide this information.
16. Page 4-2, statements indicate that certain individuals may be exposed to hazardous substances without using respiratory protection. The rationale for this practice should be explained and the potential exposure should be estimated.
17. Page 4-3, statements indicate that standard operating procedures will be developed for minimizing worker contact with hazardous substances. However, no mention is made of procedures that will be developed for minimizing worker contact with radioactive material. Please provide this information.
18. Page 4-4, a reference is made to informing commercial laundries about hazardous substances on worker protective clothing. This reference appears to indicate that the contractor plans to use non-disposable protective clothing during the remediation activities. Any commercial laundry that is used for cleaning protective clothing may be required to comply with all applicable regulations concerning hazardous and radioactive material, including those for obtaining a radioactive materials license and other permits, as well as worker training and

exposure monitoring requirements. Please clarify that all contaminated clothing will only be sent to a commercial laundry possessing the appropriate licenses and permits.

19. Page 4-5, statements indicate that only one member of the ALARA Committee will review and approve ALARA procedures. This is inconsistent with the rationale for establishing and maintaining an ALARA Committee. In addition, the membership of the ALARA Committee is unclear as it is referenced to a RUST internal document that was not provided with the remediation plan. Please provide the rationale for allowing only one member of the ALARA Committee to review and approve ALARA procedures as well as describe the membership of the ALARA Committee.
20. Page 4-6, statements indicate that the radiation protection program is comprised of all RUST radiological standard operating procedures. As these procedures were not provided or described in the remediation plan, NRC staff cannot determine if they are adequate to ensure protection of the public health and safety or the safety of the workers involved in remediation activities. Please include a description of these procedures in the remediation plan or provide a copy of the relevant RUST documents to NRC for review.
21. Page 4-7, statements indicate that occupational doses shall not exceed  $5(N-18)$ , where N equals the individual's age in years. This method for determining radiation exposure limits was included in 10 CFR 20.1 - 20.601 and will not be used by NRC after January 1, 1994. Please revise the remediation plan to reflect the requirements of 10 CFR 20.1001 - 20.2401.
22. Page 4-7, statements indicate that radiation work permits (RWPs) are "initiated" (developed?) by any individual responsible for a given operation and the RWPs are reviewed and approved by the Radiation Control Supervisor/Site Safety and Health Supervisor (RCS/SSHS). It is not clear if RWPs will be reviewed by the Project Manager or DLA personnel, who are ultimately responsible for ensuring that remediation activities are carried out in accordance with the procedures described in the remediation plan. Please clarify that RWPs will be reviewed by all appropriate RUST and DLA personnel prior to being used at the site.
23. Page 4-3, please clarify who will be the "responsible individual" that will "present the requirements of the RWP".
24. Page 4-8, it is unclear how long RWPs will remain in effect as statements indicate that they will be in effect for a "specified period." The usual practice is to specify an expiration date on the RWP. Please clarify that RWPs will be developed, reviewed, activated and inactivated per written procedures that ensure that out-of-date RWPs are not inadvertently used at the site.

25. Page 4-8, please clarify where the RWPs will be located during the remediation activities.
26. Page 4-9, please clarify how frequently areas outside the radiation controlled area will be surveyed for contamination.
27. Page 4-9, it is unclear what type of HEPA ventilation system will be used to prevent radioactive material from being exhausted to the site and site environs. In addition, there is no discussion of the system calibration, filter replacement or filtered effluent monitoring procedures for the HEPA ventilation system. Please provide this information.
28. Page 4-9, the discussion of the radioactive waste handling and packaging procedures is inadequate as the discussion references a RUST internal procedure that was not provided with the remediation plan. Please provide a copy of the referenced document or include the procedures as part of the remediation plan.
29. Page 4-10, please indicate the type and sensitivity of monitoring instruments that will be used to monitor individuals exiting radiation controlled areas.
30. Page 4-10, please indicate the frequency of contamination surveys that will be performed to prevent the spread of contamination from radiation control areas.
31. Page 4-10, the description of the airborne radioactivity monitoring program is inadequate as it references a RUST internal document that was not provided with the remediation plan. Please provide the referenced document or include the procedures in the remediation plan.
32. Page 4-11, the description of the radiological instrumentation program is inadequate as it references RUST internal documents that were not provided with the remediation plan. Please provide the referenced document or include the procedures in the remediation plan.
33. Page 4-12, please indicate who will calibrate radiological instrumentation.
34. Page 4-12, see comment at #32 above.
35. Page 4-12, airborne monitoring alarm setpoints are stated to be 10% of the maximum permissible concentration (MPC). 10 CFR 20.1001 - 20.2401 uses the derived air concentration instead of the MPC to determine airborne radioactivity levels. Compliance with the requirements of 10 CFR Part 20.1001 - 20.2401 is mandatory for all NRC licensees on January 1, 1994, unless an exemption to these requirements is granted by NRC. In that remedial activities are not scheduled to commence until January 1994, remediation of the site should be carried out using the

regulations contained in 10 CFR 20.1001 - 20.2401. Please clarify that all remediation activities will be carried out in compliance with 10 CFR 20.1001 - 20.2401.

36. Page 4-12, the rationale for performing air monitoring surveys only every four hours and only when airborne radioactivity is expected to be maximized should be discussed.
37. Page 4-12, it is not clear what the term "radiological work" means in the last sentence. Does this term include decontamination activities, characterization activities and demolition activities or is it limited to decontamination activities alone? Please clarify this statement.
38. Page 4-13, it is not clear what the distinction is between the conditions described in #3 and #2 on page 4-12. Please clarify these statements.
39. Page 4-13, would the requirement outlined in #6 be in effect when the walls and roofs are removed?
40. Page 4-13, airborne particulate monitoring procedures are discussed in terms of maximum permissible concentration (MPC). 10 CFR Part 20.1001 - 20.2401 uses the derived air concentration instead of the MPC to determine airborne radioactivity levels. Compliance with the requirements of 10 CFR Part 20.1001 - 20.2401 is mandatory for all NRC licensees on January 1, 1994, remediation of the site should be carried out using the regulations contained in 10 CFR 20.1001 - 20.2401. In addition, the discussion of airborne particulate analysis is inadequate as it references RUST internal documents that were not provided with the remediation plan. Please provide a copy of the referenced document or include the procedures in the remediation plan.
41. Page 4-15, statements indicate that anticontamination clothing may be laundered onsite or by a commercial off-site vendor. In that onsite laundering of contaminated clothing is not authorized under the current DLA license, this activity may require DLA to amend its existing radioactive materials license. In addition, it will be DLA's responsibility as the licensee to ensure that any contaminated clothing sent off-site for laundering is sent to facilities that are licensed as appropriate to receive and launder the clothing (see #19 above).
42. Page 4-15, the description of the radioactive waste management procedures is inadequate as it refers to internal RUST documents that were not provided with the remediation plan. In addition, an estimate of the volume of waste expected to be generated by remediation activities, as well as an indication of the disposal facility that the waste will be sent for disposal should be included in the plan. In that heavy metals are expected to be present in the soil (from sewer sludge application adjacent to the buildings), the plan should include a description of the activities that will be used to ensure that if mixed

waste is generated by remediation activities, it is managed in accordance with all applicable State and Federal regulations. Finally, the meaning of the term "A-Unstable" waste is not clear.

43. Page 7-1, the interior and exterior walls and roofs have been designated as unaffected areas. The interior walls should be considered affected areas unless demonstrated otherwise. In addition, it is not clear if the characterization survey described in this section is consistent with statements made in section 3. This section indicates that the walls and roofs will be removed and placed on the ground before characterization, while section 7 seems to indicate that characterization will occur while the roofs and walls are in place. Please clarify these statements.
44. Page 7-3, Previous discussions with DLA staff and the conceptual remediation plan submitted to NRC in February 1993, indicated that the intent of the remediation activities was to remove all residual radioactive material above unrestricted release limits from the building surfaces and soil and to dispose of this material in a radioactive waste disposal facility. Statements on this and subsequent pages indicate that radioactive contamination will be averaged over the area of the survey blocks established as part of the characterization survey. In that the activity of the residual contamination on building surfaces is generally low and the areal extent of contamination is limited, this method could allow building or soil contamination in excess of the allowable limits to be released for unrestricted use. At this site contamination exists in discrete patches, rather than being homogeneously distributed. Therefore, it appears that biased sampling would be preferable to sampling on a coarse grid as described in NUREG/CR-5849. Please note that the applicable contamination limits for building surfaces are in units of disintegrations per minute per 100 square centimeters or lesser area. Please clarify that the intent of the remediation activities is to remove radioactive material contamination above the unrestricted use limits and that building surfaces and soil in excess of the limits for unrestricted release will be removed and disposed of as radioactive waste.
45. Page 7-4, it is not clear why survey measurements would be recorded as "dpm/probe" as indicated in statements made on this and subsequent pages. Please explain the rationale for using this unit of radiation measurement.
46. Page 7-5, the text indicates that 5 points per survey block will be surveyed, referencing these points to Figure 2 in appendix C. Figure 2 of Appendix C indicates only 4 survey points per survey block. In addition, NUREG/CR-5849 specifies that survey points for building surfaces are the intersections of the gridlines, while figure 2 indicates that the survey points are within the 1m X 1m gridblocks. Please clarify the number and location of the survey points that will be used.



47. Page 7-6, it is unclear what will be considered a survey unit for the purposes of the remediation project. Please clarify what will be used as a survey unit during the remediation activities.
48. Page 7-6, it is unclear if alpha activity will be determined in all cases where elevated beta-gamma activity is detected. In addition, it is not clear that alpha activity will be determined in all instances where beta-gamma activity is determined. For example it appears that alpha activity will only be determined in those instances where average and maximum beta-gamma activity is determined. Please clarify when alpha activity will be determined.
49. Page 7-7, it is unclear if the smear sample will be, in all instances, taken from the region within the survey block that exhibits the maximum surface activity. Please clarify that smears will be taken from the area of maximum activity in all instances.
50. Page 7-7, chain of custody procedures are referenced to an internal RUST document. This document is not included in the list of references on page 2-1 nor was the document provided for NRC staff review. Please provide a copy of the referenced document or include the procedures in the remediation plan.
51. Page 7-9, it is unclear at what depth soil samples will be taken. Previous site characterization data indicated residual contamination in excess of 10 Pci/gm at depths greater than 45 centimeters in soil at three locations. This should be considered when developing the soil characterization and remediation plan.
52. Page 7-10, references are made to a procedure outlined in section 7.4.5, while the remediation plan does not contain a section 7.4.5. Please clarify the reference.
53. Page 7-11, insufficient information is provided to allow NRC staff to determine if the method for evaluating soil samples is adequate to determine the radioactive material concentration in the soil. Please provide the method for evaluating soil samples.
54. Page 8-1, statements indicate that only removable-surface-activity and exposure-rate unrestricted release levels will be met by the remediation activities. Please clarify that fixed-surface-contamination unrestricted release levels will also be met.
55. Page 8-1, statements indicate that soil concentration levels will be averaged over 100 square meters. In that soil contamination levels at the site are generally low and the areal extent of contamination is limited, soil at the site may currently meet these limits if averaged over 100m<sup>2</sup>. Because the soil contamination is known to be spotty, it would appear appropriate to conduct biased sampling to demonstrate that the soil concentration averaged over the contaminated area is less than 10 Pci/gm.

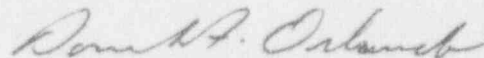
56. Page 8-2, statements indicate that final status surveys will not be performed on structures that have been razed as part of the remediation process. It appears that DLA plans to use the information gathered during the characterization survey to support the assertion that the structures meet the unrestricted use guidelines. Please clarify that the data obtained during the characterization survey of the buildings will be sufficient to comply with NRC's unrestricted release criteria and NUREG/CR-5849 and that this information will be submitted to NRC as part of the documentation of the termination survey.
57. What measures will be taken to prevent trespassing at the site during off hours?
58. What are the estimated projected average and maximum worker and public doses, if any, from remediation activities? In addition, what is the total estimated worker radiation dose from the remediation activities?
59. What is the estimated cost of the remediation project?
60. What methods will be used to remove contaminated flooring and soil?
61. Please describe what additional surveying activities will occur if contamination in excess of unrestricted use limits is detected during the termination survey.

unrestricted release limits from the building surfaces and soil and to dispose of this material in a radioactive waste disposal facility. Statements in the remediation plan indicate that radioactive contamination will be averaged over the area of the survey blocks established as part of the characterization survey. Because the activity of the residual contamination on building surfaces is generally low and the areal extent of contamination is limited, this method could allow building or soil contamination in excess of the allowable limits to be released for unrestricted use. At this site contamination exists in discrete patches, rather than being homogeneously distributed. Therefore, it appears that biased sampling would be preferable to sampling on a coarse grid as described in NUREG/CR-5849. Please note that the applicable contamination limits for building surfaces are in units of disintegrations per minute per 100 square centimeters or lesser area. Please clarify that the intent of the remediation activities is to remove radioactive material contamination above the unrestricted use limits and that building surfaces and soil in excess of the limits for unrestricted release will be removed and disposed of as radioactive waste.

During the public meeting that was held on May 24, 1993, several individuals indicated that they believed that it would be helpful to hold an additional public meeting after DLA submitted the remediation plan to NRC. Given the interest that the remediation of this site has elicited in the local community, NRC believes that an additional public meeting to discuss the contents of the remediation plan would be appropriate. As such, NRC strongly encourages DLA to consider holding an additional public meeting in the near future, in the Curtis Bay area, to discuss the remediation plan with all interested individuals.

Please review the specific comments included in the enclosure and provide a response within 30 days of the date of this letter. Given the number and scope of our comments, you may find it helpful to meet with NRC and State representatives to discuss the plan and our comments. This meeting would be open to observation by the public. If you have any questions, require additional information, would like to arrange to meet with NRC staff, or require additional time to respond to our comments, please contact me at (301) 504-2566.

Sincerely,



Dominick A. Orlando, Project Manager  
Regulatory Issues Section  
Decommissioning and Regulatory  
Issues Branch  
Division of Low-Level Waste Management  
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Enclosure: As stated