0025082

CORRES CONTROL
OUTGOING LTR NO

89 RF 0856

Rocky Flats Plant
Aerospace Operations
Rockwell International Corporation
P.O. Box 464
Golden, Colorado 80402-0464
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Contractor to U.S. Department of Energy

Rockwell International

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CORRES. CONTROL	x	x
ARNDT, MB	X	
GREENGARD, T	X	
CLASSIFICATION		
UNCLASSIFIED	X	X
CONFIDENTIAL		
SECRET		

AUTH. CLASSIFIER SIG.
BK Greer

DATE 3-06-89

IN REPLY TO LTR. NO.

DEC #

LTR. APPROVALS

ORIG. & TYPIST INITIALS
MBA/dae

RF-46469 (Rev. 9/88)

March 6, 1989 89-RF-0856

Albert E. Whiteman
Area Manager
DOE, RFAO

FINAL RESPONSES TO CONTAINER STORAGE FACILITY CLOSURE PLAN

Attn: K. J. Schneider

Enclosed are two additional copies of the final written responses to the Colorado Department of Health (CDH) comments on the above referenced closure plan. These are in addition to the four copies previously submitted on February 2, 1989 which also included one disk copy (in Word Star) of the revised closure plan which incorporated the changes based on these CDH comments.

If you have any further questions or comments please contact Michael Arndt at extension 4294.

K. B. McKinley
RCRA/CERCLA Program

Orig. and 1cc - A. E. Whiteman
Enc.

ADMIN RECORD

SW-A-002940

F/I

CO7890010526

Date: January 31, 1989
Revision No.: 1

RESPONSES TO OCTOBER 16, 1988
CDH LETTER ON THE CLOSURE PLAN FOR
THE CONTAINER STORAGE FACILITY

INTRODUCTION

These responses are provided in the order discussed in the Colorado Department of Health (CDH) letter of October 16, 1988, and the CDH meeting minutes of October 19, 1988. These are responses to the interpreted meaning of the comments and indicate changes to the closure plan.

CDH OCTOBER 16, 1988 COMMENT:

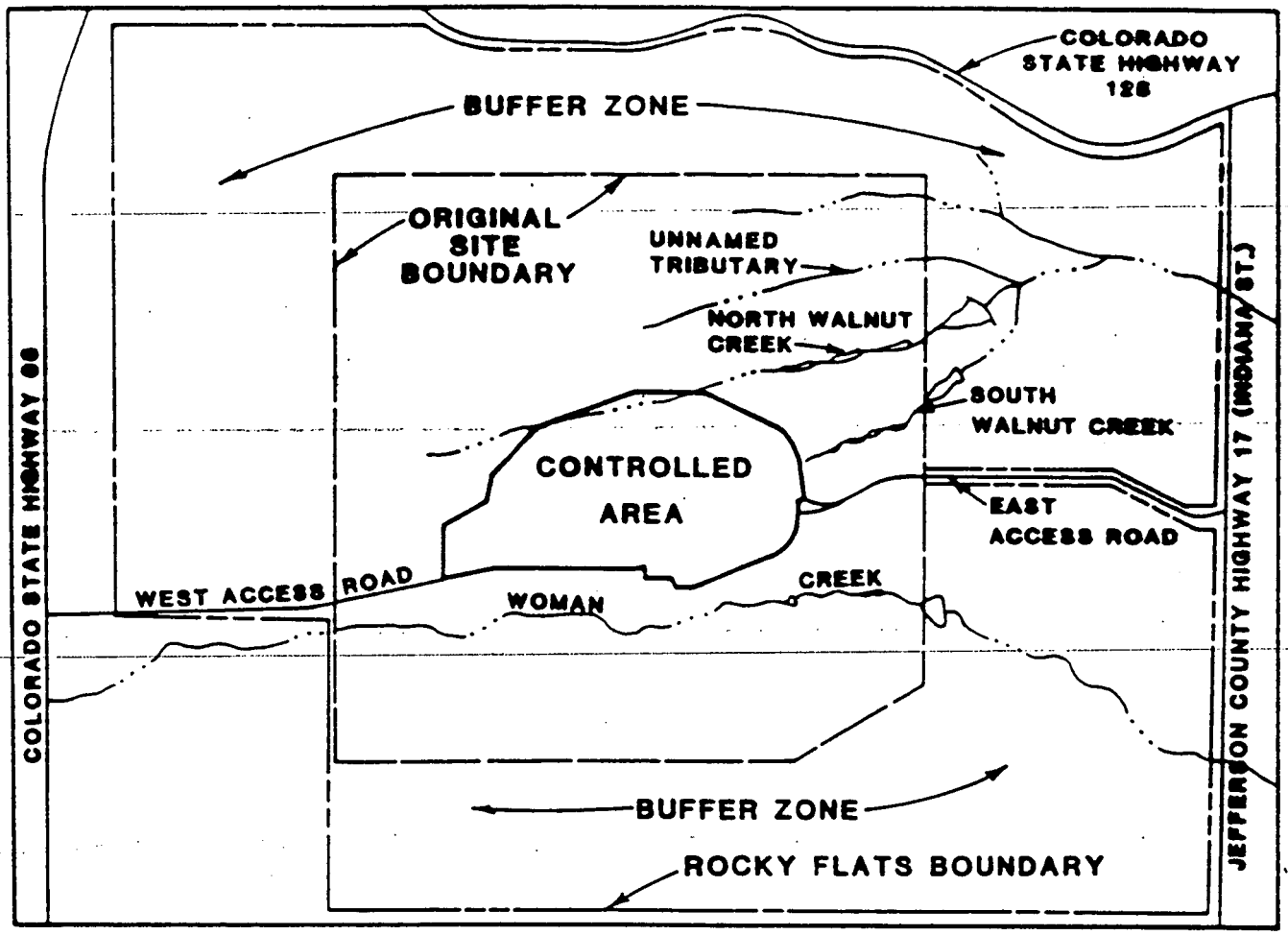
1. The vicinity map (Figure 1 on page 2) should include the location of the cities of Broomfield and Arvada. These communities are cited in the Closure Plan Section 1.1.1 as being 9 to 12 miles from the Rocky Flats Plant (RFP), along with the cities of Boulder and Golden, which are included on the map.

CDH MEETING MINUTES:

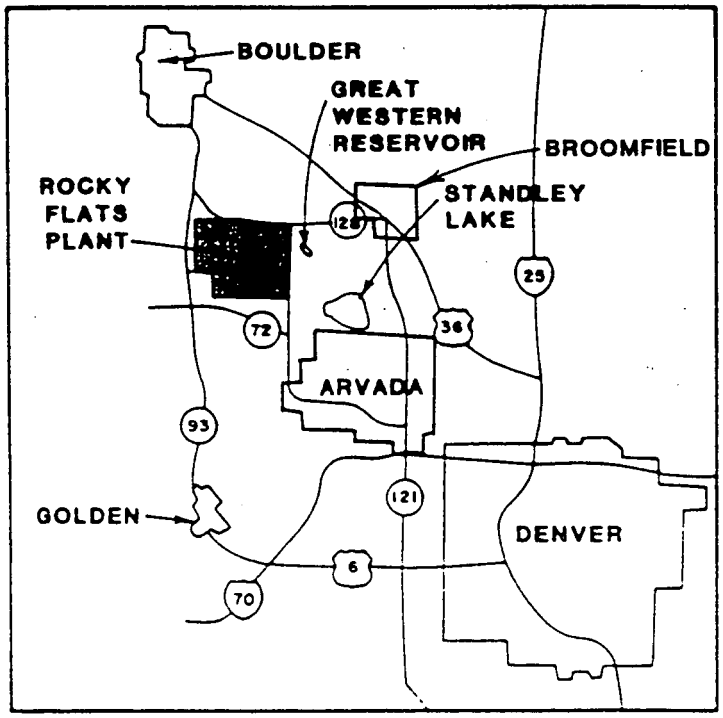
1. The vicinity map on page 2 can be revised to include the locations of Broomfield and Arvada.

RESPONSE:

Figure 1 has been revised to include the locations of Broomfield and Arvada.



APPROXIMATE SCALE 1"=3,300'



APPROXIMATE SCALE 1"=40,000'

6 017 86	Chen & Associates	VICINITY MAP	Fig. 1

CDH OCTOBER 16, 1988 COMMENT:

2. The geologic cross sections presented with the closure plan contain only superficial information and do not provide details of the geologic setting present beneath each of the units undergoing closure. The lack of detailed knowledge about the specific geology underlying the closing units may hinder the determination of the potential contamination extent. If evidence of contamination is revealed, the post-closure plan must include a detailed geologic setting for any regulated units which cannot be clean closed and are subject to closure as a landfill under 6 CCR 1007-3, Section 265 Subpart N.

CDH MEETING MINUTES:

2. Geological Cross Sections, Figure 6, is developed from one boring, therefore does not have adequate supporting data, some major assumptions were made. Its limitations are presented on the drawing. The cross section will be revised to include data as it is acquired according to the sampling plan.

RESPONSE:

It is currently believed that a clean closure can be implemented at all of the container storage facilities. Additional geological characterization is not currently felt to be required, but will be conducted for this specific unit if found necessary. An updated response will be presented as more data is acquired according to the sampling plan.

CDH OCTOBER 16, 1988 COMMENT:

3. Section 1.3.3 indicates a total of 460 drums stored at the Property Utilization and Disposal (PU&D) Drum Storage Area over its operating life. However, with 20 drums accumulating each year form 1974-1977, and 50 drums yearly from 1978-1985, the total number of drums consequentially raises the total container storage capacity, shown in Section 1.3.4, from 25,300 to 26,400 gallons. Estimated storage capacity is probably also too low for the Swinerton and Walberg (S&W) Contractor Storage Yard. This unit had the potential to contain much more than the 1,965 gallons of waste which were estimated for 1985.

CDH MEETING MINUTES:

3. The correction in the number of drums stored at the Property Utilization and Disposal Drum Storage Area is appropriate - 480 is more accurate than 460. The number of samples in the west area of the PU&D Drum Storage area may be increased.

RESPONSE:

The closure plan has been revised to indicate 480 drums were stored at the PU&D Drum Storage Area (attached page 10). The increased number of drums has been reflected in Section 1.3.4 to indicate 26,400 gallons of storage instead of the reported 25,300 gallons. The number of samples in the west area of the PU&D Drum Storage area will not be increased based on the increased storage volume. The four percent increased storage does not in itself justify increased sampling.

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The storage capacity of the Swinerton and Walberg (S&W) Contractor Storage Yard has been reviewed Based on the current information, there is no evidence to suggest an increase in the storage capacity at the S&W yard.

per year prior to that (Elvey, 1986). Assuming 20 drums accumulated each year from 1974 through 1977 and 50 drums accumulated each year from 1978 through 1985, 480 drums were stored at the PU&D drum storage area over its operating life. The maximum number of drums stored at any one time is unknown but is at least 158 (Elvey, 1986). Drum accumulation often occurred for approximately one to two years prior to removal of drums from the area. Following drum removal, their contents were recycled (Elvey, 1988).

Dumpster Storage Area

A maximum of one, 12-foot by 16-foot dumpster was stored in this area (Elvey, 1988).

1.3.4 Total Container Storage Capacity

Drum Storage Area

Assuming a maximum of 480 drums were stored at any one time, the total storage capacity of the PU&D drum storage area over its operating life was 26,400 gallons.

The drums and their contents were sold periodically for recycling until September 1984, when the oil in the drums

CDH OCTOBER 16, 1988 COMMENT:

4. Explain the "administrative controls" which would be expected to prevent any radioactive contamination from occurring in the PU&D yards and at the other container storage units. Describe the quality assurance program for insuring the absence of radioactivity in the container storage areas.

CDH MEETING MINUTES:

4. CDH and EPA want more detail on Administrative Controls which should prevent any radioactive contamination from occurring in the PU&D yards.

RESPONSE:

The administrative controls consisted of Plant Directives implemented by Rocky Flats personnel responsible for storage in the PU&D yards and at the other container storage units. Briefly, drums were externally monitored by the Radiation Monitoring Department prior to shipment to the storage areas. Drums originating from the plant site were sampled and analyzed prior to transferring to the storage areas. Drums with contents above detection limits were refused for storage in the container storage units. The detection limit was approximately 20 disintegrations per minute per 100 square centimeters (dpm/100 cm^2).

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CDH OCTOBER 16, 1988 COMMENT:

5. 6 CCR 1007-3, Section 256.112(b)(3) requires "an estimate of the maximum inventory of hazardous wastes ever on-site over the active life of the facility." For the S&W Building 980 Container Storage Facility, Section 1.4.3 indicates that "the maximum number of containers stored at any given time was ten." However, Section 1.4.7 states that "as of March 1988, the area contained approximately 35 drums." Explain the discrepancy, and provide an updated storage capacity for the unit.

CDH MEETING MINUTES:

5. The discrepancy in quantifying the number of waste drums at the 980 S&W site lies in that most of the drums stored did not contain waste. The area is going through RCRA closure due to activities in 1986 and earlier, whereas the reference to drums causing confusion came from a Spring 1988 site visit. These locations will be further characterized.

RESPONSE:

Not all of the drums stored in the yard in the Spring 1988 contained hazardous waste. Section 1.4.3 has been revised (attached page 27) to indicate that "the maximum number of containers <u>of hazardous waste</u> stored at any given time was ten."

1.4.3 Number, Types and Sizes of Containers Used

The maximum number of containers of hazardous waste stored at any given time was ten. The containers were 55-gallon steel drums (Richards, 1986).

1.4.4 Total Container Storage Capacity

The total capacity of ten 55-gallon drums is 550 gallons.

1.4.5 Monitoring and Containment System

Visual monitoring of the storage area was conducted periodically. Written records of this monitoring were not maintained.

The 55-gallon drums were placed directly on the ground surface. A berm approximately 1 to 1 1/2 feet high was located on the west, south and east sides of the overall storage yard (Richards, 1986).

CDH OCTOBER 16, 1988 COMMENT:

6. Avoid words like "should" or "might." For example, Section 1.4.6 indicates that wastes stored in the drums "Should not have contained radioactive contamination." 6 CCR 1007-3, Section 265.13 requires "a detailed chemical and physical analysis of a representative sample of the waste." The May 1985 analysis obtained from the drums stored in both the S&W Building 980 Container Storage Facility and the PU&D Drum Storage Area indicates that a gamma scan was performed, but not an alpha or beta scan. Explain how the composite sample was adequately characterized given the absence of these scans.

CDH MEETING MINUTES:

6. Words like "should" or "might" are not appropriate in a closure plan. Positive statements of the situation should be made. This is a problem with Rockwell's consultants, which is being corrected by Rockwell.

RESPONSE:

Words such as "should" or "might" must not be changed in the closure plan where the meaning of the applicable sentence is changed. The example cited from Section 1.4.6 - the wastes stored in the drums "<u>should</u> not have contained radioactive contamination" - is an example where a definitive statement would change the meaning. In this instance, the characterization data available on the wastes stored in the drums was not specific towards radioactive contamination and does not permit a definitive statement regarding its presence. Therefore, the statement made regarding what <u>should</u> have been stored in the drums is supportive of the concept of closure.

The soil characterization plan includes sampling and testing for radionuclides since it could not be determined definitively whether radioactive contamination was not included in the drum wastes.

The alpha and beta scans were not performed in the May 1985 analysis because the steel walls of the drums block these types of radiation. It was never intended to open each drum for scanning purposes. The drums have since been removed, thereby precluding additional sampling. The soil characterization will include a comprehensive radionuclide scan as described in Appendix 2 Soil Characterization Plan, Section 4.2.2, Direct Radiation Survey.

CDH OCTOBER 16, 1988 COMMENT:

7. The maximum container storage capacity for the Building 885 Drum Storage Area should be 20 drums for each of the two sides of the storage area, or 2,200 gallons. The maximum storage capacity for the other container storage facilities is also potentially much different than the amount of wastes cumulatively stored at the individual units at any given time. This is due to the drums being cycled in and out over the operational lifetime of the closing units.

CDH MEETING MINUTES:

7. Calculational errors in the quantities of waste in the Building 885 Drum Storage Area and other storage areas should be recalculated.

RESPONSE:

6 CCR 1007-3, Section 265.111 requires that "an estimate of the maximum inventory of hazardous wastes ever on site over the active life of the facility" be provided in the closure plan. The maximum number of drums containing hazardous waste at each of the container storage facilities is provided in the applicable subsections titled Number, Types and Sizes of Containers Used for each container storage facility.

A review of the references and calculations for each facility indicates the following:

PU&D Drum Storage Area: The maximum inventory of hazardous waste has been revised as indicated in the response to Comment #3.

Building 885 Drum Storage Area: The maximum inventory of hazardous waste ever on the site over the life of the facility was two 55-gallon drums (110 gallons) as stated in the closure plan. The maximum capacity was 40 drums, which included unused oils and solvents. If the total capacity

was conservatively considered to represent the maximum inventory of hazardous waste, 2,200 gallons would have been used in the closure plan. It was not considered appropriate to use the maximum possible inventory at any of the container storage facilities, but rather an estimate of the maximum inventory ever on site.

The maximum storage capacity of hazardous wastes at the remaining storage facilities do not require further response. The drums being cycled in and out of the facility are not considered cumulative storage inventory.

CDH OCTOBER 16, 1988 COMMENT:

8. Explain whether drums in the Building 885 Drum Storage Area were at one time stored on pallets directly on the ground before the ground surface in the east and west sections was covered over with concrete. Sections 1.6.5 and 3.1.1 are contradictory and the long-term storage history is unclear. If drums were at any time stored directly on the ground surface, then soil samples from under the concreted slab must be obtained. In this instance the sampling procedure for Building 885, as described in Appendix 2, page 20, is inadequate. This unit is also identified as SWMU 177 in the 881 Hillside RI/FS, and is not considered a potential source of ground-water or surface-water contamination. However, Section 1.6.7 notes evidence of "staining on the ground surface," and Section 1.6.5 indicates the lack of containing berms around the storage area. Explain the contradiction in these two reports.

CDH MEETING MINUTES:

8. The drums stored in the Building 885 Drum Storage Area were always stored on concrete, not directly on the ground. Therefore, sampling underneath the concrete is not appropriate. Clarification between the description of SWMU 177 in the Building 881 RI/FS and its description in the closure plan is needed. The RI/FS states that SWMU 177 is not a potential source of ground-water or surface-water contamination, but the closure plan describes staining on the ground surface, and the area's lack of berms for containment. The documents will be cross-checked.

RESPONSE:

The subject drums were always stored on concrete; therefore, no soil sampling will be conducted below the concrete slab.

Soil staining in the Building 885 drum storage area is reported along the openings of the semi-enclosed buildings. It is in these areas that soil sampling will be conducted as discussed in Section 4.3.4 of Appendix 2.

Ten soil samples will be taken along the openings at one foot away from the edge of the concrete floor.

Evidence of "staining on the ground surface" and lack of containing berms, which are reported in the closure plan, are not necessarily a contradiction to the RI/FS statement that "SWMU 177 is not a potential source of ground-water or surface-water contamination." Surface contamination that results in staining will not necessarily be leached by infiltration to the ground water. No coordination of the cleanups is planned, and as stated by the CDH in previous meetings, there can be no overlap of RCRA closure and the Low Priority SWMU programs.

CDH OCTOBER 16, 1988 COMMENT:

9. Explain your source for the review of 90 day accumulation storage in the Building 865 Drum Storage Area. Section 1.8.1 references J. Norris, 1988, while Section 1.8.7 references J. Norris, 1986 and the U.S. DOE, 1987A. Section 1.12 references 40 CFR as the source for identifying the maximum extent of operation for a closure plan. As the Rocky Flats Plant falls under the jurisdiction of the Colorado Code of Regulations, the corresponding section of 6 CCR 1007-3, should be the reference cited.

CDH MEETING MINUTES:

9. This comment pertains to some incorrect references which should be corrected.

RESPONSE:

The source for the review of 90-day accumulation storage in the Building 865 Drum Storage Area, in both Sections 1.8.1 and 1.8.7, is J. Norris, 1988. The closure plan has been revised for Section 1.8.7 (attached page 53) to reflect the correct reference source.

The code reference in Section 1.12 has been revised (attached page 64).

1.8.7 Existing Conditions of Area

There is no visual evidence or documented reports of spills or leakage in the storage area. As determined by a site visit in November 1986, the area contained one or two drums at that time. The area is currently designated a 90-day accumulation area. The need for a 90-day accumulation point in this area is currently under review (Norris, 1988).

1.8.8 Geologic Setting

A description of the geologic setting of the Building 865 drum storage area is not necessary since the building provided secondary containment to the area and there have been no known releases to the environment from the area.

1.9 Description of the Building 883 Drum Storage Area

1.9.1 Dates of Operation

The Building 883 drum storage area (Figure 2) has been used since 1981. The storage area is still in use for less than 90-day storage (Rowzee, 1986 and Rowzee, 1988).

storage area. The cargo container that was used outside of Building 334 prior to August 1986 was located adjacent to the Building 444/453 storage area in the fall of 1986 (Gibson, 1986). This cargo container was moved out of this area to the RFP main hazardous waste storage area, identified as Unit #1 in the RCRA Part B Permit Application (U.S. Department of Energy, 1987a). A radiation survey of the area identified above background levels of ionizing radiation at some locations of the Building 444/453 drum storage area.

1.11.8 Geologic Setting

The geologic setting of the Building 444/453 drum storage area is discussed in Section 1.10.8.

1.12 Maximum Extent of Operation

A closure plan must "identify the maximum extent of the operation which will be unclosed during the life of the facility" [6 CCR 1007-3, Section 265.112(a)(1)]. The estimate must be high enough to ensure that if an inspector came onto the facility, none of the conditions observed would exceed those stated in the plan.

CDH OCTOBER 16, 1988 COMMENT:

10. 6 CCR 1007-3, Section 265.113(b)(2) indicates that in order for the Department (CDH) to approve an extension of the 180-day closure period, the owner/operator must have taken and continue to take "all steps to prevent threats to human health and the environment." The inclusion of the general monitoring and security procedures at the plant, taken from the 1986 "Annual Environmental Monitoring Report" does not specifically address the protection of human health and the environment at the unit(s) that are not operating that are undergoing closure. Explain the unit-specific procedures RFP will use in order to prevent threats to human health and the environment.

CDH MEETING MINUTES:

10. Schedules of the closure and the protection of human health and the environment were once again discussed, see 2a. above. A case must be made for each specific site to go beyond the 180-day limit for closure. The schedules must be reconsidered - CDH intends to issue the plans for public comment, not to have Rockwell/DOE revise them.

RESPONSE:

A basic discussion of the protection of human health and the environment is provided in the existing closure plan, Section 1.14.4 (Justification for Extension of Schedule). The closure plan addresses the actions that will be taken at this unit to protect human health and the environment. Specifically, removing any stored hazardous waste, sampling the soils in the storage area, the installation of monitoring wells if necessary, and the ground-water monitoring between the storage yard and off-site areas of the plant.

Soil remediation will be implemented if the respective container storage area is determined to be a contributing source resulting in exceeding the ground-water protection standards at the applicable point of compliance. Ground-water protection standards are defined in Section E of the Post-Closure Care Permit Application.

CDH OCTOBER 16, 1988 COMMENT:

11. The floor screening survey for removable beta-gamma radiation, from Section 3.2.2.2, must be stated as 1000 dpm/100 square centimeters, and not "less than the activities defined in Table XII." The beta-gamma screening level for fixed contamination must also be explicitly stated and not referred to as "less than those defined in Table XII" where various values are given. Radioactive Contamination levels are based on ALARA, or "as low as reasonably achievable." The values presented in Table XII are the maximum acceptable, and efforts must be made to reduce values further.

RESPONSE:

The closure plan has been revised (attached page 94) to state specifically that removable beta-gamma contamination must be less than 1000 dpm/100 square centimeters, as shown in the table Summary of Acceptable Surface Contamination Levels, Table XII. The beta-gamma limits for fixed contamination are also explicitly stated.

The values in Table XII are listed for "average," "maximum," and "removable" contamination levels. Reasonable efforts will be made to remove concrete contamination to levels below the maximum acceptable level, as described in Section 3.2.3. Foam decontamination, vacuum removal, and three rinses will be performed regardless of whether contamination is less than the maximum acceptable levels. These efforts are being executed to achieve as low as reasonably achievable contamination levels.

The floors will also be surveyed for non-removable or fixed contamination using the air proportional-type alpha survey instrument. The direct count must be less than detectable, approximately 500 dpm per 50 square centimeters, to be considered clean.

3.2.2.2 Surveying for Beta-Gamma

The floors will be surveyed for removable beta-gamma contamination by performing swipe tests and counting the swipe in a beta-sensitive smear counter. To be considered clean, the floor must have removable beta-gamma contamination less than 1,000 dpm/100 square centimeters, as defined in Table XII (Rockwell, 1985).

The floors will also be surveyed for fixed beta-gamma contamination using a Ludlum Model 31, Geiger-Mueller type instrument. The instrument probe will be placed close to and moved slowly over the floor and the count-rate reading noted. The reading must be less than 15,000 dpm/100 square centimeters, as defined in Table XII (Rockwell, 1985).

CDH OCTOBER 16, 1988 COMMENT:

12. The sampling methods presented in Appendix 4, "Rinsate Sampling Methods" do not specifically address the sampling and analysis of rinsate. Likewise, the soil sampling method presented in Appendix 7 does not address the sampling of soils found within the areas of potential contamination. Generic methods are not appropriate in these cases and sampling methods specific to the investigation must be included.

RESPONSE:

The Container Storage Facilities closure plan addresses facilities decontamination in Section 3.0. Subsection 3.2.3 specifically addresses procedures for decontamination of concrete surfaces. The concrete will be decontaminated by foam cleaning, which will be removed by vacuum techniques. The foam cleaning will be followed by rinsing three times. All rinsate will be collected and transported to a temporary holding tank. The rinsate will then be characterized for final disposition.

The rinsate sampling methods, analytical methods, and quality assurance/quality control procedures to be followed are presented in Appendices 4, 5 and 6, respectively. The appendices are reproduced from Section C (Appendix C-2, Section C-5 and Section C-7) of the RCRA Part B Permit Application.

The rinsate will be temporarily stored in a holding tank. Representative sampling of wastes in tanks is specifically addressed in Appendix 4 of

the closure plan, which conforms to 6 CCR 264.13(b)(3). The appendix details sample collection methods, sample handling and documentation, and sample shipment.

The alternatives for rinsate disposal, based on the results of the sampling and analysis, are addressed in the closure plan.

The Soil Characterization Plan in Appendix 2 specifically addresses the soil sampling methods for potential contamination areas in the container storage facilities. Sampling procedures are discussed in Section 4.3.2 of Appendix 2. This section references generic sampling procedures described in the IGMP/CSPCP (Installation Generic Monitoring Plan/Comprehensive Source and Plume Characterization Plan), which are reproduced for convenience in Appendix 7 of the closure plan. Appendix 7 was not intended to address site specific sampling procedures.

CDH OCTOBER 16, 1988 COMMENT:

13. Section 5.1 states that ground-water monitoring will be provided if contaminated soils are encountered all the way to the water table. Ground-water monitoring will also be required under a Part 264 Post-Closure Care Permit if the container storage units cannot be "clean-closed" but must be closed as a landfill. 6 CCR 1007-3, Part 264, Subpart F indicates that a ground-water monitoring system must consist of at least "a sufficient number of wells installed at appropriate locations and depths to yield ground-water samples from the uppermost aquifer." Section 5.1 of the closure plan states that "three downgradient monitoring wells and one upgradient well will be located at each container storage facility requiring ground-water monitoring." These numbers from Part 265, are not absolute standards, and will be subject to refinement by CDH, dependent on the extent of the contaminant plume and the site-specific geology and hydrogeology of the individual container storage area.

RESPONSE:

The closure plan indicates that the proposed ground-water monitoring (consisting of three downgradient monitoring wells and one upgradient monitoring well), if required, is a <u>minimum</u> program which will be revised as necessary based on the extent of the contaminant plume and the site specific geology and hydrogeology. This is the requirement for <u>detection</u> monitoring. In any case, the final monitoring plan will be submitted to CDH for approval prior to its implementation.

CDH OCTOBER 16, 1988 COMMENT:

14. 6 CCR 1007-3, Section 264.94 Table I provides a ground-water protection standard for certain constituents. If the constituent of concern is not presented in this table, then the performance standard is background according to Section 264.94(a)(1). However, an alternate concentration limit can be granted by CDH. RFP has proposed that the ground-water protection standard be the highest of: background, drinking water standards, proposed drinking water standards, maximum contaminant levels (MCLs) or Colorado Pollution Discharge Elimination System (COPDES) permit discharge limits. If ground-water monitoring is deemed necessary at any of the container storage sites, RFP will select a ground-water protection standard, subject to approval by CDH. This standard will be included in the post-closure permit.

RESPONSE:

Ground-water protection standards for the detection monitoring wells discussed in Section 5.1 are presented in the closure plan, Section 5.2, with the understanding that ground water protection does not appear warranted at this time. Background criteria will be presented in a comprehensive plant study currently being prepared by Rockwell International. If ground-water monitoring is necessary at any of the container storage sites, a specific protection standard will be submitted to CDH for approval, and will be included in the post-closure permit. The circumstances under which ground-water monitoring and protection would be required are explained.

Ground-water protection standards at the point of compliance are defined in Section E of the Post-Closure Care Permit Application. The ground-

water discussion as presented in the closure plan and Section E appears complete in response to the CDH comment.

CDH OCTOBER 16, 1988 COMMENT:

15. 6 CCR 1007-3, Section 265.115 requires the certification of closure by an independent registered professional engineer. This engineer must be present during operations which are essential to the closure of each individual unit. Soil sampling operations, as well as contaminated soil removal and concrete decontamination, are key operations to closure certification and must be monitored by the certifying engineer.

RESPONSE:

The closure plan has been revised (attached pages 106 and 107) to include observation of portions of the soil sampling by the certifying engineer for closure certification of each unit.

7.0 CLOSURE CERTIFICATION

7.1 Certification Requirements

Certification of closure requirements is outlined in 6 CCR 1007-3, Section 265.115 and 40 CFR 265.115:

> "When closure is completed, the owner or operator must submit to the (Department of Health/Regional Administrator) certification both by the owner or operator and by an independent registered professional engineer that the facility has been closed in accordance with the specifications in the approved closure plan."

Certification by a registered professional engineer does not guarantee the adequacy of the closure procedures and does not necessarily involve detailed testing and analyses. It implies that, based on periodic facility inspections, closure has been completed in accordance with the specifications in the approved closure plan (U.S. Environmental Protection Agency, 1981).

7.2 Activities Requiring Inspections by a Registered Professional Engineer

An independent registered professional engineer will be present during operations which are essential to the closure

of each individual unit. Soil sampling operations, contaminated soil removal (if required), and concrete decontamination, are key operations to closure certification.

Field personnel will keep and sign detailed field records of soil sampling activities to further document operations performed. The field records and the results of the soil analyses will be reviewed by the engineer certifying closure.

7.3 Anticipated Schedule of Inspections by a Registered Professional Engineer

An independent registered engineer will periodically review the closure operations listed in Section 7.2 in order that a final certification of closure can be developed which states that the closure has been carried out according to the plan. The engineer will periodically obtain and review the results of chemical testing which provide a record of the progress and effectiveness of the implemented closure plan.

The independent engineer and the owner will, at the end of closure, inspect the site and certify that the closure plan

was carried out as described. Prior to final certification, deficiencies noted by the engineer will be corrected. When deficiencies have been corrected, the engineer will issue a written report to the regulatory agencies certifying that the facility has been closed according to this closure document.

CDH OCTOBER 16, 1988 COMMENT:

16. The list of sampling indicator parameters, presented as Table II in Appendix 2, may be sufficient to characterize the soils. However, if the photoionization detection (PID) or organic vapor analysis (OVA) screening of the sample material registers positive, and none of the indicator organics can be identified in concentrations high enough to account for the PID or OVA levels, then analysis for the volatile and semi-volatile organics on the Hazardous Substance List (HSL) must be performed.

RESPONSE:

The target parameters were selected to identify soils contaminated by potential releases in the storage areas based on sample analyses of the containerized wastes and knowledge of hazardous materials stored. Criteria defining soil contamination is presented for the target parameters. In order to provide additional documentation, analytical analyses will be conducted on samples with detectable PID, OVA or portable gas chromatograph readings to evaluate all volatile and semi-volatile compounds on the HSL, which will include all of the target compounds. The complete laboratory results will be presented to the CDH for review.

CDH OCTOBER 16, 1988 COMMENT:

17. State your rationale in deciding whether to conduct gross alpha and/or gross beta radiation surveys in conjunction with FIDLER surveys for gamma radiation. The surveys to be used must be explicitly stated within the closure plan. As mixed waste was potentially stored at these units, alpha, beta and gamma assessments may be necessary in order to independently identify the presence of radiation.

RESPONSE:

Appendix 2, Section 4.2.2 discusses the procedure for direct radiation survey of the container storage areas during the Phase I characterization. The surveys will be conducted to measure all three radiation parameters (gross alpha, gross beta, and gamma) and will be evaluated using field instrumentation. The procedures for the radiation survey will be in accordance with the Rocky Flats Radiation Monitoring Procedures Manual.

CDH OCTOBER 16, 1988 COMMENT:

18. 6 CCR 1007-3, Section 265.112(b)(4) requires a detailed description of the procedures for testing and sampling surrounding soils, and the criteria for determining the extent of decontamination necessary to satisfy the post-closure standard. RFP has proposed a 70 percent probability of locating contaminated areas under the random systematic sampling program. This value does not necessarily represent a high enough probability for finding potential contamination sources, especially since the radius of contamination is based on the total number of drums estimated to be added per year. This approach can easily miss small areas (one or two drums) of contamination particularly in the soil sampling grid locations for the Building 444/453 Drum Storage Area.

RESPONSE:

It has been reported since the closure plan revision that the soils will be removed for the first "lift" over the entire area of the Building 444/453 Drum Storage Area. The upper lift of the soil series at the container storage facilities is approximately 13 inches thick. A description of the soil series at all of the container storage facilities is presented in Section 4.3.1 of Appendix 2.

The 70% probability refers to finding contamination of the defined minimum area using only the unbiased, random systematic grid sample locations. The sampling plan includes both biased (stratified sampling based on the results of the Phase I surveys) and unbiased sampling. The combination of the two sampling approaches in each container storage area increases the overall probability by an undetermined amount.

At the Building 444/453 drum storage area, biased sampling beneath the first lift, which will be removed from the entire area, will be conducted at locations where surface staining was noted prior to removal of the first lift. According to the discussion in Section 4.3.4 of Appendix 2 and Figure 6, there are no anticipated biased (stratified) sampling locations based on visual surveys that have already been conducted.

If the Phase II soil sampling, as discussed in Appendix 2, Section 4.3, indicates soil contamination is present, further soil analyses (Phase III) will be conducted to define the extent of contamination and to determine further actions, as discussed in Section 4.5. The additional sampling will be conducted to identify contamination at a 90 percent confidence level. If required, the Phase III soil sampling plan will be developed and submitted to the CDH for approval within 30 days after determining Phase III sampling is required. The Phase III soil sampling plan will become part of the revised closure plan.

CDH OCTOBER 16, 1988 COMMENT:

19. The "rule of thumb" soil sampling method which consists of 16 samples, does not provide an adequate program for locating and identifying potential contaminated areas in the S&W Storage Yard, an area of almost 75,000 square feet. Several large areas of the storage yard, most of which are located in historical locations of material storage (Figure 8, page 36), are without sampling locations. The sampling plan for the S&W Storage Yard must address all areas of the yard, particularly areas of known storage. This sampling program should be in conjunction with the sampling of both the soil-stained area and the sites of known material storage during 1985.

RESPONSE:

The soil sampling in the S&W Contractor Storage Yard will include both random systematic sampling, and stratified sampling. The random systematic sampling will be comprised of 16 samples in a random grid pattern as discussed in Appendix 2, Section 4.3.4. The selection of 16 samples for random sampling in the S&W Contractor Storage Yard is a rule-of-thumb-number based on historical use of the area and engineering judgement. In addition, 11 samples will be taken at the locations of identified hazardous material storage shown on Figure 8, page 36 of the closure plan. One sample will be taken in the one area of observed soil staining. Therefore, a total of 28 soil samples will be taken by these three methods of sample location to represent soil characterization for the storage yard. The soil sampling locations are shown on Figure 5 of Appendix 2.

If the Phase II soil sampling discussed above and presented in Section 4.3 of Appendix 2 indicates soil contamination is present, further soil analysis will be conducted to define the extent of contamination and to determine further actions. Additional sampling will be conducted to determine the extent of contamination and to identify the contamination at a 90 percent confidence level.

CDH OCTOBER 16, 1988 COMMENT:

20. The background soil sampling section of Appendix 2 (page 13) indicates that "nine soil borings within one background soil plot will be made." The location of the background soil plot as well as the placement of the borings must be indicated within the closure plan.

RESPONSE:

The issue of background contamination will be addressed separately in a plant-wide comprehensive study and report currently being prepared by Rockwell International. This study will replace the site specific background soil sampling program presented in Appendix 2, Section 4.3.3. As soon as the plant-wide background study is complete, the report will be submitted to CDH for review.

CDH OCTOBER 16, 1988 COMMENT:

21. The determination of the vertical extent of contamination must not be limited by the ground-water table, as is stated in Appendix 2, Section 4.5. Borings should be extended until uncontaminated materials are reached, and not just until the ground-water table is encountered.

RESPONSE:

The vertical extent of contamination will be determined during the Phase III soil sampling by extending the borings to uncontaminated material as determined by field monitoring at the time of drilling. The depth of drilling will not be limited by the ground-water table.

CDH OCTOBER 16, 1988 COMMENT:

22. If RFP "reserves the right to send samples off site for analysis or to substitute equivalent methods," as is stated in Appendix 5, the alternate methods must be submitted to CDH for approval prior to their use by the facility. Trip and field blanks should always be taken in order to assure the accuracy of reported results. Explain how the Quality Assurance/Quality Control Procedures for the taking of trip or field blanks, found in Appendix 6, "will increase personnel chemical or radioactive exposure above ALARA levels."

RESPONSE:

Alternate off-site locations and methods of sample analyses will be submitted to CDH for review prior to implementation.

Sampling for site characterization at the container storage facilities, including field and trip blanks, will not involve personnel exposure above ALARA levels. Potential exposure above ALARA levels applies to sampling in "glove boxes and other controlled atmosphere environments", as stated in Appendix 6. Field and trip blanks obtained during the course of this closure plan will not increase personnel chemical or radioactive exposure above ALARA levels. Field and trip blanks will always be taken to assure the accuracy of reported results.