

CIMARRON ENVIRONMENTAL RESPONSE TRUST

Facility Decommissioning Plan – Rev 2

DP SECTION 6 – REVISIONS TO THE LICENSE

DP SECTION 7 – ALARA ANALYSIS

DP SECTION 11 – RADIATION PROTECTION PROGRAM

DP SECTION 14 – QUALITY ASSURANCE

DP SECTION 15 – FACILITY RADIATION SURVEYS

DP SECTION 13 – RADIOACTIVE WASTE MANAGEMENT

Note: Information provided herein consists of partial or incomplete images and information taken from multiple other data sources. It is provided for summary purposes only and should not be relied upon as technically complete or comprehensive.

March 29, 2021

DP Section 6 – Revisions to the License

License Condition 8 – Possession Limit

License Condition 10 – Final Survey & On-Site Disposal

License Condition 23 – On-Site Disposal

License Condition 26 – Radiation Protection Plan

License Condition 27 – Site Decommissioning

License Condition 8 – Possession Limit

Possession limits for uranium:

- Retain 100 g limit for U-235 > 5% enriched
- Retain 1,200 g limit for U-235 in process
- Retain 2,000 kg of natural & depleted uranium
- Add 0.5 effective kg limit for U-235 *for all SNM on site*

Retain 6,000 kg limit for thorium

Add limit of 10 g for Tc-99

License Condition 10 – Final Survey & On-Site Disposal

License Condition 10 contains 39 references

- 12 relate to on-site disposal (BA4)
- 11 refer to final status surveys (1 for Pu)
- 8 to the “Annex A” RPP
- 2 to possession limits
- 2 duplicates
- 2 *may* be retained (related to Subarea F surveys)
- Recommend deleting LC 10 – may relocate Subarea F references elsewhere

License Condition 23 – On-Site Disposal

- Authorizes burial of up to 500,000 cu ft of soil in BA4
- Specifies 5-years of post-closure monitoring
- Requires notification on land title
- Requires installation of cairns

License Condition 26 – Radiation Protection Plan

License Condition 26 contains 8 references

- 5 relate to “Annex A”
- 2 relate to 24/7 security guards
- 1 is a license amendment request now addressed in LC 26 & 27

License Condition 27 – Site Decommissioning

LC 27(a) contains 9 references

- 4 relate to 1995 Decommissioning Plan
- 4 relate to final status survey methods
- 1 incorporates the 1998 DP – Groundwater Evaluation Report

LC 27(b) references *all* wells for *eight* quarters

LC 27(c) addresses survey methods for Subarea O

LC 27(d) addresses access gates to the “Cimarron facility”

DP Section 7 – ALARA Analysis

Remember:

- Dose to workers will be < 100 mrem/yr
- Dose to members of the public will be negligible

Concept: Is it justifiable to go below DCGL from a cost-benefit perspective?

The cost-benefit analysis presented in Section 7 indicates that cost per man-rem avoided requires the expenditure of approximately \$202,000.

DP Section 11 – Radiation Protection Program

11.1 – Air Sampling

11.2 – Respiratory Protection

11.3 – Internal Exposure

11.4 – External Exposure

11.5 – Summation of Internal & External Exposure

11.6 – Contamination Control

11.7 – Instrument Program

11.8 – Nuclear Criticality

11.9 – HP Audits, Inspections & Recordkeeping (no slide)

11.10 – Special Nuclear Material Control & Accounting

Section 11.1 & 11.2

Air Sampling

- Analysis provided in Appendix A of the RPP
- Limited potential for generation of airborne radioactive material
- Air sampling for a minimum of first 4 spent resin exchanges

Respiratory Protection

- None envisioned
- Provisions described, if a respiratory protection program is needed.

Section 11.3, 11.4, & 11.5

Internal Exposure Determination

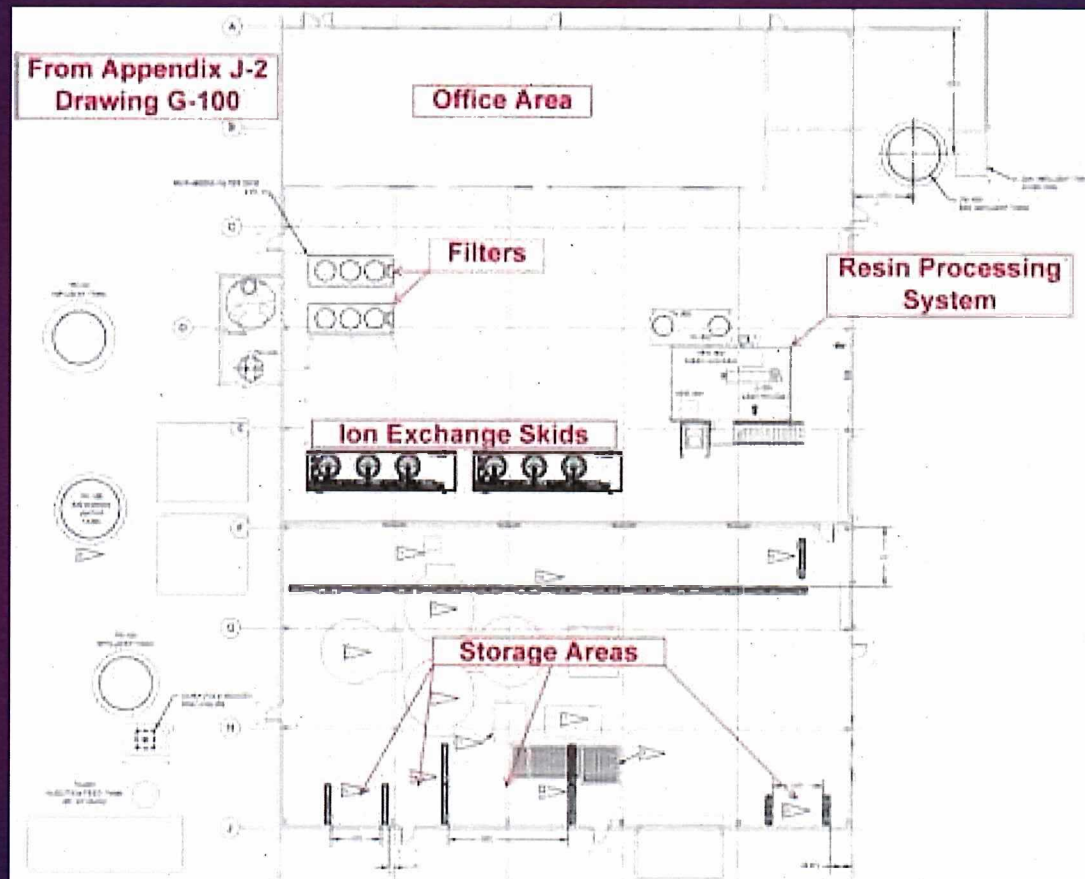
- Analysis provided in Appendix A of the RPP
- Limited potential for generation of airborne radioactive material
 - Less than 0.2% ALI for uranium
 - 0.22% ALI for Tc-99
- Air sampling to verify the effectiveness of design control and validity of analysis

External Exposure Determination

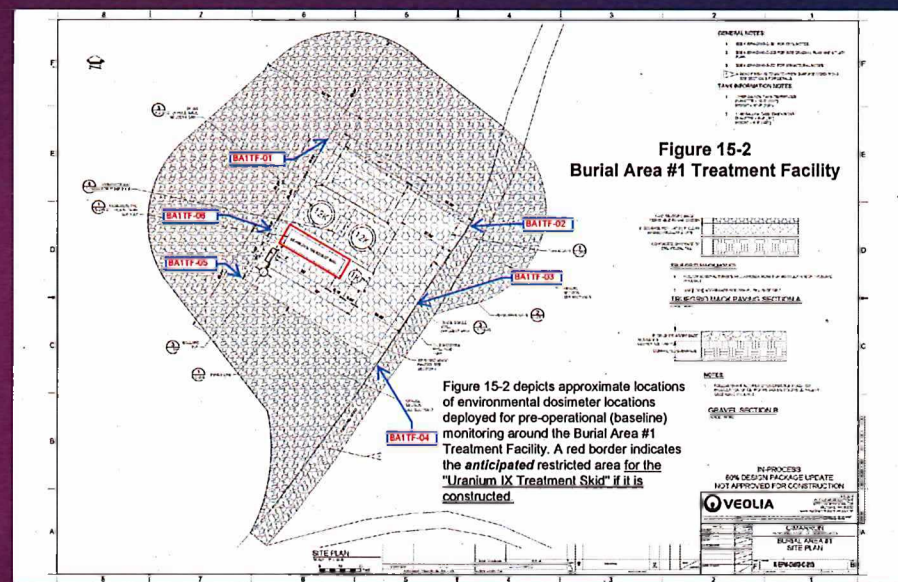
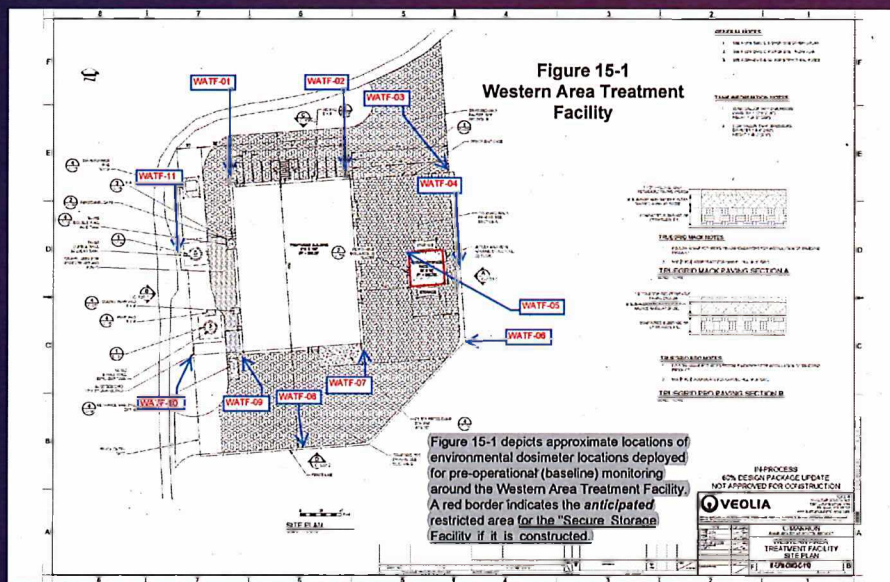
- Highest dose rate for fully loaded resin vessel - 0.024 mrem/hr @ 30 cm.
- Area dosimeters will be deployed – Locations to be determined
- No personnel monitoring required
- Environmental dosimeters deployed – collecting baseline data

Summation of Internal and External Dose – Not required

Restricted Areas



Environmental Dosimeter Locations



Section 11.6, 11.7

Contamination Control – Addressed in RPP

Instrument Program

- Inventory of portable survey instruments provided in RPP
- Benchtop alpha/beta sample counter
- Laboratory analyses provided by offsite vendor

Manufacturer	Model	Probe	Min. Quantity	Description
Ludlum	12	44-9	2	Instrument Type: Handheld analog ratemeter with a GM pancake-type detector.
Ludlum	19	N/A	2	Instrument Type: Gamma micro-R meter
Ludlum	2360	43-93	3	Instrument Type: Alpha-Beta Ratemeter, Scaler, and Data Logger with a dual phosphor scintillation probe.
Ludlum	3030E	43-10-1	1	Instrument Type: Dual channel, scaler-type sample counter with a dual phosphor detector.

Section 11.8 – Nuclear Criticality Safety

Groundwater Handling and Storage

- No special precautions required

Groundwater Treatment by Ion-Exchange

- Process and administrative controls monitor and control accumulation of uranium in the groundwater treatment system

Packaged Materials

- Packaged waste meet “fissile exempt” concentration limit
- None of the processes conducted are capable of extracting enriched uranium from packaged waste

Nuclear Criticality Accident Monitoring System

- Possession limit of 1200 grams of U-235 obviates the need for a criticality monitoring system

Section 11.9 – HP Audits, Inspections, & Records

Audits

- Annual review of RFP content and implementation
- Periodic audits conducted in accordance with QAP

Surveillances

- May be conducted at any time

Records

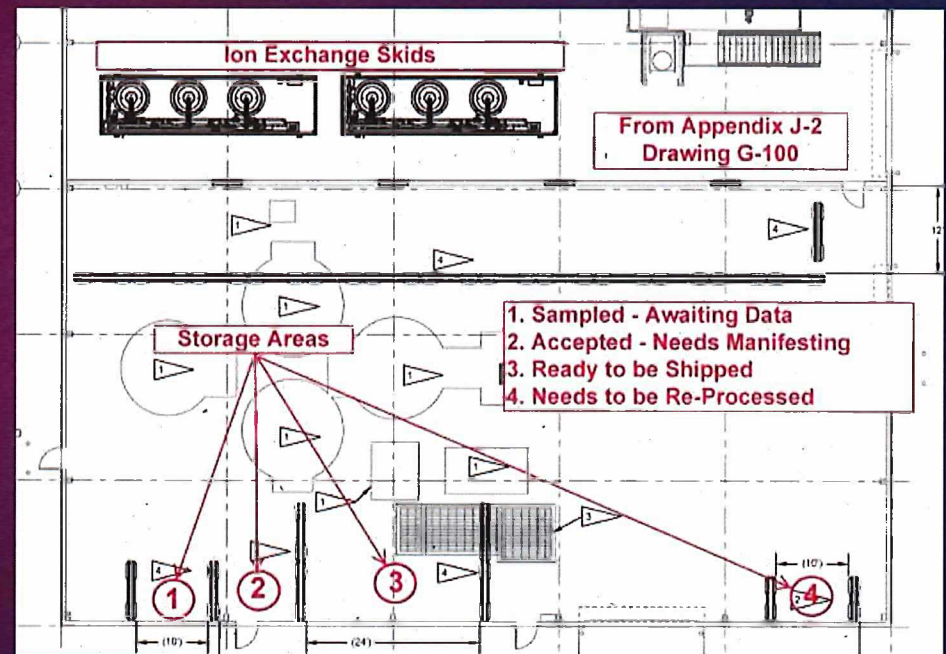
- All audits and surveillances are documented
- Issues identified by audits or surveillances are addressed through the corrective action program in the QAP.

Section 11.10

SNM Inventory, Control, & Accounting

Material Control & Accountability

- Details in RPP, Section 11.2
- Provides administrative & physical controls for SNM
- Based on crit safety analysis assuming 7.33% enriched uranium
- Shipped spent resin will be below fissile exempt limits; may require blending with inert material



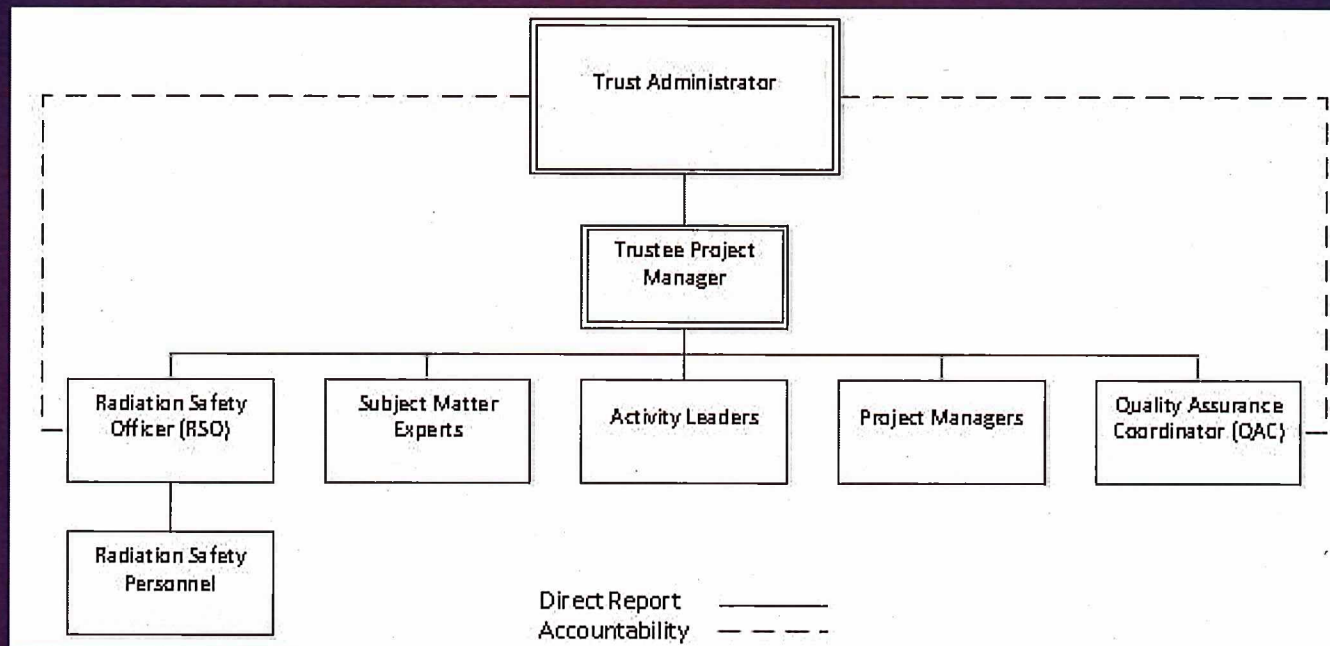
DP Section 14 – Quality Assurance

Quality Assurance Program – Appendix O

- The CERT Quality Assurance Program provides adequate controls to support the Site decommissioning.
- Designed to satisfy the requirements of:
 - NUREG-1757
 - NRC Regulatory Guide 4.15
 - Includes some requirements from NQA-1 not addressed in the above.

DP Section 14 – Quality Assurance

14.3 Organization & Responsibilities



Note: Key positions identified in the QAPP were addressed in a previous presentation.

DP Section 14 – Quality Assurance

14.4 – Qualification & Training

- Instruction for performing activities affecting quality.
- Content & frequency of training
- Personnel qualification
- Documentation of training
- Evaluation of work performance

DP Section 14 – Quality Assurance

14.5 – Procedures & Instructions

- Requirements for Site activities are defined in written operating procedures and instructions.
- “Instructions” include Activity Plans for non-routine activities as well as contractual design and construction requirements.

DP Section 14 – Quality Assurance

14.6 – Design

Design control requirements include:

- Contractor and Subcontractor (Vendor) Design
- Design Interfaces
- Design Inputs and Objectives
- Design Outputs
- Design Review
- Design Changes

DP Section 14 – Quality Assurance

14.7 – Procurement and Control

- Requirements for procurement and control of materials, equipment, parts, and services.
- Includes the inspection of Materials, Equipment, and Parts (Items)

DP Section 14 – Quality Assurance

14.8 - Sampling, Analysis, Measurements, and Processes

- Quality requirements for control of sampling, analyses, measurements, and processes.
 - Radiation Protection
 - Environmental and Effluent Sampling
 - Laboratory Quality Control
 - Construction Quality Control
 - Process Control
 - Data Quality Control

DP Section 14 – Quality Assurance

14.9 – Control of Measuring & Test Equipment

- Calibration required.
- Out of service equipment is tagged/labeled.
- Inventory required.

14.10 – Handling, Storage, and Shipping

- Control the handling, storage, shipping, cleaning, and preservation of material and equipment to prevent damage or deterioration.

DP Section 14 – Quality Assurance

14.11 – Control of Nonconforming Items & Equipment

- When items or equipment do not comply with quality requirements, they are designated “nonconforming”.
- Nonconforming items or equipment are controlled to prevent inadvertent installation or use by labeling, tagging, and/or isolation.
- Nonconformances also include not correctly following procedures and errors in documentation.

DP Section 14 – Quality Assurance

14.12 – Document Control

- Describes how quality critical documents are developed, issued, revised, and stored.
- Addresses the retention of retired documents.

14.13 – Audits & Assessments

- Regular evaluation of the effectiveness of the Cimarron QA program.
- Requires annual RP program and triannual QA program audits.

DP Section 14 – Quality Assurance

14.14 – Corrective Action

- Corrective action for non-conformances and incidents is implemented through the “Notice of Deficiency” (NOD) reporting process.
- Corrective action is documented.
- Effectiveness of corrective action is documented. This may require continuing observation of performance.

DP Section 15 – Facility Radiation Surveys

15.1 – Release Criteria

- Release Criteria were presented in Section 4 of the DP

15.2 – Characterization Surveys

- There is no longer a need for characterization of facilities – all have been released for unrestricted use.
- Characterization surveys now consist of assessment of the nature and extent of impact to groundwater (primarily) and surface water (a function of discharging groundwater).

DP Section 15 – Facility Radiation Surveys

15.3 – In-Process Surveys

- In-process groundwater monitoring (discussed in Section 8.8)
- Influent and effluent monitoring (discussed in Sections 8.3 and 8.6)
- Shipping package surveys
- Release surveys (presented in Section 4)
- Routine surveys

DP Section 15 – Facility Radiation Surveys

15.4 – Final Status Survey Design

- In accordance with NUREG/CR-5849
- Will address processing & waste storage areas
- Will address piping via “cutouts”
- Will include release surveys for equipment that remains
- Process will be based on knowledge from operations

15.5 – Final Status Survey Report

- Objective will be release for unrestricted use and license termination.

DP Section 13 – Radioactive Waste Management

13.1 – Solid Waste

- Spent Resin
- Biomass
- Potentially Contaminated Material
- Storage of Solid Radwaste

13.2 – Liquid Radwaste – NONE!

13.3 – Mixed Waste – NONE !