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ROCKY FLATS CLEANUP AGREEMENT IMPLEMENTATION SUCCESSES AND CHALLENGES

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ABSTRACT

On July 19, 1996 the U. S. Department of Energy (DOE), State of Colorado (CDPHE), and U. S. Environmental Protection Agency (EPA) entered into an agreement called the Rocky Flats Cleanup Agreement (RFCA) for the cleanup and closure of the Rocky Flats Environmental Technology Site(RFETS or Rocky Flats). Major elements of the agreement include: an Integrated Site-Wide Baseline; up to twelve significant enforceable milestones per year; agreed upon soil and water action levels and standards for cleanup; open space as the likely foreseeable land use; the plutonium and TRU waste removed by 2015; streamlined regulatory process; agreement with the Defense Nuclear Facilities Safety Board (DNFSB) to coordinate activities; and a risk reduction focus.

Successful implementation of RFCA requires a substantial effort by the parties to change their way of thinking about RFETS and meet the deliverables and commitments. Substantial progress toward Site closure through the implementation of RFCA has been accomplished in the short time since the signing yet much remains to be done. Much can be learned from the Rocky Flats experience by other facilities in similar situations.

BACKGROUND

In March 1951, the Atomic Energy Commission selected an area 15 miles northwest of downtown Denver, Colorado, as the site for a nuclear weapons production facility. Nuclear weapons production began in April 1952 , and Rocky Flats became part of the large nation nuclear weapons production mission complex. From 1952 to 1989, the primary mission of Rocky Flats was the production of nuclear and non-nuclear components for the nation's nuclear weapons arsenal. In 1989, nuclear production work at Rocky Flats was abruptly halted to address environmental and safety concerns. This suspension of operations was initially thought to be temporary. However, the President's 1992 announcement of the cancellation of the W-88 Trident Warhead Program brought to a halt Rocky Flats' sole remaining nuclear

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product line. In 1993, the Secretary of Energy announced that Rocky Flats would no longer have any nuclear weapons production mission, and production never resumed at Rocky Flats.

Nearly 40 years of nuclear weapons production at Rocky Flats left behind a legacy of radioactive waste and environmental contamination. This nuclear weapons legacy has left facilities, ground water , soil, and surface waters at Rocky Flats contaminated with chemical and radioactive substances which now pose potential public and worker health and safety risks. While the impacted area is only about 300 of the 6,250 total acres at the site, the urgency is great because of the proximity and geographic relationship to the Denver metro area.

CURRENT MISSION AT ROCKY FLATS

Today, the mission of Rocky Flats is: "Manage waste and materials, clean up and convert the Rocky Flats Site to future beneficial use in a manner that is safe, environmentally and socially responsible, and physically secure." Key mission activities include risk reduction through Special Nuclear Material (SNM) stabilization and consolidation; waste management; environmental remediation; and facility deactivation, decontamination, and decommissioning. As with the past production mission, safety remains the top priority. Kaiser-Hill Company, L.L.C. (K-H), the new integrating management contractor for Rocky Flats, will safely and cost effectively close or take down buildings, reduce the costs of operations, clean up and close Rocky Flats.

WHY ROCKY FLATS NEEDED RFCA

From a legal perspective, the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) requires federal facilities which are Superfund sites (included on the National Priorities List) to enter into a Federal Facilities Agreement with the Environmental Protection Agency. Corrective Action Orders are required by the Resource Conservation and Recovery Act (RCRA) and the Colorado Hazardous Waste Management Act for RCRA facilities with contaminated areas slated for clean up. RFCA then, combines the CERCLA and RCRA requirements and defines the regulatory path forward for the clean up of the Rocky Flats Site.

From a process and political perspective, the downward pressure on funding and the public pressure to eliminate the risks require the Site to make progress and do the "right" work first. RFCA creates a framework for decisions to be made rapidly, assigns funding to the highest Site priorities, and places all Site activities in an Integrated Site-Wide Baseline.

Finally, from a practical perspective, the then existing agreement between DOE, EPA and CDPHE, the Interagency Agreement (which RFCA replaced) was out of date, and impossible and inappropriate to comply with. Also, the Site mission had changed from production to clean up and closure and a new agreement to reflect that change was necessary.

MAJOR ELEMENTS OF RFCA

While RFCA contains all of the usual legal elements common to environmental compliance agreements, there are major elements which set it apart from other such agreements throughout the DOE complex.

Vision – a key element of the successful coalescing of interests was the creation of a vision for the Rocky Flats Site. While there was consensus that the Site needed to be cleaned up and closed down, there was no common vision for what that meant. The Vision was a result of substantial input from the community, political leaders, regulators, and DOE and its contractors. It describes the end-state of Site closure and clean up, specifies the land use of open space to which the clean up will be targeted, highlights the primary goal of reducing risk, and commits to achieve surface water quality acceptable for any use.

Goals and objectives to achieve the Vision – the first section of RFCA is the Preamble which describes in some detail the goals and objectives necessary to achieve the Vision. While the preamble is not enforceable, it is the parties' statement as to how the vision is to be interpreted and, therefore, provides guidance on the substantive work to be performed under the agreement.

Regulatory process and legal framework – the meat of the formal agreement is the parties' legal commitments as to how RCRA and CERCLA will be applied at the Site, and how the state and EPA will exercise their jurisdictions to reduce work barriers and encourage the "right" work to be accomplished. The RFCA: 1) establishes lead regulators by geographic area, 2) determines clean up will occur through the implementation of accelerated remedial actions, 3) mandates all work at the site will be prioritized and scheduled through the Integrated Site-Wide Baseline, 4) outlines how disputes between the parties will be resolved expeditiously, and 5) commits the agencies to setting limited and significant regulatory milestones.

Action Levels And Standards Framework For Surface Water, Ground Water, And Soils (ALF) – this attachment to RFCA is perhaps the most significant enabler of clean up work. It establishes up front (prior to the Record of Decision[ROD] or Corrective Action Decision[CAD]), the standards and action levels for accelerated remedial actions, thus eliminating the need for debate when each

individual action is proposed. While it does not pre-determine what is Applicable or Relevant and Appropriate Requirements (ARARs), it is expected that ALF will inform EPA's ultimate decision.

Building Disposition process and standard – establishes the way and standard by which the Site will disposition all facilities and structures. Establishes that decommissioning facilities is a CERCLA action and that the generated waste is remediation waste. The 15/85 mrem radiation standard used to establish the soil action level will be applied to buildings as they are decontaminated and waste is managed.

Environmental restoration ranking – all areas on Site in need of remediation are prioritized annually to ensure the highest risk problems are being managed first.

DNFSB/DOE/EPA/CDPHE Memorandum of Understanding (MOU)– the agencies involved in some way with nuclear issues at the Site have entered into a memorandum of understanding to define their respective roles and responsibilities. The MOU defines the lead agency to provide efficiencies and avoid overlap or conflicting direction to the Site.

No Action/No Further Action/No Further Remedial Action Decision Criteria – this attachment to RFCA lays out the decision criteria to determine when no action or no further action is required at a specific geographic area to protect the public health or the environment.

RFCA IMPLEMENTATION

On July 19, 1996, the parties, DOE, CDPHE, and EPA signed RFCA and began the substantial task of implementation. K-H, as the integrating management contractor to DOE/RFFO, has a major responsibility for the successful implementation of RFCA. The challenge, considering the constraints identified earlier, is to do the "right" things "right" – or select the "right" things to do, and do the "right" things well. RFCA contains substantive guidance in both areas and a structure for successful implementation.

Determining The "Right" Thing To Do

Vision

The Vision was created by the parties with the heavy involvement and general concurrence of the interested public and elected officials. As discussed above, the Vision contains a consensus among the parties, elected officials and most citizens of Colorado about the closure and future of Site. In

addition to specifying clean up to open space uses, it envisions surface waters leaving the site will be of a quality to be used for all uses. It directs the parties to undertake a risk based closure, dealing with the high risks first.

Preamble

The Preamble gives specific goals and objectives the parties believe necessary to implement the Vision successfully. Specific direction about the "right" things to do is given in the following areas: Disposition of SNM and TRU wastes; Waste management; Water quality; Clean up; Land use; Environmental monitoring; Building disposition; and, Mortgage reduction.

Ten-Year Plan

The Ten-Year Plan (TYP) is the RFCA implementing plan. It delineates the specific tasks, resources, and sequencing necessary to close and clean up the Site. The risk ranking of clean up work and other site needs are incorporated into the plan.

Action Levels And Standards Framework For Surface Water, Ground Water, And Soils

The ALF provides specific direction concerning when an action is required given certain levels of contamination in the environment. It does not specify what action is required – just that an evaluation must be made to determine what action to take.

Regulatory drivers

The RFCA does not modify or control all regulatory drivers, it coordinates them. RCRA Corrective Actions and CERCLA remediation are strictly controlled by RFCA while other drivers such as RCRA permitting, NPDES, CAA, worker safety, previously existing orders (Site Treatment Plan), and NEPA remain independent but coordinated activities. Many of these drivers have specific requirements as to the "right" thing to do. The parties have agreed to align the requirements of the independent authorities with the resource and planning constraints under RFCA whenever possible.

Consultative process with regulators

A key element of determining the "right" thing to do is the consultative process to which all parties have committed. From early scoping to project close out, the parties agree to communicate fully and openly. This process importantly includes budget formulation, planning, and the development of the Integrated Site-Wide Baseline.

Public involvement

Lastly, RFCA requires substantial public and elected official consultation to ensure the choices for the "right" things to do coincide with the public wishes to the greatest extent possible.

RFCA's General Direction About The "Right" Thing

Risk reduction focus

The parties have agreed to approach the clean up and closure of Rocky Flats as a risk reduction project – eliminating the highest risks first. In the short term, that means dealing with the high risk SNM and Individual Hazardous Substance Sites(IHSSs) in the early years. Modifying this pure risk approach, however, is the need for mortgage reduction to lower baseline costs, and work logic concerns to increase efficiency of the work being performed. In the long term, the primary driver is the protection of surface water leaving the site since that is the pathway of enduring concern.

Bias for materials to be removed from Site

The RFCA targets Plutonium (Pu) and other Special Nuclear Material (SNM) to be removed from the Site by 2015 (even sooner under the Ten-Year Plan) and all Transuranic (TRU) wastes as soon as possible. RFCA states a bias for removal of all low-level and low-level mixed (LL/LLM) waste off-site with the contingency of a (Corrective Action Management Unit (CAMU) designation and construction for storage of the wastes if the rate of removal from the Site cannot keep up with the production of the waste.

Future land use – open space

A key decision in RFCA is the commitment of the parties to clean up to a level which supports open space use (significantly not residential) of most of the 6,250 acre Site. A small part of the current industrial area may be converted to commercial industrial use.

CHOICES FOR "RIGHT" WORK CODIFIED

Once the "right" work has been selected through the TYP process, it is codified and enforced by the following:

Integrated Site-Wide Baseline(ISB)

The ISB contains all work to be performed on-site through closure. It is a life-cycle baseline which shows the work elements by time, scope, and dollars. The ISB is revised at least annually to reflect changes in budget and priorities.

Limited and relevant milestones and target activities

From the ISB, the regulators select annually, in consultation with the Site and DNFSB, several significant work elements as enforceable milestones and target activities for the current FY, FY+1, and FY+2. A maximum of 12 may

be selected for each of those three years and they may also select a "few" major activities as out-year milestones. Milestones are enforceable with stipulated penalties and relate to environmental and waste management activities while target activities are not enforceable and relate to SNM activities.

DOING THE WORK "RIGHT"

Clean-up work under RFCA is conducted as accelerated actions until the Corrective Action Decision/Record of Decision (CAD/ROD) is issued for the operable units. Since the CAD/ROD is not expected until near the end of the closure, most work will be done as accelerated actions. Accelerated actions may be authorized by three different documents (actions).

- A Proposed Action Memorandum (PAM) authorizes work to be completed during a period no longer than six months.
- An Interim Measure/Interim Remedial Action (IM/IRA) authorizes work to be completed during a period longer than six months. Also may be developed for accelerated actions where several remedial options are available.
- A RFCA Standard Operating Protocol(RSOP) authorizes any repetitive work of substantially the same character. Once an RSOP has been approved, the Site needs only to notify the regulators prior to commencement of the work. No additional regulatory approval is required.

During the execution of the work, the parties may implement a field modification on the spot to deal with minor modifications in the plan for work necessitated by changed conditions and/or opportunities for increased efficiencies. During the work planning and execution, the parties are obliged to consider what is truly "necessary and sufficient" for the safe and successful completion of the work and to look for opportunities for cost, time, and process savings.

SUCCESSES TO DATE

When RFCA was signed, the parties had not been able to complete the negotiations on the action level for soils contaminated by radioactive elements. The parties agreed to an aggressive schedule for determining how to apply the 15/85 mrem standard at the Site. On October 18, 1996, the application of the dose based action level of 15/85 mrem was agreed to by the parties as the standard to apply to all accelerated action at the Site. The 15/85 mrem approach was adapted from the EPA draft "Radiation Site Cleanup Regulation" rule and applied to the Site using site condition in the RESRAD model.

All Milestones and Target Activities (M&TAs) established in RFCA for FY 96 were accomplished. These included significant environmental clean up, waste management, and SNM activities. The new M&TAs for FY97, 98, and 99 have been

established by the regulators and are currently in effect while a dispute continues over several of them.

Water quality standards and use classifications agreed to by the parties in RFCA could not become final until Colorado Water Quality Control Commission(WQCC) adoption. At the hearing in December all of the agreements in RFCA were adopted by the WQCC including surface water standards for Pu(0.15 pCi/l), Am(0.15 pCi/l), and Nitrates(100 mg/l) and removal of the use classifications.

One of the requirements of RFCA was the creation of the Implementation Guidance Document (IGD) – a product intended to provide the parties with a road map for smooth implementation of the sometimes unclear legal language of RFCA. The document has been jointly drafted by the parties and should be approved by the time of WM97.

A major success of RFCA implementation is the attitude and approach of all parties, typified by the vocabulary used to discuss the Site issues. Common words in use now include: cooperation, collaboration, team, closure, efficiency, completion, end, helpful, and integration.

In addition to the above specific RFCA products, perhaps a more important measure of the success of implementation is reflected by the real change that has occurred at the Site and work being done. While the following list is not all directly attributable to RFCA (and in fact includes RFCA as an accomplishment), it is related to the new way of thinking and occurred during, and largely as a result of, Kaiser-Hill's management of the Site.

- Established Vision and closure project strategy
- Moved from 70-year/$22B to 10-year/$6-8B project
- Landmark regulatory agreement (RFCA)
- Optimized workforce (reduction of 2400)
- New labor agreement (increased productivity)
- Shipped more waste off-site than previous 5 years
- D&D'd first Pu contaminated building
- Cleaned up 4 of top 10 IHSSs
- Reduced baseline mortgage costs by $60 M
- Improved safety performance
- Generally done more for less

MAJOR TASKS AHEAD

D&D

Following SNM stabilization and safe storage/shipment, the largest task at Rocky Flats is the deactivation, decommissioning, decontamination, demolition, and disposal(D^5), of all of the facilities and structures on site.

RFCA calls for a Decommissioning Program Plan (DPP) to describe the last four "Ds" of the D^5 effort. It requires a building-specific Decommissioning Operations Plans (DOP) for the complex Pu buildings. RFCA also provides the opportunity to perform multiple decommissioning efforts on 95+% of the structures through the use of a one-time approval of the DPP and decommissioning RSOP.

The biggest remaining technical issue is the details of how D^5 will be planned and performed. Questions include: How to apply the 15/85 mrem standard to D^5 ? How will the levels of radiological contamination be measured? What is the relationship to ALARA? What are the implications to the volumes and types of waste requiring management? What are the implications to worker safety?

Firm ISB for FY97 and out-years

The ISB is the key document tying all activities at the Site to schedule and resources. It is critical to all efforts at the Site to produce a baseline at the earliest time possible, one that is credible to the regulators, public, politicians, DOE headquarters, and to all people working at Rocky Flats. It must tie to the realities of this year and the TYP effort.

Education about RFCA

It is essential to the success of RFCA implementation to have informed management, workforce, regulators, elected officials, and stakeholders. All parties to the agreement and K-H must continually work to improve the understanding of the involved individuals and organizations to ensure common goals and expectations.

Find adequate resources to support the expectations and the ISB

Through the negotiations and public involvement related to RFCA, great expectations have been created for the rapid clean up and closure of Rocky Flats. Should insufficient resources be provided to the Site, which would inhibit reasonably paced progress, the cooperative team approach created by RFCA would be severely strained.

Culture of site personnel and regulators

We must rid ourselves of stovepipe thinking and behavior which impedes the full integration of activities on-site. The attendant distrust and turf battles needlessly delay work and consume resources in an unacceptable way.

Asking employees to work themselves out of jobs

Successful implementation of RFCA means current employees will be phased out of work during the next 10 years. We must find a way to motivate the workers while they are on-site and to assist them in finding quality employment upon completion of their employment.

CONCLUSIONS

Rocky Flats, its regulators and the community have accomplished a great deal in a short time to move the Site in the positive direction of rapid and safe, clean up and closure. We have created a vision and a vehicle to achieve it. While major tasks lie ahead, the recent successes create our greatest opportunity to make quantum changes and progress at Rocky Flats. Success breeds success and progress breeds progress. For the first time, the community agrees on the definition of success and progress. We have excellent leadership at DOE/RFFO, K-H, the regulators, and among elected officials. It is now time to perform.