

ROCKY FLATS STEWARDSHIP COUNCIL

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Jefferson County -- Boulder County -- City and County of Broomfield -- City of Arvada -- City of Boulder
City of Golden -- City of Northglenn -- City of Westminster -- Town of Superior
League of Women Voters -- Rocky Flats Cold War Museum -- Rocky Flats Homesteaders
Arthur Widdowfield

Board of Directors Meeting – Agenda

Monday, September 12, 2011, 8:30 AM – 12:00 PM

**Rocky Mountain Metropolitan Airport, Terminal Building, Mount Evans Room
11755 Airport Way, Broomfield, Colorado**

- 8:30 AM Convene/Introductions/Agenda Review
- 8:35 AM Chairman’s Review of August 12th Executive Committee meeting
- 8:40 AM Business Items
1. Consent Agenda
 - Approval of meeting minutes and checks
 2. Executive Director’s Report
- 8:50 AM Public Comment
- 9:00 AM Board Review of Stewardship Council Activities for 2011 and Initial Review of 2012 Work Plan (briefing memo attached)
- The 2011 Stewardship Council work plan provides that the board shall review its work for the year. The review shall include an assessment of how the organization can improve in the coming year, focusing on areas of weakness and opportunities for improvement.
 - The review is a first step in the board approving the 2012 work plan.
 - The attached draft 2012 work plan is an update of the 2011 plan.
 - Formal approval of the 2012 work plan will take place at the November 14th meeting.
- 9:20 AM FY 12 Budget – Initial Review (briefing memo attached)
- At this meeting the board will review the draft FY 12 budget.
 - Formal budget hearings will take place at the November 14th meeting.
- 9:35 AM Continue Triennial Review
- The board began the triennial review at the June meeting, with all governments expressing their commitment to continuing the organization for another three years.
 - At this meeting, we will begin reviewing the proposed changes to the IGA.

- 9:55 AM DOE Briefing on 2012 CERCLA Five-Year Review (briefing memo attached)
- CERCLA, one of the two federal laws guiding remediation activities of contaminated sites, requires that every five years DOE review the remedies.
 - The broad purpose of this review is to ensure that the remediation goals are being met and that the remedies continue to protect human health and the environment.
 - The last five year review for Rocky Flats took place in 2007.
 - At this meeting, DOE will outline the upcoming review and provide the foundation for subsequent briefings and technical meetings.
- 10:15 AM Host DOE Quarterly Meeting (briefing memo attached)
- DOE will brief the Stewardship Council on site activities for the first quarter of 2011 (January – March).
 - DOE has posted the report on their website and will provide a summary of its activities to the Stewardship Council.
 - Activities include surface water monitoring, groundwater monitoring, ecological monitoring, and site operations (inspections, maintenance, etc.).
 - In addition to the briefing, DOE will also introduce new Legacy Management staff.
- 11:15 AM Briefing by LeRoy Moore (briefing memo attached)
- LeRoy Moore, one of the founders of the Rocky Mountain Peace and Justice Center, has worked on Rocky Flats issues since the late 1970s.
 - LeRoy was deeply involved in many public dialogues and technical working groups surrounding the cleanup, closure, and long-term protection of Rocky Flats.
 - He will brief on his perspectives regarding the cleanup and management decisions DOE and the USFWS have made since closure in 2006.
- 11:45 AM Public comment
- 11:55 AM Updates/Big Picture Review
1. Executive Director
 2. Member Updates
 3. Review Big Picture

Adjourn

Next Meetings: November 14 (2nd Monday)
February 6, 2012

Rocky Flats Acronym List
 Prepared by Rik Getty, Rocky Flat Stewardship Council
 May 2011

Acronym or Term	Means	Definition
Alpha Radiation		A type of radiation that is not very penetrating and can be blocked by materials such as human skin or paper. Alpha radiation presents its greatest risk when it gets inside the human body, such as when a particle of alpha emitting material is inhaled into the lungs. Plutonium, the radioactive material of greatest concern at Rocky Flats, produces this type of radiation.
Am	americium	A man-made radioactive element which is often associated with plutonium.
AME	Actinide Migration Evaluation	An exhaustive years-long study by independent researchers who studied how actinides such as Pu, Am, and U move through the soil and water at Rocky Flats
AMP	Adaptive Management Plan	Additional analyses that DOE is performing beyond the normal environmental assessment for breaching the remaining site dams.
AOC well	Area of Concern well	A particular type of groundwater well
B	boron	Boron has been found in some surface water and groundwater samples at the site
Be	beryllium	A very strong and lightweight metal that was used at Rocky Flats in the manufacture of nuclear weapons. Exposure to beryllium is now known to cause respiratory disease in those persons sensitive to it
Beta Radiation		A type of radiation more penetrating than alpha and hence requires more shielding. Some forms of uranium emit beta radiation.
BMP	best management practice	A term used to describe actions taken by DOE that are not required by regulation but warrant action.
BZ	Buffer Zone	The majority of the Rocky Flats site was open land that was added to provide a "buffer" between the neighboring communities and the industrial portion of the site. The buffer zone was approximately 6,000 acres. Most of the buffer zone lands now make up the Rocky Flats National Wildlife Refuge.
CAD/ROD	corrective action decision/record of decision	The complete final plan for cleanup and closure for Rocky Flats. The Federal/State laws that governed the cleanup at Rocky Flats required this document.
CCP	Comprehensive Conservation Plan	The refuge plan adopted by the U.S. Fish and Wildlife Service in 2007.
CDPHE	Colorado Department of Public Health and Environment	State agency that regulates the site.
CERCLA	Comprehensive Environmental	Federal legislation that governs site cleanup. Also known as the Superfund Act

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	Response, Compensation and Liability Act	
cfs	cubic feet per second	A volumetric measure of water flow.
COC	Contaminant of Concern	A hazardous or radioactive substance that is present at the site.
COU	Central Operable Unit	A CERCLA term used to describe the DOE-retained lands, about 1,500 acres comprised mainly of the former Industrial Area where remediation occurred
Cr	chromium	Potentially toxic metal used at the site.
CRA	comprehensive risk assessment	A complicated series of analyses detailing human health risks and risks to the environment (flora and fauna).
D&D	decontamination and decommissioning	The process of cleaning up and tearing down buildings and other structures.
DG	discharge gallery	This is where the treated effluent of the SPPTS empties into North Walnut Creek.
DOE	U.S. Department of Energy	The federal agency that manages portions of Rocky Flats. The site office is the Office of Legacy Management (LM).
EA	environmental assessment	Required by NEPA (see below) when a federal agency proposes an action that could impact the environment. The agency is responsible for conducting the analysis to determine what, if any, impacts to the environment might occur due to a proposed action.
EIS	environmental impact statement	A complex evaluation that is undertaken by a government agency when it is determined that a proposed action by the agency may have significant impacts to the environment.
EPA	U.S. Environmental Protection Agency	The federal regulatory agency for the site.
ETPTS	east trenches plume treatment system	The treatment system near the location of the east waste disposal trenches which treats groundwater contaminated with organic solvents emanating from the trenches. Treated effluent flows into South Walnut Creek.
FC	functional channel	Man-made stream channels constructed during cleanup to help direct water flow.
FACA	Federal Advisory Committee Act	This federal law regulated federal advisory boards. The law requires balanced membership and open meetings with published Federal Register meeting dates.
Gamma Radiation		This type of radiation is very penetrating and requires heavy shielding to keep it from exposing people. Am is a strong gamma emitter.
GAO	Government Accountability Office	Congressional office which reports to Congress. The GAO did 2 investigations of Rocky Flats relating to the ability to close the site for a certain dollar amount and on a certain time schedule. The first study was not optimistic

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		while the second was very positive.
g	gram	metric unit of weight
gpm	gallons per minute	A volumetric measure of water flow in the site's groundwater treatment systems and other locations.
GWIS	groundwater intercept system	Refers to a below ground system that directs contaminated groundwater toward the Solar Ponds and East Trenches treatment systems.
IA	Industrial Area	Refers to the central core of Rocky Flats where all production activities took place. The IA was roughly 350 of the total 6,500 acres at the site.
IC	Institutional Control	ICs are physical and legal controls geared towards ensuring the cleanup remedies remain in place and remain effective.
IHSS	Individual Hazardous Substance Site	A name given during cleanup to a discrete area of known or suspected contamination. There were over two hundred such sites at Rocky Flats.
ITPH	interceptor trench pump house	The location where contaminated groundwater collected by the interceptor trench is pumped to either the Solar Ponds and East Trenches treatment systems
L	liter	Metric measure of volume, a liter is slightly larger than a quart.
LM	Legacy Management	DOE office responsible for overseeing activities at closed sites.
M&M	monitoring and maintenance	Refers to ongoing activities at Rocky Flats.
MSPTS	Mound site plume treatment system	The treatment system for treating groundwater contaminated with organic solvents which emanates from the Mound site where waste barrels were buried. Treated effluent flows into South Walnut Creek.
NEPA	National Environmental Policy Act	Federal legislation that requires the federal government to perform analyses of environmental consequences of major projects or activities.
NPL	National Priorities List	A listing of Superfund sites. The refuge lands were de-listed from the NPL while the DOE-retained lands are still on the NPL due to ongoing groundwater contamination and associated remediation activities.
OLF	Original Landfill	Hillside dumping area of about 20 acres which was used from 1951 to 1968. It underwent extensive remediation with the addition of a soil cap and groundwater monitoring locations.
OU	Operable Unit	A term given to large areas of the site where remediation was focused.
pCi/g	picocuries per gram of soil	A unit of radioactivity measure. The soil cleanup standard at the site was 50 pCi/g of soil.

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pCi/L	picocuries per liter of water	A water concentration measurement. The State of Colorado set the regulatory limit for Pu and Am at 0.15 pCi/L of water. This standard is 100 times stricter than the EPA's national standard.
PLF	Present Landfill	Landfill constructed in 1968 to replace the OLF. During cleanup the PLF was closed under RCRA regulations with an extensive cap and monitoring system.
POC	Point of Compliance (surface water)	A surface water site that is monitored and must be found to be in compliance with federal and state standards for hazardous constituents. Violations of water quality standards at the points of compliance could result in DOE receiving financial penalties.
POE	Point of Evaluation (surface water)	These are locations at Rocky Flats at which surface water is monitored for water quality. There are no financial penalties associated with water quality exceedances at these locations, but the site may be required to develop a plan of action to improve the water quality.
POU	Peripheral Operable Unit	A CERCLA term used to describe the Wildlife Refuge lands of about 4,000 acres.
Pu	Plutonium	Plutonium is a metallic substance that was fabricated to form the core or "trigger" of a nuclear weapon. Formation of these triggers was the primary production mission of the Rocky Flats site. Pu-239 is the primary radioactive element of concern at the site. There are different forms of plutonium, called isotopes. Each isotope is known by a different number. Hence, there are plutonium 239, 238, 241 and others.
RCRA	Resource Conservation and Recovery Act	Federal law regulating hazardous waste. In Colorado, the EPA delegates CDPHE the authority to regulate hazardous wastes.
RFCA	Rocky Flats Cleanup Agreement	The regulatory agreement which governed cleanup activities. DOE, EPA, and CDPHE were signors.
RFCAB	Rocky Flats Citizen Advisory Board	This group was DOE's site-specific advisory board, a FACA-chartered group. They provided community feedback to DOE on a wide variety of Rocky Flats issues from 1993-2006.
RFCLOG	Rocky Flats Coalition of Local Governments	The predecessor organization of the Rocky Flats Stewardship Council. It was comprised of the following governments: Arvada, Boulder, Boulder County, Broomfield, Jefferson County, Superior, and Westminster.
RFETS	Rocky Flats Environmental Technology Site	The moniker for the site during cleanup years.
RFLMA	Rocky Flats Legacy	The post-cleanup regulatory agreement between DOE,

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	Management Agreement	CDPHE, and EPA which governs site activities. The CDPHE takes lead regulator role, with support from EPA as required.
RFNWR	Rocky Flats National Wildlife Refuge	The approximate 4,000 acres which compose the wildlife refuge.
RFSOG	Rocky Flats Site Operations Guide	The nuts-and-bolt guide for post-closure site activities performed by DOE and its contractors.
SPPTS	solar ponds plume treatment system	System used to treat groundwater contaminated with uranium and nitrates. The nitrates originate from the former solar evaporation ponds which had high levels of nitric acid. The uranium is primarily naturally-occurring with only a slight portion man-made. Effluent flows into North Walnut Creek
U	Uranium	Naturally occurring radioactive element. There were two primary isotopes of U used during production activities. The first was enriched U which contained a very high percentage (>90%) of U-235 which was used in nuclear weapons. The second isotope was U-238, also known as depleted uranium. This had various uses at the site and only had low levels of radioactivity..
USFWS	United States Fish & Wildlife Service	An agency within the US Department of the Interior that is responsible for maintaining the nation-wide system of wildlife refuges, among other duties. The regional office is responsible for the RFNWR.
VOC	volatile organic compound	These compounds include cleaning solvents that were used in the manufacturing operations at Rocky Flats. The VOCs used at Rocky Flats include carbon tetrachloride (often called carbon tet), trichloroethene (also called TCE), perchloroethylene (also called PCE), and methylene chloride.
WCRA	Woman Creek Reservoir Authority	This group is composed of the three local communities, the Cities of Westminster, Northglenn, and Thornton, who use Stanley Lake as part of their drinking water supply network. Water from the site used to flow through Woman Creek to Stanley Lake but the reservoir severed that connection. The Authority has an operations agreement with DOE to manage the Woman Creek Reservoir.
WQCC	Water Quality Control Commission	State board within CDPHE tasked with overseeing water quality issues throughout the state. DOE has petitioned the WQCC several times in the last few years regarding water quality issues.
ZVI	zero valent iron	A type of fine iron particles used to treat VOC's in the ETPTS and MSPTS.

Business Items

- June 6, 2011, draft board meeting minutes
- List of Stewardship Council checks

Draft 2012 Work Plan

- Cover memo
- Draft work plan

Draft 2012 Budget

- Cover memo
- Draft budget

ROCKY FLATS STEWARDSHIP COUNCIL

Monday, June 6, 2011, 8:30 AM – 12:00 PM

**Rocky Mountain Metropolitan Airport, Terminal Building, Mount Evans Room
11755 Airport Way, Broomfield, Colorado**

Board members in attendance: Marc Williams (Director, Arvada), Maria VanderKolk (Alternate, City of Arvada), Lisa Morzel (Director, City of Boulder), Eric Stone (Alternate, City of Boulder), Lori Cox (Director, Broomfield), Greg Stokes (Alternate, Broomfield), David Allen (Alternate, Broomfield), Sheri Paiz (Director, Northglenn), Shelley Stanley (Alternate, Northglenn), Joe Cirelli (Director, Superior), Bob Briggs (Director, Westminster), Mary Fabisiak (Alternate, Westminster), Ann Lockhart (Alternate, Rocky Flats Cold War Museum), Kathy Bacheller (Alternate, Rocky Flats Homesteaders), Jeannette Hillery (Director, League of Women Voters), Arthur Widdowfield (citizen).

Stewardship Council staff members and consultants in attendance: David Abelson (Executive Director), Rik Getty (Technical Program Manager), Barb Vander Wall (Seter & Vander Wall, P.C.), Jennifer Bohn (RFSC accountant), Erin Rogers (consultant).

Attendees: Vera Moritz (EPA), Carl Spreng (CDPHE), Charlie Adams (CDPHE), Marilyn Null (CDPHE), John Dalton (EPA), Dan Miller (CO Attorney General office), Scott Surovchak (DOE-LM), Rick DiSalvo (Stoller), Bob Darr (Stoller), Jody Nelson (Stoller), George Squibb (Stoller), John Boylan (Stoller), Linda Kaiser (Stoller), Rachelle Thorne (Stoller), Casey Michalski (Stoller), Heidi Frasole (Stoller), Gwen Hooten (DOE-LM), Ken Starr (DOE-LM), Karen Reed (DOE-LM), Linda Kaiser (Stoller), Bruce Hastings (USFWS), Emily Hunt (City of Thornton), Eric Tade (City of Thornton), Debra Williams (Town of Superior Trustee), Joyce Downing (City of Northglenn), Colin Anonsen (Rep. Polis), Stuart Feinhor (Rep. Polis), Mary Harlow (citizen), Hildegard Hix (citizen), Anne Fenerty (citizen), Leroy Moore (Rocky Mountain Peace & Justice Center).

Convene/Agenda Review

Chair Bob Briggs convened the meeting at 8:37 a.m. He began by introducing the Mayor of Northglenn, Joyce Downing, who was in attendance. The first item was introductions of attendees. He then asked if there were any suggested changes to the agenda, and there were none.

Chairman's Review of May 6th Executive Committee meeting

Chairman Briggs noted that an Executive Committee meeting was held on May 6 at College Hill Library in Westminster. The purpose was to develop the agenda for this meeting. He asked if there were any questions, and there were none. He noted that these meetings are always open to the public.

Consent Agenda

Lisa Morzel moved to approve the February Board meeting minutes and checks. The motion was seconded by Arthur Widdowfield. The motion to accept the minutes and checks passed 11-0.

Executive Director's Report

David Abelson began his report to the Board by announcing that Board Member Maria VanderKolk is leaving her position with the City of Arvada, and therefore the Stewardship Council. This will be her last meeting, and she will be replaced by Jim McCarthy, from the city's Environmental Compliance Division. David next noted that there had been some press coverage in conjunction with the grand opening of the new visitor's center at the Rocky Mountain Arsenal. There was also information announced by Department of the Interior Secretary, Ken Salazar, regarding plans for a Rocky Mountain Greenway System of trails connecting the Arsenal, Rocky Flats and the Two Ponds National Wildlife Refuge. \$350,000 in initial funding has been allocated for trails between the Arsenal and Sand Creek/South Platte River.

David next thanked the local government members as all of the annual dues had been received by the Stewardship Council. He also noted that, based on a suggestion from Lisa Morzel, there is an acronym list in the Board packet, which will now be a regular inclusion. He said to Rik or him know if anything is missing or needs to be changed. Rik Getty provided information about a Rocky Flats site tour which was to take place the following week. David discussed the status of several items about which he had emailed information to the Board. These items dam breaching, the Adaptive Management Plan, proposed changes to institutional controls, and a public involvement plan. He said that the first three items are already on the agenda for this meeting. He noted that DOE approved the EA for dam breaching by issuing a Finding of No Significant Impact, or FONSI. The AMP is an add-on that lays out additional terms, protocols, goals, how systems are managed, reporting requirements, etc. He said that under the terms of the plan, the terminal ponds will not be breached until 2018 and 2020. In the interim, they will be operated and monitored in a flow-through configuration.

With regard to the issue of changes to institutional controls at the site, this will be addressed through amendments to the CAD/ROD. A public comment period will run through July. A meeting on this topic was scheduled for June 16 at the Westminster Rec Center. The site has also released a revised Public Involvement Plan. Staff will review the changes and provide information to the Board. Finally, changes to the Points of Compliance along Indiana Street were implemented in mid-May. David noted that DOE went above and beyond what the Board had requested. These points along Indiana will continue to be POCs for the next two years and after that they will serve as monitoring points.

Public Comment

Anne Fenerty said she had a question about an earlier statement regarding the Board's role as an 'institution' in the context of institutional controls. She noted that the Stewardship Council does not have advisory ability, and that she does not view the Stewardship Council as an institutional control. She handed out a definition of institutional controls developed by the EPA. David

Abelson clarified that this characterization of the Board was not meant in the legal sense. He said that the Board does serve a purpose in ensuring that people do not forget about the history and maintenance of Rocky Flats.

Mickey Harlow referred to a statement that americium sometimes occurs with plutonium in the environment. She noted her understanding that americium always occurs with plutonium. She said that in the future all of the plutonium left at Rocky Flats will become americium since it is the daughter product, and it is even more deadly.

Sheri Paiz noted that she had previously requested that Leroy Moore speak to the Board. As he was in attendance at this meeting, she said she would like to invite him to speak. Leroy Moore said that he first wanted to clarify that in 75 years there will be more radioactivity from americium at Rocky Flats than what we are seeing from plutonium at the present time. He then noted that a couple months ago he was recognized by the Boulder Daily Camera as a 'pacesetter' for 2011. At the ceremony for this award, he wrote a meditation on Rocky Flats. Leroy read this to the Board. He also handed out a brochure about the topic of nuclear guardianship.

Receive Stewardship Council 2010 Financial Audit

Eric Barnes, from Wagner Barnes, briefed the Board on the results of the recent audit, which covered calendar year 2010. In the final version of the audit, page one will reflect the auditor's opinion. This will be the 'independent auditors report', using generally accepted auditing standards. Mr. Barnes stated that it will be the auditors' opinion that the Boards' financial statements present a fair representation of its financial position. This finding is what is known as a 'clean opinion'. They found the Stewardship Council's records to be well-kept. He spent a few minutes reviewing the draft report. Mr. Barnes quickly highlighted the Board's balance sheet, assets and liabilities, grant revenue, and budget vs. actual expenses. Overall, no material problems were found and the Stewardship Council was deemed to be in compliance with all applicable laws and regulations.

Mickey Harlow asked why salaries are not broken down by line items. Eric said that all staff is contractual. David Abelson said total compensation paid consultants are shown in the Board's budget.

Marc Williams moved to accept the 2010 audit. The motion was seconded by Joe Cirelli. The motion passed 11-0.

Host DOE Annual Meeting

DOE was on hand to brief the Stewardship Council on site activities for calendar year 2010. DOE has posted the report on its website. Activities included surface water monitoring, groundwater monitoring, ecological monitoring, and site operations (inspections, maintenance, etc.). Upon a request from the Board, DOE will also discuss changes to the site configuration it might make over the next 30 years.

Surface Water Monitoring and Operations -- George Squibb

George noted that because of the large amount of rain last spring, there were some pretty substantial pond discharges at A-4, B-5 and smaller ones from C-2. Even with the May rain, current pond levels are low. The ground was dry and absorbed much of the moisture. Flow rates were also high (ranging from 75-158% of the 1997-2009 average). However, since this time period includes pre-closure numbers, this partially explains why these numbers were high. Shelley Stanley asked if the flows at SW027 due to recent high precipitation resulted in some samples being taken. George said that the sampler was triggered for one grab.

George next reviewed slides showing the sample results for the Points of Compliance. All levels were below applicable standards. Also, water quality at all points of evaluation, except SW027, was below applicable standards. Reportable 12-month rolling average values for plutonium at SW027 were observed starting April 30, 2010. George said that concentrations are likely caused by transport of low-level residual contamination in the SW027 drainage. Mitigating actions, which were taken in accordance with Contact Record 2010-06, included installing additional erosion control wattles in locations along the hillside north of the South Interceptor Ditch (SID) and permanent erosion blankets and reseeded in three areas in the SID. This work was successfully completed on December 20, 2010. Approximately 2,560 linear feet of Filtrex wattles and 8,452 square feet of permanent erosion matting were installed.

George noted that at GS51 there was very little flow, so only 4-5 grab samples were taken. There was not enough water to analyze. Mickey Harlow asked how much water is needed to complete their analysis. George said depends on which analyte and analysis method is used, but that they need four liters for plutonium and americium analysis. David Allen commented that the same scenario happened last year at SW027. George responded that there was even less precipitation in 2010 than 2009. Mickey Harlow asked if it would help to remove the wattles in order to get more water to sample. George said it would, but this could cause contamination to move and that the wattles are serving their intended purpose of fixing soil in place.

The final update regarding surface water was that performance monitoring during the year at the Original and Present Landfills resulted in no analytes detected above the applicable standards.

Groundwater Monitoring and Operations -- John Boylan

RFLMA monitoring included all AOC, Sentinel, and RCRA wells. AOC wells are monitored for the impact of groundwater on surface water. Sentinel wells provide an indication of plume movement. RCRA wells support the landfill remedies. Treatment system locations were also monitored. Non-RFLMA monitoring included sampling at and around the SPPTS. This was done to support optimization of Phase II (uranium) and Phase III (nitrate) treatment. Non-RFLMA monitoring also included the continued evaluation of treatment at the MSPTS and ETPTS as described in Contact Record 2010-07.

John next spoke about the measurement and calculation of seepage velocities, or groundwater flow rates, which were estimated from water levels measured across the COU. Eighteen well pairs were used. The median velocity was 120 feet per year, with a range of 8 to 424 feet per year. Locations where velocity was at least 200 feet per year included part of the B881 hillside, B771, the original landfill, and part of 903 pad and lip area. Velocity was less than 50 feet per year at the south (former) Industrial Area and the north side of the solar ponds. Statistical

analyses of groundwater quality data were performed per RFLMA. Analysis of variance (ANOVA) results for 2010 were very similar to 2009. Downgradient concentrations of several metals exceed upgradient concentrations. John said this may be attributable to natural sources (ore mineralization, organic-rich sediments). Statistical trending calculations were also similar to 2009 in that there were no increasing trends at downgradient wells. Per RFLMA, the findings of either higher downgradient concentrations or an increasing trend trigger the consultation process. Boron and uranium conditions met this requirement and were addressed in Contact Record 2011-03. David Abelson asked John whether the site had determined any potential causal explanations for the trends they are seeing. John said it was difficult because of the isolated nature of the results, which have not been repeated. At this time, they are waiting for additional data. Higher water levels could be re-charging groundwater, which might explain some things. This is being investigated.

John next moved into a review of 2010 activities related to site plumes with treatment systems. These include the Mound site (which includes oil burn pit #2), East Trenches and Solar Ponds. At Mound, source area evaluation wells were sampled in 2010 and results were generally consistent with previous data. Downgradient sentinel well results were also generally consistent with previous data, although in the 4th quarter one well saw increased concentrations of several VOCs. John also said that 2010 saw the highest water levels on record for source area and downgradient wells and several trends were identified and discussed in the Annual Report. The Mound Site Passive Treatment System (MSPTS) treated approximately 420,000 gallons of water, which was the highest volume since 2006 and continues the trend of increasing volumes since 2005. Influent concentrations of PCE and TCE were higher in 2010 and increased sharply in the fourth quarter. Higher spring flow rates reduced residence time in the treatment system which reduced treatment effectiveness. Treatment media will be replaced in 2011.

At the East Trenches plume, as at Mound, source area evaluation wells were sampled in 2010 and results were generally consistent with previous data. Downgradient sentinel well results were also generally consistent with previous data. Several trends were identified and discussed in the Annual Report. There were decreasing trends in main parent compounds, and increasing trends in degradation byproducts, which is a positive development. The treatment system (ETPTS) treated over 1.6 million gallons. This was the highest volume treated since 2005, which represented 1.7 to 4 times the volumes treated in previous post-closure years, and reverses a trend of decreasing volumes that began in 2007. Contaminant concentrations in the system influent were generally consistent with previous years. Higher flow rates reduced residence time in the treatment system which reduced treatment effectiveness. Effluent showed some increased concentrations compared with previous years, particularly PCE and TCE.

At the Solar Ponds, source area evaluation wells showed fairly consistent nitrate concentrations, while uranium concentrations were more variable. Wells nearer the source area are lower in uranium than wells farther away, which illustrates the impact of natural uranium. The SPPTS treated approximately 730,000 gallons of water, which was significantly higher than all previous years. This was due to the installation of Phase 1 upgrades as well as heavy spring precipitation. Influent concentrations, as well as influent flow, were higher than most previous years. Higher flow rates reduced residence time in the treatment system which reduced treatment effectiveness. Effluent also showed some increased concentrations over previous years, however at the

discharge gallery, concentrations of nitrate and uranium were much lower than they were at site closure. Results do indicate that the overall effectiveness of the SPPTS is improving. John reviewed the ongoing upgrades to the system that took place throughout the year. These updates were provided to the Stewardship Council throughout the year and are discussed in detail in the Annual Report.

John moved on to a summary of annual activities related to other groundwater contaminant plumes and areas of interest. These included the Solar Ponds-area VOC plume, 903 Pad/Ryan's Pit plume, Industrial Area plume, vinyl chloride plume, IHSS 118.1 plume, PU&D yard plume, OUI plume and well as areas surrounding former buildings. Results for all plumes were consistent with previous years, with decreasing trends at most areas.

Anne Fenerty asked why the site was focusing on VOCs and not beryllium. John said that beryllium was not identified as a contaminant of concern. They do sample for uranium, and the information can be found in the Annual Report. Lisa Morzel asked what decision had been made regarding old drainages, and whether they would be re-established. John said that functional channel two takes sheet flow and routes it toward North Walnut Creek. Lisa then asked when and how they decide to do isotopic analyses for uranium. John said that these analyses are extremely expensive, so they only do them when indicated. Mary Fabisiak asked about an acronym found on the page discussing non-RFLMA monitoring. John said it referred to a rough count of bacteria. Arthur Widdowfield asked how the site collects and disposes of the byproducts of stripping off VOCs. John said that when VOCs go through the zero valent iron (ZVI) treatment system, only low levels of chloride and other material are left, so there is no need for further treatment.

Annual Site Inspection -- Rick DiSalvo

For this project, a team was assembled to walk the entire surface of former industrial area, which was divided into various zones. He noted that landfills, treatment systems and water monitoring stations are inspected throughout the year on a routine basis. The team was tasked with looking for visual signs of erosion or precursors of erosion, the effectiveness of institutional controls and any evidence of adverse biological conditions. The team found all institutional controls and signs to be in place as required and no significant erosion or adverse biological conditions. Minor holes, small animal evidence and depressions were identified and subsequently filled in. Debris and trash was collected or flagged for pick-up.

Lisa Morzel asked if they find depressions every year, and Rick said they usually do. These can be up to about 6 feet in diameter. She asked if they see more depressions in areas where there are higher flow rates. Rick said they may be associated in areas with higher precipitation, with water infiltrating into void spots.

Rick said he also wanted provide some clarification about earlier public remarks related to americium and plutonium. He said americium-241 is the daughter of plutonium-241. The isotope used at Rocky Flats to make pits was plutonium-239. He said there was a small amount of plutonium-241 at the site. During production, Rocky Flats tried to purify and remove plutonium-241. It also has a fairly short (14 year) half-life. Therefore, most of this isotope has already decayed. Plutonium-239 decays to uranium-235, which has a much longer half-life.

Americium-241 decays to neptunium-237, which has an even longer half-life than uranium-235. Mickey Harlow said she would like to see more information about this. Rick said it could be found in the Feasibility Study.

Ecological monitoring -- Jody Nelson

Jody began by showing some photos demonstrating same-area comparisons between 2005 and 2010. He noted that revegetation areas have really taken off. The ecology staff provided support throughout the year for OLF project, POC flume project, roads project, surface water configuration EA, SW027/903 lip hillside seeding and erosion controls, Mound Treatment System project, annual dam mowing and riprap spraying project, Solar Ponds Plume Treatment System projects, and annual weed control efforts.

Ecological monitoring efforts included: OLF and PLF vegetation surveys; monthly weed surveys in the mitigation wetlands; revegetation monitoring; weed monitoring and mapping; Preble's mouse mitigation monitoring; wetland mitigation monitoring; and Bluebird box monitoring.

Wildlife monitoring found no active prairie dog towns in the COU. Nests found onsite included Great Horned Owls, Swainson's Hawk and Red-Tailed Hawk. Bluebird nest boxes have been provided, but have so far been occupied by house wrens and tree swallows.

Weed control efforts during 2010 included the release of bio-controls for Dalmatian toadflax. This effort involved a small caterpillar. Jody found that they have dispersed all over the site, which is working well. Shelly Stanley asked if the site is using bio-controls for other weeds. Jody said they are using any that are available. He said some work well and some do not. Also, now that grass areas have really become established, a group of volunteers has been collecting seeds, including wildflowers. They decided not to do this at closure because they knew they would have to use so many herbicides to allow grass to become established. They put seeds in small nursery areas, and will not use herbicides in these locations. The seeds will start to blow into other areas, but will probably take 3-5 years to really take effect. Lisa Morzel asked how much soil was placed on top of buried buildings and was told it ranged from 8-20 feet. Eric Stone asked if there were any increasing trends in small animal burrows. Jody said there was not and that they were very isolated. He was also asked if the site was doing any inventory of small mammal population. He said they were not. Eric added that it would be interesting to see if these populations are re-establishing yet.

Original landfill -- Rick DiSalvo

12 monthly inspections were performed in 2010. Settlement monuments were surveyed in March, June, September, and December, and data were within the expected range per the Monitoring and Maintenance Plan, which is between 1.34 and 2.86 feet depending on the location. Surface cracking in the Berm 1 and Berm 7 locations indicated continued localized instability. Maintenance and repairs were completed.

Inclinometers were measured on October 28, November 18, and December 13, 2010. Very little deflection was noted in the fourth quarter. A review by a geotechnical engineer was consistent with both the 2008 Geotechnical Report and 2009 inclinometer review. These studies showed that localized slumping occurs as groundwater levels saturate the organic layer near bedrock, as

was observed after spring precipitation. The recommendation is to continue monitoring and implementing maintenance to fill and grade surface cracking. There was also a review by a geotechnical engineer of the impact on Berm 7 stability from saturation by seep runoff. Saturation from runoff did not impact berm stability

Rick shared images using a new mapping tool which makes it easier to visualize and understand the features and issues related to the Original Landfill. This tool includes photos over time, both before and after closure. With this tool, various features can be highlighted, such as berms, wells, and seeps. Rick walked through the history of the landfill, including construction details, berms, and drainages. He then illustrated the development of cracks, seeps, and slumps and showed how they relate to the previous configurations and drainages. He was able to demonstrate how and where the geotechnical investigation took place, as well as the resulting repairs and sampling locations. As part of this project, core samples were taken 25 feet below the two-foot cover. They ended up with 75% recovery of these samples, and were able to determine what had changed since the last sampling in the 1990's. The results showed that the main contaminants of concern were SVOCs, which are related to incomplete combustion of carbon products, such as construction, street sweeping, and asphalt runoff. Many constituents that had been detected previously were undetectable in this sampling. There were no VOCs, and no radionuclides above background levels. There were also no results above Refuge worker risk levels and very few were above Colorado screening targets. The study concluded that there is still a relatively low risk from the landfill. The next 5-year review will determine next steps for exiting post-closure care requirements at the landfill.

At the Present Landfill, four quarterly inspections were completed in 2010. The settlement monument surveys were completed in December 2010. Rick also mentioned that there are no utilities onsite. All power is solar and there are 64 units, producing 13 kilowatts of energy.

DOE Update on Dam Breach EA, Adaptive Management Plan and Changes to Indiana Points of Compliance

Because the meeting was running behind schedule, Chairman Briggs asked if anyone had question about this topic. David Allen asked if the monitoring points on Indiana were going to remain as Points of Compliance, or Points of Evaluation. Scott Surovchak said they will continue to be POCs and will later become part of the AMP. He said they will remain at the same locations until the Jefferson Parkway is constructed. Shelley Stanley referred to Table 4-16 of the EA, and asked about a reportable condition that was not captured in table. Linda Kaiser said the EA was prepared prior to that event in 2010. Shelley said some changes had been made, but were not reflected in the document.

David Abelson pointed to information in the Board packet regarding institutional controls (IC's) at Rocky Flats. He noted that Dan Miller was in attendance. David Allen said he had not had time to go through everything yet, and that if there are concerns or issues, they will get in touch with agencies outside of the meeting. He also asked if Dan could give an overview of the proposed changes. Carl Spreng distributed copies of the 'Proposed Plan for Amendment of Corrective Action Decision/Record of Decision'.

Dan Miller explained that there is a regulatory process for reviewing or amending IC's. The Proposed Plan is part of CERCLA. The process involves providing an explanation of significant differences to changes to the Record of Decision (ROD), and that lower level changes are permitted to be made administratively. However, the agencies had committed to make any changes as an amendment to the ROD, so even though it is not required, that is why it is being done this way. He added that there will be 30-day public comment period. Page six of the handout (Table 1) provides a side-by-side comparison of proposed changes and the existing language in the CAD/ROD, along with clarifying language explaining the intent behind the changes.

Dan explained that they are not changing the fundamental intent of the IC's, which is to prevent exposure to materials and buried structures. The original language was not intended to prohibit activities such as dam maintenance or installing culverts along roads. The proposed changes clarify that any disturbance below three feet must have regulatory approval. This will serve to formalize the process that has already been used. Sheri Paiz asked who would be reviewing these changes and if there would be any public involvement. Dan said that CDPHE will review the changes and public involvement will be determined for each project. He added that there will be contact record for each instance, and all information will be available through a very transparent process.

Dan noted that DOE is the only federal agency that allows ICs to be implemented through an environmental covenant. There has been an issue about interpreting this as a property interest. Another mechanism has been developed, which is called a Restrictive Notice. It is also legally enforceable, and was developed to address issues with other federal agencies, and would only come into play with utility lines. The process for any future changes to IC's will be determined by EPA guidance at the time.

A public meeting has been scheduled for June 16. Carl Spreng added that these changes will be reflected in three places: 1) minor modifications to the ROD, 2) environmental covenant, 3) tri-party agreement. The language explaining the rationale and objectives for the changes will also be included.

Start of Stewardship Council Triennial Review -- Meet with Thornton

No later than February 13, 2012, the Stewardship Council will need to renew the organization's Intergovernmental Agreement (IGA). As part of this process, the Board must complete two steps. First is today's meeting with City of Thornton representatives to discuss that city joining the Stewardship Council. The second step will be to review the current IGA to determine if any changes to the scope and mission are warranted, and if so, the nature of those changes. This part of the dialogue will take place at the September meeting. The Board's attorney, Barb Vander Wall, said that this timing works out well because any changes will need to be reviewed by all the parties to the IGA. In terms of process, once a consensus is reached, there will be a memorandum of sorts distributed to all parties. She added any assistance that Board members can provide in terms of guiding this document through their government for signatures would be helpful.

Representatives from the City of Thornton spoke next and explained that the main impetus behind their request to become member is a desire to become involved in water issues at the site. Thornton is a member of the Woman Creek Reservoir Authority (WCRA), and they have observed that many of these issues are discussed within the Stewardship Council. In terms of why they were not original members of this group, the current representatives do not know. At this point, they feel they cannot continue to rely on Northglenn to keep them updated on these issues and feel a responsibility to get involved on behalf of their citizens.

Lisa Morzel asked about how the process would work and how the current revolving membership system between Northglenn and Golden would be affected. David Abelson noted that Northglenn and Golden have questioned the future of the rotating membership system independently of this change, and that it may be eliminated at this point. If changes are made, the IGA and bylaws will each have to be amended. IGA changes are implemented through the government entities, and bylaws changes happen within the Stewardship Council. David asked Board members to think about changes and be prepared to discuss a motion at the September meeting. Joe Cirelli asked for an explanation of the rationale for the current quorum rules. David Abelson said that there are 13 Board members, and because of rotating members, 12 votes are available at any given time. The members include eight governments, and four non-governmental members. Nine was chosen for a quorum because it required that at least one non-government group was in attendance to provide a quorum and to pass a vote.

David asked if any governments were considering exiting the IGA. None indicated that they are seeking to terminate their membership. He also asked if any governments opposed to Thornton joining. None opposed. He also asked whether the governments agreed to grant Northglenn and Golden voting rights each year (in essence, eliminating the rotating party status in favor of permanent member status). None voiced any opposition. Barb Vander Wall requested a proposed document reflecting approval of full board on these changes that can be shared with the member governments.

Public comment

Carl Spreng shared information about another public comment period. He said the Trustee Council for Natural Resource Damages had a meeting scheduled later this week (Thursday) to discuss and act upon proposals for remaining NRD funding. He said there were two small projects and one large one, which was related to section 16. If these projects were approved, all remaining funding would be spent. A public comment period will follow. Bob Briggs asked if the meeting was open to the public. Carl said it was.

Updates/Big Picture Review

Lisa Morzel reported she was among a number of local government representatives to speak before the State Land Board last week urging them to accept a proposal regarding section 16. This proposal involves placing a conservation easement on 23 acres, and acquiring all mineral rights and leases remaining on Rocky Flats land. She reported that the Trustees spoke favorably, and that the vote was unanimous. Because of this, an additional square mile will be added to the Refuge. Boulder, Boulder County and Jefferson County were involved, and Broomfield and

Arvada were also cooperating. Scott Surovchak asked if Lisa was talking about mineral rights and leases on section 9 and also leases. She said that was correct. Scott said that was very good news. Lisa said that the plan is very complicated and that she would be happy to provide additional details to the Board if desired.

Big Picture Review

September 12

Potential Business Items

- Continue triennial review conversation, including the question of Thornton joining the Stewardship Council
- Initial review of 2012 budget
- Initial review of 2012 work plan

Potential Briefing Items

- DOE update on start of CERCLA 5-year review
- DOE quarterly briefing

November 14 (second Monday)

Potential Business Items

- Continue triennial review
- Budget hearings for 2012 budget
- Approve 2012 work plan

Potential Briefing Items

- DOE quarterly briefing
- Continue discussion of CERCLA 5-year review
- Update on Solar Ponds performance

Issues to watch:

Original landfill performance, including special sampling program results
Solar Ponds performance
Data for CERCLA review

The meeting was adjourned at 11:52 a.m.

Respectfully submitted by Erin Rogers.

4:59 PM

08/26/11

Rocky Flats Stewardship Council
Check Detail
 May 21 through August 26, 2011

Type	Num	Date	Name	Account	Paid Amount	Original Amount
Check		5/26/2011		CASH-Wells Fargo-Operating		-3.50
				Admin Services-Misc Services	-3.50	3.50
TOTAL					-3.50	3.50
Check		6/30/2011		CASH-Wells Fargo-Operating		-3.50
				Admin Services-Misc Services	-3.50	3.50
TOTAL					-3.50	3.50
Check		7/31/2011		CASH-Wells Fargo-Operating		-3.50
				Admin Services-Misc Services	-3.50	3.50
TOTAL					-3.50	3.50
Check	1494	6/6/2011	VOID	CASH-Wells Fargo-Operating		0.00
TOTAL					0.00	0.00
Bill Pm...	1495	6/5/2011	Crescent Strategies, LLC	CASH-Wells Fargo-Operating		-7,513.57
Bill	5/31/...	5/31/2011		Personnel - Contract	-6,850.00	6,850.00
				Telecommunications	-142.40	142.40
				TRAVEL-Local	-61.71	61.71
				Postage	-15.99	15.99
				Supplies	-261.97	261.97
				Printing	-181.50	181.50
TOTAL					-7,513.57	7,513.57
Bill Pm...	1496	6/5/2011	HUB SW	CASH-Wells Fargo-Operating		-2,959.19
Bill	206407	5/12/2011		Insurance	-2,959.19	2,959.19
TOTAL					-2,959.19	2,959.19
Bill Pm...	1497	6/5/2011	Seter & Vander Wall, P.C.	CASH-Wells Fargo-Operating		-484.18
Bill	60853	5/31/2011		Attorney Fees	-484.18	484.18
TOTAL					-484.18	484.18
Check	1498	6/6/2011	VOID	CASH-Wells Fargo-Operating		0.00
TOTAL					0.00	0.00
Bill Pm...	1499	6/5/2011	The Hartford	CASH-Wells Fargo-Operating		-500.00
Bill	34 11...	5/6/2011		Insurance	-500.00	500.00
TOTAL					-500.00	500.00
Bill Pm...	1500	6/5/2011	Wagner Barnes, P.C.	CASH-Wells Fargo-Operating		-4,147.82
Bill	16904	5/31/2011		Annual Audit	-4,147.82	4,147.82
TOTAL					-4,147.82	4,147.82
Check	1501	6/6/2011	Qwest	CASH-Wells Fargo-Operating		-28.19
				Telecommunications	-28.19	28.19

4:59 PM
08/26/11

Rocky Flats Stewardship Council Check Detail May 21 through August 26, 2011

Type	Num	Date	Name	Account	Paid Amount	Original Amount
TOTAL					-28.19	28.19
Bill Pm...	1502	6/6/2011	Jennifer A. Bohn	CASH-Wells Fargo-Operating		-629.00
Bill	11-43	5/31/2011		Accounting Fees	-629.00	629.00
TOTAL					-629.00	629.00
Bill Pm...	1503	6/6/2011	The Rogers Group, LLC	CASH-Wells Fargo-Operating		-525.00
Bill	5/20/...	4/30/2011		Personnel - Contract	-525.00	525.00
TOTAL					-525.00	525.00
Check	1504	7/6/2011	Qwest	CASH-Wells Fargo-Operating		-27.12
				Telecommunications	-27.12	27.12
TOTAL					-27.12	27.12
Bill Pm...	1505	7/6/2011	Jennifer A. Bohn	CASH-Wells Fargo-Operating		-382.50
Bill	11-46	6/30/2011		Accounting Fees	-382.50	382.50
TOTAL					-382.50	382.50
Bill Pm...	1506	7/6/2011	Blue Sky Bistro	CASH-Wells Fargo-Operating		-195.85
Bill	619	6/6/2011		Misc Expense-Local Government	-195.85	195.85
TOTAL					-195.85	195.85
Bill Pm...	1507	7/10/2011	Crescent Strategies, LLC	CASH-Wells Fargo-Operating		-7,054.94
Bill	6/30/...	6/30/2011		Personnel - Contract	-6,850.00	6,850.00
				Telecommunications	-135.40	135.40
				TRAVEL-Local	-53.55	53.55
				Postage	-15.99	15.99
TOTAL					-7,054.94	7,054.94
Bill Pm...	1508	7/10/2011	Energy Communities All...	CASH-Wells Fargo-Operating		-950.00
Bill	0001	7/1/2011		Subscriptions/Memberships	-950.00	950.00
TOTAL					-950.00	950.00
Bill Pm...	1509	7/10/2011	Seter & Vander Wall, P.C.	CASH-Wells Fargo-Operating		-1,174.53
Bill	61056	6/30/2011		Attorney Fees	-1,174.53	1,174.53
TOTAL					-1,174.53	1,174.53
Check	1510	8/11/2011	Qwest	CASH-Wells Fargo-Operating		-26.89
				Telecommunications	-26.89	26.89
TOTAL					-26.89	26.89
Bill Pm...	1511	8/11/2011	Crescent Strategies, LLC	CASH-Wells Fargo-Operating		-7,047.80
Bill	7/31/...	7/31/2011		Personnel - Contract	-6,850.00	6,850.00
				Telecommunications	-135.40	135.40
				TRAVEL-Local	-46.41	46.41
				Postage	-15.99	15.99
TOTAL					-7,047.80	7,047.80

4:59 PM

08/26/11

Rocky Flats Stewardship Council
Check Detail
May 21 through August 26, 2011

Type	Num	Date	Name	Account	Paid Amount	Original Amount
Bill Pm...	1512	8/11/2011	Jennifer A. Bohn	CASH-Wells Fargo-Operating		-569.50
Bill	11-60	7/31/2011		Accounting Fees	-569.50	569.50
TOTAL					-569.50	569.50
Bill Pm...	1513	8/11/2011	Seter & Vander Wall, P.C.	CASH-Wells Fargo-Operating		-179.18
Bill	61261	7/31/2011		Attorney Fees	-179.18	179.18
TOTAL					-179.18	179.18
Bill Pm...	1514	8/11/2011	The Rogers Group, LLC	CASH-Wells Fargo-Operating		-550.00
Bill	7/24/...	7/24/2011		Personnel - Contract	-550.00	550.00
TOTAL					-550.00	550.00

ROCKY FLATS STEWARDSHIP COUNCIL

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Jefferson County -- Boulder County -- City and County of Broomfield -- City of Arvada -- City of Boulder
City of Golden -- City of Northglenn -- City of Westminster -- Town of Superior
League of Women Voters -- Rocky Flats Cold War Museum -- Rocky Flats Homesteaders
Arthur Widdowfield

MEMORANDUM

TO: Board
FROM: David Abelson
SUBJECT: Board Review of Stewardship Council Activities for 2011 and Initial Review of Draft 2012 Work Plan
DATE: September 1, 2011

At this meeting the Board will evaluate its efforts for 2011 and start reviewing its 2012 work plan (attached). Any changes to the work plan will be incorporated into a revised draft that will be reviewed, modified as necessary, and approved at the November 14th meeting.

Review of 2011 Activities

The 2011 work plan contains the following provision:

“How the Stewardship Council will measure its success is important. Many organizations use sophisticated techniques to measure success, but these are not necessary for the Stewardship Council. Rather each year the Stewardship Council will pause and reflect on its Work Plan elements to help determine its ability to accomplish the stated mission and objectives. The review shall include an assessment of how the organization can improve in the coming year, focusing on areas of weakness and opportunities for improvement.”

The first part of the conversation will be the Board’s assessment. That conversation will then be used to set goals for 2012 and to make changes to the draft 2012 plan.

Overview of Draft Plan

The draft plan we are submitting for your discussion and edits contains three primary changes:

1. Adding provisions about the CERCLA five-year review.
2. Adding a provision about engaging in the Adaptive Management Plan meetings, including technical discussions.
3. Deleting the provision about working with USFWS on the refuge plan as there is insufficient funding to begin implementing the site conservation plan in the coming year

The other changes, I trust, are self-explanatory. Please let me know what questions you have, particularly if there are any items I did not include in the draft work plan.

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League of Women Voters -- Rocky Flats Cold War Museum -- Rocky Flats Homesteaders
Arthur Widdowfield

2012 Work Plan

Draft September 1, 2011

Mission:

The mission of the Rocky Flats Stewardship Council is to provide continuing local oversight of activities at the Rocky Flats site and to ensure local government and community interests are met with regards to long-term stewardship of residual contamination and refuge management. The mission also includes providing a forum to track issues related to former site employees and to provide an ongoing mechanism to maintain public knowledge of Rocky Flats, including educating successive generations of ongoing needs and responsibilities regarding contaminant management and refuge management.

Preface: **2012 Challenges and Opportunities**

In **2012**, the Stewardship Council will complete its **7th** year of operations. **At the start of the year, membership will expand to include the City of Thornton.**

Some of the challenges and opportunities to address in **2012** will likely include:

- **Incorporating Thornton into the organization.**
- **Participating in the CERCLA five-year review.**
- **Addressing growing concerns amongst members and citizens with DOE management decisions.**
- **Developing and circulating accurate information about protectiveness of Rocky Flats cleanup.**
- **Maintaining public awareness and interest in the ongoing management needs at Rocky Flats.**
- **Reviewing and modifying as necessary organizational systems to ensure members remain engaged and the Stewardship Council functions efficiently.**

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Deleted: During the year we will conduct the second triennial review. The triennial review provides the framework for the organization (1) to ensure all governments remain committed to the organization, and (2) to realign the organization as necessary. DOE also wants make sure that the Stewardship Council, as the Local Stakeholder Organization (LSO) for Rocky Flats, continues to serve its Congressionally-defined role. These two dialogues will be linked.

Deleted: 2011

Deleted: Conducting the aforementioned reviews

Deleted: <#>Building relationships with the new members of the Colorado Congressional delegation (as needed).¶

Background:

The Stewardship Council occupies two roles: (1) serving as the Local Stakeholder Organization (LSO) for Rocky Flats, and (2) engaging USFWS on the management of the Rocky Flats National Wildlife Refuge.

Local Stakeholder Organization (LSO)

Legacy Management approved the LSO Plan for Rocky Flats on December 21, 2005. That Plan identifies how the main responsibilities Congress identified in the legislation authorizing the creation of LSO (Section 3120 of the Fiscal Year 2005 Defense Authorization bill) are to be carried out at Rocky Flats. These responsibilities are summarized as follows:

- Solicit and encourage public participation in appropriate activities relating to the closure and post-closure operations of the site.
- Disseminate information on the closure and post-closure operations of the site to the State and local and Tribal governments in the vicinity of the site, and persons and entities having a stake in the closure or post-closure operations of the site.
- Transmit to appropriate officers and employees of DOE questions and concerns of governments, persons, and entities referred to in the preceding bullet.

In fulfilling these responsibilities, the Stewardship Council has been tasked with helping DOE meet its public involvement obligations identified in the Post-Closure Public Involvement Plan (PCPIP) for Rocky Flats.

Rocky Flats National Wildlife Refuge

“The Rocky Flats National Wildlife Refuge Act of 2001” established that Rocky Flats shall become a national wildlife refuge following EPA certification that the site has been cleaned to the agreed-upon regulatory standards. In July 2007 DOE conveyed jurisdictional responsibility over nearly 4000 acres to the Department of the Interior for the Rocky Flats National Wildlife Refuge.

Deleted: Additional lands will likely be conveyed in 2011. ¶

In April 2005, USFWS published the Rocky Flats Comprehensive Conservation Plan (CCP), the conservation plan for the Rocky Flats National Wildlife Refuge. The CCP describes the desired future conditions of the Refuge and provides long-range guidance and management direction. Per the CCP, in the coming years USFWS anticipates developing the following “step-down” management plans, which provide specific guidance for achieving the objectives established in the CCP:

1. Vegetation and Wildlife Management Plan
2. Integrated Pest Management Plan
3. Fire Management Plan
4. Visitors Services Plan
5. Health and Safety Plan
6. Historic Preservation Plan

Due to funding restrictions, USFWS has delayed implementation of the CCP, including delaying the timeline for opening the Refuge for public access. ~~Should~~ USFWS ~~take~~ steps to open the

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Refuge, the Stewardship Council would work with USFWS and DOE to ensure the current access restrictions to DOE-retained lands remain effective and to address issues as needed.

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Work Plan Elements

The Work Plan is divided into the following five sections:

1. DOE Management Responsibilities
2. Former Rocky Flats Workforce
3. Outreach
4. Rocky Flats National Wildlife Refuge
5. Business Operations

DOE Management Responsibilities

Overview:

One of the key roles of the Stewardship Council continues to be to understand and engage the various issues regarding the cleanup and post-closure management of Rocky Flats, and to provide a forum to foster discussions among DOE, the regulatory agencies, and community members.

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2012 Activities:

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1. Review information regarding the long-term stewardship and management of the Rocky Flats site, including but not limited to the results of the operational and performance monitoring data of site operations and DOE status reports.
2. Work with DOE on implementing its Post-Closure Public Involvement Plan (PCPIP), including the meetings DOE identified in the PCPIP.
3. Review DOE budgets for implementation of DOE responsibilities.
4. Participate in DOE, CDPHE and/or EPA assessment(s) of remedy operations and effectiveness.
5. As needed, evaluate legal and regulatory issues regarding implementation of RFLMA and related site documents, and provide information to the Stewardship Council and to the community.
6. Work with DOE and the regulators to understand technical data regarding implementation and effectiveness of cleanup remedies and long-term controls, and provide information to the Stewardship Council and to the community.
7. Transmit to appropriate officers and employees of the DOE questions and concerns of governments, persons and entities regarding Rocky Flats.
8. Participate in the CERCLA five-year review.
9. Continue to participate in Adaptive Management Plan meetings, including technical evaluations of data.
10. Support the Rocky Flats Cold War Museum efforts to establish a museum and on mechanisms for educating successive generations about the history of Rocky Flats, particularly about residual contamination and continued need for long-term stewardship.

Deleted: site-wide long-term stewardship plans

Deleted: Continue evaluating DOE's proposal to breach terminal ponds A-4, B-5, and C-2, and to move the points of compliance from Indiana Street to the eastern edge of the Central Operating Unit (COU).¶

Deleted: <#>Work with USFWS and DOE on interpretative signage on refuge lands that includes history of Rocky Flats and cleanup, and ongoing DOE monitoring and surveillance program.¶

11. Track issues related to transfer of administrative jurisdiction over former mineral parcels from DOE to Department of the Interior for inclusion in the Rocky Flats National Wildlife Refuge.
12. Track the development of Jefferson County Parkway as it relates to Rocky Flats.

Former Rocky Flats Workforce

Overview:

One of DOE's primary post-closure responsibilities is to manage the health and pension benefits of former site workers. Many of these workers are the constituents of the Stewardship Council governments. Further, the Rocky Flats Homesteaders, which represents more than 1800 former site workers, sits on the Board of the Stewardship Council. For these and other reasons, as noted in the Stewardship Council's IGA, worker issues will continue to be an important focus of the Stewardship Council.

2012 Activities:

1. Track issues related to the implementation of the Energy Employee Occupational Illness Program Compensation Act (EEOIPCA). Respond as needed.
2. Communicate worker concerns to the Administration and to members of the Colorado Congressional delegation.

Deleted: 2011

Outreach

Overview:

As the LSO for Rocky Flats, a core responsibility for the Stewardship Council is reaching out to the community and providing a mechanism to educate people about Rocky Flats and the ongoing management needs. As part of this mission it remains essential that the Stewardship Council maintain close communications with DOE, EPA, CDPHE, USFWS and Congress.

The local communities have developed over the period of many years a very good working relationship with the two primary regulatory agencies that oversee the site, EPA and CDPHE. It is imperative that the Stewardship Council continue this tradition of partnership with these agencies.

The Colorado congressional delegation likewise played a critical role in addressing Rocky Flats issues. The Stewardship Council shall remain an important vehicle for addressing issues of concern to the delegation and for providing community interface with the delegation on the numerous site-specific issues and concerns.

2012 Activities:

1. Hold quarterly Board meetings and provide opportunity for public comment and public dialogue.
2. Communicate with other local officials, DOE, state and federal regulators, the Colorado congressional delegation, and other stakeholders about the Stewardship Council's mission and activities, as appropriate.

Deleted: 2011

3. Seek public input and involvement on issues related to DOE and USFWS responsibilities at Rocky Flats.
4. Evaluate Congressional action affecting DOE and USFWS and administrative action that could affect Rocky Flats.
5. Maintain communication with federal and state legislators, as appropriate, and track federal and state legislation as needed.
6. Provide opportunities at meetings and in between meetings for education and feedback.
7. Work with DOE to disseminate information on the cleanup and post-closure operations of Rocky Flats.
8. Participate in local, regional and national forums.
9. Implement mechanisms for the Stewardship Council and the general public to be informed of the results of the monitoring data and other relevant information, recognizing that not all communication between DOE and Rocky Flats constituencies will flow through the Stewardship Council. Options include:
 - o Periodic reports
 - o Email updates
 - o White papers
 - o Letters

Deleted: ¶
Press releases

Rocky Flats National Wildlife Refuge

Overview:

A core function of the Stewardship Council is to engage on issues related to the development and management of the future Rocky Flats National Wildlife Refuge. This work includes tracking and addressing issues related to the interface of the Refuge to lands that DOE will retain as part of its management responsibilities. Without funding for the Refuge, there will be little management activities for the foreseeable future.

2012 Activities:

1. Track agency and Congressional action affecting funding for USFWS.
2. Track issues related to the inclusion of Section 16 in the southwest corner of Rocky Flats into the Refuge.

Deleted: 2011

Deleted: <#>Work with USFWS on implementation and funding of the Comprehensive Conservation Plan for the Rocky Flats National Wildlife Refuge.¶

Deleted: <#>Provide a forum for the community to raise issues related to development of management plans and other issues affecting USFWS responsibilities at the Rocky Flats National Wildlife Refuge.¶

Business Operations

Overview:

Business Operations refers to organizational management responsibilities – conducting the annual audit, submitting financial reports to DOE, adopting annual Work Plan and annual budget, etc.

Deleted: hiring staff,

2012 Activities:

1. Conclude the Stewardship Council's triennial review
2. Amend bylaws to account for expansion of organizational membership.
3. Appoint non-governmental members to the Stewardship Council.

Deleted: 2011

Deleted: Conduct

4. Work with DOE to ensure the Stewardship Council continues to meet the needs as the LSO for Rocky Flats.
 5. Operate Stewardship Council in compliance with state and federal regulations.
 6. Conduct financial audit.
 7. Prepare and adopt the annual work plan and the annual budget.
 8. Submit financial reports to DOE.
 9. Review and renew as necessary consulting agreements.
 10. Provide annual report on activities.
-

Success Measurement Criteria

How the Stewardship Council will measure its success is important. Many organizations use sophisticated techniques to measure success, but these are not necessary for the Stewardship Council. Rather each year the Stewardship Council will pause and reflect on its Work Plan elements to help determine its ability to accomplish the stated mission and objectives. The review shall include an assessment of how the organization can improve in the coming year, focusing on areas of weakness and opportunities for improvement.

ROCKY FLATS STEWARDSHIP COUNCIL

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League of Women Voters -- Rocky Flats Cold War Museum -- Rocky Flats Homesteaders
Arthur Widdowfield

MEMORANDUM

TO: Board
FROM: David Abelson
SUBJECT: Draft 2012 Budget
DATE: August 31, 2011

In accordance with Colorado law, attached for your review is the first draft of the Stewardship Council's fiscal year 2012 budget. I have scheduled time at the meeting for you to discuss and modify as necessary this draft. As a unit of local government under the Colorado Constitution, the Stewardship Council must hold budget hearings prior to adopting a final budget. The budget hearings will be held at the November 14th meeting. You will adopt the budget at that meeting.

Overview: In accordance with the Board's direction in past years, the budget is for more than the anticipated costs (approximately 20% above projected costs for 2012). Over-budgeting gives the board latitude in how it manages the expenditures. Since its inception, each year the Stewardship Council's budget has declined; expenditures over the past few years, however, have remained fairly level. This proposed budget reflects a net decrease of \$1,950 over the 2011 budget; 2010 was a reduction of \$2,550 over 2009. A comparison of the proposed 2012 budget and the approved 2011 budget follows.

BUDGET CATEGORY CHANGE FROM FY 2011

A. Personnel	\$0.00
B. Fringe Benefits	\$0.00
C. Travel	\$0.00
D. Computer Equipment	\$0.00
E. Supplies	\$0.00
F. Contractual	\$0.00
G. Construction	\$0.00
H. Other	\$1950.00
• Printing: No change	
• Postage: No change	
• Liability Insurance: No change	

- Telephone, email etc.: decreased by \$700
- Website
 - Hosting: No change
 - Webmaster: Decreased by \$1000
- Subscriptions/Memberships: Decreased by \$250 (reduced conference registration fees)

TOTAL NET DIFFERENCE FROM 2011 BUDGET (\$1,950.00)

ROCKY FLATS STEWARDSHIP COUNCIL
2012 Budget -- DRAFT #1

		<u>2011 Budget</u>	<u>2011 Actual/ Projected Expenses*</u>
A. Personnel	\$ 93,000.00	\$ 93,000.00	\$ 82,200.00
Executive Director and Technical Advisor (\$7750/month for 12 months)			
B. Fringe Benefits	\$ -	\$ -	\$ -
Benefits	\$ -		
Staff are contract employees			
C. Travel	\$ 5,700.00		
Out of State	\$ 4,500.00	\$ 4,500.00	\$ 2,860.07
National DOE-related trips \$1500/trip X 3 trips			
Local Travel	\$ 1,200.00	\$ 1,200.00	\$ 773.28
\$100/month for 12 months			
D. Computer Equipment	\$ 500.00		
Purchase misc. hardware, software	\$ 500.00	\$ 500.00	\$ -
E. Supplies	\$ 1,200.00		
Supplies (\$100/month for 12 months)	\$ 1,200.00	\$ 1,200.00	\$ 816.39
F. Contractual	\$ 40,100.00		
Attorney & Accounting Services	\$ 33,500.00		
Legal Services (\$1400/ month for 12 months)	\$ 16,800.00	\$ 16,800.00	\$ 13,266.23
Accounting (\$850/month for 12 months)	\$ 10,200.00	\$ 10,200.00	\$ 6,426.00
Audit Report	\$ 6,500.00	\$ 6,500.00	\$ 4,147.82
Admin. Services	\$ 4,600.00		
Misc. Services: budget notices, etc.	\$ 1,000.00	\$ 1,000.00	\$ 42.00
Minutes Preparation (6 meetings)	\$ 3,600.00	\$ 3,600.00	\$ 3,300.00
Local Government Expenses	\$ 2,000.00	\$ 2,000.00	\$ 1,175.10
Miscellaneous expenses not covered by DOE funds (includes meeting expenses)			
G. Construction	\$ -	\$ -	\$ -
None			
H. Other	\$ 14,300.00		
Printing & Copy	\$ 2,000.00	\$ 2,000.00	\$ 1,414.38
Postage	\$ 1,500.00	\$ 1,500.00	\$ 811.88
\$125/month for 12 months			
Liability Insurance	\$ 4,000.00	\$ 4,000.00	\$ 3,459.19
Property Contents/General Liability	\$ 500.00		
Board Members	\$ 3,500.00		
Telephone, email, etc.	\$ 2,700.00	\$ 3,400.00	\$ 1,998.55
Website	\$ 2,000.00	\$ 3,000.00	\$ 385.00

Hosting	\$	500.00
Web master	\$	1,500.00

Subscriptions/Memberships		\$ 2,100.00	\$ 2,350.00	\$ 1,650.00
ECA membership	\$	950.00		
Conference registration fees	\$	500.00		
Newspapers	\$	650.00		

J. Indirect Costs		\$ -
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N/A

TOTAL PROPOSED BUDGET	\$ 154,800.00	\$ 156,750.00	\$ 124,725.89
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Net Change from 2011 budget	\$	(1,950.00)
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REVENUE FOR 2012

Local government contributions	\$	8,000.00
Department of Energy grant	\$	125,000.00
RFCLOG carry-over	\$	21,800.00

TOTAL	\$	154,800.00
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*2011 Actual/Projected Expenses = actual January through July; projected July through December

Triennial Review/IGA Amendments

- Cover memo
- Draft triennial review determination
- Draft IGA amendments

CERCLA Five-Year Review

- Cover memo

DOE Quarterly Briefing

- Cover memo
- Table of contents from quarterly report

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Arthur Widdowfield

MEMORANDUM

TO: Board
FROM: David Abelson
SUBJECT: Intergovernmental Agreement Triennial Review/IGA Amendment
DATE: September 1, 2011

At this meeting we will continue the triennial review of the Stewardship Council's Intergovernmental Agreement (IGA). Attached to this memo are two documents -- (1) the form of resolution for the triennial review determination, and (2) a proposed First Amendment to the IGA.

Triennial review determination

As each government did in 2009 and as we discussed at the June meeting, prior to February 13, 2012, each government will need to approve a resolution affirming its commitment to remain a party to the IGA. The attached one-page resolution regarding the triennial review determination is the same form approved by the governments in 2009. In 2009, this document was vetted with each government including city and county attorneys and incorporates their input.

Barb Vander Wall and I believe that the resolution continues to meet each government's requirements. However, in case not, please have the appropriate governmental staff review the triennial review determination and let Barb and me know what changes, if any, are necessary. Please remember that we are working to develop a document that meets the legal requirements of nine governments, so please limit edits to legally required changes.

IGA Modifications

There are three principal changes proposed to the IGA:

1. Addition of Thornton as a party to the IGA.
2. Change in Golden and Northglenn's status from rotating members to permanent members. This change in short means both governments would have a vote each year, not on alternating years as they currently have. Thornton would also join as a permanent member.
3. Change in the voting numbers.

Change in voting numbers

Currently, because Golden and Northglenn rotate votes every year, there are 12 votes at any time. Importantly, eight governments and four non-governmental parties can vote. Under the IGA and bylaws, a vote requires nine affirmative votes to be binding on the organization. Nine was chosen because it ensured that the governments, if they voted as a bloc, would need at least one non-governmental party to approve a motion.

With Thornton joining and Golden and Northglenn each getting the vote, there will be 14 votes – 10 governments and four non-governmental parties. One question the board needs to resolve in the IGA is whether it wants to change the number of votes required to approve a motion from nine to 10 or greater. (This change would be included in the IGA and later in the bylaws.)

Barb and I do not know with a change in the number of voting parties how many votes should be needed to approve a given motion. We can argue for changing the requirement from nine or leaving it as is. In the draft IGA, we have included a placeholder of changing the vote to 11. That language is simply a placeholder, designed to provide language should the board opt to change the voting numbers. Expanding the voting to 11 would maintain the provision that if the governments vote as a bloc at least one non-governmental party would be needed to support the given motion. Since the board's inception in 2006, almost every vote has been unanimous.

Importantly, the vote number has also been established as the number required for a quorum. The challenge of 11 is that it creates a high threshold for securing a quorum, necessary for the transaction of any business.

Bylaws Amendments

To align the bylaws with the IGA, a number of provisions in the bylaws will need to be made. Per the bylaws, the board (not just the governments) will review the initial amendments at the February 6, 2012, meeting and adopt the changes at the second meeting of the year. Among the changes the board will need to make are changes to the voting and quorum provisions.

Next Steps

To make the necessary changes to the IGA and bylaws, we will use the following schedule:

1. September 12th meeting – review triennial review determination and proposed changes to the IGA.
2. No later than October 10th – governments review the triennial determination and IGA modifications and forward proposed changes to Barb and me. Barb and I will then amend the documents based on governments' feedback.
3. November 14th meeting – governments review amended documents.
4. Prior to February 2012 – governments approve the triennial review determination and IGA amendments.
5. February 6, 2012 meeting – first review of bylaws amendments.
6. Second meeting of year – adopt bylaws amendments.

RESOLUTION
of
[COUNTY/CITY/TOWN of _____]
Regarding

**Triennial Determination for the Continuation of
The Rocky Flats Stewardship Council**

WHEREAS, effective as of February 13, 2006, the City and County of BROOMFIELD, the Counties of BOULDER and JEFFERSON, the Cities of ARVADA, BOULDER, GOLDEN, NORTHGLENN and WESTMINSTER, and the Town of SUPERIOR (collectively, the “Parties”), entered into an intergovernmental agreement (“IGA”) establishing the Rocky Flats Stewardship Council, a separate legal public entity created by such IGA as permitted by Colorado Constitution Article XIV and section 18(2), part 2 of article 1, title 29, C.R.S. (“Stewardship Council”); and

WHEREAS, the Stewardship Council was established to allow local governments to continue working together on issues related to the long-term protection of Rocky Flats, as described in the IGA; and

WHEREAS, pursuant to the terms of the IGA, the Stewardship Council shall terminate absent, *inter alia*, the unanimous triennial determination by all Parties that the Stewardship Council should continue for another three years; and

WHEREAS, effective February 13, 2009, the Parties approved the continuation of the Stewardship Council for three years; and

WHEREAS, the [BOCC/COUNCIL] of the [COUNTY/CITY/TOWN] now desires to consider and make a determination concerning the continuation of the Stewardship Council for another three years;

NOW, THEREFORE, BE IT RESOLVED BY THE [BOARD OF COUNTY COMMISSIONERS/COUNCIL] OF [COUNTY/CITY/TOWN OF _____] AS FOLLOWS:

That the [BOCC/COUNCIL] of the [COUNTY/CITY/TOWN of _____] does hereby find and determine that,

- a. It is not desirable for the Stewardship Council to terminate at this time; and
- b. The Stewardship Council should continue for an additional three (3) years from the date of February 13, 2012, pursuant to paragraph 10 of the IGA.

APPROVED AND ADOPTED this _____ day of _____, 20____.

[BOCC/COUNCIL]

By: _____
Chair

ATTEST:

By: _____

First Reading:
Second Reading:

FIRST AMENDMENT
TO
INTERGOVERNMENTAL AGREEMENT
ESTABLISHING THE
ROCKY FLATS STEWARDSHIP COUNCIL

This First Amendment to Intergovernmental Agreement establishing the Rocky Flats Stewardship Council (“First Amendment to IGA”) is made and entered into as of this ____ day of _____, 2012, pursuant to Colo. Const. Art. XIV, Section 18(2), part 2 of article 1, title 29, C.R.S., by and among the following parties who have executed this IGA: BOULDER COUNTY, a body politic and corporate and political subdivision of the State of Colorado, JEFFERSON COUNTY, a body politic and corporate and political subdivision of the State of Colorado, the CITY OF ARVADA, a home-rule municipal corporation and political subdivision of the State of Colorado, the CITY OF BOULDER, a home-rule municipal corporation and political subdivision of the State of Colorado, the CITY AND COUNTY OF BROOMFIELD, a Colorado municipality and county, the CITY OF WESTMINSTER, a home-rule municipal corporation and political subdivision of the State of Colorado, the TOWN OF SUPERIOR, a municipal corporation, the CITY OF GOLDEN, a home rule municipal corporation and political subdivision of the State of Colorado, and the CITY OF NORTHGLENN, a home-rule municipal corporation and political subdivision of the State of Colorado, and the CITY OF THORNTON, a home-rule municipal corporation and political subdivision of the State of Colorado (singularly and/or collectively, “Party/Parties”).

RECITALS

WHEREAS, the Rocky Flats Stewardship Council (“Stewardship Council”) was established by intergovernmental agreement (“IGA”) effective February 13, 2006, and was created to allow local governments to work together on issues related to the long-term protection of Rocky Flats; and

WHEREAS, the Stewardship Council is currently governed by a Board of Directors made up of public official representatives of nine Colorado local governments with borders which lie adjacent to or near the Rocky Flats site, including Boulder County, Jefferson County, the City of Arvada, the City of Boulder, the City and County of Broomfield, the City of Golden, the City of Northglenn, the City of Westminster, and the Town of Superior; and community stakeholder representatives including, as of the date of this amendment, the League of Women Voters, the Rocky Flats Cold War Museum, the Rocky Flats Homesteaders and Arthur Widdowfield; and

WHEREAS, the City of Thornton also lies near the Rocky Flats site and has requested to become a party to the Stewardship Council; and

WHEREAS, the Stewardship Council, at a meeting held September 12, 2011, approved the request by Thornton to become a Party to the IGA and a member of the Stewardship Council, subject to the terms and conditions of the IGA; and

WHEREAS, the Stewardship Council has further determined to make the Cities of Northglenn and Golden as “permanent” rather than “rotating” parties to the Stewardship Council; and

WHEREAS, the addition of any local government to the Stewardship Council or other modification to the IGA requires a written amendment, executed by all Parties to be valid and binding; and

WHEREAS, the Constitution and the laws of the State of Colorado permit and encourage local governmental entities to cooperate with each other to make the most efficient and effective use of their powers and responsibilities; and

WHEREAS, the execution of this First Amendment to IGA by the existing Parties to the IGA and by the City of Thornton implements Colo. Const. Art, XIV, Sec. 18(2), and part 2 of article 1, title 29, C.R.S., and is in the best interest of the Parties, the region and the people of the State of Colorado;

THEREFORE, the Parties to this First Amendment to IGA hereby covenant and agree as follows:

COVENANTS AND AGREEMENTS

1. Addition of the City of Thornton. The IGA is hereby amended to add the City of Thornton as a local government member and Party to the IGA, with all the rights, privileges and duties associated therewith, and the initial paragraph, the recitals, the body and the signature pages of the IGA shall be deemed amended to reflect this action.

2. Amendments to Remove Designation of “Permanent” and “Rotating” Parties. There shall no longer be a distinction between “Permanent Party” and “Rotating Party.” Accordingly, the IGA is hereby modified as follows:

a. Definitions: The following terms as provided under the heading “Definitions” in the IGA shall be amended as follows:

i. *“Party” shall mean “a unit of local government who is a signatory to this First Amendment to IGA, including the City and County of Broomfield, the Counties of Boulder and Jefferson, the Cities of Arvada, Boulder, Golden, Northglenn, Thornton and Westminster, and the Town of Superior.*

ii. “Permanent Party” and “Rotating Party” are hereby deleted from the IGA in their entirety.

b. Board of Directors. The first sentence of Paragraph 7 of the IGA regarding the Board of Directors shall be amended to read as follows:

*The legislative and administrative power of the Stewardship Council shall be vested with a Board of Directors not to exceed **fourteen (14)** in number, one representing each of the ten Parties, and one representing each of the Members (not to exceed four); each with one equal vote.*

c. References. All other references to “Permanent” and “Rotating” Parties in the IGA shall be read to be interpreted with the Parties’ intention to remove the distinction in designations, and refer only to “Parties.”

3. Amendment to Paragraph 7 regarding Actions of the Board: Paragraph 7.j. titled “Actions of Board” is hereby amended to change the minimum voting requirement for Board action from nine to eleven, as follows:

*j. Actions of Board. Actions of the Board require an affirmative vote of at least **eleven (11)** Directors. In the event a decision is made with less than a unanimous vote, a Director in the minority may include a statement in the record reflecting its views.*

2. Prior Provisions Effective. Except as specifically amended hereby, all the terms and provisions of the IGA shall remain in full force and effect.

3. Counterpart Execution. This First Amendment to IGA may be executed in several counterparts, each of which shall be deemed an original, and all of which together shall constitute one and the same instrument.

IN WITNESS WHEREOF, the Parties have executed this First Amendment to IGA effective as of the date first written above.

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Arthur Widdowfield

MEMORANDUM

TO: Stewardship Council Board
FROM: Rik Getty
SUBJECT: CERCLA 5-Year Review Briefing
DATE: August 24, 2011

We have scheduled 20 minutes for DOE to present a short kick-off briefing on the upcoming CERCLA 5-year review which will be conducted in 2012. Under CERCLA Superfund regulations, the EPA is required to review the remedies at Superfund sites where hazardous substances remain at levels that potentially pose an unacceptable risk. The DOE-retained lands at Rocky Flats have residual contamination resulting in use restrictions, so a periodic review is required by CERCLA.

EPA guidance provides reviews must be conducted every five years and may be conducted more frequently if necessary to ensure the protectiveness of the remedy. The last review was conducted and approved by the EPA in 2007; the next review must therefore be approved by the EPA in 2012.

CERCLA reviews are EPA's responsibility. At Rocky Flats, EPA, DOE and CPDHE will conduct the review and produce the draft report, with formal approval by the EPA. This collaborative approach mirrors the approach these three agencies adopted during the 2007 CERCLA 5-year review.

For further background information the following links provide access to past briefings to the Stewardship Council at the May and August 2007 Board meetings on the 2007 CERCLA 5-year review process:

http://www.rockyflatssc.org/RFSC_agendas/RFSC_Bd_mtg_packet_5_07.pdf

http://www.rockyflatssc.org/RFSC_agendas/RFSC_Bd_mtg_packet_8_07.pdf

As stated in the EPA guidance, "The Five-Year Review process integrates information taken from decision documents and operational data with the experiences of those responsible for and affected by actions at the site." The six components for the review process are:

- Community involvement and notification
- Document review
- Data review and analysis
- Site inspection
- Interviews
- Protectiveness determination

Information from the first five components is used to formulate a conclusion for the sixth component – namely whether the site’s remedial actions are protective of human health and the environment.

At the heart of the review process is a technical assessment conducted by EPA. This assessment focuses on three questions:

- Question A: Is the remedy functioning as intended? To answer this question the review focuses on the technical performance of the remedy. Data on monitoring, system performance and operation and maintenance of the remedy plays an important role in the determinations. In addition, the review confirms that access controls and institutional controls are in place and successfully prevent exposure.
- Question B: Are the exposure assumptions, toxicity data, cleanup levels, and Remedial Action Objectives still valid? The review examines all the risk parameters on which the original remedy decision was based. This assessment should test the validity of all assumptions that underlie the original risk calculations. To reach its conclusions, the review will generally consider changes in target populations, exposure routes, site characteristics and land use, reference doses and slope factors, regulatory requirements and remedial objectives.
- Question C: Has any other information come to light that could call into question the protectiveness of the remedy? An example would be ecological risks which had not been adequately evaluated or addressed at a site, and there is no plan to address these risks through a future action.

These questions provide a framework for organizing and evaluating data and ensure that relevant issues are considered when determining the protectiveness of the remedy. Based on the answers to questions A, B and C, a determination will be made regarding whether the remedy remains protective of human health and the environment. A draft report will be submitted to EPA for their final review and approval.

Please contact me if you have any questions.

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Arthur Widdowfield

MEMORANDUM

TO: Stewardship Council Board
FROM: Rik Getty
SUBJECT: DOE Quarterly Briefing
DATE: August 24, 2011

We have scheduled one hour for DOE to brief on the quarterly report for the first quarter of 2011 (January - March). There is no executive summary in the report. Because the report minus the appendices is 54 pages, I am attaching the table of contents. You can find the entire report at: http://www.lm.doe.gov/Rocky_Flats/Documents.aspx

Below are highlights of the surveillance and maintenance activities that I've excerpted from the report. The appendices (approximately 120 pages) include the inspection results, water quality results, and information regarding actions taken in Contact Record CR 2010-06 which addresses elevated Pu levels found at monitoring location SW027.

DOE will brief on the following topics in a format similar to past quarterly and annual report updates:

- surface water monitoring;
- groundwater monitoring;
- ecological monitoring; and,
- site operations (inspections, pond operations, security, general maintenance, etc.).

Please contact me if you have any questions.

Annual Site Inspection

Annual inspection and monitoring of evidence of significant erosion and violation of institutional controls (ICs) is required in accordance with RFLMA Attachment 2, Sections 5.3.4 and 5.3.6. The inspection was conducted on March 15, 2011.

The following categories were inspected or monitored during the inspection:

- Evidence of significant erosion in the Central Operable Unit (COU), and the proximity of this erosion to subsurface features identified in RFLMA Attachment 2, Figure 3 and Figure

4. This monitoring included observation for precursor evidence of significant erosion, such as cracks, rills, slumping, subsidence, and sediment deposition.
- The effectiveness of ICs as determined through any evidence of the violation of any of these controls.
 - Evidence of adverse biological conditions, such as unexpected morbidity or mortality.

As part of the IC inspection, verification that the Environmental Covenant remains in the administrative record and on file in Jefferson County records is required annually. In addition, physical controls (i.e., signs placed along the COU fence) were also inspected.

No evidence of violations of institutional or physical controls was observed.

On March 18, 2011, an inspection team member verified that the Environmental Covenant for the COU remains in the administrative record and on file with the Jefferson County land records, which are used by the Planning and Zoning Department.

No adverse biological conditions were noted during the inspection.

The most significant finding of this annual inspection was the discovery of a deep sinkhole approximately 5 feet wide by 10 feet long by 25 feet deep located on the southwest side of the former Building 881 (the only building explosively demolished during cleanup).

Several areas were noted as having evidence of erosion, possible depressions, or holes. Except for a deep hole in the vicinity of the former Building 881 southwest corner, these appeared to be minor and very limited in area. Survey coordinates indicate that the location of the hole was the south stairwell leading from the building entrance hallway to the basement level. A photograph of the hole is included in Appendix A, along with a copy of the building footprint showing the location. Based on the final characterization surveys of former Building 881, the building met free release criteria, and it was demolished by explosive demolition, resulting in the upper two floors collapsing onto the bottom floor. The area was then filled and contoured. The hole appears to be due to settling of fill material at the bottom area of the staircase, causing the fill soil to settle into the staircase structure that did not fully collapse during demolition.

The general area surrounding the hole was fenced off with temporary fencing, and Stoller Engineering provided guidance on the method to fill the hole. The hole was filled on March 30, 2011, using 28 tons of imported structural fines and 20 tons of imported Rocky Flats Alluvium. The fill material was imported from a pit located to the west of Rocky Flats Site. Fill material was hauled to the site with a tandem dump truck and staged approximately 60 feet away from the hole. An excavator was then used to move the material from the staging area directly into the hole. Fill material was mechanically compacted by using the bucket of the excavator. Final grade of the compacted fill was left approximately 1 foot above the surrounding grades so that any minor settlement of the fill material would not create a depression. The area was re-seeded with Rocky Flats native seed varieties upon completion of the project.

Based on the depth of the Building 881 hole and the possibility that other holes could form in the future above buried subsurface structures, site operations personnel now inspect selected areas

quarterly. The surface locations have been marked with fence posts for ease of conducting inspections, and access to these locations is managed using the Site work authorization and approval process.

Present Landfill (PLF) Inspection

The routine PLF inspection for the first quarter of CY 2011 was performed on February 28, 2011. No significant problems were observed during these inspections. Copies of the landfill inspection forms are presented in Appendix B.

Original Landfill (OLF) Inspection

Routine OLF monthly inspections during the first quarter of CY 2011 were performed on January 28, February 28, and March 30, 2011. The landfill cover vegetation was evaluated on March 17, 2011. The completed inspection forms are presented in Appendix B.

Groundwater Treatment Systems

Mound Site Plume Treatment System (MSPTS)

Routine maintenance activities continued at the MSPTS through the first quarter of CY 2011. The most significant of these activities was the replacement of the media within the two treatment cells and repairs to the subsurface effluent discharge gallery, which had become partially clogged. In addition, minor upgrades to the plumbing within each treatment cell were made to support potential future upgrades that would reduce long-term maintenance costs.

Finally, an effluent polishing component was also installed as a part of this project. The project was conducted in February and March; prior to its start, routine maintenance activities that were conducted included checking and flushing filters and inspecting influent and effluent flow conditions. The parallel upflow configuration established in June 2010 was maintained and will remain the primary flow configuration at the MSPTS until further notice.

The effluent polishing component is an innovative, solar-powered air stripper that is contained within the pre-existing effluent metering manhole. This unit will be tested for effectiveness and optimized for some time before it is considered complete. Some of the aspects to be tested and optimized include the number and configuration of spray nozzles, the pump rate, ventilation of the air stripper housing (the manhole), and the system flow rate. Because of the numerous variables and need to optimize the unit, the component that was installed is only designed for half-time operation (during the daytime). Testing will be performed to identify adjustments needed to achieve optimal effectiveness. The results of optimization efforts will dictate additional infrastructure needs (ranging from nozzles and pumps to additional solar power infrastructure). Once optimized, the unit will be equipped for uninterrupted operation. The 2011 annual report will provide a more comprehensive discussion of the unit and its associated optimization.

East Trenches Plume Treatment System (ETPTS)

Routine maintenance activities continued at the ETPTS through the first quarter of CY 2011. These activities included checking influent and effluent flow conditions and water levels in the cells. Refer to Section 3.1.10.2 for information on water quality sampling.

Solar Ponds Plume Treatment System (SPPTS)

Routine maintenance activities continued at the SPPTS through the first quarter of CY 2011. These activities included weekly inspections of the solar/battery systems that power the pumps, the operation of the pumps, and influent and effluent flow conditions.

The Phase II and III upgrades that were completed in the second quarter of CY 2009 continued to be a focal point for optimization efforts. Most of these efforts were directed to operation of Phase III Cell A (the cell filled with inert media, which is dosed with liquid carbon to support denitrifying bacteria), and included adjustments to recirculation, flow rates, and dosing. In addition, due to accumulation of biomass in the cell, maintenance actions were initiated that involved using a rod or similar tool to puncture and break apart the biomass.

Section 3.1.10.3 summarizes the non-RFLMA sampling conducted at the SPPTS in the first quarter of CY 2011.

Present Landfill Treatment System (PLFTS)

Routine maintenance activities continued at the PLFTS through the first quarter of CY 2011. These activities generally consisted of inspecting the system for potential problems.

Erosion Control and Re-vegetation

Maintenance of the site erosion control features required continued effort throughout the first quarter of CY 2011, especially following high-wind or precipitation events. Erosion wattles and matting loosened and displaced by high winds or rain were repaired. Erosion controls were installed and maintained for the various projects that were ongoing during the first quarter of CY 2011. Several areas were interseeded with additional native species to increase vegetation cover.

Water Monitoring Highlights

During the first quarter of CY 2011, the water monitoring network successfully met the targeted monitoring objectives as required by the RFLMA and in conformance with RFSOG implementation guidance. The RFLMA network consisted of 11 automated gaging stations, 10 surface water grab-sampling locations, 8 treatment system locations, 99 wells, and 8 precipitation gages. During the quarter, 25 flow-paced composite samples, 10 surface water grab samples, 8 treatment system samples, and 10 groundwater samples were collected (in accordance with RFLMA protocols) and submitted for analysis. An additional three flow-paced composites were in progress during the quarter, and analytical data were not available for this report.

All water quality data at the RFLMA POCs remained well below the applicable standards through the first quarter of CY 2011.

Elevated levels of plutonium-239,240 were measured at POE SW027 during the second quarter of 2010. These data are presented and discussed further in Section 3.1.3.2. Since SW027 has seen very little flow since April 2010, no additional composite samples have been collected. Thus, no new analytical data are available to include in the 12-month rolling average, and the 12-month rolling average for plutonium remains at reportable levels. All other analyte concentrations at SW027 remained below reporting levels as of the end of the first quarter of CY 2011.

All POE analyte concentrations at GS10 and SW093 remained below reporting levels as of the end of the first quarter of CY 2011. Erosion and runoff controls, as well as extensive revegetation efforts, have been effective in measurably reducing both sediment transport and constituent concentrations. As of the end of the first quarter of CY 2011, these monitoring locations continued to show plutonium-239, plutonium-240, and americium-241 activities well below the RFLMA standards. With the removal of impervious areas (resulting in decreased runoff), the stabilization of soils within the drainages, and the progression of revegetation, water quality is expected to continue to be acceptable.

Groundwater monitoring results will be evaluated as part of the annual report for CY 2011.

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LeRoy Moore Briefing

- Cover memo
- Letter from LeRoy Moore
- Briefing materials

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League of Women Voters -- Rocky Flats Cold War Museum -- Rocky Flats Homesteaders
Arthur Widdowfield

MEMORANDUM

TO: Board
FROM: David Abelson
SUBJECT: LeRoy Moore
DATE: September 1, 2011

I have scheduled 30 minutes for LeRoy Moore with the Rocky Mountain Peace and Justice Center to brief on his perspectives and concerns with the cleanup and closure of Rocky Flats, and related issues. LeRoy's briefing materials are attached.

Rocky Mountain Peace and Justice Center

P. O. Box 1156, Boulder, CO 80306 USA 303-444-6981 Fax 720-565-9755 <http://rmpic.org/>

August 29, 2011

To: Members of the Rocky Flats Stewardship Council
From: LeRoy Moore, PhD

Thank you for asking me to share my perspective on Rocky Flats with the Stewardship Council at your meeting on September 12.

When I moved to Colorado in 1974 to teach American Studies and Religious Studies at the University of Denver (my own doctorate being in the history of religion in the U.S.) I knew nothing of the existence of the Rocky Flats plant. I had been telling students since about 1970 that in my view the human race faced three fundamental threats of our own making to our ongoing existence: a nuclear holocaust, a catastrophic environmental disaster, and centralized, secretive and thus non-democratic governance. I encouraged students to identify sources of these threats as well as cultural resources on which we might draw to avert them so as to continue our life on this planet.

When I learned about the Rocky Flats nuclear bomb plant in 1978 I saw that it posed all three of these threats in a very concentrated form. In response I left the academic world for an activist vocation focused on Rocky Flats and the larger nuclear enterprise of which it is a part. I brought to this work no scientific training but considerable experience as a researcher, writer and teacher. I simplified my life to live on the modest income of teaching part-time at CU, where from 1980 until I retired in 1996 I offered courses on nonviolent social change. In 1983 I helped found the Rocky Mountain Peace and Justice Center, which ever since has been the base for my work on the nuclear issue. All this work has been a non-paid wholly volunteer activity.

When I joined the company of Rocky Flats activists in 1979 they were referring to Rocky Flats as a “local hazard, global threat.” The “global threat” signifies Rocky Flats’ contribution to a possible nuclear holocaust as the sole U.S. producer of the explosive plutonium “pits” at the core of nuclear warheads. The “local hazard” refers to radioactive and chemical toxins released into the environment of the Denver area and beyond during production years, typically without the public being informed.

In the years after I learned about Rocky Flats I resisted production at the plant until it officially ended in 1992, then served on several advisory or oversight bodies through all the years of the “cleanup.” Meanwhile, I have

been on a steep learning curve regarding the science of radiation health effects, have written many articles and papers on all aspects of Rocky Flats, and for a number of years was a rare lay member of two committees of the National Council on Radiation Protection and Measurements. Now, 32 years later I find that Rocky Flats is still a “local hazard and a global threat.” A global threat because the plutonium pit in essentially every nuclear warhead in the present U.S. arsenal was made at Rocky Flats (by now a few have been produced at Los Alamos). And, despite the Superfund cleanup or because of it Rocky Flats continues to pose a “local hazard.” And that’s why we need Nuclear Guardianship.

“Rocky Flats: The Case for Nuclear Guardianship” is the topic of the presentation I will make on September 12. The 15-page paper included with this letter makes this case along four separate but interrelated lines: 1) the questionable character of the Rocky Flats “cleanup”; 2) the toxicity of plutonium; 3) the dubious foundation of standards for permissible exposure to radiation; and 4) Response: Nuclear Guardianship for Rocky Flats.

My paper is not intended as a comprehensive account of these topics. Still, it provides a great deal of information, including links and references to material not included. If you prefer something shorter than the whole paper, reading the abstract and the introduction and conclusion for each of the four parts will give you a good sense my message.

I very much look forward to discussing these issues with you on September 12.

Yours truly,

LeRoy Moore

ROCKY FLATS: THE CASE FOR NUCLEAR GUARDIANSHIP

LeRoy Moore, PhD

Rocky Mountain Peace and Justice Center

September 12, 2011

Abstract: This paper makes the case for Nuclear Guardianship at Rocky in three parts. Part 1 documents the questionable character of the Rocky Flats “cleanup.” It shows that the government bodies responsible for the cleanup failed to review documents from an investigation of environmental lawbreaking at the facility, ignored findings of plutonium mobility as well as a major study on burrowing animals at the site, characterized the eastern buffer zone in a way that gave insufficient weight to a 1970 AEC study that showed heavy plutonium contamination in this area, and did no Environmental Impact Statement. Late in the cleanup process the engaged public learned that years earlier a cap had been placed on funding for the cleanup. The final Rocky Flats Cleanup Agreement was rejected by 86% of the parties who commented on it.

Part 2 focuses on the toxicity of plutonium. Harmful only if taken into the body, it remains dangerously radioactive for more than a quarter-million years. Because it is lethal in very small amounts and is present in the Rocky Flats environment as minuscule particles, it poses an essentially permanent hazard at the site. Agencies that calculate risk recognize that plutonium is far more dangerous than other radioactive elements, yet their calculations by design fail to protect the most vulnerable. Plutonium’s potential to harm the human gene pool may be its greatest danger.

Part 3 shows why standards for permissible exposure to radiation are flawed. First, all such standards in a variety of ways stack the deck against the vulnerable. Though a recent definitive study shows that any exposure to radiation is potentially harmful, risk analysis in practice assumes that some level of exposure is acceptable. Certain standards that apply at Rocky Flats are found wanting. Affected people have always been excluded from the process of setting standards. And effects of exposure on wildlife have hardly been examined. The uncertainty that thus prevails in risk analysis is often taken to mean the absence of a problem rather than the possible presence of one, a practice recently criticized from within the scientific establishment.

The paper’s final section explains that Nuclear Guardianship responds directly to the long-term nature of the nuclear peril we humans have created. Brief reference is made to how Rocky Flats can become a model for ecological responsibility rather than risk.

1. The questionable character of the Rocky Flats “cleanup”

The agencies responsible for the “cleanup” EPA, CDPHE and DOE ignored some pertinent data and in other cases used incomplete or faulty data.

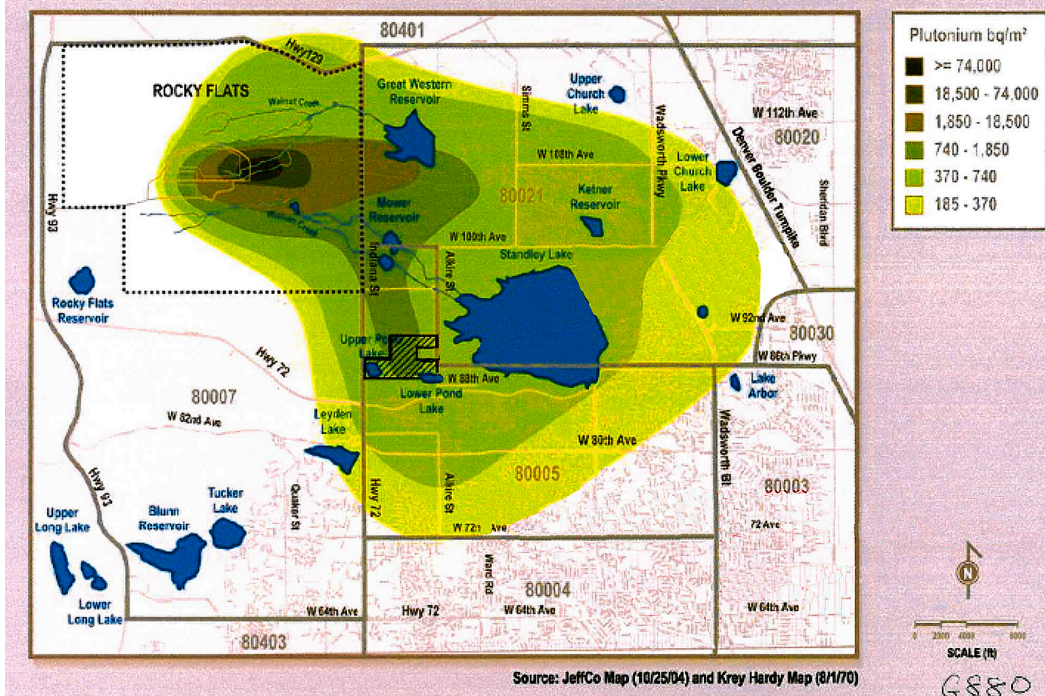
- **Data from an investigation of environmental lawbreaking:** The FBI raided Rocky Flats in 1989 to collect evidence of alleged environmental lawbreaking by plant operator Rockwell International. A special grand jury spent nearly three years reviewing the evidence and was ready to indict several Rockwell and DOE officials when the case was settled out of court. Major charges against Rockwell were dropped, the company paid a fine for relatively minor offenses, and 65 cartons of documents from the case were sealed in the Denver Federal Courthouse. Do these cartons contain evidence of environmental contamination that should have been reviewed by those responsible for the Rocky Flats “cleanup”? That the grand jury opposed the settlement suggests that such review should have occurred. Yet the EPA and CDPHE, the agencies that regulated the “cleanup,” never reviewed these documents. Wes McKinley, foreman of the grand jury, cannot by law reveal what he learned from the grand jury work, but he’s an outspoken critic of the cleanup (see McKinley and Caron Balkany, *The Ambushed Grand Jury* [N.Y.: Apex Press 2004]). Jon Lipsky, the FBI agent in charge of the raid, calls the cleanup “woefully inadequate a farce” (<http://www.grist.org/article/little-rockyflats/>). Until the sealed documents are made available for examination by the public doubt will remain about the reliability of the “cleanup.” At this point there is no national security justification for continued secrecy regarding possible environmental lawbreaking during production years at Rocky Flats.
- **Question of plutonium mobility:** Those who designed the “cleanup” for Rocky Flats relied on scientists who did a multi-year Actinide Migration Evaluation at the site and concluded that plutonium left in the soil at Rocky Flats will remain “relatively immobile.” But their results were based primarily on computer modeling rather than empirical observation (see <http://rmpjc.org/2010/12/03/science-compromised-in-the-cleanup-of-rocky-flats/>). By contrast, environmental engineer M. Iggy Litaor, in the unusually wet spring of 1995 with instruments he had set up in the field, detected significant horizontal migration of plutonium in subsurface soil at Rocky Flats. Soon after his stunning real-time discovery, which attracted a great deal of attention because it countered the prevailing Rocky Flats orthodoxy, he was involuntarily terminated by Kaiser-Hill and replaced by the Actinide Migration team. Back in his native Israel, he tried for about two years to get DOE-Rocky Flats to provide computerized data he needed to complete a report of his findings. They ignored his request. He thus never published a report in a technical journal documenting what he

had found. Absent such, it's as if the movement of plutonium Litaor directly observed in the saturated conditions at Rocky Flats in the spring of 1995 never happened.

- **Bioturbation:** In an unprecedented 1996 study, ecologist Shawn Smallwood revealed how burrowing animals redistribute contaminants left in the soil at Rocky Flats. He identified 18 species of burrowing creatures at Rocky Flats, all constantly moving soil and any adhering contaminants. They take surface material down and bring buried material up. Major diggers, like pocket gophers, harvester ants, and prairie dogs, burrow to depths of 16 feet and more and disturb very large areas on the surface. Coyotes, badgers, rabbits, and other animals move additional soil. Plants loosen soil and create passages animals use. Smallwood estimates that burrowing animals disturb 11 to 12% of surface soil at Rocky Flats in any given year. Undisturbed soils do not exist at this site. Plutonium and americium, which at Rocky Flats are only partially remediated down to a depth of 6 feet and are not remediated at all below that level, are being constantly re-circulated in the environment. What's now buried is likely some day to be brought to the surface for wider dispersal by wind, water, fires or other means. Material brought to the surface in the more contaminated DOE-retained land at the center of the wildlife refuge can be redistributed within the refuge and beyond, posing a danger now and in perpetuity. Humans will unwittingly take particles into their bodies (Smallwood, "Soil Bioturbation and Wind Affect Fate of Hazardous Materials that Were Released at the Rocky Flats Plant, Colorado" [November 23, 1996], Report submitted for plaintiff's counsel in *Cook v. Rockwell International*, United States District Court, District of Colorado, No. 90-CV-00181).

In his research Smallwood went onto the Rocky Flats site on three separate occasions in the summer and fall of 1996, each time accompanied by Rocky Flats personnel. He finished his report before the end of that year and two years later published results in a technical journal ("Animal Burrowing Attributes Affecting Hazardous Waste Management," *Environmental Management*, vol. 22, no. 6, 1998, pp. 831-847). But officials from the DOE, EPA and CDPHE who established the soil remediation standards in the final Rocky Flats Cleanup Agreement of June 2003 ignored his findings. Regarding burrowing animals, they considered prairie dog activity in the top 6 feet of soil. They relied primarily on the conclusion of the Actinide Migration Evaluation scientists that plutonium left in the Rocky Flats soil would remain "relatively immobile." The AME scientists, in their 2004 final report, stated that data on highly mobile species that might transport actinides "are not available and would be difficult and in some cases logistically nearly impossible to obtain" (Kaiser-Hill Co. Actinide Migration Evaluation Pathway Analysis Summary Report, ER-108 [April 2004], p. 23). Smallwood's study had been completed eight years earlier.

- Questionable characterization of the eastern buffer zone:** In 1970 P. W. Krey and E. P. Hardy, Atomic Energy Commission scientists, produced this map showing deposits of plutonium released from Rocky Flats into the environment on and off the Rocky Flats site in becquerels per square meter (one becquerel = one burst of radiation per second). To



produce their map, Krey and Hardy sampled soil to a depth of 20 cm (about 8 inches) across the predominantly downwind eastern portion of the Rocky Flats site plus a large off-site downwind area (the map includes about 30 square miles of off-site land within the contaminated zone). They determined the plutonium content in each sample as well as its depth in the soil. Some plutonium on the surface of soil when they did their work in 1970 has undoubtedly blown away. But most of the plutonium present in what they showed to be high concentrations in the eastern part of the Rocky Flats site should still be there, having percolated down to deeper levels in the soil.

By contrast, maps used to characterize the Rocky Flats site for the “cleanup” completed in 2005 show only a scant presence of plutonium in the eastern part of the site. These maps show the results of a procedure known as “kriging.” The kriging method entails dividing a given area into large plots (perhaps of 35 acres each), collecting five shallow samples from within each plot, mixing these samples and then analyzing the blended material to produce an average plutonium concentration for that plot. This method misses deeper deposits and could average away hot spots. It is very different from the method employed by Krey and Hardy of sampling to depth and analyzing each sample. As noted earlier, the “cleanup” assumes that plutonium left in the Rocky Flats soil is “relatively

immobile.” U.S. Fish & Wildlife Service now manages most of the former Rocky Flats buffer zone. On July 21, 2011, the Inspector General’s Office in the Department of Interior issued a report entitled "Status of the Rocky Flats National Wildlife Refuge." The report calls attention to a serious problem of noxious weeds at Rocky Flats and says that the method employed at other wildlife refuges of plowing such weeds under cannot be used at Rocky Flats because both the EPA and CDPHE warn that doing this at Rocky Flats "could cause elevated levels of remaining radioactive material to migrate into surface water” (quoted in <http://www.nytimes.com/gwire/2011/08/01/01greenwire-colo-wildlife-refuge-with-nuclear-past-faces-n-27122.html>). In short, both EPA and CDPHE have acknowledged to a Department of Interior official that plutonium or other radionuclides are present in topsoil of the former Rocky Flats buffer zone. The kriging maps did not show this.

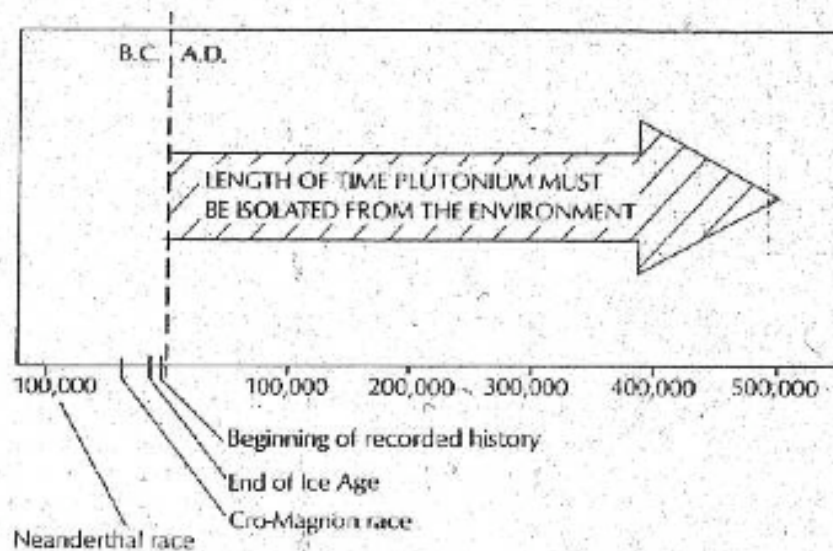
- **No EIS:** The National Environmental Policy Act requires federal agencies undertaking action that significantly affects the human environment to do an Environmental Impact Statement for that action, yet none was done for the Rocky Flats “cleanup.” Conceivably, the EIS process would have corrected faulty data and uncovered ignored data.
- **Cap on the funding for the cleanup:** Some involved in the public-participation process related to the cleanup continually advocated cleaning the site to the maximum extent possible with existing technology. A DOE official eventually revealed that years earlier a secret deal had been made with Congress that put a ceiling on what could be spent on the cleanup. Money, thus, was the real driver of the “cleanup” and secrecy had not died with the end of production (See Moore, “Rocky Flats: The Bait and Switch Cleanup,” *Bulletin of the Atomic Scientists* [Jan./Feb. 2005] at <http://www.rockyflatsnuclearguardianship.org/leroy-moore/papers-by-leroy-moore-phd-2/>).
- **Lack of public support for the “cleanup”:** When the agencies put the final Rocky Flats Cleanup Agreement out for public comment in late 2002, 86% of the parties commenting rejected what they proposed (see comments at <https://www.rfets.gov/eddie/rfcaandimp/RFCA/main.asp>).
- **Conclusion:** The “cleanup” done at Rocky Flats endangers uninformed people of future generations. As the foregoing shows, the site was “cleaned” using questionable data and incomplete information. Though most of the site has legally become a wildlife refuge, it will cease being a wildlife refuge long before plutonium left in the environment ceases to be dangerous. What happens after fences fall and memory fades?

2. The toxicity of plutonium

Plutonium-239 was the fissile material used in the production of warhead pits at Rocky Flats. It is the contaminant of principal concern at Rocky Flats. In what follows this particular isotope is referred to simply as plutonium.

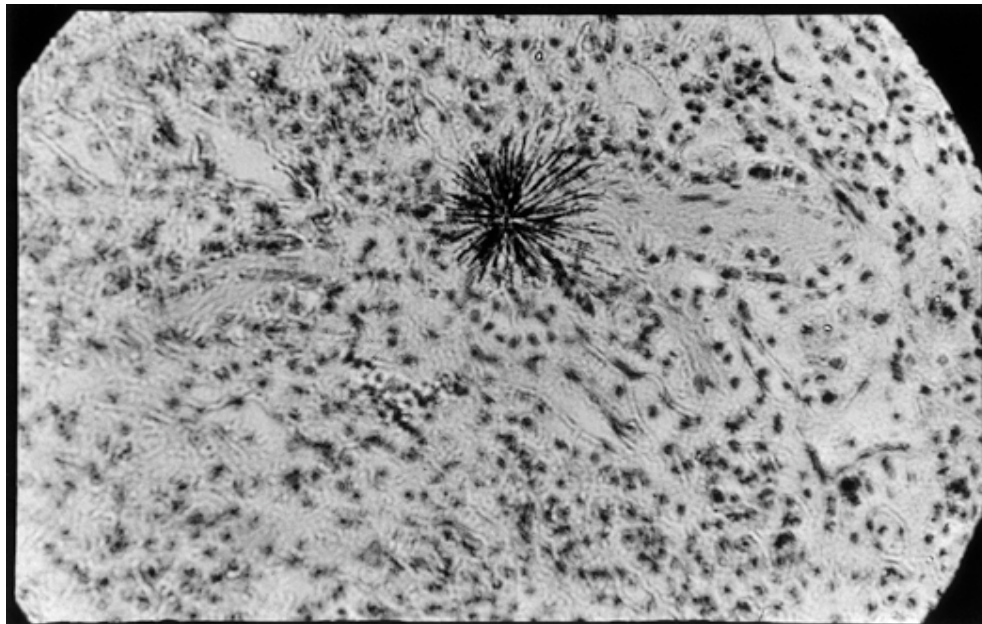
- **Radioactivity:** All radioactive materials emit energy in the form of electron volts that can damage human tissue. But the highly concentrated energy emitted by plutonium makes it “fiendishly toxic, even in small amounts,” according to Glenn Seaborg, who in 1941 isolated and named plutonium (quoted in Jeremy Bernstein, *Plutonium* [2007], p. 105).
- **Plutonium’s long half-life:** Plutonium-239 has a half-life of 24,110 years. It remains dangerously radioactive for more than a quarter-million years. The physicist Fritjof Capra thought it should be kept isolated from the environment for half-a-million years. At Rocky Flats not only was it deposited in the environment but the cleanup entailed no effort to remove as much as possible. Some unknown quantity was knowingly left behind.

Timescale for Plutonium in the Environment
(from Fritjof Capra, *The Turning Point*, 1982, p. 246)



- **Potentially lethal if internalized:** The alpha radiation emitted by plutonium cannot penetrate skin like x-rays or gamma radiation. But tiny particles inhaled, ingested, or otherwise taken into the body through an open wound may lodge in the lungs, liver, surface or marrow of bone or elsewhere. For as long as plutonium resides in the body it continually bombards the immediately surrounding tissue with radiation. The result

may be cancer, genetic defects, harm to the immune system. The latency period for cancer may be 20 to 30 years.



- **Plutonium in lung tissue:** “The black star in the middle of this picture shows the tracks made by alpha rays emitted from a particle of plutonium-239 in the lung tissue of an ape. The alpha rays do not travel very far, but once inside the body, they can penetrate more than 10,000 cells within their range. This set of alpha tracks (magnified 500 times) occurred over a 48-hour period.” (Robert Del Tredici, *At Work in the Fields of the Bomb* [NY: Harper & Row, 1987], plate 39)
- **An essentially permanent danger:** Due to its long half-life and the danger of taking tiny particles into the body, any quantity of plutonium left in the environment poses an essentially permanent danger.
- **Hazardous in very small amounts:** Plutonium particles of 10 microns or smaller can be inhaled. For comparison, the average diameter of human hair is about 50 microns. Meteorologist W. Gale Biggs found that airborne particles at Rocky Flats “are probably smaller than 0.01 microns” (“Emissions and Monitoring of Plutonium from Rocky Flats,” April 26, 2007). Such particles were distributed across the whole of the Rocky Flats site and beyond. Particles to see are not too small to do harm.
- **Potential harm from a single plutonium alpha particle:** Researchers at Columbia University demonstrated that a single plutonium alpha particle induces mutations in mammal cells. Cells receiving very low doses were more likely to be damaged than destroyed. Replication of these damaged cells constitutes genetic harm, and more such harm per unit

dose occurs at very low doses than would occur with higher doses. In a follow-up study, they found that “a single alpha particle can induce mutations and chromosome aberrations in [adjacent or bystander] cells that received no direct radiation exposure to their DNA.” (Tom K. Hei et al., *Proceedings of the National Academy of Sciences*, vol. 94 [Ap. 1997], pp. 3765-3770; and vol. 98 [4 Dec. 2001], pp. 14410-14415)

- **An especially harmful type of radiation:** The alpha radiation emitted by plutonium cannot penetrate skin, but if a particle lodges in the body the alpha radiation it emits is far more harmful than an equal dose from a source of gamma, beta, or x-ray radiation that passes through the body. Therefore, the agencies that set standards for permissible exposure use a special factor called the “relative biological effect” (RBE) to calculate the extra harm that may result from internal alpha exposure. The RBE number they employ is 20. This means that they assume that plutonium, such as that left in the environment at Rocky Flats, poses a risk of harm 20 times greater than the equivalent dose of radiation emitted by, say, x-rays. But 20 is the average RBE. For some individuals the actual RBE will be far greater. The RBE for bone cancer, for example, ranges to as high as 320. For an individual susceptible to bone cancer, therefore, plutonium exposure thus could be 16 times more harmful than exposure allowed for calculating risk using an RBE of 20. The averaging approach customarily employed by those who set exposure standards disregards the enormous variations in human susceptibility. (For RBE, see Helen A. Grogan et al., *Assessing Risk of Exposure to Plutonium*, Health Studies on Rocky Flats, Risk Assessment Corp. [Feb. 2000], pp. 6.27-6.39)
- **Potential harm to human gene pool:** British researchers recently concluded that the RBE for genetic effects is essentially infinite, because the extent of potential harm to the gene pool is incalculable (M. A. Khadim et al., *Nature*, vol. 355, no. 20 [Feb. 1992], pp. 738-740). The resultant “genomic instability” may account for illnesses so elusive that epidemiology is “powerless” to detect any relationship between their incidence and exposure to radiation (Rob Edwards, *New Scientist*, vol. 11 Oct. 1997, pp. 37-40). Plutonium’s greatest danger may prove to be an insidious damage to the human gene pool.
- **The distinct vulnerability of a human child:** The elderly, the ill, those with a genetic susceptibility and the fetus are among the vulnerable. But of all creatures exposed to alpha emitters like plutonium the human child is without question the most vulnerable. Among the reasons are these:
 - a) A human child is more likely than an adult to stir up dust, to eat dirt, to breathe in gasps, or to scrape a knee or an elbow, all ways of taking tiny particles of plutonium or americium into the body.

- b) Because a child's body is smaller than an adult's, internalized plutonium or americium have much less mass in which to be distributed or to concentrate.
 - c) Plutonium or americium within a child's body integrates with that child's growth and tissue development.
 - d) By contrast to either adult humans or other beings, a child's normal life span provides far more time for internalized alpha emitters to harm her or his health.
- **Conclusion:** Results of studies of the toxicity of plutonium show it to be more harmful than is reflected in the regulations and standards employed by government agencies purportedly to protect exposed individuals. This suggests that standards for permissible exposure to plutonium are quite inadequate, but as the following section shows this inadequacy has very deep roots within the official nuclear culture.

3. Why standards for permissible exposure to radiation are flawed

A feature of the nuclear age is recognition that exposure to ionizing radiation (here referred to simply as radiation) may cause harm and that it's necessary therefore to develop standards for permissible exposure. The major bodies that study radiation health effects and make recommendations regarding exposure standards to government and industry are the ICRP (International Commission on Radiological Protection) and the NCRP (National Council on Radiation Protection and Measurements). Their work is highly technical and esoteric. But as the game is actually played, setting exposure standards is a gamble in which from the first the deck is stacked against the exposed. (For a detailed critique of the ICRP by Canadian radiation health specialist Dr. Rosalie Bertell, see http://www.ccnr.org/radiation_standards.html)

- **The dubious foundation of radiation exposure standards:** The whole edifice of US and international standards for permissible exposure to radiation rests on the dubious foundation of estimated doses and cancer incidence rates among the survivors of the Hiroshima and Nagasaki bombings. But the survivors belong to the strongest, healthiest, most robust part of the population, and, besides, no information was collected on these people until five years after the bombings and estimates of their exposures are highly uncertain and have been modified twice. When a large population is exposed to some toxin, those who die first from this exposure will be the ill, the infirm, the old, the very young and those with a genetic susceptibility. Basing exposure standards on what happens to survivors results in protecting the strong more than those who most need

protection. Also, as stated above, it means that across the board the deck is stacked against the exposed. A better foundation for setting standards would be to use data on nuclear workers (Steve Wing, David Richardson and Alice Stewart, “The Relevance of Occupational Epidemiology to Radiation Protection Standards,” *New Solutions*, vol. 9, no. 2 [1999]).

- **Who is protected?** U.S. and international standards in general are set to protect “reference man,” who is defined by the ICRP as a 154-pound Caucasian male in his twenties. Infants, children, women, the elderly, a fetus or a person with a genetic susceptibility are more vulnerable than “reference man,” but standards for permissible exposure are generally calculated to protect him (see <http://www.ieer.org/campaign/index.html>).
- **No safe dose:** The National Academy of Sciences report on *Health Risks from Exposure to Low Levels of Ionizing Radiation* (BEIR VII, 2006), the most complete study of this kind to date, categorically affirmed that any dose of radiation is potentially harmful. In the run-up to this study many figures within or close to the nuclear establishment expected the study to conclude that there is a threshold for safe exposure, that is, that exposures below a certain level would be shown to be harmless or even beneficial. The study clearly demonstrated that there is no such thing as a safe dose. (I discussed the controversy leading up to this study in “Lowering the Bar,” *Bulletin of the Atomic Scientists*, May-June 2002, pp. 28-37; <http://www.amazon.com/Lowering-bar-government-standards-how-Scientists/dp/B0008FBCCC>)
- **Risk assessment and cost-benefit analysis:** In the 1970s and 80s, just as the public was learning about local hazards at Rocky Flats, government and industry personnel were applying the tools of risk assessment and cost-benefit analysis in the nuclear realm. These tools enable decision-makers to deal with threats to public health and environmental integrity without unduly impeding enterprises like the nuclear industry. Incorporation of these tools into the decision-making process is based on the assumption that scientists can understand the impact of human activities on ecological and human systems well enough to predict harm and to estimate risk. The resultant risk-based regulatory regime that now prevails in the U.S. puts a price on human health and ecological well-being without really knowing what that price is. It presupposes that some level of harm is acceptable without asking those affected whether it is acceptable to them. Abstract and abstruse formulations of risk consign wholly unknown persons to disease, deformity and premature death. Victims become nameless ciphers devoid of flesh and blood.
- **Rocky Flats: Workers exposed to plutonium:** In 1987 Gregg S. Wilkinson of DOE’s Los Alamos Lab published results of his study

showing that some exposed Rocky Flats workers with internal plutonium deposits as low as 5% of DOE's purportedly safe permissible lifetime body burden developed a variety of cancers in excess of what was normal for unexposed workers (*American Journal of Epidemiology*, vol. 125, no. 2 [1987], pp. 231-250). His study created a firestorm of controversy within DOE. A physician at Los Alamos told him that his findings, if true, "would shut down the nuclear industry!" His supervisor urged him to modify his findings prior to publication to please "the customer" that is, DOE. When he went ahead with publication his work conditions were made intolerable and he resigned (Wilkinson, "Seven years in search of alpha: The best of times, the worst of times," *Epidemiology*, 10 [1999]).

- **Rocky Flats: Cleanup standards compared to background**
 - a) Plutonium is not a part of natural background radiation. Natural background has been altered globally by the addition of plutonium fallout from detonating nuclear devices in the atmosphere.
 - b) The average background level for plutonium from global fallout in soil along the Front Range of the Rockies in Colorado is 0.04 picocuries per gram of soil (pCi/g).
 - c) The 50 pCi/g of plutonium allowed to remain in the top 3 feet of soil at the site is 1,250 times the 0.04 pCi/g average background level.
 - d) The 1,000 to 7,000 pCi/g of plutonium allowed at a depth of 3 to 6 feet below the surface at the site is 25,000 to 175,000 times the 0.04 pCi/g average background level. Below 6 feet, there is no limit.
 - e) The late Edward Martell, the NCAR radiochemist who opened up the public health issue for Rocky Flats when he found plutonium in the off-site environment after the 1969 fire, observed that some people become ill and die from exposure to naturally occurring radiation. He said also that exposures to fallout from nuclear weapons tests have increased disease and death worldwide. The dissident Soviet nuclear scientist Andrei Sakharov said the same thing. We thus should do our best to eliminate risk or to reduce it to the lowest possible level. This principle was not followed in setting cleanup standards for Rocky Flats.

- **Rocky Flats: 2×10^{-6} :** These numbers appear in some documents related to the "cleanup" done at Rocky Flats. What do they mean? They are an abstract shorthand referring to an estimated lifetime excess cancer risk to two individuals out of one million (10^{-6}) exposed to cancer-causing agents in the Rocky Flats environment. This is the anticipated cancer risk among wildlife refuge workers at Rocky Flats. Out of one million persons employed as refuge workers, two will get cancer by age 70. This sounds very cautious, and the conclusion itself is stated as if it were a matter of certainty. But the risk assessment by which this conclusion is reached is freighted with multiple uncertainties that remain for the most part an esoteric science not accessible to affected parties, that is, to those who may

be exposed. Of course, at Rocky Flats this means not simply the putative wildlife refuge workers but also any other people who may venture onto the Rocky Flats site or who may be affected by cancer-causing substances released into the atmosphere from the site. If the refuge worker, the one who will spend the most time at Rocky Flats, is protected at the 2×10^{-6} level, others need not worry; for them the site is “safe.” But cancer happens to specific individuals, each with her or his own distinct vulnerabilities that don’t fit the model of “standard man.” This, plus the fact that the toxicity of plutonium is underestimated in the official ways of calculating risk, means that formulas, like the one that heads this paragraph, are at best misleading and at worst utterly false.

- Dust:** Though dust wafting in the breeze is the likeliest way for humans to be exposed to plutonium, there has never been a program of routine sampling of respirable dust in surface soil at Rocky Flats. CDPHE has a little known history in this regard. In 1975 Dr. Carl Johnson, then head of the Jefferson County Health Department, and two soil-scientists from the US Geological Survey took dust samples at 25 locations on nearby off-site land east of the Rocky Flats site. They found plutonium concentrations on average 44 times greater than had been measured at the same locations in previous whole-soil sampling done by CDPHE. Their results led to cancellation of a planned residential development on the land in question. Johnson proposed that, for purposes of assessing health risk at offsite locations, the State of Colorado test for plutonium in respirable dust on the surface of the soil. Coarser materials that cannot be inhaled and retained in the body, he said, have no bearing on actual health hazards. Including such material in samples that are analyzed dilutes the amount of radioactivity and provides results that are inaccurate and misleading. State officials asked Dr. Karl Z. Morgan, the “father of health physics,” whether the state should adopt Johnson’s respirable dust method or continue the practice of whole-soil sampling. Morgan supported Johnson’s approach because it produces results that are more accurate and more protective of the public health. Colorado officials, having sought Morgan’s advice, ignored it. This example shows why a sampling method never routinely practiced at Rocky Flats either on the site or off would be more protective of the public health because it would better show levels of possible exposure vis-à-vis standards for permissible exposure. (For more detail, including references, see my “Democracy and Public Health at Rocky Flats,” at <http://www.rockyflatsnuclearguardianship.org/leroy-moore/papers-by-leroy-moore-phd-2/>)
- Affected people excluded from the standard setting process:** All standards for permissible radiation exposure are developed by a self-selected scientific elite without any direct input, much less consent, from affected populations. At the time that I was a member of NCRP’s Committee on Public Policy and Risk Communication, two activist

colleagues not connected to the NCRP, Lisa Ledwedge of the Institute for Energy and Environmental Research and Lisa Crawford of the Fernald Residents for Environmental Safety and Health, and I gave a presentation at the NCRP annual meeting (later published as “Stakeholder Perspectives on Radiation Protection,” *Health Physics*, vol. 87, no. 3 [September 2004], pp. 293-299). We emphasized that in the standard-setting process certain principles must apply:

- a) In situations of uncertainty the burden of proof must be kept on the source of risk rather than on those affected by it.
- b) Transparency must prevail in revealing known risks and in exploring suspected risks (such as with little-studied synergisms between radioactive and hormone-disrupting chemicals).
- c) Concerns of affected workers and publics as well as the interests of future generations must be included in the standard-setting process.

The lively discussion that followed our presentation produced no fruit. I remained with the NCRP as a token outsider for three more years before resigning in frustration. I had been impressed by both the brilliance and the blindness of my associates. But as to standards for radiation exposure, I realized that our earthly fate continues to be decided not by ourselves but by a group that functions more or less like a medieval priesthood.

- **Wildlife and genetics:** Some observers took a quite sanguine approach to reports a while back that deposits of plutonium had been found in the bodies of deer killed near Rocky Flats. Ecologist K. Shawn Smallwood, who in 1996 studied wildlife at Rocky Flats, “found it remarkable that no genetic studies” had been done either at Rocky Flats or at other nuclear sites (Smallwood et al., “Animal Burrowing Attributes Affecting Hazardous Waste Management,” *Environmental Management*, vol. 22, no. 6, 1998, p. 834). Genetic specialist Diethard Tautz says that effects of radiation exposure on a given species of wildlife may not be readily apparent in the individuals of that species until the passage of several generations. He calls this a “genetic uncertainty problem” (*Trends in Genetics*, vol. 16, November 2000, pp. 475-477). His work suggests that wildlife at Rocky Flats could in the long term be hurt by conditions at the site. Such harm would not be confined to the site.
- **Conclusion: The misuse of uncertainty:** A National Academy of Sciences report published in 2008 sharply criticizes the EPA for the way it deals with scientific uncertainty in calculating risk (http://www.nap.edu/catalog.php?record_id=12209). Uncertainty, which stems from lack of knowledge, cannot be eliminated but it can be reduced. Typically, the report says, EPA treats uncertainty as a sign of the absence of a problem rather than the possible presence of one. “There’s almost an incentive to having scientific uncertainty,” one scientist told a reporter

from *The New York Times* (December 3, 2008). According to the report, too little is known about variability in human susceptibility as well as cumulative effects of exposure to radioactive and chemical toxins in combination. In calling for greater transparency and stakeholder involvement in the risk assessment process, the report points to directions in which the science of risk analysis can be expected to evolve. Though it is the EPA that is criticized, its carelessness regarding uncertainty is endemic in the nuclear field. At Rocky Flats affected populations are fated to live with the results of multiple uncertainties, some of which, but by no means all, are catalogued in the first three parts of the present paper.

4. Response: Nuclear Guardianship for Rocky Flats

The concept of Nuclear Guardianship emerged in the mid-1980s in response to the recognition that we humans must take responsibility for the vast quantities of nuclear waste we have generated. Because of the longevity of this highly toxic material it needs to be kept isolated from the environment and, where this has not happened, as at Rocky Flats, steps need to be taken to protect humans and other creatures from exposure (see <http://www.joannamacy.net/nuclearguardianship/nuclear-guardianship-ethic.html>).

- **Long-term commitment:** Nuclear Guardianship is a powerful manifestation of a cultural shift away from secrecy and denial towards ecological responsibility. A people's initiative, it entails a commitment for the millennia. It is a pledge to our children's children's children.
- **Innovation:** Rocky Flats provides the unique opportunity to initiate Nuclear Guardianship at a site contaminated with the toxic remains of nuclear weapons production.
- **Precedent:** The DOE touts the risk-based cleanup of Rocky Flats as an example to be followed elsewhere. Nuclear Guardians seek instead to provide a precedent of ecological responsibility for other such sites.
- **Precaution:** In the face of the public health and environmental uncertainty that prevails at Rocky Flats, Nuclear Guardians advocate the precautionary principle (http://www.rachel.org/lib/pp_def.htm).
- **Incomplete list of projected early steps for Nuclear Guardians at Rocky Flats:**

- a) Reverse plans to allow public recreation at the Rocky Flats National Wildlife Refuge in favor of managing the refuge as open space that is closed to the public. In 2004 when Fish & Wildlife Service put its EIS on the refuge out for public comment, 81% of the commenting parties rejected public access to the refuge; only 11% explicitly favored it.
- b) Stop construction of the proposed Jefferson Parkway or alternate bikeway along the contaminated eastern edge of the Rocky Flats site because of the danger of stirring up plutonium-laden dust (http://www.dailycamera.com/ci_17941987).
- c) Support former Rocky Flats workers' efforts to receive compensation and medical care for ailments likely due to workplace exposures.
- d) Establish at Rocky Flats a program for periodic testing of respirable dust in surface soil for its plutonium and americium content.
- e) Develop educational materials/curricula to inform the public.
- f) Support the Rocky Flats Cold War Museum in its mission to tell the full story of Rocky Flats.
- g) Research the ways of flora and fauna at Rocky Flats so as the better to voice their concerns in the councils of human decision-making.
- h) Gain public access to the documents that were sealed in the Denver Federal Courthouse as part of the 1992 out-of-court settlement of the case charging Rockwell with violation of environmental laws.
- i) Revisit the cleanup.
- j) Work with all concerned parties, governmental and non-governmental.

Conclusion: The Nuclear Guardian's role is to assume responsibility for a mess we humans have made, curtailing or limiting exposure to toxins while also being advocates for the vulnerable and the voiceless, including the non-human creatures that live in or visit the poisoned Rocky Flats environment. Whether such roles should be carried out by government personnel or by others is a question that requires exploration. The need for Guardianship will far outlast the typical government agency. Guardianship is a work for the eons. To implement it requires cooperation between all parties involved. If we do this work well, Rocky Flats can show the way.