

ROCKY FLATS STEWARDSHIP COUNCIL
Monday, April 2, 2018, 8:30 – 11:40 a.m.
Rocky Mountain Metropolitan Airport, Terminal Building, Mount Evans Room
11755 Airport Way, Broomfield, Colorado

Board members: Mark McGoff (Director, Arvada), Sandra McDonald (Alternate, Arvada), Cindy Domenico (Director, Boulder County), Summer Laws (Alternate, Boulder County), Lisa Morzel (Director, Boulder), Mike Shelton (Director, Broomfield), Kim Groom (Alternate, Broomfield), David Allen (Alternate, Broomfield), Jim Dale (Director, Golden), Libby Szabo (Director, Jefferson County), Pat O’Connell (Alternate, Jefferson County), Joyce Downing (Director, Northglenn), Shelley Stanley (Alternate, Northglenn), Chris Hanson (Director, Superior), Sandy Pennington (Alternate, Superior), Jan Kulmann (Director, Thornton), Emily Hunt (Alternate, Thornton), Cathy Shugarts (Alternate, Westminster), Jeannette Hillery (Director, League of Women Voters), Sue Vaughn (Alternate, League of Women Voters), Murph Widdowfield (Director, Rocky Flats Cold War Museum), Roman Kohler (Director, Rocky Flats Homesteaders), Kim Griffiths

Stewardship Council staff and consultants: David Abelson (Executive Director), Barb Vander Wall (Seter & Vander Wall, P.C.), Rik Getty (Technical Program Manager)

Attendees: Sarah Borgers (Westminster), Ryan Hanson (Sen. Gardner), Carl Spreng (CDPHE), Lindsay Masters (CDPHE), Linda Kaiser (Navarro), Patty Gallo (Navarro), John Boylan (Navarro), Bob Darr (Navarro), Jeffrey Murl (DOE-LM), Scott Surovchak (DOE-LM), Vera Moritz (EPA), Lynn Segal, Marion Whitney, Bonnie Graham-Reed, Pat Mellen, Paul Karolyi (journalist, Changing Denver), Nathan Church (Harvey Pro Cinema), Patty Calhoun (Westword), Matt Mauro (KDVR), Jon Mocton (KDVR), Irene Rodriguez (The Nation Report), Randy Stafford, Dale Avery, LeRoy Moore, Judith Mohling, Linda Hladik, David Wood, John Yoder, Brittany Gutermuth, Travis Milnes, Kim Seroff, Das Ellis, Elizabeth Panzer, Elaine McNeely.

Convene/Agenda Review: Vice Chair Chris Hanson opened the meeting at 8:30 a.m.

Public comment on Consent Agenda and Non-Agenda Items: Lynn Segal voiced her concern with opening the Rocky Flats National Wildlife Refuge.

Business Items:

Consent Agenda: Approval of Minutes and Checks: Lisa Morzel moved to approve the minutes and checks; Roman Kohler seconded the motion. The motion was approved 14-0.

Executive Director’s Report: David Abelson began by welcoming the new Board member, Summer Laws, Boulder County policy advisor. He next discussed Ann Lockhart’s decision to cease preparing the Stewardship Council minutes. David stated he is not sure how he will proceed, but for this meeting, Barb Vander Wall and Rik Getty will help take notes which David will use to compile the minutes.

David next explained that the 2017 audit will be presented at the June 4th meeting. Jennifer Bohn and David have reviewed the draft and did not find any issues. Barb Vander Wall will

next review it. David said that the auditor is preparing a clean audit, as the auditor has done each year he has conducted the audit. David next discussed local government dues, noting that all dues have been received except from one government. That payment is in process.

David next updated the Board on federal funding, explaining that Congress passed and the President signed funding for the remainder of the federal fiscal year. DOE secured the funding it needs for this fiscal year, and while he has not been tracking USFWS funding, the fact that the agency is moving forward with opening the Refuge, funding for that agency's work at Rocky Flats seems secure.

Finally, David spoke about uranium values at the Walnut Creek Point of Compliance (WALPOC). Rik and David, along with local government staff, continue to track uranium values at WALPOC. The Board has been briefed numerous times on uranium values, including fluctuations in the concentrations. Notably, the majority of the uranium is naturally-occurring (68-86%), but from a regulatory compliance standpoint, that distinction between man-made and naturally-occurring is not important as standards are standards and have to be met. The March staff update will include reference to and a short discussion of the latest issues described in contact record 2018-04. That record was issued in response to what is called a "reportable condition," an exceedance of the 30-day average at WALPOC. The standard is 16.8 micrograms/liter. The composite sample was 24 micrograms/liter, and the duplicate sample was 21 micrograms/liter. By comparison, the drinking water standard that local governments must meet is 30 micrograms/liter. As discussed in the contract record, the parties agreed that no mitigating action is required at this time. David said he will continue to update the Board as needed and trusts the issue will be discussed at the June 4, 2018, meeting.

CDPHE -- Follow Up to February 5, 2018 Stewardship Council Briefing

CDPHE began its presentation by outlining four questions from the February meeting:

1. Does the assessment of risk from plutonium exposure at Rocky Flats include dust inhalation? Carl Spreng said the answer is "yes."
2. Is inhalation risk significantly different than the risk from skin contact? Carl Spreng said the answer is "yes."
3. Does the risk from inhalation alone of plutonium differ from the overall risk presented at the February 2018 Stewardship Council meeting? Carl Spreng said the answer is "yes."
4. Are the doses from alpha radiation different from other types of radiation? Can you compare mrem levels when the radiation sources are different? Carl Spreng said the answer is "yes."

Lindsay Masters next explained the four-stage risk assessment process:

1. Hazard identification (which chemicals are of concern)
2. Toxicity assessment (numerical toxicity value)
3. Exposure assessment (where are the receptors and who are they)
4. Risk characterization (includes magnitude of risk and uncertainty of the estimate)

In turn, risk equals the probability of harm multiplied by the magnitude of the possible harm. To help illustrate this point, they showed four types of risk: (1) drinking diet soda and the resulting cancer risk from saccharin and obesity, (2) large asteroid impacting Earth, (3) cosmetics (namely, the risks from lead and other chemicals), and (4) cars and motorcycles.

With this background, Lindsay and Carl turned to the CERCLA risk range and the question of how clean is clean. The CERCLA target risk range is an increased cancer risk to the individual of 1-in-10,000 to 1-in-1,000,000. In Colorado, they noted, roughly 1 in 2 men get cancer and 1 in 3 women get cancer. The increased risk allowed under CERCLA is, they noted, extremely low.

Carl and Lindsay next showed a number of slides that address how site personnel and the regulatory agencies addressed dust inhalation. The human exposure pathways are from inhalation, ingestion, dermal absorption, injection, and external irradiation. They explained that as a gamma emitter, the greatest risk from americium is from external exposure. For plutonium, an alpha emitter, that pathway is negligible. Plutonium, in contrast, must be inhaled. Risk, in turn, is linked to the type of radionuclide (alpha, beta and gamma).

In short, Carl and Lindsay explained how inhalation rates were used to calculate risks to potential receptors. They concluded by noting that the greatest risk to people living in close proximity to Rocky Flats is from radon gas. Radon is estimated to cause about 21,000 lung cancer deaths per year in the U.S. Radon is a naturally-occurring radioactive gas that comes from the breakdown of uranium in the soil. High radon levels have been found in all 50 states and in all parts of Colorado. In Colorado, about half the homes have radon levels higher than the EPA recommended action level of 4 picoCuries per liter (pCi/L).

CDPHE Presentation – Buffer Zone Sampling

Carl and Lindsay began by explaining the Rocky Flats operational features.

1. Industrial Area (IA) – Approximately 350 acres, the IA housed the plant operations. That area included approximately 400 buildings.
2. Buffer Zone (BZ) – The BZ was the security and safety area surrounding the IA. The area was expanded to 6,150 acres in the 1970s following the 1969 fire.
3. Central Operable Unit (COU) – This area is the land DOE currently manages. Approximately 1,308 acres, the COU includes most of the former IA plus areas that are part of the final remedy.
4. Peripheral Operable Unit (POU) – These lands surround the COU. They were transferred to USFWS in 2007 for the express purposes of the Rocky Flats National Wildlife Refuge.
5. Rocky Flats National Wildlife Refuge – At 5,237 acres, the Refuge includes the POU plus acreage acquired when mining leases were extinguished using Natural Resource Damages funds.

With that background, they explained that for sampling purposes Rocky Flats was divided into 12 exposure units. The exposure units were established to facilitate investigation and assessment of the site. Rocky Flats was then divided into 30-acre grids. Within each grid, site personnel sampled five spots (one in the center and four in each corner). As shown on a map that they

provided, a map that is also included in the Stewardship Council's briefing packet, site personnel and the regulatory agencies recognized that they had enough data for some of the cells and thus did not sample those cells. One such area was the Wind Blown Exposure Unit.

Sandy Pennington asked for clarification on the sample methodology. Carl responded that the site was divided into 30-acre grids. Four samples, each six inches deep, were taken from the corners of grid, and one sample was taken at center. All five samples were then combined.

Shelley Stanley asked about the size of the Wind Blown Exposure Unit. Carl responded that it was approximately 0.5 square miles. Sandy Pennington next asked about the proposed access points for the Rocky Flats National Wildlife Refuge and the proposed trails. Carl pointed them out on a map, explaining it is his understanding that one proposed trail would be through the Wind Blown Exposure Unit.

Lindsay and Carl next showed sampling maps indicating plutonium contamination in surface soils, and subsurface soil sampling. They also showed a map indicating sampling of the 903 Pad and 903 Lip Area. Lisa Morzel asked about the scale of 903 Pad and Lip area. Carl replied that area is approximately 40 acres. In response to a question from Jim Dale regarding how contamination spread, Carl replied that the contamination got into the soil via leaking drums. Over time, the prevailing winds from west to east spread the contamination. Regarding hotspots at the 903 Pad, Lisa Morzel asked how site personnel remediated them. Carl responded that personnel removed dirt. Chris Hanson asked how personnel identified the hot spots. Carl said they used a FIDLER instrument, a field instrument for detecting low energy radiation.

Next, Lindsay and Carl explained the EPA's 2005 confirmatory sampling. In 2005, following the completion of the 2004 sampling, analyses, and data validation, EPA performed its own surface soil testing. Agency staff selected the 30-acre cell within each of the 12 EUs which had the highest mean plutonium value. Next, they obtained five samples from each cell (one sample at the center and four near the corners), but instead of compositing the five samples into one sample, they analyzed all five discrete samples. That data was included in a slide that showed plutonium values being extremely low, far lower than the regulatory standards.

From there, they turned to other efforts to independently verify the soil contamination values. Those efforts included ORISE's independent verification, an aerial survey, USFWS's 2006 sampling, ATSDR's 2005 review, CDPHE split samples, and other third-party reviews.

Sandy Pennington said she was concerned that even with the extensive work, hot spots could be missed. David Abelson noted that Sandy's concerns were widely shared at closure, and that the Rocky Flats Coalition of Local Government's independent review (conducted by MACTEC) reached the same conclusion. David said the likelihood of hotspots in the former Industrial Area (IA) and around the 903 Lip Area is why comprehensive water quality monitoring, particularly surface water monitoring, remains imperative.

Public Comment on CDPHE's Presentation: Marion Whitney said an ecosystem keeps changing, and that this fact is not often appreciated. She explained that when water levels are high, plutonium concentrates on the stream banks, and that after the water recedes, children will

expose themselves to the contaminants. She said if people want additional information, go to the Community Right to Know website. Pat Mellen asked about the statement that the CERCLA review considered the Refuge lands. Lindsay Masters said she would provide additional information to Pat. Lynn Segal asked about people eating plants grown on Rocky Flats. Judith Mohling said that additional information can be found on the Rocky Mountain Peace Center's website. David Wood said additional information can be found at rockyflatsneighbors.org. He noted that he tested soils at his home that neighbors Rocky Flats, and that the values are low and consistent with other analyses.

Pat Mellen Briefing

Pat is an attorney and a resident of Superior. She requested time to address concerns she had with CDPHE's presentation at the February 5, 2018, Stewardship Council Board of Director's meeting. She titled her presentation "Rocky Flats: Concerns and Challenges." Her stated goal is not to change anyone's point of view but instead present another viewpoint.

Pat began her presentation by describing her goals for today: "consolidated summary of diverse concerns, clarification of context around complex issues, and renewed efforts at collaboration by all parties." She next provided context to CDPHE's "Big Truths" from the February 5, 2018, meeting: (1) Rocky Flats once was highly contaminated, (2) environmental crimes committed during Plant Operations, (3) some on and off-site residual contamination remains, and (4) will persist a long time." Regarding #1, she noted plutonium fires (1957, 1969), "misguided waste storage/disposal decisions," 903 Pad, East Trenches, Pondcrete/Saltcrete, and the Solar Ponds."

Regarding #2, she focused her comments on the Rocky Flats grand jury and the fact that Rockwell pleaded guilty to 10 charges, paying an \$18 million fine. Those fines were a result of RCRA and Clean Water Act violations. She noted that due to contractual obligations, the taxpayers ultimately paid the \$18 million fine. In addition, as part of providing context for truth #2, Pat laid out a timeline for the various cleanup agreements. She presented her understanding of what it meant to accelerate the cleanup, noting that the legal basis for the cleanup flipped the normal process for investigating the extent of the contamination prior to undertaking remedial activities. She further noted that Rocky Flats competed with other sites for cleanup dollars and that ATSDR cautioned against allowing access to Rocky Flats until the completion of remedial activities and an assessment of the risk.

Additionally, regarding #2, Pat also noted that no remedial actions were taken on the lands that now comprise the Refuge or off-site.¹ She also discussed efforts by Broomfield and the Standley Lake Cities (Westminster, Northglenn and Thornton) to secure new water supplies and protect existing supplies. Those projects were completed in 1995, when cleanup was in the early stages. She also said that the Refuge Act was approved by Congress before cleanup standards were established.

Pat next turned to truth #3, noting that plutonium standards for surface soil (defined at the top 3' of soil) are 50 pCi/g. Standards for soils 3'-6' below grade are 1,000 pCi/g. Below 6' plutonium standards are "unlimited." Hot spots in the surface soils in the former Industrial Area likely

¹ This latter part of the statement tracks what Pat said but is partly inaccurate. There was a soil remediation project located just east of Indiana Street.

exist. She also noted that contamination spread off-site, referencing the Krey Hardy map that was compiled for the Atomic Energy Commission.

Regarding truth #4, she discussed the disposal of a safe at the Hanford Site in Washington State that contained a bottle holding plutonium. She said she has heard anecdotal evidence of workers burying waste underground at Rocky Flats.

Pat next turned to the fact that DOE provides funding for both CDPHE and the Stewardship Council. Without discussing any specifics, she noted that Carl Johnson, who worked for the Jefferson County Health Department, was fired because he found plutonium off-site of Rocky Flats. Pat O'Connell asked when Johnson was fired. Pat said she did not know. Randy Stafford, a citizen, said he was fired in the early 1980s. Libby Szabo asked whether Pat had seen Dr. Johnson's personnel file and knew the reason for his firing. Pat said she did not. Jim Dale, who retired from the Jefferson County Health Department in 2011, questioned the connection Pat was making, arguing it was irresponsible to conclude that Dr. Johnson's firing was a result of his work on Rocky Flats without concrete proof. Other Board members questioned the point Pat was making—namely, those who get funding from DOE are compromised, and those who challenge DOE are fired. Pat reiterated that she was only reporting what she was told but did not have any first-hand knowledge of the employment determination, including the reason why he was fired.

Pat next turned to the question of how someone who has no knowledge of Rocky Flats can make a reasonable assessment of the risks associated with the site. She discussed the complexity of the issues and science, noting, for instance, that the final regulatory documents (the Remedial Investigation/Feasibility Study (RI/FS)) is 23 volumes, much of it complex and technical. Complicating the challenge is that the RI/FS was completed at the end of cleanup, not as the start as is the norm for RCRA and CERCLA cleanups.²

Next, she questioned CDPHE's statements from the February 5, 2018, briefing concerning inhalation of a small particle of plutonium. She noted that plutonium can be extremely dangerous and toxic if inhaled. She continued by noting that other toxins are of concern, not just plutonium. From there she questioned that impacts that would result from building the Jefferson Parkway. That road is slated to utilize Indiana Street and 300' along the Indiana Street/Rocky Flats eastern boundary that was previously conveyed to the local jurisdictions for building the road. That conveyance of the 300' right-of-way was authorized in the Rocky Flats refuge act. Pat questioned the impact of disturbing soils along the 300' right-of-way as those activities would release plutonium into the environment. She commented that there are no emergency response plans should workers uncover disposal trenches along the right-of-way. Mike Shelton questioned whether she really believes that waste drums were disposed of in the lands that now comprise the Rocky Flats Refuge, especially the far reaches along the eastern boundary. Pat replied that there is anecdotal evidence from former workers that waste was disposed of in trenches. David Abelson pointed out that the lands Pat is discussing were in private ownership until 1974/1975. Pat replied that she is only reported what she has heard, but she has not researched the issue herself. Other Board members questioned that accuracy of her statement,

² In legal terms, what Pat was referencing was that the cleanup was done under the interim action provisions of RCRA and CERCLA.

and the implication that there were burial tranches on the lands that now comprise the Rocky Flats Refuge.

She next turned to the cessation of air quality sampling following the closure of the site. In support of her concerns, she showed a document that was provided by Gale Biggs. It appears to be a 1982 air report from Building 771. Scott Surovchak with DOE said that he had previously seen that document from Gale and that it is not a Rocky Flats document. Scott said it does not track the form the AEC/DOE used. Scott asked if she could provide the source of that document. Pat replied that she had not checked into the source, trusting Biggs, but would find the document source and provide that information to Scott.

She next turned to averaging plutonium soil values and comparing them to soil cleanup levels. She said whether cleanup values are safe or not safe is not the question, but rather what is safe today might not be safe tomorrow. Cancer risk, she noted, is not the only standard. She noted that the site is not static and that if the numbers prove inaccurate what is the fall back position. In support of this point, she introduced the idea of risk communication, citing a study by Satterfield and Levin. “Risk adverse” versus “risk tolerance” is a point of view, she said. Regarding embracing evolving risk and decision-making, she highlighted Love Canal and contaminated drinking water in Flint, Michigan. From there, she returned to disposal problems at Hanford and ongoing instability of the Original Landfill at Rocky Flats.

She next turned to the question of the impacts of wildfires and construction activities, arguing that based on others’ personal experience the amount of smoke visible from the 1969 fire contradicted official accounts. David Abelson asked whether she was comparing a fire at a plutonium building during production to the impact of a wildfire today. Pat said she was not making that connection but did not explain why she mentioned the two types of fire during this portion of the presentation.

Returning to the aforementioned water quality protection projects for Broomfield and Standley Lake, she said that use restrictions on Standley Lake were a result of plutonium in the sediments. (This issue reemerged during Board questions/comments.) She also said the goal was to prevent Standley Lake from ending up like Great Western Reservoir but did not explain that reference.

Finally, she questioned where the missing plutonium might be, noting that prairie dogs can dig quite deep.

Her bottom line is:

- “What is the purpose and the responsibility of this Council v. individual local governments to protect the public – who owns any future problems?”
- “LSO v. Non-LSO distinctions”
- “Public awareness of the difference”
- “Expansion into the Refuge activities”

Pat then took questions from the Board. Chris Hanson asked about restrictions on activities at Standley Lake, noting that local governments often place various restrictions on the use of public reservoirs holding municipal drinking water. Cindy Domenico echoed Chris’ comment. Shelley

Stanley, City of Northglenn staff and a member of the authority that manages the Woman Creek Reservoir, noted that the hydrologic connection between Rocky Flats and Standley Lake was severed in 1995 by the completion of the Woman Creek Reservoir. She explained that none of the use restrictions on Standley Lake are associated with Rocky Flats or plutonium in the sediments.

Sandy Pennington asked about the ATSDR report that Pat mentioned. She said that USFWS should heed ATSDR's caution regarding restriction access restrictions to Rocky Flats. She also noted that USFWS should take that counsel into account when developing the compatibility determination. David Abelson explained that USFWS' compatibility determination has nothing to do with contamination but stems from the agency's organic act and regulations. The determination, he said, is a function of permissible uses of the refuge.

Public Comment on Pat's Presentation: Elaine McNeely moved to Five Parks in Arvada in 2004. She and her husband were not notified of what she called the "dangers of living near Rocky Flats." In 2014, her husband, Brian, was diagnosed with cardio angiosarcoma, a cancer she described as rare. Brian died in 2015. She said others in her neighborhood, including a child, have Parkinson's, MS and other cancers.

Bonnie Graham-Reed said that no testing of the refuge lands has been conducted since closure in 2006. She said the site is not static and that it should be treated accordingly and err on the side of caution. David Wood, a resident of Candelas, said that the public is distorting the data, and that burrowing animals is not an issue. Regarding the issue of cancer clusters, causation is hard to prove, and that instead of making judgements people should look at the statistics. Marion Whitney stated that she needs more research to be completed on the health risks of Rocky Flats, and until such studies are completed, the Refuge should be closed.

Elizabeth Panzer spoke of her son who is also battling cardio angiosarcoma. Her son is the neighbor of whom Elaine spoke. She said that looking at risks through statistics dehumanizes what she and her family are experiencing. She also noted that she may have found some link between her son's cancer and chemicals found at Rocky Flats. People need to stay flexible in their thinking so that they do not miss the human stories.

Randy Stafford echoed Elaine and Elizabeth's comments. She noted that over the history of Rocky Flats there have only been six studies on the health impacts of communities neighboring the site. Of those studies, the only one to not find any health issues is the one conducted by CDPHE. He urged the Board to view CDPHE's critically. Lynn Segal said that what you do not know can hurt you.

Board Roundtable: David Abelson discussed the Big Picture. At the June 4th meeting, the Board will receive the 2017 audit, hear from DOE, and meet with USFWS to learn more about its plans for the Refuge.

The meeting was adjourned at 11:40 a.m.

Prepared by David Abelson