ROCKY FLATS STEWARDSHIP COUNCIL
Monday, February 5, 2018, 8:30 a.m. – 12:20 p.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), 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), Sandy Pennington (Alternate, Superior), Jan Kulmann (Director, Thornton), Emily Hunt (Alternate, Thornton), Shannon Bird (Director, Westminster), 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), Cameron Richards (Seter & Vander Wall, P.C.), Rik Getty (Technical Program Manager), Ann Lockhart (Minutes)

Attendees: Christine Hawley (WCRA), Sarah Borgers (Westminster), Ryan Hanson (Sen. Gardner), Stuart Feinhor (Rep. Polis), Will Noel (Rep. Polis), Carl Spreng (CDPHE), Lindsay Masters (CDPHE), Warren Smith (CDPHE), Linda Kaiser (Navarro), Patty Gallo (Navarro), Jeremy Wehner (Navarro), John Boylan (Navarro), Bob Darr (Navarro), Jody Nelson (Navarro), George Squibb (Navarro), Jeffrey Murl (DOE-LM), Scott Surovchak (DOE-LM), Karen Edson (DOE-LM), Vera Moritz (EPA), Gerald Hunt, Lynn Segal, Marion Whitney, Ted Ziegler, W. Gale Biggs, Bonnie Graham-Reed, Emily Graham, Pat Mellen, Paul Karolyi (journalist, Changing Denver), Jana Houghteling, Nathan Church (Harvey Pro Cinema), Randy Stafford, Harvey Nichols, Eric Griffiths, Sasha Stiles, Christopher Houghton, Alesya Casse

Convene/Agenda Review: Chair Joyce Downing opened the meeting at 8:30 a.m.

Public comment on Consent Agenda and Non-Agenda Items: Bonnie Graham-Reed said she was disappointed that the Rocky Flats Downwinders were not chosen to join the Stewardship Council Board of Directors. Marion Whitney noted that she was available to be a fact checker on issues related to Rocky Flats.

Business Items: The Board addressed a number of issues.

Bylaws Amendment: At the October 30, 2017, meeting, the Board discussed two amendments to the Stewardship Council bylaws. One would expand the non-voting members to include former elected officials who had previously served on the Stewardship Council Board of Directors. The second would stagger the terms of the community representative seats.

Mark McGoff moved to approve the bylaws amendments related to the non-voting members. Lisa Morzel seconded the motion. The motion was approved 14-0.

Roman Kohler moved to approve the bylaws amendment related to staggering terms. Mark McGoff seconded that motion. The motion was approved 14-0.

Local Government Ratification of Community Member Seats: At the October 30, 2017, meeting, the Board of Directors agreed to appoint the League of Women Voters and Rocky Flats Homesteaders to a two-year term, and the Rocky Flats Cold War Museum and Kim Griffiths to a one-year term, pending adoption of the bylaws amendment staggering terms. Following the Board's approval of the bylaws amendment staggering terms, Jim Dale moved to ratify this decision; the motion was seconded by Lisa Morzel. The governments voted 10-0 to ratify these terms. The terms start at the February 5, 2018, meeting.

Election of Stewardship Council Officers: Each year, the Board appoints the executive committee. The three positions are Chair, Vice Chair, and Secretary/Treasurer. Jim Dale moved to appoint Joyce Downing as Chair; Jeannette Hillery seconded the motion. The motion was approved 14-0. Mike Shelton moved to appoint Chris Hanson as Vice Chair; Jan Kuhlman seconded the motion. The motion was approved 14-0.

Both Lisa Morzel and Jeannette Hillery expressed interest in serving as the Secretary/Treasurer. Both were nominated by the Board. Following a straw poll of the Board, eight members expressed support for Jeannette and six for Lisa. Jim Dale then moved to appoint Jeannette as the Secretary/Treasurer; Mike Shelton seconded the motion. The motion was approved 14-0.

2018 Meeting Schedule: The 2018 meeting dates, as proposed by the executive committee, are February 5, April 2, June 4, September 17, and October 29. Shannon Bird moved to adopt these meeting dates; Cindy Domenico seconded the motion. The motion was approved 14-0.

Consent Agenda: Approval of Minutes and Checks: Lisa Morzel opened the discussion, noting that her name is missing from the list of attendees. Jeannette moved to approve the checks and minutes with the change Lisa noted; Roman seconded the motion. The motion was approved 14-0.

Executive Director's Report: David Abelson began by welcoming the new Board members: Cindy Domenico (Boulder County Commission), Jim Dale (Golden Council), Kim Groom (Broomfield Council), Maria De Cambra (Westminster Council), Cathy Shugarts (Westminster staff), and Kim Griffiths.

He next noted that all of the governments approved the IGA amendments and IGA triennial review. In response to a question from David Allen, David Abelson said that once they have all of the paperwork, Barb Vander Wall will compile the IGA and will send it to each member. David also noted that local government dues notices will be sent in the coming weeks. Annually, each government contributes $1000 to the Stewardship Council.

David next explained the federal budget process. He said that the federal government is currently operating under a stop-gap funding bill (called a "continuing resolution"). The continuing resolution runs through this Friday, February 8. It is unclear whether Congress will

approve a funding bill that will cover the remainder of the federal fiscal year (through September 30), or whether it will approve another short-term continuing resolution. Additionally, on or around February 12, the Administration will submit to Congress the President's Fiscal Year 2019 budget. Through both the continuation of funding for 2018, and the 2019 budget, David will track funding for DOE in general and DOE's Office of Legacy Management in particular. If past appropriations are an indicator of fiscal years 2018 and 2019 budgets, David does not anticipate there will be any funding problems for the Office of Legacy Management. Less clear, he says, is funding for the US Fish and Wildlife Service (USFWS). Regarding USFWS funding, Jim Dale said he is interested in knowing if there will be any cuts to the portion of the budget that funds the Rocky Flats National Wildlife Refuge.

DOE-LM Quarterly Report: Third Quarter 2017

Quarterly reports are required under the Rocky Flats Legacy Management Agreement (RFLMA) to document that the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) remedy continues to provide effective protection. Components of the remedy for Rocky Flats include:

- Maintaining two landfill covers
- Maintaining three groundwater treatment systems
- Monitoring surface water and groundwater
- Maintaining physical controls (signage and access restrictions)
- Enforcing institutional controls including:
    - No occupied building construction
    - Excavation and soil-disturbance restrictions
    - No surface-water consumption or agricultural use
    - No groundwater wells, except for monitoring
    - Landfill covers and engineered remedy-components protection

Surface Water, George Squibb
Routine surface water sampling in Woman Creek, downstream of the Original Landfill (monitoring point GS59), showed mean concentrations for all analytes were below applicable RFLMA water quality standards. At the Present Landfill, routine second-quarter sampling showed vinyl chloride was above the applicable RFLMA standard. The standard is 0.2 µg/L; the sample was 0.28 µg/L. Per RFLMA evaluation protocols, the result triggered a sampling frequency increase from quarterly to monthly. For the following monthly sample, vinyl chloride was not detected, so sampling frequency returned to quarterly. Additionally, no RFLMA point of evaluation (POE) or point of compliance (POC) analyte concentrations were reportable during the quarter.

Shannon Bird asked about the vinyl chloride levels. George said no remedial action was needed. It was detected way upstream before anyone could be exposed. Shelley Stanley asked about 2017 precipitation. George said it was less than normal, around 12 inches at the site. It was mostly dry from June until recently. Jim Dale asked if the Present Landfill was lined. George said he did not know. Jim asked where the vinyl chloride came from. Scott Surovchak said it comes from breakdown of organic materials, and that most sanitary landfills have it. A higher

number triggers a consultation with the regulators, who then decide a response. Sandy Pennington noted that in one quarter vinyl chloride was high and the next month low and asked about the impact of precipitation on the number of tests. George said every year it varies, not just the precipitation but how it arrives. The Site Operations Guide has targets for sampling. If a sampling location has a lot of variability, he may increase the frequency of sampling. If there is no water, levels cannot be measured, and there is no risk. Sandra McDonald asked about sampling the ponds. George said sometimes water flows through, so there is no water to sample. The WALPOC location was not sampled because it was dry.

Public comment re: Surface Water: Marion Whitney asked if they were still monitoring groundwater even if the surface is dry. George said yes, that some of the 88 wells were dry last year. Lynn Segal asked how precipitation disperses contamination. George said, with lots of runoff, more contamination is picked up from the surface. In dry periods, there is more uranium, most of it naturally occurring. Hail moves more surface materials as it pounds the soil.

Groundwater Monitoring and Operations: John Boylan
The RFLMA monitoring network includes:

- 10 Resource Conservation and Recovery Act (RCRA) wells (monitored quarterly). These wells evaluate potential impacts from OLF and PLF.
- Nine Area of Concern (AOC) wells and one surface water support location (monitored semiannually). These wells are located in drainages downstream of contaminant plumes and evaluate discharges to surface water.
- 27 Sentinel wells (monitored semiannually). These are downgradient of treatment systems, on the edges of plumes, and in drainages. These wells look for plumes migrating to surface water and treatment system problems
- 42 Evaluation wells (monitored biennially). These wells are within plumes, near source areas, and interior of Central Operable Unit (COU). They evaluate whether monitoring of an area or plume can cease.
- Nine treatment system locations (seven are monitored semiannually, and two are monitored quarterly)

The third quarter is a light sampling period. Only the only RCRA wells are monitored. The results are generally consistent with previous data.

At the groundwater treatment systems, activities included routine maintenance. The site also continued evaluating treatment effectiveness at the Solar Ponds Plume Treatment System. At the Solar Ponds, influent nitrate continued to be treated to below detection limits in the treatment lagoon. DOE also subcontracted treatment experts began work on improving uranium treatment.

Shelley Stanley asked about the material in the microcell of the groundwater treatment system. John said there are ion exchange resins and fish bones. A subcontractor was hired to run other media and tested three or four. The ion exchange resins proved much more successful. Kim Groom asked about the wells near the Solar Ponds, and Shelley asked how much water is treated. John said the average flow in 2017 was about one gallon a minute, about 25 percent of normal. The Solar Ponds, Mound and East Trenches were treating 100 percent of the water. Jim Dale asked for an executive summary of the hydrology of Rocky Flats. John said the 1995 EG&G

report and the Administrative Record both include a summary. Jim asked about waste created from remediation. John said the lagoon generates sludge, but that it has never been cleaned out. Sandy Pennington asked about the 88 groundwater wells and the adequacy of testing 42 biennially. John said they are within the sources area and do not change much. He said their objectives drive frequency of testing. Protecting surface water quality is the most important thing. Asked how far the groundwater has moved in two years, John said it depends, and that the geology is fairly tight. The groundwater is very slow moving, about 50 feet a year, with some more and some less.

Sandy asked about extreme precipitation impact. John said that in 2013 most of the precipitation ran off the site and that flow velocities were calculated. Libby Szabo asked if they go through every natural disaster scenario. John said part of the closure agreement was to carefully evaluate all the "what ifs." Now, as they maintain the site, they fill in depressions. Shelley asked about the range of uranium levels. John said it was 65-85 micrograms per liter and that the lagoon reduces the levels by 20 percent down to 50-65 micrograms per liter.

Public Comment re: Groundwater: Lynn Segal asked about different water levels in different strata. John said the upper strata varies in thickness and that there is not enough water to be considered an aquifer. Below that is the clay stone formation, which covers the entire area. Water flows across the top of it. Deeper down are aquifers. Gale Biggs said water flows down from the mountains (Coal Creek runoff) creating the rocky flats and questioned if it could wash out the plutonium. George Squibb said the 2013 precipitation included 25 inches of rain. Lynn asked about the location of buried wastes. John showed a map of the East Trenches 15-18 feet deep in the southeast area. He said that over millennia, the creek will be deeper. The East Trenches are monitored by wells. Marion Whitney asked, as a former teacher and Scoutmaster, what the situation is today, since they are all trying to keep children safe. John said she could go to the DOE website and look at the data and annual report.

Site Operations, Jeremy Wehner
Activities included quarterly sign inspections. Signs are one part of the RFLMA physical control. One sign east of the COU that had fallen off was replaced

At the Original Landfill, site personnel performed three monthly inspections (July 27, August 8, and September 21). The August 8 inspection was combined with a weather-related inspection. Another weather-related inspection was conducted on September 25. Maintenance to address a slumping event was identified and completed. Vertical settling at each monument was within limits. Additionally, the East Subsurface Drain was inspected as part of the OLF monthly and weather-related inspections. The temporary groundwater intercept system became operational on March 29 and operated throughout the third quarter

At the Present Landfill, site personnel performed the quarterly inspection on August 8. It was combined with weather-related inspection. An additional weather-related inspection was conducted on September 25. The landfill in good condition and no maintenance is required.

Former Building Areas 371, 771, 881, 991 are routinely inspected (quarterly and during weather-related inspections) for subsidence. During the quarter, two weather-related inspections were

performed (August 8 and September 25). No changes were identified.

At the North Walnut Creek Slump, hillside maintenance grading was conducted during the second quarter. During the third quarter, a crack developed along the slump scarp alignment. Maximum crack displacement was 3-4 inches in width and 2 feet in depth. Survey monitoring points were installed and surveyed. The crack was filled.

Regarding site roads, they are in good shape with no major rutting. Fall maintenance is scheduled for the fourth quarter.

Shelley Stanley asked if there were new cracks in the original landfill. The answer was no. The 2015 slump was the big one, and they continue to regrade it. Sandy Pennington asked if she could go online to see the monthly and quarterly data. The answer was yes. Mike Shelton asked about limits on slumping. The answer was that settlements have occurred measuring one-half inch to 4 inches. If they are larger, a reevaluation is done. Jeannette Hillery asked about the berm west of the Original Landfill, and David Allen asked about the depth of the landfill cover. The answer was 2 feet on top. In some places, 15 feet of fill was used on the landfill.

Public Comment re: Site Operations: There were none.

Ecology, Jody Nelson
Activities for the quarter includes preble's mouse mitigation monitoring, wetland mitigation monitoring, revegetation monitoring, prairie dog surveys, shrub/tree planting survival monitoring, and photopoint monitoring. Regarding the prairie dogs, there is one town active on the Refuge, north of the A4 Pond.

Kim Groom asked about the rattlesnake population. Jody said it is still there along the drainage bottoms.

Public Comment re: Ecology: Marion Whitney asked about the depth of roots of native plants in the area. Jody said he did a literature search and found a University of Nebraska researcher who dug up plants to check. He said blue stem grass goes down many feet. Jim Dale asked for a link to that study in the minutes. (See "Root Development in the Grassland Formation, A Correlation of the Root Systems of Native Vegetation and Crop Plants," John E. Weaver -- https://ia902708.us.archive.org/29/items/rootdevelopment00weavgoog/rootdevelopment00weavgoog.pdf; See also "The Ecological Relations of Roots," John E. Weaver -- https://archive.org/details/ecologicalrelati00weav)

CDPHE Presentation – Rocky Flats Myths and Misunderstandings

Carl Spring, RFLMA coordinator, said CDPHE added another staff person a year and a half ago, Lindsay Masters. Lindsay said she is relatively new and has degrees in geology and law. Furthermore, she said Rocky Flats is in her neighborhood.

Carl said the presentation is intended to provide an overview of some Rocky Flats myths and misunderstandings about science, data, the cleanup, risk and regulatory structure and address

frequently asked questions about Rocky Flats. For more information, please visit CDPHE's Rocky Flats website: https://www.colorado.gov/pacific/cdphe/rocky-flats
Contact information: Carl.Spreng@state.co.us and Lindsay.Masters@state.co.us

Some big truths:

1. Rocky Flats once was highly contaminated.
2. Environmental crimes were committed during site operations. Rockwell, the second operator, pleaded guilty to environmental crimes, and paid $18.5 million penalty.
3. Some on and off-site environmental contamination remains.
4. The contamination will persist for a long time.

Then: Huge Superfund effort

- 10-year, $7 billion cleanup
- Deactivated, decommissioned and demolished 800+ structures
- 421 potentially contaminated areas investigated
- ~360 areas remediated
- COCs: arsenic, benzo(a) pyrene, dioxin, plutonium, vanadium
- Activities overseen by DOE, EPA, CDPHE, DNFSB
- In 2005, ATSDR issued public health report

Now: Rocky Flats Plant gone

The industrial sources have been removed, and the lands that comprise the Refuge are delisted from CERCLA. DOE maintains the remedy, including groundwater and surface water monitoring, and the remedy remains protective of human health and environment.

Truth 3: There is on and off-site residual contamination

Residual contamination at Superfund sites is not unusual. At Rocky Flats, the levels are within the regulatory, health-based limits. Additionally, CDPHE continues to monitor the site

Truth 4: Residual contamination will be there for a very long time

Americium, plutonium, uranium and metals will remain for thousands of years; chlorinated solvents will remain for decades. Therefore, there is ongoing monitoring, operations and maintenance, and groundwater treatment. CERCLA five-year reviews will continue, and the state will enforce institutional controls.

Carl and Lindsay next discussed twenty select myths and misunderstandings. Each is labeled with "Statement #..." below.

Statement #1: DOE pays CDPHE for oversight

This statement is true. At Rocky Flats, DOE follows the "polluter pays" principle. This approach is efficient, practical and fair. Laws and regulations govern CDPHE oversight, and CDPHE reports funding to the Colorado State Legislature. Federal grants are common practice.

Statement #2: Cleanup records and data are secret and unavailable to the public
This statement is incorrect. Government open records law (FOIA and CORA) apply. They noted "sunshine is the best disinfectant." Superfund law also requires data to be accessible. The information is available on multiple websites, and if you cannot find it, ask CDPHE.

The DOE Administrative Record: https://www.lm.doe.gov/CERCLA/SiteSelector.aspx
CDPHE's records: https://www.colorado.gov/cdphe/hmwmd=records-review For the EPA, the information is found on the Environmental Information Service Center. Older records are in a hard copy.

Statement #3: Sealing Grand Jury records is evidence of wrongdoing
Grand juries investigate potential criminal conduct. The proceedings are generally secret by law. This requirement helps protect witnesses and ensure constitutional protections. In support of this view, Carl and Linsdsay referred to Federal Rules of Criminal Procedure, Rule 6 (e) (2) (b):

> "Unless these rules provide otherwise, the following persons must not disclose a matter occurring before the Grand Jury (i) a grand juror;… (vi) an attorney for the government; or a person to whom disclosure is made…."
> https://www.law.cornell.edu/rules/frcrmp/rule_6Statement #

Further, grand jury records would not impact the remedy decision. There are two separate issues: legal v. cleanup. The Rocky Flats grand jury finished before the RI/FS data was collected. Environmental investigation data was collected 1991 to 2005; this was used to make cleanup decisions because high quality assurance/quality control standards. Earlier data was not collected using the same rigorous QA/QC standards, so it was not used. Carl and Lindsay concluded that regulatory conclusions would not be changed by the grand jury proceedings.

Statement #4: A small dose of ionizing radiation could be harmful
They noted this view is "possible but not probable." Due to uncertainties of the effect of low-level ionizing radiation, DOE and the site regulators utilized the linear no-threshold dose model. The linear no-threshold model (LNT) assumes that the long-term, biological damage caused by ionizing radiation is directly proportional to the dose; that is, it conservatively assumes that any dose, no matter how low, could potentially create the effects that could lead to a cancer. Additionally, regulations provide limits below which risk/dose is negligible.

Further, radioactivity levels at Rocky Flats are also well below regulatory standards. The average residual plutonium contamination in surface soil is:

- Refuge: 1.1 picocuries/gram
- COU: 2.3 pCi/g
- Dose: <0.5 mrem/year for adult or child
- Risk: <1 in a million excess risk of excess cancer

By comparison, the state of Colorado dose limit is 25 mrem/year above background. The calculated doses for plutonium exposure in the most contaminated area:

- 0.3 mrem/year for adult Refuge worker
- 0.2 mrem/year for a child visitor

- .07 mrem/near for an adult visitor

Carl and Lindsay then showed a chart comparing the Rocky Flats dose to other doses.

Statement #5: Inhaling even one particle of plutonium can cause cancer
The risk is not zero, but it is very small. They stated millions of dust particles contaminated with PuO2 must be inhaled in order for significant radiation doses.

Statement #6: Plutonium is the most dangerous substance known
Plutonium is hazardous, but it is not as immediately hazardous to health as many more common chemicals are. The harmful effects from exposure to low doses is possible, not probable. Many carcinogenic substances are harmful in the environment and in products.

Statement #7: Locations of subsurface contamination are unknown
This statement is inaccurate. Contamination levels and locations are known from data. The CERCLA Administrative Record includes the RI/FS report (23 volumes). Other sampling affirmed the location of contamination. Additionally, DOE continues to monitor and report, with oversight by EPA and CDPHE.

Statement #8: Inadequate sampling
This statement is inaccurate. Cleanup entailed extensive environmental investigation, including 2,000 waste streams identified by state enforcement. Based on scientific knowledge and regulatory requirements—the same general process used at other CERCLA sites—there are samples (air, soil, groundwater, surface water, sediment) totaling 6.9 million data points. Decisions were based on data collected, interviews, records and process knowledge.

As an example, Carl and Lindsay discussed groundwater. Using hydrogeologic and release information, and approved sampling procedures and methods, the site collected extensive data from June 1991 through July 2005. In total, Rocky Flats had approximately 1,289 groundwater wells. Additionally, there is ongoing groundwater monitoring and sampling.

Statement #9: Parkway construction would release harmful levels of plutonium
As background, a 300-foot right-of-way was granted in accordance with the Rocky Flats National Wildlife Refuge Act. The RI/FS investigation concluded both the Refuge area and off-site areas are suitable for unlimited use and unrestricted exposure. Levels protective of a Refuge worker also protective of a construction worker due to a shorter exposure time.

In support of this position, Carl and Lindsay noted that along the 300-foot right-of-way, there were 31 soil samples from 14 sampling locations. The maximum concentration for plutonium is 8.8 pCi/gram. The average concentration is 1.4 pCi/gram. Third party sampling east of the right-of-way agrees with DOE sampling results.

Statement #10: No standards have been established for airborne radionuclides
This statement is incorrect. Federal air standards are the National Emission Standards for Hazardous Air Pollutants (NESHAPS, part of the Clean Air Act). The standard is 10 millirem/year dose limit for radionuclide. The state of Colorado radiation standard limits public

to total annual dose of 25 millirem/year. The average annual emission for Pu-239 and Pu-240 is .02 picocuries per cubic meter of air.

Statement #11: HiVol air samplers did not capture the right size particles
Carl and Lindsay showed a chart that explains why this statement is not correct.

Statement #12: Continuous air monitoring is still needed
Along with DOE and EPA, CDPHE disagrees with this conclusion. Prior to cleanup, air monitoring was conducted for decades. That data is included in the annual air emissions and monitoring reports. The samplers collected both site-derived and naturally occurring radionuclides. Only a small fraction of the Rad-NESHAP standard was detected. The site operated under a state of Colorado air quality operating permit.

After cleanup, sources of airborne contaminants (solvents, radionuclides, etc.) are gone. Air monitoring continued briefly to confirm very low contaminant levels. Air monitoring ceased and the state air quality permit was terminated. The potential remains for minor wind erosion of the residual contamination in surface soil.

Statement #13: Pu surface soil action levels are inadequate
This statement is incorrect. As background, an action level is the point at which an action is triggered. At Rocky Flats, all remedial surface soil action levels set at 1 in 100,000 excess cancer risk. Plutonium soil action levels were initially 651 pCi/g (1996). In 2003, the action levels were lowered to 50 pCi/g after input from stakeholders. For surface soils, the residual levels of Pu in COU are, on average, 2.3 pCi/g, below the applicable action level. No remedial action levels were triggered in the lands that comprise the Rocky Flats refuge.

Statement #14: Process waste lines were just left in place and are a continuing source
Process waste lines were thoroughly characterized. Most waste lines were removed, and some lines were purged and plugged with grout. Grouting is not unique to Rocky Flats. Finally, the remaining process line locations were documented.

Statement #15: The landfills (OLF and PLF) are full of toxic materials
The landfills were well characterized (surface soil, subsurface soil, groundwater & surface water). They contain mostly municipal wastes. There are some unknowns, so RCRA wells monitor groundwater emanating from landfills.

Statement #16: Wildfires will release harmful levels of radionuclides
Residual plutonium and americium contamination do not have sufficient potential to rise to levels of concern, based on existing regulatory guidance. There will be future fires and the agencies expect public interest and concern.

Statement #17: Drinking water supplies are being contaminated
This statement is incorrect. First, there is no longer a hydrologic connection between Rocky Flats and municipal drinking water supplies. A DOE grant funded a new drinking water supply for Broomfield and a protection project for Standley Lake. The drinking water suppliers monitor water before releasing it. Some plutonium remains in the sediments of Standley Lake, Great

Western Reservoir and Mower Reservoir from past releases. Those risk levels are below concern for residential exposure.

In addition, water leaving the Rocky Flats COU is subject to stricter standards than drinking water for plutonium, uranium and americium.

Statement #18: Plutonium missing from Rocky Flats
One of the allegations is that Rocky Flats plutonium dumped at the Lowry Landfill from the early 1950s to about 1980. There is no evidence of this claim. Of the eight main responsible parties in the 2005 Consent Decree for Lowry Superfund cleanup, DOE is not among them.

Statement #19: Plants and animals are negatively impacted
This statement is incorrect. There has been no observed unexpected animal mortality. Previous surveys of plant and animal diversity and health show plants and animals are thriving. Studies have been undertaken by EPA, Colorado State University and others. That information is included in the RI/FS Rocky Flats Ecological Risk Assessment. More specifically, samples were taken from deer tissue—Colorado State University (1970s-1990s) and US Fish and Wildlife Service (2005).

Statement #20: CDPHE is not enforcing regulations following POC exceedances
This statement is incorrect. RFLMA Attachment 2 flow charts provide procedures. There have never been conditions to justify a CDPHE penalty under RFLMA. CDPHE enforces for non-radioactive contaminants and the institutional controls. EPA has authority to fine DOE for exceedances for radionuclide standards.

David Allen had questions about a fire on the west side of Indiana Street around 2012-15. He also asked about soil action levels. Carl said there was a tiered approach with soil actions levels at 3 feet and at 6 feet. Cindy Domenico asked about the cessation of air monitoring which the public also wants to know. She said it would make sense to have an annual check. Carl said for decades the site was monitoring, but then contamination sources were removed. Continuous monitoring was done a short time and also during prescribed fires. He may recommend it during construction of the highway. David Abelson said there is a lot of concern by the governments and public about the cessation of air quality monitoring.

Libby Szabo asked if enough time had elapsed to see if there are cancer clusters and whether they could be detected. Lindsay said cancer incidence with both physical and laboratory diagnoses is recorded in the Colorado Central Cancer Registry. Minor skin cancers are not included. Studies were conducted in 2008 and 2017, but no increase was found in cancers tied to plutonium. She said there was some statistical elevation of prostate cancer in Boulder County. Regarding thyroid cancer, there was no clear pattern of cancer in neighborhoods around Rocky Flats. Libby asked about the difference between controlled burns or wildfires, whether the residual effect differs. She said the brush is out there. Carl said trained fire fighters are there for controlled burns when conditions are right to proceed, but that from a contaminant standpoint there is no difference between a controlled burn and a wildfire.

Sandy Pennington asked whether the state would consider something dire enough to resample soil, such as a major flood, which would move more soil. Carl said he met with the site to discuss the effects of flooding and movement of surface water off-site. She also asked about risks from digging deep for pylons for Jefferson Parkway, for the anticipated construction of the visitor center, and for building overpasses or underpasses that might result in lots of dust inhalation. Carl said there was no subsurface contamination along Indiana Street and there was no plutonium above background along Highway 128. Sandy questioned risk to road construction workers when they dig the pylons. Carl said the windblown Pu contamination has been 1-2 inches in the surface soil, mainly in the COU.

Jim Dale asked about slide 33 and the rain bucket tests as a surrogate for air sampling. He said Jefferson County Health Department collected rain buckets on the east side of Rocky Flats. Carl said surface water is sampled regularly. Jim also asked about radon. Lindsay said 4 picocuries per liter is the radon action level. She said half of the homes in the area have naturally occurring radon, which is a big public health hazard and the number one cause of lung cancer. Carl said people can get radon test kits to check.

Lisa Morzel asked about plutonium inhalation and how deep the cores were in Standley Lake. Carl said he will post this on the website. Sandy asked whether the public would be safe from surface particles windblown on the trails at the site, per the *Cook* case settlement. Carl said there is a 23-volume report that examined risks to wildlife Refuge workers, visitors, children, etc. The cancer risk was below regulatory standards even with 100 visits to the Refuge. David Abelson said this question will be discussed further at the April meeting.

Public Comment on CDPHE Presentation: Randy Stafford asked about internal alpha radiation. Carl said the danger is the dose from radiation absorbed in the lung. Bonnie Graham-Reed wondered how dangerous plutonium is. She said alpha does not penetrate the skin and that the risk is inside the body. She mentioned a 1948 book about the Bikini test site and that so many scientists have said plutonium is one of the most lethal substances. She asked her daughter to read a Jon Lipsky statement and then asked why all sampling was not considered. Carl said there have been lots of studies, and that national standards are based on a huge database. Since 1948, lots of data has been gathered.

Carl said samples taken before the summer of 1991 could not be used because they did not meet all the specific quality assurance/quality control standards. He said the radioactive elements such as strontium, radium and tritium are from nuclear reactors. Tritium has a short half-life, so sampling for it is negligible.

Harvey Nichols said he had a contract from the mid-1970s and found the air sampling to be inefficient. He said CDPHE has an extraordinary responsibility and in the past was passive and weak. He thanked Carl and Lindsay for the great effort, but questioned the multi-generational effect of radiation exposure. He said lots of air samples are misleading and comparisons can be misleading. He said he and John Rampe went to the Air Pollution Control Division about the burn permits. He demanded that the National Academy of Sciences look at all federal and private evidence related to allowing recreation at the Refuge and exposing the community to massive doses.

Gale Biggs asked whether stack emissions data was deleted. He said he was on Governor Romer's Air Committee and that because of poor management at Rocky Flats, plutonium was dumped and that an estimated 60-90 percent of plutonium-239 was on the ground, not the stacks. Small alpha particles, 10 microns or less, are inhalable. Carl said plutonium particles attach to soil. He said the air filters used by the state and EPA have been tested and shown to be 99 percent efficient.

Ted Ziegler said he worked on safety issues with three different Rocky Flats contractors and mentioned the 1,400 barrels of mixed wastes stored outside. He said stuff was buried that people do not know about. Access for visitors should be away from the larger spray field. Sasha Stiles said she was a physician and knows the epidemiology of cancer. As a resident of Superior, she does not feel safe living near Rocky Flats and wants to learn more. She objected to the term "myths."

Alesya Casse said citizens are concerned about the CDPHE campaign of misunderstanding. In reading the risk assessment of the Rocky Mountain Arsenal, nothing was mentioned about alpha radiation or concern about disturbed soil and that the Colorado health department says there is no risk. She said officials are very concerned about the Hanford Site in Washington State. She expects an abundance of caution.

Randy Stafford of Littleton, who is a mathematician and computer scientist, said he is on the Jefferson Parkway Advisory Committee. He said Carl ignores the risk of resuspension of plutonium in the air and that the Colorado health department is failing to protect the public and has a flip and cavalier attitude. He said his mother lived near Rocky Flats. He asked why not continue monitoring the health of the downwind population?

CDPHE's presentation can be accessed at:
http://rockyflatssc.org/public_comment/Myths%20and%20Misunderstandings%20CDPHE%20presentation%20at%20RFSC%20with%20notes%20%282018-2-5%29%20.pdf

The meeting was adjourned at 12:20 p.m.

Prepared by Ann Lockhart