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Department of Energy

ROCKY FLATS FIELD OFFICE
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GOLDEN, COLORADO 80403-8200

MAY 03 2001

01-DOE-00838

DIST.	LTR	ENC
BOGENBERGER, V.		
BOGNAR, E.	✓	✓
BRAILSFORD, M.D.		
BURNS, T.F.		
CIAGLO, T.	✓	✓
DECK, C.A.	✓	✓
DIETERLE, S.E.		
FERRERA, D.W.		
FERRI, M.S.		
FRASER, R.G.		
FULTON, J.C.		
GERMAIN, A.L.		
GIACOMINI, J.		
ISOM, J.H.		
LEONARD, R.C.		
MARTINEZ, L.A.	✓	✓
NORTH, K.		
PARKER, A.M.		
POWERS, K.P.		
RODGERS, A.D.		
SANDLIN, N.B.	✓	✓
SCOTT, G.K.		
SHELTON, D.C.		
SPEARS, M.		
TRICE, K.D.		
TUOR, N.R.		
VOORHEIS, G.M.		
Butler, L	✓	✓
Gregory, T	✓	✓

COR. CONTROL	X	X
ADMN. RECORD		
PATS/130	✓	✓

Reviewed for Addressee
Corres. Control RFP

5/3/01 Date By

Ref Ltr. #

DOE ORDER #

Steve Gunderson
Rocky Flats Cleanup Agreement Coordinator
Colorado Department of Public Health and Environment
4300 Cherry Creek Drive South
Denver, Colorado 80246-1530

Dear Mr. Gunderson:

Enclosed please find the Rocky Flats Environmental Technology Site (Site) Responses to Concerns to the Colorado Department of Public Health and Environment (CDPHE) Buffer Zone Report. The Department of Energy (DOE) and Kaiser-Hill Company, L.L.C. (K-H) met with the regulatory agencies on January 10, 2001, to reach agreement on all areas identified by the CDPHE Buffer Zone Report as being of possible environmental concern. The enclosed response document provides background information regarding Site/CDPHE correspondence, a summary of the process for identification of historical release sites, and a proposed resolution for each "area" or "site" identified by CDPHE as potentially being of environmental concern.

Concerns for many of the sites were resolved at the January 10, 2001, meeting and agreements were reached to resolve concerns for all the areas identified by CDPHE. This document has been revised as agreed at the January 10, 2001, meeting. The DOE and K-H will be incorporating this information into the next Historical Release Report.

If you should have any additional questions regarding these responses, please contact Norma I. Castaneda at (303) 966-4226 or contact me at (303) 966-5918.

Sincerely,

Joseph A. Legare
Assistant Manager
for Environment and Infrastructure

Enclosure

MAY 2001
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ADMIN RECORD
BZ-A-000502

1/26

DOCUMENT CLASSIFICATION
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cc w/Enc.:
N. Castaneda, ERWM, RFFO
L. Butler, K-H
T. Greengard, SAIC
T. Rehder, EPA
G. Kleeman, EPA
C. Spreng, CDPHE
D. Kruchek, CDPHE
S. Tarlton, CDPHE
Administrative Record

CDPHE BUFFER ZONE REPORT:
ROCKY FLATS RESPONSE TO CONCERNS

This document was prepared by the Rocky Flats Environmental Technology Site (Site) for presentation at the CDPHE/EPA/Site meeting on January 10, 2001. The purpose of the meeting was to reach agreement on all areas identified by the CDPHE Buffer Zone Report as being of possible environmental concern. The document provides background information regarding Site/CDPHE correspondence, a summary of the process for identification of historical release sites, and a proposed resolution for each "area" or "site" identified by CDPHE as potentially being of environmental concern.

Concerns for many of the sites were resolved at the January 10, 2001 meeting and agreements were reached to resolve concerns for all of the areas identified by CDPHE. This document has been revised as agreed at the January 10, 2001 meeting. See the meeting minutes for the resolution of concerns by site.

BACKGROUND

The Colorado Department of Public Health and Environment (CDPHE) released a report on the CDPHE website entitled, Buffer Zone Contamination Review Technical Report dated August 23, 1999 (BZ Report). The study was intended to be a review of information contained in various documents to ascertain if additional potentially contaminated areas might exist in the Buffer Zone, beyond those areas that have currently been identified as Potential Areas of Concern (PACs) or Individual Hazardous Substance Sites (IHSSs). In the report, CDPHE identified 30 additional areas that may have possible environmental concerns and six currently identified areas that may have additional concerns. The report stated that identification of additional areas of possible concern does not necessarily mean that these newly identified areas contain contamination or that they are necessarily the result of unreported activities performed at Rocky Flats. Rather, these areas may be the result of natural events, or they may have been identified but the activities associated with these sites are not adequately documented at this time.

The Rocky Flats Site (Site) responded in a December 21, 1999 letter from Joe Legare of the Department of Energy (DOE) to Steve Gunderson and Steve Tarleton of CDPHE. An Assessment and Response to the CDPHE report was provided as an attachment to the letter. In the letter, DOE stated that the 36 areas were reviewed internally by comparing the information presented against other aerial photographs, Site knowledge and documented sampling where available. Based on this review, the Site determined that eight of the 36 areas identified by CDPHE either have work currently associated with them or will be followed up on in the future. The remaining 28 areas do not require further action.

On March 15, 2000, David Kruchek of CDPHE (CDPHE Representative) sent an email memorandum (March 15, 2000 memo) to Tom Greengard of the Site. The memorandum contained draft comments in response to the previous correspondence and was provided to help guide discussions at a meeting planned to discuss areas in the Buffer Zone that CDPHE and EPA still have questions about. The State and EPA had met previously to discuss the CDPHE report. The meeting was postponed and rescheduled January 10, 2001. It was planned as a technical meeting and included the review of aerial photographs. The purpose of the Site/CDPHE/EPA meeting was to reach agreement on all areas of potential concern. The agencies would like to be able to declare some areas of the Buffer Zone "clean" for all uses as a result of the review of the areas in the Buffer Zone.

IDENTIFICATION OF HISTORICAL RELEASE SITES

The following discussion of the programs dedicated to identifying potential historical release sites at Rocky Flats is presented to summarize the comprehensive and in-depth effort that has gone into identifying potential releases at Rocky Flats over the last fifteen to thirty years.

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In responses to several of the findings, the Comprehensive Environmental Assessment and Response Program (CEARP) is referenced. The CEARP was the precursor to the Environmental Restoration Program within the DOE, and was based on the CERCLA process. The CEARP comprehensively identified and evaluated actual and potential waste sites and contamination incidents including leaks and spills. The CEARP Phase I: Installation Assessment Report was released in April 1986. The Phase I Report focused on whether waste disposal practices or other operations resulted in environmental problems that require remedial action. The CEARP Phase I Report was based on a records search, open literature survey, employee interviews, preliminary assessments and site inspections. The Phase I Report provided documentation for CERCLA pre-remedial activities including Federal Facility Site Discovery and Identification Findings, Preliminary Assessments, Site Inspections and Hazard Ranking System evaluation. The Phase I investigations were performed by personnel of the Los Alamos National Laboratory (LANL) for DOE Albuquerque Operations. At the time, DOE-HQ and Albuquerque Operations were conducting environmental contamination assessments for all the weapons sites under their jurisdiction, which included Rocky Flats. DOE and Contractor personnel at Rocky Flats provided assistance, but not direction, to the LANL investigation.

As part of the records search, documents were reviewed and evaluated in the categories of environmental reports, management plans, monitoring reports, permits, operational records, standard operating procedures, appraisals, audits, inspections, special reports, historical documents, accident/incident investigation reports and internal files. Key historical documents that were reviewed included "A Summary of Onsite Radioactive Waste Disposal" (E.A. Putzier, 1970) and "Environmental Inventory: A Historical Summation of Environmental Incidents Affecting Soils at or Near the USAEC Rocky Flats Plant" (J.B. Owen and L.M. Steward, 1973).

Former and current Site employees with knowledge of Site operations were identified and screened to determine who should be interviewed. Eighty-four employees familiar with production, facilities, site services, research, waste management and environmental operations were interviewed. These individuals were interviewed to identify waste disposal operations, past leaks or spills, and undocumented incidents or practices that could have resulted in environmental concerns. Information from the interviews covers the complete history of operations at the Site from 1951 through 1984 and is included in the CEARP Phase I Report.

In addition to the CEARP Installation Assessment Report, a Historical Release Report (HRR) was prepared in June 1992. The HRR was updated quarterly under the Interagency Agreement (IAG) until 1996. Since then, the HRR has been updated annually under the Rocky Flats Cleanup Agreement (RFCA). The purpose of the HRR is to report, summarize and update existing and/or new information on incidents involving hazardous substances at Rocky Flats. The information in the HRR is used by EPA and CDPHE to determine whether sites potentially affected by incidents, known as Potential Areas of Concern (PACs), Individual Hazardous Substance Sites (IHSSs), and Under Building Contamination (UBCs) require or warrant further investigation and/or remediation. IHSSs are defined as individual locations where hazardous substances have come to be located at a discrete area within the Site.

Identification and characterization of hazardous materials releases of hazardous materials is determined by background research, comprehensive review of DOE and contractor files, interviews with current and former Site employees, review of photographs and site inspections. Thousands of documents have been reviewed and several hundred employees have been interviewed as part of the HRR process. The HRR process has verified and augmented previous IHSS documentation, and identified potential new sites that may present an impact to human health and the environment.

The photographs and preliminary photographic interpretations of disturbed areas at Rocky Flats contained in the EPA Photo Report of 1988 were reviewed during the initial HRR investigations. The EPA Photo Report is cited extensively in, and is the basis of, the CDPHE BZ Report.

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RESOLUTION OF CONCERNS

In the following section, CDPHE concerns and responses to those concerns have been summarized in order to facilitate final resolution of the concerns raised in the BZ Report.

Concerns for many of the sites were resolved at the January 10, 2001 meeting and agreements were reached to resolve concerns for all of the areas identified by CDPHE. This document has been revised to resolve concerns for all of the sites as agreed at the January 10, 2001 meeting. See the meeting minutes for the resolution of concerns and agreements for each site.

SITE #1.

CDPHE Concern: Disturbed ground immediately southeast of the Industrial Area (IA) identified as the former small arms range (see CDPHE Buffer Zone Report, Appendix 2, #1 and 64).

Resolution: This site is the Old Firing Range. It has been designated as a new PAC, number SE-1602. It is addressed in the 1999 Annual Update to the Historical Release Report (HRR).

SITE #2.

CDPHE Concern: Disturbed ground northwest of the IA, an apparent ranch site, possible trenches and an area along the hillside near the creek to the southwest of the ranch (see BZ Report, Appendix 2, #4,41 and 49). This area is reported to have been utilized as a practice site for various activities including small arms target practice and possibly for disposal activities.

December 1999 Site Response: These disturbed areas are located on the Lindsay Ranch. The Ranch site was inspected by Nick Demos and Tom Greengard on 11/17/99. All areas appear to be associated with Ranch operations, scouring and slumping features, or different vegetation. These features are observable on the air photos. No information of a spill or environmental release exists. No additional study of this area is planned.

After reviewing the Site response of December 1999, CDPHE (March 15, 2000 memo) has requested documentation of exercises and training activities that have been conducted at the Ranch. The CDPHE Representative is concerned with undue risks to visitors and the environment from small arms target practice. He has requested sufficient information to determine its environmental condition, whether the site should be identified as a Potential Area of Concern (PAC), and whether sampling for metals and possibly explosives is necessary. The documentation should include information regarding all of the specific areas identified at the site, specifically the disturbed area along the stream bank to the southwest of the barn (see 1971 photo, Figure 6 of the EPA 1988 Photo Report (Photo Report), referenced in Appendix 2, #49 of the CDPHE Buffer Zone Report).

Additional Discussion: Interviews were conducted with Wackenhut security personnel to obtain information on security training at the Ranch site. Occurences of live fire were reported once in approximately 1974 and once in 1983 or 1984. No indications of previous firing events were reported or had been heard of by one of the security officers who has been at Rocky Flats since 1970. He indicated he had substantial contact with officers who had been at the Site since 1951. Before 1970, shooting was reported to have been mostly on the East Firing Range. Several weapons were fired in the 1970s training exercise. Shooting was conducted from the south hillside overlooking the Ranch buildings toward the farmhouse and barn. One of the officers interviewed was in charge of exercises for the "special response team". They conducted a live fire exercise once at the Ranch house in 1983 or 1984. This exercise

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included the use of small arms, tear gas and concussion grenades. Many training exercises to test security were conducted in the vicinity of Lindsay Ranch. Most exercises did not use live fire or explosives. All cleaning of weapons was conducted at the Security building on Plantsite. Several exercises have been conducted using the Multiple Integrated Laser Engagement System (MILES). These exercises used lasers and blanks, not live fire. Many vehicles have been used for Plant security including tracked and wheeled vehicles. Restrictions on travel in the Buffer Zone have been in place since the early 1990s. There have been no known leaks or spills from security exercises in the vicinity of the Ranch or surrounding property. No fueling operations were conducted at the Ranch.

No information of a spill or environmental release exists including interviews and information provided in CEARP, the HRR and other historical reports. Inspection of the Ranch indicates that all disturbed areas referenced by CDPHE appear to be associated with Ranch operations, scouring and slumping features, or different vegetation (predominantly cattails).

Resolution: An Integrated Work Control Program (IWCP) work package has been prepared to perform general housekeeping in the Buffer Zone. Cleanup tasks are scheduled to begin in May 2001. The Lindsay Ranch area is scheduled as the first task area and will include general "non-ranch" related housekeeping which will include collection of spent rifle and shotgun casings associated with the above mentioned plant security exercises.

SITE #3.

CDPHE Concern: Disturbed areas southwest of B881 (see BZ Report, Appendix 2, #10 and 30), west of OU1 between OU1 and IHSS 115, and north of the South Interceptor Ditch (SID). Possible outfalls from B881 or other sources and a possible retention pond are indicated in Figure 2 of the Photo Report.

December 1999 Site Response: The disturbed areas appear to be erosion and slump features from three runoff areas from the B850 area, a large slump associated with construction of the SID, and drilling and sampling for OU1 investigations. No evidence for a pond structure was observed. Extensive sampling and analysis data exist from OU1 studies conducted from 1986 to 1999. A CAD/ROD for OU1 was signed in 1997 and amended in 2000. No additional study of this area is planned.

After reviewing the Site response of December 1999, the CDPHE Representative (March 15, 2000 memo) doesn't believe the area was adequately investigated as part of OU1 and he thinks a determination of possible contamination needs to be performed, possibly including sample collection and analysis. Documentation needs to be provided if sampling has previously been conducted.

Additional Discussion: The outfalls referenced in the EPA Photo Report can be seen on the 1955 photo. The areas are engineered drainage structures for runoff control from the parking lot and steep hillslope. The structures were located on Site Utility Plans, Drawing No. 1550D-53-M. They were designed as 12 inch corrugated metal pipe (CMP) with concrete shutes. No information of a spill or environmental release exists including interviews and information provided in CEARP, HRR and other historical reports. There was no reason to sample these areas as part of OU1 remedial investigations and they were not investigated.

Two maps were presented at the January 10, 2001 meeting: 1. Surface Soil and Sediment Sampling Locations dated 9/17/97, RMRS Map ID 97-0111-88 and 2. Aerial Distribution of Pu-239, 240 Activity in Surface Soils dated 3/18/99, Map ID 98-0215. The maps showed that soil and sediment concentrations for radionuclides are below Tier II levels in this area. CDPHE indicated they had no surface water concerns based on the information presented. As agreed in the meeting, the data were reviewed and concentrations were at background levels.

Resolution: No further investigation of this site.

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SITE #4.

CDPHE Concern: Disturbed ground in the southeast area of the IA and north of IHSS 119.1 and OU1 (see BZ Report, Appendix 2, #16). May have been filled in by 1964 (see Photo Report, Figures 2 and 3).

December 1999 Site Response: The disturbed area is believed to result from extensive drilling activities during the 1980s. Extensive sampling and analysis data exist from OU1 studies conducted from 1986 to 1999. A CAD/ROD for OU1 was signed in 1997 and amended in 2000. No additional study of this area is planned.

After reviewing the Site response of December 1999, the CDPHE Representative (March 15, 2000 memo) thinks the area may have been a disposal site and was not investigated as part of OU1 and needs a determination of possible contamination, possibly including sampling and analysis. Documentation needs to be provided if sampling has previously been conducted.

Additional Discussion: A disturbed area is visible in 1953 and 1955 photos. It does not appear to be a disposal site. The reason for the disturbance isn't clear, it may have been used for vehicle parking or equipment storage. No use could be determined from the photos. It couldn't be determined if the area existed prior to construction of Rocky Flats based on a review of a 1937 photo. The area was inspected and is currently under the Contractor Yard. It appears to be directly under or just south of T891C. No information of a spill or environmental release exists including interviews and information provided in CEARP, HRR and other historical reports. There was no reason to sample this area as part of OU1 remedial investigations and it was not sampled. A CAD/ROD for OU1 was signed in 1997 and amended in 2000.

As discussed in the January 10, 2001 meeting, existing historical analytical data (56 sampling locations total) exist in the area of concern. The data have been assessed and no contamination was identified in the "contractors yard" for organics, inorganics, or radionuclides. Sampling events were conducted in support of the following projects:

- Installation of the 891 Trailers Waterline, February 1994
- Construction of the 891 Decontamination Water Annex, October 1994
- Equipment Removal, August 1996
- Characterization of the Contractors Yard (44 Sample Locations), March 1994.

Resolution: No further investigation of this site.

SITE #5.

CDPHE Concern: Disturbed area southeast of the Industrial Area (IA) and just north of the small arms range (see BZ Report, Appendix 2, #19 and 47, and Photo Report, Figure 3 and later photos).

December 1999 Site Response: This site is known as the concrete wash area and was used by cement trucks during construction of buildings 130 and 460 in the 1980s.

Additional Discussion: The site is within IHSS 155. The area is surrounded by surface soils exceeding Tier II action levels as presented in the Characterization Report for the 903 Drum Storage Area, Lip Area and Americium Zone (DOE, 2000). Therefore, surface soils underlying the concrete are assumed to also exceed Tier II action levels.

Resolution: The site is within IHSS 155 and will be addressed as part of the 903 Pad and Lip Area remedial action.

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SITE #6.

CDPHE Concern: Disturbed area east of IHSS 111.3 in the area of the East Spray Field (IHSS 216.3) south of the East Access Road and just east of the small arms range (see BZ Report, Appendix 2, #8,9,20,48, and Figures 3 and 5 of the Photo Report). Disturbances appear between 1964 and 1978.

December 1999 Site Response: The disturbed area is believed to result from construction activities. There are no reports of spills, releases or waste disposal activities in this area other than the East Trenches and East Spray Field operations. The area was sampled during OU2 remedial investigations. No additional study of this area is planned.

After reviewing the Site response of December 1999, the CDPHE Representative (March 15, 2000 memo) feels that sampling in the area was insufficient to characterize the area and materials, and that the area was not specifically sampled as part of OU2 investigations. A determination of possible contamination is needed which may include sampling and analysis.

Additional Discussion: Boreholes 10691, 10791, 10891 and 11191A and wells were drilled in the area during remedial investigations (Draft Final OU2 RI Report, 1995, Figure 2.1-1). Analytical results indicate low levels of VOCs in soils.

Resolution: The area will be sampled as part of IHSS 216.3 investigations.

SITE #7.

CDPHE Concern: Disturbed area northwest of the Industrial Area (IA), south of the Present Landfill (IHSS 114) and west of IHSS 166.2 (see BZ Report, Appendix 2, #42 and Photo Report, Figures 5 and 6).

December 1999 Site Response: The area has been identified as resulting from heavy construction traffic associated with the Landfill, PU&D Yard and general equipment storage area. There are no records of any spills, releases or disposal activities in this area. No additional study of this area is planned.

After reviewing the Site response of December 1999, the CDPHE Representative (March 15, 2000 memo) has requested documentation such as old work documents, worker interviews, photographs and any data collected from previous investigations. An investigation to determine possible contamination may be necessary if no documentation is available.

Additional Discussion: This area is not present on the 1964 photo but is present on 1969 and 1971 photos (Figures 5 and 6). Landfill operations started in August, 1968. It could be a storage area or fill from landfill excavation. It appears to be present before the storage area visible on later (1978) photos. The storage area appeared between 1971 and 1978. There is no indication the area was ever sampled. The PU&D Yard and associated IHSSs (170, 174a) were in operation from 1974 to 1994, after the period of interest. No information of a spill or environmental release exists including interviews and information provided in CEARP, HRR and other historical reports.

Resolution: Site #7 will be investigated under the Buffer Zone Sampling and Analysis Plan (SAP). Results will be reported in the HRR.

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SITE #8.

CDPHE Concern: Disturbed area, possibly trenches, south of the Present Landfill (IHSS 114) and east of IHSS 170 (see BZ Report, Appendix 2, #54 and Photo Report, Figure 6).

December 1999 Site Response: There is no record of a spill, release or disposal activity at this location. The disturbed area is most likely a result of landfill operations. If determined to be part of IHSS 114, the area will be addressed as part of the CAD/ROD and final closure of the Landfill. Otherwise, no additional study of this area is planned.

After reviewing the Site response of December 1999, the CDPHE Representative (March 15, 2000 memo) responds that the area may be within the IHSS 114 boundary although the trenches identified on Figure 6 do not appear to be located within the boundary. An investigation to determine possible contamination may be necessary if no analytical data specific to these "trenches" is available.

Additional Discussion: The site is alongside Site #7 to the west. The site appears to be outside the IHSS 114 boundary in an area of open storage (see May 1986 photo, Figure 10). It appears to be present before the storage area visible on later photos. Although the site is in the middle of the PU&D Yard VOC plume, it does not appear to be contributing to that plume. No information of a spill or environmental release exists including interviews and information provided in CEARP, HRR and other historical reports.

Resolution: Site #8 will be investigated under the Buffer Zone Sampling and Analysis Plan. Results will be reported in the HRR.

SITE #9.

CDPHE Concern: Disturbed ground southwest of the Present Landfill (IHSS 114) and east of IHSS 170 (see BZ Report, Appendix 2, #54 and Photo Report, Figures 7-10, 13). Identified by the Photo Report as "open storage" with an area of "standing liquid". The site was in use as of 7/17/78 (see Photo Report, Figure 7). The BZ Report states that contamination may have been released.

December 1999 Site Response: The site is part of the new PU&D Yard storage area. There are no records of any spills, releases or waste disposal activities at this site. There are no records of storage of hazardous wastes or any wastes at this site. No additional study of this area is planned.

After reviewing the Site response of December 1999, the CDPHE Representative (March 15, 2000 memo) requests documentation indicating site use plus sampling data if available. Otherwise, an investigation to determine possible contamination may be necessary.

Additional Discussion: This site (storage area) is in the same area as #7 (disturbed ground) and #8 (possible trenches). See discussions under "Resolution" of Sites #7 and 8. There is no Figure 13 in the Site's copy of the EPA Photo Report. The new PU&D Yard was used to store excess equipment. No information of a spill or environmental release exists including interviews and information provided in CEARP, HRR and other historical reports.

Resolution: Site #9 will be investigated under the Buffer Zone Sampling and Analysis Plan. Results will be reported in the HRR.

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SITE #10.

CDPHE Concern: Disturbed area west of the IA and IHSS 170 (see BZ Report, Appendix 2, #53 and Photo Report, Figures 7-10,12,13). The Photo Report identified the area as a "probable oil burn facility". Site inspection indicated a possible cement batch plant rather than an oil burn area. There may be disposal concerns.

December 1999 Site Response: The area is the former concrete batching plant. There is no record of a burn, spill, release or disposal activity at this location. No additional study of this area is planned.

After reviewing the Site response of December 1999, the CDPHE Representative (March 15, 2000 memo) feels that the "vent" (see Photo Report, Figure 8) needs to be explained and documentation of the operations at this site provided with results of sampling, if any was performed. Otherwise, an investigation to determine possible contamination may be necessary.

Additional Discussion: The area is known to be a former concrete batching plant. The "vent" was only one photointerpreter's opinion. All air photo interpretations are verified by "on the ground" evaluation whenever possible. The "vent" interpretation should be disregarded based on actual knowledge of the site's use. Inspection of the site by the CDPHE Representative (see BZ Report, Site #10) indicated a possible cement batch plant rather than an oil burn area. No information of a burn, spill, disposal activity or environmental release exists including interviews and information provided in CEARP, HRR and other historical reports. There is no Figure 13 in the Site's copy of the EPA Photo Report.

As discussed in the January 10, 2001 meeting, the area of concern has been identified as the Concrete Batching Plant by Kaiser-Hill Construction Management (Excavation Specialist). Reference to the "vent" on the aerial photograph is the approximate location of large diesel motors associated with the concrete mixers.

Resolution: No further investigation of this site.

SITE #11.

CDPHE Concern: Small arms range northeast of IA, south of IHSS 142.1 (see BZ Report, Appendix 2, #69). The site should be identified as an IHSS or PAC and may need to be investigated when out of service. Potential contaminants include metals and possibly explosives and solvents.

December 1999 Site Response: The site is the existing Firing Range. It will be decommissioned in accordance with RFCA and the DPP. The facility will go through the Reconnaissance Level Characterization process be identified as a Type 1 or Type 2 building based on the presence or absence of contamination. Lead contamination in the berm will be removed as part of the deactivation or D&D of the facility. The D&D process will address the potential for facility contamination and ER will evaluate the potential for environmental contamination. The site will be not be designated as a PAC because the berm is considered a facility and will be decontaminated and decommissioned through the D&D process.

After reviewing the Site response of December 1999, the CDPHE Representative (March 15, 2000 memo) understands that any buildings will be decommissioned according to D&D protocols and any environmental contamination will be addressed by Environmental Restoration. He concludes that environmental concerns may exist at this site and it needs to be designated as a PAC for appropriate investigation.

Additional Discussion: The new firing range will be reported as a new PAC (NW-1505) in the 2001 Annual Update to the HRR. The building and berm will be decontaminated and decommissioned through

the D&D process. As part of the D&D process, samples will be collected to verify that lead concentrations do not exceed the appropriate standards.

Resolution: The site has been designated as PAC NW-1505. Additional evaluation will be performed by ER.

SITE #12.

CDPHE Concern: A small retention pond northeast of the IA and south of IHSS 142.1(see BZ Report, Appendix 2, # 74 and Photo Report, Figure 3). The source of the water for the pond may be the northeastern part of the IA, east of the Solar Ponds. Contaminants may have accumulated in the pond and need to be evaluated.

December 1999 Site Response: Inspection of the site on 11/17/99 and a 1969 air photo confirm that a pond may have existed at this location in a depression likely caused by the nearby roads. The depression collects water seasonally during large storm events. Sampling of influent and effluent water has been conducted at SW092 and SW091. Soil/sediment data has not been located. No VOC detections have been reported in surface water samples. Soil/sediment within the depression will be sampled "ad hoc" under the Integrated Monitoring Plan (IMP).

After reviewing the Site response of December 1999, the CDPHE Representative (March 15, 2000 memo) would like to participate in defining when, where, number of samples, depths and analytes. He would like to see documentation describing the sampling actions to be implemented including the site's inclusion in the IMP.

Resolution: Soil/sediment within the depression will be sampled. Samples will be collected under the Buffer Zone SAP. Results will be reported in the HRR.

SITE #13.

CDPHE Concern: Disturbed areas south-southeast of IA, south of Woman Creek and west of IHSS 209 (see BZ Report, Appendix 2, #6 and Photo Report, Figure 2). A possible location for a tower, not necessarily an environmental concern but needs to be documented.

December 1999 Site Response: An interview on 11/8/99 substantiated that an air monitoring tower was planned at this location but the site was rejected for unknown reasons. A grass fire also altered vegetation.

After reviewing the Site response of December 1999, the CDPHE Representative (March 15, 2000 memo) would like to see documentation including interview notes.

Additional Discussion: The site is not identified on Figure 2. The site was identified by CDPHE at the January 10, 2001 meeting. The site was planned to be the location of a radio tower installation. The radio tower was never installed. The disturbance was investigated as part of the OU5 RFI/RI and discussed in the RFI/RI Report (April 1996). The area has been revegetated.

Resolution: No further investigation of this site.

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SITE #14.

CDPHE Concern: Disturbed area west of IA, north of IHSS 133.5 and the west access road (see BZ Report, Appendix 2, #7 and #39, and Photo Report, Figures 1 and 2). May not be an environmental concern but needs to be evaluated or documented.

December 1999 Site Response: Uneven ground where the 130 trailer complex now exists, soil appears to have been brought to the area at one time, possibly it was an early construction area for the trailers. Walked down 11/17/99. No information found as to where the soil came from. One interviewee suggested it was from construction of B130 or B131. There is no record of a burn, spill, release or disposal activity at this location. No additional study of this area is planned.

After reviewing the Site response of December 1999, the CDPHE Representative (March 15, 2000 memo) indicates that the ground was disturbed prior to 1955 (see Figures 1 and 2). Therefore, it predated any construction activities associated with the 130 buildings or trailers, which are northeast of this site. The site appears to be related to activity immediately south of the west entrance road, which is the IHSS 133 area. The CDPHE Representative wants the site added to IHSS 133 and investigated.

Additional Discussion: The site can be observed on 1953 and 1955 air photos. The T130 Trailer Complex was constructed in 1989-1990. The site appears to be the location of the concrete wash pad, which may have been used as early as 1953, based on ground disturbance observed on air photos and the discussion in the HRR (1992). The incinerator was in operation starting in 1952 and the ash pits are reported to have been in use starting around 1959. The dates of operation for the incinerator and ash pits are provided so that airphotos can be reviewed with that knowledge. The site was inspected and concrete work appears to have been conducted on both sides of the current road. The cement dump area is readily observed across the road to the south and spills over the hillside. No information of a burn, spill, disposal activity or environmental release exists including interviews and information provided in CEARP, HRR and other historical reports.

Resolution: No further investigation will be performed on the north side of the main road. The area south of the road will be addressed with IHSS 133.

SITE #15.

CDPHE Concern: Disturbed area west of the IA, north of Walnut Creek and IHSS 168 (see BZ Report, Appendix 2, #14, and Photo Report, Figures 1 and 2). It may be related to ditch construction or operation and may not be an environmental concern but needs to be evaluated or documented.

December 1999 Site Response: The area is believed to result from ditch cleaning by the City of Broomfield. There is no record of a burn, spill, release or disposal activity at this location. No additional study of this area is planned.

After reviewing the Site response of December 1999, the CDPHE Representative (March 15, 2000 memo) would like to see documentation.

Additional Discussion: This site couldn't be definitively located in the Photo Report and was not indicated as a possible site on the EPA photographs. The site believed to be referenced is thought to be the Church Ditch or possibly the McKay Ditch. Soil disturbance reports are written frequently for the City of Broomfield for the Church Ditch. The site is one of the ditches that do not belong to the U.S. Government.

Resolution: No further investigation of this site.

SITE #16.

CDPHE Concern: Elongated disturbed area, east of IA, possibly a ditch or pipeline running east-northeast from approximately IHSS 113 (Mound Site), between IHSS 110/111 and IHSS 111.8/111.7 to the northeast along the top of the hillside south of Walnut Creek (see BZ Report, Appendix 2, #15). It appears to be an extension of older activity from the west. It may not be an environmental concern but needs to be evaluated or documented.

December 1999 Site Response: There is a ditch in the area and a scar from utility installation to the East Guard Gate (B920). There is also an old narrow gauge railroad grade in that area. There is no record of a burn, spill, release or disposal activity at this location. No additional study of this area is planned.

After reviewing the Site response of December 1999, the CDPHE Representative (March 15, 2000 memo) responds that given previous activities along the railroad grade (see Photo Report, Figure 2 dated 1955), they would like to see documentation of what caused the disturbances. Otherwise, the site may need to be identified as a PAC and investigated to determine possible contamination.

Additional Discussion: It is not known what previous activities along the railroad grade are referred to. The Denver Utah & Pacific Railroad was constructed across what eventually became the Rocky Flats Plantsite in the 1880s (see articles, photos and map in Endvision, September 11 and September 25, 2000 editions). The site referenced in the 1955 photo (Photo Report, Figure 2) is not visible in the 1964 photo. This linear site could be a road. It looks like a road in the 1953 photo. The East Access Road was constructed in 1964. It could have been a security road. It appears to be along the current security road on the diagonal north of Trench T-1. The site was inspected and the elongated area referenced in the concern appears to be the old railroad grade. There are a number of possibilities as to what is in the 1955 photo. However, no information of a burn, spill, disposal activity or environmental release exists including interviews and information provided in CEARP, HRR and other historical reports.

As discussed at the January 10, 2001 meeting, the State's concern is that the area bisects the East Trenches, specifically Trenches T-3 (IHSS 110) and T-4 (IHSS 111.1) are to the north of the linear feature and Trenches T-11 (IHSS 111.8) and T-10 (IHSS 111.7) are to the south. No samples were collected between the trenches according to the OU2 RI Report dated April 1995.

Resolution: Samples will be collected in the area of concern as part of investigations at IHSSs 111.7 and 111.8.

SITE #17.

CDPHE Concern: A structure, possibly a homesite, southeast of IA and immediately northeast of IHSS 142.11 (see BZ Report, Appendix 2, #21 and Photo Report, Figures 3, 5 and 6). The structures appear to have been removed and the area modified during construction of the dam on Woman Creek. This site is unlikely to be a concern but it should be evaluated or documented.

December 1999 Site Response: No evidence of a homesite was observed on historical photos. The property was procured by the U.S. Government in 1976. There were three previous owners and historical records indicate the property was used for ranching.

After reviewing the Site response of December 1999, the CDPHE Representative (March 15, 2000 memo) responded that since no site activities occurred at this location and the Government acquired the property in

1976, the State will accept the "letter" (Legare to Gunderson and Tarleton, 12/21/99) as documentation of site condition.

Resolution: No further investigation of this site.

SITE #18.

CDPHE Concern: A possible homesite, southeast of IA and south of IHSS 142.11 (see BZ Report, Appendix 2, #22). The structures appear to have been cleared and the area modified during construction of the dam on Woman Creek. This site is unlikely to be a concern but it should be evaluated or documented.

December 1999 Site Response: There is evidence of a structure, possibly a homesite, on photos from 1969. The railroad owned the land in 1897, it was bought by K. Church in 1915 and sold to the U.S. Government in 1974. Historical records indicate the property was used for ranching.

After reviewing the Site response of December 1999, the CDPHE Representative (March 15, 2000 memo) responded that since no site activities occurred at this location and the Government acquired the property in 1974, the State will accept the "letter" (Legare to Gunderson and Tarleton, 12/21/99) as documentation of site condition.

Resolution: No further investigation of this site.

SITE #19.

CDPHE Concern: Possible ash disposal pile or waste cement disposal area southwest of IA and west of IHSS 133.5 (see BZ Report, Appendix 2, #36).

December 1999 Site Response: This area is known to have been used as a concrete wash area and cement trucks routinely used it during construction of B460 in the early 1980s. Soil conditions underlying the concrete pour areas and the potential removal of all concrete debris will be addressed during the remedial action for the ash pits (IHSS 133).

After reviewing the Site response of December 1999, the CDPHE Representative (March 15, 2000 memo) would like documentation in the form of an addition or modification to the HRR that this area will be addressed with IHSS 133.

Additional Discussion: The site is within IHSS 133. The concern identifies possible ash disposal or waste cement disposal areas west of IHSS 133.5. The boundaries of IHSSs 133.5 and 133.6 were extended based on information developed as part of the HRR (June 1992) subsequent to publication of the EPA Photo Report (July 1988). The areas within IHSS 133 were investigated and results reported in the Final Phase I RFI/RI Report for Woman Creek Priority Drainage, OU 5 (April 1996). The EPA Photo Report was reviewed as part of the investigation. Nothing was found at the location west of IHSS 133.5 noted by the EPA Photo Report (figure 4). The other locations noted on figure 4 are within the extended boundaries of IHSSs 133.5 and 133.6 or adjacent to, and in between, these IHSSs. The area was identified by field inspection as rubble piles in the RI Report.

Resolution: The site is within IHSS 133 and will be addressed as part of the ash pits remedial action. The site will be included in IHSS 133.5 and 133.6 investigations.

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SITE #20.

CDPHE Concern: Numerous disturbed spots west and northwest of IA, and north and east of IHSS 168, possibly prairie dog mounds (see BZ Report, Appendix 2, #31 and 40). An evaluation should be performed.

December 1999 Site Response: These mounds can be seen in 1937 air photos prior to construction of Rocky Flats. Conjecture concerning the spots includes teepee rings from migrating Indian tribes, giant ant hills, prairie dog communities and Mima Mounds. Mima Mounds result from geomorphic processes such as solutional weathering and freeze-thaw actions. They have been observed in Mira Mesa, California and in Washington State. No further investigation is planned.

After reviewing the Site response of December 1999, the CDPHE Representative (March 15, 2000 memo) agrees that these surface scars appear to be caused by natural processes but that physical aspects of these features do not seem to fit the definition of Mima Mounds. He would like an interpretation by a "qualified expert" as well as an explanation of the apparent paths into these areas.

Additional Discussion: Airphotos from 1937–1987 were analyzed (July 1937 Photo, EPA Photo Report Figures 1, 2, 3, 4, 6, 7, 8, 9, 10 and Plant Photo 37358, October 1987). The spots appear dark on photos from spring and early summer and light-colored on photos taken in late summer and fall. The EPA Photo Report indicated that these spots "may be natural rather than man-made, prairie dog homes". The spots can be seen in photos prior to construction of Rocky Flats. There is no reason to believe that these spots, and the pattern of spots, are other than natural. Marcia Murdock, the Site's Senior Ecologist, was consulted and prepared the discussion below.

Once I was able to inspect the photos in question, it was quite obvious that the disturbances referred to at "Site #20" were part of a black-tailed prairie dog (*Cynomys ludovicianus*) colony. Prairie dog mounds are very distinctive in aerial photographs; they show up virtually white compared to surrounding ground because they are kept devoid of any vegetation by the prairie dogs (removal of visual barriers), and are randomly spaced, large roundish structures. The mounds typically cluster sporadically, a manifestation of the extended-family social structure of the species.

Interestingly, the "Site #20" colony started in the vicinity of the gravel mine near the present West Gate of the Site in the early part of the 1960s, and gradually moved to the northwest. By 1969, some of the early burrow mounds had been abandoned, and were reclaimed by vegetation. The abandoned mounds showed visual characteristics very similar to the curious roundish patches of vegetation/surficial anomalies that I described as "burrow mounds" in my first email. While inspecting photos covering a period of about 50 years, I have found that these same anomalies are present throughout the entire extent of the Rocky Flats Alluvium deposit - on and off the Site - and they are even evident in surrounding hillside areas as well, albeit very much less distinct. I'll discuss that in greater detail later. The time series of photos I was eventually able to find clearly showed the migration of the "Site #20" colony to the northwest, along the alluvial pediment. Out of curiosity, I inspected older and younger photos to see where prairie dog colonies had existed over time. The last photographic record that shows evidence of the colony in question was in 1972, when the outer Buffer Zone was acquired. This photo shows active prairie dog mounds just northwest of the 130 Trailers, and northeast of the New Landfill. By 1980 the most recently built prairie dog mounds around "Site #20" were still identifiable, but revegetated. The town was not active.

All these older photos that were of good quality and sufficient photographic resolution showed the same vegetation/surficial anomalies that I have ascribed to the burrow mounds. As I compared photos from different times, I was able to identify some of these burrow mounds in very close proximity to where prairie dog mounds appeared on other photos of different ages. To my eye, many of these appeared to be nearly identical in position and shape to the original prairie dog mound disturbance. On the 1960s photos in question, I was able to locate some prairie dog mounds that were close to some specific topographical features just northeast of the New Landfill on the Site. After marking these down, I was able to find corresponding present-day burrow mounds in the field. Some of these mounds appeared to have current small mammal use, others did not. I plan to visit these again soon, now that I have recently observed

"housekeeping" activities within similar mounds along my normal survey transects. The housekeeping activity I have observed over the past month appears to be mostly the responsibility of thirteen-lined ground squirrels (*Spermophilus tridecemlineatus*) that would be emerging from hibernation about now. Some of the burrow activity is also the distinctive runways of voles (probably prairie voles). In one location I have observed activity that might actually be from northern pocket gophers (*Thomomys talpoides*). This question has continued to pique the interest of Site ecologists, and this field season we will be investigating which small mammals are currently present in the vicinity of selected burrow mounds. By fall, we hope to have a better defined species list of the present occupants of the burrow mound areas.

Other photos over time, showing a wide area surrounding the Site, provide evidence of prairie dog colonies appearing and disappearing over the whole area - inside the Site boundaries and out in surrounding areas. Some of the photos taken early in the last decade show prairie dog colonies where the Site ecologists monitored colonies in the early 1990s, which presently stand empty. During the early 1990s, in conjunction with studies conducted on the Standley Lake eagles as they established their nesting territory, the Colorado Division of Wildlife, U.S. Fish and Wildlife Service, and Rocky Flats collaborated on a prairie dog mapping effort. During that effort we used aerial photos to identify active prairie dog colonies and to plan our monitoring strategy. At that time the colonies spread over a large area to the east and north of Rocky Flats, and several areas on the Site as well. When the plague swept through, many of the colonies were wiped out. At about the same time, a large portion of the Rock Creek super-colony was eliminated through poisoning, in preparation for the large scale expansion of the Rock Creek Subdivision and Interlochen site expansion. More recently, recovering colonies adjacent to the Site's south boundary (north of Hwy 72) were poisoned, and few individuals survive there. The Site's "Hwy. 128 Prairie Dog Town" has started to reestablish, but is not yet recovered to its pre-1994 population.

In the interest of establishing any historical memory of prairie dog colonies on the Site in the early years, I started an interview effort. It has taken some time to find a few of the "old-timers", but I was eventually able to find a few who remembered things about prairie dogs. One of the oldest men I spoke with had run cattle on the old Church holdings, along with the Churches and several of the other original landowners. He mentioned one incident when a man and his son had come out to the grazing area to shoot prairie dogs, and had apparently had some success. He saw the man several days later, and the man said his son was in the hospital very ill with an unknown ailment. The rancher told him to rush back to the hospital and have his son and himself checked for plague! He did, and his son was saved. Apparently they had plague in the colonies in the late 40s when this occurred. It turned out that the son had handled a dead prairie dog, and had indeed contracted plague. He mentioned that the plague would sweep through about every decade to 15 years, and wipe out the colonies, then they would slowly build back up. We are presently experiencing a recovery period after the plague passed through our area in 1994. Apparently little has changed with that disease dynamic.

Another old-timer who started work out here in the mid-1960s recalled that the buildings and grounds crews had been tasked with a prairie dog removal and relocation project not long after he started work here (probably about 1965-67). Because this prairie dog removal effort was going on during the same time frame that the photos in question were taken, the vehicle tracks that can be seen among the prairie dog burrows are not unexpected. It takes considerable time and effort to catch all the prairie dogs in a colony, and the effort, if they were live-trapping, could have gone on for some time. Some of the prairie dogs were relocated off the Site near the Church Ranch headquarters (the best I can determine is that may have been near the present Rocky Flats Lake), and they set up housekeeping in a place the ranchers didn't want them. Plant personnel were dispatched to capture them and move then yet again. Photos of the Site from 1964 through 1972 show colonies in the area to the west and northwest of the present day 130 trailer complex (including within the New Landfill), and in the northeast part of the outer Buffer Zone near Indiana Street (in the area of the McKay Bypass Pipeline). Later photos from the early 1980s show the "Hwy. 128 Prairie Dog Town" in place.

In a recent literature review, I have run across one 1960s research project that actually studied differences in vegetation between the burrow mounds of the Rocky Flats Alluvium, the surrounding undisturbed alluvial plain, and hillside soils of the terminal alluvial abutments where the soils have been re-sorted, and are less rocky. This research project identified these anomalous structures as "pebble mounds", and found

that northern pocket gophers were closely associated with them at that time. The authors noted that the gophers appeared to be responsible for significant turnover of the soils in these mounds. The study identified significant differences between the pebble mound vegetation and the surrounding alluvial plain vegetation. One species they noted specifically was cheatgrass (*Bromus sp.*), which still appears on the pebble mounds today. (Branson, F.A., Miller, R.F., and I.S. McQueen. Plant communities and soil moisture relationships near Denver, Colorado. 1965. Ecology. Vol 46 (3), pp 311-319.) At present, northern pocket gophers are uncommon at the Site, but other papers written regarding 1970s studies at Rocky Flats referred to apparently fairly high gopher populations at that time. (One paper described direct counts of gopher mounds: Terrol F. Winsor and F. Ward Whicker. Pocket gophers and redistribution of plutonium in soil. August, 1980. Health Physics, Pergamon Press. Vol. 39, pp. 257-262.) As with many small populations, pocket gophers exhibit cyclic population increases and crashes, so this species may presently be in recovery in the vicinity of the Site.

After considering all this information, it appears that the origination of these burrow mounds may have centered around abandoned prairie dog mounds. The soils of the prairie dog mounds would have been loose, and easy for smaller burrowing mammals to take advantage of. With the smaller rodents such as the thirteen-lined ground squirrels and northern pocket gophers able to keep the burrow mound soils loose, other species such as prairie voles (*Microtus ochrogaster*), deer mice (*Peromyscus maniculatus*), and silky pocket mice (*Perognathus flavus*) can also burrow and contribute to soil loosening and turnover by their smaller contributions. The origins and placement of the mounds may well indeed be due to historic prairie dog mounds, but the smaller residents keep these areas disturbed in the absence of the larger burrowers.

Resolution: No further investigation of this site.

SITE #21.

CDPHE Concern: Two areas of disturbed ground southwest of IA, west of IHSS 133.5, south of the raw water detention pond and the west access road (see BZ Report, Appendix 2, #37). These areas may not be associated with disposal activities but need to be evaluated or documented.

December 1999 Site Response: Interviews conducted on 11/08/99 identified the disturbances as soil and rubble "push-off" from the grading of the present dirt road in the area. The areas were inspected on 11/17/99 and found to be piles of large cobble stones. There is no record of a burn, spill, release or disposal activity at this location. No additional study of this area is planned.

After reviewing the Site response of December 1999, the CDPHE Representative (March 15, 2000 memo) would like to see copies of the interviews and the inspection report.

Additional Discussion: Agreement regarding this Site was made in the January 10, 2001 meeting regarding details of the interviews with the Kaiser-Hill Construction Management (Excavation Specialist). There are no further details available. As reported in the December 1999 Site Response, interviews with the Kaiser-Hill Construction Management (Excavation Specialist) conducted on 11/08/99 identified the disturbances as soil and rubble "push-off" from the grading of the present dirt road in the area. The areas were inspected on 11/17/99 and found to be piles of large cobble stones.

Resolution: No further investigation of this site.

SITE #22.

CDPHE Concern: Large excavation west of IA and north of IHSS 168 (see BZ Report, Appendix 2, #38). May be related to gravel excavation and not to Rocky Flats but need to be evaluated or documented.

December 1999 Site Response: The disturbance is a rock quarry managed by Western Aggregates and is not associated with Rocky Flats. No additional study of this area is planned.

After reviewing the Site response of December 1999, the CDPHE Representative (March 15, 2000 memo) reports that it is a surface mine called the Church Pit which has been operating since the 1940s. It is operated by Lakewood Brick and Tile under a 1979 Permit #M1979045 (per Carl Mount of the State Office of Minerals and Geology) and is owned by the Church Ranch. The State agrees that the site does not have contamination concerns related to Rocky Flats.

Resolution: No further investigation of this site.

SITE #23.

CDPHE Concern: Possible waste disposal area west of IA and north of IHSS 168 (see BZ Report, Appendix 2, #51). A visual inspection of the area indicates it was used as a borrow area rather than a disposal site. This needs to be properly documented and environmental concerns evaluated as necessary.

December 1999 Site Response: The site was inspected on 11/17/99. There is some evidence that the area was used as a rock quarry and several interviewees thought it was used as a borrow area for landfill operations (IHSS 114). A review of OU 11 documents found no mention of operations at this site. There is no record of a burn, spill, release or disposal activity at this location. No additional study of this area is planned.

After reviewing the Site response of December 1999, the CDPHE Representative (March 15, 2000 memo) would like copies of the interviews and site inspection report.

Additional Discussion: The site was inspected and appears to be fill. It is a large, poorly vegetated, mounded rocky area. A road leads to the Present Landfill.

Agreement regarding this Site was made in the January 10, 2001 meeting concerning details of the interviews with the Kaiser-Hill Construction Management (Excavation Specialist). There are no further details available. As reported in the December 1999 Site Response, interviews were conducted with Kaiser-Hill Construction Management (Excavation Specialists) and several interviewees thought it was used as a borrow area for landfill operations (IHSS 114). The site was inspected on 11/17/99. There is evidence that the area was used as a rock quarry.

Resolution: No further investigation of this site.

SITE #24.

CDPHE Concern: Areas of possible fill north-northwest of IA and north and west of IHSS 114 (see BZ Report, Appendix 2, #55 and Photo Report, Figures 7-10 and 13). These areas may be related to the landfill and/or ditch construction but it needs to be confirmed and documented or evaluated for environmental concerns.

December 1999 Site Response: The areas are known to be rip rap water breaks installed in the ditch during construction for erosion control. No additional study is planned.

After reviewing the Site response of December 1999, the CDPHE Representative (March 15, 2000 memo) would like documentation of the nature of the material.

Additional Discussion: The areas can be observed on photos from 1978-1986. There is no Figure 13 in the Site's copy of the EPA Photo Report. These areas appear to be associated with Landfill operations or construction of the dam. Based on the photos, both of the areas appear to have been used to stockpile soil. The time period, since the areas cannot be observed in 1971 but are visible in 1978, matches dam construction. Two landfill ponds and a dam were constructed in 1974-1975. January 1975 Rocky Flats photos (19157-03 and 04) clearly show the elongated soil mound. The areas are identified as soil stockpiles in Sanitary Landfill Renovations, Landfill Trench, General Plan & Sections, Drawing No. 27317-1 (Zeff, Cogorno & Sealy, Inc., Tri-Consultants, Inc. and Hydro-Triad, Ltd., 1974) and in Figure 2 of the Present Landfill Closure Plan (1988). There is no information of a burn, spill, disposal activity or environmental release exists including interviews and information provided in CEARP, HRR and other historical reports.

Resolution: No further investigation of this site.

SITE #25.

CDPHE Concern: Disturbed area north of IA and north of landfill retention pond, between IHSS 167.1 and the pond (see BZ Report, Appendix 2, #56 and Photo Report, Figure 7). This may be a borrow area for the landfill dam construction but it needs to be evaluated or documented.

December 1999 Site Response: The area is not clearly identified but appears to be a slump resulting from slope failure. The area may have been used as a borrow area but that has not been confirmed. There is no record of a burn, spill, release or disposal activity at this location. No additional study of this area is planned.

After reviewing the Site response of December 1999, the CDPHE Representative (March 15, 2000 memo) would like documentation that identifies this area as a slump feature or borrow area during August, 1978 (see Photo Report, Figure 7).

Additional Discussion: The site is not evident in the 1971 photo but is observable in 1978 and 1980 photos. The site was inspected and it appears to have been used as a borrow area. The slope has been cut down and the area appears to have been reseeded. The time frame and proximity to the Landfill make it reasonable to assume that use of the area is related to Landfill operations or dam construction. Two landfill ponds and a dam were constructed in 1974-1975. January 1975 Rocky Flats photos (19157-01 and 02) clearly show the area has been scraped. No information of a burn, spill, disposal activity or environmental release exists including interviews and information provided in CEARP, HRR and other historical reports.

Resolution: No further investigation of this site.

SITE #26.

CDPHE Concern: Disturbed ground northeast of IA and north of Walnut Creek and IHSS 142.2 (see BZ Report, Appendix 2, #57 and Photo Report, Figure 7). This may be a borrow area for the landfill dam

construction but it needs to be evaluated or documented. See Site #27. Sites #26 and #27 are adjacent to each other.

December 1999 Site Response: See response to Site #27.

Additional Discussion: See response to Site #27.

Resolution: No further investigation of this site.

SITE #27.

CDPHE Concern: Disturbed ground northeast of IA and north of Walnut Creek and IHSS 142.3 (see BZ Report, Appendix 2, #58 and Photo Report, Figure 7). This may be a borrow area for the landfill dam construction but it needs to be evaluated or documented.

December 1999 Site Response: The disturbed areas along the road north of the A Ponds (Sites #26 and #27) were visually observed on 11/17/99 and found to be areas of surficially-exposed caliche common to the Rocky Flats Alluvium. Several specimens were collected from the area. The area of lighter color between the two sites is where a grass fire has occurred. No additional study of this area is planned.

After reviewing the Site response of December 1999, the CDPHE Representative (March 15, 2000 memo) would like an explanation of site activities that occurred at these two sites to disturb the ground during August, 1978 (see Photo Report, Figure 7) as well as documentation such as copies of work documents that identify the activities.

Additional Discussion: Caliche is clearly evident on the surface today. Ground disturbance is not evident in the 1971 photo but is observable in 1978 and 1980 photos. Based on the photos, the area could have been used for borrow for dam construction, for construction staging or storage. The site was inspected and shows evidence of surface scraping. The time frame and proximity to the Landfill and Pond A-3, and possibly even Pond A-2, make it reasonable to assume that use of the area is related to Landfill operations or dam construction. Pond A-2 was constructed in 1973, Pond A-3 was constructed in 1974, and two Landfill ponds and a dam were constructed in 1974-1975. No information of a burn, spill, disposal activity or environmental release exists including interviews and information provided in CEARP, HRR and other historical reports.

Resolution: No further investigation of this site.

SITE #28.

CDPHE Concern: Change in surface features/outfall locations to bypass the South Walnut Creek ponds east of the IA (see BZ Report, Appendix 2, #62). The environmental concerns created by a change in flow from the diversion ditch, allowing flow farther to the east, and the possible dissemination of contamination throughout the areas affected by the ditch, need to be evaluated or documented.

December 1999 Site Response: The area has been severely eroded over the years. It is not clear where the specific disturbance is located but installation of power lines and a natural gas main may have contributed to scarring. Regarding a redirection of flow and a consequent bypass of water around the B ponds, there is a deep gully that flows directly to South Walnut Creek upstream of Pond B-5. The pond effluent is Point of Compliance (POC) GS08 and is sampled in accordance with RFCA. There is no

evidence of a spill, release or disposal activity at these locations. No additional study of this area is planned.

After reviewing the Site response of December 1999, the CDPHE Representative (March 15, 2000 memo) responded that his concern is related to the surface water flow and sediment transport and disposal that would have occurred during storm events and runoff from the East Spray Field. The CDPHE Representative indicated that the ditch was constructed for East Spray Field runoff. Surface water samples from GS08 do not provide information regarding potential contamination that may exist in the sediment in the ditch and at the terminus of the various outfall locations over time. Changing the outfall location to the east is the activity of concern. The CDPHE Representative would like to review water and sediment data previously collected along the ditch and at each outfall which may identify possible contamination, or the Site should provide a proposed sampling plan and documentation.

Additional Discussion: The disturbance referred to could not be definitively located based on a review of the photos. However, no data are available from the ditch or outfalls. The area was identified at the January 10, 2001 meeting by CDPHE.

Resolution: The area will be sampled as part of East Spray Field (IHSS 216.2) investigations.

SITE #29.

CDPHE Concern: Disturbance northwest of IA (see BZ Report, Appendix 2, #66). This appears to be a tower unrelated to any disposal activities but needs to be confirmed and documented or evaluated.

December 1999 Site Response: The area was inspected on 11/17/99. The light color circled on Figure 2 of the BZ Report is a large cattail wetland. No additional study of this area is planned. The locations identified on Figures 1 (#66) and 2 (#29) of the BZ Report are south of the dirt road.

After reviewing the Site response of December 1999, the CDPHE Representative (March 15, 2000 memo) would like documentation of the disturbance seen on Figure 9 of the Photo Report, which may be an antenna site.

Additional Discussion: It is not clear where the disturbance is located, based on a review of Figures 1 and 2 of the BZ Report and Figures 9 and 10 of the EPA Photo Report. No information of a burn, spill, disposal activity or environmental release exists in that area including interviews and information provided in CEARP, HRR and other historical reports. The site was identified by CDPHE at the January 10, 2001 meeting. The site is the location of the Meteorological Tower.

Resolution: No further investigation of this site.

SITE #30.

CDPHE Concern: Disturbed ground north of parking lot on the north side of IA (see BZ Report, Appendix 2, #72). It may be a negligible environmental impact but needs to be evaluated or documented.

December 1999 Site Response: The area was visually inspected on 11/17/99. Slumping of the hillside is apparent. The light areas circled are believed to be natural geologic processes common to that area. There is no evidence of a spill, release or disposal activity at this location. No additional study of this area is planned.

After reviewing the Site response of December 1999, the CDPHE Representative (March 15, 2000 memo) is not convinced that slumping describes the disturbed ground seen in Figure 13 of the Photo Report. He would like documentation of the activities that caused the disturbed ground, evident in 1988 photos.

Additional Discussion: There is no Figure 13 in the Site's copy of the EPA Photo Report. Slumping of the hillside is apparent today and in historical photos. It's possible that construction was occurring in the area in 1988. The parking lot was extended in 1988 or 1989. No activities were observed from a review of 1987 and 1989 photos although the appearance of a bare spot on the hillside can be observed in an October 1987 photo. Slumping and vegetation changes in different seasons can contribute to the appearance of disturbed ground. Slumping of the hillside occurs throughout the area and was clearly observed on photos and during a second site inspection. It's possible that physical stresses such as rainfall or traffic at the base of the hill caused additional slumping at that location in 1987-1988. Strict controls on waste handling were in place by the mid-1980s. No wastes would have been buried on a slumping hillside adjacent to a security fence and just above the parking lot and the only access road to that area. No information of a burn, spill, disposal activity or environmental release exists in that area including interviews and information provided in CEARP, HRR and other historical reports.

Resolution: No further investigation of this site.

The FOLLOWING SIX SITES WERE IDENTIFIED IN THE BZ REPORT AS IHSSs OR PACs THAT MAY HAVE A LARGER AERIAL EXTENT OR POSSIBLE ADDITIONAL CONCERNS THAN CURRENTLY IDENTIFIED.

SITE #31.

CDPHE Concern: Disturbed ground immediately west-northwest of IA (see BZ Report, Appendix 2, #2 and #52) appears to have been identified as PAC 300-700, the Scrap Roofing Disposal Area. The HRR indicated that scrap roofing material, asphalt, styrofoam and plastic sheeting were removed and placed in the sanitary landfill, and that no radioactivity was detected in the trench or material. No other sampling or analysis was reported. It is not clear in the HRR if both of the two large excavated areas were investigated although both were filled and may have been used as disposal sites. A visual inspection did not identify any evidence of debris or waste. The area has been filled, leveled and gently sloped to the north into Walnut Creek. Paved and dirt/gravel roads and storage/parking areas have been placed over parts of this area. This is the area of soil mounds (See BZ Report, Appendix 2, #61) which may be construction soil that may have been spread on this area. Additional evaluation of this area may need to be performed.

December 1999 Site Response: The area is outside the PA, west of B371 and is referred to as Gate 5. It has been used to stockpile sand and gravel and equipment for many years. Originally it was used for workers parking during construction of B371. The HRR describes PAC 300-700 in this area. PAC 300-700 was approved by EPA and CDPHE as No Further Action (NFA) in 1992. PAC 300-702 is also in this area and has been assigned to IA Group 300-6.

After reviewing the Site response of December 1999, the CDPHE Representative (March 15, 2000 memo) responds that two large excavations can be seen in the Photo Report, Figures 1,2,3,5 and 6. The westernmost excavation is mostly filled by 8/6/71 (Figure 6) and completely filled and partly covered by a parking lot and a road by 8/17/78 (Figure 7), and the eastern excavation is mostly filled by 6/1/80 (Figure 8). The 1992 HRR indicates that Site #31 received waste since 1955 and that "due to the limited documentation regarding disposal in the 1960s, it is unclear if any release to the environment occurred". The location of PAC 300-700 in the 1992 HRR (Figure 300-1) appears to only include the eastern

excavation and the HRR states that "other documents suggest a more westerly location". Therefore, the initial approval of PAC 300-700 as NFA may not include the whole area identified as Site #31and the designation of NFA appears to have been premature without appropriate soil sampling at this apparent landfill. The CDPHE Representative wants the actual area that was included in remedial actions at PAC 300-700 to be identified along with the results of any sampling and analysis that were performed. He concludes that additional environmental investigations appear necessary at this site.

Additional Discussion: After further review, PAC 300-700 was approved by EPA as NFA in 1992. Two sites are observable on old photos, starting in 1953. The area appears revegetated. The west side may have been filled in. Comments in the HRR regarding PACs 300-700 (Scrap Roofing Disposal Unit) and 300-702 (Pesticide Shed, B367), and BZ Report, Appendix 2, page 4 were reviewed. PAC 300-700 was an old burial trench 500 yards northwest of B371 although other documents suggested a more westerly location (HRR 1992). Note that the distance of 500 yards to the trench reported in the June 1992 HRR was an error and the actual distance is approximately 500 feet. The trench was excavated and its contents placed in the "sanitary landfill" in 1981. No radioactivity detected on the material or in the trench. Based on HRR Figure 300-1 and photos (Photo Report Figures 1-3,5-8), only the eastern excavation was included in PAC 300-700.

Resolution: Site #31 will be investigated under the Buffer Zone SAP to determine whether this site should become a PAC, or whether the boundary of PAC 300-700 should be extended. Results will be reported in the HRR.

SITE #32.

CDPHE Concern: Possible waste disposal area west-southwest of IA south of the west access road and in the area of IHSSs 133.6, 133.4, 133.1, 133.3 and 133.5 (See BZ Report, Appendix 2, #3). The currently identified IHSSs appear to identify specific areas within this disturbed area. It may not be a new IHSS but it needs to be evaluated with the adjacent IHSSs.

December 1999 Site Response: The site is near the OU5 ash pits and incinerator. The area is IHSS 133.5 and will be dispositioned as part of remedial actions for the ash pits.

After reviewing the Site response of December 1999, the CDPHE Representative (March 15, 2000 memo) will accept the "letter" (Legare to Gunderson and Tarleton, 12/21/1999) as documentation for the identification of this site.

Resolution: The area has been identified as IHSS 133.5 and will be addressed with that IHSS.

SITE #33.

CDPHE Concern: Possible waste disposal areas southwest of IA near the 133 IHSSs (See BZ Report, Appendix 2, #24, 25 and 26). Possible additional disposal/ash areas between 133.5 and 133.6, immediately north of 133.1 and south of 133.3. These areas may be currently identified as IHSSs but the exact locations are difficult to determine. An evaluation needs to be performed.

December 1999 Site Response: The site is near the OU5 ash pits. The area is believed to be IHSSs 133.2 and 133.3 and will be dispositioned as part of remedial actions for the ash pits.

After reviewing the Site response of December 1999, the CDPHE Representative (March 15, 2000 memo) will accept the "letter" (Legare to Gunderson and Tarleton, 12/21/1999) as documentation for the identification of this site.

Resolution: The area has been identified as IHSSs 133.2 and 133.3 and will be addressed with those IHSSs.

SITE #34.

CDPHE Concern: Disturbed area southeast of IA and south of Woman Creek (See BZ Report, Appendix 2, #5). Identified as IHSS 209 in the HRR but covers a larger area. IHSS 209 appears to be only the northern half of this site. The area should be included in IHSS 209 and further evaluation may need to be performed.

December 1999 Site Response: The site is an area of disturbed soil west of IHSS 209, which is known to have been used as a gravel borrow area. It is not known where the gravel was used. There is no evidence of a spill, release or disposal activity at this location. No additional study of this area is planned.

After reviewing the Site response of December 1999, the CDPHE Representative (March 15, 2000 memo) would like documentation that supports a determination of no releases or disposal activity at this site, including data that identifies the possible contamination of this site. The documentation should indicate why this area should not be included with IHSS 209, considering its apparent relationship to IHSS 209.

Additional Discussion: The site is visible in 1955 (Figure 2). The 1992 HRR indicated that IHSS 209 was being studied as part of OU5. The OU5 RFI/RI Report (1996) presents an extensive discussion of all the sites associated with IHSS 209. As part of the RI, air photos were reviewed, including the EPA Photo Report, the sites were visually inspected and samples were collected. There was no evidence that the sites were ever used for waste disposal. Analytical results from the RI samples collected indicate that contaminants of concern including volatiles, metals and radionuclides are not present within IHSS 209 and the associated surface disturbances. In addition, no information of a burn, spill, disposal activity or environmental release exists including interviews and information provided in CEARP, HRR and other historical reports. As documented in the OU5 RFI/RI Report, IHSS 209 and the source area west of the IHSS were removed from further evaluation in the human health risk assessment because concentrations did not exceed criteria established in the CDPHE screen. Additionally, results of the Ecological Risk Assessment for the Woman Creek Watershed did not indicate that IHSS 209 was a source area. IHSS 209 was proposed as No Further Action (NFA) in 1997 (HRR Annual Update, 1997) and accepted by EPA and CDPHE in 1999.

Resolution: No further investigation of this site.

SITE #35.

CDPHE Concern: Pipelines and East Spray areas east of the IA (See BZ Report, Appendix 2, #63). These activities and areas are identified as IHSSs 216.2 and 216.3. However, it does not appear that all of the East Spray areas are included in these IHSSs. There appears to be an area north of the East Access Road and east of 216.2 that is not identified as part of IHSS 216 (see Photo Report, Figure 8). The area needs to be included with IHSS 216 and evaluated as necessary.

December 1999 Site Response: The large Gwyn or Air Force Tower was at this location. There were no spills to the environment during construction or dismantlement of the tower. There is no evidence of a spill,

release or disposal activity at this location. No additional study of this area is planned. The BZ Report also requests expansion of IHSS 216.2. IHSSs 216.1 and 216.2 were sampled extensively during the OU2 Remedial Investigation. The IHSSs were subsequently proposed as NFA in 1996. Based on the sampling results, additional sampling is not warranted and no additional study of this area is planned.

After reviewing the Site response of December 1999, the CDPHE Representative (March 15, 2000 memo) responds that the Air Force Tower can be seen in Figure 13 of the Photo Report dated 6/7/88. The area initially of concern can be observed in 1980 (see Photo Report, Figure 8 dated 6/1/80) as a disturbed and dark area. The area is identified as "revegetated fill with associated spray piping". Sampling at IHSSs 216.1 and 216.2 does not provide sufficient rationale for not having included this site as part of IHSS 216.2. Proposal of these IHSSs for NFA is also insufficient rationale for the area not being part of IHSS 216.2. The CDPHE Representative would like to review the rationale for not previously including this site as part of IHSS 216.2 along with any documentation and data available for this site, plus rationale for consideration of this site as a possible new PAC. An investigation to determine the possible contamination of this area may need to be performed.

Additional Discussion: The specific area of the Tower was not included with IHSS 216.2 because there is no evidence of a spill, release or disposal activity associated with the Tower. Boreholes 10691, 10791, 10891 and 11191A and wells were drilled in the area during remedial investigations (Draft Final OU2 RI Report, 1995, Figure 2.1-1). Analytical results indicate low levels of VOCs and radionuclides in subsurface soils.

The site was identified by CDPHE at the January 10, 2001 meeting. Activities in this area could not be determined. The rationale for the specific boundaries established for the East Spray Fields is not well documented. It is possible that runoff areas were not included. The EPA Photo Report indicates that pipelines and spray areas were put in with most of the runoff appearing to go to Woman Creek (BZ Report, Appendix 2, #63). Given the location of Site #35 on the plateau north of the East Access Road, it is more likely that runoff would go to Walnut Creek. The area of the Tower is outside the boundaries of the East Spray Field IHSSs.

Resolution: The area will be sampled as part of IHSS 216.2 investigations.

SITE #36.

CDPHE Concern: Disturbed area west of IA (See BZ Report, Appendix 2, #67) which appears to be an area of fill within PAC 100-604. However, the area is not specifically identified in the HRR. The source and potential impact of this fill should be determined.

December 1999 Site Response: The area is where the 130 Trailer complex is currently located and is believed to be associated with the activities described for Site #14. There is no evidence of a spill, release or disposal activity at this location. No additional study of this area is planned.

After reviewing the Site response of December 1999, the CDPHE Representative (March 15, 2000 memo) responded that, as previously noted for Site #14, the construction activity that may have occurred at this site is not related to the concerns identified for Site #14. However, if the disturbance related to Site #36 is determined to be construction-related, then the Site is requested to provide documentation.

Additional Discussion: The site appears from Figure 2 (1955) in the BZ Report to be located north of the raw water pond near the road. However, the specific location referred to could not be located on the referenced 1983 photo (Figure 9). If it is the area noted as fill/possible disposal on Figures 7-9 (north of raw water pond near road), it seems well outside PAC 100-604. The HRR was reviewed regarding PAC 100-604 and Figure 100-1 for its boundaries. PAC 100-604 was designated as a result of sanitary sewer leaks in the T130 Trailer Complex. The T130 Complex was not constructed until 1989-1990. There was

no indication of a disturbed area at the possible location on the EPA photos prior to 1978. The site may be north of OU11 (IHSS 168). Samples were not collected from this area. The disturbance cannot be explained on the basis of available information. However, no information of a burn, spill, disposal activity or environmental release exists in that area including interviews and information provided in CEARP, HRR and other historical reports.

CDPHE identified the area of concern at the January 10, 2001 meeting. It can be seen on Figure 12 of the EPA Photo Report. The site of actual interest is an area of disturbed ground where the T130 Trailer Complex is located. The site appears to be related to construction, according to both CDPHE and Site personnel. The Site will check for additional information.

Resolution: The area will be investigated. Results will be reported in the HRR.