Questions and Responses for August 9, 1999 Westminster letter regarding the RSOP for Recycling Concrete		
Question Number	**Question**	**Response**
General Response: Several of the comments refer to matters that are outside of the scope of RSOP for recycling concrete. The RSOP is a decision document that proposes using free-released concrete as backfill versus disposing the concrete as sanitary waste offsite and bringing similar material onsite for backfill. Therefore, comments related to management and disposal of contaminated concrete, under building contamination, and building foundation removal do not directly relate to using recycled concrete for backfill material. However, consideration was given to all comments and questions, and the responses explain why the comment or question is not within the scope of this decision document. In response to Westminster questions, answers were provided and transmitted to representatives of the City of Westminster on August 19, 1999. Several of the following responses expand on the earlier answers. At that time, the following documents were transmitted, as requested: • The RFETS Decontamination and Decommissioning Characterization Protocol, Revision 0 (currently in use at RFETS) • The RFETS Decontamination and Decommissioning Characterization Protocol, working draft (a proposed revision to the above) • The Site-wide Reconnaissance Level Characterization Plan, working draft • The Site-wide Pre-Demolition Survey Plan, working draft • The RFETS Quality Assurance Manual • The Building 779 Final Status Survey Plan • The Building 779 Waste Management Plan • Concrete Disposal Options • Integrated Monitoring Plan.		
1	DOE indicates that the money saved through reuse of concrete rubble will be used to obtain further cleanup. Please provide document indicating the additional cleanup projects that can be achieved through the cost savings realized by rubbleizing and reusing concrete on site.	The cost savings will help reach the goal of achieving closure of RFETS by 2006. The cost savings from recycling the concrete were built into the overall RFETS 2006 plan budget to avoid the need for additional funding to meet the 2006 plan.

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Questions and Responses for August 9, 1999 Westminster letter regarding the RSOP for Recycling Concrete		
Question Number	**Question**	**Response**
2	Westminster understands that the Decontamination & Decommissioning (D&D) Protocol used for building 779 will serve as the basic document for D&D of all other site buildings. This facility has minimal contamination compared to the older production buildings that have incurred fires and other production related accidents. Please provide justification for the use of one protocol for all buildings.	The RFETS *Decontamination and Decommissioning Characterization Protocol* (DDCP),is written to provide guidance for how to conduct the appropriate level and type of characterization for all buildings regardless of contamination levels. It is a comprehensive document that describes the characterization process and methods for all levels of contamination. The Protocol incorporates the relevant parts of the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM) and DOE Order 5400.5, Radiation Protection of the Public and Environment. MARSSIM is used for characterization activities at commercial facilities. The application of these standards ensures that the Protocol will be effective in standardizing characterization activities for all facilities at RFETS regardless of contamination. When surveys for radiological contamination are conducted, the areas of the building are divided into "survey units". A survey unit is an area within a building or room that has similar contamination characteristics. A survey unit could be the floor, part of a wall, or a number of rooms. Per MARSSIM, survey units can be classified into one of four categories: **Impacted Class 1 Area:** Areas that have potential contamination (based on building operating history) or known contamination (based on past or preliminary characterization survey data). This would normally include areas where radioactive materials were used and stored and where records indicate spills or other unusual occurrences could have resulted in the spread of contamination. **Impacted Class 2 Area:** Areas that have or had a potential for radioactive contamination or known contamination, but are not expected to exceed the applicable contamination limits. **Impacted Class 3 Areas:** Areas that are not classified as Impacted Class 1, Impacted Class 2 or Non-impacted. These areas are not expected to contain residual contamination above the applicable limits, based on knowledge of building history and/or previous survey information. However, insufficient documentation is present to exclude the area from survey requirements. **Non-Impacted Areas:** Areas not classified as Impacted Class 1, Impacted Class 2 or Impacted Class 3. These areas are areas where there is no reasonable potential for residual contamination, based on knowledge of building history and/or previous survey information. Sufficient information is present to be assured that no residual contamination is present above the applicable limits. These area classifications can apply to buildings with significant contamination or buildings with no contamination. Buildings with more contamination will have more Impacted Class 1 areas then those with less contamination. The survey requirements for Impacted Class 1 areas are significantly more stringent than for Non-Impacted areas. RFETS follows these requirements when developing the survey plans for each area.

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		This systematic process establishes the methods to allow the same protocol to be used in buildings of varying contamination levels.
3	An independent sampling verification and quality assurance program for both the building undergoing D&D and for concrete once it is rubbleized is necessary to ensure that the building itself and the concrete rubble meet the free release criteria. Please provide information and copies of the documents that define the independent sampling verification plan, the quality assurance program, and the documents that explain how the free release criteria will be met for the rubble (both radionuclide and non-radionuclide) and which regulations will be used to meet that criteria for rubble.	The existing *Decontamination and Decommissioning Characterization Protocol* (DDCP) adapts the relevant sections of the *Multi-Agency Radiation Survey and Site Investigation Manual* (MARSSIM) and uses the Data Quality Objective (DQO) process and site quality assurance/quality control procedures. Currently, the DDCP is used as the basis for preparing building specific sampling and analysis plans (SAPs). The ongoing decommissioning projects in buildings 779 and 886 will follow their project specific SAPs that have been approved by CDPHE and meet the site quality assurance/quality control (QA/QC) program requirements. For use with future projects, the Site is updating the DDCP and has drafted a *Sitewide Pre-Demolition Survey* (PDSP). The PDSP is being worked on in consultation with EPA and CDPHE, who must approve it before the Site is allowed to implement it. The PDSP is also based on the DQO process, and in accordance with the *Decommissioning Program Plan* (DPP), it adapts the use of the MARSSIM. The DQO process is a systematic planning tool, based on the scientific method, that identifies the environmental problem; defines the data collection process; and ensures that the type, quality, and quantity of the data collected are appropriate for the decision making process. The DQO process, defined by the EPA, is a series of planning steps to identify and design efficient and timely data collection program. Independent verification and validation (IVV) is a subset of pre-demolition characterization. Determining where, when and how to use it is determined on a case-by-case basis. The PDSP section on IVV will specify the key criteria that DOE will use to determine on a case-by-case basis whether or not to conduct an IVV. These criteria include: experience and lessons learned from similar buildings; building specific issues (such as, contamination levels and locations); potential environmental and liability concerns; and, stakeholder and regulator input. These criteria are used in conjunction with the pre-demolition survey DQOs to ensure 1) the need for an IVV is established, 2) that an IVV will provide sufficient data to make required decisions with reasonable certainty, and 3) the survey collects only the necessary amount of information. EPA and CDPHE intend to do an IVV for Building 779, and will assess the need to conduct additional IVVs on other major plutonium buildings.

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		The concrete must meet the criteria outlined in the draft building RSOP before it can be stockpiled for reuse. Sampling of the concrete after it has been rubbleized would not be needed. A building built of concrete that is a candidate for being used as onsite fill must successfully complete the pre-demolition survey and must demonstrate that it meets the criteria for use as fill as summarized in the RSOP. All decommissioning activities will be conducted in accordance with the RFETS Quality Assurance Program. The DQO process must be used, confirmation must be received that the concrete has met the criteria, and the QA/QC requirements must be satisfactorily complied with before the concrete rubble is stockpiled for reuse. On the other hand, if the DQOs and QA/QC were not met, the building would either be further decontaminated, or, if that is not practical, its concrete will be dropped from consideration for use as backfill. The results of the pre-demolition survey are reviewed by CDPHE in accordance with the DPP. Therefore, it is unnecessary to sample the concrete after it has been rubbleized, because it would have met the applicable criteria.
4	At what point in the D&D process will the HEPA filters be removed from the buildings? Will they be retained for under building characterization and deconstruction activities such as removing contaminated building sections that must be disposed of as low level or transuranic waste?	This question covers issues not within the scope of the RSOP. As indicated on Page 1 of the RSOP, Section 1, second paragraph, the RSOP only addresses concrete that meets free release criteria and its disposition after demolition and placement as backfill. The timing for the removal of HEPA filters is an important event that is determined on a case-by-case basis. In general, decontamination will take place while HEPA filters are still operating. Under building contamination will be addressed in separate RFCA decision documents.
5	Concrete that meets the free release criteria will be segregated from contaminated concrete, stockpiled, and processed for use as backfill material around the site. Where will the contaminated concrete be staged? Please provide detailed information showing the planned storage area, protection afforded to the area from the elements and plans for the environmental monitoring of this area. Also provide a timetable for removing the waste generated, where it will be disposed and the costs associated with this activity.	This question covers issues not within the scope of the RSOP. As indicated on Page 1 of the RSOP, Section 1, second paragraph, the RSOP only addresses concrete that meets free release criteria and its disposition after demolition and placement as backfill. Management of other wastes including contaminated concrete storage is addressed in the decision documents for building decommissioning.
6	Please provide information as to the measurement instruments and processes that will be used to ensure that the surface and sub-surface of the concrete is free from radiological and non-radiological contamination before and after rubbleization.	The decision for what measurement instruments and process will be used is determined on a case-by-case basis using established RFETS' procedures. Guidance for characterization is contained in the DDCP, the Site QA Manual, and RFETS radiological control and safety procedures. Taken together, these documents describe the process and methods for determining the appropriate instrumentation for each survey or sampling on a case-by-case basis. See also Westminster comment #2.
7	Please provide the City with a copy of the sampling plan for runoff water that comes from the rubbleized concrete pile berm indicating frequency of sampling and availability of those reports for public review. If the plan is not available, when will it be developed?	As indicated on Page 6, Section 2.6, paragraph 3 of the RSOP, no sampling of runoff water from the concrete pile is anticipated. Since the concrete will meet the free release criteria, sampling would not be necessary for runoff.

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8	Please provide detailed information on the cost savings achieved by keeping the rubble on site as well as information on the cost of each option that may have been considered, for use as clean fill rather than the concrete rubble, and the cost per ton disposal value for the free release rubble.	A cost analysis was conducted in September 1998 to document the concrete disposal options for decommissioning activities at RFETS. This document was used to assess the cost savings that were summarized in the RSOP and to provide information during briefings given at public meetings. As indicated on Page 21 of the RSOP, Section 9.2, the fifth bullet, the cost analysis has been made part of the administrative record for the RSOP.
9	Does the figure for concrete processing (16.50 per cubic yard) include onsite labor required to remove rebar and other debris from concrete prior to processing and the auxiliary processing facilities required before the concrete is rubbleized?	The $16.50 per cubic yard figure does include onsite labor to remove rebar and other debris and auxiliary processing. See also response to Westminster Question 8.
10	What will become of the other construction materials that will be removed? Will they be removed to the Erie Landfill? What are the costs associated with transporting these materials? How many shipments are anticipated?	This question covers issues not within the scope of the RSOP. As indicated on Page 1 of the RSOP, Section 1, second paragraph, the RSOP only addresses concrete that meets free release criteria and its disposition after demolition and placement as backfill. The disposition of other construction materials will be addressed in other decision documents..
11	Initially DOE indicated that the rubble would be used to fill the cleaned foundations of the 700-371/374 buildings that are all included in the Industrial Area. The industrial Area will have long term monitoring wells, DOE now plans to use the material for fill of other foundations as well as site contouring. What additional monitoring wells will be put in place to ensure that there is no migration of contamination into the groundwater from the placement of rubble in areas other than the Industrial Area? Please provide written information on what other foundations are planned for infill as well as where the contouring will occur.	As indicated on pages 19 and 20, Section 8 of the RSOP, there are two areas proposed for backfilling with the recycled concrete: Building 771 and Buildings 371/374. Currently, there are no plans to backfill any other areas or to use the recycled concrete for contouring. However, if other potential areas are identified, they will have to be screened against the site selection criteria in Section 8.1. Since the concrete will have to meet the free release criteria, there is no need for additional monitoring wells.
12	Contamination under the foundations of site buildings needs to be removed prior to filling. Is DOE committed to removing all building foundations as recommended by the Industrial Area Task Force as well as the City to mitigate the potential for further offsite migration of contamination into the Woman Creek/Walnut Creek drainage's and to preserve options for future use?	This question is not within the scope of the RSOP. As indicated on Page 1 of the RSOP, Section 1, second paragraph, the RSOP only addresses concrete that meets free release criteria and its disposition after demolition and placement as backfill. The disposition of the foundations will be determined in future decommissioning or environmental restoration decision documents.
13	The RSOP states that if the number of road miles are reduced the number of potential highway accidents would be less. How were the risks calculated?	Data from the U.S. Department of Transportation, National Highway Traffic Safety Administration for highway truck accident rates were used, as were on-Site accident rates, to qualitatively identify risks for the scenarios presented in the RSOP. This data has been included in the Administrative Record for this RSOP. The RSOP states that if the number of road miles are reduced the number of potential highway accidents would be less. Truck and automotive accident rates, obtained from the U.S. Department of Transportation are maintained as a function of miles traveled. The risks are calculated in a qualitative approach in that the more miles traveled, the more accidents will occur. Risk is directly proportional to the miles traveled.

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14	Why would the environmental impacts of placing the rubble in the ground onsite be less than if they were placed in the ground at a landfill? Please clarify the calculations and rationale used to validate the environmental and cost advantages of concrete recycling.	Environmental impacts would increase due to all of the associated direct and indirect impacts of hauling off concrete and hauling in rock or soil. These would include, for example, traffic safety, as discussed in the response to question 13; and air emissions, as discussed in the response to question 15. Other impacts would occur from using rock and gravel in lieu of concrete for fill. Impacts would be less for recycling when all environmental impacts (not just those at the rubble disposal sites) are considered. The cost data is available as discussed above in the response for question #8. Cost is not a consideration under NEPA, and was not used to show an environmental benefit or detriment from concrete recycling.
15	Will the truck emissions be greater or less if the trucks travel over 80 miles versus the lower dispersion found from onsite transportation in the relatively smaller confines of the site?	Regardless of dispersion, hauling a load less than 0.5 mile will generate less air pollution than hauling the same load the same 0.5-mile plus another 79.5 miles.
16	The lifetime slump is designed not to exceed 1% will the onsite recycled concrete disposition sites support light, moderate, or heavy construction should the land be developed in the future?	By specifying the 1% slump requirement, the RSOP has required that an engineered assessment will be conducted to ensure that the 1% slump will be achieved depending on the future use. Since the land use of RFETS after closure has not been determined, it is not yet known if the area will support light, moderate, or heavy traffic. That is why no specific compaction or testing requirements were provided in the RSOP. Also see response to Broomfield Question 11.
17	The RSOP states that radiological air monitoring will not be necessary during the demolition, processing, or placement of the rubbleized material. Previous remediation efforts called for portable air monitors around the remediation area. The RSOP states that because the rubble will meet "free release" criteria the additional monitoring is not necessary. Airborne dust will be generated by the deconstruction and rubbleizing activities. Wouldn't placement of portable monitors around the area, in addition to the CDPHE monitors that are in place, provide further evidence and assurance to the public that the rubble was indeed clean and that there was no spread of airborne contamination during these activities? Please comment	As indicated on Page 6, Section 2.6 of the RSOP, the existing Site Radioactive Ambient Air Monitoring Program (RAAMP) sampler network will be used for ambient air monitoring. The RAAMP sampler network continuously monitors airborne dispersion of radioactive materials from the Site into the surrounding environment. Thirty-seven samplers comprise the RAAMP network. Fourteen of these samplers are deployed at the Site perimeter and are used to confirm Site compliance with the 10 millirem per year standard mandated in 40 CFR 61, Subpart H. Filters for the 14 RAAMP samplers located at the Site perimeter and from one on-Site sampler near the 903 Pad are collected and analyzed monthly for uranium, plutonium, and americium isotopes. The RAAMP is in addition to the CDPHE sampling network. CDPHE has determined that its network is adequate for monitoring demolitions.

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18	DOE does not plan to place the rubble on an impervious surface. Since the materials may be stored onsite for a significant period of time, a potential exists for the downward migration of these material into the underlying soil columns. Overtime, surface precipitation may dissolve materials and carry them into the underlying soil and the groundwater. There are no plans to prevent the migration of concrete fines and dissolved material into the soil column or groundwater. What is the cost of using the impervious material to protect the soil and groundwater from further contamination, and why was this protection not considered in the RSOP?	The concrete will not be placed on an impervious surface because the concrete will meet free release criteria. Also, concrete fines will not move through the soil column and enter groundwater. There would have to be voids in the soil column that would allow the fines to work down into the groundwater. These voids would have to be numerous and connected. Soils with these characteristics do not exist in the areas being considered for stockpiling.
19	Use of impervious material will also aid in restricting the growth of weeds under the rubble pile that could provide food for small animals. The concrete rubble could provide habitat for field and deer mice, which have been linked to the hantavirus as well as rattlesnakes that are indigenous to the site. How does DOE plan to ensure that the rubble piles are kept free from mice and snakes?	The Site currently has an Integrated Weed Management Plan that addresses weed control. Areas such as a concrete rubble storage area would be treated as other storage areas are, and would be subject to appropriate weed control under this program. Without appropriate food sources, neither rodents nor the snakes that would follow them would be expected to be a problem around the rubble.
20	The stockpile for free-release material will have dust and surface water control measures to prevent fugitive dust and impacts to surface water from the stockpiling activities. How often will dust suppression materials be applied to the stockpile? What measures will be taken to protect the surface water from large amounts of runoff generated during storm events?	As indicated on Page 4, Section 2.2, last paragraph and Page 5, Section 2.3 last paragraph and Page 5, Section 2.4, last paragraph, dust control will be conducted through stockpiling, processing and transportation. A stabilizing emulsion will be applied when material is added or removed from a stockpile and on an as-needed basis. As indicated on Page 4, Section 2.2, third paragraph, the storage areas will be surrounded by silt fence and shallow berms to retain runoff. If water volume exceeds the capacity of the berms, the water will be pumped off to a holding tank to evaporate. This will prevent large amounts of runoff generated during storm events from affecting surface water with silt or pH., See also responses to Westminster Questions 7 and 24 and Broomfield Questions 5 and 7.
21	What sampling measures and schedule will be instituted to ensure that the runoff precipitation that is contained in the berms does not contain incompatible chemicals (acids, solvents, etc) leached from the concrete?	As indicated on Page 6, Section 2.6, paragraph 3, no sampling of the runoff is anticipated because the concrete will meet free release criteria. Incompatible chemicals would not be present in concentrations that would react or otherwise be expected to have adverse impacts on human health or the environment. See also the response to Westminster Question 7.
22	A NEPA checklist should be used to ensure all environmental issues have been addressed and resolved. The checklist should cover Clean Air Act, Clean Water Act, NEPA, Resource Conservation and Recovery Act and non-hazardous solid waste, radiological controls, Endangered and Threatened Species Act and other Federal and State environmental regulations. Does DOE plan to use such a list? If not please explain your reasons for this decision.	NEPA checklists were used to identify potential issues associated with concrete recycling. All of the issues identified during completion of the checklist were analyzed and documented in Section 5 of the RSOP. The regulations identified by the commentor (as well as others) were evaluated in developing the RSOP.

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23	Since the total land surface involved with the stockpiling and processing of the concrete exceeds five acres, does the requirements for a pollution prevention runoff plan have to be developed? Does the current National Environmental Policy Act (NEPA) documentation for the site cover this activity?	The existing NPDES permit and pending NPDES permit renewal incorporates EPA's current storm water discharge requirements, including the stormwater pollution prevention program (SWPPP). Under the existing NPDES requirements, each site is considered to be a separate site and each separate stockpile area is less than 5 acres. In addition, the Site has received direction from the EPA regarding the need for a SWPPP. Even when an individual site exceeded five acres, a SWPPP was not required. First, when the Site undertook the construction of the new landfill, the Site was directed by EPA to send a Notification of Intent (NOI) to cover the construction activities (because the area of disturbance was greater than 5 acres and was located outside of the drainages in the Industrial Area covered by the 1992 permit application). More recently, the McKay bypass project was covered by a similar NOI for the same reasons. This topic is discussed in the RSOP, which includes a NEPA values analysis (documentation) in Section 5, Environmental Consequences.
24	How will the waste resulting from runoff and/or the evaporation of retained surface runoff be dealt with? Do the rubble backfill sites constitute disposal of a non-hazardous solid waste and therefore require a permit?	There will be no waste resulting from runoff and/or evaporation of runoff, see Section 4 of the RSOP, first sentence. Run-off will be controlled by the berms and silt fences and will be contained at the stockpile location. As indicated on Page 2, Section 2, paragraph 1, concrete is considered an inert material by Colorado solid waste regulations. As indicated on Page 16, Section 6 of the RSOP, last two rows of the table, the concrete is considered recyclable material and is exempt from solid waste disposal sites and facilities regulations.
25	Building 771 and several others have sump pumps to remove groundwater from the footings. How does DOE plan to deal with the groundwater that infiltrated these buildings during removal of the building foundation? If rubble is added to the excavation that remains after the removal how will the groundwater be kept away from the rubble?	This question is not within the scope of the RSOP. As indicated on Page 1 of the RSOP, Section 1, second paragraph, the RSOP only addresses concrete that meets free release criteria and its disposition after demolition and placement as backfill. Groundwater management and sump removal will be covered in the building decision documents, future RSOPs, or in environmental restoration documents

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Questions and Responses for August 11, 1999 Broomfield letter regarding the RSOP for Recycling Concrete		
Question Number	**Question**	**Response**
1	The City of Broomfield cannot support the RSOP due to the lack of available information at this time.	Extensive supporting technical and engineering information is referenced in section 5.3 of the draft RSOP and in the list of documents in the administrative record in section 9.2. The offer to provide supporting information was made verbally during each of the public presentations on the subject. Telephone numbers of one or more Site personnel with ready access to the information were consistently provided during the stakeholder meetings, and the cover letter announcing the public comment period for the draft RSOP also included a contact for additional information. Although very little information was requested of the Site, all that was requested was provided to the requestors. At the request of the Rocky Flats Coalition of Local Governments (RFCoLG), 13 additional days were added to the 45-day public comment period to allow more time for review.
2	The City of Broomfield is unwilling to support the proposed RSOP until the Site can prove to the community that the concrete rubble does not pose a threat to public health and the environment. The City of Broomfield expects that the Department of Energy will provide the community with the documentation that proves that the rubble does not pose a threat to public health and the environment prior to implementing this RSOP.	As discussed in section 2.1 of the RSOP, the free release standard for hazardous substances including radionuclides will be achieved. As stated in section 5, the project will have minimal adverse cumulative effects, and the effects are expected to be minimal and temporary.

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Questions and Responses for August 11, 1999 Broomfield letter regarding the RSOP for Recycling Concrete		
Question Number	**Question**	**Response**
3	Has DOE Headquarters established a site-specific free-release criterion for the RFETS concrete? If so, what factors did DOE evaluate? Is the evaluation available to the public? If so, we request a copy.	DOE HQ has not established a separate site-specific release standard for concrete at RFETS. RFETS follows DOE Order 5400.5 which is a DOE complex wide order. The order references NRC Reg. Guide 1.86. Reg. Guide 1.86 has been used commercially for almost 30 years as the release standard for equipment and facilities for NRC decommissioning. The standard established release requirements for surface contamination. The standard is directly applicable to RFETS, and it is used because the vast majority of materials that are contaminated are surficially contaminated. RFETS takes a conservative approach when volumetric contamination is found. Any volumetrically contaminated material is characterized, removed and managed as a contaminated waste. Therefore, only surface contaminated material is left to be decontaminated to the free release standard. DOE evaluated two release standards, surface contamination and "Dose Based". The current information for a dose based analysis was derived using information from the RFCA agreement Attachment 5, Table 5 for the Tier I and Tier II action levels in soil. Additionally, Kaiser-Hill recently conducted an analysis as part of an internal planning exercise, which evaluated several scenarios of disposition of the concrete rubble (The Use of Dose-Based Assessment In Evaluating D&D Alternatives At the RFETS, August 1999). This was a "Rough Order of Magnitude" analysis. Kaiser-hill used inputs to the model that they felt were reasonable and technically sound given the purpose and goals of the analysis. All of the information provided by the analysis indicated that the surface contamination release standard was significantly more conservative than any of these scenarios and was at least as protective of human health and the environment. This information is available in the Administrative Record.

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Questions and Responses for August 11, 1999 Broomfield letter regarding the RSOP for Recycling Concrete		
Question Number	**Question**	**Response**
4	...Therefore, we suggest that a conservative approach be taken which assumes that all of the actinides will leach from the rubblized concrete. These results in a much more restrictive Subsurface Soil Action Level approximately equal to the Tier I Groundwater Action Level of 15.1 pCi/L for plutonium. This standard supported by a comprehensive rubble sampling and testing program will help ensure that radioactive materials are not inadvertently buried on-site. Has a rubble sampling and testing program been developed?	The assumption that all of the actinides will leach into the groundwater is contrary to current information. The most recent information on this subject comes from the RFETS Actinide Migration Evaluation group meeting minutes from April 29 and April 30, 1999. The latest information from experiments conducted at Los Alamos National Laboratory (LANL) has concluded that the plutonium in the environment at RFETS is PuO2. The same document indicates that PuO2 is not soluble. Additionally, the internal study conducted by Kaiser-Hill on rubble (The Use of Dose-Based Assessment In Evaluating D&D Alternatives At the RFETS, August 1999) which is a "Rough Order of Magnitude" analysis, indicates that the surface release criteria is several magnitudes lower than the Tier 1 Groundwater Action Level of 15.1 pCi/L.
5	The PCB "free release" value of 50 ppm in Table 2-1 of the RSOP is not specifically provided in the regulations cited in Table 2-1. Generally, 50 ppm triggers mandatory cleanup actions. The only post-cleanup value for PCBs that requires no additional safeguards is a residual level of 1 ppm. The 1 ppm value seems to be a more appropriated free-release value. It is the City's understanding that the 50 ppm value will not be provided in the revised RSOP.	The reference to PCB standards in section 2.1 of the RSOP were changed to delete the 50 ppm value and to reference instead the PCB regulations at 40 CFR 761. These regulations cover the determination of the cleanup standards for historical releases of PCBs.
6	What are the proposed revisions to the Integrated Monitoring Plan with respect to this project?	The Integrated Monitoring Plan provides for both project specific monitoring and routine monitoring of effluent pathways from the Industrial Area. Therefore, this is already covered in the Integrated Monitoring Plan under project specific monitoring for each media and no revisions will be necessary.
7	What inspection criteria will be employed to determine when additional dust control surfactant needs to be reapplied during the 3 to 5 year stockpile storage period?	Inspections will be conducted of the storage areas, and application and maintenance of the stabilizing emulsion to control dust will be completed, as determined by the results of the inspections and the stabilizing emulsion manufacturer's recommendations. Inspections will be conducted at least every two weeks or when the sustained wind velocity exceeds 40 mph or when it rains more than 0.5 inches in a single event. Inspections will be documented in a logbook.
8	What inspection criteria will be employed to determine when repairs to the containment berm and silt fencing are needed to prevent runoff?	The inspection criteria will be berm integrity, silt fence integrity, and presence of excess water and silt. If the berms or silt fence do not meet the inspection criteria, repairs will be made.
9	Will the Draft Industrial Area Characterization and Remediation Strategy be consulted to ensure that the proposed interim concrete rubble storage sites are not occupied with rubble at times which will impede the schedule?	Yes. The industrial area characterization and the decommissioning organizations for RFETS have been coordinating this work for the industrial area strategy and were consulted in the preparation of this RSOP.

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Questions and Responses for August 11, 1999 Broomfield letter regarding the RSOP for Recycling Concrete		
Question Number	**Question**	**Response**
10	What studies have been conducted to determine what effect the buried concrete will have on changing the alkalinity and pH of the groundwater and potential adverse effects of mobilizing potential groundwater contaminants?	No studies were conducted by RFETS regarding the effect of buried concrete on the alkalinity and pH of groundwater. Several US Department of Transportation guidelines were consulted during the preparation of the RSOP. These guidelines indicate that rubbleized concrete has the potential for affecting groundwater pH; however, with respect to embankment and fill, the pH concerns were predominantly restricted to corrosion of piping that is within the fill material. See also the response to Broomfield question #4 which provides information and references for migration of PuO2.
11	Does the RSOP assume an unrestricted end land-use scenario? If not what type of end land-use in the RSOP based upon?	The RSOP does not make any assumptions for the end land use of the RFETS, and was written to support any land-use scenario. The end land use has not been determined, and it is outside of the scope of the RSOP. However, the RSOP was written take a conservative approach. It was written to ensure that the backfilled areas withstand whatever land use is decided. The minimum slump requirement was established to ensure that the land use is considered and that the backfilled areas will have no effect on the end land use.

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Comments and Responses for Rocky Flats Coalition of Local Governments - August 9, 1999 letter regarding the RSOP for Recycling Concrete		
Comments		**Response**
1	Content of RSOP The RSOP, much as the interim TRU storage environmental assessment also recently released for public comment, does not contain sufficient information. The Coalition cannot prepare substantive comments or develop informed recommendations for draft documents that do not provide the necessary information to fully evaluate the actions proposed therein. The two documents that detail the procedures for characterizing and confirming the cleanliness of structural surfaces prior to building demolition are still under development. Without these documents, the Coalition cannot determine with the necessary degree of certainty that buildings will be adequately decontaminated to the NRC free-release standard, and consequently ensure the resulting building rubble will not represent a risk to worker and public health. For that reason, the Coalition cannot support the RSOP at this time. Instead the Coalition expects DOE will provide the Coalition with all supporting documents as they are developed.	The RFCA Standard Operating Protocol (RSOP) for Recycling Concrete is a high-level document, which sets the requirements for a repetitive activity. The document is not intended to be a stand alone, detailed document. A significant amount of relevant backup information does exist and provides greater detail and technical data on several of the questions raised in the draft Parallax report. Examples of the information include: cost data, environmental impacts, detailed NEPA information, B779 final Survey Plan, the existing *Decontamination and Decommissioning Characterization Protocols* (DDCP) and a draft revision of the DDCP, rubble geotechnical specifications, and solid waste designation. Reference to these and other documents are included in the reference section of the RSOP and the Administrative Record file for the RSOP. During and before the public comment period, Kaiser-Hill and RFFO staff offered to provide copies of this or related information. Additionally, Kaiser-Hill and RFFO staff contacted Parallax several times to ensure it had all relevant information it felt necessary to conduct this evaluation. The information requested by Parallax was provided. The DDCP provides guidance for conducting the appropriate level and type of characterization for all buildings regardless of contamination levels. The DDCP was implemented in December 1998, and it has been in use since then. It is a comprehensive document that describes the characterization process and methods for all levels of contamination. The DDCP incorporates the relevant parts of the *Multi-Agency Radiation Survey and Site Investigation Manual* (MARSSIM) and DOE Order 5400.5, *Radiation Protection of the Public and Environment.* MARSSIM is used for characterization activities at commercial facilities. The release standard the Site uses is adopted from DOE Order 5400.5.

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1 cont.		As with most "living documents", the DDCP will from time to time be revised to reflect improvements, efficiencies, and new technical and regulatory information. With oversight and input from EPA and CDPHE, the Site is currently revising the DDCP as an initiative to update it to improve comprehensive, site-wide guidance for reconnaissance level and final status survey plans. This will streamline the process and be consistent with the set of standards, plans and procedures already in place for characterization. The Final Survey Plan for Building 779 is an example of how characterization is conducted (and will be conducted) at Rocky Flats. The Parallax representative has noted that the characterization documents reviewed are adequate for their intended use. The Site also has shared the draft DDCP with Parallax, and would be happy to share and discuss it with the Coalition. We would also welcome the opportunity to brief the Coalition on the how the Site does decommissioning characterization.
2	Details of Cost-Benefit Analysis The RSOP does not contain a complete explanation of the cost-benefit analysis for on-site versus off-site disposition. DOE and/or its contractors should clarify for the Coalition the calculations and rationale used to validate the environmental, safety, and cost advantages of on-site rubble disposition. DOE will likely save a significant amount of money by implementing on-site concrete recycling, while the local communities will bear any resulting known or unknown residual risks. The Coalition would be more inclined to accept the idea of on-site rubble disposition if DOE commits the savings it realizes to activities that improve the overall cleanliness and future use value of the Site.	A cost analysis was conducted in September 1998 to document the concrete disposal options for decommissioning activities at RFETS. This document was used to assess the cost savings from implementing the RSOP and to provide information used at public meetings. As indicated on Page 21, Section 9.2, the fifth bullet, this document has been made part of the administrative record for the RSOP. The reference document that supports this response is the *Concrete Disposal Options*, September 1998. The cost savings will help reach the ambitious goal of closure by 2006. The cost savings from recycling the concrete were factored into the overall RFETS 2006 plan, so these cost savings are already committed to timely cleanup and closure of the Site.

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3	Sampling Quality Assurance An Independent sampling verification and quality assurance program should be implemented during pre-demolition building surveys for all buildings in which contamination was detected during building decommissioning characterization.	The existing *Decontamination and Decommissioning Characterization Protocol* adapts the *Multi-Agency Radiation Survey and Site Investigation Manual* (MARSSIM), and site quality assurance/quality control procedures are used as the basis for preparing building specific sampling and analysis plan (SAPs). For example, Building 779 is following a sampling and analysis plan that has been approved by CDPHE and meets the site QA/QC program requirements. As a part of the effort to revise the DDCP (as discussed in response #1), the Site has drafted a Sitewide Pre-Demolition Survey Plan (PDSP). The PDSP is being worked on in consultation with EPA and CDPHE, who must approve it before the Site is allowed to implement it. The PDSP is based on the DQO process, adapts the use of the MARSSIM, and conforms with the Site's QA/QA program. Independent verification and validation (IVV) is a subset of pre-demolition characterization. Deciding where, when and how to use IVV is determined on a case-by-case basis. For example, Building 779 is using an independent contractor to perform an IVV. The key criteria that DOE will use to determine whether or not to conduct an IVV on a given building include: experience and lessons learned from similar buildings; building specific issues (such as, contamination levels and locations); potential environmental and liability concerns; and, stakeholder and regulator input. These criteria are used in conjunction with the pre-demolition survey DQOs to ensure 1) the need for an IVV is established, 2) that an IVV will provide sufficient data to make required decisions with reasonable certainty, and 3) it collects the necessary amount of information.

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4	Residual Activity in Building Rubble If the rubble recycling RSOP is implemented, a statistically valid rubble sampling plan should be developed and implemented that confirms the average residual activity in building rubble does not exceed the standards for subsurface soils stipulated in the RFCA Action Level Framework. In no case should the results of any one sample exceed two times the applicable action level.	The concrete must meet the criteria outlined in table 2.1 of the draft building RSOP before it can be stockpiled for reuse. Because it will meet the criteria, sampling of the concrete after it has been rubbleized will not be needed. A building built of concrete that is a candidate for being used as onsite fill must successfully complete the pre-demolition survey and must demonstrate that it meets the criteria for use as fill as summarized in the RSOP. All decommissioning activities will be conducted in accordance with the RFETS Quality Assurance Program. The DQO process must be used, confirmation must be received that the concrete has met the criteria, and the QA/QC requirements must be satisfactorily complied with. If, for some reason, the DQOs and QA/QC requirements were not met, the building would either be further decontaminated, or, if decontamination was not practical, its concrete would be dropped from consideration for use as backfill. The results of the pre-demolition survey are reviewed before demolition begins by CDPHE in accordance with the DPP. Reference documents that support this response include the Site's Quality Assurance Program and the DDCP. Also, an internal study conducted by Kaiser-Hill on rubble (*The Use of Dose-Based Assessment In Evaluating D&D Alternatives At the RFETS*, August 1999) which is a "Rough Order of Magnitude" analysis, indicates that the surface release criteria is several magnitudes lower than the Tier 1 Groundwater Action Level of 15.1 pCi/L.

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5	Air Monitoring During performance of all aspects of the RSOP, radiological air monitoring should be employed to demonstrate full compliance with the Clean Air Act. Radiological air monitoring should be performed and appropriate protective equipment should be provided for all workers during any potentially dust-generating concrete recycling operations (i.e. demolition, stockpiling, crushing, and backfilling). The Site must meet the CDPHE requirement for zero fugitive dust emissions during all concrete recycling operations, including rubble stockpiling and stockpile maintenance.	As indicated on Page 6, Section 2.6 of the RSOP, the existing Site Radioactive Ambient Air Monitoring Program (RAAMP) sampler network will be used for ambient air monitoring. The RAAMP sampler network continuously monitors airborne dispersion of radioactive materials from the Site into the surrounding environment. Thirty-seven samplers comprise the RAAMP network. Fourteen of these samplers are deployed at the Site perimeter and are used to confirm Site compliance with the 10 millirem per year standard mandated in 40 CFR 61, Subpart H. Filters for the 14 RAAMP samplers located at the Site perimeter and from one on-Site sampler near the 903 Pad are collected and analyzed monthly for uranium, plutonium, and americium isotopes. The RAAMP is in addition to the CDPHE sampling network. CDPHE has determined that its network is adequate for monitoring demolitions. During the stockpiling operations, the air standards and requirements referenced in the ARARs section of the RSOP will be met.
6	Rubble Stockpiles Rubble stockpiles should be located on impermeable surfaces so that percolating waters and suspended solids are captured. Accumulated water and rubble-derived fines should be characterized as "clean" via sampling and analysis prior to release or disposal.	The concrete will not be placed on an impervious surface because the concrete will meet free release criteria. Also, concrete fines will not move through the soil column and enter groundwater. There would have to be voids in the soil column that would allow the fines to work down into the groundwater. These voids would have to be numerous and connected. An area with voids of this magnitude would not be stable enough to withstand stockpiling activities. As indicated on Page 6, Section 2.6, paragraph 3 of the RSOP, no sampling of runoff water from the concrete pile is anticipated. Since the concrete will have to meet the free release criteria, sampling would not be necessary for runoff from a pile of clean concrete.
7	Recycled Rubble Backfill Sites Recycled rubble should only be used in the basement areas of Building 771 and 371/374. To avoid any potential effects or limitations on future use in the Industrial Area, recycled rubble should be used as fill material exclusively in the Protected Area. Groundwater monitoring wells should be installed around the perimeter of areas backfilled with recycled rubble. Groundwater monitoring should begin immediately following the emplacement of recycled rubble, and should continue as put of the post-closure long-term Site stewardship program.	If other potential areas are identified, they will have to be screened against the site selection criteria in Section 8.1, and the Site must obtain the concurrence of the LRA in accordance with Section 8.4. We do not believe that any limitations should be placed on the use of clean rubble. Since the concrete will have to meet the free release criteria, monitoring of contamination originating from the backfilling activities is not anticipated. Actual use for backfilling requires notification of the LRA.

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Other changes and corrections regarding the RSOP for Recycling Concrete		
Question Number	**Question**	**Response**
1	Verbal comment by Steve Tarlton. The *Sitewide Predemolition Survey Plan* listed in Section 9.2 is a draft document.	The reference to the document was removed.

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