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U S AIR FORCE RESPONSE TO MISSOURI DEPARTMENT OF NATURAL RESOURCES
COMMENTS REGARDING DRAFT REMEDIAL INVESTIGATION FOR SITES FT002, SS003,
SS004 AND ST005 KANSAS CITY MO
12/31/1992
DEPARTMENT OF THE AIR FORCE



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AIR FORCE RESERVE



Air Force Reserve Response to MDNR comments
on the Richards-Gebaur AFB MO
Draft Remedial Investigation for
North Burn Pit, FT002
Oil Saturated Area, SS003
Hazardous Waste Drum Storage, SS004
POL Storage Yard, ST005

On page 3, Figure 1-1, topographic contours, preferably 10 feet or less, should be included on the Site Location Map. This request dates back to a previous comment letter which asked that topographic contours be included on site location maps and sampling plan maps. No reference points are provided on the boring logs or the well construction diagrams. This information is necessary to accurately determine the elevation of the top of bedrock.

AFRES Response 1: Topographic contours were included on site location maps and sampling plan maps as requested.

On page 4, Section 1.32, Site 9, Oil Saturated Area, last paragraph, what is the numerical value for the derived cleanup level for lead based on the U.S. Environmental Protection Agency (USEPA) Recommended Maximum Contaminant Level?

AFRES Response 2: The current MCL for lead listed in IRIS is 50 ug/l. However this level is not a health based criterion since it takes into account technologic and economic feasibility. The maximum contaminant limit goal (MCLG) for lead (20 ug/l) is a health based objective since it does not take technologic feasibility into account. A soil cleanup objective was derived based on the MCLG for lead. Based on USEPA standard exposure assumptions for drinking water intake (2 liters per day for 70 years for a 70 kg adult) and soil ingestion (100 mg/day per day for 70 years for a 70 kg adult), the MCLG corresponds to a health-based soil cleanup criterion of 400 mg/kg. Using similar USEPA standard exposure assumptions for children, (drinking water intake of 1 liters per day for 10 years for a 10 kg child and soil ingestion of 250 mg/day per day for 10 years for a 10 kg child) the MCLG corresponds to a health-based soil cleanup criterion of 80 mg/kg.

On page 6, Section 2.03, Geology, first paragraph, "Scraped" Plain should be spelled "Scarped" Plain. In the second paragraph of this same section, only one boring log indicated the presence of sand in the surface deposits, so this sentence should be rewritten to better describe the observed conditions. Also, alluvial deposits are located beneath and adjacent to larger streams, not "on" them as written in the text. A suggested revision of the sentence is "Unconsolidated late Pleistocene-Holocene surface deposits consist of residual clay mixed with chert and a trace of sand on the uplands and slope areas and thin alluvial deposits adjacent to the larger streams."

AFRES Response 3: The spelling of "Scarped" will be corrected. The sentence has been rewritten to better describe the observed conditions.



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On page 9, Section 2.03.1, Stratigraphy, this is a thorough discussion of the site stratigraphy, but it has little relevance to the environmental problems which need to be addressed in this RI. The uppermost bedrock units, the Argentina and the Lane, could be better described and characterized. A separate section should be added to reflect the geologic and hydrologic importance of these uppermost bedrock units to the overall geology and hydrology of the site.

AFRES Response 4: Comment acknowledged. A discussion of stratigraphy is a congressional requirement under the Department of Defense Environmental Restoration Program, and has the potential to be relevant to environmental problems which were to be addressed in this RI. The section has been incorporated into the geology section of the final RI. Hydrology is discussed in the next section in the RI on a site-by-site basis due to the scattered locations of each site.

Also, in this same section, the Cherokee Group is not only a clastic sequence of beds with numerous thin coal beds, but it also contains fine-grained micaceous sandstone and argillaceous limestone.

AFRES Response 5: The Cherokee Group also contains fine-grained micaceous sandstone and argillaceous limestone. This will be noted in the text.

A general comment about 2.03 Geology is that no attempt was made in this section to describe the Structural Geology of the Belton area which is considerably more complex than expected in areas underlain by Pennsylvanian deposits. Because of the potential relationship of structural geology and the hydrology of the area, this information should be included in an additional section on the structural geology of the Belton area.

AFRES Response 6: The impact of relevant structural geology to shallow groundwater movement and shallow subsurface geology is noted in the hydrology section.

On page 9, Section 2.04, Soils, first paragraph, according to the Soil Survey of Jackson County, Missouri, 1984, by the SCS, the Sharpsburg soils series are moderately well drained and the Macksburg series soils are somewhat poorly drained instead of both series being poorly drained as suggested in the text. Also in this same paragraph, the Greenton and Polo series soils are not mapped on the air base property, according to the Soil Survey of Jackson County. Discussion of these series should be deleted from the text.

AFRES Response 7: According to the Soil Survey of Jackson, US Soil Conservation Service, 1984, Sharpsburg soils are moderately well drained as opposed to being poorly draining. The text has been modified.



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In the second paragraph of the above section, the range of 10^{-3} to 10^{-6} cm/s is not considered moderate permeability. Less than 10^{-3} to greater than or equal to 10^{-5} cm/s is considered to be high permeability for geologic materials.

AFRES Response 8: According to Groundwater, by Freeze and Cherry, 1979, Table 2.2, the range of $10E-3$ to $10E-6$ cm/s is moderate permeability for the geologic materials encountered. This is the most quoted reference by professional hydrologists belonging to the National Well Water Association. No changes were made to the text.

On page 10, Figure 2-2, the geologic mapping presented in this figure does not entirely agree with previous studies done for this specific or general area. What is the source of information for this figure? A north arrow should be included.

AFRES Response 9: The source of the outcrop map used was supplied by a contractor which reproduced this map in a report, noting their source only as "Preston, 1984". Since the contractor is no longer in business, a source verification would be difficult at best. In our research on this topic, we have reason to believe the outcrop map identified as "Preston, 1984" was reproduced from; (a) Geologic Map of Missouri, MDNR, Division of Geology and Land Survey, 1979, or (b) Geology of Jackson County, Missouri Bureau of Geology and Mines, Volume 14, 2nd series, 1917. The north arrow is present on the current figure on the right-hand edge of the figure. Richard J. Gentile PhD, a recognized expert in Belton geology, confirms this outcrop map in his study Hydrogeologic Analysis of Richards-Gebaur AFB, MO, 1992.

On page 11, Figure 2-3, this soils map does not agree with the discussion of soils in Section 2.04 of this report. Kennebec soils are shown incorrectly to underlie the upland area (flightlines). They are described, in the text, as alluvial soils present in the level bottomland area along Scope Creek. The soils identified as Kennebec should be identified as Macksburg-Urban Land complex according to the Soil Survey of Jackson County, Missouri. The figure needs to be corrected.

AFRES Response 10: A type setting error incorrectly coded Macksburg-Urban Land Complex soils as "M" on the figure. "M" is the Kennebec soil code. "M" will be corrected to read "N" on figure where Macksburg-Urban Land Complex soils reside as confirmed by SCS.



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On page 14, Section 3.01, Regional Hydrogeology, have any of the private wells still in use near the base been sampled? Are there any wells on the base itself which are locked and no longer in use which could be sampled?

AFRES Response 11: Previous studies did not indicate the need to sample private wells near the base due to the limited quantities/mobility of contaminants near the sites and complete hydraulic isolation of existing wells. Previous studies also indicate that contaminants are not migrating off-base and no private wells are presently threatened with site-related contamination. Based on previous studies, no off-base sampling of private wells were accomplished. No on-base wells exist.

On page 14, Section 3.02.1, Site 6 - North Burn Pit Area, and Page 16, Table 3-1, the high levels of lead from samples S6S1 and S6S3 (440 mg/kg and 580 mg/kg, respectively) exceed MDOH any-use level for soil of 238 ppm (parts per million).

AFRES Response 12: Conversations with MDOH staff concerning their "any-use levels" revealed that MDOH "any-use levels" are not regulations, have never been published, and have not been reviewed by a professional peer group, and are only used internally. MDOH staff stated that MDOH "any-use levels" are used to place sites exceeding these levels (whether naturally or artificially) on an in-house registry in order to circumvent future use as school playgrounds, residential housing, and other situations where MDOH is consulted. AFRES will register any sites exceeding MDOH any-use levels with MDOH before the sites are closed or sold. AFRES also has consulted EPA for recommended cleanup action level for lead in soil. According to EPA (USEPA, Update on OSWER Soil Lead Cleanup Guidance; #9355.4-02, 29 Aug 91), the established risk-based soil cleanup level range is 500 - 1000 ppm using the EPA Uptake Biokinetic (UBK) Model. Since the maximum site concentration (580 ppm) is on the low end of this range, the site meets the cleanup goals established by USEPA. The Air Force Reserve cannot pursue cleanup activities at this site without statutory cleanup levels. Additionally, USEPA must agree with the cleanup level according to the Base Closure Act. This issue may require resolution with additional correspondence.

On page 14, Section 3.02.3, Site 10 - Hazardous Waste Drum Storage Area, the statement is made that volatile and semivolatile compounds were also found in the laboratory blanks. The reader is referred to Table 3-3 on page 20 and Appendix A for an analysis of laboratory blanks. Looking at the results for S10S6 on page 101, which is the travel blank, no compounds were reported above detection limits. Please explain which sample is supposed to show that these contaminants were found in laboratory blanks. The blank value should also be shown in Table 3-3 on page 20.

AFRES Response 13: Contractor could not obtain the needed backup data from laboratory to respond to this comment. Assume the worst-case when evaluating this data. The site has since been cleaned up, please refer to the site closure samples which met or exceeded Missouri hazardous waste testing requirements.



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On page 21, Section 3.02.4, Site 12, POL Storage Yard, which sample in Table 3-4 shows bis(2-ethylhexyl)phthalate is in the laboratory blank? Sample S12S6 on page 105 of Appendix A, a water sample which is supposed to be the travel blank, shows no compounds were found above detection limits.

AFRES Response 14: Sample S12S4 is the sample in Table 3-4 which shows bis(2-ethylhexyl)phthalate in the laboratory blank. We agree that sample S12S6 does not show any compounds found above detection limits. The text was clarified.

On page 21, Section 3.02.4, line 7, the word "from" is misspelled. More importantly, in line 8, the range for chromium is given as 23.40 mg/kg. This should be corrected to 23-40 mg/kg.

AFRES Response 15: Noted, the corrections were made.

On page 21, Section 3.03.1, Site 6, North Burn Pit Area, the total lead concentrations of 0.12 mg/l, 0.20 mg/l, and 0.11 mg/l and the chromium levels of 0.18 mg/l, 0.29 mg/l, and 0.11 mg/l found in groundwater samples 604, 606, and 607 exceed MDOH any-use level in water of 50 ppb and 100 ppb respectively. Incidentally, the National Drinking Water Standards (40 CFR 141.11) maximum permissible concentrations for lead and chromium are 0.05 mg/l and not 0.005 as stated in this paragraph.

Bis(2-ethylhexyl)phthalate at concentrations ranging from 0.011 mg/l to 0.1 mg/l also exceed MDOH any-use level in water of 4 ppb. What was the concentration in the blank which enabled you to determine that this compound was a common laboratory artifact? Sample 616, the travel blank according to Table 3-5, shows no compounds detected above reporting limits.

AFRES Response 16: Reference response 12 for MDOH's "any-use" levels. The unfiltered groundwater sample results identified here were turbid and originated from low-yield monitoring wells. Unfiltered sample results tend to over-estimate low-yield aquifer concentrations because each result is a cumulative total of analytes attached to suspended solids and the dissolved fraction of the analyte (Method dependent). One round of filtered samples was collected during the second phase Remedial Investigation at this site for comparison; no analytes were detected above background levels. National Drinking Water Standard corrections were made. There is no evidence for the presence of bis(2-ethylhexyl) phthalate (B2EP) in the trip, method, or rinsate blanks analyzed with the samples. B2EP was included as an indicator compound in the Risk Assessment. It should be noted that there is no historical documentation or rumors that indicate the discharge of phthalate compounds at the North Burn Pit. B2EP is commonly detected as a laboratory contaminant, and it is very possible the detected concentrations represent laboratory contamination. Historically, B2EP has been commonly detected as a laboratory contaminant at this and other laboratories around the country.



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On page 21, Section 3.03.2, Site 12, POL Storage Yard, the benzene concentration of 0.007 ppm is above the 5 ppb MDOH any-use level for water. Additionally, chromium levels from 0.07 to 0.37 mg/l and lead levels from 0.07 to 0.20 mg/l exceed MDOH any-use level in water of 100 ppb and 50 ppb respectively. Bis(2-ethylhexyl)phthalate, detected at concentrations of 0.023 mg/l and 1.6 mg/l also exceed MDOH any-use level in water of 4 ppb. The RI determined that this compound was a common laboratory contaminant. What was the concentration in the blank which enabled you to make this determination? Sample 1212, the travel blank according to Table 3-6, shows no compounds detected above reporting limits. It should be noted that though barium does not exceed MDOH any-use level in water, it does exceed the State's maximum contaminant level for inorganic chemicals (10 CSR 60-4.030) and the State's Water Quality Standards.

AFRES Response 17: The benzene reading which exceeded the Maximum Contaminant Level (MCL) is from a monitoring well upgradient from the site. The monitoring well was resampled during a supplemental RI/FS. No benzene was detected in any of the groundwater samples collected (total of nine monitoring wells, 4 newly installed). Benzene is known to degrade rapidly in oxygen-rich environments; it is assumed degradation occurred. Reference response 12 in this section for a response to MDOH's "any-use" levels. Reference response 16 for B2EP comment. Barium was artificially elevated for reasons stated in the response to comment 16 (confirmed in the second round of sampling). However, it was noted in the text that detected Barium levels exceed 10 CSR 60-4.030 limits.

On page 28, Section 3.04.1, Site 6, North Burn Pit Area, first full paragraph, "minor" is misspelled in line 9 and "impermeable" is misspelled in line 12. The Department's geology division does not agree that claystone is impermeable. Shale is not entirely impermeable either especially in this area due to possible jointing and fracturing.

AFRES Response 18: The intent of the statement is to imply that claystone is acting characteristically as a hydrologic barrier, due to its lower permeability, with respect to the overlying limestone. We agree that the use of the word "impermeable" could be misleading in this instance, and the text was rewritten.



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On page 36, Section 3.06, Site 6 and Site 12 Hydrogeology, second paragraph, "anomaly" is misspelled in line 4 and "heterogeneous" is misspelled in the last line. The Department's geology division does not agree with the mounding of groundwater being attributed to heterogeneous material. According to the boring logs, GMW #604 and GMW #605 are screened in similar geologic conditions, while GMW #606 is screened in more heterogeneous materials than GMW #604 or GMW #605 (i.e., a thinner limestone unit, claystone and sandstone). An irregular weathered surface of the Argentine limestone, or perched water, above the Lane Formation could be other possible explanations for the anomaly between the three wells.

AFRES Response 19: The contractor agreed that any number of theories could be championed for interpreting the data. AFRES technical staff theory differs in that they believe the anomaly was caused by the screening of the chert layer (8 feet below land surface) which is only screened in GWM605. It was assumed that the chert layer represented the bottom of a perched water table which filled the well with perched water. In any event, GWM605 was drilled out, plugged and abandoned for this reason to ensure vertical groundwater movement did not occur. The groundwater table was reassessed after abandonment in the supplemental RI.

On page 36, Section 3.06, Site 6 and Site 12 Hydrogeology, paragraphs 2 and 3, it does appear that groundwater movement follows the topographic slope and surface drainage at these two sites based on the limited groundwater data.

AFRES Response 20: Agree.

On page 39, Section 4.01, Site 6, North Burn Pit Area, MW1 was observed to contain detectable methylene chloride concentrations (37 ug/l). MDOH any-use level in water is 5 ppb. On page 40, the RI concludes that the methylene chloride concentrations detected were probably related to laboratory contamination of the samples. Again, what value in the laboratory blank prompted this decision?

AFRES Response 21: There was no evidence for the presence of methylene chloride in the trip, method, or rinsate blanks analyzed with the samples. Methylene chloride was included as an indicator compound in the Risk Assessment. It should be noted that samples from the supplemental RI detected no methylene chloride and no historical documentation or rumors suggest methylene chloride compounds were stored at this site. Methylene chloride is very commonly detected as a laboratory contaminant, and it is very likely the detected concentration represents laboratory contamination.



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On page 40, Section 4.01.1, Extent of Contamination, the statement is made that the burn pit area is not the source of the metals to the groundwater, since the metal concentrations upgradient (GMW 604) and downgradient (GMW 607) were similar. This same statement is made on page 48 for Site 12, POL Storage Yard. More investigation is needed to determine the source of the metals in groundwater. One plausible explanation is that the metals contamination represents a more widespread problem caused by years of spills.

AFRES Response 22: This site is an unlikely candidate for industrial activities (spills) due to its remote location next to a runway. Only fire training activities are known to have occurred at this location. The elevated metal concentrations in the groundwater may be sample collection method related, and not characteristic of the site. Unfiltered samples collected at this site were high in suspended solids and may have led to artificially high metal concentrations. Also reference response 16 for additional details.

On page 41, Table 4-1, presents the U.S. Environmental Protection Agency (USEPA) standards, criteria, and guidance. A similar table is needed to show the State's Water Quality Standards and Public Drinking Water Standards. Comparisons are needed throughout the RI report to show how the detected contaminant concentrations compare to the State standards.

AFRES Response 23: Missouri water quality tables will be added.

On page 42, Section 4.02, Site 9, Oil Saturated Area, the petroleum hydrocarbon concentrations (670 to 3800 mg/kg) exceed MDNR cleanup level for total petroleum hydrocarbons of 200 ppm. Additionally, the load (169-343 mg/kg) in surface soil samples exceeds in some instances MDOH any-use level in soil of 238 ppm.

AFRES Response 24: Site was cleaned up 2 APR 92. Twenty-nine cubic yards of soil (special waste) were removed and hauled to a permitted landfill. The closure report states the highest detected concentrations (past & present) at the site are 53 ppm TPH and 21 ppm Pb. Analytical results confirm site restoration.



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On page 44, Section 4.03, Site 10, Hazardous Waste Drum Storage Area, the relatively high concentrations of petroleum hydrocarbons (1900 mg/kg) reported in soils from the area directly outside the northern fence line exceed MDNR cleanup level of 200 ppm for total petroleum hydrocarbons. In the same paragraph, are the surface water samples mentioned included in the RI as a reference? It would be helpful to present either a summary or compendium of past data which is used to support statements made in the RI.

AFRES Response 25: Site was cleaned up 2 APR 92. Fifteen cubic yards of soil (special waste) were removed and hauled to a permitted landfill. The closure report states the highest detected concentrations at the site are now 15 ppm TPH and 17 ppm Pb. Analytical results confirm site restoration. Additional data requested can be obtained from the study entitled Installation Restoration Program, Phase II Confirmation/Quantification, Stage 2 provided to your office July 1988. In summary, no surface water contamination was detected.

On pages 44 and 45, Section 4.04, Site 12, POL Storage Yard, it should again be noted that the TPH cleanup level of 200 ppm in soil is exceeded significantly at this location. In the last sentence, page 44, it should be noted that the benzene concentration of 1.25 mg/kg found in the subsurface soil sample from outside building 953 exceeds the cleanup level of 1 ppm established for benzene. A previous comment addressed the contaminants found in the groundwater at this site.

AFRES Response 26: Remedial action is expected and has been planned for at this site. The cleanup goals mentioned are only legally applicable to underground storage tanks (UST) regulated by Missouri law. Since no USTs exist at this CERCLA site, the Missouri UST regulation is classified as a "to be considered" when remedial action is selected from the Feasibility Study.

On page 51, Section 5.02.1, Toxicological Profiles of Indicator Compounds, this section should be expanded to include barium and chromium, since these contaminants have been found in groundwater samples.

AFRES Response 27: Barium and chromium were included as indicator compounds in the Risk Assessment and added to the toxicological profiles section.



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On page 71, Section 5.03.3.2, Site 9, Oil Saturated Area, the text contradicts Table 5-1 on page 68. The first statement states "The complete exposure pathways identified at the Oil Saturated Area were direct contact and air." Table 5-1 shows that the air exposure pathway is incomplete.

AFRES Response 28: The text is correct. Table 5-1 was corrected to show that the air exposure pathway is complete for the Oil Saturated Area site.

On page 92, (e), line 4, the word "thirty" is misspelled beyond recognition.

AFRES Response 29: Spelling of "thirty" is now recognizable.

On pages 93 and 94, the summary and conclusions need to be re-evaluated in terms of MDOH any-use levels in soil and water. Particularly, the groundwater contamination should not be written off, because upgradient and down gradient concentrations of individual sites do not differ significantly. The RI needs to evaluate the impact the various sites may have had on the groundwater on a more widespread basis.

AFRES Response 30: A supplemental RI/FS is enclosed to address the groundwater shortcomings of this report. The supplemental RI/FS is correct in the event the first phase RI/FS contradicts the supplemental RI/FS.



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Air Force Reserve Response to General MDOH comments
on the Richards-Gebaur AFB MO
Draft Remedial Investigation for
North Burn Pit, FT002
Oil Saturated Area, SS003
Hazardous Waste Drum Storage, SS004
POL Storage Yard, ST005

MDOH had comments applicable to the entire RI for Sites 6, 9, 10, and 12. Where they had comments specific to one site, these were noted.

AFRES Response 1: Comment acknowledged.

MDOH does not feel that the 200 to 290 parts per billion (ppb) lead present in groundwater samples taken at Sites 6 and 12 are background. The RI states that the two sites are not the source of the metals to the groundwater, because upgradient and downgradient concentrations do not differ significantly. It is much more plausible to attribute the metals to on-site activities. It is possible that the metal contamination represents a more widespread problem which cannot be attributed solely to one site on the base.

AFRES Response 2: Refer to MDNR's RI response 16 for clarification on inorganic results. The supplemental RI validates response 16 with analytic data, and provides a more definitive/supportable conclusion on background levels.

MDOH is concerned that the RI suggests that it is appropriate not to clean up contaminated groundwater, because there are "no potential groundwater users in the vicinity of the site." It is also inappropriate not to present risk assessments for incomplete pathways. The RI should contain, at a minimum, a qualitative risk assessment for potential exposures. The State of Missouri has no guarantee the United States Airforce will own this site in perpetuity. Portions of the base have already been sold to other entities. Future sales could result in significant human exposure through the development of private or community water supply wells. Such wells already exist in developed areas around the site. The base is located in a desirable area and would be expected to be developed quickly. Prolonged exposure to groundwater at the site could result in adverse health effects and increased cancer risks.



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AFRES Response 3: The assertion that groundwater is contaminated cannot be made based on data in the first phase RI. This was borne out in the second phase of sampling in the supplemental RI/FS. The State of Missouri is guaranteed (via the Base Closure Act) that the property will be restored environmentally prior to transfer of federal property to state jurisdiction. Each deed will contain this certification. Other commentary is the responsibility of the Kansas City Base Re-use Committee, and is not addressable within the scope of this study. It should be noted that the Air Force Reserve does not own the runway, and currently private air cargo flights comprise the bulk of airport operations. Development is expected to center around the air cargo freight industry, not residential use.

MDOH also had several comments about the soil sampling at the sites. First, the RI used mean soil concentrations to calculate exposure by direct contact. If the exposed individuals spend more time in highly contaminated areas than expected, their exposure could be higher than the RI predicts. This is particularly true of the soil samples from Site 12, the POL Storage Area, which were not analyzed due to the strong odor of jet fuel. Using even the highest reported concentration from this area may have underestimated the exposure occurring. Second, the calculated exposures do not consider multiple exposures by one individual. The same individual could potentially be exposed to more than one site. If the cancer risks from exposure to Sites 6, 9, and 12 were summed, the result would be a lifetime risk of at least 10^{-6} . The RI should reflect this possibility, as well as the potential, for increased exposure if land use changes occur.

AFRES Response 4: The Risk Assessment was revised based on mean concentrations and maximum concentrations in order to better evaluate all possible exposures. The Risk Assessment was revised for multiple exposures from all four sites; however, it should be noted that simultaneous site exposure is not probable for most pathways due to scattered locations of the sites; hence, the risk would not be additive in this instance.



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In order for MDON to fully assess the public health risk at this site, additional analytical data is needed. For instance, soil sample I8948 contained three unknown compounds at concentrations of 12, 6.8, and 8.4 ppm. These concentrations are high enough that identification should be made, regardless of whether or not they are priority pollutants. In addition, water samples collected from the site contained as many as seven unknown volatiles at concentrations as high as 150 parts per billion (ppb) and as many as seventeen semivolatiles at concentrations as high as 310 ppb. Numerous samples also had elevated detection limits due to matrix interference. Finally, numerous samples were identified as containing laboratory contaminants. Some samples were reported to contain as many as six laboratory contaminants. Other samples were reported to contain lab contaminants as high as 1.6 ppm bis(2-ethylhexyl)phthalate. Results such as these raise questions about the validity of the data. Additional analytical data should be collected to reduce the uncertainty involved in determining current and potential exposures. Additional sampling should also include sampling for PAHs at each of the sites.

AFRES Response 5: It is standard procedure in all laboratories to tentatively identify compounds. All analytical methods have their limitations, and due to background "noise" these organics could not be identified beyond a technicians best guess. The data set is valid since the quality control standards were not exceeded and State-approved laboratory procedures were followed. Therefore, AFRES disagrees with the commenter's premise and conclusions drawn. For additional information on this topic, please refer to USEPA guidance on CLP tentatively identified compound procedures.

As a general comments for all three documents, the State's geology division noted that none of them addressed the numerous abandoned oil and gas wells in the area. These wells were closed in the late 1930's using techniques that today would be considered totally inadequate. Although none of these wells appear to be located in close proximity to the sites included in these reports, they could be considered as potential pathways for contaminant migration. Please see the enclosed map.

AFRES Response 6: The Air Force Reserve appreciates the oil & gas well map submitted with MDNR comments. However, the hydraulic gradient at the Richards-Gebaur AFB sites flows away from this well field, and the vertical pathways provided by the abandoned wells do not intercept potential site contaminant pathways.

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Draft Remedial Investigation for the
POL Storage Yard, ST005

The Department's Laboratory Services Program (LSP) establishes cleanup levels for total petroleum hydrocarbons since they administer the State's Leaking Underground Storage Tank Program. LSP has established the following cleanup levels for the petroleum contaminated soils at the Richards-Gebaur Air Force Base: TPH - 200 ppm, benzene - 1 ppm, toluene 5 ppm, ethylbenzene - 10 ppm, and xylenes - 10 ppm. The State has the authority to pursue cleanup whenever at least 50 gallons of petroleum product has been spilled. This authority can be found in the "spill bill", 260.500 of the Hazardous Waste Management Law. These cleanup levels are applicable to all sites at the base which have TPH and BTEX contamination.

AFRES Response 1: The cleanup levels referred to here are over and above the risk-based levels defined in this CERCLA investigation. Missouri Hazardous Waste Law, Title 16, Part 260.480.2(6), allows for the financing of the non-federal (non-CERCLA) share of cleanup. Should the Air Force Reserve interpret this comment to mean MDNR will fund the non-federal share of cleanup at this site if MDNR establishes cleanup levels more stringent than the risk-based levels? The levels noted in this comment indicate MDNR will fund at least 90 percent of the cleanup at this site. Pursuant to the Missouri Hazardous Waste Law, Title 16, Part 260.375(16), the Air Force Reserve officially requests MDNR for assistance in locating/establishing these standards. Are these standards promulgated IAW Title 16, Part 260.370(4)? If not; in what stage of promulgation are they?

Specifically, for site 12, the United States Airforce Base is considering a cleanup only in the area to be affected by the upgrade of the Petroleum Storage Area. Partial cleanups tend to get lost in the shuffle of changing personnel and situations. Also, the project cannot be certified as complete until all the contamination has been addressed. While an incomplete or phased complete is not necessarily illegal or improper, it is not the State's Practice to advise the cleanup of partial contaminant plumes. While the soil is fairly impervious, the contaminants will migrate to some extent in clean backfill every time it rains. To minimize migration, an impermeable barrier could be used; however, it should be open to the bottom so as not to trap normal rainfall in any new backfill that might be lined. A barrier which could be used is heavy plastic sheeting. LSP advocates in-situ remediation options, as opposed to excavation and removal. These options should be evaluated, if they have not already been considered.

AFRES Response 2: The POL upgrade has been cancelled due to base closure.



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Enclosed for your review is the Clean-Up Assessment for the Richards-Gebaur Airforce Base. MDOH has established any-use levels for the contaminants found in soil and water. MDOH has determined that a health threat exists, based on the data provided in the RI. Lead, chromium, benzene, methylene chloride, and bis(2-ethylhexyl)phthalate are present in groundwater at concentrations above MDOH any-use levels. Soil samples contained levels of lead and PAHs above MDOH any-use levels. MDOH concluded that additional sampling should be performed to determine the extent of PAH contamination in soil, the extent of groundwater contamination with lead, and to better characterize the petroleum hydrocarbons in soil and groundwater at the site.

AFRES Response 3: Refer to MDNR's RI comment and response 12 for clarification on "any use" levels. Refer to MDNR's RI comment and response 16 for clarification on inorganic results. MDOH concerns were addressed in the supplemental groundwater Remedial Investigation/Feasibility Study.

Richards-Gebaur AFB Cleanup Assessment, 16 Aug 90. [Not Attached]

AFRES Response 4: A second round of sampling in the supplemental RI/FS confirms sample collection methodology of the first phase RI/FS caused groundwater samples to be unrepresentative of site conditions. Based on data in the supplemental RI/FS, the only exceedance of MDOH "any use levels" was in a single surface sample at the North Burn Pit. However, MDOH is in disagreement with USEPA on the risk posed by lead in soil which would classify the North Burn Pit as having acceptable risk. The Air Force Reserve therefore disagrees with MDOH's assessment.