Report Prepared for:

Ahmanson Land Company
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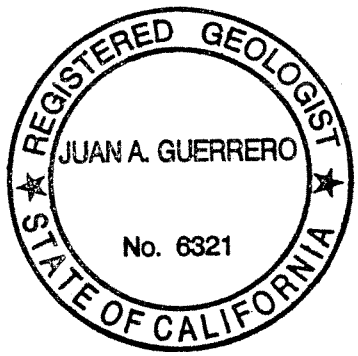
Calabasas, California, 91302-1155

REPORT OF
ENVIRONMENTAL SAMPLING
AHMANSON RANCH PROJECT
VENTURA COUNTY, CALIFORNIA

Kleinfelder Project Number 58-9168-01/001

Prepared by:



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6 RESULTS AND CONCLUSIONS

The purpose of Kleinfelder's environmental sampling was to perform screening characterization for the presence of constituents specifically related to the Rocketdyne SSFL. This section presents the results of analytical tests performed on the soil samples and surface water samples.

6.1 SOIL CONDITIONS

Soils in the upper six inches ranged from a silty sand to a sandy silt to a clayey sand, olive brown to gray brown, very fine to fine grained with a trace of medium in a slightly dense to dense condition as presented in Appendix C-Boring Logs. Traces of rootlets and organic matter, e.g., leaves, twigs, were noted.

6.2 ANALYTICAL RESULTS AND FINDINGS - SOIL

6.2.1 Total Petroleum Hydrocarbons

TPH as gasoline or diesel was not detected in the analyzed soil samples.

6.2.2 Volatile Organic Compounds

VOCs were not detected in the analyzed soil samples.

6.2.3 Semi-Volatile Organic Compounds

SVOCs were not detected in the analyzed soil samples.

6.2.4 California Title 22 Metals

Low concentrations of antimony (Sb), arsenic (As), barium (Ba), cadmium (Cd), chromium (Cr), cobalt (Co), copper (Cu), lead (Pb), molybdenum (Mo), nickel (Ni), selenium (Se), thallium (Tl), vanadium (V), and zinc (Zn) were detected in samples collected at subject site. Beryllium (Be) and silver (Ag) were not detected in the soil samples analyzed. The detected concentrations of

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metals were well below the TTLC and below the applicable regulatory standard. Results are presented on Tables 1 through 6.

6.2.5 Hexavalent Chromium

Hexavalent chromium was not detected in the analyzed soil samples.

6.2.6 pH

The pH of the soils was neutral and ranged from 6.95 at S-4 to 8.62 at S-1. Results are presented in Table 7.

6.2.7 Fluoride

Low levels of fluoride were detected in the 6 samples analyzed ranging in concentration from 0.61 mg/kg at S-1 to 8.15 mg/kg at S-3. These concentrations are well below the US EPA PRG for soluble fluoride of 3,300 mg/kg for residential soil. Fluoride is naturally occurring in the environment and these levels are within an acceptable range and are likely to represent local background conditions based on the undeveloped nature of the subject site. Results are presented in Table 8.

6.2.8 Chloride and Nitrate

Chloride was detected at concentrations ranging between non-detect at S-5 to 59 mg/kg at S-4. Chloride is naturally occurring in the environment and these levels are within an acceptable range and are likely to represent local background conditions based on the undeveloped nature of the subject site. Nitrate as NO_3 was not detected in four soil samples analyzed. Nitrate was detected in two samples at concentrations of 18.7 mg/kg at S-6, and 47.4 mg/kg at S-3. Nitrate is naturally occurring in the environment and these levels are within an acceptable range and are likely to represent local background conditions based on the undeveloped nature of the subject site. Results are presented in Table 9.

6.2.9 Perchlorate

Perchlorate was not detected in the analyzed soil samples.

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6.2.10 Formaldehyde

Formaldehyde was not detected in the analyzed soil samples.

6.2.11 Polychlorinated Biphenyls

PCBs were not detected in the analyzed soil samples.

6.2.12 Dioxin and Furans

Dioxins were not detected in soil samples S-3, S-4 and S-5. Low concentrations of dioxins were detected in soil samples S-1, S-2 and S-6. Detectable concentrations are presented in Tables 10, 11 and 12 for soil samples S-1, S-2 and S-6, respectively. The dioxin results are below the applicable US EPA comparative value for 2,3,7,8-TCDD.

According to the US EPA, dioxins are widely distributed throughout the environment in low concentrations, are persistent, and bioaccumulate. They are not commercial chemical products, but are trace level unintentional byproducts of combustion and several industrial processes involving chlorine such as: waste incineration; chemical and pesticide manufacturing; and pulp and paper bleaching. Dioxins can be commonly detected in air, soil, sediment and food. Dioxins are transported primarily through the air and are deposited on the surfaces of soil, buildings, pavement, water bodies and the leaves of plants. The principal route by which dioxins are introduced to most rivers, streams, and lakes is by soil erosion and storm water runoff from urban areas. Some major contributors of dioxin to the environment include incineration of municipal solid waste, forest fires, residential wood burning, chlorine bleaching of wood pulp and backyard burning of household waste. It is possible that one of these types of processes may have contributed to the low dioxin concentrations detected.

Furans were not detected in 5 of the 6 samples analyzed. Furans were only detected in sample S-1 as presented in Table 10. Total HpCDF at a concentration of 5.6 nanograms per kilogram (ng/kg) and OCDF at 11 ng/kg were detected in S-1. These results are below the applicable US EPA comparative value.

6.2.13 Ordnance Compounds

Ordnance compounds were not detected in the analyzed soil samples.

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6.2.14 Gamma Emitting Radionuclides

Surface soil samples were analyzed for gamma-emitting radionuclides including Potassium (K) (40), Cobalt (Co) 60, Cadmium (Cd) 109, Cesium (Cs) 137, Radium (Ra) 226, Thorium (Th) 228, Th 232, Uranium (U) 233/234, U 235, U 238, Americirum (Am) 243, Plutonium (Pu), Tritium, and Strontium (Sr) 90. The results for soil samples S-1 through S-6 are presented in Tables 13-18. Also included in the Tables are Background Concentration ranges of select radionuclides from the SSFL and California Department of Health Services (DHS) health-based comparative values for residential land use.

Naturally occurring chemicals and radionuclides exist in the environment (soils, sediment and rocks). The levels of chemicals and radionuclides in the native environment are highly variable and dependant on site specific conditions related to various factors including rock type, age of rock, erosion and drainage patterns, and composition of soils.

Cobalt 60 and Americium 243 were not detected in the analyzed soil samples.

Potassium 40 is naturally occurring in the environment and was detected at concentrations ranging from 8.3 to 23 pico Curies per gram (pCi/g) which are below or within the SSFL Background Range concentrations of 19-25 pCi/g and below the DHS health-based comparative value of 27.6 pCi/g.

Naturally occurring Cadmium 109 was detected at concentrations ranging from 1.5 to 2.8 pCi/g. Based on the following observations, the measured concentrations are considered to represent background conditions for the subject site:

- The site has been and is currently undeveloped.
- Individual measured concentrations are near the minimum detected threshold of the laboratory analytical method.
- The analytical results exhibit low variation between sampling locations.

Cesium 137 was detected at low levels in 4 of the 6 soil samples. SSFL Background Range concentrations and DHS health-based comparative values have not been established for Cesium

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137. However, data reported by the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR, 1993) and other researchers (Eisenbud and Gesell, 1997; Kathren, 1984) indicate that:

- Cesium 137 concentrations present in surface soils are attributable to global atmospheric fallout from nuclear weapons testing.
- In the United States, available data indicate Cesium 137 is present in surface soil at levels ranging between 0.90 and 1.80 pCi/g. At 34° latitude (i.e., the approximate latitude of the subject site) available data indicate Cesium 137 is present at approximately 1.35 pCi/g.

Cesium 137 was detected at the project site in concentrations ranging from 0.14 to 0.32 pCi/g. Based on the preceding information, Cesium 137 concentrations detected at the Project site are well below expected background conditions.

Radium 226 is naturally occurring in the environment and was detected at concentrations ranging from 0.82 to 2.2 pCi/g which are below the DHS health-based comparative value of 5 pCi/g and approximate the SSFL Background Range concentrations of 1.1 to 1.5 pCi/g.

Thorium 228 is naturally occurring in the environment and was detected at concentrations ranging from 0.37 to 0.94 pCi/g which are below the SSFL Background Range concentrations of 1.0 to 1.5 pCi/g and below the DHS health-based comparative value of 5 pCi/g.

Thorium 230 is naturally occurring in the environment and was detected at concentrations ranging from 1.3 to 1.7 pCi/g which approximate the SSFL Background Range concentrations of 0.42 to 1.2 pCi/g. DHS health-based comparative values have not been established for Thorium 230. The measured concentrations are considered to represent background conditions for the subject site based on the following:

- The site has been and is currently undeveloped.
- Individual measured concentrations are near the minimum detected threshold of the laboratory analytical method.
- The analytical results exhibit low variation between sampling locations.

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Thorium 232 is naturally occurring in the environment and was detected at concentrations ranging from 0.39 to 0.97 pCi/g which are below and within the SSFL Background Range concentrations of 0.44 to 1.1 pCi/g and below the DHS health-based comparative value of 5 pCi/g.

Uranium 233/234 are naturally occurring and were detected at concentrations ranging from 0.83 to 2.0 pCi/g which are well below the DHS health-based comparative value of 30 pCi/g and approximate the SSFL Background Range concentrations of 0.77 to 0.94 pCi/g.

Uranium 235 is naturally occurring in the environment and was encountered at concentrations ranging from non-detect to 0.11 pCi/g. The concentrations are well below the DHS health-based comparative value of 30 pCi/g and approximate the SSFL Background Range concentrations of 0.03 to 0.06 pCi/g.

Uranium 238 is naturally occurring in the environment and was encountered at concentrations ranging from non-detect to 0.18 pCi/g. The maximum value is below the SSFL Background Range concentrations of 0.74 to 0.99 pCi/g and below the DHS health-based comparative value of 35 pCi/g.

Plutonium 238/239/240 was not detected in any soil sample analyzed.

Tritium was not detected in any soil sample analyzed.

Strontium 90 was detected at low levels in 5 of the 6 soil samples. SSFL Background Range concentrations and DHS health-based comparative values have not been established for Strontium 90. However, data reported by UNSCEAR, 1993 and other researchers (Eisenbud and Gesell, 1997; Kathren, 1984) indicate that:

- Strontium 90 concentrations present in surface soils are attributable to global atmospheric fallout from nuclear weapons testing.
- In the United States, available data indicate Strontium 90 has been deposited in surface soil at levels ranging between 0.56 and 1.13 pCi/g. At 34° latitude (i.e., the approximate latitude of the subject site) available data indicate Strontium 90 attributable to global atmospheric fallout from nuclear weapons testing has been deposited at approximately 0.84 pCi/g.

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Strontium 90 was detected at the project site in concentrations ranging from 0.012 to 0.17 pCi/g. Based on the preceding information, Strontium 90 concentrations detected at the project site are well below expected background conditions attributable to global atmospheric fallout from nuclear weapons testing.

6.3 ANALYTICAL RESULTS AND FINDINGS – WATER

6.3.1 Total Petroleum Hydrocarbons

TPH as gasoline or diesel was not detected in any of the surface water samples analyzed.

6.3.2 Volatile Organic Compounds

VOCs were not detected in any of the surface water samples analyzed.

6.3.3 Semi-Volatile Organic Compounds

SVOCs were not detected in any of the surface water samples analyzed.

6.3.4 California Title 22 Metals

The naturally occurring metals Sb, As, Ba, Cr, Pb, Hg, Mo, Ni, and Se were below the STLC values for the respective metals and below MCLs for drinking water or PRGs for Tap Water. Be, Cd, Co, Cu, Ag, Tl, V, and Zn were not detected in any water sample. Results are presented on Tables 19 through 21.

6.3.5 Hexavalent Chromium

Hexavalent chromium was not detected in the analyzed water samples.

6.3.6 pH

The pH of the surface water was neutral and ranged from 7.7 at W-3 to 7.89 at W-2. Results are presented on Table 22.

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6.3.7 Fluoride

Low levels of naturally occurring fluoride were detected in the surface water analyzed ranging in concentration from 0.36 mg/L at W-1 to 0.79 mg/L at W-2. These concentrations are below the MCL that ranges from 1.4 to 2.4 mg/L and is dependent upon maximum daily air temperature. Results are presented on Table 23.

6.3.8 Chloride and Nitrate

Naturally occurring chloride was detected at concentrations ranging between 46 mg/L at W-1 to 112 mg/L at W-2. These values are below the recommended Secondary Drinking Water Standards (MCLs) for chloride of 250 mg/L. Nitrate as NO_3 was detected at concentrations ranging between non-detect at W-2 and W-3, and 3.1 mg/L at W-1. The value at W-1 is below the MCL of 45 mg/L. Results are presented on Table 24.

6.3.9 Perchlorate

Perchlorate was not detected in the analyzed water samples.

6.3.10 Formaldehyde

Formaldehyde was not detected in the analyzed water samples.

6.3.11 Polychlorinated Biphenyls

PCBs were not detected in the analyzed water samples.

6.3.12 Dioxin and Furans

Dioxin and furan compounds were not detected in the analyzed water samples.

6.3.13 Ordnance Compounds

Ordnance compounds were not detected in the analyzed water samples.

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6.3.14 Gamma Emitting Radionuclides

Surface water samples were analyzed for K 40, Co 60, Cs 137, Ra 226, Th 228, Th 232, U 233/234, U 235, U 238, Am 243, Pu 238, Pu 239/240, Tritium, and Sr 90. The results for water samples W-1 through W-3 are presented in Tables 25-27.

K 40, Co 60, Cs 137, Ra 226, Am 243, and tritium were not detected.

Strontium 90 was detected in concentrations ranging from 0.01 to 0.083 pCi/L in W-1 and W-3, respectively. Strontium 90 was not detected in W-2. The MCL for Strontium 90 is 8 pCi/L. The detected concentrations are well below the MCL

Thorium 228 is naturally occurring in the environment and was detected concentrations ranging from 0.0060 to 0.019 pCi/L. MCLs have not been established for Thorium 228. The measured concentrations are considered to represent background conditions for the subject site based on the following:

- The site has been and is currently undeveloped.
- Individual measured concentrations are near the minimum detected threshold of the laboratory analytical method.
- The analytical results exhibit low variation between sampling locations.

Thorium 230 is naturally occurring in the environment and was detected at a concentration of 0.59 pico Curies per liter (pCi/L) in samples W-1. It was not detected in samples W-2 and W-3. MCLs have not been established for Thorium 230. The measured concentrations are considered to represent background conditions for the subject site based on the following:

- The site has been and is currently undeveloped.
- Individual measured concentrations are near the minimum detected threshold of the laboratory analytical method.
- The analytical results exhibit low variation between sampling locations.

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Thorium 232 is naturally occurring in the environment and was detected concentrations ranging from 0.0060 to 0.019 pCi/L. MCLs have not been established for Thorium 232. The measured concentrations are considered to represent background conditions for the subject site based on the following:

- The site has been and is currently undeveloped.
- Individual measured concentrations are near the minimum detected threshold of the laboratory analytical method.
- The analytical results exhibit low variation between sampling locations.

Naturally occurring Uranium 233/234, 235, and 238 were detected at concentrations ranging from 0.099 to 3 pCi/L. These concentrations are below the MCL for uranium of 20 pCi/L. The measured concentrations are considered to represent background conditions for the subject site based on the following:

- The site has been and is currently undeveloped.
- Individual measured concentrations are near the minimum detected threshold of the laboratory analytical method.
- The analytical results exhibit low variation between sampling locations.

Naturally occurring Plutonium 238 was detected at a concentration of 0.011 pCi/L in W-2. It was not detected in W-1 and W-3. MCLs have not been established for Plutonium 238. The measured concentrations are considered to represent background conditions for the subject site based on the following:

- The site has been and is currently undeveloped.
- Individual measured concentrations are near the minimum detected threshold of the laboratory analytical method.
- The analytical results exhibit low variation between sampling locations.

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Naturally occurring Plutonium 239/240 was detected at a concentration of 0.006 pCi/L in W-1. It was not detected in W-2 and W-3. MCLs have not been established for Plutonium 239/240. The measured concentrations are considered to represent background conditions for the subject site based on the following:

- The site has been and is currently undeveloped.
- Individual measured concentrations are near the minimum detected threshold of the laboratory analytical method.
- The analytical results exhibit low variation between sampling locations.

Concentrations of chemical or radiological constituents detected at Ahmanson Ranch do not indicate that soil or surface water constituents from the Rocketdyne SSFL or other off-site industrial uses migrated to the Ahmanson Ranch property. Chemical and radiological concentrations detected in soil and water at Ahmanson Ranch were compared to actionable threshold values such as US EPA PRGs and DHS health-based comparison values. At the levels detected, the chemical constituents do not pose a potential threat to public health, welfare, or the environment at the Ahmanson Ranch Project site. Further, radiological concentrations represent background conditions and are considered to be within an acceptable range for soils within the subject site based on the undeveloped nature of the site.

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Table 13
Analytical Soil Results S-1
Gamma-Emitting Radionuclides
(US EPA Methods 901.1, 905, 906, 907 & 908)
Ahmanson Ranch Project
County of Ventura, California

Nuclide	Depth (feet)	Concentration (pCi/g)	MDA	SSFL Background Range (pCi/g)	Comparison Value (pCi/g)
K 40 (G)	0.5	16 +/- 0.35	0.157	19-25	27.6
Co 60 (G)	0.5	ND	0.015	4-12	NE
Cd 109 (G)	0.5	1.7 +/-0.19	0.278	NE	NE
Cs 137 (G)	0.5	ND	0.014	NE	NE
Ra 226 (G)	0.5	0.82 +/-0.032	0.027	1.1-1.5	5
Th 228 (G)	0.5	0.83 +/-0.021	0.019	1-1.8	5
Th 232 (G)	0.5	0.94 +/-0.063	0.057	0.44-1.1	NE
U 235 (G)	0.5	ND	0.065	0.03-0.06	NE
U 238 (G)	0.5	ND	2.69	0.74-0.99	NE
Am 243 (G)	0.5	ND	0.487	NE	NE
Pu 238	0.5	0.036 +/- 0.040	0.061	NE	NE
Pu 239/240	0.5	-0.008 +/- 0.016	0.049	NE	NE
Tritium	0.5	-0.018 +/-0.042	0.073	ND-0.24	31,900
Sr 90	0.5	0.15 +/- 0.22	0.269	NE	NE
Th 228	0.5	0.94 +/-0.13	0.065	0.43-1.2	5
Th 230	0.5	1.5 +/- 0.16	0.049	0.42-1.2	NE
Th 232	0.5	0.84 +/-0.12	0.026	0.44-1.1	5
U 233/234	0.5	0.83 +/- 0.13	0.054	0.77-0.94	30
U 235	0.5	0.077 +/- 0.047	0.045	0.03-0.06	30
U 238	0.5	0.81 +/- 0.13	0.037	0.74-0.99	35

pCi/g- pico- curies per gram
(G)- Gamma Spectroscopy
MDA-Minimum Detectable Activity
ND- Non Detected
NE- Not Established
SSFL Background Concentrations from Ogden October 1998 Report, Table 9.
Comparison Value -Health based comparison values for radionuclides based on Dept. of Health Services release criteria (residential land use).

The data, observations, and conclusions reported in this document are intended expressly for the purposes of the proposed residential development of the Ahmanson Ranch Property, located in Ventura County, California. Any other use of the data, observations, and / or conclusions presented in this report outside of this stated intended use is not authorized.

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Table 14
Analytical Soil Results S-2
Gamma-Emitting Radionuclides
(US EPA Methods 901.1, 905. 906, 907 & 908)
Ahmanson Ranch
County of Ventura, California

Nuclide	Depth (feet)	Concentration (pCi/g)	MDA	SSFL Background Range (pCi/g)	Comparison Value (pCi/g)
K 40 (G)	0.5	15 +/- 0.90	0.447	19-25	27.6
Co 60 (G)	0.5	ND	0.041	4-12	NE
Cd 109	NA	NA	NA	NA	NA
Cs 137 (G)	0.5	0.085+/- 0.047	0.047	NE	NE
Ra 226 (G)	0.5	1.0 +/-0.091	0.080	1.1-1.5	5
Th 228 (G)	0.5	0.83 +/-0.049	0.048	1-1.8	5
Th 232 (G)	0.5	0.97 +/-0.22	0.201	0.44-1.1	NE
U 235 (G)	0.5	ND	0.151	0.03-0.06	NE
U 238 (G)	0.5	ND	4.90	0.74-0.99	NE
Am 243 (G)	0.5	ND	0.056	NE	NE
Pu 238	0.5	0.011 +/- 0.033	0.073	NE	NE
Pu 239/240	0.5	0 +/- 0.022	0.060	NE	NE
Tritium	0.5	0.014 +/-0.043	0.073	ND-0.24	31,900
Sr 90	0.5	0.17 +/- 0.24	0.307	NE	NE
Th 228	0.5	0.77 +/-0.13	0.086	0.43-1.2	5
Th 230	0.5	1.3 +/- 0.16	0.068	0.42-1.2	NE
Th 232	0.5	0.79 +/-0.12	0.036	0.44-1.1	5
U 233/234	0.5	1.1 +/- 0.17	0.064	0.77-0.94	30
U 235	0.5	0.098 +/- 0.056	0.054	0.03-0.06	30
U 238	0.5	1.2 +/- 0.18	0.055	0.74-0.99	35

pCi/g- pico- curies per gram
(G)- Gamma Spectroscopy
MDA-Minimum Detectable Activity
NE- Not Established
NA- Not Analyzed
ND- Non Detected
SSFL Background Concentrations from Ogden October 1998 Report, Table 9.
Comparison Value -Health based comparison values for radionuclides based on Dept. of Health Services release criteria (residential land use).

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Table 15
Analytical Soil Results S-3
Gamma-Emitting Radionuclides
(US EPA Methods 901.1, 905, 906, 907 & 908)
Ahmanson Ranch
County of Ventura, California

Nuclide	Depth (feet)	Concentration (pCi/g)	MDA	SSFL Background Range (pCi/g)	Comparison Value (pCi/g)
K 40 (G)	0.5	8.3 +/- 0.61	0.404	19-25	27.6
Co 60 (G)	0.5	ND	0.038	4-12	NE
Cd 109	0.5	2.8 +/- 0.40	0.514	NE	NE
Cs 137 (G)	0.5	0.14+/- 0.042	0.041	NA	NE
Ra 226 (G)	0.5	2.2 +/-0.087	0.068	1.1-1.5	5
Th 228 (G)	0.5	0.52 +/-0.038	0.042	1-1.8	5
Th 232 (G)	0.5	0.61 +/-0.17	0.172	0.44-1.1	NE
U 235 (G)	0.5	ND	0.231	0.03-0.06	NE
U 238 (G)	0.5	ND	6.48	0.74-0.99	NE
Am 243 (G)	0.5	ND	0.851	NE	NE
Pu 238	0.5	-0.008 +/- 0.016	0.059	NE	NE
Pu 239/240	0.5	-0.015 +/- 0.016	0.074	NE	NE
Tritium	0.5	-0.011 +/-0.043	0.074	ND-0.24	31,900
Sr 90	0.5	-0.038 +/- 0.11	0.156	NE	NE
Th 228	0.5	0.77 +/-0.13	0.086	0.43-1.2	5
Th 230	0.5	1.9 +/- 0.19	0.045	0.42-1.2	NE
Th 232	0.5	0.28 +/-0.062	0.026	0.44-1.1	5
U 233/234	0.5	2.0 +/- 0.26	0.103	0.77-0.94	30
U 235	0.5	0.15 +/- 0.082	0.090	0.03-0.06	30
U 238	0.5	1.7 +/- 0.23	0.074	0.74-0.99	35

pCi/g- pico- curies per gram
(G)- Gamma Spectroscopy
MDA-Minimum Detectable Activity
ND- Non Detected
NE- Not Established
SSFL Background Concentrations from Ogden October 1998 Report, Table 9.
Comparison Value –Health based comparison values for radionuclides based on Dept. of Health Services release criteria (residential land use).

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Table 16
Analytical Soil Results S-4
Gamma-Emitting Radionuclides
(US EPA Methods 901.1, 905, 906, 907 & 908)
Ahmanson Ranch
County of Ventura, California

Nuclide	Depth (feet)	Concentration (pCi/g)	MDA	SSFL Background Range (pCi/g)	Comparison Value (pCi/g)
K 40 (G)	0.5	13 +/- 0.38	0.181	19-25	27.6
Co 60 (G)	0.5	ND	0.018	4-12	NE
Cd 109	NA	NA	NA	NA	NA
Cs 137 (G)	0.5	0.032+/- 0.013	0.016	NE	NE
Ra 226 (G)	0.5	1.4 +/-0.045	0.033	1.1-1.5	5
Th 228 (G)	0.5	0.51 +/-0.021	0.022	1-1.8	5
Th 232 (G)	0.5	0.55 +/-0.085	0.086	0.44-1.1	NE
U 235 (G)	0.5	ND	0.165	0.03-0.06	NE
U 238 (G)	0.5	ND	3.78	0.74-0.99	NE
Am 243 (G)	0.5	ND	0.552	NE	NE
Pu 238	0.5	0 +/- 0.039	0.147	NE	NE
Pu 239/240	0.5	0 +/- 0.038	0.147	NE	NE
Tritium	0.5	0.010 +/-0.044	0.073	ND-0.24	31,900
Sr 90	0.5	0.022 +/- 0.13	0.167	NE	NE
Th 228	0.5	0.37 +/-0.070	0.054	0.43-1.2	5
Th 230	0.5	1.4 +/- 0.14	0.043	0.42-1.2	NE
Th 232	0.5	0.39 +/-0.065	0.019	0.44-1.1	5
U 233/234	0.5	1.80 +/- 0.24	0.092	0.77-0.94	30
U 235	0.5	0.10 +/- 0.059	0.056	0.03-0.06	30
U 238	0.5	1.8 +/- 0.22	0.058	0.74-0.99	35

pCi/g- pico- curies per gram
(G)- Gamma Spectroscopy
NA- Not Analyzed
ND- Non Detected
NE- Not Established
MDA-Minimum Detectable Activity

SSFL Background Concentrations from Ogden October 1998 Report, Table 9.

Comparison Value –Health based comparison values for radionuclides based on Dept. of Health Services release criteria (residential land use).

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Table 17
Analytical Soil Results S-5
Gamma-Emitting Radionuclides
(US EPA Methods 901.1, 905, 906, 907 & 908)
Ahmanson Ranch
County of Ventura, California

Nuclide	Depth (feet)	Concentration (pCi/g)	MDA	SSFL Background Range (pCi/g)	Comparison Value (pCi/g)
K 40 (G)	0.5	23 +/- 0.74	0.353	19-25	27.6
Co 60 (G)	0.5	ND	0.035	4-12	NE
Cd 109	0.5	1.5 +/-0.46	0.636	NE	NE
Cs 137 (G)	0.5	0.12+/- 0.013	0.039	NE	NE
Ra 226 (G)	0.5	1.1 +/-0.071	0.068	1.1-1.5	5
Th 228 (G)	0.5	0.90 +/-0.037	0.039	1-1.8	5
Th 232 (G)	0.5	0.95 +/-0.013	0.141	0.44-1.1	NE
U 235 (G)	0.5	ND	0.120	0.03-0.06	NE
U 238 (G)	0.5	ND	3.98	0.74-0.99	NE
Am 243 (G)	0.5	ND	0.056	NE	NE
Pu 238	0.5	-0.021 +/- 0.033	0.070	NE	NE
Pu 239/240	0.5	0 +/- 0.016	0.045	NE	NE
Tritium	0.5	-0.002 +/-0.044	0.075	ND-0.24	31,900
Sr 90	0.5	0.012 +/- 0.11	0.157	NE	NE
Th 228	0.5	0.61 +/-0.095	0.029	0.43-1.2	5
Th 230	0.5	1.7 +/- 0.16	0.064	0.42-1.2	NE
Th 232	0.5	0.72 +/-0.095	0.029	0.44-1.1	5
U 233/234	0.5	1.60 +/- 0.23	0.068	0.77-0.94	30
U 235	0.5	0.11 +/- 0.069	0.066	0.03-0.06	30
U 238	0.5	1.7 +/- 0.23	0.054	0.74-0.99	35

pCi/g- pico- curies per gram
(G)- Gamma Spectroscopy
MDA-Minimum Detectable Activity
ND- Non Detected
NE- Not Established
SSFL Background Concentrations from Ogden October 1998 Report, Table 9.
Comparison Value -Health based comparison values for radionuclides based on Dept. of Health Services release criteria (residential land use).

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Table 18
Analytical Soil Results S-6
Gamma-Emitting Radionuclides
(US EPA Methods 901.1, 905, 906, 907 & 908)
Ahmanson Ranch
County of Ventura, California

Nuclide	Depth (feet)	Concentration (pCi/g)	MDA	SSFL Background Range (pCi/g)	Comparison Value (pCi/g)
K 40 (G)	0.5	12 +/- 0.64	0.404	19-25	27.6
Co 60 (G)	0.5	ND	0.035	4-12	NE
Cd 109	0.5	2.3 +/-0.30	0.406	NE	NE
Cs 137 (G)	0.5	ND	0.031	NE	NE
Ra 226 (G)	0.5	1.8 +/-0.078	0.058	1.1-1.5	5
Th 228 (G)	0.5	0.50 +/-0.032	0.034	1-1.8	5
Th 232 (G)	0.5	0.54 +/-0.13	0.136	0.44-1.1	NE
U 235 (G)	0.5	ND	0.193	0.03-0.06	NE
U 238 (G)	0.5	ND	4.30	0.74-0.99	NE
Am 243 (G)	0.5	ND	0.244	NE	NE
Pu 238	0.5	0 +/- 0.027	0.054	NE	NE
Pu 239/240	0.5	-0.010 +/- 0.020	0.045	NE	NE
Tritium	0.5	-0.002 +/-0.044	0.073	ND-0.24	31,900
Sr 90	0.5	0.015 +/- 0.13	0.174	NE	NE
Th 228	0.5	0.37 +/-0.095	0.029	0.43-1.2	5
Th 230	0.5	1.7 +/- 0.10	0.078	0.42-1.2	NE
Th 232	0.5	0.39 +/-0.10	0.048	0.44-1.1	5
U 233/234	0.5	1.40 +/- 0.20	0.060	0.77-0.94	30
U 235	0.5	0.061 +/- 0.046	0.058	0.03-0.06	30
U 238	0.5	1.3 +/- 0.19	0.048	0.74-0.99	35

pCi/g- pico- curies per gram
(G)- Gamma Spectroscopy
MDA-Minimum Detectable Activity
ND- Non Detected
NE- Not Established
SSFL Background Concentrations from Ogden October 1998 Report, Table 9.
Comparison Value –Health based comparison values for radionuclides based on Dept. of Health Services release criteria (residential land use).

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Ex 1

Client: Kleinfelder
Lab No.: LR40344 - Sample S-1
Project #58-9168-01 Ahmanson Ranch

RADIOACTIVITY ANALYSIS RESULTS

Nuclide	Date Analyzed	Result (pCi/g)	MDA
K 40 (G)	08/16/99	16 ± 0.35	0.157
Co 60 (G)	08/16/99	None Detected	0.015
Cd 109 (G)	08/16/99	1.7 ± 0.19	0.278
Cs 137 (G)	08/16/99	None Detected	0.014
Ra 226 (G)	08/16/99	0.82 ± 0.032	0.027
Th 228 (G)	08/16/99	0.83 ± 0.021	0.019
Th 232 (G)	08/16/99	0.94 ± 0.063	0.057
U 235 (G)	08/16/99	None Detected	0.065
U 238 (G)	08/16/99	None Detected	2.69
Am 243 (G)	08/16/99	None Detected	0.487
Tritium	08/11/99	0.018 ± 0.042	0.073
Sr 90	08/11/99	0.18 ± 0.22	0.269
Th 228	08/18/99	0.94 ± 0.13	0.065
Th 230	08/18/99	1.5 ± 0.16	0.049
Th 232	08/18/99	0.84 ± 0.12	0.026
U 233/234	08/16/99	0.83 ± 0.13	0.054
U 235	08/16/99	0.077 ± 0.047	0.045
U 238	08/16/99	0.81 ± 0.13	0.037
Pu 238	09/24/99	0.036 ± 0.040	0.061
Pu 239/240	09/24/99	-0.008 ± 0.016	0.049

EX 1

Client: Kleinfelder
Lab No.: LR40344 - Sample S-2
Project #58-9168-01 Ahmanson Ranch

RADIOACTIVITY ANALYSIS RESULTS

Nuclide	Date Analyzed	Result (pCi/g)	MDA
K 40 (G)	08/16/99	15 ± 0.90	0.447
Co 60 (G)	08/16/99	None Detected	0.041
Cs 137 (G)	08/16/99	0.085 ± 0.047	0.047
Ra 226 (G)	08/16/99	1.0 ± 0.091	0.080
Th 228 (G)	08/16/99	0.83 ± 0.049	0.048
Th 232 (G)	08/16/99	0.97 ± 0.22	0.201
U 235 (G)	08/16/99	None Detected	0.151
U 238 (G)	08/16/99	None Detected	4.90
Am 243 (G)	08/16/99	None Detected	0.056
Tritium	08/11/99	0.014 ± 0.043	0.073
Sr 90	08/11/99	0.17 ± 0.24	0.307
Th 228	08/18/99	0.77 ± 0.13	0.086
Th 230	08/18/99	1.3 ± 0.16	0.068
Th 232	08/18/99	0.79 ± 0.12	0.036
U 233/234	08/16/99	1.1 ± 0.17	0.064
U 235	08/16/99	0.098 ± 0.056	0.054
U 238	08/16/99	1.2 ± 0.18	0.055
Pu 238	09/24/99	0.011 ± 0.033	0.073
Pu 239/240	09/24/99	0 ± 0.022	0.060

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Client: Kleinfelder
Lab No.: LR40304 - Sample S-3
Project #58-9168-01 Ahmanson Ranch

RADIOACTIVITY ANALYSIS RESULTS

Nuclide	Date Analyzed	Result (pCi/g)	MDA
K 40 (G)	08/16/99	8.3 ± 0.61	0.404
Co 60 (G)	08/16/99	None Detected	0.038
Cd 109 (G)	08/16/99	2.8 ± 0.40	0.514
Cs 137 (G)	08/16/99	0.14 ± 0.042	0.041
Ra 226 (G)	08/16/99	2.2 ± 0.087	0.068
Th 228 (G)	08/16/99	0.52 ± 0.038	0.042
Th 232 (G)	08/16/99	0.61 ± 0.17	0.172
U 235 (G)	08/16/99	None Detected	0.231
U 238 (G)	08/16/99	None Detected	6.48
Am 243 (G)	08/16/99	None Detected	0.851
Tritium	08/11/99	- 0.011 ± 0.043	0.074
Sr 90	08/11/99	- 0.038 ± 0.11	0.156
Th 232	08/18/99	0.28 ± 0.062	0.026
Th 230	08/18/99	1.9 ± 0.19	0.045
Th 228	08/16/99	0.34 ± 0.082	0.081
U 233/234	08/16/99	2.0 ± 0.26	0.103
U 235	08/16/99	0.15 ± 0.082	0.090
U 238	08/16/99	1.7 ± 0.23	0.074
Pu 238	09/24/99	-0.008 ± 0.016	0.059
Pu 239/240	09/24/99	-0.015 ± 0.016	0.074

Client: Kleinfelder
Lab No.: LR40302 - Sample S-4
Project #58-9168-01 Ahmanson Ranch

Ex 1

RADIOACTIVITY ANALYSIS RESULTS

Nuclide	Date Analyzed	Result (pCi/g)	MDA
K 40 (G)	08/16/99	13 ± 0.38	0.181
Co 60 (G)	08/16/99	None Detected	0.018
Cs 137 (G)	08/16/99	0.032 ± 0.013	0.016
Ra 226 (G)	08/16/99	1.4 ± 0.045	0.033
Th 228 (G)	08/16/99	0.51 ± 0.021	0.022
Th 232 (G)	08/16/99	0.55 ± 0.085	0.086
U 235 (G)	08/16/99	None Detected	0.165
U 238 (G)	08/16/99	None Detected	3.78
Am 243 (G)	08/16/99	None Detected	0.552
Tritium	08/11/99	0.010 ± 0.044	0.073
Sr 90	08/11/99	0.022 ± 0.13	0.167
Th 232	08/18/99	0.39 ± 0.065	0.019
Th 230	08/18/99	1.4 ± 0.14	0.043
Th 228	08/18/99	0.37 ± 0.070	0.054
U 233/234	08/16/99	1.80 ± 0.24	0.092
U 235	08/16/99	0.10 ± 0.059	0.056
U 238	08/16/99	1.8 ± 0.22	0.058
Pu 238	09/24/99	0 ± 0.039	0.147
Pu 239/240	09/24/99	0 ± 0.038	0.147

Client: Kleinfelder
Lab NO.: LR40300 - Sample S-5
Project #58-9168-01 Ahmanson Ranch

Ex 1

RADIOACTIVITY ANALYSIS RESULTS

Nuclide	Date Analyzed	Result (pCi/g)	MDA
K 40 (G)	08/16/99	23 ± 0.74	0.353
Co 60 (G)	08/16/99	None Detected	0.035
Cd 109 (G)	08/16/99	1.5 ± 0.46	0.636
Cs 137 (G)	08/16/99	0.12 ± 0.034	0.039
Ra 226 (G)	08/16/99	1.1 ± 0.071	0.068
Th 228 (G)	08/16/99	0.90 ± 0.037	0.038
Th 232 (G)	08/16/99	0.95 ± 0.13	0.141
U 235 (G)	08/16/99	None Detected	0.120
U 238 (G)	08/16/99	None Detected	3.98
Am 243 (G)	08/16/99	None Detected	0.056
Tritium	08/11/99	-0.002 ± 0.044	0.075
Sr 90	08/11/99	0.012 ± 0.11	0.157
Th 228	08/18/99	0.61 ± 0.095	0.080
Th 230	08/18/99	1.7 ± 0.16	0.064
Th 232	08/18/99	0.72 ± 0.095	0.029
U 233/234	08/16/99	1.60 ± 0.23	0.068
U 238	08/16/99	1.7 ± 0.23	0.054
Pu 238	09/24/99	-0.021 ± 0.033	0.070
Pu 239/240	09/24/99	0 ± 0.016	0.045

Client: Kleinfelder
Lab No.: LR40291 - Sample S-6
Project #58-9168-01 Ahmanson Ranch

Ex 1

RADIOACTIVITY ANALYSIS RESULTS

Nuclide	Date Analyzed	Result (pCi/g)	MDA
K 40 (G)	08/16/99	12 ± 0.64	0.404
Co 60 (G)	08/16/99	None Detected	0.035
Cd 109 (G)	08/16/99	2.3 ± 0.30	0.406
Cs 137 (G)	08/16/99	None Detected	0.031
Ra 226 (G)	08/16/99	1.8 ± 0.078	0.058
Th 228 (G)	08/16/99	0.50 ± 0.032	0.034
Th 232 (G)	08/16/99	0.54 ± 0.13	0.136
U 235 (G)	08/16/99	None Detected	0.193
U 238 (G)	08/16/99	None Detected	4.30
Am 243 (G)	08/16/99	None Detected	0.244
Tritium	08/11/99	0.012 ± 0.043	0.073
Sr 90	08/11/99	0.015 ± 0.13	0.174
Th 232	08/18/99	0.39 ± 0.10	0.048
Th 230	08/18/99	2.0 ± 0.27	0.070
Th 228	08/18/99	0.37 ± 0.10	0.078
U 233/234	08/16/99	1.40 ± 0.20	0.060
U 235	08/16/99	0.061 ± 0.046	0.058
U 238	08/16/99	1.3 ± 0.19	0.048
Pu 238	09/24/99	0 ± 0.027	0.054
Pu 239/240	09/24/99	-0.010 ± 0.020	0.045