



September 17, 2003

Mr. Bruce G. Ehrlich
Nossaman, Guthner, Knox and Elliot LLP
445 South Figueroa Street, 31st Floor
Los Angeles, California 90071

**SITE: GREENPARK RUNKLE CANYON, LLC RUNKLE CANYON PROPERTY
IN SIMI VALLEY, CALIFORNIA**

RE: SITE INVESTIGATION REPORT OF 550-ACRE PARCEL

Dear Mr. Ehrlich:

Miller Brooks Environmental, Inc. (Miller Brooks) is pleased to submit this report documenting our site investigation of the eastern 550-acre portion (Site) of the 1,615-acre Runkle Canyon Property (Property) in Ventura County, California (see Figure 1). The investigation included surface soil and water sampling, the drilling and sampling of soil borings, and collection of groundwater samples on the Runkle Canyon Property (Figure 1). The purpose of these activities was to identify recognized environmental conditions on the Property, with a particular emphasis on tritium and strontium-90. This report presents the results of sampling and analysis performed on the eastern 550-acre portion of the Property, and includes a description of the Site, a summary of site assessment activities, results of laboratory analyses, and conclusions.

1.0 BACKGROUND INFORMATION

Strontium (chemical symbol Sr) is a silvery metal that is found in nature and has four stable isotopes and twelve radioactive isotopes. Isotopes are different forms of the same element that have the same number of protons in the nucleus but a different number of neutrons. While the four stable isotopes of strontium occur naturally, strontium-90 is a by-product of the fission of uranium and plutonium in nuclear reactors and nuclear weapons. In the 1950s and 1960s, large amounts of strontium-90 were produced during atmospheric nuclear weapons tests and were dispersed worldwide. Strontium-90 has a half-life of 29.1 years. The releases from the 1950s and 1960s have been decaying slowly and result in current low background levels. The average strontium-90 concentration in surface soil is about 0.1 pico Curie per gram (pCi/g; Environmental Protection Agency [EPA], 2003a; Risk Assessment Information System, 2003; Argonne National Laboratory, 2001).

Tritium (H3) is a radioactive isotope of hydrogen that is produced naturally by interactions in the upper atmosphere, and artificially as a result of nuclear testing, especially in the early 1950s. The tritium exchanges with normal hydrogen in water vapor to form tritiated (or "heavy") water, which then becomes part of the Earth's global water. Tritium is also produced during nuclear weapons testing and as a by-product of nuclear reactors. In the mid-1950s and early 1960s, tritium was widely dispersed in the atmosphere during the above ground testing of nuclear weapons. Tritium has a half-life of approximately 12 years and acts as an excellent tracer of water movement in the subsurface and time of travel, or age, within the hydrologic. Tritium emits very low energy beta particles and radiation, and does not penetrate a significant distance in

U-1

In March 2003, a total of 19 55-gallon drums were identified on the Site. No concentrations of TPH-V, VOCs, or SVOCs were detected in the surface soil samples collected as a part of the subsequent drum removal program. All concentrations of metals detected in these surface soil samples were below EPA PRGs for residential soil. The material in the drums was transported from the Site and disposed of/recycled as non-hazardous waste (Miller Brooks, 2003b).

6.0 SUMMARY OF SITE ASSESSMENT ACTIVITIES

Site assessment activities were conducted on the Property, including the subject Site, to obtain additional data in order to determine if detectable concentrations of strontium-90 and tritium are present in soil and water at the Site. The assessment activities conducted on the Property included the drilling and sampling of six soil borings, the collection of six surface soil samples in run-off and drainage areas, the collection of 17 surface soil samples in approximately the same locations as the Harding ESE surface samples collected in September 2000, and the collection of nine water samples. Activities conducted on the subject Site only discussed below.

Based on the findings from previous investigations at the Property, it was determined that all concentrations of cesium-137 detected on the Property were within EPA background concentrations for soil, and the previous data set was adequate and representative. Therefore, no additional samples were analyzed for cesium-137 during this investigation. In addition, tritium is a radioactive isotope of hydrogen that is bound to water molecules, and is transported in the environment as water (Hendry, 1988; see Section 6.0 for further discussion). Tritium in soil occurs as a gas and has a shorter half-life, so it is generally not found in soil (Robles, 2003). Therefore, tritium analyses were performed on water samples only and not on soil.

Soil Boring Activities and Collection of Surface Soil Samples

On March 13, 2003, Miller Brooks supervised the advancement of five soil borings (MBE-2, MBE-4, MBE-5, MBE-7, and MBE-8; Figure 2) on the Site to a depth of 7 feet bgs. The borings were drilled using a hollow-stem auger drill rig with a split-spoon sampler. During drilling, soil samples were collected from all borings at the surface, 3 feet bgs, and 7 feet bgs for laboratory analysis. In addition, one duplicate sample (Duplicate-2) was collected at the location of MBE-5-Surface for laboratory analysis and quality control. During soil boring activities, Miller Brooks personnel used a photoionization detector (PID) to monitor the soil for VOCs. A description of general field procedures utilized, and copies of the soil boring logs are included in Appendix A.

On March 13 and 14, 2003, Miller Brooks collected six soil samples (MBE-1-Surface, MBE-3-Surface, MBE-6-Surface, MBE-12-Surface, SS-14A and SS-15A) from the surface of the Site. Sample SS-15A was collected approximately 100 feet east of the Site. Three offsite samples (Background-1 through Background-3) were collected as a baseline with which to compare results of the onsite samples. In addition, one duplicate sample (Duplicate-2) was collected at the location of Sample SS-15A for laboratory analysis and quality control. The samples were collected in 4-ounce glass jars and placed in a cooler for transport to a state-certified laboratory, following proper chain of custody protocol. The sample locations are shown on Figure 2 and the general field procedures are included in Appendix A.

All soil samples collected during this investigation were analyzed for strontium-90 using EPA Method 905.0. Results of the laboratory analysis of soil samples are presented in Table 1. The laboratory reports and chain of custody documents are included in Appendix B.

TABLE 1
RESULTS OF STRONTIUM ANALYSIS FOR SOIL SAMPLES
Eastern 550-acre Parcel
Runkle Canyon Property
Simi Valley, California

Sample ID	Date	Sample Depth (in feet)	pCi/g-dry
MBE-1-Surface	3/13/03	surface	2.10 (+/- 1.20)
MBE-2-Surface	3/13/03	surface	ND<2.40
MBE-2-3'	3/13/03	3	ND<2.40
MBE-2-7'	3/13/03	7	ND<2.00
MBE-3-Surface	3/13/03	surface	ND<2.00
MBE-4-Surface	3/13/03	surface	ND<2.00
MBE-4-3'	3/13/03	3	ND<2.00
MBE-4-7'	3/13/03	7	ND<2.00
MBE-5-Surface *	3/13/03	surface	ND<2.40
MBE-5-3'	3/13/03	3	ND<2.40
MBE-5-7'	3/13/03	7	ND<2.40
MBE-6-Surface	3/13/03	surface	2.20 (+/- 1.20)
MBE-7-Surface	3/13/03	surface	ND<2.40
MBE-7-3'	3/13/03	3	ND<2.40
MBE-7-7'	3/13/03	7	ND<2.40
MBE-8-Surface	3/13/03	surface	ND<2.40
MBE-8-3'	3/13/03	3	ND<2.40
MBE-8-7'	3/13/03	7	ND<2.40
MBE-12-Surface	3/13/03	surface	ND<2.00
Duplicate 2 *	3/13/03	surface	ND<2.00
SS-14A	3/14/03	surface	ND<2.80
SS-15A **	3/14/03	surface	ND<2.80
Duplicate-2 **	3/14/03	surface	ND<2.80
Background-1	3/14/03	surface	ND<2.00
Background-2	3/14/03	surface	ND<2.00
Background-3	3/14/03	surface	ND<2.20
Trip Blank	3/14/03	Not Apply	ND<10 pCi/L

most sensitive

least sensitive

Notes:

pCi/g-dry = pico curie per gram - dry

ND = not detected at limit indicated

* = Duplicate-2 was collected in the same location as Sample MBE-5-Surface on March 13, 2003.

** = Duplicate-2 was collected at the same location as Sample SS-15A on March 14, 2003.

pCi/g = pico curie per liter

High Readings:

Detection sensitivities:

2.00 to 10.00 pCi/g

$pCi/g = pCi/L$

$2.0 / .231 = 9.09$

$2.2 / .231 = 9.52$

which is "nearly ten"

U3

EPA PR6 = 0.231; therefore

$2.00 / .231 = 8.67$ (or "nine")

$10.00 / .231 = 43.29$ (or "43")

Collection of Surface and Groundwater Samples

On January 8 and 9, 2003, groundwater samples were collected from three soil borings drilled at the Site (HS-25, HS-26 and HS-29; Figure 3). The groundwater samples were collected at depths ranging from 37 feet to 56 feet bgs. Groundwater samples were collected directly from the boreholes in 4-ounce glass jars and placed in a cooler for transport to a state-certified laboratory, following proper chain of custody protocol. The sample locations are shown on Figure 3 and the general field procedures are included in Appendix A.

On February 5, 2003, a groundwater sample was collected from one of the groundwater monitoring wells previously installed at the Site (observed during site reconnaissance activities; see Figure 3). Prior to sampling, the depth to water was gauged and approximately seven gallons of groundwater were purged from the well. One groundwater sample (Well-1) was collected from the well following purging activities. The well was abandoned on March 13, 2003. Results of the laboratory analysis of the groundwater sample are presented in Table 2. The laboratory report and chain of custody document are included in Appendix B.

On March 14, 2003, three surface water samples (Creek-1, Creek-2, and Creek-3; Figure 3) were collected from the creek that flows through the central portion of Runkle Canyon. In addition, on May 1, 2003, two surface water samples (Spring-2 and Spring-3) were collected from springs at the Site (Figure 3). Results of the laboratory analysis of water samples are presented in Table 2 and copies of the laboratory reports and chain of custody documents are included in Appendix B.

All water samples collected during the investigations were analyzed for tritium using Low Level Beta Counting by Gas Proportional Counters. For additional information regarding the water sampling activities at the Site, please refer to the Miller Brooks report *Phase I and II Environmental Site Assessment* dated May 8, 2003.

7.0 FINDINGS

Soil observed during the onsite soil sampling investigation is generally described as brown/olive brown to dark brown sand and silty sand with interbedded silty clays and clayey silts from the surface to approximately 67 feet bgs (maximum depth of investigation; Miller Brooks, 2003b). Groundwater was encountered in the borings (MBE-8, HS-25, HS-26, and HS-29) during the investigation at depths ranging from approximately 7 feet to 56 feet bgs.

Laboratory analysis of soil and water samples collected from the 550-acre southern parcel of the Runkle Canyon Property revealed the following:

- Strontium-90 was detected in two soil samples (MBE-1-Surface and MBE-7-3') at concentrations of 2.10 pCi/g and 2.20 pCi/g, respectively. Both of these samples are located on the Site. These concentrations are below levels considered to pose a health risk. No concentrations of strontium-90 were detected any of the other soil samples.
- Tritium was detected in the nine water samples collected at the Site at concentrations ranging from -1 tritium units (TU) in Sample Creek-2 Water to 7 TU in Sample HS-26-37'. The concentrations detected were at levels below regulatory limits and within normal background levels for tritium. The EPA's existing standard for tritium in drinking water is 20,000 pCi/L (6,000 TU; Tuttle, 1992). In general, the higher concentrations (greater than 2 TU) were detected in groundwater samples, and lower concentrations (less than or equal to 2 TU) were detected in surface water samples.

The negative values of tritium reported are the results of the very low levels of tritium present in the samples being analyzed. Because of the random nature of counting observed radioactivity, especially when it is close to the analytical background concentration, the observed amount in the sample will sometimes be less than that of the average background. In those cases, subtraction of the background concentration will produce a negative result for the analysis (Tuttle, 1992).

8.0 DISCUSSION

Strontium-90 concentrations detected at the Site were not compared to background concentrations because the analytical method used to analyze samples at the Site was different from that used in the environmental investigations conducted at neighboring properties. In addition, detected concentrations at the Site (2.1 pCi/g and 2.2 pCi/g) were just above the analytical detection limit. The three background samples collected for the Site were reported as not detected at the method detection limit of 2.0 pCi/g. Therefore, a statistically valid comparison with local background concentration could not be conducted (Robles, 2003).

Environmental investigations conducted at neighboring properties showed that strontium-90 was present in soil at concentrations that were deemed to be either within background concentrations or at levels considered to pose no significant health risk (Robles, 2003). The EPA PRG for strontium-90 in residential soil is 0.331 pCi/g (EPA, 2003c). According to the EPA, "PRGs are generic and intended for screening sites early in the investigation process (often before site-specific information is available)" and that chemical concentrations detected above the PRG would not "automatically trigger a response action", but may warrant further investigation of potential risks at the site (EPA, 2002).

In an effort to determine whether the detected strontium-90 concentrations could represent a health risk to future residents at the Site, a screening risk evaluation was conducted. The risk evaluation was conducted following established procedures and regulatory guidance. Results of the screening risk evaluation are presented in Table 3. California health and environmental protection regulatory agencies consider the incremental cancer risk of 1 in a million as acceptable. Preliminary results of the risk evaluation indicate that health risks associated with incidental exposure to strontium-90 on the Site would not exceed an incremental cancer risk of 0.77 in a million, which is lower than the value found acceptable by the regulatory agencies (Robles, 2003).

In 1992, Rockwell International conducted a review of tritium production, possible releases, and water sampling data from the SSFL facility and vicinity. The review concluded that minor releases of tritium produced at the SSFL facility could have occurred, and that extensive water sampling has confirmed the presence of artificial tritium at levels well below the regulatory limits, and even below the limits for drinking water. During the review, sample results obtained from the SSFL facility were compared to "natural" or background concentrations of tritium detected in drinking water, swimming pools, rainwater, and other natural sources. Tritium concentrations on the SSFL facility and vicinity ranged from negative values to a few thousand pCi/L or TU. Concentrations of tritium in background samples ranged from negative values to approximately 50 pCi/L (15 TU). The EPA's existing standard for tritium in drinking water is 6,000 TU (20,000 pCi/L; Tuttle, 1992; Hendry, 1988). A table summarizing the "natural" tritium sample results is included in Appendix C.

Based on the half-life of tritium and the estimated levels in the atmosphere, concentrations of tritium detected in the samples at the Site were at levels that are typical of recent rainfall (3 TU to 5 TU; Hendry, 1988). In addition, when compared to the EPA standard and background water

Table 3. Estimation of Lifetime Cancer Risks from Residential Exposure to Strontium-90 in Soil

Parameter Symbol	Parameter Definition	Units	Strontium-90
Co	Element concentration in soil	pCi/g	2.2E+00
	Default ambient dust concentration	mg/m ³	5.0E-02
Ca	Element concentration in indoor air	pCi/m ³	1.1E-04
Ei	Total lifetime exposure factor, inhalation	m ³	2.1E+05
ETi	Total lifetime exposure by inhalation	pCi	2.3E+01
SFi	Slope factor, Inhalation	risk/pCi	1.1E-10
	Incremental Cancer Risk from Inhalation	Risk	2.4E-09
Co	Average radionuclide concentration in soil	pCi/g	2.2E+00
Eo	Total lifetime exposure factor, ingestion	g	1.1E+03
ETo	Total intake by ingestion	pCi	2.3E+03
SFo	Slope factor, Ingestion	risk/pCi	9.2E-11
	Incremental Cancer Risk from Oral Ingestion	Risk	2.1E-07
Co	Average radionuclide concentration in soil	pCi/g	2.2E+00
Ee	Total lifetime exposure factor, external	years	2.4E+01
ETe	Total lifetime exposure external	yr/pCi/g	1.1E+01
SFe	Slope factor, External	risk/year/pCi/g	4.8E-10
	Incremental Cancer Risk from External Exposure	Risk	5.3E-09
	TOTAL INCREMENTAL CANCER RISK		7.7E-07

$7.7E-07 = 0.77 / \text{million}$

No EPA-approved method
cited for these
computations