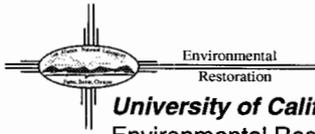


# Los Alamos National Laboratory

ENVIRONMENTAL RESTORATION

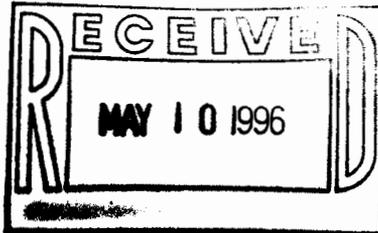
*Benito Garcia*  
*Ron K...*



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**U. S. Department of Energy**  
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Date: May 9, 1996  
Refer to: EM/ER:96-256

Mr. Benito Garcia  
NMED-HRMB  
P.O. Box 26110  
Santa Fe, NM 87502

**SUBJECT: RESPONSE TO THE NOTICE OF DEFICIENCY (NOD) FOR THE RESOURCE CONSERVATION AND RECOVERY ACT FACILITY INVESTIGATION (RFI) REPORT, TECHNICAL AREA (TA) 50, (FORMER OPERABLE UNIT 1147)**

Dear Mr. Garcia:

Enclosed is the Los Alamos National Laboratory's response to the New Mexico Environment Department's NOD concerning the TA-50 RFI Report. A certification form signed by the appropriate officials is also enclosed. The enclosed response repeats each comment from the NOD for convenience in reviewing.

Please contact Cheryl Rofer at (505) 667-2988 or Mike Gilgosh at (505) 667-5794, if you have any questions regarding the response to the NOD.

Sincerely,

*Jorg Jansen*  
Jorg Jansen, Program Manager  
Environmental Restoration Project  
Los Alamos National Laboratory

Sincerely,

*Theodore J. Taylor*  
Theodore J. Taylor, Program Manager  
Environment Restoration Program  
DOE/Los Alamos Area Office

JJ/TT/bp

Enclosures: Response to NOD for TA-50 RFI Report  
Certification



*TC*

Cy (w/encs.):

M. Gilgosch, LAAO, MS A316  
D. Griswold, ERD, AL, MS A906  
J. Harry, EM/ER, MS M992  
B. Hoditschek, NMED-HRMB  
R. Kern, NMED-HRMB  
N. Naraine, EM-453, DOE-HQ  
D. Neleigh, EPA (2 copies)  
C. Rofer, EES-1, MS D462  
T. Taylor, LAAO, MS A316  
N. Weber, NMED-AIP, MS J993  
J. White, ESH-19, MS K498  
S. Yanicak, NMED-AIP, MS J993  
EM/ER File, MS M992 (CT #C081)  
RPF, MS M707

Cy (w/o encs.):

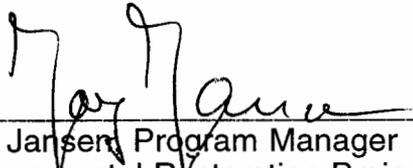
T. Baca, EM, MS J591  
T. Glatzmaier, DDEES/ER, MS M992  
D. McInroy, EM/ER, MS M992  
G. Rael, ERD, AL, MS A906  
W. Spurgeon, EM-453, DOE-HQ  
J. Vozella, LAAO, MS A316

## CERTIFICATION

I certify under penalty of law that these documents and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violation.

Document Title: Response to the Notice of Deficiency for the Resource Conservation and Recovery Act Facility Investigation Report, Technical Area 50, (Former Operable Unit 1147)

Name:



Jorg Jansen, Program Manager  
Environmental Restoration Project  
Los Alamos National Laboratory

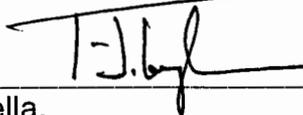
Date:

5-9-96

or

Tom Baca, Program Director  
Environmental Management  
Los Alamos National Laboratory

Name:



Joseph Vozella,  
Acting Assistant Area Manager of  
Environment Projects  
Environment, Safety, and Health Branch  
DOE-Los Alamos Area Office

Date:

5/10/96

or

Theodore J. Taylor  
Program Manager  
Environment Restoration Program  
DOE-Los Alamos Area Office

**RESPONSE TO THE NOTICE OF DEFICIENCY (NOD) FOR THE  
RESOURCE CONSERVATION AND RECOVERY ACT FACILITY  
INVESTIGATION (RFI) REPORT, TECHNICAL AREA (TA) 50, (FORMER  
OPERABLE UNIT 1147)**

1) 3.2.1 Background Comparison, p. 15;

a. *Analytes should not be eliminated from the screening process prior to comparison of detection limits to SALs. Also, risk due to background should be presented for all chemicals of concern eliminated which are above SALs.*

**RESPONSE:** All results that were reported as non-detects have been reviewed, and those results are reported here. No inorganics or radionuclide non-detects were above SALs. All non-detected results for hexachlorobenzene (3 samples), N-nitrosodi-n-propylamine (154 results), benzo[a]pyrene (138 results), bis(2-chloroethyl)ether (154 results) and dibenzo[a,h]anthracene (152 results) are less than 2 times their respective CRQLs. These sample results should be eliminated from the screening process because they were not detected and the non-detected results are indistinguishable from CRQLs.

Dibromomethane has no CRQL; with the exception of sample AAA3227 at location 50-6512, the maximum non-detected value (0.012 mg/kg) was barely above the SAL (0.008 mg/kg). Dibromomethane is typically troublesome to detect by standard SW 846 methods. These sample results should be eliminated from the screening process because they were not detected and the non-detected results are indistinguishable from the SAL. Sample AAA3227 reported dibromomethane as less than 0.02 mg/kg. This sample was taken from the "hummock" area in Ten Site Canyon where several SVOCs, metals and radionuclides were reported at levels above concern. It is not unusual to experience matrix interference under those circumstances, and further action is proposed in the RFI report for the hummock area at Ten Site Canyon.

N-nitrosodimethylamine and m-benzidine were removed from the CLP target analyte list several years ago because they are not detectable by standard methods. They should not have been reported to us and those results should not be included in the screening process.

Mixed Aroclor was reported as less than 1.0 mg/kg in 8 samples at locations 50-5063 through 50-5068, and 50-6514. This is equal to the CRQL effective as of 25 October 1995. These results should be eliminated from the screening process because these results are not distinguishable from the CRQL.

Seventeen additional analytes were not detected but the detection limit was greater than CRQL and/or SAL in at least one sample. These analytes were Mixed-Aroclor, Azobenzene, Benzo[a]anthracene, Benzo[a]pyrene, Benzo[b]fluoranthene, Benzo[k]fluoranthene, Bis(2-chloroethyl)ether, Dibenzo[a,h]anthracene, 3,3'-

Dichlorobenzidine, 2,4-Dinitrotoluene, Hexachlorobenzene, Indeno[1,2,3-cd]pyrene, Nitrobenzene, N-Nitrosodi-n-propylamine, N-Nitrosodimethylamine, Pentachlorophenol, and Vinyl chloride. The sample results associated with these 17 analytes that were not detected but the detection limit was greater than CRQL and/or SAL were all located in the "hummock" area in Ten Site Canyon where several SVOCs, metals and radionuclides were reported at levels above concern. It is not unusual to experience matrix interference under those circumstances, and further action is proposed in the RFI report for the hummock area at Ten Site Canyon.

LANL has added to the methodology section of the RFI reports the text and tables in Attachment 1, which addresses background risks. Risk due to detected site values for PRSs 50-006(c), 50-007, 50-008 and 50-006(a) is also presented in Attachment 1.

*b. To assure that the appropriate amount of samples have been analyzed, the largest hot spot which could have been missed using the comparison to background method of elimination should be presented.*

**RESPONSE:** Any atmospheric releases would have been widely dispersed and would be expected to have been deposited relatively evenly over the site. There was no reason to expect a "hot spot", and the approved sampling plan was not designed to detect "hot spots". We believe that collecting samples from 51 locations across the site adequately characterizes the site for PRSs 50-006(c), 50-007 and 50-008.

For the Ten Site Canyon PRS, releases occurred at the head of the canyon. Sediment transport processes may have caused deposition of contaminated soils in the floodplain and in sediment traps; sediment traps and the floodplain may therefore be defined as potential "hot spots". However, it is most likely that evidence of contamination would be found in the floodplain and sediment traps near the mouth of the canyon. The approved sampling plan was not designed to detect "hot spots". Samples were taken every 100 ft at transects along the stream channel and on both "banks" (the floodplain). The field screening (gross alpha, beta, and gamma counts of collected samples for shipping compliance) identified the "hummock" area as a potential "hot spot", and additional sampling points were designated in the "hummock" area. We believe that the sampling plan was adequate to identify all chemicals present above background levels.

2) *Figure 3-1, p. 17;*

*a. The flow chart presented does not account for additive risk.*

**RESPONSE:** Footnote (2) of Figure 3-1 on page 17 says "Site data will be reviewed for multiple chemicals that are less than the SAL and are above background concentrations." We performed the Multiple Chemical Evaluation (MCE) for chemicals (and radionuclides) that were below respective SALs and above contract laboratory reporting limits. The MCEs are presented in sections 4.1.3.2.1, 4.1.3.2.2, 4.2.3.2.1 and 4.2.3.2.2.

*b. Comments have already been provided to LANL that it is inappropriate for LANL to compare organic measurements at LANL with Bradley urban background concentrations. This section should be revised, and any conclusions reached based on these comparisons need to be reevaluated.*

**RESPONSE:** The footnote in Figure 3-1, page 17 was in error. Organics were not compared with Bradley urban background concentrations in this report. We assumed that no organics were present in the background. Therefore, all detected organics were carried forward to the human health SAL comparison.

*3) Section 3.2.2, p. 18: The risk-based corrective action process proposed and agreed to by EPA uses SALs for chemical constituents based on EPA Region IX preliminary remediation goals for residential soil and tap water. These are not what are used in this document. Also, the process for addressing additive risk was addressed in issue 3 of a recent memo from LANL entitled "Follow-up Issues From Joint Risk Assessment Workshop" and should be used here. Information presented in this report needs to be reevaluated based on the above information.*

**RESPONSE:** Use of Region IX preliminary remediation goals for residential soil and tap water for SAL comparisons become effective on 25 October, 1995. On that date, this report was nearly completed. When we made comparisons to SALs, we used the SALs that were in effect at the time (the "old" SALs), with the exception of the SALs for Aroclor 1254 and Aroclor 1260. We used the "new" SALs for Aroclor 1254 and Aroclor 1260 because the new SALs were based on TSCA cleanup levels. Use of the old SALs would have had no effect on section 4.1.3.2.1 (because the sample value for Aroclor 1254 was 1.0 mg/kg, not below the new SAL of 1.0 mg/kg), and, in any case, it was carried forward to the Data Interpretation Section (4.1.3.3). The MCE (section 4.1.3.2.1) would have had a different result, however. The normalized value for Aroclor 1260, using the old SAL of 0.09 mg/kg, would have been 5.7, and the sum would have been 6.0. The conclusion in the last paragraph of that section would have indicated a potential adverse human health effect. However, in section 4.1.3.3 (Data Interpretation), the Aroclor 1260 concentration would have been compared to the TSCA cleanup level of 1.0 mg/kg, and the conclusion would have been that cleanup was not warranted. Therefore, the recommendation of NFA for the PRSs 50-006(c), 50-007 and 50-008 does not change. In Ten Site Canyon (PRS 50-006(a), Aroclor 1254 and 1260 were observed in concentrations above the new SALs (and, therefore, above the old SAL). Therefore, the screening process, conclusions, and recommendations were not affected by using the new SALs.

Additive risk was addressed in sections 4.1.3.2.1, 4.1.3.2.2, 4.2.3.2.1 and 4.2.3.2.2. The report was written before Joint Risk Assessment Workshop was conducted.

4) Section 3.2.3 p. 19: *The ecological screening assessment methodology presented, in particular the use of ESALs was withdrawn at the joint risk assessment workshop. A new ecological risk assessment procedure has not been submitted for EPA review since the meeting. Guidance can be supplied on appropriate ecological risk assessment procedure upon request.*

**RESPONSE:** The ESAL-comparison approach was the standard at the time the report was written. However, the new Ecological Exposure Unit approach proposed by the Laboratory will include both these PRSs in its Ecological Risk Assessment.

5) Sections 4.1 and 4.2: *The above comments also pertain to the sites associated with atmospheric releases and ten site canyon, and information related to these sites should be reevaluated based on the above comments. Additional specific comments are listed below.*

**RESPONSE:** The responses above should address concerns in sections 4.1 and 4.2.

6) 4.1 Aggregate 5: *Sites Associated with Atmospheric Releases, p. 22: The RFI report indicates that the PRSs in Aggregate 5 may have received air borne releases from various nearby source areas and goes on to indicate that much of the area has since been paved. A review of historical aerial photographs (available through EMSL-Las Vegas or elsewhere) should be conducted to define potential areas of airborne deposition which may require sampling.*

**RESPONSE:** Any airborne release would have been widely dispersed and is expected to be evenly deposited over the site. Samples were collected at 51 locations. There is no reason to believe that evidence for release would be found preferentially at locations paved over by asphalt. In addition, because significant disturbance results from paving, any surface contamination may have been diluted or removed during the paving process. It is possible that any surface contamination may have concentrated in drainages present during the period of airborne releases. We sampled those drainages, as described in the approved work plan (section 5.1.2.5.2, page 5-27). We believe that the 51 sample locations are the best locations to investigate airborne releases at TA-50.

7) 4.1.2 Field Investigation, p. 23: *Samples were collected from soils surrounding the buildings in unpaved areas. The presence of paving should not deter sampling potential source areas of contamination. As previously stated, a review of historical aerials should be conducted prior to developing sampling locations. The report indicates the area was surveyed to determine "natural" drainage channels to be used for potential sampling locations. Although surveying is useful for determining current drainageways, due to the development of the area over time, the historic drainage*

*channels may have been altered significantly, which could only be determined by reviewing as-built drawings, if available, or historical aerials.*

**RESPONSE:** The presence of paving affects potential sampling results. Sites are usually leveled by cut and/or fill procedures before they are paved. Characterizing potential soil contamination from air-borne deposition under pavement would be very difficult because any soil contaminants would have been redistributed or possibly removed by the heavy equipment used for site grading.

Perhaps the term "natural" should not have been used (but it was taken from the work plan (section 5.1.2.5.2, page 5-27). Intensive development of TA-50 occurred before the first air emissions began; we do not believe drainages changed during or after the air emission period. The major drainage for TA-50 has always been into Ten Site Canyon and this "natural" drainage was sampled. In addition, some degree of soil erosion continues to occur from the unpaved areas at TA-50, and sampling of the present drainages is an excellent method to determine the potential presence of contaminants from prior air releases.

*8) 4.1.2 Field Investigation, p. 25: If air deposition of contaminants is the primary concern in this area, homogenizing the soil sample to a depth of six inches, as the report indicates, significantly dilutes the potential surface contamination. Explain why the stainless steel coring tool for collecting undisturbed samples, referred to in Chapter 5 of the RFI work plan, was not utilized.*

**RESPONSE:** The work plan indeed called for the use of the a stainless steel coring tool. However, the approved work plan also stated the sampling was to be conducted to a depth of 6 inches (section 5.1.2.5.2). We believe that sampling at 6-inch depths was necessary because of uncertainty about the degree of disturbance of the unpaved areas caused by pedestrian and vehicle traffic, erosion, redistribution by water, etc. While we are uncertain about the degree of disturbance, we are certain that virtually all of the surface at this site has been disturbed, and anything that may have been deposited on the surface would not necessarily still be on the surface. Further, if a 6 inch depth, undisturbed core had been submitted for chemical analysis, the analytical laboratory ideally would have had to homogenize the core before proceeding with extraction and analysis. In the less ideal and more probable case, the laboratory would have randomly taken an aliquot from the core with no homogenization at all, thus possibly excluding the top of the soil column altogether. We believe that the use of the spade and scoop method with in-place homogenization for sampling to a depth of 6 inches achieved the same results as the use of the coring tool and actually was a better method for characterizing the surface soils at TA-50.

*9) 4.2.2 Field Investigation, p. 36: The report indicates that samples were taken in the discharge paths at 0-6 inch sample depths and random samples to determine vertical migration were collected at 18-24 inch and 36-42 inch intervals. The obvious gap in*

*the sampling (between 6-18 inches and 24-36 inches) greatly compromises the ability to adequately determine the extent of vertical migration of contamination and any judgements based on such data could be significantly flawed.*

**RESPONSE:** Sampling these specific intervals was called for in the approved work plan (section 5.1.2.6.2, page 5-27). Due to heterogeneity of the sediments, the depth of migration of contaminants most likely varies from place to place. However, as contaminants migrate downward from the surface, they are still present in all intervals from the surface to the maximum depth of the contamination. Therefore, in bounding the depth of contamination, we assumed that contamination is present throughout all unsampled intervals adjacent to contaminated intervals. For example, if the 18-24 inch interval indicated contamination but the 36-42 inch interval was not contaminated, we would not assume the unsampled interval (24-36 inches) is not contaminated. Lead was found above background in one sample in the 18-24 inch interval, but within background in the 36-42 in interval. Therefore, we conclude that it may be present above background in the 24-26 in interval. There were 8 radionuclides found above background levels in the 36-42 in interval, and 2 organic compounds found above SALs in the 36-42 in interval, indicating that the depth of contamination has not yet been bounded in Ten Site Canyon.

*10) 4.2.3.1 Background Comparison, p. 37: The report indicates that the Wilcoxon rank sum test was not conducted with regards to the Ten Site Canyon radionuclide analytical results, however no explanation is given. Please clarify.*

**RESPONSE:** The Wilcoxon rank sum test was not conducted for cobalt 60, radium 226, tritium and americium 241 because no background information is available for those analytes. Cobalt 60, radium 226, tritium and americium 241 were carried forward to the human health SAL comparison. All other radionuclides at the site were present in concentrations that exceeded the background UTLs. Because they exceeded background UTLs, they were carried forward to the human health SAL comparison.

## ATTACHMENT 1

### Risk Due to Background

Background risks can result from inorganics that are naturally occurring at a site. Calculation of background risks using the same methodology as site risk estimates provides a frame of reference for risk levels calculated at a site. This information provides a basis for determining risk-based remediation goals, which in some circumstances may be set at target risks comparable to background rather than default values, i.e., cancer risk of  $1E-6$  or hazard index of 1. Background risks can also affect decisions at sites that have constituents for which there is a threshold of toxicity. For some inorganics, background intakes may be near a toxicity threshold such that incremental intakes associated with contamination may be unacceptable.

Background risks calculated here use the same exposure assumptions by which SALs are calculated. SALs are based on health-protective assumptions for a residential scenario (EPA 1995, 1307). For soil exposure, the pathways include incidental soil ingestion, inhalation of resuspended dust, and dermal contact with soil. Background soil data represent several soil horizons from geographically diverse locations. Background risks are estimated for both a median concentration and the UTL from the entire background data set to present the range of potential risk associated with different soil constituent concentrations found in and around Los Alamos (Longmire et al. 1995, 1142). The background risks based on the LANL SAL residential exposure model are provided in Table 1.

Risks due to background are presented for both noncarcinogenic and carcinogenic outcomes. The potential for adverse noncarcinogenic health effects is estimated by a hazard quotient. Intakes leading to a hazard quotient up to 1 are not associated with adverse health effects. None of the median background concentrations result in hazard quotients greater than 1. The hazard quotient of the UTL concentration for manganese exceeds 1 (1.9). However, given the unlikely occurrence of this concentration, the conservative assumptions in the exposure assessment, the margin of safety in the reference dose, and the exceedance of less than a factor of two, this intake estimate is not expected to be associated with adverse health effects.

Three of the background inorganics are also carcinogens. According to the default exposure assumptions used for SALs, the lifetime cancer risks due to background residential soil exposure are estimated at 1 to 2 in 100,000 each for arsenic and beryllium.

These background risk estimates provide a frame of reference for the screening assessment and site decisions. If a site-specific risk assessment is necessary to further evaluate risks, background risks can also be calculated using the site/scenario-specific assumptions to assist in the remedial action decisions for the site.

TABLE 1

Risk Due To Background Concentrations Of Soil Inorganics Assuming A Residential Scenario<sup>1</sup>

Soil Inorganic	Background Soil Concentration <sup>2</sup> mg/kg		Hazard Quotient		Lifetime Cancer Risk	
	Median	UTL	Median	UTL	Median	UTL
Aluminum	10,000	38,700	0.13	0.5	nc	nc
Antimony	0.6	1.0	0.019	0.032	nc	nc
Arsenic	4.0	7.82	0.18	0.36	1.1E-5	2.1E-5
Barium	130	315	0.025	0.059	nc	nc
Beryllium	0.895	1.95	0.0027	0.0059	6.4E-6	1.4E-5
Cadmium <sup>3</sup>	0.20	2.7	0.0053	0.071	1.4E-10	1.9E-9
Chromium <sup>4</sup>	7.2	16.1	0.00009	0.0002	nc	nc
Cobalt	6.0	19.2	0.0013	0.0042	nc	nc
Copper	5.75	30.7	0.0021	0.011	nc	nc
Lead <sup>5</sup>	12	23.3	0.03	0.058	nc	nc
Manganese	320	714	0.84	1.9	nc	nc
Mercury	0.05	0.1	0.0022	0.0043	nc	nc
Nickel	7.0	15.2	0.0047	0.01	nc	nc
Selenium	0.3	1.7	0.00078	0.0045	nc	nc
Thallium	0.2	1.0	0.033	0.16	nc	nc
Uranium	0.9	1.87	0.0039	0.0081	nc	nc
Vanadium	21	41.9	0.039	0.078	nc	nc
Zinc	30.7	50.8	0.0013	0.0022	nc	nc

nc = noncarcinogen

<sup>1</sup> Risk estimates are based on reference doses, slope factors, and EPA Region IX default exposure assumptions effective in April 1996.

<sup>2</sup> Background soil concentrations taken from Longmire et al. 1995, 1142.

<sup>3</sup> Cancer risks for cadmium are based solely on inhalation of resuspended dust.

<sup>4</sup> Naturally-occurring chromium is assumed to exist in a trivalent state.

<sup>5</sup> Hazard quotient based on uptake biokinetic model.

Risk Due to Detected Site Values

Additionally, the risk due to chemicals which were above SAL and eliminated due to their association with background, but are not in the LANL-wide background dataset is also presented. For Aggregate 5: Sites Associated with Atmospheric Releases, those chemicals of concern eliminated which are above SALs are the carcinogens benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, indeno(1,2,3)pyrene, and noncarcinogen silver. For Ten Site Canyon, those chemicals of concern eliminated which are above SALs are the carcinogens benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and benzo(k)fluoranthene.

## Carcinogens

Table 2 presents the potential risk from carcinogenic chemicals of concern eliminated which are above SALs which do not have background values, for Aggregate 5. Risk estimates are based on the EPA Region IX PRG assumptions for industrial land use (EPA 1995, 1307). The maximum detected site value for each chemical has been used to calculate the potential risk posed from these eliminated chemicals. For these assumptions, the potential lifetime excess cancer risk is  $1 \times 10^{-5}$ . EPA uses a risk range of  $1 \times 10^{-4}$  to  $1 \times 10^{-6}$  as regulatory threshold (EPA 1990, 0559)

**TABLE 2**

**Aggregate 5: Sites Associated with Atmospheric Releases Carcinogenic Risk from Industrial Land Use using Maximum Site Values for All Chemicals of Concern Eliminated which are above SALs.**

Chemical of Potential Concern	Maximum Site Value mg/kg	Excess Lifetime Cancer Risk
Benzo(a)anthracene	1.8	6.9E-07
Benzo(a)pyrene	2.4	9.2E-06
Benzo(b)fluoranthene	2.2	8.5E-07
Benzo(k)fluoranthene	1.4	5.4E-08
Dibenzo(a,h)anthracene	0.69	2.7E-06
Indeno(1,2,3-cd)pyrene	1.6	6.2E-07
Total		1E-05

Table 3 presents the potential risk from carcinogenic chemicals of concern eliminated which are above SALs which do not have background values for Ten Site Canyon. Risk estimates are based on the EPA Region IX PRG assumptions for industrial land use (EPA 1995, 1307). The maximum detected site value for each chemical has been used to calculate the potential risk posed from these eliminated chemicals. For these assumptions, the potential lifetime excess cancer risk is  $6 \times 10^{-6}$ . EPA uses a risk range of  $1 \times 10^{-4}$  to  $1 \times 10^{-6}$  as regulatory threshold (EPA 1990, 0559)

**TABLE 3**

**Ten Site Canyon Carcinogenic Risk from Maximum Site Values for All Chemicals of Concern Eliminated which are above SALs.**

Chemical of Potential Concern	Maximum Site Value mg/kg	Excess Lifetime Cancer Risk
Benzo(a)anthracene	1.1	4.2E-07
Benzo(a)pyrene	1.2	4.6E-06
Benzo(b)fluoranthene	1.5	5.8E-07
Benzo(k)fluoranthene	1.13	4.3E-08
Total		6E-06



## Noncarcinogens

Noncarcinogenic chemicals of concern eliminated which are above SALs are evaluated in terms of their contribution to the overall hazard index of 1. In order to calculate the contribution to the hazard index for each chemical, the maximum site value and the Region IX industrial PRG were used.

Table 4 presents for Aggregate 5, the hazard quotient from silver, the only noncarcinogenic chemical of concern eliminated above SAL. The contribution to the background hazard index from silver is  $5 \times 10^{-2}$ . This number contributes negligibly toward a hazard index of 1. There are no noncarcinogenic chemicals of concern eliminated which are above SALs for Ten Site Canyon.

**TABLE 4**

**Aggregate 5: Sites Associated with Atmospheric Releases Hazard Quotient from Maximum Site Value for the chemical of concern eliminated which is above SAL.**

Chemical of Potential Concern	Maximum Site Value (mg/kg)	Hazard Quotient using Maximum Site Value
Silver	410	4.8E-02