



STATE OF NEVADA

Department of Conservation & Natural Resources

DIVISION OF ENVIRONMENTAL PROTECTION

Kenny C. Guinn, Governor

Allen Biaggi, Director

Leo M. Drozdoff, P.E., Administrator

October 30, 2006

Mr. Mark Paris
Basic Remediation Company (BRC)
875 West Warm Springs
Henderson, NV 89015

Re.: Nevada Division of Environmental Protection Response to:
SOP-16 Flux Chamber Source Testing for the BRC Field Sampling and Standard Operating Procedures...in Response to NDEP Comments dated July 26, 2006
dated August 24, 2006
NDEP Facility ID# H-000688

Dear Mr. Paris:

The NDEP has received and reviewed BRC's correspondence identified above and provides comments in Attachment A. No further response is necessary, however, the NDEP's comments should be included with the SOP.

Should you have any questions or concerns, please do not hesitate to contact me at (702) 486-2850x247.

Sincerely,

Brian A. Rakvica, P.E.
Supervisor, Special Projects Branch
Bureau of Corrective Actions

BAR:s



cc: Jim Najima, NDEP, BCA, Carson City
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Attachment A

NDEP provides clarification to several of the responses-to-comments (RTC) that were provided by BRC as part of Appendix A-4 of the aforementioned submittal.

Section 1.0 – Introduction

July 2006 NDEP Comment

The SOP does not address how the data will be applied in the post-remediation health risk assessment (HRA). It would be useful for all parties to document (in this SOP or in Chapter 9 of the Closure Plan) how the flux chamber data (VOCs and radon) will be used in the HRA.

***BRC Response:** VOC and radon flux data collected from the site under current, pre-remediation conditions, provides baseline air pathway analysis data useful for predicting exposure from site contamination to receptors prior to remediation (i.e., surface emissions and transport via ambient air to receptors on site or off site), or to receptors in structures on site without remediation. In other words, these data, with the exception of exposure scenarios that include baseline site conditions or no-action alternatives, are not useful for the post-remediation HRA. For instance, if there is an area of the site where the no action alternative is selected, then these present site conditions data or baseline assessment data are directly applicable to estimating exposure, such as vapor intrusion into future buildings. But if an area of the site is identified for a remedial action, then the baseline flux data collected in this investigation will have no application for the post-remediation HRA, and post remediation flux data will have to be collected after the selected remedial action is completed. This information has been added to Section 1.*

Current NDEP Comment

No further response is necessary from BRC. NDEP clarifies what we were looking for as follows:

- The flux data (ug/m²-min or pCi/m²-min) will be conservatively employed along with standard indoor and outdoor dispersion models to estimate indoor and outdoor exposure concentrations (ug/m³ or pCi/m³) for VOCs and radon.
- The pre-remediation flux data can be used for purposes of the post-remediation risk assessment(s) if risks associated with the pre-remediation data are *de minimis*.

Section 2 – Project Description

July 2006 NDEP Comment

Page 4, Item Number 3. – Please provide further information (including reference citations) regarding the role of the “other” flux chamber studies that have been conducted that will be “directly” comparable to the data collected.

BRC Response:

1) Case Study in USEPA User's Guide; Section 4

2) See list below.

Note that the intent of this comment was to say that flux data collected by the USEPA flux chamber technology can be used in a similar fashion to other collected data, and can be used to compare site specific data from one site to another, if that meets the needs of the program. For instance, this may be of use in assessing potential remedial options. The list of references below with annotation provides information on a case study basis that may be of interest. A similar comment to this effect has been added to Section 2.

Current NDEP Comment

No further response is necessary from BRC. NDEP is familiar with the published case studies and relevant USEPA guidance, as well as how flux data are employed in the derivation of exposure concentrations. NDEP is unclear as to how the data from studies at other sites would be used for the BRC site. NDEP anticipates that the data collected at the BRC site would be site-specific data that would not require augmentation with data from other sites.

Section 4 – Quality Assurance Objectives

July 2006 NDEP Comment

Table 1 – first box: Please confirm the total number of TO-14 target compounds (??).

BRC Response: The correct compound number is 12. This change has been made to the text.

Current NDEP Comment

No further response is necessary from BRC. NDEP clarifies that TO-15 will be used as the primary, broad suite analysis and that, in addition to TO-15 analysis, 12 analytes (which may require lower detection limits due to toxicity) will be analyzed using the selective ion mode (SIM) TO-14 analysis.

July 2006 NDEP Comment

Page 9 – First paragraph after the bullets. Reference is made to “offsite” analysis. Please clarify why offsite data will be subjected to a different analytical reporting level than onsite data.

BRC Response: Onsite data have different QC criteria and reporting levels than off site data. The field data are for screening level analysis collected by crude (by comparison) analytical techniques were the offsite analysis is as 'good as it gets'. The quantitative data are the offsite analytical data.

Current NDEP Comment

No further response is necessary from BRC. NDEP has clarified with Dr. Schmidt that “offsite analysis” means offsite, fixed laboratory analysis and “onsite analysis” means field analysis (i.e. TVA-1000 screen).

Section 4.3 – Representativeness

July 2006 NDEP Comment

A key component of representativeness for HRA is documentation of adequate spatial coverage for exposure assessment. Considerations include source information, area-specific results, and future human receptor location information. No mention is made of this aspect of representativeness. Please clarify.

BRC Response: Correct. The representativeness of these data can only be assessed after the data are collected and evaluated. For most SOPs, the discussion of representativeness of the data refers to each point where data are collected and not the overall representativeness of the data. It is possible that the highest VOC and radon flux be selected for the HRA as 'representative' meaning that some expectation of high values, say 90% C.L. has been achieved. There is probably no value in generating a representative 'average' per area tested given that the highest value makes the most sense as input to the HRA. However, as stated in the SOP, these data will be evaluated and follow-on data will be collected to meet the data objectives of the program. The FSP will address data representatives in comparison of the project objectives.

Current NDEP Comment

No further response is necessary from BRC. NDEP assumes that in the HRA(s), as a component of the data usability evaluation and the uncertainty analysis, adequate representativeness of the data will be documented and will consider source information, area-specific results, analyte toxicity, and human receptor locations.

Section 5.1 – Static Chamber Technique for Radon

July 2006 NDEP Comment

Page 12 – Please provide the conversion factors for 0.1 pCi/L radon = surface flux of 100 pCi/m²-min. Also, please note that, for flux units, when “minute” [min] is in the denominator, the “⁻¹” should not be included.

BRC Response: Note that there was an error in the text. The calculation is as follows:
(0.1 pCi/L)(1000 L/m³) or 100 pCi/m³ concentration in the flux chamber, resulting in a radon flux of:
(100 pCi/m³)(0.019 m³)/(1,440 minutes)(0.067 m²) = 0.020 pCi/m²-min. The change has been made in the SOP.
(Note that the ‘flux unit’ has historically been written as ug/m²,min⁻¹ to avoid confusion, and ug/m²-min is certainly acceptable.)

Current NDEP Comment

No further response is necessary from BRC. NDEP clarifies that the volume of the static chamber is 0.019 m³, the surface area covered by the static chamber is 0.067 m², and the sample collection time is 24 hours (1,440 minutes).

Section 5.2 – Surface Emission Isolation Flux Chamber Sampling

July 2006 NDEP Comment

Page 14, first full paragraph, second sentence. Please make the following edit: “The sweep air is added *at* a flow... Also, please provide additional detail regarding “the TVA-1000”.

BRC Response: Agreed. Change has been made to the SOP.
The TVA-1000 is a real time hydrocarbon analyzer that measures the total organic content by flame ionization detection (FID) and photoionization detection (PID). The FID sees all carbon containing compounds including methane to some response level and generally results in the higher accounting of ‘total hydrocarbon’ concentration. The PID responds to compounds that have ionization potentials less than the detector lamp and can be used to define a subset of hydrocarbon compounds such as aromatic compounds, chlorinated compounds, and compounds with unsaturated carbon-carbon bonds.
Comparing FID or ‘total’ hydrocarbon response to PID or ‘ionizable’ hydrocarbon response has utility in understanding similarity in field test data from test location to test location.

Current NDEP Comment

No further response is necessary from BRC. NDEP has clarified with Dr. Schmidt that the TVA-1000 will be used, along with other relevant site-specific information, to identify flux chamber sample locations for VOCs.

Section 5.3 – Sampling for VOCs/Radon in the Flux Chamber

July 2006 NDEP Comment

Page 15, 3rd full paragraph. Please provide additional information regarding the criteria for when TO-14 SIM analysis will be conducted.

BRC Response: *The criteria for selection and those locations selected for analysis by TO-14 (SIM) and TO-15 full scan will be identified in the FSP. An additional comment to this effect was added to the SOP.*

Current NDEP Comment

No further response is necessary from BRC. NDEP suggests that a common analyte/method list be employed for all samples, as the reason for adding the TO-14 SIM is to achieve risk-based detection limits for the more toxic analytes, such as carcinogens. This should be a goal for all sample locations. From inspection of the TO-14 target list of 12 analytes, it appears that it may not be necessary to include all of those listed in the TO-14 SIM analysis.

Section 8.3 – Data Validation

July 2006 NDEP Comment

This section describes the general approach for data validation; however, it does not describe (or reference) the guidelines that will be used to determine when data should be flagged. For example, will data be flagged if the holding times are exceeded? The SOP should be more specific as to how the data will be qualified for the items that will be reviewed (e.g., what guidance will be used). One option is to state that qualification would generally follow the EPA National Functional Guidelines, even though these are not specifically written for air methods.

BRC Response: *Agreed. The data validation process is one where the USEPA National Functional Guidelines will be followed as applied systematically to the APA data set. The following data qualifiers may be used, depending on the data set:*

B- compound found in the laboratory or method blank sample

U- compound reported at less than method detection limit

J- compound reported at above method detection limit but below reporting limit

E- compound exceeded instrument calibration range

These data qualifiers have been added to Section 8.3 of the SOP.

Current NDEP Comment

No further response is necessary from BRC. NDEP has clarified with Dr. Schmidt that Environmental Analytical Services laboratory routinely identifies data for samples that missed holding times with an asterisk and provides associated footnotes with relevant information.

Section 9.0 – Analytical Procedures and Calibration

July 2006 NDEP Comment

Please provide detail regarding the specific data reported by the lab and whether or not additional calculations are made (for VOCs and/or radon) for reporting flux rate.

BRC Response: *The laboratory reports the VOC data in ppbv and ug/m³, and the radon laboratory reports data in pCi/L. Our data reporting will calculate flux with spread sheet calculations footnoted per sheet.*

This comment has been added to Section 9.0 of the SOP.

Current NDEP Comment

No further response is necessary from BRC. NDEP clarifies that, within their report, the laboratory will convert the analyte concentration in the Summa canister to flux rate using the following conversion factors:

- Dynamic chamber: 0.005 m³/minute (sweep air inflow rate) and 0.13 m² (surface area covered by the dynamic flux chamber)
- Static chamber: 0.019 m³ (static chamber volume), 0.067 m² (surface area covered by the static chamber), and 1,440 minutes (24 hour sample collection time).