Basic Remediation
COMPANY

March 3, 2008

Mr. Brian A. Rakvica, P.E.
Nevada Division of Environmental Protection
Bureau of Corrective Actions
2030 E. Flamingo Road, Suite 230
Las Vegas, Nevada 89119-0818

Subject: Supplemental Background Shallow Soil Sampling and Analysis Plan, BMI Complex and Common Areas Vicinity, Clark County, Nevada

Dear Brian:

Per previous discussions, this letter Sampling and Analysis Plan (SAP) presents the proposed scope of work for the collection of supplemental background shallow soil data applicable to the Basic Management, Inc. (BMI), Complex and Common Areas in Clark County, Nevada. The purpose of this project is to collect data for metals and radionuclides in background shallow soils that are comparable to site soils in geologic units not covered by the existing background shallow soil dataset (BRC/TIMET 2007). These data will be used in future site-to-background statistical comparisons to be conducted during current and future site investigations.

Background and Objectives

The BMI Common Areas and Complex are located in Clark County, Nevada, and are situated approximately two miles west of the River Mountains and one mile north of the McCullough Range. The local surface topography slopes in a westerly to northwesterly direction from the River Mountains and in a northerly to northeasterly direction from the McCullough Range. Near the BMI Common Areas and Complex, the surface topography slopes north toward the Las Vegas Wash. According to the Nevada Bureau of Mines and Geology (NBMG) *Las Vegas SE Folio Geologic Map (1977) and the Geologic Map of the Henderson Quadrangle, Nevada* (NBMG 1980), the River Mountains and McCullough Range consist of volcanic rocks: dacite in the River Mountains and andesite in the McCullough Range.

The McCullough Range is the primary source of materials upslope of the BMI Complex, the Lower Ponds, and the western and central portions of the Upper Ponds. Both the River Mountains and the McCullough Range are primary sources of materials upslope of the eastern portion of the Upper Ponds.

The existing BRC/TIMET background shallow soil dataset consists of samples collected almost exclusively from soils originating from the McCullough Range. Only background sample location BRC-BKG-12 is considered to be a mixed alluvial fan location. No samples during the

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BRC/TIMET background shallow soil investigation were collected exclusively from the alluvial fan materials downgradient of the River Mountains. Although there were several background samples collected by ENVIRON (2003) in this geologic unit, given recent sample results at the site, the applicability of the ENVIRON data to the site is uncertain.

Thus, at present, insufficient background data exist for alluvial fan materials downgradient of the River Mountains to evaluate whether concentrations of site-related chemicals detected in site samples in the eastern portion of the BMI Common Areas statistically exceed concentrations of these chemicals in background soil. Therefore, the specific goals and comparisons proposed for the supplemental background shallow soils study included the collection of data:

- From sampled soil units that are representative of Site soils not covered by the existing background shallow soil dataset;
- That form a sufficient sample population that can be used to support statistical comparison of on-site and background datasets;
- That could be used to evaluate the comparability of soil originating from geologic units from the River Mountains.

Specific lithologies targeted by this supplemental background shallow soil sampling event are the Qr1 and Qr2 deposits (see Figure 1). It is anticipated that these data will be used for comparison purposes for the Mohawk and portions of the Parcel 4B sub-areas only.

Scope of Work

The following is the proposed scope of work for this SAP. The scope of work has been divided into two main tasks: 1) Field Implementation; and 2) Reporting.

Task 1: Field Implementation

The requirements for sample collection and analysis are established in the BRC Quality Assurance Project Plan (QAPP; BRC, ERM and MWH 2008) and the Field Sampling and Standard Operating Procedures (FSSOP; BRC, ERM and MWH 2007), which are stand-alone NDEP-approved project documents.

Pre-Field Activities

The pre-field activities will be conducted in accordance with FSSOPs for the BMI Common Areas (BRC, ERM and MWH 2007). The Health and Safety Plan (HSP; BRC and MWH, 2005) and QAPP (BRC, ERM and MWH 2008) prepared for the BMI Common Areas will be used for this proposed scope of work. All work will be completed under the direction of a State of Nevada Certified Environmental Manager (CEM).

Sampling Locations and Depths

As noted above, lithology targeted by this supplemental background shallow soil sampling event are the Qr1 and Qr2 deposits. Soil sample locations are shown on Figure 1. Soil samples will be

collected from the surface and subsurface in each boring: surface samples will be collected from 0-0.5 feet bgs, and subsurface samples will be collected from 4-6 ft bgs, and 9-11 ft bgs. Based on this sampling approach, 30 samples will be collected for analyses; 15 samples from each lithology.

Analytical Program

The samples will be submitted for analysis to a Nevada-certified laboratory (TestAmerica - St. Louis, Missouri office). Analysis of surface and subsurface soil samples will include a full suite of metals and radionuclides. In addition, since the sample locations are adjacent to Lake Mead Parkway, surface samples will be analyzed for semi-volatile organic compounds (SVOCs), and BRC will implement field screening using photoionization detectors (PIDs) (using two lamps) in accordance with SOP-39. If detects are registered with the PID, then the sample locations will be moved further from the road, while remaining within native soil. The individual analytes, analytical methods, and reporting limits are specified on Table 1. These analytes and methods are consistent with the current BRC QAPP.

A subset of supplemental background soil samples will be further evaluated by analysis of the following general soil characteristics: total organic carbon (TOC), pH, cation exchange capacity, soil texture and moisture content. These data will be used to define soil characteristics and assess soil heterogeneity.

Task 2: Reporting

Measurement data will be consistently assessed and documented to determine whether objectives were met. The review will assess data quality and identify potential limitations on data use. The data quality review process provides information on overall method performance and data usability. The BRC QAPP defines the basis for assessing the elements of data quality. Laboratory data and data quality review reporting procedures and formats are also addressed in the BRC QAPP.

Once the data are collected, BRC will subject the data to validation per procedures agreed to previously with the NDEP and consistent with the BRC QAPP (BRC, ERM and MWH 2008) and SOP-40. Only those data determined by the QA/QC review to be suitable for use will be considered for the site dataset. A separate Data Validation Summary Report will be prepared and submitted to NDEP.

Following data validation the results of the soil sampling and analysis will be summarized in a brief report that will be prepared and submitted to the NDEP. The report will include a tabulated summary of analytical data, a QA/QC review summary, and the results of any statistical testing (including statistical plots).

Applicability and use of the supplemental background data will be addressed on a case-by-case basis in future investigations. Ideally, the background data will be used in site-to-background statistical comparisons to identify site-related metals and radionuclides as chemicals of potential concern for further investigation. It is not anticipated that the supplemental background dataset will be combined with either of the existing BRC/TIMET or ENVIRON background datasets.

Rather it will be used as a stand-alone background dataset for investigations with data in these geologic units.

Schedule

Once final approval of this SAP is received from NDEP, field implementation activities can commence within one to two weeks. BRC will provide NDEP with at least one week notice prior to the initiation of field activities at the Site. It is anticipated that this work can be completed within one week, depending on field conditions. The soil samples will be submitted to the laboratories and placed on a standard turn around time. Therefore, a report can be completed within one month after the final data is received from the laboratory and necessary validation is completed.

Closing Remarks

Please call me at 626-382-0001 if you have any questions or comments.

Sincerely,

Basic Remediation Company

Ranajit Sahu, CEM
Project Manager

Attachments: Table 1 – Boring And Well Construction Details Summary Analyte List
Figure 1 – Site Location

I hereby certify that I am responsible for the services described in this document and for the preparation of this document. The services described in this document have been provided in a manner consistent with the current standards of the profession and to the best of my knowledge comply with all applicable federal, state and local statutes, regulations and ordinances. I hereby certify that all laboratory analytical data was generated by a laboratory certified by the NDEP for each constituent and media presented herein.

March 3, 2008

Dr. Ranajit Sahu, C.E.M. (No. EM-1699, Exp. 10/07/2007) Date
BRC Project Manager

REFERENCES

Basic Remediation Company (BRC) and MWH. 2005. BRC Health and Safety Plan, BMI Common Areas, Clark County, Nevada. October.

Basic Remediation Company (BRC), ERM, and MWH. 2007. BRC Field Sampling and Standard operating Procedures. BMI Common Areas, Clark County, Nevada. August.

Basic Remediation Company (BRC), ERM, and MWH. 2008. BRC Quality Assurance Project Plan. BMI Common Areas, Clark County, Nevada. August.

BRC and Titanium Metals Corporation (TIMET). 2007. Background Shallow Soil Summary Report, BMI Complex and Common Areas Vicinity. March.

Environ. 2003. Risk Assessment for the Water Reclamation Facility Expansion Site, Henderson, Nevada". Volume II, Appendix E. October 15.

Nevada Bureau of Mines and Geology (NBMG). 1980. Las Vegas SE Folio Geologic Map (1977) and the Geologic Map of the Henderson Quadrangle, Nevada.

TABLE 1
PROJECT LIST OF ANALYTES
(Page 1 of 3)

Parameter of Interest	Preparation Method	Analytical Method	Compound List	CAS Number	Laboratory Limits	
Metals	EPA 3050M	EPA 6020/6010B	Aluminum	7429-90-5	5	mg/kg
			Antimony	7440-36-0	0.5	mg/kg
			Arsenic	7440-38-2	1	mg/kg
			Barium	7440-39-3	2	mg/kg
			Beryllium	7440-41-7	0.1	mg/kg
			Boron	7440-42-8	10	mg/kg
			Cadmium	7440-43-9	0.05	mg/kg
			Calcium	7440-70-2	50	mg/kg
			Chromium	7440-47-3	1	mg/kg
			Cobalt	7440-48-4	0.2	mg/kg
			Copper	7440-50-8	1	mg/kg
			Iron	7439-89-6	5	mg/kg
			Lead	7439-92-1	0.3	mg/kg
			Lithium	1313-13-9	5	mg/kg
			Magnesium	7439-95-4	50	mg/kg
			Manganese	7439-96-5	0	mg/kg
			Molybdenum	7439-98-7	1	mg/kg
			Nickel	7440-02-0	1	mg/kg
			Niobium	7440-03-1	3	mg/kg
			Palladium	7440-05-3	0.1	mg/kg
			Phosphorus	7723-14-0	50	mg/kg
			Platinum	7440-06-4	0.1	mg/kg
			Potassium	7440-09-7	10	mg/kg
			Selenium	7782-49-2	0.5	mg/kg
			Silicon	7440-21-3	25	mg/kg
			Silver	7440-22-4	0.2	mg/kg
			Sodium	7440-23-5	20	mg/kg
			Strontium	7440-24-6	0.5	mg/kg
			Sulfur	7704-34-9	500	mg/kg
			Thallium	7440-28-0	0.2	mg/kg
			Tin	7440-31-5	0.2	mg/kg
			Titanium	7440-32-6	0.5	mg/kg
			Tungsten	7440-33-7	0.5	mg/kg
			Uranium	7440-61-1	0.1	mg/kg
			Vanadium	7440-62-2	1.0	mg/kg
			Zinc	7440-66-6	2	mg/kg
			Zirconium	7440-67-7	10	mg/kg
	EPA 3060A	EPA 7196A	Chromium (VI)	18540-29-9	0.4	mg/kg
	EPA 7471A	EPA 7471A	Mercury	7439-97-6	0.0333	mg/kg
Radionuclides	HASL 300 RC5013/5032 [1] (Total Dissolution)	HASL A-01-R	Thorium-232	7440-29-1	1.0	pCi/g
			Thorium-228	14274-82-9	1.0	pCi/g
			Thorium-230	14269-63-7	1.0	pCi/g
	HASL 300 RC5013/5032/5086 [1] (Total Dissolution)		Uranium-233/234	13966-29-5	1.0	pCi/g
			Uranium 235/236	15117-96-1	1.0	pCi/g
			Uranium-238	7440-61-1	1.0	pCi/g
	HASL 300 RC-5013/RC-5032 [1]	EPA 903.1	Radium-226	13982-63-3	1.0	pCi/g
		EPA 904.0	Radium-228	15262-20-1	1.0	pCi/g
Misc. Soil Characteristics	EPA 9060		Total organic carbon (TOC)	7440-44-0	25	mg/kg
	ASTM D2216-98		Percent moisture	%MOISTURE		percent
	EPA 9045C		pH in soil	pH	NA	pHunits
	EPA 9080 or 9081		Cation exchange capacity	NA	NA	meq/100g
	ASTM D422		Soil Texture Class	NA	NA	% of total
Semivolatile Organic Compounds	EPA 3550B	EPA 8270C	1,2,4,5-Tetrachlorobenzene	95-94-3	330	µg/kg
			1,2-Diphenylhydrazine	122-66-7	330	µg/kg
			1,4-Dioxane	123-91-1	330	µg/kg

TABLE 1
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Parameter of Interest	Preparation Method	Analytical Method	Compound List	CAS Number	Laboratory Limits	
			2,2'/4,4'-Dichlorobenzil	3457-46-3	330	µg/kg
			2,4,5-Trichlorophenol	95-95-4	330	µg/kg
Semivolatile Organic Compounds (continued)	EPA 3550B	EPA 8270C	2,4,6-Trichlorophenol	88-06-2	330	µg/kg
			2,4-Dichlorophenol	120-83-2	330	µg/kg
			2,4-Dimethylphenol	105-67-9	330	µg/kg
			2,4-Dinitrophenol	51-28-5	1600	µg/kg
			2,4-Dinitrotoluene	121-14-2	330	µg/kg
			2,6-Dinitrotoluene	606-20-2	330	µg/kg
			2-Chloronaphthalene	91-58-7	330	µg/kg
			2-Chlorophenol	95-57-8	330	µg/kg
			2-Methylnaphthalene	91-57-6	330	µg/kg
			2-Nitroaniline	88-74-4	1600	µg/kg
			2-Nitrophenol	88-75-5	330	µg/kg
			3,3-Dichlorobenzidine	91-94-1	1600	µg/kg
			3-Nitroaniline	99-09-2	1600	µg/kg
			4,4'-Dichlorobenzil	3457-46-3	330	µg/kg
			4-Bromophenyl phenyl ether	101-55-3	330	µg/kg
			4-Chloro-3-methylphenol	59-50-7	330	µg/kg
			4-Chlorophenyl phenyl ether	7005-72-3	330	µg/kg
			4-Chlorothioanisole	123-09-1	1600	µg/kg
			4-Chlorothiophenol	106-54-7	330	µg/kg
			4-Nitroaniline	100-01-6	1600	µg/kg
			4-Nitrophenol	100-02-7	1600	µg/kg
			Acenaphthene	83-32-9	330	µg/kg
			Acenaphthylene	208-96-8	330	µg/kg
			Acetophenone	98-86-2	330	µg/kg
			Aniline	62-53-3	330	µg/kg
			Anthracene	120-12-7	330	µg/kg
			Azobenzene	103-33-3	330	µg/kg
			Benzo(a)anthracene	56-55-3	330	µg/kg
			Benzo(a)pyrene	50-32-8	330	µg/kg
			Benzo(b)fluoranthene	205-99-2	330	µg/kg
			Benzo(g,h,i)perylene	191-24-2	330	µg/kg
			Benzo(k)fluoranthene	207-08-9	330	µg/kg
			Benzoic acid	65-85-0	1600	µg/kg
			Benzyl alcohol	100-51-6	330	µg/kg
			bis(2-Chloroethoxy)methane	111-91-1	330	µg/kg
			bis(2-Chloroethyl) ether	111-44-4	330	µg/kg
			bis(2-Chloroisopropyl) ether	108-60-1	330	µg/kg
			bis(2-Ethylhexyl) phthalate	117-81-7	330	µg/kg
			bis(Chloromethyl) ether	542-88-1	330	µg/kg
			bis(p-Chlorophenyl) sulfone	80-07-9	330	µg/kg
			bis(p-Chlorophenyl)disulfide	1142-19-4	330	µg/kg
			Butylbenzyl phthalate	85-68-7	330	µg/kg
			Carbazole	86-74-8	330	µg/kg
			Chrysene	218-01-9	330	µg/kg
			Dibenzo(a,h)anthracene	53-70-3	330	µg/kg
			Dibenzofuran	132-64-9	330	µg/kg
			Dichloromethyl ether	542-88-1	330	µg/kg
			Diethyl phthalate	84-66-2	330	µg/kg
			Dimethyl phthalate	131-11-3	330	µg/kg

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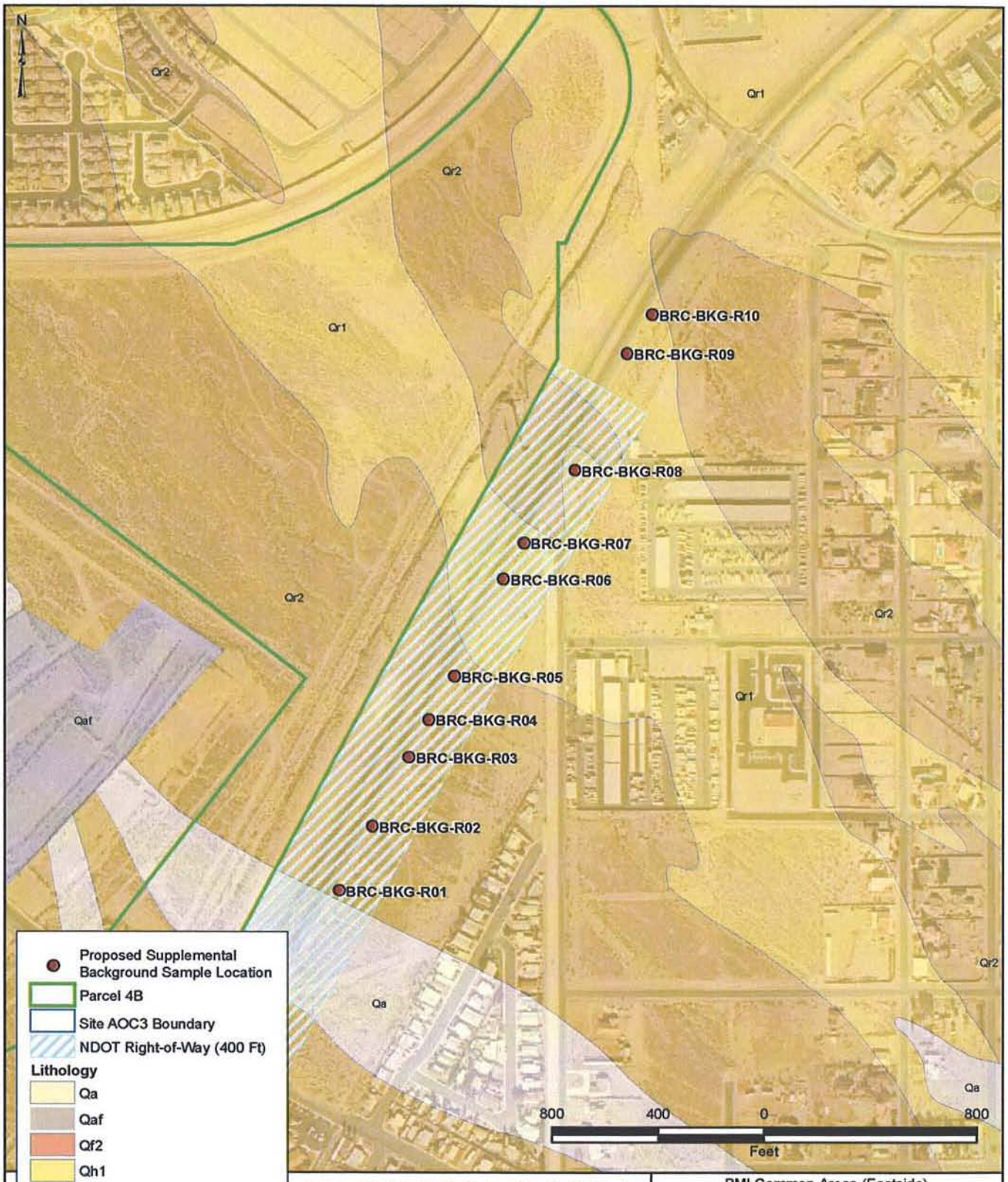
Parameter of Interest	Preparation Method	Analytical Method	Compound List	CAS Number	Laboratory Limits	
			Di-n-butyl phthalate	84-74-2	330	µg/kg
			Di-n-octyl phthalate	117-84-0	330	µg/kg
Semivolatile Organic Compounds (continued)	EPA 3550B	EPA 8270C	Diphenyl disulfide	882-33-7	330	µg/kg
			Diphenyl sulfide	139-66-2	330	µg/kg
			Diphenyl sulfone	127-63-9	330	µg/kg
			Fluoranthene	206-44-0	330	µg/kg
			Fluorene	86-73-7	330	µg/kg
			Hexachlorobenzene	118-74-1	330	µg/kg
			Hexachlorobutadiene	87-68-3	330	µg/kg
			Hexachlorocyclopentadiene	77-47-4	1600	µg/kg
			Hexachloroethane	67-72-1	330	µg/kg
			Hydroxymethyl phthalimide	118-29-6	330	µg/kg
			Indeno(1,2,3-cd)pyrene	193-39-5	330	µg/kg
			Isophorone	78-59-1	330	µg/kg
			m,p-Cresol	106-44-5	660	µg/kg
			Naphthalene	91-20-3	330	µg/kg
			Nitrobenzene	98-95-3	330	µg/kg
			N-nitrosodi-n-propylamine	621-64-7	330	µg/kg
			N-nitrosodiphenylamine	86-30-6	330	µg/kg
			o-Cresol	95-48-7	330	µg/kg
			Octachlorostyrene	29082-74-4	330	µg/kg
			p-Chloroaniline (4-Chloroani	106-47-8	330	µg/kg
			p-Chlorobenzenethiol	106-54-7	330	µg/kg
			Pentachlorobenzene	608-93-5	330	µg/kg
			Pentachlorophenol	87-86-5	1600	µg/kg
			Phenanthrene	85-01-8	330	µg/kg
			Phenol	108-95-2	330	µg/kg
			Phthalic acid	88-99-3	330	µg/kg
			Pyrene	129-00-0	330	µg/kg
			Pyridine	110-86-1	660	µg/kg
			Thiophenol	108-98-5	330	µg/kg
			Tentatively Identified Compounds (TICs)		NA	µg/kg

Notes:
Reporting Limits - Based on laboratory limits for primary laboratory (TestAmerica).
Laboratory limits are subject to matrix interferences and may not always be achieved in all samples.
NA = Not applicable.
Activities for specific radionuclide will be back-quantitated from those analyzed.
[1]TestAmerica-Richland, WA method.



January 2008 Aerial Photo from AeroTech Mapping.

BMI Common Areas (Eastside)
Clark County, Nevada

FIGURE 1

PROPOSED SUPPLE-MENTAL BACKGROUND SAMPLE LOCATIONS

Basic Remediation COMPANY

Prepared by:	Date	JOB No. 0064278
MKJ	03/03/08	FILE: GIS\BRC\SUPPL_BACKGROUND.MXD