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May 21, 2009

VIA FEDERAL EXPRESS

Dr. Marysia Skorska
NEVADA DIVISION OF ENVIRONMENTAL PROTECTION
Bureau of Corrective Actions
2030 East Flamingo Road, Suite 230
Las Vegas, Nevada 89119

Re: Proposed 2009 Site-Wide Groundwater Monitoring Program and Reporting
Revision 1.0, Henderson, Nevada, NDEP Facility ID #s H-000536 AND H-000540

Dear Dr. Skorska:

This document has been prepared by Hargis + Associates, Inc. (H+A) on behalf of Stauffer Management Company, LLC/Syngenta Crop Protection, Inc. (SMC/Syngenta), Montrose Chemical Corporation of California (Montrose) and Olin Corporation (the Companies) to provide a revised proposal for the 2009 site-wide groundwater monitoring program to be performed at and in the vicinity of the Black Mountain Industrial Complex (BMI) site (the Site). An original proposal was submitted to the Nevada Division of Environmental Protection (NDEP) in a letter dated March 6, 2009 (H+A, 2009). NDEP provide comments to the original proposal in a letter to the Companies dated March 24, 2009 (NDEP, 2009). This revised proposal addresses NDEP comments. A formal response to the NDEP comments is provided as Appendix A.

As discussed further below, the Companies believe the objectives of periodic groundwater monitoring at the Site have evolved and it is now appropriate to revise the sampling program to better fit current needs and objectives. Secondarily, the Companies and other BMI companies currently conduct several periodic monitoring programs for various purposes during the year, but nowhere does that data come all together to form a current comprehensive view of groundwater conditions at the Site. Hence, besides a restructuring of the site-wide monitoring program to become a model for long-term monitoring of the Site, this document proposes an annual report to provide that needed comprehensive view of the Site.

Background and Introduction

The site-wide groundwater monitoring program was initiated in 2006 and six sampling events have been completed to date. The original primary objective of these groundwater sampling events was to define the general character and distribution of Stauffer Chemical Company (Stauffer) and Montrose Site Related Compounds (SRCs) in groundwater. The Companies believe that the NDEP shares the view that the distribution of SRCs and the migration pathways have been well identified at the Site with the exception of potential vertical migration.

A secondary objective of the original program was to evaluate the potential for seasonal changes in groundwater conditions. Review of the data collected since 2006 indicate that the distributions of both inorganic and organic chemicals are mostly consistent from monitoring period to monitoring period. This consistent condition has been reported to NDEP in the conceptual site model report and in various

site-wide monitoring program data submittals. Hence, the Companies believe the original objectives of the site-wide monitoring program have been achieved.

However, it is clear that some form of long-term monitoring is required for the Site to determine whether the contaminant plume is remaining locationally stable and to ensure that no unexpected migration of chemicals occurs onto or offsite unnoticed. Therefore, the Companies believe that the objectives of the site-wide monitoring program have evolved from a program of plume characterization and definition to that of long-term routine plume monitoring, especially in the shallow zone.

As to specific activities, the former site-wide characterization program and future routine long-term plume monitoring program require the same activities (i.e., collection of water level and analytical data along with an ongoing monitoring for non-aqueous phase liquids [NAPLs]). However, given the consistency observed in the past six monitoring events, the Companies believe the scope and frequency of the monitoring program can be streamlined to minimize the Companies' and NDEP's effort while continuing to provide sufficient data to monitor trends that will assist operational decisions for the remedial actions currently underway in the study area.

Before discussing the specific recommendations for the 2009 program, it is important to note that the site-wide monitoring program is only a part of the total groundwater monitoring being conducted at the Site. Other programs as listed below contribute to the on-going understanding of groundwater conditions at the Site. These programs have been taken into consideration in developing the scope of the 2009 site-wide program.

- Montrose's semi-annual closed ponds area monitoring program;
- The Companies' annual groundwater treatment system (GWTS) extraction well monitoring program;
- The Companies' quarterly downgradient transect monitoring program, and
- The Companies' quarterly GWTS Consent Order monitoring program.

Monitor well locations, analytical schedules, and monitoring frequencies for each of these programs are summarized in Table 1.

In addition, Basic Remediation Company (BRC) is presently conducting quarterly Corrective Action Management Unit (CAMU) groundwater monitoring. The details of this program are summarized in the BRC Groundwater Monitoring Plan (BRC, 2008).

As noted above, the data from these programs are not currently integrated to form a clear picture of groundwater conditions at the Site. The Companies feel it would be practical and useful to compile this data into a single document on a periodic basis. The development of a report for future site-wide monitoring programs provides a clear opportunity to accomplish this objective.

The following sections provide a narrative description of the proposed monitoring program, study area figures, and summary tables.

SITE-WIDE PROGRAM OBJECTIVES

The Companies believe there are now three main objectives for long-term monitoring for this Site, 1) monitor the location of the plume to assure that it does not deviate from its current location and migration

pathway, 2) monitor selected locations within the plume to document the effect and progress of remedial actions, and 3) detect any source of contamination that may migrate into the study area from off-site.

MONITOR WELL/SAMPLING LOCATIONS

Monitoring locations proposed for the 2009 site-wide monitoring program are discussed below based on hydrogeologic unit.

Shallow Zone

Figure 1 identifies the monitoring locations proposed for the 2009 site-wide monitoring program as well as the locations of other ongoing monitoring programs wells in the shallow zone. This figure includes new wells being drilled during the preparation of this proposal. The monitor wells proposed for the 2009 site-wide monitoring program are summarized in Table 2 along with the justification for their use.

As indicated previously, selection of specific wells for the 2009 program was based on the objective of providing coverage for long-term plume monitoring.

Hence, the majority of the wells selected for the 2009 site-wide monitoring program (and subsequent years), are located along the periphery of the current plume while a limited number of wells are located in the core of the plume. Provided below is additional discussion regarding the shallow zone monitor well selection process:

- Upgradient water quality will be monitored by wells H-11, AA-MW-24, and AA-MW-05. H-11 has been used since monitoring at the Site began and provides a long history of upgradient water quality data along the eastern portion of the Site. AA-MW-24 located toward the middle of the upgradient area of the Site, has recently been installed by Montrose near former monitoring location MW-1 and now provides a fully documented monitoring location confirmed to be in the shallow zone. Parenthetically, MW-1, which is completed in the middle zone, will continued to be monitored twice a year as part of the post-closure monitoring program for the Montrose closed ponds area, further supplementing upgradient monitoring.

  Note that monitor well H-13, formerly located at the southwest corner of the Site and used in the past for upgradient monitoring has been destroyed by road construction activities by others. In consideration of the near-by location of other wells selected for this program (EC-04 and AA-MW-05), it does not appears neither necessary nor wise to replace this well in an area under construction for the extension of Eastgate Road.

- For the periphery of the plume, both clean and impacted wells have been selected to monitor the lateral location of the plume along its north-south direction. Prior monitoring events have demonstrated that in regard to maximum contaminant limits (MCLs), benzene defines the western edge of the chemical plume while chloroform defines the eastern edge. Examples of well selection based on the plume edges are wells EC-10, EC-04, and H-55 to the west, and M-057A, M-125, and M-142 to the east.

- Downgradient monitoring locations were selected to monitor the presence of compounds specifically relevant to the Site while serving the specific purpose of extending the range of monitoring done by other programs solely for the purpose of operational monitoring of the GWTS. Four wells with reasonably long analytical histories were selected for this purpose as follows: PC-028, PC-031, PC-064, and PC-067.

- All shallow zone wells that are, or will become, part of vertical delineation well clusters wells have been included in the program, including wells MC-09R, AA-BW-09A, AA-MW-25, B-01, and MW-3.

- For the interior of the plume, wells were selected based on their location to monitor groundwater downgradient of certain source areas (Table 2). For example, EC-07 was selected to monitor groundwater quality downgradient of the former BHC cake piles and Stauffer production plants, while monitor well B-01 will monitor conditions downgradient of the former Montrose plant currently undergoing soil vapor extraction remediation.

- BRC has initiated its 2009 CAMU monitoring program. BRC notes in their work plan that BRC and the Companies have sampled some of the same wells in the past and it is agreed that duplication of effort is inefficient. The CAMU program analyte list is extensive and overlaps that planned for the 2009 site-wide monitoring program. Additionally, the CAMU program includes wells that otherwise might have been considered for the 2009 site-wide monitoring program (BRC, 2008).

  Therefore, as a practical matter and given BRC's extensive program in the CAMU area and the inclusion of all site-wide analytes in their analytical program, no shallow zone BRC CAMU area wells are included in the Companies' 2009 site-wide program (please refer to Figure 7 of BRC, 2008). However, the BRC sampling data will be used in the Companies proposed comprehensive year-end reporting for the site-wide program. To show the total coverage that will result from this combination of data, the monitoring locations being used in the shallow zone for BRC's CAMU program are shown in Figure 1.

Monitoring for the presence of NAPL has been included in the site-wide monitoring program since 2008 and will continue to be monitored at locations where evidence of NAPL has been identified. Figure 1 shows the planned locations for NAPL measurements for the 2009 site-wide program.

Middle Zone

Monitor well locations for all middle zone monitor wells proposed for the 2009 site-wide program are illustrated in Figure 2. Provided below is additional discussion regarding the middle zone monitor well selection process:

- All middle zone wells that are, or will become, part of vertical delineation well clusters wells have been included in the program (CP-1, DPT-1, MC-MW-10, and MC-MW-29).

- Monitor wells in the middle zone that were constructed as part of the dense non-aqueous phase liquid (DNAPL) investigation in the immediate area of the former Montrose facility have been included in the program (MC-MW-9 through MC-MW-12).

- All new middle zone monitor wells that will be constructed as part of the middle zone investigation in the GWTS area have been included in the program (MC-MW-29 through MC-MW-31).

- New middle zone well E-13, recently drilled and constructed by SMC/Syngenta.

Deep Zone

Monitor well locations for all deep zone monitor wells proposed for the 2009 site-wide program are illustrated in Figure 3. The deep zone monitor wells to be included in the 2009 site-wide program consist of the Tronox, LLC (Tronox) wells TR-01, TR-03, TR-05, TR-07, TR-09, TR-11, and TR-12), existing Montrose monitor well MW-8, and the monitor wells to be drilled as part of the vertical delineation study MC-MW-26, MC-MW-27, and MC-MW-28).

MONITORING FREQUENCY AND SCHEDULE

The Companies propose that long-term plume monitoring can be accomplished by annual sampling and bi-annual water level and NAPL monitoring. The annual event of groundwater sampling and water level/NAPL monitoring would be conducted in October. The additional water level/NAPL monitoring event was conducted in April 2009 with concurrence from NDEP (NDEP, 2009). The timing of the monitoring events in these months will coincide with all other study area monitoring programs and BRC monitoring of the CAMU area to provide a wide area comprehensive data set.

ANALYTE LIST

For previous site-wide monitoring events, groundwater samples were analyzed for the following chemical classes:

- Volatile organic compounds (VOCs);
- Pesticides;
- Metals to include arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver and uranium;
- Total dissolved solids, and
- Organic acids (limited number of wells only).

Other analytes such as radiochemical constituents and perchlorate were analyzed as needed by special evaluation programs.

The Companies also considered including SVOCs in the analyte list. However, a review of the analytical data from the previous six sampling events indicates that most SVOCs are not found above the method detection limit or were also detected as VOCs by the 8260 EPA method (i.e., compounds such as 1,2-, 1-3, and 1,4-dichlorobenzene) in areas were VOCs are typically present at elevated concentrations. Therefore, it appears that no significant benefit is being derived from the analysis of SVOCs.

REPORTING AND INTEGRATION OF DATA

Historically, groundwater monitoring data generated by programs originated for various purposes have been documented and evaluated in separate reports. This approach presents a fragmented picture of groundwater conditions at the site and makes trend analysis unnecessarily difficult to conduct or review. Hence, the Companies feel there is a need for a single annual comprehensive compilation and evaluation of groundwater data. In order to fulfill this need, the Companies propose that reporting for the site-wide monitoring program be accomplished as an annual groundwater monitoring report that would integrate

sampling data acquired from all the periodic sampling programs carried out onsite each year. This is not to imply that all detailed information from all the programs would be replicated in this annual groundwater monitoring report, but rather that water quality and level data generated by the various programs would be combined together for the production of water level and chemical compound contour maps to provide a full picture of that data across the Site. Narrative evaluation and discussion of trends would then be based on these comprehensive maps rather than be provided within each individual program report for fragments of the total data.

The comprehensive annual groundwater monitoring report would present data from the following programs, all of which would be conducted in October:

- This 2009 site-wide monitoring program;
- Montrose's semi-annual closed ponds area monitoring program ;
- The Companies' annual GWTS extraction well monitoring program;
- The Companies' fourth quarter quarterly downgradient transect monitoring program;
- The Companies Consent Order fourth quarter monitoring program, and
- BRC's fourth quarter CAMU monitoring program.

The annual groundwater monitoring report would be submitted by the end of February following the end of the previous calendar year and would also include a section that describes any modifications necessary to the plan to align the long-term monitoring program with current needs and objectives.

Sincerely,

HARGIS + ASSOCIATES, INC.

Michael R. Long, RG, CEM

Principal Hydrogeologist
State of Nevada CEM No. 1891 (Exp 05/27/10)

cc w/encl: Mr. Brian Rakvica, NDEP
Mr. Paul Sundberg, Consultant to Montrose Chemical Corporation
Mr. George Crouse, Syngenta
Mr. Lee Erickson, Stauffer Management Company, LLC
Mr. Mike Bellotti, Olin Corporation
Mr. Curt Richards, Olin Corporation
Mr. Brian Giroux, McGinley & Associates
Mr. Paul Hackenberry, Hackenberry & Associates
Mr. Kelly Richardson, Latham & Watkins
Mr. Ed Modiano, *de maximis, inc*.
Mr. Joseph Kelly, Montrose Chemical Corporation

REFERENCES CITED

Basic Remediation Company (BRC) 2008. Groundwater Monitoring Plan, Corrective Action Management Unit (CAMU) Area. December 16, 2008.

Hargis + Associates, Inc. (H+A), 2009 Proposed 2009 Site-Wide Groundwater Monitoring Program and Reporting; Henderson, Nevada, NDEP Facility ID #s H-000536 and H-000540. March 6, 2009. [NDEP acceptance status – Comments provided on March 24, 2009].

Nevada Division of Environmental Protection (NDEP), 2009. NDEP Response to: Proposed 2009 Site-Wide Groundwater Monitoring Program and Reporting; Henderson, Nevada, NDEP Facility ID #s H-000536 and H-000540, dated March 6, 2009. March 24, 2009.

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TABLE 1

SUMMARY OF OTHER EXISTING GROUNDWATER SAMPLING PROGRAMS

PROGRAM	WELLS	SAMPLING FREQUENCY	VOLATILE ORGANIC COMPOUNDS 8260B	SEMI VOLATILE ORGANIC COMPOUNDS 8270C	PESTICIDES 8081A	ORGANIC ACIDS HPLC	para-CHLOROTHIOANISOLE 8270C	METHOD 8141A	OTHER
Montrose Closed Ponds Monitoring	MW-1, MW-2, MW-3, and MW-4[a]	Biannually (April and October)	X	X (4,4'-Dichlorobenzil Only)	X				
Transect Monitoring	MC-47, MC-48, MC-49 MC-50, MC-53, MC-113, and MC-114	Quarterly	X		X				
Extraction Wells	A, B, C, D2, E3, F, G, H2, I, J, K2, L, M2, N[f], O[f]	Annually (month varies)	X		X				X[g]
Consent Order Wells	**Upgradient** H-18A and H-21R	Quarterly	X[b]			X[c]	X[d]	X[e]	
	Downgradient H-49A, H-56A, and H-58A	Quarterly	X[b]				X[d]		

FOOTNOTES

a = Analytical Method M2510B for Specific Conductivity is used for Montrose Closed Ponds Monitoring.
b = Analytical Method EPA Method 8260 for VOCs (Standard analyte list) plus Dimethyl disulfide.
c = Analytical Method HPLC (organic acids) for benzenesulfonic acid, dimethyldithiophosphate, diethyldithiophosphate, 4-chlorobenzenesulfonic acid, and phthalic acid.
d = Analytical Method EPA Method 8270C for para-Chlorothioanisole (reported as 4-chlorophenyl methyl sulfide by Test America).
e = Analytical Method EPA Method 8141A for Carbophenthion and Phosmet.
f = Extraction wells N and O to be drilled and incorporated into the groundwater treatment system in 2009.
g = Additional analytes included perchlorate, selected trace metals, total dissolved solids, and fuel hydrocarbons in 2008.

HPLC = High performance liquid chromatography

TABLE 2

PROPOSED GROUNDWATER MONITORING PROGRAM FOR 2009

WELL IDENTIFIER	HYDROGEOLOGIC UNIT	WATER LEVEL MONITORING	NAPL MONITORING	GROUNDWATER SAMPLING EVENT		PURPOSE
				Routine Analytes	Routine Analytes and Organic Acids	
SHALLOW ZONE **Former Facilities Areas and Tronox Property**						
AA-MW-05	Shallow zone	X	X	X		Upgradient water quality monitoring
AA-MW-13	Shallow zone	X	X	X		Former manufacturing area monitoring
AA-MW-14	Shallow zone	X	X	X		Former manufacturing areas monitoring
AA-MW-24	Shallow zone	X	X	X		Upgradient water quality monitoring
AA-MW-25	Shallow zone	X	X	X		Montrose closed ponds (CPA) source area monitoring and vertical delineation cluster well
B-01	Shallow zone	X	X	X		Montrose former plant site (FPS) source area monitoring and vertical delineation cluster well
B-16	Shallow zone	X		X		Western margin of plume monitoring
EC-03	Shallow zone	X	X	X		Stauffer source area monitoring
EC-04	Shallow zone	X		X		Stauffer source area and western margin of plume monitoring
EC-07	Shallow zone	X	X		X	Stauffer source area monitoring and organic acid sampling location
EC-10	Shallow zone	X	X	X		Stauffer source area and western margin of plume monitoring
H-11	Shallow zone	X	X	X		Upgradient water quality monitoring
H-55	Shallow zone	X		X		Western margin of plume monitoring
M-057A	Shallow zone	X		X		Eastern margin of plume monitoring

1. Routine analytes include volatile organic compounds, organochlorine pesticides, metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver and uranuium),, and total dissolved solids
2. NAPL = Non-aqueous phase liquid
3. GWTS = Groundwater Treatment System
4. CAMU = Corrective Action Management Unit

TABLE 2

PROPOSED GROUNDWATER MONITORING PROGRAM FOR 2009

WELL IDENTIFIER	HYDROGEOLOGIC UNIT	WATER LEVEL MONITORING	NAPL MONITORING	GROUNDWATER SAMPLING EVENT		PURPOSE
				Routine Analytes	Routine Analytes and Organic Acids	
SHALLOW ZONE Former Facilities Areas and Tronox Property (Continued)						
M-092	Shallow zone	X		X		Eastern margin of plume monitoring
M-125	Shallow zone	X		X		Eastern margin of plume monitoring
M-142	Shallow zone	X		X		Eastern margin of plume monitoring
TR-06	Shallow zone	X	X	X		Eastern margin of plume monitoring
SHALLOW ZONE Area Downgradient of GWTS						
MC-09R	Shallow zone	X				Vertical delineation cluster well, water level only monitoring location
MW-A-J	Shallow zone	X				Water level only monitoring location
MW-R	Shallow zone	X				Water level only monitoring location
PC-028	Shallow zone	X		X		Historically a monitoring location showing elevated concentrations
PC-031	Shallow zone	X		X		Western margin of migration pathway from GWTS
PC-064	Shallow zone	X		X		Center of migration pathway from GWTS
PC-067	Shallow zone	X		X		Eastern margin of migration pathway from GWTS

1. Routine analytes include volatile organic compounds, organochlorine pesticides, metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver and uranuium),, and total dissolved solids
2. NAPL = Non-aqueous phase liquid
3. GWTS = Groundwater Treatment System
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TABLE 2

PROPOSED GROUNDWATER MONITORING PROGRAM FOR 2009

WELL IDENTIFIER	HYDROGEOLOGIC UNIT	WATER LEVEL MONITORING	NAPL MONITORING	GROUNDWATER SAMPLING EVENT		PURPOSE
				Routine Analytes	Routine Analytes and Organic Acids	
MIDDLE ZONE						
CP-01	Middle zone	X	X	X		Montrose CPA source area middle zone monitoring and vertical delineation cluster well
DPT-01	Middle zone	X	X	X		Montrose FPS source area middle zone monitoring and vertical delineation cluster well
EC-13	Middle zone	X	X	X		Stauffer source area middle zone monitoring
MC-MW-09	Middle zone	X	X	X		Montrose CPA and former tank farm source area middle zone monitoring and vertical delineation cluster well
MC-MW-10	Middle zone	X	X	X		Montrose FPS source area middle zone monitoring and part of vertical delineation well cluster
MC-MW-11	Middle zone	X	X	X		Western Montrose source area middle zone monitoring
MC-MW-12	Middle zone	X	X	X		Eastern Montrose source area middle zone monitoring and vertical delineation cluster well
MC-MW-29	Middle zone	X	X	X		Middle zone monitoring in the GWTS area and vertical delineation cluster well
MC-MW-30	Middle zone	X	X	X		Middle zone monitoring in the GWTS area
MC-MW-31	Middle zone	X	X	X		Middle zone monitoring in the GWTS area
DEEP ZONE						
MC-MW- 26	Deep zone	X		X		Montrose FPS source area deep zone monitoring and vertical delineation cluster well

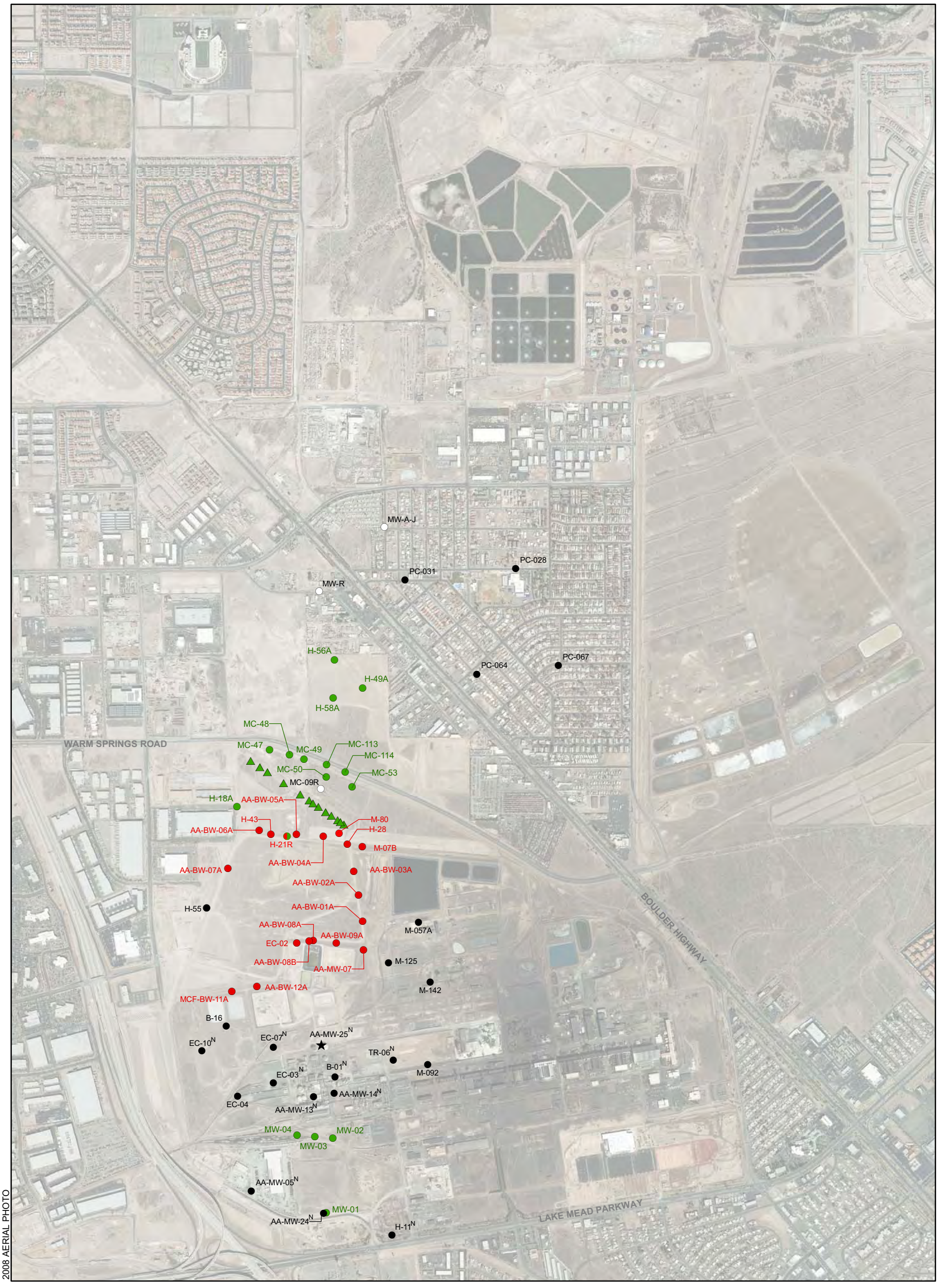
1. Routine analytes include volatile organic compounds, organochlorine pesticides, metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver and uranuium),, and total dissolved solids
2. NAPL = Non-aqueous phase liquid
3. GWTS = Groundwater Treatment System
4. CAMU = Corrective Action Management Unit

TABLE 2

PROPOSED GROUNDWATER MONITORING PROGRAM FOR 2009

WELL IDENTIFIER	HYDROGEOLOGIC UNIT	WATER LEVEL MONITORING	NAPL MONITORING	GROUNDWATER SAMPLING EVENT		PURPOSE
				Routine Analytes	Routine Analytes and Organic Acids	
DEEP ZONE (Continued)						
MC-MW-27	Deep zone	X		X		Montrose CPA source area deep zone monitoring and vertical delineation cluster well
MC-MW-28	Deep zone	X		X		Montrose FPS source area deep zone monitoring and vertical delineation cluster well
MW-08	Deep zone	X		X		Manufacturing areas source area deep zone monitoring and vertical delineation cluster well
TR-01	Deep zone	X				Water level measurement location only
TR-03	Deep zone	X				Water level measurement location only
TR-05	Deep zone	X				Water level measurement location only,
TR-07	Deep zone	X				Water level measurement location only
TR-09	Deep Zone	X				Water level measurement location only
TR-11	Deep zone	X		X		Deep zone monitoring and vertical delineation cluster well downgradient of the GWTS
TR-12	Deep zone	X		X		Deep zone monitoring and vertical delineation cluster well downgradient of the GWTS

1. Routine analytes include volatile organic compounds, organochlorine pesticides, metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver and uranuium),, and total dissolved solids
2. NAPL = Non-aqueous phase liquid
3. GWTS = Groundwater Treatment System
4. CAMU = Corrective Action Management Unit



EXPLANATION

- H-11 — GROUNDWATER SAMPLING AND WATER LEVEL MEASUREMENT LOCATION
- MW-R — WATER LEVEL MEASUREMENT LOCATION ONLY
- AA-MW-25 — VERTICAL DELINEATION STUDY, GROUNDWATER SAMPLING, AND WATER LEVEL MEASUREMENT LOCATION TO BE INSTALLED
- AA-BW-06A — CAMU AREA MONITORING PROGRAM WELLS
- MW-01 — TRANSECT, CONSENT ORDER, OR MONTROSE CLOSED PONDS AREA MONITOR WELL
- H-21R — CAMU AREA MONITORING PROGRAM AND CONSENT ORDER WELL
- EXTRACTION WELL

N

0 750 1,500

Feet

NOTES:
N = Non Aqueous Phase Liquid (NAPL) measurement location
CAMU = Corrective Action Management Unit

SITE-WIDE GROUNDWATER MONITORING PROGRAM
MONTROSE, STAUFFER AND OLIN SITES
HENDERSON, NEVADA

**PROPOSED 2009
SHALLOW ZONE
MONITORING PROGRAM**

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05/14/2009

FIGURE 1

PREP BY DAT REV BY BRW RPT NO 1012.13

Proposed scope shallow_rev4.mxd

EXPLANATION

- ● CP-01 — GROUNDWATER SAMPLING, WATER LEVEL, AND NAPL MEASUREMENT LOCATION
- MC-MW-30 ★ — MIDDLE ZONE MONITOR WELL, GROUNDWATER SAMPLING, AND WATER LEVEL MEASUREMENT LOCATION TO BE INSTALLED.

NOTES:
N = NAPL measurement location
NAPL = Non Aqueous Phase Liquid

N

0 375 750
Feet

SITE-WIDE GROUNDWATER MONITORING PROGRAM
MONTROSE, STAUFFER AND OLIN SITES
HENDERSON, NEVADA

PROPOSED 2009
MIDDLE ZONE
MONITORING PROGRAM

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02/10/2009

FIGURE 2

PREP BY DAT REV BY BRW RPT NO 1012.13 Proposed scope-UMCf rev2.mxd

EXPLANATION

- ○ TR-03 WATER LEVEL MEASUREMENT LOCATION ONLY
- ● TR-11 GROUNDWATER SAMPLING AND WATER LEVEL MEASUREMENT LOCATION
- ★ MC-MW-26 VERTICAL DELINEATION STUDY, GROUNDWATER SAMPLING, AND WATER LEVEL MEASUREMENT LOCATION TO BE INSTALLED.

N

0 375 750

Feet

SITE-WIDE GROUNDWATER MONITORING PROGRAM
MONTROSE, STAUFFER AND OLIN SITES
HENDERSON, NEVADA

PROPOSED 2009
DEEP ZONE
MONITORING PROGRAM

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02/10/2009

FIGURE 3

PREP BY DAT REV BY BRW RPT NO 1012.13 Proposed scope-UMCc_rev2.mxd

APPENDIX A

RESPONSE TO COMMENTS

APPENDIX A

RESPONSE TO NEVADA DIVISION OF ENVIRONMENTAL PROTECTION (NDEP) COMMENTS TO:

NDEP RESPONSE TO: PROPOSED 2009 SITE-WIDE GROUNDWATER MONITORING PROGRAM AND REPORTING, HENDERSON, NEVADA, NDEP FACILITY ID #s H-000536 AND H-000540; DATED MARCH 6, 2009.

Pursuant to the request of the Nevada Division of Environmental Protection (NDEP), this Response to Comments was prepared to document responses to NDEP comments contained in the letter referenced above. Each NDEP comment is reiterated below and the response to the comment provided by the BMI Companies.

1. *General comment, it is necessary to reference the NDEP's guidance on hydrogeologic and lithologic nomenclature to provide clarity to the Companies' statements (see BMI Plant Sites and Common Areas Projects, Henderson, Nevada, Hydrologic and Lithologic Nomenclature Unification, dated January 6, 2009).*

RESPONSE: The nomenclature and reference noted above have been added to Revision 1.0 of the proposal. The original proposal included hydrogeologic and lithologic nomenclature consistent with the reference above and older, historic terms with the intent to provide clarity to the reader. However, only those terms consistent with the reference above will be used in Revision 1.0.

2. *Regarding "Background and Introduction", pages 1 through 2:*

    a. *The NDEP agrees that the objectives of the site-wide monitoring program in the Shallow Zone have generally evolved from a program of plume characterization and definition to that of long-term routine plume monitoring. Exceptions to this statement are noted below:*

        i. *The NDEP notes that this is not the case for the plumes of contaminants in the Middle and Deep Zones whose horizontal and vertical extents are not yet defined.*

RESPONSE: Comment noted. Additional site characterization investigations are presently underway for the middle and deep zones in the site-wide groundwater monitoring program area. NDEP will be kept informed as to the status and findings of these investigations as they progress.

        ii. *In addition, the eastern extents of the Shallow Zone plume are not fully understood, however, it is expected that this issue will be addressed under the site characterization program rather than the monitoring program.*

RESPONSE: Comment noted. Additional site characterization investigations are presently being planned in the shallow zone by Tronox, LLC (and/or its successors) in the eastern portion of the site-wide area. This investigation was referred to by Tronox, LLC as the Phase B Site Evaluation. It is the Companies' understanding that information from this investigation will be presented to NDEP when available.

iii. *Also, the downgradient plumes are not fully understood as site-related chemicals have been detected in the vicinity of the Las Vegas Wash (including north of the Las Vegas Wash). Again, it is expected that this issue will be addressed under the site characterization program rather than the monitoring program.*

RESPONSE: Additional site characterization investigations are presently planned for the middle and deep zones in the site-wide groundwater monitoring program area, including the GWTS area. Also see response to NDEP comment 2.a.ii. The Companies agree that further characterization now underway as apart of the vertical delineation program will provide additional information on the character of site area groundwater downgradient of the GWTS. Based on the results of these investigations, the Companies will determine if additional investigation in the area between the GWTS and Las Vegas Wash is needed.

iv. *Therefore, the site-wide monitoring program will have to continue to evolve to incorporate new information as it becomes available, and the program will have to be evaluated after the 2009 scope of work is completed.*

RESPONSE: The Companies concur that the site-wide monitoring program will be evaluated at the end of calendar year 2009. Recommendations for the scope of the program for 2010 will be presented to NDEP in the annual year-end summary report.

b. *Regarding the various groundwater monitoring programs listed on page 2 (the bulleted items), it is requested that the Companies develop a table and set of figures that presents the locations that are monitored; the analytes that are monitored; and the frequency of the monitoring. Without this comprehensive presentation it is impossible for the NDEP to concur with the Companies proposal.*

RESPONSE: Tables summarizing all site groundwater monitoring programs and figures illustrating well locations for each program are presented in the revised proposal (Tables 1 and 2 and Figures 1 through 3). Similar versions of the tables and figures have appeared in previously submitted groundwater monitoring reports.

i. *In addition, the related Figures should be revised to account for the additional monitoring that is being conducted by the Companies. The Figures, as presented, do not accurately represent the amount of monitoring that the Companies are conducting.*

RESPONSE: See response to NDEP comment 2.b above. Figures 1 through 3 have been revised accordingly.

3. *Regarding the "Shallow Zone/Alluvial Aquifer", pages 2 through 4:*

a. *Please include non-aqueous phase liquid (NAPL) monitoring for well EC-03 due to the high concentrations of dissolved phase organics in that well (see Additional DNAPL Reconnaissance Borings Data Submittal Report Former Montrose Facility, Montrose*

Chemical Corporation of California, Henderson, Nevada, dated October 9, 2008 [Hargis, 2008]).

RESPONSE: The Companies will include NAPL measurements at shallow zone monitor well EC-3 to the scope of the 2009 groundwater monitoring program.

b. *Page 3, 2nd bullet, please note that the "periphery of the plume" should not contain impacted wells. It would seem that in these areas the "periphery of the plume" has not yet been defined. Please provide additional discussion and context on this matter.*

RESPONSE: The Companies feel that to monitor in the long term the extent of organic SRC's currently present at concentrations greater than Federal MCLs, groundwater samples need to be collected from both impacted and unimpacted wells. Part of the value of periodic monitoring is the evaluation of trends and non-detectable concentrations have limited value for this need.

The revised proposal figures illustrate the Companies' plan to collect groundwater samples from several wells along the margins of where the organic SRCs plume is present based on recent monitoring data. The Companies feel that this configuration of wells serves this need efficiently.

c. *Page 3, 3rd bullet, as noted above, due to the manner in which the Companies have depicted the monitoring program it is not clear that sufficient downgradient monitoring is being conducted. The NDEP will consider this matter in the revised proposal.*

RESPONSE: The Companies recognize sampling in the downgradient area is limited; however, the program is consistent with the stated objectives. The Companies welcome further dialogue with NDEP on monitoring objectives and the wellfield necessary to meet these objectives. Please see response to NDEP comment 2.b and 2.b.i.

d. *Page 3, last bullet, the issue of the selection of the monitoring points within the plume needs additional detail. A cross-reference to Table 1 would be helpful.*

RESPONSE: Additional verbiage has been added to Table 2 (Please note: Table 2 summarizes the proposed site-wide groundwater monitoring program in Revision 1.0 of the proposal).

e. *Page 4, 1st bullet, please provide a reference to the Basic Remediation Company (BRC) Corrective Action Management Unit (CAMU) monitoring program that is being discussed.*

RESPONSE: A reference to the BRC CAMU groundwater monitoring plan has been included in Revision 1.0 of the proposal.

4. *Regarding the "Middle Zone/fine-grained Upper Muddy Creek (UMCf)", page 4:*

a. *Please add the following three wells to the monitoring program: AA-MW-20, RB-11/MC-MW-18, and RB-10/MC-MW-17. This request is due to high concentrations of dissolved phase organics and high Flame Ionization Detector (FID) readings observed in these wells (Hargis, 2008), and due to the NDEP's concern that the extent of NAPL in the Middle*

Zone does not appear to be well defined (see Nevada Division of Environmental Protection Response to: Additional DNAPL Reconnaissance Borings Data Submittal Report Former Montrose Facility, Montrose Chemical Corporation of California, Henderson, Nevada, dated October 9, 2008, dated November 4, 2008).

RESPONSE: Elevated concentrations in a groundwater sample, in and of itself, is not a sufficient reason for it to be considered in a long-term monitoring program. Equally important are its location and sampling depth in the wellfield. The Companies welcome further discussion regarding objectives (and necessary wells to meet those objectives), but have currently not added the requested wells to the proposed 2009 program.

b. *Please include NAPL monitoring for all wells in the Middle Zone.*

RESPONSE: The Companies will include NAPL measurements at all 10 middle zone monitor wells to the scope of the 2009 groundwater monitoring program.

c. *Due to the known presence of NAPL in the Middle Zone, the NDEP is concerned about no monitoring wells being proposed for the Middle Zone downgradient of the Groundwater Treatment System (GWTS). Please address this in the revised proposal.*

RESPONSE: Please refer to Figure 2 of the revised proposal. Middle zone wells MC-MW-29 through 31 will be incorporated into the groundwater monitoring program and monitored by the Companies during 2009. These wells will be sampled upon completion and during the 2009 annual round. Results of these analyses will determine if they remain in the program for 2010.

5. *Regarding the "Deep Zone/coarse-grained Upper Muddy Creek (UMCc)", pages 4 through 5, and Table 1:*

   a. *Please include NAPL monitoring for wells MC-MW-26, MC-MW-27, MW-08, TR-11, TR-12, and MC-MW-28.*

RESPONSE: The Companies do not feel that it is necessary to include NAPL measurements at deep zone wells to the scope of the 2009 groundwater monitoring program. This is based on the fact that no NAPL materials have ever been identified in any deep zone wells and a review of historic groundwater quality data from deep zone wells indicates that VOC concentrations, if detected, are well below percent saturation concentrations in all wells. Also, monitoring for chemicals for which there is no evidence that it exists, is a waste of resources.

However, the Companies will collect NAPL measurements if upon receipt of data from the initial groundwater sampling event for new deep zone monitor well MC-MW-26 through -28 indicates that elevated concentrations of VOCs and/or any evidence of NAPL materials are observed during NAPL screening conducted during drilling operations.

6. *Regarding the "Analyte List", page 5:*

   a. *The NDEP does not concur with the proposal to drop analysis for semi-volatile organic compounds (SVOCs). The NDEP notes that:*

i. The United States Environmental Protection Agency (USEPA) method 8260 for volatile organic compounds (VOCs) does not detect 2-chlorophenol, which is denser than water, insoluble or only slightly soluble in water but freely soluble in alcohol, ether, and caustic alkali solutions, and which has been detected in many wells at the site as reported in the Site-Wide Groundwater Monitoring Program Third and Fourth Quarters 2008 and Annual Summary of Data, Former Montrose and Stauffer Facilities, Henderson, Nevada, dated January 29, 2009 (Hargis, 2009). Examples where 2-chlorophenol was detected above the NDEP Basic Comparison Level (BCL) of 30.4 µg/L include wells AA-MW-14 (3,500 µg/L), B-01 (150 µg/L), and EC-07 (57 µg/L) in the proposed monitoring program in the Shallow Zone, and well MC-MW-10 (110 µg/L) in the Middle Zone.

RESPONSE: The Companies respectfully decline to include SVOC analyses of groundwater samples to the scope of the 2009 groundwater monitoring program. SVOC constituents detected at concentrations greater than their respective MCLs are detected using EPA method 8260B for VOCs (e.g. 1,2-dichlorobenzene and 1,4-dichlorobenzene). These SVOCs are commonly detected in groundwater samples collected from monitor wells where VOCs are present at concentrations greater than their respective MCLs. Presently, there is no MCL for 2-chlorophenol, cited above.

ii. In many cases, detection limits for SVOCs listed in Hargis, 2009 are not useful for evaluating whether or not these compounds exceed the NDEP BCLs. For example, in wells EC-07 and EC-10 this is the case for 3,3'-dichlorobenzidine, azobenzene, benzidine, benzo(a)anthracene, and twenty more other SVOCs. The same concern applies to numerous other wells.

RESPONSE: Please see response to comment 6.a.i above.

b. NDEP requests that metals analysis also include uranium.

RESPONSE: The Companies will include uranium analyses of groundwater samples to the scope of the 2009 groundwater monitoring program. The 2009 uranium data will be evaluated to determine if it will be included in the 2010 program.

7. Regarding Table 1, the NDEP has the following comments:

a. The column labeled "Routine Analytes" need to cross-reference to a table which presents the actual analytes that are proposed to be analyzed.

RESPONSE: Additional information regarding the analytes identified as "routine analytes" in Table 2 (formerly Table 1) is provided in the footnotes. The "routine analytes" are the same as previous years and include standard list VOCs and organochlorine pesticides, as well as the other analytes noted, plus uranium (see comment 6.b). Detailed lists of all specific analytes are also contained in sample results tables in the site-wide data submittals provided to NDEP.

b. In the column "Purpose" please identify the actual source areas to be monitored.

RESPONSE: The Companies have expanded Table 2 to include potential source areas for the column noted as "Purpose" in the former Table 1.

c. *The stated purpose for well MCF- BW-11A appears to be incorrect because this well is identified on Figure 1 as a "proposed CAMU area monitoring well". Please address it in the revised proposal.*

RESPONSE: Monitor well MCF-BW-11A serves both purposes noted in the proposed plan. Table 2 has been revised to include both of these purposes in the revised document.

d. *Table 1 appears to be missing several wells identified on Figure 1, for example AA-BW-09A, AA-BW-01A, AA-BW-02A, AA-BW-03A, M-07B, H-28, AA-BW-04A, AA-BW-05A, H-43, AA-BW-06A, and AA-BW-07A. Please address it in the revised proposal.*

RESPONSE: These monitor wells are wells identified to be a part of the BRC CAMU monitoring program, and hence were not listed in Table 1 (now Table 2). A reference to the BRC groundwater monitoring work plan has been added to the text and figures to make this distinction.

e. *Please reference documents that identify the wells designated as to be monitored by BRC (i.e., MC-MW-10 through 12, MC-MW-30, and MC-MW-31). The NDEP notes that wells MC-MW-10 through 12 are owned by the Companies.*

RESPONSE: A reference to the BRC CAMU groundwater monitoring plan has been added to Revision 1.0 of the proposal.

8. *Regarding Figure 1, the NDEP has the following comments:*

a. *Regarding the "combined extent of organic SRCs in groundwater at concentrations greater than their respective MCLs", the NDEP has the following comments:*

i. *The Companies have not considered the NDEP BCLs for compounds that do not have a United States Environmental Protection Agency (USEPA) Maximum Contaminant Limit (MCL). For example, beta-BHC.*

RESPONSE: Figure 1 has been revised to note only shallow zone well locations for the proposed 2009 site-wide program as well as the other existing groundwater sampling programs.

ii. *Please clarify why only "organic SRCs" are considered. The Companies have a significant inorganic plume of contaminants as well (arsenic, uranium, radon, total dissolved solids, etc.). In addition, based upon the text the Companies have not considered all of the organic SRCs. If a compounds such as beta-BHC was selected the depiction would be significantly different.*

RESPONSE: The Companies disagree that a significant inorganic plume of contaminants are present at the site for each of the constituents listed above. However, the Companies will add uranium to the analytical list for 2009, please see responses to comment 6.b. and 8.a.i.

iii. Without supporting documentation, it is impossible for the NDEP to verify or concur with the depicted extents.

RESPONSE: Please see response to comment 8.a.i.

9. Regarding Figure 2, the NDEP has the following comments:

a. The same notation as provided on Figure 1 should be used to indicate which wells are being monitored for NAPL.

RESPONSE: Please see response to comment 4.b above. The Companies will include NAPL measurements at all 10 middle zone monitor wells to the scope of the 2009 groundwater monitoring program.

b. Wells MC-MW-30 and MC-MW-31 are listed as being proposed to be installed by BRC. The NDEP notes that the locations of these two wells along with well MC-MW-29, denoted on Figure 2 as a yet not installed well to be monitored by the Companies, correspond to the locations of the three Middle Zone wells proposed to be installed by the Companies in that area as discussed in the Change to Workplan to Evaluate the Impact of the Groundwater Treatment System on the Fine Grained Upper Muddy Creek Formation, dated July 2, 2008. Please discuss it in the revised proposal.

RESPONSE: All three middle zone wells are to be drilled and installed by the Companies in accordance with the NDEP-approved work plan dated November 19, 2007. BRC has designated monitor wells MC-MW-30 and MC-MW-31 as part of their CAMU groundwater monitoring program. However, each of these monitor wells will be sampled by the Companies as part of the 2009 site-wide groundwater monitoring program in 2009. Figure 2 has been revised accordingly.