

OCTOBER 2007 — BI-ANNUAL
ANALYTICAL RESULTS REPORT

MONTROSE FACILITY
HENDERSON, NEVADA

Prepared for:

Montrose Chemical Corporation
of California
600 Ericksen Avenue NE, Suite 360
Bainbridge Island, WA 98110

Converse Project No. 89-43133-12

June 3, 2008

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Mr. Joe Kelly
Montrose Chemical Corporation of California
600 Ericksen Avenue NE, Suite 360
Bainbridge Island, WA 98110

Subject: Bi-Annual Report - October 2007
Montrose Facility
Henderson, Nevada

Dear Mr. Kelly:

Converse Consultants (Converse) is pleased to present this Bi-Annual Report for results of the October 2007 monitoring event conducted for Montrose Chemical Corporation of California. This report covers the sampling and analyses of four monitoring wells near the closed ponds at the Henderson, Nevada facility. Well MW-1 is located upgradient from the former ponds, while MW-2, MW-3, and MW-4 are situated in a downgradient direction.

This report has been prepared in accordance with the *Amended Closure/Post-Closure Plan* approved by the Nevada Division of Environmental Protection (NDEP) and the revised *1994 Sampling and Analysis Plan*.

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If you have any questions concerning information contained in this report, please contact us at your convenience.

Respectfully submitted,

CONVERSE CONSULTANTS

Kurt Goebel
Vice President
Environmental Division Manager

KAG:DRB:rj

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Montrose October 2007 Report

Limitations

Conclusions and recommendations in this report are based on the monitoring and sampling completed for the bi-annual sampling performed in October 2007 for the closed pond area of the former Montrose Chemical Corporation of California site in Henderson, Nevada. Sampling was intended to confirm the presence or absence of target contaminants at selected locations. Contaminant levels observed may not be representative of site-wide conditions. It is the intent of this monitoring event to detect only contaminants for which laboratory analyses were performed. Therefore, conclusions may be drawn only on the presence or absence of reported analytes. Observed contaminants may change with relation to time, on-site activities, and adjacent site activities.

This report is for the use of Montrose Chemical Corporation as it applies to the subject site in Henderson, Nevada. Its preparation has been in accordance with generally accepted practices in geotechnical engineering, environmental and engineering geology and hydrogeology. No other warranty, either expressed or implied, is made.

Certified Environmental Manager (CEM) Statement

For the services provided and described in this document, the following language is from NAC 459.

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.

A Converse Certified Environmental Manager was in responsible charge during the collection of the field sampling data as described in this report and also during the compilation of this report.

CONVERSE CONSULTANTS

Douglas R. Bell
Senior Project Manager
Nevada CEM 1767 (Exp. 8/31/09)
Dated _____



Montrose October 2007 Report

This report covers the October 2007 sampling and analyses of four monitoring wells near the closed ponds of the former Montrose facility in Henderson, Nevada. Well MW-1 is located upgradient from the former ponds, while MW-2, MW-3, and MW-4 are arrayed across the downgradient direction.

This report has been prepared in accordance with the *Amended Closure/Post-Closure Plan* approved by the Nevada Division of Environmental Protection (NDEP). All aspects of the field sampling were performed in accordance with the revised *1994 Sampling and Analysis Plan*, with the exception of the purging technique as noted below.

1.0 Monitoring Well Sampling and Groundwater Analyses

At the direction of Montrose, micro-purge sampling techniques were used during this event to establish consistency in sampling techniques across all sampling programs being performed at the Montrose site. Sampling was conducted in accordance with procedures outlined in Section 12.3 of Hargis & Associates *Sampling and Analysis Plan*, dated September 12, 2006. Prior to sampling, a static depth to water level measurement was collected from each well. Purging was then performed at a rate between 0.1 to 0.5 liters per minute (LPM). Field parameters were collected during this time at approximate 5-minute intervals for at least four intervals. Purging and sampling were performed using 1/4-inch dedicated tygon tubing, a QED SamplePro Pump, a QED MP10 Controller, and compressed carbon dioxide gas. Sampling data for each well was recorded on Low-Flow Purge/Sampling Forms. Water samples were logged and tracked using *Chain-of-Custody* forms and shipped to Test America Analytical Testing Corporation, of Irvine, California for analysis.

In accordance with the March 20, 1989, NDEP letter to Mr. Daniel Greeno of Montrose Chemical Corporation, each sample was analyzed for the following seven “indicator” compounds:

- Carbon Tetrachloride
- DDT
- Dichlorobenzil
- Ethylbenzene
- Methylene Chloride
- Toluene
- Total Xylenes

The analytical suite used to detect these compounds also identifies other compounds that, for the purposes of this report, are referred to as “non-indicator” compounds. During several years of non-indicator compound monitoring, several chemicals as listed below have been commonly quantified:

- Benzene
- Chloroform
- 1,4 – Dichlorobenzene
- Chlorobenzene
- 1,2 – Dichlorobenzene

In response to the NDEP’s review of the October 2006 Bi-Annual Report, and Converse’s Response to Comments Letter dated April 5, 2007, each sample was also analyzed for the following inorganic compounds during the October 2007 bi-annual event:

- Arsenic
- Cadmium
- Lead
- Perchlorate
- Silver
- Barium
- Chromium
- Mercury
- Selenium

In addition to the results of the special inorganic analysis noted above, this report provides detailed information on five non-indicator compounds while all other compounds detected by the currently used analytical methodology are simply listed for reference. That listing of miscellaneous compounds will be reviewed occasionally to evaluate whether other compounds should be considered as candidates for the list of non-indicator compounds that are reviewed in detail. Such additions will only be made with concurrence from NDEP.

Results of the sampling for both indicator and non-indicator compounds from the March 1990 through October 2007 sampling events (listed by sample date) are summarized in Tables 1 through 4 in the appendix of this report. In addition, graphs of the historical data for selected non-indicator compounds are also included for each well. Water level data collected from all wells during the monitoring event is presented in Table 5.

2.0 Analytical Methods and Results

The groundwater samples were analyzed by Test America Analytical Testing Corporation, a Nevada certified laboratory. The samples were analyzed for volatile organic compounds (VOCs) using EPA Method SW8260B, organochlorine pesticides using EPA Method SW8081A, 2,2'/4-4'-dichlorobenzil using EPA Method SW8270C, perchlorate using EPA Method 314.0, and metals using EPA Method 6020 and EPA Method 7470A.

2.1 Concentration Trends

The evaluation of concentration trends covers the monitoring periods since 1990. General trends in the concentration of both indicator and non-indicator compounds are discussed below, and have been examined to evaluate whether individual constituents were observed within their typical range during this monitoring event. Emphasis has also been placed on the continuation or abatement of specific trends.

2.1.1 Indicator Compounds

During the October 2007 monitoring event, carbon tetrachloride and methylene chloride were the only indicator compounds observed.

Carbon tetrachloride was detected in MW-2 at a concentration of 470 $\mu\text{g/L}$. This is a slight increase from the April 2007 concentration of 310 $\mu\text{g/L}$. Even with this slight increase, carbon tetrachloride remained within its historically observed range in MW-2. Carbon tetrachloride in MW-4 decreased to below the laboratory detection limit while concentrations in MW-1 and MW-3 were non-detectable at the laboratory detection limit.

Methylene chloride was detected in MW-2 during the October 2007 sampling event at a concentration of 110 $\mu\text{g/L}$. This is within the historically observed range for MW-2. Methylene chloride concentrations in MW-1, MW-3, and MW-4 remained at non-detectable levels.

The concentrations of 4,4'-DDT in MW-3 and MW-4, detected at 0.035 $\mu\text{g/L}$ during the April 2007 event decreased to non-detectable at the laboratory detection limit during the October 2007 sampling event. Concentrations of 4,4'-DDT in MW-1 and MW-2 were non-detectable at the laboratory detection limit during the October 2007 sampling event.

2.1.2 Non-Indicator Compounds

Presentation Conventions

Non-indicator compounds which have designated maximum contaminant levels (MCLs), and for which historic data is available have been plotted against time in the enclosed graphs for each well. Please note that starting with the April 2006 report, the concentration scales on the graphs have been changed to show $\mu\text{g/L}$ rather than the mg/L units that were used in past reports. This change in presentation format was made to eliminate possible transcription errors between the analytical reports and the charts, to conform to common industry practice of using $\mu\text{g/L}$ for reporting groundwater concentrations, and to facilitate use of this data with other Montrose investigation programs.

Also, please note that starting with the April 2007 report, the concentration scales on the graphs are displayed logarithmically as requested by the NDEP after their review of the October 2006 Bi-Annual Sampling Report. This change was outlined in Converse's Response to Comments letter dated April 5, 2007. Note that for wells with non-detectable chemical quantitations, concentrations of $\frac{1}{2}$ the detection limit were used to keep trend lines from merging with their respective X-axis. This approach introduces a small error in the graphs. However, it does not obscure the overall trends of the compounds.

Data Evaluation and Trends

Benzene

The benzene concentration in MW-1 remained below the laboratory detection limit while the compound was detected in monitoring wells MW-2 and MW-3 at concentrations of 2,600 $\mu\text{g/L}$ and 1,900 $\mu\text{g/L}$, respectively. As compared to the previous sampling event, the benzene concentrations in MW-2 and MW-3 increased slightly. The benzene concentration in MW-4 decreased from 46 $\mu\text{g/L}$ to non-detectable as compared to the previous sampling event. Overall, currently observed benzene concentrations for MW-1, MW-

2, MW-3, and MW-4 remained within their historically observed ranges.

Chloroform

Chloroform increased slightly in MW-1 from a concentration of 0.69 µg/L during the April 2007 sampling event to 1.7 µg/L during the October 2007 event. Chloroform was also detected in monitoring wells MW-2, MW-3, and MW-4 at concentrations of 100,000 µg/L, 35,000 µg/L, and 12,000 µg/L respectively. As compared to the previous sampling event, chloroform concentrations increased slightly in MW-2, increased moderately in MW-3, and remained stable in MW-4. Chloroform continues to remain near the low end of its historically observed ranges in MW-1 and MW-4, while its concentrations in MW-2 and MW-3 are near the upper ends of their historically observed ranges.

Chlorobenzene

Chlorobenzene decreased in MW-1 from a concentration of 0.40 µg/L during the April 2007 sampling event to non-detectable. As compared to the previous sampling event, chlorobenzene concentrations increased from 2,000 µg/L to 2,500 µg/L in MW-2, increased from 25,000 µg/L to 27,000 µg/L in MW-3, and decreased from 110 µg/L to 100 µg/L in MW-4. Overall, concentrations in MW-1, MW-3, and MW-4 remained near the low end of their historically observed ranges, while MW-2 was at its highest observed concentration since October 1995.

Dichlorobenzenes

1,2-dichlorobenzene and 1,4-dichlorobenzene concentrations were non-detectable in MW-1 during this event. The concentrations of 1,2-dichlorobenzene and 1,4-dichlorobenzene in MW-2 increased from non-detectable to 67 µg/L and 98 µg/L, respectively. The concentrations of 1,2-dichlorobenzene and 1,4-dichlorobenzene in MW-3 increased from 27,000 µg/L and 28,000 µg/L, respectively to 32,000 µg/L and 35,000 µg/L, respectively. 1,2-dichlorobenzene was non-detectable in MW-4, while the

concentration of 1,4-dichlorobenzene remained stable at 110 µg/L compared to the April 2007 sampling result. Overall, concentrations of 1,2 and 1,4 dichlorobenzene remain within their historically observed ranges for each well.

2.1.3 Miscellaneous Compounds

In addition to the non-indicator compounds discussed above, several miscellaneous compounds were quantified during this monitoring event. The compounds quantified are listed by well in Table 1 and concentration data can be found in the analytical reports presented in Appendix B.

Table 1 - Quantified Miscellaneous Compounds
October 2007 Monitoring Event

Note: All concentrations are listed in micrograms per liter (µg/L). Constituents which were not detected are expressed as ND followed by the minimum detectable limit (MDL) for that parameter. MDLs are also expressed in µg/L.

Constituent	MW-1	MW-2	MW-3	MW-4
1,1-Dichloropropene	ND/0.28	28	ND/56	ND/56
1,3-Dichlorobenzene	ND/0.35	ND/7	1,400	ND/70
Bromochloromethane	ND/0.32	11	ND/64	ND/64
Trichloroethene	ND/0.26	ND/5.2	ND/52	66

2.1.4 Inorganic Compounds

At the request of the NDEP, samples from all four closed pond monitoring wells were also analyzed for nine inorganic compounds. The special analyses were conducted for both 2007 sampling events. These compounds include the metals arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver, and perchlorate and TDS. To provide a summary of the data generated during this special analytical program, the chemical concentrations for both sampling rounds have been provided in Table 2. The full analytical reports for the October 2007 sampling event are presented in Appendix B.

Table 2
Analytical Results - Inorganic Compounds
April and October 2007 Monitoring Events

Note: All concentrations listed are in micrograms per liter (µg/L) except TDS which is shown as milligrams per liter (mg/L). Constituents which were not detected are expressed as ND followed by the minimum detectable limit (MDL) for that parameter. Maximum Contaminant Levels (MCLs) are found in the USEPA National Primary Drinking Water Regulations and are the highest level of a contaminant allowed in drinking water. Preliminary Remediation Goals (PRGs) are direct contact exposure pathways provided by the USEPA.

Constituent	Sample Program	MW-1	MW-2	MW-3	MW-4	MCL ug/L	PRG ug/L
Arsenic	April 2007	62	51	62	84	10	0.045
	October 2007	57	53	69	86		
Barium	April 2007	24	59	45	29	2000	2,600
	October 2007	24	68	55	30		
Cadmium	April 2007	ND/0.050	0.052	ND/0.050	0.072	5	18
	October 2007	ND/0.11	ND/0.11	ND/0.11	ND/0.11		
Chromium	April 2007	14	ND/0.70	ND/0.70	2.5	100	110
	October 2007	15	0.92	0.78	2.8		
Lead	April 2007	0.10	ND/0.10	0.10	ND/0.10	15 ¹	No PRG
	October 2007	0.14	ND/0.10	ND/0.10	ND/0.10		
Mercury	April 2007	ND/0.10	ND/0.10	ND/0.10	ND/0.10	2	11
	October 2007	ND/0.10	ND/0.10	ND/0.10	ND/0.10		
Selenium	April 2007	2.7	4.3	16	15	50	180
	October 2007	2.1	4.8	20	17		
Silver	April 2007	ND/0.10	ND/0.10	ND/0.10	ND/0.10	No MCL	180
	October 2007	ND/0.20	ND/0.20	ND/0.20	ND/0.20		
Perchlorate	April 2007	ND/1.5	49	270	180	No MCL	3.6
	October 2007	ND/1.5	12	170	170		
TDS (mg/L)	April 2007	710	6700	5900	4100	500 mg/L ²	No PRG
	October 2007	750	6400	6400	4400		

Notes:

1. Lead - Treatment Technique Action Level
2. TDS Secondary Drinking Water Standard

2.1.5 Groundwater Monitoring Parameters

When compared to the April 2007 monitoring event, the static water levels in MW-2 and MW-4 decreased slightly, remained the same in MW-3, and increased slightly in MW-4. Conductivity readings in MW-1, MW-2, MW-3, and MW-4 appeared to be within their historic ranges. Other parameters such as pH and temperature appeared to be within their normal ranges.

3.0 Summary and Conclusions

Based on the data collected during the October 2007 sampling event, conclusions for indicator and non-indicator compound concentrations and distribution are as follows:

1. Of the indicator compounds, carbon tetrachloride was detected in well MW-2 but remained within its historically observed range. Methylene chloride was also detected in MW-2 at a concentration within its historically observed range. No other indicator compounds were found at concentrations above the laboratory detection limits during this monitoring event.
2. A total of five non-indicator compounds continue to be commonly observed in MW-2, MW-3, and MW-4. These compounds are benzene, chloroform, chlorobenzene, 1,2-dichlorobenzene, and 1,4-dichlorobenzene. The concentrations of benzene and the dichlorobenzenes observed during this monitoring event are generally at or near the low end of their historically observed ranges while chloroform and chlorobenzene in MW-2 are at or near the upper end of their historically observed ranges.

3. The special organic analyses conducted for the April and October 2007 sampling events have achieved their purpose of providing data for those parameters (metals, perchlorate, and TDS) in the closed pond monitoring wells. No significant variations in concentrations are discernable between the two sampling events.



Appendix A



October 2007 Laboratory Test Results

Appendix B



Appendix C