

# DAHL

& ASSOCIATES, INC.

Environmental Compliance Management Systems

October 25, 1993

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MPCA, HAZARDOUS  
WASTE DIVISION

Mr. David Scheer  
MPCA Hazardous Waste Division  
Tanks and Spills Section  
520 Lafayette Road  
St. Paul, MN 55155

Dear Mr. Scheer:

RE: Fact Sheet #7, Former Conoco Store #23034, 1126 South Robert Street, West St. Paul, Minnesota. LEAK #00000858

Enclosed is Fact Sheet #7, Site Monitoring Worksheet, for the above referenced site. A two week ground-water pump test was completed on October 22, 1993. Representative samples were collected and analyzed for pH, total suspended solids (TSS), chemical oxygen demand (COD), benzene, ethyl benzene, toluene, and xylene (BETX), and total hydrocarbons expressed as gasoline (TPH/Gas) per Metropolitan Waste Control Commission (MWCC) temporary discharge permit. The ground-water depression system will be re-started immediately if concentrations do not exceed the limits set by the MWCC.

Due to the unusually high water table elevations this year, the soil vapor vent screens are submerged and the soil vapor ventilation system remains non-operational. Once the water table drops and a sufficient amount of vent screen is exposed, the vent system will be started. Fact Sheet #11 (CAD Monitoring Worksheet) will be completed once the entire remediation system is operating, unless one portion of the system is started significantly earlier than the other (more than 30 days).

If you have any questions concerning this information or related to the project in general please contact me.

Sincerely,  
DAHL & ASSOCIATES, INC.



Mike Watson  
Assistant Project Manager

MPW/rl

enclosures

cc: Ms. Cindy Mueller, Conoco Inc.

SITE MONITORING WORKSHEET  
Fact Sheet #7  
Minnesota Pollution Control Agency  
LUST Cleanup Program  
April 1993

The Minnesota Pollution Control Agency (MPCA) staff expect this worksheet to simplify the required post-investigation site monitoring reports. Submit this worksheet:

- \* quarterly, after the remedial investigation (RI) is complete but before corrective action is taken;
- \* quarterly, during corrective action design (CAD) installation; and
- \* quarterly, after CAD is operational, along with "CAD System Monitoring Worksheet," (fact sheet #11).

Completion and submittal according to the above schedule fulfills your quarterly site monitoring report requirements. You may include a short cover letter whenever circumstances require. However, you must still submit an annual progress report as described in "Petroleum Tank Release Reports" (fact sheet #3). [NOTE: MPCA staff may reduce the frequency of progress reporting on a site specific basis.]

Where attachments are requested (tables, maps, graphs, etc.), please check off those items attached. The only table not mandatory is that for dissolved oxygen.

MPCA Leak Number: 858

I. Ground Water Monitoring

Please attach the following:

- X Cumulative table of ground water monitoring results, including all sample blanks.
- X Copies of most recent laboratory reports for ground water analyses, including a copy of the Chain of Custody.
- X Cumulative table of ground water elevation and product thickness results.
- X Hydrograph for all monitoring and recovery wells.
- X Graph(s) showing contaminant concentrations over time for all monitoring and recovery wells.
- X Ground water contour map based on the most recent ground water elevation data.
- X Table of dissolved oxygen sample results (if collected)

Please describe unusual circumstances that may have influenced the sampling results:

Please detail significant observations made at the site:

## II. Vapor Impact Monitoring

If vapor impacts were detected during the remedial investigation, please attach:

- a cumulative table of vapor monitoring results. The table should identify the location of all vapor monitoring points (i.e., sewer manholes, basements, etc.)
- a map of vapor monitoring locations.

Sampling instrument used:  
Sampling method:

NOTE: If vapor concentrations exceed 10 percent of the lower explosive limit, exit the building and contact the local fire department immediately. Then contact the MPCA spills unit at voice 612/297-8610, TDD 612/297-5353 or Greater Minnesota TDD 1-800-627-3529.

Vapor mitigation is required.

## III. Recommendations

Use this space to detail any recommendations for modifying the current monitoring schedule:

# TABLE 1 WATER TABLE ELEVATION

Conoco Store #23034  
Conoco-South Robert, W. St. Paul, Minnesota (VEMN0601)

WELL #	ELEVATION	DATE	D.T.P	D.T.W	P.T.	W.T.E.
MW-1	100.47	10/23/89	0.00	17.99	0.00	82.48
	100.47	12/15/89	0.00	18.89	0.00	81.58
	100.47	01/08/90	0.00	19.15	0.00	81.32
	100.47	02/05/90	0.00	19.61	0.00	80.86
	100.47	03/13/90	0.00	20.12	0.00	80.35
	100.47	03/29/90	0.00	19.81	0.00	80.66
	100.47	04/24/90	0.00	19.94	0.00	80.53
	*Resurvey	100.45	05/03/90	0.00	20.07	0.00
	100.45	05/15/90	0.00	19.66	0.00	80.79
	100.45	06/06/90	0.00	19.40	0.00	81.05
	100.45	06/12/90	0.00	18.75	0.00	81.70
	100.45	06/15/90	0.00	18.66	0.00	81.79
	100.45	06/29/90	0.00	17.82	0.00	82.63
	100.45	07/06/90	0.00	17.52	0.00	82.93
	100.45	07/13/90	0.00	17.30	0.00	83.15
	100.45	07/20/90	0.00	17.04	0.00	83.41
	100.45	08/22/90	0.00	15.90	0.00	84.55
	100.45	09/10/90	0.00	15.90	0.00	84.55
	100.45	10/10/90	0.00	15.90	0.00	84.55
	100.45	11/06/90	0.00	16.64	0.00	83.81
	100.45	01/14/91	0.00	17.77	0.00	82.68
	100.45	02/05/91	0.00	18.29	0.00	82.16
	100.45	03/13/91	0.00	18.76	0.00	81.69
	100.45	04/04/91	0.00	18.51	0.00	81.94
	100.45	05/10/91	0.00	17.81	0.00	82.64
	100.45	06/16/91	0.00	16.32	0.00	84.13
	100.45	07/03/91	0.00	15.56	0.00	84.89
	100.45	08/06/91	0.00	15.22	0.00	85.23
	100.45	09/09/91	0.00	15.15	0.00	85.30
	100.45	09/10/91	0.00	15.30	0.00	85.15
	100.45	10/08/91	0.00	14.68	0.00	85.77
	100.45	11/19/91	0.00	15.32	0.00	85.13
	100.45	12/26/91	0.00	14.93	0.00	85.52
	100.45	01/13/92	0.00	14.79	0.00	85.66
	100.45	02/10/92	0.00	15.02	0.00	85.43
	100.45	03/13/92	0.00	14.56	0.00	85.89
	100.45	04/20/92	0.00	14.27	0.00	86.18
	100.45	05/11/92	0.00	13.94	0.00	86.51
	100.45	06/12/92	0.00	14.11	0.00	86.34
	100.45	09/10/92	0.00	13.72	0.00	86.73
*Resurvey	100.45	12/23/92	0.00	14.30	0.00	86.15
	100.45	03/09/93	0.00	15.87	0.00	84.58
	100.45	06/10/93	0.00	13.90	0.00	86.55
	100.45	07/19/93	0.00	11.99	0.00	88.46
	100.45	07/28/93	0.00	12.08	0.00	88.37
	100.45	09/17/93	0.00	12.55	0.00	87.90
12:00 hrs.	100.45	09/29/93	0.00	12.75	0.00	87.70
14:30 hrs.	100.45	09/29/93	0.00	12.72	0.00	87.73
	100.45	09/30/93	0.00	12.40	0.00	88.05
	100.45	10/07/93	0.00	12.79	0.00	87.66

W-2	100.77	10/23/89	0.00	19.23	0.00	81.54
	100.77	12/15/89	0.00	20.14	0.00	80.63
	100.77	01/08/90	0.00	20.40	0.00	80.37
	100.77	02/05/90	0.00	20.93	0.00	79.84
	100.77	03/13/90	0.00	21.30	0.00	79.47
	100.77	03/29/90	0.00	20.87	0.00	79.90
	100.77	04/24/90	0.00	21.18	0.00	79.59
Resurvey	100.74	05/03/90	0.00	21.48	0.00	79.26
	100.74	05/15/90	0.00	20.89	0.00	79.85
	100.74	06/06/90	0.00	20.62	0.00	80.12
	100.74	06/12/90	0.00	19.92	0.00	80.82
	100.74	06/15/90	0.00	19.85	0.00	80.89
	100.74	06/29/90	0.00	18.93	0.00	81.81
	100.74	07/06/90	0.00	18.63	0.00	82.11
	100.74	07/13/90	0.00	18.39	0.00	82.35
	100.74	07/20/90	0.00	18.15	0.00	82.59
	100.74	08/22/90	0.00	16.93	0.00	83.81
	100.74	09/10/90	0.00	17.00	0.00	83.74
	100.74	10/10/90	0.00	17.13	0.00	83.61
	100.74	11/06/90	0.00	17.81	0.00	82.93
	100.74	01/14/91	0.00	19.00	0.00	81.74
	100.74	02/05/91	0.00	19.50	0.00	81.24
	100.74	03/13/91	0.00	19.92	0.00	80.82
	100.74	04/04/91	0.00	19.51	0.00	81.23
	100.74	05/10/91	0.00	19.30	0.00	81.44
	100.74	06/16/91	0.00	17.38	0.00	83.36
	100.74	07/03/91	0.00	16.55	0.00	84.19
	100.74	08/06/91	0.00	16.29	0.00	84.45
	100.74	09/09/91	0.00	16.23	0.00	84.51
	100.74	09/10/91	0.00	16.36	0.00	84.38
	100.74	10/08/91	0.00	15.68	0.00	85.06
	100.74	11/19/91	0.00	16.30	0.00	84.44
	100.74	12/26/91	0.00	16.03	0.00	84.71
	100.74	01/13/92	0.00	15.94	0.00	84.80
	100.74	02/10/92	0.00	16.20	0.00	84.54
	100.74	03/13/92	0.00	15.65	0.00	85.09
	100.74	04/20/92	0.00	15.30	0.00	85.44
	100.74	05/11/92	0.00	14.85	0.00	85.89
	100.74	06/12/92	0.00	15.00	0.00	85.74
	100.74	09/10/92	0.00	14.70	0.00	86.04
Resurvey	100.77	12/23/92	0.00	15.40	0.00	85.37
	100.77	03/09/93	0.00	16.96	0.00	83.81
	100.77	06/10/93	0.00	14.90	0.00	85.87
	100.77	07/19/93	0.00	12.85	0.00	87.92
	100.77	07/28/93	0.00	12.99	0.00	87.78
	100.77	09/17/93	0.00	13.49	0.00	87.28
12:00 hrs.	100.77	09/29/93	0.00	13.73	0.00	87.04
14:30 hrs.	100.77	09/29/93	0.00	13.70	0.00	87.07
	100.77	09/30/93	0.00	13.37	0.00	87.40
	100.77	10/07/93	0.00	13.78	0.00	86.99
W-3	101.05	10/23/89	0.00	20.77	0.00	80.28
	101.05	12/15/89	21.54	22.35	0.81	78.70
	101.05	01/08/90	22.07	22.47	0.40	78.58
	101.05	02/05/90	22.53	22.91	0.38	78.14
	101.05	03/13/90	22.91	23.37	0.46	77.68
	101.05	03/29/90	22.82	23.14	0.32	77.91
	101.05	04/24/90	22.99	23.39	0.40	77.66
Resurvey	101.05	05/03/90	22.99	23.30	0.31	77.75
	101.05	05/15/90	22.71	22.92	0.21	78.13

101.05	06/06/90	21.33	22.60	1.27	78.45
101.05	06/12/90 ^	22.22	23.00	0.78	78.05
101.05	06/15/90 ^	21.20	21.74	0.54	79.31
101.05	06/29/90 ^	19.39	20.08	0.69	80.97
101.05	07/06/90	19.67	19.70	0.03	81.35
101.05	07/13/90	0.00	19.41	0.00	81.64
101.05	07/20/90	0.00	19.22	0.00	81.83
101.05	08/22/90	0.00	18.04	0.00	83.01
101.05	09/10/90	0.00	18.27	0.00	82.78
101.05	10/10/90	0.00	18.49	0.00	82.56
101.05	11/06/90	0.00	19.24	0.00	81.81
101.05	01/14/91	20.50	20.58	0.08	80.47
101.05	02/05/91	21.00	21.05	0.05	80.00
101.05	03/13/91	21.66	21.68	0.02	79.37
101.05	04/04/91	0.00	21.28	0.00	79.77
101.05	05/10/91	0.00	20.42	0.00	80.63
101.05	06/16/91	0.00	18.26	0.00	82.79
101.05	07/03/91	0.00	17.62	0.00	83.43
101.05	08/06/91	0.00	17.36	0.00	83.69
101.05	09/09/91	0.00	17.51	0.00	83.54
101.05	09/10/91	0.00	17.67	0.00	83.38
101.05	10/08/91	0.00	16.96	0.00	84.09
101.05	11/19/91	0.00	17.81	0.00	83.24
101.05	12/26/91	0.00	17.38	0.00	83.67
101.05	01/13/92	0.00	17.39	0.00	83.66
101.05	02/10/92	0.00	17.65	0.00	83.40
101.05	03/13/92	0.00	17.28	0.00	83.77
101.05	04/20/92	0.00	16.57	0.00	84.48
101.05	05/11/92	0.00	16.04	0.00	85.01
101.05	06/12/92	0.00	16.42	0.00	84.63
101.05	09/10/92	0.00	16.00	0.00	85.05
101.04	12/23/92	0.00	16.61	0.00	84.43
101.04	03/09/93	0.00	18.38	0.00	82.66
101.04	06/10/93	0.00	16.02	0.00	85.02
101.04	07/19/93	0.00	13.79	0.00	87.25
101.04	07/28/93	0.00	14.12	0.00	86.92
101.04	09/17/93	0.00	14.71	0.00	86.33
101.04	09/29/93	0.00	14.97	0.00	86.07
101.04	09/29/93	0.00	15.52	0.00	85.52
101.04	09/30/93	0.00	15.48	0.00	85.56
101.04	10/07/93	0.00	15.08	0.00	85.96
100.68	05/03/90	0.00	23.93	0.00	76.75
100.68	07/13/90	0.00	19.82	0.00	80.86
100.68	07/20/90	0.00	19.65	0.00	81.03
100.68	08/22/90	0.00	18.60	0.00	82.08
100.68	09/10/90	0.00	18.94	0.00	81.74
100.68	10/10/90	0.00	19.22	0.00	81.46
100.68	11/06/90	0.00	19.99	0.00	80.69
100.68	01/14/91	0.00	21.30	0.00	79.38
100.68	02/05/91	0.00	21.83	0.00	78.85
100.68	03/13/91	0.00	22.35	0.00	78.33
100.68	04/04/91	0.00	22.21	0.00	78.47
100.68	05/10/91	0.00	21.14	0.00	79.54
100.68	06/16/91	0.00	18.53	0.00	82.15
100.68	07/03/91	0.00	18.14	0.00	82.54
100.68	08/06/91	0.00	18.10	0.00	82.58
100.68	09/09/91	0.00	18.35	0.00	82.33
100.68	09/10/91	0.00	18.40	0.00	82.28
100.68	10/08/91	0.00	17.76	0.00	82.92

Resurvey

12:00 hrs.  
14:30 hrs.

MW-4

	100.68	11/19/91	0.00	17.70	0.00	82.98
	100.68	12/26/91	0.00	18.10	0.00	82.58
	100.68	01/13/92	0.00	18.18	0.00	82.50
	100.68	02/10/92	0.00	18.50	0.00	82.18
	100.68	03/13/92	0.00	17.88	0.00	82.80
	100.68	04/20/92	0.00	17.22	0.00	83.46
	100.68	05/11/92	0.00	16.63	0.00	84.05
	100.68	06/12/92	0.00	17.19	0.00	83.49
	100.68	09/10/92	0.00	16.84	0.00	83.84
*Resurvey	100.66	12/23/92	0.00	17.42	0.00	83.24
	100.66	03/09/93	0.00	19.19	0.00	81.47
	100.66	06/10/93	0.00	16.20	0.00	84.46
	100.66	07/19/93	0.00	14.42	0.00	86.24
	100.66	07/28/93	0.00	14.90	0.00	85.76
	100.66	09/17/93	0.00	15.57	0.00	85.09
12:00 hrs.	100.66	09/29/93	0.00	15.81	0.00	84.85
14:30 hrs.	100.66	09/29/93	0.00	15.78	0.00	84.88
	100.66	09/30/93	0.00	15.49	0.00	85.17
	100.66	10/07/93	0.00	15.96	0.00	84.70
W-5	102.13	12/23/92	0.00	17.03	0.00	85.10
	102.13	03/09/93	0.00	18.73	0.00	83.40
	102.13	06/10/93	0.00	16.53	0.00	85.60
	102.13	07/19/93	0.00	14.40	0.00	87.73
	102.13	07/28/93	0.00	14.62	0.00	87.51
	102.13	09/17/93	0.00	15.15	0.00	86.98
12:00 hrs.	102.13	09/29/93	0.00	15.41	0.00	86.72
14:30 hrs.	102.13	09/29/93	0.00	15.43	0.00	86.70
	102.13	09/30/93	0.00	15.28	0.00	86.85
	102.13	10/07/93	0.00	15.10	0.00	87.03
W-1	100.61	12/23/92	0.00	16.00	0.00	84.61
	100.61	03/09/93	0.00	17.92	0.00	82.69
	100.61	06/10/93	0.00	15.54	0.00	85.07
	100.61	07/19/93	0.00	13.82	0.00	86.79
	100.61	07/28/93	0.00	14.13	0.00	86.48
	100.61	09/17/93	0.00	14.74	0.00	85.87
	100.61	09/20/93	0.00	16.13	0.00	84.48
	100.61	09/27/93	0.00	14.12	0.00	86.49
12:00 hrs.	100.61	09/29/93	0.00	14.94	0.00	85.67
14:30 hrs.	100.61	09/29/93	0.00	25.40	0.00	75.21
	100.61	09/30/93	0.00	25.64	0.00	74.97
	100.61	10/07/93	0.00	15.10	0.00	85.51

Explanation:

- All measurments are in feet (ft).
- D.T.P - Depth-to-Product
- D.T.W - Depth-to-Water
- P.T. - Product Thickness
- W.T.E - Water-Table-Elevation
- ^ - Data corrected for possible base measurement error.

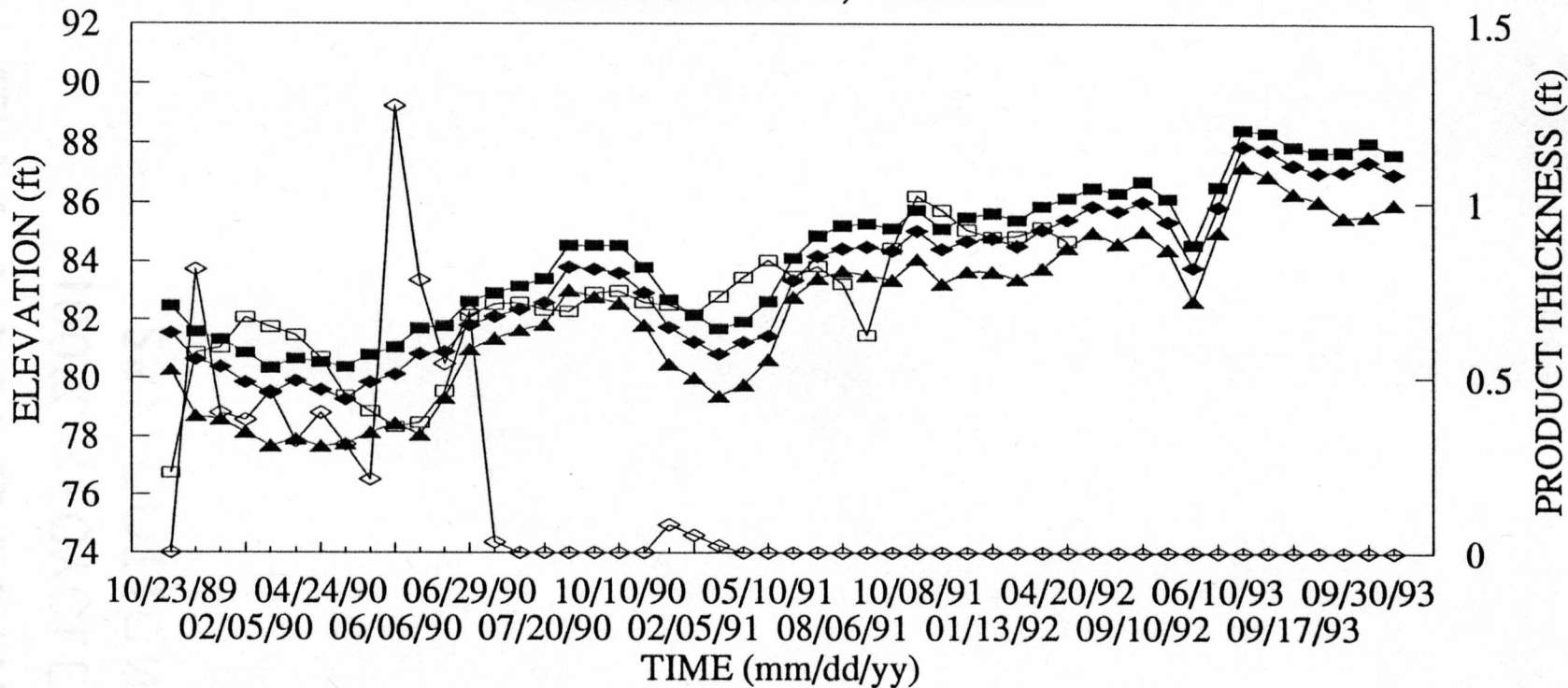
**TABLE 2**  
**GROUNDWATER ANALYSIS SUMMARY**  
*Conoco Store #23034*  
*Conoco-South Robert, W. St. Paul, Minnesota (VEMN0601)*

WELL #	DATE	B	E	T	X	THG/GRO	MTBE
MW-1	05/03/90	ND	ND	ND	ND	ND	ND
	09/10/90	ND	ND	ND	ND	ND	ND
	03/13/91	ND	ND	ND	ND	ND	ND
	09/09/91	ND	ND	ND	ND	ND	ND
	12/26/91	ND	ND	ND	ND	ND	ND
	03/13/92	ND	ND	ND	ND	ND	ND
	06/12/92	ND	ND	ND	ND	ND	ND
	09/10/92	ND	ND	ND	ND	ND	ND
	12/23/92 *	ND	ND	ND	ND	ND	ND
	03/09/93	ND	ND	ND	ND	ND	ND
	06/10/93	ND	ND	ND	ND	ND	ND
	09/17/93	ND	ND	ND	ND	ND	ND
MW-2	05/03/90	6600	4	12	6900	27000	1600
	09/10/90	7300	950	17000	9600	48000	1600
	03/13/91	8200	1200	13000	10000	68000	3000
	09/09/91	8500	1300	9300	10000	48000	3000
	12/26/91	3800	1200	1100	4400	23000	ND
	03/13/92	2100	800	1200	2300	11000	ND
	06/12/92	2500	1100	1000	2600	17000	220
	09/10/92	4200	1300	1400	3100	19000	ND
	12/23/92 *	5800	1500	2800	4000	27000	ND
	03/09/93	5300	1300	3800	4500	21000	ND
	06/10/93	240	ND	120	230	1200	ND
	09/17/93	210	250	ND	370	3100	ND
MW-3	05/03/90						
	09/10/90	9700	2000	23000	16000	82000	1500
	03/13/91	9200	3900	23000	26000	110000	2600
	09/09/91	11000	3000	22000	20000	79000	4900
	12/26/91	7700	2300	10000	14000	77000	1600
	03/13/92	10000	2800	17000	15000	64000	ND
	06/12/92	8100	2500	16000	14000	72000	290
	09/10/92	9800	ND	22000	17000	75000	ND
	12/23/92 *	8100	2700	16000	15000	82000	ND
	03/09/93	6500	3000	20000	17000	74000	ND
	06/10/93	6400	2700	11000	13000	52000	ND
	09/17/93	4300	2200	14000	11000	40000	ND
W-4	05/03/90	ND	ND	ND	2	41	ND
	09/10/90	ND	ND	ND	ND	19	ND
	03/13/91	ND	ND	ND	1	40	ND
	09/09/91	ND	ND	ND	ND	ND	16
	12/26/91	ND	ND	ND	ND	ND	ND
	03/13/92	ND	ND	ND	ND	ND	ND
	06/12/92	ND	ND	ND	ND	ND	ND
	09/10/92	ND	ND	ND	ND	ND	ND
	12/23/92 *	ND	ND	ND	ND	ND	ND
	03/09/93	ND	ND	ND	ND	ND	ND
	06/10/93	ND	ND	ND	ND	ND	ND
	09/17/93	ND	ND	ND	ND	ND	ND



# GROUND-WATER ELEVATIONS/PRODUCT THICKNESS

Conoco South Robert, VEMN0601



■ MW-1

◆ MW-2

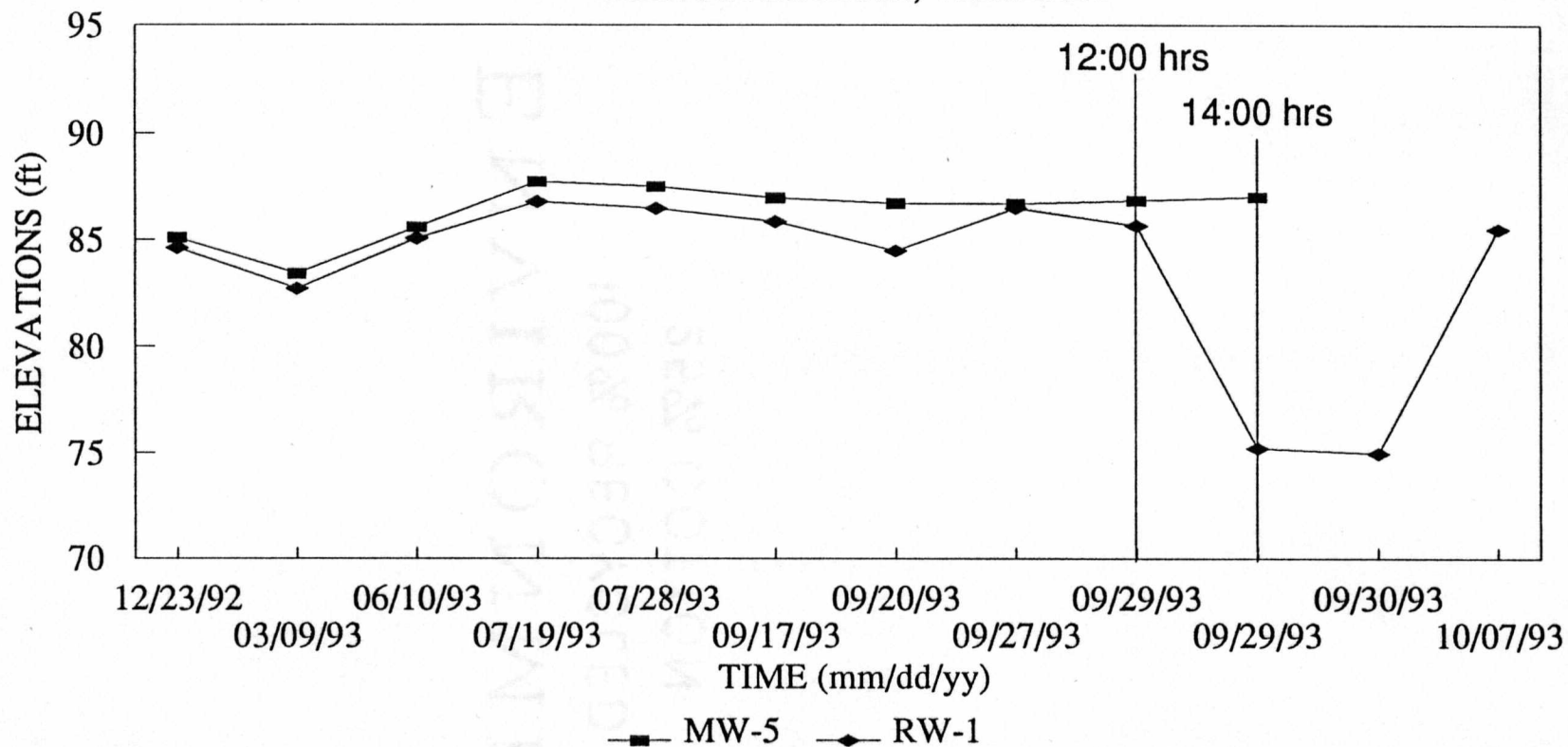
▲ MW-3

□ MW-4

◇ MW-3, prod. thickness

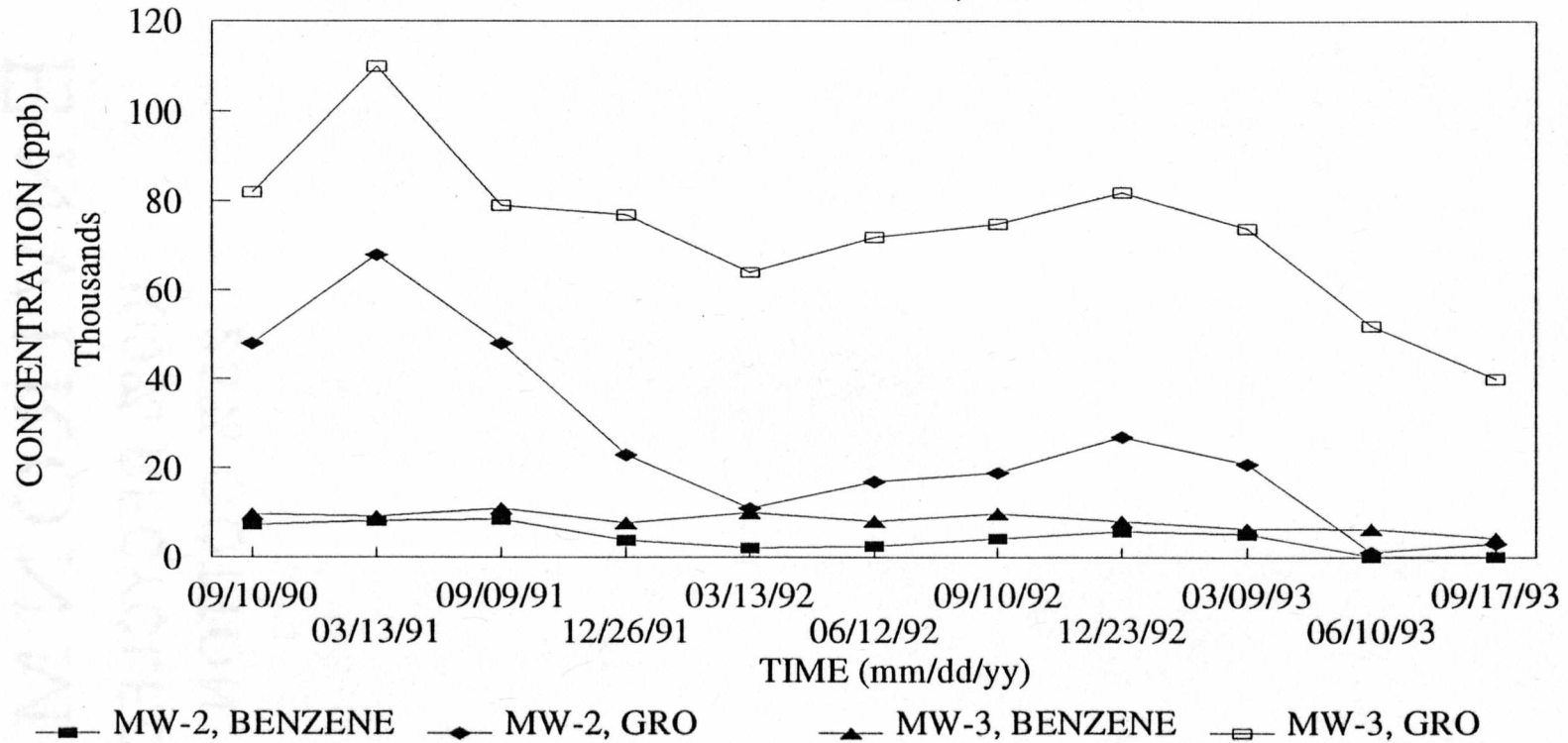
# GROUND-WATER ELEVATIONS, MW-5 & RW-1

Conoco South Robert, VEMN0601



# CONCENTRATIONS vs. TIME, MW-2 & MW-3

Conoco South Robert, VEMN0601



DAIRY QUEEN

NORTH

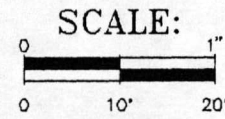


EXPLANATION

NOTE :  
This drawing (including property lines, structures, and locations of buried utilities) is not exact. For precise locations, consult a registered land surveyor and appropriate utility company.

⊙ MW- MONITORING WELL

GROUND-WATER GRADIENT DATA:  
• BASED ON DATA COLLECTED ON 10/7/93



4390 McMenamy Road  
Saint Paul, MN. 55127  
Phone (612)490-2905  
FAX (612)490-3777

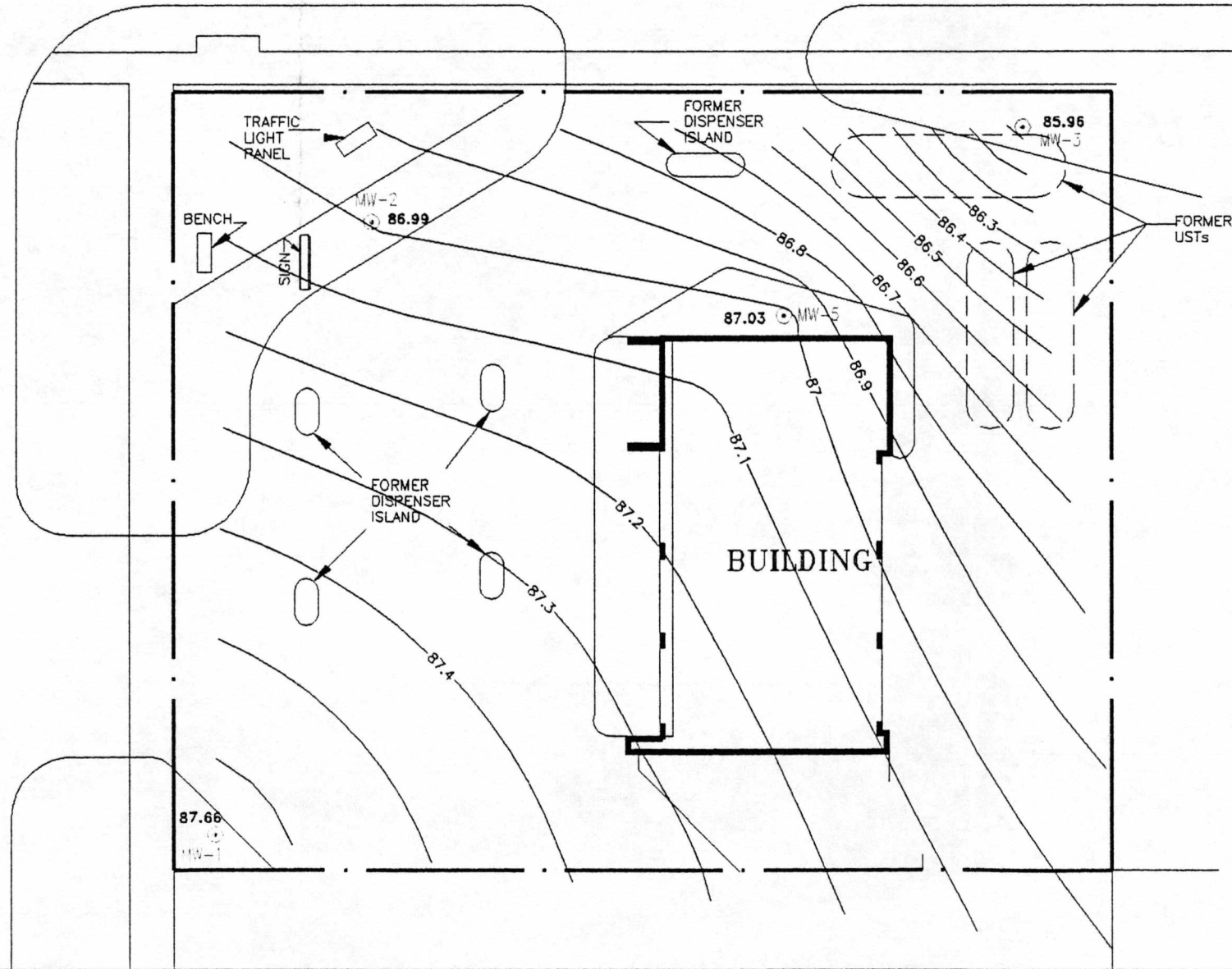
**DAHL**

& ASSOCIATES, INC.  
Environmental Consultants, Contractors & Engineers

DAHL STD NO: VEMN0601-B-00-B

BUTLER AVENUE

SOUTH ROBERT STREET



NANCY RADDATZ DANCE

STOFFEL'S CHIRO

GROUND-WATER GRADIENT

1126 ROBERT STREET SOUTH  
WEST ST. PAUL, MINNESOTA

PLOT DATE 10/26/93 AutoCAD FILE NAME 0601-15B PLOT SCALE 1" = 20'

DATE DRAWN	10/26/93
DRAWN BY	Jim N.
APPROVED BY	
DRAWING NUMBER	B-15-B
PROJECT NUMBER	VEMN0601
FIGURE NUMBER	

**DAHL****& ASSOCIATES, INC.**

Environmental Consultants, Contractors &amp; Engineers

DAHL FAX

(612) 490-2905

Fax (612) 490-3777

Date: 10-27-93To: Dave ScheerFrom: Mike Watson

Message: Enclosed are the laboratory reports  
for the third quarter for leak # 858,  
Former Conoco Store #23034, 1126 S. Robert  
St. I failed to include them w/  
FactSheet #7. Sorry for any inconvenience  
this may have caused you. FactSheet #7  
is completed and is in mail.

Number of Pages 6 (including this sheet)

Please contact us if this transmission is not complete

# Huntingdon

Consulting Engineers Environmental Scientists

Twin City Testing Corporation  
737 Pelham Boulevard  
St. Paul, Minnesota 55114-1776  
(612) 645-3601  
Fax: (612) 659-7515

## REPORT OF: CHEMICAL ANALYSES

PROJECT: VEMN 0601

DATE: September 30, 1993

REPORTED TO: Dahl & Associates  
Attn: Mike Watson  
4390 McMenemy Drive  
St. Paul, MN 55127

Conoco Inc.

LABORATORY NO: 4410 93-2564  
HPN: 844

### INTRODUCTION

This report presents the results of the analyses of five samples received on September 20, 1993, from a representative of Dahl & Associates. The scope of our services was limited to the parameters listed in the attached tables.

### METHODOLOGY

Analyses are performed according to Twin City Testing Standard Operating Procedures. The procedures are based on the references stated in the analytical results tables.

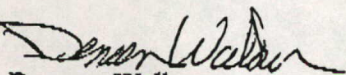
### RESULTS

The results are listed in the attached tables.

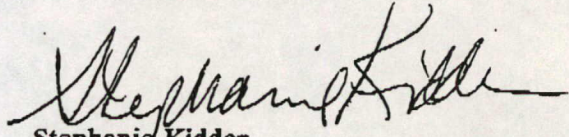
### REMARKS

The samples were collected on September 17, 1993. If samples are not consumed in the analysis, they are held for two months from the date of sample receipt and then disposed, unless written instructions to the contrary are received.

### TWIN CITY TESTING CORPORATION

  
Deneen Walker  
Project Manager

DW/SK/lml

  
Stephanie Kidder  
Laboratory Manager

**PETROLEUM VOLATILE ORGANIC COMPOUND RESULTS**  
**EPA METHOD 8020**

(All values are in  $\mu\text{g/L}$  which is equivalent to parts-per-billion)

Client ID:	Method Blank	MW-1	MW-4	MW-5	
TCT ID:		5762	5765	5766	
<b>Parameter:</b>					<b><u>PQL</u></b>
Benzene	ND	ND	ND	ND	5
Toluene	ND	ND	ND	ND	5
Ethyl benzene	ND	ND	ND	ND	5
Total xylenes	ND	ND	ND	ND	5
Methyl-tert-Butyl Ether	ND	ND	ND	ND	5
<b>Surrogate Recovery:</b>					
$\alpha, \alpha, \alpha$ -Trifluorotoluene	102%	102%	103%	102%	
Gasoline Range Organics	ND	ND	ND	ND	30
<b>Surrogate Recovery:</b>					
$\alpha, \alpha, \alpha$ -Trifluorotoluene	100%	101%	101%	100%	
<b>Date Collected:</b>		9/17/93	9/17/93	9/17/93	
<b>Date Analyzed:</b>	9/29/93	9/29/93	9/29/93	9/29/93	

PQL = Practical Quantitation Limit

ND = Not Detected

**Reference:** EPA Test Methods for Evaluating Solid Waste, SW-846, November 1986, 3rd Edition.

Wisconsin Department of Natural Resources, PUBL-SW-140, April 1992.

**PETROLEUM VOLATILE ORGANIC COMPOUND RESULTS**  
**EPA METHOD 8020**

(All values are in  $\mu\text{g/L}$  which is equivalent to parts-per-billion)

Client ID: MW-2

TCT ID: 5763

<u>Parameter:</u>		<u>PQL</u>
Benzene	210	50
Toluene	ND	50
Ethyl benzene	250	50
Total xylenes	370	50
Methyl-tert-Butyl Ether	ND	50
<b>Surrogate Recovery:</b>		
$\alpha, \alpha, \alpha$ -Trifluorotoluene	100%	
Gasoline Range Organics	3,100	300
<b>Surrogate Recovery:</b>		
$\alpha, \alpha, \alpha$ -Trifluorotoluene	97%	
<b>Date Collected:</b>	9/17/93	
<b>Date Analyzed:</b>	9/29-30/93	

PQL = Practical Quantitation Limit

ND = Not Detected

Reference: EPA Test Methods for Evaluating Solid Waste, SW-846, November 1986, 3rd Edition.

Wisconsin Department of Natural Resources, PUBL-SW-140, April 1992.

**PETROLEUM VOLATILE ORGANIC COMPOUND RESULTS****EPA METHOD 8020**(All values are in  $\mu\text{g/L}$  which is equivalent to parts-per-billion)

Client ID: MW-3

TCT ID: 5764

<u>Parameter:</u>		<u>PQL</u>
Benzene	4,300	1,200
Toluene	14,000	1,200
Ethyl benzene	2,200	1,200
Total xylenes	11,000	1,200
Methyl-tert-Butyl Ether	ND	1,200
<b>Surrogate Recovery:</b>		
$\alpha, \alpha, \alpha$ -Trifluorotoluene	102%	
Gasoline Range Organics	40,000	7,500
<b>Surrogate Recovery:</b>		
$\alpha, \alpha, \alpha$ -Trifluorotoluene	101%	
Date Collected:	9/17/93	
Date Analyzed:	9/29/93	

PQL = Practical Quantitation Limit

ND = Not Detected

Reference: EPA Test Methods for Evaluating Solid Waste, SW-846, November 1986, 3rd Edition.

Wisconsin Department of Natural Resources, PUBL-SW-140, April 1992.



737 PELHAM AVENUE  
DOCK 4  
ST. PAUL, MN 55114  
PHONE 612-658-7555

CHAIN-OF-CUSTODY RECORD

TCT NO. 53523

TCT CONTACT: D. Walker.  
 PROJECT NAME: DAHL  
 CLIENT P.O. # / PROJECT NO.: JEMN 0601  
 BILL TO (CO. NAME, ADDRESS): DAHL  
MIKE WATSON / Jonathan Paetz.  
 REPORT TO:

11.1.1993 - 11.1.1993  
 11.1.1993 - 11.1.1993

CLIENT NAME: DAHL & Associates  
 CLIENT ADDRESS (STREET NUMBER, SUITE, ETC.): 4390 McMenemy RD  
ST Paul MN 55127  
 CLIENT ADDRESS (CITY, STATE, ZIP):  
 CLIENT CONTACT/ADDRESS IF DIFFERENT FROM ABOVE: 490-2905  
 PHONE:  
 SAMPLED BY: DAHL & Associates [Signature]

POSSIBLE HAZARD: YES \_\_\_\_\_ UNKNOWN  (COMMENT BELOW)  
 SAMPLE DISPOSAL: RETURN TO CLIENT \_\_\_\_\_ DISPOSAL BY LAB   
 (ADDITIONAL CHARGES MAY BE ASSESSED)

ANALYSES REQUEST	FILTERED (YES/NO)	N	N	N					
PRESERVED (CODE)		E	E	E					
REFRIGERATED (Y/N)		Y	Y	Y					
CODE A - NONE									
B - HNO3									
C - H2SO4									
D - NaOH									
E - HCl									
F -									

BETX  
 MIBX  
 CIPed

TCT USE ONLY

PROJ. MGR.: Daneen

PRIORITY:

INVOICE #:

JOB NAME: HPN # 844

CUSTODY SEAL INTACT/NUMBER Y/N: N/A

TEMPERATURE OF CONTAINER: COOL

SAMPLE CONDITION: OK

---

PREPAY Y/N:

CHECK NO.:

CHECK AMOUNT:

ITEM NO.	CLIENT SAMPLE ID.	MATRIX	DATE SAMPLED	TIME SAMPLED					NO. OF CONTAINERS	CONTAINER TYPE	TCT NO.
3	MW-1	H2O	9-17-93	P.M.					3	4oz PET	5762
3 <sup>2</sup>	MW-2								3		5763
3 <sup>3</sup>	MW-3								3		5764
3 <sup>4</sup>	MW-4								3		5765
3 <sup>5</sup>	MW-5								3		5766
6											
7											
8											
9											
10											

Additional Comments	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
	<u>Skinner</u>	<u>9-17-93</u>		<u>[Signature]</u>	<u>9/20</u>	<u>3:30</u>
				<u>Paula Brown</u>	<u>9/20/93</u>	<u>4:00</u>

TOTAL P. 06

10-27-1993 09:01AM FROM DAHL AND ASSOCIATES TO 9-2978676 P. 06