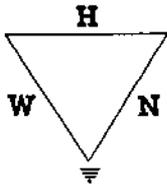


SEP 12 1991



Wagner, Heindel, and Noyes, Inc. consulting geologists

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September 9, 1991

Mr. Richard Spiese, Sites Coordinator
Petroleum Sites Management Section
Agency of Natural Resources
103 South Main Street
Waterbury, Vermont 05676

RE: Final Report
Castleton School/Library
Castleton, Vermont

Dear Richard:

Our final round of groundwater monitoring for the Castleton School/Library fuel oil release investigation was completed on May 21, 1991, and was followed by a report dated June 20, 1991. This final report provides conclusions and recommendations based on the entire data set collected at the site over the past approximately two years.

CONCLUSIONS

A summary table, attached to this letter, has been prepared which provides the concentrations of BTEX constituents, and total hydrocarbons detected in each monitoring well and the Town well, taken from the period May 4, 1989 through May 21, 1991. A total of six groundwater sampling rounds of 12 wells (\pm) and the Town well were conducted at the site.

During the initial May 4, 1989 sampling round, low levels of total hydrocarbons were observed in MW-1, MW-2, MW-3, MW-7, and MW-12 (the trip blank showed the highest levels of total hydrocarbons, which may suggest sample contamination during transit). Those wells showing detectable levels of hydrocarbons were generally located just downgradient of the Library fuel oil tank. (There was a conspicuous absence of contamination noted in MW-9, however.)

During the next sampling round on August 7, 1989, only MW-3 and MW-8 showed detectable total hydrocarbons. During the four subsequent sampling rounds, no detectable organic contaminants were observed in any monitor wells, with the minor exception of 3.3 ppm observed in MW-5 during the February 1990 round. Some data gaps are observed in these later sampling rounds due to frozen curb boxes, or destroyed wells.

Extensive monitoring of groundwater levels and water quality at the Castleton School/Library site revealed low levels of total hydrocarbons in some wells in the vicinity of the Library and the School during the summer and fall of 1989. Water table maps constructed from groundwater elevation data for 12 monitoring wells clearly illustrates that the groundwater flowing beneath the Library and School moves toward the Castleton Town well. However, four subsequent groundwater sampling rounds failed to show any extensive petroleum contamination near the School or Library that is threatening the water quality of the Town well.

RECOMMENDATIONS

In our opinion, the groundwater quality data gathered at this site shows no potential threats to the Castleton Town well from fuel oil releases at the Castleton School or Library. We therefore recommend that groundwater monitoring at this site be discontinued. Consistent with the Vermont UST Regulations, the fuel tanks at the School and Library should be routinely monitored to ensure that these tanks are not leaking. We further recommend that, wherever possible, all remaining monitoring wells be preserved and maintained so that these wells will be available in the event that additional problems arise at the site.

We have enjoyed providing our services to the Agency for this project, and look forward to future hydrogeologic investigative and remediative work with the State of Vermont.

Sincerely,



Dean A. Grover, P.E.
Environmental Engineer

DAG/kp

Attachments

State of Vermont/Castleton Library
 Summary of Fuel Oil Investigation Sampling- 1989-91
 Concentration in PPB unless otherwise noted.

DATE	PARAMETER	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11	MW-12	TOWN WELL	TRIP BLANK	
05/04/89	Benzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	TBQ	ND	ND	ND	TBQ	
	Toluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	TBQ	
	Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	Xylenes	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	MTBE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	THC (PPM)*	.173/318	0.275	0.343	ND	ND	ND	1.26	ND	ND	ND	ND	ND	2.68	0.767	4.45
UP (#)	0	0	0	1	1	0	0	0	0	0	5	0	0	0	2	
08/07/89	Benzene	ND	ND/ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	Toluene	ND	ND/ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	Ethylbenzene	ND	ND/ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	Xylenes	ND	ND/ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	MTBE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	THC (PPM)	ND	ND/ND	9.0	ND	ND	ND	ND	29.0	ND	ND	ND	ND	ND	ND	
UP (#)	0	0/0	0	0	0	0	0	0	0	0	0	0	0	0		
11/07/89	Benzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND/ND	ND	ND	ND	
	Toluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND/ND	ND	ND	ND	
	Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND/ND	ND	ND	ND	
	Xylenes	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND/ND	ND	ND	ND	
	MTBE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	THC (PPM)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND/ND	ND	ND	ND	
UP (#)	0	0	0	0	0	0	0	0	0	0	0/0	0	0	0		
02/21/90	Benzene	-	-	-	ND/ND	ND	ND	Well Destroyed	ND	ND	ND	ND	ND	ND	ND	
	Toluene	-	-	-	ND/ND	ND	ND		ND	ND	ND	ND	ND	ND	ND	ND
	Ethylbenzene	-	-	-	ND/ND	ND	ND		ND	ND	ND	ND	ND	ND	ND	ND
	Xylenes	-	-	-	ND/ND	ND	ND		ND	ND	ND	ND	ND	ND	ND	ND
	MTBE	-	-	-	ND/ND	ND	ND		ND	ND	ND	ND	ND	ND	ND	ND
	THC (PPM)	-	-	-	ND/ND	3.3	ND		ND	ND	ND	ND	ND	ND	ND	ND
UP (#)	-	-	-	0/0	1	1	1	1	1	1	1	1	1	1		
06/11/90	Benzene	ND	ND	ND	ND	-	ND	Well Destroyed	ND/ND	ND	ND	ND	ND	ND	ND	
	Toluene	ND	ND	ND	ND	-	ND		ND/ND	ND	ND	ND	ND	ND	ND	ND
	Ethylbenzene	ND	ND	ND	ND	-	ND		ND/ND	ND	ND	ND	ND	ND	ND	ND
	Xylenes	ND	ND	ND	ND	-	ND		ND/ND	ND	ND	ND	ND	ND	ND	ND
	MTBE	-	-	-	-	-	-		-	-	-	-	-	-	-	-
	THC (PPM)	ND	ND	ND	ND	ND	ND		ND/ND	ND	ND	ND	ND	ND	ND	ND
UP (#)	0	0	0	0	-	0	0/0	0	0	0	0	0	0	0		
05/21/91	Benzene	ND	-	-	ND	ND	ND	Well Destroyed	ND	ND	ND	ND	ND/ND	ND	ND	
	Toluene	ND	-	-	ND	ND	ND		ND	ND	ND	ND	ND/ND	ND	ND	
	Ethylbenzene	ND	-	-	ND	ND	ND		ND	ND	ND	ND	ND/ND	ND	ND	
	Xylenes	ND	-	-	ND	ND	ND		ND	ND	ND	ND	ND/ND	ND	ND	
	MTBE	ND	-	-	ND	ND	ND		ND	ND	ND	ND	ND/ND	ND	ND	
	THC (PPM)	ND	-	-	ND	ND	ND		ND	ND	ND	ND	ND/ND	ND	ND	
UP (#)	0	-	-	0	0	0	0	0	0	0	0/0	0	0			

NOTES:

THC = TOTAL HYDROCARBON MEASURED BY EPA METHOD 418.1 (PPM)
 UP = # OF UNIDENTIFIED PEAKS FROM EPA METHOD 602.
 * = CONCENTRATIONS MEASURED ON 6/6/89.

X/Y = DUPLICATE SAMPLE
 TBQ = TRACE BELOW QUANTIFICATION LIMIT
 ND = BELOW QUANTIFICATION LIMIT