

RAMSEY CONSERVATION DISTRICT



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October 20, 2009

Ms. Stephanie McNamara
Administrator
800 East County Road E.
Vadnais Heights, MN 55127

Re: Gilfillan Lake - Groundwater Influence

Dear Ms. McNamara:

To respond to your request for Ramsey Conservation District's opinion on the effects of groundwater on Gilfillan Lake levels, I have reviewed several sources of information:

- Minnesota Department of Health Well Records
- Technical Memorandum, *Gilfillan Lake-Water Balance & Quality Context*, Wenck Associates, Inc., May 19, 2009
- *2008 Annual Monitoring Report, Highway 96 Site, White Bear Township*, Conestoga-Rovers & Associates, June 2009

Wenck's technical memorandum states that the lake's water levels have fallen in each of the last three years (2006-2008) and they are almost four feet lower than the value reported in 1994. The stated purpose of that memo was to guide the process of preparing a Sustainable Lake Management Plan. The Wenck memo stated that previous reports by Conestoga-Rovers & Associates as well as by Professional Engineering Consultants concluded that cessation of lake level augmentation and lack of precipitation between 1987 and 1989 caused low water levels in the lake.

You requested that I review the Wenck memo and determine whether or not it reflected sound science. I can say unequivocally that, based on my review and understanding, it does. As the memo states, a more precise understanding of the influence from groundwater on the lake would require the collection of more data.

Ramsey Conservation District
Gilfillan Lake - Groundwater Influence

You asked that I confirm the impact on Gilfillan Lake levels, if any, of the extraction wells at the Highway 96 Dump site. The two extraction wells, EW-1A and EW-2, draw water from the Glacial Drift Lower Sand aquifer and the St. Peter aquifer, respectively. The extraction wells do not affect the lake levels. Gilfillan Lake is perched above static groundwater elevations. This is demonstrated by the fact that the lake levels are higher than the static water elevations in nearby wells. All studies confirm this fact. Efforts to further confirm this by gathering additional data from wells and nearby lakes, as recommended in the Wenck memo, could be conducted.

In 2008, extraction wells EV-1A and EV-2 reportedly pumped 4.2 and 8.3 million gallons, respectively. To compare private groundwater usage to the volume of water pumped by the two extraction wells; the average household uses approximately 400 gallons of water per day and the extraction wells, EV-1A and EV-2, pump 11,500 and 23,000 gallons per day, respectively. The extraction wells, that prevent the migration of contaminants from the Highway 96 Dump, pump the equivalent of approximately 86 residential wells.


By far the most common aquifer used by private well owners in the area is the St. Peter; the same as the extraction wells.

As for whether similar geologic conditions exist on all sides of the lake, a review of well records determined that inter-bedded clay and sand layers, of possibly localized extent, are present around Gilfillan Lake. This makes lateral correlation of individual layers difficult and no well information exists beneath the lake. Compounding this difficulty is the fact that different drillers describe geological materials in various ways, making comparison of those materials less certain.

A map with selected well locations and the respective well records is included with this letter. What the selected well records surrounding Gilfillan Lake typically show is clay or sandy clay present between the surface and depths ranging from 12 to 62 feet below grade. There were exceptions such as well 500485 that showed sand and gravel from the surface to 30 feet and clay and gravel from 30 to 60 feet. A list of all the wells in Section 17, Township 30, Range 22 is also attached.

If you have any questions, please feel free to contact me.

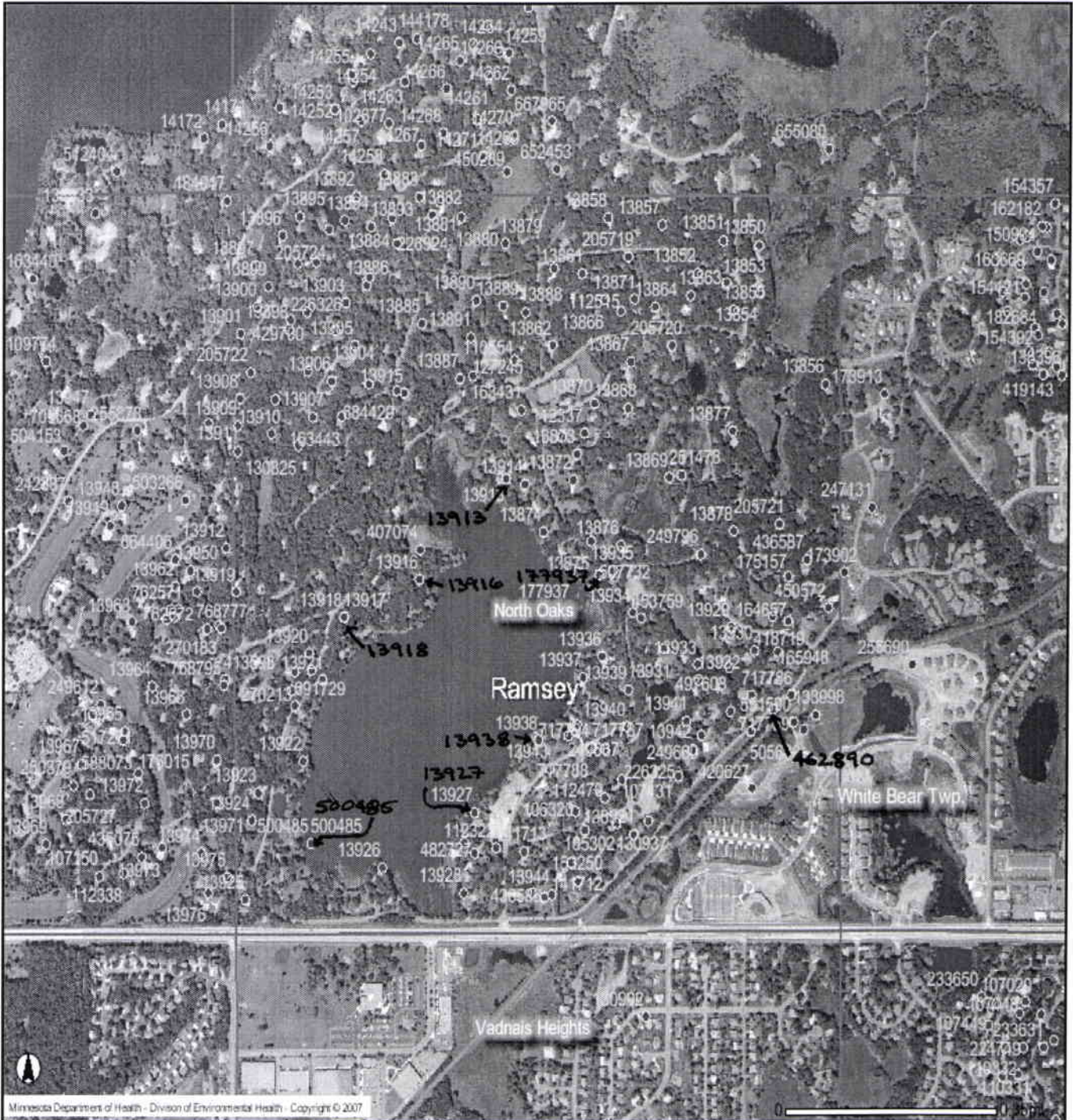
Sincerely,



Geoffrey H. Nash, P.G.
Geologist



The Minnesota County Well Index



Well List

Unique Number	Stratigraphy	County	Well Name	Township	Range	Dir	Section	Sub Sections	Depth (ft)	Use	Elevation (ft)	Depth Cased (ft)	SWL	Casing Diameter	Casing Material	Aquifer	Address
13850	Yes	Ramsey	HELTZER, HARRY	30	22	W	17	AAABCC	380	Domestic	915	340	41	4	Steel (black or low carbon)	Jordan	6 MALLARD LA , NORTH OAKS
13851	Yes	Ramsey	BORDERS, A M	30	22	W	17	AABACC	230	Domestic	940	185	53	4	Steel (black or low carbon)	St Peter	7 MALLARD RD N , NORTH OAKS
13852	Yes	Ramsey	OSTRAND, GARY	30	22	W	17	AABCCA	210	Domestic	930	195	63	4	Steel (black or low carbon)	St Peter	10 PHEASANT LA , NORTH OAKS
13853	Yes	Ramsey	KING, NEAL	30	22	W	17	AABDCC	225	Domestic	950	185	60	4	Steel (black or low carbon)	St Peter	5465A 18 CR N ,
13854	Yes	Ramsey		30	22	W	17	AABDDD	207	Domestic	941	178	63	5	Steel (black or low carbon)	St Peter	2 MALLARD LA , NORTH OAKS
13855	Yes	Ramsey	BRUCE, ROBERT	30	22	W	17	AACABD	218	Domestic	950	188	60	4	Steel (black or low carbon)	St Peter	19 OAK RD E , NORTH OAKS
13856	Yes	Ramsey	BAUER, DONALD	30	22	W	17	AADDDD	257	Domestic	950	226	70	4	Steel (black or low carbon)	Prairie Du Chien Group	8 OAKS RD E , NORTH OAKS
13857	Yes	Ramsey	BARDEN, E J	30	22	W	17	ABAABD	195	Domestic	920	165	38	4	Steel (black or low carbon)	St Peter	11 PHEASANT LA , NORTH OAKS
13858	Yes	Ramsey		30	22	W	17	ABABBC	205	Domestic	920	185	40	4	Steel (black or low carbon)	St Peter	15 PHEASANT LA , NORTH OAKS
13860	Yes	Ramsey	HEINER CONSTRUCTION	30	22	W	17	ABBCDD	222	Domestic	930	184		4		St Peter	4 NORTH OAKS RD ,
13861	Yes	Ramsey	PETERSON, CLAYTON	30	22	W	17	ABBDCA	233	Domestic	935	190		4		St Peter	PHEASANT LA ,
13862	Yes	Ramsey	CARLSON, B	30	22	W	17	ABCCAB	208	Domestic	930	190		4		St Peter	29 OAKS RD E ,
13863	Yes	Ramsey	STAFNE, DR	30	22	W	17	ABDAAA	289	Domestic	920	198		4		St Peter	555 ASHLAND AV , ST PAUL
13864	Yes	Ramsey	MASON	30	22	W	17	ABDABD	271	Domestic	920	188	39	6		Multiple	23 OAKS RD E ,
13866	Yes	Ramsey	KAISER, J	30	22	W	17	ABDBAC	215	Domestic	930	185		4		St Peter	
13867	Yes	Ramsey	HOEFLIN	30	22	W	17	ABDCDD	215	Domestic	929	192	80	4		St Peter	
13868	Yes	Ramsey		30	22	W	17	ACBAAC	215	Domestic	928	175	35	4		St Peter	CHIPMUNK LA , NORTH OAKS
13869	Yes	Ramsey	ZELLE, LOUIS N.	30	22	W	17	ACADDC	250	Domestic	920	178	45	6	Steel (black or low carbon)	St Peter	1 TEAL ISLAND RD , NORTH OAKS
13870	Yes	Ramsey	BLAINES CONSTRUCTION	30	22	W	17	ACBADB	212	Domestic	928	159	28	4		St Peter	1 CHIPMUNK , NORTH OAKS
13871	Yes	Ramsey	ANDERSON, JAMES	30	22	W	17	ABDBAC	231	Domestic	930						25 OAKS RD E ,
13872	Yes	Ramsey	LUNHAGEN, ROBERT	30	22	W	17	ACCABB	184	Domestic	930	184	37	4		St Peter	13 DUCKPASS RD ,
13873	Yes	Ramsey	VAN HOUSEN	30	22	W	17	ACBDBC	203	Domestic	932	170		4		St Peter	15 DUCKPASS , NORTH OAKS
13874	Yes	Ramsey	GIPPLE, DONALD C.	30	22	W	17	ACCCBA	210	Domestic	920	168		5		St Peter	24 DUCK PASS RD , NORTH OAKS
13875	Yes	Ramsey	BREWSTER	30	22	W	17	ACCDAC	403	Domestic	920	350	50	4		Jordan	9 DUCK PASS RD ,
13876	Yes	Ramsey	FOLEY	30	22	W	17	ACDCCA	214	Domestic	925	166		4	Steel (black or low carbon)	St Peter	7 DUCK PASS RD , NORTH OAKS
13877	Yes	Ramsey	JACKSON	30	22	W	17	ADBDBA	213	Domestic	922	170	40	4		St Peter	4 DUCK PASS RD ,
13878	Yes	Ramsey	MURPHY, R	30	22	W	17	ADCDBA	215	Domestic	931	172		4	Steel (black or low carbon)	St Peter	10 DUCK PASS RD , NORTH OAKS
13879	Yes	Ramsey	RAMSEY, K.	30	22	W	17	BAAACD	177	Domestic	940	177		4		St Peter	21E PHEASANT RD , NORTH OAKS
13880	Yes	Ramsey	BROWN, CHARLES	30	22	W	17	BAABBC	220	Domestic	950	197		4		St Peter	4 WOOD DUCK LA ,
13881	Yes	Ramsey	ROBINSON	30	22	W	17	BABABD	220	Domestic	950	197		4		St Peter	3 WOOD

13882	Yes	Ramsey	HAVERTZ, H.	30	22	W	17	BABABC	244	Domestic	960	207		4	St Peter	5 WOOD DUCK LA , NORTH OAKS
13883	Yes	Ramsey	HARTMAN, WILLARD	30	22	W	17	BABBAA	207	Domestic	955	177	70	4	St Peter	32 EAGLE RIDGE RD , NORTH OAKS
13884	Yes	Ramsey	BAILLIF, E.A.	30	22	W	17	BABBBC	218	Domestic	940	170	55	4	St Peter	31 EAGLE RIDGE RD .
13885	Yes	Ramsey	SPORKE, ROBERT	30	22	W	17	BACACB	216	Domestic	950	190	73	4	St Peter	26 EAGLE RIDGE RD .
13886	Yes	Ramsey	NELSON	30	22	W	17	BACBCA	216	Domestic	950	180	100	4	St Peter	36 PHEASANT LA ,
13887	Yes	Ramsey	L. V. ROZYCKI	30	22	W	17	BACDDD	200	Domestic	930	168		4	St Peter	33 OAKS RD E , NORTH OAKS
13888	Yes	Ramsey	HARRIS	30	22	W	17	BADAAD	215	Domestic	925	196	55	4	St Peter	NORTH OAKS RD ,
13889	Yes	Ramsey	ANTON PETERSON	30	22	W	17	BADABC	217	Domestic	930	178	45	5	St Peter	2 DEER LA , NORTH OAKS
13890	Yes	Ramsey	ARTHUR PREUSCH	30	22	W	17	BADBAA	202	Domestic	930	189	52	4	St Peter	5 DEER LA , NORTH OAKS
13891	Yes	Ramsey	EDWARD O. ABEL	30	22	W	17	BADBCC	212	Domestic	925	184	65	4	St Peter	3 DEER LA , NORTH OAKS
13892	Yes	Ramsey	ARTHUR HEDSTROM	30	22	W	17	BBAABB	195	Domestic	930	161	60	4	St Peter	18 SPRING FARM LA , NORTH OAKS
13893	Yes	Ramsey	CHARLES LAUDER	30	22	W	17	BBAADB	210	Domestic	930	170		4	St Peter	20 SPRING FARM LA ,
13894	Yes	Ramsey	KING	30	22	W	17	BBABAD	200	Domestic	920	163	47	4	St Peter	208 SPRING FARM LA ,
13895	Yes	Ramsey	JOHN KLUNE	30	22	W	17	BBBAD	214	Domestic	920	162	63	4	St Peter	SPRING FARM LA ,
13896	Yes	Ramsey	DR. JOHNSON	30	22	W	17	BBBBAD	204	Domestic	920	174	50	4	St Peter	PHEASANT LA E ,
13897	Yes	Ramsey	DONALD KELLY	30	22	W	17	BBBCAC	220	Domestic	925	191		5	St Peter	210 PLEASANT LAKE RD E , NORTH OAKS
13898	Yes	Ramsey	GLADIATOR CONSTRUCTION	30	22	W	17	BBCACD	238	Domestic	975	224	110	4	St Peter	14 SUNSET LA , NORTH OAKS
13899	Yes	Ramsey	H. HANSEN	30	22	W	17	BBCBAA	235	Domestic	960	202	90	4	St Peter	208 SUNSET LA ,
13900	Yes	Ramsey	QUIN	30	22	W	17	BBCBAC	235	Domestic	960	202	90	4	St Peter	11 SUNSET LA
13901	Yes	Ramsey	HORACE HANSEN	30	22	W	17	BBCBBB	220	Domestic	950	196	70	4	St Peter	9 SUNSET LA ,
13903	Yes	Ramsey	FRINK	30	22	W	17	BBDBAD	209	Domestic	970	179		4	St Peter	35 PHEASANT LA , NORTH OAKS
13904	Yes	Ramsey	CONZEMIUS	30	22	W	17	BBDBDC	227	Domestic	990	197		4	St Peter	37 PHEASANT LA ,
13905	Yes	Ramsey	ADAMS	30	22	W	17	BBDDBC	240	Domestic	970	207		4	St Peter	42 PHEASANT LA , NORTH OAKS
13906	Yes	Ramsey	KENNETH GREEN	30	22	W	17	BCABAB	255	Domestic	980	220		4	St Peter	46 PEASANT LA , NORTH OAKS
13907	Yes	Ramsey	J. MILTIN	30	22	W	17	BCBADA	227	Domestic	945	189		4	St Peter	1 SPARROW LA , NORTH OAKS
13908	Yes	Ramsey	R. BUSH	30	22	W	17	BCBBBC	285	Domestic	990	235	105	4	Multiple	10 SUNSET LA
13909	Yes	Ramsey	R. C. ANTHONY	30	22	W	17	BCBBCC	250	Domestic	975	200		4	St Peter	8 SUNSET LA .
13910	Yes	Ramsey	GEORGE B MILLARD	30	22	W	17	BCBCAA	200	Domestic	930	180		4	St Peter	SPARROW ,
13911	Yes	Ramsey	WOOLRIDGE, J.M.	30	22	W	17	BCBCBC	227	Domestic	970	220		4	St Peter	6 SUNSET LA ,
13913	Yes	Ramsey	P. CRUUSHANK	30	22	W	17	BDACDA	210	Domestic	920	170		4	St Peter	1 GADWALL , NORTH OAKS
13914	Yes	Ramsey	WAYNE HAMALA	30	22	W	17	BDADCC	223	Domestic	930	190		4	St Peter	4 GADWALL LA , NORTH OAKS
13915	Yes	Ramsey	W. R. PETERSON	30	22	W	17	BDBBBA	220	Domestic	960	195		4	St Peter	4 OTTER LA , NORTH OAKS
13916	Yes	Ramsey	WILLIAM BOLLENBACH JR.	30	22	W	17	CABBAA	250	Domestic	922	165	39	6	Multiple	1 POPLAR LA , NORTH OAKS
13917	Yes	Ramsey		30	22	W	17	CBACAA	230	Domestic	930	186	72	4	St Peter	44 OAKS RD E
13918	Yes	Ramsey		30	22	W	17	CBACAA	233	Domestic	930	183	55	4	St Peter	
13919	Yes	Ramsey	LASCO, HENRY A.	30	22	W	17	CBBBCB	237	Domestic	930	177	50	4	St Peter	1 BUFFALO LA , NORTH OAKS
13920	Yes	Ramsey	F. O'NEILL	30	22	W	17	CBCAAA	218	Domestic	930	180	49	4	St Peter	15 WEST SHORE RD .

13921	Yes	Ramsey	VOGT, KEITH W.	30	22	W	17	CBDBC	211	Domestic	920	174		4	Steel (black or low carbon)	St Peter	12 WEST SHORE DR , NORTH OAKS
13922	Yes	Ramsey	WILLIAM BLOEDL	30	22	W	17	CCBAAC	216	Domestic	912	164		4		St Peter	8 WEST SHORE RD .
13923	Yes	Ramsey	C. ARNER	30	22	W	17	CCBCBA	230	Domestic	925	173	84	5		St Peter	5 WEST SHORE RD .
13924	Yes	Ramsey		30	22	W	17	CCBCCD	235	Domestic	930	184		4		Multiple	3 WEST SHORE RD , NORTH OAKS
13925	Yes	Ramsey	D.F. GARLAND	30	22	W	17	CCCCCD	238	Domestic	920	176		4		St Peter	44 ROBB FARM RD .
13926	Yes	Ramsey	R. J. MORDAUNT	30	22	W	17	CCDADD	228	Domestic	920	164	45	6		St Peter	37 ROBB FARM RD .
13927	Yes	Ramsey		30	22	W	17	CDACCA	213	Domestic	930	175	50	4	Steel (black or low carbon)	St Peter	15 DOVE LA , NORTH OAKS
13928	Yes	Ramsey	STEIL	30	22	W	17	CDDCB	210	Domestic	920	169		5	Steel (black or low carbon)	St Peter	25 ROBB FARM RD , NORTH OAKS
13929	Yes	Ramsey	THEWIS	30	22	W	17	DABDBB	230	Domestic	952	194		4	Steel (black or low carbon)	St Peter	6 BLUE GOOSE RD , NORTH OAKS
13930	Yes	Ramsey	PAMLENYI	30	22	W	17	DABDDC	260	Domestic	945	204	61	4	Steel (black or low carbon)	St Peter	4 BLUE GOOSE RD , NORTH OAKS
13931	Yes	Ramsey	BERG, T.P.	30	22	W	17	DBADCD	237	Domestic	931	174	35	4	Steel (black or low carbon)	St Peter	4 LILY POND LA , NORTH OAKS
13932	Yes	Ramsey	SCHERER, D.L.	30	22	W	17	DACBCA	243	Domestic	930	179	50	4	Steel (black or low carbon)	St Peter	2 LILY POND RD , NORTH OAKS
13933	Yes	Ramsey		30	22	W	17	DBADDD	220	Domestic	942	170	42	5	Steel (black or low carbon)	St Peter	1 LILY POND RD , NORTH OAKS
13934	Yes	Ramsey	O'BANNON, MICHAEL	30	22	W	17	DBACAA	185	Domestic	935	165	50	4	Steel (black or low carbon)	St Peter	8 LILY POND RD , NORTH OAKS
13935	Yes	Ramsey	SCHREIER, THOMAS	30	22	W	17	DBBADA	170	Domestic	922	158	30	4	Steel (black or low carbon)	St Peter	15 LILY POND RD , NORTH OAKS
13936	Yes	Ramsey	MOLD, HOWARD	30	22	W	17	DBCAAA	210	Domestic	920	172	84	4	Steel (black or low carbon)	St Peter	11 LILY POND RD , NORTH OAKS
13937	Yes	Ramsey	WIDMAN, E.O.	30	22	W	17	DBCACA	259	Domestic	920	226	40	4	Steel (black or low carbon)	Prairie Du Chien Group	21 GILFILLAN RD E , NORTH OAKS
13938	Yes	Ramsey	ALLEN, ANDY	30	22	W	17	DBCCCC	185	Domestic	922	157	35	4	Steel (black or low carbon)	St Peter	11 GILFILLAN RD , NORTH OAKS
13939	Yes	Ramsey		30	22	W	17	DBDBDB	255	Domestic	920	223		4	Steel (black or low carbon)	Multiple	7 LILY POND RD , NORTH OAKS
13940	Yes	Ramsey	RAMBERG	30	22	W	17	DBDACC	190	Domestic	925	161	26	0	Steel (black or low carbon)	St Peter	24 GILFILLAN RD , NORTH OAKS
13941	Yes	Ramsey	HALL, G.	30	22	W	17	DACCBD	245	Domestic	920	180	47	4	Steel (black or low carbon)	St Peter	6 WREN LA , NORTH OAKS
13942	Yes	Ramsey	R. BYMARK	30	22	W	17	DCAAAB	226	Domestic	910	175	60	4		St Peter	211 AWASSO LA E .
13943	Yes	Ramsey	STEWART, WAYNE	30	22	W	17	DCBBCC	209	Domestic	921	168	25	4	Steel (black or low carbon)	St Peter	18 GILFILLAN RD E , NORTH OAKS
13944	Yes	Ramsey		30	22	W	17	DCCCDB	257	Domestic	910	165	40	4		St Peter	10 ROBB FARM RD , NORTH OAKS
105301	Yes	Ramsey		30	22	W	17	DCBDDD	170	Domestic	918	160	50	4	Steel (black or low carbon)	St Peter	8 DOVE LA , NORTH OAKS

105302	Yes	Ramsey	MCALPINE, GENE & CLIFF	30	22	W	17	DCBDDA	171	Domestic	922		50	4	Steel (black or low carbon)	St Peter	4 DOVE LA , NORTH OAKS
105303	Yes	Ramsey	MARKEGARD	30	22	W	17	ACBBDD	172	Domestic	927		40	4	Steel (black or low carbon)	St Peter	8 MNK LA , NORTH OAKS
106320	Yes	Ramsey	CIAMPI, LEE	30	22	W	17	DCBAAD	202	Domestic	928	165	30	4	Steel (black or low carbon)	St Peter	9 DOVE LA , NORTH OAKS
107023	Yes	Ramsey	KLUNE, JOHN	30	22	W	17	BCAABA	220	Domestic	950	184	65	4	Steel (black or low carbon)	St Peter	19 EAGLE RIDGE RD , NORTH OAKS
107431	Yes	Ramsey		30	22	W	17	DCABBA	171	Domestic	925	155	40	4	Steel (black or low carbon)	St Peter	5 DOVE LA , NORTH OAKS
109772	Yes	Ramsey	WYATT, ED	30	22	W	17	BBDBBB	225	Domestic	955	179	59	4	Steel (black or low carbon)	St Peter	22 SPRING FARM LA , NORTH OAKS
109776	Yes	Ramsey	MCCALLUM, NANCY	30	22	W	17	DACDBD	233	Domestic	930	185	47	4	Steel (black or low carbon)	Multiple	11 ROBB FARM RD , NORTH OAKS
109799	Yes	Ramsey	UNGER, GUNNER	30	22	W	17	BBCAAB	227	Domestic	945	188	68	4		St Peter	24 SPRING FARM LA , NORTH OAKS
110554	Yes	Ramsey	BRANDT, DAVE	30	22	W	17	BADDDC	264	Domestic	931	188	45	4		St Peter	1 NORTH OAKS RD ,
112322	Yes	Ramsey	SHARP, JAMES	30	22	W	17	CDDBAC	215	Domestic	925	172	80	4	Steel (black or low carbon)	St Peter	23 DOVE LA , NORTH OAKS
112337	Yes	Ramsey	STROMATH & THEIS	30	22	W	17	ACBADB	215	Domestic	932	174	85	4	Steel (black or low carbon)	St Peter	3 CHIPMUNK LA , NORTH OAKS
112469	Yes	Ramsey		30	22	W	17	DACDA	187	Abandoned	945	150	20	4	Steel (black or low carbon)	St Peter	7 ROBB FARM RD , NORTH OAKS
112470	Yes	Ramsey		30	22	W	17	DCBADB	202	Domestic	925	156	20	4	Steel (black or low carbon)	St Peter	7 DOVE LA , NORTH OAKS
112515	Yes	Ramsey	DEFRESNE NELSON BUILDERS, INC.	30	22	W	17	ABDCBA	202	Domestic	935	170	40	4	Steel (black or low carbon)	St Peter	716 JOHNSON AV , WHITE BEAR LAKE
127245	Yes	Ramsey	HILL, KERMIT	30	22	W	17	BDABBD	240	Domestic	938		65	4	Steel (black or low carbon)		31 OAK E , NORTH OAKS
127564	Yes	Ramsey	WEBBER, TONY	30	22	W	17	CDDDAB	191	Domestic	925	169	30	4	Steel (black or low carbon)	St Peter	10 GILFILLAN RD , NORTH OAKS
130825	Yes	Ramsey	GLOBE BUILDERS	30	22	W	17	BCBDCA	200	Domestic	885	180	30	4	Steel (black or low carbon)	St Peter	4640 CHATSWORTH N , ST PAUL
130937	Yes	Ramsey		30	22	W	17	DCACDA	200	Domestic	920	170	20	4	Steel (black or low carbon)	St Peter	4640 CHATSWORTH N , ST PAUL
138921	Yes	Ramsey	KLEIN, CHARLES	30	22	W	17	DCACCD	207	Abandoned	921	165	30	4	Steel (black or low carbon)	St Peter	2 EDGEWATER LA , NORTH OAKS
138998	Yes	Ramsey	SUNRISE BUILDERS	30	22	W	17		240	Domestic	944	201	80	4	Steel (black or low carbon)		
141712	Yes	Ramsey	YI-FU LIN, GARY	30	22	W	17	DCCBDA	200	Domestic	933	168	30	4	Steel (black or low carbon)	St Peter	10 DOVE LA , NORTH OAKS
141713	Yes	Ramsey	TREIBER, FRED	30	22	W	17	CDDAAD	245	Domestic	922	168	60	4	Steel (black or low carbon)	St Peter	14 DOVE LA , NORTH OAKS
153250	Yes	Ramsey	ROSS, ROBERT R JR	30	22	W	17	DCCDBB	217	Domestic	925	168	35	4	Steel (black or low carbon)	St Peter	27 ROBB FARM RD , NORTH OAKS

163431	Yes	Ramsey	GILBERT & SONS CONSTRUCTION	30	22	W	17	BDAAB	203	Domestic	933	170	40	4	Steel (black or low carbon)	St Peter	5 GLADWELL LA , NORTH OAKS
163443	Yes	Ramsey	NORUSIS, RALPH	30	22	W	17	BCABAD	200	Domestic	960	182	30	4	Steel (black or low carbon)	St Peter	15 EAGLE RIDGE RD , NORTH OAKS
164657	Yes	Ramsey	HILAND, DOUG	30	22	W	17	DAACAB	235	Abandoned	943	183	52	4	Steel (black or low carbon)	Multiple	3 BLUE GOOSE RD , NORTH OAKS
165948	Yes	Ramsey	DEWITT, GREG	30	22	W	17	DAACDC	230	Abandoned	943	195	70	4	Steel (black or low carbon)	Prairie Du Chien Group	2 BLUE GOOSE RD , NORTH OAKS
173949	Yes	Ramsey	WESLEY ROBERTSON CONST.	30	22	W	17	BBADDA	244	Domestic	947	185	70	4	Steel (black or low carbon)	St Peter	38 PHEASANT LA ,
175157	Yes	Ramsey	HERMAN	30	22	W	17	DAABAA	230	Domestic	950	190	60	4		St Peter	6 MALLARD LA , NORTH OAKS
177937	Yes	Ramsey	SMITH, CLARK	30	22	W	17	DBBABB	248	Domestic	920	166	40	4	Steel (black or low carbon)	Multiple	20 DUCK PASS RD , NORTH OAKS
186989	Yes	Ramsey		30	22	W	17	DCBAAA	170	Abandoned	928	150	38	4	Steel (black or low carbon)	St Peter	22 GILFILLAN RD E , NORTH OAKS
205719	Yes	Ramsey		30	22	W	17	ABACAB	200	Domestic	920	197		4		St Peter	283 PHEASANT LA ,
205720	Yes	Ramsey	DUNPHY	30	22	W	17	ABDDAB	220	Domestic	920	172	42	4		St Peter	16 OAKS RD E , ST PAUL
205721	Yes	Ramsey	ABBOT, PAUL	30	22	W	17	ADDCBA	225	Domestic	930	185	60	4		Prairie Du Chien Group	3 MALLARD RD , NORTH OAKS
205722	Yes	Ramsey		30	22	W	17	BBCDCB	285	Domestic	990	235	105	4		Multiple	
205723	Yes	Ramsey	N P. SWEENEY	30	22	W	17	BBCDDD	260	Domestic	980	220	95	4		St Peter	45 PHEASANT LA , NORTH OAKS
205724	Yes	Ramsey	DEWITT	30	22	W	17	BBABAC	210	Domestic	918	195		4		St Peter	SPRING FARM LA , NORTH OAKS
226324	Yes	Ramsey	ANDERSON	30	22	W	17	BABBCC	220	Domestic	940	175	65	4		Multiple	33 PHEASANT LA , NORTH OAKS
226325	Yes	Ramsey	MILLARD, GEORGE	30	22	W	17	DCAADB	215	Domestic	915	167	29	4	Steel (black or low carbon)	Multiple	15 ROBB FARM RD , NORTH OAKS
226326	Yes	Ramsey	JENSEN	30	22	W	17	BBCACA	267	Domestic	980	223	115	4			121 SUNSET LA , NORTH OAKS
247284	Yes	Ramsey	NORTH OAKS FARM	30	22	W	17		432			273	54	16			, NORTH OAKS
249660	Yes	Ramsey	OLSON, HENRY	30	22	W	17	DACCCC	224	Domestic	924	174	35	4	Steel (black or low carbon)	Multiple	2 WREN LA , NORTH OAKS
249666	Yes	Ramsey		30	22	W	17	CDDBBB	250	Domestic	927	222	50	4	Steel (black or low carbon)	Multiple	19 DOVE LA , NORTH OAKS
249667	Yes	Ramsey		30	22	W	17	DBCDCD	209	Domestic	924	173	42	5	Steel (black or low carbon)	St Peter	15 GILFILLAN RD E , NORTH OAKS
249668	Yes	Ramsey		30	22	W	17	DBCDCB	168	Domestic	913	161	28	4	Steel (black or low carbon)	St Peter	17 GILFILLAN RD E , NORTH OAKS
249796	Yes	Ramsey	HILL FARM-NORTH OAKS	30	22	W	17	ADCCCC	432	Irrigation	941	273		16	Steel (black or low carbon)	Multiple	2 BLUE GOOSE RD , NORTH OAKS
251478	Yes	Ramsey	1 TEAL ISLAND RD	30	22	W	17	ACDAAB	200	Domestic	920	176	32	4	Steel (black or low carbon)	St Peter	1 TEAL ISLAND RD , NORTH OAKS
270213	Yes	Ramsey	HAMMERDING, JANET	30	22	W	17	CBCAAC	218	Abandoned	924	180		4	Steel (black or low carbon)	St Peter	13 WEST SHORE RD , NORTH OAKS
407074	Yes	Ramsey	CRAM, BARCLAY M.	30	22	W	17	BDCBCB	230	Domestic	930	185	30	4	Steel (black or low carbon)	St Peter	38 OAKS RD E , NORTH OAKS

418719	Yes	Ramsey		30	22	W	17	DABACB	171	Abandoned	942	168	50	4	Steel (black or low carbon)	St Peter	7 BLUE GOOSE RD , NORTH OAKS
420627	Yes	Ramsey		30	22	W	17	DDBBAB	186	Abandoned	928	157	42	4	Steel (black or low carbon)	St Peter	13 ROBB FARM RD , NORTH OAKS
429700	Yes	Ramsey	WESTLUND BROTHERS BUILDERS	30	22	W	17	BBBD	245	Domestic	948	199	120	4	Steel (black or low carbon)	St Peter	18 SUNSET LA , NORTH OAKS
430525	Yes	Ramsey	HARTLEY	30	22	W	17	BCBABC	224	Domestic	940	174	50	4	Steel (black or low carbon)	St Peter	5 SPARROW LA ,
436586	Yes	Ramsey	SINGER, AL	30	22	W	17	DCCCBD	205	Abandoned	925	168	35	4	Steel (black or low carbon)	St Peter	29 ROBB FARM RD , NORTH OAKS
436587	Yes	Ramsey	GUSTAFSON	30	22	W	17	ADDCC	154	Domestic	959	150	85	4		St Peter	2 ROBB FARM RD , NORTH OAKS
450572	Yes	Ramsey	SCHWIETERS, STEVEN	30	22	W	17	DAADAA	230	Domestic	949	199	75	4		St Peter	4 ROBB FARM RD , NORTH OAKS
453759	Yes	Ramsey	SCHREIRER, TOM	30	22	W	17	DBBAAD	185	Abandoned	920	163	55	4	Steel (black or low carbon)	St Peter	15 LILY POND RD , NORTH OAKS
462890	Yes	Ramsey	N. OAKS COMPANY	30	22	W	17	DADCBD	145	Monitor well	941	128		4	Steel (black or low carbon)	St Peter	ROBB FARM RD ,
462891	Yes	Ramsey	N. OAKS COMPANY	30	22	W	17	DACDDB	163	Monitor well	941	146	47	4	Steel (black or low carbon)	St Peter	ROBB FARM RD ,
482727	Yes	Ramsey	ELFSTROM, KATHLEEN	30	22	W	17	CDDBBC	225	Abandoned	928	175	49	4	Steel (black or low carbon)	Multiple	21 DOVE LA , NORTH OAKS
483475	Yes	Ramsey	IND. SCHOOL DIS #623	30	22	W	17	BDD	16	Abandoned		6	11.4	2	Unknown		929 EDGERTON ST , MAPLEWOOD
497603	Yes	Ramsey	LETOURNEQU, JANNIS	30	22	W	17	DACABC	215	Abandoned	952	186	65	4	Steel (black or low carbon)	St Peter	9 ROBB FARM RD , NORTH OAKS
498209	Yes	Ramsey	W F BAUER CONSTRUCTION	30	22	W	17		240	Domestic		202	70	4	Steel (black or low carbon)		1 WOODDUCK LA , NORTH OAKS
500485	Yes	Ramsey	WOLTERS, PAUL	30	22	W	17	CCBACD	200	Domestic	915	170	60	4	Steel (black or low carbon)	St Peter	6 WEST SHORE RD , NORTH OAKS
505680	Yes	Ramsey		30	22	W	17	DADDCA			945	135		6		St Peter	820 47 AV , WHITE BEAR TOWNSHIP
507732	Yes	Ramsey	GRAY, ROBERT	30	22	W	17	ACCCAD	200	Domestic	918	165	75	4	Steel (black or low carbon)	St Peter	22 DUCK PASS RD , NORTH OAKS
534012	Yes	Ramsey	KEITH WATERS & ASSOC	30	22	W	17		198	Domestic		170	50	4	Steel (black or low carbon)		4 MALLARD RD N , NORTH OAKS
534314	Yes	Ramsey	SCHOLZ ROBERT	30	22	W	17	DBB	260	Domestic		212	100	4	Steel (black or low carbon)		41 PHEASANT LA ,
550104	Yes	Ramsey	BAAB, GARY	30	22	W	17		176	Domestic		168	30	4	Steel (black or low carbon)		26 DUCKPASS ,
551590	Yes	Ramsey	KRAWCZEWSKI, HELEN	30	22	W	17	DADCAD	90	Unknown	941	77.6	38.3	8	Steel (black or low carbon)		935 #86 HYE ,
558212	Yes	Ramsey	LAY, DONALD	30	22	W	17		201	Domestic		173	70	4	Steel (black or low carbon)		17 EAGLE RIDGE RD , NORTH OAKS
558213	Yes	Ramsey	PARKER, DAVE	30	22	W	17		184	Domestic		156	28	4	Steel (black or low carbon)		10 OAKS RD E , NORTH OAKS

575202	Yes	Ramsey	SANTARSIERO, DAN	30	22	W	17		180	Domestic		159	50	4	Steel (black or low carbon)		11 NORTH MALLARD , NORTH OAKS
575219	Yes	Ramsey	LUND, JEFF	30	22	W	17		200	Domestic		172	50	4	Steel (black or low carbon)		28 PHEASANT LA , NORTH OAKS
608677	Yes	Ramsey	N OAKS COMPANY	30	22	W	17	DAD	29	Monitor well		19	23	2	Plastic		IN REMARKS,
652460	Yes	Ramsey	DAN LANG HOMES LTD	30	22	W	17		200	Unknown		166	62	4	Steel (black or low carbon)		10 MALLARD RD N , NORTH OAKS
652482	Yes	Ramsey	GLENNY, WILLIAM	30	22	W	17		201	Domestic		164	38	4	Steel (black or low carbon)		8 DUCK PASS RD , NORTH OAKS
670774	Yes	Ramsey	POTOCNIK, TRACY	30	22	W	17		191	Domestic		174	35	4	Plastic		41 ROBB FARM RD , NORTH OAKS
671855	Yes	Ramsey	RUDY WICKLANDER HOMES	30	22	W	17		164	Domestic		149	30	4	Plastic		19 MALLARD RD N , NORTH OAKS
674200	Yes	Ramsey	EMERAL BUILDERS	30	22	W	17	ACC	200	Domestic		200	45	3.9	Steel (black or low carbon)		18 MALLARD RD N , NORTH OAKS
684429	Yes	Ramsey	JOEL, DALE	30	22	W	17	BDBBBA	201	Domestic	958	174	75	4	Steel (black or low carbon)	St Peter	4 OTTER LA , NORTH OAKS
688321	Yes	Ramsey	JAIN RESIDENCE	30	22	W	17		35	Elevator		35		16	Steel (black or low carbon)		18 MALLARD N , NORTH OAKS
691729	Yes	Ramsey	PALEN, GREG	30	22	W	17	CBCDAB	200	Domestic	921	168	35	4	Steel (black or low carbon)		10 SHORE RD W , NORTH OAKS
712544	Yes	Ramsey	MICHAEL'S CONSTRUCTION	30	22	W	17		220	Domestic		179	60	4	Steel (black or low carbon)		16 MALLARD RD ,
717785	Yes	Ramsey	MV-16B	30	22	W	17	DADBDC	161	Monitor well	942	151	46	2	Steel (black or low carbon)	St Peter	NORTH OAKS
717786	Yes	Ramsey	MV-16D	30	22	W	17	DADBDC	80	Monitor well	942	70	46	2	Steel (black or low carbon)	Quat Water Table Aquifer	NORTH OAKS
717787	Yes	Ramsey	MV-17L	30	22	W	17	DBCDCD	290	Monitor well	917	250	32	4	Steel (black or low carbon)	Prairie Du Chien Group	8 EDGEWATER LA , NORTH OAKS
717788	Yes	Ramsey	MV-17B	30	22	W	17	DBCDCD	190	Monitor well	917	180	28	2	Steel (black or low carbon)	St Peter	8 EDGEWATER LA , NORTH OAKS
717789	Yes	Ramsey	EW-2	30	22	W	17	DADCAC	135	Remedial	937	135	41.5	6	Steel (black or low carbon)	St Peter	
717794	Yes	Ramsey	MV-17A	30	22	W	17	DCBABA	105	Monitor well	917	95	39	2	Steel (black or low carbon)	St Peter	8 EDGEWATER LA , NORTH OAKS
748178	Yes	Ramsey	MV-18A	30	22	W	17	CBDBBC	115	Monitor well	925	105	35	2	Steel (black or low carbon)		15 WEST SHORE RD , NORTH OAKS
748179	Yes	Ramsey	MV-18B	30	22	W	17	BCA	195	Monitor well			68		Steel (black or low carbon)		15 WEST SHORE RD , NORTH OAKS
748180	Yes	Ramsey	MV-18L	30	22	W	17	BCA	280	Monitor well		262	35	4	Steel (black or low carbon)		15 WEST SHORE RD , NORTH OAKS
798775	Yes	Ramsey	EISENCHENK & HOMMERDING	30	22	W	17	CBCACA	440	Domestic	924	407	51	4	Steel (black or low carbon)	Jordan	13 WEST SHORE RD , NORTH OAKS

186 Well Records Returned

Minnesota Unique Well No.

13913

County Ramsey
 Quad White Bear Lake West
 Quad ID 119D

MINNESOTA DEPARTMENT OF
 HEALTH
**WELL AND
 BORING RECORD**
 Minnesota Statutes Chapter 103I

Entry Date 08/14/1991
 Update Date 12/10/2003
 Received Date

Well Name P. CRUUSHANK Township Range Dir Section Subsections Elevation 920 ft. 30 22 W 17 BDACDA Elevation Method 7.5 minute topographic map (+/- 5 feet)		Well Depth 210 ft. Depth Completed 210 ft. Date Well Completed 08/25/1968
Well Address 1 GADWALL NORTH OAKS MN		Drilling Method -- Drilling Fluid -- Well Hydrofractured? <input type="checkbox"/> Yes <input type="checkbox"/> No From Ft. to Ft.
Geological Material CLAY GRAVEL SANDY CLAY HARDPAN SANDROCK		Use Domestic Casing Type Joint No Information Drive Shoe? <input type="checkbox"/> Yes <input type="checkbox"/> No No Above/Below 0 ft.
Color YELLOW Hardness From 0 To 22 22 53 53 102 102 128 128 210	Casing Diameter 4 in. to 170 ft. Weight lbs./ft. Hole Diameter Open Hole from 170 ft. to 210 ft.	
Screen NO Make Type Diameter Slot/Gauze Length Set Between		
Static Water Level ft. from Date Measured PUMPING LEVEL (below land surface) 0 ft. after hrs. pumping 15 g.p.m.		
Well Head Completion Pitless adapter manufacturer Model <input type="checkbox"/> Casing Protection <input type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)		
NO REMARKS		Grouting Information Well Grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No
Located by: Minnesota Geological Survey Method: Digitized - scale 1:24,000 or larger (Digitizing Table)		Nearest Known Source of Contamination ___feet ___direction ___type Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No
Unique Number Verification: N/A Input Date: 01/01/1990 System: UTM - Nad83, Zone15, Meters X: 493889 Y: 4992757		Pump <input checked="" type="checkbox"/> Not installed Date Installed Manufacturer's name Model number ___ HP ___ Volts Length of drop Pipe ___ft. Capacity ___g.p.m. Type Submersible Material
First Bedrock St.Peter Aquifer St.Peter Last Strat St.Peter Depth to Bedrock 128 ft.		Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input type="checkbox"/> No
		Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No
		Well Contractor Certification Salverda Well Co. 82006 License Business Name Lic. Or Reg. No. Name of Driller
County Well Index Online Report		13913 Printed 10/20/2009 HE-01205-07

Minnesota Unique Well No.

13916

County Ramsey
 Quad White Bear Lake West
 Quad ID 119D

MINNESOTA DEPARTMENT OF
 HEALTH
**WELL AND
 BORING RECORD**
 Minnesota Statutes Chapter 103I

Entry Date 08/14/1991
 Update Date 12/10/2003
 Received Date

Well Name WILLIAM BOLLENBACH JR. Township Range Dir Section Subsections Elevation 922 ft. 30 22 W 17 CABBAA Elevation Method 7.5 minute topographic map (+/- 5 feet)		Well Depth 250 ft. Depth Completed 250 ft. Date Well Completed 05/00/1956																																
Well Address 1 POPLAR LA NORTH OAKS MN		Drilling Method --																																
Geological Material <table border="1"> <thead> <tr> <th>Color</th> <th>Hardness</th> <th>From</th> <th>To</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td>0</td> <td>62</td> </tr> <tr> <td></td> <td></td> <td>62</td> <td>138</td> </tr> <tr> <td></td> <td></td> <td>138</td> <td>164</td> </tr> <tr> <td></td> <td></td> <td>164</td> <td>169</td> </tr> <tr> <td></td> <td></td> <td>169</td> <td>175</td> </tr> <tr> <td></td> <td></td> <td>175</td> <td>215</td> </tr> <tr> <td></td> <td></td> <td>215</td> <td>250</td> </tr> </tbody> </table>		Color	Hardness	From	To			0	62			62	138			138	164			164	169			169	175			175	215			215	250	Drilling Fluid --
Color	Hardness	From	To																															
		0	62																															
		62	138																															
		138	164																															
		164	169																															
		169	175																															
		175	215																															
		215	250																															
		Well Hydrofractured? <input type="checkbox"/> Yes <input type="checkbox"/> No From Ft. to Ft.																																
		Use Domestic																																
		Casing Type Joint No Information Drive Shoe? <input type="checkbox"/> Yes <input type="checkbox"/> No No Above/Below 0 ft.																																
		<table border="1"> <thead> <tr> <th>Casing Diameter</th> <th>Weight</th> <th>Hole Diameter</th> </tr> </thead> <tbody> <tr> <td>6 in. to 165 ft.</td> <td>lbs./ft.</td> <td></td> </tr> </tbody> </table>	Casing Diameter	Weight	Hole Diameter	6 in. to 165 ft.	lbs./ft.																											
Casing Diameter	Weight	Hole Diameter																																
6 in. to 165 ft.	lbs./ft.																																	
		Open Hole from 165 ft. to 250 ft.																																
		<table border="1"> <thead> <tr> <th>Screen NO</th> <th>Make</th> <th>Type</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Screen NO	Make	Type																													
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		<table border="1"> <thead> <tr> <th>Diameter</th> <th>Slot/Gauze</th> <th>Length</th> <th>Set Between</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Diameter	Slot/Gauze	Length	Set Between																												
Diameter	Slot/Gauze	Length	Set Between																															
		Static Water Level 39 ft. from Land surface Date Measured 05/00/1956																																
		PUMPING LEVEL (below land surface) 42 ft. after hrs. pumping 15 g.p.m.																																
		Well Head Completion Pitless adapter manufacturer Model <input type="checkbox"/> Casing Protection <input type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)																																
NO REMARKS		Grouting Information Well Grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No																																
Located by: Minnesota Geological Survey Method: Digitized - scale 1:24,000 or larger (Digitizing Table) Unique Number Verification: N/A Input Date: 01/01/1990 System: UTM - Nad83, Zone15, Meters X: 493658 Y: 4992537		Nearest Known Source of Contamination ___feet ___direction ___type Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No																																
		Pump <input checked="" type="checkbox"/> Not Installed Date Installed Manufacturer's name AURORA Model number ___ HP 1.5 Volts 220 Length of drop Pipe 63 ft. Capacity 27 g.p.m Type Submersible Material																																
		Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input type="checkbox"/> No																																
		Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No																																
First Bedrock St.Peter Aquifer Multiple Last Strat Prairie Du Chien Group Depth to Bedrock 138 ft.		Well Contractor Certification Keys Well Co. 62012 License Business Name Lic. Or Reg. No. Name of Driller																																
County Well Index Online Report		13916 Printed 10/19/2009 HE-01205-07																																

Minnesota Unique Well No.

13918

County Ramsey
 Quad White Bear Lake West
 Quad ID 119D

MINNESOTA DEPARTMENT OF
 HEALTH
**WELL AND
 BORING RECORD**
 Minnesota Statutes Chapter 103I

Entry Date 08/14/1991
 Update Date 08/23/1991
 Received Date

Well Name Township Range Dir Section Subsections Elevation 930 ft. 30 22 W 17 CBACAA Elevation Method topographic map (+/- 5 feet)		Well Depth 233 ft.	Depth Completed 233 ft.	Date Well Completed 10/14/1965
Drilling Method --		Drilling Fluid --		
Geological Material SANDY CLAY DRY SAND CLAY HARDPAN CLAY MUDDY FINE SAND SANDSTONE FINE SAND ROCK COARSE SAND ROCK		Color YELLOW YELLOW GRAY WHITE BLUE	Hardness SOFT HARD	From To 0 14 14 36 36 100 100 110 110 122 122 155 155 183 183 220 220 233
Use Domestic		Well Hydrofractured? <input type="checkbox"/> Yes <input type="checkbox"/> No From Ft. to Ft.		
Casing Type Joint No Information Drive Shoe? <input type="checkbox"/> Yes <input type="checkbox"/> No No Above/Below 0 ft.		Casing Diameter 4 in. to 183 ft. Weight lbs./ft. Hole Diameter		
Open Hole from ft. to ft.		Screen Make Type		
Diameter Slot/Gauze Length Set Between		Static Water Level 55 ft. from Land surface Date Measured 10/10/1965		
PUMPING LEVEL (below land surface) 62 ft. after hrs. pumping 18 g.p.m.		Well Head Completion Pitless adapter manufacturer Model <input type="checkbox"/> Casing Protection <input type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)		
NO REMARKS		Grouting Information Well Grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No		
Located by: Minnesota Geological Survey Method: Digitized - scale 1:24,000 or larger (Digitizing Table)		Nearest Known Source of Contamination __feet __direction __type Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No		
Unique Number Verification: N/A Input Date: 01/01/1990		Pump <input type="checkbox"/> Not Installed Date Installed Manufacturer's name Model number __ HP __ Volts Length of drop Pipe __ft. Capacity __g.p.m. Type Material		
System: UTM - Nad83, Zone15, Meters X: 493458 Y: 4992452		Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input type="checkbox"/> No		
First Bedrock St.Peter Aquifer St.Peter Last Strat St.Peter Depth to Bedrock 155 ft.		Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No Well Contractor Certification License Business Name Lic. Or Reg. No. Name of Driller		
County Well Index Online Report		13918		Printed 10/20/2009 HE-01205-07

Minnesota Unique Well No.

13927

County Ramsey
 Quad White Bear Lake West
 Quad ID 119D

MINNESOTA DEPARTMENT OF
 HEALTH
**WELL AND
 BORING RECORD**
 Minnesota Statutes Chapter 103I

Entry Date 08/14/1991
 Update Date 10/17/1995
 Received Date

Well Name Township Range Dir Section Subsections Elevation 930 ft. 30 22 W 17 CDACCA Elevation Method topographic map (+/- 5 feet)		Well Depth 213 ft.	Depth Completed 213 ft.	Date Well Completed 11/29/1965
Well Address 15 DOVE LA NORTH OAKS MN		Drilling Method --		
Geological Material CLAY ROCK SANDROCK SANDROCK		Color YELLOW GRAY GRAY GRAY	Hardness 0 47 53 61	From To 0 47 47 53 53 61 61 213
Drilling Fluid -		Well Hydrofractured? <input type="checkbox"/> Yes <input type="checkbox"/> No From Ft. to Ft.		
Use Domestic		Casing Type Steel (black or low carbon) <input type="checkbox"/> Joint No Information <input type="checkbox"/> Drive Shoe? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Above/Below 1 ft.		
Casing Diameter 4 in. to 175 ft.		Weight lbs./ft.	Hole Diameter	
Open Hole from 175 ft. to 213 ft.				
Screen NO Make Type				
Diameter Slot/Gauze Length Set Between				
Static Water Level 50 ft. from Land surface Date Measured 11/29/1965				
PUMPING LEVEL (below land surface) 0 ft. after hrs. pumping 20 g.p.m.				
Well Head Completion Pitless adapter manufacturer Model <input type="checkbox"/> Casing Protection <input type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)				
REMARKS GAMMALOGGED 5-2-1994.		Grouting Information Well Grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No		
Located by: Minnesota Geological Survey Method: Digitized - scale 1:24,000 or larger (Digitizing Table)		Nearest Known Source of Contamination _feet _direction _type Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No		
Unique Number Verification: Information from owner System: UTM - Nad83, Zone15, Meters X: 493808 Y: 4992023		Pump <input checked="" type="checkbox"/> Not installed Date Installed 11/00/1965 Manufacturer's name STAR-RITE Model number HP 0.75 Volts Length of drop Pipe 90 ft. Capacity g.p.m. Type Submersible Material Galvanized		
Borehole Geophysics Yes First Bedrock Platteville Last Strat St.Peter		Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input type="checkbox"/> No		
Aquifer St.Peter Depth to Bedrock 47 ft.		Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No		
County Well Index Online Report		Well Contractor Certification Zuercher Well Co. 62028 License Business Name Lic. Or Reg. No. Name of Driller		
13927		Printed 10/20/2009 HE-01205-07		

Minnesota Unique Well No.

13938

County Ramsey
Quad White Bear Lake West
Quad ID 119D

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING RECORD
Minnesota Statutes Chapter 103I

Entry Date 08/14/1991
Update Date 12/18/2002
Received Date

Well Name ALLEN, ANDY		Well Depth	Depth Completed	Date Well Completed
Township Range Dir Section Subsections Elevation 922 ft.		185 ft.	185 ft.	04/30/1963
30 22 W 17 DBCCCC Elevation Method topographic map (+/- 5 feet)		Drilling Method --		
Well Address 11 GILFILLAN RD NORTH OAKS MN		Drilling Fluid --	Well Hydrofractured? <input type="checkbox"/> Yes <input type="checkbox"/> No From Ft. to Ft.	
Geological Material		Use Domestic		
Color	Hardness	From	To	Casing Type Steel (black or low carbon) Joint No Information Drive Shoe? <input type="checkbox"/>
		0	50	Yes <input type="checkbox"/> No <input type="checkbox"/> Above/Below 0 ft.
CLAY		50	56	
LIMEROCK		56	185	
SANDROCK				
		Casing Diameter	Weight	Hole Diameter
		4 in. to 157 ft.	lbs./ft.	
Open Hole from 157 ft. to 185 ft.				
Screen NO Make Type				
Diameter	Slot/Gauze	Length	Set Between	
Static Water Level 35 ft. from Land surface Date Measured 04/30/1963				
PUMPING LEVEL (below land surface) 0 ft. after hrs. pumping 20 g.p.m.				
Well Head Completion Pitless adapter manufacturer Model <input type="checkbox"/> Casing Protection <input type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)				
NO REMARKS		Grouting Information Well Grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No		
Located by: Minnesota Geological Survey		Method: Digitized - scale 1:24,000 or larger (Digitizing Table)		
Unique Number		Input Date: 01/01/1990		
Verification: Information from owner		System: UTM - Nad83, Zone 15, Meters X: 493979 Y: 4992181		
		Nearest Known Source of Contamination _feet _direction _type Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No		
		Pump <input checked="" type="checkbox"/> Not Installed Date installed 00/00/1963 Manufacturer's name STAR-RITE Model number __ HP 0.75 Volts Length of drop Pipe 42 ft. Capacity g.p.m. Type Submersible Material		
		Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input type="checkbox"/> No		
		Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No		
		Well Contractor Certification Minnesota Geological Survey MGS SAMPSON, D. License Business Name Lic. Or Reg. No. Name of Driller		
First Bedrock Platteville		Aquifer St.Peter		
Last Strat St.Peter		Depth to Bedrock 50 ft.		
County Well Index Online Report		13938		Printed 10/20/2009 HE-01205-07

Minnesota Unique Well No.

177937

County Ramsey
 Quad White Bear Lake West
 Quad ID 119D

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING RECORD
 Minnesota Statutes Chapter 103I

Entry Date 08/14/1991
 Update Date 05/05/1994
 Received Date

Well Name SMITH, CLARK Township Range Dir Section Subsections Elevation 920 ft. 30 22 W 17 DBBABB Elevation Method 7.5 minute topographic map (+/- 5 feet)		Well Depth 248 ft. Depth Completed 248 ft. Date Well Completed 03/25/1982
		Drilling Method Non-specified Rotary
Well Address 20 DUCK PASS RD NORTH OAKS MN		Drilling Fluid -- Well Hydrofractured? <input type="checkbox"/> Yes <input type="checkbox"/> No From Ft. to Ft.
Geological Material CLAY GRAVEL CLAY RED CLAY & SAND SAND SANDSTONE WHITE & GRAY LIMESTONE & SANDSTONE		Use Domestic Casing Type Steel (black or low carbon) Joint Threaded Drive Shoe? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Above/Below 0 ft.
Color GRAY BLUE HARD	Hardness HARD	From To 0 18 18 25 25 35 35 115 115 157 157 217 217 248
		Casing Diameter 4 in. to 166 ft. Weight lbs./ft. Hole Diameter Open Hole from 166 ft. to 248 ft.
		Screen NO Make Type Diameter Slot/Gauze Length Set Between
		Static Water Level 40 ft. from Land surface Date Measured 03/25/1982
		PUMPING LEVEL (below land surface) ft. after hrs. pumping g.p.m.
		Well Head Completion Pitless adapter manufacturer Model <input type="checkbox"/> Casing Protection <input type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)
NO REMARKS		Grouting Information Well Grouted? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Located by: Minnesota Geological Survey Method: Digitized - scale 1:24,000 or larger (Digitizing Table) Unique Number Verification: Information from owner System: UTM - Nad83, Zone15, Meters X: 494064 Y: 4992560	Nearest Known Source of Contamination _feet _direction _type Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No	
		Pump <input checked="" type="checkbox"/> Not Installed Date Installed 04/02/1982 Manufacturer's name MCDONALD Model number __ HP 0.75 Volts 230 Length of drop Pipe 70 ft. Capacity 10 g.p.m. Type Submersible Material Galvanized
		Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input type="checkbox"/> No
		Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No
		Well Contractor Certification Johnson Bros. Well 62114 JOHNSON, J. License Business Name Lic. Or Reg. No. Name of Driller
First Bedrock St.Peter Last Strat Prairie Du Chien Group	Aquifer Multiple Depth to Bedrock 157 ft.	

Minnesota Unique Well No.

462890

County Ramsey
 Quad White Bear Lake West
 Quad ID 119D

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING RECORD

Entry Date 12/31/1991
 Update Date 10/16/2008
 Received Date 11/21/2006

Minnesota Statutes Chapter 103I

Well Name N. OAKS COMPANY Township Range Dir Section Subsections Elevation 941 ft 30 22 W 17 DADCBD Elevation Method 7.5 minute topographic map (+/- 5 feet)				Well Depth 145 ft Depth Completed 145 ft Date Well Completed 09/24/1990																																									
Well Address ROBB FARM RD MN				Drilling Fluid Water	Well Hydrofractured? <input type="checkbox"/> Yes <input type="checkbox"/> No From Ft. to Ft.																																								
Geological Material <table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Geological Material</th> <th style="text-align: left;">Color</th> <th style="text-align: left;">Hardness</th> <th style="text-align: left;">From</th> <th style="text-align: left;">To</th> </tr> </thead> <tbody> <tr> <td>SANDY CLAY</td> <td>RED/BRN</td> <td></td> <td>0</td> <td>12</td> </tr> <tr> <td>BOULDER</td> <td></td> <td></td> <td>12</td> <td>14</td> </tr> <tr> <td>SAND + CLAY</td> <td>RED/BRN</td> <td></td> <td>14</td> <td>45</td> </tr> <tr> <td>GRAVEL + CLAY</td> <td>RED/BRN</td> <td></td> <td>45</td> <td>50</td> </tr> <tr> <td>SANDY CLAY</td> <td>RED/BRN</td> <td></td> <td>50</td> <td>71</td> </tr> <tr> <td>SAND + GRAVEL + CLAY</td> <td>BROWN</td> <td></td> <td>71</td> <td>85</td> </tr> <tr> <td>SANDSTONE (ST. PETER)</td> <td>WHITE</td> <td></td> <td>85</td> <td>145</td> </tr> </tbody> </table>				Geological Material	Color	Hardness	From	To	SANDY CLAY	RED/BRN		0	12	BOULDER			12	14	SAND + CLAY	RED/BRN		14	45	GRAVEL + CLAY	RED/BRN		45	50	SANDY CLAY	RED/BRN		50	71	SAND + GRAVEL + CLAY	BROWN		71	85	SANDSTONE (ST. PETER)	WHITE		85	145	Use Monitor well	
Geological Material	Color	Hardness	From	To																																									
SANDY CLAY	RED/BRN		0	12																																									
BOULDER			12	14																																									
SAND + CLAY	RED/BRN		14	45																																									
GRAVEL + CLAY	RED/BRN		45	50																																									
SANDY CLAY	RED/BRN		50	71																																									
SAND + GRAVEL + CLAY	BROWN		71	85																																									
SANDSTONE (ST. PETER)	WHITE		85	145																																									
Casing Type Steel (black or low carbon) Joint Welded Drive Shoe? <input type="checkbox"/> Yes <input type="checkbox"/> No Above/Below 0 ft.				Casing Diameter Weight Hole Diameter 8 in. to 114 ft. lbs./ft. 4 in. to 128 ft. lbs./ft.																																									
Open Hole from ft. to ft.				Screen YES Make JOHNSON Type stainless steel																																									
Diameter Slot/Gauze Length Set Between 4 8 0 135 ft. and 145 ft.				Static Water Level ft. from Date Measured																																									
PUMPING LEVEL (below land surface) ft. after hrs. pumping g.p.m.				Well Head Completion Pitless adapter manufacturer Model <input type="checkbox"/> Casing Protection <input checked="" type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)																																									
REMARKS CASING: 8 TO 114; 4 TO 128. SAND 2 1/2 GAL. PORTLAND 18 BAGS Located by: Minnesota Geological Survey Method: Digitized - scale 1:24,000 or larger (Digitizing Table) Unique Number Verification: N/A Input Date: 01/01/1990 System: UTM - Nad83, Zone15, X: 494603 Y: 4992247 Meters				Grouting Information Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Grout Material: Neat Cement from to 123 ft. 18 bags																																									
Nearest Known Source of Contamination ___feet ___direction ___type Well disinfected upon completion? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				Pump <input type="checkbox"/> Not Installed Date Installed Manufacturer's name Model number ___ HP ___ Volts Length of drop Pipe ___ft Capacity ___g.p.m Type Material																																									
Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No																																									
Well Contractor Certification First Bedrock St.Peter Aquifer St.Peter Last Strat St.Peter Depth to Bedrock 85 ft.				EH Renner and Sons, Inc. 1431 KLAUJ, R. License Business Name Lic. Or Reg. No. Name of Driller																																									
County Well Index Online Report				462890 Printed 10/19/2009 HE-01205-07																																									

Minnesota Unique Well No.

500485

County Ramsey
 Quad White Bear Lake West
 Quad ID 119D

MINNESOTA DEPARTMENT OF
 HEALTH
**WELL AND
 BORING RECORD**
 Minnesota Statutes Chapter 103I

Entry Date 06/13/1991
 Update Date 03/11/2005
 Received Date

Well Name WOLTERS, PAUL Township Range Dir Section Subsections Elevation 915 ft. 30 22 W 17 CCBACD Elevation Method 7.5 minute topographic map (+/- 5 feet)		Well Depth 200 ft. Depth Completed 200 ft. Date Well Completed 08/30/1989
Well Address 6 WEST SHORE RD NORTH OAKS MN 55110		Drilling Method Non-specified Rotary Drilling Fluid Bentonite Well Hydrofractured? <input type="checkbox"/> Yes <input type="checkbox"/> No From Ft. to Ft.
Geological Material SAND & GRAVEL CLAY & GRAVEL SAND & GRAVEL CLAY & GRAVEL SANDROCK SANDROCK		Use Domestic Casing Type Steel (black or low carbon) Joint Threaded <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Above/Below 1 ft. Casing Diameter 4 in. to 170 ft. Weight 11 lbs./ft. Hole Diameter 7 in. to 170 ft. 4 in. to 200 ft.
Color WHITE Hardness SOFT		From To 0 30 30 60 60 89 89 100 100 165 165 200
Static Water Level 60 ft. from Land surface Date Measured 08/30/1989		Open Hole from 170 ft. to 200 ft.
PUMPING LEVEL (below land surface) 100 ft. after 3 hrs. pumping g.p.m.		Screen NO Make Type Diameter Slot/Gauze Length Set Between
Well Head Completion Pitless adapter manufacturer Model <input type="checkbox"/> Casing Protection <input type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)		Grouting Information Well Grouted? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
NO REMARKS		Nearest Known Source of Contamination 95 feet N direction Septic tank/drain field type Well disinfected upon completion? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Located by: Minnesota Geological Survey Method: Digitized - scale 1:24,000 or larger (Digitizing Table) Unique Number Input Date: 01/01/1990 Verification: Address verification System: UTM - Nad83, Zone15, Meters X: 493373 Y: 4991956		Pump <input type="checkbox"/> Not Installed Date Installed Manufacturer's name Model number __ HP_ Volts Length of drop Pipe _ft. Capacity _g.p.m Type Material
First Bedrock St.Peter Aquifer St.Peter Last Strat St.Peter Depth to Bedrock 100 ft.		Abandoned Wells Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
County Well Index Online Report		Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No Well Contractor Certification Mccullough & Sons 82054 BEAUVAIS, T. License Business Name Lic. Or Reg. No. Name of Driller
500485		Printed 10/20/2009 HE-01205-07