

Case No:	41861	Contract:	EPW09038	SDG No:	ME3P10	Lab Code:	CHEM
Sample Number:	ME3P17	Method:	Hg	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	MW-07	pH:	2	Sample Date:	10112011	Sample Time:	18:45:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Mercury	0.70	ug/L	1			Yes	S2BVE

Case No:	41861	Contract:	EPW09038	SDG No:	ME3P10	Lab Code:	CHEM
Sample Number:	ME3P17	Method:	ICP_AES	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	MW-07	pH:	2	Sample Date:	10112011	Sample Time:	18:45:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Aluminum	9020	ug/L	1			Yes	S2BVE
Antimony	7.5	ug/L	1	J	J	Yes	S2BVE
Arsenic	136	ug/L	1			Yes	S2BVE
Barium	587	ug/L	1	E	J	Yes	S2BVE
Beryllium	1.5	ug/L	1	J	J	Yes	S2BVE
Cadmium	3.7	ug/L	1	J	J	Yes	S2BVE
Calcium	159000	ug/L	1	E	J	Yes	S2BVE
Chromium	46.1	ug/L	1		J+	Yes	S2BVE
Cobalt	10.7	ug/L	1	J	J	Yes	S2BVE
Copper	24700	ug/L	1			Yes	S2BVE
Iron	22900	ug/L	1			Yes	S2BVE
Lead	282	ug/L	1			Yes	S2BVE
Magnesium	15400	ug/L	1	E	J	Yes	S2BVE
Manganese	744	ug/L	1	E	J	Yes	S2BVE
Nickel	65.1	ug/L	1			Yes	S2BVE
Potassium	6700	ug/L	1			Yes	S2BVE
Selenium	35.0	ug/L	1	U	U	Yes	S2BVE
Silver	75.4	ug/L	1			Yes	S2BVE
Sodium	37800	ug/L	1		J+	Yes	S2BVE
Thallium	25.0	ug/L	1	U	U	Yes	S2BVE
Vanadium	50.0	ug/L	1	J	U	Yes	S2BVE
Zinc	404	ug/L	1			Yes	S2BVE

Case No:	41861	Contract:	EPW09038	SDG No:	ME3P10	Lab Code:	CHEM
Sample Number:	ME3P18	Method:	Hg	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	MW-08	pH:	2	Sample Date:	10122011	Sample Time:	10:25:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Mercury	0.19	ug/L	1	J	J	Yes	S2BVE

Case No:	41861	Contract:	EPW09038	SDG No:	ME3P10	Lab Code:	CHEM
Sample Number:	ME3P18	Method:	ICP_AES	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	MW-08	pH:	2	Sample Date:	10122011	Sample Time:	10:25:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Aluminum	384	ug/L	1			Yes	S2BVE
Antimony	60.0	ug/L	1	U	U	Yes	S2BVE
Arsenic	2.5	ug/L	1	J	J	Yes	S2BVE
Barium	200	ug/L	1	JE	UJ	Yes	S2BVE
Beryllium	5.0	ug/L	1	U	U	Yes	S2BVE
Cadmium	0.18	ug/L	1	J	J	Yes	S2BVE
Calcium	80200	ug/L	1	E	J	Yes	S2BVE
Chromium	10.0	ug/L	1	J	U	Yes	S2BVE
Cobalt	50.0	ug/L	1	U	U	Yes	S2BVE
Copper	480	ug/L	1			Yes	S2BVE
Iron	2500	ug/L	1			Yes	S2BVE
Lead	21.9	ug/L	1			Yes	S2BVE
Magnesium	8140	ug/L	1	E	J	Yes	S2BVE
Manganese	470	ug/L	1	E	J	Yes	S2BVE
Nickel	16.2	ug/L	1	J	J	Yes	S2BVE
Potassium	5890	ug/L	1			Yes	S2BVE
Selenium	35.0	ug/L	1	U	U	Yes	S2BVE
Silver	10.0	ug/L	1	U	U	Yes	S2BVE
Sodium	16100	ug/L	1		J+	Yes	S2BVE
Thallium	25.0	ug/L	1	U	U	Yes	S2BVE
Vanadium	50.0	ug/L	1	J	U	Yes	S2BVE
Zinc	60.0	ug/L	1	J	U	Yes	S2BVE

Case No:	41861	Contract:	EPW09038	SDG No:	ME3P10	Lab Code:	CHEM
Sample Number:	ME3P18	Method:	CN	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	MW-08	pH:	2	Sample Date:	10122011	Sample Time:	10:25:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Cyanide	10.0	ug/L	1	U	UJ	Yes	S2BVE

Case No:	41861	Contract:	EPW09038	SDG No:	ME3P10	Lab Code:	CHEM
Sample Number:	ME3P19	Method:	Hg	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	MW-09	pH:	2	Sample Date:	10122011	Sample Time:	11:50:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Mercury	0.20	ug/L	1	U	U	Yes	S2BVE

Case No:	41861	Contract:	EPW09038	SDG No:	ME3P10	Lab Code:	CHEM
Sample Number:	ME3P19	Method:	CN	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	MW-09	pH:	2	Sample Date:	10122011	Sample Time:	11:50:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Cyanide	10.0	ug/L	1	U	UJ	Yes	S2BVE

Case No:	41861	Contract:	EPW09038	SDG No:	ME3P10	Lab Code:	CHEM
Sample Number:	ME3P19	Method:	ICP_AES	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	MW-09	pH:	2	Sample Date:	10122011	Sample Time:	11:50:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Aluminum	1970	ug/L	1			Yes	S2BVE
Antimony	60.0	ug/L	1	U	U	Yes	S2BVE
Arsenic	10.0	ug/L	1	U	U	Yes	S2BVE
Barium	257	ug/L	1	E	J	Yes	S2BVE
Beryllium	5.0	ug/L	1	U	U	Yes	S2BVE
Cadmium	0.15	ug/L	1	J	J	Yes	S2BVE
Calcium	50700	ug/L	1	E	J	Yes	S2BVE
Chromium	10.0	ug/L	1	J	U	Yes	S2BVE
Cobalt	1.4	ug/L	1	J	J	Yes	S2BVE
Copper	71.7	ug/L	1			Yes	S2BVE
Iron	1800	ug/L	1			Yes	S2BVE
Lead	2.7	ug/L	1	J	J	Yes	S2BVE
Magnesium	27400	ug/L	1	E	J	Yes	S2BVE
Manganese	369	ug/L	1	E	J	Yes	S2BVE
Nickel	5.4	ug/L	1	J	J	Yes	S2BVE
Potassium	17600	ug/L	1			Yes	S2BVE
Selenium	35.0	ug/L	1	U	U	Yes	S2BVE
Silver	10.0	ug/L	1	U	U	Yes	S2BVE
Sodium	75600	ug/L	1			Yes	S2BVE
Thallium	25.0	ug/L	1	U	U	Yes	S2BVE
Vanadium	50.0	ug/L	1	J	U	Yes	S2BVE
Zinc	60.0	ug/L	1	J	U	Yes	S2BVE

Case No:	41861	Contract:	EPW09038	SDG No:	ME3P10	Lab Code:	CHEM
Sample Number:	ME3P20	Method:	CN	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	MW-10	pH:	2	Sample Date:	10122011	Sample Time:	18:10:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Cyanide	10.0	ug/L	1	U	UJ	Yes	S2BVE

Case No:	41861	Contract:	EPW09038	SDG No:	ME3P10	Lab Code:	CHEM
Sample Number:	ME3P20	Method:	Hg	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	MW-10	pH:	2	Sample Date:	10122011	Sample Time:	18:10:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Mercury	0.20	ug/L	1	U	U	Yes	S2BVE

Case No:	41861	Contract:	EPW09038	SDG No:	ME3P10	Lab Code:	CHEM
Sample Number:	ME3P20	Method:	ICP_AES	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	MW-10	pH:	2	Sample Date:	10122011	Sample Time:	18:10:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Aluminum	1260	ug/L	1			Yes	S2BVE
Antimony	60.0	ug/L	1	U	U	Yes	S2BVE
Arsenic	2.6	ug/L	1	J	J	Yes	S2BVE
Barium	200	ug/L	1	JE	UJ	Yes	S2BVE
Beryllium	5.0	ug/L	1	U	U	Yes	S2BVE
Cadmium	0.32	ug/L	1	J	J	Yes	S2BVE
Calcium	16200	ug/L	1	E	J+	Yes	S2BVE
Chromium	10.0	ug/L	1	J	U	Yes	S2BVE
Cobalt	0.74	ug/L	1	J	J	Yes	S2BVE
Copper	11.9	ug/L	1	J	J	Yes	S2BVE
Iron	5640	ug/L	1			Yes	S2BVE
Lead	2.4	ug/L	1	J	J	Yes	S2BVE
Magnesium	5000	ug/L	1	JE	UJ	Yes	S2BVE
Manganese	376	ug/L	1	E	J	Yes	S2BVE
Nickel	4.0	ug/L	1	J	J	Yes	S2BVE
Potassium	5000	ug/L	1	J	U	Yes	S2BVE
Selenium	35.0	ug/L	1	U	U	Yes	S2BVE
Silver	10.0	ug/L	1	U	U	Yes	S2BVE
Sodium	10800	ug/L	1		J+	Yes	S2BVE
Thallium	25.0	ug/L	1	U	U	Yes	S2BVE
Vanadium	50.0	ug/L	1	J	U	Yes	S2BVE
Zinc	60.0	ug/L	1	J	U	Yes	S2BVE

Case No:	41861	Contract:	EPW09038	SDG No:	ME3P10	Lab Code:	CHEM
Sample Number:	ME3P27	Method:	CN	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	FB-01	pH:	2	Sample Date:	10112011	Sample Time:	16:45:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Cyanide	10.0	ug/L	1	U	UJ	Yes	S2BVE

Case No:	41861	Contract:	EPW09038	SDG No:	ME3P10	Lab Code:	CHEM
Sample Number:	ME3P27	Method:	Hg	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	FB-01	pH:	2	Sample Date:	10112011	Sample Time:	16:45:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Mercury	0.20	ug/L	1	U	U	Yes	S2BVE

Case No:	41861	Contract:	EPW09038	SDG No:	ME3P10	Lab Code:	CHEM
Sample Number:	ME3P27	Method:	ICP_AES	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	FB-01	pH:	2	Sample Date:	10112011	Sample Time:	16:45:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Aluminum	200	ug/L	1	U	U	Yes	S2BVE
Antimony	60.0	ug/L	1	U	U	Yes	S2BVE
Arsenic	10.0	ug/L	1	U	U	Yes	S2BVE
Barium	200	ug/L	1	UE	UJ	Yes	S2BVE
Beryllium	5.0	ug/L	1	U	U	Yes	S2BVE
Cadmium	5.0	ug/L	1	U	U	Yes	S2BVE
Calcium	599	ug/L	1	JE	J	Yes	S2BVE
Chromium	10.0	ug/L	1	U	U	Yes	S2BVE
Cobalt	50.0	ug/L	1	U	U	Yes	S2BVE
Copper	25.0	ug/L	1	U	U	Yes	S2BVE
Iron	100	ug/L	1	J	U	Yes	S2BVE
Lead	10.0	ug/L	1	U	U	Yes	S2BVE
Magnesium	80.9	ug/L	1	JE	J	Yes	S2BVE
Manganese	1.1	ug/L	1	JE	J	Yes	S2BVE
Nickel	40.0	ug/L	1	U	U	Yes	S2BVE
Potassium	5000	ug/L	1	U	U	Yes	S2BVE
Selenium	35.0	ug/L	1	U	U	Yes	S2BVE
Silver	10.0	ug/L	1	U	U	Yes	S2BVE
Sodium	866	ug/L	1	J	J	Yes	S2BVE
Thallium	25.0	ug/L	1	U	U	Yes	S2BVE
Vanadium	50.0	ug/L	1	U	U	Yes	S2BVE
Zinc	5.5	ug/L	1	J	J	Yes	S2BVE

Case No:	41861	Contract:	EPW09038	SDG No:	ME3P10	Lab Code:	CHEM
Sample Number:	ME3P28	Method:	ICP_AES	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	FB-02	pH:	2	Sample Date:	10122011	Sample Time:	18:05:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Aluminum	200	ug/L	1	U	U	Yes	S2BVE
Antimony	60.0	ug/L	1	U	U	Yes	S2BVE
Arsenic	10.0	ug/L	1	U	U	Yes	S2BVE
Barium	200	ug/L	1	UE	UJ	Yes	S2BVE
Beryllium	5.0	ug/L	1	U	U	Yes	S2BVE
Cadmium	5.0	ug/L	1	U	U	Yes	S2BVE
Calcium	525	ug/L	1	JE	J	Yes	S2BVE
Chromium	10.0	ug/L	1	U	U	Yes	S2BVE
Cobalt	50.0	ug/L	1	U	U	Yes	S2BVE
Copper	25.0	ug/L	1	U	U	Yes	S2BVE
Iron	100	ug/L	1	J	U	Yes	S2BVE
Lead	10.0	ug/L	1	U	U	Yes	S2BVE
Magnesium	87.5	ug/L	1	JE	J	Yes	S2BVE
Manganese	0.84	ug/L	1	JE	J	Yes	S2BVE
Nickel	40.0	ug/L	1	U	U	Yes	S2BVE
Potassium	5000	ug/L	1	U	U	Yes	S2BVE
Selenium	35.0	ug/L	1	U	U	Yes	S2BVE
Silver	10.0	ug/L	1	U	U	Yes	S2BVE
Sodium	525	ug/L	1	J	J	Yes	S2BVE
Thallium	25.0	ug/L	1	U	U	Yes	S2BVE
Vanadium	0.43	ug/L	1	J	J	Yes	S2BVE
Zinc	60.0	ug/L	1	U	U	Yes	S2BVE

Case No:	41861	Contract:	EPW09038	SDG No:	ME3P10	Lab Code:	CHEM
Sample Number:	ME3P28	Method:	CN	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	FB-02	pH:	2	Sample Date:	10122011	Sample Time:	18:05:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Cyanide	10.0	ug/L	1	U	UJ	Yes	S2BVE

Case No:	41861	Contract:	EPW09038	SDG No:	ME3P10	Lab Code:	CHEM
Sample Number:	ME3P28	Method:	Hg	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	FB-02	pH:	2	Sample Date:	10122011	Sample Time:	18:05:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Mercury	0.20	ug/L	1	U	U	Yes	S2BVE

Case No:	41861	Contract:	EPW09038	SDG No:	ME3P10	Lab Code:	CHEM
Sample Number:	ME3P31	Method:	Hg	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	PB-01	pH:	2	Sample Date:	10112011	Sample Time:	17:07:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Mercury	0.20	ug/L	1	U	U	Yes	S2BVE

Case No:	41861	Contract:	EPW09038	SDG No:	ME3P10	Lab Code:	CHEM
Sample Number:	ME3P31	Method:	ICP_AES	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	PB-01	pH:	2	Sample Date:	10112011	Sample Time:	17:07:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Aluminum	200	ug/L	1	U	U	Yes	S2BVE
Antimony	60.0	ug/L	1	U	U	Yes	S2BVE
Arsenic	10.0	ug/L	1	U	U	Yes	S2BVE
Barium	200	ug/L	1	UE	UJ	Yes	S2BVE
Beryllium	5.0	ug/L	1	U	U	Yes	S2BVE
Cadmium	5.0	ug/L	1	U	U	Yes	S2BVE
Calcium	358	ug/L	1	JE	J	Yes	S2BVE
Chromium	10.0	ug/L	1	U	U	Yes	S2BVE
Cobalt	50.0	ug/L	1	U	U	Yes	S2BVE
Copper	25.0	ug/L	1	U	U	Yes	S2BVE
Iron	100	ug/L	1	J	U	Yes	S2BVE
Lead	10.0	ug/L	1	U	U	Yes	S2BVE
Magnesium	54.7	ug/L	1	JE	J	Yes	S2BVE
Manganese	15.0	ug/L	1	JE	UJ	Yes	S2BVE
Nickel	40.0	ug/L	1	U	U	Yes	S2BVE
Potassium	5000	ug/L	1	U	U	Yes	S2BVE
Selenium	35.0	ug/L	1	U	U	Yes	S2BVE
Silver	10.0	ug/L	1	U	U	Yes	S2BVE
Sodium	646	ug/L	1	J	J	Yes	S2BVE
Thallium	25.0	ug/L	1	U	U	Yes	S2BVE
Vanadium	50.0	ug/L	1	J	U	Yes	S2BVE
Zinc	60.0	ug/L	1	U	U	Yes	S2BVE

Case No:	41861	Contract:	EPW09038	SDG No:	ME3P10	Lab Code:	CHEM
Sample Number:	ME3P31	Method:	CN	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	PB-01	pH:	2	Sample Date:	10112011	Sample Time:	17:07:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Cyanide	10.0	ug/L	1	U	UJ	Yes	S2BVE

Case No:	41861	Contract:	EPW09038	SDG No:	ME3P10	Lab Code:	CHEM
Sample Number:	ME3P32	Method:	ICP_AES	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	PB-02	pH:	2	Sample Date:	10122011	Sample Time:	18:00:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Aluminum	200	ug/L	1	U	U	Yes	S2BVE
Antimony	60.0	ug/L	1	U	U	Yes	S2BVE
Arsenic	10.0	ug/L	1	U	U	Yes	S2BVE
Barium	4.4	ug/L	1	JE	J	Yes	S2BVE
Beryllium	5.0	ug/L	1	U	U	Yes	S2BVE
Cadmium	5.0	ug/L	1	U	U	Yes	S2BVE
Calcium	8580	ug/L	1	E	J	Yes	S2BVE
Chromium	10.0	ug/L	1	J	J	Yes	S2BVE
Cobalt	50.0	ug/L	1	U	U	Yes	S2BVE
Copper	25.0	ug/L	1	U	U	Yes	S2BVE
Iron	100	ug/L	1	J	U	Yes	S2BVE
Lead	10.0	ug/L	1	U	U	Yes	S2BVE
Magnesium	1310	ug/L	1	JE	J	Yes	S2BVE
Manganese	1.6	ug/L	1	JE	J	Yes	S2BVE
Nickel	40.0	ug/L	1	U	U	Yes	S2BVE
Potassium	5000	ug/L	1	J	U	Yes	S2BVE
Selenium	35.0	ug/L	1	U	U	Yes	S2BVE
Silver	10.0	ug/L	1	U	U	Yes	S2BVE
Sodium	9630	ug/L	1			Yes	S2BVE
Thallium	25.0	ug/L	1	U	U	Yes	S2BVE
Vanadium	1.7	ug/L	1	J	J	Yes	S2BVE
Zinc	7.0	ug/L	1	J	J	Yes	S2BVE

Case No:	41861	Contract:	EPW09038	SDG No:	ME3P10	Lab Code:	CHEM
Sample Number:	ME3P32	Method:	CN	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	PB-02	pH:	2	Sample Date:	10122011	Sample Time:	18:00:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Cyanide	10.0	ug/L	1	U	UJ	Yes	S2BVE

Case No:	41861	Contract:	EPW09038	SDG No:	ME3P10	Lab Code:	CHEM
Sample Number:	ME3P32	Method:	Hg	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	PB-02	pH:	2	Sample Date:	10122011	Sample Time:	18:00:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Mercury	0.20	ug/L	1	U	U	Yes	S2BVE

Case No:	41861	Contract:	EPW09038	SDG No:	ME3P10	Lab Code:	CHEM
Sample Number:	ME3P35	Method:	ICP_AES	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	MW-11	pH:	2	Sample Date:	10122011	Sample Time:	18:25:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Aluminum	1180	ug/L	1			Yes	S2BVE
Antimony	60.0	ug/L	1	U	U	Yes	S2BVE
Arsenic	10.0	ug/L	1	U	U	Yes	S2BVE
Barium	200	ug/L	1	JE	UJ	Yes	S2BVE
Beryllium	5.0	ug/L	1	U	U	Yes	S2BVE
Cadmium	0.20	ug/L	1	J	J	Yes	S2BVE
Calcium	45500	ug/L	1	E	J	Yes	S2BVE
Chromium	10.0	ug/L	1	J	U	Yes	S2BVE
Cobalt	0.48	ug/L	1	J	J	Yes	S2BVE
Copper	143	ug/L	1			Yes	S2BVE
Iron	1560	ug/L	1			Yes	S2BVE
Lead	11.8	ug/L	1			Yes	S2BVE
Magnesium	5610	ug/L	1	E	J+	Yes	S2BVE
Manganese	95.8	ug/L	1	E	J	Yes	S2BVE
Nickel	4.4	ug/L	1	J	J	Yes	S2BVE
Potassium	5340	ug/L	1			Yes	S2BVE
Selenium	35.0	ug/L	1	U	U	Yes	S2BVE
Silver	10.0	ug/L	1	U	U	Yes	S2BVE
Sodium	63200	ug/L	1			Yes	S2BVE
Thallium	25.0	ug/L	1	U	U	Yes	S2BVE
Vanadium	50.0	ug/L	1	J	U	Yes	S2BVE
Zinc	60.0	ug/L	1	J	U	Yes	S2BVE

Case No:	41861	Contract:	EPW09038	SDG No:	ME3P10	Lab Code:	CHEM
Sample Number:	ME3P35	Method:	Hg	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	MW-11	pH:	2	Sample Date:	10122011	Sample Time:	18:25:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Mercury	0.20	ug/L	1	U	U	Yes	S2BVE

Case No:	41861	Contract:	EPW09038	SDG No:	ME3P10	Lab Code:	CHEM
Sample Number:	ME3P35	Method:	CN	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	MW-11	pH:	2	Sample Date:	10122011	Sample Time:	18:25:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Cyanide	3.0	ug/L	1	J	J	Yes	S2BVE



USEPA Contract Laboratory Program
Inorganic Traffic Report & Chain of Custody Record

Case No: 41861
DAS No:
SDG No: ME3P10 L 13

Date Shipped: 10/13/11 Carrier Name: UPS Airbill: 1Z-549-OW4-22-1008-2556 Shipped to: ChemTech Consulting Group (CHEM) 284 Sheffield Street Mountainside NJ 07092 (908) 789-8900	Chain of Custody Record		Sampler Signature: <i>John Spielberg</i>	For Lab Use Only Lab Contract No: EPW09038 Unit Price: Transfer To: Lab Contract No: Unit Price:
	Relinquished By (Date / Time)	Received By (Date / Time)		
	1. <i>John Spielberg, 10/13/11, 1600</i>	<i>Ken Rame, 10/14/11 10:10</i>		
	2. <i>[Signature]</i>			
	3.			
	4.			

INORGANIC SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT DATE/TIME		ORGANIC SAMPLE No.	FOR LAB USE ONLY Sample Condition On Receipt
ME3P10	Ground Water/ John Spielberg	L/G	CN (21), TM/Hg (21)	5-1091 (HNO3), 5-1092 (NaOH) (2)	MW-01	10/12/11	1015	E3P10	
ME3P11	Ground Water/ John Spielberg	L/G	CN (21), TM/Hg (21)	5-1097 (HNO3), 5-1098 (NaOH) (2)	MW-02	{	1112	E3P11	
ME3P12	Ground Water/ John Spielberg	L/G	CN (21), TM/Hg (21)	5-1103 (HNO3), 5-1104 (NaOH) (2)	MW-03		1610	E3P12	
ME3P13	Ground Water/ John Spielberg	L/G	CN (21), TM/Hg (21)	5-1109 (HNO3), 5-1110 (NaOH) (2)	MW-04		1200	E3P13	
ME3P27	Field QC/ John Spielberg	L/G	CN (21), TM/Hg (21)	5-1209 (HNO3), 5-1210 (NaOH) (2)	FB-01	10/11/11	1645	E3P27	
ME3P28	Field QC/ John Spielberg	L/G	CN (21), TM/Hg (21)	5-1215 (HNO3), 5-1216 (NaOH) (2)	FB-02	10/12/11	1805	E3P28	
ME3P31	Field QC/ John Spielberg	L/G	CN (21), TM/Hg (21)	5-1233 (HNO3), 5-1234 (NaOH) (2)	PB-01	10/11/11	1707	E3P31	

Shipment for Case Complete? N	Sample(s) to be used for laboratory QC:	Additional Sampler Signature(s): <i>John Spielberg</i>	Cooler Temperature Upon Receipt: 5°C	Chain of Custody Seal Number: 89245, 89246
Analysis Key:	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G	Custody Seal Intact? YES	Shipment Iced? YES
CN = Cyanide - water, TM/Hg = CLP Total Metals/Hg - water				

TR Number: 5-264186997-100811-0003

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PR provides preliminary results. Requests for preliminary results will increase analytical costs.

Send Copy to: Sample Management Office, 15000 Conference Center Dr., Chantilly, VA. 20151-3819 Phone 703/818-4200; Fax 703/818-4602



USEPA Contract Laboratory Program
Inorganic Traffic Report & Chain of Custody Record

Case No: 47867
DAS No:
SDG No: ME3P10

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Date Shipped: 10/13/11	Chain of Custody Record	Sampler Signature: John Spielberg	For Lab Use Only
Carrier Name: UPS	Relinquished By (Date / Time)	Received By (Date / Time)	Lab Contract No: EPW09038
Airbill: 1Z-549-OW4-22-1008-2565	1. John Spielberg, 10/13/11, 1600	Ken Turner 10/14/11 10:10	Unit Price:
Shipped to: ChemTech Consulting Group (CHEM) 284 Sheffield Street Mountainside NJ 07092 (908) 789-8900	2.		Transfer To:
	3.		Lab Contract No:
	4.		Unit Price:

INORGANIC SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No/ PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT DATE/TIME	ORGANIC SAMPLE No.	FOR LAB USE ONLY Sample Condition On Receipt
ME3P14	Ground Water/ John Spielberg	L/G	CN (21), TM/Hg (21)	5-1115 (HNO ₃), 5-1116 (NaOH) (2)	MW-05	10/11/11 1315	E3P14	
ME3P15	Ground Water/ John Spielberg	L/G	CN (21), TM/Hg (21)	5-1121 (HNO ₃), 5-1122 (NaOH) (2)	MW-05D	1315	E3P15	
ME3P16	Ground Water/ John Spielberg	L/G	CN (21), TM/Hg (21)	5-1133 (HNO ₃), 5-1134 (HNO ₃), 5-1135 (NaOH), 5-1136 (NaOH) (4)	MW-06	1650	E3P16	
ME3P17	Ground Water/ John Spielberg	L/G	CN (21), TM/Hg (21)	5-1141 (HNO ₃), 5-1142 (NaOH) (2)	MW-07	1845	E3P17	
ME3P29	Field QC/ John Spielberg	L/G	CN (21), TM/Hg (21)	5-1221 (HNO ₃), 5-1222 (NaOH) (2)	FB-03		E3P29	

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10/13/11

Shipment for Case Complete? N	Sample(s) to be used for laboratory QC: ME3P16	Additional Sampler Signature(s): John Spielberg	Cooler Temperature Upon Receipt: 5°C	Chain of Custody Seal Number: 89247, 89248
Analysis Key:	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G	Custody Seal Intact? <input checked="" type="checkbox"/>	Shipment Iced? <input checked="" type="checkbox"/>
CN = Cyanide - water, TM/Hg = CLP Total Metals/Hg - water				

TR Number: 5-264186997-100811-0004

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JSEPA Contract Laboratory Program
Inorganic Traffic Report & Chain of Custody Record

Case No: 41861

DAS No:

SDG No:

ME3P10

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Date Shipped: 10/13/11	Chain of Custody Record Relinquished By (Date / Time) 1. John Spielberg, 10/13/11, 1000 2. 3. 4.	Sampler Signature: John Spielberg	For Lab Use Only Lab Contract No: EPW09038 Unit Price: Transfer To: Lab Contract No: Unit Price:
Carrier Name: UPS		Received By (Date / Time) Ken Lane 10/14/11 10:10	
Airbill: 1Z-549-OW4-22-1008-2574			
Shipped to: ChemTech Consulting Group (CHEM) 284 Sheffield Street Mountainside NJ 07092 (908) 789-8900			

INORGANIC SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT DATE/TIME	ORGANIC SAMPLE No.	FOR LAB USE ONLY Sample Condition On Receipt
ME3P18	Ground Water/ John Spielberg	L/G	CN (21), TM/Hg (21)	5-1147 (HNO ₃), 5-1148 (NaOH) (2)	MW-08	10/12/11 1025	E3P18	
ME3P19	Ground Water/ John Spielberg	L/G	CN (21), TM/Hg (21)	5-1153 (HNO ₃), 5-1154 (NaOH) (2)	MW-09	1150	E3P19	
ME3P20	Ground Water/ John Spielberg	L/G	CN (21), TM/Hg (21)	5-1159 (HNO ₃), 5-1160 (NaOH) (2)	MW-10	1810	E3P20	
ME3P30	Field QC/ John Spielberg	L/G	CN (21), TM/Hg (21)	5-1227 (HNO ₃), 5-1228 (NaOH) (2)	FB-04	10/12/11 1800	E3P30	981 10/13/11
ME3P32	Field QC/ John Spielberg	L/G	CN (21), TM/Hg (21)	5-1239 (HNO ₃), 5-1240 (NaOH) (2)	PB-02		E3P32	

Shipment for Case Complete? N	Sample(s) to be used for laboratory QC:	Additional Sampler Signature(s): John Spielberg	Cooler Temperature Upon Receipt: 5°C	Chain of Custody Seal Number: 89249, 89250
Analysis Key:	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G	Custody Seal Intact? YES	Shipment Iced? YES
CN = Cyanide - water, TM/Hg = CLP Total Metals/Hg - water				

TR Number: 5-264186997-100811-0005

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Regional Transmittal Form

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V**

DATE: 11/21/2011

SUBJECT: Review of Data
Received for review on 11/4/2011

FROM: Timothy Prendiville, Supervisor, Chief (SR-6J)
Superfund Contract Management Section

TO: Data User: MDEQ
Email address: walczakj@michigan.gov

LEVEL 3 DATA VALIDATION

We have reviewed the data for the following case:

SITE NAME: C & H Lake Linden Operations (MI)

CASE NUMBER: 41861 **SDG NUMBER:** ME3P21

Number and Type of Samples: 6 waters

Sample Numbers: ME3P21-P26

Laboratory: ChemTech **Hrs. for Review:** _____

Following are our findings:

CC: Howard Pham
Region 5 TPO
Mail Code: SA-5J

Below is a summary of the out-of-control audits and the possible effects on the data for this case:

Six (6) water samples, numbered ME3P21-P26, were collected on October 12, 2011. The lab received the samples on October 14, 2011 in good condition. All samples were analyzed for metals and cyanide. All samples were analyzed using the CLP SOW ISM01.3 analysis procedures.

Mercury analysis was performed using a Cold Vapor AA Technique. Cyanide analysis was performed using the MIDI Distillation procedure. The remaining inorganic analyses were performed using an Inductively Coupled Plasma-Atomic Emission Spectroscopy (ICP-AES) procedure.

EXES flagged cyanide samples J-/R for improper preservation. In the EXES Superset Deliverable file, the pH entered was 2 for all analytes. The pH for cyanide should be entered in as 12. There is nothing in place for this reviewer to make the proper changes to the Superset Deliverable file. The flags for improper preservation have been removed from this reviewers report.

1. HOLDING TIME:

No defects were found.

2. CALIBRATIONS:

The following inorganic samples are associated with calibration standards used past the expiration date.

Hits are qualified "J" and non-detects are qualified "UJ".

Cyanide

ME3P21, ME3P22, ME3P23, ME3P24, ME3P25, ME3P26

3. BLANKS:

The following inorganic samples are associated with an ICB/CCB or preparation blank concentration which is greater than the method detection limit (MDL). The sample result is greater than the MDL.

Hits less than the CRQL are qualified "U". The sample result is raised to the CRQL.

Hits greater than the CRQL but less than 5 times the blank are qualified "J+".

Iron

ME3P21, ME3P23, ME3P25, ME3P26

Potassium

ME3P21, ME3P22, ME3P23, ME3P24, ME3P25, ME3P26

Vanadium

ME3P21, ME3P22, ME3P23, ME3P25, ME3P26

No samples were identified as field blanks.

4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE AND LAB CONTROL SAMPLE:

No defects were found for matrix spike or laboratory control samples.

5. LABORATORY AND FIELD DUPLICATE:

No defects were found for the laboratory duplicate samples.

ME3P23/24 are field duplicate pairs. The following inorganic analytes are associated with field duplicate results which did not meet technical data validation criteria; however, no sample results are qualified for field duplicates.

Sodium, Cyanide

6. ICP ANALYSIS:

No defects were found for the serial dilution or ICS samples.

7. SAMPLE RESULTS:

The following inorganic samples have analyte concentrations reported above the method detection limit (MDL) but below the quantitation limit (CRQL).

Results are qualified "J".

Aluminum

ME3P22, ME3P23, ME3P24, ME3P25

Barium

ME3P21, ME3P22, ME3P23, ME3P24, ME3P25, ME3P26

Cadmium

ME3P22

Chromium

ME3P23

Copper

ME3P23

Lead

ME3P22, ME3P23, ME3P25

Magnesium

ME3P21, ME3P23, ME3P24, ME3P25, ME3P26

Manganese

ME3P21, ME3P23, ME3P24, ME3P25, ME3P26

Nickel

ME3P21, ME3P22, ME3P23, ME3P24, ME3P26

Zinc

ME3P22

All data, except those qualified above, are acceptable.

EXES ISM01.3 Data Qualifier Sheet

<u>Qualifiers</u>	<u>Data Qualifier Definitions</u>
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control (QC) criteria. The analyte may or may not be present in the sample.
UJ	The analyte was analyzed for, but not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

Sample Summary Report

Case No:	41861	Contract:	EPW09038	SDG No:	ME3P21	Lab Code:	CHEM
Sample Number:	ME3P21	Method:	ICP_AES	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	SW-01	pH:	2	Sample Date:	10122011	Sample Time:	13:30:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Aluminum	200	ug/L	1	U	U	Yes	S2BVE
Antimony	60.0	ug/L	1	U	U	Yes	S2BVE
Arsenic	10.0	ug/L	1	U	U	Yes	S2BVE
Barium	26.6	ug/L	1	J	J	Yes	S2BVE
Beryllium	5.0	ug/L	1	U	U	Yes	S2BVE
Cadmium	5.0	ug/L	1	U	U	Yes	S2BVE
Calcium	16700	ug/L	1			Yes	S2BVE
Chromium	10.0	ug/L	1	U	U	Yes	S2BVE
Cobalt	50.0	ug/L	1	U	U	Yes	S2BVE
Copper	27.0	ug/L	1			Yes	S2BVE
Iron	100	ug/L	1	J	U	Yes	S2BVE
Lead	10.0	ug/L	1	U	U	Yes	S2BVE
Magnesium	3300	ug/L	1	J	J	Yes	S2BVE
Manganese	5.4	ug/L	1	J	J	Yes	S2BVE
Nickel	4.7	ug/L	1	U	J	Yes	S2BVE
Potassium	5000	ug/L	1	J	U	Yes	S2BVE
Selenium	35.0	ug/L	1	U	U	Yes	S2BVE
Silver	10.0	ug/L	1	U	U	Yes	S2BVE
Sodium	11200	ug/L	1			Yes	S2BVE
Thallium	25.0	ug/L	1	U	U	Yes	S2BVE
Vanadium	50.0	ug/L	1	J	U	Yes	S2BVE
Zinc	60.0	ug/L	1	U	U	Yes	S2BVE

Case No:	41861	Contract:	EPW09038	SDG No:	ME3P21	Lab Code:	CHEM
Sample Number:	ME3P21	Method:	CN	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	SW-01	pH:	2	Sample Date:	10122011	Sample Time:	13:30:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Cyanide	10.0	ug/L	1	U	UJ	Yes	S2BVE

Case No:	41861	Contract:	EPW09038	SDG No:	ME3P21	Lab Code:	CHEM
Sample Number:	ME3P21	Method:	Hg	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	SW-01	pH:	2	Sample Date:	10122011	Sample Time:	13:30:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Mercury	0.20	ug/L	1	U	U	Yes	S2BVE

Case No:	41861	Contract:	EPW09038	SDG No:	ME3P21	Lab Code:	CHEM
Sample Number:	ME3P22	Method:	CN	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	SW-02	pH:	2	Sample Date:	10122011	Sample Time:	18:00:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Cyanide	10.0	ug/L	1	U	UJ	Yes	S2BVE

Case No:	41861	Contract:	EPW09038	SDG No:	ME3P21	Lab Code:	CHEM
Sample Number:	ME3P22	Method:	ICP_AES	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	SW-02	pH:	2	Sample Date:	10122011	Sample Time:	18:00:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Aluminum	49.3	ug/L	1	J	J	Yes	S2BVE
Antimony	60.0	ug/L	1	U	U	Yes	S2BVE
Arsenic	10.0	ug/L	1	U	U	Yes	S2BVE
Barium	102	ug/L	1	J	J	Yes	S2BVE
Beryllium	5.0	ug/L	1	U	U	Yes	S2BVE
Cadmium	0.12	ug/L	1	J	J	Yes	S2BVE
Calcium	28100	ug/L	1			Yes	S2BVE
Chromium	10.0	ug/L	1	U	U	Yes	S2BVE
Cobalt	50.0	ug/L	1	U	U	Yes	S2BVE
Copper	29.1	ug/L	1			Yes	S2BVE
Iron	920	ug/L	1			Yes	S2BVE
Lead	4.7	ug/L	1	J	J	Yes	S2BVE
Magnesium	5650	ug/L	1			Yes	S2BVE
Manganese	46.1	ug/L	1			Yes	S2BVE
Nickel	1.0	ug/L	1	J	J	Yes	S2BVE
Potassium	5000	ug/L	1	J	U	Yes	S2BVE
Selenium	35.0	ug/L	1	U	U	Yes	S2BVE
Silver	10.0	ug/L	1	U	U	Yes	S2BVE
Sodium	55900	ug/L	1			Yes	S2BVE
Thallium	25.0	ug/L	1	U	U	Yes	S2BVE
Vanadium	50.0	ug/L	1	J	U	Yes	S2BVE
Zinc	22.1	ug/L	1	J	J	Yes	S2BVE

Case No:	41861	Contract:	EPW09038	SDG No:	ME3P21	Lab Code:	CHEM
Sample Number:	ME3P22	Method:	Hg	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	SW-02	pH:	2	Sample Date:	10122011	Sample Time:	18:00:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Mercury	0.20	ug/L	1	U	U	Yes	S2BVE

Case No:	41861	Contract:	EPW09038	SDG No:	ME3P21	Lab Code:	CHEM
Sample Number:	ME3P23	Method:	Hg	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	SW-03	pH:	2	Sample Date:	10122011	Sample Time:	14:15:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Mercury	0.20	ug/L	1	U	U	Yes	S2BVE

Case No:	41861	Contract:	EPW09038	SDG No:	ME3P21	Lab Code:	CHEM
Sample Number:	ME3P23	Method:	CN	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	SW-03	pH:	2	Sample Date:	10122011	Sample Time:	14:15:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Cyanide	20.7	ug/L	1		J	Yes	S2BVE

Case No:	41861	Contract:	EPW09038	SDG No:	ME3P21	Lab Code:	CHEM
Sample Number:	ME3P23	Method:	ICP_AES	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	SW-03	pH:	2	Sample Date:	10122011	Sample Time:	14:15:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Aluminum	16.7	ug/L	1	J	J	Yes	S2BVE
Antimony	60.0	ug/L	1	U	U	Yes	S2BVE
Arsenic	10.0	ug/L	1	U	U	Yes	S2BVE
Barium	44.1	ug/L	1	J	J	Yes	S2BVE
Beryllium	5.0	ug/L	1	U	U	Yes	S2BVE
Cadmium	5.0	ug/L	1	U	U	Yes	S2BVE
Calcium	17300	ug/L	1			Yes	S2BVE
Chromium	1.1	ug/L	1	J	J	Yes	S2BVE
Cobalt	50.0	ug/L	1	U	U	Yes	S2BVE
Copper	19.6	ug/L	1	J	J	Yes	S2BVE
Iron	100	ug/L	1	J	U	Yes	S2BVE
Lead	1.5	ug/L	1	J	J	Yes	S2BVE
Magnesium	1220	ug/L	1	J	J	Yes	S2BVE
Manganese	5.5	ug/L	1	J	J	Yes	S2BVE
Nickel	1.8	ug/L	1	J	J	Yes	S2BVE
Potassium	5000	ug/L	1	J	U	Yes	S2BVE
Selenium	35.0	ug/L	1	U	U	Yes	S2BVE
Silver	10.0	ug/L	1	U	U	Yes	S2BVE
Sodium	3610000	ug/L	20	D		Yes	S2BVE
Thallium	25.0	ug/L	1	U	U	Yes	S2BVE
Vanadium	50.0	ug/L	1	J	U	Yes	S2BVE
Zinc	60.0	ug/L	1	U	U	Yes	S2BVE

Case No:	41861	Contract:	EPW09038	SDG No:	ME3P21	Lab Code:	CHEM
Sample Number:	ME3P24	Method:	ICP_AES	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	SW-03D	pH:	2	Sample Date:	10122011	Sample Time:	14:15:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Aluminum	22.6	ug/L	1	J	J	Yes	S2BVE
Antimony	60.0	ug/L	1	U	U	Yes	S2BVE
Arsenic	10.0	ug/L	1	U	U	Yes	S2BVE
Barium	39.6	ug/L	1	J	J	Yes	S2BVE
Beryllium	5.0	ug/L	1	U	U	Yes	S2BVE
Cadmium	5.0	ug/L	1	U	U	Yes	S2BVE
Calcium	16900	ug/L	1			Yes	S2BVE
Chromium	10.0	ug/L	1	U	U	Yes	S2BVE
Cobalt	50.0	ug/L	1	U	U	Yes	S2BVE
Copper	28.2	ug/L	1			Yes	S2BVE
Iron	110	ug/L	1			Yes	S2BVE
Lead	10.0	ug/L	1	U	U	Yes	S2BVE
Magnesium	2330	ug/L	1	J	J	Yes	S2BVE
Manganese	11.5	ug/L	1	J	J	Yes	S2BVE
Nickel	1.3	ug/L	1	J	J	Yes	S2BVE
Potassium	5000	ug/L	1	J	U	Yes	S2BVE
Selenium	35.0	ug/L	1	U	U	Yes	S2BVE
Silver	10.0	ug/L	1	U	U	Yes	S2BVE
Sodium	1700000	ug/L	20	D		Yes	S2BVE
Thallium	25.0	ug/L	1	U	U	Yes	S2BVE
Vanadium	50.0	ug/L	1	U	U	Yes	S2BVE
Zinc	60.0	ug/L	1	U	U	Yes	S2BVE

Case No:	41861	Contract:	EPW09038	SDG No:	ME3P21	Lab Code:	CHEM
Sample Number:	ME3P24	Method:	CN	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	SW-03D	pH:	2	Sample Date:	10122011	Sample Time:	14:15:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Cyanide	10.0	ug/L	1	U	UJ	Yes	S2BVE

Case No:	41861	Contract:	EPW09038	SDG No:	ME3P21	Lab Code:	CHEM
Sample Number:	ME3P24	Method:	Hg	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	SW-03D	pH:	2	Sample Date:	10122011	Sample Time:	14:15:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Mercury	0.20	ug/L	1	U	U	Yes	S2BVE

Case No:	41861	Contract:	EPW09038	SDG No:	ME3P21	Lab Code:	CHEM
Sample Number:	ME3P25	Method:	CN	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	SW-04	pH:	2	Sample Date:	10122011	Sample Time:	15:15:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Cyanide	10.0	ug/L	1	U	UJ	Yes	S2BVE

Case No:	41861	Contract:	EPW09038	SDG No:	ME3P21	Lab Code:	CHEM
Sample Number:	ME3P25	Method:	Hg	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	SW-04	pH:	2	Sample Date:	10122011	Sample Time:	15:15:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Mercury	0.20	ug/L	1	U	U	Yes	S2BVE

Case No:	41861	Contract:	EPW09038	SDG No:	ME3P21	Lab Code:	CHEM
Sample Number:	ME3P25	Method:	ICP_AES	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	SW-04	pH:	2	Sample Date:	10122011	Sample Time:	15:15:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Aluminum	8.5	ug/L	1	J	J	Yes	S2BVE
Antimony	60.0	ug/L	1	U	U	Yes	S2BVE
Arsenic	10.0	ug/L	1	U	U	Yes	S2BVE
Barium	27.3	ug/L	1	J	J	Yes	S2BVE
Beryllium	5.0	ug/L	1	U	U	Yes	S2BVE
Cadmium	5.0	ug/L	1	U	U	Yes	S2BVE
Calcium	16000	ug/L	1			Yes	S2BVE
Chromium	10.0	ug/L	1	U	U	Yes	S2BVE
Cobalt	50.0	ug/L	1	U	U	Yes	S2BVE
Copper	28.2	ug/L	1			Yes	S2BVE
Iron	100	ug/L	1	J	U	Yes	S2BVE
Lead	1.4	ug/L	1	J	J	Yes	S2BVE
Magnesium	3130	ug/L	1	J	J	Yes	S2BVE
Manganese	5.6	ug/L	1	J	J	Yes	S2BVE
Nickel	40.0	ug/L	1	U	U	Yes	S2BVE
Potassium	5000	ug/L	1	J	U	Yes	S2BVE
Selenium	35.0	ug/L	1	U	U	Yes	S2BVE
Silver	10.0	ug/L	1	U	U	Yes	S2BVE
Sodium	10800	ug/L	1			Yes	S2BVE
Thallium	25.0	ug/L	1	U	U	Yes	S2BVE
Vanadium	50.0	ug/L	1	J	U	Yes	S2BVE
Zinc	60.0	ug/L	1	U	U	Yes	S2BVE

Case No:	41861	Contract:	EPW09038	SDG No:	ME3P21	Lab Code:	CHEM
Sample Number:	ME3P26	Method:	Hg	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	SW-05	pH:	2	Sample Date:	10122011	Sample Time:	16:15:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Mercury	0.20	ug/L	1	U	U	Yes	S2BVE

Case No:	41861	Contract:	EPW09038	SDG No:	ME3P21	Lab Code:	CHEM
Sample Number:	ME3P26	Method:	CN	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	SW-05	pH:	2	Sample Date:	10122011	Sample Time:	16:15:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Cyanide	10.0	ug/L	1	U	UJ	Yes	S2BVE

Case No:	41861	Contract:	EPW09038	SDG No:	ME3P21	Lab Code:	CHEM
Sample Number:	ME3P26	Method:	ICP_AES	Matrix:	Water	MA Number:	DEFAULT
Sample Location:	SW-05	pH:	2	Sample Date:	10122011	Sample Time:	16:15:00
% Moisture :				% Solids :			

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable	Validation Level
Aluminum	200	ug/L	1	U	U	Yes	S2BVE
Antimony	60.0	ug/L	1	U	U	Yes	S2BVE
Arsenic	10.0	ug/L	1	U	U	Yes	S2BVE
Barium	26.7	ug/L	1	J	J	Yes	S2BVE
Beryllium	5.0	ug/L	1	U	U	Yes	S2BVE
Cadmium	5.0	ug/L	1	U	U	Yes	S2BVE
Calcium	16200	ug/L	1			Yes	S2BVE
Chromium	10.0	ug/L	1	U	U	Yes	S2BVE
Cobalt	50.0	ug/L	1	U	U	Yes	S2BVE
Copper	26.0	ug/L	1			Yes	S2BVE
Iron	100	ug/L	1	J	U	Yes	S2BVE
Lead	10.0	ug/L	1	U	U	Yes	S2BVE
Magnesium	3160	ug/L	1	J	J	Yes	S2BVE
Manganese	5.5	ug/L	1	J	J	Yes	S2BVE
Nickel	0.87	ug/L	1	J	J	Yes	S2BVE
Potassium	5000	ug/L	1	J	U	Yes	S2BVE
Selenium	35.0	ug/L	1	U	U	Yes	S2BVE
Silver	10.0	ug/L	1	U	U	Yes	S2BVE
Sodium	11700	ug/L	1			Yes	S2BVE
Thallium	25.0	ug/L	1	U	U	Yes	S2BVE
Vanadium	50.0	ug/L	1	J	U	Yes	S2BVE
Zinc	60.0	ug/L	1	U	U	Yes	S2BVE

Edit History Report

Case No: 41861 Contract: EPW09038 SDG No: ME3P21 Lab Code: CHEM

Method: CN

Sample	Matrix	Analyte Name	Data Field	Old Value	New Value	User	Edit Date Time	Global
ME3P21	Water	Cyanide	Validation Flag	U	UJ	Stephen Connet	11/22/11 5:17 PM	
ME3P21	Water	Cyanide	Validation Flag	R	U	Lauren Davis	11/21/11 2:18 PM	
ME3P22	Water	Cyanide	Validation Flag	U	UJ	Stephen Connet	11/22/11 5:17 PM	
ME3P22	Water	Cyanide	Validation Flag	R	U	Lauren Davis	11/21/11 2:20 PM	
ME3P23	Water	Cyanide	Validation Flag		J	Stephen Connet	11/22/11 5:18 PM	
ME3P23	Water	Cyanide	Validation Flag	J-		Lauren Davis	11/21/11 2:22 PM	
ME3P24	Water	Cyanide	Validation Flag	U	UJ	Stephen Connet	11/22/11 5:19 PM	
ME3P24	Water	Cyanide	Validation Flag	R	U	Lauren Davis	11/21/11 2:22 PM	
ME3P25	Water	Cyanide	Validation Flag	U	UJ	Stephen Connet	11/22/11 5:19 PM	
ME3P25	Water	Cyanide	Validation Flag	R	U	Lauren Davis	11/21/11 2:23 PM	
ME3P26	Water	Cyanide	Validation Flag	U	UJ	Stephen Connet	11/22/11 5:20 PM	
ME3P26	Water	Cyanide	Validation Flag	R	U	Lauren Davis	11/21/11 2:25 PM	

Method: ICP_AES

Sample	Matrix	Analyte Name	Data Field	Old Value	New Value	User	Edit Date Time	Global
ME3P21	Water	Magnesium	Validated Result	5000	3300	Lauren Davis	11/21/11 2:18 PM	
ME3P21	Water	Magnesium	Validation Flag	U	J	Lauren Davis	11/21/11 2:18 PM	
ME3P21	Water	Manganese	Validated Result	15.0	5.4	Lauren Davis	11/21/11 2:18 PM	
ME3P21	Water	Manganese	Validation Flag	U	J	Lauren Davis	11/21/11 2:18 PM	
ME3P21	Water	Nickel	Validated Result	40.0	4.7	Lauren Davis	11/21/11 2:18 PM	
ME3P21	Water	Nickel	Validation Flag	U	J	Lauren Davis	11/21/11 2:18 PM	
ME3P22	Water	Aluminum	Validated Result	200	49.3	Lauren Davis	11/21/11 2:19 PM	
ME3P22	Water	Aluminum	Validation Flag	U	J	Lauren Davis	11/21/11 2:19 PM	
ME3P22	Water	Cadmium	Validated Result	5.0	0.12	Lauren Davis	11/21/11 2:19 PM	
ME3P22	Water	Cadmium	Validation Flag	U	J	Lauren Davis	11/21/11 2:19 PM	
ME3P22	Water	Lead	Validated Result	10.0	4.7	Lauren Davis	11/21/11 2:19 PM	
ME3P22	Water	Lead	Validation Flag	U	J	Lauren Davis	11/21/11 2:19 PM	
ME3P22	Water	Nickel	Validated Result	40.0	1.0	Lauren Davis	11/21/11 2:19 PM	
ME3P22	Water	Nickel	Validation Flag	U	J	Lauren Davis	11/21/11 2:19 PM	
ME3P23	Water	Aluminum	Validated Result	200	16.7	Lauren Davis	11/21/11 2:22 PM	
ME3P23	Water	Aluminum	Validation Flag	U	J	Lauren Davis	11/21/11 2:22 PM	
ME3P23	Water	Chromium	Validated Result	10.0	1.1	Lauren Davis	11/21/11 2:22 PM	
ME3P23	Water	Chromium	Validation Flag	U	J	Lauren Davis	11/21/11 2:22 PM	

Sample	Matrix	Analyte Name	Data Field	Old Value	New Value	User	Edit Date Time	Global
ME3P23	Water	Lead	Validated Result	10.0	1.5	Lauren Davis	11/21/11 2:22 PM	
ME3P23	Water	Lead	Validation Flag	U	J	Lauren Davis	11/21/11 2:22 PM	
ME3P23	Water	Magnesium	Validated Result	5000	1220	Lauren Davis	11/21/11 2:22 PM	
ME3P23	Water	Magnesium	Validation Flag	U	J	Lauren Davis	11/21/11 2:22 PM	
ME3P23	Water	Manganese	Validated Result	15.0	5.5	Lauren Davis	11/21/11 2:22 PM	
ME3P23	Water	Manganese	Validation Flag	U	J	Lauren Davis	11/21/11 2:22 PM	
ME3P23	Water	Nickel	Validated Result	40.0	1.8	Lauren Davis	11/21/11 2:22 PM	
ME3P23	Water	Nickel	Validation Flag	U	J	Lauren Davis	11/21/11 2:22 PM	
ME3P24	Water	Aluminum	Validated Result	200	22.6	Lauren Davis	11/21/11 2:23 PM	
ME3P24	Water	Aluminum	Validation Flag	U	J	Lauren Davis	11/21/11 2:23 PM	
ME3P24	Water	Magnesium	Validated Result	5000	2330	Lauren Davis	11/21/11 2:23 PM	
ME3P24	Water	Magnesium	Validation Flag	U	J	Lauren Davis	11/21/11 2:23 PM	
ME3P24	Water	Manganese	Validated Result	15.0	11.5	Lauren Davis	11/21/11 2:23 PM	
ME3P24	Water	Manganese	Validation Flag	U	J	Lauren Davis	11/21/11 2:23 PM	
ME3P24	Water	Nickel	Validated Result	40.0	1.3	Lauren Davis	11/21/11 2:23 PM	
ME3P24	Water	Nickel	Validation Flag	U	J	Lauren Davis	11/21/11 2:23 PM	
ME3P25	Water	Aluminum	Validated Result	200	8.5	Lauren Davis	11/21/11 2:24 PM	
ME3P25	Water	Aluminum	Validation Flag	U	J	Lauren Davis	11/21/11 2:24 PM	
ME3P25	Water	Lead	Validated Result	10.0	1.4	Lauren Davis	11/21/11 2:24 PM	
ME3P25	Water	Lead	Validation Flag	U	J	Lauren Davis	11/21/11 2:24 PM	
ME3P25	Water	Magnesium	Validated Result	5000	3130	Lauren Davis	11/21/11 2:24 PM	
ME3P25	Water	Magnesium	Validation Flag	U	J	Lauren Davis	11/21/11 2:24 PM	
ME3P25	Water	Manganese	Validated Result	15.0	5.6	Lauren Davis	11/21/11 2:24 PM	
ME3P25	Water	Manganese	Validation Flag	U	J	Lauren Davis	11/21/11 2:24 PM	
ME3P26	Water	Magnesium	Validated Result	5000	3160	Lauren Davis	11/21/11 2:25 PM	
ME3P26	Water	Magnesium	Validation Flag	U	J	Lauren Davis	11/21/11 2:25 PM	
ME3P26	Water	Manganese	Validated Result	15.0	5.5	Lauren Davis	11/21/11 2:25 PM	
ME3P26	Water	Manganese	Validation Flag	U	J	Lauren Davis	11/21/11 2:25 PM	
ME3P26	Water	Nickel	Validated Result	40.0	0.87	Lauren Davis	11/21/11 2:25 PM	
ME3P26	Water	Nickel	Validation Flag	U	J	Lauren Davis	11/21/11 2:25 PM	



USEPA Contract Laboratory Program
Inorganic Traffic Report & Chain of Custody Record

Case No: 41861
DAS No:
SDG No: ME3P21 L

16

Date Shipped: 10/13/11 Carrier Name: UPS Airbill: 1Z-549-OW4-22-1008-2583 Shipped to: ChemTech Consulting Group (CHEM) 284 Sheffield Street Mountainside NJ 07092 (908) 789-8900	Chain of Custody Record		Sampler Signature: <i>John Spielberg</i>
	Relinquished By	(Date / Time)	Received By
	1. <i>John Spielberg</i>	10/13/11 16:10	10/14/11 12:20
	2.		
	3.		
4.			
For Lab Use Only			
Lab Contract No: EPW09038			
Unit Price:			
Transfer To:			
Lab Contract No:			
Unit Price:			

INORGANIC SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT DATE/TIME	ORGANIC SAMPLE No.	FOR LAB USE ONLY Sample Condition On Receipt
ME3P21	Surface Water/ John Spielberg	L/G	CN (21), TM/Hg (21)	5-1165 (HNO ₃), 5-1166 (NaOH) (2)	SW-01	10/12/11 1330	E3P21	
ME3P22	Surface Water/ John Spielberg	L/G	CN (21), TM/Hg (21)	5-1171 (HNO ₃), 5-1172 (NaOH) (2)	SW-02	1800	E3P22	
ME3P23	Surface Water/ John Spielberg	L/G	CN (21), TM/Hg (21)	5-1177 (HNO ₃), 5-1178 (NaOH) (2)	SW-03	1415	E3P23	
ME3P24	Surface Water/ John Spielberg	L/G	CN (21), TM/Hg (21)	5-1183 (HNO ₃), 5-1184 (NaOH) (2)	SW-03D	1415	E3P24	
ME3P25	Surface Water/ John Spielberg	L/G	CN (21), TM/Hg (21)	5-1195 (HNO ₃), 5-1196 (HNO ₃), 5-1197 (NaOH), 5-1198 (NaOH) (4)	SW-04	1515	E3P25	
ME3P26	Surface Water/ John Spielberg	L/G	CN (21), TM/Hg (21)	5-1203 (HNO ₃), 5-1204 (NaOH) (2)	SW-05	1615	E3P26	

Shipment for Case Complete? <input checked="" type="checkbox"/>	Sample(s) to be used for laboratory QC: ME3P25	Additional Sampler Signature(s): <i>John Spielberg</i>	Cooler Temperature Upon Receipt: 5°C	Chain of Custody Seal Number: 89251, 89252
Analysis Key:	Concentration: <input checked="" type="radio"/> Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G	Custody Seal Intact? <input checked="" type="checkbox"/>	Shipment Iced? <input checked="" type="checkbox"/>
CN = Cyanide - water, TM/Hg = CLP Total Metals/Hg - water				

TR Number: 5-264186997-100811-0006

PR provides preliminary results. Requests for preliminary results will increase analytical costs.

Send Copy to: Sample Management Office, 15000 Conference Center Dr., Chantilly, VA. 20151-3819 Phone 703/818-4200; Fax 703/818-4602

LABORATORY COPY

Appendix G

Area Well Logs



Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Wellogic

1

Import ID:

Tax No:	Permit No: W0031127	County: Houghton	Township: Schoolcraft			
Well ID: 31000000639		Town/Range: 56N 32W	Section: 18	Well Status: Active	WSSN:	Source ID/Well No:
		Distance and Direction from Road Intersection: .8 MI. EAST OF INTERSECTION OF FLORIDA ST. LAURIUM AND OLD COLONY RD.				
Elevation:		Well Owner:				
Latitude: 47.24284528		Well Address:				
Longitude: -88.42032736		Owner Address:				
Method of Collection: Interpolation-Map						

Drilling Method: Rotary	Well Use: Household	Pump Installed: No
Well Depth: 302.00 ft.	Date Completed: 12/26/2000	Pressure Tank Installed: No
Well Type: New	Height: 1.50 ft. above grade	Pressure Relief Valve Installed: No
Casing Type: Steel - black		
Casing Joint: Welded		
Casing Fitting: Drive shoe		
Diameter: 6.00 in. to 26.00 ft. depth		
Borehole: 10.00 in. to 26.00 ft. depth		
6.00 in. to 302.00 ft. depth		
Static Water Level: 19.00 ft. Below Grade		
Well Yield Test:	Yield Test Method: Air	
Pumping level 302.00 ft. after 1.00 hrs. at 2 GPM		
Screen Installed: No	Intake: Bedrock Well	
Well Grouted: Yes	Grouting Method: Unknown	
Grouting Material	Bags Additives Depth	
Neat cement	10.00 None 0.00 ft. to 26.00 ft.	
Wellhead Completion: 12 inches above grade		
Nearest Source of Possible Contamination:		Drilling Machine Operator Name: PAUL LAHTI
Type	Distance	Direction
Septic tank	50 ft.	North
		Employment: Employee
		Contractor Type: Water Well Drilling Contractor Reg No: 1677
		Business Name: SIIRTOLA WELL DRILLING
		Business Address:
		Water Well Contractor's Certification
		This well was drilled under my supervision and this report is true to the best of my knowledge and belief.
		Signature of Registered Contractor
		Date

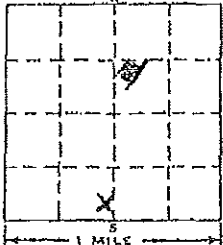
General Remarks: BASED ON INFO PROVIDED BY CUSTOMER

Other Remarks:

WATER WELL RECORD ACT 284 PA 1905

 MICHIGAN DEPARTMENT
 OF
 PUBLIC HEALTH

573

1 LOCATION OF WELL			3 OWNER OF WELL		
County HOUGHTON	Township Name SCHOOLCRAFT	Fraction SE 1/4 SE 1/4 SW 1/4	Section Number 18	Town Number 56 N/2	Range Number 32 E/W.
Distance And Direction from Road Intersections 1 MILE W EAST OF LAURIUM AND 400' NORTH OF THE OLD COLONY ROAD.			Address		
Street address & City of Well Location Locate with "X" in section below			4 WELL DEPTH: (completed) 50 ft. Date of Completion 9/28/79		
Sketch Map: 			5 <input checked="" type="checkbox"/> Cable tool <input type="checkbox"/> Rotary <input type="checkbox"/> Driven <input type="checkbox"/> Dug <input type="checkbox"/> Hollow rod <input type="checkbox"/> Jetted <input type="checkbox"/> Bored <input type="checkbox"/>		
			6 USE: <input checked="" type="checkbox"/> Domestic <input type="checkbox"/> Public Supply <input type="checkbox"/> Industry <input type="checkbox"/> Irrigation <input type="checkbox"/> Air Conditioning <input type="checkbox"/> Commercial <input type="checkbox"/> Test Well <input type="checkbox"/>		
			7 CASING: Threaded <input type="checkbox"/> Welded <input checked="" type="checkbox"/> Height: Above "0815W" Diam. 6 in. to 25 ft. Depth Surface 2 ft. Weight 19.0 lbs./ft. Drive Shoe? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
2 FORMATION			8 SCREEN: NONE		
	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM	Type: _____ Diam: _____		
SANDY CLAY	6	6	Slot/Gauge _____ Length _____		
SANDY CLAY AND BOULDER	6	12	Set between _____ ft. and _____ ft.		
PORTAGE LAKE LAVA SERIES	38	50	Fittings: _____		
			9 STATIC WATER LEVEL _____ ft. below land surface		
			10 PUMPING LEVEL below land surface 44 ft. after 12 hrs. pumping 7 1/2 g.p.m. _____ ft. after _____ hrs. pumping _____ g.p.m.		
			11 WATER QUALITY in Parts Per Million: UNKNOWN Iron (Fe) _____ Chlorides (Cl) _____ Hardness _____ Other _____		
			12 WELL HEAD COMPLETION: <input type="checkbox"/> In Approved Pit <input checked="" type="checkbox"/> Pitless Adapter <input type="checkbox"/> 12" Above Grade		
			13 Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Depth: From 25 ft. to SURFACE		
			14 Nearest Source of possible contamination 25 foot NW Direction SEPTIC Type Well disinfected upon completion <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
			15 PUMP: <input type="checkbox"/> Not installed Manufacturer's Name RED JACKET Model Number 50W09BC HP 1/2 Volts 115 Length of Drop Pipe 40 ft. capacity 8 G.P.M. Type: <input checked="" type="checkbox"/> Submersible <input type="checkbox"/> Jet <input type="checkbox"/> Reciprocating		
16 Remarks, elevation, source of data, etc.			17 WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief. VALLEY PLOG & HIGGINS, INC. 1722-31 REGISTERED BUSINESS NAME REGISTRATION NO. Address POB 458, DOLLAR BAY, MI 49922 Signed George Korman Date 10/2/79 AUTHORIZED REPRESENTATIVE		

USE A 2ND SHEET IF NEEDED

WATER WELL AND PUMP RECORD

PERMIT NUMBER

1 LOCATION OF WELL		Township Name		Fraction		Section Number		Town Number		Range Number	
County Houghton		Schoolcraft		SE 1/4 NW 1/4 NW 1/4		17		56 N/S		32 E/W	
Distance And Direction From Road Intersection .75 Mile West of intersect of C8 and S641, then .25 mile South.						3 OWNER OF WELL: Address Address Same As Well Location? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No					
Street Address & City of Well Location Locate with "X" in Section Below						4 WELL DEPTH: Date Completed MO. DAY YEAR <input checked="" type="checkbox"/> New Well <input type="checkbox"/> Replacement Well 402 ft. 08 28 91					
Sketch Map: 						5 <input type="checkbox"/> Cable tool <input checked="" type="checkbox"/> Rotary <input type="checkbox"/> Driven <input type="checkbox"/> Dug <input type="checkbox"/> Hollow rod <input type="checkbox"/> Auger <input type="checkbox"/> Jatted <input type="checkbox"/>					
						6 USE: <input checked="" type="checkbox"/> Domestic <input type="checkbox"/> Type I Public <input type="checkbox"/> Type III Public <input type="checkbox"/> Irrigation <input type="checkbox"/> Type IIa Public <input type="checkbox"/> Heat pump <input type="checkbox"/> Test Well <input type="checkbox"/> Type IIb Public <input type="checkbox"/>					
						7 CASING: <input checked="" type="checkbox"/> Steel <input type="checkbox"/> Threaded <input type="checkbox"/> Welded <input type="checkbox"/> Plastic <input type="checkbox"/> Height: Above 25 2 ft. 6 in. to 67 1/2 ft. depth Surface 2 ft. Weight 18.97 lbs./ft. Grouted Drill Hole Diameter in. to ft. depth Drive Shoe <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No in. to ft. depth <input type="checkbox"/>					
2 FORMATION DESCRIPTION				THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM	8 SCREEN: <input checked="" type="checkbox"/> Not installed Type _____ Diameter _____ Slot/Gauze _____ Length _____ Set between _____ ft. and _____ ft. FITTINGS: <input type="checkbox"/> K-Packer <input type="checkbox"/> Lead Packer <input type="checkbox"/> Bremer Check <input type="checkbox"/> Blank above screen _____ ft. Other _____					
sand & gravel - clayey				12	12	9 STATIC WATER LEVEL: 21 ft. below land surface <input type="checkbox"/> Flow					
gravel & cobbles - clayey				5	17	10 PUMPING LEVEL below land surface 402 ft. after 1 hrs. pumping at 1/2 G.P.M. ft. after hrs. pumping at G.P.M.					
clay				50.5	67.5	11 WELL HEAD COMPLETION: <input checked="" type="checkbox"/> Pileless adapter <input type="checkbox"/> 12" above grade <input type="checkbox"/> Basement offset <input type="checkbox"/> Approved pit					
bedrock				334.8	402	12 WELL GROUTED? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes From _____ to _____ ft. <input type="checkbox"/> Neat cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____ No. of bags of cement _____ Additives _____					
						13 Nearest source of possible contamination Type septic Distance 150 ft. Direction West Well disinfected upon completion? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Was old well plugged? <input type="checkbox"/> Yes <input type="checkbox"/> No					
						14 PUMP: <input type="checkbox"/> Not installed <input type="checkbox"/> Pump Installation Only Manufacturer's name Grundfos Model number 10S10 HP 1 Volts 230 Length of Drop Pipe 357 ft. capacity 11 G.P.M. TYPE <input checked="" type="checkbox"/> Submersible <input type="checkbox"/> Jet PRESSURE TANK: Manufacturer's name Amtrol Model number #202 Capacity 30 Gallons					
15. Remarks, elevation, source of data, etc. See 2nd sheet if needed				16. WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief. Siirtola Well Drilling, Inc. 1677 REGISTERED BUSINESS NAME REGISTRATION NO. Address Rte. 1, Box 386 C, Hancock MI 49930 Signed Date 21OCT91 AUTHORIZED REPRESENTATIVE							
17. Rig Operator's Name: Paul Ziemnick											

D67d 2/89

GEOLOGICAL SURVEY COPY

Authority: Act 388 PA 1978
Completion: Required
Penalty: Conviction of a violation of any provision is a misdemeanor.

GEOLOGICAL SURVEY NO.

MICHIGAN DEPARTMENT OF PUBLIC HEALTH

WATER WELL AND PUMP RECORD

PERMIT NUMBER

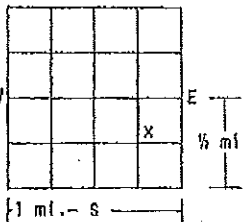
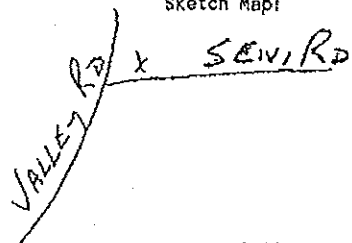
2312

1 LOCATION OF WELL		3 OWNER OF WELL	
County Houghton	Township Name SCHOOLCRAFT	Fraction $\frac{1}{4}$ $\frac{1}{4}$ $\frac{1}{4}$	Section Number 16
Distance And Direction From Road Intersection 1/2 MILE WEST OF TRAPROCK VALLEY ROAD ON WEST VALLEY ROAD AND 400 FEET NORTH.		Town Number 56 N/8	
Street Address & City of Well Location		Range Number 32 E/W	
Locate with "X" in Section Below		Address Address Same As Well Location? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Sketch Map: 		4 WELL DEPTH: 63 FT. Date Completed: 2/19/94 <input checked="" type="checkbox"/> New Well <input type="checkbox"/> Replacement Well	
		5 <input checked="" type="checkbox"/> Cable tool <input type="checkbox"/> Rotary <input type="checkbox"/> Driven <input type="checkbox"/> Dug <input type="checkbox"/> Hollow rod <input type="checkbox"/> Auger <input type="checkbox"/> Jetted <input type="checkbox"/>	
		6 USE: <input checked="" type="checkbox"/> Domestic <input type="checkbox"/> Type I Public <input type="checkbox"/> Type III Public <input type="checkbox"/> Irrigation <input type="checkbox"/> Type IIa Public <input type="checkbox"/> Heat pump <input type="checkbox"/> Test Well <input type="checkbox"/> Type IIb Public <input type="checkbox"/>	
		7 CASING: Diameter <input checked="" type="checkbox"/> Steel <input type="checkbox"/> Threaded <input type="checkbox"/> Height Above/Below Surface 1 1/2 ft. <input type="checkbox"/> Plastic <input checked="" type="checkbox"/> Welded <input type="checkbox"/> Surface 18.97 lbs./ft. 6 in. to 60 ft. depth Grouded Drill Hole Diameter in. to in. depth in. to in. depth	
2 FORMATION DESCRIPTION		8 SCREEN: <input type="checkbox"/> Not Installed Type STAINLESS Diameter 6" Slot/Gauze 10 Length 4' Set between 160 ft. and 163 ft. FITTINGS: <input checked="" type="checkbox"/> K-Packer <input type="checkbox"/> Lead Packer <input type="checkbox"/> Bremer Check <input type="checkbox"/> Blank above screen ft. Other	
CLAY SAND	THICKNESS OF STRATUM 4'	DEPTH TO BOTTOM OF STRATUM 4'	9 STATIC WATER LEVEL: 26 ft. below land surface <input type="checkbox"/> Flow
SANDY CLAY	3'	7'	10 PUMPING LEVEL: below land surface 30 ft. after 23 hrs. pumping at 15 G.P.M. ft. after hrs. pumping at G.P.M.
CLAY SAND	7'	14'	11 WELL HEAD COMPLETION <input checked="" type="checkbox"/> Pitless adapter <input type="checkbox"/> 12" above grade <input type="checkbox"/> Basement offset <input type="checkbox"/> Approved pit
SAND & GRAVEL	49'	63'	12 WELL GROUTED? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes From to ft. <input type="checkbox"/> Neat cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other No. of bags of cement Additives
			13 Nearest source of possible contamination Type SEPTIC Distance 90 ft. Direction NE Well disinfected upon completion? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Was old well plugged? <input type="checkbox"/> Yes <input type="checkbox"/> No
			14 PUMP <input type="checkbox"/> Not Installed <input type="checkbox"/> Pump Installation Only Manufacturer's name STA-RITE Model number 10P4C02T-02 HP 1/2 Volts 230 Length of Drop Pipe 40 ft. capacity 10 G.P.M. TYPE: <input checked="" type="checkbox"/> Submersible <input type="checkbox"/> Jet PRESSURE TANK: Manufacturer's name STA-RITE Model number 82TE Capacity 36 Gallons
15. Remarks, elevation, source of data, etc.		16. WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief. KERANEN WELL & PUMP 31-1722 REGISTERED BUSINESS NAME REGISTRATION NO. Address RTE 1 BOX 238 CALUMET, MICH 49913 Signed George Keranen Date 2-21-94 AUTHORIZED REPRESENTATIVE	
17. Rig Operator's Name: G. GEORGE KERANEN		Authority: Act 368 PA 1978 Completion: Required Penalty: Conviction of a violation of any provision is a misdemeanor.	

D67d 289

MICHIGAN DEPARTMENT OF PUBLIC HEALTH WATER WELL AND PUMP RECORD

PERMIT NUMBER: 2600

LOCATION OF WELL 31563216001		Tax Parcel No.	
County HOUGHTON	Township Name SCHOOLCRAFT	Fraction SW 1/4 NE 1/4 SE 1/4	Section No. 16 Town No. 56 N Range No. 32 W
Distance And Direction From Road Intersection .25 MILE E OF INTERSECT OF TRAPROCK VALLEY RD & SEIVI RD, LAKE LINDEN 49945 Street Address & City of Well Location		3 OWNER OF WELL Address Address Same As Well Location? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Locate with 'x' in Section Below  Sketch Map: 		4 WELL DEPTH: 92.0 ft. Date Completed 08/31/94 <input checked="" type="checkbox"/> New Well <input type="checkbox"/> Replacement Well	
		5 <input type="checkbox"/> Cable tool <input checked="" type="checkbox"/> Rotary <input type="checkbox"/> Driven <input type="checkbox"/> Dug <input type="checkbox"/> Hollow rod <input type="checkbox"/> Auger/Bored <input type="checkbox"/> Jetted	
		6 USE <input checked="" type="checkbox"/> Domestic <input type="checkbox"/> Type I Public <input type="checkbox"/> Type II Public <input type="checkbox"/> Irrigation <input type="checkbox"/> Type II Public <input type="checkbox"/> Heat Pump <input type="checkbox"/> Test Well <input type="checkbox"/> Type IIb Public	
		7 CASING: <input checked="" type="checkbox"/> Steel <input type="checkbox"/> Threaded <input type="checkbox"/> Plastic <input checked="" type="checkbox"/> Welded Diameter 6.00 in. to 89.0 ft. depth 0.00 in. to 0.0 ft. depth Grouted Drill Hole Diameter 0.00 in. to 0.0 ft. depth 0.00 in. to 0.0 ft. depth Height: Above Surface 1.5 ft. Weight 18 lbs/ft. Drive Shoe <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
2 FORMATION DESCRIPTION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM	8 SCREEN <input type="checkbox"/> Not Installed Type Stainless Steel Diameter 6.00 SLOT 0.012 Length 0.3 Set between 89.00 ft. and 92.00 ft. FITTINGS: <input checked="" type="checkbox"/> K-Packer <input type="checkbox"/> Lead Packer <input type="checkbox"/> Bremner Check <input checked="" type="checkbox"/> Blank above screen 2.0 ft. Other
SAND-CLAYEY	88.0	88.0	
SAND	4.0	92.0	
			9 STATIC WATER LEVEL: 49.00 ft. below land surface <input type="checkbox"/> Flow
			10 PUMPING LEVEL: below land surface 92 ft. after 1.0 hrs. pumping at 55 G.P.M. 0 ft. after 0.0 hrs. pumping at 0 G.P.M.
			11 WELL HEAD COMPLETION: <input checked="" type="checkbox"/> Pitless adapter <input type="checkbox"/> 12" above grade <input type="checkbox"/> Basement offset <input type="checkbox"/> Approved pit
			12 WELL GROUTED? <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes From _____' to _____ ft. <input type="checkbox"/> Neat cement <input checked="" type="checkbox"/> Bentonite <input type="checkbox"/> Other _____ No. of bags of cement ____ Additives _____
			13 Nearest source of possible contamination Type Septic Distance 115 ft. Direction NW Well disinfected upon completion? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Was old well plugged? <input type="checkbox"/> Yes <input type="checkbox"/> No
			14 PUMP: <input type="checkbox"/> Not Installed <input type="checkbox"/> Pump Installation Only Manufacturer's name MYERS Model number PEP510 HP 1/2 Volts Length of Drop Pipe 84 ft. capacity 12 G.P.M. TYPE: <input checked="" type="checkbox"/> Submersible <input type="checkbox"/> Jet PRESSURE TANK: Manufacturer's name Amtrol Model number 202 Capacity 30 Gallons

15 Remarks, elevation, source of data, etc.

16 WATER WELL CONTRACTOR'S CERTIFICATION:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

SIIRTOLA WELL DRILLING INC 1677

REGISTERED BUSINESS NAME REGISTRATION NO.

Address R#1 BOX 386C HANCOCK, MI 49930

Signed *Paul Ziemnick* Date 08/31/94

AUTHORIZED REPRESENTATIVE

Data Source: MDNR

/ Rig Operator's Name: Paul Ziemnick

Paul Ziemnick

AUTHORITY: Act 368 PA 1978 COMPLETION: Required PENALTY: Conviction of a violation of any provision is a misdemeanor



Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Wellogic

7

Import ID:

Tax No:	Permit No:	County: Houghton	Township: Schoolcraft				
Well ID: 31000001193		Town/Range: 56N 32W	Section: 19	Well Status: Active	WSSN:	Source ID/Well No:	
		Distance and Direction from Road Intersection: 1.9 MILES EAST OF INTERSECT OF US 41 AND OLD COLONY ROAD					
		Well Owner:					
Elevation:		Well Address:		Owner Address:			
Latitude: 47.242448							
Longitude: -88.405674							
Method of Collection: Interpolation-Map							

Drilling Method: Rotary	Pump Installed: Yes	Pump Installation Only: No	
Well Depth: 242.00 ft.	Pump Installation Date:	HP: 0.75	
Well Type: New	Manufacturer: F.E. Myers	Pump Type: Submersible	
Casing Type: Steel - unknown	Model Number: S2J72-12	Pump Capacity: 12 GPM	
Casing Joint: Welded	Drop Pipe Length: 204.00 ft.	Pump Voltage:	
Casing Fitting: Drive shoe	Drop Pipe Diameter:	Drilling Record ID:	
Diameter: 6.00 in. to 25.50 ft. depth	Draw Down Seal Used: No		
Borehole: 8.00 in. to 25.50 ft. depth	Pressure Tank Installed: Yes		
	Pressure Tank Type: Unknown		
	Manufacturer: Amtrol		
	Model Number: 202	Tank Capacity: 30.0 Gallons	
	Pressure Relief Valve Installed: No		
Static Water Level: 8.00 ft. Below Grade	Formation Description	Thickness	Depth to Bottom
Well Yield Test:	Clay Sandy	6.00	6.00
Yield Test Method: Unknown	Sandstone	236.00	242.00
Pumping level 242.00 ft. after 1.00 hrs. at 4 GPM			
Screen Installed: No			
Intake: Bedrock Well			
Well Grouted: Yes	Grouting Method: Unknown		
Grouting Material	Bags	Additives	Depth
Neat cement	4.00	None	4.00 ft. to 25.50 ft.
Wellhead Completion: Pitless adapter	Geology Remarks:		
Nearest Source of Possible Contamination:	Drilling Machine Operator Name: PAUL ZIEMNIK		
Type	Employment: Unknown		
Distance			
Direction			
Septic tank			
	Contractor Type: Water Well Drilling Contractor	Reg No: 1677	
	Business Name: SIIRTOLA WELL DRILLING		
	Business Address:		
	Water Well Contractor's Certification		
	This well was drilled under my supervision and this report is true to the best of my knowledge and belief.		
	Signature of Registered Contractor	Date	
General Remarks:			
Other Remarks:			



Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Wellogix

8

Import ID:

Tax No:	Permit No: W0431035	County: Houghton	Township: Schoolcraft			
Well ID: 31000001471		Town/Range: 56N 32W	Section: 19	Well Status: Active	WSSN:	Source ID/Well No:
		Distance and Direction from Road Intersection: 0.5 mile west of Pepin Road on Gas Plant Road on north side 500 feet				
		Well Owner:				
		Well Address: Owner Address:				
Elevation:						
Latitude: 47.22976						
Longitude: -88.42255						
Method of Collection: GPS Sld Positioning Svc SA Off						

Drilling Method: Cable Tool	Pump Installed: Yes	Pump Installation Only: No
Well Depth: 210.00 ft.	Well Use: Household	Pump Installation Date: 10/18/2004
Well Type: Replacement	Date Completed: 10/18/2004	HP: 0.75
Casing Type: Steel - black	Height: 2.00 ft. above grade	Manufacturer: Sta-Rite
Casing Joint: Welded		Model Number: 10P4D02J04
Casing Fitting: Drive shoe		Drop Pipe Length: 200.00 ft.
		Drop Pipe Diameter: 1.00 in.
		Draw Down Seal Used: No
Diameter: 6.00 in. to 25.00 ft. depth		Pressure Tank Installed: Yes
		Pressure Tank Type: Diaphragm/bladder
Borehole: 9.00 in. to 25.00 ft. depth		Manufacturer: Other
6.00 in. to 210.00 ft. depth		Model Number: BN4202
		Tank Capacity: 20.0 Gallons
		Pressure Relief Valve Installed: No

Static Water Level: 10.00 ft. Below Grade	Formation Description	Thickness	Depth to Bottom
Well Yield Test: Yield Test Method: Test pump	Clay & Gravel W/Boulders	7.50	7.50
Pumping level 200.00 ft. after 1.00 hrs. at 3 GPM	Basalt Broken	5.50	13.00
	Basalt	197.00	210.00

Screen Installed: No	Intake: Bedrock Well

Well Grouted: Yes	Grouting Method: Displacement plug
Grouting Material	Bags Additives Depth
Neat cement	6.00 None 4.00 ft. to 25.00 ft.

Wellhead Completion: Pitless adapter, 12 inches above grade	Geology Remarks:

Nearest Source of Possible Contamination:	Drilling Machine Operator Name: Ted Keranen
Type Distance Direction	Employment: Employee
Drainfield/Dry well 70 ft. Southeast	

Abandoned Well Plugged: No	Contractor Type: Water Well Drilling Contractor Reg No: 2413
Reason Not Plugged: Well still in use for non-drinking water purposes	Business Name: Keranen & Eskola Well Drilling
	Business Address: 55961 Lake Linden Avenue, Laurium, MI, 49913

Water Well Contractor's Certification	
This well was drilled under my supervision and this report is true to the best of my knowledge and belief.	
Signature of Registered Contractor	Date

General Remarks:
Other Remarks: Tank Manufacturer: Baron

Wellogic 9

Tax No: 31-012-170-010-50/60		Permit No: W1031038		County: Houghton		Township: Schoolcraft		
<p>Well ID: 31000002201</p> <p>Elevation:</p> <p>Latitude: 47.2312</p> <p>Longitude: -88.3847</p> <p>Method of Collection: GPS Std Positioning Svc SA Off</p>				Town/Range:	Section:	Well Status:	WSSN:	Source ID/Well No:
				56N 32W	20	Active		
				Distance and Direction from Road Intersection:				
				0.1 mile north of Cemetery Road on Angman Road on west side				
				Well Owner:				
				Well Address:		Owner Address:		

Drilling Method: Cable Tool	Pump Installed: Yes	Pump Installation Only: No
Well Depth: 44.00 ft.	Pump Installation Date: 5/5/2010	HP: 0.50
Well Type: New	Manufacturer: Red Jacket	Pump Type: Submersible
Casing Type: Steel - black	Model Number: 50C21112G9	Pump Capacity: 10 GPM
Casing Joint: Welded	Drop Pipe Length: 36.00 ft.	Pump Voltage:
Casing Fitting: Drive shoe	Drop Pipe Diameter: 1.00 in.	Drilling Record ID:
	Draw Down Seal Used: No	
Diameter: 6.00 in. to 40.00 ft. depth	Pressure Tank Installed: Yes	
	Pressure Tank Type: Diaphragm/bladder	
	Manufacturer: Goulds	
Borehole: 6.00 in. to 44.00 ft. depth	Model Number: V60	Tank Capacity: 20.0 Gallons
	Pressure Relief Valve Installed: Yes	

Static Water Level: 1.00 ft. Below Grade Well Yield Test: Yield Test Method: Test pump Pumping level 40.00 ft. after 5.00 hrs. at 3 GPM	Formation Description	Thickness	Depth to Bottom
	Topsoil Sandy	1.00	1.00
	Sand	1.00	2.00

Screen installed: Yes	Filter Packed: No	Sand & Gravel Silty	14.00	19.00
Screen Diameter: 5.00 in.	Blank: 1.00 ft. Above	Clay Sand Gravel Soft	23.00	42.00
Screen Material Type: Stainless steel-wire wrapped		Red Sand Silty	2.00	44.00
Slot	Length	Set Between		
10.00	4.00 ft.	40.00 ft. and 44.00 ft.		
Fittings: Neoprene packer, Bottom plug				

Well Grouted: Yes	Grouting Method: Driven/dry grout				
Grouting Material	Bags	Additives	Depth		
Bentonite dry granular	3.00	None	0.00 ft. to 36.00 ft.	Geology Remarks:	

Wellhead Completion: Pitless adapter, 12 inches above grade

Nearest Source of Possible Contamination:			Drilling Machine Operator Name: Jeff Eskola	
Type	Distance	Direction	Employment: Employee	
Septic tank	75 ft.	Southeast		
Drainfield/Dry well	85 ft.	Southeast	Contractor Type: Water Well Drilling Contractor Reg No: 2413	

	Business Name: Keranen & Eskola Well Drilling
	Business Address: 30330 Lincoln School Road, Calumet, MI, 49913
	Water Well Contractor's Certification
	This well was drilled under my supervision and this report is true to the best of my knowledge and belief.
	Signature of Registered Contractor Date

General Remarks:

Other Remarks:

Signed [Signature]
 AUTHORIZED REPRESENTATIVE

Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Wellogic

Import ID:

Tax No:		Permit No:		County: Houghton		Township: Schoolcraft		
Well ID: 31000001555				Town/Range:	Section:	Well Status:	WSSN:	Source ID/Well No:
				56N 32W	21	Active		
				Distance and Direction from Road Intersection:				
				.5 MILE NORTH OF THE OLD SCHOOL ROAD; .25 MILE WEST OF THE TRAPROCK VALLEY ROAD				
Elevation:				Well Owner:				
Latitude: 47.23638493				Well Address:		Owner Address:		
Longitude: -88.37720443								
Method of Collection: Interpolation-Map				MI				

Drilling Method: Cable Tool	Pump Installed: Yes	Pump Installation Only: No
Well Depth: 32.00 ft.	Pump Installation Date:	HP: 0.30
Well Type: Unknown	Manufacturer: Red Jacket	Pump Type: Submersible
Date Completed: 1/9/1980	Model Number: 50W19BC	Pump Capacity: 10 GPM
Casing Type: Unknown	Drop Pipe Length: 26.00 ft.	Pump Voltage:
Casing Joint: Threaded & coupled	Drop Pipe Diameter:	Drilling Record ID:
Casing Fitting: Drive shoe	Draw Down Seal Used: No	
Diameter: 6.00 in. to 29.00 ft. depth	Pressure Tank Installed: No	
Borehole:	Pressure Relief Valve Installed: No	

Static Water Level: 10.00 ft. Below Grade	Formation Description	Thickness	Depth to Bottom
Well Yield Test: Yield Test Method: Unknown			
Pumping level 24.00 ft. after 3.00 hrs. at 10 GPM			
Screen Installed: Yes Filter Packed: No	Sand Fine	3.00	3.00
Screen Diameter: 6.00 in. Blank: *u	Clay & Cobbles Hard	16.00	19.00
Screen Material Type: Stainless steel-wire wrapped	Clay Gravely	2.00	21.00
Slot Length Set Between	Sand Fine	8.00	29.00
16.00 3.00 ft. 29.00 ft. and 32.00 ft.	Sand Water Bearing Coarse	3.00	32.00
Fittings: Neoprene packer			
Well Grouted: No			

	Geology Remarks:
Wellhead Completion: Pitless adapter	

Nearest Source of Possible Contamination:			Drilling Machine Operator Name:
Type	Distance	Direction	Employment: Unknown
Other	75 ft.	South	
			Contractor Type: Water Well Drilling Contractor Reg No: 1222

Abandoned Well Plugged: No	Contractor Type: Water Well Drilling Contractor Business Name: VALLEY P & H INC. Business Address:	Reg No: 1222
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Reason Not Plugged:	<p align="center">Water Well Contractor's Certification</p> <p>This well was drilled under my supervision and this report is true to the best of my knowledge and belief.</p> <p>Signature of Registered Contractor _____ Date _____</p>
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General Remarks:

Other Remarks: Contamination Source 1:ABANDONED COW BARN



Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Wellogic 12

Import ID:

Tax No:	Permit No:	County: Houghton	Township: Schoolcraft			
Well ID: 31000001558		Town/Range: 56N 32W	Section: 21	Well Status: Active	WSSN:	Source ID/Well No:
Elevation:		Distance and Direction from Road Intersection:				
Latitude: 47.229973		2.5 MILE NORTH ALONG CEMETARY ROAD; FROM LAKE LINDEN AT TRAPROCK RIVER				
Longitude: -88.364633		Well Owner:				
Method of Collection: QQQ - Centroid		Well Address:			Owner Address:	
		MI				

Drilling Method: Cable Tool	Well Use: Household	Pump Installed: No
Well Depth: 202.00 ft.	Date Completed: 12/31/1970	Pressure Tank Installed: No
Well Type: Unknown	Height: 4.00 ft. above grade	Pressure Relief Valve Installed: No
Casing Type: Unknown	Casing Joint: Threaded & coupled	
Casing Fitting: Drive shoe		
Diameter: 6.00 in. to 196.00 ft. depth		
Borehole:		

Static Water Level: 0.00 ft. Above Grade (Flowing)	Formation Description	Thickness	Depth to Bottom
Well Yield Test:			
Yield Test Method: Unknown			
Pumping level 35.00 ft. after 1.00 hrs. at 14 GPM	Sand Fine	12.00	12.00
	Red Clay	9.00	21.00
	Sand Clayey	29.00	50.00
	Red Clay	10.00	60.00
	Sand Clayey	20.00	80.00
	Clay & Sand Gravely	14.00	94.00
	Sand Clayey	29.00	123.00
	Sand Fine	15.00	138.00
	Sand Clayey	38.00	176.00
	Clay & Sand Gravely	7.00	183.00
	Sand Fine	15.00	198.00
	Sand & Gravel Water Bearing	4.00	202.00

Unrestricted Flow Rate:	Geology Remarks:
Screen Installed: Yes	
Filter Packed: No	
Screen Diameter: 6.00 in.	
Blank: *u	
Screen Material Type: Stainless steel-wire wrapped	
Slot Length Set Between	
18.00 4.00 ft. 198.00 ft. and 202.00 ft.	
Fittings: Unknown	
Well Grouted: No	
Wellhead Completion: 12 inches above grade	

Nearest Source of Possible Contamination:	Drilling Machine Operator Name:
Type Distance Direction	Employment: Unknown
Septic tank 80 ft. Southwest	
Abandoned Well Plugged: No	Contractor Type: Water Well Drilling Contractor Reg No: 0154
Reason Not Plugged:	Business Name: EDW. SIIRTOLA
	Business Address:
	Water Well Contractor's Certification
	This well was drilled under my supervision and this report is true to the best of my knowledge and belief.
	Signature of Registered Contractor Date



Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Welllogic 13

Import ID:

Tax No:	Permit No:	County: Houghton	Township: Schoolcraft				
Well ID: 31000001226 Elevation: Latitude: 47.23885 Longitude: -88.347459 Method of Collection: Interpolation-Map		Town/Range: 56N 32W	Section: 22	Well Status: Active	WSSN:	Source ID/Well No:	
		Distance and Direction from Road Intersection: 0.25 MILE SOUTH OF SEIVI ROAD ON VALLEY ROAD AND 0.75 MILE EAST					
		Well Owner: Well Address: Owner Address:					

Drilling Method: Cable Tool Well Depth: 142.00 ft. Well Type: New Casing Type: Steel - unknown Casing Joint: Welded Casing Fitting: Drive shoe Diameter: 6.00 in. to 43.00 ft. depth Borehole: 6.00 in. to 142.00 ft. depth	Well Use: Household Date Completed: 9/7/1994 Height: 2.00 ft. above grade Pump Installed: Yes Pump Installation Date: Manufacturer: Red Jacket Model Number: 50CNSI-CN5 Drop Pipe Length: 120.00 ft. Drop Pipe Diameter: Draw Down Seal Used: No Pressure Tank Installed: Yes Pressure Tank Type: Unknown Manufacturer: Amtrol Model Number: 203 Pressure Relief Valve Installed: No	Pump Installation Only: No HP: 0.50 Pump Type: Submersible Pump Capacity: 10 GPM Pump Voltage: Drilling Record ID: Tank Capacity: 12.0 Gallons
--	--	--

Static Water Level: 2.00 ft. Below Grade Well Yield Test: Yield Test Method: Test pump Pumping level 120.00 ft. after 1.00 hrs. at 12 GPM	<table border="1"><thead><tr><th>Formation Description</th><th>Thickness</th><th>Depth to Bottom</th></tr></thead><tbody><tr><td>Clay Sandy</td><td>14.00</td><td>14.00</td></tr><tr><td>Clay & Gravel Sandy</td><td>16.00</td><td>30.00</td></tr><tr><td>Red Clay & Gravel</td><td>12.00</td><td>42.00</td></tr><tr><td>Sandstone</td><td>100.00</td><td>142.00</td></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr></tbody></table>	Formation Description	Thickness	Depth to Bottom	Clay Sandy	14.00	14.00	Clay & Gravel Sandy	16.00	30.00	Red Clay & Gravel	12.00	42.00	Sandstone	100.00	142.00																								
Formation Description	Thickness	Depth to Bottom																																						
Clay Sandy	14.00	14.00																																						
Clay & Gravel Sandy	16.00	30.00																																						
Red Clay & Gravel	12.00	42.00																																						
Sandstone	100.00	142.00																																						

Screen Installed: No Intake: Bedrock Well	Geology Remarks:
Well Grouted: Yes Grouting Material: Bentonite dry granular Grouting Method: Unknown Bags: 3.00 Additives: None Depth:	
Wellhead Completion: Pitless adapter	

Nearest Source of Possible Contamination: Type: Septic tank Distance: 80 ft. Direction: East	Drilling Machine Operator Name: GEORGE KERANEN Employment: Unknown
	Contractor Type: Water Well Drilling Contractor Business Name: KERANEN WELL & PUMP Business Address:
	Reg No: 1722
	Water Well Contractor's Certification This well was drilled under my supervision and this report is true to the best of my knowledge and belief.
General Remarks: Other Remarks:	Signature of Registered Contractor Date

Wellogig 14

Import ID:

Failure to comply is a misdemeanor.

Tax No:		Permit No: W9731179		County: Houghton		Township: Osceola		
Well ID: 31000001219				Town/Range:	Section:	Well Status:	WSSN:	Source ID/Well No:
				56N 33W	26	Active		
				Distance and Direction from Road Intersection: ON HARMA ROAD EAST OF GOLF COURSE ROAD				
Elevation:				Well Owner:				
Latitude: 47.219002				Well Address:				Owner Address:
Longitude: -88.448611				RTE 2, BOX 1330 CALUMET, MI 49913				
Method of Collection: Interpolation-Map								

Drilling Method: Rotary	Pump Installed: Yes	Pump Installation Only: No
Well Depth: 125.00 ft.	Pump Installation Date:	HP: 0.50
Well Type: New	Manufacturer: Sta-Rite	Pump Type: Submersible
Date Completed: 9/26/1997	Model Number: 10P4802J-0	Pump Capacity: 10 GPM
Casing Type: Steel - unknown	Drop Pipe Length: 110.00 ft.	Pump Voltage:
Casing Joint: Welded	Drop Pipe Diameter:	Drilling Record ID:
Casing Fitting: Drive shoe	Draw Down Seal Used: No	
Diameter: 6.00 in. to 27.00 ft. depth	Pressure Tank Installed: Yes	
	Pressure Tank Type: Unknown	
	Manufacturer: A.O. Smith	
Borehole: 8.00 in. to 25.00 ft. depth	Model Number: V100	Tank Capacity: 12.0 Gallons
6.00 in. to 125.00 ft. depth	Pressure Relief Valve Installed: No	

Static Water Level: 17.00 ft. Below Grade Well Yield Test: Yield Test Method: Bailer Pumping level 110.00 ft. after 1.00 hrs. at 10 GPM	Formation Description	Thickness	Depth to Bottom
	Clay & Stones	8.00	8.00
	Hardpan	117.00	125.00

[illegible]

Well Grouted: Yes Grouting Method: Unknown					
Grouting Material	Bags	Additives	Depth		
Neat cement	5.00	None	0.00 ft. to 25.00 ft.	Geology Remarks:	

Wellhead Completion: Pitless adapter	
--------------------------------------	--

Nearest Source of Possible Contamination:			Drilling Machine Operator Name: JEFF ESKOLA
Type	Distance	Direction	Employment: Employee
Septic tank	60 ft.	East	

	Contractor Type: Water Well Drilling Contractor	Reg No: 1722
	Business Name: KERANEN WELL & PUMP	
	Business Address:	

<p align="center">Water Well Contractor's Certification</p> <p>This well was drilled under my supervision and this report is true to the best of my knowledge and belief.</p>	
<p>Signature of Registered Contractor</p>	<p>Date</p>

General Remarks:

Other Remarks:

TAX NO:

1. LOCATION OF WELL

County

Houghton

Township Name

OSCEOLA

Fraction

1/4 NE 1/4 SE 1/4

Section No.

76

Town No.

56N

Range No.

33W

Distance and Direction from Road Intersection

ON HARMA ROAD EAST OF GOLF COURSE ROAD

Street Address & City of Well Location

Locate with 'x' in Section Below

Sketch Map

2. FORMATION DESCRIPTION

THICKNESS OF STRATUM

DEPTH TO BOTTOM OF STRATUM

CLAY & ROCKS

8'

8'

HARD ROCK

117'

125'

3. OWNER OF WELL

Address

Address Same as Well Location ☒ Yes ☐ No

4. WELL DEPTH:

Date Completed

☒ New Well

☐ Replacement Well

125

ft.

9/26/97

5. ☒ Cable Tool

☐ Rotary

☐ Driven

☐ Dug

☐ Hollow Rod

☐ Auger/Bored

☐ Jetted

6. USE:

☒ Household

☐ Type I Public

☐ Type III Public

☐ Irrigation

☐ Type IIa Public

☐ Heat Pump

☐ Test Well

☐ Type IIb Public

7. CASING:

☒ Steel

☐ Threaded

☐ Plastic

☒ Welded

☐ Other

Height: Above/Below Surface: 2 ft

Diameter: 6 in. to 27 ft. depth

Weight: 18.92 lbs./ft.

BORE HOLE:

Diameter: 8 in. to 25 ft. depth

☒ Drive Shoe

☐ Shale Packer

Diameter: 6 in. to 25 ft. depth

8. SCREEN:

☒ Not Installed

☐ Gravel-Packed

Type

Diameter

Slot/Gauze

Length:

Set Between

ft. and

ft.

FITTINGS:

☐ K-Packer

☐ Bremar Check

☐ Blank Above Screen

ft. Other

9. STATIC WATER LEVEL:

17 ft. Below Land Surface

☐ Flowing

10. PUMPING LEVEL: Below Land Surface

110 ft. After 1 hrs. Pumping at 10 G.P.M.

☐ Plunger

☒ Baller

☐ Air

☐ Test Pump

11. WELL HEAD COMPLETION:

☒ Pileless Adapter

☐ 12' Above Grade

☐ Basement Offset

☐ Well House

12. WELL GROUTED?

☐ No

☒ Yes

From 0 to 25 ft.

☒ Neat Cement

☐ Bentonite

☐ Other

No. of Bags 5

Additives

13. NEAREST SOURCE OF POSSIBLE CONTAMINATION:

Type SEPTIC

Distance 60 ft.

Direction EAST

Type

Distance

ft.

Direction

14. PUMP:

☐ Not Installed

☐ Pump Installation Only

Manufacturer's Name STA-RITE

Model Number 10P4502102

HP 1/2

Volts 230

Length of Drop Pipe 110 ft.

Capacity 10 G.P.M.

TYPE: ☒ Submersible

☐ Jet

☐ Other

PRESSURE TANK:

Manufacturer's Name A-D SMITH

Model Number V100

Capacity 12 Gallons

36

15. WATER WELL CONTRACTOR'S CERTIFICATION:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

KERANEN WELL & PUMP

31-1722

REGISTERED BUSINESS NAME

REGISTRATION NO.

Address RTE 1 BOX 238 CALUMET, MICH, 49813

Signed George Keranen

Date 10-1-97

15. ABANDONED WELL PLUGGED?

☐ Yes

☐ No

Casing Diameter

in.

Depth

ft.

PLUGGING MATERIAL:

☐ Neat Cement

☐ Bentonite Slurry

☐ Cement/Bentonite Slurry

☐ Concrete Grout

☐ Bentonite Chips

No. of Bags

Casing Removed?

☐ Yes

☐ No

16. REMARKS: (Elevation, Source of Data, etc.)

17. DRILLING MACHINE OPERATOR:

☒ Employee

☐ Subcontractor

Name JEFF ESKOLA

USE A 2ND SHEET IF NEEDED

PERMIT NO:

W9731179

W-2-228 9/93



Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Wellogic 16

Import ID:

Tax No:	Permit No: W313083	County: Houghton	Township: Calumet			
Well ID: 31000001404		Town/Range: 56N 33W	Section: 25	Well Status: Active	WSSN:	Source ID/Well No:
		Distance and Direction from Road Intersection: 0.3 MILE EAST OF INTERSECT OF M-26 AND GAS PLANT ROAD				
Elevation:		Well Owner:				
Latitude: 47.227828		Well Address:				
Longitude: -88.4357		Owner Address:				
Method of Collection: Interpolation-Map						

Drilling Method: Rotary	Well Use: Household	Pump Installed: Yes	Pump Installation Only: No	
Well Depth: 302.00 ft.	Date Completed: 8/12/1996	Pump Installation Date:	HP: 1.00	
Well Type: New	Height: 2.00 ft. above grade	Manufacturer: Red Jacket	Pump Type: Submersible	
Casing Type: Steel - unknown	Casing Joint: Welded	Model Number: 8NS14BC	Pump Capacity: 10 GPM	
Casing Fitting: Drive shoe		Drop Pipe Length: 285.00 ft.	Pump Voltage:	
		Drop Pipe Diameter:	Drilling Record ID:	
Diameter: 6.00 in. to 26.00 ft. depth		Draw Down Seal Used: No		
Borehole: 10.00 in. to 26.00 ft. depth		Pressure Tank Installed: Yes		
		Pressure Tank Type: Unknown		
		Manufacturer: Amtrol		
		Model Number: 250	Tank Capacity: 10.0 Gallons	
		Pressure Relief Valve Installed: No		
Static Water Level: 3.00 ft. Below Grade	Yield Test Method: Unknown	Formation Description	Thickness	Depth to Bottom
Well Yield Test:	Pumping level 302.00 ft. after 1.00 hrs. at 2 GPM	Sand & Gravel Clayey	8.00	8.00
		Gravel	3.00	11.00
		Unidentified Consolidated Fm	291.00	302.00
Screen Installed: No	Intake: Bedrock Well			
Well Grouted: Yes	Grouting Method: Unknown			
Grouting Material	Bags Additives Depth			
Neat cement	4.00 None 4.00 ft. to 26.00 ft.			
Wellhead Completion: Pitless adapter		Geology Remarks:		
Nearest Source of Possible Contamination:		Drilling Machine Operator Name: PAUL ZIEMNICH		
Type	Distance	Direction		
Septic tank	90 ft.	Northeast		
		Employment: Unknown		
		Contractor Type: Water Well Drilling Contractor	Reg No: 1677	
		Business Name: SIIRTOLA WELL DRILLING		
		Business Address:		
		Water Well Contractor's Certification		
		This well was drilled under my supervision and this report is true to the best of my knowledge and belief.		
		Signature of Registered Contractor	Date	
General Remarks:				
Other Remarks:				



Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Wellogic 17

Import ID:

Tax No:	Permit No:	County: Houghton	Township: Calumet				
Well ID: 31000001405 Elevation: Latitude: 47.220021 Longitude: -88.431186 Method of Collection: Interpolation-Map		Town/Range: 56N 33W	Section: 25	Well Status: Active	WSSN:	Source ID/Well No:	
		Distance and Direction from Road Intersection: ABOUT ONE MILE SOUTH OF LAURIUM ON HIGHWAY M26					
		Well Owner:			Owner Address:		
		Well Address:					

Drilling Method: Rotary Well Depth: 101.00 ft. Well Type: Unknown	Well Use: Household Date Completed: 9/8/1980	Pump Installed: Yes Pump Installation Date: Manufacturer: F.E. Myers Model Number: SH5-511 Drop Pipe Length: 93.00 ft. Drop Pipe Diameter: Draw Down Seal Used: No	Pump Installation Only: No HP: 0.50 Pump Type: Submersible Pump Capacity: Pump Voltage: Drilling Record ID:	
Casing Type: Unknown Casing Joint: Welded Casing Fitting: Drive shoe Diameter: 6.00 in. to 32.00 ft. depth Borehole:	Height: 2.00 ft. above grade	Pressure Tank Installed: No Pressure Relief Valve Installed: No		
Static Water Level: Below Grade Well Yield Test: Pumping level 40.00 ft. after 1.00 hrs. at 30 GPM	Yield Test Method: Unknown	Formation Description	Thickness	Depth to Bottom
Screen installed: No Intake: Bedrock Well Well Grouted: No Wellhead Completion: Pitless adapter		Sand & Gravel	16.00	16.00
		Clay & Gravel	16.00	32.00
		Unidentified Consolidated Fm	69.00	101.00
Nearest Source of Possible Contamination: Type: Septic tank Distance: 60 ft. Direction: West		Drilling Machine Operator Name: Employment: Unknown		
Abandoned Well Plugged: No		Contractor Type: Water Well Drilling Contractor Business Name: SIIRTOLA WELL DRILLING Business Address:		
Reason Not Plugged:		Reg No: 0154		
		Water Well Contractor's Certification This well was drilled under my supervision and this report is true to the best of my knowledge and belief.		
General Remarks:		Signature of Registered Contractor		
Other Remarks:		Date		



Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Wellogic | 8

Import ID:

Tax No:	Permit No: W0631029	County: Houghton	Township: Schoolcraft
Well ID: 31000001779		Town/Range: 56N 32W	Section: 30
		Well Status: Active	WSSN:
Elevation: 1089 ft.		Distance and Direction from Road Intersection: 200' E OF INTER OF PEPIN RD & GAS PLANT RD	
Latitude: 47.22737		Well Owner:	
Longitude: -88.41395		Well Address:	
Method of Collection: GPS Std Positioning Svc SA Off		Owner Address:	

Drilling Method: Rotary	Pump Installed: Yes	Pump Installation Only: No
Well Depth: 262.00 ft.	Pump Installation Date:	HP: 0.75
Well Type: New	Manufacturer: Red Jacket	Pump Type: Submersible
Casing Type: Unknown	Model Number: 75F211CNS1	Pump Capacity: 10 GPM
Casing Joint: Welded	Drop Pipe Length: 240.00 ft.	Pump Voltage:
Casing Fitting: Drive shoe	Drop Pipe Diameter: 1.00 in.	Drilling Record ID:
Diameter: 6.00 in. to 26.00 ft. depth	Draw Down Seal Used: No	
Borehole: 10.00 in. to 26.00 ft. depth	Pressure Tank Installed: Yes	
6.00 in. to 262.00 ft. depth	Pressure Tank Type: Diaphragm/bladder	
	Manufacturer: Amtrol	
	Model Number: BN4202	Tank Capacity: 20.0 Gallons
	Pressure Relief Valve Installed: Yes	

Static Water Level: 10.00 ft. Below Grade	Formation Description	Thickness	Depth to Bottom
Well Yield Test:	Sand & Clay Clayey	10.00	10.00
Yield Test Method: Air	Basalt	252.00	262.00
Pumping level 262.00 ft. after 1.00 hrs. at 5 GPM			

Screen Installed: No	Intake: Bedrock Well

Well Grouted: Yes	Grouting Method: Unknown
Grouting Material	Bags Additives Depth
Unknown	10.00 None 4.00 ft. to 26.00 ft.

Wellhead Completion: Pitless adapter	Geology Remarks:

Nearest Source of Possible Contamination:	Drilling Machine Operator Name: PAUL LAHTI
Type	Employment: Employee
Distance	Pump Installer: DAVID SIIRTOLA
Direction	Contractor Type: Water Well Drilling Contractor Reg No: 1677
Septic tank	87 ft. Southeast
	Business Name: SIIRTOLA WELL DRLG
	Business Address:

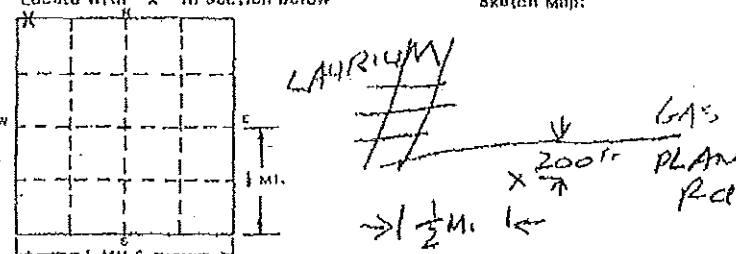
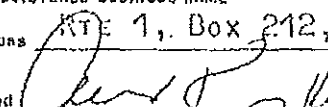
Water Well Contractor's Certification	
This well was drilled under my supervision and this report is true to the best of my knowledge and belief.	
Signature of Registered Contractor	Date

General Remarks:
Other Remarks:

WATER WELL RECORD

ACT 294 PA 1966

MICHIGAN DEPARTMENT
OF
PUBLIC HEALTH

1 LOCATION OF WELL		TOWNSHIP NAME		Fraction	Section Number	Town Number	Range Number
County HOUGHTON		SCHOOLCRAFT		NW 1/4 NW 1/4 NW 1/4	30	56 N/8	32 E/W
Distance And Direction from Road Intersections 1/2 MILE EAST OF LAURIUM AND 200' SOUTH OF THE GAS PLANT ROAD.				3 OWNER OF WELL: Address			
Street address & City of Well Location Locate with "X" in section below				4 WELL DEPTH: (completed) Date of Completion 123 ft. 6/22/81			
Sketch Map: 				6 <input checked="" type="checkbox"/> Cable tool <input type="checkbox"/> Rotary <input type="checkbox"/> Driven <input type="checkbox"/> Dug <input type="checkbox"/> Hollow rod <input type="checkbox"/> Jetted <input type="checkbox"/> Bored			
				6 USE: <input checked="" type="checkbox"/> Domestic <input type="checkbox"/> Public Supply <input type="checkbox"/> Industry <input type="checkbox"/> Irrigation <input type="checkbox"/> Air Conditioning <input type="checkbox"/> Commercial <input type="checkbox"/> Test Well			
				7 CASING: Threaded <input type="checkbox"/> Welded <input checked="" type="checkbox"/> Height: Above/Below Surface 2 ft. Diam. 6 in. to 25 ft. Depth 123 ft. Weight 18.92 lbs./ft. Drive Shou? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
2 FORMATION		THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM	8 SCREEN: NONE Type: _____ Dia.: _____ Slot/Gauze _____ Length _____ Set between _____ ft. and _____ ft. Fittings: _____			
SANDY CLAY AND BOULDERS		8	(8)				
PORTAGE LAKE LAVA SERIES		115	123				
				9 STATIC WATER LEVEL 8 1/2 ft. below land surface			
				10 PUMPING LEVEL below land surface 108 ft. after 1 hrs. pumping 8 g.p.m. 100 ft. after 48 hrs. pumping 2 1/2 g.p.m.			
				11 WATER QUALITY in Parts Per Million: UNKNOWN Iron (Fe) _____ Chlorides (Cl) _____ Hardness _____ Other _____			
				12 WELL HEAD COMPLETION: <input type="checkbox"/> In Approved Pit <input checked="" type="checkbox"/> Pitless Adapter <input type="checkbox"/> 12" Above Grade			
				13 Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> _____ Depth: From 25 ft. to SURFACE			
				14 Nearest Source of possible contamination 75 feet E Direction SEPTIC Type Well disinfected upon completion <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
				15 PUMP: <input type="checkbox"/> Not installed Manufacturer's Name RED JACKET Model Number 50W193C HP 1/2 Volts 230 Length of Drop Pipe 108 ft. capacity 5 G.P.M. Type: <input checked="" type="checkbox"/> Submersible <input type="checkbox"/> Jet <input type="checkbox"/> Reciprocating			
16 Remarks, elevation, source of data, etc.				17 WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief. VALLEY WELL & PUMP 31-1728 REGISTERED BUSINESS NAME REGISTRATION NO. Address RTE 1, Box 212, CALUMET, MI 49913 Signed  Date 6/24/81 AUTHORIZED REPRESENTATIVE			

USE A 2ND SHEET IF NEEDED

AUG 3 1981



Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Welllogic 22

Import ID:

Tax No:	Permit No:	County: Houghton	Township: Schoolcraft			
Well ID: 31000001561		Town/Range: 56N 32W	Section: 28	Well Status: Active	WSSN:	Source ID/Well No:
		Distance and Direction from Road Intersection: .8 MILE EAST OF INTERSECTION OF TRAPROCK VALLEY ROAD & GAY ROAD; GAY HILL				
Elevation:		Well Owner:				
Latitude: 47.21409866		Well Address:				
Longitude: -88.3692121		Owner Address:				
Method of Collection: Interpolation-Map		MI				

Drilling Method: Rotary	Pump Installed: Yes	Pump Installation Only: No
Well Depth: 152.00 ft.	Pump Installation Date:	HP: 0.75
Well Type: Unknown	Manufacturer: F.E. Myers	Pump Type: Submersible
Casing Type: Steel - unknown	Model Number: SJ62-J711P	Pump Capacity: 11 GPM
Casing Joint: Unknown	Drop Pipe Length: 147.00 ft.	Pump Voltage:
Casing Fitting: Drive shoe	Drop Pipe Diameter:	Drilling Record ID:
Diameter: 6.00 in. to 148.50 ft. depth	Draw Down Seal Used: No	
Borehole:	Pressure Tank Installed: Yes	
	Pressure Tank Type: Unknown	
	Manufacturer: Amtrol	
	Model Number: #202	Tank Capacity: 42.0 Gallons
	Pressure Relief Valve Installed: No	

Static Water Level: 60.00 ft. Below Grade	Formation Description	Thickness	Depth to Bottom
Well Yield Test: Yield Test Method: Unknown	Sand	12.00	12.00
Pumping level 152.00 ft. after 1.00 hrs. at 8 GPM	Clay Sandy	134.00	146.00
	Sand	6.00	152.00

Screen Installed: Yes	Filter Packed: No
Screen Diameter: 6.00 in.	Blank: *u
Screen Material Type: Unknown	
Slot Length Set Between	
12.00 4.00 ft. 148.00 ft. and 152.00 ft.	
Fittings: Unknown	
Well Grouted: No	

Wellhead Completion: Pitless adapter	Geology Remarks:

Nearest Source of Possible Contamination:	Drilling Machine Operator Name:
Type Distance Direction	Employment: Unknown
Septic tank 60 ft. West	

Abandoned Well Plugged: No	Contractor Type: Water Well Drilling Contractor Reg No: 1677
Reason Not Plugged:	Business Name: SIIRTOLA WELL DRILLING
	Business Address:

Water Well Contractor's Certification	
This well was drilled under my supervision and this report is true to the best of my knowledge and belief.	
Signature of Registered Contractor	Date

General Remarks:
Other Remarks:



Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Wellogic 23

Import ID:

Tax No:	Permit No:	County: Houghton	Township: Schoolcraft			
Well ID: 31000001565		Town/Range: 56N 32W	Section: 28	Well Status: Active	WSSN:	Source ID/Well No:
		Distance and Direction from Road Intersection: .5 MILE NORTHEAST OF INTERSECTION OF TRAPROCK VALLEY ROAD & GAY ROAD				
Elevation:		Well Owner:		Owner Address:		
Latitude: 47.2199803		Well Address:				
Longitude: -88.37929299		MI				
Method of Collection: Interpolation-Map						

Drilling Method: Rotary	Well Use: Household	Pump Installed: Yes	Pump Installation Only: No	
Well Depth: 69.00 ft.	Date Completed: 4/2/1982	Pump Installation Date:	HP: 0.50	
Well Type: Unknown	Height:	Manufacturer: F.E. Myers	Pump Type: Submersible	
Casing Type: Steel - unknown		Model Number: SK52-58	Pump Capacity: 8 GPM	
Casing Joint: Welded		Drop Pipe Length: 58.00 ft.	Pump Voltage:	
Casing Fitting: Drive shoe		Drop Pipe Diameter:	Drilling Record ID:	
Diameter: 6.00 in. to 65.00 ft. depth		Draw Down Seal Used: No		
Borehole:		Pressure Tank Installed: Yes		
		Pressure Tank Type: Unknown		
		Manufacturer: Well-X-Trol		
		Model Number: #202	Tank Capacity: 30.0 Gallons	
		Pressure Relief Valve Installed: No		
Static Water Level: 5.00 ft. Below Grade	Yield Test Method: Unknown	Formation Description	Thickness	Depth to Bottom
Well Yield Test:		Sand	12.00	12.00
Pumping level 65.00 ft. at 15 GPM		Clay Sandy	26.00	38.00
		Sand Clayey	27.00	65.00
		Gravel	4.00	69.00
Screen Installed: Yes	Filter Packed: No			
Screen Diameter: 6.00 in.	Blank: *u			
Screen Material Type: Unknown				
Slot	Length	Set Between		
22.00	4.00 ft.	64.00 ft. and 65.00 ft.		
Fittings: Neoprene packer				
Well Grouted: No				
Wellhead Completion: Pitless adapter				
Nearest Source of Possible Contamination:		Drilling Machine Operator Name:		
Type	Distance	Employment: Unknown		
Septic tank	60 ft.			
Direction				
Northwest				
Abandoned Well Plugged: No		Contractor Type: Water Well Drilling Contractor	Reg No: 0154	
Reason Not Plugged:		Business Name: SIIRTOLA WELL DRILLING INC.		
		Business Address:		
		Water Well Contractor's Certification		
		This well was drilled under my supervision and this report is true to the best of my knowledge and belief.		
		Signature of Registered Contractor	Date	
General Remarks:				
Other Remarks:				



Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Wellogic 24

Import ID:

Tax No:	Permit No: W0431025	County: Houghton	Township: Schoolcraft			
Well ID: 31000000910		Town/Range: 56N 32W	Section: 27	Well Status: Active	WSSN:	Source ID/Well No:
		Distance and Direction from Road Intersection: 1.2 miles east on Lake Linden-Gay Road (S562) from Traprock Valley Road (S641), then 500 feet north				
Elevation:		Well Owner:				
Latitude: 47.21588		Well Address:				
Longitude: -88.35876		Owner Address:				
Method of Collection: GPS Std Positioning Svc SA Off						

Drilling Method: Cable Tool	Well Use: Household	Pump Installed: Yes	Pump Installation Only: No	
Well Depth: 136.00 ft.	Date Completed: 1/7/2004	Pump Installation Date: 1/10/2004	HP: 0.75	
Well Type: New		Manufacturer: Goulds	Pump Type: Submersible	
Casing Type: Steel - black	Height: 2.00 ft. above grade	Model Number: 10GS07412L	Pump Capacity: 10 GPM	
Casing Joint: Welded		Drop Pipe Length: 120.00 ft.	Pump Voltage:	
Casing Fitting: Drive shoe		Drop Pipe Diameter: 1.00 in.	Drilling Record ID:	
Diameter: 6.00 in. to 132.00 ft. depth		Draw Down Seal Used: No		
Borehole: 6.00 in. to 136.00 ft. depth		Pressure Tank Installed: Yes		
		Pressure Tank Type: Diaphragm/bladder		
		Manufacturer: Other		
		Model Number: BN4202	Tank Capacity: 20.0 Gallons	
		Pressure Relief Valve Installed: No		
Static Water Level: 88.00 ft. Below Grade	Well Yield Test: Yield Test Method: Test pump	Formation Description	Thickness	Depth to Bottom
Pumping level 111.00 ft. after 1.50 hrs. at 11 GPM		Topsoil	2.00	2.00
		Clay & Gravel	3.00	5.00
		Red Sand Clayey	5.00	10.00
		Clay & Gravel	18.00	28.00
		Clay & Gravel Sandy	5.00	33.00
		Clay Sandy Soft	37.00	70.00
		Clay & Gravel	60.00	130.00
		Sand & Gravel	5.00	135.00
		Sand Heaving/Quick	1.00	136.00
Screen Installed: Yes	Filter Packed: No			
Screen Diameter: 5.00 in.	Blank: 1.00 ft. Above			
Screen Material Type: Stainless steel-wire wrapped				
Slot Length Set Between				
12.00 4.00 ft. 132.00 ft. and 136.00 ft.				
Fittings: Neoprene packer, Bottom plug				
Well Grouted: Yes	Grouting Method: Driven/dry grout			
Grouting Material Bags Additives Depth				
Bentonite dry granular 5.00 None				
Wellhead Completion: Pileless adapter, 12 inches above grade				
Nearest Source of Possible Contamination:		Drilling Machine Operator Name: Jeff Eskola		
Type Distance Direction		Employment: Employee		
Septic tank 225 ft. South				
Drainfield/Dry well 250 ft. South				
		Contractor Type: Water Well Drilling Contractor	Reg No: 2413	
		Business Name: Keranen & Eskola Well Drilling		
		Business Address: 55961 Lake Linden Avenue, Laurium		
		Water Well Contractor's Certification		
		This well was drilled under my supervision and this report is true to the best of my knowledge and belief.		
		Signature of Registered Contractor	Date	
General Remarks:				
Other Remarks: Tank Manufacturer: Baron				



Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Welllogic 25

Import ID:

Tax No: 31-012-177-007-00		Permit No: W0531079		County: Houghton		Township: Schoolcraft		
Well ID: 310000001698				Town/Range:	Section:	Well Status:	WSSN:	Source ID/Well No:
				56N 32W	27	Active		
Elevation:				Distance and Direction from Road Intersection:				
Latitude: 47.21505				1 mile east of Traprock Valley Road (S641) on Lake Linden-Gay Road (S562) on north side				
Longitude: -88.36091				Well Owner:				
Method of Collection: GPS Std Positioning Svc SA Off				Well Address:		Owner Address:		

Drilling Method: Cable Tool	Pump Installed: Yes	Pump Installation Only: No
Well Depth: 180.00 ft.	Pump Installation Date: 7/15/2005	HP: 0.75
Well Type: New	Manufacturer: Goulds	Pump Type: Submersible
Casing Type: Steel - black	Model Number: 10SB07412L	Pump Capacity: 10 GPM
Casing Joint: Welded	Drop Pipe Length: 100.00 ft.	Pump Voltage:
Casing Fitting: Drive shoe	Drop Pipe Diameter: 1.00 in.	Drilling Record ID:
Diameter: 6.00 in. to 176.00 ft. depth	Draw Down Seal Used: No	
Borehole: 6.00 in. to 180.00 ft. depth	Pressure Tank Installed: No	
	Pressure Relief Valve Installed: No	

Static Water Level: 80.00 ft. Below Grade	Formation Description	Thickness	Depth to Bottom
Well Yield Test: Yield Test Method: Test pump	Topsoil	2.00	2.00
Pumping level 84.00 ft. after 1.00 hrs. at 14 GPM	Red Clay & Gravel	20.00	22.00
	Clay & Boulders	3.00	25.00
Screen Installed: Yes	Clay & Gravel Sandy Hard	10.00	35.00
Filter Packed: No	Clay & Gravel	2.00	37.00
Screen Diameter: 5.00 in.	Boulders	5.00	42.00
Blank: 1.00 ft. Above	Clay Sandy Soft	6.00	48.00
Screen Material Type: Stainless steel-wire wrapped	Boulders	2.00	50.00
Slot Length Set Between	Clay & Gravel Soft	97.00	147.00
8.00 4.00 ft. 176.00 ft. and 180.00 ft.	Clay Sandy Soft	11.00	158.00
Fittings: Neoprene packer, Bottom plug	Clay & Stones Gravely	2.00	160.00
	Clay Sand Gravel	14.00	174.00
Well Grouted: Yes	Clay & Sand Silty	1.00	175.00
Grouting Method: Driven/dry grout			
Grouting Material Bags Additives Depth			
Bentonite dry granular 7.00 None 0.00 ft. to 176.00 ft.			

Wellhead Completion: Pitless adapter, 12 inches above grade	(Continued On Page 2)
	Geology Remarks:

Nearest Source of Possible Contamination:	Drilling Machine Operator Name: Jeff Eskola
Type Distance Direction	Employment: Employee
Septic tank 60 ft. West	
Drainfield/Dry well 80 ft. West	
	(Continued on page 2)

General Remarks:

Other Remarks:



Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Wellogic 25

Import ID:

Tax No: 31-012-177-007-00		Permit No: W0531079		County: Houghton		Township: Schoolcraft	
Well ID: 310000001698		Town/Range:	Section:	Well Status:	WSSN:	Source ID/Well No:	
		56N 32W	27	Active			
		Distance and Direction from Road Intersection: 1 mile east of Traprock Valley Road (S641) on Lake Linden-Gay Road (S562) on north side					
Elevation:		Well Owner:					
Latitude: 47.21505		Well Address:					
Longitude: -88.36091		Owner Address:					
Method of Collection: GPS Std Positioning Svc SA Off							

(Continued from Page 1)			GEOLOGY REMARKS:	
Formation Description	Thickness	Depth to Bottom		
Sand & Gravel	2.00	177.00		
Sand	3.00	180.00		
Contractor Type: Water Well Drilling Contractor Reg No: 2413				Water Well Contractor's Certification This well was drilled under my supervision and this report is true to the best of my knowledge and belief.
Business Name: Keranen & Eskola Well Drilling				
Business Address: 55961 Lake Linden Avenue, Laurium, MI, 49913				
Signature of Registered Contractor			Date	

Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Wellogic 27

Import ID:

Tax No:	Permit No:	County: Houghton	Township: Osceola
Well ID: 31000001238		Town/Range: 56N 33W	Section: 34
		Well Status: Active	WSSN:
		Source ID/Well No:	
		Distance and Direction from Road Intersection: 0.75 MILE WEST ON ELECTRIC PARK ROAD OFF US41 THEN 0.75 MILE NORTH ON EAST CALUMET MICHIGAN	
Elevation: .		Well Owner:	
Latitude: 47.204358		Well Address:	Owner Address:
Longitude: -88.482354			
Method of Collection: Interpolation-Map			

Drilling Method: Rotary	Pump Installed: Yes	Pump Installation Only: No
Well Depth: 260.00 ft.	Pump Installation Date:	HP: 0.75
Well Type: New	Manufacturer: Aermotor	Pump Type: Submersible
Casing Type: Steel - unknown	Model Number:	Pump Capacity: 6 GPM
Casing Joint: Welded	Drop Pipe Length: 260.00 ft.	Pump Voltage:
Casing Fitting: Drive shoe	Drop Pipe Diameter:	Drilling Record ID:
	Draw Down Seal Used: No	
Diameter: 6.00 in. to 42.00 ft. depth	Pressure Tank Installed: Yes	
	Pressure Tank Type: Unknown	
	Manufacturer: Other	
Borehole:	Model Number: 42-02	Tank Capacity: 40.0 Gallons
	Pressure Relief Valve Installed: No	

Static Water Level: 8.00 ft. Below Grade Well Yield Test: Yield Test Method: Unknown Pumping level 260.00 ft. after 1.00 hrs. at 8 GPM	Formation Description	Thickness	Depth to Bottom
	Loam Clayey Sandy	4.00	4.00
	Boulders	18.00	22.00
	Sand & Silt	6.00	28.00
Screen Installed: No Intake: Bedrock Well	Sand Silt Gravel	12.00	40.00
	Hardpan	220.00	260.00

Well Grouted: No			

	Geology Remarks:
Wellhead Completion: Pitless adapter, 12 inches above grade	

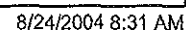
Nearest Source of Possible Contamination:			Drilling Machine Operator Name: S KARVAKKO
Type	Distance	Direction	Employment: Unknown
Sewer line	60 ft.	Northwest	
			Contractor Type: Water Well Drilling Contractor Reg No: 1888

Business Name: S KARVAKKO WELL DRILLING
Business Address:

Water Well Contractor's Certification	
This well was drilled under my supervision and this report is true to the best of my knowledge and belief.	
Signature of Registered Contractor	Date

General Remarks:

Other Remarks: Tank Manufacturer: CON-AIR



Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Wellogic

30

Import ID:

Tax No: 31-009-085-017-00		Permit No: W0831109		County: Houghton		Township: Osceola		
Well ID: 31000002062				Town/Range:	Section:	Well Status:	WSSN:	Source ID/Well No:
				56N 33W	35	Active		
				Distance and Direction from Road Intersection: 0.25 mile south of Golf Course Road on Old County Road on west side				
Elevation:				Well Owner:				
Latitude: 47.20972				Well Address:				
Longitude: -88.46073				Owner Address:				
Method of Collection: GPS Std Positioning Svc SA Off								

Drilling Method: Cable Tool	Pump Installed: Yes	Pump Installation Only: No
Well Depth: 180.00 ft.	Pump Installation Date: 9/5/2008	HP: 0.75
Well Type: New	Manufacturer: Red Jacket	Pump Type: Submersible
	Model Number: 75C21112G1	Pump Capacity: 10 GPM
Casing Type: Steel - black	Drop Pipe Length: 169.00 ft.	Pump Voltage:
Casing Joint: Welded	Drop Pipe Diameter: 1.00 in.	Drilling Record ID:
Casing Fitting: Drive shoe	Draw Down Seal Used: No	
	Pressure Tank Installed: Yes	
Diameter: 6.00 in. to 38.00 ft. depth	Pressure Tank Type: Diaphragm/bladder	
	Manufacturer: Amtrol	
Borehole: 6.00 in. to 180.00 ft. depth	Model Number: BN8205	Tank Capacity: 34.0 Gallons
	Pressure Relief Valve Installed: Yes	

Static Water Level: 14.00 ft. Below Grade Well Yield Test: Yield Test Method: Bailer Pumping level 180.00 ft. after 1.00 hrs. at 6 GPM				Formation Description	Thickness	Depth to Bottom
Screen Installed: No Intake: Bedrock Well				Sand & Stones	2.00	2.00
				Clay & Boulders	13.00	15.00
				Clay & Gravel Hard	15.00	30.00
				Basalt Broken	8.00	38.00
				Basalt	142.00	180.00
Well Grouted: Yes Grouting Method: Driven/dry grout Grouting Material Bags Additives Depth						

Sealing material	Page	Amount	Depth	Geology Remarks:
Bentonite dry granular	9.00	None	0.00 ft. to 38.00 ft.	
Wellhead Completion: Pitless adapter, 12 inches above grade				

Nearest Source of Possible Contamination:			Drilling Machine Operator Name: James Eskola
Type	Distance	Direction	Employment: Employee
Septic tank	50 ft.	West	
Drainfield/Dry well	70 ft.	West	Contractor Type: Water Well Drilling Contractor Reg No: 2413

	Business Name: Keranen & Eskola Well Drilling
	Business Address: 30330 Lincoln School Road, Calumet, MI, 49913

<p>Water Well Contractor's Certification</p> <p>This well was drilled under my supervision and this report is true to the best of my knowledge and belief.</p>	
<p>Signature of Registered Contractor</p>	<p>Date</p>

General Remarks:

Other Remarks:

Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Wellogic 32

Import ID:

Tax No:	Permit No: W9931023	County: Houghton	Township: Calumet			
Well ID: 31000001450		Town/Range: 56N 33W	Section: 36	Well Status: Active	WSSN:	Source ID/Well No:
		Distance and Direction from Road Intersection: 1500 FEET SOUTHEAST OF GOLF COURSE ROAD				
		Well Owner:				
Elevation:		Well Address:		Owner Address:		
Latitude: 47.209512						
Longitude: -88.446683						
Method of Collection: Interpolation-Map						

Drilling Method: Cable Tool	Pump Installed: Yes	Pump Installation Only: No
Well Depth: 65.00 ft.	Pump Installation Date:	HP: 0.50
Well Type: New	Manufacturer: Sta-Rite	Pump Type: Submersible
Well Use: Household	Model Number: 10P4C025-0	Pump Capacity: 10 GPM
Date Completed: 12/15/1998	Drop Pipe Length: 40.00 ft.	Pump Voltage:
Casing Type: Steel - unknown	Drop Pipe Diameter:	Drilling Record ID:
Height: 2.00 ft. above grade	Draw Down Seal Used: No	
Casing Joint: Welded	Pressure Tank Installed: Yes	
Casing Fitting: Drive shoe	Pressure Tank Type: Unknown	
Diameter: 6.00 in. to 28.00 ft. depth	Manufacturer: A.O. Smith	
	Model Number: V-60	Tank Capacity: 6.0 Gallons
Borehole: 6.00 in. to 65.00 ft. depth	Pressure Relief Valve Installed: No	

Static Water Level: 13.00 ft. Below Grade Well Yield Test: Yield Test Method: Test pump Pumping level 60.00 ft. after 1.00 hrs. at 8 GPM				Formation Description	Thickness	Depth to Bottom
Screen Installed: No Intake: Bedrock Well				Clay	3.00	3.00
				Boulders	1.00	4.00
				Clay & Stones	4.00	8.00
				Clay & Boulders	5.00	13.00
				Clay & Stones	15.00	28.00
				Unidentified Consolidated Fm	37.00	65.00
Well Grouted: Yes Grouting Method: Unknown						
Grouting Material	Bags	Additives	Depth			

Filtering material	Grain size	Reaction	Depth	Geology Remarks:
Bentonite dry granular	4.00	None		
Wellhead Completion: Pitless adapter				

Nearest Source of Possible Contamination:			Drilling Machine Operator Name: JEFF ESKOLA
Type	Distance	Direction	Employment: Employee
Septic tank	75 ft.	Northeast	
			Contractor Type: Water Well Drilling Contractor Reg No: 1722
			Business Name: KERANEN WELL & PUMP
			Business Address:
			Water Well Contractor's Certification
			This well was drilled under my supervision and this report is true to the best of my knowledge and belief.
			Signature of Registered Contractor _____ Date _____

General Remarks:

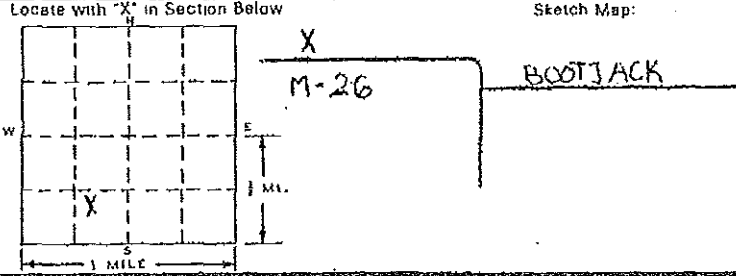
Other Remarks:

WATER WELL AND PUMP RECORD

PERMIT NUMBER

1979

33

1 LOCATION OF WELL		TOWNSHIP NAME		FRACTION		SECTION NUMBER		TOWN NUMBER		RANGE NUMBER	
County Houghton		Schoolcraft		NW 1/4 SE 1/4 SW 1/4		31		56 N/S		32 E/W	
Distance And Direction From Road Intersection 0.6 mile W of Intersection of M-23 and Bootjack Road						3 OWNER OF WELL: Address Address Same As Well Location? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No					
Street Address & City of Well Location Locate with "X" in Section Below						4 WELL DEPTH: 262 FT. Date Completed 06/29/92 <input checked="" type="checkbox"/> New Well <input type="checkbox"/> Replacement Well					
Sketch Map: 						5 <input type="checkbox"/> Cable tool <input checked="" type="checkbox"/> Rotary <input type="checkbox"/> Driven <input type="checkbox"/> Dug <input type="checkbox"/> Hollow rod <input type="checkbox"/> Auger <input type="checkbox"/> Jetted					
						6 USE: <input checked="" type="checkbox"/> Domestic <input type="checkbox"/> Type I Public <input type="checkbox"/> Type III Public <input type="checkbox"/> Irrigation <input type="checkbox"/> Type IIa Public <input type="checkbox"/> Heat pump <input type="checkbox"/> Test Well <input type="checkbox"/> Type IIb Public					
2 FORMATION DESCRIPTION						7 CASING: Diameter <input checked="" type="checkbox"/> Steel <input type="checkbox"/> Threaded <input type="checkbox"/> Plastic <input checked="" type="checkbox"/> Welded 6 in. to 28 ft. depth Grouted Drill Hole Diameter 6 in. to 28 ft. depth Height Above/Below Surface 1.5 ft. Weight 18.97 lbs./ft. Drive Shoe <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No					
						8 SCREEN: <input checked="" type="checkbox"/> Not Installed Type _____ Diameter _____ Slot/Gauze _____ Length _____ Set between _____ ft. and _____ ft. FITTINGS <input type="checkbox"/> K-Packer <input type="checkbox"/> Lead Packer <input type="checkbox"/> Brainer Check <input type="checkbox"/> Blank above screen _____ ft. Other _____					
Sand						9 STATIC WATER LEVEL: 115 ft. below land surface <input type="checkbox"/> Flow					
Sand-Clayey						10 PUMPING LEVEL: below land surface 262 ft. after 1 hrs. pumping at 6 G.P.M. _____ ft. after _____ hrs. pumping at _____ G.P.M.					
Clay & Gravel						11 WELL HEAD COMPLETION <input checked="" type="checkbox"/> Pitless adapter <input type="checkbox"/> 12" above grade <input type="checkbox"/> Basement offset <input type="checkbox"/> Approved pit					
Sandstone						12 WELL GROUTED? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes From _____ to _____ ft. <input type="checkbox"/> Neat cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____ No. of bags of cement _____ Additives _____					
15. Remarks, elevation, source of data, etc.						13 Nearest source of possible contamination Type Barn Distance 100 ft. Direction S Well disinfected upon completion? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Was old well plugged? <input type="checkbox"/> Yes <input type="checkbox"/> No					
						14 PUMP: <input type="checkbox"/> Not Installed <input type="checkbox"/> Pump Installation Only Manufacturer's name Myers Model number S2J10 HP 1 Volts 230 Length of Drop Pipe 239 ft. capacity 12 G.P.M. TYPE: <input checked="" type="checkbox"/> Submersible <input type="checkbox"/> Jet PRESSURE TANK: Amtrol Manufacturer's name _____ Model number #202 Capacity 30 Gallons					
12. Rig Operator's Name: Paul Ziemnick						16. WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief. Siirtola Well Drilling, INC. 1677 REGISTERED BUSINESS NAME REGISTRATION NO. Address Rte. 1, Box 386C Hancock, MI 49930 Signed <i>[Signature]</i> Date 06/30/92 AUTHORIZED REPRESENTATIVE					

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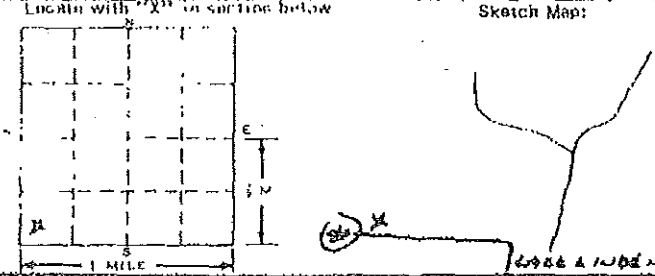
GEOLOGICAL SURVEY COPY

Authority:
Completion:
Penalty:Act 368 PA 1978
Required
Conviction of a violation
of any provision is a
misdemeanor.

WATER WELL RECORD

ACT 294 PA 1965

MICHIGAN DEPARTMENT
OF
PUBLIC HEALTH545
34

1 LOCATION OF WELL			3 OWNER OF WELL:		
County Houghton	Township Name SCHOOLCRAFT	Fraction SW 1/4 SW 1/4	Section Number 31	Town Number 756 N/S.	Range Number R32 E/W.
Distance and Direction from Road Intersections 1/2 mile west of Lake Linden on M 26			Address		
Street address & City of Well Location Locate with "X" in section below			4 WELL DEPTH: (completed) Date of Completion 165 ft. 6/15/72		
Sketch Map: 			5 <input type="checkbox"/> Cable tool <input checked="" type="checkbox"/> Rotary <input type="checkbox"/> Driven <input type="checkbox"/> Dug <input type="checkbox"/> Hollow rod <input type="checkbox"/> Jotted <input type="checkbox"/> Bored <input type="checkbox"/>		
			6 USE: <input checked="" type="checkbox"/> Domestic <input type="checkbox"/> Public Supply <input type="checkbox"/> Industry <input type="checkbox"/> Irrigation <input type="checkbox"/> Air Conditioning <input type="checkbox"/> Commercial <input type="checkbox"/> Test Well <input type="checkbox"/>		
			7 CASING: Threaded <input checked="" type="checkbox"/> Welded <input type="checkbox"/> Diam. 6 in. to 34 ft. Depth 20 lbs./ft. Height: Above/below Surface 1 ft. Drive Shoe? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
7 FORMATION			8 SCREEN: NONE		
THICKNESS OF STRATUM			Type: _____ Dia.: _____		
DEPTH TO BOTTOM OF STRATUM			Slot/Gauze _____ Length _____		
TOP SOIL 1 1			Set between _____ ft. and _____ ft.		
SAND 5 6			Fittings:		
CLAY & ROCKS 19 (25)			9 STATIC WATER LEVEL 37 ft. below land surface		
CONGLOMERATE 140 165			10 PUMPING LEVEL below land surface 110 ft. after 1/2 hrs. pumping 5 o.p.m. _____ ft. after _____ hrs. pumping _____ o.p.m.		
			11 WATER QUALITY in Parts Per Million: Iron (Fe) _____ Chlorides (Cl) _____ Hardness _____ Other _____		
			12 WELL HEAD COMPLETION: <input type="checkbox"/> In Approved Pit <input type="checkbox"/> Pitless Adapter <input checked="" type="checkbox"/> 12" Above Grade		
			13 Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input checked="" type="checkbox"/> DRILL MUD Depth: From 0 ft. to 31 ft.		
			14 Nearest Source of possible contamination 55 feet N Direction SEPTIC Type Well disinfected upon completion <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
			15 PUMP: <input checked="" type="checkbox"/> Not installed Manufacturer's Name RAYERS Model Number SG-52-5A HP 1/2 Volts 220 Length of Drop Pipe 151 ft. capacity _____ G.P.M. Type: <input checked="" type="checkbox"/> Submersible <input type="checkbox"/> Jet <input type="checkbox"/> Reciprocating		
16 Remarks, elevations, etc., if needed			17 WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief. KOYKA WELL DRILLING CO. INC. REGISTERED BUSINESS NAME REGISTRATION NO. Address ROUTE 1 BARAGA MI 49908 Signed Robert Vaitals Date 2/23/73 AUTHORIZED REPRESENTATIVE		



Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Welllogic 35

Import ID:

Tax No:	Permit No:	County: Houghton	Township: Schoolcraft			
Well ID: 31000000675		Town/Range: 56N 32W	Section: 32	Well Status: Active	WSSN: 3720	Source ID/Well No: Well # 7
		Distance and Direction from Road Intersection: NORTHEAST SIDE OF LAKE LINDEN OFF OF 15TH STREET EXTENDED				
Elevation:		Well Owner:				
Latitude: 47.202421		Well Address:				
Longitude: -88.397825		Owner Address:				
Method of Collection: GPS Std Positioning Svc SA Off						

Drilling Method: Rotary	Well Use: Type I public	Pump Installed: No
Well Depth: 230.00 ft.	Date Completed: 8/20/2001	Pressure Tank Installed: No
Well Type: New	Height: 3.00 ft. above grade	Pressure Relief Valve Installed: No
Casing Type: Steel - black		
Casing Joint: Welded		
Casing Fitting: None		
Diameter: 8.00 in. to 207.00 ft. depth		
Borehole: 12.00 in. to 207.00 ft. depth		
Static Water Level: 0.00 ft. Above Grade (Flowing)		
Well Yield Test:	Yield Test Method: Air	
Pumping level 190.00 ft. after 9.00 hrs. at 400 GPM		
Unrestricted Flow Rate:		
Screen Installed: Yes	Filter Packed: No	
Screen Diameter: 8.00 in.	Blank: 11.00 ft. Above	
Screen Material Type: Stainless steel-slotted		
Slot Length Set Between		
20.00 ft. 207.00 ft. and 227.00 ft.		
Fittings: Neoprene packer		
Well Grouted: Yes	Grouting Method: Unknown	
Grouting Material Bags Additives Depth		
Neat cement 78.00 None 0.00 ft. to 207.00 ft.		
Wellhead Completion: 12 inches above grade		
Nearest Source of Possible Contamination:		
Type Distance Direction		
Unknown		
General Remarks: SCREEN HAS 7 FEET OF 20 SLOT, 2 FEET OF 40 SLOT, AND 11 FEET OF 55 SLOT		
Other Remarks:		

Formation Description	Thickness	Depth to Bottom
Red Sand & Clay	10.00	10.00
Clay & Gravel Sandy	5.00	15.00
Sand & Clay	30.00	45.00
Red Clay & Silt Soft	5.00	50.00
Red Clay Hard W/Clay	25.00	75.00
See Comments	5.00	80.00
Sand	9.00	89.00
Gravel & Sand	3.00	92.00
Clay Gravel Sand W/Silt	3.00	95.00
Clay Sandy	20.00	115.00
Clay & Gravel Sandy	11.00	126.00
Clay Sandy	24.00	150.00
Sand Gravel Clay	10.00	160.00

(Continued On Page 2)

Geology Remarks:
STRATUM 6: LAYERS OF HARD AND SOFT CLAY WITH SILT

Drilling Machine Operator Name: WILLIAM B.
Employment: Employee

(Continued on page 2)

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

import ID:

Tax No:	Permit No:	County: Houghton	Township: Schoolcraft			
Well ID: 31000000675		Town/Range: 56N 32W	Section: 32	Well Status: Active	WSSN: 3720	Source ID/Well No: Well # 7
		Distance and Direction from Road Intersection: NORTHEAST SIDE OF LAKE LINDEN OFF OF 15TH STREET EXTENDED				
		Well Owner:				
		Well Address:		Owner Address:		
Elevation:						
Latitude: 47.202421						
Longitude: -88.397825						
Method of Collection: GPS Std Positioning Svc SA Off						

[illegible]

087d 12/86

DEC 12 1989

GEOLOGICAL SURVEY COPY

Authority: Act 368 PA 1978
 Completion: Required
 Penalty: Conviction of a violation of any provision is a misdemeanor.



Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Welllogic 37

Import ID:

Tax No: 3101218301700	Permit No: W0331024	County: Houghton	Township: Schoolcraft			
Well ID: 31000000777		Town/Range: 56N 32W	Section: 33	Well Status: Active	WSSN:	Source ID/Well No:
		Distance and Direction from Road Intersection: 1 mile east of S562 (Traprock Valley Road) on Post Road and 650 feet east				
Elevation:		Well Owner: C				
Latitude: 47.205128		Well Address:				
Longitude: -88.37003		Owner Address:				
Method of Collection: QQQ - Centroid						

Drilling Method: Cable Tool	Pump Installed: Yes	Pump Installation Only: No
Well Depth: 82.00 ft.	Pump Installation Date: 11/30/2003	HP: 0.50
Well Type: New	Manufacturer: Goulds	Pump Type: Submersible
Casing Type: Steel - black	Model Number: 10SB05422	Pump Capacity: 10 GPM
Casing Joint: Welded	Drop Pipe Length: 50.00 ft.	Pump Voltage:
Casing Fitting: Drive shoe	Drop Pipe Diameter: 1.25 in.	Drilling Record ID:
Diameter: 6.00 in. to 78.50 ft. depth	Draw Down Seal Used: No	
Borehole: 6.00 in. to 82.00 ft. depth	Pressure Tank Installed: Yes	
	Pressure Tank Type: Other	
	Manufacturer: Other	
	Model Number: NT-40SS	Tank Capacity: 1.2 Gallons
	Pressure Relief Valve Installed: No	

Static Water Level: 42.00 ft. Below Grade	Formation Description	Thickness	Depth to Bottom
Well Yield Test:			
Yield Test Method: Test pump	Topsoil	1.00	1.00
Pumping level 63.00 ft. after 2.00 hrs. at 15 GPM	Sand & Gravel	5.00	6.00
	Clay Sand Gravel	11.00	17.00
	Clay Sand Gravel Stony	6.00	23.00
	Clay & Gravel Sandy	25.00	48.00
	Sand Very Fine	5.00	53.00
	Clay & Sand Very Fine	2.00	55.00
	Sand Very Fine	6.00	61.00
	Clay & Sand Very Fine	6.00	67.00
	Clay Sandy	9.00	76.00
	Clay & Sand Fine	4.00	80.00
	Sand Fine	2.00	82.00

Screen installed: Yes	Filter Packed: No
Screen Diameter: 5.00 in.	Blank:
Screen Material Type: Stainless steel-wire wrapped	
Slot Length Set Between	
8.00 4.00 ft. 78.50 ft. and 82.00 ft.	
Fittings: Neoprene packer, Bottom plug	
Well Grouted: Yes	Grouting Method: Driven/dry grout
Grouting Material Bags Additives Depth	
Bentonite dry granular 5.00 None 0.00 ft. to 78.50 ft.	
Wellhead Completion: Pitless adapter, 12 inches above grade	

Nearest Source of Possible Contamination:	Drilling Machine Operator Name: Ted Keranen
Type Distance Direction	Employment: Employee
None	
	Contractor Type: Water Well Drilling Contractor Reg No: 1722
	Business Name: Keranen Well & Pump, Inc.
	Business Address: 31005 Township Park Road, Calumet
	Water Well Contractor's Certification
	This well was drilled under my supervision and this report is true to the best of my knowledge and belief.
	Signature of Registered Contractor Date

General Remarks:
Other Remarks: Tank Type: In-Well Diaphragm/Bladder tank, Tank Manufacturer: In-Well Technologies, Inc.
EQP-2017 (4/2010) Page 1 of 1 Pump Added 1/1/1900 12:00 AM Contractor 2/25/2003 2:10 PM

TAX NO:

MICHIGAN DEPARTMENT OF PUBLIC HEALTH
WATER WELL AND PUMP RECORD

PERMIT NO:

W 9931044

38

1. LOCATION OF WELL

County

HOUGHTON

Township Name

SCHOLLCRAFT

Fraction

N 1/4 NE 1/4 SEC 14

Section No.

33

Town No.

56A1

Range No.

32W

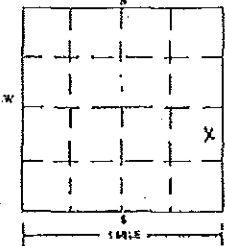
Distance and Direction from Road Intersection

FIRE # 123 ON POST ROAD

Street Address & City of Well Location

Locate with 'x' in Section Below

Sketch Map



2. FORMATION DESCRIPTION

THICKNESS
OF
STRATUMDEPTH TO
BOTTOM OF
STRATUM

SANDY CLAY

10' 10'

SANDY CLAY & GRAVEL

38' 48'

SANDY CLAY

29' 77'

SANDY CLAY & GRAVEL

63' 140'

STICKY CLAY

3' 143'

SAND & GRAVEL

4' 147'

3. OWNER OF WELL

Address

Address Same as Well Location ☒ Yes ☐ No

4. WELL DEPTH: Date Completed

☒ New Well☐ Replacement Well

147 ft. 12/21/98

5. ☒ Cable Tool☐ Rotary☐ Driven☐ Dug☐ Hollow Rod☐ Auger/Bored☐ Jetted6. USE: ☒ Household☐ Type I Public☐ Type III Public☐ Irrigation☐ Type IIa Public☐ Heat Pump☐ Test Well☐ Type IIb Public7. CASING: ☒ Steel☐ Threaded

Height: Above/Below

☐ Plastic☒ Welded

Surface: 2 ft

☐ Other

Diameter: 6 in. to 14 3/4 ft. depth

Weight: 18.22 lbs./ft.

in. to ft. depth

BORE HOLE:

Diameter: 6 in. to 14 3/4 ft. depth

☒ Drive Shoe☐ Shale Packer

in. to ft. depth

8. SCREEN: ☐ Not Installed☐ Gravel-Packed

Type: STAINLESS

Diameter: 1"

Slot/Gauze: 15

Length: 4'

Set Between: 143 ft. and 147 ft.

FITTINGS: ☒ K-Packer☐ Brenner Check☐ Blank Above Screen

ft. Other

9. STATIC WATER LEVEL:

4.5 ft. Below Land Surface

☐ Flowing

10. PUMPING LEVEL: Below Land Surface

130 ft. After 1 hrs. Pumping at 10 G.P.M.

☐ Plunger☐ Bailer☐ Air☒ Test Pump

11. WELL HEAD COMPLETION:

☒ Pitless Adapter☐ 12" Above Grade☐ Basement Offset☐ Well House12. WELL GROUTED? ☐ No☒ Yes

From to ft.

☐ Neat Cement☒ Bentonite☐ Other

No. of Bags: 5

Additives

13. NEAREST SOURCE OF POSSIBLE CONTAMINATION:

Type: SEPTIC

Distance: 66 ft. Direction: SOUTH

Type: Distance: ft. Direction:

14. PUMP: ☐ Not Installed☐ Pump Installation Only

Manufacturer's Name: STA-RITE

Model Number: 10P4C2J-22

HP: 1/2

Volts: 230

Length of Drop Pipe: 135 ft.

Capacity: 10 G.P.M.

TYPE: ☒ Submersible☐ Jet☐ Other

PRESSURE TANK:

Manufacturer's Name: A.O.S.M.I.T.H.

Model Number: 460

Capacity: 6 Gallons

20

15. ABANDONED WELL PLUGGED?

☐ Yes ☐ No

Casing Diameter: in.

Depth: ft.

PLUGGING MATERIAL:

☐ Neat Cement☐ Bentonite Slurry☐ Cement/Bentonite Slurry☐ Concrete Grout☐ Bentonite Chips

No. of Bags:

Casing Removed?

☐ Yes ☐ No

16. REMARKS: (Elevation, Source of Data, etc.)

17. DRILLING MACHINE OPERATOR:

☒ Employee ☐ Subcontractor

Name: JEFF ESKOLA

MASTER LIST

15. WATER WELL CONTRACTOR'S CERTIFICATION:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

KERALEEN WELL & PUMP 31-1222

REGISTERED BUSINESS NAME

REGISTRATION NO.

Address: Rte. 1 Box 238 CALUMET, MICH.

Signed: Gerald K. Keraleen Date: 1-11-99

AUTHORIZED REPRESENTATIVE

GEOLOGICAL SURVEY COPY

Authority: Act 328, PA 1976

Completion: Required

Penalty: Conviction of a violation of any provision is a misdemeanor.



Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Welllogic 39

Import ID:

Tax No:	Permit No: W0131084	County: Houghton	Township: Schoolcraft
Well ID: 31000000615		Town/Range: 56N 32W	Section: 34
		Well Status: Active	WSSN:
Elevation:		Distance and Direction from Road Intersection:	
Latitude: 47.21330852		3/8 MILE WEST OF HILTUNEN X CUT ON GAY ROAD AND 200 FEET SOUTH.	
Longitude: -88.34333328		Well Owner:	
Method of Collection: Interpolation-Map		Well Address:	Owner Address:

Drilling Method: Cable Tool	Pump Installed: Yes	Pump Installation Only: No
Well Depth: 107.00 ft.	Pump Installation Date:	HP: 0.50
Well Type: New	Manufacturer: Sta-Rite	Pump Type: Submersible
Casing Type: Steel - black	Model Number: 10P4C02304	Pump Capacity: 10 GPM
Casing Joint: Welded	Drop Pipe Length: 95.00 ft.	Pump Voltage:
Casing Fitting: Drive shoe	Drop Pipe Diameter:	Drilling Record ID:
Diameter: 6.00 in. to 104.00 ft. depth	Draw Down Seal Used: No	
Borehole: 6.00 in. to 107.00 ft. depth	Pressure Tank Installed: Yes	
	Pressure Tank Type: Unknown	
	Manufacturer: Goulds	
	Model Number: V-80	Tank Capacity: 20.0 Gallons
	Pressure Relief Valve Installed: No	

Static Water Level: 90.00 ft. Below Grade	Formation Description	Thickness	Depth to Bottom
Well Yield Test: Yield Test Method: Test pump	Red Clay & Gravel Sandy	42.00	42.00
Pumping level 101.00 ft. after 1.00 hrs. at 10 GPM	Clay & Gravel Sandy	62.00	104.00
	Sand	3.00	107.00

Screen Installed: Yes	Filter Packed: No
Screen Diameter: 6.00 in.	Blank: *u
Screen Material Type: Unknown	
Slot Length Set Between	
10.00 4.00 ft. 104.00 ft. and 107.00 ft.	
Fittings: Unknown	

Well Grouted: Yes	Grouting Method: Unknown
Grouting Material	Bags Additives Depth
Bentonite slurry	4.00 None

Wellhead Completion: Pitless adapter	Geology Remarks:

Nearest Source of Possible Contamination:	Drilling Machine Operator Name: Ted Keranen
Type Distance Direction	Employment: Employee
Septic tank 120 ft. Southwest	

Contractor Type: Water Well Drilling Contractor	Reg No: 1722
Business Name: Keranen Well & Pump	
Business Address:	

Water Well Contractor's Certification	
This well was drilled under my supervision and this report is true to the best of my knowledge and belief.	

Signature of Registered Contractor	Date
------------------------------------	------

General Remarks:
Other Remarks:



Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Welllogic

40

Import ID:

Tax No: 31-012-184-006-10		Permit No: W0731017		County: Houghton		Township: Schoolcraft	
Well ID: 310000001920				Town/Range: 56N 32W	Section: 34	Well Status: Active	WSSN:
				Source ID/Well No:			
Elevation:				Distance and Direction from Road Intersection: 1 mile east of Traprock Valley Road (S641) on Gay Road (S562) on south side			
Latitude: 47.21338				Well Owner:			
Longitude: -88.36045				Well Address:		Owner Address:	
Method of Collection: GPS Std Positioning Svc SA Off							

Drilling Method: Cable Tool	Pump Installed: Yes	Pump Installation Only: No
Well Depth: 168.00 ft.	Pump Installation Date: 11/30/2006	HP: 0.75
Well Type: New	Manufacturer: Goulds	Pump Type: Submersible
Casing Type: Steel - black	Model Number: 10GS07412L	Pump Capacity: 10 GPM
Casing Joint: Welded	Drop Pipe Length: 121.00 ft.	Pump Voltage:
Casing Fitting: Drive shoe	Drop Pipe Diameter: 1.00 in.	Drilling Record ID:
Diameter: 6.00 in. to 164.00 ft. depth	Draw Down Seal Used: No	
Borehole: 6.00 in. to 168.00 ft. depth	Pressure Tank Installed: Yes	
	Pressure Tank Type: Diaphragm/bladder	
	Manufacturer: Goulds	
	Model Number: V60	Tank Capacity: 20.0 Gallons
	Pressure Relief Valve Installed: Yes	

Static Water Level: 77.50 ft. Below Grade	Formation Description	Thickness	Depth to Bottom
Well Yield Test: Yield Test Method: Test pump	Topsoil	1.00	1.00
Pumping level 101.00 ft. after 3.00 hrs. at 15 GPM	Clay & Gravel Sandy	24.00	25.00
	Boulders	1.00	26.00
Screen Installed: Yes	Clay & Gravel Sandy	5.00	31.00
Filter Packed: No	Boulders	3.00	34.00
Screen Diameter: 5.00 in.	Clay	18.00	52.00
Blank: 1.00 ft. Above	Clay & Gravel Sandy	49.00	101.00
Screen Material Type: Stainless steel-wire wrapped	Sand & Gravel Silty	2.50	103.50
Slot Length Set Between	Clay & Gravel	21.50	125.00
10.00 4.00 ft. 164.00 ft. and 168.00 ft.	Sand Clayey Very Fine	8.00	133.00
Fittings: Neoprene packer, Bottom plug	Clay	16.00	149.00
Well Grouted: Yes	Clay & Gravel Sandy	10.00	159.00
Grouting Method: Driven/dry grout	Sand Silty	4.00	163.00
Grouting Material Bags Additives Depth	(Continued On Page 2)		
Bentonite dry granular 6.00 None 0.00 ft. to 160.00 ft.	Geology Remarks:		

Wellhead Completion: Pitless adapter, 12 inches above grade	

Nearest Source of Possible Contamination:	Drilling Machine Operator Name: Jeff Eskola
Type Distance Direction	Employment: Employee
Septic tank 95 ft. Southeast	
Drainfield/Dry well 100 ft. Southeast	(Continued on page 2)

General Remarks:
Other Remarks:

Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Wellogic 40

Import ID:

Tax No: 31-012-184-006-10		Permit No: W0731017		County: Houghton		Township: Schoolcraft		
Well ID: 31000001920				Town/Range:	Section:	Well Status:	WSSN:	Source ID/Well No:
				56N 32W	34	Active		
				Distance and Direction from Road Intersection:				
				1 mile east of Traprock Valley Road (S641) on Gay Road (S562) on south side				
				Well Owner:				
Elevation:				Well Address:		Owner Address:		
Latitude: 47.21338								
Longitude: -88.36045								
Method of Collection: GPS Std Positioning Svc SA Off								

(Continued from Page 1)

[illegible]

Contractor Type:	Water Well Drilling Contractor	Reg No: 2413
Business Name:	Keranen & Eskola Well Drilling	
Business Address:	55961 Lake Linden Avenue, Laurium, MI, 49913	

Water Well Contractor's Certification

This well was drilled under my supervision and this report is true to the best of my knowledge and belief.

Signature of Registered Contractor

Date _____



Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Welllogic 41

Import ID:

Tax No: 31-006-004-003-303	Permit No: W0831117	County: Houghton	Township: Franklin
Well ID: 31000002059		Town/Range: 55N 33W	Section: 4
		Well Status: Active	WSSN:
Elevation:		Source ID/Well No:	
Latitude: 47.19849		Distance and Direction from Road Intersection:	
Longitude: -88.49771		0.25 mile west of Tecumseh Road on Electric Park Road on south side	
Method of Collection: GPS Std Positioning Svc SA Off		Well Owner:	
		Well Address: Owner Address:	

Drilling Method: Cable Tool	Pump Installed: Yes	Pump Installation Only: No
Well Depth: 193.00 ft.	Pump Installation Date: 6/2/2009	HP: 0.75
Well Type: New	Manufacturer: Red Jacket	Pump Type: Submersible
Casing Type: Steel - black	Model Number: 75C21112G	Pump Capacity: 10 GPM
Casing Joint: Welded	Drop Pipe Length: 181.00 ft.	Pump Voltage:
Casing Fitting: Drive shoe	Drop Pipe Diameter: 1.00 in.	Drilling Record ID:
Diameter: 6.00 in. to 32.00 ft. depth	Draw Down Seal Used: No	
Borehole: 6.00 in. to 193.00 ft. depth	Pressure Tank Installed: Yes	
	Pressure Tank Type: Diaphragm/bladder	
	Manufacturer: Goulds	
	Model Number: V60	Tank Capacity: 20.0 Gallons
	Pressure Relief Valve Installed: Yes	

Static Water Level: 11.00 ft. Below Grade	Formation Description	Thickness	Depth to Bottom
Well Yield Test: Yield Test Method: Bailer	Sand Fine	2.00	2.00
Pumping level 190.00 ft. after 1.00 hrs. at 4 GPM	Clay Sandy Hard	8.00	10.00
	Clay W/Gravel	19.50	29.50
Screen Installed: No	Basalt Soft	2.50	32.00
Intake: Bedrock Well	Basalt	161.00	193.00

Well Grouted: Yes	Grouting Method: Driven/dry grout
Grouting Material: Bentonite dry granular	Grouting Material: Bags Additives Depth
4.00	None 0.00 ft. to 32.00 ft.

Wellhead Completion: Pitless adapter, 12 inches above grade	Geology Remarks:
---	------------------

Nearest Source of Possible Contamination:	Drilling Machine Operator Name: Kevin Keranen
Type Distance Direction	Employment: Employee
Septic tank 70 ft. Southeast	
Drainfield/Dry well 80 ft. Southeast	
	Contractor Type: Water Well Drilling Contractor Reg No: 2413
	Business Name: Keranen & Eskola Well Drilling
	Business Address: 30330 Lincoln School Road, Calumet, MI, 49913
	Water Well Contractor's Certification
	This well was drilled under my supervision and this report is true to the best of my knowledge and belief.
	Signature of Registered Contractor Date

General Remarks:
Other Remarks:

Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Wellogig 43

Import ID:

Tax No:	Permit No: W0031032	County: Houghton			Township: Osceola	
Well ID: 31000000550		Town/Range: 55N 33W	Section: 3	Well Status: Active	WSSN:	Source ID/Well No:
		Distance and Direction from Road Intersection: 0.5 MILES NORTH OF ONECO RD. ON OLD COUNTY RD. AND 500' EAST				
		Well Owner: _____				
Elevation:		Well Address: _____				
Latitude: 47.19198847		Owner Address: _____				
Longitude: -88.47309084						
Method of Collection: Interpolation-Map						

Drilling Method: Cable Tool	Pump Installed: Yes	Pump Installation Only: No
Well Depth: 175.00 ft.	Pump Installation Date:	HP: 0.50
Well Type: New	Manufacturer: Sta-Rite	Pump Type: Submersible
	Model Number: 10P4C02J-0	Pump Capacity: 10 GPM
Casing Type: Steel - black	Drop Pipe Length: 80.00 ft.	Pump Voltage:
Casing Joint: Welded	Drop Pipe Diameter:	Drilling Record ID:
Casing Fitting: Drive shoe	Draw Down Seal Used: No	
Diameter: 6.00 in. to 57.00 ft. depth	Pressure Tank Installed: Yes	
	Pressure Tank Type: Unknown	
	Manufacturer: Amtrol	
Borehole: 6.00 in. to 175.00 ft. depth	Model Number: WF-100	Tank Capacity: 32.0 Gallons
	Pressure Relief Valve Installed: No	

Static Water Level: 9.00 ft. Below Grade Well Yield Test: Yield Test Method: Test pump Pumping level 60.00 ft. after 1.00 hrs. at 20 GPM				Formation Description	Thickness	Depth to Bottom
Screen installed: No Intake: Bedrock Well				Topsoil	1.00	1.00
				Clay & Sand	3.00	4.00
				Clay Sandy	7.00	11.00
				Clay & Gravel Sandy	46.00	57.00
				Unidentified Consolidated Fm Hard	118.00	175.00
Well Grouted: Yes Grouting Method: Unknown Grouting Material Bags Additives Depth						

Bentonite dry granular 6.00 None	Geology Remarks:
Wellhead Completion: Pitless adapter	

Nearest Source of Possible Contamination:			Drilling Machine Operator Name: JOE MOORE
Type	Distance	Direction	Employment: Employee
Septic tank	150 ft.	East	
			Contractor Type: Water Well Drilling Contractor Reg No: 1722
			Business Name: KERNANEN WELL & PUMP
			Business Address:
			Water Well Contractor's Certification
			This well was drilled under my supervision and this report is true to the best of my knowledge and belief.
			Signature of Registered Contractor _____ Date _____

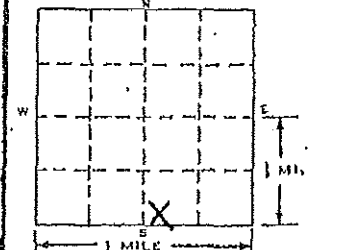
General Remarks:

Other Remarks:

WATER WELL RECORD

ACT 204 PA 1965

MICHIGAN DEPARTMENT
OF
PUBLIC HEALTH

1 LOCATION OF WELL		TOWNSHIP NAME		Fraction	Section Number	Town Number	Range Number
County Houghton		Oceola		SE 1/4 Sec 5	3	55 N.W.S.	33 W.W.
Distance and Direction from Road Intersections ABOUT 1 MILE EAST OF HWY U.S. 41 AT HIGHWAY LOCATION							
Sheet address & City of Well Location CALUMET, MICH.							
Location with "X" in section below				Sketch Map:			
							
2 FORMATION		THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM	3 OWNER OF WELL:			
SAND		8	8	Address			
ROCKY GRAVEL		6	(14)	4 WELL DEPTH: (completion) Date of Completion			
BED - ROCK		39	53	53 ft. NOV 18, 1976			
				5 <input checked="" type="checkbox"/> Cable tool <input type="checkbox"/> Rotary <input type="checkbox"/> Driven <input type="checkbox"/> Other			
				<input type="checkbox"/> Hollow rod <input type="checkbox"/> Jetted <input type="checkbox"/> Bored <input type="checkbox"/>			
				6 USE: <input checked="" type="checkbox"/> Domestic <input type="checkbox"/> Public Supply <input type="checkbox"/> Industry			
				<input type="checkbox"/> Irrigation <input type="checkbox"/> Air Conditioning <input type="checkbox"/> Commercial			
				<input type="checkbox"/> Test Well <input type="checkbox"/>			
				7 CASING: Threaded <input checked="" type="checkbox"/> Welded <input type="checkbox"/> Height: Above/Below			
				Diam. 6 in. to 2 1/2 ft. Depth 2 ft.			
				Surface 2 ft. Weight 18.45 lbs./ft.			
				Drive Shoe? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
				8 SCREEN:			
				Type: _____ Dia.: _____			
				Slot/Gauze _____ Length _____			
				Set between _____ ft. and _____ ft.			
				Fittings: _____			
				9 STATIC WATER LEVEL			
				10 ft. below land surface			
				10 PUMPING LEVEL below land surface			
				25 ft. after 1 hrs. pumping 24 g.p.m.			
				_____ ft. after _____ hrs. pumping _____ g.p.m.			
				11 WATER QUALITY in Parts Per Million			
				Iron (Fe) _____ Chlorides (Cl) _____			
				Hardness _____ Other _____			
				12 WELL HEAD COMPLETION: <input type="checkbox"/> In Approved Pit			
				<input checked="" type="checkbox"/> Pitless Adapter <input type="checkbox"/> 12" Above Grade			
				13 Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
				<input checked="" type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/>			
				Depth: From 5 ft. to 2.5 ft.			
				14 Nearest Source of possible contamination			
				55 feet NORTH Direction SEPTIC Type			
				Well disinfected upon completion <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
				16 PUMP: <input type="checkbox"/> Not installed			
				Manufacturer's Name MYERS			
				Model Number 5652-SX HP 1/2 Volts 230			
				Length of Drop Pipe 45 ft. capacity _____ G.P.M.			
				Type: <input checked="" type="checkbox"/> Submersible			
				<input type="checkbox"/> Jet <input type="checkbox"/> Reciprocating			
16 Remarks, elevation, source of data, etc.				17 WATER WELL CONTRACTOR'S CERTIFICATION:			
				This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.			
				STICKLER WELL DRILLING 0154			
				REGISTERED BUSINESS NAME REGISTRATION NO.			
				Address RTE 1, HANCOCK MICH			
				Signed [Signature] Date 11/23/76			
				AUTHORIZED REPRESENTATIVE			



Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.

Welllogic

45

Import ID:

Failure to comply is a misdemeanor.

Tax No: 31-009-002-013-00	Permit No: W04-31-171	County: Houghton	Township: Osceola
Well ID: 31000001532		Town/Range: 55N 33W	Section: 2
		Well Status: Active	WSSN:
Elevation:		Distance and Direction from Road Intersection:	
Latitude: 47.185448		0.1 MILE NORTH OF INTERSECTION OF GOLF COURSE ROAD AND HENDRICKSON ROAD	
Longitude: -88.447082		Well Owner:	
Method of Collection: Interpolation-Map		Well Address:	Owner Address:

Drilling Method: Rotary	Pump Installed: Yes	Pump Installation Only: No
Well Depth: 401.00 ft.	Pump Installation Date:	HP: 1.50
Well Type: New	Manufacturer: Red Jacket	Pump Type: Submersible
Casing Type: Steel - unknown	Model Number: 150F211CN5	Pump Capacity: 10 GPM
Casing Joint: Welded	Drop Pipe Length: 360.00 ft.	Pump Voltage:
Casing Fitting: Drive shoe	Drop Pipe Diameter:	Drilling Record ID:
Diameter: 6.00 in. to 26.00 ft. depth	Draw Down Seal Used: No	
4.00 in. to 381.00 ft. depth	Pressure Tank Installed: No	
Borehole: 6.00 in. to 401.00 ft. depth	Pressure Relief Valve Installed: No	
10.00 in. to 26.00 ft. depth		

Static Water Level: 175.00 ft. Below Grade	Formation Description	Thickness	Depth to Bottom
Well Yield Test:	Sand Clayey	2.00	2.00
Yield Test Method: Air	Basalt	308.00	310.00
Pumping level 401.00 ft. after 1.00 hrs. at 6 GPM	Sandstone	91.00	401.00

Screen Installed: No	Intake: Bedrock Well

Well Grouted: Yes	Grouting Method: Unknown
Grouting Material	Bags Additives Depth
Neat cement	10.00 None 4.00 ft. to 26.00 ft.

Wellhead Completion: Pitless adapter	Geology Remarks:

Nearest Source of Possible Contamination:	Drilling Machine Operator Name: PAUL LAHTI
Type Distance Direction	Employment: Employee
None	

Contractor Type: Water Well Drilling Contractor	Reg No: 1677
Business Name: SIIRTOLA WELL DRILLING	
Business Address:	

Water Well Contractor's Certification	
This well was drilled under my supervision and this report is true to the best of my knowledge and belief.	

Signature of Registered Contractor	Date

General Remarks:
Other Remarks:



Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Welllogic 46

Import ID:

Tax No: 31-009-002-005-00		Permit No: W1031009		County: Houghton		Township: Osceola	
Well ID: 31000002175		Town/Range:	Section:	Well Status:	WSSN:	Source ID/Well No:	
		55N 33W	2	Active			
Elevation:		Distance and Direction from Road Intersection:					
Latitude: 47.192268		0.25 mile east of Old County Road on Dover Road on south side					
Longitude: -88.457283		Well Owner					
Method of Collection: Section - Centroid		Well Address:				Owner Address:	

Drilling Method: Cable Tool		Well Use: Household		Pump Installed: Yes		Pump Installation Only: No	
Well Depth: 47.00 ft.		Date Completed: 11/6/2009		Pump Installation Date: 11/6/2009		HP: 0.50	
Well Type: New		Height: 2.00 ft. above grade		Manufacturer: McDermott		Pump Type: Submersible	
Casing Type: Steel - black		Casing Joint: Welded		Model Number: PEP2W52BA		Pump Capacity: 12 GPM	
Casing Fitting: Drive shoe		Diameter: 6.00 in. to 25.50 ft. depth		Drop Pipe Length: 18.00 ft.		Pump Voltage:	
Borehole: 9.00 in. to 25.50 ft. depth		6.00 in. to 47.00 ft. depth		Drop Pipe Diameter: 1.00 in.		Drilling Record ID:	
				Draw Down Seal Used: No			
				Pressure Tank Installed: Yes			
				Pressure Tank Type: Diaphragm/bladder			
				Manufacturer: Well-Mate			
				Model Number: WM-6		Tank Capacity: 20.0 Gallons	
				Pressure Relief Valve Installed: Yes			
Static Water Level: 8.50 ft. Below Grade		Well Yield Test:		Yield Test Method: Test pump			
Pumping level 18.00 ft. after 2.00 hrs. at 15 GPM							
Screen Installed: No		Intake: Bedrock Well		Formation Description		Thickness	Depth to Bottom
				Sand & Gravel Clayey W/Boulders		14.00	14.00
				Clay & Gravel		3.00	17.00
				Basalt Broken		3.00	20.00
				Basalt		27.00	47.00
Well Grouted: Yes		Grouting Method: Displacement plug					
Grouting Material		Bags	Additives	Depth			
Neat cement		6.00	None	6.00 ft. to 25.50 ft.			
Wellhead Completion: Pitless adapter, 12 inches above grade				Geology Remarks:			
Nearest Source of Possible Contamination:				Drilling Machine Operator Name: James Eskola			
Type	Distance	Direction		Employment: Employee			
Septic tank	50 ft.	Northwest		Pump Installer: Ted Keranen			
Drainfield/Dry well	50 ft.	Northwest		Contractor Type: Water Well Drilling Contractor		Reg No: 2413	
				Business Name: Keranen & Eskola Well Drilling			
				Business Address: 30330 Lincoln School Road, Calumet, MI, 49913			
				Water Well Contractor's Certification			
				This well was drilled under my supervision and this report is true to the best of my knowledge and belief.			
				Signature of Registered Contractor		Date	
General Remarks:							
Other Remarks:							



Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.
Failure to comply is a misdemeanor.

Welllogic 47

Import ID:

Tax No:	Permit No:	County: Houghton	Township: Schoolcraft
Well ID: 31000001281		Town/Range: 55N 33W	Section: 1
Elevation:		Well Status: Active	WSSN:
Latitude: 47.188573		Source ID/Well No:	
Longitude: -88.445619		Distance and Direction from Road Intersection: 1.5 MILES NORTH OF HUBBELL AND 0.25 MILE EAST OF GOLF COURSE ROAD	
Method of Collection: Interpolation-Map		Well Owner:	
		Well Address:	
		Owner Address:	

Drilling Method: Cable Tool	Pump Installed: Yes	Pump Installation Only: No
Well Depth: 175.00 ft.	Pump Installation Date:	HP: 0.50
Well Type: Unknown	Manufacturer: Red Jacket	Pump Type: Submersible
Casing Type: Unknown	Model Number: 50W09BC	Pump Capacity: 6 GPM
Casing Joint: Welded	Drop Pipe Length: 136.00 ft.	Pump Voltage:
Casing Fitting: Drive shoe	Drop Pipe Diameter:	Drilling Record ID:
Diameter: 6.00 in. to 27.00 ft. depth	Draw Down Seal Used: No	
Borehole:	Pressure Tank Installed: No	
	Pressure Relief Valve Installed: No	
Static Water Level: 26.00 ft. Below Grade	Formation Description	Thickness
Well Yield Test:		Depth to Bottom
Yield Test Method: Unknown	Loam Sandy	1.00
Pumping level 140.00 ft. after 1.00 hrs. at 9 GPM	Clay & Gravel Sandy	13.00
Pumping level 115.00 ft. after 4.00 hrs. at 6 GPM	See Comments	161.00
Screen Installed: No		175.00
Intake: Bedrock Well		
Well Grouted: Yes	Grouting Method: Unknown	
Grouting Material	Bags	Additives
Neat cement	0.00	None
	Depth	
	0.00 ft. to 25.00 ft.	
Wellhead Completion: Pitless adapter	Geology Remarks:	
	JACOBSVILLE SANDSTONE	
Nearest Source of Possible Contamination:	Drilling Machine Operator Name:	
Type	Employment: Unknown	
Animal yard/Feedlot		
Distance		
150 ft.		
Direction		
Southeast		
Abandoned Well Plugged: No	Contractor Type: Water Well Drilling Contractor	Reg No: 1778
Reason Not Plugged:	Business Name: VALLEY WELL & PUMP	
	Business Address:	
	Water Well Contractor's Certification	
	This well was drilled under my supervision and this report is true to the best of my knowledge and belief.	
	Signature of Registered Contractor	Date
General Remarks:		
Other Remarks:		



Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Welllogic 48

Import ID:

Tax No:	Permit No:	County: Houghton	Township: Schoolcraft			
Well ID: 31000001282 Elevation: Latitude: 47.188546 Longitude: -88.445851 Method of Collection: Interpolation-Map		Town/Range: 55N 33W	Section: 1	Well Status: Active	WSSN:	Source ID/Well No:
		Distance and Direction from Road Intersection: 1.5 MILES NORTH OF HUBBELL AND 0.25 MILE EAST OF GOLF COURSE ROAD				
		Well Owner		Well Address:		

Drilling Method: Cable Tool Well Depth: 150.00 ft. Well Type: Unknown Casing Type: Unknown Casing Joint: Welded Casing Fitting: Drive shoe Diameter: 6.00 in. to 27.00 ft. depth Borehole:	Well Use: Household Date Completed: 8/15/1980 Height:	Pump Installed: Yes Pump Installation Date: Manufacturer: Red Jacket Model Number: 50W09BC Drop Pipe Length: 136.00 ft. Drop Pipe Diameter: Draw Down Seal Used: No Pressure Tank Installed: No Pressure Relief Valve Installed: No	Pump Installation Only: No HP: 0.50 Pump Type: Submersible Pump Capacity: 6 GPM Pump Voltage: Drilling Record ID:												
Static Water Level: 26.00 ft. Below Grade Well Yield Test: Yield Test Method: Unknown Pumping level 140.00 ft. after 1.00 hrs. at 9 GPM Pumping level 115.00 ft. after 4.00 hrs. at 6 GPM		<table border="1"><thead><tr><th>Formation Description</th><th>Thickness</th><th>Depth to Bottom</th></tr></thead><tbody><tr><td>Loam Sandy</td><td>1.00</td><td>1.00</td></tr><tr><td>Clay & Gravel Sandy</td><td>13.00</td><td>14.00</td></tr><tr><td>See Comments</td><td>136.00</td><td>150.00</td></tr></tbody></table>		Formation Description	Thickness	Depth to Bottom	Loam Sandy	1.00	1.00	Clay & Gravel Sandy	13.00	14.00	See Comments	136.00	150.00
Formation Description	Thickness	Depth to Bottom													
Loam Sandy	1.00	1.00													
Clay & Gravel Sandy	13.00	14.00													
See Comments	136.00	150.00													
Screen Installed: No Intake: Bedrock Well															
Well Grouted: Yes Grouting Material: Neat cement Grouting Method: Unknown Bags: 0.00 Additives: None Depth: 0.00 ft. to 25.00 ft.		Geology Remarks: JACOBSTOWN SANDSTONE													
Wellhead Completion: Pitless adapter															
Nearest Source of Possible Contamination: Type: Animal yard/Feedlot Distance: 150 ft. Direction: Southeast		Drilling Machine Operator Name: Employment: Unknown													
Abandoned Well Plugged: No		Contractor Type: Water Well Drilling Contractor Business Name: VALLEY WELL & PUMP Business Address:													
Reason Not Plugged:		Reg No: 1778													
		Water Well Contractor's Certification This well was drilled under my supervision and this report is true to the best of my knowledge and belief.													
General Remarks:		Signature of Registered Contractor													
Other Remarks:		Date													



Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Welllogic 50

Import ID:

Tax No:	Permit No: W02-31-019	County: Houghton	Township: Schoolcraft
Well ID: 31000000679		Town/Range: 55N 32W	Section: 5
		Well Status: Active	WSSN:
Elevation:		Distance and Direction from Road Intersection:	
Latitude: 47.19381636		1 MILE EAST OF M-26 ON BOOTJACK AND 100' NORTH	
Longitude: -88.39367875		Well Owner:	
Method of Collection: Interpolation-Map		Well Address:	Owner Address:

Drilling Method: Cable Tool	Pump Installed: Yes	Pump Installation Only: No
Well Depth: 72.00 ft.	Pump Installation Date:	HP: 0.50
Well Type: New	Manufacturer: Goulds	Pump Type: Submersible
Casing Type: Steel - black	Model Number: 10SB05412L	Pump Capacity: 10 GPM
Casing Joint: Welded	Drop Pipe Length: 60.00 ft.	Pump Voltage:
Casing Fitting: Drive shoe	Drop Pipe Diameter:	Drilling Record ID:
Diameter: 6.00 in. to 68.00 ft. depth	Draw Down Seal Used: No	
Borehole: 6.00 in. to 72.00 ft. depth	Pressure Tank Installed: Yes	
	Pressure Tank Type: Unknown	
	Manufacturer: Amtrol	
	Model Number: 202	Tank Capacity: 20.0 Gallons
	Pressure Relief Valve Installed: No	
Static Water Level: Above Grade (Flowing)		
Well Yield Test:	Yield Test Method: Test pump	
Pumping level 65.00 ft. after 1.00 hrs. at 10 GPM		
Unrestricted Flow Rate:		
Screen Installed: Yes	Filter Packed: No	
Screen Diameter: 6.00 in.	Blank:	
Screen Material Type: Stainless steel-wire wrapped		
Slot Length Set Between		
12.00 4.00 ft. 68.00 ft. and 72.00 ft.		
Fittings: Neoprene packer		
Well Grouted: Yes	Grouting Method: Unknown	
Grouting Material Bags Additives Depth		
Bentonite dry granular 4.00 None		
Wellhead Completion: Pitless adapter		
Nearest Source of Possible Contamination:		
Type Distance Direction		
Septic tank 55 ft. West		
	Drilling Machine Operator Name: TED KERANEN	
	Employment: Employee	
	Contractor Type: Water Well Drilling Contractor	Reg No: 1722
	Business Name: KERANEN WELL & PUMP	
	Business Address:	
	Water Well Contractor's Certification	
	This well was drilled under my supervision and this report is true to the best of my knowledge and belief.	
	Signature of Registered Contractor	Date

General Remarks:

Other Remarks:





Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Welllogic 53

Import ID:

Tax No:	Permit No:	County: Houghton	Township: Franklin
Well ID: 31000001286		Town/Range: 55N 33W	Section: 9
Elevation:		Well Status: Active	WSSN:
Latitude: 47.173646		Source ID/Well No:	
Longitude: -88.510179		Distance and Direction from Road Intersection:	
Method of Collection: Interpolation-Map		0.4 MILE NORTHEAST OF BOSTON ROAD AND US 41; WALTER TERVO ROADSIDE PARK	
		Well Owner:	Owner Address:
		Well Address:	

Drilling Method: Rotary	Well Use: Type III public	Pump Installed: No
Well Depth: 102.00 ft.	Date Completed: 10/1/1980	Pressure Tank Installed: No
Well Type: Unknown	Height: 2.50 ft. above grade	Pressure Relief Valve Installed: No
Casing Type: Unknown	Casing Joint: Threaded & coupled	
Casing Fitting: Drive shoe	Diameter: 4.00 in. to 29.00 ft. depth	
Sorehole:		
Static Water Level: 7.00 ft. Below Grade	Yield Test Method: Unknown	Formation Description
Well Yield Test:	Pumping level 35.00 ft. after 0.00 hrs. at 1 GPM	Thickness
		Depth to Bottom
		Clay Sandy W/Boulders
		27.00
		27.00
		See Comments
		75.00
		102.00
Screen Installed: No	Intake: Bedrock Well	
Well Grouted: No		Geology Remarks:
		ROCK, LAVA SERIES
Wellhead Completion: Unknown		
Nearest Source of Possible Contamination:		Drilling Machine Operator Name:
Type	Distance	Employment: Unknown
Outhouse/Privy	125 ft.	
Direction	Northeast	
Abandoned Well Plugged: No		Contractor Type: Water Well Drilling Contractor
Reason Not Plugged:		Reg No: 1215
		Business Name: MICH DEPT STATE HIGHWAYS
		Business Address:
		Water Well Contractor's Certification
		This well was drilled under my supervision and this report is true to the best of my knowledge and belief.
		Signature of Registered Contractor
		Date

General Remarks: WELL PERMIT NO. W-80-52-5001

Other Remarks:



Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Welllogic 55

Import ID:

Tax No:	Permit No: W0131020	County: Houghton	Township: Osceola
Well ID: 31000000552		Town/Range: 55N 33W	Section: 10
		Well Status: Active	WSSN:
Elevation:		Distance and Direction from Road Intersection:	
Latitude: 47.1829021		1 MILE EAST OF US-41 ON ONECO RD. AND 100' SOUTH	
Longitude: -88.47313299		Well Owne	
Method of Collection: Interpolation-Map		Well Address:	Owner Address:

Drilling Method: Cable Tool	Pump Installed: Yes	Pump Installation Only: No
Well Depth: 75.00 ft.	Pump Installation Date:	HP: 0.50
Well Type: New	Manufacturer: Red Jacket	Pump Type: Submersible
Casing Type: Steel - black	Model Number: 50F311-CN5	Pump Capacity: 10 GPM
Casing Joint: Welded	Drop Pipe Length: 40.00 ft.	Pump Voltage:
Casing Fitting: Drive shoe	Drop Pipe Diameter:	Drilling Record ID:
Diameter: 6.00 in. to 25.00 ft. depth	Draw Down Seal Used: No	
Borehole: 9.00 in. to 25.00 ft. depth	Pressure Tank Installed: Yes	
6.00 in. to 75.00 ft. depth	Pressure Tank Type: Unknown	
	Manufacturer: Amtrol	
	Model Number: 202	Tank Capacity: 20.0 Gallons
	Pressure Relief Valve Installed: No	

Static Water Level: 10.00 ft. Below Grade	Formation Description	Thickness	Depth to Bottom
Well Yield Test: Pumping level 30.00 ft. after 1.00 hrs. at 20 GPM	Clay & Gravel Sandy	16.00	16.00
Yield Test Method: Test pump	Unidentified Consolidated Fm Hard	59.00	75.00

Screen Installed: No	Intake: Bedrock Well

Well Grouted: Yes	Grouting Method: Unknown
Grouting Material: Neat cement	Bags: 5.00 Additives: None Depth:

Wellhead Completion: Pitless adapter	Geology Remarks:

Nearest Source of Possible Contamination:	Drilling Machine Operator Name: JOE MOORE
Type: Septic tank	Employment: Employee
Distance: 85 ft.	
Direction: Southwest	

Contractor Type: Water Well Drilling Contractor	Reg No: 1722
Business Name: KERANEN WELL & PUMP	
Business Address:	

Water Well Contractor's Certification	
This well was drilled under my supervision and this report is true to the best of my knowledge and belief.	
Signature of Registered Contractor	Date

General Remarks:
Other Remarks:



Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Welllogic 57

Import ID:

Tax No:	Permit No:	County: Houghton	Township: Osceola			
Well ID: 31000001214		Town/Range: 55N 33W	Section: 11	Well Status: Active	WSSN:	Source ID/Well No:
Elevation:		Distance and Direction from Road Intersection: SOTHEAST CORNER OF INTERSECT OF DOVER ROAD AND 019				
Latitude: 47.170999		Well Owner:				
Longitude: -88.4566		Well Address:		Owner Address:		
Method of Collection: Interpolation-Map						

Drilling Method: Rotary	Pump Installed: Yes	Pump Installation Only: No
Well Depth: 417.00 ft.	Pump Installation Date:	HP: 1.00
Well Type: New	Manufacturer: F.E. Myers	Pump Type: Submersible
Casing Type: Steel - unknown	Model Number: PEP102	Pump Capacity: 10 GPM
Casing Joint: Welded	Drop Pipe Length: 245.00 ft.	Pump Voltage:
Casing Fitting: Drive shoe	Drop Pipe Diameter:	Drilling Record ID:
Diameter: 6.00 in. to 26.00 ft. depth	Draw Down Seal Used: No	
Borehole: 10.00 in. to 26.00 ft. depth	Pressure Tank Installed: Yes	
	Pressure Tank Type: Unknown	
	Manufacturer: Amtrol	
	Model Number: 250	Tank Capacity: 60.0 Gallons
	Pressure Relief Valve Installed: No	

Static Water Level: 4.00 ft. Below Grade	Formation Description	Thickness	Depth to Bottom
Well Yield Test:	Gravel Clayey	9.00	9.00
Yield Test Method: Unknown	Sandstone	408.00	417.00
Pumping level 220.00 ft. after 1.00 hrs. at 15 GPM			

Screen Installed: No	Intake: Bedrock Well

Well Grouted: Yes	Grouting Method: Unknown		
Grouting Material	Bags	Additives	Depth
Neat cement	9.00	None	5.00 ft. to 26.00 ft.

Wellhead Completion: Pitless adapter	Geology Remarks:

Nearest Source of Possible Contamination:	Drilling Machine Operator Name: PAUL ZIEMNICK
Type	Employment: Unknown
Septic tank	

Distance	Direction
180 ft.	East

Contractor Type: Water Well Drilling Contractor	Reg No: 1677
Business Name: SIIRTOLA WELL DRILLING	
Business Address:	
Water Well Contractor's Certification	
This well was drilled under my supervision and this report is true to the best of my knowledge and belief.	
Signature of Registered Contractor	Date

General Remarks:
Other Remarks:



Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Welllogic 58

Import ID:

Tax No:	Permit No:	County: Houghton	Township: Osceola
Well ID: 31000001290		Town/Range: 55N 33W	Section: 11
		Well Status: Active	WSSN:
Elevation:		Distance and Direction from Road Intersection:	
Latitude: 47.178888		0.5 MILE NORTH OF COUNTRY ROAD 019; 80 FEET EAST OF DOVER ROAD	
Longitude: -88.45603		Well Owner:	
Method of Collection: Interpolation-Map		Well Address:	Owner Address:

Drilling Method: Cable Tool	Pump Installed: Yes	Pump Installation Only: No
Well Depth: 122.00 ft.	Pump Installation Date:	HP: 0.50
Well Type: Unknown	Manufacturer: Burks	Pump Type: Submersible
Casing Type: Unknown	Model Number: 5SN8B	Pump Capacity: 7 GPM
Casing Joint: Welded	Drop Pipe Length: 115.00 ft.	Pump Voltage:
Casing Fitting: Drive shoe	Drop Pipe Diameter:	Drilling Record ID:
Diameter: 5.00 in. to 26.00 ft. depth	Draw Down Seal Used: No	
Borehole:	Pressure Tank Installed: No	
	Pressure Relief Valve Installed: No	

Static Water Level: 15.00 ft. Below Grade	Formation Description	Thickness	Depth to Bottom
Well Yield Test:	Clay Sandy	11.00	11.00
Yield Test Method: Unknown	Unidentified Consolidated Fm	111.00	122.00
Pumping level 115.00 ft. after 1.00 hrs. at 6 GPM			

Screen Installed: No	Intake: Bedrock Well		

Well Grouted: Yes	Grouting Method: Unknown	
Grouting Material	Bags	Depth
Neat cement	0.00	0.00 ft. to 26.00 ft.

Wellhead Completion: Pitless adapter	Geology Remarks:

Nearest Source of Possible Contamination:	Drilling Machine Operator Name:
Type	Employment: Unknown
Septic tank	
Distance	
70 ft.	
Direction	
East	

Abandoned Well Plugged: No	Contractor Type: Water Well Drilling Contractor	Reg No: 1014
	Business Name: VALLEY PLBG & HTG INC	
	Business Address:	

Reason Not Plugged:	Water Well Contractor's Certification
	This well was drilled under my supervision and this report is true to the best of my knowledge and belief.

General Remarks:	Signature of Registered Contractor	Date
Other Remarks:		

Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Wellogig 59

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import ID:
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Tax No: 31-014-362-003-30		Permit No: W0531113		County: Houghton			Township: Torch Lake		
Well ID: 31000001722				Town/Range:	Section:	Well Status:	WSSN:	Source ID/Well No:	
				55N 33W	12	Active			
				Distance and Direction from Road Intersection: 0.75 mile northwest on Hendrickson Road or 21st Street from Hwy M-26 on southwest side					
Elevation:									
Latitude: 47.18338				Well Owner:					
Longitude: -88.43544				Well Address:			Owner Address:		
Method of Collection: GPS Std Positioning Svc SA Off									

Drilling Method: Cable Tool	Pump Installed: Yes	Pump Installation Only: No
Well Depth: 95.00 ft.	Pump Installation Date: 10/22/2005	HP: 0.50
Well Type: New	Manufacturer: Goulds	Pump Type: Submersible
Date Completed: 9/23/2005	Model Number: 10SB05412L	Pump Capacity: 10 GPM
Casing Type: Steel - black	Drop Pipe Length: 81.00 ft.	Pump Voltage:
Height: 2.00 ft. above grade	Drop Pipe Diameter: 1.00 in.	Drilling Record ID:
Casing Joint: Welded	Draw Down Seal Used: No	
Casing Fitting: Drive shoe	Pressure Tank Installed: Yes	
	Pressure Tank Type: Diaphragm/bladder	
Diameter: 6.00 in. to 27.00 ft. depth	Manufacturer: Goulds	
	Model Number: V60	Tank Capacity: 20.0 Gallons
Borehole: 9.00 in. to 27.00 ft. depth	Pressure Relief Valve Installed: Yes	
6.00 in. to 95.00 ft. depth		

Static Water Level: 16.00 ft. Below Grade	<table border="1"> <thead> <tr> <th>Formation Description</th> <th>Thickness</th> <th>Depth to Bottom</th> </tr> </thead> <tbody> <tr> <td>Sand & Stones</td> <td>7.00</td> <td>7.00</td> </tr> <tr> <td>Sandstone Soft Broken</td> <td>2.00</td> <td>9.00</td> </tr> <tr> <td>Sandstone Jacobsville Ss</td> <td>86.00</td> <td>95.00</td> </tr> </tbody> </table>	Formation Description	Thickness	Depth to Bottom	Sand & Stones	7.00	7.00	Sandstone Soft Broken	2.00	9.00	Sandstone Jacobsville Ss	86.00	95.00
Formation Description		Thickness	Depth to Bottom										
Sand & Stones		7.00	7.00										
Sandstone Soft Broken		2.00	9.00										
Sandstone Jacobsville Ss	86.00	95.00											
Well Yield Test: Yield Test Method: Bailor													
Pumping level 95.00 ft. after 1.00 hrs. at 10 GPM													
Pumping level 70.00 ft. after 1.00 hrs. at 8 GPM													
Pumping level 60.00 ft. after 1.00 hrs. at 6 GPM													

[illegible]

Well Grouted: Yes	Grouting Method: Displacement plug					
Grouting Material:	Bags	Additives	Depth			
Neat cement	6.00	None	4.00 ft. to 27.00 ft.	Geology Remarks:		

Wellhead Completion: Pitless adapter, 12 inches above grade	

Nearest Source of Possible Contamination:			Drilling Machine Operator Name: Jeff Eskola
Type	Distance	Direction	Employment: Employee
Fuel tank	65 ft.	West	
Septic tank	85 ft.	West	Contractor Type: Water Well Drilling Contractor Reg No: 2413

Business Name: Keranen & Eskola Well Drilling
Business Address: 55961 Lake Linden Avenue, Laurium, MI, 49913

Water Well Contractor's Certification
 This well was drilled under my supervision and this report is true to the best of my knowledge and belief.

Signature of Registered Contractor _____ Date _____

General Remarks:
Other Remarks:

TAX NO:		MICHIGAN DEPARTMENT OF PUBLIC HEALTH WATER WELL AND PUMP RECORD				PERMIT NO: W 42310159	
1. LOCATION OF WELL		Township Name		Fraction	Section No.	Town No.	Range No.
County Houghton		TORCH LAKE		SE 1/4 NW 1/4 NE 1/4	12	55N	33W
Distance and Direction from Road Intersection 1/3 MILE WEST OF M26 ON LAKEVIEW AND 75 FT NORTH				3. OWNER OF WELL Address _____ Address Same as Well Location <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
Street Address & City of Well Location Locate with 'x' in Section Below				4. WELL DEPTH: 192 ft. Date Completed 11-7-95 <input checked="" type="checkbox"/> New Well <input type="checkbox"/> Replacement Well			
<div style="display: flex; align-items: center;"> <div style="flex: 1;"> </div> <div style="flex: 1;"> <p>Sketch Map</p> </div> </div>				5. <input checked="" type="checkbox"/> Cable Tool <input type="checkbox"/> Rotary <input type="checkbox"/> Driven <input type="checkbox"/> Dug <input type="checkbox"/> Hollow Rod <input type="checkbox"/> Auger/Bored <input type="checkbox"/> Jetted <input type="checkbox"/>			
				6. USE: <input checked="" type="checkbox"/> Household <input type="checkbox"/> Type I Public <input type="checkbox"/> Type III Public <input type="checkbox"/> Irrigation <input type="checkbox"/> Type IIa Public <input type="checkbox"/> Heat Pump <input type="checkbox"/> Test Well <input type="checkbox"/> Type IIb Public <input type="checkbox"/>			
2. FORMATION DESCRIPTION				7. CASING: <input checked="" type="checkbox"/> Steel <input type="checkbox"/> Threaded <input type="checkbox"/> Plastic <input checked="" type="checkbox"/> Welded <input type="checkbox"/> Other _____			
				Height: Above/Below Surface: 2 ft			
THICKNESS OF STRATUM				Diameter: 6 in. to 25 ft. depth			
DEPTH TO BOTTOM OF STRATUM				Weight: 18.97 lbs./ft.			
SANDY CLAY				BORE HOLE: <input checked="" type="checkbox"/> Drive Shoe <input type="checkbox"/> Shale Packer			
SANDSTONE				Diameter: 8 in. to 25 ft. depth			
				6 in. to 192 ft. depth			
				8. SCREEN: <input checked="" type="checkbox"/> Not Installed <input type="checkbox"/> Gravel-Packed			
				Type _____ Diameter _____			
				Slot/Gauze _____ Length: _____			
				Set Between _____ ft. and _____ ft.			
				FITTINGS: <input type="checkbox"/> K-Packer <input type="checkbox"/> Bremer Check			
				<input type="checkbox"/> Blank Above Screen _____ ft. Other _____			
				9. STATIC WATER LEVEL: 135 ft. Below Land Surface <input type="checkbox"/> Flowing			
				10. PUMPING LEVEL: Below Land Surface 180 ft. After 1 hrs. Pumping at 7 G.P.M.			
				<input type="checkbox"/> Plunger <input type="checkbox"/> Bailor <input type="checkbox"/> Air <input checked="" type="checkbox"/> Test Pump			
				11. WELL HEAD COMPLETION: <input checked="" type="checkbox"/> Pitless Adapter <input type="checkbox"/> 12" Above Grade			
				<input type="checkbox"/> Basement Offset <input type="checkbox"/> Well House			
				12. WELL GROUTED? <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes From 0 to 25 ft.			
				<input checked="" type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____			
				No. of Bags 4 Additives _____			
				13. NEAREST SOURCE OF POSSIBLE CONTAMINATION:			
				Type SEPTIC Distance 90 ft. Direction EAST			
				Type _____ Distance _____ ft. Direction _____			
USE A 2ND SHEET IF NEEDED				14. PUMP: <input type="checkbox"/> Not Installed <input type="checkbox"/> Pump Installation Only			
15. ABANDONED WELL PLUGGED? <input type="checkbox"/> Yes <input type="checkbox"/> No				Manufacturer's Name STA-RITE			
Casing Diameter _____ in. Depth _____ ft.				Model Number 10P4D025-02 HP 3/4 Volts 230			
PLUGGING MATERIAL: <input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite Slurry				Length of Drop Pipe 180 ft. Capacity 10 G.P.M.			
<input type="checkbox"/> Cement/Bentonite Slurry <input type="checkbox"/> Concrete Grout <input type="checkbox"/> Bentonite Chips				TYPE: <input checked="" type="checkbox"/> Submersible <input type="checkbox"/> Jet <input type="checkbox"/> Other _____			
No. of Bags _____ Casing Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No				PRESSURE TANK:			
				Manufacturer's Name AMTRUL			
				Model Number 302 Capacity 6 Gallons 20			
16. REMARKS: (Elevation, Source of Data, etc.)				15. WATER WELL CONTRACTOR'S CERTIFICATION:			
				This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.			
				KERANEN WELL & PUMP 31-1722			
				REGISTERED BUSINESS NAME _____ REGISTRATION NO. _____			
				Address RTE. 1 Box 238 CALUMET, MICH. 49913			
				Signed George Keranen Date 3-14-96			
				AUTHORIZED REPRESENTATIVE _____			
17. DRILLING MACHINE OPERATOR:							
<input checked="" type="checkbox"/> Employee <input type="checkbox"/> Subcontractor							
Name G. KERANEN + A. KUTTA							

SW-2-228 9/93

OCT 29 1996

GEOLOGICAL SURVEY COPY

Authority: Act 368 PA 1973
Completion: Required
Penalty: Conviction of a violation of any provision is a misdemeanor.





Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Wellogic

62

Import ID:

Tax No:	Permit No:	County: Houghton		Township: Schoolcraft	
Well ID: 31000002046		Town/Range:	Section:	Well Status:	WSSN:
		55N 32W	8	Active	
		Source ID/Well No:			
Elevation:		Distance and Direction from Road Intersection:			
Latitude: 47.177364		0.4 MILES NORTH OF INTERSECTION OF BOOTJACK ROAD AND RICE LAKE ROAD			
Longitude: -88.390626		Well Owner:			
Method of Collection: GPS Std Positioning Svc SA Off		Well Address:		Owner Address:	

Drilling Method: Rotary	Pump Installed: Yes	Pump Installation Only: No
Well Depth: 73.00 ft.	Pump Installation Date: 10/29/1984	HP: 0.50
Well Type: New	Manufacturer: F.E. Myers	Pump Type: Submersible
Casing Type: Steel - black	Model Number: SJ52-558	Pump Capacity: 8 GPM
Casing Joint: Welded	Drop Pipe Length: 63.00 ft.	Pump Voltage:
Casing Fitting: Drive shoe	Drop Pipe Diameter:	Drilling Record ID:
Diameter: 6.00 in. to 69.50 ft. depth	Draw Down Seal Used: No	
Borehole: 6.00 in. to 73.00 ft. depth	Pressure Tank Installed: Yes	
	Pressure Tank Type: Unknown	
	Manufacturer: Sta-Rite Signature	
	Model Number:	Tank Capacity: 42.0 Gallons
	Pressure Relief Valve Installed: No	
Static Water Level: 0.00 ft. Above Grade (Flowing)		
Well Yield Test:	Yield Test Method: Unknown	
Pumping level 73.00 ft. after 1.00 hrs. at 8 GPM		
Unrestricted Flow Rate:		
Screen Installed: Yes	Filter Packed: No	
Screen Diameter: 6.00 in.	Blank:	
Screen Material Type: Other		
Slot	Length	Set Between
6.00	4.00 ft.	69.00 ft. and 73.00 ft.
Fittings: Other		
Well Grouted: No		
Wellhead Completion: Pitless adapter		
Nearest Source of Possible Contamination:		
Type	Distance	Direction
Septic tank	55 ft.	North
	Geology Remarks:	
	Drilling Machine Operator Name: UNK	
	Employment: Unknown	
	Contractor Type: Water Well Drilling Contractor Reg No: 1677	
	Business Name: SIIRTOLA WELL DRILLING	
	Business Address: RTE 1 BOX 386C, HANCOCK, MI, 49930	
	Water Well Contractor's Certification	
	This well was drilled under my supervision and this report is true to the best of my knowledge and belief.	
	Signature of Registered Contractor	Date

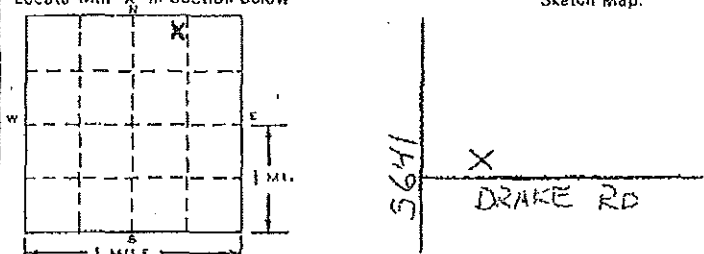
General Remarks:

Other Remarks: Screen Material:JOHNSON STAINLESS, Screen Fittings:LEAD PACKER

WATER WELL AND PUMP RECORD

PERMIT NUMBER

63

1 LOCATION OF WELL		3 OWNER OF WELL:	
County Houghton	Township Name Schoolcraft	Fraction NE 1/4 NW 1/4	Section Number 8
Distance And Direction From Road Intersection NE corner of intersect of 5641 and Drake Rd.		Town Number 55 N/S	
Street Address & City of Well Location Boottjack Rd.		Range Number 32 E/W	
Locate with "X" in Section Below 		Address Address Same As Well Location? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
		4 WELL DEPTH: Date Completed 222 ft. 10/28/90 <input checked="" type="checkbox"/> New Well <input type="checkbox"/> Replacement Well	
		5 <input type="checkbox"/> Cable tool <input checked="" type="checkbox"/> Rotary <input type="checkbox"/> Driven <input type="checkbox"/> Dug <input type="checkbox"/> Hollow rod <input type="checkbox"/> Auger <input type="checkbox"/> Jetted <input type="checkbox"/>	
		6 USE: <input checked="" type="checkbox"/> Domestic <input type="checkbox"/> Type I Public <input type="checkbox"/> Type III Public <input type="checkbox"/> Irrigation <input type="checkbox"/> Type IIa Public <input type="checkbox"/> Heat pump <input type="checkbox"/> Test Well <input type="checkbox"/> Type IIb Public <input type="checkbox"/>	
		7 CASING: <input checked="" type="checkbox"/> Steel <input type="checkbox"/> Threaded <input type="checkbox"/> Welded <input type="checkbox"/> Plastic <input type="checkbox"/> Height Above Surface 1.5 ft. 6 in to 119 ft. depth Weight 18.97 lbs./ft. Grouted Drill Hole Diameter <input checked="" type="checkbox"/> Drive Shoe <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
2 FORMATION DESCRIPTION		8 SCREEN: <input checked="" type="checkbox"/> Not Installed Type _____ Diameter _____ Slot/Gauze _____ Length _____ Set between _____ ft. and _____ ft. FITTINGS: <input type="checkbox"/> K-Packer <input type="checkbox"/> Lead Packer <input type="checkbox"/> Bremer Check <input type="checkbox"/> Blank above screen _____ ft. Other _____	
		9 STATIC WATER LEVEL: 3 ft. below land surface <input type="checkbox"/> Flow	
		10 PUMPING LEVEL: below land surface 222 ft. after 1 hrs. pumping at 10 G.P.M. _____ ft. after _____ hrs. pumping at _____ G.P.M.	
		11 WELL HEAD COMPLETION: <input checked="" type="checkbox"/> Pitless adapter <input type="checkbox"/> 12" above grade <input type="checkbox"/> Basement offset <input type="checkbox"/> Approved pit	
		12 WELL GROUTED? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes From _____ to _____ ft. <input type="checkbox"/> Neat cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____ No. of bags of cement _____ Additives _____	
		13 Nearest source of possible contamination Type septic Distance 55 ft. Direction W Well disinfected upon completion? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Was old well plugged? <input type="checkbox"/> Yes <input type="checkbox"/> No	
14 PUMP: <input type="checkbox"/> Not installed <input type="checkbox"/> Pump Installation Only Manufacturer's name Myers Model number S2J72 HP 3/4 Volts 230 Length of Drop Pipe 189 ft. capacity 11 G.P.M. TYPE: <input checked="" type="checkbox"/> Submersible <input type="checkbox"/> Jet PRESSURE TANK: Manufacturer's name Amtrol Model number 202 Capacity 30 Gallons		15. Remarks, elevation, source of data, etc.	
		16. WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief. Siirtola Well Drilling Inc. 1677 REGISTERED BUSINESS NAME REGISTRATION NO. Address Rte. 1, Box 386C, Hancock MI 49930 Signed Clem Junt Date 6 NOV 90 AUTHORIZED REPRESENTATIVE	
		17. Rig Operator's Name: Paul Ziemnick	



Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Welllogic 64

Import ID:

Tax No:	Permit No:	County: Houghton	Township: Schoolcraft			
Well ID: 31000001260		Town/Range: 55N 32W	Section: 9	Well Status: Active	WSSN:	Source ID/Well No:
Elevation:		Distance and Direction from Road Intersection: 2 MILES ALONG BOOTJACK ROAD FROM LAKE LINDEN; THEN 1 MILE EAST ALONG RICE LAKE ROAD				
Latitude: 47.171117		Well Owner:				
Longitude: -88.372242		Well Address:				
Method of Collection: Interpolation-Map		Owner Address:				

Drilling Method: Cable Tool	Pump Installed: Yes	Pump Installation Only: No	
Well Depth: 80.00 ft.	Pump Installation Date:	HP: 0.50	
Well Type: Unknown	Manufacturer: F.E. Myers	Pump Type: Submersible	
Casing Type: Unknown	Model Number: SC52-5A	Pump Capacity:	
Casing Joint: Threaded & coupled	Drop Pipe Length: 45.00 ft.	Pump Voltage:	
Casing Fitting: Drive shoe	Drop Pipe Diameter:	Drilling Record ID:	
Diameter: 6.00 in. to 32.00 ft. depth	Draw Down Seal Used: No		
Borehole:	Pressure Tank Installed: No		
	Pressure Relief Valve Installed: No		
Static Water Level: 20.00 ft. Below Grade	Formation Description	Thickness	Depth to Bottom
Well Yield Test:	Sand Clayey	12.00	12.00
Yield Test Method: Unknown	Clay	4.00	16.00
Pumping level 38.00 ft. after 1.00 hrs. at 12 GPM	Sandstone	64.00	80.00
Screen Installed: No			
Intake: Bedrock Well			
Well Grouted: No			
Wellhead Completion: Pitless adapter			
Nearest Source of Possible Contamination:	Drilling Machine Operator Name:		
Type	Employment: Unknown		
Septic tank			
Distance			
65 ft.			
Direction			
East			
Abandoned Well Plugged: No	Contractor Type: Water Well Drilling Contractor	Reg No: 0154	
	Business Name: SIIRTOLA WELL DRILLING		
Reason Not Plugged:	Business Address:		
	Water Well Contractor's Certification		
	This well was drilled under my supervision and this report is true to the best of my knowledge and belief.		
	Signature of Registered Contractor	Date	
General Remarks:			
Other Remarks:			



Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Welllogic 65

Import ID:

Tax No:	Permit No: W0831095	County: Houghton	Township: Schoolcraft
Well ID: 31000002029 Elevation: 719 ft. Latitude: 47.17687 Longitude: -88.38177 Method of Collection: GPS Std Positioning Svc SA Off		Town/Range: 55N 32W	Section: 9
		Well Status: Active	WSSN:
		Source ID/Well No:	
		Distance and Direction from Road Intersection: 29030 rheault rd.	
Well Owner:		Owner Address:	
Well Address:			

Drilling Method: Rotary	Pump Installed: Yes	Pump Installation Only: No
Well Depth: 200.00 ft.	Pump Installation Date: 8/12/2008	HP: 0.50
Well Type: Replacement	Manufacturer: McDermott	Pump Type: Submersible
Casing Type: Steel - black	Model Number: pep2w72ba-	Pump Capacity: 12 GPM
Height: 1.00 ft. above grade	Drop Pipe Length: 161.00 ft.	Pump Voltage:
Casing Joint: Welded	Drop Pipe Diameter: 1.00 in.	Drilling Record ID:
Casing Fitting: Drive shoe, Centralizer	Draw Down Seal Used: No	
Diameter: 6.00 in. to 39.00 ft. depth	Pressure Tank Installed: Yes	
	Pressure Tank Type: Diaphragm/bladder	
	Manufacturer: Amtrol	
Borehole: 10.00 in. to 39.00 ft. depth	Model Number: wx-203	Tank Capacity: 32.0 Gallons
6.00 in. to 200.00 ft. depth	Pressure Relief Valve Installed: Yes	

Static Water Level: 82.00 ft. Below Grade	Formation Description	Thickness	Depth to Bottom
Well Yield Test: Yield Test Method: Test pump	Silt & Sand	4.00	4.00
Pumping level 17.50 ft. after 1.00 hrs. at 14 GPM	Clay & Silt	6.00	10.00
	Silt Sand Gravel	5.00	15.00
Screen Installed: No	Clay Gravel Sand	11.00	26.00
Intake: Bedrock Well	Sandstone	174.00	200.00

Well Grouted: Yes	Grouting Method: Grout pipe outside casing
Grouting Material	Bags Additives Depth
Neat cement	11.00 None 3.00 ft. to 39.00 ft.
Wellhead Completion: Pitless adapter, 12 inches above grade	
Geology Remarks:	

Nearest Source of Possible Contamination:	Drilling Machine Operator Name: Steven Larson
Type Distance Direction	Employment: Subcontractor
Septic tank 150 ft. West.	
Abandoned Well Plugged: Yes	Contractor Type: Water Well Drilling Contractor Reg No: 1779
	Business Name: Larson Well Drilling LLC
	Business Address: 18034 second sand beach rd, L'Anse, MI, 49946
	Water Well Contractor's Certification
	This well was drilled under my supervision and this report is true to the best of my knowledge and belief.
Casing Diameter: 6 in.	Casing Removed: No
Plugging Material: Neat cement	
No. of Bags: 30.00	Well Depth: 180 ft.
Signature of Registered Contractor Date	

General Remarks:
Other Remarks:



Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Wellogic 66

Import ID:

Tax No: 31-012-060-017-30		Permit No: W0531052		County: Houghton		Township: Schoolcraft			
Well ID: 310000001683				Town/Range: 55N 32W	Section: 10	Well Status: Active	WSSN:	Source ID/Well No:	
				Distance and Direction from Road Intersection: 0.1 mile west of Post Road on Rice Lake Road (S23) and 400 feet north					
Elevation:				Well Owner:					
Latitude: 47.1721				Well Address:					Owner Address:
Longitude: -88.34528									
Method of Collection: GPS Std Positioning Svc SA Off									

Drilling Method: Cable Tool				Pump installed: No				
Well Depth: 148.00 ft.		Well Use: Household		Pressure Tank installed: No				
Well Type: Replacement		Date Completed: 6/7/2005		Pressure Relief Valve installed: No				
Casing Type: Steel - black		Height: 2.00 ft. above grade						
Casing Joint: Welded								
Casing Fitting: Drive shoe								
Diameter: 6.00 in. to 25.00 ft. depth								
Borehole: 9.00 in. to 25.00 ft. depth								
6.00 in. to 148.00 ft. depth								
Static Water Level: 42.00 ft. Below Grade				Formation Description		Thickness	Depth to Bottom	
Well Yield Test:				Yield Test Method: Bailer				
Pumping level 146.00 ft. after 1.00 hrs. at 0 GPM				Topsoil		2.00	2.00	
Screen installed: No Intake: Bedrock Well				Clay		8.00	10.00	
				Clay & Gravel Sandy		3.00	13.00	
				Clay		2.00	15.00	
				Sandstone Soft		1.50	16.50	
				Sandstone		131.50	148.00	
Well Grouted: Yes Grouting Method: Displacement plug				Geology Remarks:				
Grouting Material		Bags	Additives					Depth
Neat cement		4.00	None					4.00 ft. to 25.00 ft.
Wellhead Completion: 12 inches above grade								
Nearest Source of Possible Contamination:				Drilling Machine Operator Name: Jeff Eskola				
Type	Distance	Direction		Employment: Employee				
Drainfield/Dry well	140 ft.	East-Southeast		Contractor Type: Water Well Drilling Contractor Reg No: 2413				
Septic tank	140 ft.	East-Southeast		Business Name: Keranen & Eskola Well Drilling				
Abandoned Well Plugged: No				Business Address: 55961 Lake Linden Avenue, Laurium, MI, 49913				
Reason Not Plugged: Well still in use for non-drinking water purposes				Water Well Contractor's Certification				
				This well was drilled under my supervision and this report is true to the best of my knowledge and belief.				
				Signature of Registered Contractor Date				
General Remarks: Well produces 12 gallons per hour								
Other Remarks:								



Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Welllogix 68

Import ID:

Tax No:	Permit No:	County: Houghton	Township: Schoolcraft			
Well ID: 31000001198		Town/Range: 55N 32W	Section: 11	Well Status: Active	WSSN:	Source ID/Well No:
Elevation:		Distance and Direction from Road Intersection: NORTHEAST CORNER OF INTERSECT OF POST ROAD AND RICE LAKE ROAD				
Latitude: 47.171282		Well Owner:				
Longitude: -88.340433		Well Address:		Owner Address:		
Method of Collection: Interpolation-Map						

Drilling Method: Rotary	Pump Installed: Yes	Pump Installation Only: No
Well Depth: 222.00 ft.	Pump Installation Date:	HP: 0.50
Well Type: New	Manufacturer: F.E. Myers	Pump Type: Submersible
Casing Type: Steel - unknown	Model Number: 2J52-12	Pump Capacity: 12 GPM
Casing Joint: Welded	Drop Pipe Length: 164.00 ft.	Pump Voltage:
Casing Fitting: Drive shoe	Drop Pipe Diameter:	Drilling Record ID:
Diameter: 6.00 in. to 29.50 ft. depth	Draw Down Seal Used: No	
Borehole:	Pressure Tank Installed: Yes	
	Pressure Tank Type: Unknown	
	Manufacturer: Amtrol	
	Model Number: 202	Tank Capacity: 30.0 Gallons
	Pressure Relief Valve Installed: No	

Static Water Level: 12.00 ft. Below Grade	Formation Description	Thickness	Depth to Bottom
Well Yield Test:	Clay Sandy	29.50	29.50
Yield Test Method: Unknown	Sandstone	192.50	222.00
Pumping level 222.00 ft. after 1.00 hrs. at 2 GPM			

Screen Installed: No	Intake: Bedrock Well

Well Grouted: No	
------------------	--

Wellhead Completion: Pitless adapter	Geology Remarks:

Nearest Source of Possible Contamination:	Drilling Machine Operator Name: PAUL ZIEMNICK
Type	Employment: Unknown
Septic tank	

Distance	Direction	Contractor Type: Water Well Drilling Contractor	Reg No: 1677
110 ft.	South	Business Name: SIIRTOLA WELL DRILLING	
		Business Address:	

Water Well Contractor's Certification	
This well was drilled under my supervision and this report is true to the best of my knowledge and belief.	
Signature of Registered Contractor	Date

General Remarks:
Other Remarks:

Wellogig 60

Import ID:

Failure to comply is a misdemeanor.

Tax No: 31-012-061-002-00		Permit No: W0531129		County: Houghton		Township: Schoolcraft		
Well ID: 31000001908				Town/Range:	Section:	Well Status:	WSSN:	Source ID/Well No:
				55N 32W	11	Active		
				Distance and Direction from Road Intersection: 0.5 mile south of Camp 4 Road on Post Road on south side				
Elevation:				Well Owner:				
Latitude: 47.18482				Well Address:		Owner Address:		
Longitude: -88.33557								
Method of Collection: GPS Std Positioning Svc SA Off								

Drilling Method: Cable Tool	Pump Installed: Yes	Pump Installation Only: No
Well Depth: 64.00 ft.	Pump Installation Date: 10/31/2006	HP: 0.50
Well Type: New	Manufacturer: Goulds	Pump Type: Submersible
Date Completed: 10/31/2006	Model Number: 10SB05422	Pump Capacity: 10 GPM
Casing Type: Steel - black	Drop Pipe Length: 51.00 ft.	Pump Voltage:
Casing Joint: Welded	Drop Pipe Diameter: 1.00 in.	Drilling Record ID:
Casing Fitting: Drive shoe	Draw Down Seal Used: No	
Diameter: 6.00 in. to 25.00 ft. depth	Pressure Tank Installed: No	
	Pressure Relief Valve Installed: No	
Borehole: 9.00 in. to 25.00 ft. depth		
6.00 in. to 64.00 ft. depth		

Static Water Level: 12.00 ft. Below Grade Well Yield Test: Yield Test Method: Baller Pumping level 53.00 ft. after 1.00 hrs. at 10 GPM	Formation Description	Thickness	Depth to Bottom
	Topsoil	1.00	1.00
	Red Clay	8.00	9.00
	Sandstone Soft W/Clay	4.00	13.00
	Sandstone Jacobsville Ss	51.00	64.00
Screen Installed: No Intake: Bedrock Well			

[illegible]

Well Grouted: Yes	Grouting Method: Displacement plug					
Grouting Material	Bags	Additives	Depth			
Neat cement	6.00	None	4.00 ft. to 25.00 ft.	Geology Remarks:		

Wellhead Completion:	Pitless adapter, 12 inches above grade

Nearest Source of Possible Contamination:			Drilling Machine Operator Name: Kevin Keranen	
Type	Distance	Direction	Employment: Employee	
Septic tank	100 ft.	Southeast		
Drainfield/Dry well	110 ft.	Southeast	Contractor Type: Water Well Drilling Contractor Reg No: 2413	

	Business Name: Keranen & Eskola Well Drilling Business Address: 55961 Lake Linden Avenue, Laurium, MI, 49913
--	---

Water Well Contractor's Certification
 This well was drilled under my supervision and this report is true to the best of my knowledge and belief.

Signature of Registered Contractor _____ Date _____

General Remarks:

Other Remarks:

Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Wellogig 70

Import ID:

Tax No:	Permit No: W9931003	County: Houghton			Township: Osceola	
Well ID: 31000001211		Town/Range:	Section:	Well Status:	WSSN:	Source ID/Well No:
		55N 33W	15	Active		
		Distance and Direction from Road Intersection:				
		500 FEET SOUTH OF SUNELU ROAD				
Elevation:						
Latitude: 47.17002		Well Owner:				
Longitude: -88.472852		Well Address:			Owner Address:	
Method of Collection: Interpolation-Map						

Drilling Method: Cable Tool	Pump Installed: Yes	Pump Installation Only: No
Well Depth: 90.00 ft.	Pump Installation Date:	HP: 0.50
Well Type: New	Manufacturer: Sta-Rite	Pump Type: Submersible
Well Use: Household	Model Number: LOP4C025-0	Pump Capacity: 10 GPM
Date Completed: 12/4/1999	Drop Pipe Length: 80.00 ft.	Pump Voltage:
Casing Type: Steel - unknown	Drop Pipe Diameter:	Drilling Record ID:
Height: 2.00 ft. above grade	Draw Down Seal Used: No	
Casing Joint: Welded	Pressure Tank Installed: Yes	
Casing Fitting: Drive shoe	Pressure Tank Type: Unknown	
	Manufacturer: A.O. Smith	
Diameter: 6.00 in. to 25.00 ft. depth	Model Number: V-80	Tank Capacity: 8.0 Gallons
	Pressure Relief Valve Installed: No	
Borehole: 9.00 in. to 25.00 ft. depth		
6.00 in. to 90.00 ft. depth		

Static Water Level: 8.00 ft. Below Grade Well Yield Test: Yield Test Method: Test pump Pumping level 80.00 ft. after 1.00 hrs. at 12 GPM	Formation Description	Thickness	Depth to Bottom
	Clay & Stones	4.00	4.00
	Clay Sandy Hard	3.00	7.00
	Sandstone Soft Hard	1.00	8.00
Screen Installed: No Intake: Bedrock Well	Hardpan	82.00	90.00

[illegible]

Well Grouted: Yes	Grouting Method: Unknown					
Grouting Material	Bags	Additives	Depth			
Neat cement	5.00	None	0.00 ft. to 25.00 ft.	Geology Remarks:		

Wellhead Completion:	Pitless adapter

Nearest Source of Possible Contamination:			Drilling Machine Operator Name: JEFF ESKOLA
Type	Distance	Direction	Employment: Employee
Septic tank	53 ft.	North	
Septic tank	50 ft.	West	Contractor Type: Water Well Drilling Contractor Reg No: 1722

Business Name: KERANEN WELL & PUMP
Business Address:

	Water Well Contractor's Certification This well was drilled under my supervision and this report is true to the best of my knowledge and belief.
Signature of Registered Contractor	Date

General Remarks:

Other Remarks:

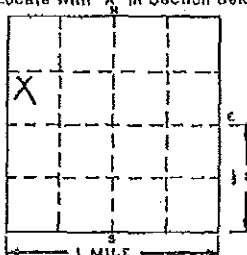
GEOLOGICAL SURVEY NO.

MICHIGAN DEPARTMENT OF PUBLIC HEALTH

WATER WELL AND PUMP RECORD

PERMIT NUMBER

72

1 LOCATION OF WELL		County Houghton		Township Name Franklin		Fraction NW 1/4 SW 1/4 NW 1/4		Section Number 14		Town Number 55 N/S		Range Number 3 E/W	
Distance And Direction From Road Intersection 1 1/2 miles off U.S. 41 on Pontiac Rd., 1/2 mile off Pontiac Rd. on Lake Anne Crosscut				3 OWNER OF WELL: Address _____ Address Same As Well Location? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No									
Street Address & City of Well Location Lake Anne Crosscut				4 WELL DEPTH: 40 ft. Date Completed MO. 7 DAY 7 YEAR 1992 <input checked="" type="checkbox"/> New Well <input type="checkbox"/> Replacement Well									
Locate with "X" in Section Below				5 <input checked="" type="checkbox"/> Cable tool <input type="checkbox"/> Rotary <input type="checkbox"/> Driven <input type="checkbox"/> Dug <input type="checkbox"/> Hollow rod <input type="checkbox"/> Auger <input type="checkbox"/> Jetted									
Sketch Map: 				6 USE: <input checked="" type="checkbox"/> Domestic <input type="checkbox"/> Type I Public <input type="checkbox"/> Type III Public <input type="checkbox"/> Irrigation <input type="checkbox"/> Type IIa Public <input type="checkbox"/> Heat pump <input type="checkbox"/> Test Well <input type="checkbox"/> Type IIb Public									
2 FORMATION DESCRIPTION				THICKNESS OF STRATUM		DEPTH TO BOTTOM OF STRATUM		7 CASING: Diameter 6 in. to 40 ft. depth <input type="checkbox"/> Steel <input checked="" type="checkbox"/> Plastic <input checked="" type="checkbox"/> Welded Height: Above/Below Surface 1 ft. Weight 14.9 lbs./ft. Drive Shoe <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No					
Sandy Clay S.lts Blders				16'				8 SCREEN: <input type="checkbox"/> Not installed Type Telescoping Diameter 6" Slot/Gauze 10 Length 3' Set between 40 ft. and 37 ft. FITTINGS: <input checked="" type="checkbox"/> X-Packer <input type="checkbox"/> Lead Packer <input type="checkbox"/> Bromer Check <input type="checkbox"/> Blank above screen _____ ft. Other _____					
Gravel Sand Clay				15'		31'		9 STATIC WATER LEVEL: 18 ft. below land surface <input type="checkbox"/> Flow					
Sand (Fine)				9'		40'		10 PUMPING LEVEL: below land surface 36 ft. after 2.1 hrs. pumping at 10 G.P.M. _____ ft. after _____ hrs. pumping at _____ G.P.M.					
								11 WELL HEAD COMPLETION: <input checked="" type="checkbox"/> Pileless adapter <input checked="" type="checkbox"/> 12" above grade <input type="checkbox"/> Basement offset <input type="checkbox"/> Approved pit					
								12 WELL GROUTED? <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes From _____ to _____ ft. <input type="checkbox"/> Neat cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____ No. of bags of cement _____ Additives _____					
								13 Nearest source of possible contamination Type _____ Distance _____ ft. Direction _____ Well disinfected upon completion? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Was old well plugged? <input type="checkbox"/> Yes <input type="checkbox"/> No					
								14 PUMP: <input checked="" type="checkbox"/> Not installed <input type="checkbox"/> Pump installation Only Manufacturer's name _____ Model number _____ HP _____ Volts _____ Length of Drop Pipe _____ ft. capacity _____ G.P.M. TYPE: <input type="checkbox"/> Submersible <input type="checkbox"/> Jet PRESSURE TANK: Manufacturer's name _____ Model number _____ Capacity _____ Gallons					
15. Remarks, elevation, source of data, etc.				16. WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief. DIST. 3 OF 3 KARVAKHO WELL DRILLING 31-1888 REGISTERED BUSINESS NAME KARVAKHO WELL DRILLING REGISTRATION NO. 265-H Address: Box 265-H CHASSSELL Signature: [Signature] Date: 11-20-92 AUTHORIZED REPRESENTATIVE									
17. Rig Operator's Name: Stephen Karvakhko				18. Authority: <input checked="" type="checkbox"/> Completion Required <input type="checkbox"/> Penalty: <input type="checkbox"/> Act 368 PA 1978 Conviction of a violation of any provision is a misdemeanor.									

D67d 2/89

GEOLOGICAL SURVEY COPY

73

WATER WELL RECORD

ACT 294 PA 1985

 MICHIGAN DEPARTMENT
OF
PUBLIC HEALTH

1 LOCATION OF WELL			3 OWNER OF WELL		
County	Township Name	Fraction	Section Number	Town Number	Range Number
Houghton	Osceola	NE 1/4 SW 1/4 SW 1/4	13	55 N/6	33 E/W
Distance And Direction from Road Intersections 1/4 MILE SW OF M-26 ON THE TAMARACK TAILINGS.			Address		
Street address & City of Well Location Locate with "X" in section below			4 WELL DEPTH: (completed) Date of Completion		
			208 ft. 6/29/79 5 <input checked="" type="checkbox"/> Cable tool <input type="checkbox"/> Rotary <input type="checkbox"/> Driven <input type="checkbox"/> Dug <input type="checkbox"/> Hollow rod <input type="checkbox"/> Jetted <input type="checkbox"/> Bored <input type="checkbox"/>		
Sketch Map:			6 USE: <input checked="" type="checkbox"/> Domestic <input type="checkbox"/> Public Supply <input type="checkbox"/> Industry <input checked="" type="checkbox"/> Irrigation <input type="checkbox"/> Air Conditioning <input type="checkbox"/> Commercial <input type="checkbox"/> Test Well <input type="checkbox"/>		
2 FORMATION			7 CASING: Threaded <input checked="" type="checkbox"/> Welded <input type="checkbox"/> Height: Above/Below		
	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM	Diam.		
FINE GRAY TAILING	130	130	5 in. to 205 ft. Depth		
DARK BROWN CLAY	6	136	Weight 14.8 lbs./ft.		
RED STICKY CLAY	4	140	Drive Shou? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
FINE CLAYEY SAND	64	204	8 SCREEN:		
FINE SAND	1	205	Type: STAINLESS Dia.: 5" TELESCOPE		
MEDIUM SAND	3	208	Slot/Gauze 12 SLOT Length 36"		
RED CLAY	1	209	Set between 208 ft. and 205 ft.		
			Fittings: BAIL BOTTOM, LEAD PACKER		
			9 STATIC WATER LEVEL		
			15 ft. below land surface		
			10 PUMPING LEVEL below land surface		
			55 ft. after 2 hrs. pumping 15 g.p.m.		
			ft. after hrs. pumping g.p.m.		
			11 WATER QUALITY in Parts Per Million: UNKNOWN		
			Iron (Fe) Chlorides (Cl)		
			Hardness Other		
			12 WELL HEAD COMPLETION: <input type="checkbox"/> In Approved Pit		
			<input checked="" type="checkbox"/> Pitless Adaptor <input type="checkbox"/> 12" Above Grade		
			13 Well Grouted? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
			<input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/>		
			Depth: From ft. to ft.		
			14 Nearest Source of possible contamination		
			60 feet EAST Direction LAGOON Type		
			Well disinfected upon completion <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
			15 PUMP: <input type="checkbox"/> Not installed		
			Manufacturer's Name RED JACKET		
			Model Number 8CC HP 1 Volts 480		
			Length of Drop Pipe 84 ft. capacity 20 G.P.M.		
			Type: <input checked="" type="checkbox"/> Submersible		
			<input type="checkbox"/> Jet <input type="checkbox"/> Reciprocating		
16 Remarks, elevation, source of data, etc.			17 WATER WELL CONTRACTOR'S CERTIFICATION:		
			This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.		
			VALLEY PLBG & Htg., Inc. 1722-31		
			REGISTERED BUSINESS NAME REGISTRATION NO.		
			Address POB 458, DOLLAR BAY, MI 49922		
			Signed <i>Earl S. Ingberg</i> Date 7/6/79		
			AUTHORIZED REPRESENTATIVE		



Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Welllogic 74

Import ID:

Tax No:	Permit No:	County: Houghton	Township: Torch Lake			
Well ID: 31000001253		Town/Range: 55N 32W	Section: 18	Well Status: Active	WSSN:	Source ID/Well No:
Elevation:		Distance and Direction from Road Intersection:				
Latitude: 47.156547		0.3 MILE NORTH OF INTERSECT OF MUD LAKE ROAD AND BOOTJACK ROAD; THEN 0.5 MILE WEST				
Longitude: -88.405495		Well Owner:				
Method of Collection: Interpolation-Map		Well Address: Owner Address:				

Drilling Method: Rotary	Pump Installed: Yes	Pump Installation Only: No
Well Depth: 182.00 ft.	Pump Installation Date:	HP: 0.50
Well Type: New	Manufacturer: Red Jacket	Pump Type: Submersible
Casing Type: Steel - unknown	Model Number: CN59BC	Pump Capacity: 10 GPM
Casing Joint: Welded	Drop Pipe Length: 169.00 ft.	Pump Voltage:
Casing Fitting: Drive shoe	Drop Pipe Diameter:	Drilling Record ID:
Diameter: 6.00 in. to 136.00 ft. depth	Draw Down Seal Used: No	
Borehole:	Pressure Tank Installed: Yes	
	Pressure Tank Type: Unknown	
	Manufacturer: Amtrol	
	Model Number: 202	Tank Capacity: 30.0 Gallons
	Pressure Relief Valve Installed: No	

Static Water Level: Above Grade (Flowing)	Formation Description	Thickness	Depth to Bottom
Well Yield Test: Yield Test Method: Unknown	Sand	10.00	10.00
Pumping level 182.00 ft. after 1.00 hrs. at 5 GPM	Sand Clayey	120.00	130.00
	Sand & Gravel Clayey	6.00	136.00
	Sandstone	46.00	182.00

Unrestricted Flow Rate:	
Screen Installed: No	Intake: Bedrock Well

Well Grouted: Yes	Grouting Method: Unknown		
Grouting Material	Bags	Additives	Depth
Bentonite slurry	0.00	None	
Geology Remarks:			
Wellhead Completion: Pitless adapter			

Nearest Source of Possible Contamination:	Drilling Machine Operator Name: PAUL ZIEMNICK
Type	Employment: Unknown
Septic tank	
Distance	Contractor Type: Water Well Drilling Contractor
60 ft.	Reg No: 1677
Direction	Business Name: SIIRTOLA WELL DRILLING
Northwest	Business Address:
	Water Well Contractor's Certification
	This well was drilled under my supervision and this report is true to the best of my knowledge and belief.
	Signature of Registered Contractor
	Date

General Remarks:
Other Remarks:

Wellogig 75

Import ID:

Failure to comply is a misdemeanor.

Tax No:	Permit No: 2704	County: Houghton			Township: Torch Lake	
<p>Well ID: 31000001271</p> <p>Elevation:</p> <p>Latitude: 47.156654</p> <p>Longitude: -88.405164</p> <p>Method of Collection: Interpolation-Map</p>		Town/Range:	Section:	Well Status:	WSSN:	Source ID/Well No:
		55N 32W	18	Active		
		Distance and Direction from Road Intersection:				
		3.5 MILES SOUTH OF LAKE LINDEN ON BOOTJACK ROAD; 0.6 MILE WEST ON BONNHI ROAD AND 0.1 MILE NORTH				
		Well Owner:				
		Well Address:			Owner Address:	

Drilling Method: Cable Tool	Pump Installed: Yes	Pump Installation Only: No
Well Depth: 150.00 ft.	Pump Installation Date:	HP: 0.50
Well Type: New	Manufacturer: Sta-Rite	Pump Type: Submersible
Well Use: Household	Model Number: 10P4S02T-0	Pump Capacity: 10 GPM
Date Completed: 10/17/1994	Drop Pipe Length: 60.00 ft.	Pump Voltage:
Casing Type: Steel - unknown	Drop Pipe Diameter:	Drilling Record ID:
Height: 2.00 ft. above grade	Draw Down Seal Used: No	
Casing Joint: Welded	Pressure Tank Installed: Yes	
Casing Fitting: Drive shoe	Pressure Tank Type: Unknown	
	Manufacturer: Amtrol	
Diameter: 6.00 in. to 138.00 ft. depth	Model Number: 203	Tank Capacity: 12.0 Gallons
	Pressure Relief Valve Installed: No	
Borehole: 6.00 in. to 150.00 ft. depth		

Static Water Level: Above Grade (Flowing) Well Yield Test: Yield Test Method: Test pump Pumping level 47.00 ft. after 1.00 hrs. at 15 GPM		Formation Description	Thickness	Depth to Bottom
Unrestricted Flow Rate: Screen Installed: No Intake: Bedrock Well		Sand	10.00	10.00
		Clay & Gravel Sandy	30.00	40.00
		Clay & Sand	9.00	49.00
		Clay Sandy	23.00	72.00
		Clay & Gravel Sandy	21.00	93.00
		Clay Sand Gravel	7.00	100.00
		Clay Sandy	10.00	110.00
		Clay & Gravel Sandy	27.00	137.00
		Sandstone Soft	1.00	138.00
		See Comments	12.00	150.00
Well Grouted: Yes Grouting Method: Unknown				

Well Grouted: Yes	Grouting Method: Unknown			
Grouting Material	Bags	Additives	Depth	Geology Remarks: JACOBSTOWN SANDSTONE
Bentonite dry granular	4.00	None		

Wellhead Completion: Pitless adapter	
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Nearest Source of Possible Contamination:			Drilling Machine Operator Name: GEORGE KERANEN
Type	Distance	Direction	Employment: Unknown
Septic tank	64 ft.	East	

	Contractor Type: Water Well Drilling Contractor	Reg No: 1722
	Business Name: KERANEN WELL & PUMP	
	Business Address:	

Water Well Contractor's Certification	
This well was drilled under my supervision and this report is true to the best of my knowledge and belief.	
Signature of Registered Contractor	Date

General Remarks:

Other Remarks:



Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Welllogic 77

Import ID:

Tax No:	Permit No: W0231078	County: Houghton	Township: Torch Lake
Well ID: 31000000603		Town/Range: 55N 32W	Section: 17
		Well Status: Active	WSSN:
Elevation:		Distance and Direction from Road Intersection:	
Latitude: 47.160396		Lot #33 on Bluewater Drive off of the Bootjack Road, #28135	
Longitude: -88.3996324		Well Owner:	
Method of Collection: Address Matching-Street Centerline		Well Address:	Owner Address:

Drilling Method: Cable Tool	Pump Installed: Yes	Pump Installation Only: No
Well Depth: 97.00 ft.	Pump Installation Date: 7/2/2002	HP: 0.50
Well Type: New	Manufacturer: Goulds	Pump Type: Submersible
Casing Type: Steel - black	Model Number: 10SB05412L	Pump Capacity: 10 GPM
Casing Joint: Welded	Drop Pipe Length: 91.00 ft.	Pump Voltage:
Casing Fitting: Drive shoe	Drop Pipe Diameter: 1.00 in.	Drilling Record ID:
Diameter: 6.00 in. to 93.00 ft. depth	Draw Down Seal Used: No	
Borehole: 6.00 in. to 97.00 ft. depth	Pressure Tank Installed: Yes	
	Pressure Tank Type: Diaphragm/bladder	
	Manufacturer: Other	
	Model Number: CA 4202	Tank Capacity: 20.0 Gallons
	Pressure Relief Valve Installed: No	

Static Water Level: 5.00 ft. Below Grade	Formation Description	Thickness	Depth to Bottom
Well Yield Test:			
Pumping level 90.00 ft. after 2.00 hrs. at 3 GPM			
	Topsail	1.00	1.00
	Clay & Sand	2.00	3.00
	Clay Sandy	14.00	17.00
	Gravel & Boulders	8.00	25.00
	Clay & Gravel Sandy	58.00	83.00
	Sand & Gravel	14.00	97.00

Screen Installed: Yes	Filter Packed: No
Screen Diameter: 5.00 in.	Blank:
Screen Material Type: Stainless steel-wire wrapped	
Slot Length Set Between	
12.00 4.00 ft. 93.00 ft. and 97.00 ft.	
Fittings: Neoprene packer	

Well Grouted: Yes	Grouting Method: Driven/dry grout
Grouting Material	Bags Additives Depth
Bentonite dry granular	5.00 None 0.00 ft. to 93.00 ft.

Wellhead Completion: Pitless adapter, 12 inches above grade

Nearest Source of Possible Contamination:	Drilling Machine Operator Name: Ted Keranen
Type Distance Direction	Employment: Employee
Septic tank 60 ft. Northeast	

Contractor Type: Water Well Drilling Contractor	Reg No: 1722
Business Name: Keranen Well & Pump, Inc.	
Business Address: 31005 Township Park Road, Calumet	

Water Well Contractor's Certification	
This well was drilled under my supervision and this report is true to the best of my knowledge and belief.	

Signature of Registered Contractor	Date
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General Remarks:
Other Remarks: Tank Manufacturer: Pro-Line, Coordinate Source: Google Well address geocoding



Water Well And Pump Record

Completion is required under authority of Part 127, Act 368 PA 1978.

Failure to comply is a misdemeanor.

Welllogic 78

Import ID:

Tax No:	Permit No: W9831028A	County: Houghton	Township: Torch Lake			
Well ID: 31000001195		Town/Range: 55N 32W	Section: 16	Well Status: Active	WSSN:	Source ID/Well No:
Elevation:		Distance and Direction from Road Intersection: 1.25 MILES EAST OF BOOTJACK ROAD ON RICE LAKE ROAD AND 150 FEET SOUTH				
Latitude: 47.170405		Well Owner:				
Longitude: -88.368155		Well Address:				
Method of Collection: Interpolation-Map		Owner Address:				

Drilling Method: Rotary	Pump Installed: Yes	Pump Installation Only: No
Well Depth: 80.00 ft.	Pump Installation Date:	HP: 0.50
Well Type: New	Manufacturer: Sta-Rite	Pump Type: Submersible
Casing Type: Steel - unknown	Model Number: 10P4C02J02	Pump Capacity: 10 GPM
Casing Joint: Welded	Drop Pipe Length: 68.00 ft.	Pump Voltage:
Casing Fitting: Drive shoe	Drop Pipe Diameter:	Drilling Record ID:
Diameter: 6.00 in. to 25.00 ft. depth	Draw Down Seal Used: No	
Borehole: 8.00 in. to 25.00 ft. depth	Pressure Tank Installed: Yes	
6.00 in. to 80.00 ft. depth	Pressure Tank Type: Unknown	
	Manufacturer: A.O. Smith	
	Model Number: V-60	Tank Capacity: 6.0 Gallons
	Pressure Relief Valve Installed: No	

Static Water Level: 7.00 ft. Below Grade	Formation Description	Thickness	Depth to Bottom
Well Yield Test:	Topsoil	2.00	2.00
Yield Test Method: Test pump	Red Clay Sandy	10.00	12.00
Pumping level 75.00 ft. after 1.00 hrs. at 5 GPM	Sandstone	68.00	80.00

Screen Installed: No	Intake: Bedrock Well

Well Grouted: Yes	Grouting Method: Unknown
Grouting Material	Bags Additives Depth
Neat cement	4.00 None 0.00 ft. to 25.00 ft.

Wellhead Completion: Pitless adapter	Geology Remarks:

Nearest Source of Possible Contamination:	Drilling Machine Operator Name: JEFF ESKOLA
Type Distance Direction	Employment: Employee
Septic tank 55 ft. Northeast	

Contractor Type: Water Well Drilling Contractor	Reg No: 1722
Business Name: KERANEN WELL & PUMP	
Business Address:	

Water Well Contractor's Certification	
This well was drilled under my supervision and this report is true to the best of my knowledge and belief.	
Signature of Registered Contractor	Date

General Remarks:
Other Remarks:



Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Wellogic 79

Import ID:

Tax No:	Permit No: W9831108	County: Houghton	Township: Torch Lake
Well ID: 31000001196		Town/Range: 55N 32W	Section: 16
Elevation:		Well Status: Active	WSSN:
Latitude: 47.16393		Source ID/Well No:	
Longitude: -88.378615		Distance and Direction from Road Intersection: 0.75 MILE EAST OF BOOTJACK ROAD ON RICE LAKE ROAD AND 0.5 MILE SOUTH	
Method of Collection: Interpolation-Map		Well Owner:	
		Well Address:	Owner Address:

Drilling Method: Cable Tool	Pump Installed: Yes	Pump Installation Only: No
Well Depth: 116.00 ft.	Pump Installation Date:	HP: 0.50
Well Type: New	Manufacturer: Goulds	Pump Type: Submersible
Casing Type: Steel - unknown	Model Number: 10SB05-412	Pump Capacity: 10 GPM
Casing Joint: Welded	Drop Pipe Length: 100.00 ft.	Pump Voltage:
Casing Fitting: Drive shoe	Drop Pipe Diameter:	Drilling Record ID:
Diameter: 6.00 in. to 28.00 ft. depth	Draw Down Seal Used: No	
Borehole: 6.00 in. to 116.00 ft. depth	Pressure Tank Installed: Yes	
	Pressure Tank Type: Unknown	
	Manufacturer: Amtrol	
	Model Number: 202	Tank Capacity: 6.0 Gallons
	Pressure Relief Valve Installed: No	
Static Water Level: 29.00 ft. Below Grade	Formation Description	Thickness
Well Yield Test:		Depth to Bottom
Yield Test Method: Test pump	Topsoil	2.00
Pumping level 110.00 ft. after 1.00 hrs. at 10 GPM	Clay & Gravel Sandy	20.00
	Red Clay & Gravel	6.00
	Sandstone	88.00
Screen Installed: No		116.00
Intake: Bedrock Well		
Well Grouted: Yes	Grouting Method: Unknown	
Grouting Material	Bags	Additives
Bentonite dry granular	3.00	None
Depth		
Wellhead Completion: Pitless adapter	Geology Remarks:	
Nearest Source of Possible Contamination:	Drilling Machine Operator Name: JEFF ESKOLA	
Type	Employment: Employee	
Septic tank		
	Contractor Type: Water Well Drilling Contractor	Reg No: 1722
	Business Name: KERANEN WELL & PUMP	
	Business Address:	
	Water Well Contractor's Certification	
	This well was drilled under my supervision and this report is true to the best of my knowledge and belief.	
	Signature of Registered Contractor	Date

General Remarks:
Other Remarks:



Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Welllogic 80

Import ID:

Tax No:	Permit No:	County: Houghton	Township: Torch Lake			
Well ID: 31000001263 Elevation: Latitude: 47.170684 Longitude: -88.36177 Method of Collection: Interpolation-Map		Town/Range:	Section:	Well Status:	WSSN:	Source ID/Well No:
		55N 32W	15	Active		
		Distance and Direction from Road Intersection: 1.8 MILES EAST OF INTERSECT OF RICE LAKE ROAD AND BOOTJACK ROAD				
		Well Owner: Well Address:				
		Owner Address:				

Drilling Method: Rotary Well Depth: 62.00 ft. Well Type: Unknown Casing Type: Unknown Casing Joint: Welded Casing Fitting: Drive shoe Diameter: 6.00 in. to 25.00 ft. depth Borehole:	Well Use: Household Date Completed: 12/8/1982 Height: Pump Installed: No Pressure Tank Installed: No Pressure Relief Valve Installed: No
--	---

Static Water Level: 8.00 ft. Below Grade Well Yield Test: Yield Test Method: Unknown Pumping level 60.00 ft. after 1.00 hrs. at 12 GPM	Formation Description	Thickness	Depth to Bottom
	Clay Sandy	12.00	12.00
Screen Installed: No Intake: Bedrock Well	Sandstone	50.00	62.00

Well Grouted: Yes Grouting Material: Neat cement Grouting Method: Unknown Bags: 0.00 Additives: None Depth: 3.00 ft. to 25.00 ft.	Wellhead Completion: 12 inches above grade	Geology Remarks:

Nearest Source of Possible Contamination: Type: Septic tank Distance: 60 ft. Direction: North	Drilling Machine Operator Name: Employment: Unknown
Abandoned Well Plugged: No	Contractor Type: Water Well Drilling Contractor Business Name: SIIRTOLA WELL DRILLING Business Address:
Reason Not Plugged:	Reg No: 0154
Water Well Contractor's Certification This well was drilled under my supervision and this report is true to the best of my knowledge and belief.	
Signature of Registered Contractor Date	

General Remarks:
Other Remarks:



Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Welllogic 81

Import ID:

Tax No:	Permit No: W9831137	County: Houghton	Township: Torch Lake			
Well ID: 31000001266		Town/Range: 55N 32W	Section: 15	Well Status: Active	WSSN:	Source ID/Well No:
Elevation:		Distance and Direction from Road Intersection: FIRE #R10B ON RICE LAKE ROAD				
Latitude: 47.169922		Well Owner:				
Longitude: -88.345432		Well Address:				
Method of Collection: Interpolation-Map		Owner Address:				

Drilling Method: Cable Tool	Pump Installed: Yes	Pump Installation Only: No
Well Depth: 218.00 ft.	Pump Installation Date:	HP: 0.75
Well Type: New	Manufacturer: Sta-Rite	Pump Type: Submersible
Casing Type: Steel - unknown	Model Number: 10P4D02J-0	Pump Capacity: 10 GPM
Casing Joint: Welded	Drop Pipe Length: 200.00 ft.	Pump Voltage:
Casing Fitting: Drive shoe	Drop Pipe Diameter:	Drilling Record ID:
Diameter: 6.00 in. to 34.00 ft. depth	Draw Down Seal Used: No	
Borehole: 6.00 in. to 218.00 ft. depth	Pressure Tank Installed: Yes	
	Pressure Tank Type: Unknown	
	Manufacturer: Well-Rite-Flexcon	
	Model Number: WR60	Tank Capacity: 6.0 Gallons
	Pressure Relief Valve Installed: No	

Static Water Level: 57.00 ft. Below Grade	Formation Description	Thickness	Depth to Bottom
Well Yield Test: Yield Test Method: Test pump	Clay & Stones	15.00	15.00
Pumping level 200.00 ft. after 1.00 hrs. at 4 GPM	Clay & Gravel	10.00	25.00
	Red Clay	9.00	34.00
	See Comments	184.00	218.00

Screen Installed: No	Intake: Bedrock Well

Well Grouted: Yes	Grouting Method: Unknown		
Grouting Material	Bags	Additives	Depth
Bentonite dry granular	3.00	None	
Geology Remarks: JACOBSVILLE SANDSTONE			

Wellhead Completion: Pitless adapter

Nearest Source of Possible Contamination:	Drilling Machine Operator Name: JEFF ESKOLA
Type	Employment: Employee
Septic tank	

Distance	Direction
55 ft.	Northeast
Contractor Type: Water Well Drilling Contractor	
Reg No: 1722	
Business Name: KERANEN WELL & PUMP	
Business Address:	

Water Well Contractor's Certification	
This well was drilled under my supervision and this report is true to the best of my knowledge and belief.	
Signature of Registered Contractor	Date

General Remarks:
Other Remarks:

GEOLOGICAL SURVEY NO.

MICHIGAN DEPARTMENT OF PUBLIC HEALTH
WATER WELL AND PUMP RECORD

PERMIT NUMBER

3185

1. LOCATION OF WELL		2. TOWNSHIP NAME		3. FRACTION		4. SECTION NUMBER		5. TOWN NUMBER		6. RANGE NUMBER	
Houghton		Torch Lake		NW 1/4 NW 1/4 SE 1/4		22		55 N/4		33 R/W	
7. DISTANCE AND DIRECTION FROM ROAD INTERSECTION											
4.1 MILES SOUTH OF DREAMLAND HOTEL ON BOOTJACK ROAD AND 200 FEET EAST											
8. STREET ADDRESS & CITY OF WELL LOCATION											
9. LOCATE WITH "X" IN SECTION BELOW											
				10. SKETCH MAP							
2. FORMATION DESCRIPTION				THICKNESS OF STRATUM		DEPTH TO BOTTOM OF STRATUM		11. OWNER OF WELL			
								12. WELL DEPTH: Date Completed MO. DAY YEAR 17 26 93			
GRAVEL & ROCKS				3'		3'		13. ADDRESS			
								14. ADDRESS SAME AS WELL LOCATION? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
RED CLAY & ROCKS				17'		20'		15. 4. WELL DEPTH: 201 FT.			
								16. 5. CABLE TOOL <input checked="" type="checkbox"/> ROTARY <input type="checkbox"/> DRIVEN <input type="checkbox"/> DUG			
SANDY CLAY				11'		31'		17. 6. HOLLOW ROD <input type="checkbox"/> AUGER <input type="checkbox"/> JETTED <input type="checkbox"/>			
								18. 8. USE: <input checked="" type="checkbox"/> DOMESTIC <input type="checkbox"/> TYPE I PUBLIC <input type="checkbox"/> TYPE III PUBLIC			
SANDY CLAY & GRAVEL				140'		171'		19. 9. IRRIGATION <input type="checkbox"/> TYPE IIa PUBLIC <input type="checkbox"/> HEAT PUMP			
								20. 10. TEST WELL <input type="checkbox"/> TYPE IIb PUBLIC <input type="checkbox"/>			
CLAY SAND & GRAVEL				27'		198'		21. 11. CASING: <input checked="" type="checkbox"/> STEEL <input type="checkbox"/> THREADED <input type="checkbox"/> HOIST ABOVE/BELOW			
								22. 12. PLASTIC <input type="checkbox"/> WELDED <input checked="" type="checkbox"/> SURFACE 2 ft			
SAND & GRAVEL				3'		201'		23. 13. WEIGHT 18.77 lbs/ft			
								24. 14. DRIVE SHAFT <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO			
								25. 15. SCREEN <input type="checkbox"/> NOT INSTALLED			
								26. 16. TYPE STAINLESS DIAMETER 6			
								27. 17. SLOT/GAUZE 12 LENGTH 4'			
								28. 18. SET BETWEEN 198 ft. and 201 ft.			
								29. 19. FITTINGS <input checked="" type="checkbox"/> K-PACKER <input type="checkbox"/> LEAF PACKER <input type="checkbox"/> BRONZE CHECK			
								30. 20. BLANK ABOVE SCREEN <input type="checkbox"/> OTHER			
								31. 21. 9. STATIC WATER LEVEL			
								32. 22. 4 ft. below land surface <input type="checkbox"/> FLOW			
								33. 23. 10. PUMPING LEVEL below land surface			
								34. 24. 170 ft. after 1 hrs. pumping at 9 G.P.M.			
								35. 25. 11. WELL HEAD COMPLETION <input checked="" type="checkbox"/> PILLESS ADAPTOR <input type="checkbox"/> 12" ABOVE GRADE			
								36. 26. BASEMENT OFFSET <input type="checkbox"/> APPROVED PIT <input type="checkbox"/>			
								37. 27. 12. WELL GROUTED? <input checked="" type="checkbox"/> NO <input type="checkbox"/> YES FROM to			
								38. 28. NOAT CEMENT <input type="checkbox"/> BENTONITE <input type="checkbox"/> OTHER			
								39. 29. NO. OF BAGS OF CEMENT Additives			
								40. 30. 13. NEAREST SOURCE OF POSSIBLE CONTAMINATION			
								41. 31. TYPE SEPTIC DISTANCE 65 ft. DIRECTION S-E			
								42. 32. WELL DISINFECTED UPON COMPLETION? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO			
								43. 33. WAS OLD WELL PLUGGED? <input type="checkbox"/> YES <input type="checkbox"/> NO			
								44. 34. 14. PUMP: <input type="checkbox"/> NOT INSTALLED <input type="checkbox"/> PUMP INSTALLATION ONLY			
								45. 35. MANUFACTURER'S NAME RED JACKET			
								46. 36. MODEL NUMBER 50CNLSBP 12 VOLTS 230			
								47. 37. LENGTH OF DROP PIPE 160 ft. CAPACITY 10 G.P.M.			
								48. 38. TYPE: <input checked="" type="checkbox"/> SUBMERSIBLE <input type="checkbox"/> JET			
								49. 39. PRESSURE TANK:			
								50. 40. MANUFACTURER'S NAME			
								51. 41. MODEL NUMBER CAPACITY Gallons			
								52. 42. 15. REMARKS, ELEVATION, SOURCE OF DATA, ETC.			
17. RIG OPERATOR'S NAME: G. KERANEN & JEFF ESKOLA								53. 43. 16. WATER WELL CONTRACTOR'S CERTIFICATION:			
								54. 44. THIS WELL WAS DRILLED UNDER MY JURISDICTION AND THIS REPORT IS TRUE TO THE BEST OF MY KNOWLEDGE AND BELIEF.			
								55. 45. KERANEN WELL & PUMP 31-1722			
								56. 46. REGISTERED BUSINESS NAME REGISTRATION NO.			
								57. 47. ADDRESS RTE 1 BOX 238 CALUMET, MICH.			
								58. 48. SIGNED Jeff Eskola DATE 7-27-93			
								59. 49. AUTHORIZED REPRESENTATIVE			
								60. 50. 18. 25 1003			

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GEOLOGICAL SURVEY COPY

Authority:	Act 368 PA 1978
Completion:	Required
Penalty:	Conviction of a violation of any provision is a misdemeanor.

85

WATER WELL RECORD

ACT 204 PA 1985

MICHIGAN DEPARTMENT
OF
PUBLIC HEALTH

1 LOCATION OF WELL		Fraction		Section Number	Town Number	Range Number
County HOUGHTON	Township Name SCHOOL CRAFT	SW 1/4 NW 1/4 SW 1/4		22	55 N/2	33 E/W.
Distance And Direction from Road Intersections 1 1/4 MILES WEST OF MASON AND 100' NORTH OF COUNTY RD. 020.						
Street address & City of Well Location Locate with "X" in section below Sketch Map:						
2 FORMATION		THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM	3 OWNER OF WELL:		
HARD RED CLAY & SMALL STONES	10	(10)	Address			
JACOBSVILLE SANDSTONE	130	140	4 WELL DEPTH: (completed) Date of Completion 140 ft. 11/11/80			
			5 <input checked="" type="checkbox"/> Cable tool <input type="checkbox"/> Rotary <input type="checkbox"/> Driven <input type="checkbox"/> Dug <input type="checkbox"/> Hollow rod <input type="checkbox"/> Jolted <input type="checkbox"/> Bored <input type="checkbox"/>			
			6 USE: <input checked="" type="checkbox"/> Domestic <input type="checkbox"/> Public Supply <input type="checkbox"/> Industry <input type="checkbox"/> Irrigation <input type="checkbox"/> Air Conditioning <input type="checkbox"/> Commercial <input type="checkbox"/> Test Well <input type="checkbox"/>			
			7 CASING: Threaded <input type="checkbox"/> Welded <input checked="" type="checkbox"/> Height: Above/Below Surface 2 ft. Weight 18.9 lbs./ft. Drive Shoe? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
			8 SCREEN: NONE Type: _____ Dia: _____ Slot/Gauze _____ Length _____ Set between _____ ft. and _____ ft. Fittings: _____			
			9 STATIC WATER LEVEL 16 ft. below land surface			
			10 PUMPING LEVEL below land surface 130 ft. after 1 hrs. pumping 7 g.p.m. 132 ft. after 2 hrs. pumping 4 g.p.m.			
			11 WATER QUALITY in Parts Per Million: UNKNOWN Iron (Fe) _____ Chlorides (Cl) _____ Hardness _____ Other _____			
			12 WELL HEAD COMPLETION: <input type="checkbox"/> In Approved Pit <input type="checkbox"/> Pitless Adapter <input checked="" type="checkbox"/> 12" Above Grade			
			13 Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Depth: From SURFACE to 25 ft.			
			14 Nearest Source of possible contamination 200 feet N Direction SEPTIC Type Well disinfected upon completion <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
			15 PUMP: <input type="checkbox"/> Not installed Manufacturer's Name _____ Model Number _____ HP _____ Volts _____ Length of Drop Pipe _____ ft. capacity _____ G.P.M. Type: <input type="checkbox"/> Submersible <input type="checkbox"/> Jnt <input type="checkbox"/> Reciprocating			
16 Remarks, elevation, source of data, etc.		17 WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief. VALLEY P & H, INC. 31-1778 REGISTERED BUSINESS NAME REGISTRATION NO. Address POB 458, DOLLAR BAY, MI 49922 Signed <i>Ant K. Kuhn</i> Date 11/12/80 AUTHORIZED REPRESENTATIVE				

NOV 24 1980



Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Wellogic 86

Import ID:

Tax No:	Permit No: W9931045	County: Houghton	Township: Torch Lake			
Well ID: 31000000450		Town/Range: 55N 33W	Section: 23	Well Status: Active	WSSN:	Source ID/Well No:
		Distance and Direction from Road Intersection: .75 MILE NW OF INTERSECT OF BAULMAN RD. & NIGHTINGALE DRIVE				
Elevation:		Well Owner:				
Latitude: 47.1421343		Well Address:				
Longitude: -88.44738772		Owner Address:				
Method of Collection: Interpolation-Map		MI				

Drilling Method: Rotary	Well Use: Household	Pump Installed: Yes	Pump Installation Only: No	
Well Depth: 162.00 ft.	Date Completed: 8/26/1999	Pump Installation Date:	HP: 0.50	
Well Type: New	Height: 1.50 ft. above grade	Manufacturer: Red Jacket	Pump Type: Submersible	
Casing Type: Steel - black	Casing Fitting: Drive shoe	Model Number: 50CNSW1	Pump Capacity: 10 GPM	
Casing Joint: Welded		Drop Pipe Length: 148.00 ft.	Pump Voltage:	
		Drop Pipe Diameter: 8.00 in.	Drilling Record ID:	
Diameter: 6.00 in. to 26.00 ft. depth		Draw Down Seal Used: No		
Borehole: 10.00 in. to 26.00 ft. depth		Pressure Tank Installed: Yes		
		Pressure Tank Type: Unknown		
		Manufacturer: Other		
		Model Number: 202	Tank Capacity: 20.0 Gallons	
		Pressure Relief Valve Installed: No		
Static Water Level: 18.00 ft. Below Grade	Yield Test Method: Unknown	Formation Description	Thickness	Depth to Bottom
Well Yield Test:		Clay Sandy	8.00	8.00
Pumping level 162.00 ft. after 1.00 hrs. at 15 GPM		Clay	8.00	16.00
Pumping level 100.00 ft. after 1.00 hrs. at 10 GPM		Sandstone	146.00	162.00
Screen Installed: No	Intake: Bedrock Well			
Well Grouted: Yes	Grouting Method: Unknown			
Grouting Material	Bags	Additives	Depth	
Bentonite slurry	10.00	None	0.00 ft. to 26.00 ft.	
Wellhead Completion: Pitless adapter		Geology Remarks:		
Nearest Source of Possible Contamination:		Drilling Machine Operator Name: PAUL LAHTI		
Type	Distance	Employment: Unknown		
Septic tank	76 ft.	Contractor Type: Water Well Drilling Contractor Reg No: 1677		
		Business Name: SIIRTOLA WELL DRILLING INC		
		Business Address:		
		Water Well Contractor's Certification		
		This well was drilled under my supervision and this report is true to the best of my knowledge and belief.		
		Signature of Registered Contractor		
		Date		

General Remarks:

Other Remarks: Tank Manufacturer: AMTROL

WATER WELL RECORD

ACT 294 PA 1965

 MICHIGAN DEPARTMENT
OF
PUBLIC HEALTH

1 LOCATION OF WELL		Twp.		Fraction		Section No.		Town		Range	
Houghton Torch Lake		UNANKH		23		55 N. 33 W.					
Distance And Direction from Road Intersections 3 MI. WEST ON BOOTH ROAD FROM UPPER ROAD INTERSECTION Street address & City of Well Location LAKE LINDEU MICH											
3 OWNER OF WELL											
Address											
2 FORMATION		THICKNESS OF STRATUM		DEPTH TO BOTTOM OF STRATUM		4 WELL DEPTH: (completed)		Date of Completion			
SAND		6		6		84 ft.		JUNE 18, 1974			
CLAY		36		42		5 <input checked="" type="checkbox"/> Cable tool <input type="checkbox"/> Rotary <input type="checkbox"/> Driven <input type="checkbox"/> Dug					
GRAVEL, SAND CLAYEY		5		47		<input type="checkbox"/> Hollow rod <input type="checkbox"/> Jetted <input type="checkbox"/> Bored <input type="checkbox"/> Test Well					
SAND CLAYEY		22		69		6 USE: <input checked="" type="checkbox"/> Domestic <input type="checkbox"/> Public Supply <input type="checkbox"/> Industry					
SAND		8		77		7 CASING: Threaded <input checked="" type="checkbox"/> Welded <input type="checkbox"/> Diam. 6 in. to 80 ft. Depth		Height: Above/Below surface 2 ft. Weight 19 lbs./ft. Drive Sheet Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
SAND COURSE		7		84		8 SCREEN: JOHNSON Type: STAINLESS Diam. 6"					
						Slot/Gauge 015 Length 4'					
						Set between 80 ft. and 84 ft.					
						Fittings: STANDARD					
						9 STATIC WATER LEVEL					
						2 ft. below land surface					
						10 PUMPING LEVEL below land surface					
						12 ft. after 1 hrs. pumping 16 g.p.m.					
						ft. after hrs. pumping g.p.m.					
						11 WATER QUALITY in Parts Per Million:					
						Iron (Fe) Chlorides (Cl)					
						Hardness					
						12 WELL HEAD COMPLETION: <input type="checkbox"/> In Approved Pit <input checked="" type="checkbox"/> Pitless Adapter <input type="checkbox"/> 12" Above Grade					
						13 GROUTING: Well Grouted? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No					
						Material: <input type="checkbox"/> Neat Cement <input type="checkbox"/> Depths: From ft. to ft.					
						14 SANITARY: Nearest Source of possible contamination					
						60 feet NORTH Direction SEPT 16					
						Well disinfected upon completion <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No					
						15 PUMP: Manufacturer's Name M. W. E. A. S.					
						Model Number SC 52-58 HP 1/2					
						Length of Drop Pipe 24 ft. capacity G.P.M.					
						Type: <input checked="" type="checkbox"/> Submersible <input type="checkbox"/> Jet <input type="checkbox"/> Reciprocating					
16 Remarks elevation source of data, etc.						17 WATER WELL CONTRACTOR'S CERTIFICATION:					
						This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.					
						EPAW 311201A 0154					
						REGISTERED BUSINESS NAME REGISTRATION NO.					
						Address ROUTE 1, HAWK ROCK MICH					
						Signed Edward J. Santola Date 7/6/74					
						AUTHORIZED REPRESENTATIVE					



Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Wellogic 88

Import ID:

Tax No: 31-014-374-001-00		Permit No: W05-31-082		County: Houghton		Township: Torch Lake		
Well ID: 310000001689 Elevation: Latitude: 47.14341 Longitude: -88.443925 Method of Collection: QQQ - Centroid				Town/Range:	Section:	Well Status:	WSSN:	Source ID/Well No:
				55N 33W	24	Active		
				Distance and Direction from Road Intersection: Nearest Road is Nightengale Drive Lot 24				
				Well Owner: Well Address: Owner Address:				

Drilling Method: Rotary Well Depth: 160.00 ft. Well Type: New Casing Type: Steel - black Casing Joint: Welded Casing Fitting: Drive shoe Diameter: 6.00 in. to 31.00 ft. depth Borehole: 9.00 in. to 31.00 ft. depth 6.00 in. to 160.00 ft. depth	Well Use: Household Date Completed: 8/16/2005 Height: 1.00 ft. above grade	Pump Installed: Yes Pump Installation Date: 8/17/2005 Manufacturer: McDermott Model Number: PEP2W52BA Drop Pipe Length: 149.00 ft. Drop Pipe Diameter: 1.00 in. Draw Down Seal Used: No Pressure Tank Installed: No Pressure Relief Valve Installed: No	Pump Installation Only: No HP: 0.50 Pump Type: Submersible Pump Capacity: 12 GPM Pump Voltage: Drilling Record ID:
---	--	---	---

Static Water Level: 5.80 ft. Below Grade Well Yield Test: 1.00 hrs. at 12 GPM Yield Test Method: Air	Formation Description	Thickness	Depth to Bottom
	Silt Sand Gravel	2.00	2.00
	Silt & Sand Clayey	8.00	10.00
	Sandstone	150.00	160.00

Screen Installed: No Intake: Bedrock Well			

Well Grouted: Yes Grouting Material: Neat cement Grouting Method: Grout pipe outside casing Bags: 4.00 Additives: None Depth: 4.00 ft. to 31.00 ft.	Geology Remarks:
--	------------------

Wellhead Completion: Pitless adapter, 12 inches above grade	
---	--

Nearest Source of Possible Contamination: Type: Septic tank Distance: 50 ft. Direction: North	Drilling Machine Operator Name: Steve Larson Employment: Employee Pump Installer: Curt Larson
--	---

	Contractor Type: Water Well Drilling Contractor Business Name: Robert A. Larson Well Drilling Business Address: HCR01 Box 188, L'Anse, MI, 49946
--	--

	Water Well Contractor's Certification This well was drilled under my supervision and this report is true to the best of my knowledge and belief. Signature of Registered Contractor Date
--	--

General Remarks:
Other Remarks:



General Remarks:			
Other Remarks:			
EQP-2017 (4/2010)	Page 1 of 1	State of Michigan	2/15/2006 8:01 AM



Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Welllogic 90

Import ID:

Tax No:	Permit No: W04-31-065	County: Houghton	Township: Torch Lake
Well ID: 31000001491		Town/Range: 55N 32W	Section: 19
Elevation:		Well Status: Active	WSSN:
Latitude: 47.154241		Source ID/Well No:	
Longitude: -88.417213		Distance and Direction from Road Intersection: 1.8 MILES NORTH INTERSECTION OF BAULMAN ROAD AND RED BARN ROAD	
Method of Collection: Interpolation-Map		Well Owner:	
		Well Address:	
		Owner Address:	
		MI	

Drilling Method: Rotary	Pump Installed: Yes	Pump Installation Only: No
Well Depth: 201.00 ft.	Pump Installation Date:	HP: 0.50
Well Type: New	Manufacturer: Grundfos	Pump Type: Submersible
Casing Type: Steel - unknown	Model Number: GRU58Q5A	Pump Capacity: 5 GPM
Casing Joint: Welded	Drop Pipe Length: 140.00 ft.	Pump Voltage:
Casing Fitting: Drive shoe	Drop Pipe Diameter:	Drilling Record ID:
Diameter: 6.00 in. to 122.50 ft. depth	Draw Down Seal Used: No	
Borehole: 6.00 in. to 201.00 ft. depth	Pressure Tank Installed: Yes	
	Pressure Tank Type: Unknown	
	Manufacturer: Amtrol	
	Model Number: BN4202	Tank Capacity: 20.0 Gallons
	Pressure Relief Valve Installed: No	

Static Water Level: 14.00 ft. Below Grade	Formation Description	Thickness	Depth to Bottom
Well Yield Test: Yield Test Method: Air	Sand	15.00	15.00
Pumping level 201.00 ft. after 1.00 hrs. at 12 GPM	Sand & Gravel	25.00	40.00
	Clay	20.00	60.00
	Sand & Gravel Clayey	7.00	67.00
	Clay	28.00	95.00
	Gravel & Clay	27.50	122.50
	Sandstone	78.50	201.00

Screen Installed: No	Intake: Bedrock Well		

Well Grouted: Yes	Grouting Method: Unknown
Grouting Material	Bags Additives Depth
Bentonite slurry	1.00 None

Wellhead Completion: Pitless adapter

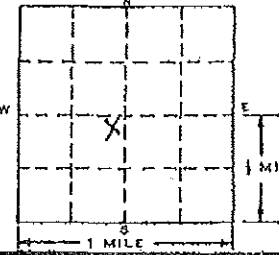
Nearest Source of Possible Contamination:	Drilling Machine Operator Name: PAUL LAHTI
Type	Employment: Employee
Septic tank	

Distance	Direction
1020 ft.	West

Contractor Type: Water Well Drilling Contractor	Reg No: 1677
Business Name: SIIRTOLA WELL DRILLING	
Business Address:	
Water Well Contractor's Certification	
This well was drilled under my supervision and this report is true to the best of my knowledge and belief.	
Signature of Registered Contractor	Date

General Remarks:
Other Remarks:

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WATER WELL RECORD
ACT 204 PA 1985MICHIGAN DEPARTMENT
OF
PUBLIC HEALTH

1 LOCATION OF WELL			3 OWNER OF WELL:		
County	Township Name	Fraction	Section Number	Town Number	Range Number
HOUGHTON	SCHOOLCRAFT	NE 1/4 NE 1/4 SW 1/4	19	55 N/6	32 E/W.
Distance And Direction from Road Intersections 1 6/10 MILES NORTH OF THE BAULMAN RD. AT TORCH LAKE.			Address		
Street address & City of Well Location Locate with "X" in section below			4 WELL DEPTH: (completed) Date of Completion		
<div style="display: flex; align-items: center;"><div style="flex: 1;"></div><div style="flex: 1; text-align: right;"><p>Sketch Map: TORCH LAKE</p><p>1.64</p><p>BAULMAN ROAD</p></div></div>			150 ft. 9/24/81		
			5 <input checked="" type="checkbox"/> Cable tool <input type="checkbox"/> Rotary <input type="checkbox"/> Driven <input type="checkbox"/> Dug <input type="checkbox"/> Hollow rod <input type="checkbox"/> Jetted <input type="checkbox"/> Bored		
			6 USE: <input checked="" type="checkbox"/> Domestic <input type="checkbox"/> Public Supply <input type="checkbox"/> Industry <input type="checkbox"/> Irrigation <input type="checkbox"/> Air Conditioning <input type="checkbox"/> Commercial <input type="checkbox"/> Test Well <input type="checkbox"/>		
			7 CASING: Threaded <input type="checkbox"/> Welded <input checked="" type="checkbox"/> Height: Above/Below Diam. Surface 4 ft. Weight 18.97 lbs./ft. Drive Shoe? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
2 FORMATION			6 in. to 61 ft. Depth		
THICKNESS OF STRATUM			in. to ft. Depth		
DEPTH TO BOTTOM OF STRATUM			8 SCREEN: NONE		
FINE SAND 6 6			Type: Dia.:		
SANDY CLAY AND GRAVEL (SOFT) 29 35			Slot/Gauze Length		
SANDY CLAY & GRAVEL (HARD) 13 (48)			Set between ft. and ft.		
JACOBSTOWN SANDSTONE 102 150			Fittings:		
			9 STATIC WATER LEVEL		
			4 ft. below land surface		
			10 PUMPING LEVEL below land surface		
			110 ft. after 2 hrs. pumping 15 G.P.M.		
			ft. after hrs. pumping G.P.M.		
			11 WATER QUALITY in Parts Per Million:		
			Iron (Fe) Chlorides (Cl) UNKNOWN.		
			Hardness Other		
			12 WELL HEAD COMPLETION: <input type="checkbox"/> In Approved Pit		
			<input type="checkbox"/> Pitless Adapter <input checked="" type="checkbox"/> 12" Above Grade		
			13 Well Grouted? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
			<input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite		
			Depth: From ft. to ft.		
			14 Nearest Source of possible contamination		
			100 feet S Direction PRIVVY Type		
			Well disinfected upon completion <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
			15 PUMP: <input checked="" type="checkbox"/> Not installed		
			Manufacturer's Name		
			Model Number HP Volts		
			Length of Drop Pipe ft. capacity G.P.M.		
			Type: <input type="checkbox"/> Submersible		
			<input type="checkbox"/> Jet <input type="checkbox"/> Reciprocating		
16 Remarks, elevation, source of data, etc.			17 WATER WELL CONTRACTOR'S CERTIFICATION:		
			This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.		
			VALLEY WELL & PUMP 31-12778		
			REGISTERED BUSINESS NAME REGISTRATION NO.		
			Address RTE 1, Box 212, CALUMET, MI 49913		
			Signed <i>Quinn Foster</i> Date 9/24/81		
			AUTHORIZED REPRESENTATIVE		

OCT 1 1981

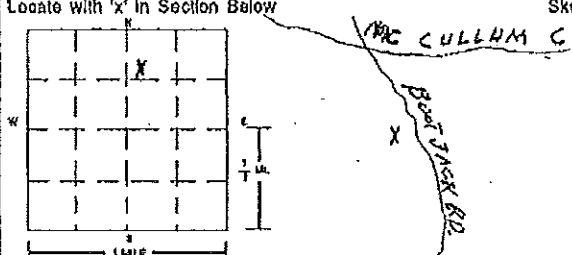
GEOLOGICAL SURVEY COPY

WATER WELL RECORD
ACT 204 PA 1965MICHIGAN DEPARTMENT
OF
PUBLIC HEALTH

1 LOCATION OF WELL			3 OWNER OF WELL:		
County HOUGHTON	Township Name TORCH LAKE	Fraction NE 1/4 SE 1/4	Section Number 20	Town Number 55 N.	Range Number 32 W.
Distance And Direction from Road Intersections ABOUT 4 MILES SOUTH FROM LAKE LINDEN ON BOOT JACK ROAD			Address		
Street address & City of Well Location LAKE LINDEN MI			4 WELL DEPTH: (completed) Date of Completion		
Locate with "X" in section below			50 ft.		
Sketch Map:			5 <input type="checkbox"/> Cable tool <input checked="" type="checkbox"/> Rotary <input type="checkbox"/> Driven <input type="checkbox"/> Dig		
			<input type="checkbox"/> Hollow rod <input type="checkbox"/> Jatted <input type="checkbox"/> Bored <input type="checkbox"/>		
			6 USE: <input type="checkbox"/> Domestic <input type="checkbox"/> Public Supply <input type="checkbox"/> Industry		
			<input type="checkbox"/> Irrigation <input type="checkbox"/> Air Conditioning <input type="checkbox"/> Commercial		
			<input type="checkbox"/> Test Well <input type="checkbox"/>		
			7 CASING: Threaded <input checked="" type="checkbox"/> Welded <input type="checkbox"/> Height: Above/Below		
			Diam. 6 in. to 30 ft. Depth 125 lbs./ft.		
			Surface 7 ft.		
			Weight 125 lbs./ft.		
			Drive Shoe? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
2 FORMATION			8 SCREEN:		
SAND			Type: _____ Dia: _____		
CLAY			Slot/Gauze _____ Length _____		
GRAVELLY CLAY			Set between _____ ft. and _____ ft.		
SANDSTONE			Fittings: _____		
THICKNESS OF STRATUM			9 STATIC WATER LEVEL		
6			75 ft. below land surface FLOWING		
20			10 PUMPING LEVEL below land surface		
3			4 ft. after 1 hrs. pumping 60 g.p.m.		
21			_____ ft. after _____ hrs. pumping _____ g.p.m.		
DEPTH TO BOTTOM OF STRATUM			11 WATER QUALITY in Parts Per Million:		
6			Iron (Fe) _____ Chlorides (Cl) _____		
26			Hardness _____ Other _____		
29			12 WELL HEAD COMPLETION: <input type="checkbox"/> In Approved Pit		
50			<input checked="" type="checkbox"/> Pitless Adaptor <input type="checkbox"/> 12" Above Grade		
			13 Well Grouted? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
			<input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/>		
			Depth: From _____ ft. to _____ ft.		
			14 Nearest Source of possible contamination		
			20 feet NE Direction SEPTIC Type		
			Well disinfected upon completion <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
			15 PUMP: <input type="checkbox"/> Not installed		
			Manufacturer's Name MYERS		
			Model Number 5452-S/MP 1/2 Volts 230		
			Length of Drop Pipe 15 ft. capacity _____ G.P.M.		
			Type: <input checked="" type="checkbox"/> Submersible		
			<input type="checkbox"/> Jet <input type="checkbox"/> Reciprocating		
16 Remarks, elevation, source of data, etc.			17 WATER WELL CONTRACTOR'S CERTIFICATION:		
			This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.		
			STANTON WELL DRILLING 0154		
			REGISTERED BUSINESS NAME		
			Address HANCOCK MI		
			Signed Edward Little Date 10/26/74		
			AUTHORIZED REPRESENTATIVE		

USE A 2ND SHEET IF NEEDED

93

TAX NO:		MICHIGAN DEPARTMENT OF PUBLIC HEALTH WATER WELL AND PUMP RECORD				PERMIT NO: A W 42310180	
1. LOCATION OF WELL		Township Name		Fraction	Section No.	Town No.	Range No.
County HUGHSTON		TORCH LAKE		SW 1/4 NE 1/4	20	55N	32W
Distance and Direction from Road Intersection 3 MILES SOUTH OF LAKE LINDEN ON BOOTHACK ROAD AND 150 FEET WEST		3. OWNER OF WELL Address Address Same as Well Location <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No					
Street Address & City of Well Location		4. WELL DEPTH:		Date Completed	<input checked="" type="checkbox"/> New Well <input type="checkbox"/> Replacement Well		
Locate with 'x' in Section Below		200 ft.		12/15/95			
Sketch Map 		5. <input checked="" type="checkbox"/> Cable Tool <input type="checkbox"/> Rotary <input type="checkbox"/> Driven <input type="checkbox"/> Dug <input type="checkbox"/> Hollow Rod <input type="checkbox"/> Auger/Bored <input type="checkbox"/> Jetted <input type="checkbox"/>		6. USE: <input checked="" type="checkbox"/> Household <input type="checkbox"/> Type I Public <input type="checkbox"/> Type III Public <input type="checkbox"/> Irrigation <input type="checkbox"/> Type IIa Public <input type="checkbox"/> Heat Pump <input type="checkbox"/> Test Well <input type="checkbox"/> Type IIb Public <input type="checkbox"/>			
2. FORMATION DESCRIPTION		THICKNESS OF STRATUM		DEPTH TO BOTTOM OF STRATUM		7. CASING: <input checked="" type="checkbox"/> Steel <input type="checkbox"/> Threaded <input type="checkbox"/> Plastic <input checked="" type="checkbox"/> Welded <input type="checkbox"/> Other	
SAND		8'		8'		Height: Above/Below Surface: 2 ft	
SANDY CLAY + GRAVEL		4'		119'		Diameter: 6 in. to 136 ft. depth	
CLAY + GRAVEL		11'		130		Weight: 18.97 lbs./ft.	
CLAYSAND + GRAVEL		5'		135		BOREHOLE: Diameter: 6 in. to 200 ft. depth	
RED CLAY + GRAVEL		1'		136'		<input checked="" type="checkbox"/> Drive Shoe <input type="checkbox"/> Shale Packer	
SAND STONE		64'		200'		8. SCREEN: <input checked="" type="checkbox"/> Not Installed <input type="checkbox"/> Gravel-Packed	
						Type _____ Diameter _____	
						Slot/Gauge _____ Length: _____	
						Set Between _____ ft. and _____ ft.	
						FITTINGS: <input type="checkbox"/> K-Packer <input type="checkbox"/> Bremer Check	
						<input type="checkbox"/> Blank Above Screen _____ ft. Other _____	
						9. STATIC WATER LEVEL: _____ ft. Below Land Surface <input type="checkbox"/> Flowing	
						10. PUMPING LEVEL: Below Land Surface	
						180 ft. After 1 hrs. Pumping at 8 G.P.M.	
						<input type="checkbox"/> Plunger <input type="checkbox"/> Baller <input type="checkbox"/> Air <input checked="" type="checkbox"/> Test Pump	
						11. WELL HEAD COMPLETION:	
						<input checked="" type="checkbox"/> Pitless Adaptor <input type="checkbox"/> 12" Above Grade	
						<input type="checkbox"/> Basement Offset <input type="checkbox"/> Well House	
						12. WELL GROUTED? <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes From _____ to _____ ft.	
						<input type="checkbox"/> Neat Cement <input checked="" type="checkbox"/> Bentonite <input type="checkbox"/> Other _____	
						No. of Bags 5 Additives _____	
						13. NEAREST SOURCE OF POSSIBLE CONTAMINATION:	
						Type SEPTIC Distance 70 ft. Direction SOUTH	
						Type _____ Distance _____ ft. Direction _____	
USE A 2ND SHEET IF NEEDED						14. PUMP: <input type="checkbox"/> Not Installed <input type="checkbox"/> Pump Installation Only	
15. ABANDONED WELL PLUGGED? <input type="checkbox"/> Yes <input type="checkbox"/> No						Manufacturer's Name BURKS	
Casing Diameter _____ in. Depth _____ ft.						Model Number 75NB-120 HP 3/4 Volts 230	
PLUGGING MATERIAL: <input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite Slurry						Length of Drop Pipe 180 ft. Capacity 10 G.P.M.	
<input type="checkbox"/> Cement/Bentonite Slurry <input type="checkbox"/> Concrete Grout <input type="checkbox"/> Bentonite Chips						TYPE: <input checked="" type="checkbox"/> Submersible <input type="checkbox"/> Jet <input type="checkbox"/> Other _____	
No. of Bags _____ Casing Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No						PRESSURE TANK:	
						Manufacturer's Name AMTROL	
						Model Number 250 Capacity 13.6 Gallons 44	
16. REMARKS: (Elevation, Source of Data, etc.)						15. WATER WELL CONTRACTOR'S CERTIFICATION:	
						This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.	
						KERAMEN WELL & PUMP 31-1722	
						REGISTERED BUSINESS NAME REGISTRATION NO.	
						Address RTE. 1 BOX 238 CALUMET, MICH. 49913	
						Signed George Newman Date 12-28-95	
						AUTHORIZED REPRESENTATIVE	
17. DRILLING MACHINE OPERATOR:							
<input type="checkbox"/> Employee <input type="checkbox"/> Subcontractor							
Name GEORGE NEWMAN							

GW-2-228 0/93

DNR - ESCANABA, MI

MAR 27 1996

GEOLOGICAL SURVEY COPY

Authority: Act 365 PA 1978
Completion: Required

Penalty: Conviction of a violation of any provision is a misdemeanor.

Wellogig 94

Import ID:

Tax No:	Permit No: W06-31-113	County: Houghton			Township: Torch Lake	
Well ID: 31000001925		Town/Range: 55N 32W	Section: 21	Well Status: Active	WSSN:	Source ID/Well No:
		Distance and Direction from Road Intersection: .5 MI E OF MUD LAKE RD & SCHOOL FOREST RD				
		Well Owner:				
		Well Address:		Owner Address:		
Elevation:						
Latitude: 47.14261						
Longitude: -88.3701						
Method of Collection: GPS Std Positioning Svc SA Off						

Drilling Method: Rotary	Pump Installed: No
Well Depth: 242.00 ft.	Pressure Tank Installed: No
Well Type: New	Pressure Relief Valve Installed: No
Well Use: Type III public	
Date Completed: 11/22/2006	
Casing Type: Steel - black	
Height: 1.50 ft. above grade	
Casing Joint: Welded	
Casing Fitting: Drive shoe	
Diameter: 6.00 in. to 26.00 ft. depth	
Borehole: 10.00 in. to 26.00 ft. depth	
6.00 in. to 242.00 ft. depth	

Static Water Level: 48.00 ft. Below Grade Well Yield Test: Yield Test Method: Air Pumping level 242.00 ft. after 1.00 hrs. at 5 GPM			
	Formation Description	Thickness	Depth to Bottom
	Clay Sandy	16.00	16.00
	Sandstone	226.00	242.00

Screen Installed: No				Intake: Bedrock Well					
Well Grouted: Yes				Grouting Method: Unknown					
Grouting Material				Bags	Additives	Depth			

Neat cement	10.00	None	4.00 ft. to 26.00 ft.	Geology Remarks:
Wellhead Completion: 12 inches above grade				

Nearest Source of Possible Contamination:			Drilling Machine Operator Name: PAUL LAHTI	
Type	Distance	Direction	Employment: Employee	
None	200 ft.		Contractor Type: Water Well Drilling Contractor Reg No: 1677	

	Business Name: SIIRTOLA WELL DRLG
	Business Address:
	<p align="center">Water Well Contractor's Certification</p> <p>This well was drilled under my supervision and this report is true to the best of my knowledge and belief.</p>
	<p align="center">Signature of Registered Contractor Date</p>

General Remarks: _____

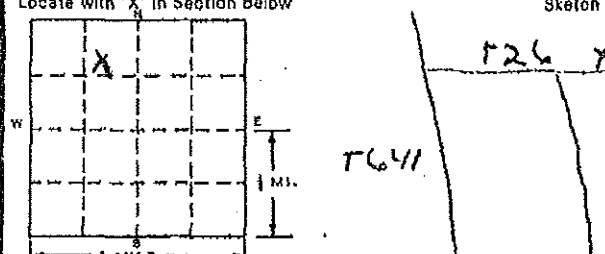
Other Remarks: _____

MICHIGAN DEPARTMENT OF PUBLIC HEALTH

WATER WELL AND PUMP RECORD

PERMIT NUMBER

95

1 LOCATION OF WELL		3 OWNER OF WELL:	
County HOUGHTON	Township Name FORCH LAKE	Fraction S 1/4 NE 1/4 HW	Section Number 21
Distance And Direction From Road Intersection 7 MILE EAST OF INTERSECT OF T641 + T26		Town Number 55 N/S	Range Number 32 E/W
Street Address & City of Well Location LAKES LINDEN		Address Same As Well Location? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Locate with "X" in Section Below		4 WELL DEPTH: (completed) 102 ft.	
Sketch Map: 		Date of Completion 29 OCT 84	
2 FORMATION DESCRIPTION		5 <input type="checkbox"/> Cable tool <input checked="" type="checkbox"/> Rotary <input type="checkbox"/> Driven <input type="checkbox"/> Dug	
THICKNESS OF STRATUM		<input type="checkbox"/> Hollow rod <input type="checkbox"/> Auger <input type="checkbox"/> Jettied <input type="checkbox"/>	
DEPTH TO BOTTOM OF STRATUM		8 USE: <input checked="" type="checkbox"/> Domestic <input type="checkbox"/> Type I Public <input type="checkbox"/> Type II Public	
SAND, CLAYEY		<input type="checkbox"/> Irrigation <input type="checkbox"/> Type IIa Public <input type="checkbox"/> Heat pump	
CLAY		<input type="checkbox"/> Test Well <input type="checkbox"/> Type IIb Public <input type="checkbox"/>	
SANDSTONE		7 CASING: <input checked="" type="checkbox"/> Steel <input type="checkbox"/> Threaded <input type="checkbox"/> Welded	
		Diameter: 6 in. to 27 ft. depth	
		Height: 18.97 ft.	
		Surface 18.97 ft.	
		Weight 18.97 lbs./ft.	
		Grouted Drill Hole Diameter	
		Drive Shoes <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
		8 SCREEN: <input checked="" type="checkbox"/> Not installed	
		Type _____ Diameter _____	
		Slot/Gouge _____ Length _____	
		Set between _____ ft. and _____ ft.	
		FITTINGS: <input type="checkbox"/> K-Packer <input type="checkbox"/> Lead Packer <input type="checkbox"/> Bremor Check	
		<input type="checkbox"/> Blank above screen _____ ft. Other _____	
		9 STATIC WATER LEVEL:	
		8 ft. below land surface <input type="checkbox"/> Flow	
		10 PUMPING LEVEL: below land surface	
		102 ft. after 1 hrs. pumping at 0.5 G.P.M.	
		_____ ft. after _____ hrs. pumping at _____ G.P.M.	
		11 WELL HEAD COMPLETION: <input type="checkbox"/> Fittess adapter <input checked="" type="checkbox"/> 42" above grade	
		<input type="checkbox"/> Basement offset <input type="checkbox"/> Approved pit	
		12 WELL GROUTED? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes From _____ to _____ ft.	
		<input type="checkbox"/> Neat cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other _____	
		No. of bags of cement _____ Additives _____	
		13 Nearest source of possible contamination	
		Type SEPTIC Distance 120 ft. Direction EAST	
		Well disinfected upon completion? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
		14 PUMP: <input checked="" type="checkbox"/> Not installed <input type="checkbox"/> Pump installation Only	
		Manufacturer's name _____	
		Model number _____ HP _____ Volts _____	
		Length of Drop Pipe _____ ft. capacity _____ G.P.M.	
		TYPE: <input type="checkbox"/> Submersible <input type="checkbox"/> Jet _____	
		PRESSURE TANK:	
		Manufacturer's name _____	
		Model number _____ Capacity _____ Gallons	
15. Remarks, elevation, source of data, etc.		16. WATER WELL CONTRACTOR'S CERTIFICATION:	
		This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.	
		SHIRTOLA WELL DRILLING 1677	
		REGISTERED BUSINESS NAME _____ REGISTRATION NO. _____	
		Address 2151 HANCOCK	
		Signed Carl J. [Signature] Date 30 OCT 84	
		AUTHORIZED REPRESENTATIVE	

D67d 2/84

JAN 2 1985

GEOLOGICAL SURVEY COPY

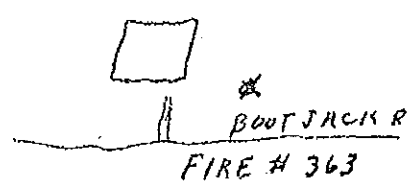
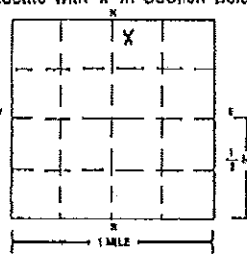
Authority: Act 368 PA 1978
 Completion: Required
 Penalty: Conviction of a violation of any provision is a

ACT 294 PA 1965

MICHIGAN DEPARTMENT
OF
PUBLIC HEALTH

GEOLOGICAL SURVEY COPY

97

TAX NO:		MICHIGAN DEPARTMENT OF PUBLIC HEALTH WATER WELL AND PUMP RECORD				PERMIT NO: 2384	
1. LOCATION OF WELL		Township Name TORCH LAKE		Fraction NW 1/4 NW 1/4 NE 1/4	Section No. 27	Town No. 55N	Range No. 33W
County Houghton							
Distance and Direction from Road Intersection 4.4 MILES SOUTH OF DREAM LAND HOTEL ON BOOTJACK ROAD AND 50 FEET WEST.		3. OWNER OF WELL Address Address Same as Well Location <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No					
Street Address & City of Well Location							
Locate with 'x' in Section Below		Sketch Map PORTAGE LAKE 		4. WELL DEPTH: 125 ft.		Date Completed 11/23/94	
				5. <input checked="" type="checkbox"/> Cable Tool <input type="checkbox"/> Rotary <input type="checkbox"/> Driven <input type="checkbox"/> Dug <input type="checkbox"/> Hollow Rod <input type="checkbox"/> Auger/Bored <input type="checkbox"/> Jetted <input type="checkbox"/>			
				6. USE: <input checked="" type="checkbox"/> Household <input type="checkbox"/> Type I Public <input type="checkbox"/> Type III Public <input type="checkbox"/> Irrigation <input type="checkbox"/> Type IIa Public <input type="checkbox"/> Heat Pump <input type="checkbox"/> Test Well <input type="checkbox"/> Type IIb Public <input type="checkbox"/>			
2. FORMATION DESCRIPTION		THICKNESS OF STRATUM		DEPTH TO BOTTOM OF STRATUM		7. CASING: <input checked="" type="checkbox"/> Steel <input type="checkbox"/> Threaded <input type="checkbox"/> Plastic <input checked="" type="checkbox"/> Welded <input type="checkbox"/> Other Diameter: 6 in. to 122 ft. depth BORE HOLE: Diameter: 6 in. to 125 ft. depth	
TOP SOIL		2'		2'		Height: Above/Below Surface: 2 ft.	
SAND		3'		5'		Weight: 1897 lbs./ft.	
CLAY SAND & GRAVEL		7'		12'		<input checked="" type="checkbox"/> Drive Shoe <input type="checkbox"/> Shale Packer	
SANDY CLAY & GRAVEL		106'		118'		8. SCREEN: <input type="checkbox"/> Not Installed <input type="checkbox"/> Gravel-Packed Type STAINLESS Diameter: 6" Slot/Gauze: 10 Length: 4' Set Between: 122 ft. and 125 ft.	
FINE RED SAND		4'		122'		FITTINGS: <input checked="" type="checkbox"/> K-Packer <input type="checkbox"/> Bremer Check <input type="checkbox"/> Blank Above Screen	
SAND		3'		125'		9. STATIC WATER LEVEL: 6 ft. Below Land Surface <input type="checkbox"/> Flowing	
						10. PUMPING LEVEL: Below Land Surface 35 ft. After 1 hrs. Pumping at 20 G.P.M. <input type="checkbox"/> Plunger <input type="checkbox"/> Bailor <input type="checkbox"/> Air <input checked="" type="checkbox"/> Test Pump	
						11. WELL HEAD COMPLETION: <input checked="" type="checkbox"/> Pitless Adapter <input type="checkbox"/> 12" Above Grade <input type="checkbox"/> Basement Offset <input type="checkbox"/> Well House	
						12. WELL GROUTED? <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes From 4 to 125 ft. <input type="checkbox"/> Neat Cement <input checked="" type="checkbox"/> Bentonite <input type="checkbox"/> Other No. of Bags 4 Additives	
						13. NEAREST SOURCE OF POSSIBLE CONTAMINATION: Type SEPTIC Distance 55 ft. Direction WEST Type Distance ft. Direction	
USE A 2ND SHEET IF NEEDED						14. PUMP: <input type="checkbox"/> Not Installed <input type="checkbox"/> Pump Installation Only Manufacturer's Name STA-RITE Model Number 10SP4C01T02HP 1/2 Volts 115 Length of Drop Pipe 40 ft. Capacity 10 G.P.M. TYPE: <input checked="" type="checkbox"/> Submersible <input type="checkbox"/> Jet <input type="checkbox"/> Other PRESSURE TANK: Manufacturer's Name AMTROL Model Number 202 Capacity 6 Gallons 20	
15. ABANDONED WELL PLUGGED? <input type="checkbox"/> Yes <input type="checkbox"/> No Casing Diameter in. Depth ft. PLUGGING MATERIAL: <input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite Slurry <input type="checkbox"/> Cement/Bentonite Slurry <input type="checkbox"/> Concrete Grout <input type="checkbox"/> Bentonite Chips No. of Bags Casing Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No		16. REMARKS: (Elevation, Source of Data, etc.) DIST. 3 OFFICE DATE FOR CLOSURE					
17. DRILLING MACHINE OPERATOR: JAN 7 1995 <input type="checkbox"/> Employee <input type="checkbox"/> Subcontractor Name G. KERANEN		WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief. KERANEN WELL & PUMP 31-1722 REGISTERED BUSINESS NAME REGISTRATION NO. Address RTG 1 BOX 238 CALUMET, MICH. 49913 Signed George Keranen Date 11-25-94 AUTHORIZED REPRESENTATIVE					

GW-2-228 9/93

GEOLOGICAL SURVEY COPY

 Authority: Act 258 PA 1976
 Completion: Required
 Penalty: Conviction of a violation of any provision is a misdemeanor.



Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Wellogic 98

Import ID:

Tax No:	Permit No: W9931116	County: Houghton	Township: Torch Lake
Well ID: 31000000426		Town/Range: 55N 33W	Section: 26
		Well Status: Active	WSSN:
Elevation:		Distance and Direction from Road Intersection:	
Latitude: 47.128891		.6 mile northwest of intersect of Baulman Rd. and Nightingale Dr.	
Longitude: -88.449103		Well Owner:	
Method of Collection: QQQ - Centroid		Well Address:	Owner Address:

Drilling Method: Rotary	Pump Installed: Yes	Pump Installation Only: No
Well Depth: 142.00 ft.	Pump Installation Date:	HP: 0.50
Well Type: New	Manufacturer: Red Jacket	Pump Type: Submersible
Casing Type: Steel - black	Model Number: 50CNSW1	Pump Capacity: 10 GPM
Casing Joint: Welded	Drop Pipe Length: 120.00 ft.	Pump Voltage:
Casing Fitting: Drive shoe	Drop Pipe Diameter:	Drilling Record ID:
Diameter: 6.00 in. to 27.50 ft. depth	Draw Down Seal Used: No	
Borehole: 10.00 in. to 27.50 ft. depth	Pressure Tank Installed: Yes	
	Pressure Tank Type: Unknown	
	Manufacturer: Other	
	Model Number: 202	Tank Capacity: 20.0 Gallons
	Pressure Relief Valve Installed: No	

Static Water Level: Above Grade (Flowing)	Formation Description	Thickness	Depth to Bottom
Well Yield Test: Yield Test Method: Unknown	Sand	2.00	2.00
Pumping level 142.00 ft. after 1.00 hrs. at 20 GPM	Sandstone	140.00	142.00

Unrestricted Flow Rate:	
Screen Installed: No	Intake: Bedrock Well

Well Grouted: Yes	Grouting Method: Unknown	Geology Remarks:
Grouting Material	Bags Additives Depth	
Neat cement	10.00 None 0.00 ft. to 27.50 ft.	

Wellhead Completion: Pileless adapter

Nearest Source of Possible Contamination:	Drilling Machine Operator Name: Paul Lahti
Type Distance Direction	Employment: Unknown
Septic tank 60 ft. Southeast	

Contractor Type: Water Well Drilling Contractor	Reg No: 1677
Business Name: Siirtola Well Drilling	
Business Address:	

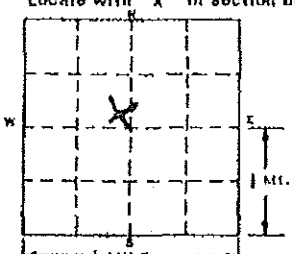
Water Well Contractor's Certification	
This well was drilled under my supervision and this report is true to the best of my knowledge and belief.	
Signature of Registered Contractor	Date

General Remarks:
Other Remarks: Tank Manufacturer: amtrol

99
WATER WELL RECORD

ACT 294 PA 1985

MICHIGAN DEPARTMENT
OF
PUBLIC HEALTH

1 LOCATION OF WELL			3 OWNER OF WELL		
County HOUGHTON	Township Name TORCH LAKE	Fraction SE 1/4 SW 1/4	Section Number 26	Town Number 33N	Range Number 40W
Distance And Direction from Road Intersections 3 MI. EAST OF DOLLAR BAY ON CENTER ROAD			Address 		
Street address & City of Well Location DOLLAR BAY MICH			4 WELL DEPTH: (completed) 90 ft. Date of Completion 7/28/72		
Locate with "X" in section below 			5 <input checked="" type="checkbox"/> Cable tool <input type="checkbox"/> Notary <input type="checkbox"/> Driven <input type="checkbox"/> Dig <input type="checkbox"/> Hollow rod <input type="checkbox"/> Jettied <input type="checkbox"/> Bored		
			6 USE: <input checked="" type="checkbox"/> Domestic <input type="checkbox"/> Public Supply <input type="checkbox"/> Industry <input type="checkbox"/> Irrigation <input type="checkbox"/> Air Conditioning <input type="checkbox"/> Commercial <input type="checkbox"/> Test Well		
2 FORMATION			7 CASING: Threaded <input checked="" type="checkbox"/> Welded <input type="checkbox"/> Height: Above/Below Surface 3 ft.		
			6 in. to 27 ft. Depth Weight 12.45 lb. Drive Shoe? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
SAND - CLAYEY			5	5	8 SCREEN:
RED - CLAY			22	27	Type: _____ Dia.: _____
RED - SANDSTONE			63	90	Slot/Gauze _____ Length _____
					Set between _____ ft. and _____ ft.
					Fittings: _____
					9 STATIC WATER LEVEL
					30 ft. below land surface
					10 PUMPING LEVEL below land surface
					70 ft. after 1 hrs. pumping 20 g.p.m.
					_____ ft. after _____ hrs. pumping _____ g.p.m.
					11 WATER QUALITY in Parts Per Million:
					Iron (Fe) _____ Chlorides (Cl) _____
					Hardness _____ Other _____
					12 WELL HEAD COMPLETION: <input type="checkbox"/> In Approved Pit
					<input checked="" type="checkbox"/> Pitless Adapter <input type="checkbox"/> 12" Above Grade
					13 Well Grouted? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
					<input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> _____
					Depth: From _____ ft. to _____ ft.
					14 Nearest Source of possible contamination
					70 feet SOUTH direction SEPTIC Type
					Well disinfected upon completion <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
					15 PUMP: <input type="checkbox"/> Not installed
					Manufacturer's Name MYERS
					Model Number SG525B HP 1/2 Volts 220
					Length of Drop Pipe 63 ft. capacity _____ G.P.M.
					Type: <input checked="" type="checkbox"/> Submersible <input type="checkbox"/> Jet <input type="checkbox"/> Reciprocating
16 Remarks, elevation, source of data, etc.			17 WATER WELL CONTRACTOR'S CERTIFICATION:		
			This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.		
			EDW. STIRYOLA 0154		
			REGISTERED BUSINESS NAME HAWROCK REGISTRATION NO. MICH		
			Address Edward Stirtola 8/7/72		
			Signed Edward Stirtola Date 8/7/72		
			AUTHORIZED REPRESENTATIVE		

SEP 11 1972



Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Wellogic 160

Import ID:

Tax No:	Permit No: W00-31042	County: Houghton	Township: Torch Lake
Well ID: 31000000380		Town/Range: 55N 33W	Section: 25
		Well Status: Active	WSSN:
Elevation: 778 ft.		Distance and Direction from Road Intersection: 1.25 MILES NE OF INTERSECT OF SENTER RD & BACKMAN RD	
Latitude: 47.12766439		Well Owner:	
Longitude: -88.43847039		Well Address:	
Method of Collection: Address Matching-House Number		Owner Address:	

Drilling Method: Rotary	Pump Installed: Yes	Pump Installation Only: No
Well Depth: 102.00 ft.	Pump Installation Date: 5/25/2001	HP: 0.50
Well Type: New	Manufacturer: Red Jacket	Pump Type: Submersible
Casing Type: Steel - black	Model Number: 50F211	Pump Capacity: 10 GPM
Casing Joint: Welded	Drop Pipe Length: 80.00 ft.	Pump Voltage:
Casing Fitting: Drive shoe	Drop Pipe Diameter:	Drilling Record ID:
Diameter: 6.00 in. to 44.00 ft. depth	Draw Down Seal Used: No	
Borehole: 6.00 in. to 44.00 ft. depth	Pressure Tank Installed: Yes	
	Pressure Tank Type: Unknown	
	Manufacturer: Other	
	Model Number: 202	Tank Capacity: 22.0 Gallons
	Pressure Relief Valve Installed: No	

Static Water Level: 24.00 ft. Below Grade	Formation Description	Thickness	Depth to Bottom
Well Yield Test:	Loam Sandy	10.00	10.00
Yield Test Method: Air	Clay	34.00	44.00
Pumping level 102.00 ft. after 1.00 hrs. at 15 GPM	Sandstone	58.00	102.00

Screen Installed: No	Intake: Bedrock Well

Well Grouted: Yes	Grouting Method: Unknown
Grouting Material	Bags Additives Depth
Bentonite slurry	24.00 None

Wellhead Completion: Pitless adapter	Geology Remarks:

Nearest Source of Possible Contamination:	Drilling Machine Operator Name: PAUL LAHTI
Type	Employment: Employee
Distance	
Direction	
Septic tank	
76 ft.	
North	

Contractor Type: Water Well Drilling Contractor	Reg No: 1677
Business Name: SIIRTOLA WELL DRILLING INC	
Business Address:	

Water Well Contractor's Certification	
This well was drilled under my supervision and this report is true to the best of my knowledge and belief.	
Signature of Registered Contractor	Date

General Remarks:
Other Remarks: Tank Manufacturer:AMTROL

Wellogic / 02

Import ID:

Tax No:		Permit No:		County: Houghton			Township: Torch Lake	
Well ID: 31000001276				Town/Range:	Section:	Well Status:	WSSN:	Source ID/Well No:
				55N 32W	30	Active		
				Distance and Direction from Road Intersection:				
				0.7 MILES NORTH OF INTERSECTION OF DAUMAN ROAD AND LAKE SHORE ROAD				
Elevation:				Well Owner:				
Latitude: 47.13099				Well Address:				
Longitude: -88.410681				Owner Address:				
Method of Collection: Interpolation-Map								

Drilling Method: Rotary	Pump Installed: Yes	Pump Installation Only: No
Well Depth: 160.00 ft.	Pump Installation Date:	HP: 0.50
Well Type: Unknown	Manufacturer: F.E. Myers	Pump Type: Submersible
Date Completed: 1/9/1987	Model Number: SJ52-J511P	Pump Capacity: 11 GPM
Casing Type: Steel - unknown	Drop Pipe Length: 63.00 ft.	Pump Voltage:
Casing Joint: Welded	Drop Pipe Diameter:	Drilling Record ID:
Casing Fitting: Drive shoe	Draw Down Seal Used: No	
Diameter: 6.00 in. to 156.00 ft. depth	Pressure Tank Installed: Yes	
	Pressure Tank Type: Unknown	
	Manufacturer: Amtrol	
Borehole:	Model Number: 250	Tank Capacity: 8.0 Gallons
	Pressure Relief Valve Installed: No	

Static Water Level: 9.00 ft. Below Grade	<table border="1"> <thead> <tr> <th>Formation Description</th> <th>Thickness</th> <th>Depth to Bottom</th> </tr> </thead> <tbody> <tr> <td>Sand</td> <td>8.00</td> <td>8.00</td> </tr> <tr> <td>Sand Clayey</td> <td>142.00</td> <td>150.00</td> </tr> <tr> <td>Sand</td> <td>10.00</td> <td>160.00</td> </tr> </tbody> </table>	Formation Description	Thickness	Depth to Bottom	Sand	8.00	8.00	Sand Clayey	142.00	150.00	Sand	10.00	160.00
Formation Description		Thickness	Depth to Bottom										
Sand		8.00	8.00										
Sand Clayey		142.00	150.00										
Sand		10.00	160.00										
Well Yield Test: Yield Test Method: Unknown													
Pumping level 160.00 ft. after 1.00 hrs. at 40 GPM													
Pumping level 40.00 ft. after 1.00 hrs. at 15 GPM													

Screen Installed: Yes	Filter Packed: No		
Screen Diameter: 6.00 in.	Blank: *u		
Screen Material Type: Stainless steel-wire wrapped			
Slot Length Set Between			
0.01 4.00 ft. 156.00 ft. and 160.00 ft.			
Fittings: Neoprene packer			
Well Grouted: No			

	Geology Remarks:
Wellhead Completion: Pitless adapter	

Nearest Source of Possible Contamination:			Drilling Machine Operator Name:	
Type	Distance	Direction	Employment: Unknown	
Septic tank	60 ft.	East		
			Contractor Type: Water Well Drilling Contractor	Req No: 1677

Abandoned Well Plugged: No	Business Name: SIIRTOLA WELL DRILLING Business Address:
----------------------------	--

Reason Not Plugged:	Water Well Contractor's Certification This well was drilled under my supervision and this report is true to the best of my knowledge and belief.
	Signature of Registered Contractor _____ Date _____

General Remarks:

Other Remarks:



Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Wellogic 103

Import ID:

Tax No: 31-014-330-005-00	Permit No: W0431074	County: Houghton	Township: Torch Lake
Well ID: 31000001455		Town/Range: 55N 32W	Section: 30
		Well Status: Active	WSSN:
Elevation:		Source ID/Well No:	
Latitude: 47.13752		Distance and Direction from Road Intersection:	
Longitude: -88.42416		0.7 mile north on Red Barn Road from Baulman Road and 200 feet east	
Method of Collection: GPS Std Positioning Svc SA Off		Well Owner:	
		Well Address: Owner Address:	

Drilling Method: Cable Tool	Pump Installed: Yes	Pump Installation Only: No
Well Depth: 119.00 ft.	Pump Installation Date: 7/30/2004	HP: 0.50
Well Type: New	Manufacturer: Goulds	Pump Type: Submersible
Casing Type: Steel - black	Model Number: 10SB05412L	Pump Capacity: 10 GPM
Casing Joint: Welded	Drop Pipe Length: 107.00 ft.	Pump Voltage:
Casing Fitting: Drive shoe	Drop Pipe Diameter: 1.00 in.	Drilling Record ID:
Diameter: 6.00 in. to 115.00 ft. depth	Draw Down Seal Used: No	
Borehole: 6.00 in. to 119.00 ft. depth	Pressure Tank Installed: Yes	
	Pressure Tank Type: Diaphragm/bladder	
	Manufacturer: Proline	
	Model Number: CA4202	Tank Capacity: 20.0 Gallons
	Pressure Relief Valve Installed: No	

Static Water Level: 48.00 ft. Below Grade	Formation Description	Thickness	Depth to Bottom
Well Yield Test: Yield Test Method: Test pump	Sand Silty	10.00	10.00
Pumping level 95.00 ft. after 2.00 hrs. at 6 GPM	Clay & Sand	56.00	66.00
	Sand Clayey Fine	2.00	68.00
Screen Installed: Yes	Sand Fine	2.00	70.00
Filter Packed: No	Clay Sand Gravel	19.00	89.00
Screen Diameter: 5.00 in.	Clay & Gravel Sandy Hard	24.00	113.00
Blank: 1.00 ft. Above	Sand & Gravel Clayey	2.00	115.00
Screen Material Type: Stainless steel-wire wrapped	Sand & Gravel	4.00	119.00
Slot Length Set Between			
12.00 4.00 ft. 115.00 ft. and 119.00 ft.			
Fittings: Neoprene packer, Bottom plug			
Well Grouted: Yes			
Grouting Method: Driven/dry grout			
Grouting Material Bags Additives Depth			
Bentonite dry granular 5.00 None			

Wellhead Completion: Pitless adapter, 12 inches above grade	Geology Remarks:
	Clay & Gravel encountered at 119 feet

Nearest Source of Possible Contamination:	Drilling Machine Operator Name: Ted Keranen
Type Distance Direction	Employment: Employee
Septic tank 100 ft. East-Northeast	Contractor Type: Water Well Drilling Contractor Reg No: 2413
Drainfield/Dry well 120 ft. East-Northeast	Business Name: Keranen & Eskola Well Drilling
	Business Address: 55961 Lake Linden Avenue, Laurium, MI, 49913
	Water Well Contractor's Certification
	This well was drilled under my supervision and this report is true to the best of my knowledge and belief.
	Signature of Registered Contractor Date

General Remarks:
Other Remarks:



Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Wellogic 104

Import ID:

Tax No:	Permit No: W9831130	County: Houghton	Township: Torch Lake			
Well ID: 31000001588		Town/Range: 55N 32W	Section: 29	Well Status: Active	WSSN:	Source ID/Well No:
Elevation:		Distance and Direction from Road Intersection: .5 MILE SOUTH OF FIRE STATION ON BOUTJACK ROAD; 250 FEET WEST				
Latitude: 47.12867023		Well Owner:				
Longitude: -88.4016408		Well Address:				
Method of Collection: Interpolation-Map		Owner Address:				

Drilling Method: Cable Tool	Pump Installed: Yes	Pump Installation Only: No
Well Depth: 35.00 ft.	Pump Installation Date:	HP: 0.50
Well Type: New	Manufacturer: Sta-Rite	Pump Type: Submersible
Casing Type: Steel - unknown	Model Number: 105P4CO15-	Pump Capacity: 10 GPM
Casing Joint: Welded	Drop Pipe Length: 25.00 ft.	Pump Voltage:
Casing Fitting: Drive shoe	Drop Pipe Diameter:	Drilling Record ID:
Diameter: 6.00 in. to 32.50 ft. depth	Draw Down Seal Used: No	
Borehole: 6.00 in. to 35.00 ft. depth	Pressure Tank Installed: Yes	
	Pressure Tank Type: Unknown	
	Manufacturer: Well-Rite-Flexcon	
	Model Number: WR-60	Tank Capacity: 20.0 Gallons
	Pressure Relief Valve Installed: No	

Static Water Level: 1.50 ft. Below Grade	Formation Description	Thickness	Depth to Bottom
Well Yield Test: Yield Test Method: Test pump	Sand	5.00	5.00
Pumping level 25.00 ft. after 2.00 hrs. at 20 GPM	Clay & Sand	3.00	8.00
	Clay Gravel Stones	14.00	22.00
	Clay & Gravel Sandy	8.00	30.00
	Sand & Gravel	5.00	35.00

Screen Installed: Yes	Filter Packed: No
Screen Diameter: 6.00 in.	Blank: *u
Screen Material Type: Stainless steel-wire wrapped	
Slot Length Set Between	
12.00 3.00 ft. 7 ft. and 35.00 ft.	
Fittings: Neoprene packer	

Well Grouted: Yes	Grouting Method: Unknown
Grouting Material	Bags Additives Depth
Bentonite slurry	3.00 None
Wellhead Completion: Pitless adapter	Geology Remarks:

Nearest Source of Possible Contamination:	Drilling Machine Operator Name: JEFF ESKOLA
Type Distance Direction	Employment: Employee
Septic tank 90 ft. North	Contractor Type: Water Well Drilling Contractor Reg No: 1722
	Business Name: KERANEN WELL & PUMP
	Business Address:
	Water Well Contractor's Certification
	This well was drilled under my supervision and this report is true to the best of my knowledge and belief.
	Signature of Registered Contractor Date

General Remarks:
Other Remarks:



Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Welllogic 105

Import ID:

Tax No:	Permit No:	County: Houghton	Township: Torch Lake
Well ID: 31000001597		Town/Range: 55N 32W	Section: 29
Elevation:		Well Status: Active	WSSN:
Latitude: 47.13043047		Source ID/Well No:	
Longitude: -88.40128247		Distance and Direction from Road Intersection: 1.5 MILE SOUTH OF BOOTJACK ON BOOTJACK ROAD	
Method of Collection: Interpolation-Map		Well Owner:	
		Well Address:	Owner Address:

Drilling Method: Cable Tool	Pump Installed: Yes	Pump Installation Only: No
Well Depth: 189.00 ft.	Pump Installation Date:	HP: 0.50
Well Type: Unknown	Manufacturer: F.E. Myers	Pump Type: Submersible
Casing Type: Unknown	Model Number: SG-52-5B	Pump Capacity: 6 GPM
Casing Joint: Threaded & coupled	Drop Pipe Length: 170.00 ft.	Pump Voltage:
Casing Fitting: Drive shoe	Drop Pipe Diameter:	Drilling Record ID:
Diameter: 5.00 in. to 188.50 ft. depth	Draw Down Seal Used: No	
Borehole:	Pressure Tank Installed: No	
	Pressure Relief Valve Installed: No	

Static Water Level: 2.00 ft. Below Grade	Formation Description	Thickness	Depth to Bottom
Well Yield Test:			
Yield Test Method: Unknown	Sand & Clay	39.00	39.00
Pumping level 100.00 ft. after 1.00 hrs. at 12 GPM	Clay Sand Gravel	31.00	70.00
	Clay	14.00	84.00

Screen Installed: Yes	Filter Packed: No	Clay Sand Gravel	100.00	184.00
Screen Diameter: 5.00 in.	Blank: *u	Sand Medium	5.00	189.00
Screen Material Type: Stainless steel-wire wrapped				
Slot	Length	Set Between		
10.00	10.00 ft.	186.00 ft. and 189.00 ft.		
Fittings: Neoprene packer				

Well Grouted: Yes	Grouting Method: Unknown	Geology Remarks:
Grouting Material	Bags	
Unknown	0.00	
Additives	None	
Depth	0.00 ft. to 100.00 ft.	
Wellhead Completion: Pitless adapter, 12 inches above grade		

Nearest Source of Possible Contamination:	Drilling Machine Operator Name:
Type	Employment: Unknown
Septic tank	
Distance	
70 ft.	
Direction	
North-Northeast	

Abandoned Well Plugged: No	Contractor Type: Water Well Drilling Contractor	Reg No: 0081
Reason Not Plugged:	Business Name: KOYKKA WELL DRILLIN G	
	Business Address:	

Water Well Contractor's Certification	
This well was drilled under my supervision and this report is true to the best of my knowledge and belief.	
Signature of Registered Contractor	Date

General Remarks:
Other Remarks:



Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Wellogic 107

Import ID:

Tax No: 31-014-385-004-00	Permit No: W0631142	County: Houghton	Township: Torch Lake
Well ID: 31000001883		Town/Range: 55N 33W	Section: 35
Elevation:		Well Status: Active	WSSN:
Latitude: 47.1212		Source ID/Well No:	
Longitude: -88.4483		Distance and Direction from Road Intersection: 0.3 mile east of Senter Road on Baulman Road on north side	
Method of Collection: GPS Std Positioning Svc SA Off		Well Owner:	
		Well Address:	
		Owner Address:	

Drilling Method: Cable Tool	Well Use: Household	Pump Installed: Yes	Pump Installation Only: No
Well Depth: 65.00 ft.	Date Completed: 10/9/2006	Pump Installation Date: 10/12/2006	HP: 0.50
Well Type: Replacement	Height: 2.00 ft. above grade	Manufacturer: Goulds	Pump Type: Submersible
Casing Type: Steel - black	Casing Joint: Welded	Model Number: 10SB05412L	Pump Capacity: 10 GPM
Casing Fitting: Drive shoe	Diameter: 6.00 in. to 36.50 ft. depth	Drop Pipe Length: 41.00 ft.	Pump Voltage:
	Borehole: 6.00 in. to 65.00 ft. depth	Drop Pipe Diameter: 1.00 in.	Drilling Record ID:
		Draw Down Seal Used: No	
		Pressure Tank Installed: Yes	
		Pressure Tank Type: Diaphragm/bladder	
		Manufacturer: Goulds	
		Model Number: V60	Tank Capacity: 20.0 Gallons
		Pressure Relief Valve Installed: Yes	
Static Water Level: 25.50 ft. Below Grade	Well Yield Test: Yield Test Method: Test pump	Formation Description	Thickness
Pumping level 26.00 ft. after 20.00 hrs. at 20 GPM			Depth to Bottom
Screen Installed: No	Intake: Bedrock Well	Sand & Stones Silty	7.00
		Sand	16.00
		Clay	3.00
		Clay W/Sandstone	6.00
		Sandstone Soft	4.50
		Sandstone	28.50
Well Grouted: Yes	Grouting Method: Driven/dry grout		
Grouting Material: Bentonite dry granular	Bags: 3.00		
Additives: None	Depth:		
Wellhead Completion: Pitless adapter, 12 inches above grade		Geology Remarks:	
Nearest Source of Possible Contamination:		Drilling Machine Operator Name: Kevin Keranen	
Type: Septic tank	Distance: 50 ft.	Employment: Employee	
Direction: North-Northeast			
Drainfield/Dry well	55 ft.		
Direction: North-Northeast			
Abandoned Well Plugged: No		Contractor Type: Water Well Drilling Contractor	Reg No: 2413
Reason Not Plugged: Well still in use for non-drinking water purposes		Business Name: Keranen & Eskola Well Drilling	
		Business Address: 55961 Lake Linden Avenue, Laurium, MI, 49913	
		Water Well Contractor's Certification	
		This well was drilled under my supervision and this report is true to the best of my knowledge and belief.	
		Signature of Registered Contractor	Date
General Remarks:			
Other Remarks:			



Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Welllogic 109

Import ID:

Tax No: 31-014-386-008-60		Permit No: W0631047		County: Houghton		Township: Torch Lake	
Well ID: 31000001812		Town/Range: 55N 33W	Section: 36	Well Status: Active	WSSN:	Source ID/Well No:	
Elevation:		Distance and Direction from Road Intersection: 300 feet south of Nightingale Drive on Baulman Road on east side					
Latitude: 47.12651		Well Owner:					
Longitude: -88.44534		Well Address:				Owner Address:	
Method of Collection: GPS Std Positioning Svc SA Off							

Drilling Method: Cable Tool		Well Use: Household		Pump Installed: Yes		Pump Installation Only: No	
Well Depth: 70.00 ft.		Well Type: New		Pump Installation Date: 5/15/2006		HP: 0.50	
Casing Type: Steel - black		Date Completed: 5/12/2006		Manufacturer: Goulds		Pump Type: Submersible	
Casing Joint: Welded		Height: 2.00 ft. above grade		Model Number: 10SB05422		Pump Capacity: 10 GPM	
Casing Fitting: Drive shoe		Diameter: 6.00 in. to 49.50 ft. depth		Drop Pipe Length: 61.00 ft.		Pump Voltage:	
Borehole: 6.00 in. to 70.00 ft. depth				Drop Pipe Diameter: 1.00 in.		Drilling Record ID:	
				Draw Down Seal Used: No			
				Pressure Tank Installed: Yes			
				Pressure Tank Type: Diaphragm/bladder			
				Manufacturer: Goulds			
				Model Number: V-60		Tank Capacity: 20.0 Gallons	
				Pressure Relief Valve Installed: Yes			
Static Water Level: 37.00 ft. Below Grade		Well Yield Test:		Yield Test Method: Bailer			
Pumping level 50.00 ft. after 0.50 hrs. at 25 GPM							
Screen Installed: No		Intake: Bedrock Well		Formation Description		Thickness	Depth to Bottom
				Sand		4.00	4.00
				Sand Clayey		10.00	14.00
				Sand		8.00	22.00
				Sand Clayey		3.00	25.00
				Sand		11.00	36.00
				Brown Clay		1.00	37.00
				Red Clay		1.00	38.00
				Sandstone Soft		11.50	49.50
				Sandstone Jacobsville Ss		20.50	70.00
Well Grouted: Yes		Grouting Method: Driven/dry grout					
Grouting Material		Bags	Additives	Depth			
Bentonite dry granular		4.00	None				
Wellhead Completion: Pitless adapter, 12 inches above grade				Geology Remarks:			
Nearest Source of Possible Contamination:				Drilling Machine Operator Name: Ted Keranen			
Type	Distance	Direction		Employment: Employee			
Septic tank	80 ft.	South		Pump Installer: Jeff Eskola			
Drainfield/Dry well	100 ft.	South		Contractor Type: Water Well Drilling Contractor		Reg No: 2413	
				Business Name: Keranen & Eskola Well Drilling			
				Business Address: 55961 Lake Linden Avenue, Laurium, MI, 49913			
				Water Well Contractor's Certification			
				This well was drilled under my supervision and this report is true to the best of my knowledge and belief.			
				Signature of Registered Contractor		Date	
General Remarks:							
Other Remarks:							

Wellogig 110

Import ID:

Tax No: 31-014-331-045-00		Permit No: W08-31-053		County: Houghton		Township: Torch Lake		
Well ID: 31000002100				Town/Range:	Section:	Well Status:	WSSN:	Source ID/Well No:
				55N 32W	31	Active		
				Distance and Direction from Road Intersection: 0.6 MI E OF INTERSECT OF RED BARN RD & BAULMAN RD				
Elevation:				Well Owner:				
Latitude: 47.12176				Well Address:				
Longitude: -88.41677				Owner Address:				
Method of Collection: GPS Std Positioning Svc SA Off								

Drilling Method: Rotary	Pump Installed: Yes	Pump Installation Only: No
Well Depth: 182.00 ft.	Pump Installation Date:	HP: 0.50
Well Type: New	Manufacturer: Red Jacket	Pump Type: Submersible
	Model Number: 50C211CNS9	Pump Capacity: 10 GPM
Casing Type: Steel - black	Drop Pipe Length: 141.00 ft.	Pump Voltage:
Casing Joint: Welded	Drop Pipe Diameter: 1.00 in.	Drilling Record ID:
Casing Fitting: Drive shoe	Draw Down Seal Used: No	
Diameter: 6.00 in. to 159.00 ft. depth	Pressure Tank Installed: Yes	
	Pressure Tank Type: Diaphragm/bladder	
	Manufacturer: Amtrol	
Borehole: 6.00 in. to 182.00 ft. depth	Model Number: BN4202	Tank Capacity: 20.0 Gallons
	Pressure Relief Valve Installed: Yes	

Static Water Level: 36.00 ft. Below Grade Well Yield Test: Yield Test Method: Air Pumping level 182.00 ft. after 1.00 hrs. at 12 GPM	Formation Description	Thickness	Depth to Bottom
	Sand	10.00	10.00
	Sand Clayey	47.00	57.00
	Clay	102.00	159.00

[illegible]

Well Grouted: Yes				Grouting Method: Unknown							
Grouting Material		Bags	Additives	Depth							
Bentonite dry granular		3.00	None	4.00 ft. to 159.00 ft.				Geology Remarks:			

Wellhead Completion: Pitless adapter	

Nearest Source of Possible Contamination:			Drilling Machine Operator Name: PAUL LAHTI
Type	Distance	Direction	Employment: Employee
Septic tank	70 ft.	Northeast	Pump Installer: NATHAN SIIRTOLA
			Contractor Type: Water Well Drilling Contractor Reg No: 1677

WATER WELL RECORD
ACT 204 PA 1966MICHIGAN DEPARTMENT
OF
PUBLIC HEALTH

1 LOCATION OF WELL

County

Township Name

Fraction

Section Number

Town Number

Range Number

HOUGHTON

TORCH LAKE

SE 1/4 NW 1/4 NE 1/4

31

55 N/2

32 1/2 W.

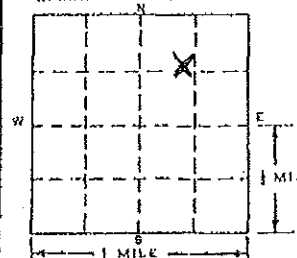
Distance And Direction from Road Intersections

4 MILES EAST OF DOLLAR BAY AND 1/8
MI. N. OF BAULMAN ROAD.

Street address & City of Well Location

Locate with "X" in section below

Sketch Map:



3 OWNER OF WELL:

Address

4 WELL DEPTH: (completed) Date of Completion

65

ft.

8/7/78

☒ Cable tool ☐ Rotary ☐ Driven ☐ Dug
☐ Hollow rod ☐ Jetted ☐ Bored ☐

 6 USE: ☒ Domestic ☐ Public Supply ☐ Industry
☐ Irrigation ☐ Air Conditioning ☐ Commercial
☐ Test Well ☐
7 CASING: Threaded ☒ Welded ☐ Height: Above/Below

Diam. Surface 2 ft.

Weight 14.8 lbs./ft.

Drive Shoe? Yes ☒ No ☐

8 SCREEN:

Type: STAINLESS Dia.: 5" TELESCOPE

Slot/Gauze 12 SLOT Length 3'

Set between 62 ft. and 65 ft.

Fittings: LEAD PACKER & BAIL BOTTOM

9 STATIC WATER LEVEL

4 ft. below land surface

10 PUMPING LEVEL below land surface

23 ft. after 2 hrs. pumping 13 g.p.m.

ft. after hrs. pumping g.p.m.

11 WATER QUALITY in Parts Per Million:

Iron (Fe) Chlorides (Cl)

Hardness Other

12 WELL HEAD COMPLETION: ☐ In Approved Pit☒ Pitless Adaptor ☐ 12" Above Grade13 Well Grouted? ☐ Yes ☒ No☐ Neat Cement ☐ Bentonite ☐

Depth: From ft. to ft.

14 Nearest Source of possible contamination

90 feet E Direction SEPTIC Type

Well disinfected upon completion ☒ Yes ☐ No15 PUMP: ☐ Not installed

Manufacturer's Name BURKE

Model Number A3SN6B HP/3 Volts 115

Length of Drop Pipe 42 ft. capacity 42 G.P.M.

Type: ☒ Submersible☐ Jet☐ Reciprocating

USE A 2ND SHEET IF NEEDED

16 Remarks, elevation, source of data, etc.

17 WATER WELL CONTRACTOR'S CERTIFICATION:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

VALLEY PLDG & HIG., INC. 1684
REGISTERED BUSINESS NAME REGISTRATION NO.

Address POB 458, DOLLAR BAY, MI 49922

Signed *E. J. E. J. E. J.* Date 9/5/78

AUTHORIZED REPRESENTATIVE

SEP 11 1978



Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.

Welllogic 112

Import ID:

Failure to comply is a misdemeanor.

Tax No:	Permit No: W9931127	County: Houghton	Township: Torch Lake			
Well ID: 31000000394		Town/Range: 55N 32W	Section: 32	Well Status: Active	WSSN:	Source ID/Well No:
		Distance and Direction from Road Intersection: Fire #116 on Boot Jack Road				
Elevation:		Well Owner:				
Latitude: 47.118197		Well Address:				
Longitude: -88.401904		Owner Address:				
Method of Collection: QQQ - Centroid						

Drilling Method: Cable Tool	Pump Installed: No				
Well Depth: 46.00 ft.	Pressure Tank Installed: No				
Well Type: New	Pressure Relief Valve Installed: No				
Casing Type: Steel - black					
Casing Joint: Welded					
Casing Fitting: Drive shoe					
Diameter: 6.00 in. to 42.00 ft. depth					
Borehole: 6.00 in. to 46.00 ft. depth					
Static Water Level: 3.00 ft. Below Grade	Formation Description		Thickness	Depth to Bottom	
Well Yield Test: Yield Test Method: Test pump	Topsoil		1.00	1.00	
Pumping level 37.00 ft. after 2.00 hrs. at 20 GPM	Sand & Stones		4.00	5.00	
	Clay Sand Gravel		5.00	10.00	
Screen Installed: Yes	Filter Packed: No	Clay & Gravel Sandy		31.00	41.00
Screen Diameter: 6.00 in.	Blank:	Sand & Gravel		5.00	46.00
Screen Material Type: Stainless steel-wire wrapped					
Slot Length Set Between					
12.00 4.00 ft. 42.00 ft. and 46.00 ft.					
Fittings: Neoprene packer					
Well Grouted: Yes	Grouting Method: Unknown				
Grouting Material Bags Additives Depth					
Bentonite slurry 3.00 None					
Wellhead Completion: Pitless adapter	Geology Remarks:				
Nearest Source of Possible Contamination:	Drilling Machine Operator Name: Jeff Eskola				
Type Distance Direction	Employment: Employee				
None	Contractor Type: Water Well Drilling Contractor Reg No: 1722				
None	Business Name: Keranen Well & Pump				
	Business Address:				
	Water Well Contractor's Certification				
	This well was drilled under my supervision and this report is true to the best of my knowledge and belief.				
	Signature of Registered Contractor Date				

General Remarks:

Other Remarks:

113

WATER WELL RECORD

ACT 204 PA 1965

MICHIGAN DEPARTMENT
OF
PUBLIC HEALTH

1 LOCATION OF WELL			3 OWNER OF WELL		
County	Township Name	Fraction	Section Number	Town Number	Range Number
Houghton	TURCH LAKE	SE 1/4 NW 1/4	32	55 N.S.	32 W.
Distance And Direction from Road Intersections			Address		
5 MILES FROM LAKE LINCOLN ON BOOTHACK ROAD					
Street Address & City of Well Location			4 WELL DEPTH: (completed) Date of Completion		
LAKE LINCOLN MICH			196 ft. SEPT 15, 1976		
Locate with "X" in section below			5 <input checked="" type="checkbox"/> Cable tool <input type="checkbox"/> Rotary <input type="checkbox"/> Driven <input type="checkbox"/> Dig		
Sketch Map:			<input type="checkbox"/> Hollow rod <input type="checkbox"/> Jetted <input type="checkbox"/> Bored <input type="checkbox"/>		
			6 USE: <input checked="" type="checkbox"/> Domestic <input type="checkbox"/> Public Supply <input type="checkbox"/> Industry		
			<input type="checkbox"/> Irrigation <input type="checkbox"/> Air Conditioning <input type="checkbox"/> Commercial		
			<input type="checkbox"/> Test Well <input type="checkbox"/>		
			7 CASING: Threaded <input checked="" type="checkbox"/> Welded <input type="checkbox"/>		
			Height: Above/Below Surface <u>2</u> ft.		
			Weight <u>19.45</u> lbs./ft.		
			Drive Shoe? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
2 FORMATION			8 SCREEN: JOHNSON		
	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM	Type: STAINLESS Dia.: <u>6"</u>		
SAND	5	5	Slot/Gauze <u>0.10</u> Length <u>4'</u>		
SAND - CLAYEY	55	60	Set between <u>192</u> ft. and <u>196</u> ft.		
GRAVELLY CLAY	28	88	Fittings: STANDARD		
SAND CLAYEY	104	192	9 STATIC WATER LEVEL		
WATER BEARING SAND	4	196	<u>0</u> ft. below land surface		
			10 PUMPING LEVEL below land surface		
			<u>30</u> ft. after <u>1</u> hrs. pumping <u>480</u> g.p.m.		
			ft. after ___ hrs. pumping ___ g.p.m.		
			11 WATER QUALITY in Parts Per Million:		
			Iron (Fe) _____ Chlorides (Cl) _____		
			Hardness _____ Other _____		
			12 WELL HEAD COMPLETION: <input type="checkbox"/> In Approved Pit		
			<input checked="" type="checkbox"/> Pitless Adapter <input type="checkbox"/> 12" Above Grade		
			13 Well Grouted? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
			<input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/>		
			Depth: From _____ ft. to _____ ft.		
			14 Nearest Source of possible contamination		
			<u>75</u> feet <u>North</u> direction <u>SEPTIC</u> Type		
			Well disinfected upon completion <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
			15 PUMP:		
			<input type="checkbox"/> Not installed		
			Manufacturer's Name <u>MYERS</u>		
			Model Number <u>SG52-55</u> HP <u>1</u> Volts <u>230</u>		
			Length of Drop Pipe <u>45</u> ft. capacity _____ G.P.M.		
			Type: <input checked="" type="checkbox"/> Submersible		
			<input type="checkbox"/> Jet <input type="checkbox"/> Reciprocating		
16 Remarks, elevation, source of data, etc.			17 WATER WELL CONTRACTOR'S CERTIFICATION:		
			This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.		
			SILRITULA WELL DRILLING 0154		
			REGISTERED BUSINESS NAME REGISTRATION NO.		
			Address <u>ROUTE 1, HANCOCK MICH</u>		
			Signed <u>Edward Silritula</u> Date <u>10/11/76</u>		
			AUTHORIZED REPRESENTATIVE		

OCT 27 1976



Water Well And Pump Record

Completion is required under authority of Part 127 Act 368 PA 1978.

Failure to comply is a misdemeanor.

Wellogic

114

Import ID:

Tax No:	Permit No:	County: Houghton	Township: Torch Lake			
Well ID: 31000001277		Town/Range: 55N 32W	Section: 33	Well Status: Active	WSSN:	Source ID/Well No:
Elevation:		Distance and Direction from Road Intersection: 200 FEET EAST OF INTERSECTION OF POINT MILLS AND GROSSE POINT ROAD				
Latitude: 47.127091		Well Owner:				
Longitude: -88.378243		Well Address:				
Method of Collection: Interpolation-Map		Owner Address:				

Drilling Method: Rotary	Pump Installed: Yes	Pump Installation Only: No
Well Depth: 120.00 ft.	Pump Installation Date:	HP: 0.50
Well Type: Unknown	Manufacturer: F.E. Myers	Pump Type: Submersible
Casing Type: Unknown	Model Number: SH52-58	Pump Capacity:
Casing Joint: Welded	Drop Pipe Length: 89.00 ft.	Pump Voltage:
Casing Fitting: Drive shoe	Drop Pipe Diameter:	Drilling Record ID:
Diameter: 6.00 in. to 29.00 ft. depth	Draw Down Seal Used: No	
Borehole:	Pressure Tank Installed: No	
	Pressure Relief Valve Installed: No	

Static Water Level: 24.00 ft. Below Grade	Formation Description	Thickness	Depth to Bottom
Well Yield Test:	Clay Sandy	12.00	12.00
Yield Test Method: Unknown	Clay	17.00	29.00
Pumping level 100.00 ft. after 1.00 hrs. at 20 GPM	Sandstone	91.00	120.00

Screen Installed: No	Intake: Bedrock Well
Well Grouted: No	

Wellhead Completion: Pitless adapter	Geology Remarks:
--------------------------------------	------------------

Nearest Source of Possible Contamination:	Drilling Machine Operator Name:
Type	Employment: Unknown
Septic tank	

Abandoned Well Plugged: No	Contractor Type: Water Well Drilling Contractor	Reg No: 0154
Reason Not Plugged:	Business Name: SIIRTOLA WELL DRILLING	
	Business Address:	

Water Well Contractor's Certification	
This well was drilled under my supervision and this report is true to the best of my knowledge and belief.	
Signature of Registered Contractor	Date

General Remarks:
Other Remarks:

Appendix H

Michigan Natural Features Inventory Survey Results



T54N
R32W

MICHIGAN STATE
UNIVERSITY
EXTENSION

Search Results for Houghton County
Displaying Record 1 to 3 of 3 Records Found

Common Name	Scientific Name	State Status	Federal Status	Last Observed Date	Element Category	Mapping Precision	General Site Description
Bald eagle	Haliaeetus leucocephalus	SC		2004-07-08	Animal	S	✓
Lake herring or Cisco	Coregonus artedii	T		1988	Animal		✓ Portage Lake - Area (9641 acres), Max. Depth (54 ft)
Sauger	Sander canadensis	T		1955-08-19	Animal		✓

T = threatened

Query Results Generated on Mar 07, 2012

Database Updated on Nov 07, 2011

New Search	Refine Search	Previous 25 Records	Next 25 Records
EO Data	Site of Observation	Best Documentation of EO	Town Range Section County
1988: inactive. 1989: ad sitting. 1990: 2 yg. 1991: 2 yg, 1 banded. 1992-93: 2 yg banded. 1994: 2 yg, 1995: ad seen in area. 1996: Inactive. 1997: (a) gone. 1998: Inactive. 1999: (b) Ad. obs. incubating, nest failed. 2000: (c) 2 unbanded yg. 2001: (c) nest occupied but failed; 3 eggs found. 2002: (c) nest occupied but failed. 2003: (c) 2 yg. 2004: (d?) 2 yg?.	Ho-10 Bootjack	Hendrickson, J. 1988. Eagle/Osprey Production 1988.	54N 32W 6 Houghton ✓
	Portage Lake	Bailey, R.M., W.C. Latta, and G.R. Smith. 2003. MI Fish Atlas 2003 - Access database and shapefiles. In Digital Water Atlas V1 edited by Institute for Fisheries Research, MI DNR, Feb 20 2003.	54N 32W 6,7 Houghton ✓
	Portage Lake	Bailey, R.M., W.C. Latta, and G.R. Smith. 2003. MI Fish Atlas 2003 - Access database and shapefiles. In Digital Water Atlas V1 edited by Institute for Fisheries Research, MI DNR, Feb 20 2003.	54N 32W 6,7 Houghton ✓
New Search	Refine Search	Previous 25 Records	Next 25 Records



T54N
R33W

MICHIGAN STATE
UNIVERSITY
EXTENSION

Search Results for Houghton County
Displaying Record 1 to 6 of 6 Records Found

Query Results Generated on Mar 08, 2012

Database Updated on Nov 07, 2011

New Search

Refine Search

Previous 25 Records

Next 25 Records

Common Name	Scientific Name	State Status	Federal Status	Last Observed Date	Element Category	Mapping Precision	General Site Description	EO Data	Site of Observation	Best Documentation of EO	Town Range	Section	County
Great Lakes Marsh				1987-08-12	Community	S	A large estuary/river mouth marsh complex between the Portage and Sturgeon Rivers, protruding into Portage Lake and extending south to Highway 41.	The northwest part is primarily wet meadow of acidic nature, resembling bog. Mat depth 4'-7". Shrub swamp of monoculture Myrica occupies old river channels. Emergent bulrush marsh with submergent species on rivermouth sandbars. Strong currents prohibit rivermouth vegetation. ~60 species.	Sturgeon River	Albert, D.A. 1987. August 12 - MNFI Site Survey.	54N 33W	28,32,33,34	Houghton
Common loon	Gavia immer	T		1992	Animal	M		1992: 1 pr.	Portage Lake - Houghton County	Westhoven, Arlene. 1992 Michigan Loon Watch Report.	54N 33W	9,10,11,14,15,16,21,22,23	Houghton
Douglas's hawthorn	Crataegus douglasii	SC		1950-06-13	Plant	G			Houghton		54N 33W	4,5,6,7,8,17,18	Houghton
Lake herring or Cisco	Coregonus artedii	T		1988	Animal		Portage Lake - Area (9641 acres), Max. Depth (54 ft)		Portage Lake	Bailey, R.M., W.C. Latta, and G.R. Smith. 2003. MI Fish Atlas 2003 - Access database and shapefiles. In Digital Water Atlas V1 edited by Institute for Fisheries Research, MI DNR, Feb 20 2003.	54N 33W	4,5,8,9,10,11,12,13,14,15,16,17,20,21,22,23,27,28,29,32,33,34	Houghton
Lake sturgeon	Acipenser fulvescens	T		1998-08-03	Animal		no habitat information provided.	13 juveniles were captured using 12 experimental gill nets. Nets were set at 16 to 50 ft depths. Eleven of the fish ranged in length from 230 to 395 mm in total length and 2 to 9 oz. The remaining 2 were 386 mm and 8 Oz and 625	Portage Lake	Auer, N.A. 1998. DNR - Threatened / Endangered Species Report.	54N 33W	4,5,9,10,15,16	Houghton

T = threatened

(over)

T 55N
R 32W



MICHIGAN STATE
UNIVERSITY
EXTENSION

Search Results for Houghton County
Displaying Record 1 to 3 of 3 Records Found

Query Results Generated on Mar 07, 2012
Database Updated on Nov 07, 2011

[New Search](#) [Refine Search](#) [Previous 25 Records](#) [Next 25 Records](#)

Common Name	Scientific Name	State Status	Federal Status	Last Observed Date	Element Category	Mapping Precision	General Site Description	EO Data	Site of Observation	Best Documentation of EO	Town Range	Section	County
Bald eagle	Haliaeetus leucocephalus	SC		2004-07-08	Animal	S		1988: inactive. 1989: ad sitting. 1990: 2 yg. 1991: 2 yg, 1 banded. 1992-93: 2 yg banded. 1994: 2 yg. 1995: ad seen in area. 1996: Inactive. 1997: (a) gone. 1998: Inactive. 1999: (b) Ad. obs. incubating, nest failed. 2000: (c) 2 unbanded yg. 2001: (c) nest occupied but failed; 3 eggs found. 2002: (c) nest occupied but failed. 2003: (c) 2 yg. 2004: (d?) 2 yg?.	Ho-10 Bootjack	Hendrickson, J. 1988. Eagle/Osprey Production 1988.	55N 32W	19 20,29 30 31	Houghton
Lake herring or Cisco	Coregonus artedii	T		1988	Animal		Torch Lake - Area (2750 acres), Max. Depth (123 ft) Thermal/Oxygen (Latta, 1995 where =coldest, high oxygen and 4 = warmest, low oxygen) - 1		Torch Lake	Bailey, R.M., W.C. Latta, and G.R. Smith. 2003. MI Fish Atlas 2003 - Access database and shapefiles. In Digital Water Atlas V1 edited by Institute for Fisheries Research, MI DNR, Feb 20 2003.	55N 32W	5,6,7,8,17,18,19	Houghton
Sauger	Sander canadensis	T		1976-08-29	Animal				Torch Lake	Bailey, R.M., W.C. Latta, and G.R. Smith. 2003. MI Fish Atlas 2003 - Access database and shapefiles. In Digital Water Atlas V1 edited by Institute for Fisheries Research, MI DNR, Feb 20 2003.	55N 32W	5,6,7,8,17,18,19	Houghton

[New Search](#) [Refine Search](#) [Previous 25 Records](#) [Next 25 Records](#)

T = threatened



T 55N
R 33W

MICHIGAN STATE
UNIVERSITY
EXTENSION

Search Results for Houghton County
Displaying Record 1 to 4 of 4 Records Found

Query Results Generated on Mar 07, 2012

Database Updated on Nov 07, 2011

							New Search		Refine Search		Previous 25 Records		Next 25 Records	
Common Name	Scientific Name	State Status	Federal Status	Last Observed Date	Element Category	Mapping Precision	General Site Description	EO Data	Site of Observation	Best Documentation of EO	Town Range	Section	County	
Douglas's hawthorn	Crataegus douglasii	SC		1950-06-13	Plant	G			Houghton		55N 33W	31,32	Houghton	
Lake herring or Cisco	Coregonus artedii	T		1988	Animal		Torch Lake - Area (2750 acres). Max. Depth (123 ft) Thermal/Oxygen (Latta, 1995 where 1=coldest, high oxygen and 4 = warmest, low oxygen) -1		Torch Lake	Bailey, R.M., W.C. Latta, and G.R. Smith. 2003. MI Fish Atlas 2003 - Access database and shapefiles. In Digital Water Atlas V1 edited by Institute for Fisheries Research, MI DNR, Feb 20 2003.	55N 33W	13,14,23,24,26,27,34,35	Houghton	
Lake sturgeon	Acipenser fulvescens	T		1998-08-03	Animal		no habitat information provided.	13 juveniles were captured using 12 experimental gill nets. Nets were set at 16 to 50 ft depths. Eleven of the fish ranged in length from 230 to 395 mm in total length and 2 to 9 oz. The remaining 2 were 386 mm and 8 oz and 625 mm and 39 oz (both of these fish were fitted with transmitters). The small fish tagged did not survive.	Portage Lake	Auer, N.A. 1998. DNR - Threatened / Endangered Species Report.	55N 33W	32,33	Houghton	
Sauger	Sander canadensis	T		1976-08-29	Animal				Torch Lake	Bailey, R.M., W.C. Latta, and G.R. Smith. 2003. MI Fish Atlas 2003 - Access database and shapefiles. In Digital Water Atlas V1 edited by Institute for Fisheries Research, MI DNR, Feb 20 2003.	55N 33W	13,14,23,24,26,27,34,35	Houghton	

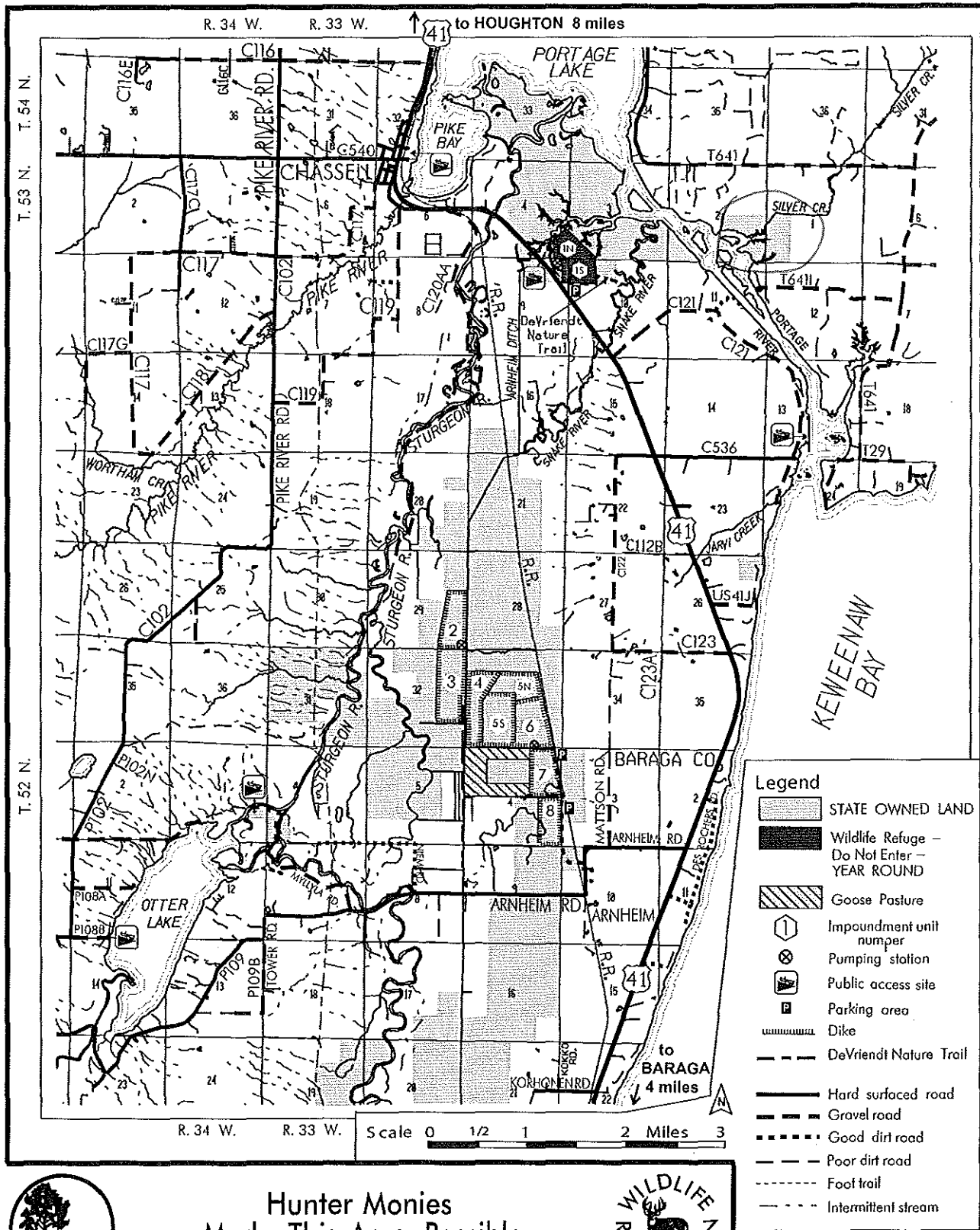


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STURGEON RIVER SLOUGHS STATE WILDLIFE AREA

HOUGHTON & BARAGA COUNTIES, MICHIGAN



Hunter Monies
Made This Area Possible

DNR - Wildlife Map 310101 (was 0101) Rev. 8/2006 -MLS

