

Table 4.--Selected logs of wells and test holes in Marshall County, Ind.--Cont.

Well 35/1-32N1--Continued

Material	Thick- ness (feet)	Depth (feet)	Remarks
Devonian and Silurian Systems; undifferentiated:			
Shale, gray-green, and dolomitic lime; interbedded-----	43	493	
Lime, hard; shaly, buff, gray, and gray-blue-----	52	545	
Lime, dolomitic, white to buff, with some shale-----	40	585	
Lime, dolomitic, white to gray, with considerable shale-----	23	608	
Lime, very fine, extremely hard, dense, dolomitic-----	47	655	
Lime, fine-grained, hard, dolomitic, with some gypsum----	50	705	

Well 35/1-36B1

Type of record: Driller's log.

Altitude: 837 feet.

Quaternary System:			
Recent and Pleistocene Series:			
Clay, yellow-----	34	34	
Clay, blue-----	11	45	
Sand, dark-----	15	60	
Clay, blue-----	10	70	
Sand-----	14	84	

Well 35/1-36Q1

Type of record: Driller's log.

Altitude: 825 feet.

Quaternary System:			
Recent and Pleistocene Series:			
Top soil, sandy-----	20	20	
Clay, soft, blue-----	40	60	
Clay, blue, and gravel; mixed----	10	70	
Gravel, pea-sized-----	17	87	

Well 35/2-27F1

Type of record: Driller's log.

Altitude: 846 feet.

Quaternary System:			
Recent and Pleistocene Series:			
Clay-----	48	48	
Hardpan-----	22	70	
Mud-----	64	134	
Sand and gravel-----	20	154	
Record missing-----	2	156	

Table 4.--Selected logs of wells and test holes in Marshall County, Ind.--Cont.

Well 35/2-27G1

Type of record: Driller's log.		Altitude: 846 feet.	
Material	Thick-ness (feet)	Depth (feet)	Remarks
Quaternary System:			
Recent and Pleistocene Series:			
Clay-----	30	30	
Hardpan-----	150	180	
Mud, red-----	7	187	
Clay-----	10	197	
Mississippian System:			
Lower Mississippian Series:			
Limestone-----	5	202	

Well 35/2-27P1

Type of record: Driller's log.		Altitude: 847 feet.	
Material	Thick-ness (feet)	Depth (feet)	Remarks
Quaternary System:			
Recent and Pleistocene Series:			
Clay, yellow-----	16	16	
Gravel, pea-sized-----	4	20	
Clay, blue, and gravel; mixed----	45	65	
Shale fragments-----	2	67	
Clay, blue, and gravel-----	83	150	
Gravel, pea-sized-----	10	160	

Well 35/2-28D1

Type of record: Driller's log.		Altitude: 854 feet.	
Material	Thick-ness (feet)	Depth (feet)	Remarks
Quaternary System:			
Recent and Pleistocene Series:			
Clay, yellow-----	18	18	
Gravel and blue clay; mixed-----	17	35	
Gravel, pea-sized-----	7	42	

Well 35/2-28E1

Type of record: Driller's log.		Altitude: 867 feet.	
Material	Thick-ness (feet)	Depth (feet)	Remarks
Quaternary System:			
Recent and Pleistocene Series:			
Clay, blue-----	35	35	
Clay, blue and gravel-----	11	46	
Clay, blue-----	43	89	
Sand, yellow-----	8	97	

Well 35/2-28E2

Type of record: Driller's log.		Altitude: 863 feet.	
Material	Thick-ness (feet)	Depth (feet)	Remarks
Quaternary System:			
Recent and Pleistocene Series:			
Clay, brown-----	18	18	
Sand, brown-----	2	20	
Clay, blue, and gravel-----	55	75	
Sand and gravel; red-----	8	83	

Table 4.--Selected logs of wells and test holes in Marshall County, Ind.--Cont.

Well 35/2-28E3

Type of record: Driller's log.

Altitude: 867 feet.

Material	Thick- ness (feet)	Depth (feet)	Remarks
Quaternary System:			
Recent and Pleistocene Series:			
Clay, yellow, and gravel-----	30	30	
Clay, blue, and gravel-----	8	38	
Gravel and coarse sand-----	4	42	

Well 35/2-28F1

Type of record: Driller's log.

Altitude: 857 feet.

Material	Thick- ness (feet)	Depth (feet)	Remarks
Quaternary System:			
Recent and Pleistocene Series:			
Record missing-----	40	40	
Clay, blue-----	40	80	
Clay, yellow, and gravel; mixed--	20	100	
Gravel, fine-----	8	108	

Well 35/2-28F3

Type of record: Driller's log.

Altitude: 857 feet.

Material	Thick- ness (feet)	Depth (feet)	Remarks
Quaternary System:			
Recent and Pleistocene Series:			
Clay, yellow-----	20	20	
Gravel-----	10	30	
Gravel, pea-sized, and sand-----	10	40	
Clay, blue, and gravel-----	50	90	
Gravel, pea-sized-----	15	105	

Well 35/2-28F4

Type of record: Driller's log.

Altitude: 850 feet.

Material	Thick- ness (feet)	Depth (feet)	Remarks
Quaternary System:			
Recent and Pleistocene Series:			
Clay, yellow-----	18	18	
Clay, blue-----	22	40	
Gravel with slate and blue shale-	15	55	
Clay, blue, and gravel; mixed, hard-----	35	90	
Gravel, coarse-----	20	110	

Well 35/2-28P1

Type of record: Driller's log.

Altitude: 857 feet.

Material	Thick- ness (feet)	Depth (feet)	Remarks
Quaternary System:			
Recent and Pleistocene Series:			
Clay-----	20	20	
Sand-----	15	35	
Clay, sandy-----	10	45	
Sand-----	14	59	

Table 4.--Selected logs of wells and test holes in Marshall County, Ind.--Cont.

Well 35/2-28P2

Type of record: Driller's log.

Altitude: 853 feet.

Material	Thick- ness (feet)	Depth (feet)	Remarks
Quaternary System:			
Recent and Pleistocene Series:			
Clay, yellow-----	10	10	
Clay, blue, and gravel; mixed----	18	28	
Gravel, pea-sized, and slate; mixed-----	6	34	

Well 35/2-29A2

Type of record: Driller's log.

Altitude: 862 feet.

Material	Thick- ness (feet)	Depth (feet)	Remarks
Quaternary System:			
Recent and Pleistocene Series:			
Clay, yellow-----	25	25	
Clay, blue-----	45	70	
Clay, blue, and gravel; mixed----	45	115	
Gravel-----	11	126	

Well 35/2-29A3

Type of record: Driller's log.

Altitude: 867 feet.

Material	Thick- ness (feet)	Depth (feet)	Remarks
Quaternary System:			
Recent and Pleistocene Series:			
Clay, yellow-----	36	36	
Gravel-----	7	43	
Clay, blue-----	7	50	
Gravel, pea-sized-----	5	55	

Well 35/2-29H2

Type of record: Driller's log.

Altitude: 852 feet.

Material	Thick- ness (feet)	Depth (feet)	Remarks
Quaternary System:			
Recent and Pleistocene Series:			
Clay, yellow, and gravel; mixed--	30	30	
Gravel, yellow, mixed with mud and silt-----	6	36	
Gravel and clay; mixed, yellow---	14	50	
Clay, blue, and gravel; mixed----	40	90	
Gravel, coarse-----	9	99	

Well 35/2-29L1

Type of record: Driller's log.

Altitude: 848 feet.

Material	Thick- ness (feet)	Depth (feet)	Remarks
Quaternary System:			
Recent and Pleistocene Series:			
Muck-----	5	5	
Mud and clay; soft-----	7	12	
Clay, soft-----	11	23	
Clay, hard-----	71	94	
Sand-----	47	141	

Table 4.--Selected logs of wells and test holes in Marshall County, Ind.--Cont.

Well 35/2-29L2

Type of record: Driller's log.

Altitude: 843 feet.

Material	Thick- ness (feet)	Depth (feet)	Remarks
Quaternary System:			
Recent and Pleistocene Series:			
Muck-----	5	5	
Mud and clay; soft-----	7	12	
Sand and gravel-----	4	16	
Clay-----	25	41	
Sand-----	2	43	
Clay-----	26	69	
Sand with some gravel-----	26	95	
Sand, medium-----	13	108	
Sand, fine-----	7	115	
Sand, medium-----	25	140	
Clay-----	2	142	

Well 35/2-29R1

Type of record: Driller's log.

Altitude: 862 feet.

Material	Thick- ness (feet)	Depth (feet)	Remarks
Quaternary System:			
Recent and Pleistocene Series:			
Clay, yellow-----	21	21	
Clay, blue-----	11	32	
Gravel-----	28	60	
Clay, blue, and gravel-----	39	99	
Gravel, pea-sized-----	9	108	

Well 35/2-30Q1

Type of record: Driller's log.

Altitude: 846 feet.

Material	Thick- ness (feet)	Depth (feet)	Remarks
Quaternary System:			
Recent and Pleistocene Series:			
Clay, yellow-----	21	21	
Clay, blue, and gravel; mixed, hard-----	57	78	
Gravel, coarse-----	9	87	

Well 35/2-32A2

Type of record: Driller's log.

Altitude: 860 feet.

Material	Thick- ness (feet)	Depth (feet)	Remarks
Quaternary System:			
Recent and Pleistocene Series:			
Clay, yellow-----	30	30	
Sand, fine-----	10	40	
Clay, blue, and gravel-----	50	90	
Gravel-----	10	100	

Table 4.--Selected logs of wells and test holes in Marshall County, Ind.

Well 35/2-32H1

Type of record: Driller's log. Altitude: 854 feet.

Material	Thick- ness (feet)	Depth (feet)	Remarks
Quaternary System:			
Recent and Pleistocene Series:			
Clay-----	30	30	
Sand and clay-----	10	40	
Gravel-----	5	45	
Sand-----	9	54	

Well 35/2-32M1

Type of record: Driller's log. Altitude: 867 feet.

Material	Thick- ness (feet)	Depth (feet)	Remarks
Quaternary System:			
Recent and Pleistocene Series:			
Clay and rocks-----	84	84	
Gravel, dirty-----	10	94	
Sand, coarse-----	12	106	

Well 35/2-33B1

Type of record: Driller's log. Altitude: 852 feet.

Material	Thick- ness (feet)	Depth (feet)	Remarks
Quaternary System:			
Recent and Pleistocene Series:			
Clay, yellow-----	8	8	
Clay, blue, and gravel; mixed----	37	45	
Sand, coarse-----	5	50	

Well 35/2-33B3

Type of record: Driller's log. Altitude: 857 feet.

Material	Thick- ness (feet)	Depth (feet)	Remarks
Quaternary System:			
Recent and Pleistocene Series:			
Clay, yellow-----	20	20	
Clay, blue, and gravel; mixed----	16	36	
Clay, blue-----	14	50	
Gravel-----	4	54	

Well 35/2-33D3

Type of record: Driller's log. Altitude: 862 feet.

Material	Thick- ness (feet)	Depth (feet)	Remarks
Quaternary System:			
Recent and Pleistocene Series:			
Clay, yellow-----	30	30	
Gravel, pea-sized, and sand-----	18	48	
Clay, blue, and gravel-----	51	99	
Gravel, pea-sized-----	17	116	

Table 4.--Selected logs of wells and test holes in Marshall County, Ind.--Cont.

Well 35/2-33D4

Type of record: Driller's log.

Altitude: 857 feet.

Material	Thick- ness (feet)	Depth (feet)	Remarks
Quaternary System:			
Recent and Pleistocene Series:			
Clay, blue-----	59	59	
Rock-----	3	62	Boulder.
Clay, sandy-----	28	90	
Clay, blue-----	10	100	
Sand and gravel-----	14	114	

Well 35/3-26N1

Type of record: Driller's log.

Altitude: 803 feet.

Material	Thick- ness (feet)	Depth (feet)	Remarks
Quaternary System:			
Recent and Pleistocene Series:			
Sand, fine to coarse, silty, brown-----	1	1	Silt 15 percent.
Sand, fine, silty, brown, with clay lumps-----	2	3	Do.
Sand, fine to coarse, silty, brown, with fine gravel, and clay lumps-----	2	5	Do.
Silt, clayey, gray with white specks, with fine sand and gravel-----	1	6	
Silt, sandy, black-----	4	10	
Sand, fine, silty, dark-brown----	3	13	Silt 20 percent.
Sand, fine, brown-----	5	18	
Sand, fine, silty, gray-----	3	21	
Sand, fine, brown-----	9	30	

Well 35/3-26Q1

Type of record: Driller's log.

Altitude: 820 feet.

Material	Thick- ness (feet)	Depth (feet)	Remarks
Quaternary System:			
Recent and Pleistocene Series:			
Record missing-----	20	20	
Sand, fine-----	27	47	
Sand and gravel-----	27	74	
Clay and sand-----	1	75	
Sand, coarse-----	5	80	
Sand, very fine-----	5	85	
Gravel-----	9	94	
Clay, blue-----	23	117	
Hardpan and clay-----	29	146	
Mississippian and Devonian Systems:			
Lower Mississippian and Upper Devonian Series; undifferentiated:			
Slate and shale; blue-----	149	295	
Shale, black-----	5	300	

Table 4.--Selected logs of wells and test holes in Marshall County, Ind.--Cont.

Well 35/3-26R1

Type of record: Driller's log.

Altitude: 802 feet.

Material	Thick- ness (feet)	Depth (feet)	Remarks
Quaternary System:			
Recent and Pleistocene Series:			
Sand, silty, brown, with roots---	1	1	Silt 20-30 percent.
Sand, medium to coarse, silty, brown, with fine gravel-----	2	3	
Sand, fine to medium, brown-----	5	8	
Sand, fine to coarse, brown, with fine gravel-----	3	11	
Sand, fine, gray-----	2	13	
Sand, fine, silty, gray-----	6	19	Silt 10 percent.
Sand, fine, silty, brown-----	2	21	Do.
Sand, fine, silty, gray-----	6	27	Do.
Sand, fine, brown-----	3	30	

Well 35/3-27K1

Type of record: Driller's log.

Altitude: 800 feet.

Material	Thick- ness (feet)	Depth (feet)	Remarks
Quaternary System:			
Recent and Pleistocene Series:			
Silt, clayey, black, with some sand-----	5	5	
Silt, sandy, clayey, dark-brown, with white specks-----	6	11	
Silt, sandy, soft, gray-----	5	16	
Silt, gray, with fine to medium sand-----	2	18	
Sand, fine to medium, brown-----	12	30	

Well 35/3-27L1

Type of record: Driller's log.

Altitude: 798 feet.

Material	Thick- ness (feet)	Depth (feet)	Remarks
Quaternary System:			
Recent and Pleistocene Series:			
Silt, sandy, brown, with clay lumps-----	1	1	
Silt, sandy, clayey, brown-----	1	2	
Clay, silty, dark-brown, with some fine sand-----	2	4	
Silt, sandy, dark-brown, with white specks-----	3	7	
Sand, fine, silty, brown-----	3	10	Silt 10 percent.
Sand, fine, silty, brown, with fine gravel-----	5	15	Do.
Sand, fine, brown-----	15	30	

Table 4.--Selected logs of wells and test holes in Marshall County, Ind.--Cont.

Well 35/3-27Q1

Type of record: Driller's log.		Altitude: 818 feet.	
Material	Thick-ness (feet)	Depth (feet)	Remarks
Quaternary System:			
Recent and Pleistocene Series:			
Sand-----	20	20	
Clay with some streaks of sand---	103	123	
Hardpan-----	13	136	
Gravel and clay balls-----	2	138	
Gravel-----	19	157	Clay at 157 feet.

Well 35/3-27Q2

Type of record: Driller's log.		Altitude: 818 feet.	
Material	Thick-ness (feet)	Depth (feet)	Remarks
Quaternary System:			
Recent and Pleistocene Series:			
Sand, clean, gray-----	35	35	
Clay, blue-----	47	82	
Shale, blue-----	4	86	Gravel?
Clay, blue-----	35	121	
Gravel, dirty-----	2	123	
Clay and hardpan-----	18	141	
Gravel-----	1	142	
Clay-----	33	175	

Well 35/3-27Q3

Type of record: Driller's log.		Altitude: 815 feet.	
Material	Thick-ness (feet)	Depth (feet)	Remarks
Quaternary System:			
Recent and Pleistocene Series:			
Fill-----	10	10	
Clay, blue-----	90	100	
Clay, sandy-----	20	120	
Gravel, clean-----	3	123	
Gravel, dirty-----	9	132	
Gravel, clean-----	6	138	
Clay with sand-----	17	155	

Well 35/3-27R1

Type of record: Driller's log.		Altitude: 802 feet.	
Material	Thick-ness (feet)	Depth (feet)	Remarks
Quaternary System:			
Recent and Pleistocene Series:			
Silt, brown, with fine sand-----	2	2	Sand 30 percent.
Silt, clayey, brown, with fine sand-----	1	3	Sand 20 percent.
Silt, clayey, black, with some fine sand-----	1	4	
Silt, black, with fine sand-----	6	10	Sand 10-15 percent.
Sand, fine to coarse, silty, gray	9	19	Silt 40 percent.
Clay, gray, with some fine sand--	11	30	

Table 4.--Selected logs of wells and test holes in Marshall County, Ind.--Cont.

Well 35/3-29H1

Type of record: Driller's log. Altitude: 817 feet.

Material	Thick- ness (feet)	Depth (feet)	Remarks
Quaternary System:			
Recent and Pleistocene Series:			
Clay-----	10	10	
Mud, sandy-----	50	60	
Gravel-----	20	80	
Gravel, muddy-----	60	140	
Mississippian and Devonian Systems:			
Lower Mississippian and Upper Devonian Series; undifferentiated:			
Shale, pea-green-----	15	155	
Lime, gray-----	15	170	
Shale, gray-----	80	250	
Shale, light-brown-----	80	330	
Shale, dark-brown-----	74	404	
Shale, limey, gray-----	21	425	
Devonian System:			
Middle Devonian Series:			
Limestone-----	10	435	

Well 35/3-31A1

Type of record: Driller's log. Altitude: 811 feet.

Quaternary System:			
Recent and Pleistocene Series:			
Sand-----	80	80	
Mud-----	34	114	
Gravel-----	4	118	
Mud, gray-----	6	124	
Mud, red-----	19	143	
Mud, gray-blue-----	20	163	
Mississippian System:			
Lower Mississippian Series:			
Lime and shells-----	14	177	
Mississippian and Devonian Systems:			
Lower Mississippian and Upper Devonian Series; undifferentiated:			
Shale, sandy, gray-----	68	245	
Shale, light-brown-----	40	285	
Shale, dark-brown-----	55	340	
Shale, gray-----	21	361	
Record missing-----	5	366	Limestone?

Well 35/3-33C1

Type of record: Driller's log. Altitude: 804 feet.

Quaternary System:			
Recent and Pleistocene Series:			
Clay and gravel-----	15	15	
Clay, slick, blue-----	22	37	
Record missing-----	4	41	
Gravel, sand, and clay; mixed----	7	48	
Gravel and sand; clean, gray-----	5	53	

Table 4.--Selected logs of wells and test holes in Marshall County, Ind.--Cont.

Well 35/3-33H1

Type of record: Driller's log.

Altitude: 806 feet.

Material	Thick-ness (feet)	Depth (feet)	Remarks
Quaternary System:			
Recent and Pleistocene Series:			
Sand, yellow-----	25	25	
Clay, blue-----	50	75	
Sand, yellow-----	12	87	

Well 35/3-34B1

Type of record: Driller's log.

Altitude: 818 feet.

Material	Thick-ness (feet)	Depth (feet)	Remarks
Quaternary System:			
Recent and Pleistocene Series:			
Top soil-----	2	2	
Sand, dirty, yellow-----	16	18	
Sand and gravel-----	12	30	
Clay, blue-----	94	124	
Sand, dirty, and gravel-----	4	128	
Gravel, coarse-----	12	140	
Sand, coarse, with some gravel---	13	153	Blue clay at 153 feet.

Well 35/3-34E1

Type of record: Driller's log.

Altitude: 800 feet.

Material	Thick-ness (feet)	Depth (feet)	Remarks
Quaternary System:			
Recent and Pleistocene Series:			
Clay, silty, brown, with some sand-----	1	1	
Sand, fine to medium, clayey, brown-----	1	2	
Sand, fine to medium, brown-----	9	11	
Clay, gray, with fine to coarse sand-----	5	16	Sand 20 percent.
Sand, fine to medium, gray, with some silt-----	3	19	
Sand, fine to medium, silty, gray -----	6	25	
Sand, fine to medium, silty, brownish-gray-----	5	30	

Well 35/3-34M1

Type of record: Driller's log.

Altitude: 802 feet.

Material	Thick-ness (feet)	Depth (feet)	Remarks
Quaternary System:			
Recent and Pleistocene Series:			
Sand, fine to coarse, silty, brown, with fine gravel-----	1	1	
Sand, fine to medium, brown, with some gravel-----	4	5	
Sand, fine to coarse, brown, with fine gravel-----	1	6	

Table 4.--Selected logs of wells and test holes in Marshall County, Ind.--Cont.

Well 35/3-34M1--Continued			
Material	Thick- ness (feet)	Depth (feet)	Remarks
Quaternary System:			
Recent and Pleistocene Series:			
Sand, fine to medium, brown-----	1	7	
Sand, fine to coarse, brown, with fine gravel-----	1	8	
Sand, fine to coarse, silty, gray, with fine gravel-----	3	11	
Sand, fine to medium, silty, gray-----	15	26	
Sand, fine to medium, silty, brown-----	4	30	
Well 35/3-34N1			
Type of record: Driller's log.		Altitude: 798 feet.	
Quaternary System:			
Recent and Pleistocene Series:			
Clay, silty, sandy, brown-----	1	1	
Sand, fine to coarse, brown, with fine to coarse gravel-----	1	2	
Sand, fine to medium, brown-----	3	5	
Sand, fine to coarse, brown, with fine to coarse gravel-----	7	12	
Clay, sandy, brownish-gray-----	4	16	Sand 20-30 percent.
Sand, fine to coarse, silty, brown, with fine gravel-----	3	19	
Clay, brownish-gray, with fine to coarse sand-----	11	30	
Well 35/3-35B1			
Type of record: Driller's log.		Altitude: 827 feet.	
Quaternary System:			
Recent and Pleistocene Series:			
Sand, fine, brown-----	30	30	
Sand, coarse, brown, and gravel--	11	41	
Clay, blue-----	46	87	
Hardpan-----	17	104	
Sand, fine, dirty-----	1	105	
Sand, coarse, gray, and gravel---	8	113	
Well 35/3-35B2			
Type of record: Driller's log.		Altitude: 827 feet.	
Quaternary System:			
Recent and Pleistocene Series			
Top soil-----	5	5	
Sand and gravel-----	31	36	
Clay, blue-----	58	94	

Table 4.--Selected logs of wells and test holes in Marshall County, Ind.--Cont.

Well 35/3-35B2--Continued

Material	Thick- ness (feet)	Depth (feet)	Remarks
Quaternary System:			
Recent and Pleistocene Series:			
Gravel, coarse-----	10	104	
Sand, coarse-----	3	107	
Sand, coarse, and gravel-----	3	110	Clay at 110 feet.

Well 35/3-36C1

Type of record: Driller's log.		Altitude: 842 feet.	
Quaternary System:			
Recent and Pleistocene Series:			
Sand and yellow clay-----	36	36	
Clay, blue-----	38	74	
Sand-----	6	80	

Well 35/3-36E1

Type of record: Driller's log.		Altitude: 805 feet.	
Quaternary System:			
Recent and Pleistocene Series:			
Sand, fine to medium, silty, brown-----	2	2	Silt 20 percent.
Sand, fine to medium, silty, clayey, brown-----	1	3	Do.
Sand, fine to medium, silty, brown, with clay and gravel----	1	4	Do.
Sand, fine to coarse, brown, with fine gravel and some silt-----	1	5	
Sand, fine to coarse, silty, brown, with fine gravel-----	2	7	Silt 20 percent.
Sand, medium to coarse, brown, with gravel and some silt-----	1	8	
Sand, fine, brown-----	12	20	
Sand, fine, gray-----	6	26	
Sand, fine to medium, gray-----	4	30	

Table 5.--Field chemical analyses of water from wells in Marshall County, Indiana
(Results in parts per million. Analyses by U. S. Geological Survey, except where otherwise noted.)

Well: See text for description of well-numbering system.

Material: G, gravel; Sd, sand.

Geologic age: P1, Pleistocene.

U. S. Public Health Service drinking-water standards: Iron (Fe) - 0.3 ppm for iron and manganese together; Sulfate (SO_4) - 250 ppm; Chloride (Cl) - 250 ppm.

Remarks: BOR, analysis by Baltimore and Ohio Railroad.

Well	Material	Geologic age	Date of collection	Temperature (°F)	Iron (Fe)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Hardness as $CaCO_3$ (Calcium, magnesium)	Remarks
32/1-1C1	Sd,G	P1	8-60	--	2.0	386	80	8	344	
1D1	Sd,G	P1	1-17-61	56	.5	395	75	16	332	
4B2	Sd,G	P1	12-15-60	--	.3	254	100	12	300	
7N1	G	P1	12-15-60	54	.5	361	45	12	188	
10N1	G	P1	12-28-60	54	3.8	395	10	8	304	
13N1	Sd,G	P1	1-17-61	--	3.0	420	35	4	316	
15K1	Sd	P1	12-28-60	52	1.0	381	25	12	300	
16J3	G,Sd	P1	12-28-60	53	2.5	405	10	12	304	
16K1	G,Sd	P1	12-16-57	53	1.0	---	---	---	---	
17A1	Sd	P1	6-27-56	--	---	359	---	6	412	
17B1	G,Sd	P1	12-28-60	51	2.5	366	65	12	340	
17B2	G	P1	1-17-61	51	7.5	478	15	4	328	
17F1	Sd	P1	1-17-61	55	4.0	346	30	<4	252	
18A2	Sd,G	P1	7-24-57	52	.5	151	---	6	172	
18B3	Sd,G	P1	7-24-57	53	.6	183	---	<2	164	
20R1	Sd,G	P1	12-28-60	55	.4	224	75	20	252	
22H3	Sd,G	P1	7-24-57	--	2.0	325	---	2	284	
22H7	Sd	P1	12-28-60	52	2.0	361	20	8	304	
22J2	Sd,G	P1	7-24-57	53	2.0	351	---	2	304	
23D2	G,Sd	P1	77-26-57	52	4.0	234	---	<2	200	
23E1	Sd	P1	12-28-60	52	1.0	381	30	12	320	
23K1	Sd,G	P1	1-17-61	54	1.0	429	5	4	300	
24L1	Sd,G	P1	12-15-60	55	2.0	278	10	8	200	

Table 5.--Field chemical analyses of water from wells in Marshall County, Indiana--Continued

Well	Ma- teri- al	Geo- logic age	Date of collec- tion	Temper- ature (°F)	Iron (Fe)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Hardness as CaCO ₃ (Calcium, magnesium)	Remarks
32/1-25R1	Sd,G	P1	1-17-61	52	1.0	371	50	4	288	
27Q1	Sd,G	P1	7-26-57	52	2.5	334	---	6	328	
30E1	Sd,G	P1	11-21-57	55	2.0	229	---	28	236	
31K2	Sd,G	P1	7-25-57	52	1.5	242	---	6	264	After pumping 1 hr.
31K2	Sd,G	P1	7-25-57	--	1.4	222	---	6	244	After pumping 2.5 hr.
34B2	G,Sd	P1	12-28-60	52	.6	376	20	8	276	
34C3	Sd,G	P1	7-24-57	52	2.0	303	---	4	296	
35G1	Sd,G	P1	1-17-61	55	1.0	337	25	4	244	
36D1	Sd,G	P1	12-16-57	58	1.0	322	---	38	328	
32/2- 2A1	Sd,G	P1	12-15-60	53	.5	283	55	8	264	
6B1	Sd,G	P1	6-23-60	--	.5	337	45	8	264	
7P1	G	P1	1-17-61	--	1.0	390	65	4	320	
7Q1	Sd,G	P1	1-17-61	52	1.0	429	120	24	412	
9A1	Sd,G	P1	12- 5-60	53	1.2	449	50	<4	368	
9B1	Sd,G	P1	12-15-60	53	1.1	322	30	8	272	
10G1	G	P1	6-21-57	52	1.0	361	---	10	388	
10K1	G,Sd	P1	6-21-57	--	2.0	371	---	18	408	
10K2	Sd,G	P1	12-15-60	52	1.2	464	85	12	412	
11J1	Sd,G	P1	1-17-61	--	3.0	503	80	56	480	
14N1	Sd,G	P1	12-15-60	55	<.1	307	90	16	304	
15R1	G,Sd	P1	1-17-61	49	<.1	425	60	4	352	
20E1	Sd,G	P1	9- 3-57	56	.9	171	---	12	196	
20E1	Sd,G	P1	12-15-60	--	.3	259	55	8	244	
22L1	G	P1	9- 3-57	--	1.2	415	---	8	316	
24R1	Sd,G	P1	1-16-61	55	.5	464	10	<4	308	
26H1	G	P1	11-17-61	--	.3	532	15	4	332	
30J1	G,Sd	P1	9- 3-57	--	.4	195	---	10	188	
30P1	G,Sd	P1	12-15-60	53	1.0	283	145	16	380	

32/2-33M1	G	P1	1-18-61	--	0.1	366	40	4	276
32/3- 1A1	Sd,G	P1	1-17-61	--	1.0	410	5	<	272
2P1	Sd,G	P1	12-15-60	53	1.5	264	90	8	248
5R2	Sd,G	P1	6-20-57	52	1.5	334	---	66	432
7G1	Sd,G	P1	1-16-61	--	.1	332	45	12	292
7Q1	Sd,G	P1	1-16-61	--	1.5	488	10	4	312
16D1	G,Sd	P1	1-16-61	--	1.0	303	65	8	256
21H1	G	P1	12-15-60	54	1.4	312	10	4	212
22D2	Sd	P1	11-22-57	53	1.0	200	---	24	160
23E1	G	P1	12-15-60	52	2.4	346	5	8	244
28N1	Sd,G	P1	1-16-61	--	3.0	478	20	4	364
34N1	Sd,G	P1	12-15-60	54	.4	434	30	4	348
35E1	G	P1	12-14-60	--	2.5	386	10	8	244
36P1	Sd	P1	6-20-57	52	2.2	173	---	<	160
32/4- 5R1	Sd	P1	7-14-60	52	.1	351	55	16	396
8F1	G	P1	7-14-60	--	1.0	390	5	4	252
19F1	Sd,G	P1	7-14-60	--	1.0	273	55	8	288
21L1	Sd,G	P1	7-14-60	--	3.0	386	20	4	292
29R1	G	P1	7-14-60	56	1.5	307	75	8	300
32R1	Sd,G	P1	6-29-56	--	----	314	---	6	312
32R1	Sd,G	P1	7-14-60	--	2.0	386	55	12	320
33/1- 2N2	Sd,G	P1	6-29-60	--	.3	293	35	12	248
3D1	Sd,G	P1	7-14-60	--	.3	381	35	4	264
3N1	Sd	P1	6-29-60	56	.1	366	20	4	284
3N2	Sd	P1	6-18-57	--	.4	239	---	18	268
6C1	G	P1	12-16-57	49	1.5	176	---	24	208
6C1	G	P1	6-29-60	--	.3	181	35	8	132
10A1	Sd,G	P1	12-60	--	.5	312	50	4	268
10D1	Sd,G	P1	12-16-57	49	.8	249	---	60	268
10L1	G	P1	11-21-57	54	3.0	259	---	16	212
10L2	G,Sd	P1	6-29-60	--	.3	210	25	8	160
11H1	Sd,G	P1	6-29-60	--	.1	371	65	8	308
11R1	Sd,G	P1	6-22-60	56	.5	293	50	8	236
16R1	G,Sd	P1	6-29-60	--	.5	371	50	4	304
22K1	G	P1	9- 4-57	--	.4	400	---	30	380

Table 5.--Field chemical analyses of water from wells in Marshall County, Indiana--Continued

Well	Material	Geologic age	Date of collection	Temperature (°F)	Iron (Fe)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Hardness as CaCO ₃ (Calcium, magnesium)	Remarks
33/1-22K1	G	P1	6-29-60	--	0.3	503	40	8	384	
32H1	Sd,G	P1	6-29-60	54	.3	351	85	12	344	
35K1	G	P1	12-16-57	54	.5	390	---	44	372	
35K1	G	P1	6-22-60	--	.5	346	110	28	372	
33/2-2N1	Sd,G	P1	6-22-60	--	.1	332	60	8	308	
5C1	G,Sd	P1	9-4-57	--	<	171	---	12	192	
5H2	Sd,G	P1	7-13-60	54	3.0	425	40	4	320	
6H1	Sd	P1	6-22-60	56	1.5	351	40	8	272	
9E1	Sd,G	P1	6-56	--	----	237	---	6	260	
9E1	Sd,G	P1	6-22-60	--	3.0	268	55	12	256	
12E1	G	R1	7-13-60	56	2.0	381	10	4	260	
16P1	Sd,G	P1	1-18-61	49	.1	361	50	4	284	
18P1	Sd	P1	12-8-60	--	.5	322	70	4	264	
18Q1	Sd	P1	6-23-60	56	.5	346	85	8	328	
19D1	G,Sd	P1	12-60	--	.2	395	90	4	360	
19E1	G,Sd	P1	9-4-57	54	.3	368	---	6	384	
19F1	Sd	P1	6-23-60	--	1.0	366	40	16	292	
21R1	G	P1	6-23-60	54	1.0	298	65	12	268	
23H1	Sd	P1	9-4-57	--	<	312	---	12	316	
25J1	Sd,G	P1	12-9-60	--	.3	366	60	4	352	
26E1	Sd,G	P1	12-60	--	.1	332	45	4	284	
27C1	Sd,G	P1	12-8-60	--	.6	317	65	4	264	
30N1	Sd	P1	7-19-60	58	.5	288	15	4	192	
33/3-5J1	G,Sd	P1	7-13-60	59	2.0	361	5	8	248	
7N1	Sd	P1	7-13-60	--	1.0	317	60	4	248	
7R1	Sd	P1	12-8-60	--	.3	249	105	8	260	
8P1	Sd	P1	7-13-60	--	7.5	468	70	12	388	
10D1	Sd,G	P1	1-17-61	--	2.0	390	10	<	288	

33/3-13P1	G,Sd	P1	7-12-60	--	1.0	351	75	8	324
18E1	Sd,G	P1	9-4-57	--	1.5	293	---	10	208
18E1	Sd,G	P1	7-13-60	--	1.5	317	5	4	204
24A1	Sd	P1	7-12-60	--	1.5	483	95	12	444
24K1	Sd,G	P1	7-15-60	--	.5	429	10	4	272
24K2	Sd,G	P1	7-15-60	--	1.0	381	10	4	276
26D1	Sd,G	P1	7-12-60	54	1.5	376	5	4	228
31N1	Sd,G	P1	9-4-57	--	.1	249	---	10	264
31N1	Sd,G	P1	7-12-60	--	.1	234	35	8	216
34R1	Sd,G	P1	7-13-60	55	2.0	337	60	8	296
33/4- 5F1	Sd,G	P1	7-12-60	53	.1	381	10	4	268
16M1	Sd,G	P1	7-12-60	56	< 7.5	586	45	4	464
19A1	G	P1	7-12-60	58	1.0	366	70	8	312
19H1	Sd	P1	7-12-60	--	.5	390	75	12	356
19M1	G	P1	7-12-60	--	1.0	386	15	4	260
32M1	Sd,G	P1	7-12-60	---	.3	342	80	12	308
32M2	Sd	P1	7-12-60	53	1.5	342	75	8	300
34/1- 1C1	Sd,G	P1	7-14-60	53	1.5	351	35	4	292
6C1	Sd,G	P1	9-5-57	57	.5	210	---	8	188
6C1	Sd,G	P1	6-13-60	--	1.0	234	35	4	184
9P1	Sd,G	P1	9-5-57	54	1.2	288	---	68	400
9P1	Sd,G	P1	6-13-60	--	.5	307	45	28	296
10L1	Sd	P1	6-13-60	--	.3	244	60	28	256
11E1	Sd,G	P1	6-13-60	--	1.0	351	70	8	332
20G1	Sd	P1	6-14-60	--	.3	312	45	8	260
21C1	Sd,G	P1	12-60	--	1.2	429	35	4	348
22R1	G	P1	11-20-57	--	1.0	220	---	20	264
23G1	Sd,G	P1	1-17-61	--	.1	400	130	12	408
23D1	Sd,G	P1	12-60	--	1.4	366	65	8	320
23N1	G	P1	12-60	--	3.0	508	30	< 4	404
23Q1	Sd,G	P1	6-14-60	--	3.0	405	65	8	364
26P1	G,Sd	P1	9-4-57	--	1.2	264	---	14	300
27R1	Sd,G	P1	6-29-60	59	.5	376	40	8	320
29R1	Sd,G	P1	6-29-60	---	.3	303	65	8	288
31D2	G	P1	6-29-60	58	.3	142	10	8	148
32C1	G,Sd	P1	6-29-60	59	.3	337	65	12	312
33C1	G,Sd	P1	6-29-60	59	.3	410	35	8	308

Table 5.--Field chemical analyses of water from wells in Marshall County, Indiana--Continued

Well	Material	Geologic age	Date of collection	Temperature (°F)	Iron (Fe)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Hardness as CaCO ₃ (Calcium, magnesium)	Remarks
34/2-1B1	Sd	P1	6-16-60	--	1.0	234	55	8	220	
1J2	Sd	P1	12-60	--	1.3	410	5	4	276	
5J1	G	P1	6-15-60	57	.3	390	125	80	536	
5R1	Sd,G	P1	11-18-58	57	.5	220	---	40	256	
6L1	Sd,G	P1	6-15-60	53	1.0	366	35	4	296	
8B2	G,Sd	P1	7-14-60	58	.5	342	75	8	312	
8J1	Sd	P1	7-14-60	--	.1	293	50	8	272	
10F1	Sd,G	P1	12-7-60	--	2.5	366	20	4	260	
13J1	G,Sd	P1	12-60	--	.4	283	30	16	216	
18A1	Sd	P1	6-16-60	58	1.0	293	20	8	212	
20G1	Sd,G	P1	12-60	53	1.2	298	40	4	256	
20Q5	G	P1	11-18-57	55	1.5	220	---	24	228	
20Q6	G,Sd	P1	6-20-60	--	2.0	278	65	4	236	
21C1	G	P1	6-16-60	--	.1	361	60	8	312	
24M1	Sd	P1	12-60	--	1.0	351	85	12	356	
26P1	G	P1	6-22-60	56	1.0	386	5	4	240	
28H1	G,Sd	P1	7-14-60	58	<.1	503	45	8	372	
30R1	G,Sd	P1	6-22-60	55	3.0	410	125	24	440	
32A1	Sd,G	P1	6-22-60	59	1.0	410	35	8	328	
32D1	Sd	P1	6-22-60	53	3.0	381	90	8	372	
33B1	G	P1	6-22-60	49	1.5	405	50	8	320	
33B2	Sd	P1	6-22-60	--	2.0	366	55	60	308	
35G1	G	P1	11-19-57	54	1.0	---	---	<4	200	
35G2	G	P1	6-22-60	--	.5	278	45	4	212	
34/3-2A1	Sd	P1	6-21-60	--	.3	439	55	20	404	
6Q4	Sd	P1	6-21-60	52	3.0	366	20	8	260	
6Q5	Sd	P1	12-60	--	1.4	317	10	<4	220	
10C1	Sd,G	P1	6-13-57	53	4.0	337	---	4	288	

34/3-10P1	Sd	P1	12-60	--	1.5	293	95	24	336
11A1	G,Sd	P1	6-21-60	52	1.0	337	55	8	276
14P1	G	P1	6-21-60	--	1.5	429	5	4	280
34J1	Sd	P1	6-13-57	53	.8	198	---	4	164
34/4-5C1	Sdq	P1	11-20-57	54	.3	122	---	28	184
17R1	G	P1	1-17-61	--	1.0	473	10	< 4	312
21D1	Sd	P1	1-6-61	--	---	468	25	8	336
35/1-22B1	Sd,G	P1	6-14-60	--	.5	439	10	8	316
23C1	Sd,G	P1	6-11-57	--	4.0	386	---	6	336
23C1	Sd,G	P1	6-14-60	--	5.0	420	15	8	320
23G1	G	P1	6-28-56	--	---	327	---	2	392
23L1	Sd,G	P1	6-11-57	52	.5	249	---	< 4	236
23P2	Sd,G	P1	9-5-57	--	.5	212	---	12	236
25N1	Sd,G	P1	6-14-60	--	.3	503	115	40	592
25P1	G	P1	9-5-57	--	1.0	312	---	30	280
27N1	Sd,G	P1	12-60	--	.6	425	10	4	296
31H1	Sd,G	P1	9-5-57	--	3.0	229	---	8	236
31H1	Sd,G	P1	6-14-60	--	4.0	386	155	8	392
33E1	G	P1	11-21-57	52	.1	312	---	32	308
33E1	G	P1	6-14-60	58	.1	317	40	12	288
34R1	G	P1	6-14-60	58	1.5	351	25	4	280
36B1	Sd	P1	6-15-60	--	.5	503	40	8	420
36Q1	G	P1	6-14-60	--	---	346	25	8	280
35/2-24J1	Sd,G	P1	6-28-56	--	---	300	---	4	308
24J1	Sd,G	P1	6-16-60	--	1.0	405	40	8	316
24J2	Sd	P1	6-28-56	--	---	305	---	6	316
26Q1	Sd	P1	6-14-60	--	1.5	420	10	8	308
27F1	Sd,G	P1	-----	--	---	322	---	6	239
27N1	Sd	P1	6-15-60	--	.1	400	5	16	244
27P1	G	P1	6-14-60	--	.3	395	10	4	288
28D1	G	P1	9-5-57	57	1.2	346	---	22	372
28D2	Sd,G	P1	9-5-57	--	1.0	317	---	25	344
28E3	G,Sd	P1	7-14-60	--	1.5	468	115	36	468
28F3	G	P1	9-5-57	58	.9	354	---	32	448
28P2	G	P1	6-15-60	--	.5	298	65	8	288

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Table 5.--Field chemical analyses of water from wells in Marshall County, Indiana--Continued

Well	Material	Geologic age	Date of collection	Temperature (°F)	Iron (Fe)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Hardness as CaCO ₃ (Calcium, magnesium)	Remarks
35/2-29A2	G	P1	6-14-60	--	1.0	366	55	8	320	
29J1	G	P1	5-9-57	58	1.0	188	---	48	348	
29R1	G	P1	11-19-57	50	.7	366	---	---	288	
29R2	G	P1	9-5-57	58	.5	334	---	20	280	
30M1	Sd,G	P1	12-7-60	--	4.5	459	35	4	364	
30Q1	G	P1	7-12-60	--	7.5	459	50	4	388	
32A2	G	P1	6-15-60	58	1.0	415	10	4	288	
32B1	G	P1	9-5-57	59	1.0	210	---	16	184	
32H1	Sd,G	P1	6-28-56	--	---	271	---	4	292	
33B3	G	P1	1-17-61	57	.5	429	30	8	304	
33D3	G	P1	9-5-57	--	.2	212	---	14	172	
35/3-19P1	Sd	P1	6-16-60	58	1.0	371	35	8	288	
23D1	Sd,G	P1	6-16-60	--	1.0	356	70	24	324	
25E1	Sd	P1	6-28-56	--	---	383	---	2	332	
25E1	Sd	P1	6-16-60	54	4.0	444	25	8	332	
33H1	Sd	P1	6-16-60	54	4.0	400	10	8	240	
35Q1	Sd	P1	12-60	--	.1	434	60	16	440	
35/4-21G1	Sd,G	P1	6-30-60	55	.5	386	15	4	272	
29H1	G	P1	6-30-56	58	1.0	454	15	4	284	

Table 6.--Water levels in observation wells in Marshall County, Indiana
(In feet below land-surface datum. Water level:
e, estimated; h, tape measurement).

Marshall 1. (33/3-16A1). Howard Lemler. NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 16, T. 33 N., R. 3 E.
Dug unused water-table well in glacial drift, diameter 36 inches, depth 17.3
feet. Land-surface datum is about 832 feet above msl. Highest water level is
1.07 below lsd, April 9, 1950; lowest 10.09 below lsd, October 1, 1955. Records
available: 1948-60.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
1948		Mar. 3	3.58	1950		Nov. 18	8.49
		10	3.94			25	8.20
May 20	3.82	18	4.67	Jan. 5	2.96	Dec. 2	6.93
27	5.12	24	5.01	19	3.19	9	4.59
June 24	6.67	31	4.80	Feb. 2	2.73	16	5.12
July 1	6.56	April 7	5.01	9	2.97	23	5.51
8	6.85	14	5.48	16	2.58	30	5.88
15	7.13	21	5.93	27	2.53		
22	7.22	28	6.40	Mar. 2	2.71	1951	
29	7.40	May 5	6.47	9	3.25	Jan. 6	3.31
Aug. 5	7.59	12	6.75	25	1.12	13	4.26
12	7.56	19	7.08	April 1	1.17	20	4.51
19	7.85	26	6.57	9	1.07	27	4.72
26	8.06	June 2	7.02	15	2.83	Feb. 3	5.31
Sept. 2	8.29	9	7.03	30	3.40	10	5.12
9	8.50	16	6.41	May 6	4.41	17	4.75
16	8.64	23	6.68	13	5.19	24	3.72
23	8.75	30	7.03	20	5.82	Mar. 3	3.55
30	8.90	July 8	7.33	27	6.34	10	4.08
Oct. 7	9.01	15	7.50	June 3	6.60	17	3.56
14	9.13	21	7.54	10	6.96	24	4.34
21	9.24	29	8.88	17	6.56	31	3.80
28	9.34	Aug. 4	7.96	24	6.39	April 7	3.00
Nov. 4	9.29	11	8.10	July 1	6.47	14	2.49
11	9.25	18	8.29	8	6.52	21	3.51
18	9.21	25	8.49	15	7.01	28	3.80
25	9.20	Sept. 1	8.64	22	5.49	May 5	4.92
Dec. 2	9.17	8	8.78	30	6.24	12	4.99
9	8.76	15	8.89	Aug. 5	6.54	19	5.10
16	8.40	29	9.00	17	6.95	26	5.55
23	9.07	Oct. 6	8.97	19	7.44	June 2	6.02
30	7.79	13	8.67	26	7.72	9	6.39
		20	8.57	Sept. 2	7.76	16	6.79
1949		27	8.52	9	8.04	23	6.85
		Nov. 10	8.56	16	8.12	30	7.00
Jan. 6	7.24	17	8.53	23	8.23	July 7	7.06
13	6.39	Dec. 1	8.50	30	8.34	14	5.11
20	4.06	8	8.49	Oct. 7	8.35	21	6.29
27	3.91	22	5.57	14	8.49	28	6.96
Feb. 3	4.27	29	4.38	21	8.54	Aug. 4	7.49
10	4.62			28	8.59	11	8.03
17	4.10			Nov. 4	8.66	18	8.15
24	3.79			11	8.67		

Table 6.--Water levels in observation wells in Marshall County, Ind.--Cont.

Marshall 1--Continued

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Aug. 25	8.40	July 26	8.17	Aug. 22	8.77	Aug. 14	8.70
Sept. 8	8.64	Aug. 2	8.38	29	9.05	21	8.67
15	8.79	9	8.49	Sept. 5	9.26	24	8.69
22	9.01	16	8.65	12	9.42	28	8.50
29	9.18	23	8.82	19	9.46	Sept. 4	8.58
Oct. 6	9.20	30	9.14	26	9.50	11	8.47
13	9.37	Sept. 6	9.39	Oct. 3	9.70	18	8.92
20	9.39	20	9.63	24	9.86	25	8.93
27	8.83	27	9.73	31	9.90	Oct. 2	8.91
Nov. 3	8.32	Oct. 4	9.82	Nov. 7	9.91	9	8.59
10	8.24	11	9.84	14	9.96	10	1.17
24	6.26	18	9.89	21	9.97	16	2.26
Dec. 1	6.39	25	9.87	28	10.01	23	3.57
8	5.44	Nov. 1	9.93	Dec. 5	10.02	30	4.53
15	5.80	8	9.96			Nov. 6	4.71
22	6.38	15	9.99	1954		13	5.04
29	4.16	21	9.74			20	5.45
		29	9.92	Jan. 2	10.06	27	5.93
1952		Dec. 6	9.90	9	10.07	Dec. 4	6.50
		13	9.91	16	10.08	11	6.46
Jan. 5	4.50	27	9.78	23	10.05	18	6.44
12	4.80			30	9.87	25	6.30
19	3.34	1953		Feb. 6	9.80		
26	3.77			13	9.78	1955	
Feb. 2	4.45	Jan. 10	9.58	20	9.40		
9	4.50	17	9.46	27	9.08	Jan. 1	4.22
16	4.56	31	8.43	Mar. 6	8.60	8	3.24
23	4.96	Feb. 7	8.39	13	8.00	15	3.71
Mar. 1	5.37	14	8.26	20	7.74	22	4.73
8	5.20	28	7.36	27	3.67	29	5.78
15	4.49	Mar. 7	6.87	April 3	3.77	Feb. 5	6.52
22	3.50	21	4.69	10	4.04	12	6.50
29	4.78	April 4	5.75	17	4.13	19	5.70
April 5	3.99	11	6.42	24	2.30	26	3.68
12	3.22	18	5.96	May 1	3.09	Mar. 5	4.17
19	3.68	25	6.44	8	4.20	12	4.70
26	4.53	May 2	6.64	15	5.49	19	5.07
May 3	5.51	9	7.15	22	6.30	26	4.71
10	6.31	23	7.26	29	6.36	April 2	4.76
17	6.64	June 6	7.62	June 5	6.90	9	4.83
24	5.18	20	9.05	12	7.33	16	4.94
31	5.26	27	8.69	19	7.69	23	5.07
June 7	5.72	July 4	7.92	26	8.05	30	5.20
14	5.25	11	8.28	July 3	8.07	May 7	5.79
21	6.20	18	8.51	10	8.11	14	6.19
28	7.27	25	8.66	17	8.22	21	6.64
July 5	7.73	Aug. 1	8.69	24	8.27	28	6.69
12	7.76	8	8.45	31	8.51	June 4	7.50
19	7.90	15	8.55	Aug. 7	8.59	11	7.65

Table 6.--Water levels in observation wells in Marshall County, Ind.--Cont.

Marshall 1--Continued

Date	Water level	Date	Water level	Date	Water level	Date	Water level
June 18	7.71	May 5	4.21	Mar. 23	7.29	Feb. 8	6.40
25	7.84	12	3.42	30	7.23	15	6.42
July 2	7.95	19	4.20	April 6	7.10	22	6.49
9	8.38	26	4.88	13	6.19	Mar. 1	5.51
16	8.41	June 2	5.30	20	3.78	8	5.56
23	8.59	9	5.96	27	4.76	15	5.62
30	8.70	16	6.04	May 4	5.70	22	5.80
Aug. 6	8.85	23	6.46	11	5.66	29	6.14
13	9.05	30	7.29	18	5.69	April 5	6.39
20	9.17	July 7	7.40	25	5.94	12	6.50
27	9.33	14	7.53	June 1	6.25	19	6.69
Sept. 3	9.46	21	7.62	8	6.53	26	6.95
10	9.69	28	7.63	15	6.55	May 3	7.33
17	9.95	Aug. 4	7.69	22	6.61	10	7.53
24	10.02	11	7.93	29	5.38	17	7.04
Oct. 1	10.09	18	8.09	July 6	5.76	24	7.81
8	9.96	25	8.21	13	6.70	31	8.67
15	9.95	Sept. 1	8.30	20	7.54	June 7	8.26
22	9.93	8	8.34	27	7.58	14	8.13
29	9.91	15	8.49	Aug. 3	7.73	21	8.01
Nov. 5	9.71	22	8.65	10	8.20	28	7.94
12	9.43	29	8.75	17	8.44	July 5	7.88
19	9.19	Oct. 6	9.03	24	8.56	12	7.05
26	8.94	13	9.19	31	8.76	19	6.03
Dec. 3	8.66	20	9.48	Sept. 7	9.05	26	5.22
10	8.62	27	9.60	14	9.23	Aug. 2	4.69
17	8.65	Nov. 3	9.65	21	9.42	9	4.41
24	8.64	10	9.66	28	9.60	16	4.67
31	8.65	17	9.69	Oct. 5	9.67	23	4.82
		24	9.70	12	9.71	30	5.72
1956		Dec. 1	9.71	19	9.83	Sept. 6	6.54
		8	9.70	26	9.29	13	6.53
Jan. 7	8.67	15	9.68	Nov. 2	8.78	20	6.49
14	8.75	22	9.62	9	8.46	27	6.46
21	8.81	29	9.49	16	8.19	Oct. 4	6.50
28	8.95			23	7.24	11	6.54
Feb. 4	9.05	1957		30	5.96	18	6.62
11	8.48			Dec. 2	5.40	25	6.72
18	8.30	Jan. 5	9.50	14	4.22	Nov. 1	7.05
25	7.43	12	9.51	21	3.69	8	7.10
Mar. 3	7.39	19	9.53	28	3.51	15	7.06
10	6.78	26	8.70			22	6.71
17	6.63	Feb. 2	8.63	1958		29	6.31
24	6.25	9	8.20			Dec. 6	6.69
31	6.21	16	7.87	Jan. 4	3.71	13	7.07
April 7	6.29	23	7.73	11	4.25	20	7.26
14	6.37	Mar. 2	7.49	18	4.72	27	7.42
21	6.39	9	7.47	25	5.58		
28	6.40	16	7.33	Feb. 1	6.36		

Table 6.--Water levels in observation wells in Marshall County, Ind.--Cont.

Marshall 1--Continued

Date	Water level	Date	Water level	Date	Water level	Date	Water level
1959		June 27	5.57	1960		July 2	5.85
		July 4	5.95			9	5.91
Jan. 3	7.38	11	6.59	Jan. 2	4.89	16	6.21
10	7.27	18	7.04	9	4.84	23	6.71
17	7.22	25	7.21	16	4.82	30	7.23
24	7.19	Aug. 1	7.59	23	4.69	Aug. 6	7.46
31	7.00	8	7.72	30	4.51	13	7.75
Feb. 7	6.86	15	8.04	Feb. 6	4.20	20	7.81
14	6.37	22	8.22	13	3.77	27	7.93
21	6.36	29	8.43	20	3.74	Sept. 3	8.10
28	6.38	Sept. 5	8.50	27	3.73	10	8.33
Mar. 7	6.35	12	8.61	Mar. 12	3.74	17	8.40
14	6.28	19	8.68	19	3.76	24	8.45
21	6.11	26	8.79	26	3.69	Oct. 1	8.53
28	5.06	Oct. 3	8.70	April 2	3.05	8	8.60
April 4	5.10	10	8.53	9	3.20	15	8.69
11	5.18	17	7.68	16	3.31	22	8.75
25	5.33	24	7.05	23	3.36	29	8.83
May 2	5.21	31	6.97	30	3.59	Nov. 5	8.88
9	5.12	Nov. 7	6.55	May 7	3.71	12	8.95
16	5.10	14	5.69	14	4.73	19	9.07
23	5.15	21	5.10	21	5.41	26	9.11
30	5.23	28	4.97	28	5.45	Dec. 3	9.16
June 6	5.31	Dec. 5	4.99	June 4	5.51	10	9.20
13	5.37	12	5.01	11	5.53	17	9.27
20	6.07	19	5.04	18	5.45	24	9.32
		26	4.91	25	5.70	31	9.37

Marshall 2. (34/2-32J3). City of Plymouth. Plymouth Waterworks. NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 32, T. 34 N., R. 2 E. Drilled unused artesian well in gravel, diameter 16 inches, depth 127 feet. Land-surface datum is about 803 feet above msl. Recording gage installed June 4, 1956. Highest water level is 17.80 below lsd, April 20, 1960; lowest 23.10 below lsd, June 11, 1958. Records available: 1956-60. Affected by nearby pumping and by trains.

(Daily highest water level from recorder graph, 1956)

1956		Dec. 28	22.09	Dec. 30	22.07	Dec. 31	22.07
		29	22.12				
Dec. 27	22.09						

(Daily highest water level from recorder graph, 1957)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	22.18	22.10	21.99	21.81	21.56	-----	20.43	21.58	-----	22.10h	21.98	-----
2	22.12	22.15	21.98	21.87	21.38	-----	20.59	20.53	-----	22.17	-----	-----
3	22.20	22.05	21.97	21.95	21.41	-----	-----	21.46	-----	22.35	-----	-----
4	22.23	-----	21.96	-----	-----	-----	-----	21.44	-----	22.22	-----	-----
5	22.25e	22.31	22.01	21.57	-----	-----	-----	-----	22.15	-----	-----	-----

Table 6.--Water levels in observation wells in Marshall County, Ind.--Cont.

Marshall 2--Continued

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
6	22.17	22.22	22.01	21.45	-----	-----	-----	-----	22.02	-----	-----	-----
7	22.12	22.19	22.04	21.31	-----	-----	-----	21.59	22.00	-----	-----	-----
8	22.24	22.25	22.08	21.24	20.55	-----	-----	21.79	21.99	22.19	21.93h	21.81
9	22.24	22.07	22.08	21.28	20.53	-----	-----	21.66	21.98	22.20	21.93	-----
10	22.30	21.96	22.05	21.22	20.51	-----	-----	21.52e	22.06	22.33	-----	-----
11	-----	21.93	21.98	21.95	20.53	-----	-----	21.47	21.99	22.23	-----	-----
12	-----	21.89	22.06	21.94	20.49	-----	-----	21.46	22.18	22.21	-----	-----
13	-----	21.91	22.11	21.87	20.43	-----	-----	-----	22.06	22.17	-----	-----
14	-----	21.95	22.06	21.90	20.47	-----	-----	-----	22.03	22.12	-----	-----
15	-----	21.94	-----	21.92	-----	-----	-----	-----	21.94	-----	-----	-----
16	-----	21.92	22.08	21.97	-----	-----	-----	-----	21.93	-----	-----	-----
17	-----	21.95	22.00	22.02	-----	-----	-----	-----	22.04	-----	-----	-----
18	-----	21.88	21.94	22.00	-----	-----	-----	-----	-----	-----	-----	21.19
19	-----	22.01	21.93	21.95	-----	-----	-----	-----	-----	22.14	-----	-----
20	-----	22.06	22.03	21.83	-----	20.94	-----	-----	-----	22.07	-----	-----
21	-----	22.06	21.99	21.78	-----	21.05	21.77	-----	22.06	22.03	21.49	-----
22	-----	22.09	21.98	21.72	-----	-----	21.81	-----	22.07	22.09	21.38	-----
23	-----	22.11	21.99	21.78	-----	-----	21.97	-----	22.01	21.83	21.29h	20.30
24	-----	22.00	21.94	21.86	-----	-----	21.85	-----	22.09	21.79	21.31	-----
25	-----	21.96	21.87	21.88	-----	-----	21.83	-----	22.08	21.79	21.30	-----
26	-----	22.02	21.91	21.55	-----	21.05	21.86	-----	22.22	21.72	-----	-----
27	-----	22.09	21.95	21.28	-----	21.11	21.81	-----	22.12	21.67	-----	-----
28	-----	22.02	21.93	21.09	-----	20.83	-----	-----	22.09	21.69	-----	-----
29	-----	-----	21.90	21.12	-----	20.59	-----	-----	22.04	21.81	-----	-----
30	22.12	-----	21.96	21.22	-----	20.45	21.52	-----	22.00	-----	-----	-----
31	22.08	-----	21.88	-----	-----	-----	21.70	-----	-----	-----	-----	-----

(Daily highest water level from recorder graph, 1958)

1	-----	20.70	-----	-----	21.03	-----	-----	-----	20.28	-----	-----	-----
2	-----	20.69	-----	20.60	20.95	-----	-----	-----	-----	-----	-----	-----
3	-----	20.69	-----	-----	20.94	-----	-----	-----	-----	20.65	-----	-----
4	-----	20.78	-----	-----	-----	-----	-----	-----	-----	20.64	-----	-----
5	-----	-----	-----	-----	-----	21.56	-----	-----	-----	20.69	-----	-----
6	-----	-----	-----	-----	-----	-----	-----	20.90	-----	20.66	-----	20.95
7	-----	-----	-----	-----	21.01	-----	-----	20.73	-----	-----	-----	20.90
8	-----	-----	-----	20.91	21.22	-----	20.63	-----	-----	-----	-----	20.85
9	20.61	-----	-----	20.92	21.11	-----	20.70	-----	-----	-----	-----	20.95
10	20.75	-----	-----	20.80	21.08	-----	20.91	-----	-----	-----	-----	21.00
11	20.63	-----	-----	20.76	21.08	22.81	20.78	-----	-----	-----	-----	20.95
12	20.56	-----	-----	20.76	21.12	-----	20.65	20.07	-----	-----	-----	20.95
13	20.53	-----	-----	20.74	21.26	-----	20.54	20.06	-----	-----	-----	21.05
14	20.55	-----	-----	20.74	21.38	-----	20.50	20.13	-----	-----	-----	20.95
15	20.62	-----	-----	20.81	21.44	-----	20.56	20.10	-----	-----	-----	21.00
16	20.66	-----	-----	20.82	21.44	-----	-----	19.77	-----	-----	-----	21.10
17	-----	-----	-----	21.03	21.49	-----	-----	19.55	-----	-----	-----	21.05
18	-----	-----	20.47	20.94	21.41	-----	-----	19.56	-----	-----	-----	21.05

Table 6.--Water levels in observation wells in Marshall County, Ind.--Cont.

Marshall 2--Continued

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
19	-----	-----	20.50	20.88	21.31	-----	20.75	19.67	-----	-----	-----	21.00
20	-----	-----	20.48	20.78	21.30	-----	20.70	19.87	-----	-----	-----	21.15
21	-----	-----	20.50	20.75	21.42	-----	20.66	19.96	-----	-----	-----	21.10
22	-----	-----	20.50	20.78	-----	-----	20.73	20.05	-----	-----	-----	21.05
23	-----	-----	20.49	20.89	-----	-----	20.81	20.01	-----	-----	-----	21.10
24	-----	-----	-----	20.80	-----	-----	20.99	19.91	-----	-----	-----	21.15
25	20.60	-----	20.52	20.97	-----	-----	20.91	-----	-----	-----	-----	21.10
26	20.56	-----	20.58	20.95	-----	-----	20.93	20.06	-----	-----	-----	21.10
27	20.56	-----	20.59	20.84	-----	-----	-----	20.16	-----	-----	-----	21.10
28	20.69	-----	20.57	20.79	-----	-----	-----	20.20	-----	-----	-----	21.15
29	20.69	-----	20.59	20.87	-----	-----	-----	20.23	-----	-----	-----	21.10
30	20.67	-----	20.52	20.96	-----	-----	-----	20.30	-----	-----	-----	21.20
31	20.69	-----	20.51	20.97	-----	-----	-----	20.33	-----	-----	-----	21.10

(Daily highest water level from recorder graph, 1959)

1	21.00	20.95	19.40	19.20	18.35	19.20	-----	20.15	21.00	20.95	20.70	20.20
2	21.00	20.90	19.40	19.05	18.35	19.35	-----	20.10	20.90	20.95	20.70	20.25
3	21.05	20.90	19.50	19.05	18.50	19.45	-----	19.90	21.00	20.95	20.80	20.25
4	21.05	21.00	19.70	19.00	18.85	19.65	-----	20.10	20.95	20.95	20.75	20.25
5	21.10	21.05	19.60	18.90	18.90	19.65	-----	20.25	21.10	20.90	20.65	20.25
6	21.15	21.15	19.60	19.05	19.00	19.60	-----	20.30	21.00	21.00	20.65	20.15
7	21.15	21.15	19.75	19.20	19.20	-----	-----	20.30	21.00	21.05	20.60	20.10
8	21.20	21.00	19.70	19.20	19.20	-----	-----	20.30	21.15	21.00	20.55	20.25
9	21.25	20.85	19.70	19.20	19.10	-----	19.90	20.20	21.30	21.10	20.50	20.30
10	21.25	20.55	19.80	19.15	19.05	-----	19.75	20.20	21.30	21.00	20.60	20.35
11	21.15	20.30	19.85	19.15	19.05	19.65	19.70	20.45	21.20	20.90	20.60	20.25
12	21.20	20.05	19.85	19.10	19.25	-----	19.60	20.50	21.10	20.80	20.65	20.20
13	21.25	19.75	19.90	19.10	19.30	-----	19.60	20.55	21.05	20.90	20.55	20.10
14	21.25	19.50	19.80	19.25	19.35	19.15	19.80	20.65	21.00	20.90	20.20	20.05
15	21.20	19.30	19.70	19.35	19.45	19.10	19.90	20.60	21.10	20.90	19.85	20.10
16	21.05	19.30	19.80	19.50	19.45	-----	19.95	20.40	21.15	21.15	19.75	20.10
17	21.10	19.40	19.85	19.50	19.40	-----	20.00	20.35	21.20	21.05	19.90	20.15
18	21.00	19.50	20.00	19.45	19.35	-----	19.95	20.50	21.20	20.90	20.00	20.20
19	20.95	19.75	19.95	19.35	19.50	-----	19.85	20.55	21.15	20.90	20.05	20.25
20	21.10	19.90	19.90	19.35	19.60	-----	19.75	20.65	21.10	21.00	20.15	20.15
21	21.00	20.00	19.85	19.55	-----	-----	19.95	20.70	21.10	21.10	20.05	20.15
22	21.10	19.85	19.80	19.55	19.85	-----	20.00	20.75	21.35	21.05	20.05	20.25
23	21.05	19.75	19.80	19.60	-----	-----	19.90	20.65	21.30	21.05	20.00	20.25
24	21.00	19.60	19.90	19.60	19.45	-----	19.85	20.60	21.25	20.85	20.05	20.25
25	20.95	19.50	20.05	19.60	19.45	19.75	19.85	20.70	21.20	20.75	20.15	20.20
26	20.95	19.45	19.80	19.50	19.50	19.50	19.75	20.75	21.10	20.70	20.15	20.15
27	21.10	19.50	19.60	19.25	19.95	19.15	19.75	20.80	21.05	20.80	20.15	20.05
28	21.15	19.45	-----	18.85	-----	-----	20.00	20.90	21.10	20.85	20.20	20.00
29	21.15	-----	18.95	18.50	19.90	-----	20.15	20.90	20.85	20.80	20.20	20.10
30	21.20	-----	18.95	18.35	19.40	-----	20.15	20.85	20.95	20.80	20.10	20.10
31	21.00	-----	19.05	-----	19.20	-----	20.20	20.80	-----	20.75	-----	20.15

Table 6.--Water levels in observation wells in Marshall County, Ind.--Cont.

Marshall 2--Continued

(Daily highest water level from recorder graph, 1960)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	20.10	19.60	19.45	18.15	18.70	-----	19.60	20.50	20.90	20.85	21.05	21.15
2	20.00	19.70	19.50	18.05	18.65	-----	19.70	20.45	21.00	20.75	21.10	21.10
3	20.05	19.90	19.35	18.15	18.80	-----	19.35	20.35	20.95	20.75	21.15	21.05
4	20.05	19.85	19.45	18.25	18.90	-----	19.35	20.20	20.80	20.90	21.15	21.00
5	20.20	19.70	19.50	18.50	18.95	-----	19.35	20.20	20.75	20.90	21.05	20.95
6	20.20	19.50	19.50	18.60	18.95	-----	19.60	20.25	20.75	20.95	21.00	21.05
7	20.20	19.30	19.45	18.70	18.80	-----	19.65	20.10	21.00	20.95	21.05	21.10
8	20.30	19.20	19.55	18.80	18.75	-----	19.70	20.10	21.05	20.90	21.10	21.10
9	20.30	19.35	19.55	18.90	18.75	-----	19.75	20.30	21.00	20.85	21.10	21.10
10	20.25	19.00	19.60	18.90	18.85	-----	19.60	20.50	20.90	20.85	21.15	21.10
11	20.25	18.90	19.65	18.85	18.95	-----	19.60	20.45	20.75	21.00	21.25	21.00
12	20.00	18.55	19.65	19.05	19.00	-----	19.80	20.45	20.70	21.05	21.10	21.00
13	19.75	18.35	19.60	19.15	19.00	19.30	19.90	-----	20.80	21.05	21.05	21.15
14	19.35	18.35	19.55	19.15	-----	19.05	-----	-----	20.85	21.10	21.00	21.10
15	19.25	18.50	19.70	19.10	-----	18.95	-----	20.25	20.90	21.05	21.00	21.15
16	19.25	18.70	19.60	18.85	-----	18.95	-----	20.40	20.90	20.95	21.10	21.15
17	19.25	18.80	19.60	18.30	-----	18.90	-----	20.40	20.90	20.90	21.05	21.20
18	19.20	18.90	19.75	18.10	-----	18.85	-----	20.40	20.80	21.05	21.00	21.15
19	19.50	19.05	19.70	17.90	-----	18.85	-----	20.55	20.65	21.05	21.00	21.15
20	19.65	19.10	19.65	17.80	-----	18.90	-----	20.50	20.75	21.10	20.95	21.25
21	19.65	18.95	19.65	17.85	-----	19.10	-----	20.30	20.75	21.10	20.90	21.30
22	19.70	19.00	19.65	18.15	-----	19.15	-----	20.30	20.75	21.00	21.00	21.30
23	19.75	19.20	19.75	18.35	19.00	19.25	-----	20.50	20.85	20.95	21.10	21.30
24	19.70	19.20	19.70	18.40	19.15	19.50	-----	20.55	20.85	21.00	21.00	21.25
25	19.65	19.20	19.80	18.40	19.20	19.40	-----	20.65	20.80	21.10	20.95	21.10
26	19.85	19.25	19.75	18.60	19.25	19.35	-----	20.70	20.70	21.05	21.00	21.10
27	19.80	19.30	19.55	18.85	19.30	19.35	-----	20.75	20.80	21.05	20.95	21.20
28	19.85	19.25	19.20	18.85	19.25	19.65	-----	20.70	20.95	21.10	20.95	21.30
29	19.85	19.25	18.70	18.85	19.20	19.60	-----	20.65	20.90	21.05	21.05	21.25
30	19.75	-----	18.50	18.75	19.15	19.65	-----	20.80	20.90	20.95	21.10	21.30
31	19.65	-----	18.30	-----	19.20	-----	-----	20.80	-----	20.90	-----	21.30

Marshall 3. (32/1-31K1). Fred Banks. NW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 31, T. 32 N., R. 1 E. Drilled unused water-table well in sand, diameter 36-18 inches, depth 43 feet. Highest water level is 7.45 below lsd, April 25 and May 2, 1960; lowest 11.25 below lsd, Sept. 28, 1959. Records available: 1957-60.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
1957		Dec. 2	9.55	1958		Feb. 3	9.05
		8	9.55			10	8.95
Nov. 11	10.22	16	9.55	Jan. 6	8.55	17	9.05
18	9.78	23	9.15	13	8.65	24	9.45
20	9.58	30	8.65	20	8.85	Mar. 3	9.55
25	9.29			27	8.85	10	9.55

Table 6.--Water levels in observation wells in Marshall County, Ind.--Cont.

Marshall 3--Continued

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Mar. 17	9.55	Dec. 15	9.75	Aug. 24	11.05	May 2	7.45
24	9.65	22	9.85	31	11.05	9	7.65
31	9.65	29	9.95	Sept. 7	10.95	16	7.85
April 7	9.75			14	11.05	23	8.15
14	9.85	1959		21	11.15	30	8.35
21	9.85			28	11.25	June 6	8.65
28	9.95	Jan. 5	10.15	Oct. 5	11.15	13	8.85
May 5	10.05	12	10.15	12	11.15	20	9.05
12	10.05	19	10.25	19	10.85	27	9.15
19	10.25	26	10.15	26	10.85	July 4	9.25
26	10.35	Feb. 2	10.15	Nov. 2	10.85	11	9.25
June 2	10.45	9	10.05	9	10.85	18	9.35
9	10.35	16	10.05	16	10.75	25	9.55
16	8.15	23	9.85	23	9.95	Aug. 1	9.75
23	8.25	Mar. 2	8.95	30	9.95	8	9.65
30	7.95	9	8.85	Dec. 7	9.95	15	9.65
July 7	8.05	16	8.75	14	9.95	22	9.75
14	8.25	23	8.55	21	9.95	29	9.85
21	8.05	30	8.45	28	9.95	Sept. 5	9.95
28	8.25	April 6	8.25			12	10.05
Aug. 4	8.65	13	8.05	1960		19	10.15
11	8.95	20	8.15			26	10.25
18	8.85	27	8.45	Jan. 4	9.95	Oct. 3	10.35
25	8.75	May 4	8.35	11	9.85	10	10.35
Sept. 1	8.95	11	8.35	18	9.75	17	10.55
8	9.25	18	8.25	25	9.75	24	10.65
15	9.55	25	8.55	Feb. 1	9.45	31	10.75
22	9.45	June 1	8.65	8	9.45	Nov. 7	10.75
29	9.55	8	8.55	15	9.15	14	10.75
Oct. 6	9.65	15	8.75	22	8.75	21	10.85
13	9.75	22	9.35	29	8.65	28	10.85
20	9.85	29	9.45	Mar. 7	8.75	Dec. 5	10.75
27	9.95	July 6	9.75	14	9.55	12	10.75
Nov. 3	9.95	13	10.15	21	9.35	19	10.65
10	10.15	20	10.25	28	9.25	26	10.65
17	9.95	27	10.15	April 4	8.95		
24	9.85	Aug. 3	10.25	11	8.85		
Dec. 1	9.75	10	10.35	18	7.85		
8	9.75	17	10.75	25	7.45		

Marshall 4. (35/2-29L1). Petic Blueberry Plantation. NE $\frac{1}{2}$ SW $\frac{1}{4}$ sec. 29, T. 35 N., R. 2 E. Drilled unused artesian well in sand, diameter 6 inches, depth 133 feet. Land-surface datum is about 848 feet above msl. Recording gage installed Aug. 12, 1957. Highest water level is 41.6 below lsd, April 30, and May 6 and 7, 1960; lowest 54.2 below lsd, May 16, 1959 and May 13, 1960. Records available: 1957-60. Affected by barometric pressure and by occasional pumping.

Table 6.--Water levels in observation wells in Marshall County, Ind.--Cont.

Marshall 4--Continued

(Daily highest water level from recorder graph, 1957)

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Aug. 13	44.73	Sept. 17	45.05	Oct. 10	45.26	Nov. 2	45.30
14	44.70	18	45.03	11	45.33	3	45.31
15	44.70	19	44.96	12	45.36	4	45.38
16	44.73	20	44.95	13	45.35	5	45.36
17	44.81	21	44.94	14	45.26	6	45.40
20	h44.88	22	44.98	15	45.16	7	45.16
29	44.84	23	45.06	16	45.03	8	44.95
30	44.87	24	45.13	17	45.03	9	45.19
31	44.89	25	45.10	18	45.17	10	45.54
Sept. 1	44.86	26	45.13	19	45.32	11	45.60
2	44.73	27	45.28	20	45.40	12	45.40
3	44.70	28	45.31	21	45.44	13	45.15
4	44.70	29	45.19	22	45.31	14	44.82
5	44.90	30	45.04	23	45.13	15	45.03
6	44.96	Oct. 1	45.04	24	44.97	16	45.13
7	44.94	2	45.07	25	45.26	17	e45.37
8	44.95	3	45.11	26	45.38	20	45.10
9	44.96	4	45.18	27	45.43	21	45.23
10	44.95	5	45.20	28	45.40	22	45.39
13	44.93	6	45.17	29	45.16	23	45.07
14	44.95	7	45.14	30	45.09	24	45.07
15	44.87	8	45.15	31	45.13	25	45.14
16	44.89	9	45.19	Nov. 1	45.31	26	45.14

(Daily highest water level from recorder graph, 1958)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	-----	-----	44.15	43.90	43.93	-----	-----	44.1	43.7	-----	-----	44.1
2	-----	-----	44.21	43.85	43.91	-----	-----	44.0	43.8	-----	-----	43.8
3	-----	-----	44.21	43.82	43.85	-----	-----	44.0	43.8	-----	-----	43.8
4	-----	-----	44.23	43.78	43.87	44.15	-----	44.1	43.8	-----	-----	44.0
5	-----	-----	44.23	43.49	43.93	44.10	-----	44.1	43.8	-----	-----	-----
6	-----	-----	44.23	43.48	43.91	44.20	-----	44.1	43.7	-----	-----	44.3
7	-----	-----	44.22	43.69	43.84	-----	-----	43.9	43.8	-----	-----	44.5
8	-----	-----	44.04	43.93	43.81	-----	-----	44.0	43.8	-----	-----	44.3
9	-----	-----	44.03	44.08	43.82	-----	-----	44.1	43.6	43.7	-----	44.4
10	-----	-----	44.04	-----	43.95	-----	-----	44.0	43.7	43.8	-----	44.5
11	-----	-----	44.04	-----	43.95	-----	-----	44.0	43.8	44.0	-----	44.4
12	-----	-----	43.93	-----	44.10	-----	-----	43.9	43.8	44.1	-----	44.3
13	-----	-----	43.90	-----	44.17	-----	-----	44.0	43.7	44.1	44.0	44.4
14	-----	-----	43.90	-----	44.04	-----	-----	43.9	43.7	44.0	44.0	44.5
15	-----	-----	43.88	-----	44.04	-----	-----	43.9	43.7	43.9	44.1	44.5
16	-----	-----	43.88	-----	43.98	-----	-----	43.8	43.7	43.8	44.0	44.5
17	-----	-----	43.89	-----	43.89	-----	-----	43.7	43.6	43.8	44.0	44.4
18	-----	-----	43.94	-----	43.89	-----	-----	43.8	43.7	44.0	44.1	44.5

Table 6.--Water levels in observation wells in Marshall County, Ind.--Cont.

Marshall 4--Continued

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
19	-----	-----	43.92	43.82	44.00	-----	-----	43.8	-----	43.9	44.2	44.4
20	-----	-----	43.89	43.76	44.04	-----	-----	43.7	-----	43.9	44.2	44.6
21	-----	-----	43.89	43.72	43.92	-----	-----	43.7	-----	43.9	44.2	44.6
22	-----	-----	43.93	43.71	43.92	-----	-----	43.8	-----	43.9	44.1	44.6
23	-----	-----	43.99	43.70	-----	-----	-----	43.7	-----	43.9	44.1	44.6
24	-----	-----	43.95	43.70	-----	-----	-----	43.6	-----	43.9	44.0	44.7
25	-----	-----	43.92	44.09	-----	-----	-----	43.6	-----	44.0	44.0	44.8
26	-----	-----	43.87	44.03	44.20	-----	43.95	43.7	-----	44.0	44.2	44.8
27	-----	-----	43.87	43.88	44.11	-----	43.71	43.7	-----	-----	44.1	44.7
28	-----	-----	43.85	43.82	44.12	-----	44.05	43.7	-----	-----	44.1	44.7
29	-----	-----	43.88	43.88	-----	-----	44.05	43.7	-----	-----	44.3	44.7
30	-----	-----	43.86	43.92	-----	-----	44.05	43.6	-----	-----	44.3	44.9
31	-----	-----	43.87	-----	-----	-----	44.0	43.6	-----	-----	-----	44.5

(Daily highest water level from recorder graph, 1959)

1	44.4	45.2	43.9	42.9	42.5	42.8	42.9	43.3	43.6	43.9	43.8	43.4
2	44.5	44.7	43.8	42.7	42.5	42.9	43.0	43.3	43.7	43.8	43.8	43.5
3	44.6	44.4	43.8	42.7	42.5	42.9	43.1	43.3	43.8	43.8	43.7	43.4
4	44.7	44.5	43.9	42.9	42.5	42.9	42.9	43.3	43.9	43.8	43.5	43.3
5	44.9	44.6	43.4	42.9	43.0	-----	42.9	43.3	43.9	43.8	43.6	43.3
6	44.8	45.0	43.4	43.0	42.9	-----	42.9	43.3	43.8	43.7	43.8	43.3
7	44.8	44.9	43.8	42.9	43.0	-----	43.1	43.3	43.8	43.7	44.0	43.3
8	44.9	44.8	43.9	42.9	43.2	-----	43.0	43.3	43.9	43.7	44.0	43.3
9	44.9	44.6	43.8	42.9	42.8	-----	43.0	43.4	43.9	43.7	43.8	43.5
10	44.9	44.5	43.9	43.0	42.7	-----	43.0	43.5	43.9	43.8	43.7	43.5
11	44.8	44.7	43.8	43.0	42.7	42.8	43.0	43.5	44.0	43.8	43.7	43.2
12	44.7	44.4	43.7	42.9	42.8	42.8	43.0	43.6	44.0	43.9	43.8	43.1
13	44.7	44.4	43.7	42.8	42.8	42.8	43.1	43.6	44.0	43.9	43.6	43.3
14	44.5	44.3	43.5	42.8	42.8	43.0	43.1	43.6	43.8	43.9	43.6	43.5
15	44.5	44.3	43.3	42.7	42.8	43.0	43.2	43.6	43.8	43.9	43.7	43.4
16	44.5	44.2	43.7	42.7	43.5	43.0	43.1	43.6	43.8	43.9	43.7	43.3
17	44.5	44.1	43.7	42.6	43.1	43.0	43.0	43.6	43.9	43.9	43.7	43.3
18	44.6	44.1	43.9	42.6	42.9	43.0	43.0	43.5	44.0	43.9	43.6	43.4
19	44.6	44.2	43.7	42.6	42.8	43.0	43.0	43.6	44.0	43.9	43.6	43.5
20	44.6	44.3	43.5	42.6	42.9	43.0	43.0	43.6	43.9	43.9	43.4	43.4
21	44.4	44.2	43.5	42.7	42.9	42.9	43.1	43.6	43.8	44.0	43.4	43.4
22	44.6	44.0	43.5	42.7	42.9	42.9	43.1	43.6	43.8	43.9	43.4	43.4
23	45.0	43.9	43.4	42.7	42.9	43.0	43.1	43.7	43.8	43.5	43.2	43.4
24	44.8	44.1	43.4	42.6	43.0	43.0	43.1	43.7	43.9	43.4	43.1	43.3
25	44.8	44.0	43.4	42.6	42.9	42.9	43.2	43.7	43.9	43.4	43.2	43.3
26	44.8	44.0	43.0	42.6	42.9	42.9	43.2	43.6	-----	43.7	43.4	43.2
27	44.9	44.0	43.1	42.2	42.9	43.0	43.2	43.6	-----	43.8	43.5	42.9
28	44.9	44.0	43.3	42.2	42.9	43.0	43.3	43.6	-----	44.1	43.6	42.9
29	44.7	-----	43.3	42.4	42.9	43.0	43.3	43.6	43.7	44.1	43.6	42.9
30	44.8	-----	43.1	42.5	42.9	43.0	43.3	43.6	43.9	44.0	43.5	43.1
31	45.1	-----	43.1	-----	42.8	-----	43.3	43.6	-----	43.9	-----	43.2

Table 6.--Water levels in observation wells in Marshall County, Ind.--Cont.

Marshall 4--Continued

(Daily highest water level from recorder graph, 1960)

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	43.3	42.9	----	42.2	41.8	41.9	42.1	42.5	42.9	43.1	43.1	43.8
2	43.1	42.9	42.4	42.1	41.9	----	41.9	42.5	42.9	43.0	43.2	43.7
3	43.1	42.9	42.3	42.1	41.9	----	41.9	42.5	42.9	43.2	43.5	43.6
4	43.3	42.8	42.3	42.0	41.9	----	----	42.5	42.9	43.2	43.7	43.6
5	43.3	42.4	42.4	42.0	41.8	----	----	42.5	42.9	43.1	43.6	43.6
6	43.2	42.4	42.5	41.9	41.6	----	----	42.6	42.9	43.1	43.5	43.6
7	43.0	42.6	42.5	41.9	41.6	----	----	42.5	43.0	43.2	43.6	43.7
8	43.1	42.4	42.5	42.0	----	----	----	42.5	42.9	43.2	43.6	43.7
9	43.2	42.2	42.3	42.0	----	----	----	42.5	42.9	43.2	43.6	43.6
10	43.2	42.1	42.3	42.2	----	----	----	42.5	43.0	43.3	43.6	43.6
11	43.3	42.2	42.4	42.0	41.8	----	----	42.6	42.9	43.3	43.6	43.5
12	43.0	42.7	42.4	42.1	42.6	----	----	42.6	42.9	43.3	43.6	43.6
13	43.0	42.7	42.5	42.2	42.6	41.9	42.0	42.6	42.9	43.2	43.6	43.6
14	42.8	42.7	42.5	42.1	42.2	41.9	42.1	42.6	43.0	43.2	43.5	43.4
15	42.8	42.6	42.3	42.0	42.1	41.9	42.2	42.6	43.0	43.3	43.2	43.4
16	43.0	42.4	42.1	41.9	41.9	41.9	42.2	42.7	43.1	43.3	43.2	43.5
17	42.9	42.4	42.1	41.8	41.9	41.9	42.1	42.7	43.1	43.3	43.5	43.6
18	42.8	42.4	42.2	42.0	42.0	42.1	42.1	42.6	43.0	43.3	43.5	43.7
19	42.8	42.4	42.2	42.1	41.9	42.2	42.1	42.6	42.9	43.3	43.6	43.8
20	43.1	42.6	42.3	41.8	41.8	42.1	42.2	42.6	43.0	43.4	43.6	43.6
21	43.1	42.3	42.3	41.8	41.8	42.0	42.3	42.6	43.1	43.4	43.5	43.6
22	43.1	42.3	42.3	41.9	41.9	42.0	42.3	42.6	43.1	43.2	43.5	43.6
23	43.1	42.4	42.4	41.8	42.0	41.9	42.4	42.7	43.1	43.2	43.6	43.7
24	43.0	42.4	42.4	41.7	42.0	41.9	42.4	42.7	43.1	43.3	43.5	43.8
25	42.9	42.2	42.5	41.7	41.9	42.1	42.4	42.8	43.1	43.4	43.5	43.6
26	42.9	42.2	42.5	41.7	41.9	42.1	42.4	42.8	43.2	43.3	43.4	43.6
27	42.8	----	42.4	41.9	41.9	42.1	42.4	42.8	43.1	43.3	43.4	43.8
28	42.9	----	42.4	41.9	42.0	42.0	42.3	42.8	43.1	43.4	43.3	43.8
29	43.0	----	42.2	41.7	42.0	42.0	42.3	42.8	43.0	43.4	43.4	43.7
30	43.0	----	42.1	41.6	42.0	42.1	42.3	42.8	43.0	43.3	43.5	43.7
31	42.9	----	42.1	----	42.0	----	42.4	42.9	----	43.1	----	43.6

PUBLICATIONS OF COOPERATIVE GROUND-WATER PROGRAM

Report

Ground-water resources of the Indianapolis area, Marion County, Indiana. C. L. McGuinness. Indiana Department of Conservation, Division of Geology. 1943.

Bulletins

- No. 1 Memorandum concerning a pumping test at Gas City, Indiana. J. G. Ferris, Indiana Department of Conservation, Division of Water Resources. 1945.
- 2 A preliminary report of the ground-water levels of the State based on records of twenty-six observation wells for which long time records are available. Indiana Department of Conservation, Division of Water Resources. 1946 (Out of print).
- 3 Ground-water resources of St. Joseph County, Indiana. Part 1, South Bend area. F. H. Klaer, Jr., and R. W. Stallman. Indiana Department of Conservation, Division of Water Resources. 1948.
- 4 Ground-water resources of Boone County, Indiana. E. A. Brown. Indiana Department of Conservation, Division of Water Resources. 1949.
- 5 Ground-water resources of Noble County, Indiana. R. W. Stallman and F. H. Klaer, Jr. Indiana Department of Conservation, Division of Water Resources. 1950.
- 7 Water-level records of Indiana. Indiana Department of Conservation, Division of Water Resources. 1956.
- 8 Ground-water resources of Tippecanoe County, Indiana. Appendix, Basic Data. J. S. Rosenshein and O. J. Cosner. Indiana Department of Conservation, Division of Water Resources. 1956.
- 8 Ground-water resources of Tippecanoe County, Indiana. J. S. Rosenshein. Indiana Department of Conservation, Division of Water Resources. 1958 (1959).
- 9 Ground-water resources of Adams County, Indiana. F. A. Watkins, Jr., and P. E. Ward. Indiana Department of Conservation, Division of Water Resources. 1962.
- 10 Ground-water resources of northwestern Indiana. Preliminary Report: Lake County. J. S. Rosenshein. Indiana Department of Conservation, Division of Water Resources. 1961.
- 11 Ground-water resources of west-central Indiana. Preliminary Report: Greene County. F. A. Watkins, Jr., and D. G. Jordan. Indiana Department of Conservation, Division of Water Resources. 1961.

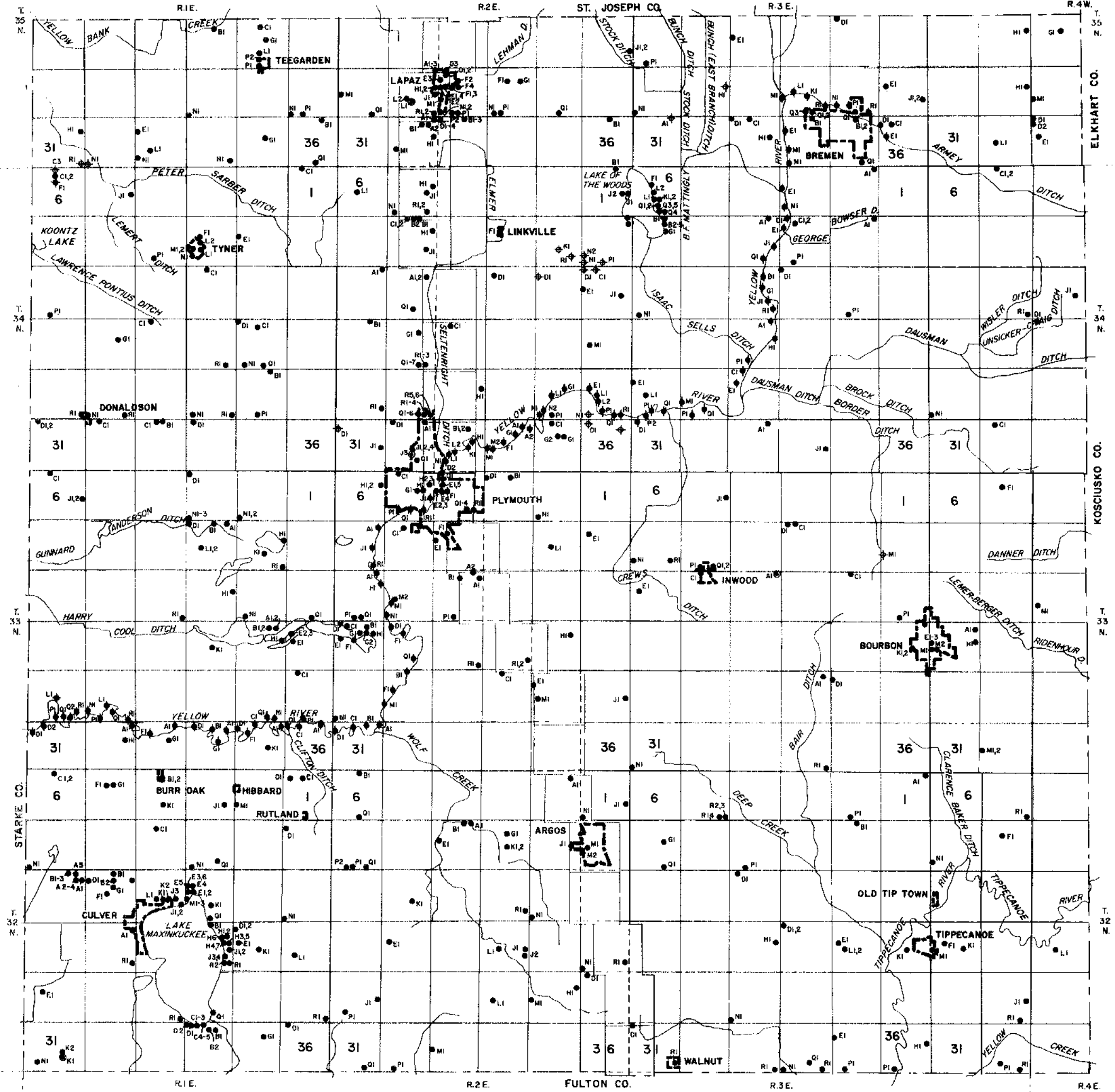
Publications of cooperative ground-water programs--Continued

Bulletins--Continued

- 12 Ground-water resources of northwestern Indiana. Preliminary Report: Porter County. J. S. Rosenshein. Indiana Department of Conservation, Division of Water Resources. 1962.
- 13 Ground-water resources of northwestern Indiana. Preliminary Report: La Porte County. J. S. Rosenshein and J. D. Hunn. Indiana Department of Conservation, Division of Water Resources. 1962.
- 14 Ground-water resources of west-central Indiana. Preliminary Report: Sullivan County. F. A. Watkins, Jr., and D. G. Jordan. Indiana Department of Conservation, Division of Water Resources. 1962.
- 15 Ground-water resources of northwestern Indiana. Preliminary Report: St. Joseph County. J. S. Rosenshein and J. D. Hunn. Indiana Department of Conservation, Division of Water Resources. 1962.
- 16 Ground-water resources of west-central Indiana. Preliminary Report: Clay County. F. A. Watkins, Jr., and D. G. Jordan. Indiana Department of Conservation, Division of Water Resources. 1962.
- 17 Ground-water resources of west-central Indiana. Preliminary Report: Vigo County. F. A. Watkins, Jr., and D. G. Jordan. Indiana Department of Conservation, Division of Water Resources. 1963.
- 18 Ground-water resources of west-central Indiana. Preliminary Report: Owen County. F. A. Watkins, Jr., and D. G. Jordan. Indiana Department of Conservation, Division of Water Resources. 1963.
- 19 Ground-water resources of northwestern Indiana. Preliminary Report: Marshall County. J. S. Rosenshein and J. D. Hunn. Indiana Department of Conservation, Division of Water Resources. 1964.

INDEX

	Page
Abstract-----	1
Acknowledgments-----	5
Analysis of Ground water-----	5,9
hardness of water-----	9
method of analysis-----	5
U. S. Public Health Service drinking-water standards-----	135
Bibliography, selected-----	10
Conditions, ground-water-----	6
Conditions, hydrologic-----	7
confined or artesian-----	7
unconfined or water-table-----	7
Conditions, quality of water-----	6
range in concentration-----	6
significance of various constituents and properties-----	7
Data, collection and processing-----	5
observation wells-----	5
water samples-----	5
well records-----	5
Geology, general-----	6
consolidated rocks-----	6
Devonian age-----	6
Mississippian age-----	6
Ordovician age-----	6
Silurian age-----	6
unconsolidated rocks-----	6
Pleistocene and Recent age-----	6
well logs-----	27
Location-----	2
Publications, cooperative ground-water program-----	154
Records-----	9
field chemical analyses-----	9,135
water levels-----	143
wells-----	9,11
well logs-----	2,27
Summary-----	9
Water levels-----	59,143
Wells-----	5,8,9
construction of-----	8
drilled-----	8
driven-----	8
jetted-----	8
logs-----	9,27
numbering system-----	4
observation-----	5,9
tests, for oil or gas and foundations-----	8
Well screen, grain-size, and equivalent slot and gauze size-----	8



EXPLANATION

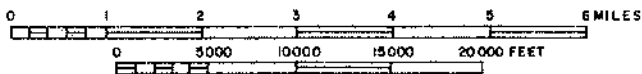
- BI Water well or test hole
- H3 Observation well
- ◆ CI Flood-control test boring
- ◆ F1 Structure boring for bridge
- ◆ R5 Oil or gas well or test hole

Base from modified General Highway and Transportation
Map revised to July, 1953. Drainage and Town
boundaries in part from U.S. Geological Survey
topographic maps

6	5	4	3	2	1
7	8	9	10	11	12
13	14	15	16	17	18
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25	26	27	28	29	30
31	32	33	34	35	36

DIAGRAM OF TOWNSHIP

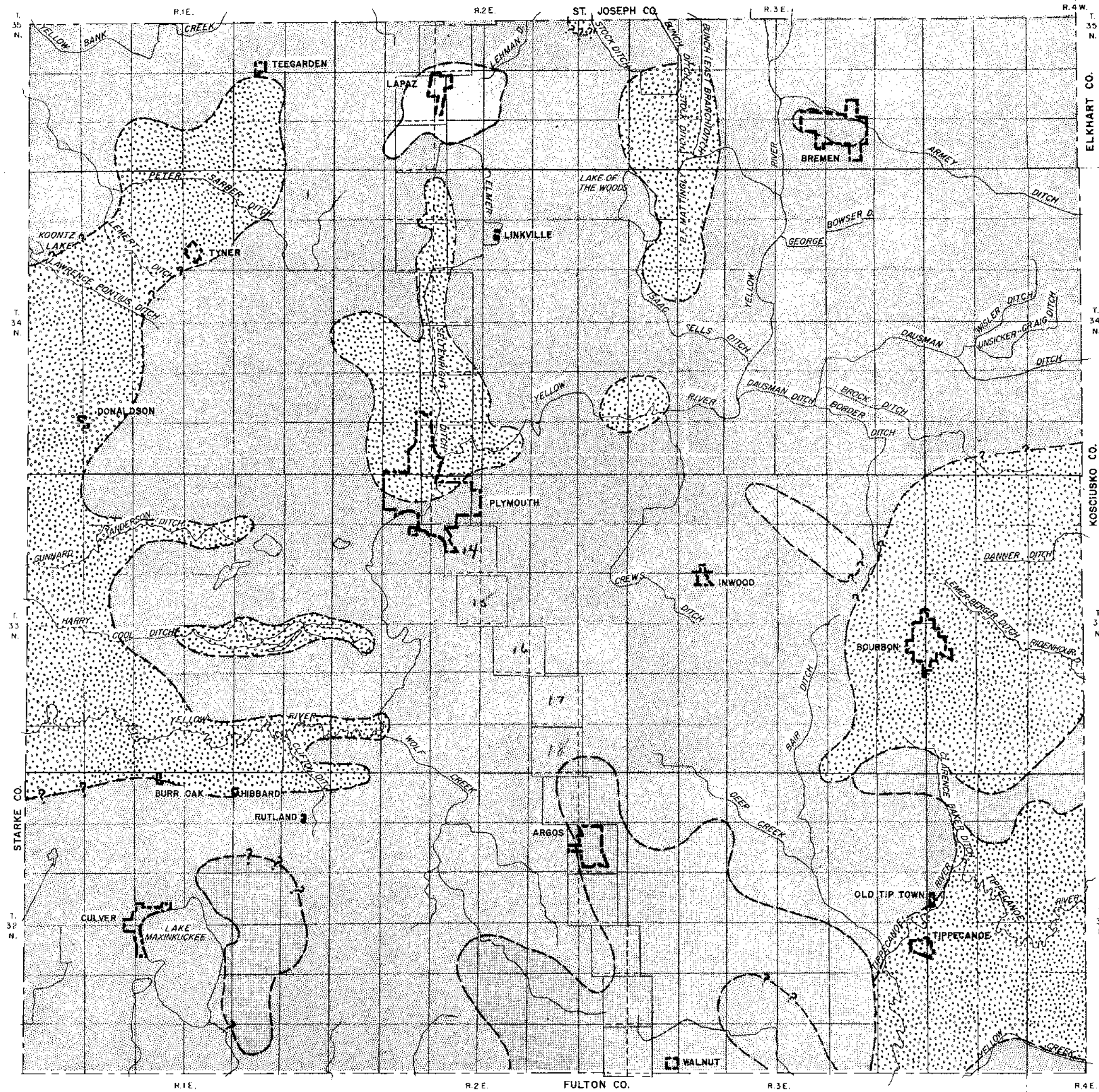
MAP OF MARSHALL COUNTY, INDIANA, SHOWING LOCATION OF WELLS AND TEST HOLES



BY J. S. ROSENHEIN AND J. D. HUNN
1961

D	C	B	A
E	F	G	H
M	L	K	J
N	P	Q	R

SECTION LETTER SYMBOLS
IN WELL-NUMBERING
SYSTEM.

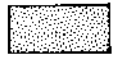


EXPLANATION

Production from glaciofluvial sand and gravel



Depths of domestic wells generally less than 50 feet. Depths of industrial and public-supply wells generally deeper. Yields adequate to more than adequate for domestic use. Larger yields possible



Well depths generally from 50 to 100 feet. Some shallower production possible locally and in valley of Yellow River. Yields adequate to more than adequate for domestic use. Larger yields possible



Well depths generally from 50 to 150 feet. production from several shallow and deep sand and gravel units. Yields adequate to more than adequate for domestic use. Larger yields possible



Well depths generally from 100 to 150 feet. Shallower production possible locally. Yields adequate to more than adequate for domestic use. Larger yields possible locally

--- Boundary approximate

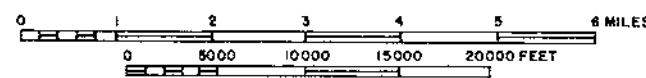
-?-?-? Boundary uncertain

Base from modified General Highway and Transportation Map revised to July, 1953. Drainage and Towns boundaries in part from U.S. Geological Survey topographic maps

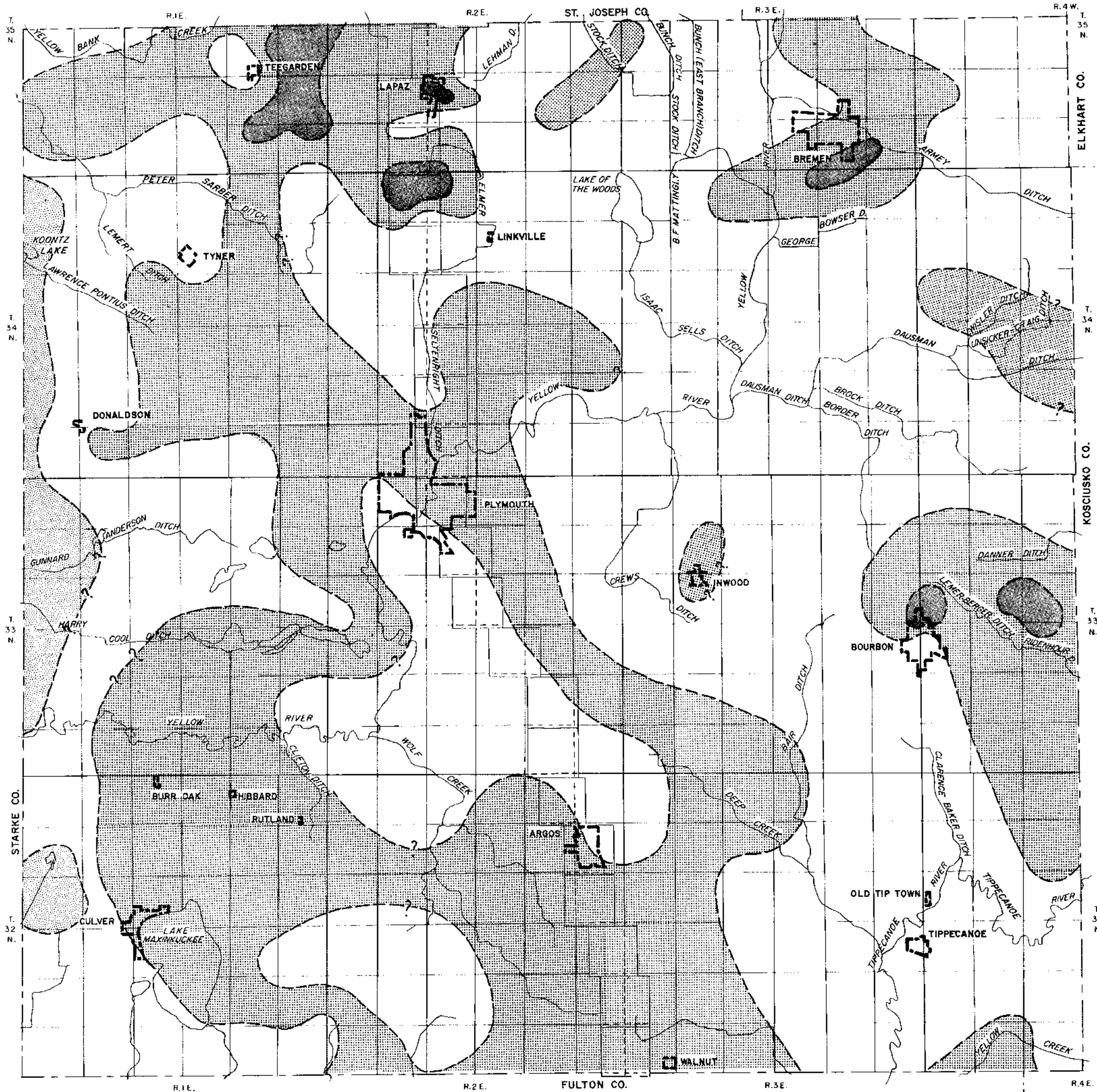
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19	20	21	22	23	24
25	26	27	28	29	30
31	32	33	34	35	36

DIAGRAM OF TOWNSHIP

MAP OF MARSHALL COUNTY, INDIANA, SHOWING AVAILABILITY OF GROUND WATER

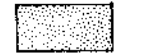


BY J. S. Rosenshein and J. D. Hunt
1961

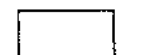


EXPLANATION

Hardness of water, in parts per million



less than 200



200 - 300



300 - 400



more than 400

Boundary approximate

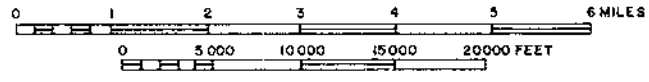
Boundary uncertain

Base from modified General Highway and Transportation Map revised to July, 1953. Drainage and town boundaries in part from U.S. Geological Survey topographic maps

6	5	4	3	2	1
7	8	9	10	11	12
13	14	15	16	17	18
19	20	21	22	23	24
25	26	27	28	29	30
31	32	33	34	35	36

DIAGRAM OF TOWNSHIP

MAP OF MARSHALL COUNTY, INDIANA, SHOWING HARDNESS OF WATER IN SAND AND GRAVEL OF PLEISTOCENE AGE



BY J. S. ROSENHEIM AND J. D. HUNN
1961