PUMP TEST RECORD

THORPE WELL COMPANY, BOX 1376, DES MOINES, IOWA

Lake Panorama Located at Panora, Iowa

SE NE NE Sec. 26 - T78N - R31W

Make, Kind and Size of Power Sumo - 60 H.P. - Sub.

Bowl No. Size Stages

Column Setting 527 ft. Size 4" Shaft size and

Static Level Before Pumping ~~387~~ 302' After Pumping 317' ~~302'~~ Temperature 72°

Date	Time	Engine R.P.M.	Pump R.P.M.	Pumping Level	Gallons Per. Min.	Temp. Discharge Description	Sand P.P.M. Volume
10/14/69	3:30 PM			387	100		Dirty
	4:00 PM			387	100		Dirty
	4:30			387	100		Dirty
	5:00			387	100		Clearing
	5:30			387	100		Clearing
	6:00			387	100		Clearing
	6:30			387	100		Clearing
	7:00			387	100		Clearing
	7:30			387	100		Fairly Clear
	8:00			387	100		Fairly Clear
	8:30			387	100		Fairly Clear
	9:00			387	100		Fairly Clear
	10:00			387	100		Clearing
	11:00			387	100		Clearing
10/15/69	12:00			387	100	72°	Clearing
	12:45 AM	PH 8.3 - 75°F		387	150	72° - 38 GPG	Clearing
	1:45			387	150	72° - 38 GPG	Clearing
	2:45			387	150		Clearing
	3:45			387	150		Clearing
	4:45			387	150		Clearing
	5:45			387	150		Clearing
	6:45			387	150		Clearing

Cleared gauge at 0900 10/15/69 PUMP TEST RECORD (continued) Page 2

For Lake Panorama Located at Panora, Iowa

Date	Time	Engine R.P.M.	Pump R.P.M.	Pumping Level	Gallons Per Min.	Temp. Discharge Description	Sand P.P.M. Volume
10/15/69	8:00 AM			387	150	AKL 72°-245-FL 1.5	Fairly Clear
	9:00			354			
	10:00			354	250		Lt. Cloudy
	10:45	Shut down		354			
	10:53	Recover		302 S.L.			
	11:15	Start Up		306	210		
	11:35			307	250		
	12:00 Noon			307	250		
	12:30			313	285		
	1:00			313	285		Lt. Cloudy
	1:45			315	335	65-64-67-39	
	2:30			315	335		Clearing
	3:00			315	335		Clearing
	3:30			315	335		Clear
	4:00			315	335	22°c	Clear
	4:30			315	335	34 GR	Clear
	5:00			315	335		Clear
	5:30			315	335		Clear
	6:00			315	335		Clear
6	6:30			315	335		Clear
	6:45 PM	Lights Out-No. Elec.					
10/16/69	12:00	Start Up		315	335		Cloudy
	12:30			315	335		Cloudy
	1:00			315	335		Clear
	1:30			315	335		Clear
	2:00			315	335		Clear
	2:30			315	335		Clear
	3:00			315	335		Clear

For Lake Panorama Located at Panora, Iowa

Date	Time	Engine R.P.M.	Pump R.P.M.	Pumping Level	Gallons Per Min.	Temp. Discharge Description	Sand P.P.M. Volume
10/16/69	3:30			315	335		Clear
	4:00			315	332	Leak at Orfice	Clear
	4:30			315	332		Clear
	5:00			315	332		Clear
	5:30			317	329		Clear
	6:00			317	329		Clear
	7:00			317	329		Clear
	7:30			317	329		Clear
	8:00			317	329		Clear
	9:00			317	329		Clear
	9:30			317	329		Clear
	10:00			317	329		Clear
	10:30			317	329		Clear
	11:00			317	329		Clear
	11:30			317	329		Clear
	12:00			317	329		Clear
	12:30			317	329		Clear
	1:00			317	329		Clear
	1:30			317	329		Clear
	2:00			317	329		Clear
	2:30			317	329		Clear
	3:00			317	329		Clear
	3:30			317	329		Clear
	4:00			317	329		Clear
	4:30			317	329		Clear
	5:00			317	329		Clear
	5:30			317	329		Clear

PUMP TEST RECORD (continued) Page 4

For Lake Panorama Located at Panora, Iowa

Date	Time	Engine R.P.M.	Pump R.P.M.	Pumping Level	Gallons Per.Min.	Temp. Discharge Description	Sand P.P.M. Volume
10/16/69	6:00			317	329		Clear
	7:00			317	329		Clear
	8:00			317	329		Clear
	9:00			317	329		Clear
	10:00			317	329		Clear
	11:00			317	329		Clear
	12:00			317	329		Clear
10/17/69	1:00			317	329		Clear
	2:00			317	329		Clear
	3:00			317	329		Clear
	4:00			317	329		Clear
	5:00			317	329		Clear
	6:00			317	329		Clear
	7:00			317	329		Clear
	8:00			317	329		Clear
	9:00			317	329		Clear
	10:00			317	329		Clear
	11:00			317	329		Clear
	12:00			317	329		Clear
	1:00			317	329		Clear
	2:00			317	329		Clear
	3:00			317	329		Clear
	3:30			317	329		Clear
	End of test pump -- 72 hours.						

PUMP TEST RECORD

THORPE WELL COMPANY, BOX 1376, DES MOINES, IOWA

For Lake Panorama Located at Panora, Iowa

SE NE NE Sec. 26 - T80N - R31W

Make, Kind and Size of Power Sumo - 60 H.P. - Sub.

Bowl No. ____ Size ____ Stages ____

Column Setting 527 ft. Size 4" Shaft size ____ and ____

Static Level Before Pumping ~~397~~ 302' After Pumping 317' ~~302'~~ Temperature 72°

Date	Time	Engine R.P.M.	Pump R.P.M.	Pumping Level	Gallons Per. Min.	Temp. Discharge Description	Sand P.P.M. Volume
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	4:30			387	100		Dirty
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	5:30			387	100		Clearing
	6:00			387	100		Clearing
	6:30			387	100		Clearing
	7:00			387	100		Clearing
	7:30			387	100		Fairly Clear
	8:00			387	100		Fairly Clear
	8:30			387	100		Fairly Clear
	9:00			387	100		Fairly Clear
	10:00			387	100		Clearing
	11:00			387	100		Clearing
10/15/69	12:00			387	100	72°	Clearing
	12:45 AM	PH 8.3 - 75°F		387	150	72° - 38 GPG	Clearing
	1:45			387	150	72° - 38 GPG	Clearing
	2:45			387	150		Clearing
	3:45			387	150		Clearing
	4:45			387	150		Clearing
	5:45			387	150		Clearing
	6:45			387	150		Clearing

Cleared gauge at 0900 10/15/69 PUMP TEST RECORD (continued) Page 2

For Lake Panorama Located at Panora, Iowa

Date	Time	Engine R.P.M.	Pump R.P.M.	Pumping Level	Gallons Per.Min.	Temp. Discharge Description	Sand P.P.M. Volume
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	9:00			354			
	10:00			354	250		Lt. Cloudy
	10:45	Shut down		354			
	10:53	Recover		302 S.L.			
	11:15	Start Up		306	210		
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	2:30			315	335		Clearing
	3:00			315	335		Clearing
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	4:00			315	335	22°c	Clear
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	5:00			315	335		Clear
	5:30			315	335		Clear
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10/16/69	12:00	Start Up		315	335		Cloudy
	12:30			315	335		Cloudy
	1:00			315	335		Clear
	1:30			315	335		Clear
	2:00			315	335		Clear
	2:30			315	335		Clear
	3:00			315	335		Clear

PUMP TEST RECORD (continued) Page 3

For Lake Panorama Located at Panora, Iowa

Date	Time	Engine R.P.M.	Pump R.P.M.	Pumping Level	Gallons Per Min.	Temp. Discharge Description	Sand P.P.M. Volume
10/16/69	3:30			315	335		Clear
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	7:00			317	329		Clear
	7:30			317	329		Clear
	8:00			317	329		Clear
	9:00			317	329		Clear
	9:30			317	329		Clear
	10:00			317	329		Clear
	10:30			317	329		Clear
	11:00			317	329		Clear
	11:30			317	329		Clear
	12:00			317	329		Clear
	12:30			317	329		Clear
	1:00			317	329		Clear
	1:30			317	329		Clear
	2:00			317	329		Clear
	2:30			317	329		Clear
	3:00			317	329		Clear
	3:30			317	329		Clear
	4:00			317	329		Clear
	4:30			317	329		Clear
	5:00			317	329		Clear
	5:30			317	329		Clear

PUMP TEST RECORD (continued)

For Lake Panorama Located at Panora, Iowa

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	11:00			317	329		Clear
	12:00			317	329		Clear
10/17/69	1:00			317	329		Clear
	2:00			317	329		Clear
	3:00			317	329		Clear
	4:00			317	329		Clear
	5:00			317	329		Clear
	6:00			317	329		Clear
	7:00			317	329		Clear
	8:00			317	329		Clear
	9:00			317	329		Clear
	10:00			317	329		Clear
	11:00			317	329		Clear
	12:00			317	329		Clear
	1:00			317	329		Clear
	2:00			317	329		Clear
	3:00			317	329		Clear
	3:30			317	329		Clear
	End of test pump -- 72 hours.						

STATE HYGIENIC LABORATORY, DES MOINES BRANCH
WATER LABORATORY DIVISION
MINERAL ANALYSIS

LAB. NO. 5939
MINERAL NO. 8004
27 Jul 19 70 bj

TOWN Panora COUNTY Guthrie
OWNER OF SUPPLY Lake Panorama
COLLECTOR'S NAME Earle Scheetz
DATE COLLECTED 10 Jun 70 DATE RECEIVED 16 Jun 70
REPORT TO: NAME IGS
ADDRESS Iowa City

FIELD DATA

SOURCE: WELL NAME, NUMBER, POINT OF COLLECTION, DEPTH, CONSTRUCTION DATE, ETC., Sample taken at well 2440' 1969

WELL PUMPED 72 HRS. AT 329 GPM. DATE OF PREVIOUS SAMPLE
WAS SAMPLE FREE OF TURBIDITY WHEN COLLECTED Yes
TEMPERATURE °F 72 ALKALINITY (ppm $CaCO_3$) P T pH
IS A POLYPHOSPHATE BEING USED? No

LABORATORY ANALYSIS
(PARTS PER MILLION)

SPECIFIC CONDUCTANCE K AT 25°C 270 x 10^{-5}. TURBIDITY
DISSOLVED SOLIDS 1760 SOLUBLE IRON (Fe) 0.65
TOTAL SOLIDS 1760 SILICA (SiO_2) 12 TOTAL IRON (Fe) 0.65
ALKALINITY (ppm $CaCO_3$) P None T 190 pH 7.3 DATE 16 Jun 70

POSITIVE IONS		NEGATIVE IONS	
K^+	30	NO_3^-	< 0.1
Na^+	270	F^-	2.2
Ca^{++}	156	Cl^-	220
Mg^{++}	55.9	SO_4^{--}	760
Mn^{++}	< 0.05	HCO_3^-	232
Al^{+++}		CO_3^{--}	None

HARDNESS AS $CaCO_3$ 621 ppm 36.3 gpg

ANALYST Ryan

R. L. MORRIS
JHG PRINCIPAL CHEMIST

THORPE WELL COMPANY

2340 SIXTH AVENUE
DES MOINES, IOWA

RECEIVED 6/25/70

Drilled for Lake Panorama *at* Panora

Well is located 3 *miles N-E-S-W and* *miles N-E-S-W from* Panora, Iowa

in the ¼ ¼ *Section* 26 *Township* 80N *Range* 31W

Drilling started April 2, 19 69 *Completed* October 26, 19 69

Well No 1 *Kind of Well* Rotary-Cable Tool *Depth* 2441 *Size hole started* 17 *in*

Finish 8" *G. P. M.* 329 *Static Head* 302 *Pumping level from surface* 317

Water was first encountered at *in* *Approx. Amt* *Temp* 72°

Remarks All casing cemented, bottom to top.

(GIVE DETAILS OF PERFORATED PIPE AND SEALS)

RECORD OF PERMANENT PIPE					TEMPORARY PIPE	
SIZE PIPE	AMOUNT OF PIPE	DEPTH TO BOTTOM OF PIPE	DEPTH TO TOP OF PIPE	MAKE OF PIPE	SIZE PIPE	AMOUNT
13-3/8	200'	200	G.L.	Welded		
8-5/8	2095'	2095'	G.L.	Welded Steel		

Driller Kenneth Brooks *From Surface to* *feet*

Driller Amos Weatherbee *From* *feet to* *feet*

Driller Boyd McLaughlin *From* *feet to* *feet*

AMOUNT IN FEET	KIND OF SOIL OR FORMATION (BE SPECIFIC)	TOTAL DEPTH FEET
30	Clay	30
15	Clay and gravel	45
10	Sand	55
135	Shale	190
855	Lime	1045
30	Shale and lime	1075
680	Lime	1755
35	Lime and chert	1790
175	Sand and dolomite	1965
40	Shale, sand and dolomite	2005
35	St. Peter sand	2040
55	Dolomite and sand	2095
17	Gray lime	2112
112	Sandy lime	2224
21	Sandy lime (cherty)	2245
40	No sample	2285
38	Sandy	2323
20	Lime - hard	2343
11	Lime	2354
13	Sandy lime	2367
18	Lime	2385
56	Sandy lime	2441

THORPE WELL COMPANY

2540 SIXTH AVENUE
DES MOINES, IOWA

RECEIVED 6/25/70

N-1-P

Drilled for Lake Panorama *at* Panora

Well is located 3 *miles N-E-S-W and* ____ *miles N-E-S-W from* Panora, Iowa

in the ____ ¼ ____ ¼ *Section* 26 *Township* 80N *Range* 31W

Drilling started April 2, 19 69 *Completed* October 26, 19 69

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58	Sandy lime	2441

STATE HYGIENIC LABORATORY, DES MOINES BRANCH
WATER LABORATORY DIVISION
MINERAL ANALYSIS

LAB. NO. 5939
MINERAL NO. 8004
27 Jul 19 70 bj

TOWN Panora COUNTY Guthrie
OWNER OF SUPPLY Lake Panorama
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SOURCE: WELL NAME, NUMBER, POINT OF COLLECTION, DEPTH, CONSTRUCTION DATE, ETC., Sample taken at well 2440' 1969

WELL PUMPED 72 HRS. AT 329 GPM. DATE OF PREVIOUS SAMPLE
WAS SAMPLE FREE OF TURBIDITY WHEN COLLECTED Yes
TEMPERATURE °F 72 ALKALINITY (ppm $CaCO_3$) P T pH
IS A POLYPHOSPHATE BEING USED? No

LABORATORY ANALYSIS
(PARTS PER MILLION)

SPECIFIC CONDUCTANCE K AT 25°C 270 x 10^{-5}. TURBIDITY
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ALKALINITY (ppm $CaCO_3$) P None T 190 pH 7.3 DATE 16 Jun 70

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Mg^{++}	55.9	SO_4^{--}	760
Mn^{++}	< 0.05	HCO_3^-	232
Al^{+++}		CO_3^{--}	None

HARDNESS AS $CaCO_3$ 621 ppm 36.3 gpg

ANALYST Ryan

R. L. MORRIS
JHG PRINCIPAL CHEMIST

Lake Panorama

Panora, Iowa

FACT SHEET

LOCATION — Lake Panorama is located in the middle of 6000 acres along the Middle Raccoon River in Guthrie County, Iowa, one mile west of Panora just off Highway 64. It is 45 miles west of Des Moines and 90 miles east of Omaha.

DEVELOPING COMPANY — American Lakes and Land Company, whose principal officers have specialized in lake developments throughout the nation. Top talented, experienced personnel are being used on this project which assures its ultimate success.

SIZE OF LAKE — Lake Panorama will contain approximately 1,400 acres of water at an average depth of 30 feet and will have more than 31 miles of shoreline. The length of the lake will exceed 7 miles.

TOTAL ACREAGE — The entire project will contain 6000 acres of which 1,400 acres will be flooded. The remaining 4,600 acres are beautifully wooded and will be developed into building sites, parks, beaches, and other recreation areas.

DAM — The dam to impound the waters for Lake Panorama will be 1100 feet in length, 60 feet in height and 750 feet thick at the base. The impervious clay core and concrete spillways will be constructed to handle maximum 100 year flood conditions.

LOTS — All lots have a minimum of 16,000 square feet (80' x 200' or equivalent). Lots designated as "A" have minimum building restriction of 1200 square feet of living area — "B" has 1020 — "C" has 840 and "D" has 680.

ROADS — Roads will be constructed to state specifications, will be 50 feet wide with 18 feet hard surface. There will be approximately 50 miles of roads in Panorama; they will be private and not open to the general public.

CLUBHOUSE — There will be a large clubhouse with game room facilities, a lounge, rest rooms and bath houses for the users of the beach and swimming pool. When completed the building will exceed $150,000.00 in value.

BEACHES — Six sand beaches will be constructed. 2 will be 700 feet long by 200 feet deep with bath houses. All beaches will be equally attractive and will have all facilities.

RECREATION AREAS — Picnic and park areas will be constructed in various sections of Panorama, as well as fishing and boat docks, a lighted boat launching ramp, swimming pool, tennis courts and docking conveniences at the clubhouse.

BOAT MARINA — Sales, repairs, instant docking and storage will be available to the property owner at a nominal fee.

LANDING STRIP — A 3100 foot landing strip will enable residents at Panorama to fly to the lake, taxi, and be a short walk away from their home. Building lots adjoining the runway will be available.

GOLF COURSE & COUNTRY CLUB PROPOSED — An 18 hole golf course designed by one of the nations leading architects has been proposed. This would include a pro-shop complete with country club facilities. Fareway home sites would be available.

CAMPING AREA — A beautifully located site would be set aside complete with the following: electricity, water, dumping station and toilet and shower facilities.

PERMANENT RESIDENTIAL AREA — A very spacious area has been designated and set aside near the dam for the building of permanent homes. Building restrictions for this area will be set up and enforced.

MOBILE HOME AREA — Beautifully landscaped lots with above average width pads to accomodate coaches up to double width. Reasonable restrictions. All utilities are available.

USE OF LAKE — The lake, as well as other recreation areas, is limited to the use of Property Owners and invited guests only, who may enjoy fishing, boating, swimming, water skiing and all other recreational facilities. The lake will be stocked with game fish and a designated area will be reserved for fishing only with boats limited to trolling speed.

ASSOCIATION — All property owners will be required to belong to a non-profit association named Lake Panorama Property Owners Association, and dues will be $50.00 per year, payable on the first day of May of the year following purchase of property. These dues may not be increased without a vote of 2/3 of the active association members.

UTILITIES — Utilities will include electricity, telephone service and a central water system.

TITLE INSURANCE — The developers hold title insurance on the entire tract of land including Lake Panorama. Individual policies may be secured by the property owners if they desire.

FINANCING — Property at Lake Panorama may be purchased through easy bank terms with up to five years to pay.

DVERTISED IN

LIFE®

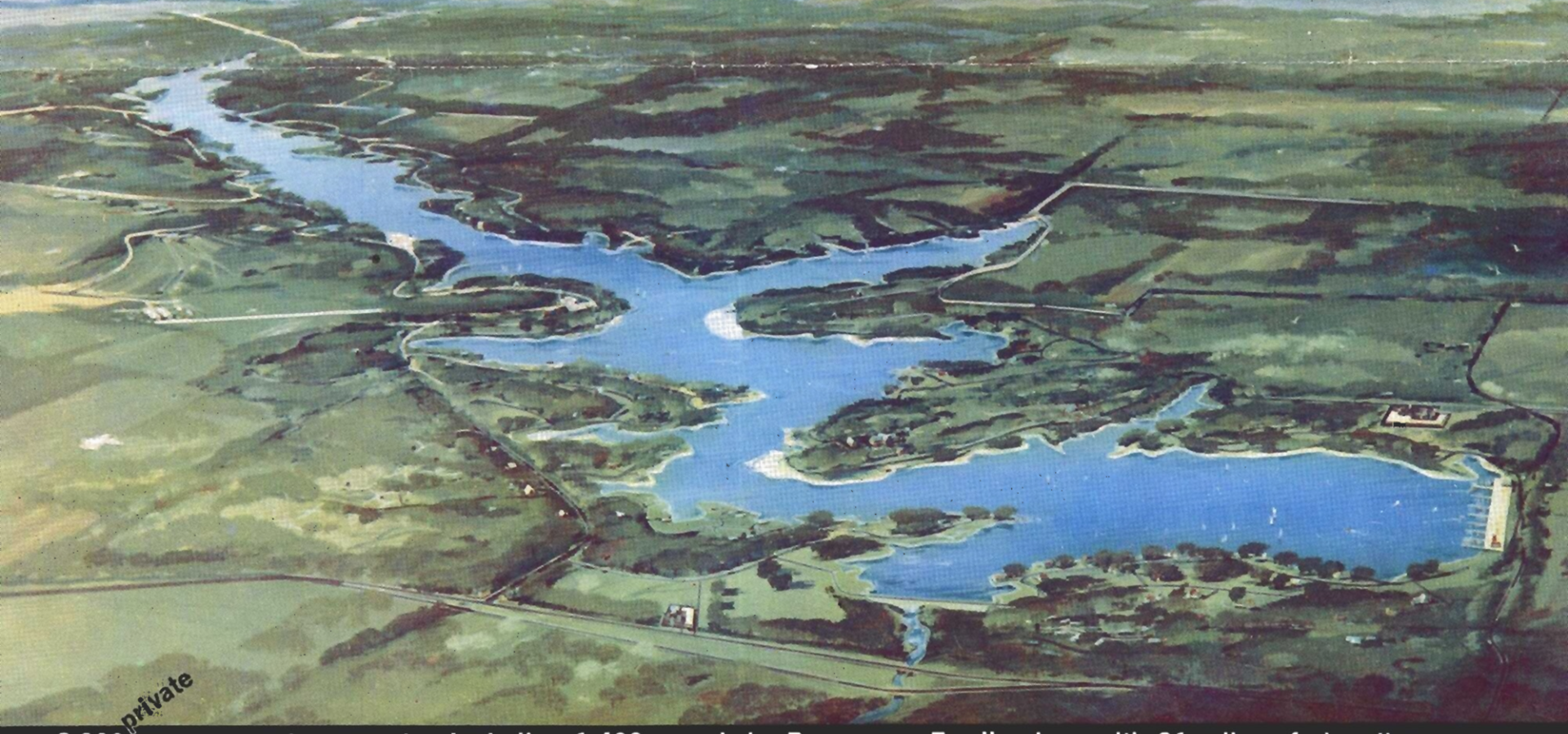
The vacation home owners dream

LAKE PANORAMA

PANORA, IOWA

85 miles East of Omaha . . . . . 45 miles West of Des Moines

EASILY ACCESSIBLE—ONLY 15 MILES NORTH OF INTERSTATE 80



6,000 private acre recreation complex including 1,400 acre Lake Panorama—7 miles long with 31 miles of shoreline.

Dedicated to complete family enjoyment of weekend vacations the year round, Lake Panorama embodies the most abundant—every season—recreation and relaxation in a matchless 6000 acre setting of pure beauty. The money you spent on brief annual vacations can now accumulate in the ever increasing value you are building into your very own piece of land. You actually save while you vacation, more frequently on more weekends throughout the year.

LAKEFRONT AND LAKEVIEW LOTS AVAILABLE.

ANOTHER LAKE COMMUNITY BY

American Lakes & Land Co.

ALLCO

3733 LAMAR AVENUE

MEMPHIS, TENNESSEE 38118

"Creating tomorrows' lake communities"

☐ Yes, I would love to learn more about Lake Panorama. Please send your colorful brochure at once.

☐ Include a gate pass. I intend to drive out soon.

Name_____

Address_____

City_____ Zip_____

Mail without obligation to

Lake Panorama
P. O. Box 567
Panora, Iowa

Phone 515-755-2101

LAKE PANORAMA

Where dreams can be lived for years to come!

about the owners . . .

Mid-Iowa Lakes Corporation, composed entirely of Iowans, owns this 6,000 acre property. Three years ago a group of successful businessmen with vision and foresight purchased the property. These men realized their state was faced with the problem of providing facilities for recreation and retirement of its citizens. Mid-Iowa Corporation with its 1,400 stockholders assures the success of this great Iowa recreation venture.

about the development . . .

Dedicated to complete family enjoyment of year-round vacation living, Lake Panorama embodies the most abundant in every-season recreation and relaxation in a beautiful 6,000 acre—private—tract of ground that surrounds 1,400 acres of clean water. Here is a lake that stretches 7 miles in length with an average depth of 45 feet. Waterfront and waterview lots are available in this area where until now they were nonexistent. The location of Lake Panorama in the rapidly expanding Des Moines-Omaha area guarantees the growth of your investment.

about the developers . . .

Mid-Iowa Lakes Corporation selected American Lakes and Lake Company (ALLCO) of Memphis, Tennessee to develop and sell Lake Panorama. The officers of ALLCO have specialized in their various phases of the highly specialized field of lake developing since 1953. These men have helped plan and direct over 40 successful lake developments throughout the land. With vision and dedication to their profession, ALLCO offers the best knowledge available to build "Tomorrow's Lake Communities Today"—Lake Panorama is just that!

A lot at Lake Panorama is the best buy in this area today!

GW Guthrie Co. Gen Data

March 4, 1969

Mr. Tom Thorpe
Thorpe Well Company
2340 Sixth Avenue
P. O. Box 1376
Des Moines, Iowa 50313

Dear Mr. Thorpe:

In answer to your telephone call this morning, we are enclosing a rough forecast of the geologic section down through the Jordan Sandstone beneath the Lake Panorama housing project site located in the NE¼ sec. 31, T.80N.,R.30W., Guthrie County. This location is about half a mile northwest of the town of Panora on the west bluff of the Middle Raccoon River valley. According to the Panora topographic quadrangle the surface elevation at this site will range from about 1,100 to 1,150 feet above sea level.

Based on the estimated water needs of 1,000 gpm you declared for this project it would seem that the Jordan Sandstone is their best possibility, but we are uncertain whether the Jordan will be as productive here,as, for example, at Stuart, where it reportedly yielded 500 gpm with 70 feet of drawdown. If you recall, the Jefferson city well finished in the Jordan yielded only 375 gpm with a specific capacity of about 1 gpm/ft. of drawdown and this after acidizing with 1,500 gallons of acid, followed by a second acid job using 2,000 gallons. The new Adair town well developed 240 gpm from the Jordan with 45 feet of drawdown from a static head of 590 feet also after acidizing.

Thus, it is rather difficult to make any definite predictions about the Jordan potential at Panora. From a quality standpoint the Jordan water probably will be acceptable since it seems to be used at Stuart and Jefferson.

We hope this brief review is what you wanted. Please let us know if you have any questions on this or if we can be of additional assistance.

Very truly yours,

H. C. Hershey

HGH/PJH:njc
Enclosure

Anticipated Geologic Section at the
NE¼ sec. 31, T.80N.,R.30W., Guthrie County, Iowa
(assumed surface elevation 1,130 feet a.s.l.)

Geologic unit	Thickness(ft)	Depth Range(ft)
Quaternary System		
Pleistocene Series (mostly sandy glacial drift clay, locally contains silt and sand and gravel)	100-160	0-125±
Pennsylvanian System		
Des Moines Series (mostly shale, some sandstone, minor coal beds and thin limestones)	375±	125±-500±
Mississippian System		
St. Louis Formation (limestone and sandstone)		
Warsaw-Keokuk-Burlington Formations (mostly dolomite, limestone, and chert; some shale in upper part)		
Gilmore City Formation (limestone, oolitic)	400±	500±-900±
Hampton Formation (dolomite and limestone, with considerable chert)		
Starrs Cave Limestone, oolitic		
Prospect Hill Siltstone		
Devonian System		
Maple Mill Shale	50±	900±-950±
Lime Creek Formation (limestone and dolomite)		
Cedar Valley-Wapsipinicon Formations (dolomite, containing gypsum-anhydrite in lower half, slightly silty in basal part)	575	950±-1525±
Ordovician System		
Maquoketa Formation (thin shale at top, underlain by dolomite with considerable chert)	250	1525±-1775±
Galena Formation (dolomite, and minor chert)	125	1775±-1900±
Decorah-Platteville Formations (limestone, dolomite, and shale in variable percentages)	50	1900±-1950±
St. Peter Sandstone	35	1950±-1985±
Prairie du Chien Formation (dolomite, very sandy in upper half; practically no sand in lower half, trace of chert)	340	1985±-2325±
Cambrian System		
Jordan Sandstone	25±	2325±-2350±
St. Lawrence Dolomite		2350±-

Watts No. (Telephone)
1-800-362-1865

3

GROUND WATER REQUEST FORM

Date 3-4-69

Handled by Prior 11:55 a.m.

Caller Tom Thorpe

Information desired Needs immediately, a rough sketch of main formation tops, particularly Maple Mill, Maquoketa, St. Peter & Jordan

Who is this information for(check) [ ] city or town [ ] industry [ ] domestic [ ] irrigation [ ] recreation [X] other(specify) Municipal type well for group of cottage owners on Lake Panorama

Location of site Guthrie County NE¼ of Sec. 31, 80N., 30W., Cass. Twp.

Elevation of well 1100' W. Bluff of Raccoon River

How much water wanted(gpm) 1000 gpm.

Is water quality or temperature restricted(specify)

Any information on present wells(location,depth,casing,production, etc.)

Other information or comments

Would appreciate getting a rough forecast in the mail to him this afternoon.

March 4, 1969

Mr. Tom Thorpe
Thorpe Well Company
2340 Sixth Avenue
P. O. Box 1376
Des Moines, Iowa 50313

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Very truly yours,

H. G. Hershey

HGH/PJH:njc
Enclosure

G W. Guthrie Co
Lake Panorama

July 3, 1969

Memorandum
To Dr. H. G. Hershey
From Richard C. Northup
Re Jordan well at Lake Panorama

Don Wramm and Wes. Thorpe phoned Wednesday afternoon in regard to the well at Lake Panorama. As you know they have had a lost circulation problem now for several weeks. As of now they are shut down at 1030' in the upper part of the Devonian section. The well is being drilled by their new combination rig which they purchased about a year ago, and they have about decided to switch over to the cable tool facility in an attempt to get around the lost circulation problem. Wes wanted our opinion as to whether this was the procedure to follow, and wanted to get an idea as to how far the carbonate section extended where lost circulation might continue. I compared the section with one of the Redfield wells and the well at Stuart and gave him lithologies and thicknesses down to the St. Peter, advising that lost circulation can always occur in a section of highly jointed or fractured limestone and dolomite, but that it is of course impossible to predict any exact spot where this situation can develop. I do recall that at Redfield, Northern Natural had a lost circulation in the gypsum-anhydrite section in the Devonian on a couple of their wells and advised Wes of this possibility at Lake Panorama. As progress has come to a virtual halt, it would seem logical to switch over to cable tools at least for a while, and advised him accordingly. However the more I think about it, I wonder just how good a shape the hole is. If the hole turns out to be crooked they still will have a hard time making any headway. I assume they will case down ~~xx~~ to the Mississippian before proceeding any ~~xxxxx~~ deeper as they are only cased to 262' (into the Pennsylvanian) as of now. We have samples to 940 feet and the remainder to 1030' are being sent to us. Most of the samples to date have been extremely poor.

GW Lake Panorama well folder, Panora (Guthrie Co.)

STATE OF IOWA
IOWA GEOLOGICAL SURVEY
123 NORTH CAPITOL STREET
IOWA CITY, IOWA 52242
Phone: (319) 338-1173

Iowa
a place to grow

October 24, 1978

Mr. John Kouri
Lake Panorama Association
108 E. Main Street
Panora, IA 50216

Dear Mr. Kouri:

In response to your request I am sending you pertinent data on the Lake Panorama deep well drilled in 1969 including a log of the geologic units penetrated, the casing schedule, a record of the original pumping test of the well, and a chemical analysis of the water.

I am also enclosing a copy of the original letter report I prepared on the Lake Panorama site before construction. Observe from the pumping test that the well delivered 329 gpm with only 15 feet of drawdown. This is a specific capacity of about 22 gpm/ft. of drawdown indicating the Jordan aquifer is quite productive in this area. Note also that casing extends from the surface into the upper part of the Prairie du Chien dolomite so that all overlying water zones are sealed off.

The water is rather highly mineralized in sulfate, sodium, chloride, and fluoride, but may still be used. The radioactivity of the water will also be above recommended limits and I would advise softening treatment which will reduce the radium concentration to acceptable levels.

I trust this is the information you wanted. If any questions remain or if I can be of additional assistance in this matter, please let me know.

Very truly yours,

Paul J. Horick
Senior Ground Water Geologist

PJH/tjj