Illinois Geologic Quadrangle Map
IGQ Karnak-G

Geology of Karnak Quadrangle

Johnson, Pulaski, and Massac Counties, Illinois

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Structural Geology

Regional Structure

The Karnak Quadrangle lies along the southern margin of the Illinois Basin and at the northern edge of the Mississippi Embayment. The Illinois Basin, which is the older structure, is expressed by the gentle northward dip of Mississippian bedrock formations, as shown on cross section A–A′ on map sheet 2. (The actual dip ranges from less than 1° to about 2° but is exaggerated 2:1 on the cross section.) This dip was imparted by uplift of the Pascola Arch, a structure south of Illinois that rose during Cretaceous time (Stearns and Marcher 1962).

The Mississippi Embayment began to subside late in the Cretaceous Period and became an arm of the Gulf of Mexico. The Embayment overlies an ancient rift zone, the Reelfoot Rift, which probably controlled its later subsidence (Kolata and Nelson 1991). The McNairy Formation, a nearshore marine deposit of late Cretaceous age, dips and thickens southward into the embayment. The much younger Mounds Gravel, a fluvial deposit, overlies the McNairy with an angular unconformity.

Little Cache Fault Zone

The Little Cache Fault Zone in the northeastern part of the Karnak Quadrangle consists of faults that trend slightly east of north. Largely hidden by valley-fill sediments, these faults are indicated by displaced and tilted Mississippian formations. In areas north of the Karnak Quadrangle where the fault zone is better exposed, the fault zone is composed of high-angle normal faults. The youngest rocks known to be displaced are Middle Pennsylvanian (Trask and Jacobson 1990, Nelson 1995, Nelson et al. 2004).

Several faults that also strike north-northeast are inferred in the southeastern part of the Karnak Quadrangle. The best fault evidence is in a gravel pit in the NE¼, Sec. 32, T14S, R3E, where bedding of the McNairy dips as steeply as 50° northwest. The steeply dipping McNairy is overlain by horizontal and unfaulted Mounds Gravel, indicating that movements took place after the Cretaceous Period but before late Miocene or Pliocene time. North of the center of Sec. 33, same township, both the McNairy and Mounds Gravel dip about 10° west-northwest, and the Mounds Gravel appears to be displaced at least 50 feet down to the east. Abrupt changes in elevation and tilting of the Mounds Gravel also were mapped in Sec. 21 east of Patterson Branch. This area is in line with a fault mapped in the northwestern part of the Mermet Quadrangle to the east (Devera and Nelson 1998). Further indications of faulting include narrow linear ridges and valleys that trend north-northeast and large changes in elevations of the bedrock surface in water wells. Although these findings suggest faulting as young as Quaternary, the evidence is weak. The observed structural irregularities may reflect processes such as solution collapse rather than tectonic faulting.

Structures along the Post Creek Cutoff

The Post Creek Cutoff is an artificial ditch that was cut in the early twentieth century to drain the Cache Valley for agriculture. This excavation lowered the base level by 60 feet and created a steep gradient to the Ohio River. The resulting vigorous downward erosion reached Paleozoic bedrock in several places and exposed unusual geologic structure. Strongly deformed rocks are evident in several places along Post Creek Cutoff in the Bandana Quadrangle (Nelson 2007) and southern Karnak Quadrangle (fig. 1). Structures at the place labeled Post Creek North on figure 1 are illustrated in a field sketch (fig. 2).

Post Creek North (fig. 2) is located 1 mile north of Tick Ridge Road in the central part of Sec. 35, T14S, R2E, and is visible only when water in the ditch is low. Post Creek North is another graben-like structure containing McNairy, Mounds, and Metropolis Formations, steeply dipping and faulted into contact with Mississippian limestone. A test hole (ISGS No. 7 Curt Jones; Appendix 1) in line with the structure encountered Equality Formation overlying a mixture of clay and chert fragments that probably represents residuum derived from weathered limestone. At a depth of 45 feet, the drill rods dropped freely and then wedged into a crevice in limestone, bending the core barrel. Karst features are thereby indicated, but whether solution collapse, tectonic faulting, or a combination of the two produced the Post Creek North structure is not resolved.

The Cache Valley

The most striking topographic feature of the map area is the Cache Valley. Crossing southernmost Illinois from east to west, the Cache Valley links the Ohio River at Bay City east of the Karnak map area with the Mississippi River northwest of Cairo, southwest of the map area. Wider and deeper than the modern lower Ohio Valley, the Cache once held a major river. The small, sluggish, underfit streams that now occupy this swampy lowland could not have carved it.

Geologists differ on the details, but generally agree that the Ohio River flowed through the Cache Valley during much of the Pleistocene Epoch (Weller 1940, Fisk 1944, Alexander and Prior 1968, Masters and Reinertsen 1987). At times, torrents of glacial meltwater were added to the normal flow of the river. These floods carved the valley deeply into bedrock and then, as the waters receded, backfilled the valley with lake sediment. With increasing sediment fill, the Cache Valley was less able to accommodate normal river flow, and eventually the Ohio River shifted into its present course. This event probably took place some time between 8,000 to 25,000 years before present (Esling et al. 1989).

The Cache Valley may have begun forming in the late Tertiary Period, more than 10 million years ago. Evidence is given by deposits of what appears to be Mounds Gravel resting on the bedrock floor of the valley, as indicated by

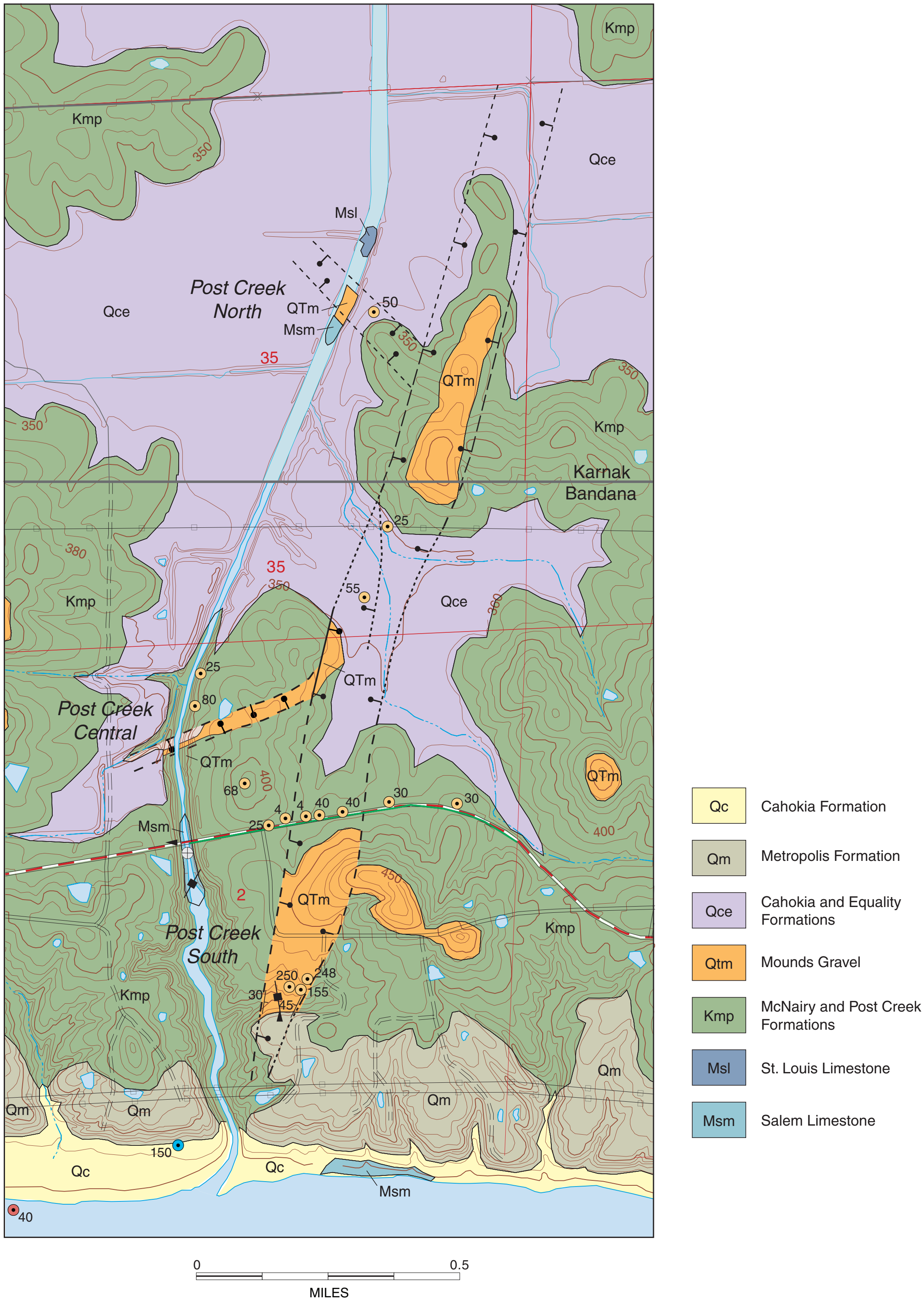

Figure 1 Post Creek area.

a few deep wells east of the map area. Also, the Mounds Gravel in the map area slopes toward the Cache Valley, descending from 400 to 450 feet elevation near the Ohio River to 375 feet near the Cache Valley. The Mounds Gravel is absent on much higher hilltops north of the Cache Valley. These facts suggest that the Mounds Gravel, which is of Miocene to early Pleistocene age, partially filled a preexisting valley that coincides with the modern Cache. This early Cache Valley may be part of an ancestral Tennessee or Wabash River; it was not related to the Ohio River. During the late Tertiary and early Pleistocene, rivers that rose in what is now the Ohio Valley flowed far north of southern Illinois. The Ohio River came into being when glacial deposits filled and blocked these streams during early to middle Pleistocene time (Melhorn and Kempton 1991).

Filling the main Cache Valley are primarily sand and gravel and lesser amounts of silt and clay (see cross section on map sheet 2). From the surface downward, these deposits include the Cahokia Formation (Holocene age), the Henry Formation (Wisconsinan Stage of the Pleistocene), the Pearl Formation (Illinoian Stage of the Pleistocene), and older, unnamed sand and gravel. The latter may locally include Mounds Gravel. Thin Peoria Silt (loess) or wind-blown sand overlies subtle terraces within the valley at elevations above about 345 feet (Leon R. Follmer, written communication, 2006). Valleys tributary to the Cache contain thick deposits of fine-grained sediments, primarily silt and clay of the Equality Formation (Wisconsinan) overlain by thin deposits of the Cahokia Formation. Many of these partially buried valleys are 75 to more than 100 feet deep.

Geologic mapping in the Cache Valley is based partly on borehole data (table 1), partly on geomorphology, and partly on the U.S. Department of Agriculture's soil surveys (Fehrenbacher and Walker 1959, Parks and Fehrenbacher 1968, Parks 1975). These surveys, based on data for many test pits, shallow boreholes, and field observations, present detailed information on soil profiles to a depth of (typically) 5 feet. The surveys are a valuable addition to the few exposures the geologist can observe in the field.

Linear to gently arcuate ridges that stand 10 to 20 feet above adjacent sloughs and depressions are apparent on the topographic map as well as in the field. Characteristic soils are the Ginat, Weinbach, and Sciotoville silt loams and the Alvin sandy loam. These soils are developed in thin (less than 5 feet) wind-blown silt or fine sand directly overlying sand of the Henry Formation (map unit symbol Qh). The ridges represent fluvial point bars and midchannel islands that formed near the end of occupation of the Cache Valley by a large river during the Wisconsinan Age.

Low-lying flat to very gently rolling land separates the ridges of the Henry Formation. These poorly drained depressions and sloughs contain a variety of soil types, the most common of which are the Beaucoup, Darwin, Belknap, Petrolia, Piopolis, and Wheeling. All are clays and silty clays containing no significant sandy layers within 5 feet of the surface. Boreholes indicate that silt and clay of the Cahokia Formation is 5 to 25 feet thick in these areas and overlies sand and gravel of the Henry Formation (map unit symbol Qch).

The lowest areas in the Cache Valley are elongate sloughs that typically are cypress swamps. Although several soil types are present, the Karnak soil dominates. Boreholes show thick (10 to 25 feet) organic-rich clay and silty clay. This wetland of the Cahokia Formation is represented by the map symbol Qc(sc). Below the silty clay facies of Cahokia is the Henry Formation. The sloughs represent abandoned channels of the final stages of a large river in the Cache Valley.

Hills and ridges bordering the Cache Valley are composed of Mississippian bedrock and Cretaceous sediments mantled by loess. Where bedrock is not exposed at the surface, soil surveys were used to distinguish loess from alluvial and

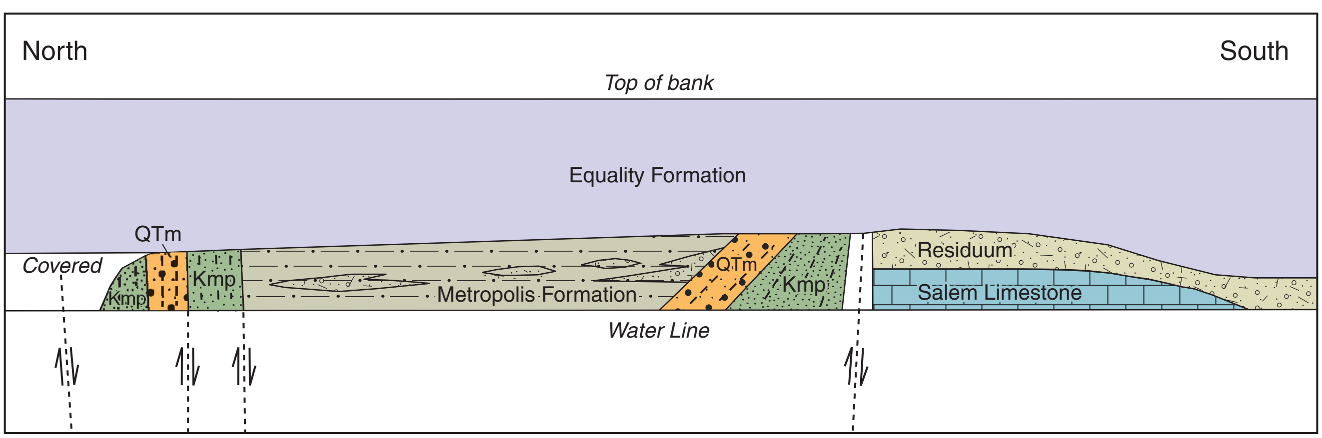

Figure 2 Post Creek North structure, based on a field sketch of the east bank of the Post Creek Cutoff. Length of view is roughly 600 feet, and the height of the bank is 25 to 30 feet (7.6 to 9.1 m). Vertical exaggeration is approximately 3×.

lacustrine sediments. The Alford, Hosmer, and Wartrace soils are developed in loess (Fehrenbacher and Walker 1959, Parks and Fehrenbacher 1968, Parks 1975). Nearly level foot slopes surrounding hills up to about the 370-foot contour are loess-covered terraces. In some areas of the Cache Valley, multiple terraces have been observed. The Sangamon Geosol has been observed in a few places on these terraces, developed in sandy material thought to be Pearl Formation. The Pearl and Metropolis Formations are equivalent in age, but the Pearl contains glacially derived sediments, whereas the Metropolis (not shown) does not (Leon R. Follmer, written communication 2006).

Economic Geology

Groundwater

Groundwater conditions differ markedly among four parts of the map area: (1) the uplands north of the Cache Valley, (2) the main Cache Valley, (3) the tributaries of the Cache Valley, and (4) uplands south of the Cache Valley.

Uplands north of the Cache are composed of Mississippian bedrock mantled by Pleistocene loess. Because loess does not yield useful quantities of water, wells in this area must be drilled into bedrock. Although most bedrock wells are less than 150 feet deep, some are as deep as 600 feet, and yields typically are fewer than 15 gallons per minute (gpm). Most wells in the northern uplands are completed in the Paoli Limestone, Aux Vases Sandstone, and Ste. Genevieve Limestone. Information from drillers' logs is meager, but the Paoli, Aux Vases, and Ste. Genevieve contain porous beds of sandstone and oolitic limestone that may serve as aquifers. Fractures and crevices in limestone also may be a source of groundwater. Information is not available on possible water supplies in rocks below the Ste. Genevieve.

In the main Cache Valley, abundant supplies of water are available from sand and gravel aquifers in the Henry and Pearl Formations. Rose Farms completed several large-diameter (12 to 16 inches) irrigation wells that were 50 to 110 feet deep and produced as much as 800 gpm. The Belknap village well yields 100 gpm through 6-inch pipe from the Henry Formation. Water wells for Karnak are completed in the Henry Formation at depths of 100 to 150 feet; flow data are not available. Ample water for residential use may be found at less than 50 feet at many places in the valley. However, shallow sand and gravel aquifers that are not protected by overlying impermeable silt or clay are susceptible to contamination from surface or near-surface wastes (Berg et al. 1984).

The wide, flat-bottomed tributaries of the Cache Valley contain thick (up to 155 feet) deposits of the Equality Formation, which consists dominantly of silt and clay with isolated lenses of sand and gravel. The Equality is a poor aquifer. A few residential wells are completed in gravel lenses and yield less than 15 gpm. Most wells in tributaries have been drilled into bedrock at depths of 110 to 440 feet and yield 15 to 60 gpm.

In the hills south of the Cache Valley, most water wells are completed in Mississippian limestone at depths of 75 to 200 feet. In a few cases, wells had to be drilled as deep as 550 feet to reach water. Most wells are 6 inches in diameter below the surface casing and yield 10 to 50 gpm. Information on bedrock aquifers is sparse. Most wells probably are completed in the Salem or Ullin Limestones, both of which contain intervals of porous, coarse-grained rock. However, fractures and crevices may be the primary pathways for groundwater, as observed in outcrops in the Post Creek Cutoff and in large industrial wells near Joppa and Metropolis, east of the map area.

A few wells south of the Cache Valley produce water from gravel of the Cretaceous Post Creek Formation. The Post Creek is a patchy, lenticular unit that rests on top of bedrock. Wells in this formation yield less than 10 to about 30 gpm. The Post Creek commonly contains a large amount of iron pyrite, which imparts high iron and hydrogen sulfide content to groundwater. Thus, bedrock tends to provide larger volumes of better quality water than does the Post Creek gravel.

Limestone

The Paoli and Ste. Genevieve Limestones offer potential resources of limestone. An active quarry at White Hill and an abandoned quarry at Mermet, both in the Ste. Genevieve Limestone, are located, respectively, 1 mile west and east of the map area. An abandoned quarry in the upper part of the Paoli Limestone is located 0.5 mile northeast of Belknap within the map area. The Paoli Limestone varies from 120 to 145 feet thick but contains thick interbeds of shale in the upper part. The Ste. Genevieve is thought to range from 250 to more than 300 feet thick, and, aside from shale and sandstone layers a few feet thick, the entire formation is limestone. However, only the upper 50 feet of the Ste. Genevieve is above drainage. Elsewhere in southern Illinois, the Paoli and Ste. Genevieve are quarried for such uses as agricultural lime, road-surfacing material, aggregate for concrete, rock dust, and riprap. The light gray oolitic limestone, especially prevalent in the Ste. Genevieve, has higher calcium content, but typically is too soft to use as aggregate for highway construction. The most promising area for quarrying is in the bluffs on the north side of Cache Valley west of Belknap.

Sand and Gravel

The Mounds Gravel is quarried in numerous small pits in and near the study area. The gravel is used mostly for surfacing secondary roads and driveways. The best gravel for this purpose is finer than 2 inches, has a wide size distribution, and has a matrix of sand with the porosity plugged by clay. Such material can pack into a hard, water-bound, macadam-like road surface. Washed and screened gravel from the Mounds can be used as decorative stone for edging, walkways, and patios.

Most gravel pits in the Mounds are part-time operations, because there is not continuous demand for the product. Ample supplies of gravel can be located on most of the higher hills south of the Cache Valley. The thickness of gravel suitable for road surfacing typically is 10 to 20 feet (3 to 6 m), and the overburden is 10 to 30 feet (3 to 9 m) of soft silt or loess. The upper part of the Mounds appears to be largely sand, containing only scattered pebbles and probably having little commercial value. The basal layer of gravel commonly is cemented to a concrete-like material and consequently is left behind during mining.

Sand from the Henry Formation in the Cache Valley has potential as a source of high-quality construction sand. Sand from the bed of the Ohio River also may be suitable for industrial purposes. At the time of mapping, a dredge was recovering sand for use in making concrete from the river channel near Metropolis, about 15 miles east of the report area.

Clay

Lamar (1948, p. 85–86) sampled clay of the McNairy Formation exposed in test pits in the NE¼ of Sec. 29, T14S, R3E, Massac County. Test drilling would be required, however, to verify these deposits and their present-day commercial viability. Existing borehole records are of no value in evaluating clay deposits of the Karnak Quadrangle.

Another possible source of clay is the Equality Formation, which underlies large areas of alluvial bottomland north and south of Cache Valley. Analysis of clay collected from the bank of Post Creek Cutoff near the south line of Sec. 26, T14S, R2E, indicated that the clay may be suitable for making bricks and drain tiles and as bonding material for molding sand (Lamar 1948, p. 72). The absorbent-clay pits near Olmsted in Pulaski County, a few miles southwest of the map area, operate in the Porters Creek Clay, a unit of early Tertiary age. So far as is known, the Porters Creek is absent from the Karnak Quadrangle.

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Appendix 1 List of wells from which geologic information was obtained for the Karnak Quadrangle (June 13, 2000).

County No.	Operator	Farm	Well type	Location	Sect.	Twp.	Rng.	T.D.[1]	Formation at T.D.	Type of log
				JOHNSON COUNTY						
20387	W.E. Sergent	E. Hodge	water	950′ NL, 650′ WL	34	13S	2E	600′	limestone	drillers
20361	J. Beanland	Guy Casper	water	100′ SL, 1700′ EL	34	13S	2E	250′	Ste. Genevieve Ls.	drillers
240	J. Beanland	Guy Casper	water	1600′ SL, 2400′ EL	35	13S	2E	250′	Ste. Genevieve Ls.	drillers
S-0009	IDOT[2]	Route 45	bridge boring	2250′ SL, 1100′ WL	21	13S	3E	31.8′	sandstone	engineers
20451	L. Beanland	Rose Farms	water	300′ SL, 1700′ WL	31	13S	3E	146′	Aux Vases Ss.	drillers
20391	R. Beanland	Carl Cameron	water	SW SE SW	32	13S	3E	155′	Aux Vases Ss.	drillers
20592	L. Beanland	Pat Greer	water	1000′ NL, 600′ WL	32	13S	3E	231′	Ste. Genevieve Ls.	drillers
20481	R. Beanland	John Manley	water	2300′ SL, 2300′ WL	32	13S	3E	100′	limestone	drillers
229	J. Beanland	James Merchant	water	1100′ NL, 1600′ WL	32	13S	3E	185′	limestone	drillers
20392	R. Beanland	Virgil Sullivan	water	2700′ NL, 1400′ WL	32	13S	3E	165′	Henry or Pearl Fm.	drillers
20409	Paul Horman	Donald Vaughn	water	2550′ SL, 300′ EL	32	13S	3E	350′	Ste. Genevieve Ls.	drillers
20366	R. Beanland	Bob Racey	water	1500′ NL, 4300′ WL	33	13S	3E	100′	Paoli Ls.	drillers
222	J. Beanland	Wayne Kean	water	1650′ NL, 2350′ WL	2	14S	2E	490′	St. Louis Ls.	drillers
20439	G. Klassen	Rose Farms	water	SE SE NW	12	14S	2E	87′	Henry Fm.	drillers
20376	Earl Baker	Belknap Village	water	25′ NL, 2950′ EL	12	14S	2E	240′	Ste. Genevieve Ls.	sample study
S-3006	IDOT	Route 928	bridge boring	250’ NL, 1000′ WL	6	14S	3E	111.3′	limestone	engineers
S-3109	IDOT	Cache River	bridge boring	0′ SL, 1800′ WL	6	14S	3E	71′	Henry Fm.	engineers
				PULASKI COUNTY						
S-0351	IDOT	Cache River	bridge boring	1200′ SL, 0′ EL	9	14S	2E	141′	Henry Fm.	engineers
S-0036	IDOT	Route 169	bridge boring	0′ SL, 1800′ WL	13	14S	2E	104′	Pearl Fm.	engineers
S-0039	IDOT	Post Creek Cutoff	bridge boring	550′ SL, 1700′ EL	14	14S	2E	99′	limestone	engineers
20294	C.M. Luton	Kenneth Riley	water	800′ SL, 30′ EL	14	14S	2E	340′	Equality Fm.	drillers
31	E.M. Gould	Transient Camp	water	1200′ SL, 1000′ EL	14	14S	2E	457′	Salem Ls.	sample study
20498	R. Beanland	Martin Bros.	water	2500′ SL, 2000′ EL	15	14S	2E	200′	limestone	drillers
20474	John Ruester	Karnak Village	water	1650′ SL, 1600′ WL	15	14S	2E	128′	Pearl Fm.	drillers
20616		Karnak Village	water	2100′ SL, 1550′ WL	15	14S	2E	55′	Henry Fm.	sample study
20398	S. Petersen	Karnak Village	water	1400′ SL, 1400′ WL	15	14S	2E	128′	Pearl Fm.	sample study
S-0023	IDOT	Route 169	bridge boring	1300′ SL, 3150′ EL	16	14S	2E	76.5′	Pearl Fm.	engineers
20499	L. Beanland	Rose Farms	water	2100′ NL, 1300′ EL	16	14S	2E	92′	Henry or Pearl Fm.	drillers
126	C.M. Luton	Donald Clark	water	200′ NL, 3000′ EL	21	14S	2E	58′	Equality Fm.	drillers
20502	R. Beanland	Deon Peck	water	1300′ NL, 200′ WL	22	14S	2E	80′	chert	drillers
20531	R. Beanland	Carl Corzine	water	1300′ SL, 1000′ WL	22	14S	2E	130′	chert	drillers
173	Paul Horman	R. Buchanan	water	1400′ NL, 1600′ EL	24	14S	2E	73′	limestone	drillers
20297	C.M. Luton	Rev. Anderson	water	SW NE NE	25	14S	2E	65′	McNairy Fm.	drillers
20370	R. Beanland	Ronnie Clark	water	2500′ NL, 1950′ WL	26	14S	2E	248′	limestone	drillers
20530	R. Beanland	Bill Meyer	water	2500′ NL, 200′ EL	27	14S	2E	165′	limestone	drillers
118	W.E. Sergent	George Inman	water	200′ SL, 300′ EL	28	14S	2E	210′	limestone	drillers
	ISGS	Curt Jones #7	stratigraphic	2700′ SL, 1300′ EL	35	14S	2E	50′	limestone	core description
				MASSAC COUNTY						
S-3085	IDOT	Patterson Branch	bridge boring	1350′ NL, 24′ WL	15	14S	3E	89′	Pearl Fm.	engineers
S-0039	IDOT	Patterson Branch	bridge boring	0′ SL, 1500′ EL	16	14S	3E	114.6′	sandstone	engineers
S-3118	IDOT	Patterson Branch	bridge boring	1150′ SL, 0′ EL	16	14S	3E	57.1′	chert	engineers
	ISGS	Walquist #1	stratigraphic	1150′ NL, 1500′ WL	16	14S	3E	40′	Mounds Gravel	core description
	ISGS	Walquist #2	stratigraphic	1200′ NL, 1600′ EL	16	14S	3E	27′	limestone	core description
20640	R. Beanland	James Riley	water	100′ SL, 150′ WL	16	14S	3E	95′	chert	drillers
20513	R. Beanland	Larry Fischer	water	250′ SL, 400′ WL	16	14S	3E	130′	limestone	drillers
20544	R. Beanland	Robert Wrye	water	1500′ NL, 1000′ EL	16	14S	3E	85′	limestone	drillers
20352	J. Beanland	Boaz Pent. Ch.	water	250′ SL, 300′ EL	17	14S	3E	96′	limestone	drillers
20258	R. Beanland	Earl Marlman	water	2200′ SL, 1000′ WL	17	14S	3E	123′	Post Creek Fm.	drillers
20469	Paul Horman	Walquist Bros.	water	1500′ NL, 600′ EL	17	14S	3E	80′	limestone	drillers
20587	R. Beanland	Alfred Myrick	water	300′ SL, 2000′ EL	17	14S	3E	100′	limestone	drillers
20685	L. Beanland	Donald Canada	water	100′ SL, 1200′ EL	19	14S	3E	160′	limestone	drillers
20658	R. Beanland	Dan Reagor	water	1400′ SL, 1200′ EL	19	14S	3E	86′	chert	drillers
20617	L. Beanland	Leroy Jackson	water	900′ SL, 2500′ WL	20	14S	3E	354′	limestone	drillers
20321	J. Beanland	James Abbott	water	150′ SL, 2400′ EL	20	14S	3E	122′	Post Creek Fm.	drillers
20659	R. Beanland	Carl Patrick	water	1300′ NL, 2300′ WL	20	14S	3E	105′	chert	drillers
S-0010	IDOT	C.E. & I. RR	bridge boring	50′ NL, 50′ WL	21	14S	3E	76.5′	McNairy Fm.	engineers
20545	R. Beanland	Jean Redenour	water	2500′SL, 100′ WL	21	14S	3E	130′	chert	drillers

(continued)

20486	R. Beanland	Randy Wilke	water	400´ SL, 1800´ WL	21	14S	3E	105´	limestone	drillers
20482	Paul Horman	H.W. Schmidt	water	800´ SL, 1400´ EL	21	14S	3E	177´	rock	drillers
20259	R. Beanland	Phillip Barnett	water	500´ NL, 100´ WL	28	14S	3E	86´	limestone	drillers
20278	W.E. Sergent	Robert Harmon	water	150´ SL, 2500´ WL	28	14S	3E	200´	limestone	drillers
20323	R. Beanland	William Wells	water	1200´ NL, 100´ WL	28	14S	3E	165´	limestone	drillers
20250	W.E. Sergent	Terry Lewis	water	1500´ NL, 1050´ WL	29	14S	3E	195´	limestone	drillers
20682	R. Beanland	Ralph Sommer	water	0´ SL, 2100´ EL	29	14S	3E	185´	limestone	drillers
20252	W.E. Sergent	Bill Brooks	water	100´ SL, 100´ WL	29	14S	3E	585´	limestone	drillers
20516	R. Beanland	Roy Logeman	water	2450´ NL, 2300´ EL	29	14S	3E	165´	limestone	drillers
20515	R. Beanland	C.L. Fisher	water	2500´ NL, 2500´ WL	29	14S	3E	140´	limestone	drillers
20548	L. Beanland	Jeffrey Barham	water	2550´ SL, 2200´ WL	29	14S	3E	129´	limestone	drillers
20690	R. Beanland	R. Stubblefield	water	100´ SL, 950´ EL	29	14S	3E	170´	limestone	drillers
S-3069	IDOT	unnamed creek	bridge boring	2600´ SL, 1100´ WL	30	14S	3E	61.0´	Pearl Fm.	engineers
S-3064	IDOT	unnamed creek	bridge boring	2200´ SL, 5´ EL	30	14S	3E	70.5´	limestone	engineers
20594	L. Beanland	Melvin Horn	water	550´ NL, 1050´ EL	32	14S	3E	270´	limestone	drillers
20285	W.E. Sergent	Arthur Meyer	water	3800´ NL, 2450´ EL	33	14S	3E	200´	limestone	drillers
GIDDINGS BORINGS REPORTED BY HUGHES (1987)[3]										
(none)	Hughes	K-1	stratigraphic	100´ NL, 250´ WL	2	14S	2E	22´	loess	core description
	Hughes	K-3	stratigraphic	2450´ NL, 1400´ WL	32	13S	3E	26´	Henry Fm.	core description
	Hughes	K-4	stratigraphic	2300´ SL, 150´ WL	5	14S	3E	17´	Henry Fm.	core description
	Hughes	K-5	stratigraphic	2600´ NL, 1100´ WL	5	14S	3E	22´	Cahokia Fm.	core description
	Hughes	K-7	stratigraphic	2250´ NL, 2500´ WL	12	14S	2E	24´	Henry Fm.	core description
	Hughes	K-8	stratigraphic	200´ SL, 2150´ WL	12	14S	2E	20´	Henry Fm.	core description
	Hughes	K-9	stratigraphic	2500´ SL, 1950´ EL	13	14S	2E	10´	Equality Fm.	core description
	Hughes	K-10	stratigraphic	350´ SL, 1200´ EL	7	14S	3E	24´	Henry Fm.	core description
	Hughes	K-11	stratigraphic	200´ SL, 200´ EL	7	14S	3E	42´	loess	core description
	Hughes	K-12	stratigraphic	2400´ SL, 1050´ WL	8	14S	3E	7´	Cahokia Fm.	core description
	Hughes	K-13	stratigraphic	2100´ SL, 1500´ WL	8	14S	3E	26´	Henry Fm.	core description
	Hughes	K-14	stratigraphic	1200´ SL, 1000´ WL	8	14S	3E	24´	Henry Fm.	core description
	Hughes	K-15	stratigraphic	2000´ SL, 1850´ WL	2	14S	2E	14´	Aux Vases Ss.	core description
	Hughes	K-16	stratigraphic	900´ SL, 1000´ WL?	2	14S	2E	13´	Equality Fm.	core description
	Hughes	K-17	stratigraphic	1800´ NL, 1800´ WL	2	14S	2E	13´	Aux Vases Ss.	core description
	Hughes	K-18	stratigraphic	1050´ NL, 50´ WL	3	14S	2E	16´	Ste. Genevieve Ls.	core description
	Hughes	K-19	stratigraphic	1500´ NL, 50´ WL	3	14S	2E	19´	Ste. Genevieve Ls.	core description
	Hughes	K-20	stratigraphic	1950´ NL, 50´ WL	3	14S	2E	43´	Equality Fm.	core description
	Hughes	K-24	stratigraphic	1700´ NL, 50´ EL	18	14S	3E	18´	loess	core description
	Hughes	K-25	stratigraphic	1400´ NL, 700´ EL	18	14S	3E	40´	unidentified silt	core description
	Hughes	K-26	stratigraphic	1900´ SL, 1900´ EL	17	14S	3E	13´	loess	core description
	Hughes	K-27	stratigraphic	2500´ SL, 800´ EL	18	14S	3E	16´	loess	core description

[1] T.D., total depth.
[2] IDOT, Illinois Department of Transportation.
[3] Note: There is no record of borings K-2, K-6, K-21, K-22, and K-23.