Preliminary Report on Geologic Conditions
at proposed damsite on Poplar Creek,
south - central part, sec. 17, T. 41 N., R. 9 E., Cook County
by
George E. Ekblaw, Illinois State Geological Survey
August 7, 1961

Geologic Situation. The proposed damsite on Poplar Creek in the south - central part sec. 17, T. 41 N., R. 9 E., Cook County, is located just west of the outer margin of the West Chicago moraine. According to information in our files, the material composing the valley walls consists of three different strata of glacial drift.

The uppermost stratum is silt, sand, and gravel, comprising outwash from the West Chicago glacier. Eastward it grades into the buff clayey till that comprises the moraine.

The middle stratum is sand and gravel constituting glacial outwash older than the West Chicago. It consists of two layers of which the upper is coarser and includes fragments up to 8-10 inches in size and is buffish in color. The lower layer is finer, containing stones generally no larger than 1-2 inches, and is grayish in color. It is generally cemented.

The lowest stratum is reddish till, more clayey and firmer than the West Chicago. About 15 feet of it is exposed along the base of the valley slopes and it extends downward. It probably underlies the alluvium in the valley.

The contact between the middle stratum of outwash and the bottom stratum of till is marked by springs and peat terraces.

Interpretation. It is obvious that the sand and gravel that comprises the upper two layers is relatively very permeable. The cementation results from the deposition of calcium carbonate (lime) when the ground water moving through the outwash and saturated with calcium carbonate is evaporated as it issues along the valley. The dense till stratum under the ground checks the downward movement of the water and causes it to move laterally to issue as springs along the contact and to contribute to the formation of peat terraces at that horizon.

Opinion. It appears very questionable that it will be possible to impound water in the valley at any level much if any above the top of the bottom stratum of till, which is about 15 feet above the bottom of the valley or at an elevation of about 765-770 feet above mean sea-level. The middle and top strata of gravel, especially the upper coarser layer of the middle stratum, appear to be so permeable that excessive if not complete leakage would occur through it around the ends of a dam. Consequently it appears that a dam only about 15 feet high is feasible at this site.

Preliminary Report on Geologic Conditions
at proposed damsite on Tinley Creek
SE.¼ sec. 6, T. 36 N., R. 13 E., Cook County
by
George E. Ekblaw, Illinois State Geological Survey
August 7, 1961

Geologic Situation. The proposed damsite on Tinley Creek in the SE.¼ sec. 6, T. 36 N., R. 13 E., Cook County, is located on the back slope of the Tinley moraine, at or just southwest of the outermost limit of Glacial Lake Chicago at its highest (Glenwood) stage.

So far as known, the material comprising the valley walls is firm clayey till of Tinley age. However, there may be local pockets or layers of outwash silt, sand, and gravel,as the valley of Tinley Creek was an avenue for the escape of melt water from the Tinley glacier and local deposits of gravel are known to occur along it southwest of the damsite.

The character of the material in the bottom of the valley is not certain. The surficial material is alluvial silt, but it may be underlain either by till, by outwash, or by laminated lacustrine silt, and dolomite (Niagaran) bedrock may lie at a shallow depth, as it crops out in a branch of Tinley Creek not much more than half a mile to the east.

Opinion. Although on the basis of information currently available the damsite appears feasible geologically, because the information is inadequate it must be considered provisional and subject to final decision if adequate test-borings reveal satisfactory conditions.

Preliminary Report on Geologic Conditions at proposed damsite on West Branch DuPage River SE.¼ SE.¼ SE.¼ sec. 10 and SW.¼ SW.¼ SW.¼ sec. 11, T. 40 N., R. 9 E., DuPage County

by
George E.Ekblaw, Illinois State Geological Survey
August 7, 1961

Geologic Situation. This damsite is situated along the back margin of the West Chicago moraine, and as a consequence the west valley-wall rises steeply and the east valley-wall, on the ground moraine, is gently sloping. The valley is relatively broad for a stream of its size, and the bottom is flat.

Till is exposed in the west valley-wall and presumably comprises the east wall. Outwash sand and gravel is known to underlie the valley bottom from the damsite south downstream and may very well underlie the damsite.

Opinion. If the damsite is underlain by outwash, it is of course very questionable that it is feasible. A final decision will depend on what kind of material is revealed by adequate test-borings.

Preliminary Report on Geologic Conditions at proposed damsite along Prentiss Creek in SW.¼ sec. 14, T. 38 N., R. 10 E., DuPage County

by
George E. Ekblaw, Illinois State Geological Survey
August 9, 1961

Geologic Situation. This damsite is located in the undifferentiated east part of the Valparaiso moraine. The valley is a normal U-shaped valley, with considerable gradient and somewhat broad for the size of the stream.

According to records of wells drilled near the damsite, dolomite (Niagaran) bedrock is encountered at elevations about 660 feet above mean sea-level, which is less than 10 feet below the bottom of the valley. The dolomite is reportedly overlain by 27 to 37 feet of sand and gravel, which therefore presumably comprises the bottom of the valley and the lower part of the valley-walls. The upper part of the valley-walls presumably consists of till.

Opinion. Assuming that the well records are reliable, the existence of sand and gravel in the bottom of the valley and in the lower part of the valley-walls makes this an unfeasible damsite. The occurrence of dolomite at a shallow depth is also unfavorable. If the potential importance of the proposed reservoir is sufficient to warrant, test-borings could be made to substantiate the situation.

Preliminary Report on Geologic Conditions along tributary on east side of East Branch DuPage River near center sec. 26, T. 39 N., R. 10 E., DuPage County

by
George E. Ekblaw, Illinois State Geological Survey
August 9, 1961

Geologic Situation. The damsite is situated in the undifferentiated east part of the Valparaiso morainic belt. The valley is relatively broad for the size of the stream, the bottom is flat, and the walls have considerable slope. It was definitely a drainageway for melt water not only from the glacier that built the local moraine but also from later glaciers that built moraines farther east.

So far as is known, valley walls are of glacial till. The surficial material in the valley bottom is alluvial silt, but the character of the underlying material is not known. It may be till but the appearance and known history of the valley are suggestive that it is probably outwash, more likely silt and sand than gravel.

Opinion. Whether or not this damsite is feasible depends on the character of the material in the bottom of the valley, which will have to be ascertained by adequate test-borings. If the material is till, the site is feasible; if it is silt, sand, or gravel, the feasibility of the site will depend on the relative stability and permeability of the material and its susceptibility to corrective measures if necessary.

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Preliminary Report on Geologic Conditions
at proposed damsite on Waupecan Creek
in NE.¼ SW.¼ sec. 20, T. 33 N., R. 7 E., Grundy County
by
George E. Ekblaw, Illinois State Geological Survey
August 10, 1961

Geologic Situation. The valley of Waupecan Creek is marked by a number of terraces within the valley and by a difference of 40 feet in height between the valley-walls. It is eroded in the Marseilles ground moraine.

The valley-walls are comprised of Marseilles till with a thin mantle of silt and sand. The alluvium in the valley bottom and on the terraces is thin and mostly silt. It mantles till or bedrock.

The bedrock belongs to the Pennsylvanian system and consists principally of three types of rock. The highest rock is sandstone, thin-bedded in the upper part and massive and cross-bedded below. It has a total thickness of about 25 feet. It is exposed both upstream and downstream from the damsite.

The sandstone is underlain by a sequence of beds of different kinds of shale, of which the total thickness ranges up to 16 feet but all of which may be locally absent.

Beneath the shale sequence is a sequence of beds of clay or soft shale, with thin beds or lenses of limestone. This sequence totals 20 to 25 feet in thickness.

Interpretation. The damsite is in a region that was once covered to an elevation of 650 feet by glacial melt water that formed Lake Wauponsee during the Kankakee Torrent episode. Waupecan valley marks the western margin of several of the erosional levels developed by the Torrent in its recessional stages. This accounts for the fact that the west wall of the valley is 40 feet higher (585 feet) than the east (545 feet on eroded plain). The terraces within the valley were eroded by the creek in accord with additional stages of downcutting by Lake Chicago outlet waters in Illinois Valley.

Opinion. The materials that lie under the dam and comprise the sides of the valley are all sufficiently substantial to support a dam and sufficiently impervious to prevent leakage either under or around the ends of the dam. However, the presence of bedrock, especially the sandstone, at shallow depth may be an unfavorable factor for a small dam, as a keyway to tie the dam to the rock will have to be excavated in the rock and filled with the same material that is used for the dam.

Preliminary Report on Geologic Conditions at proposed damsite along Norton Creek near SE. corner sec. 15, T. 40 N., R. 8 E., Kane County

by
George E. Ekblaw, Illinois State Geological Survey
August 10, 1961

Geologic Situation. At the proposed damsite the north wall of Norton Creek valley is a moderate slope rising 30-40 feet to a terrace about a third of a mile wide and extending upstream on both sides of the valley. The south wall is steep and about 80 feet high. The valley-bottom is relatively narrow.

The terrace on the north side of the valley is composed of sand and gravel, in which there are several operating and abandoned pits. The sand and gravel is reported to extend down at least 10 feet below the bottom of the valley.

The south valley-wall consists of a basal stratum of sand and gravel above which are alternating strata of silt, till, and sand and gravel.

Dolomite bedrock of Silurian age crops out along the bottom of valley in the SW. corner of sec. 14, not far upstream from the damsite, and this suggests that it probably underlies the damsite at a shallow depth.

Opinion. In view of the facts that sand and gravel comprises the north wall of the valley, that it comprises and underlies the bottom of the valley, that strata of it occur at the base and at other positions in the south wall of the valley, and that because all this sand and gravel is very permeable and would allow leakage around the ends of and under the proposed dam, the damsite appears completely nonfeasible. The possible presence of bedrock at shallow depth is also an unfavorable factor.

Preliminary Report on Geologic Conditions
at proposed damsite on Ferson Creek
SE.¼ NE.¼ NE.¼ sec. 19, T. 40 N., R. 8 E., Kane County
by
George E. Ekblaw, Illinois State Geological Survey
August 16, 1961

Geologic Situation. At the proposed damsite the west wall of the valley of Ferson Creek is about 70 feet and has a moderately steep slope, but the east valley-wall is only about 20 feet high and is more gently sloping.

The material in the east valley-wall is all sand and gravel and part of a deposit of glacial outwash that continues for more than half a mile east and northeast. The material in the west valley-wall is apparently also sand and gravel but a part of a kamic deposit that continues to rise an additional 70 feet to the southwest. Pink till is exposed at the base of both valley-walls and presumably underlies the alluvial silt in the valley-bottom.

Opinion. Because both valley-walls are composed of sand and gravel that is parts of extensive local deposits, there would be excessive if not complete leakage around the ends of the proposed dam and consequently this site is considered nonfeasible.

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Preliminary Report on Geologic Conditions
at proposed damsite on Ferson Creek
at middle of W.½ SE.¼ sec. 20, T. 40 N., R. 8 E., Kane County
by
George E. Ekblaw, Illinois State Geological Survey
August 16, 1961

Geologic Situation. At the proposed damsite Ferson Creek flows against the south wall of its valley and has eroded a vertical bank about 30 feet high, with the top at an elevation slightly above 750 feet above mean sea-level. Both to the east and west of this vertical bank the south wall of the valley is more gently sloping up to a terrace level just above 740 feet above mean sea-level. The north wall of the valley is similarly a gentle slope up to a terrace level at the same elevation. The bottom of the valley is flat.

The material in the steep bank in the south valley-wall is all pink till, darker in the lower part and lighter in the upper part. The top of the pink till slopes downward gently to the east and more steeply to the west and is overlain by a stratum of sand and gravel. A stratum of gray till overlies the sand and gravel stratum and truncates the pink till where the gravel is absent.

The material in the north wall consists of sand and gravel, part of the same deposit that occurs in the south wall in both directions from the steep bank. The pink till that is so well exposed in the south bank is also exposed in the north valley-wall, under the sand and gravel deposit and mostly downstream (northeasterly) from the damsite. The pink till presumably underlies the alluvial silt in the valley bottom.

Opinion. Although the presence of till in the south valley-wall and presumably under the valley is favorable for a dam, the fact that the north valley-wall consists of sand and gravel through which there would be excessive or possibly complete leakage around the end of a dam makes the site nonfeasible.

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Preliminary Report on Geologic Conditions
at proposed damsite on Hollenback Creek
in SW.¼ ? SE.¼ sec. 9, T. 36 N., R. 6 E., Kendall County
by
George E. Ekblaw, Illinois State Geological Survey
August 16, 1961

Geologic Situation. The material comprising the walls and underlying the alluvial silt in the bottom of the valley of Hollenback Creek at the proposed damsite consists of/a variable mixture of till and sand and gravel, partly in alternating layers.

Interpretation. The damsite appears to be located just outside the outer (northwest) margin of the Marseilles moraine, which may account for the mixture and alternation of till and sand and gravel.

Opinion. Because of the mixed and somewhat uncertain character of the material comprising the walls and underlying bottom of the valley and the consequent uncertainty as to its permeability, the feasibility of the damsite is questionable and can be definitely determined only after adequate samples from adequate test-borings have been examined.

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Preliminary Report on Geologic Conditions
at proposed damsite on Little Rock Creek
near center, SE.¼ sec. 33, T. 37 N., R. 6 E., Kendall County
by
George E. Ekblaw, Illinois State Geological Survey
August 16, 1961

Geologic Situation. The valley of Little Rock Creek at the proposed damsite is almost canyon-like, with a relatively narrow, flat bottom and almost vertical walls 60 feet high.

So far as is known, the material in the walls consists of glacial till. The alluvial silt in the bottom of the valley is relatively thin and lies directly on the Galena dolomite formation (upper part). The dolomite is porous, uniform, mostly massive.

Opinion. So far as geologic conditions are concerned, this damsite appears generally feasible for a dam as much as 60 feet high. The dolomite in the floor of the valley will certainly support a dam, even a high one, and although it is porous it is relatively impermeable. The till in the valley-walls is also relatively impermeable. Good till for the dam itself is abundantly available locally.

Although the situation appears favorable, it should of course be confirmed by an adequate program of test-borings.

However, there are two factors that require attention. One is the fact that because the base of the dam will be directly on dolomite, a keyway in the dolomite will have to be trenched out and filled with the same material used for the dam. The other is the fact that the damsite is hardly a mile north of the Sandwich fault, that consequently there may be at the damsite fractures related to the fault, that there may have been solution along some of these fractures, and that these will have to be grouted. Careful scrutiny of the bedrock must be maintained while the keyway is trenched, to observe and to treat appropriately any fractures or solution channels that may be revealed.

Preliminary Report on Geologic Conditions at proposed damsite on Mill Creek in NW.¼ sec. 5, T. 45 N., R. 11 E., Lake County

by
George E. Ekblaw, Illinois State Geological Survey
August 17, 1961

Geologic Situation. At the proposed damsite the valley of Mill Creek is about 50 feet deep, with a relatively narrow botton, the south valley-wall is relatively steep, and the north valley-wall is relatively gentle.

All of the material in the valley-walls and under the bottom is presumably glacial till.

Opinion. So far as known, the geological factors are favorable for the construction of a dam at the proposed site. This opinion is subject to confirmation by an adequate program of test-borings.

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Preliminary Report on Geologic Conditions at proposed damsite on Nippersink Creek in SW.¼ sec. 19, T. 46 N., R. 7 E., McHenry County

by
George E. Ekblaw, Illinois State Geological Survey
August 18, 1961

Geologic Situation. At the proposed damsite the valley of Nippersink Creek is U-shaped with a flat bottom almost a quarter of a mile wide and with relatively steep walls 50-60 feet high.

The material in the valley-walls consists of two strata of till. The upper stratum is mostly a gray stony till (West Chicago) and the lower one is dark pink and denser (Marengo). The material in the valley-bottom is alluvium of unknown but probably no great thickness and presumably lies on the dark pink till.

Opinion. On the basis of the information currently available, it appears that this is a feasible damsite, as the tills that comprise the valley-walls and presumably underlie the valley-bottom are both sufficiently stable to support a dam, sufficiently dense to prevent leakage under or around the ends of a dam, and satisfactory material for the dam itself.

However, this opinion should be substantiated by an adequate program of test-borings.

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Preliminary Report on Geologic Conditions
at proposed damsite on Jackson Creek
in SE.¼ sec. 17, T. 34 N., R. 10 E., Will County
by
George E. Ekblaw, Illinois State Geological Survey
August 21, 1961

Geologic Situation. The valley of Jackson Creek is shallow and relatively broad, generally with a relatively wide and flat valley-bottom and gently sloping valley-walls that are over-steepened wherever the stream is flowing against and eroding them.

The valley-walls are presumably comprised of glacial till. The alluvium in the valley-bottom is thin, as dolomite bedrock of Silurian age underlies the area at an elevation of 580-590 feet above mean sea-level or only approximately 10 feet below the valley-bottom. Locally there are low terraces of silt, sand, and fine gravel along the sides of the valley.

Because the southeastward extension of both the steep southwest limb of the Kankakee Arch and the Sandwich fault passes through or near this damsite, it is not unlikely that the bedrock may be faulted, fractured, and jointed more than usual.

Opinion. It appears that if somewhat more than usual caution is employed in further investigation of this damsite, it may be a feasible one.

The till that presumably comprises the valley-walls is sufficiently firm and dense that it will both support a dam and prevent leakage around its ends. Although the silty alluvium in the valley-bottom and the material in the terraces will support a dam, both are probably so permeable that they would allow excessive leakage and consequently will have to be cut off by a core-wall. Because of the shallow depth at which bedrock occurs, this core-wall should be extended into a key-way trench cut in the bedrock.

Constant observation of the bedrock should be maintained during the excavation of this trench to note the possible occurrence of faults and fractures that should be grouted to prevent leakage through them.

Preliminary Report on Geologic Conditions at proposed damsite on Hickory Creek near middle, S.½ sec. 13, T. 35 N., R. 11 E., Will County

by
George E. Ekblaw, Illinois State Geological Survey
August 21, 1961

Geologic Situation. The valley of Hickory Creek is about 75 feet deep, with relatively steep walls, especially the lower 25-50 feet, and a flat bottom much narrower at the damsite than at any other location either upstream or downstream.

So far as known, the valley-walls at the damsite consist entirely of glacial till. However, both on the south side upstream and on the north side downstream the lower 25 feet of the valley-walls consist of gravel which constitutes terrace-like deposits, and remnants of such deposits may occur at the damsite.

The valley-bottom presumably consists of alluvium (silt, sand, and gravel) that is believed to be relatively thin and to lie on glacial till.

Opinion. On the basis of available information this site appears to be feasible for a high dam and large reservoir.

The till that comprises the valley-walls and presumably underlies the alluvium at a shallow depth is both sufficiently stable to support a high dam and sufficiently dense to prevent leakage even from a deep, large reservoir as well as to supply satisfactory material for a dam.

However, this opinion should be substantiated by an adequate program of test-borings.

A core-trench should be excavated through the alluvium and into the underlying till and should be filled with the dam material. The same procedure should be utilized in any gravel deposits in the valley-walls that may be revealed by test-borings.

Because of the gravel terraces both upstream and downstream, the dam could not be located very far either east or west from the north-south center-line of the section.

Preliminary Report on Geologic Conditions at proposed damsite on Long Run in S.½ NW.¼ sec. 1, T. 36 N., R. 10 E., Will County

by
George E. Ekblaw, Illinois State Geological Survey
August 25, 1961

Geologic Situation. The valley of Long Run is U-shaped, with a flat bottom about 500 feet wide at an elevation of approximately 620 feet above mean sea-level, a relatively steep northwest wall 50-60 feet high, and a moderately sloping southeast wall 30-40 feet high. Along the southeast wall there is a terrace at about 640 feet above mean sea-level, which is correlative with a broad terrace slightly lower in elevation along the west side of the valley immediately downstream and with a narrow terrace on the north side of the valley immediately upstream.

The valley-walls consist of two strata of glacial drift. The lower stratum, which has been designated the Lemont drift, is a stony drift consisting to a large extent and associated with large local deposits of silt, sand, and gravel. It seemingly comprises the terraces noted along the valley. The upper stratum is a more clayey till, the Valparaiso till.

The valley-bottom consists of silty, sandy, gravelly alluvium lying either on Lemont drift, from which it cannot be readily distinguished, or on Niagaran dolomite bedrock, which in this locality occurs at elevations 600-610 feet above mean sea-level.

Recent excavations for a new power plant in the bottom of DesPlaines Valley less than a mile west of the proposed damsite revealed that the top of the Niagaran dolomite is filled with solution channels and pits, and the same condition is therefore not unlikely at the proposed damsite.

Opinion. Although all the materials at the proposed damsite are sufficiently stable to support a dam, the stony, gravelly Lemont drift in the lower part of the valley-walls and possibly under the alluvium is probably so permeable that it would allow excessive leakage around and under the proposed dam. The probable existence of solution channels and pits in the upper surface of the underlying Niagaran dolomite bedrock is also a potential source of excessive leakage under the proposed dam.

For these reasons the damsite is considered of doubtful feasibility. Certainly a thorough program of test-borings should be made to ascertain adequately the character of the Lemont drift and of the bedrock surface.

Moreover, a core-trench would have to be excavated through the alluvium and into the bedrock in the bottom of the valley and be backfilled with dam material. During the excavation of this trench the character of the bedrock should be kept under constant inspection to ascertain (1) where deeper excavation may be necessary to reach solid bedrock and (2) where channels and cavities in the rock need to be filled with grout.

Preliminary Report on Geologic Conditions at proposed damsite on Spring Creek in NE.¼ SW.¼ sec. 33, T. 36 N., R. 11 E., Will County

by
George E. Ekblaw, Illinois State Geological Survey
August 28, 1961

Geologic Situation. At the proposed damsite the valley of Spring Creek is V-shaped, with a relatively narrow bottom and moderately sloping walls 35 feet high on the southeast and 70 feet high on the northwest side. Terraces at elevations respectively slightly above and slightly below 675 feet above mean sea-level occur along the northwest side of the valley immediately upstream and along the southeast side of the valley immediately downstream from the damsite. A small terrace also slightly below 675 feet above mean sea-level occurs along the northwest side of the valley at the damsite.

The valley-walls consist of two strata of glacial drift. The lower stratum, which has been designated the Lemont drift, is a stony drift consisting to a large extent and associated with extensive local deposits of silt, sand, and gravel. It seemingly comprises the terraces noted along the valley and presumably underlies the valley-bottom. The upper stratum along the valley-walls is a more clayey till, the Valparaiso till.

Opinion. Although the presence of glacial drift both in the valley-walls and in the valley-bottom seemingly makes this a feasible damsite, the fact that the lower part is the stony, gravelly, sandy, silty Lemont drift, which may be so permeable that it would allow excessive leakage both around the ends and under the dam, makes it necessary to withhold final judgment until an adequate program of test-borings reveals the character of the Lemont drift.

Preliminary Report on Geologic Conditions at proposed damsite on Spring Brook in the NW.¼ SW.¼ sec. 12, T. 37 N., R. 9 E., Will County

by
George E. Ekblaw, Illinois State Geological Survey
August 28, 1961

Geologic Situation. The proposed damsite along Spring Brook is located at the point where the stream transects the northwest wall of the valley of DuPage River. At this point the valley of Spring Brook is narrower and more constricted and has steeper walls that at any point for two miles upstream.

The material in the valley-walls consists of firm, dense glacial till (Minooka). The valley-bottom is presumably alluvium, but it is believed to be relatively thin and to lie on dolomite bedrock of Niagaran age. The bedrock lies at a depth of less than 10 feet under sand and gravel outwash in a terrace extending south for half a mile from the damsite, occupying the west part of the valley of DuPage River, and standing as much as 30 feet above DuPage River.

Opinion. Except for the alluvium in the valley-bottom, both the glacial till in the valley-walls and the bedrock under the bottom are sufficiently stable to support a dam and sufficiently dense to prevent leakage, and the till is good for dam material.

However, it will be necessary to excavate a key-trench through the alluvium and into the bedrock and to fill the trench with the dam material to prevent leakage under the dam.

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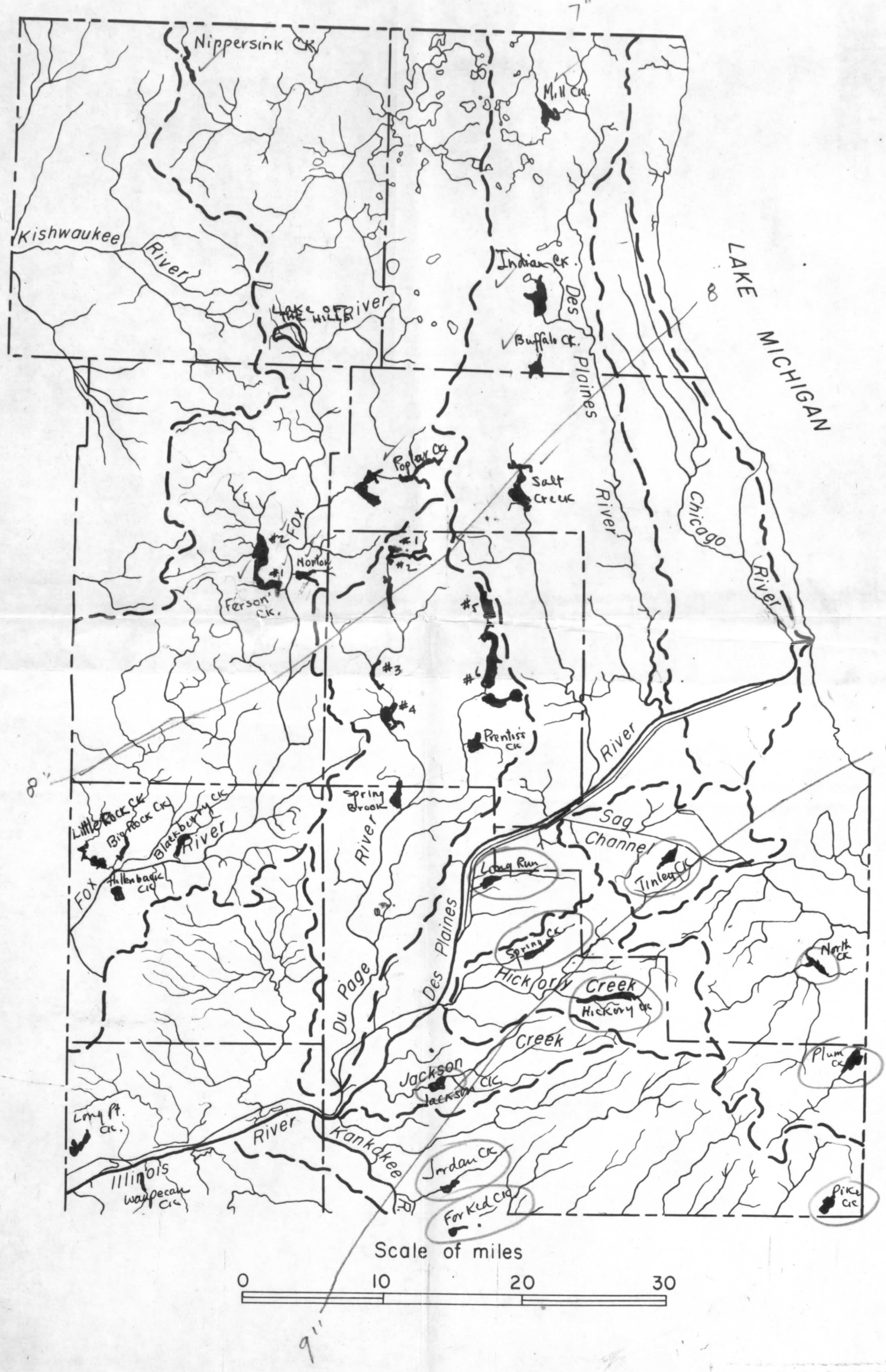

Scale of miles

0 10 20 30

SCALE: 1" = 1 MILE