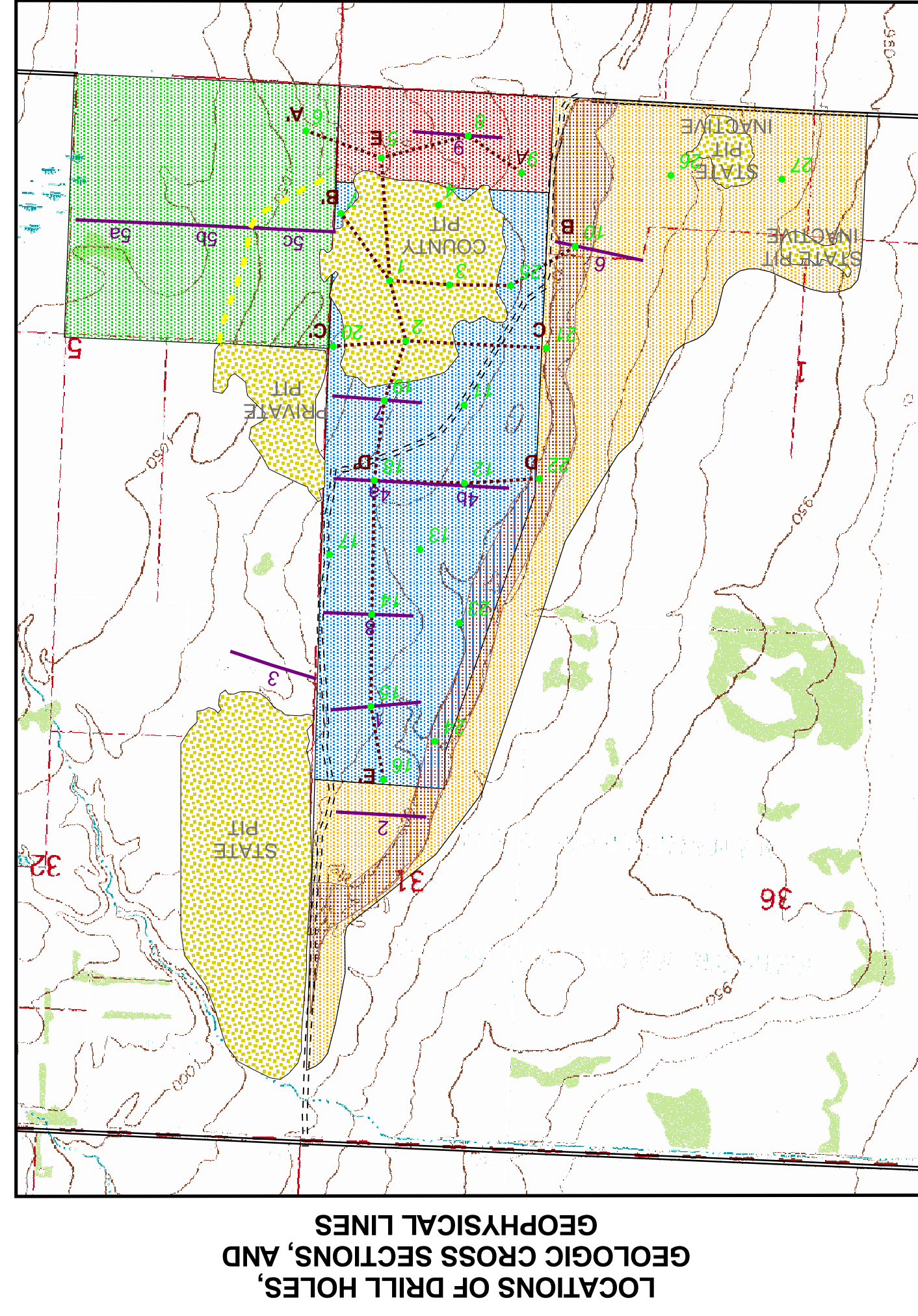
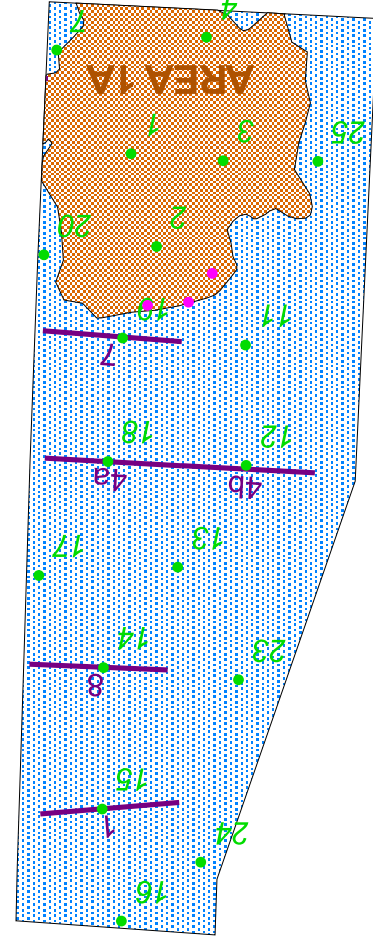


AGGREGATE RESOURCE EVALUATION FOR A PORTION OF FELTON PRAIRIE CLAY COUNTY, MINNESOTA 2000

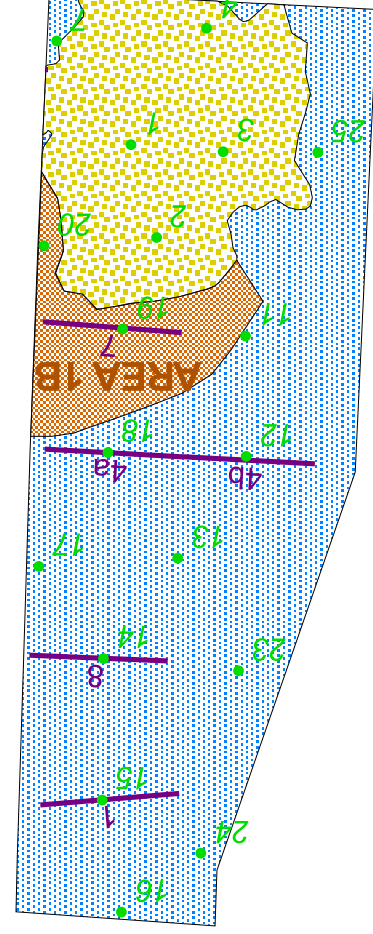
GEOLOGIC INTERPRETATION OF THE STUDY AREA COMPRISING THE STUDY AREA



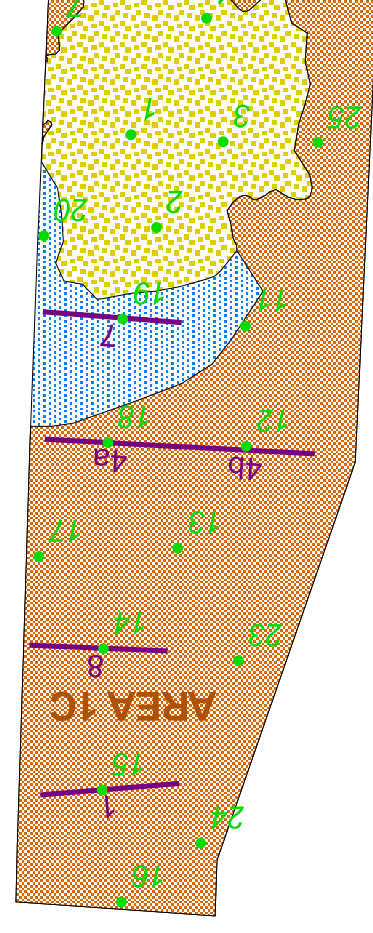
- STUDY AREA**
- Subareas 1A, 1B, 1C
 - Area 2
 - Area 3
 - Area 4
 - Gravel pit
 - Beach ridge
 - Drill hole ID and location
 - Cross section line
 - Geophysical line and ID
 - Inferred geologic contact



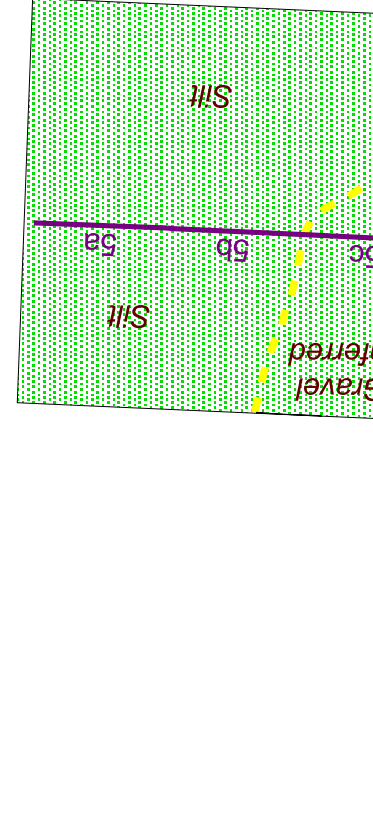
Area 1A: 65 acres
 - Represents the Clay County gravel pit as of November of 1999.
 - Contains 5,900,000 cubic yards of gravel and sand in current stockpiles, waste pits, or along the banks of the pit.
 - Contains 4 holes - all 4 holes have a gravel thickness > 10 feet.
 - Depth to water table: 0 to 4 feet below the surface.
 - Gravel thickness: 55 to 65 feet.
 - Gravel trends: Pitches out to 5 feet just west of pit (hole 25).
 - Overburden: Overburden greater than 2 feet encountered in the area.
 - Quality: Very good. Passes specs for concrete.
 - To the east, the overburden thickened to greater than 10 feet.
 - Aggregate for comparative purposes.



Area 1B: 23 acres
 - Represents the Clay County gravel pit and south of the gravel pit.
 - Contains 9,000,000 cubic yards of gravel and sand in current stockpiles, waste pits, or along the banks of the pit.
 - Contains 3 holes - all 3 holes have a gravel thickness > 10 feet.
 - Depth to water table: 19 to 43 feet below the surface.
 - Gravel thickness: 68 to 93 feet.
 - Gravel trends: Geophysical line 7 indicates a continuous deposit.
 - Overburden: No overburden greater than 2 feet encountered in this area.
 - Quality: Very good. Contains within NINDOT specs for Class 5 aggregate for comparative purposes.



Area 1C: 172 acres
 - Represents the gravel pit to the east and west of the County gravel pit.
 - Contains 11,900,000 cubic yards of gravel and sand in current stockpiles, waste pits, or along the banks of the pit.
 - Contains 18 holes, 16 holes have a gravel thickness > 10 feet.
 - Ranges: 0 to 103 feet.
 - Averages: 24 feet below surface.
 - Overburden: Approximately 0 to 20 feet, thicker in the northern part of Area 1.
 - Gravel trends: Thickers to the east (>100 feet), thins to west (0 feet).
 - Quality: Very good. The overall deposit passes MNDOT specifications (specs) for sand and gravel.
 - Gradations: Average composite value fits within NINDOT specs for Class 5 aggregate for comparative purposes.
 - The water table is approximately 1000 +/- 5 feet above sea level.
 - Encountered at various depths within the deposit, they are difficult to quantify.



Area 2: 50 acres
 - Represents the area south of the County gravel pit.
 - Volume: No estimates were created for this area due to the limited accessibility of the deposit (high overburden).
 - Overburden: High overburden.
 - Gravel thickness: 0 to 57 feet.
 - Gravel trends: Geophysical line 9 shows a deposit of sand and gravel with thick overburden.
 - Quality: Good. The overall deposit passes MNDOT specs for concrete.
 - Overburden: 29 to 55+ feet.
 - Averages: 29 feet below surface.
 - Contains 5 holes - 2 holes have a gravel thickness > 10 feet.
 - Contains 5 holes - 2 holes have a gravel thickness > 10 feet.
 - Contains 5 holes - 2 holes have a gravel thickness > 10 feet.
 - Contains 5 holes - 2 holes have a gravel thickness > 10 feet.



Area 3: 160 acres
 - Represents the area of the Bicentennial Prairie.
 - Contains 13,300,000 cubic yards of gravel and sand in current stockpiles, waste pits, or along the banks of the pit.
 - Contains 20 holes, 18 holes have a gravel thickness > 10 feet.
 - Ranges: 0 to 103 feet.
 - Averages: 24 feet below surface.
 - Overburden: Approximately 0 to 20 feet, thicker in the northern part of Area 1.
 - Gravel trends: Thickers to the east (>100 feet), thins to west (0 feet).
 - Quality: Very good. The overall deposit passes MNDOT specifications (specs) for sand and gravel.
 - Gradations: Average composite value fits within NINDOT specs for Class 5 aggregate for comparative purposes.
 - The water table is approximately 1000 +/- 5 feet above sea level.
 - Encountered at various depths within the deposit, they are difficult to quantify.

LOCATIONS OF DRILL HOLES, GEOLOGIC CROSS SECTIONS, AND GEOPHYSICAL LINES

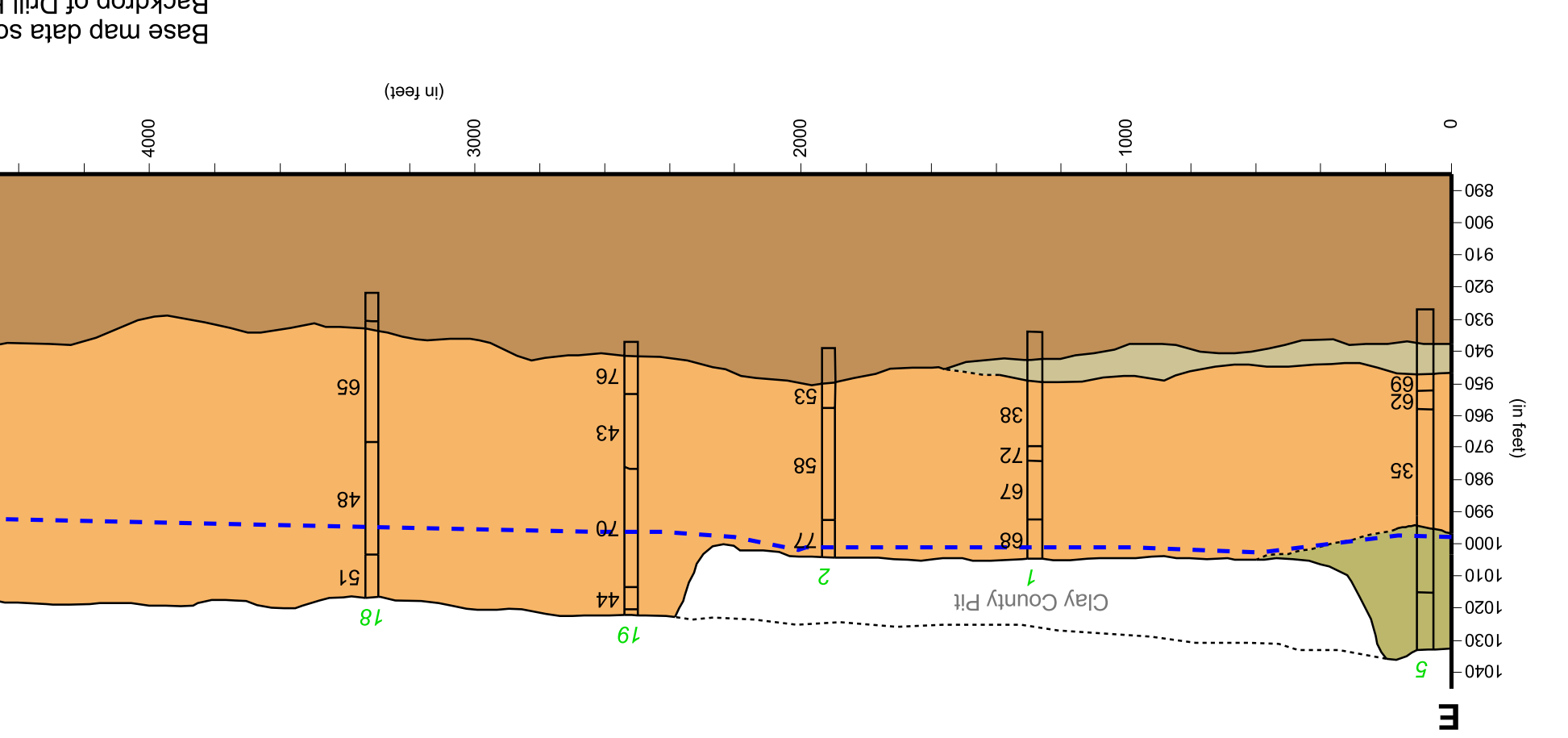
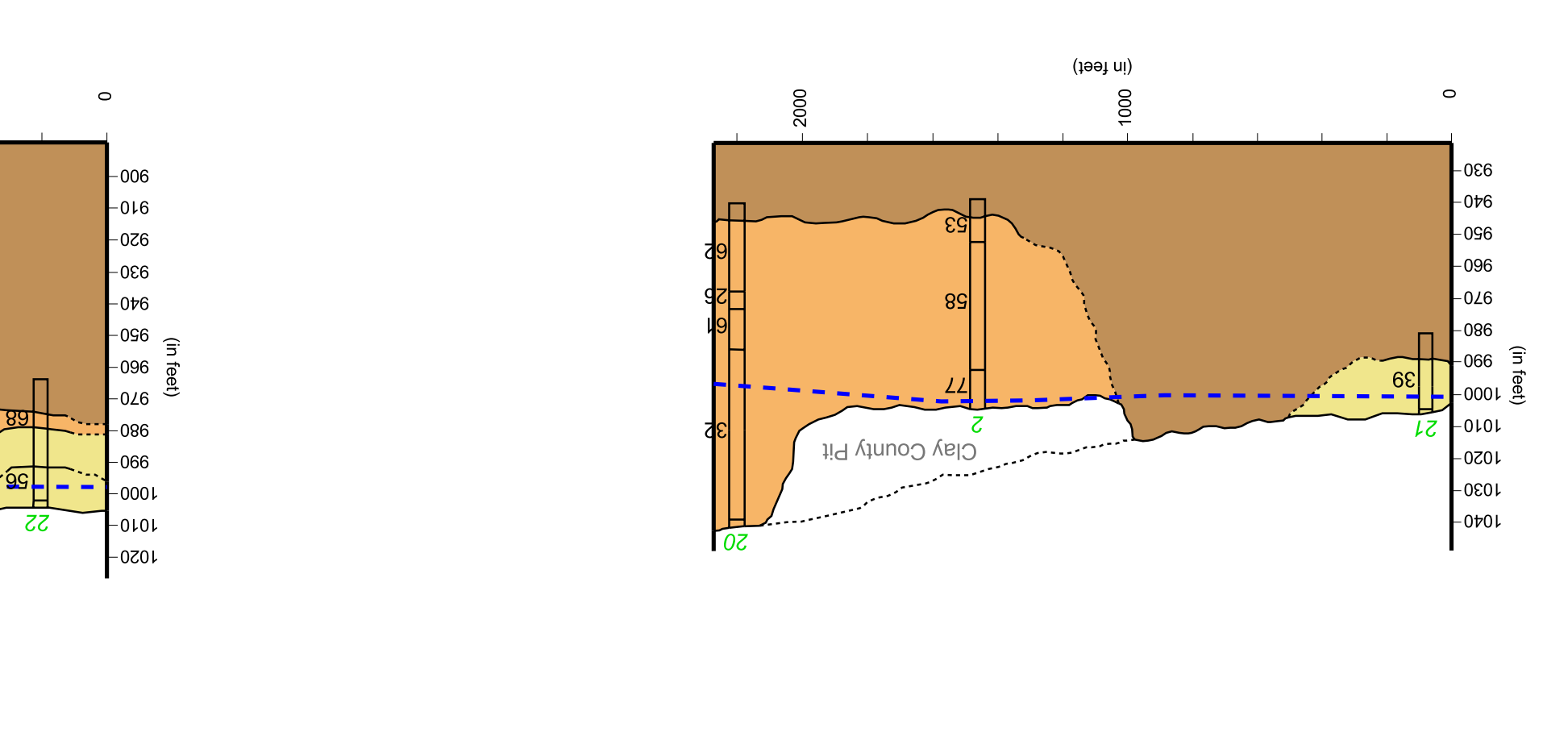
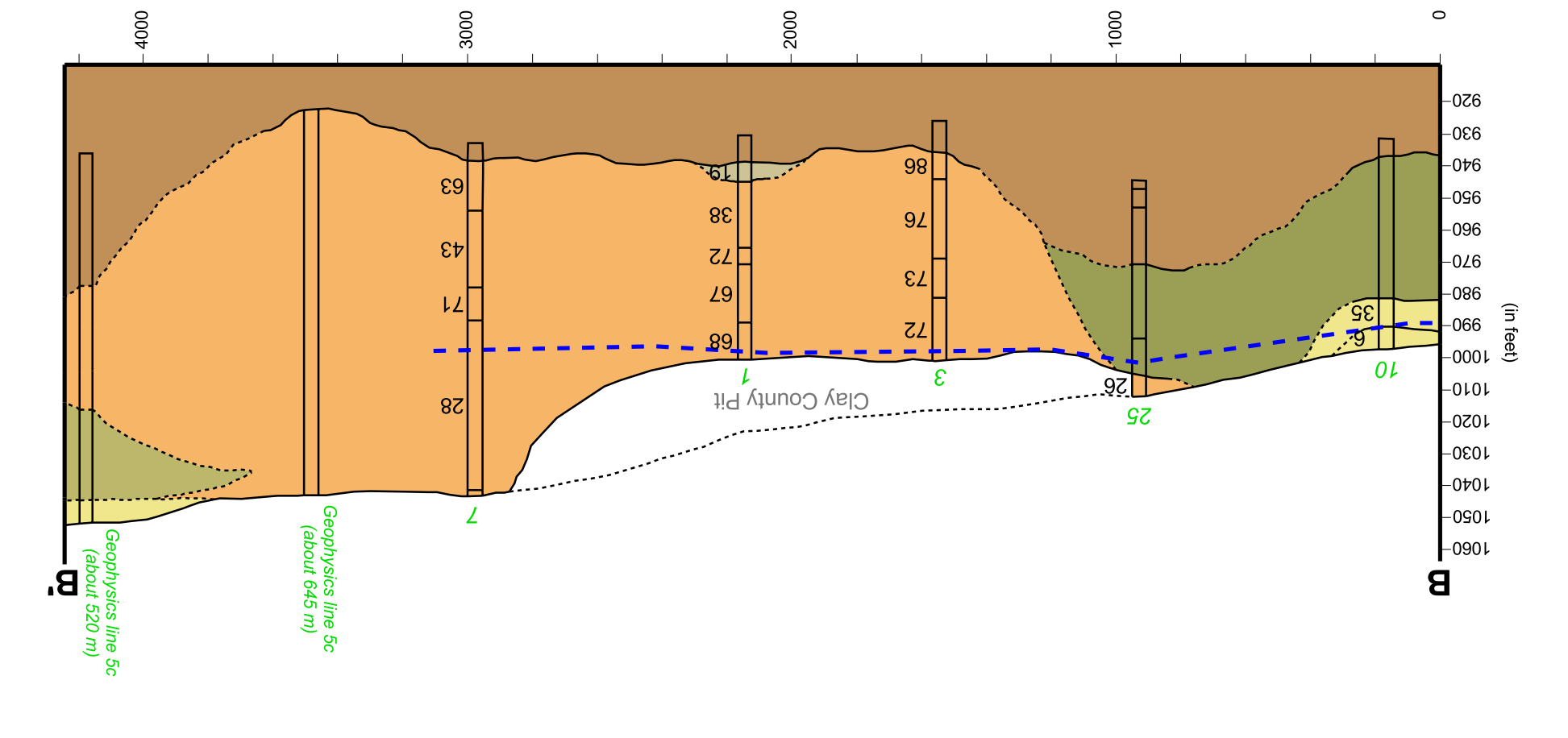
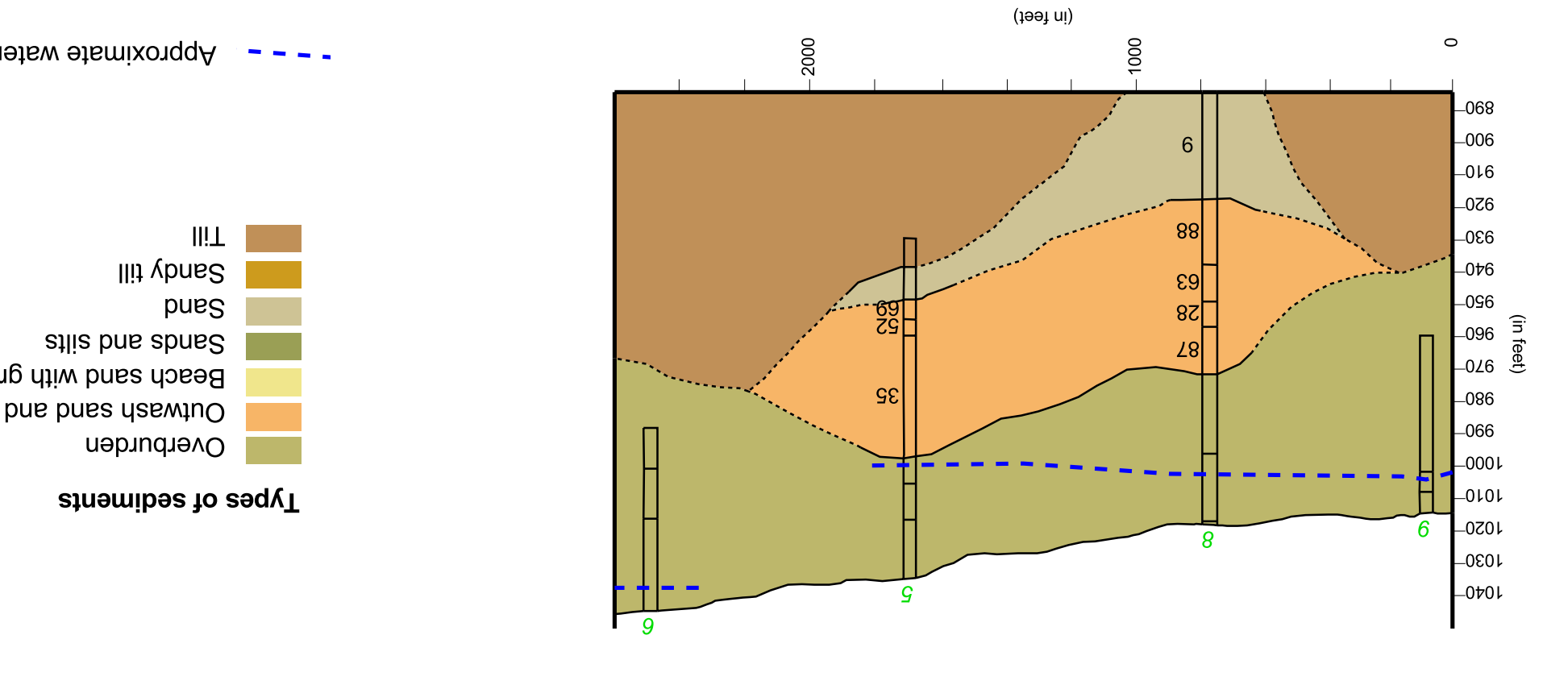
AREA 4: 265 acres
 - Represents the area of the Bicentennial Prairie.
 - Contains 13,300,000 cubic yards of gravel and sand in current stockpiles, waste pits, or along the banks of the pit.
 - Contains 20 holes, 18 holes have a gravel thickness > 10 feet.
 - Ranges: 0 to 103 feet.
 - Averages: 24 feet below surface.
 - Overburden: Approximately 0 to 20 feet, thicker in the northern part of Area 1.
 - Gravel trends: Thickers to the east (>100 feet), thins to west (0 feet).
 - Quality: Very good. The overall deposit passes MNDOT specifications (specs) for sand and gravel.
 - Gradations: Average composite value fits within NINDOT specs for Class 5 aggregate for comparative purposes.
 - The water table is approximately 1000 +/- 5 feet above sea level.
 - Encountered at various depths within the deposit, they are difficult to quantify.

AREA 2: 50 acres
 - Represents the area south of the County gravel pit.
 - Volume: No estimates were created for this area due to the limited accessibility of the deposit (high overburden).
 - Overburden: High overburden.
 - Gravel thickness: 0 to 57 feet.
 - Gravel trends: Geophysical line 9 shows a deposit of sand and gravel with thick overburden.
 - Quality: Good. The overall deposit passes MNDOT specs for concrete.
 - Overburden: 29 to 55+ feet.
 - Averages: 29 feet below surface.
 - Contains 5 holes - 2 holes have a gravel thickness > 10 feet.
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 - Contains 5 holes - 2 holes have a gravel thickness > 10 feet.

AREA 3: 160 acres
 - Represents the area of the Bicentennial Prairie.
 - Contains 13,300,000 cubic yards of gravel and sand in current stockpiles, waste pits, or along the banks of the pit.
 - Contains 20 holes, 18 holes have a gravel thickness > 10 feet.
 - Ranges: 0 to 103 feet.
 - Averages: 24 feet below surface.
 - Overburden: Approximately 0 to 20 feet, thicker in the northern part of Area 1.
 - Gravel trends: Thickers to the east (>100 feet), thins to west (0 feet).
 - Quality: Very good. The overall deposit passes MNDOT specifications (specs) for sand and gravel.
 - Gradations: Average composite value fits within NINDOT specs for Class 5 aggregate for comparative purposes.
 - The water table is approximately 1000 +/- 5 feet above sea level.
 - Encountered at various depths within the deposit, they are difficult to quantify.

AREA 4: 265 acres
 - Represents the area of the Bicentennial Prairie.
 - Contains 13,300,000 cubic yards of gravel and sand in current stockpiles, waste pits, or along the banks of the pit.
 - Contains 20 holes, 18 holes have a gravel thickness > 10 feet.
 - Ranges: 0 to 103 feet.
 - Averages: 24 feet below surface.
 - Overburden: Approximately 0 to 20 feet, thicker in the northern part of Area 1.
 - Gravel trends: Thickers to the east (>100 feet), thins to west (0 feet).
 - Quality: Very good. The overall deposit passes MNDOT specifications (specs) for sand and gravel.
 - Gradations: Average composite value fits within NINDOT specs for Class 5 aggregate for comparative purposes.
 - The water table is approximately 1000 +/- 5 feet above sea level.
 - Encountered at various depths within the deposit, they are difficult to quantify.

GEOLOGIC CROSS SECTIONS



- Types of sediments**
- Overburden
 - Outwash sand and gravel
 - Beach sand with silt
 - Sand
 - Sandy silt
 - Till
- Drill hole profile**
- Drill hole ID
 - The percentage of gravel by weight within the interval
 - Colors represent type of sediment

Cross sections are based on the geologic logs of the drill core.

This plate is the second of a two plate series. All observations are based on data gathered during the aggregate resource evaluation, and the geophysical data. All observations are based on the geologic interpretations for designated areas within the study area and along five cross sections. These cross sections are geologic interpretations based upon the simplified logs found in Appendix C.

Base map data sources:
 Backup of Drill Hole Locations - Digital raster graphics (DRG) file from U.S. Geological Survey, 1:24,000
 Location of road, shown in Geologic Interpretation of the Four Areas Comprising the Study Area - Minnesota Department of Natural Resources, Bureau of Engineering, March 2000.

Aggregate resource data sources:
 Department of Natural Resources, Bureau of Engineering, March 2000.

Drill hole locations - Minnesota Department of Natural Resources, Bureau of Engineering, March 2000.

Locations of road, shown in Geologic Interpretation of the Four Areas Comprising the Study Area - Minnesota Department of Natural Resources, Bureau of Engineering, March 2000.

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