



# MORGAN COUNTY, INDIANA

## 2024 MORGAN COUNTY SANITARY SEWER COMPREHENSIVE PLAN

July 2024

PREPARED BY:



853 Columbia Road, Suite 101  
Plainfield, IN 46168  
[www.BanningEngineering.com](http://www.BanningEngineering.com)

**MORGAN COUNTY, INDIANA**  
**2024 MORGAN COUNTY SANITARY SEWER**  
**COMPREHENSIVE PLAN**

**Table of Contents**

**Chapter 1: Introduction – Pg. 1**

**Chapter 2: Project Overview – Pg. 1**

**Chapter 3: Mapping – Pg. 2**

    3.1 Mapping Background

    3.2 Little Point/Eminence

    3.3 Waverly

**Chapter 4: Target Areas for Development – Pg. 4**

    4.1 Martinsville

    4.2 Mooresville

**Chapter 5: Recommended Projects – Pg. 7**

    5.1 Mooresville Sewer Expansion

    5.2 Martinsville Sewer Expansion

**List of Exhibits**

Figure 1 Morgan County NPDES Permits Exhibit

Figure 2 Morgan County Site Selection Map

Figure 7 Martinsville Sites

Figure 8 Mooresville Sites

Figure 9 Mooresville Sewer Improvements Exhibit

Figure 10 Martinsville Sewer Improvements Exhibit

## CHAPTER 1: INTRODUCTION

Banning Engineering, Inc (Banning) has completed many projects related to wastewater in Morgan County (County). The Morgan County Comprehensive Plan addresses the importance of expansion of Sewer/Water and the importance of expanding and locating available utility infrastructure. The plan also notes a gap in the current wastewater capacity in the northeastern quadrant of the County. The document notes the need for further enhancements to the system to ensure adequate capacities to support residential growth in the area's desired locations.

Through this master plan, the Banning team gathered high level information regarding the operations and capacities of those plants. In addition, Banning searched to verify any other active wastewater treatment plants owned by municipalities, non-profits, conservancy districts, or private owners.

Our team strategically found and shows the components needed for appropriate and prosperous development, which translates to effective and intentionally planned growth in Morgan County. The following is a clear set of information to guide Morgan County's growth decisions regarding sanitary sewer planning and design that matches the present and future needs of the County. This report is an abridged version of the findings that were supplied to the County.

## CHAPTER 2: PROJECT OVERVIEW

Morgan County hired Banning to put together a study to determine where the best investment of time and money for wastewater expansion to promote economic development within the County. During this study we used the following process to arrive at our recommendations to provide to the County.

- Assemble a GIS Map to help illustrate the process of selecting parcels for development.
- Target 4 to 5 key communities/areas where development is most likely to occur.
- Meet with key communities and the County to discuss areas of need or potential growth.
- Develop recommendations along with Engineer's Opinion of Probable Cost for improvements.

## CHAPTER 3: MAPPING

### 3.1 MAPPING BACKGROUND:

Geography leaps to the forefront when talking about planning for wastewater infrastructure. Natural and man-made barriers can quickly rule out sewer service locations, making wastewater planning challenging. A robust Geographic Information System (GIS) can uncover information critical to making decisions. Natural barriers like flat terrain, floodplains, and wetlands can make gravity sewer service challenging and expensive. Man-made barriers like railroads, highways, and levees can have the same effect. Building infrastructure along public roadways is common practice and generally follows the speed of local development. A parcel's likelihood of development can be predicted based on geography— its proximity to a roadway/utility corridor or a growing community. Figure 1 shows the wastewater treatment plants (WWTPs) and National Pollutant Discharge Elimination System (NPDES) permitted facilities in Morgan County. For the purpose of this study, it was assumed that parcels within 1 mile of an existing service area could feasibly be served by an existing facility. However, there were a couple of other areas that were not eliminated from our study based on additional factors, such as location and land use, as a regional lift station and forcemain or package wastewater treatment plant could be an option for those sites. Although there is an argument that some areas could also be serviced via a commercial septic system, we would consider those to be less desirable due to the expense, significant land challenges (size, land coverage, and fall), maintenance and operation expenses, and much shorter service life.

Analyzing these encumbrances with GIS technology, Banning created a powerful tool for identifying developable property and ranking the likelihood of development based on key factors. This map depicting where development is likely to occur in the future, will aid in sanitary sewer planning decisions.

The map's goal was to identify land that appears to have few encumbrances that inhibit development based on the following key factors:

- Natural barriers like existing terrain, floodplains, registered wetlands, forested/low-lying areas, and rivers.
- Proximity to existing water and sewer service.
- Proximity to roadway corridors and current roadway condition, width, and surface type.
- Proximity to recent development.
- Current and future zoning.

Using datasets like LiDAR contours, the National Wetlands Inventory Map, DNR Best Available Floodway Map, land coverage, available utility information, and the County's new roadway inventory database, Banning ran an analysis to narrow down locations in the County with the highest development potential. Knowing what areas are likely to develop drives decisions on where the County may prioritize wastewater investment. The GIS Map that was developed can be used to guide decision-makers by converting raw data into easy-to-read maps. The results intertwine with the infrastructure planning and system management phases. Figure 2 in this report shows the map of the county after filters have been applied to eliminate the heavily encumbered parcels. This map is also made available to County via the following QR code and weblink:

Map Weblink: <https://rb.gy/25ug9s>



Through the use of the map, Banning narrowed down the areas of focus to the following six (6) areas of interest:

- South of Mooresville
- North of Monrovia
- Martinsville
- Maple Turn/Henderson Ford Road Interchange
- Little Point/Eminence Interchange
- Waverly



Internal meetings with Banning staff and Morgan County Officials eliminated the Little Point/Eminence and Waverly areas as primary focuses for this study.

## **CHAPTER 4: TARGET AREAS FOR DEVELOPMENT**

### **4.1 MARTINSVILLE:**

Martinsville is located at the southern part of the County and is the intersection of several major state roads including State Road 39, State Road 44, State Road 67, and State Road 252. Additionally the City is bisected by Interstate 69 with four interchanges located along the interstate as it goes through the City. An additional interchange is located within the City's service limits on the south side of the City at Liberty Church Road.

The City currently owns and operates a 2.200 MGD activated sludge type wastewater treatment plant. In reviewing the MRO's for the facility between February 2023 and August 2023, the average influent to the wastewater treatment plant was approximately 0.980 MGD; however, the most recent NPDES permit renewal lists the average daily flow as 1.161 MGD. The highest flow recorded during that time was 2.920 MGD. No readily available peak capacity flow was available to determine if this exceeded an allowable peak for the facility. Aside from minor inconsistencies noted during our review of the MRO's, no significant deficiencies have been noted in the past several inspections of the WWTP. Additionally, no significant violations are listed in IDEM's virtual file cabinet.

With the construction of I-69 through the City, the open and unencumbered land is much more likely to develop due to ease of access. Much of the open, developable land located on the west side of the City is protected from flooding by a levee that roughly follows the White River on the east side of the river. On the south side of the city at Liberty Church Road there are several large, open parcels; however, many on the southwest, northwest, and northeast sides of that interchange are located within the floodway and floodplain. Based on the number of drainage swales on the southeast side of the interchange, it is likely that a significant number of those parcels are also within the floodplain but are not shown as such due to the age of the flood mapping in that area.

There are three areas that do appear to be serviceable that would make sense from an economic growth standpoint. The first is the aforementioned Henderson Ford Road area to the north along I-69. As described above, the location on the southeast side of that interchange appears to not have any significant encumbrances other than the unknowns for sewer service. The County could further investigate a lift station in that area that would pump back to the City's sewer system. This option may be costly depending on what kind of development occurs in this area.

The second area of interest would be along Artesian Avenue on the southeast side of the City. This area also has several large parcels of ground with very few encumbrances that show up in our initial research. Sewer and water are both near the area and generally it is currently used as farm ground. Residential is developing on the west side of Artesian Ave. that may make commercial or industrial more difficult due to separation typically being recommended between them. An exhibit of these areas can be seen in Figure 7 of this report.

The third area is located at the State Road 44 Interchange on the northeast side of the City. Reportedly, the city installed a gravity sewer under I-69 when the new interstate was constructed to help service this area. That sewer currently ends approximately 1,500 feet to the south of that interchange. The County could consider funding a project to extend that sewer further to the east to provide the potential of sewer service to the parcels along State Road 44. This seems like a low cost option to make those parcels more desirable to developers. Similar to area 2, much of this is near existing residential development and something similar to that may be most likely to develop in this area.

#### **4.2 MOORESVILLE:**

The Town of Mooresville is located near the northeast edge of the County near both Hendricks County and Marion County. State Road 67, State Road 267, State Road 144, and State Road 42 all run through Mooresville and provide easy access to the Town and its outskirts. I-70 is located approximately 3.5 miles to the north of Town and I-69 is located approximately 7.5 miles to the southeast of Town.

The Town currently owns and operates a 2.500 MGD Vertical Loop Reactor type wastewater treatment plant with a 1.000 MGD Diversion when flow exceeds 2.500 MGD. The Town is currently under an Agreed Order with IDEM and a 4<sup>th</sup> quarter update was submitted to IDEM in

January of this year and, while unavailable on the virtual file cabinet, another quarterly update should have been submitted at the end of March. Per the virtual file cabinet files the Agreed Order is due to a multitude of reasons; however, the Town and their consultants appear to be addressing the situation. The last available quarterly update has requested authorization to initiate the 1-year compliance period to complete the terms and conditions required to complete the Agreed Order. It is unclear whether the Agreed Order prohibits additional sewer users from connecting to the Town's collection system. Review of the most recent MRO's (January 2024 and December 2023) show that the WWTP is meeting its discharge limits.

Banning performed a Master Plan Study for the south side of Mooresville in 2018. In that study and in this Project, it is clear that there is potential for significant growth on the south side of Mooresville due to the large unencumbered parcels of land in that area, particularly on the west side of State Road 67 and near Bethel Road. The land there is relatively unencumbered and sewer and water service is nearby. An exhibit of these areas can be seen in Figure 8 of this report. Hill Water Corporation services the area in question and construction of a new water treatment plant is currently under way to expand their treatment capacity. Additionally, Indiana American Water recently build a new water treatment plant in the area that expanded their capacity.

In the Master Plan for Mooresville, Banning identified these areas as having significant potential for growth and designed sewer upgrades to be able to easily provide sewer service to those areas via additional gravity sewer. The master plan broke up the improvements into two phases. The first phase of the improvements was constructed and put into service in 2021. The second phase was designed in 2021, but was put on hold due to costs and the loss of a large industrial user in the area. Since the completion of the first phase, several of the large parcels have been developed. It is Banning's opinion that with the construction of the second phase, more economic development is likely to occur in the area.



## CHAPTER 5: RECOMMENDED PROJECTS

Based on the reviews of the four major communities as described above, Banning believes that the following three areas make the most sense for priority projects to promote growth in Morgan County.

1. South of Mooresville
2. Northeast of Martinsville at the State Road 44, State Road 252, and I-69 Interchanges

### 5.1 MOORESVILLE SEWER EXPANSION:

As noted above, Banning performed a similar type study for the Town of Mooresville in the past and believes the area would be primed for growth with additional investment in the sanitary sewer service infrastructure. Generally the scope of the remaining work that needs done in this area is the replacement of pumps, motors, and electrical at two existing lift stations (Sun Polymer and Crosby Road), the decommissioning of an existing lift station within Flag Staff Business Park that would coincide with the installation of a new 15" gravity sewer in it's place, and the installation of a new lift station at TOA that would decommission the existing siphon under White Lick Creek. These improvements would significantly increase the capacity of the sewer system on the south side of Mooresville and are steps towards being able to service additional commercial development on the south side. The cost estimate, including construction and non-construction costs, for these items is \$4,755,000 and a detailed breakdown is shown below in Table 1. An exhibit of these improvements can be seen in Figure 9 of this report.



TOWN OF MOORESVILLE					
SOUTHERN WASTEWATER IMPROVEMENTS - PHASE 2 CONSTRUCTION ESTIMATE					
4/19/2024					
ITEM NO.	ITEM	UNITS	QTY.	UNIT PRICE	TOTAL PRICE
1	12" C900 PVC FORCEMAIN (EXCAVATION)	L.F.	680	\$150.00	\$102,000.00
2	16" DR11 HDPE FORCEMAIN (DIRECTIONAL DRILL)	L.F.	550	\$300.00	\$165,000.00
3	TOA LIFT STATION PUMPS AND CONTROL/STATUS MODULE	EACH	1	\$300,000.00	\$300,000.00
4	TOA LIFT STATION ELECTRICAL AND CONTROLS PACKAGE	EACH	1	\$150,000.00	\$150,000.00
5	TOA LIFT STATION STRUCTURES AND SITE WORK	EACH	1	\$450,000.00	\$450,000.00
6	TOA LIFT STATION GENERATOR AND PAD	EACH	1	\$120,000.00	\$120,000.00
7	15" PVC GRAVITY MAIN (FLAGSTAFF)	L.F.	2820	\$200.00	\$564,000.00
8	PRECAST CONCRETE MANHOLES (FLAGSTAFF)	EACH	12	\$15,000.00	\$180,000.00
9	CROSBY LIFT STATION PUMPS AND CONTROL/STATUS MODULE	EACH	1	\$325,000.00	\$325,000.00
10	CROSBY LIFT STATION ELECTRICAL AND CONTROLS PACKAGE	EACH	1	\$150,000.00	\$150,000.00
11	CROSBY LIFT STATION GENERATOR AND PAD	EACH	1	\$120,000.00	\$120,000.00
12	SUN-POLYMERS LIFT STATION PUMPS AND CONTROL/STATUS MODULE	EACH	1	\$300,000.00	\$300,000.00
13	SUN-POLYMERS LIFT STATION ELECTRICAL AND CONTROLS PACKAGE	EACH	1	\$150,000.00	\$150,000.00
14	MISC ITEMS	LUMP SUM	1	\$200,000.00	\$200,000.00
<b>ESTIMATED CONSTRUCTION COST</b>					<b>\$3,276,000.00</b>
<b>CONSTRUCTION CONTINGENCY (20%)</b>					<b>\$660,000.00</b>
<b>NON-CONSTRUCTION COST (25%)</b>					<b>\$819,000.00</b>
<b>TOTAL ESTIMATED CONSTRUCTION COST</b>					<b>\$4,755,000.00</b>

Table 1 – Mooresville Southern Wastewater Improvements Construction Estimate

## 5.2 MARTINSVILLE SEWER EXPANSION:

While Banning is less familiar with this area, through our cursory review of the existing collection system in the area and input from the City and Morgan County, Banning believes this to be another area of high likelihood for commercial growth. As of the issuance of this report it appears that only cursory discussions have taken place regarding expansion of sewer service to this area; however the foresight of the City to install sewer under I-69 should greatly help the endeavor. The parcels bounded between State Road 44 and State Road 252 appear to generally slope to the east towards the West Fork of Clear Creek. On site sewers for those major parcels and a lift station at the low point along Hess Road would likely be the most economical option. A forcemain would need to be installed back to the new sewer crossing under I-69. A high level cost estimate for this is \$2,555,000 and a detailed breakdown of this estimate is shown below in Table 2. An exhibit showing the forcemain and lift station can be seen in Figure 10 of this report.

CITY OF MARTINSVILLE CONSTRUCTION COST ESTIMATE SR 44 & SR 252 LIFT STATION 4/19/2024					
ITEM NO.	ITEM	UNITS	QTY.	UNIT PRICE	TOTAL PRICE
1	LIFT STATION PUMPS AND CONTROL/STATUS MODULE	EACH	1	\$300,000.00	\$300,000.00
2	LIFT STATION ELECTRICAL AND CONTROLS PACKAGE	EACH	1	\$150,000.00	\$150,000.00
3	LIFT STATION STRUCTURES AND SITE WORK	EACH	1	\$450,000.00	\$450,000.00
4	LIFT STATION GENERATOR AND PAD	EACH	1	\$120,000.00	\$120,000.00
5	8" C900 PVC FORCEMAIN (EXCAVATION), NORTHERN	L.F.	4,600	\$140.00	\$644,000.00
6	MISC ITEMS	LUMP SUM	1	\$100,000.00	\$100,000.00
<b>ESTIMATED CONSTRUCTION COST</b>					<b>\$1,764,000.00</b>
<b>CONSTRUCTION CONTINGENCY (20%)</b>					<b>\$350,000.00</b>
<b>NON-CONSTRUCTION COST (25%)</b>					<b>\$441,000.00</b>
<b>TOTAL ESTIMATED CONSTRUCTION COST</b>					<b>\$2,555,000.00</b>

Table 2 – SR 44 & SR 252 Lift Station Construction Estimate

# Figure 1 - Morgan County NPDES Permits Exhibit

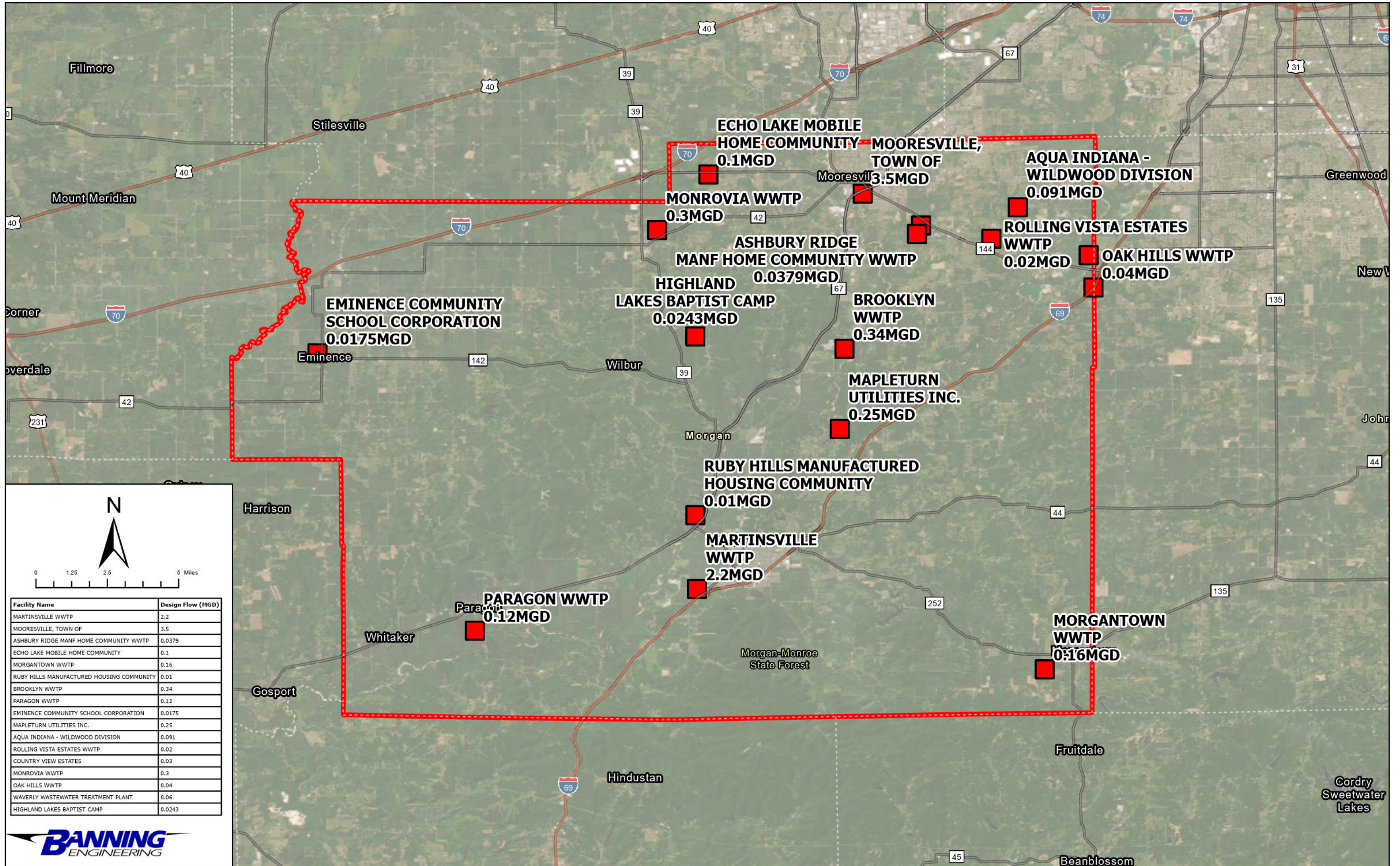


Figure 2 - Morgan County Site Selection Map

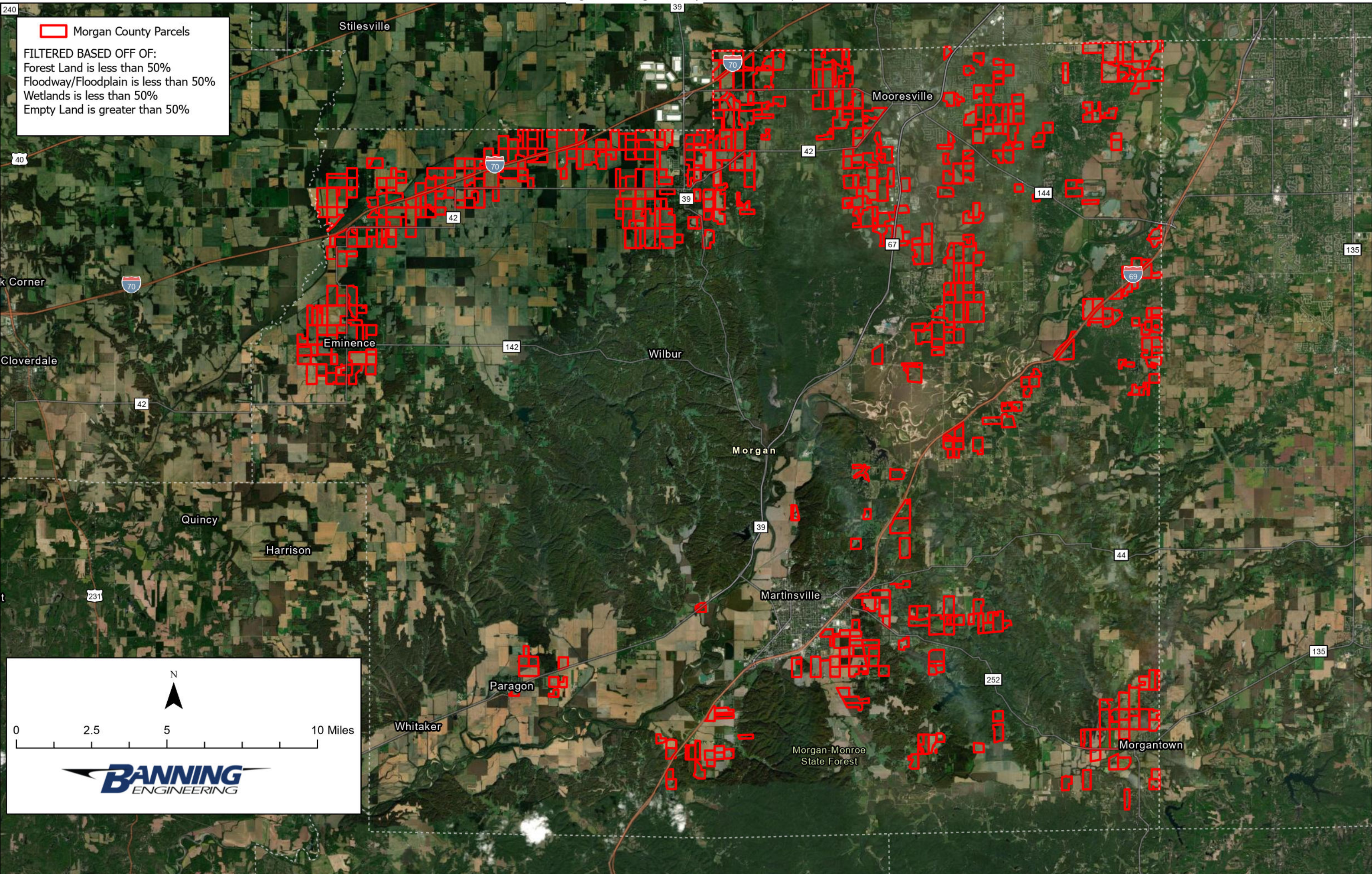

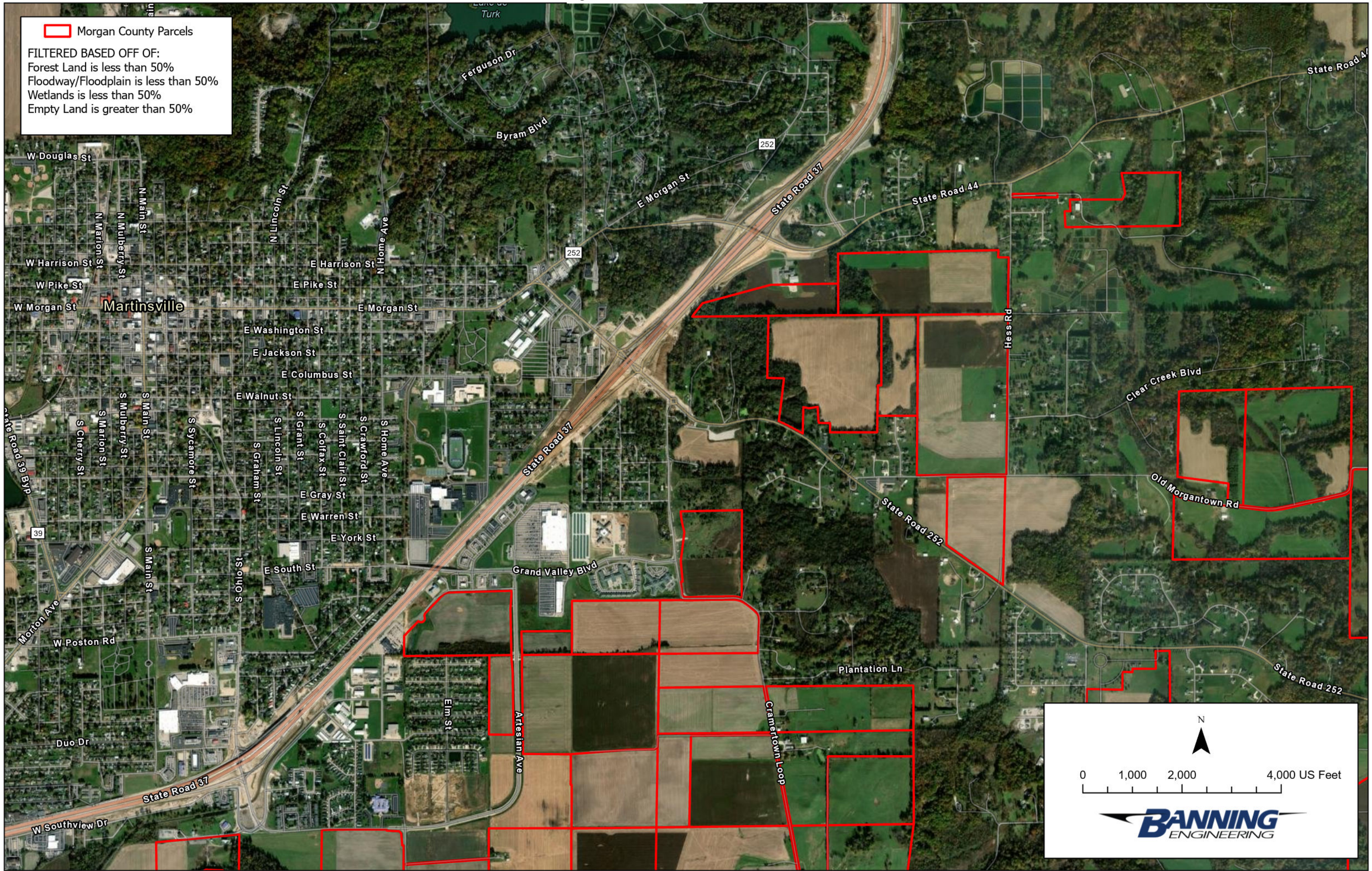


Figure 7 - Martinsville Sites

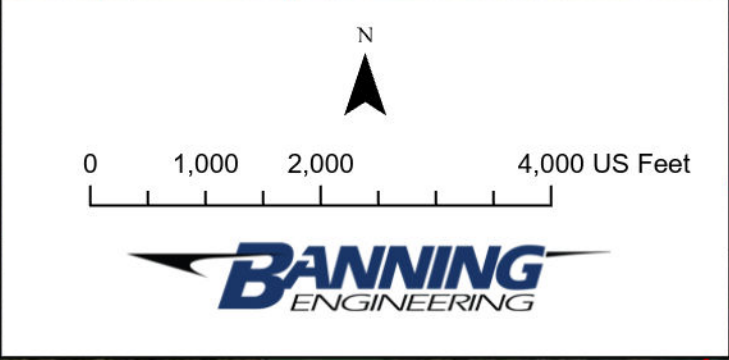
 Morgan County Parcels

FILTERED BASED OFF OF:  
Forest Land is less than 50%  
Floodway/Floodplain is less than 50%  
Wetlands is less than 50%  
Empty Land is greater than 50%




N

0 1,000 2,000 4,000 US Feet

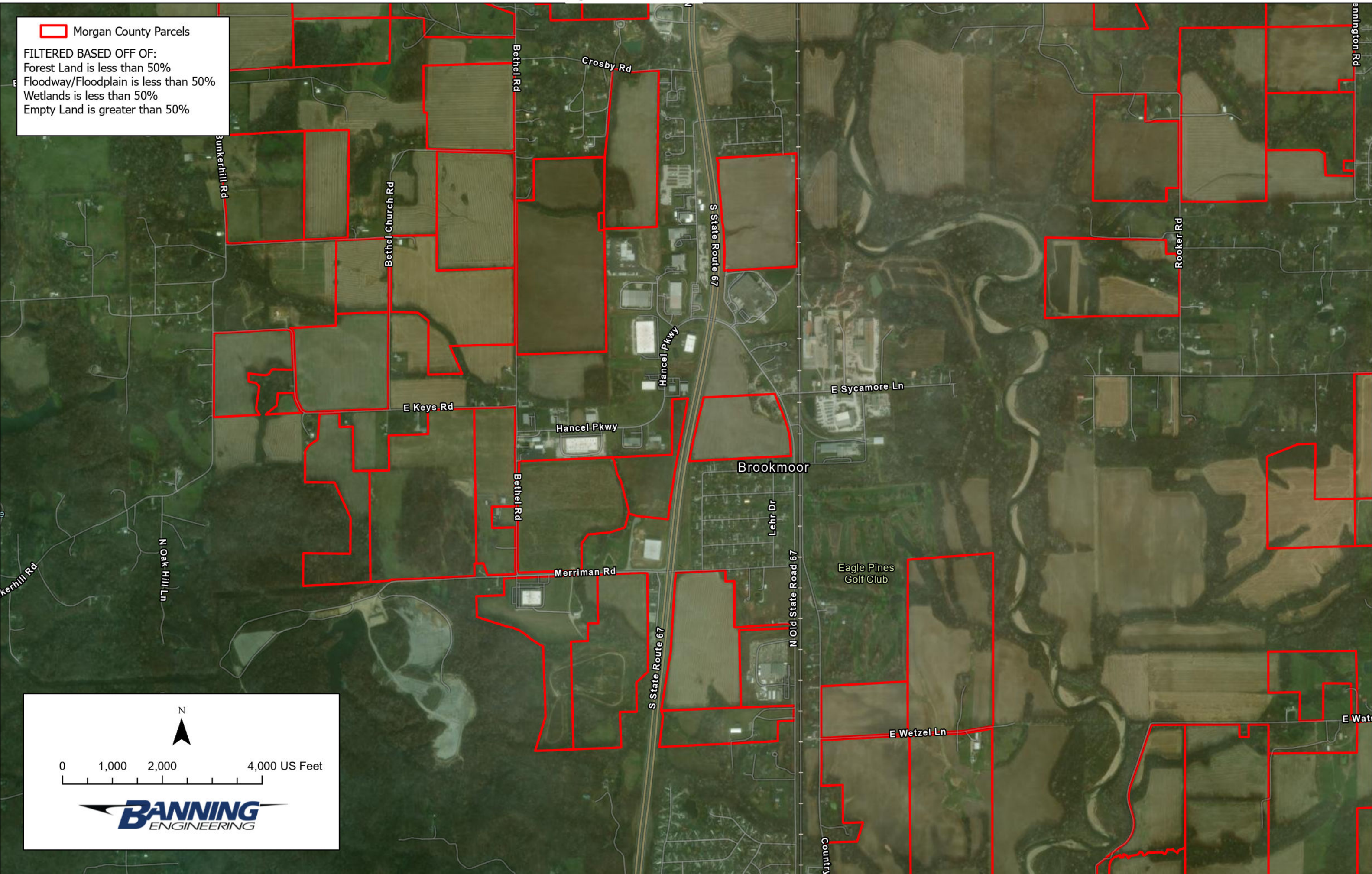


**BANNING**  
ENGINEERING


Figure 8 - Mooresville Sites

 Morgan County Parcels


FILTERED BASED OFF OF:  
Forest Land is less than 50%  
Floodway/Floodplain is less than 50%  
Wetlands is less than 50%  
Empty Land is greater than 50%



N

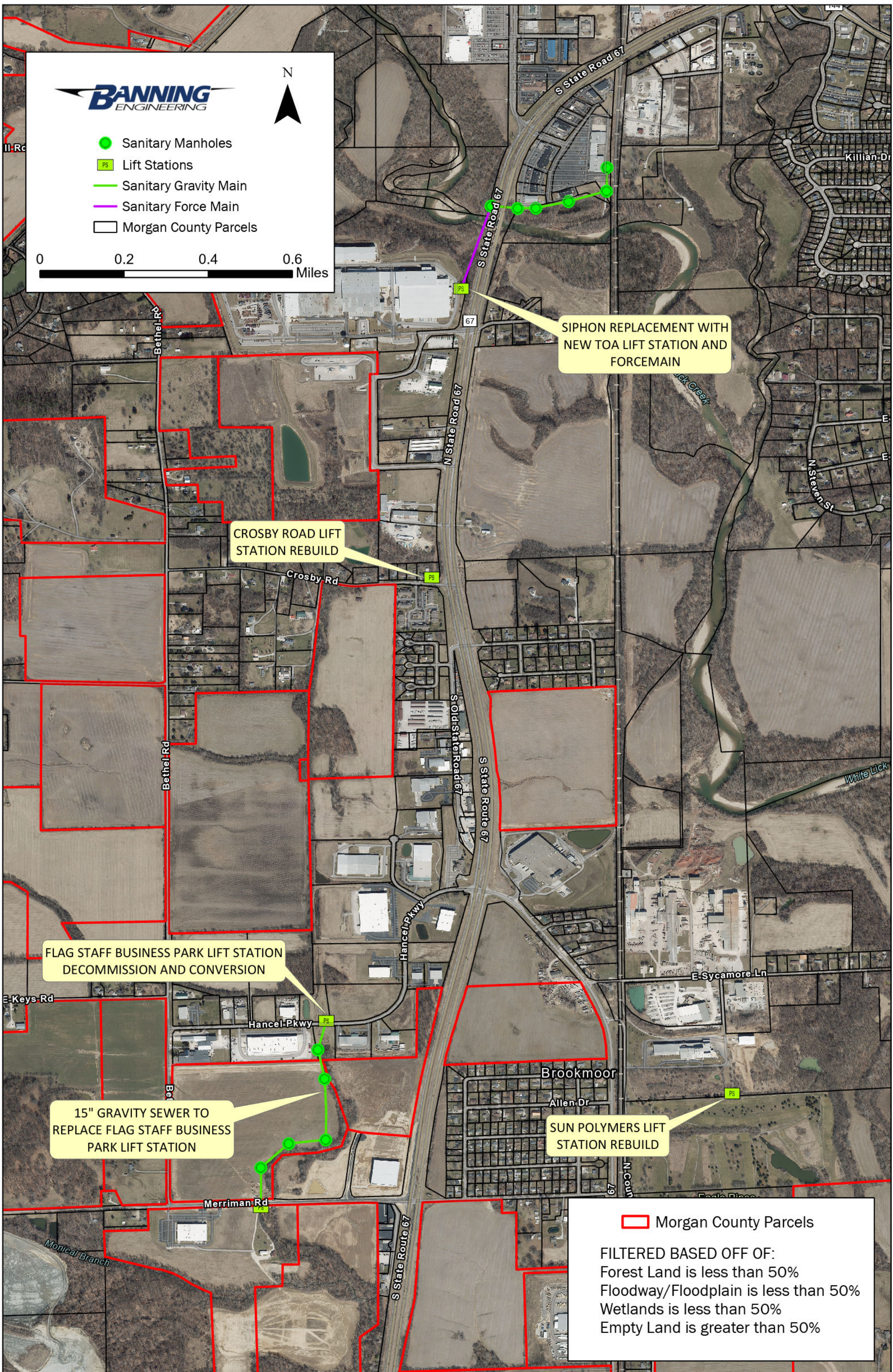


0 1,000 2,000 4,000 US Feet



**BANNING**  
ENGINEERING

Figure 9 - Mooresville Southern Wastewater Improvements - Phase 2



**BANNING ENGINEERING**

● Sanitary Manholes  
PS Lift Stations  
— Sanitary Gravity Main  
— Sanitary Force Main  
 Morgan County Parcels

0 0.2 0.4 0.6 Miles

SIPHON REPLACEMENT WITH NEW TOA LIFT STATION AND FORCEMAIN

CROSBY ROAD LIFT STATION REBUILD

FLAG STAFF BUSINESS PARK LIFT STATION DECOMMISSION AND CONVERSION

15" GRAVITY SEWER TO REPLACE FLAG STAFF BUSINESS PARK LIFT STATION

SUN POLYMERS LIFT STATION REBUILD

Morgan County Parcels

FILTERED BASED OFF OF:  
 Forest Land is less than 50%  
 Floodway/Floodplain is less than 50%  
 Wetlands is less than 50%  
 Empty Land is greater than 50%



Figure 10 - SR 44 Lift Station

