BLACKBERRY CREEK
TAX INCREMENT FINANCING DISTRICT

Redevelopment Plan & Program

Village of Montgomery

Approved by Village Board on June 12, 2023
by Ordinances 2015, 2016 and 2017

BLACKBERRY CREEK
TAX INCREMENT FINANCING REDEVELOPMENT PROJECT AREA
REDEVELOPMENT PLAN & PROGRAM

March 2023

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INTRODUCTION

This report documents the Tax Increment Redevelopment Plan and Program (the "Redevelopment Plan") for the Village of Montgomery Blackberry Creek Tax Increment Financing Redevelopment Project Area (the "Project Area"). The Redevelopment Plan has been prepared for use by the Village of Montgomery (the "Village") by Teska Associates, Inc. The proposed Redevelopment Plan seeks to respond to a number of deficiencies, challenges and needs within the Project Area, and is indicative of a strong commitment and desire on the part of the Village to improve and revitalize the Project Area. This document is intended to provide a framework for improvements and reinvestment within the Project Area over the next 23 years.

The Village's current comprehensive plan, which was adopted in 2014, encourages continued economic development within the Village, and highlights specific recommendations for the Project Area. The comprehensive plan identifies the Project Area as a "primary growth area" and encourages industrial growth and annexation, business attraction, and infrastructure improvements within the Village. The Project Area is anticipated to be developed primarily as industrial and commercial, and the comprehensive plan should be amended to remove recommendation for multi-family residential within the Project Area.

The Project Area includes a small Village owned parcel and large unincorporated undeveloped land on Baseline Road (IL Route 30) west of Orchard Road. The Project Area is currently in the process of being annexed into the Village of Montgomery, which must be completed prior to approval of this Redevelopment Plan. The Village has agreed to annexation and as part of the annexation process the Village will consider multi-family residential for part of the Project Area, however only if it is age-restricted senior housing.

The Project Area is subject to chronic flooding as documented in Appendix A – Eligibility Report. Due to the unique nature of this site, and the extraordinary challenges necessary to overcome the flooding issues for development, the Village is exploring Tax Increment Financing. To this end, the Village retained the planning consulting firm Teska Associates, Inc. to assist the Village in the creation of a new TIF redevelopment project area. Teska has conducted the necessary field surveys, site evaluations, and identified key redevelopment opportunities and necessary public improvements within the Project Area, and this Redevelopment Plan summarizes the analyses and findings of the consultant's work. The Village is entitled to rely on the findings and conclusions of this Redevelopment Plan in designating the Project Area as a "redevelopment project area" under the **State of Illinois Tax Increment Allocation Redevelopment Act, 65 ILCS 5/11-74.4-1 as amended**, the "Act". Teska has prepared this Redevelopment Plan and the related Eligibility Study with the understanding that the Village would rely on: (a) the findings and conclusions of the Redevelopment Plan and associated Eligibility Report in proceeding with the designation of the Project Area and the adoption and implementation of the Redevelopment Plan; and (b) the fact that Teska has obtained the necessary information so that the Redevelopment Plan and the related Eligibility Study will comply with the requirements of the Act.

Tax Increment Financing

Tax increment financing is permitted in Illinois under the "Tax Increment Allocation Redevelopment Act," as from time to time amended (**Chapter 65 ILCS 5/11-74.4-1, et seq.**) (the "Act"). Only areas which meet certain specifications outlined in the Act are eligible to use this financing mechanism. In addition to describing the redevelopment objectives, this Redevelopment Area Plan and Program report sets forth in general terms the overall program to be undertaken to achieve these objectives.

The Act permits municipalities to improve eligible "conservation" or "blighted" areas in accordance with an adopted Redevelopment Plan over a period not to exceed 23 years. The municipal cost of certain public improvements and programs can be repaid with the revenues generated by increased assessed values of private real estate within a designated project area. This use of revenues is only applied to the increase in equalized assessed valuation generated within the designated project area during the limited term of the Redevelopment Plan and Program, principally from new private development.

Aerial Location Map

REDEVELOPMENT PROJECT AREA DESCRIPTION

The boundaries of the Redevelopment Project Area were carefully established in adherence to the eligibility criteria and include only those parcels which would benefit by the proposed Redevelopment Plan and Program. The Study Area generally consists of undeveloped parcels on Baseline Road (IL Route 30) west of Orchard Road. The Study Area consists of four (4) parcels totaling approximately two-hundred and fifty-two (252) acres. Existing land uses within the Project Area are illustrated in "Figure B Existing Land Uses".

*Table 1: Existing Land Use **	
Existing Land Use	**Land Area (Acres)**
Vacant / Undeveloped	202
Floodplain	50
TOTAL	252

*Table 2: Existing Housing Units ***	
Type	**Units**
Single-Family	0
Multi-Family	0
TOTAL	0

** A large portion of the Project Area is currently unincorporated and should be annexed into the Village of Montgomery prior to designation as a TIF district.*

*** The intended relocation of ten (10) or more residential units, or the presence of seventy-five (75) or more residential units requires the preparation of a Housing Impact Study. Therefore, a Housing Impact Study is not required to be included in this report.*

FIGURE A – PROJECT AREA BOUNDARY MAP

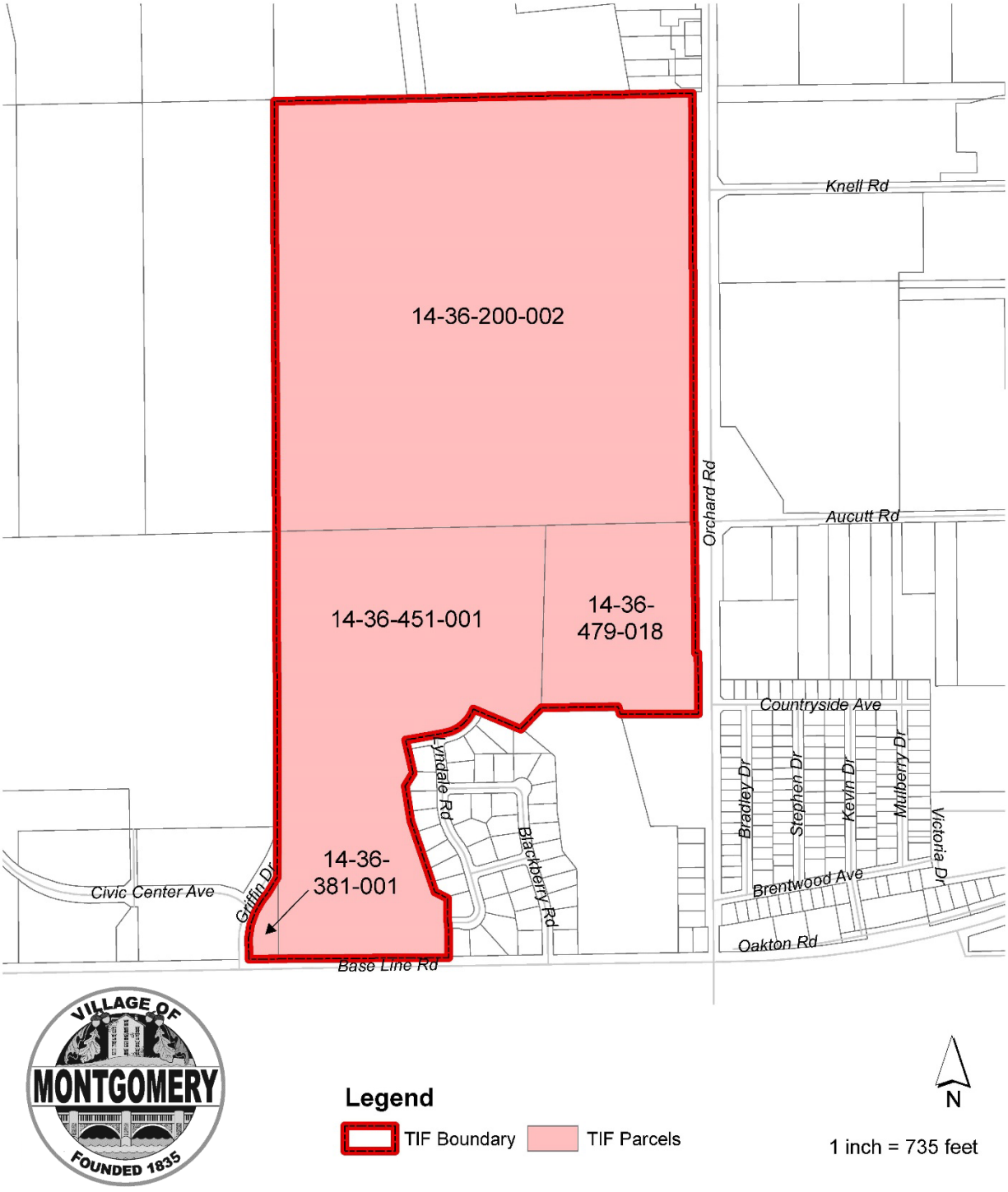


FIGURE B – EXISTING LAND USE

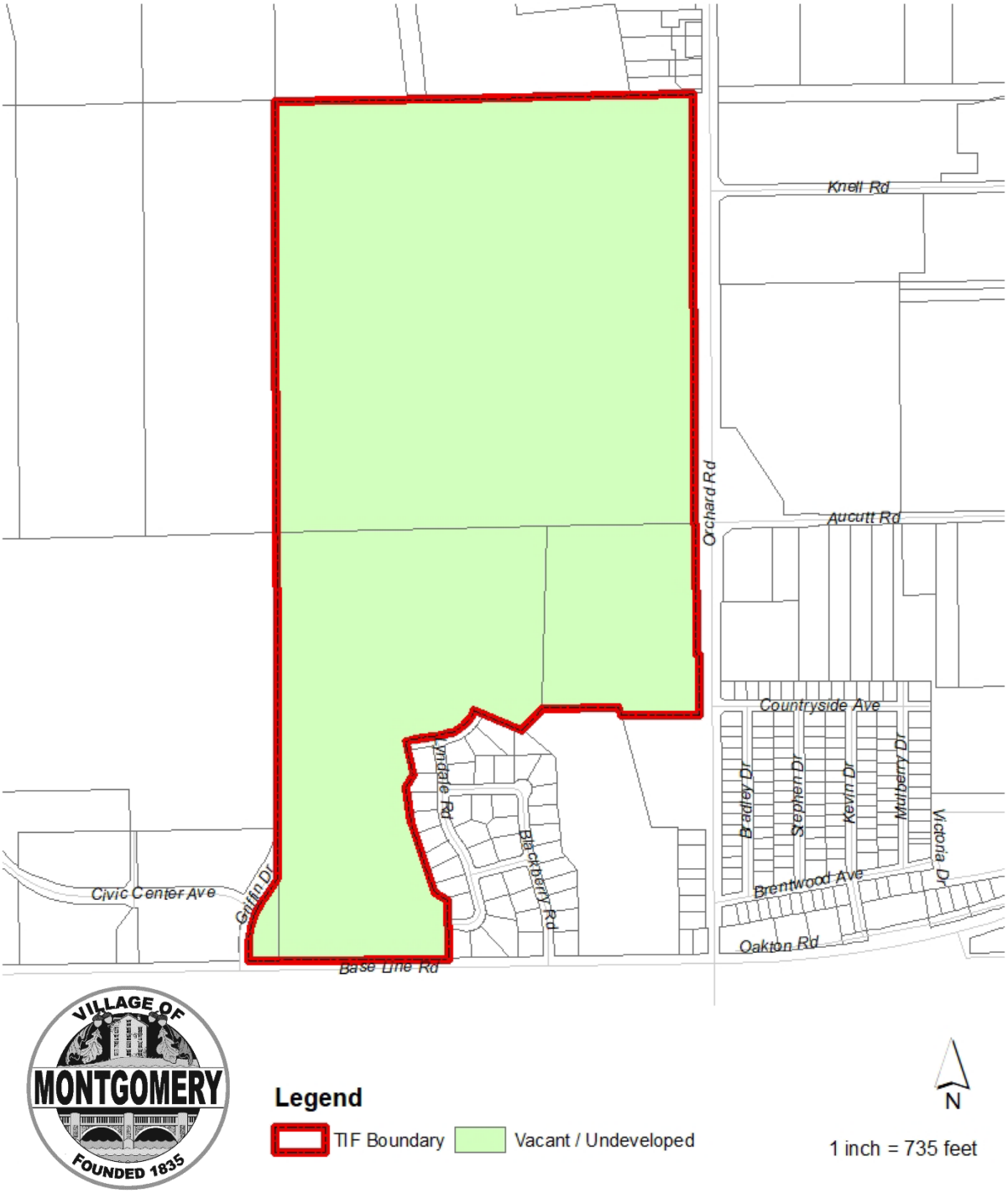
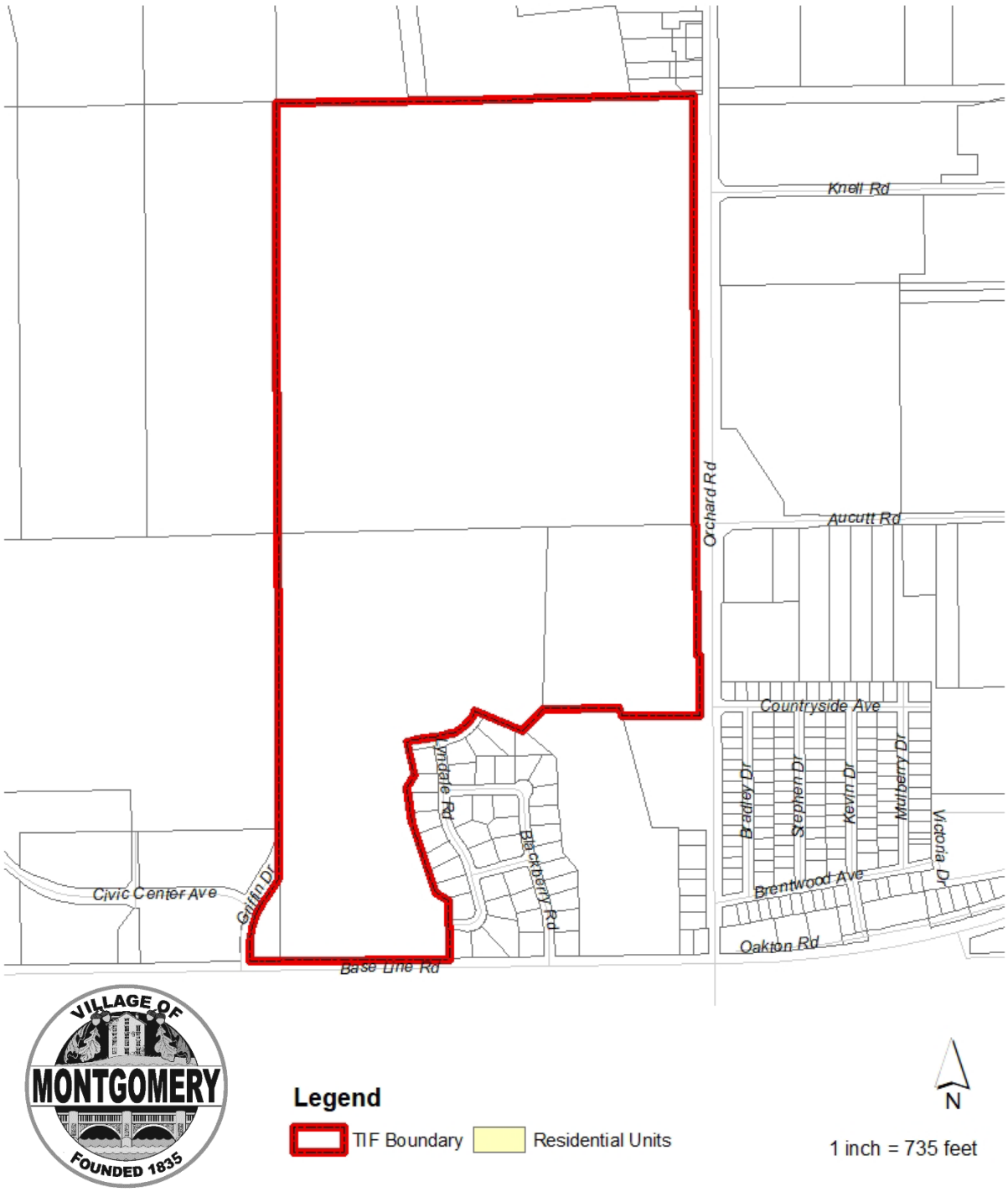


FIGURE C – EXISTING RESIDENTIAL UNITS



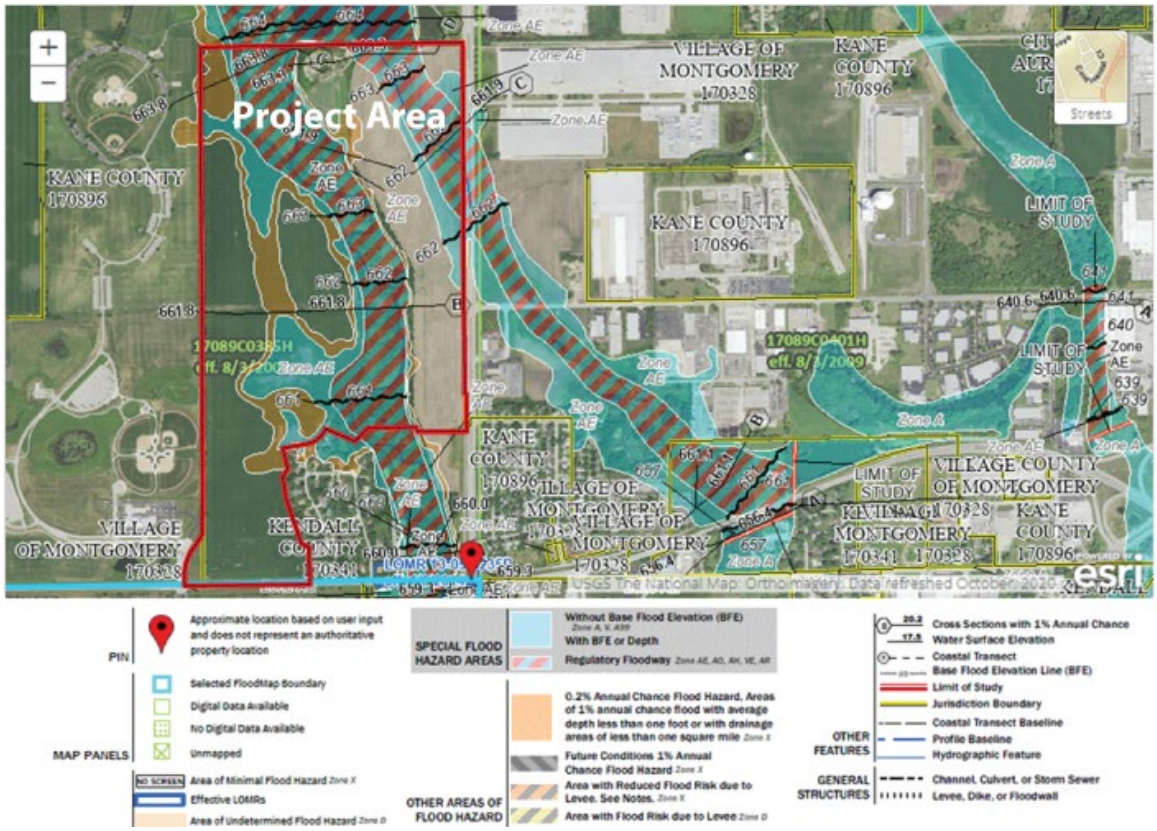
Summary of the Eligibility of the Proposed Project Area

In July of 2021, and then again in January of 2023, a study was undertaken, consistent with the Act and related procedural guidelines, to determine the eligibility of the Project Area. These "Eligibility Findings" indicate that the proposed Project Area meets the statutory requirements of a "blighted area" and is therefore eligible for designation as a "Tax Increment Finance Redevelopment Project Area."

As detailed in Appendix A – Tax Increment Financing Eligibility Report of this Redevelopment Plan, the Project Area meets the qualification for vacant land and is eligible for designation as a "blighted area" due to the predominance and extent of the following characteristics:

1. Chronic Flooding

Each of these factors contributes significantly to the eligibility of the Project Area as a "blighted area." These characteristics point towards the need for designation of the Project Area as a "blighted area" to be followed by public intervention in order that redevelopment might occur.



REDEVELOPMENT PLAN & PROGRAM

The revitalization of the Project Area presents challenges and opportunities for the Village of Montgomery. The success of this effort will depend upon cooperation between private investment and local government. Public and private development efforts have not yet been able to stimulate the comprehensive revitalization of the Project Area. The adoption of this Redevelopment Area Plan and Program will assist with the development of the Project Area, as well as implementation of the goals and objectives of the Village's Comprehensive Plan, which otherwise could not reasonably be anticipated to occur without the adoption of this Redevelopment Area Plan and Program. Through public investment, the area will become more attractive to private investment.

The Act describes the Redevelopment Plan as "*the comprehensive program of the municipality for development or redevelopment intended by the payment of redevelopment project costs to reduce or eliminate those conditions, the existence of which qualified the redevelopment project area as a blighted area or conservation area ..., and thereby serves to enhance the tax bases of the taxing districts which extend into the redevelopment project area.*"

The successful implementation of the Blackberry Creek Redevelopment Project Area Plan & Program requires that the Village take full advantage of the real estate tax increment attributed to the Project Area as provided for by the Act. The Project Area will not reasonably be developed and improved without the use of such incremental revenues.

Purpose of the Redevelopment Plan

Pursuant to the Act, the purpose of a Redevelopment Plan and Program is to promote the health, safety, morals, and welfare of the general public by:

< Eradicating blighting conditions and instituting conservation measures;

< Removing and alleviating adverse conditions by encouraging private investment of underutilized and vacant properties which will strengthen the economy, tax base, business environment, and living environment;

< Address documented 'chronic flooding' conditions that exist within the Project Area;

< Improving existing public utilities and infrastructure within the area; and

< Enhancing the overall quality of the business environment in the Village of Montgomery.

Redevelopment Plan Goals and Objectives

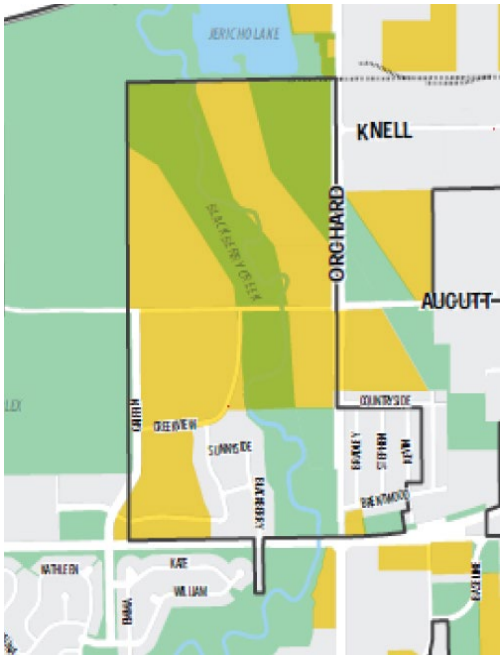
The aim of the Redevelopment Plan is the revitalization of the Project Area as a strong and attractive commercial and industrial development, which will contribute to the health and vitality of the Village of Montgomery. The goals and objectives of the Redevelopment Plan include those articulated in the Act, and those stated in the Village of Montgomery Comprehensive Plan. The goals and objectives outlined in the Comprehensive Plan which relate to this Redevelopment Plan are summarized below:

"Promote the expansion and development of industrial areas and business parks as presented in the Land Use Plan." (page 35)

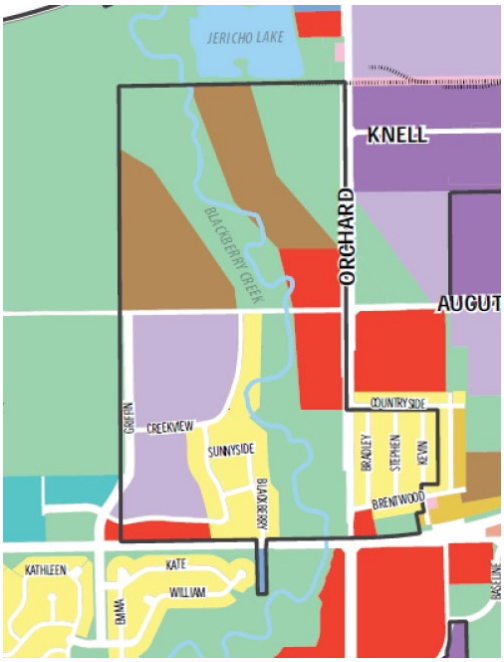
"Work with the MEDC to create and market competitive "packages" of incentives, grants, infrastructure investments, and credits to prospective businesses." (page 35)

The Comprehensive Plan designates the Project Area as a "primary growth area" and future land use as a combination of "light industrial"and "heavy industrial" and "general commercial" and "multi-family residential" on the Future Land Use Map. (page 43)

Future development within the Project Area is anticipated to be industrial and commercial in nature, however certain areas within the Project Area may be developed as residential consistent with the comprehensive plan. Any future residential will be limited to age-restricted senior housing.



Comprehensive Plan Growth Areas



Comprehensive Plan Future Land Use

FIGURE D – FUTURE LAND USE

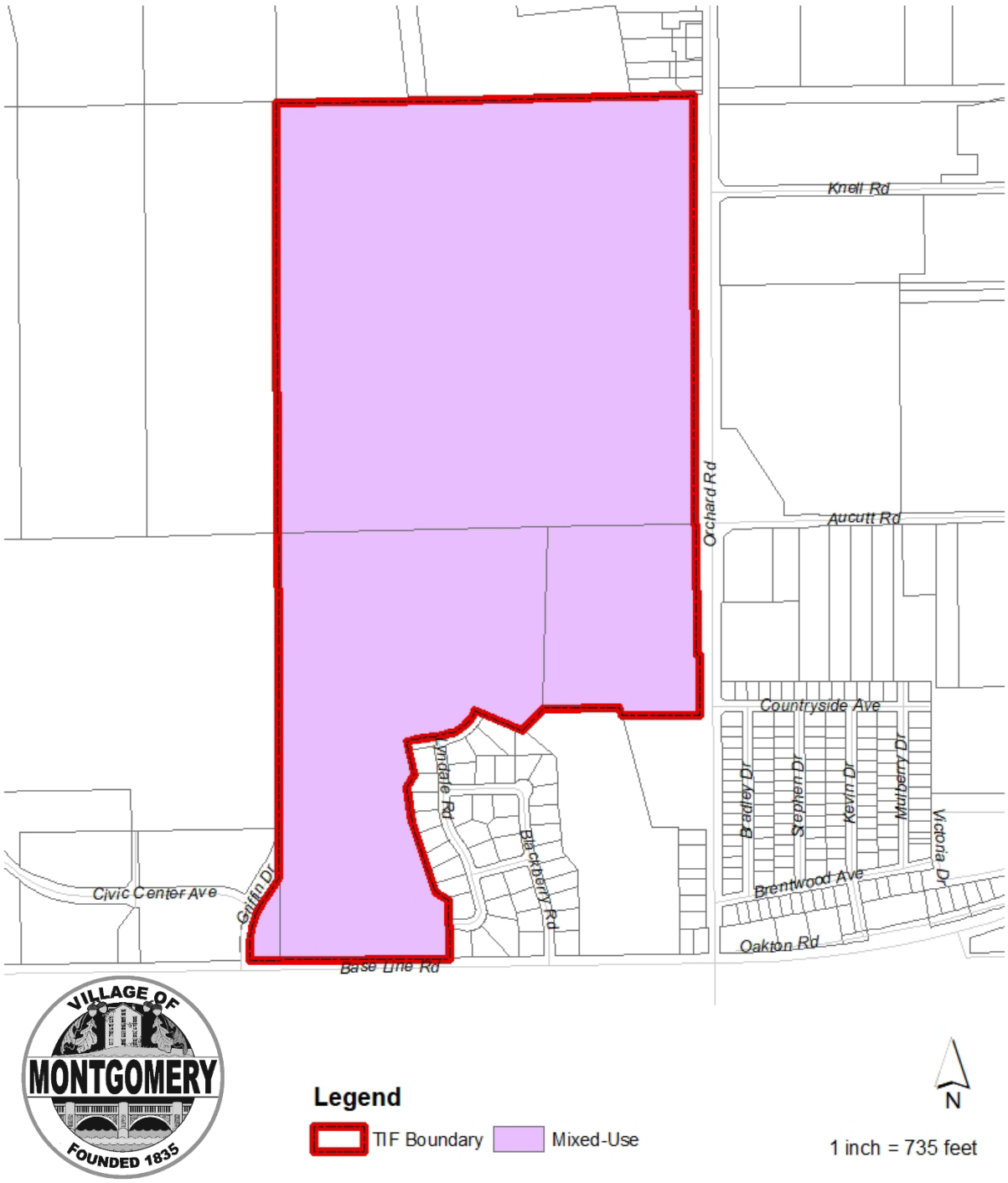
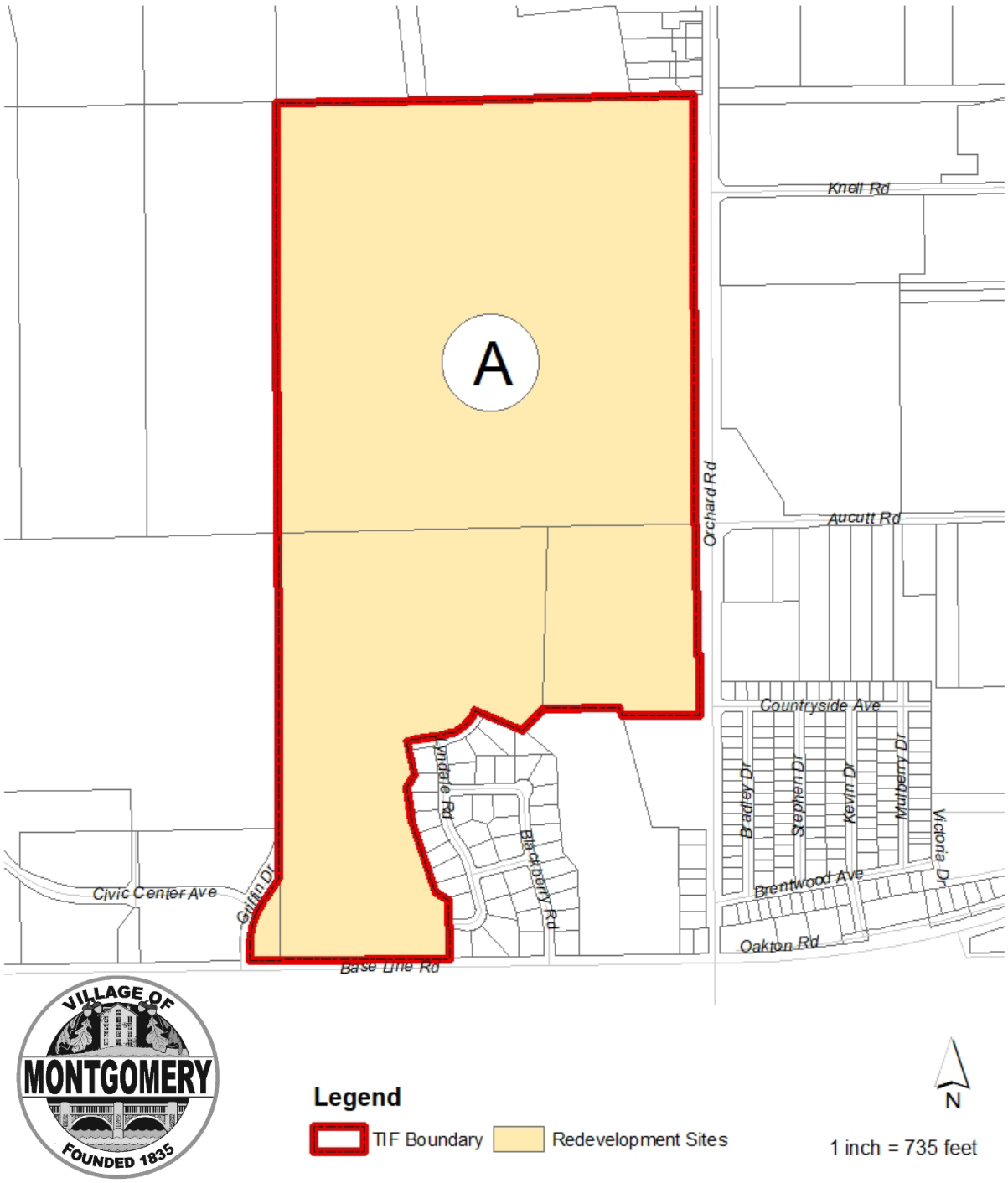


FIGURE E – REDEVELOPMENT SITES

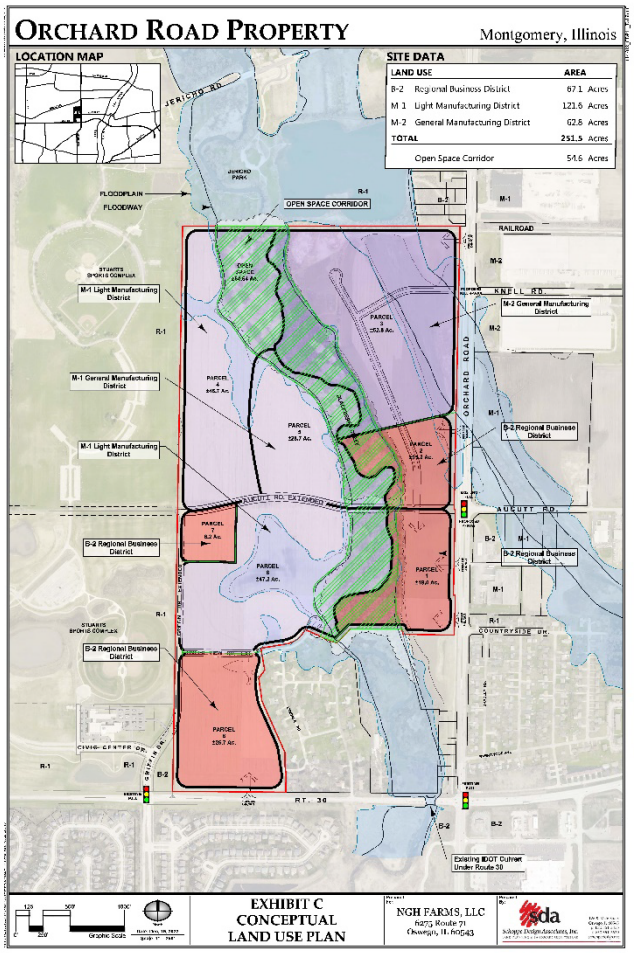


Future Land Use Plan

The recommended land uses, redevelopment opportunities, and public improvements of this Redevelopment Plan are based upon the guidelines and development opportunities presented in the Village of Montgomery Comprehensive Plan.

The intent of the Future Land Use Plan is to provide a long-range guide for determining the uses to which the land should eventually be put, and to direct subsequent zoning decisions as redevelopment occurs within the Project Area. The designation of an existing use as a redevelopment site is not intended to suggest any immediate requirement for redevelopment. Rather, these sites are identified as a way of planning for their future redevelopment only if and when a property owner pursues a development project, or an existing business or resident vacates a property.

The Future Land Use Plan (Figure D) shows anticipated land uses at completion of project activities. The Project Area is anticipated to be rehabilitated/redeveloped as industrial and commercial. General land use descriptions are as follows:



Mixed-Use

The mixed-use category includes both industrial and commercial uses. Industrial uses are anticipated to be both light industrial consistent with the M-1 Light Industrial District, and heavy industrial consistent with the M-2 General Manufacturing District. Commercial uses include those uses as permitted in the B-2 Regional Business District, as outlined in the Village of Montgomery Unified Development Ordinance. Ancillary uses to the primary industrial and commercial uses, including parking and open space, are also permitted.

Specific anticipated land use areas and locations are identified on the Orchard Road Property Conceptual Land Use Plan, as prepared by Schoppe Design Associates, Inc. and dated December 19, 2022. However, this concept plan is not finalized and is subject to change prior to approval. Certain areas within the Project Area may be developed as residential but limited to age-restricted senior housing.

Redevelopment Opportunity Sites

The entire Project Area (excluding the approximately 50 acres of floodway) is a redevelopment opportunity site, as identified in (Figure E - Redevelopment Sites). Recommendations for this site, including land uses, design guidelines, and conceptual site designs, are derived from the Village's Comprehensive Plan, the Orchard Road Property Conceptual Land Use Plan, and discussions with Village staff and officials.

Table 3 indicates the potential future opportunity sites, existing land uses, and potential future land uses. Although the first use is shown on the Future Land Use Plan described in the previous section, any land use described in Table 3 is appropriate and within the intent of this Redevelopment Plan.

This Redevelopment Plan serves as a guideline for the Project Area but is not intended to establish specific requirements. Adjustments may be made in response to market conditions and other key factors as long as they remain faithful to the Village's overall goals and objectives for the Project Area, and for the IL Route 30 corridor in general. Therefore, this Redevelopment Plan is consistent with the Village's Comprehensive Plan and is intended to be a key vehicle for implementing that plan.

Table 3: Redevelopment Opportunity Sites

Site	Approx. Area (Acres)	Existing Land Use	Future Land Use
A	252	Vacant / Undeveloped	Mixed-Use (Industrial and Commercial)
Total	252*		

** Includes roughly 50 acres of undevelopable floodway*

The Village may determine that other redevelopment opportunities, when consistent with the land use designations on the Future Land Use Plan, are within the intent of this Redevelopment Plan.

As indicated by Figure D – Future Land Use, the Project Area parcels are planned for a mixture of industrial and commercial uses. In addition to these opportunity sites, the Redevelopment Plan also anticipates activities that may be undertaken by the public sector, which are identified in the Public Improvements section of this report. All of these future redevelopment opportunities and public improvements should be conducted with the guidance of the Village's Comprehensive Plan.

Undertaking these redevelopment activities will generate increased tax revenues, encourage ancillary commercial opportunities, upgrade public improvements such as roadways, parking areas, sidewalks, etc., and provide a stimulus for additional development in surrounding areas. Through these improvements, the character and economic viability of the Route 30 and Orchard Road corridors will be improved over time.

Eligible Project Costs

Redevelopment project costs mean and include the sum total of all reasonable or necessary costs incurred or estimated to be incurred, and any such costs incidental to the Redevelopment Plan and Program. As provided by the Act, other eligible project costs may include, without limitation, the following:

< Costs of studies, surveys, development of plans, and specifications, implementation and administration of the Redevelopment Plan including but not limited to staff and professional service costs for architectural, engineering, legal, financial, planning or other services;

< The cost of marketing sites within the Project Area to prospective businesses, developers, and investors;

< Property assembly costs including, but not limited to, acquisition of land and other property, real or personal, or rights or interests therein, demolition of buildings, site preparation and site improvements that serve as an engineered barrier addressing ground level or below ground environmental contamination, including, but not limited to parking lots and other concrete or asphalt barriers, and the clearing and grading of land;

< Costs of rehabilitation, reconstruction, repair, or remodeling of existing public or private buildings, fixtures, and leasehold improvements; and the cost of replacing an existing public building if pursuant to the implementation of a redevelopment project the existing public building is to be demolished to use the site for private investment or devoted to a different use requiring private investment;

< Costs of the construction of public works or improvements;

< Costs of job training and retraining projects, including the cost of "welfare to work" programs implemented by businesses located within the Project Area, and costs of advanced vocational education or career education, including but not limited to courses in occupational, semi-technical or technical fields leading directly to employment, incurred by one or more taxing districts, as provided in the Act;

< Financing costs, including but not limited to, all necessary and incidental expenses related to the issuance of obligations and which may include payment of interest on any obligations issued under the Act accruing during the estimated period of construction of any redevelopment project for which such obligations are issued, and not exceeding 36 months thereafter and including reasonable reserves related thereto;

< To the extent the Village by written agreement accepts and approves the same, all or a portion of a taxing district's capital costs resulting from the Redevelopment Project necessarily incurred or to be incurred within a taxing district in furtherance of the objectives of the Redevelopment Plan;

< To the extent the Village by written agreement accepts and approves the same, an elementary, secondary, or unit school district's increased costs attributable to assisted housing units as provided in the Act;

< Relocation costs to the extent that the Village determines that relocation costs shall be paid or is required to make payment of relocation costs by Federal or State law;

< Interest cost incurred by a redeveloper related to the construction, renovation or rehabilitation of a redevelopment project, as provided by the Act.

Public Improvements

The Village of Montgomery may provide public improvements in the Project Area to stimulate development and redevelopment in a manner consistent with this Redevelopment Plan. Some public improvements may be provided in partnership with the Illinois Department of Transportation, or other governmental agencies as applicable. Public improvements may include, but are not limited to, the following:

< Vacation, removal, resurfacing, widening, reconstruction, and other improvements to rights-of-way, streets, alleys, bridges, pedestrian ways, and pathways.

< Improvement of public utilities such as sewer and water lines, electric lines, sidewalks, curbs and gutters, storm water detention facilities. Such improvement may include relocation and/or burial of existing overhead lines.

< Beautification and safety improvements, including streetscape improvements, lighting, etc.

Public improvement activities which are planned as part of this Redevelopment Plan are based upon recommendations contained in the Comprehensive Plan and through meetings and conversations with the Village staff. A summary of recommended public improvements includes the following:

1. Bridge construction. Intersection improvements at Orchard Road and Aucutt Road. Griffin Road and Aucutt Road Extension.
2. Bike path Construction.
3. Wetland mitigation.
4. Sanitary sewer and miscellaneous utility extensions (ComEd, etc.).
5. New well and water main. Water main crossing of Orchard Road.

The costs associated with the public improvements described in this Redevelopment Plan may be shared by the Village of Montgomery, other governmental agencies, and individual developers and property owners, pursuant to an agreement between the parties. The Village may determine in the future that certain listed improvements are no longer needed or appropriate and may remove them from the list or may add new improvements to the list which are consistent with the objectives of this Redevelopment Plan. Such additions shall not require plan amendment provided they are for eligible public improvements and will not require an increase to the total estimated project costs in Table 4.

Phasing of Project

Redevelopment projects anticipated in this Plan may commence immediately. Most of the development and redevelopment projects are anticipated to be completed within twenty-three (23) years. The Village may undertake additional public improvements or development projects as appropriate throughout the life of the Redevelopment Plan and Program.

Project Area view looking north from Baseline Road (IL Route 30)

Project Area view looking west from Aucutt Road

Estimated Project Costs

Estimated public project costs are listed in Table 4. These costs are based on 2022 dollars and are therefore subject to inflation. Increases in estimated Total Redevelopment Project Costs of more than five percent (5%), after adjustment for inflation from the date of the Redevelopment Plan adoption, are subject to amendment procedures as provided under the Act.

Table 4: Estimated Redevelopment Project Costs	
Category	Cost
Property Assembly including Acquisition, Site Preparation and Demolition, Environmental Remediation	$2,500,000
Environmental, market and planning studies, surveys, development of engineering and architectural plans, specifications, implementation and administration fees	$5,000,000
Rehabilitation, reconstruction, repair, or remodeling of existing public or private buildings and fixtures	$500,000
Construction or improvement of public improvements [(1)]	$30,000,000
Job training/retraining and relocation costs	$500,000
Developer Interest Costs, taxing districts eligible reimbursement and capital costs	$1,000,000
Total Estimated Project Costs [(2) (3)]	$39,500,000

(1) Public improvements may also include capital costs of taxing districts and other costs allowable under the Act. Specifically, public improvements as identified in the Redevelopment Plan and as allowable under the Act may be made to property and facilities owned or operated by the Village or other public entities. As provided in the Act, Redevelopment Project Costs may include, to the extent the Village by written agreement accepts and approves the same, all or a portion of a taxing district's capital costs resulting from the redevelopment project necessarily incurred or to be incurred within a taxing district in furtherance of the objectives of the Redevelopment Plan.

(2) Actual costs for each category identified above may vary provided that the total estimated project costs may not be exceeded by more than 5%, after adjustment for inflation, without amendment to this Redevelopment Plan.

(3) This table does not include costs associated with the issuance of municipal obligations, capitalized interest, reimbursement for a portion of privately issued obligations, financing costs during construction (not to exceed 36 months), or other eligible project costs. Such additional costs may or may not be incurred and cannot be estimated at this time.

Sources of Funds

The Act provides a way for municipalities to finance public redevelopment costs with incremental real estate tax revenues. Incremental tax revenue is derived from the increase in the current equalized assessed valuation (EAV) of real property within the Project Area over and above the certified initial EAV of the real property. Any increase in EAV is then multiplied by the current tax rate, resulting in the tax increment revenue.

Funds necessary to pay redevelopment project costs may be derived from a number of authorized sources. These may include, but are not limited to, the following:

< Real property tax increment revenues from the Project Area;

< Tax revenues resulting from the establishment of any Special Service Area districts within the Project Area;

< Interest earned on temporary investments;

< Gifts, grants, and contributions;

< Sale or lease of land proceeds;

< Transfer from a contiguous redevelopment project area created under the Act.

The principal source of funds to undertake redevelopment activities will be the incremental increase in real property taxes attributable to the increase in the equalized assessed value of each taxable lot, block, tract or parcel of real property in the Project Area over the initial equalized assessed value of each such lot, block, tract or parcel. There may also be other eligible local sources of revenue, such as the sale or lease of Village owned property, that the Village determines are appropriate to allocate to the payment of redevelopment project costs.

The Village may utilize net incremental property taxes received from the Project Area to pay eligible Redevelopment Project Costs, or obligations issued to pay such costs, in other contiguous redevelopment project areas, or those obligations issued to pay such costs, in other contiguous redevelopment project areas, or those separated only by a public right-of-way, and vice versa. The amount of revenue from the Project Area, made available to support such contiguous redevelopment project areas, or those separated only by a public right-of-way, when added to all amounts used to pay eligible Redevelopment Project Costs with the Project Area, shall not at any time exceed the total Redevelopment Project Costs described in the Plan.

Nature and Term of Obligations to be Issued

The financial plan of this Redevelopment Plan is intended to establish a conservative public expenditure approach. Revenues will be accumulated in the special tax allocation fund to pay for public purpose expenditures identified in this Redevelopment Plan, and whenever practical, expenditures will be made on a cash basis. This method of financing shall not preclude the Village from undertaking initiatives designed to stimulate appropriate private investment within the Project Area.

Certain redevelopment projects may be of such a scale or on such a timetable as to preclude financing on a cash basis. These projects may be funded by the use of tax increment revenue obligations issued pursuant to the Act for a term not to exceed twenty (20) years. Consistent with the conservative nature of the financial plan for this Redevelopment Program, the highest priority for the issuance of tax increment revenue obligations shall occur when the commitment is in place for private sector investment necessary to fund the amortization of such obligations.

All obligations are to be covered after issuance by projected and actual tax increment revenues and by such debt service reserved and sinking funds as may be provided by ordinance. Revenues not required for the retirement of obligations providing for reserves, sinking funds, and anticipated redevelopment project costs may be declared surplus and become available for distribution annually to the taxing districts within the Project Area.

One or more issues of obligations may be sold at one or more times in order to implement this plan, as now or hereafter amended, in accordance with law.

Initial Equalized Assessed Valuation

Table 5 lists the equalized assessed valuation of properties in the Project Area. The total 2022 equalized assessed valuation of the Project Area is **$124,157**.

PIN	VALUE
14-36-200-002	$75,165
14-36-451-001	$42,274
14-36-381-001	$0
14-36-479-018	$6,718
TOTAL	**$124,157**

Table 5: Project Area Equalized Assessed Valuation

Anticipated Equalized Assessed Valuation

Upon the completion of anticipated redevelopment projects, it is estimated that the equalized assessed valuation of real property within the Project Area will be approximately **$31,337,582**. This figure is based upon estimates of value for the anticipated redevelopment projects described in this report.

Payment in Lieu of Taxes

No payments in lieu of taxes are anticipated as part of the Redevelopment Plan and Program.

Provision for Amending the Redevelopment Plan and Program

The Redevelopment Plan and Program may be amended pursuant to provisions of the Act.

Commitment to Fair Employment Practices and an Affirmative Action Plan

The Village is committed to and will affirmatively implement the assurance of equal opportunity in all personnel and employment actions with respect to this Redevelopment Plan. This includes, but is not limited to: hiring, training, transfer, promotion, discipline, fringe benefits, salary, employment working conditions, termination, etc. without regard to any non-merit factor, including race, national origin, color, religion, sex, sexual orientation, gender identity, disability (physical or mental), age, marital status, status as a parent, or genetic information.

In order to implement this principle for this Redevelopment Plan, the Village shall require and promote equal employment practices and affirmative action on the part of itself and its contractors and vendors. In particular, parties engaged by the Village shall be required to agree to the principles set forth in this section.

FINANCIAL IMPACT OF REDEVELOPMENT

Without the adoption of the Redevelopment Plan and Program, development and redevelopment projects within the Project Area are not reasonably expected to be undertaken by private enterprise. In the absence of Village-sponsored redevelopment, there is a prospect that blighting factors will continue to exist and spread, and the Project Area on the whole, as well as adjacent properties, will become less attractive for the maintenance and improvement of existing buildings and sites. Erosion of the assessed valuation of property in the Project Area has already occurred and could lead to further reductions of real estate tax revenue to all taxing districts.

Implementation of the Redevelopment Plan and Program is expected to have significant short and long term positive financial impacts on the taxing districts affected by this Redevelopment Plan. In the short term, the Village's effective use of tax increment financing can be expected to arrest the ongoing decline of existing assessed values in the Project Area, thereby stabilizing the existing tax base for local taxing agencies. In the long term, after the completion of all redevelopment improvements and activities, and the payment of all redevelopment project costs and municipal obligations, the taxing districts will benefit from the enhanced tax base which results from the increase in equalized assessed valuation caused by the Redevelopment Plan and Program.

The following taxing districts cover the proposed Project Area:

1. Village of Montgomery
2. Kane County
3. Kane County Forest Preserve
4. Sugar Grove Township/Road District/Water Authority/Community Building
5. Kaneland C.U.S.D. 302
6. Waubonsee College 516
7. Sugar Grove Fire Protection District
8. Sugar Grove Park District
9. Sugar Gove Library District
10. Fox Metro Water Reclamation District

This Redevelopment Plan contemplates redevelopment of specific opportunity sites with industrial and commercial uses. Given the small size of the study area (covering roughly 252 acres), impact on individual taxing districts, and taxing districts in general, will be limited. However, actual impacts on individual districts will be dependent on the specific nature of any future (re)developments within the Project Area.

Impact of the Village of Montgomery

The Village of Montgomery provides a variety of services, including police protection, snow removal, road maintenance, water service, and building and zoning services. The annexation of undeveloped property with new mixed-use development will have an impact on demand for the services and programs provided by the Village. As provided in the Act, a portion of Redevelopment Project Costs may be allocated toward capital costs incurred by the Village which are made necessary by development as described in this Redevelopment Plan. The public improvements section of this plan highlights some of these anticipated capital costs.

Impact on Kane County

Kane County provides a variety of services, including the County Court system, health services and maintenance of open space and recreational activities. The replacement of underutilized property within the County with new development that is annexed into the Village of Montgomery will lessen the demand for the services and programs provided by the County. Due to the small size of the Project Area in relation to the County at large, services provided to County residents should not be affected, and the impact is anticipated to be minimal. Therefore, no specific program is set forth in this Redevelopment Plan.

Impact on Kane County Forest Preserve

The Kane County Forest Preserve District manages natural areas, open spaces, and provides educational and recreational opportunities for residents of Kane County. The replacement of underutilized property with new industrial and commercial development should have minimal impact on demand for the services and programs provided by the forest preserve. Therefore, no specific program is set forth in this Redevelopment Plan.

Impact on Sugar Township / Road District / Water Authority / Community Building

Sugar Grove Township provides a variety of services, including the Township Assessor road maintenance, water service to unincorporated areas, and the Community Building. The replacement of underutilized property with new industrial and commercial development should have minimal impact on the demand for the services and programs provided by the Township. Future senior housing residents may generate a minimal increase in demand for township services, but due to the small size of the Project Area in relation to the Township at large, services provided to residents should not be affected, and any impact is anticipated to be minimal. The annexation of the Project Area will benefit the district by allowing for connection to the unincorporated residential subdivision to provide them with access to signalized intersections (Griffin/Rt. 30 or Orchard/Aucutt). No specific program is set forth in this Redevelopment Plan.

Impact on Kaneland C.U.S.D. 302

Kaneland Community Unit School District 308 provides elementary through high school services to the residents of Aurora, Cortland, Elburn, Kaneville, Maple Park, Montgomery, North Aurora, Sugar Grove and Virgil. The replacement of underutilized property with new industrial and commercial development should have no impact on the demand for the services and programs provided by the school district, aside from potential programs such as training programs to serve new businesses and educational services for new employees in which training the Act provides for reimbursement of costs incurred by the district to provide such training. Future residential development may be permitted but would be limited to age-restricted senior housing, and no additional students are expected to be generated. Therefore, any impact is anticipated to be minimal given the industrial and commercial nature of anticipated future development, and the small size of the Project Area in comparison to the size of the district. Therefore, no specific program is set forth in this Redevelopment Plan.

Impact on Waubonsee College 516

Waubonsee Community College has campuses in Sugar Grove, Aurora, and Plano. The college offers educational and community programs for residents of the district. The replacement of underutilized property with new industrial and commercial development may cause a small increase to demand for the services and programs provided by the college, including training programs to serve new businesses and educational services for new employees in which training the Act provides for reimbursement of costs incurred by the district to provide such training. However, any impact is anticipated to be minimal given the industrial and commercial nature of anticipated future development, and the small size of the Project Area in comparison to the size of the district. Therefore, no specific program is set forth in this Redevelopment Plan.

Impact on Sugar Grove Fire Protection District

The Sugar Grove Fire Protection District serves Sugar grove and surrounding areas. The replacement of underutilized property with new industrial and commercial development could result in an increase in the demand for the services and programs provided by the fire district resulting from new construction. However, any impact is expected to be limited due to the relatively small size of the Project Area in comparison to the size of the district. No specific program is set forth in this Redevelopment Plan.

Impact on Sugar Grove Park District

The Sugar Grove Park District maintains parks and provides services to the residents of Sugar Grove and surrounding areas. The replacement of underutilized property with new industrial and commercial development should have no impact on the demand for the services and programs provided by the park district. In addition, any potential future residential development will be limited to age-restricted senior housing. Therefore, no specific program is set forth in this Redevelopment Plan.

Impact on Sugar Grove Library District

The Sugar Grove Library District has one facility in Sugar Grove. The replacement of underutilized property with new industrial and commercial development should have no impact on demand for the services and programs provided by the library district. Any potential future residential development will also be limited to age-restricted senior housing. Therefore, no specific program is set forth in this Redevelopment Plan. In addition, the Act defines a clear formula for repayment of fees to the district for any documented increased demand for services directly generated by TIF supported projects. Therefore, no specific program is set forth in this Redevelopment Plan.

Impact on Fox Metro Water Reclamation District

The Fox Metro Water Reclamation District is a public utility responsible for the conveyance and treatment of wastewater in the region. The replacement of underutilized property with new industrial and commercial development should have minimal impact on demand for the services and programs provided by the district. Therefore, no specific program is set forth in this Redevelopment Plan.

FINDINGS OF NEED FOR TAX INCREMENT FINANCING

Based on the findings of this Redevelopment Plan and Program, the Village President and the Village Board of Montgomery, Illinois, adopt the following findings pursuant to **Section 11-74.4-3(n)** of the Act.

Project Area Not Subject to Growth

The Project Area on the whole has not been subject to growth and development through investment by private enterprise and would not reasonably be anticipated to be developed without adoption of this Redevelopment Plan. Substantial evidence supports this conclusion.

First, the Village finds that the Project Area on the whole has not been subject to growth and redevelopment through investment by private enterprise, based on the following evidence as outlined in the Eligibility Findings Report in Appendix A:

1. Chronic Flooding

Secondly, the Village finds that the Project Area would not reasonably be anticipated to be developed without adoption of this Redevelopment Plan. This conclusion is based upon the findings of this report and the Village of Montgomery Comprehensive Plan:

1. Extraordinary mitigation costs to alleviate existing chronic flooding conditions;
2. Proposed redevelopment sites indicate a financial gap without public resources, grants or other incentives to promote redevelopment;
3. The need for public – private partnerships to support future redevelopment; and
4. The need for future infrastructure improvements to support proposed development.

Therefore, the Village of Montgomery finds that the Project Area is not subject to appropriate growth and development and is not anticipated to be developed without adoption of this Redevelopment Plan.

Conformance with Comprehensive Plan

This Redevelopment Plan substantially conforms to and is based upon the recommendations of the Village of Montgomery Comprehensive Plan, including the goals and objectives therein, as well as future land uses and anticipated redevelopment activities.

Date of Completion

The Redevelopment Project shall be completed, and all obligations issued to finance redevelopment costs shall be retired, no later than December 31 of the year in which the payment to the municipal treasurer as provided in the Act is to be made with respect to ad valorem taxes levied in the twenty-third (23rd) calendar year following the year in which the ordinance approving this Project Area is adopted, or December 31, 2046.

Appendix A

BLACKBERRY CREEK
TAX INCREMENT REDEVELOPMENT PROJECT AREA
ELIGIBILITY REPORT

March 2023

Prepared by:
Teska Associates, Inc.

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EXHIBITS

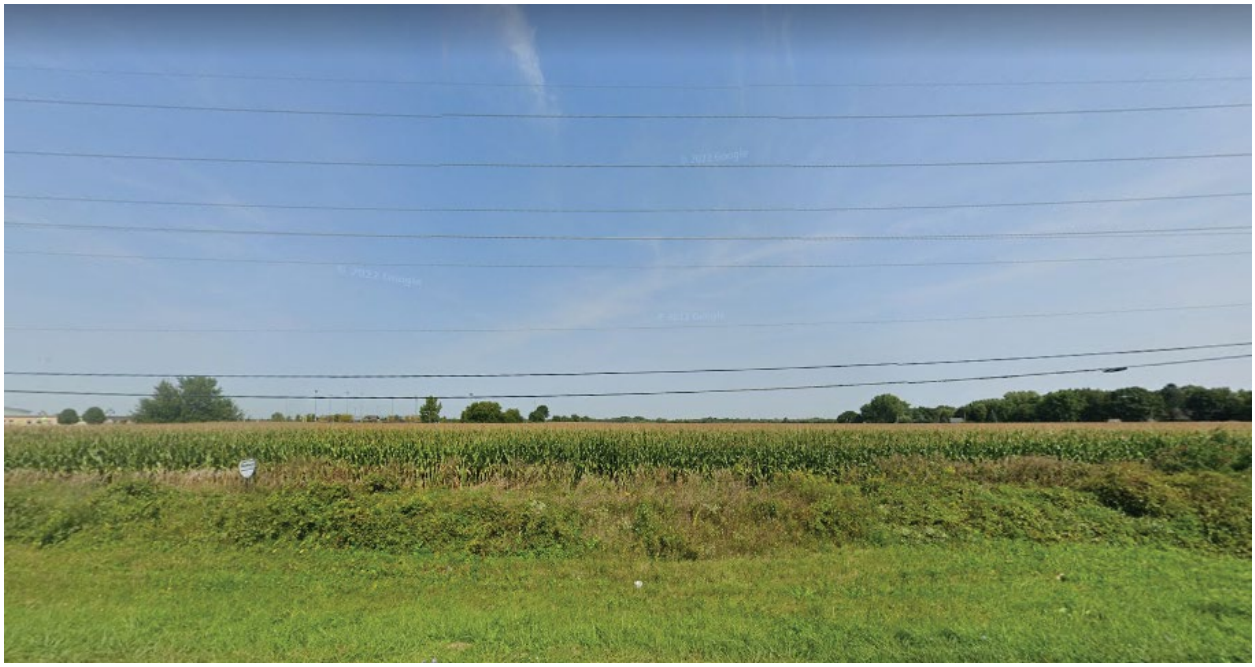
INTRODUCTION

In order to encourage redevelopment, the Village of Montgomery (the "Village") is investigating the creation of a Tax Increment Financing ("TIF") Redevelopment Project Area (the "Project Area") for property located at the northwest corner of IL Route 30 and Orchard Road and is located in unincorporated Kane County. The Act requires that all parcels located in a redevelopment project area are to be located within the Village Boundary, and so these parcels will need to be annexed into the Village of Montgomery prior to designation as a TIF district.

The purpose of this Eligibility Report is to document the eligibility criteria as required by the Tax Increment Allocation Redevelopment Act (65 ILCS 5/11 - 74.4 - 1, et seq.) as amended (the "Act"). The following analysis documents the presence of eligibility criteria necessary for designation as a TIF District, as required in the Act.

Tax Increment Financing can be used to make the designated Project Area more attractive for redevelopment by eliminating the conditions which inhibit private investment, weaken the Village's tax base, affect the safety of community residents, and hinder the Village's ability to promote cohesive development of compatible land uses as articulated in the Village's Comprehensive Plan. In accordance with the TIF Act, public improvements may be constructed, and incentives provided to encourage the type of private investment that will allow the Village to achieve its vision and goals.

Establishing the Blackberry Creek Redevelopment Project Area can help the Village to meet these goals by facilitating physical improvements, removing blighting conditions, and providing funding sources for improvement projects within the Project Area. These improvements will not only help improve the physical conditions and economic development of the Project Area, but also enhance the quality of life of adjacent properties and neighborhoods, and for all residents of the Village of Montgomery as a whole.



TAX INCREMENT FINANCING

The Act stipulates specific procedures, which must be adhered to in designating a Redevelopment Project Area, as well as amendments thereto. The following terms referenced in this Eligibility Report are defined in the Act as follows:

A "**Redevelopment Project Area**" is defined as:

"...an area designated by the municipality, which is not less in the aggregate than 1 ½ acres and in respect to which the municipality has made a finding that there exist conditions which cause the area to be classified as an industrial park conservation area, or a blighted area or a conservation area, or a combination of both blighted areas and conservation areas."

A "**Blighted Area**" is defined as:

"…any improved or vacant area within the boundaries of a redevelopment project area located within the territorial limits of the municipality where …

2. *If **vacant**, the sound growth of the redevelopment project area is impaired by a combination of 2 or more of the following factors, each of which is (i) present, with that presence documented, to a meaningful extent so that a municipality may reasonably find that the factor is clearly present within the intent of the Act and (ii) reasonably distributed throughout the vacant part of the redevelopment project area to which it pertains:*
    a. *Obsolete platting of vacant land that results in parcels of limited or narrow size or configurations of parcels of irregular size or shape that would be difficult to develop on a planned basis and in a manner compatible with contemporary standards and requirements, or platting that failed to create rights-of-ways for streets or alleys or that created inadequate right-of way widths for streets, alleys, or other public rights-of-way or that omitted easements for public utilities.*
    b. *Diversity of ownership of parcels of vacant land sufficient in number to retard or impede the ability to assemble the land for development.*
    c. *Tax and special assessment delinquencies exist or the property has been the subject of tax sales under the Property Tax Code within the last 5 years.*
    d. *Deterioration of structures or site improvements in neighboring areas adjacent to the vacant land.*
    e. *The area has incurred Illinois Environmental Protection Agency or United States Environmental Protection Agency remediation costs for, or a study conducted by an independent consultant recognized as having expertise in environmental remediation has determined a need for, the clean-up of hazardous waste, hazardous substances, or underground storage tanks required by State or federal law, provided that the remediation costs constitute a material impediment to the development or redevelopment of the redevelopment project area.*
    f. *The total equalized assessed value of the proposed redevelopment project area has declined for 3 of the last 5 calendar years prior to the year in which the redevelopment project area is designated or is increasing at an annual rate that is less than the balance of the municipality for 3 of the last 5 calendar years for which information is available or is increasing at an annual rate that is less than the Consumer Price Index for All Urban Consumers published by the United States Department of Labor or successor agency for 3 of the last 5 calendar years prior to the year in which the redevelopment project area is designated.*

3. *If **vacant**, the sound growth of the redevelopment project area is impaired by one of the following factors that (i) is present, with that presence documented, to a meaningful extent so that a municipality may reasonably find that the factor is clearly present within the intent of the Act and (ii) is reasonably distributed throughout the vacant part of the redevelopment project area to which it pertains:*
   a. *The area consists of one or more unused quarries, mines, or strip mine ponds.*
   b. *The area consists of unused rail yards, rail tracks, or railroad rights-of-way.*
   c. ***The area, prior to its designation, is subject to (i) chronic flooding that adversely impacts on real property in the area as certified by a registered professional engineer or appropriate regulatory agency or (ii) surface water that discharges from all or a part of the area and contributes to flooding within the same watershed, but only if the redevelopment project provides for facilities or improvements to contribute to the alleviation of all or part of the flooding.***
   d. *The area consists of an unused or illegal disposal site containing earth, stone, building debris, or similar materials that were removed from construction, demolition, excavation, or dredge sites. Prior to November 1, 1999, the area is not less than 50 nor more than 100 acres and 75% of which is vacant (notwithstanding that the area has been used for commercial agricultural purposes within 5 years prior to the designation of the redevelopment project area), and the area meets at least one of the factors itemized in paragraph (1) of this subsection, the area has been designated as a town or village center by ordinance or comprehensive plan adopted prior to January 1, 1982, and the area has not been developed for that designated purpose.*
   e. *The area qualified as a blighted improved area immediately prior to becoming vacant, unless there has been substantial private investment in the immediately surrounding area."*

This Eligibility Report summarizes the analyses and findings of the Village's planning consultant, Teska Associates, Inc. ("Teska"). Determination of eligibility of the proposed Project Area is based on a comparison of data gathered through field observations by Teska Associates, Inc., document and archival research, and information obtained from the Village of Montgomery and Kane County, Illinois against the eligibility criteria set forth in the Act.

Teska has prepared this report with the understanding that the Village would rely on:

1. The findings and conclusions of this report in proceeding with the designation of the Project Area as a Redevelopment Project Area under the requirements of the Act; and
2. The fact that Teska has obtained the necessary information to conclude that the Project Area can be designated as a Redevelopment Project Area in compliance with the Act.

The Blackberry Creek Study Area is eligible for designation as a Tax Increment Financing District based on the predominance and extent of parcels exhibiting the following primary characteristics:

1. Chronic Flooding

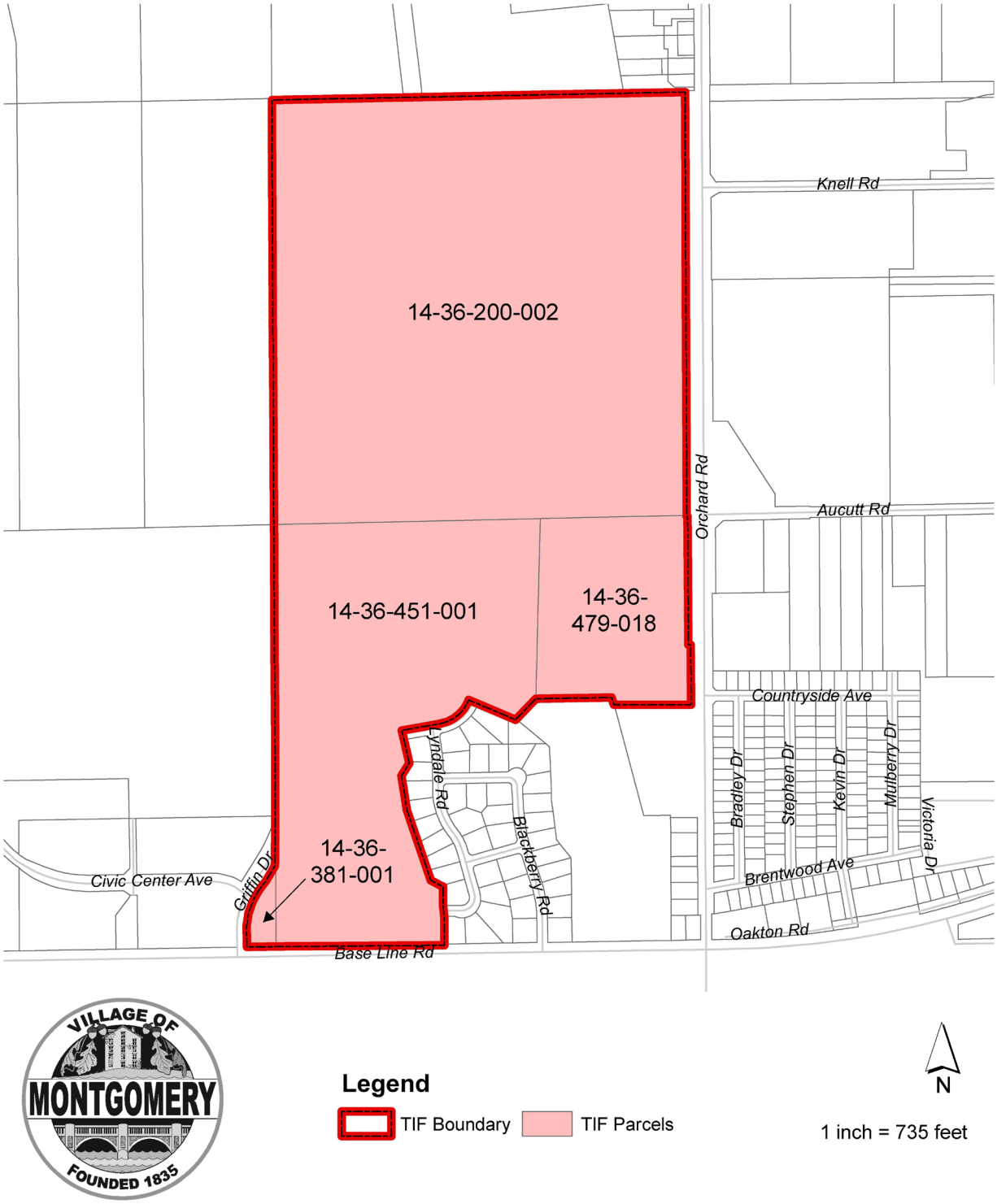
Each of these factors contributes significantly towards the eligibility of the Project Area as a whole.

DESCRIPTION OF THE PROJECT AREA

The Project Area generally consists of unimproved property located at the northwest corner of IL Route 30 and Orchard Road. The Project Area includes four (4) parcels and no structures. The total area of the Project Area is approximately two-hundred and fifty-two (252) acres, more or less. “Exhibit 1” illustrates the exact boundaries of the Project Area.

Aerial Location Map

FIGURE 1 - PROJECT AREA BOUNDARY MAP



PROJECT AREA CLASSIFICATION

Teska conducted a field survey of every property located within the Project Area. Based on an inspection of the exteriors of buildings and grounds, field notes were taken to record the condition for each parcel. This survey occurred in October 2021 and again in January 2023. Photographs further document the observed conditions. Field observations were supplemented with information provided by Village of Montgomery and Kane County officials.

There are two sets of eligibility criteria for unimproved parcels to be designated as a 'blighted area.' A combination of one (1) or two (2) blighting factors outlined in the Act must be present to a meaningful extent and reasonably distributed throughout the Project Area.

Vacant Land

Unimproved (vacant) land is defined in the Act as follows:

As used in subsection (a) of Section 11-74.4-3 of this Act, "vacant land" means any parcel or combination of parcels of real property without industrial, commercial, and residential buildings which has not been used for commercial agricultural purposes within 5 years prior to the designation of the redevelopment project area, unless the parcel is included in an industrial park conservation area or the parcel has been subdivided; provided that if the parcel was part of a larger tract that has been divided into 3 or more smaller tracts that were accepted for recording during the period from 1950 to 1990, then the parcel shall be deemed to have been subdivided, and all proceedings and actions of the municipality taken in that connection with respect to any previously approved or designated redevelopment project area or amended redevelopment project area are hereby validated and hereby declared to be legally sufficient for all purposes of this Act. For purposes of this Section and only for land subject to the subdivision requirements of the Plat Act, land is subdivided when the original plat of the proposed Redevelopment Project Area or relevant portion thereof has been properly certified, acknowledged, approved, and recorded or filed in accordance with the Plat Act and a preliminary plat, if any, for any subsequent phases of the proposed Redevelopment Project Area or relevant portion thereof has been properly approved and filed in accordance with the applicable ordinance of the municipality.

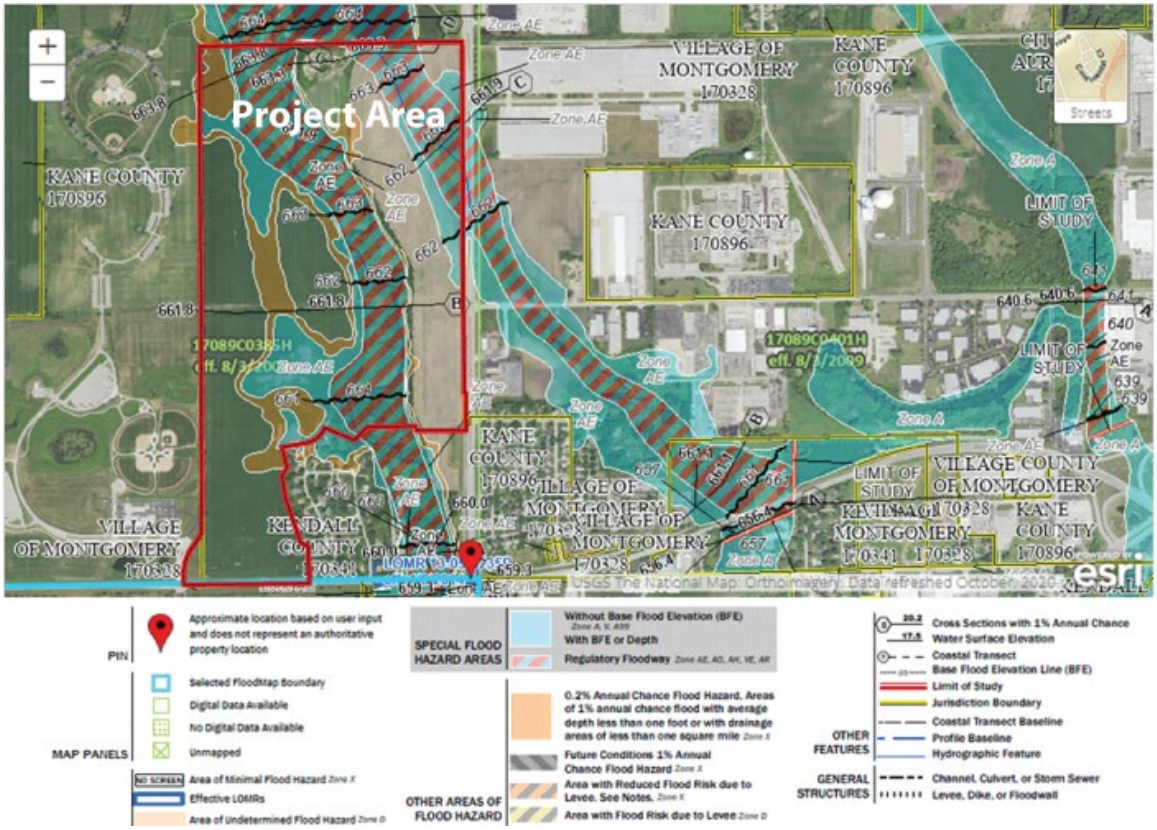
Although portions of the Project Area are currently used as commercial farmland, the Project Area qualifies as vacant land as defined in the Act due to the fact that it has been subdivided. The Project Area was historically a part of a single parcel used for farming and was subdivided into multiple smaller parcels at the time the residential subdivision to the south on IL Route 30 was developed, in roughly the year 2000. The four (4) individual PINs that make up the Project Area were therefore all recently subdivided, but not developed at that time likely due to the significant wetlands running through the property, as shown in the table below:

PIN	Created
14-36-200-002	2011
14-36-451-001	2000
14-36-479-018	2011
14-36-381-001	2004

ELIGIBILITY FINDINGS

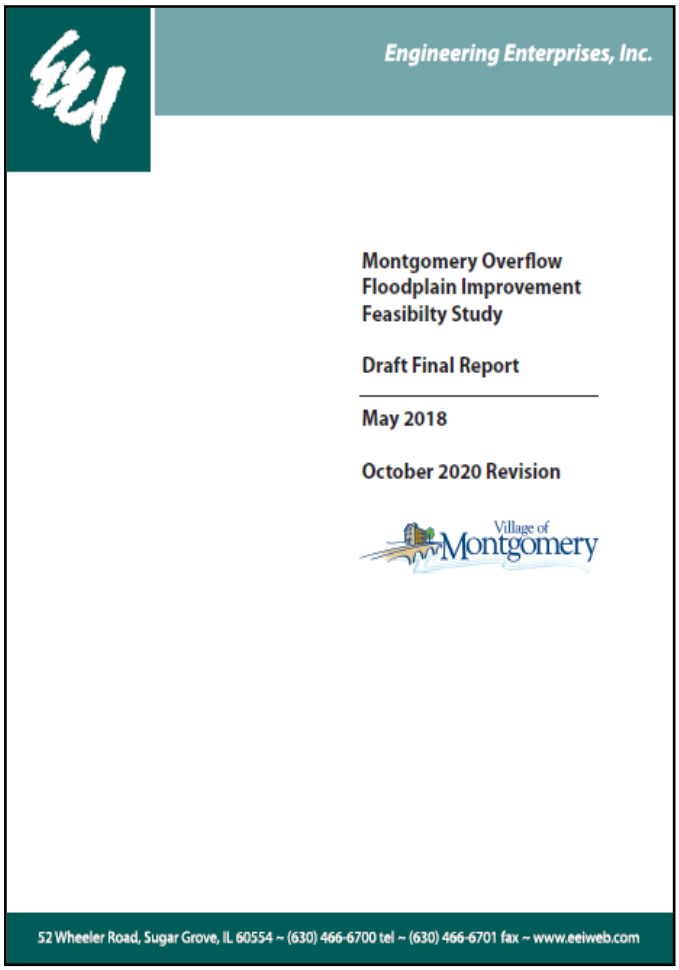
The Project Area meets the qualification for "vacant land" as defined in the Act. In addition, the presence of one (1) eligibility factor is required for designation as a "blighted area." Relevant eligibility criteria within the Project Area include the following:

"The area, prior to its designation, is subject to (i) chronic flooding that adversely impacts on real property in the area as certified by a registered professional engineer or appropriate regulatory agency or (ii) surface water that discharges from all or a part of the area and contributes to flooding within the same watershed, but only if the redevelopment project provides for facilities or improvements to contribute to the alleviation of all or part of the flooding."



Floodway, 100-year and 500-year floodplain within the Project Area

Chronic flooding within the Project Area results from its location within the Blackberry Creek Watershed as well as the Montgomery Overflow. The Project Area is tributary to approximately fifty-seven (57) square miles of drainage area and subject to major flood flows. The Blackberry Creek Watershed experienced flood flows in excess of 2800 cfs during the July 1996 flood.



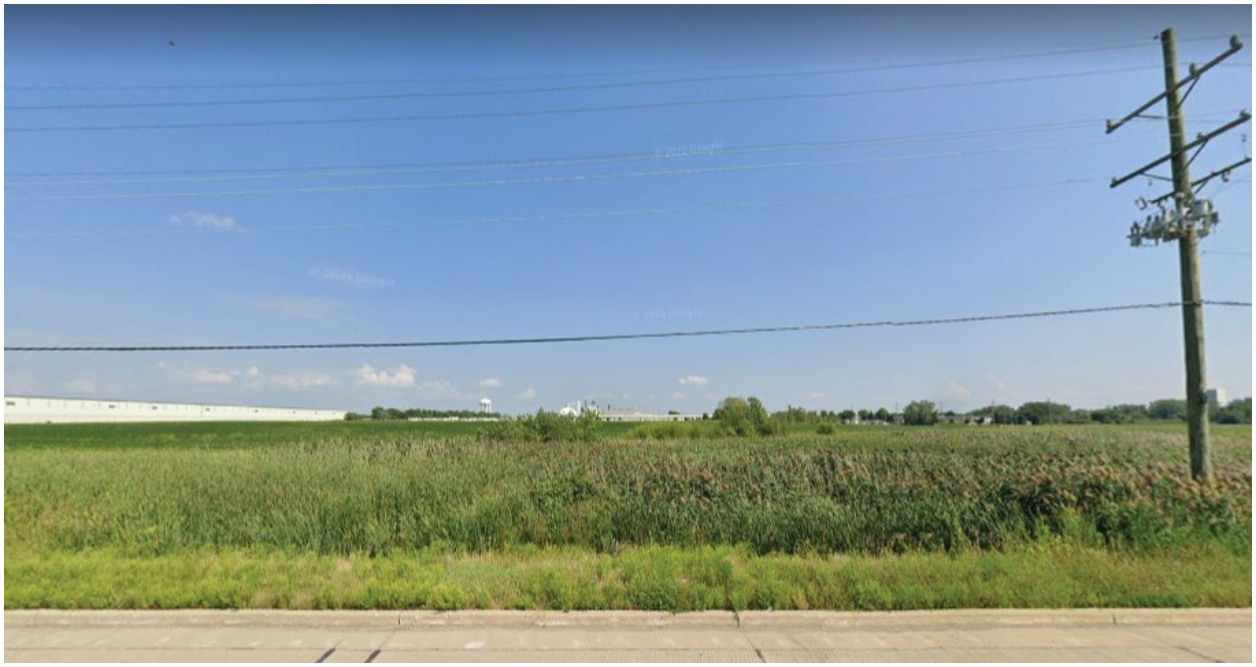
Chronic flooding is also documented in the "Montgomery Overflow Floodplain Improvement Feasibility Study" prepared by Engineering Enterprises in 2018 and updated in 2020. This report documents flooding issues within the Project Area and surrounding areas and provides recommendations for specific improvements to alleviate the existing conditions. Specific recommendations for the property within the Project Area is provided, and these suggested infrastructure improvements are necessary for future development of the property.

"The Montgomery Overflow is a floodplain between the Blackberry Creek Watershed and the Fox River Watershed that is triggered in large flood events along Blackberry Creek. Flood flows break out of Blackberry Creek at Jericho Lake and flow southeast over Orchard and Aucutt Roads to Route 30 and then flow east along Route 30 towards the Fox River. This encumbers a number of properties with significant areas of floodplain and floodway along this corridor between Jericho Lake and Route 30. In addition, properties in the corridor have inadequate local drainage facilities which has turned farmland into wetlands over the years. The existing drainage to the area is provided by a 12" drain tile that is in disrepair and an 18-inch culvert under Route 30, both of which are inadequate to address the drainage and flooding issues. See attached Exhibit C: Existing Drainage." (page 1-1)

SUMMARY FINDINGS

Based on the findings contained within this Eligibility Report, the Project Area qualifies under the definition of "vacant land" and the 'blighted area' eligibility criteria for vacant land, as established in the Act. Chronic Flooding contributes significantly towards the eligibility of the Project Area, and points to the need for designation of the Project Area as a Tax Increment Financing District, to be followed by public intervention in order that redevelopment might occur.

Based on these findings, the Village may proceed with the designation of the Project Area as a Tax Increment Financing District under the processes outlined in the Act.



BLACKBERRY CREEK
TAX INCREMENT REDEVELOPMENT PROJECT AREA
FLOODING OPINION LETTER

February 6, 2023

Ms. Sonya Abt
Community Development Director
Village of Montgomery
211 N. River Street
Montgomery, IL 60538

Re: Proposed TIF No. 4 – Flood Certification Letter

Dear Ms. Abt:

This letter is to certify that the area designated on the attached Exhibit I, is subject to significant flooding. The Special Flood Hazard Area is designated per the Flood Insurance Rate Map, Number 17089C0385H, revised August 3, 2009. (attached) The subject property is in the Blackberry Creek watershed and is tributary to approximately 57 square miles of drainage area and is therefore subject to major flood flows. Flood flows in excess of 2800 cfs were observed during the July 1996 flood.

Based on our review of the relevant flood insurance information, knowledge of the watershed and property this area is adversely impacted by flooding.

If you have any questions or require any additional information, please contact our office.

Respectfully Submitted,

ENGINEERING ENTERPRISES, INC.

Peter G. Wallers (ARS)

Peter G. Wallers, PE, CFM
Chairman
Village Engineering Consultant

\\Milkyway\EEI_Storage\Docs\Public\MONTGOME\2021\MO2125-D Hamman Property (West of Orchard Road)\TIF Certification\Draft Cert Letter 2023 TIF 4 v2.doc

BLACKBERRY CREEK
TAX INCREMENT REDEVELOPMENT PROJECT AREA
FLOODPLAIN IMPROVEMENT FEASIBILITY STUDY

Engineering Enterprises, Inc.

Montgomery Overflow Floodplain Improvement Feasibilty Study

Draft Final Report

May 2018

October 2020 Revision

Village of Montgomery

52 Wheeler Road, Sugar Grove, IL 60554 ~ (630) 466-6700 tel ~ (630) 466-6701 fax ~ www.eeiweb.com

MONTGOMERY OVERFLOW FLOODPLAIN IMPROVEMENT FEASIBILITY STUDY

Village of Montgomery, IL

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List of Exhibits

Appendix

SECTION 1.0 – INTRODUCTION

The Village of Montgomery has created a TIF District that encompasses much of the undeveloped area along Aucutt Road between Route 31 and Orchard Road. See attached Exhibit A: Study Location Map. The TIF encompasses a floodplain area known as the Montgomery Overflow which has existing drainage and flooding issues. See attached Exhibit B: Floodplain. The TIF provides an opportunity to address the existing issues while creating development value for properties within the TIF and for the Village. This Study lays the foundation for employing the TIF to accomplish these goals.

This primary work for this Study was completed and summarized in a Draft Report dated May 2018. However, additional work was done as the Village's TIF 2 plans came into focus over the last two years. Portions of this Report were updated, and additional study work performed, in conjunction with the TIF 2 Transportation Study and Aucutt Road Concept Design project undertaken by EEI for the Village in 2020 and presented in a Draft Report dated September 9, 2020. The updated and new material is presented in italic text in this October 2020 revised Draft Report.

Section 1.1 – Background

The Montgomery Overflow is a floodplain between the Blackberry Creek Watershed and the Fox River Watershed that is triggered in large flood events along Blackberry Creek. Flood flows break out of Blackberry Creek at Jericho Lake and flow southeast over Orchard and Aucutt Roads to Route 30 and then flow east along Route 30 towards the Fox River. This encumbers a number of properties with significant areas of floodplain and floodway along this corridor between Jericho Lake and Route 30. In addition, properties in the corridor have inadequate local drainage facilities which has turned farmland into wetlands over the years. The existing drainage to the area is provided by a 12" drain tile that is in disrepair and an 18-inch culvert under Route 30, both of which are inadequate to address the drainage and flooding issues. See attached Exhibit C: Existing Drainage.

Section 1. 2 – Goals

The Village has two primary goals for the proposed Montgomery Overflow Floodplain Improvements. First, to create development opportunity and provide infrastructure within the TIF area to support development and second to improve drainage and floodplain management within the floodplain area.

There are several improvements needed to achieve these goals, first is to provide a replacement for the existing failed drainage tile with a replacement outfall storm sewer. The outfall storm sewer will provide an outlet for existing and future detention areas and will convey low flow storm events in the watershed and thereby eliminate nuisance flows.

The second improvement is the installation of a properly sized roadway culvert for Aucutt Road. Currently the Aucutt Road culvert is undersized and the roadway floods and is overtopped in major storm events. Replacement of the existing culvert with a properly sized culvert will make Aucutt Road a dependable transportation route.

The third set of improvements would be the creation of regional stormwater and floodplain management basins. The basins could provide detention for Aucutt Road widening and provide off-site detention and floodplain compensatory storage for properties in the TIF 2 area. Providing offsite detention and/or

floodplain compensatory storage would free up significant area on prime development parcels and provide additional buildable area in the TIF 2 area.

This study provides preliminary information on the improvements required to accomplish these goals, the potential cost and funding for the improvements, recommendation for improvements and phasing, and future work items required to bring improvements to fruition through the planning, engineering, and construction process.

The 2020 update focuses specifically on the items discussed in the Project Analysis and Recommendations sections of the TIF 2 Transportation Study. The TIF 2 Transportation Study includes Floodplain and Drainage Improvements and the Mulberry Drive Extension in the recommendation for 2021-2025. The goals of this revised Report are to provide documentation of the additional work done to support the recommendations in the TIF 2 Transportation Study, review the proposed flood control and drainage improvements, and assist the Village in moving forward with project selection and implementation.

SECTION 2.0 – METHODOLOGY

In order to determine how much storage might be required to remediate floodplain and detention requirements on properties within the area and how much compensatory storage could be created, EEI did an analysis of the existing properties.

The first part of this analysis involved looking at each parcel and determining how much floodplain area and volume was on each property using the floodplain maps and GIS topography (floodplain area outside of the regulatory floodway that could be reclaimed for development). This calculation was then used to calculate the required compensatory storage for each parcel based on the ordinance requirements of 1.5 to 1.0 for compensatory storage. In addition, we estimated the amount of detention storage that each parcel would require if developed with varying impervious surface coverage from 50% to 85%. This information is available for use in planning the compensatory basin improvements depending on which property owners want to participate in the project. See attached Appendix 1: Individual Parcel Remediation Spreadsheet.

The second part of the analysis involved calculating the amount of compensatory storage that could be provided by the project. This was done by identifying parcels with lower development potential at the downstream end of the corridor upstream of Route 30 that would be advantageous locations for excavating storage. Volume calculations were completed using the GIS topography and the invert of the existing outfall under Route 30 to maximize the depth of the excavation. This provides us with a calculation of the potential storage that could be created to provide storage for Village projects and property developments.

The third part of the analysis involved estimates of cost for improvements and benefits for participating landowners. This included estimating costs for construction of the basins, the outfall storm sewer, on-site detention for development properties, and other drainage improvements. See attached Table 2-1 Preliminary EOPC – Basin Option 1; Table 2-2: Preliminary EOPC – Basin Option 1A; Table 2-3: Preliminary EOPC – Basin Option 2; Table 2-4: Preliminary EOPC – Basin Option 2A; *Table 2-5: Preliminary EOPC - Basin Option 3;* and Table 2-6: Preliminary EOPC – Individual Parcel On-Site Detention. *The 2020 revision provides additional cost estimates for a new basin option, the storm sewer improvements and the Mulberry Drive Extension. This information is discussed and presented in Section 3.5.*

This also included looking at the cost benefits that would be realized to property owners by the increase in development area available with detention and floodplain fill compensatory storage provided off-site.

These analyses were employed to assess the costs and benefits for specific properties and provide the framework for looking at additional properties as the project moves forward.

SECTION 3.0 – RESULTS

Section 3.1 – Wetlands and Floodplains

The existing floodplain is identified by the FEMA Floodplain maps. The analysis identified areas of floodplain that could be removed from the floodplain to provide more development area with the implementation of the project. The most likely properties for development were identified. See attached Exhibit D: Potential Development Areas Requiring Floodplain or Detention Compensatory Storage. *The potential development areas were modified as a result of the addition of the Basin Option 3 and the Mulberry Drive Extension discussed in section 3.5. See attached Exhibit E: Potential Development Areas with Basin Option 3 and Mulberry Extension.*

A preliminary field wetland delineation was performed for the study area to identify wetlands that would have to be addressed during project implementation. Most of the wetlands correspond with the floodway area so they might be undisturbed by development activity or enhanced to mitigate disturbed areas. See attached Exhibit F: Preliminary Delineation Wetlands.

As the project progresses and property owner participation is identified and improvements designed, detailed floodplain calculations and modeling and assessment of wetland impacts and mitigation requirements will be required as part of the planning and design process.

Section 3.2 – Compensatory Storage Basins

Compensatory Storage Basins were located in advantageous locations within the watershed to maximize potential storage provided and off-site benefits provided. This resulted in two areas being analyzed that could be independent or developed together depending on the project needs. Other areas could be utilized for smaller projects but the identified areas provide the most potential storage benefits. For a view of the basins within the study area see attached Exhibit G: Preliminary Basin Options Overview and for a close up of the proposed improvements see attached Exhibit H: Preliminary Basin Options Close-Up. *Exhibits G and H have been updated to include Basin Option 3 and the Mulberry Extension.*

In order to construct the basins to maximize the storage volume a new outfall storm sewer would have to be constructed from Route 30 to the existing storm sewer west of the Pasadena Subdivision. The outfall would also allow for local drainage improvements within the floodplain corridor. The previous referenced Exhibits also show the proposed outfall storm sewer.

The potential compensatory storage volume available in the basins is summarized in the attached Table 3-1: Compensatory Storage Basin Volume. *The potential compensatory storage volume available in Basin Option 3 is summarized in the attached Table 3-2: Compensatory Storage Basin Option 3 Volume.*

Preliminary review of the soil survey information shows that there may be organic, wetland or other material unsuitable for use as structural fill. Therefore, our analysis of the costs of the basins also looked at the option to over excavate the basins and return the excess material to the bottom of the basins. This cost is reflected in the previously referenced cost estimates. For this reason, we recommend obtaining soil borings in the proposed basin areas as one of the first steps in implementing the improvements. *Soil Borings were performed in 2020 and showed generally suitable materials and are discussed in Section 3.5.*

In 2020 we also researched existing utilities in the area where the potential Basins would be located. There are Village water and sanitary utilities that would have to be addressed for basin construction. There is also a large Fox Metro Interceptor in the area that would require coordinate with Fox Metro. See attached Appendix 3 existing sanitary and existing water main exhibits.

Section 3.3 – Example Property Cost/Benefit Analysis

In order to establish a framework for how the funding and property development costs and benefits will work, we conducted a more detailed analysis for one property. This was done with the previous calculations developed during the study along with discussions with Village staff and property owner representatives. The example property is at the northeast corner of Aucutt and Orchard. See the attached Table 3-3: Individual Parcel with Participation in Regional Detention Basin for a detailed view of the calculations.

This table shows the amount of area that could be recovered for development by providing the detention and floodplain compensatory storage in the proposed regional basin. It also assesses the costs associated with construction of the regional basin and the value of the benefits of the additional developable land area. Furthermore, it provides an assessment of the total value created for the property and the dedicated TIF increment funding that would be created by the development and used to pay for construction of the improvements.

Similar detailed assessments could be produced for other parcels to assist the Village and interested property owners in determining if participation in the project is feasible and desirable.

Section 3.4 – Orchard Road West Property

As an extension of the study we also looked at the large property to the west of Orchard Road. See attached Exhibit I: Orchard Road Property Remediation. A portion of this property is tributary to the Montgomery Overflow and could participate in the improvements and be provided off-site compensatory and detention storage. In addition, we also made a preliminary assessment of the required detention and compensatory storage requirements for the remainder of the property to assess the feasibility of a similar project for the area tributary to Blackberry Creek. See attached Table 3-4: Orchard Road Property Remediation.

Section 3.5 – 2020 Property Acquisition and TIF 2 Study Analysis

As the TIF 2 Study was getting underway Village staff started investigating property acquisition for the floodplain and drainage improvements with EEI. A part of this investigation included a soils and geotechnical investigation which was recommended in the May 2018 Draft Report. The results of the soils investigation are attached in the Appendix 2: Soils Report. The Soils Report shows that the proposed improvements are feasible and provides guidance for design and construction of the improvements.

As a result of the soils investigation, the TIF 2 Study, and negotiations with property owners, another compensatory storage basin option was identified. This Basin Option 3 has several advantages: proximity to Aucutt Road for use as detention and compensatory storage for Aucutt improvements, availability of property, and suitable soils to allow use of excavated material for fill in adjacent areas. Basin Option 3 is smaller than the previous options but suitable for the Aucutt Road and Mulberry Drive projects identified in the TIF 2 Transportation Study. The Aucutt Road and Mulberry Improvements would use approximately

7.3 of the 18.1 Acre-feet of available storage in Basin Option 3. However, Basin Option 3 is also compatible with the development of Basin Option 2 which is also located on the parcels targeted for acquisition. The basin in these areas could be constructed in phases to provide additional storage for TIF 2 development opportunities. In addition, this area could also interconnect with future basin construction in the area of Basin Option 1 should the opportunity and need to pursue those projects arise as the TIF 2 area develops.

The investigation also developed an alternative to the originally proposed Access Road with an extension of Mulberry Drive to Aucutt Road. The proposed alignment for Mulberry is along the west side of the floodplain area and avoids crossing the floodplain. The previously proposed access road would be overtopped in the Montgomery Overflow flooding events. This alignment for Mulberry provides an effective and safe secondary access for the Countryside area. It can also be used for access during construction of the basin improvements.

A small regional basin in the area of Option 3 and the Mulberry Drive Extension have been identified as recommendation for 2021 to 2025 in the TIF 2 Study. Basin Option 3 and the proposed alignment for the Mulberry Drive Extension are shown in the updated Exhibit G: Preliminary Basin Options Overview and Exhibit H: Preliminary Basin Options Close-Up.

The current status of the property acquisition analysis is shown in Exhibit J: Basin Parcel Target Acquisition. The parcels targeted for acquisition are shown in the blue shading and are consistent with construction of Basin Option 3, Basin Option 2, and the Mulberry Avenue Extension. Easements from additional properties would also be required for sections of the storm sewer improvements shown on the exhibits.

Conceptual cost estimates were prepared for Basin Option 3, the Mulberry Drive Extension, and the storm sewer north and south of Route 30 necessary for the drainage and floodplain improvements. Changes to the proposed storm sewer, particularly north of Route 30, were necessary with Basin Option 3. These costs were identified and estimated in the TIF 2 Transportation Study and have been further refined and updated in this Report. The conceptual costs are presented in the attached Table 2-5: Preliminary EOPC – Basin Option 3, Table 3-5: Preliminary EOPC - South Storm Sewer, Table 3-6: Preliminary EOPC – North Storm Sewer, and Table 3-7: Preliminary EOPC – Mulberry Drive Extension.

SECTION 4.0 – RECOMMENDATIONS

This study demonstrates the feasibility of the Montgomery Overflow Improvements project utilizing the resources available through the TIF District. We recommend that the Village proceed with the project and continue working with property owners to determine the level of interest in participation and work towards development agreements with property owners. A basic outline of the proposed improvements and phasing was outlined in the Village's Capital Improvement Plan and is summarized below. *The below recommendations have been updated to align with the recommendations in the TIF 2 Transportation Study.*

Completed Work Items.

- *Soils and Geotechnical Investigation*
- *Property Acquisition Investigation*
- *Obtained Easement for South Storm Sewer*

FY2021

- *Review Details of Proposed Drainage and Floodplain Improvements with Village Board in Conjunction with Review of Proposed Transportation Improvements and Project Sequencing from TIF 2 Transportation Study*
- *Final Report for Montgomery Overflow Floodplain Improvement Feasibility Study in Conjunction with Final Report for the TIF 2 Transportation Study*
- *Property Acquisition for Drainage and Floodplain Improvements*
- *Wetland Delineation*
- *South Storm Sewer Design and Construction*
- *Easement Acquisition for North Storm Sewer (and Drain Tile Replacement if necessary)*

FY2022

- *Floodplain Modeling, Design Engineering, and Permitting for Regional Detention Improvements in area of Option 3 and/or Option 2.*
- *Design Engineering for North Storm Sewer (and Drain Tile Replacement if necessary)*

Future Fiscal Years

- *Construction of North Storm Sewer*
- *Construction of Regional Detention Improvements*
- *Design and Construction of Mulberry Drive Extension*
- *Floodplain Modeling, Design Engineering, Permitting, Easement and Property Acquisition for additional Regional Detention Improvements to meet TIF 2 Development Needs*

Engineering Enterprises, Inc.
52 Wheeler Road, Sugar Grove, IL 60554

JOB NO:	MO1702
DESIGNED:	Tyler Meyer
DATE:	November 8, 2017
PROJECT TITLE:	**Montgomery Overflow Floodplain Improvement Feasibility Study**

Table 3-1: Compensatory Storage Basin Volumes

Option 1

Contour Elevation (ft)	Contour Area (sq-ft)	Contour Area (acre)	Incremental Depth (ft)	Incremental Volume (acre-ft)	Cumulative Volume (cu-ft)	Cumulative Volume (acre-ft)
650.00	358,186	8.223	n/a	n/a	-	-
651.00	384,310	8.823	1.00	8.523	371,248	8.523
652.00	397,608	9.128	1.00	8.975	762,207	17.498
653.00	411,062	9.437	1.00	9.282	1,166,542	26.780
654.00	424,674	9.749	1.00	9.593	1,584,410	36.373
655.00	438,443	10.065	1.00	9.907	2,015,969	46.280
656.00	452,369	10.385	1.00	10.225	2,461,375	56.505

1ST OPTION TOTAL STORAGE = 56.505 acre-feet

Option 2

Contour Elevation (ft)	Contour Area (sq-ft)	Contour Area (acre)	Incremental Depth (ft)	Incremental Volume (acre-ft)	Cumulative Volume (cu-ft)	Cumulative Volume (acre-ft)
650.00	554,687	12.734	n/a	n/a	-	-
651.00	599,335	13.759	1.00	13.246	577,011	13.246
652.00	621,894	14.277	1.00	14.018	1,187,626	27.264
653.00	644,611	14.798	1.00	14.537	1,820,878	41.802
654.00	667,485	15.323	1.00	15.061	2,476,926	56.862
655.00	690,516	15.852	1.00	15.588	3,155,927	72.450
656.00	713,704	16.384	1.00	16.118	3,858,037	88.568

2ND OPTION TOTAL STORAGE = 88.568 acre-feet

Notes:

1. Outlet elevations of the 1st and 2nd option ponds are based on the elevation of the ex. 12" field tile going south of US 30.
2. Parcels 15-31-401-008, 15-31-401-007, 15-31-401-006, and north half of 15-31-401-005 were used in calculation of the detention pond. Parcels 15-31-401-025 and south half of 15-31-326-022 were also used in calculation of the 2nd option detention pond.
3. A high water level of 656 was assumed to avoid encroachment on the parking lot on the south end of parcel 15-31-401-005.
4. Outer pond limits based on 50' offset from property lines. Side slopes are based on the wetland bottom basin cross-section outlined in the Village of Montgomery Naturalized Stormwater Management Faciility Guidelines. Contours 656 down to 651 are at a 5:1 slope and contours 651 down to 650 are at a 10:1 slope.
5. All storage is below the floodplain elevation.

Engineering Enterprises, Inc.
52 Wheeler Road, Sugar Grove, IL 60554

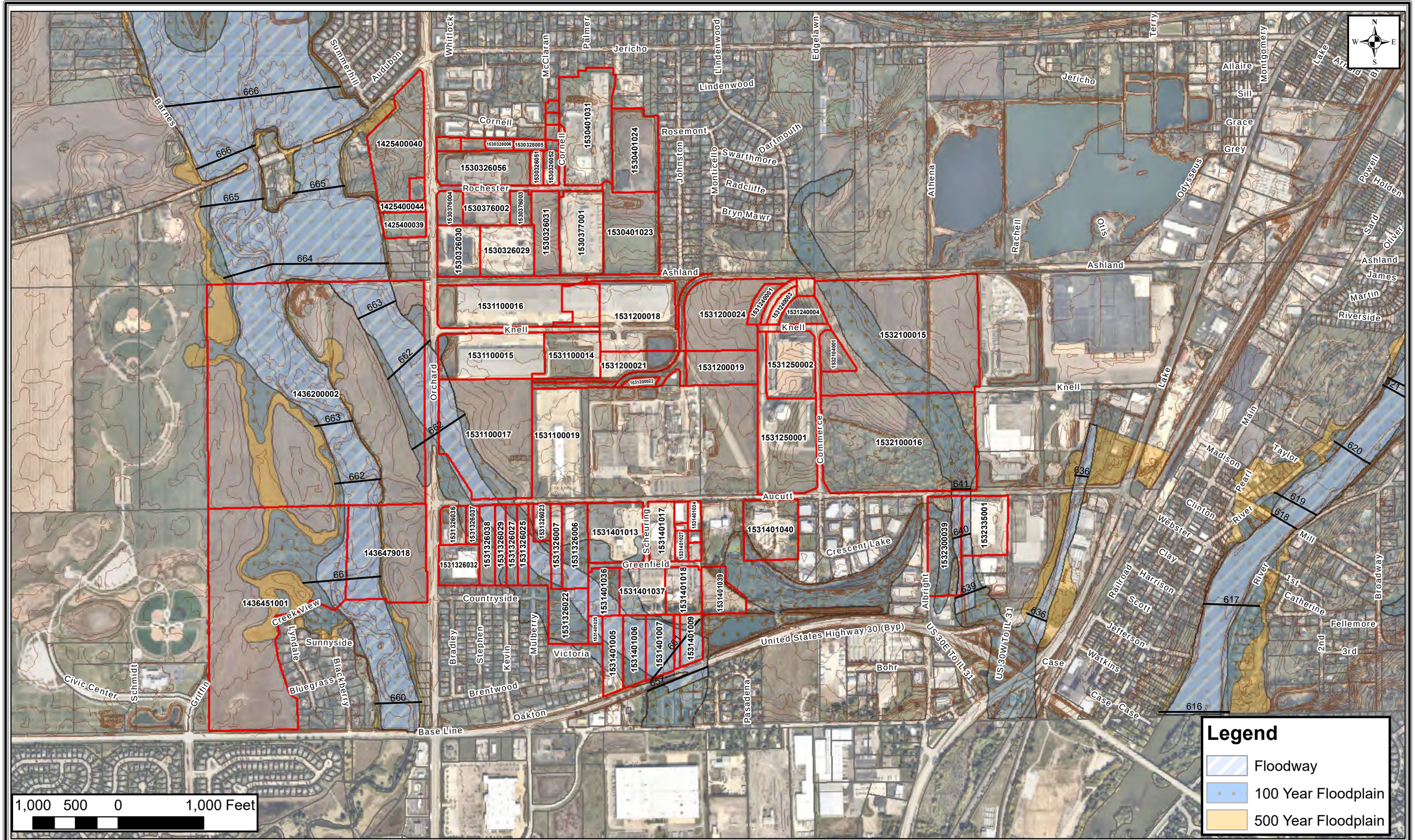
JOB NO:	MO1702
DESIGNED:	Tim Paulson
DATE:	September 28, 2020
PROJECT TITLE:	**Montgomery Overflow Floodplain Improvement Feasibility Study**

Table 3-2: Compensatory Storage Basin Option 3 Volume

Option 3						
Contour Elevation	Contour Area	Contour Area	Incremental Depth	Incremental Volume	Cumulative Volume	Cumulative Volume
(ft)	(sq-ft)	(acre)	(ft)	(acre-ft)	(cu-ft)	(acre-ft)
652.00	99,246	2.278	n/a	n/a	-	-
653.00	114,307	2.624	1.00	2.451	106,777	2.451
654.00	123,196	2.828	1.00	2.726	225,528	5.177
655.00	131,611	3.021	1.00	2.925	352,932	8.102
656.00	140,184	3.218	1.00	3.120	488,829	11.222
657.00	148,916	3.419	1.00	3.318	633,379	14.540
658.00	157,805	3.623	1.00	3.521	786,740	18.061
				1ST OPTION TOTAL STORAGE =		**18.061** **acre-feet**

Notes:

1. Outlet elevation of Option 3 pond based on the elevation of the proposed storm sewer connecting to the Pasadena storm sewer south of US 30.
2. Parcels 15-31-326-025, 15-31-326-027, 15-31-326-029, and 15-31-326-038 were used in calculation of the detention pond.
3. A high water level of 658 was assumed based and Kane County 2 foot topo and avoiding encroachment on adjacent parcels
4. Outer pond limits based on 50' offset from property lines. Side slopes are based on the wetland bottom basin cross-section outlined in the Village of Montgomery Naturalized Stormwater Management Faciility Guidelines.
5. Contours 658 down to 653 are at a 5:1 slope and contours 651 down to 650 are at a 10:1 slope.
6. All storage is below the floodplain elevation.



Engineering Enterprises, Inc.
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52 Wheeler Road
Sugar Grove, Illinois 60554
(630) 466-6700 / www.eeiweb.con

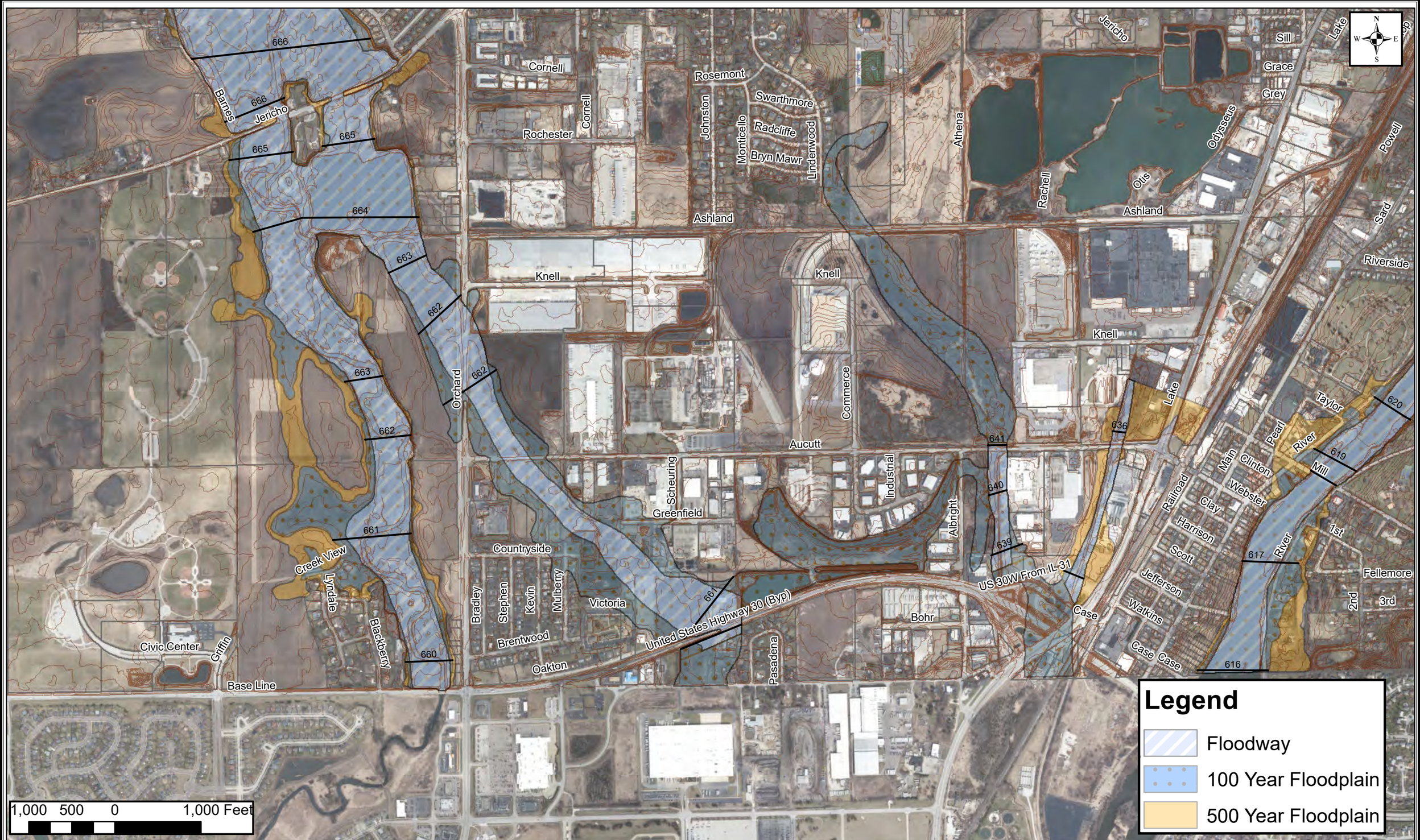
Village of Montgomery
Kane & Kendall Counties, Illinois

NO.	DATE	REVISIONS

DATE: OCTOBER 2020
PROJECT NO.: MO1702-V
PATH: H:\GIS\PUBLIC\MONTGOMERY\2017\
FILE: MO1702-EXH A STUDY LOCATION MAP.MXD

EXHIBIT A
STUDY LOCATION MAP

MONTGOMERY OVERFLOW
FLOODPLAIN FEASIBILITY
STUDY



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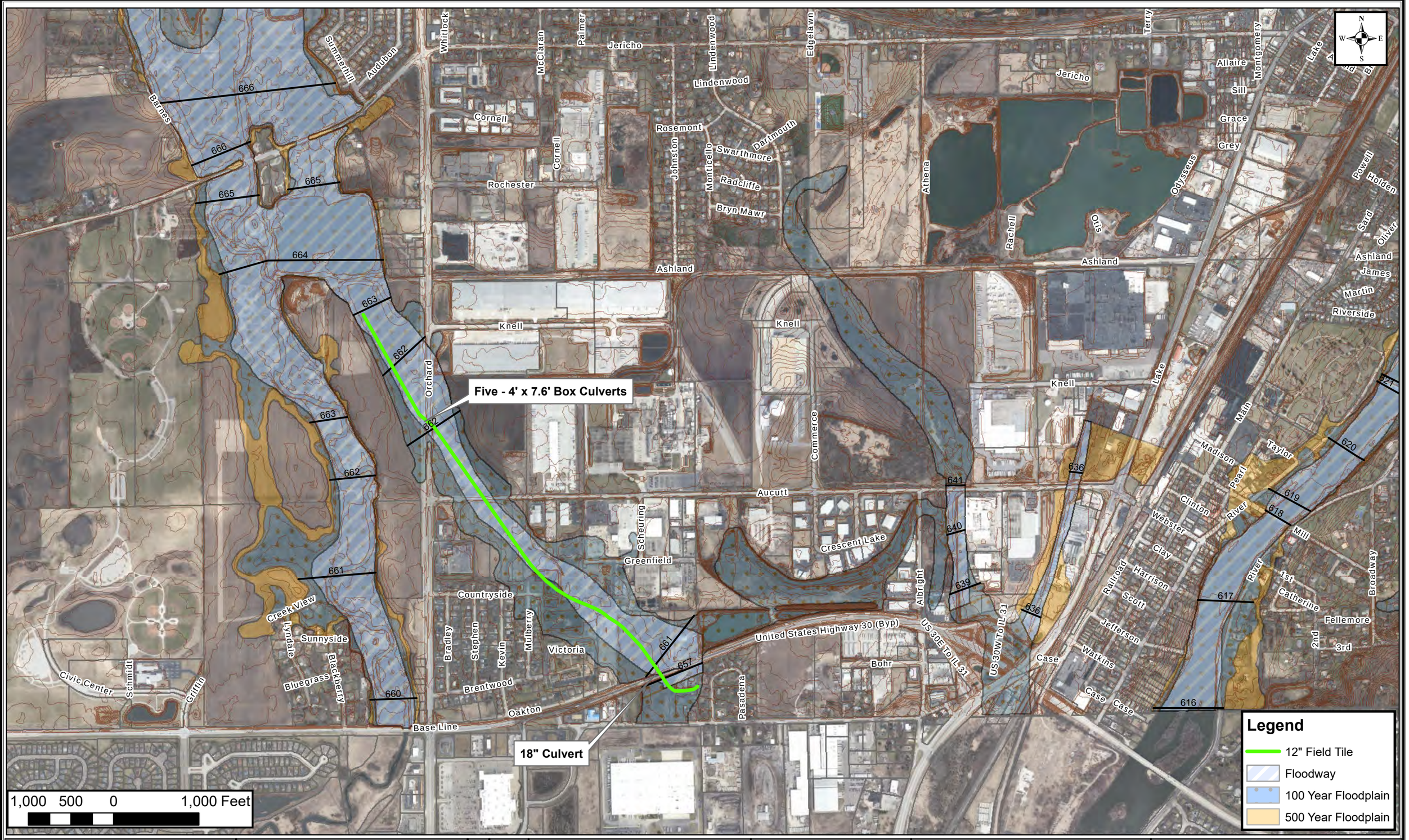
Village of Montgomery
Kane & Kendall Counties, Illinois

NO.	DATE	REVISIONS

DATE: MAY 2017
PROJECT NO.: MO1702-V
PATH: H:\GIS\PUBLIC\MONTGOMERY\2017\
FILE: MO1702- EXHIBIT B OVERFLOW FLOODPLAIN.MXD

EXHIBIT B
FLOODPLAIN

MONTGOMERY OVERFLOW
FLOODPLAIN FEASIBILITY
STUDY



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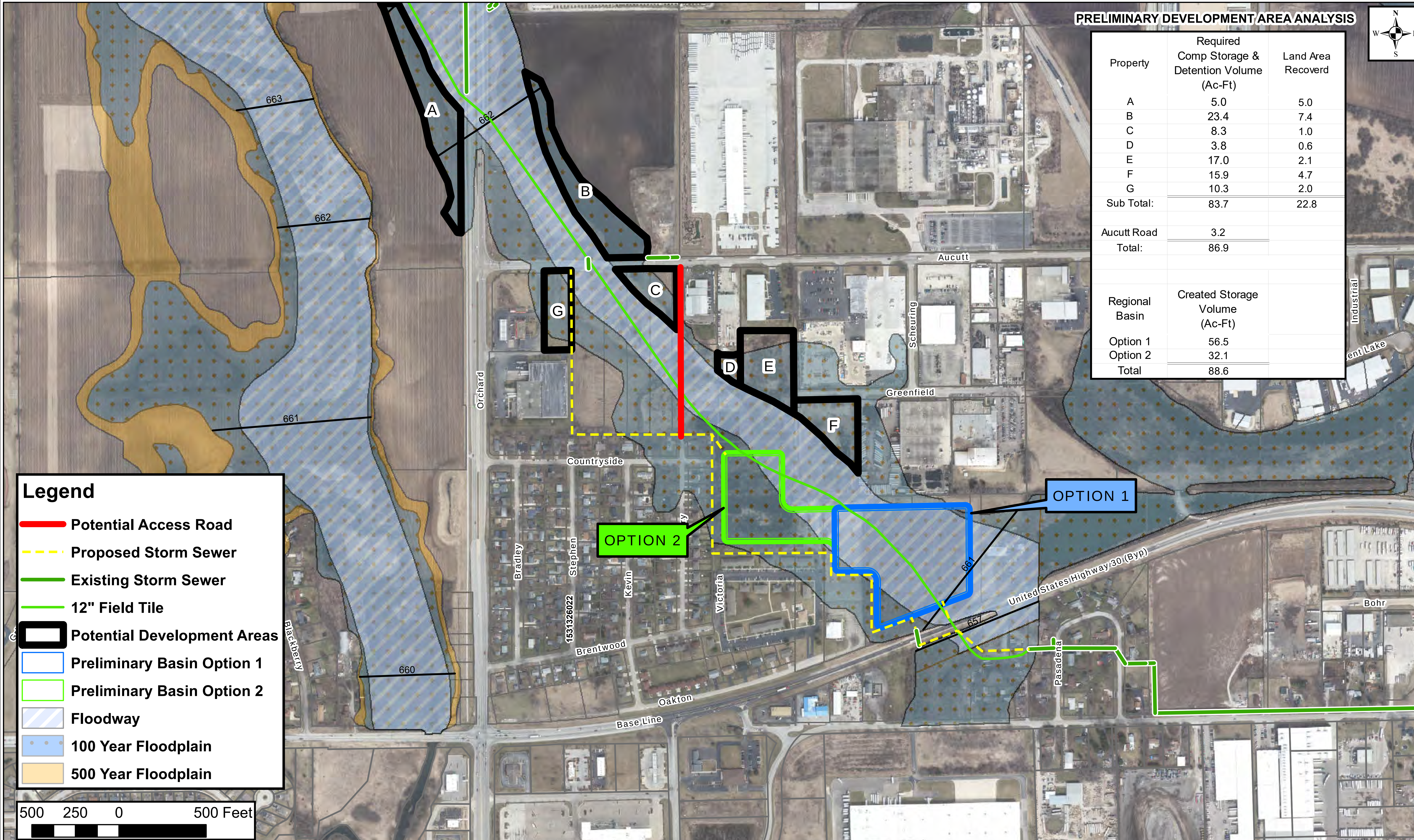
Village of Montgomery
Kane & Kendall Counties, Illinois

NO.	DATE	REVISIONS

DATE: OCTOBER 2020
PROJECT NO.: MO1702-V
PATH: H:\GIS\PUBLIC\MONTGOMERY\2017\
FILE: MO1702- EXHIBIT C EXISTING DRAINAGE EXHIBIT.MXD

EXHIBIT C
EXISTING DRAINAGE

MONTGOMERY OVERFLOW
FLOODPLAIN FEASIBILITY
STUDY



PRELIMINARY DEVELOPMENT AREA ANALYSIS

Property	Required Comp Storage & Detention Volume (Ac-Ft)	Land Area Recoverd
A	5.0	5.0
B	23.4	7.4
C	8.3	1.0
D	3.8	0.6
E	17.0	2.1
F	15.9	4.7
G	10.3	2.0
Sub Total:	83.7	22.8
Aucutt Road	3.2	
Total:	86.9	
Regional Basin	Created Storage Volume (Ac-Ft)	
Option 1	56.5	
Option 2	32.1	
Total	88.6	

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Village of Montgomery
Kane & Kendall Counties, Illinois

NO.	DATE	REVISIONS

DATE: OCTOBER 2020
PROJECT NO.: MO1702-V
PATH: H:\GIS\PUBLIC\MONTGOMERY\2017\
FILE: MO1702_EXHIBIT D DEVELOPMENT AREA.MXD

EXHIBIT D
POTENTIAL DEVELOPMENT AREAS
REQUIRING FLOODPLAIN OR DETENTION
COMPENSATORY STORAGE

MONTGOMERY OVERFLOW
FLOODPLAIN FEASIBILITY
STUDY

PRELIMINARY DEVELOPMENT AREA ANALYSIS

Property	Required Comp Storage & Detention Volume (Ac-Ft)	Land Area Recoverd
A	5.0	5.0
B	23.4	7.4
C	8.3	1.0
D	3.8	0.6
E	17.0	2.1
F	15.9	4.7
G	3.0	0.5
Sub Total:	76.4	21.3
Mulberry Extension	4.1	
Aucutt Road	3.2	
Sub Total:	7.3	
Total:	83.7	

Regional Basin	Created Storage Volume (Ac-Ft)
Option 3	18.1
Option 2	32.1
Total	50.2

N
W E
S

A
B
C
D
E
F
G

OPTION 1
OPTION 2
OPTION 3

663
662
661
660
657

Aucutt
Scheuring
Greenfield
Industrial
Orchard
Countryside
Bradley
Stephen
Kevin
Victoria
1531326022
Brentwood
Oakton
Base Line
Blackberry
United States Highway 30 (Byp)
Pasadena
Bohr

Legend

- Proposed Storm Sewer
- Mulberry Extension
- Existing Storm Sewer
- 12" Field Tile
- Potential Development Areas
- Preliminary Basin Option 1
- Preliminary Basin Option 2
- Preliminary Basin Option 3
- Floodway
- 100 Year Floodplain
- 500 Year Floodplain

500 250 0 500 Feet

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Village of Montgomery
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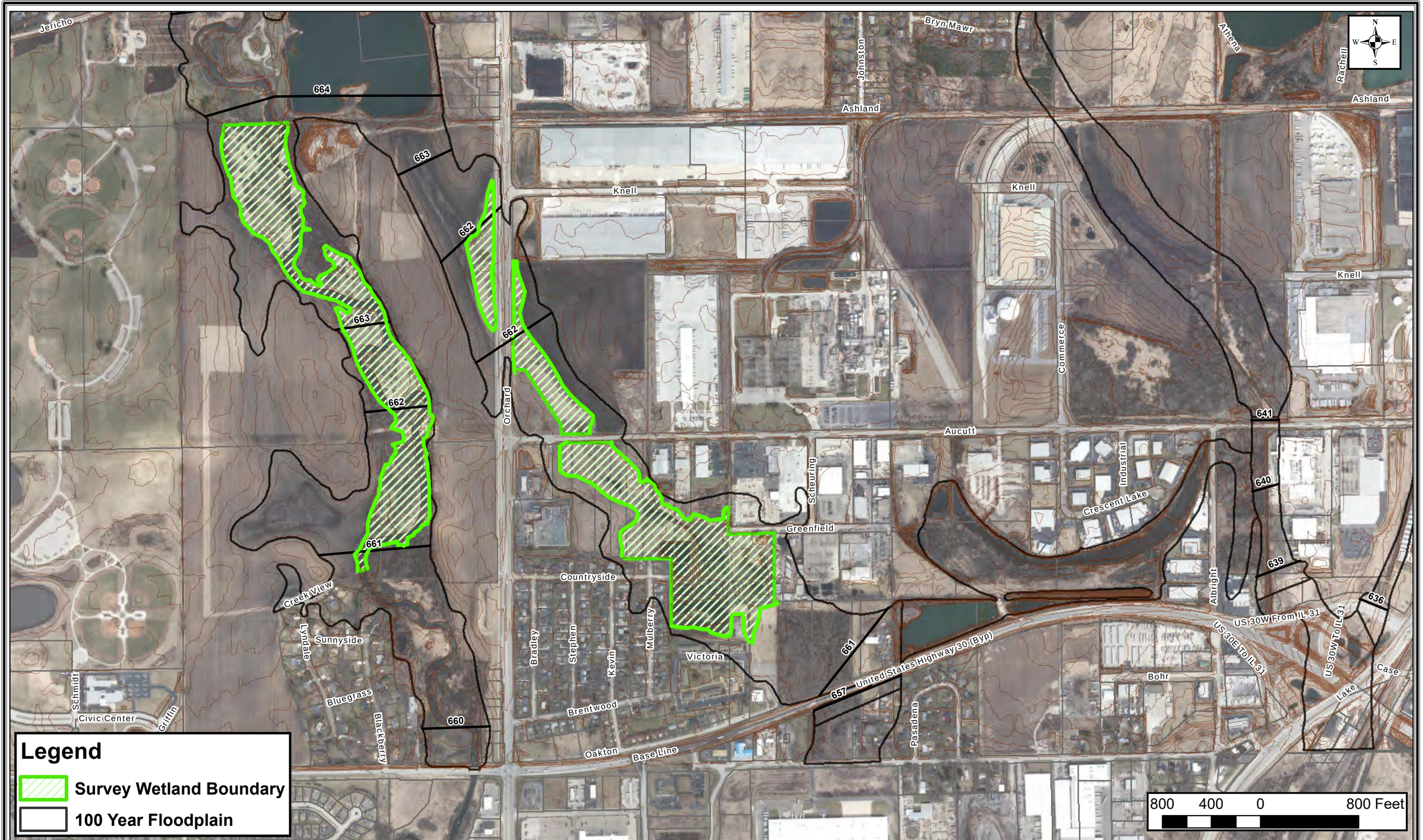
NO.	DATE	REVISIONS

DATE: OCTOBER 2020
PROJECT NO.: MO1702-V
PATH: H:\GIS\PUBLIC\MONTGOMERY\2017\
FILE: MO1702_EXHIBIT E DEVELOPMENT AREAS.MXD

EXHIBIT E
POTENTIAL DEVELOPMENT AREAS
WITH BASIN OPTION 3 AND
MULBERRY EXTENSION

MONTGOMERY OVERFLOW
FLOODPLAIN FEASIBILITY
STUDY



Legend

- Survey Wetland Boundary
- 100 Year Floodplain

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NO.	DATE	REVISIONS

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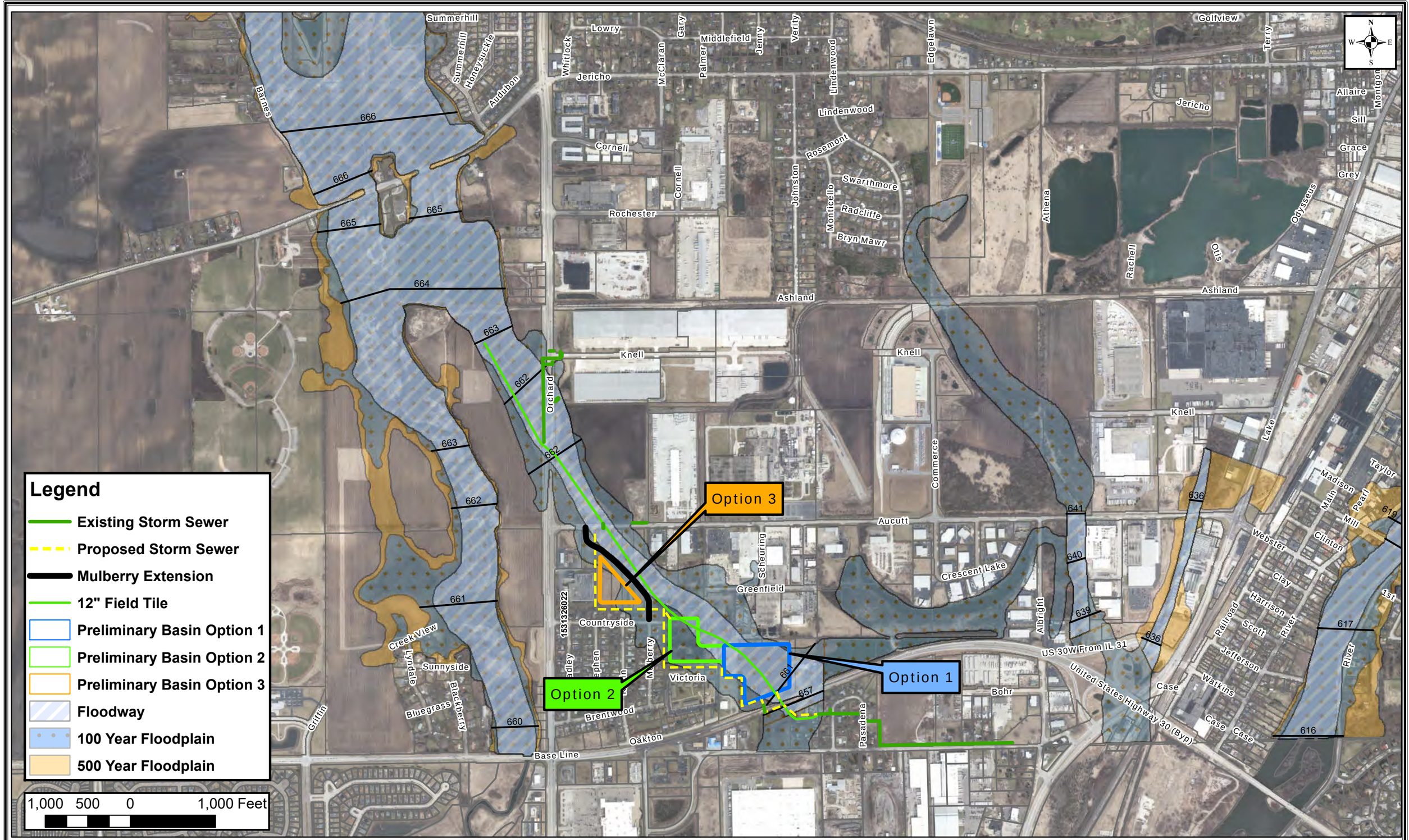
PROJECT NO.: MO1702-V
PATH: H:\GIS\PUBLIC\MONTGOMERY\2017\
FILE: MO1702_EXHIBIT F WETLANDS EXHIBIT.MXD

EXHIBIT F
PRELIMINARY DELINEATION
WETLANDS

MONTGOMERY OVERFLOW
FLOODPLAIN FEASIBILITY
STUDY



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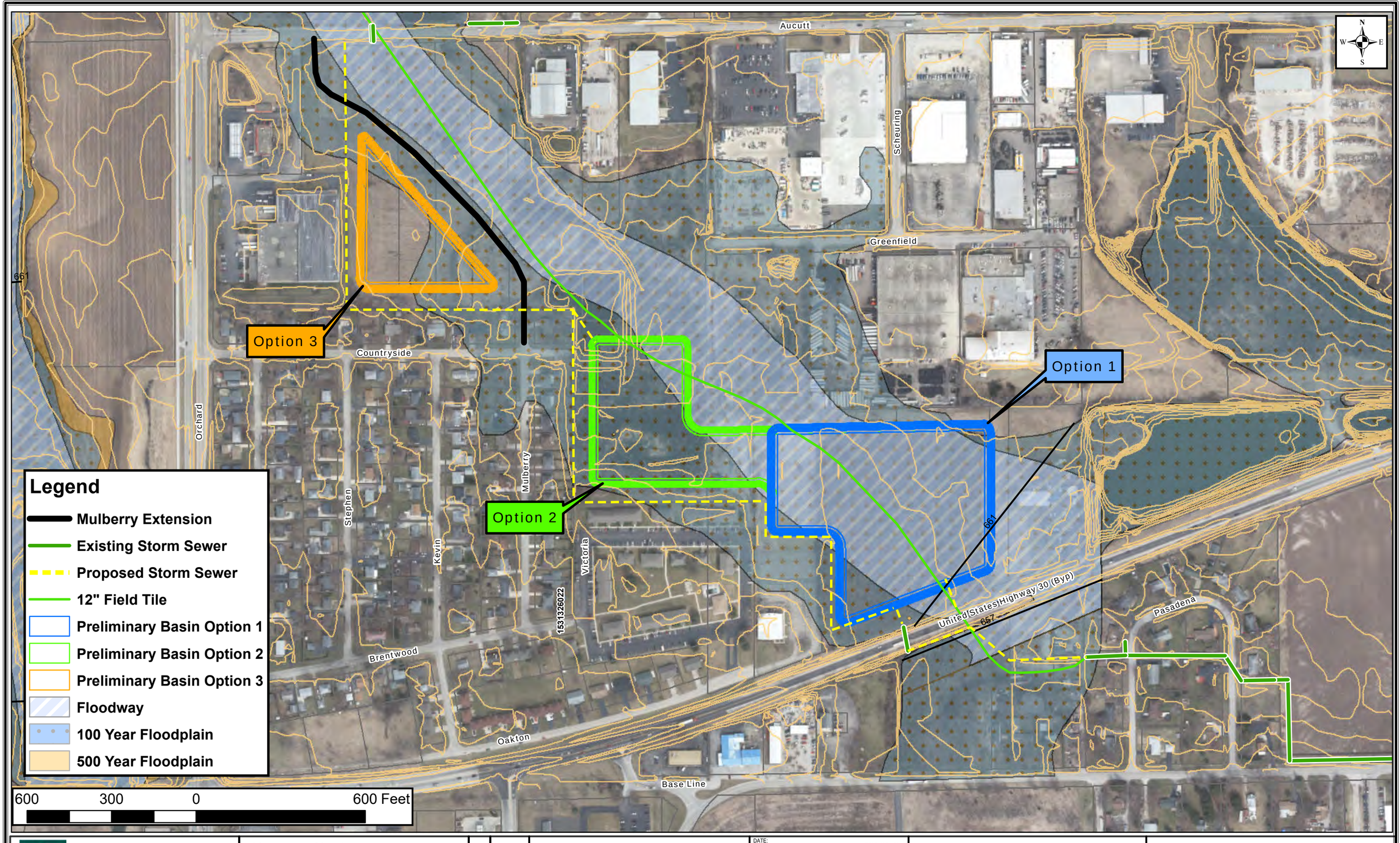
Village of Montgomery
Kane & Kendall Counties, Illinois

NO.	DATE	REVISIONS

DATE: OCTOBER 2020
PROJECT NO.: MO1702-V
PATH: H:\GIS\PUBLIC\MONTGOMERY\2017\
FILE: MO1702_EXHIBIT G PRELIMINARY POND OPTIONS.MXD

EXHIBIT G
PRELIMINARY BASIN
OPTIONS OVERVIEW

MONTGOMERY OVERFLOW
FLOODPLAIN FEASIBILITY
STUDY



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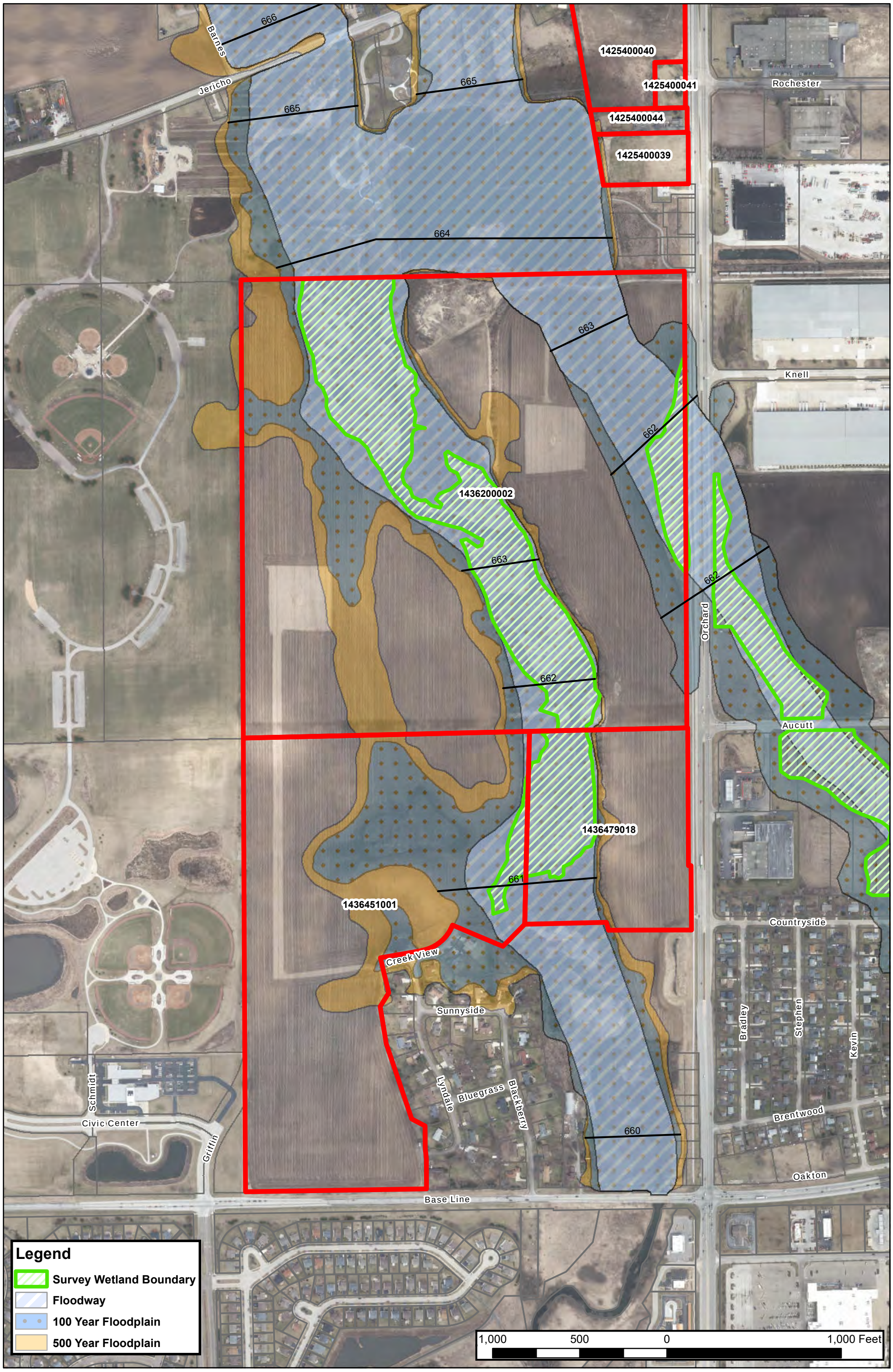
Village of Montgomery
Kane & Kendall Counties, Illinois

NO.	DATE	REVISIONS

DATE: FEBRUARY 2018
PROJECT NO.: MO1702-V
PATH: H:\GIS\PUBLIC\MONTGOMERY\2017\
FILE: MO1702 PRELIMINARY POND OPTIONS EXHIBIT 3-4.MXD

EXHIBIT H
PRELIMINARY BASIN OPTIONS CLOSE UP

MONTGOMERY OVERFLOW FLOODPLAIN FEASIBILITY STUDY



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Village of Montgomery
Kane & Kendall Counties, Illinois

DATE:	OCTOBER 2020
PROJECT NO.:	MO1702
BY:	MJT
PATH:	...\\GIS\PUBLIC\MONTGOMERY\2017
FILE:	MO1702 - PRELIMINARY POND EXHIBIT ORCH.MXD

EXHIBIT I
ORCHARD ROAD PROPERTY

MONTGOMERY OVERFLOW
FLOODPLAIN FEASIBILITY
STUDY

Engineering Enterprises, Inc.

APPENDIX 1: INDIVIDUAL PARCEL REMEDIATION SPREADSHEET
MONTGOMERY OVERFLOW FEASIBILITY STUDY
VILLAGE OF MONTGOMERY

Montgomery Overflow

Property Index Number (PIN)	Parcel Area (sf)	Parcel Area (ac)	Flood Fringe Area (sf)	Flood Fringe Percent	Floodway Area (sf)	Floodway Percent	Floodplain Area (sf)	Floodplain Percent	Average Elevation Flood Fringe	Floodplain Elevation	Floodplain Fill 1.0x Fill (cy)	Floodplain Fill 1.5x Fill (cy)	Floodplain Fill 1.5x Fill (ac-ft)	Current Status	Detention Required (acre-ft) 50% Impervious 0.39 ac-ft/acre	Detention Required (acre-ft) 75% Impervious 0.47 ac-ft/acre	Detention Required (acre-ft) 85% Impervious 0.50 ac-ft/acre
15-31-100-015	659,905	15.149	23,436	4%	18,932	3%	42,368	6%	661	662	868	1,302	0.807	Developed	--	--	--
15-31-100-017	1,396,000	32.048	162,148	12%	329,138	24%	491,286	35%	660	662	12,011	18,016	11.167	Farmed	9.552	11.511	12.246
15-31-326-006 North	125,602	2.883	0	0%	0	0%	0	0%	--	--	--	--	--	Developed	--	--	--
15-31-326-006 South	180,934	4.154	91,751	51%	73,323	41%	165,074	91%	657	662	16,991	25,486	15.797	Wooded	0.963	1.161	1.235
15-31-326-007 North	60,986	1.400	0	0%	0	0%	0	0%	--	--	--	--	--	Developed	--	--	--
15-31-326-007 South	70,462	1.618	24,970	35%	40,358	57%	65,328	93%	658	662	3,699	5,549	3.439	Wooded	0.270	0.325	0.346
15-31-326-022	467,983	10.743	284,309	61%	159,427	34%	443,736	95%	656	662	63,180	94,770	58.742	Farmed	2.763	3.329	3.542
15-31-326-023	87,580	2.011	6,180	7%	1,144	1%	7,324	8%	657	662	1,144	1,717	1.064	Developed	--	--	--
15-31-326-025 North	34,509	0.792	25,613	74%	0	0%	25,613	74%	657	662	4,743	7,115	4.410	Farmed	0.309	0.372	0.396
15-31-326-025 South	89,072	2.045	41,288	46%	47,784	54%	89,072	100%	656	662	9,175	13,763	8.531	Farmed	0.370	0.445	0.474
15-31-326-027 North	19,078	0.438	18,956	99%	0	0%	18,956	99%	657	662	3,510	5,266	3.264	Farmed	0.171	0.206	0.219
15-31-326-027 South	104,438	2.398	60,165	58%	44,273	42%	104,438	100%	657	662	11,142	16,713	10.359	Farmed	0.539	0.649	0.691
15-31-326-029	123,451	2.834	47,382	38%	43,800	35%	91,182	74%	657	662	8,774	13,162	8.158	Farmed	0.713	0.859	0.914
15-31-326-036	132,589	3.044	20,393	15%	0	0%	20,393	15%	658	662	3,021	4,532	2.809	Developed	--	--	--
15-31-326-037	70,473	1.618	55,026	78%	3,945	6%	58,971	84%	657	662	10,190	15,285	9.474	Farmed	0.596	0.718	0.764
15-31-326-038	173,923	3.993	43,520	25%	40,133	23%	83,653	48%	657	662	8,059	12,089	7.493	Farmed	1.198	1.444	1.536
15-31-401-005 North (Pr. Pond)	118,796	2.727	28,293	24%	90,181	76%	118,474	100%	--	--	--	--	--	Grassed	0.256	0.309	0.328
15-31-401-005 South	97,393	2.236	41,023	42%	0	0%	41,023	42%	657	662	7,597	11,395	7.063	Developed	--	--	--
15-31-401-006 (Pr. Pond)	216,183	4.963	69,999	32%	144,876	67%	214,875	99%	--	--	--	--	--	Wooded	0.638	0.769	0.818
15-31-401-007 (Pr. Pond)	233,155	5.353	16,641	7%	202,859	87%	219,500	94%	--	--	--	--	--	Wooded	0.271	0.327	0.348
15-31-401-008 (Pr. Pond)	41,904	0.962	3,309	8%	31,339	75%	34,648	83%	--	--	--	--	--	Grassed	0.095	0.114	0.121
15-31-401-009	151,415	3.476	30,000	20%	96,233	64%	126,233	83%	660	661	1,111	1,667	1.033	Farmhouse	0.494	0.595	0.633
15-31-401-013	454,606	10.436	97,839	22%	0	0%	97,839	22%	657	662	18,118	27,178	16.846	Developed	--	--	--
15-31-401-025	53,294	1.223	25,537	48%	27,757	52%	53,294	100%	657	662	4,729	7,094	4.397	Gravel	0.229	0.276	0.293
15-31-401-036	202,954	4.659	86,744	43%	116,198	57%	202,942	100%	657	662	16,064	24,096	14.935	Wooded	0.777	0.936	0.996
15-31-401-037	298,427	6.851	104,028	35%	6,692	2%	110,720	37%	658	662	15,412	23,117	14.329	Developed	--	--	--
14-36-200-002	1,958,536	44.962	263,789	13%	726,489	37%	990,278	51%	660	662	19,540	29,310	18.167	Farmed	11.031	13.293	14.142
Aucutt Corner Parcel	136,792	3.140	102,092	75%	28,026	20%	130,118	95%	658	662	15,125	22,687	14.062	Grassed	0.974	1.174	1.248
Aucutt Rd R.O.W.	0	--	24,384	--	24,031	--	48,415	--	659	662	2,709	4,064	2.519	Developed	--	--	--
Countryside Subdivision	0	--	199,929	--	0	--	199,929	--	658	662	29,619	44,429	27.538	Developed	--	--	--
Greenfield Rd R.O.W.	0	--	39,220	--	0	--	39,220	--	659	662	4,358	6,537	4.052	Developed	--	--	--
Orchard Rd R.O.W.	0	--	94,461	--	168,516	--	262,977	--	660	662	6,997	10,496	6.506	Developed	--	--	--
Aucutt Widening (Req'd Storage)	0	--	0	--	0	--	0	--	--	--	--	--	--	Developed	3.140	3.140	3.140
TOTALS											297,887	446,831	276.961		35.346	41.953	44.430

Blackberry Creek (Hamman Properties)

Parcel Identification Number (PIN)	Parcel Area (sf)	Parcel Area (ac)	Flood Fringe Area (sf)	Flood Fringe Percent	Floodway Area (sf)	Floodway Percent	Floodplain Area (sf)	Floodplain Percent	Average Elevation Flood Fringe	Floodplain Elevation	Floodplain Fill 1.0x Fill (cy)	Floodplain Fill 1.5x Fill (cy)	Floodplain Fill 1.5x Fill (ac-ft)	Current Status	Detention Required (acre-ft) 50% Impervious 0.39 ac-ft/acre	Detention Required (acre-ft) 75% Impervious 0.47 ac-ft/acre	Detention Required (acre-ft) 85% Impervious 0.50 ac-ft/acre
14-36-200-002	4,713,420	108.205	413,335	9%	1,541,636	33%	1,954,971	41%	661	662	15,309	22,963	14.233	Farmed	28.398	34.223	36.407
14-36-451-001	3,200,545	73.474	602,850	19%	204,276	6%	807,126	25%	658	662	89,311	133,967	83.037	Farmed	26.826	32.329	34.392
14-36-479-018	1,050,177	24.109	16,415	2%	431,416	41%	447,831	43%	658	662	2,432	3,648	2.261	Farmed	5.540	6.676	7.102
TOTALS											107,052	160,578	99.532		60.763	73.228	77.902

Assumptions:

1. Average elevation in the flood fringe is based on the Kane County 2-foot contours.
2. Floodplain elevation is rounded up to the nearest foot.
3. Parcel 15-31-326-025 and 15-31-326-027 was assumed to be split into a north and south section for purposes of separately developing the north sections.
4. Parcel 15-31-401-005 was assumed to be split into a north and south section. The north section was used as space for the retention pond while the south was filled to be raised out of the floodplain.
5. Parcels 15-31-326-006 and 15-31-316-007 have been split into a north and south sections. The north sections are already fully developed and the south sections have been separated for future development.
6. Detention requirement based on the Kane County Technical Guidance Manual nomograph for 100-Year Detention Volume vs. Percent Impervious. The area to be developed is the total parcel area minus the floodway.
7. Aucutt Corner Parcel is located at the northeast corner of Orchard Rd and Aucutt Rd. The average elevation of the flood fringe for this parcel is based on the Orchard Road Widening Plans (658') not the Kane County 2-foot contours (659').
8. Aucutt Widening (Req'd Storage) is strictly the additional stormwater storage required whenever Aucutt Rd is widened to a 3-lane road with a dual left turn lane. The additional storage is the same regardless of Percent Impervious column.

BLACKBERRY CREEK
TAX INCREMENT REDEVELOPMENT PROJECT AREA
SOILS REPORT

rubino ENGINEERING INC.

REPORT TRANSMITTAL

September 24, 2020

To: Timothy N. Paulson, P.E., CFM
Senior Project Manager
Engineering Enterprises, Inc.
52 Wheeler Road
Sugar Grove, IL 60554

Re: **Geotechnical Engineering Services Report**
Proposed Montgomery Overflow Project
Orchard Road and Aucutt Road
Montgomery, Illinois

Rubino Report No. G20.095

Via email: tpaulson@eeiweb.com

Dear Mr. Paulson,

Rubino Engineering, Inc. (Rubino) is pleased to submit our Geotechnical Engineering Services Report for the proposed Montgomery Overflow Project in Montgomery, Illinois.

Report Description

Enclosed is the Geotechnical Services Report including results of field and laboratory testing, as well as recommendations for detention pond design, pavement design, utility installation, and general site development.

Authorization and Correspondence History

- Rubino Proposal No. Q20.204g_REV3 dated June 18, 2020; Signed and authorized by Timothy Paulson, Senior Project Manager of Engineering Enterprises, Inc. on June 22, 2020.

Closing

Rubino appreciates the opportunity to provide geotechnical services for this project and we look forward to continued participation during the design and in future construction phases of this project.

If you have questions pertaining to this report, or if Rubino may be of further service, please contact our office at (847) 931-1555.

Respectfully submitted,
RUBINO ENGINEERING, INC.

Michelle A. Lipinski, PE
President

michelle.lipinski@rubinoeng.com

MAL/file/ Enclosures

Geotechnical Engineering Services Report

PROPOSED MONTGOMERY OVERFLOW PROJECT

MONTGOMERY, ILLINOIS

RUBINO PROJECT NO. G20.095

Drilling
Laboratory Testing
Geotechnical Analysis

PREPARED BY:

rubino ENGINEERING INC.

Michelle A. Lipinski, PE
President
IL No. 062-061241, Exp. 11/30/21

PREPARED FOR:

ENGINEERING ENTERPRISES, INC.

52 WHEELER ROAD

SUGAR GROVE, ILLINOIS 60554

SEPTEMBER 24, 2020

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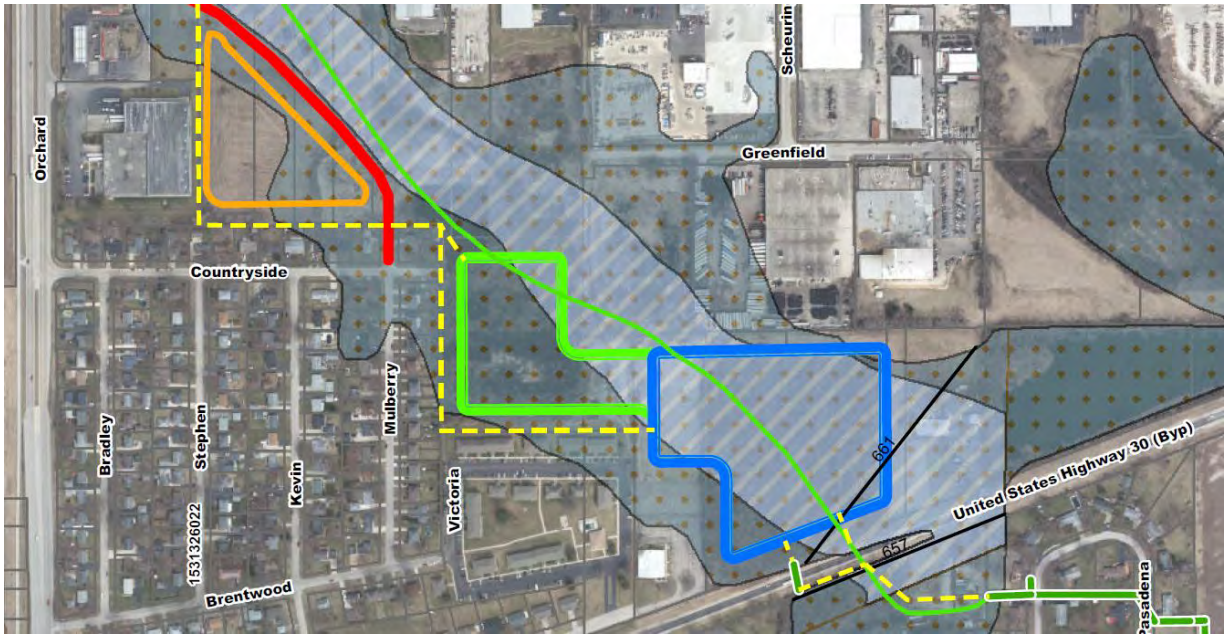
PROJECT INFORMATION

Rubino Engineering, Inc. (Rubino) Rubino understands that the Village of Montgomery is planning to construct some regional detention ponds, a storm sewer system, and an access road. There are three options for pond location and some of the properties have yet to be acquired. The properties that have yet to be acquired will need further coordination. The detention ponds will be over-excavated and the material generated could be used as structural fill. EEI has requested soil borings along the access road, for each proposed pond, and the storm sewer locations, along with CCDD certificates. In a follow-up revision email, Tim Paulson requested to remove borings from properties not controlled by the village, to include recommendations on the use of the excavated material as structural fill. Some of the soil borings for Pond Option 2 and the proposed storm sewer were inaccessible at the time of mobilization due to standing water. See Purpose / Scope of Services Section for final boring scope.

Documents received:

- Drawing – "MO1840 -Soil Boring Exhibit 1" prepared by EEI dated May 2020
- Drawing – "MO1840 -Soil Boring Exhibit 2" prepared by EEI dated May 2020



Project Correspondence:

- RFP Email from Tim Paulson of Engineering Enterprises, Inc. on May 15, 2020
- Revision Email from Tim Paulson of EEI on June 3, 2020
- Revision Email from Tim Paulson of EEI on June 15, 2020

The geotechnical recommendations presented in this report are based on the available project information and the subsurface materials described in this report. If any of the information on which this report is based is incorrect, please inform Rubino in writing so that we may amend the recommendations presented in this report (if appropriate, and if desired by the client). Rubino will not be responsible for the implementation of our recommendations if we are not notified of changes in the project.

Purpose / Scope of Services

The purpose of this study was to explore the subsurface conditions at the site in order to prepare geotechnical recommendations for detention pond design, pavement design, utility installation, and general site development for the proposed construction. Some of the soil borings for Pond Option 2 and the proposed storm sewer were inaccessible at the time of mobilization due to standing water. Rubino's final scope of services included the following drilling program:

Table 1: Drilling Scope

NUMBER OF BORINGS	DEPTH (FEET BEG*)	LOCATION
4	15 – 20	Proposed storm sewer (SS-01 through SS-05) *SS-03 Not performed*
5	10	Proposed access road (SGB-01 through SGB-05)
2	15	Proposed Pond Option 1 (P-01 & P-02)
2	15 – 20	Proposed Pond Option 2 (P2-04 & P-05) *P2-01 through P2-03 not performed*
4	15	Proposed Pond Option 3 (P3-01 through P3-06)
2	20	

*BEG = below existing grade

Representative soil samples obtained during the field exploration program were transported to the laboratory for additional classification and laboratory testing.

This report briefly outlines the following:

- *Summary of client-provided project information and report basis*
- *Overview of encountered subsurface conditions*
- *Overview of field and laboratory tests performed including results*
- *Geotechnical recommendations pertaining to:*
  - *Subgrade preparation (Pond Borings)*
  - *Determination of proposed excavated soils for the use of structural fill by soil classification and Atterberg Limits and/or One Point Proctors (Pond Borings)*
  - *Dewatering (Pond and Storm Sewer Borings)*
  - *Soil infiltration rates based on USDA soil Classification from hydrometers (Pond Borings)*
  - *Utility Installation and backfill recommendations (Storm Sewer Borings)*
  - *Trench box lateral earth pressures (Storm Sewer Borings)*
  - *Subgrade Stability and Preparation (Access Road Borings)*
  - *Estimated IBV value at each boring location (Access Road Borings)*
- *Construction considerations, including temporary excavation and construction control of water*

DRILLING, FIELD, AND LABORATORY TEST PROCEDURES

Engineering Enterprises, Inc. selected the number of borings, the boring locations, and the boring depths. Rubino located the borings in the field by measuring distances from known fixed site features. The borings were advanced utilizing 3 ¼ inch inside-diameter, hollow stem auger drilling methods and soil samples were routinely obtained during the drilling process.

Selected soil samples were tested in the laboratory to determine material properties for this report. Drilling, sampling, and laboratory tests were accomplished in general accordance with ASTM procedures. The following items are further described in the Appendix of this report.

- *Field Penetration Tests and Split-Barrel Sampling of Soils (ASTM D1586)*
- *Field Water Level Measurements*
- *Laboratory Determination of Water (Moisture) Content of Soil by Mass (ASTM D2216)*
- *Laboratory Determination of Atterberg Limits (ASTM D4318)*
- *Laboratory Determination of Particle Size (Hydrometer) Analysis of Soils (ASTM D422)*
- *Laboratory Organic Content by Loss on Ignition (ASTM D2974)*

The laboratory testing program was conducted in general accordance with applicable ASTM specifications. The results of these tests are to be found on the accompanying boring logs located in the Appendix.

SUMMARY OF GEOTECHNICAL CONSIDERATIONS

The main geotechnical design and construction considerations at this site are:

GENERAL

- **Subgrade soils** generally consisted of brown, black, and/or gray silty clay, brown and gray well-graded sandy gravel, and gray sand. See *Subsurface Conditions* section for more detailed information.

- **Free groundwater was observed** within some of the borings during drilling operations. See *Groundwater Conditions* section for more information.

DETENTION POND (P1, P2, P3 BORINGS)

- The soils in the area of the proposed detention pond area were classified as loam and sand soils. See *Detention Pond Considerations* section for more detailed information.

PAVEMENTS (SGB-01 THROUGH SGB-05)

- Surficial soils in proposed pavement areas are cohesive in nature with moderate shear strengths and moderate to high moisture contents. Please *Site Preparation Recommendations* for additional information.

- Topsoil thickness varied across the borings. Rubino recommends budgeting for at least 16 inches topsoil removal in proposed pavement areas.

- Based on the SPT N values and Qp values, **undercuts** have been estimated along the proposed access road. See *Subgrade Stability Recommendations* section for more detailed information.

- Rubino has recommended a standard pavement section for the proposed project. See *Pavement Recommendations* section for additional information.

- Positive **drainage** of the subgrade soils combined with interceptor drains and positive surface drainage will help the life expectancy of the new pavement section. See the *Pavement Drainage and Maintenance* section for more detailed information.

UTILITY INSTALLATION (SS-01 THROUGH SS-05)

- **Shallow groundwater was observed** during drilling operations. See *Groundwater Conditions and Dewatering* sections for more information.

- **Subgrade soils at proposed bearing elevations appear generally suitable** to support the proposed construction. See *Utility Installation and Backfill Recommendations* for more detailed information

- **Internally Braced Trench boxes** will be needed to support the open cut construction in areas where soft fine-grained or granular soils were encountered within the borings. See the *Trench Excavation Recommendations* sections for more information.

- **Horizontal Directional Drilling (HDD)** may not be a possible option at this site**.** See the *Utility Installation Considerations* and *Trenchless Construction Alternatives - HDD* sections for more information

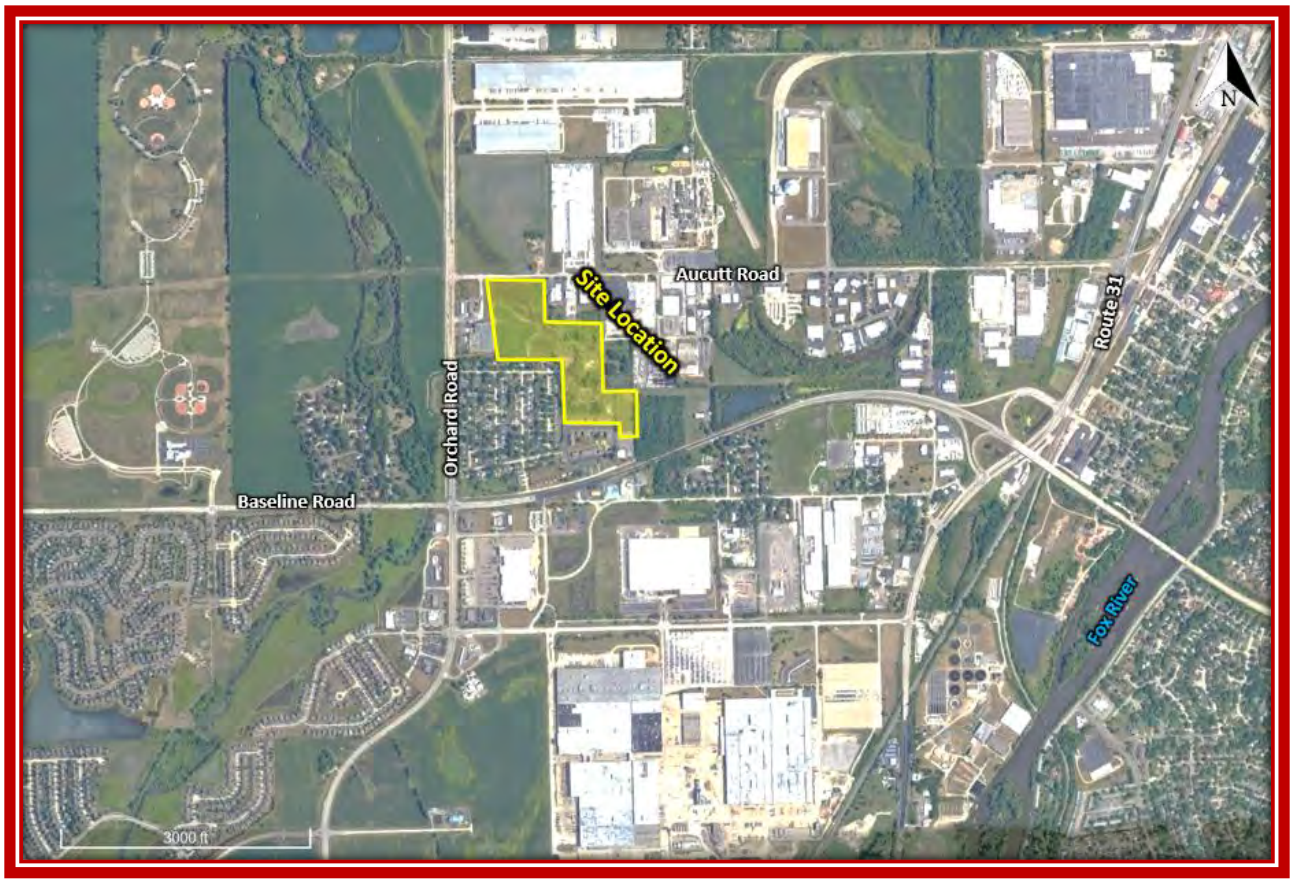
- During subgrade preparation, Rubino recommends that one of our representatives be onsite for typical **observations and documentation** of subgrade soils at the time of construction.

The geotechnical-related recommendations in this report are presented based on the subsurface conditions encountered and Rubino's understanding of the project. Should changes in the project criteria occur, a review must be made by Rubino to determine if modifications to our recommendations will be necessary.

SITE AND SUBSURFACE CONDITIONS

Site Location and Description

The project site is located in the field area southeast of the Orchard Road and Aucutt Road intersection in Montgomery, Illinois. The northwest portion of the site was previously used as an agricultural field. Presently the site is covered with brush and cattails north of Countryside Drive. On the southern end of the site near Victoria Drive and proposed Pond Option 2 there is a marsh that is surrounded by mature trees and covered in standing water. Some of the soil borings for Pond Option 2 and the proposed storm sewer were inaccessible at the time of mobilization due to standing water. See Purpose / Scope of Services Section for final boring scope.



The midpoint of the project site has an approximate latitude and longitude of 41.727425° N and -88.370352° W, respectively.

Subsurface Conditions

Beneath the topsoil, subsurface conditions generally consisted of brown, black, and/or gray silty clay, brown and gray sandy gravel, and gray sand.

- The **topsoil** thickness ranged between 3 and 18 inches
- The native **silty clay** soils were generally very soft to hard in consistency
- The **granular** soils were generally very loose to dense in apparent density

Table 2: Subsurface Conditions Summary

DEPTH RANGE (FEET BEG*)	SOIL DESCRIPTION	SPT N-VALUES (BLOWS PER FOOT)	MOISTURE CONTENT (%)	ESTIMATED SHEAR STRENGTH
Pond Option 1 (P1-01 and P1-02)				
1 – 3 ½	Stiff, brown **SILTY CLAY of HIGH PLASTICTY,** trace sand and gravel	9	21	---
1 – 11 9 ½ - 15	Medium stiff to stiff, brown and gray silty CLAY, trace to with sand and gravel	5 – 12	13 – 26	c = 750 – 1,800 psf
3 ½ - 6 11 – 15	Loose to Medium, brown to gray SAND / GRAVEL	14 – 24	10 – 17	ϕ = 31 – 34°
Pond Option 2 (P2-04 and P2-05)				
1 – 6	Medium stiff to stiff, brown silty CLAY, trace sand and gravel	6 – 14	15 – 17	c = 900 – 2,100 psf
6 – 8 ½	Soft, brown silty CLAY, trace sand and gravel *(P2-04)*	3	26	c = 300 – 500 psf
8 ½ - 13 ½	Medium stiff to stiff, brown or gray silty CLAY, trace sand and gravel	5 – 15	12 – 25	c = 750 – 2,250 psf
6 – 20	Loose to medium dense, brown and gray well-graded sandy GRAVEL to gravelly SAND	5 – 24	10 – 19	ϕ = 28 – 34°
Pond Option 3 (P3-01 through P3-06)				
1 – 8 ½	Soft to medium stiff, brown and gray silty CLAY, trace to with sand and gravel	2 – 6	15 – 40	c = 300 – 900 psf
3 ½ - 6	Stiff, dark brown and black **SILTY CLAY of HIGH PLASTICITY**, trace sand and gravel	11	21	---
1 – 18 ½	Stiff to hard, brown and gray silty CLAY, trace to with sand and gravel	8 – 35	12 – 22	c = 1,200 – 5,250 psf

DEPTH RANGE (FEET BEG*)	SOIL DESCRIPTION	SPT N-VALUES (BLOWS PER FOOT)	MOISTURE CONTENT (%)	ESTIMATED SHEAR STRENGTH
3 ½ - 6	Soft, brown and gray mottled silty CLAY, trace sand and gravel *(P3-03)*	2	40	c = 250 – 350 psf
Varies	Medium dense, brown or gray well-graded sandy GRAVEL to SAND with gravel	10 – 54	8 – 16	$\phi \geq 30°$
Proposed Access Road (SGB-01 through SGB-05)				
1 – 10	Soft to stiff, black, brown, and/or gray silty CLAY, trace sand and gravel	2 – 11	7 – 47	c = 300 – 1,650 psf
4 – 10	Loose to medium dense, gray well-graded sandy GRAVEL to poorly-graded SAND	3 – 18	9 – 25	ϕ = 28 – 32°
Proposed Storm Sewer (SS-01, SS-02, SS-04, and SS-05)				
1 – 7	Soft to medium stiff, brown and gray silty CLAY, trace sand and gravel	3 – 6	15 – 32	c = 450 – 900 psf
1 – 20	Stiff to had, gray silty CLAY, trace sand and gravel	8 – 32	12 – 19	c = 1,200 – 4,800 psf
6 ½ - 11	Loose, gray poorly-graded SAND with fines *(SS-04)*	4 – 5	13 – 18	ϕ = 28
13 ½ - 18 ½	Soft, gray silty CLAY with sand *(SS-01)*	2	13	c = 250 – 350 psf
3 ½ - 13 ½	Medium dense, gray well-graded sandy GRAVEL	10 – 35	4 – 15	ϕ = 28 – 32°

*BEG = Below existing grade

The native soils were visually classified as silty clay (CL), well-graded gravel (GW), poorly-graded sand (SP), and well-graded sand (SW) according to the Unified Soil Classification System (USCS). The above table is a general summary of subsurface conditions. Please refer to the boring logs for more detailed information.

Estimated shear strength of clay soils is based on empirical correlations using N-values, moisture content, and unconfined compressive strength.

Groundwater Conditions

Groundwater was encountered in some of the borings during drilling operations. The following table summarizes groundwater observations from the field:

Table 3: Groundwater Observation Summary

LOCATION	BORING NUMBER	GROUNDWATER LEVEL DURING DRILLING (FEET BEG*)	GROUNDWATER LEVEL UPON AUGER REMOVAL (FEET BEG*)
Pond Option 1	P1-01	11	5
	P1-02	6	N/A
Pond Option 2	P2-04	11	N/A
	P2-05	13 ½	4
Pond Option 3	P3-01	6	6
	P3-02	6	3
	P3-03	6	4
	P3-04	8 ½	6
	P3-05	8 ½	5
	P3-06	14	14
Proposed Access Road	SGB-01	4	3
	SGB-02	6	N/A
	SGB-03	6	6
	SGB-04	6	N/A
	SGB-05	8	5
Proposed Storm Sewer	SS-01	7	3
	SS-02	6	5
	SS-04	11	7
	SS-05	6	N/A

*BEG = below existing grade

It should be noted that fluctuations in the groundwater level should be anticipated throughout the year depending on variations in climatological conditions and other factors not apparent at the time the borings were performed. Groundwater may not have been observed in some areas due to the low permeability of soils. Additionally, discontinuous zones of perched water may exist within the soils. The possibility of groundwater level fluctuation should be considered when developing the design and construction plans for the project.

When bidding this project, the contractor should anticipate that groundwater will be present during excavation.

EVALUATION AND RECOMMENDATIONS

The geotechnical-related recommendations in this report are presented based on the subsurface conditions encountered and Rubino's understanding of the project. Should changes in the project criteria occur, a review must be made by Rubino to determine if modifications to our recommendations will be necessary.

Expansive Soil Discussion

Soils with low to moderate expansive properties were observed in some of the borings to depths ranging from approximately 1 to 6 feet below existing grade during the drilling operations. There is a possibility that expansive soils could be encountered at other locations on the site.

Table 4: Expansive Soils by Location

LOCATION	SOIL DESCRIPTION	DEPTH RANGE (FEET BEG*)	LIQUID LIMIT (LL)	PLASTICITY INDEX (PI)
P1-02	Brown **SILTY CLAY of HIGH PLASTICTY,** trace sand and gravel	1 – 3 ½	54	14
P3-04	Dark brown and black **SILTY CLAY of HIGH PLASTICITY**, trace sand and gravel	3 ½ - 6	52	27

*BEG = below existing grade

Expansive soils are considered unsuitable for construction due to their tendency to absorb moisture from the ground or atmosphere which causes swelling and, in turn, an increase in volume. Soils with Liquid Limits greater than 50% (LL > 50%) may exhibit highly plastic behavior and may be considered to have expansive properties (IDOT Manual 2015).

Expansive soils have high frost susceptibility and may have higher moisture contents which could contribute to failed proof rolls, however expansive soils are difficult to visually delineate in the field during construction.

Where expansive soils are encountered, subgrade treatment options may include, but are not limited to:

- Removal and replacement
- Treatment with additives (such as lime stabilization) to reduce the plasticity of the material

Topsoil Discussion

Topsoil materials as described in this report have not been analyzed for quality according to any minimum specifications. If topsoil is to be imported to or exported from this site, Rubino recommends that it meet the minimum specifications defined in **Section 1081.05** of the, "Standard Specifications for Road and Bridge Construction," adopted by the Illinois Department of Transportation, April 1st, 2016.

Rubino has reported topsoil thicknesses at each boring based on visual observation of surficial soils. Surficial topsoil thickness was visually observed to be between approximately 3 and 18 inches. **Rubino recommends budgeting for at least 16 inches of topsoil removal in proposed pavement areas.**

Organic Soils Discussion

Organic soils greater than 10% loss on ignition were not observed in the borings for this project. However, there is a possibility that organic soils could be encountered at other locations on the site.

Organic soils can later cause settlement or stability problems. If encountered during construction, Rubino recommends that organic soils be removed and replaced with a compacted and documented engineered fill.

Organic soils are defined as soils containing visible organic matter or greater than 10% organic matter as measured in a laboratory loss on ignition test. Organic soils typically consist of decomposed plant material accumulated under conditions of excessive moisture. Organic soils are dark colored in nature and may exhibit the odor of decaying vegetation.

Infiltration Rate Discussion

Soils within the areas of exploration were used to run hydrometer lab tests and were then characterized by the USDA soil texture classification in order to estimate the infiltration rates of the soil. Results from the hydrometer tests are included in the Appendix. The following table includes soil classification based on USDA as well as recommendations for design infiltration rates for soils based on USDA soil texture classification (Univ. of Wisconsin, Madison, 2006).

Table 5: Design Infiltration Rates

KEY	BORING NO.	DEPTH RANGE (FEET BEG*)	USDA SOIL TEXTURE CLASSIFICATION	DESIGN INFILTRATION RATE (IN/HR)
●	P1-02	6	SAND	3.60
●	P1-01	6	LOAM	0.24
●	P3-02	6	SAND	3.60
●	P3-06	6	LOAM	0.24

Hydrometers were not performed on soils from the borings taken in the Pond Option 2 area due to low recovery at the specified depths. However, based on the consistent soil profile across the site, Rubino recommends that Pond Option 2 be designed using the same design infiltration rates as Pond Option 1 and Pond Option 3 listed above.

USDA Soil Texture	Design Infiltration Rate (in/hr)
Sand	3.60
Loamy Sand	1.63
Sandy Loam	0.50
Loam	0.24
Silt Loam	0.13
Sandy Clay Loam	0.11
Silty Clay Loam	0.19
Clay Loam	0.03
Sandy Clay	0.04
Silty Clay	0.07
Clay	0.07

Figure 1: Design Infiltration Rates for USDA Soil Textures (Chicago Stormwater Ordinance Manual, January 2016)

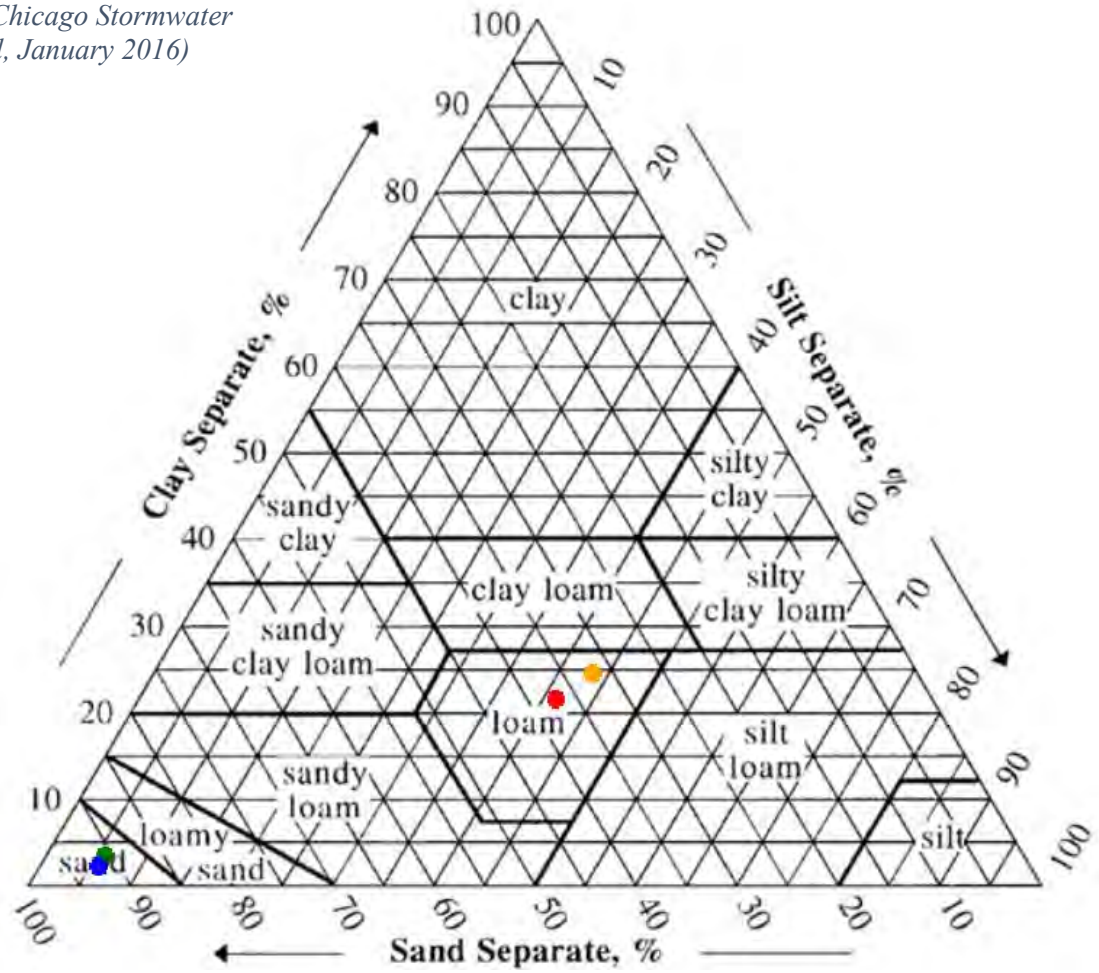


Figure 2: USDA Textural Classification Chart with Hydrometer Test Results

Detention Basin Recommendations

The depths from existing ground surface to the design grade of the detention ponds were provided by Engineering Enterprises, Inc. The following table provides summarized information of the proposed and future detention ponds. See *Infiltration Rate Discussion* section above for more detailed information about soils at the bottom of proposed and future depths of the detention ponds.

Table 6: Detention Pond Design Summary

DETENTION BASIN LOCATION	DESIGN BOTTOM DEPTH (FEET BEG*)	NORMAL WATER LEVEL ELEVATION	HIGH WATER LEVEL ELEVATION	ANTICIPATED SOIL AT BOTTOM
Pond Option 1	6	650	656	Silty CLAY and Well-graded sandy GRAVEL
Pond Option 2	6	650	656	Silty CLAY and Well-graded sandy GRAVEL
Pond Option 3	6	650	656	Silty CLAY and Well-graded sandy GRAVEL

*BEG = Below existing grade. Elevations provided by EEI.

The side slopes of the basin should be designed to be 1V:3H or flatter. Detailed slope stability analysis was outside of the scope of this project but can be performed as a supplemental report.

The slopes will require permanent protection to prevent erosion and storm water runoff. The slope protection system should provide a structurally stable topsoil environment for grass growth.

Dewatering Recommendations

Dewatering will be necessary during excavation of soils due the presence of shallow groundwater, along with; precipitation, surficial runoff, and the presence of sand seams or other conditions not apparent at the time of drilling. Shoring or trench boxes may be required where the soils are saturated or have low shear strengths. Please reference the anticipated groundwater levels on the attached boring logs and in the *Groundwater Conditions* section of this report.

Pavement Subgrade Preparation

Rubino recommends that unsuitable soils or deleterious materials be removed from the construction area, as applicable. Unsuitable soils or deleterious materials can be described as, but are not limited to:

- Organic soil / topsoil / plants / trees / shrubs / grass
- Frozen soil
- Existing asphalt or concrete pavement sections
- Concrete curb & gutter

Prior to paving, the prepared subgrade should be proofrolled using a loaded tandem axle dump truck or similar type of pneumatic tired equipment with a minimum gross weight of 9 tons per single axle. Localized soft areas identified should be repaired prior to paving. Moisture content of the subgrade be maintained between -2% and +3% of the optimum at the time of paving. It may require rework when the subgrade is either desiccated or wet.

Areas of low support or soft spots should be tested with either a Static Cone Penetrometer (SCP) or Dynamic Cone Penetrometer (DCP). The results of the DCP or SCP tests should be evaluated according to the IDOT Subgrade Stability Manual (2005), to determine the necessary depth of corrective action.

Please note that fine grained subgrade soils are sensitive to moisture and can be easily disturbed by precipitation, groundwater, or construction equipment. Therefore, extra care should be used to avoid disturbing these soils during construction activities.

Fill Materials

Where fill materials are required, the fill materials for embankment construction must conform to the requirement of Section 205 of the, "Standard Specifications for Road and Bridge Construction," adopted by the Illinois Department of Transportation, April 1st, 2016. The first layer of fill material should be placed in a relatively uniform horizontal lift and adequately keyed into the subgrade soils

The most current versions of the "Supplemental Specifications and Recurring Special Provisions" and "Project Procedures Guide" should be referenced for testing frequencies.

Table 6-1
Requirements of Borrow Soils for the Top 600 mm (24 in.) Subgrade.

REQUIRED TEST	AASHTO METHOD	PERMISSIBLE LIMIT
SDD (at OMC)	T 99 (Method C)	1,450 kg/m^3 (90 pcf) min. *
Organic Content	T 194	10 % max.
Percent Silt and Fine Sand	T 88	65 % max. **
PI	T 90	12 % min. **
LL	T 89	50 % max.
Shear Strength (c) at 95 % SDD	T 208 or T 234	50 kPa (1,000 psf) min.***
SO_3****	ASTM C 618	5 % max.

* As per Standard Specifications.
** Frost susceptibility criteria.
*** For engineered embankments which are 4.5 m (15 ft) in height or greater.
**** Only for CCB.

In general, soils form the ponds are suitable for re-use as structural fill, except for high plasticity soils. High plasticity soils used as fill should be placed at least 3 feet below the bottom of subbase stone elevation for roadways. Composite soils need to be blended to have a consistent classification. Soils

with consistent classification should be stockpiled and tested as recommended above. For budget purposes, IDOT typically recommends a shrinkage factor of 15 percent be used to determine earthwork quantities.

Subgrade Stability Recommendations (SGB-01 through SGB-05)

The recommendations located in this report are based on the data obtained at each particular soil boring location. Soil subgrade stability may vary in the field between the borings and could be affected by the weather at the time of construction.

- See attached IDOT IBV Based Remedial Action chart from the IDOT Subgrade Stability Manual for reference.
- Subgrade with an IBV value of 2 or less is a candidate for additional remediation.
- Undercut recommendations based on cuts/fills being within 12 inches of existing surface grade.

Based on the above criteria, the following boring locations have been highlighted for potential subgrade stabilization

Table 7: Undercut Recommendations

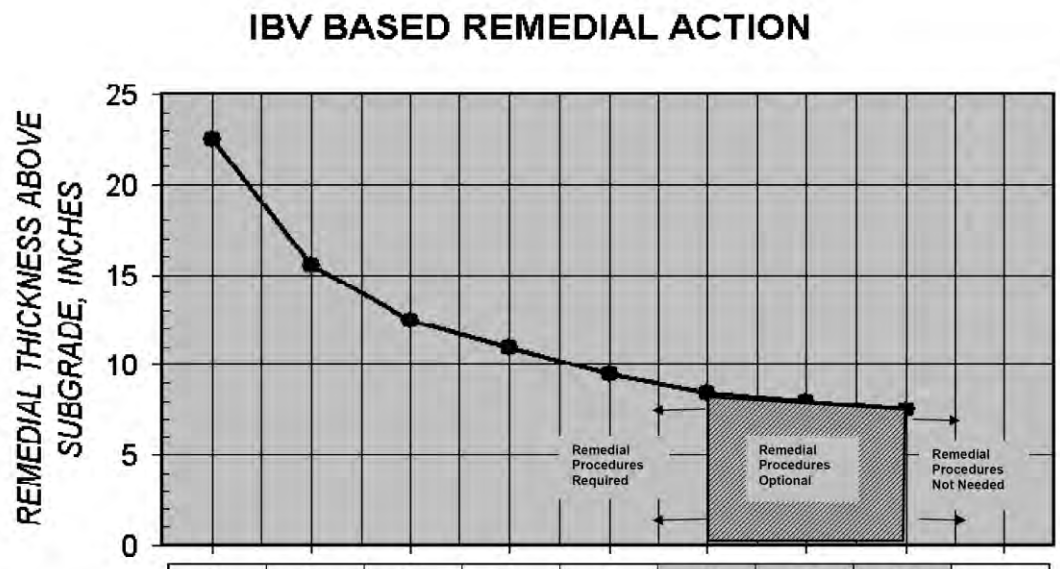
LOCATION	IBV VALUE	REMEDIAL THICKNESS (UNDERCUT)	GEOTECHNICAL CONSIDERATIONS
SGB-01 through SGB-05	1 – 4	12 inches + Woven Geotextile Fabric	Silty clay soils with low shear strength and moisture contents exceeding 25%
Rubino recommends that the designer also include a budget for triaxial geogrid over at least 25% of the pavement area to bridge over unforeseen softer subgrade areas.			

Subgrade soils may be stabilized by one of the following options:

- Remove and replace with Aggregate Subgrade Improvement 12 inch (CY).
- A layer of geotextile should be placed in areas of additional undercut.
- In areas of greater instability, geogrid and stone could be installed per manufacturer's installation specifications, maintaining positive drainage below pavements.

Unstable soil should be treated in accordance with Article 301.04 of the standard specifications and undercut guidelines in the IDOT Subgrade Stability Manual.

Reference IDOT Subgrade Stability Manual 2005



IBV	1	2	3	4	5	6	7	8	9
Cone Index(CI)	40	80	120	160	200	240	280	320	360
Shear Strength (psi)	2.25	4.50	6.75	9.00	11.25	13.50	15.75	18.00	20.25
Qu (tsf)	0.32	0.64	1.00	1.28	1.60	1.94	2.24	2.56	2.88
Rate (in./Blow)	4.6	2.6	2.0	1.5	1.3	1.1	1.0	0.9	0.8
Rate (Blows/6")	1.3	2.3	3.0	4.0	4.6	5.5	6.0	6.7	7.5
Treatment Thickness	22.5	15.5	12.5	11	9.5	8.5	8	7.5	0

Figure A-2. Thickness design as a function of IBV, CI, Shear Strength, and Q_u for subgrade treatment (granular backfill or modified soil).

Subbase Stone Recommendations

Rubino recommends that a consistent subbase thickness be placed as part of the construction of the access road. Where the soil needs to be amended, additional stone can be placed which would increase the subbase stone thickness.

The granular base course should be built at least 2 feet wider than the pavement on each side to support the tracks of the slipform paver. This extra width is structurally beneficial for wheel loads applied at pavement edge.

An IDOT CA-6 aggregate base rock (IDOT Specifications Handbook, Sec. 1004.1) can be used under the asphalt or concrete pavements.

Rubino recommends a drainage system be designed to keep water out of the base material since CA-6 contains fines which could become unstable when saturated. See the *Pavement Drainage and Maintenance* section below for more information.

Pavement Drainage and Maintenance

Fine-grained soils can be sensitive to remolding in the presence of water. In the areas of surficial clays, the surface should be maintained in a graded condition to prevent standing water on the subgrade. Appropriate measures may include, but are not limited to:

- Shaping/pitching the sub-grade to drain toward side drainage ditch along the pavement.
- Providing proper filtration for runoff waters. Proper drainage of the pavement is mandated by Article 202.05 of the IDOT Standard Specifications.
- Rubino recommends placing CA-6 as the fill at the interface of clay and the new pavement. If open-graded stone is used, a geotextile should be placed between the fine-grained soil and the stone.
- Rubino recommends pavements be sloped to provide rapid surface drainage. Water allowed to pond on or adjacent to the pavement could saturate the subgrade and cause premature deterioration of pavements, and removal and replacement may be required.
- Consideration should be given to the use of an interceptor drain to collect and remove water collecting in the granular base. The interceptor drains could be incorporated with the storm drains of other utilities located in the pavement areas.

Trenchless Construction Alternatives - HDD

Horizontal Directional Drilling (HDD) is typically used when trenching or open excavation is not practical, such as water crossings, road/railway crossings, or in other sensitive crossings.

HDD is compatible with a wide range of soil conditions. However, very loose, soft, squeezing, collapsible, or flowing soils that are not self-supporting and highly permeable, large-grained cohesionless soils and fractured rock are problematic for HDD. These problematic soils could present some difficulties related to bore stability, settlement, and inadvertent drilling fluid returns, depending on the type of soil.

Some of the problematic soils listed above were observed within the borings taken on the project site and therefore HDD may not be a possibility depending on final elevations of the pipe invert. Please consult a qualified contractor to discuss means and methods.

Utility Installation Considerations – Trenchless or Open Cut

The following geotechnical considerations should be taken into account when considering either trenching or trenchless techniques performed as part of this project:

Table 8: Geotechnical Considerations for Utility Installation

BORING NO.	DEPTH RANGE (FEET BEG*)	SOIL CONSIDERATIONS
SS-01, SS-02, & SS-05	0 - 15	▪ Presence of shallow groundwater observed through out the site ▪ Saturated, highly permeable, large-grained granular soils that may not be self-supporting

*BEG = below existing grade

Please note, trench boxes may be needed at other locations or depths for this project. If trench boxes will be used throughout the installation of the utility, lateral earth pressures should be considered for the excavations.

Utility Installation and Backfill Recommendations

Rubino anticipates that the proposed storm sewer will be bearing between approximately 5 and 10 feet below existing grade. The gravel and silty clay soils encountered at that depth range appear generally suitable for support of proposed storm sewer.

Rubino recommends that the storm sewer be supported by a granular bedding material similar to the gradation of an IDOT CA-07 stone. The thickness of the bedding material should be at least 12 inches.

If granular material is used for the backfill of the utility trench, the **granular material should have a gradation that will filter protect the backfill material from the adjacent soils**. If this gradation is not available, a geosynthetic non-woven filter fabric should be used to reduce the potential for the migration of fines into the backfill material. Granular backfill material shall be compacted to meet the above compaction criteria.

Structural fill placed in utility trenches shall be evaluated in accordance with the following table:

MATERIAL TESTED	PROCTOR TYPE*-1	MIN % DRY DENSITY	PLACEMENT MOISTURE CONTENT RANGE	FREQUENCY OF TESTING*-2	MAXIMUM LOOSE LIFT HEIGHT
Utility Trench Backfill	Standard	95%	-2 to +2 %	1 per 200 LF of fill placed	4 – 6 inches

*-1 The test frequency for the laboratory reference shall be one laboratory Proctor test for each material used on the site. If the borrow or source of fill material changes, a new reference moisture/density test should be performed.

*-2A minimum of one test per lift is recommended unless otherwise specified.

In general, utility trench backfill materials should:

- Have a Standard Proctor maximum dry density greater than 100 pcf
- Be free of organic or other deleterious materials
- Have a maximum particle size no greater than 3 inches
- Each lift of compacted, engineered fill should be tested and documented by a representative of the geotechnical engineer prior to placement of subsequent lifts
- Soils classified as GP, GW, SP, and SW will generally be suitable for use as utility trench backfill.
- Soils classified as CL, ML, SC, SM, OL, OH, MH, CH, and PT should be considered unsuitable.
- If water must be added, it should be uniformly applied and thoroughly mixed into the soil

Tested fill materials that do not achieve either the required dry density or moisture content range shall be recorded, the location noted, and reported to the Contractor and Owner. A re-test of that area should be performed after the Contractor performs remedial measures. The above test frequencies should be discussed with the contractor prior to starting the work.

The geotechnical engineer of record can only certify work that was performed under their direct observation, or under the observation of a competent person under their specific direction.

Trench Box Excavation Recommendations

Soils in the upper 10 feet exhibited low to moderate shear strength and may need to be supported during open trench excavation.

Excavation for trenches shall be performed in accordance with OSHA regulations as stated in 29 CFR Part 1926. Within those regulations, OSHA created a classification of soils in decreasing order of stability. According to the OSHA classification method of soils, Rubino expects that the soils located at the proposed depths for the storm sewer would classify as Type A, Type B, and Type C soils. The soil profile consisted of alternating layers of granular and cohesive soils.

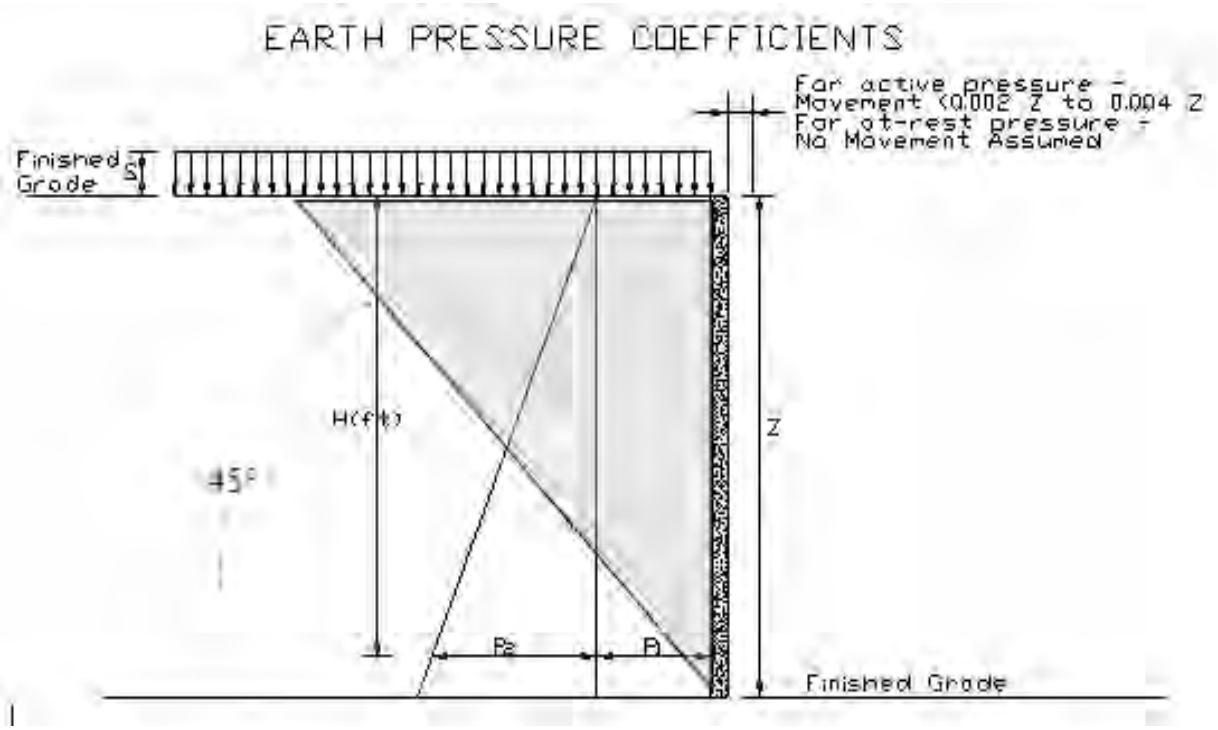
If open cut construction is planned for this project, trench boxes should be used throughout the installation of the storm sewer, and lateral earth pressures should be considered for the excavations.

Lateral Earth Pressures

Lateral earth pressures will be influenced by the conditions of wall or support restraint, methods of construction and/or compaction and the strength of the materials being restrained.

Lateral earth pressure is developed from the soils present within a wedge formed by the vertical below-grade wall and an imaginary line extending up and away from the bottom of the wall at an approximate 45° angle.

The lateral earth pressures are determined by multiplying the vertical applied pressure by the appropriate lateral earth pressure coefficient K. Rubino recommends designing the bracing for the temporary excavation for the storm sewer for the "at-rest" lateral earth pressure condition using K_o.



The following table provides the recommended "at-rest" lateral earth pressure coefficients for the soils encountered. Also included are the "active" and "passive" lateral earth pressure coefficients if needed.

Table 9: "K-Factor" Lateral Earth Pressures

DEPTH RANGE (FEET BEG*)	SOIL TYPE	ESTIMATED TOTAL UNIT WEIGHT (LB/FT^3)	FRICTION ANGLE (DEG)	K_o	K_A	K_P
1 – 20	Silty CLAY	115 – 130	26°	0.56	0.39	2.56
3 ½ - 13 ½	GRAVEL / SAND	125 – 130	28°	0.53	0.36	2.77

*BEG = below existing grade

The following equations were used to calculate the earth pressure coefficients "k".

At-Rest:	$k_o = 1 - \sin\phi$	If the walls are rigidly attached to the structure and not free to rotate or deflect at the top such as shallow tunnels
Active:	$k_a = \tan^2(45 - \frac{\phi}{2})$	Walls that are permitted to rotate and deflect at the top
Passive:	$k_p = \tan^2(45 + \frac{\phi}{2})$	Passive pressure should be determined using a factor of safety of 2.0

Conditions applicable to the above conditions include:

- For active earth pressure, wall must rotate about base, with top lateral movements 0.002Z to 0.004Z, where Z is the wall height
- For passive earth pressure, wall must move horizontally to mobilize resistance
- Uniform surcharge, where S is surcharge pressure
- Hydrostatic Pressure designed to elevations as recommended herein
- No safety factor included

Recommendations for Additional Testing

Once the site plans and grading plans are finalized, please notify Rubino so that we can review our recommendations for the direct use of the structure and development of the site.

During construction, Rubino recommends that one of our representatives be onsite for typical **observations and documentation** of exposed subgrade for pavements, including proofrolling and penetrometer testing, and of exposed subgrade for trench excavation including penetrometer testing and trench backfill compaction testing, as necessary.

CLOSING

The recommendations submitted are based on the available subsurface information obtained by Rubino Engineering, Inc. and design details furnished by Engineering Enterprises, Inc. for the proposed project. If there are any revisions to the plans for this project or if deviations from the subsurface conditions noted in this report are encountered during construction, Rubino should be notified immediately to determine if changes in the recommendations are required. If Rubino is not retained to perform these functions, we will not be responsible for the impact of those conditions on the project.

The scope of services did not include an environmental assessment to determine the presence or absence of wetlands, or hazardous or toxic materials in the soil, bedrock, surface water, groundwater or air on, below, or around this site. Any statements in this report and/or on the boring logs regarding odors, colors, and/or unusual or suspicious items or conditions are strictly for informational purposes.

After the plans and specifications are more complete, the geotechnical engineer should be retained and provided the opportunity to review the final design plans and specifications to check

that our engineering recommendations have been properly incorporated into the design documents. At this time, it may be necessary to submit supplementary recommendations. This report has been prepared for the exclusive use of Engineering Enterprises, Inc. and their consultants for the specific application to the proposed Montgomery Overflow Project in Montgomery, Illinois.

Appendix A – Drilling, Field, and Laboratory Test Procedures

ASTM D1586 Penetration Tests and Split-Barrel Sampling of Soils

During the sampling procedure, Standard Penetration Tests (SPT's) were performed at regular intervals to obtain the standard penetration (N-value) of the soil. The results of the standard penetration test are used to estimate the relative strength and compressibility of the soil profile components through empirical correlations to the soils' relative density and consistency. The split-barrel sampler obtains a soil sample for classification purposes and laboratory testing, as appropriate for the type of soil obtained.

Water Level Measurements

Water level observations were attempted during and upon completion of the drilling operation using a 100-foot tape measure. The depths of observed water levels in the boreholes are noted on the boring logs presented in the appendix of this report. In the borings where water is unable to be observed during the field activities, in relatively impervious soils, the accurate determination of the groundwater elevation may not be possible even after several days of observation. Seasonal variations, temperature and recent rainfall conditions may influence the levels of the groundwater table and volumes of water will depend on the permeability of the soils.

Ground Surface Elevations

At this time, no site-specific elevations were available to Rubino. The depths indicated on the attached boring logs are relative to the existing ground surface for each individual boring at the time of the exploration. Copies of the boring logs are located in the Appendix of this report.

ASTM D2216 Water (Moisture) Content of Soil by Mass (Laboratory)

The water content is an important index property used in expressing the phase relationship of solids, water, and air in a given volume of material and can be used to correlate soil behavior with its index properties. In fine grained cohesive soils, the behavior of a given soil type often depends on its natural water content. The water content of a cohesive soil along with its liquid and plastic limits as determined by Atterberg Limit testing are used to express the soil's relative consistency or liquidity index.

ASTM D2974 Standard Test Method for Organic Soils using Loss on Ignition (Laboratory)

These test methods cover the measurement of moisture content, ash content, and organic matter in peats and other organic soils, such as organic clays, silts, and mucks. Ash content of a peat or organic soil sample is determined by igniting the oven-dried sample from the moisture content determination in a muffle furnace at 440°C (Method C) or 750°C (Method D). The substance remaining after ignition is the ash. The ash content is expressed as a percentage of the mass of the oven-dried sample. 2.4 Organic matter is determined by subtracting percent ash content from 100.

ASTM D4318 Atterberg Limits (Laboratory)

Atterberg limit testing defines the liquid limit (LL) and plastic limit (PL) states of a given soil. These limits are used to determine the moisture content limits where the soil characteristics changes from behaving more like a fluid on the liquid limit end to where the soil behaves more like individual soil particles on the plastic limit end. The liquid limit is often used to determine if a soil is a low or high plasticity soil. The plasticity index (PI) is difference between the liquid limit and the plastic limit. The plasticity index is used in conjunction with the liquid limit to determine if the material will behave like a silt or clay.

ASTM D422 Particle Size Analysis (Laboratory)

The Particle Size Analysis of Soils determines the distribution of particle sizes in order to further classify the soil. The distribution of particle sizes larger than 75µm (retained on the No. 200 sieve) is determined by sieving, while the distribution of particle sizes smaller than 75µm is determined by a sedimentation process, using a hydrometer to secure the necessary data. These soils are then classified more accurately based on the distribution information.

Appendix B – Site Preparation – Clearing & Grubbing

Rubino recommends that unsuitable soils or fill be removed from the site, as applicable. Unsuitable soils or fills can be described as, but are not limited to:

- organic soil / topsoil / plants / trees / shrubs / grass
- frozen soil
- existing asphalt or concrete pavement sections
- existing foundations
- building debris
- existing curbs

Stripping operations should extend a minimum of: **5** feet beyond proposed pavement limits

Exceptions: where property limits allow. Notify geotechnical engineer if there are property boundary limitations. Stripping operations should be monitored and documented by a representative of the geotechnical engineer at the time of construction.

Proofrolling:

After stripping and excavating to the proposed subgrade level, as required, the pavement area should be proof-rolled and scarified and compacted to at least 95 percent of the standard Proctor maximum dry density ASTM D 698 for a depth of at least 8 inches below the surface during a period of dry weather.

Proofrolling Equipment:

Tandem-axle dump truck or similar rubber-tired vehicles are acceptable and should be loaded with at least 9 tons per axle.

Benefits of Proofrolling:

- Aids in providing a firm base for compaction of fill soils
- Helps to delineate soft, loose, or disturbed areas that may exist below subgrade level.

Subgrade Stability:

Soils which are observed to rut or deflect excessively (typically greater than 1 inch) under the moving load should either be scarified and re-compacted, or undercut and replaced.
Subgrade soils may be **stabilized** by one of the following **options**:

- **Scarifying and re-compacting** the existing subgrade soil to at least 95% compaction per ASTM D698 Standard Proctor (12-inch depth).
- **Remove and replace** with non-woven filter fabric and 3-inch stone capped with CA-06 stone.
  - A layer of non-woven filter geotextile should be placed between silty clay soil and an open-graded stone.
  - The contractor can also attempt to stabilize the existing subgrade in place by “losing” 3-inch stone into the subgrade until the until the voids of the 3-inch stone are filled with the soft soil and the subgrade “locks up,” showing minimal deflection under a proofroll.
- **Geogrid and a stone mat** placed per manufacturer’s installation specifications could reduce the amount of stone required and provide additional bridging support over softer soils
- **Lime or other chemical additive** stabilization (12 to 14 inches). This can be done as part of a lift structure. Compaction requirements still apply.

Appendix C – Fill Recommendations

In general, fill materials should meet the following:

- Standard Proctor maximum dry density >100 pcf
- Free of organic or other deleterious materials
- Have a maximum particle size no greater than 3 inches
- Have a liquid limit <45 and plasticity index <25
- Testing should include areas at least 5 feet outside the parking area perimeters, if applicable
- Each lift of compacted, engineered fill should be tested and documented by a representative of the geotechnical engineer prior to placement of subsequent lifts

Suitable Soil Classifications:

CL, SC, GW, and SW will generally be suitable for use as structural fill under pavements.

Unsuitable Soil Classifications:

OL, OH, MH, ML, SM, CH and PT should be considered unsuitable.

- If a fine-grained silt or clay soil is used for fill (CL or ML), close moisture content control will be essential to achieve the recommended degree of compaction
- If water must be added, it should be uniformly applied and thoroughly mixed into the soil by disking or scarifying

Structural fill added to the site shall be evaluated in accordance with the following table:

Material Tested	Proctor Type*-1	Min % Dry Density	Placement Moisture Content Range	Frequency of Testing*-2	Maximum Loose Lift Height
Structural Fill (Cohesive & Well-graded Granular)	Standard	98%	-2 to +3 %	1 per 2,500 yd^2 of fill placed	8 inches
Random Fill (non-load bearing)	Standard	95%	-3 to +3 %	1 per 5,000 yd^2 of fill placed	8 inches
Utility Trench Backfill	Standard	95%	-2 to +2 %	1 per 50 LF of fill placed	6 inches

*-1 The test frequency for the laboratory reference shall be one laboratory Proctor or Relative Density test for each material used on the site. If the borrow or source of fill material changes, a new reference moisture/density test should be performed.

*-2A minimum of one test per lift is recommended unless otherwise specified.

Tested fill materials that do not achieve either the required dry density or moisture content range shall be recorded, the location noted, and reported to the Contractor and Owner. A re-test of that area should be performed after the Contractor performs remedial measures. The above test frequencies should be discussed with the contractor prior to starting the work.

The geotechnical engineer of record can only certify work that was performed under their direct observation, or under the observation of a competent person under their specific direction.

In pavement areas, Rubino recommends utilizing IDOT specifications for construction.

Appendix D – Report Limitations

Subsurface Conditions:

The subsurface description is of a generalized nature to highlight the major subsurface stratification features and material characteristics. The boring logs included in the appendix should be reviewed for specific information at individual boring locations. These records include soil descriptions, stratifications, penetration resistances, locations of the samples and laboratory test data as well as water level information. The stratifications shown on the boring logs represent the conditions only at the actual boring locations. Variations may occur and should be expected between boring locations. The stratifications represent the approximate boundary between subsurface materials and the actual transition between layers may be gradual. The samples, which were not altered by laboratory testing, will be retained for up to 60 days from the date of this report and then will be discarded.

Geotechnical Risk:

The concept of risk is an important aspect of the geotechnical evaluation. The primary reason for this is that the analytical methods used to develop geotechnical recommendations do not comprise an exact science. The analytical tools that geotechnical engineers use are generally empirical and must be used in conjunction with engineering judgment and experience. Therefore, the solutions and recommendations presented in the geotechnical evaluation should not be considered risk-free, and more importantly, are not a guarantee that the interaction between the soils and the proposed structure will perform as planned. The engineering recommendations, presented in the preceding section, constitute Rubino's professional estimate of the necessary measures for the proposed structure to perform according to the proposed design based on the information generated and reference during this evaluation, and Rubino's experience in working with these conditions.

Warranty:

The geotechnical engineer warrants that the findings, recommendations, specifications, or professional advice contained herein have been made in accordance with generally accepted professional geotechnical engineering practices in the local area. No other warranties are implied or expressed.

Federal Excavation Regulations:

In Federal Register, Volume 54, No. 209 (October 1989), the United States Department of Labor, Occupational Safety and Health Administration (OSHA) amended its "Construction Standards for Excavations, 29 CFR, part 1926, Subpart P". This document was issued to better ensure the safety of workmen entering trenches or excavations. This federal regulation mandates that all excavations, whether they be utility trenches, basement excavation or footing excavations, be constructed in accordance with the new OSHA guidelines. It is our understanding that these regulations are being strictly enforced and if they are not closely followed, the owner and the contractor could be liable for substantial penalties.

The contractor is solely responsible for designing and constructing stable, temporary excavations and should shore, slope, or bench the sides of the excavations as required to maintain stability of both the excavation sides and bottom. The contractor's "responsible person," as defined in 29 CFR Part 1926, should evaluate the soil exposed in the excavations as part of the contractor's safety procedures. In no case should slope height, slope inclination, or excavation depth, including utility trench excavation depth, exceed those specified in local, state, and federal safety regulations. Rubino is providing this information solely as a service to our client. Rubino is not assuming responsibility for construction site safety or the contractor's activities; such responsibility is not being implied and should not be inferred.

Appendix E – Soil Classification General Notes

DRILLING & SAMPLING SYMBOLS:

SS:	Split Spoon - 1 3/8" I.D., 2" O.D., unless otherwise noted	PS:	Piston Sample
ST:	Thin-Walled Tube - 3" O.D., Unless otherwise noted	WS:	Wash Sample
PM:	Pressuremeter	HA:	Hand Auger
RB:	Rock Bit	HS:	Hollow Stem Auger
DB:	Diamond Bit - 4", N, B	BS:	Bulk Sample

Standard "N" Penetration: Blows per foot of a 140-pound hammer falling 30 inches on a 2-inch O.D. split spoon sampler (SS), except where noted.

WATER LEVEL MEASUREMENT SYMBOLS:
Water levels indicated on the boring logs are the levels measured in the borings at the times indicated. In pervious soils, the indicated levels may reflect the location of groundwater. In low permeability soils, the accurate determination of ground water levels is not possible with only short-term observations.

DESCRIPTIVE SOIL CLASSIFICATION:
Soil Classification is based on the Unified Soil Classification System as defined in ASTM D-2487 and D-2488. Coarse Grained Soils have more than 50% of their dry weight retained on a #200 sieve; they are described as: boulders, cobbles, gravel or sand. Fine Grained Soils have less than 50% of their dry weight retained on a #200 sieve; they are described as: clays, if they are plastic, and silts if they are slightly plastic or non-plastic. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size. In addition to gradation, coarse grained soils are defined on the basis of their relative in-place density and fine-grained soils on the basis of their consistency. Example: Lean clay with sand, trace gravel, stiff (CL); silty sand, trace gravel, medium dense (SM).

CONSISTENCY OF FINE-GRAINED SOILS:

Unconfined Compressive Strength, Qu (tsf)			N-Blows/ft.			Consistency
	<	0.25	< 2			Very Soft
0.25	-	0.5	2	-	4	Soft
0.5	-	1	4	-	8	Medium Stiff
1	-	2	8	-	15	Stiff
2	-	4	15	-	30	Very Stiff
4	-	8	30	-	50	Hard
>	-	8	> 50			Very Hard

RELATIVE DENSITY OF COARSE-GRAINED SOILS

N-Blows/ft.			Relative Density
0	-	3	Very Loose
4	-	9	Loose
10	-	29	Medium Dense
30	-	49	Dense
50	-	80	Very Dense
		80+	Extremely Dense

RELATIVE PROPORTIONS OF SAND & GRAVEL

Descriptive Term	% of Dry Weight		
Trace		<	15
With	15	-	29
Modifier		>	30

RELATIVE PROPORTIONS OF FINES

Descriptive Term	% of Dry Weight		
Trace		<	5
With	5	-	12
Modifier		>	12

*Descriptive Terms apply to components also present in sample

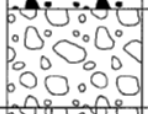
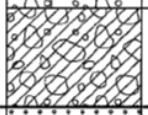
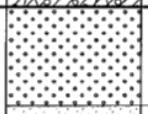
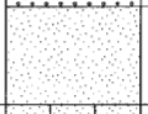
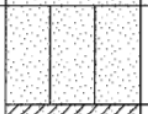
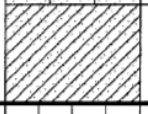
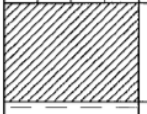
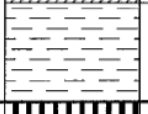
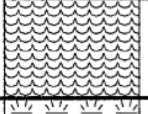
GRAIN SIZE TERMINOLOGY

Major Component	Size Range
Boulders	Over 12 in. (300mm)
Cobbles	12 in. To 3 in. (300mm to 75mm)
Gravel	3 in. To #4 sieve (75mm to 4.75mm)
Sand	#4 to #200 sieve (4.75mm to 0.75mm)

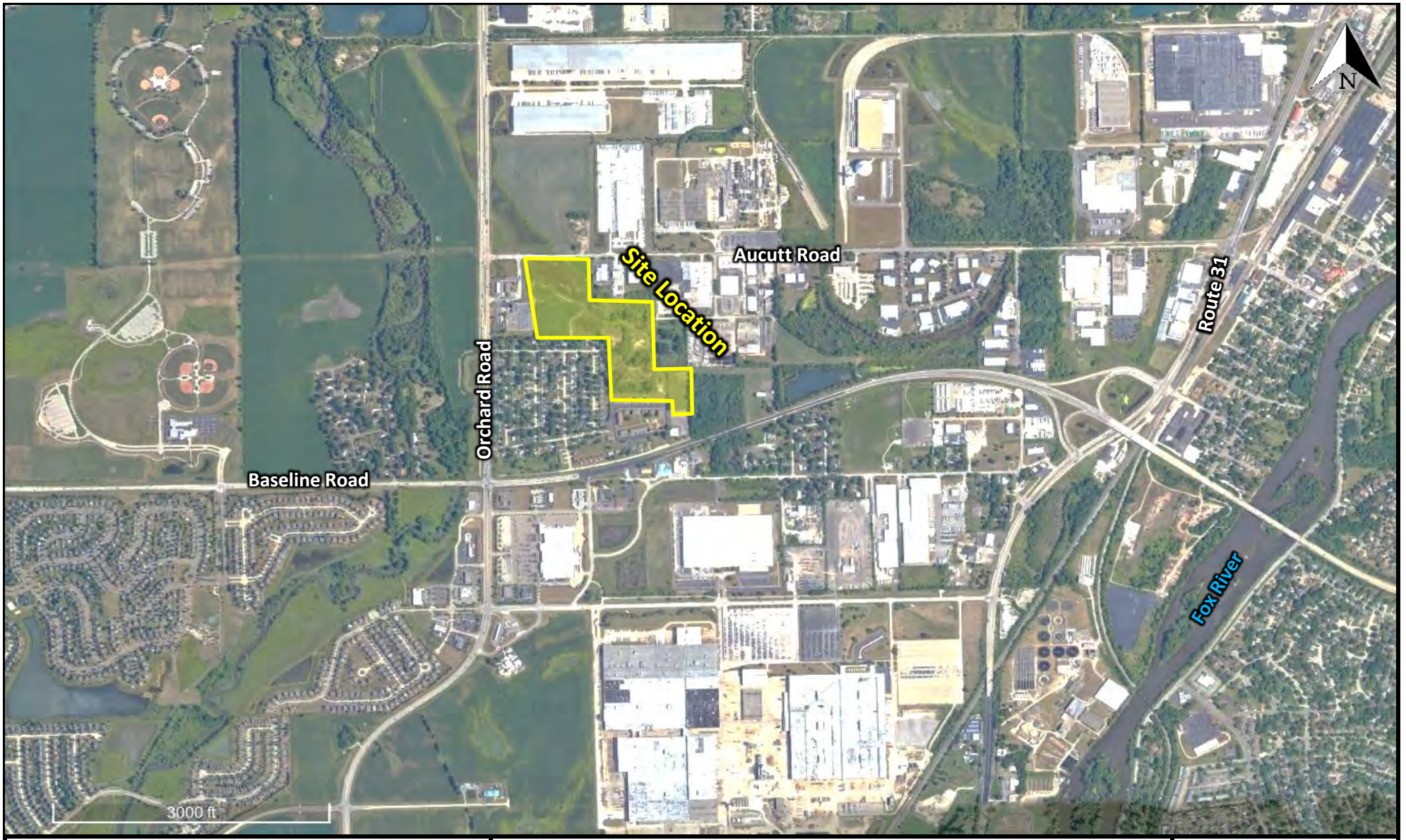
Appendix F – Soil Classification Chart

SOIL CLASSIFICATION CHART

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

MAJOR DIVISIONS			SYMBOLS: GRAPH	SYMBOLS: LETTER	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		(LITTLE OR NO FINES)		GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVELS WITH FINES		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
		(APPRECIABLE AMOUNT OF FINES)		GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	SAND AND SANDY SOILS	CLEAN SANDS		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		(LITTLE OR NO FINES)		SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SANDS WITH FINES		SM	SILTY SANDS, SAND - SILT MIXTURES
		(APPRECIABLE AMOUNT OF FINES)		SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

Appendix G – Site Vicinity Map & Boring Location Plan



rubino ENGINEERING INC.

425 Shepard Drive
Elgin, Illinois 60123

Project Name:	**Proposed Montgomery Overflow Project**
Project Location:	Field west of Orchard Road Montgomery, Illinois
Client:	**Engineering Enterprises, Inc.**
Rubino Project # :	G20.095

Site Vicinity Map

rubino ENGINEERING INC.

425 Shepard Drive
Elgin, Illinois 60123

Project Name:	**Proposed Montgomery Overflow Project**
Project Location:	Field west of Orchard Road Montgomery, Illinois
Client:	**Engineering Enterprises, Inc.**
Rubino Project # :	G20.095

Boring Location Plan

Appendix H – Borings Logs

Rubino Engineering, Inc.
425 Shepard Drive
Elgin, IL 60123
Telephone: 847-931-1555
Fax: 847-931-1560

LOG OF BORING P1-01

Rubino Job No.:	G20.095	Drilling Method:	3 ¼ Hollow Stem Auger
Project:	Proposed Montgomery Overflow Project	Sampling Method:	Split Spoon
Location:	Fields west of Orchard Road	Hammer Type:	Automatic
City, State:	Montgomery, Illinois	Boring Location:	Proposed Pond Option 1
Client:	Engineering Enterprises, Inc.		

WATER LEVELS***

While Drilling	11 ft
Upon Completion	5 ft
Delay	N/A

Station: N/A
Offset: N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch	Moisture, %	STANDARD PENETRATION TEST DATA / STRENGTH, tsf	Additional Remarks
	0					Approximately 8 inches of TOPSOIL					
						Medium stiff, brown and gray silty CLAY, trace to with sand and gravel					
				1	18			8 3 4 N=7	23		Qp=1.5 tsf
				2	9			2 2 3 N=5	22		Qp=0.5 tsf LL = 32 PL = 18 2% Organic Content
	5					*Color transitions to gray at approximately 6 feet below existing grade*	CL				
				3	16			0 2 4 N=6	15		Qp=1.0 tsf
				4	18			2 2 3 N=5	14		Qp=1.5 tsf
	10					Medium dense, gray well-graded sandy GRAVEL					
				5	16		GW	7 8 13 N=21	10		
				6	14			7 13 11 N=24	15		
	15					End of boring at approximately 15 feet below existing grade.					

STANDARD PENETRATION TEST DATA: Moisture, PL, LL (0, 25, 50); STRENGTH, tsf: Qu (Rimac), Qp (0, 2.0, 4.0)

Completion Depth:	15.0 ft	Sample Types:	Pressuremeter, Auger Cutting, Shelby Tube, Split-Spoon, Hand Auger, Rock Core, No Recovery
Date Boring Started:	7/27/20		
Date Boring Completed:	7/27/20		
Logged By:	P.P.		
Drilling Contractor:	Rubino Engineering, Inc.		

Latitude: 41.72625275
Longitude: -88.36817046
Drill Rig: Geoprobe 7822DT
Remarks:

The stratification lines represent approximate boundaries. The transition may be gradual.
***Please reference the geotechnical report text for specific groundwater / dewatering recommendations.

Rubino Engineering, Inc.
425 Shepard Drive
Elgin, IL 60123
Telephone: 847-931-1555
Fax: 847-931-1560

LOG OF BORING P1-02

Rubino Job No.:	G20.095	Drilling Method:	3 ¼ Hollow Stem Auger
Project:	Proposed Montgomery Overflow Project	Sampling Method:	Split Spoon
Location:	Fields west of Orchard Road	Hammer Type:	Automatic
City, State:	Montgomery, Illinois	Boring Location:	Proposed Pond Option 1
Client:	Engineering Enterprises, Inc.		

WATER LEVELS***

While Drilling	6 ft
Upon Completion	N/A
Delay	N/A

Station: N/A
Offset: N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch	Moisture, %	STANDARD PENETRATION TEST DATA / STRENGTH, tsf	Additional Remarks
	0					Approximately 18 inches of TOPSOIL					
				1	15	Stiff, brown SILTY CLAY of HIGH PLASTICITY, trace sand and gravel	CH	4 4 5 N=9	21		Qp=2.5 tsf LL = 54 PL = 25
				2	11	Medium dense, brown well-graded SAND with gravel	SW	3 6 8 N=14	17		
	5			3	13	Very loose to loose, gray well-graded sandy GRAVEL	GW	3 4 4 N=8	26		4% Organic Content
				4	11			1 1 2 N=3	13		
	10			5	14	Stiff, gray silty CLAY, trace sand and gravel	CL	3 4 8 N=12	12		Qp=2.0 tsf
				6	10			3 4 4 N=8	13		Qp=0.5 tsf
	15					End of boring at approximately 15 feet below existing grade.					

Completion Depth:	15.0 ft
Date Boring Started:	7/27/20
Date Boring Completed:	7/27/20
Logged By:	P.P.
Drilling Contractor:	Rubino Engineering, Inc.

Sample Types:
- Auger Cutting
- Split-Spoon
- Rock Core
- Pressuremeter
- Shelby Tube
- Hand Auger
- No Recovery

Latitude: 41.7253774
Longitude: -88.36755283
Drill Rig: Geoprobe 7822DT
Remarks: Hole collapse at approximately 6 feet below existing grade upon auger removal.

The stratification lines represent approximate boundaries. The transition may be gradual.
***Please reference the geotechnical report text for specific groundwater / dewatering recommendations.

Rubino Engineering, Inc.
425 Shepard Drive
Elgin, IL 60123
Telephone: 847-931-1555
Fax: 847-931-1560

LOG OF BORING P2-04

Rubino Job No.:	G20.095	Drilling Method:	3 ¼ Hollow Stem Auger
Project:	Proposed Montgomery Overflow Project	Sampling Method:	Split Spoon
Location:	Fields west of Orchard Road	Hammer Type:	Automatic
City, State:	Montgomery, Illinois	Boring Location:	Proposed Pond Option 2
Client:	Engineering Enterprises, Inc.		

WATER LEVELS***

While Drilling	11 ft
Upon Completion	N/A
Delay	N/A

Station: N/A
Offset: N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch	Moisture, %	Additional Remarks
	0					Approximately 14 inches of TOPSOIL				
				1	13	Stiff, brown silty CLAY with sand, trace gravel	CL	7 6 8 N=14	15	Qp=4.5 tsf LL = 38 PL = 21
				2	9			6 4 5 N=9	15	Qp=4.5 tsf
	5			3	0	Soft, brown silty CLAY, trace sand and gravel	CL	2 1 2 N=3	26	2% Organic Content
				4	12	Very stiff, brown silty CLAY, trace sand and gravel	CL	3 6 9 N=15	25	Qp=1.0 tsf 3% Organic Content
	10			5	10	Loose to medium dense, brown well-graded gravelly SAND		0 2 2 N=4	19	
				6	9			1 3 5 N=8	14	
	15						SW			
				7	10			6 9 15 N=24	15	
	20					End of boring at approximately 20 feet below existing grade.				

STANDARD PENETRATION TEST DATA
Moisture, PL, LL (0 – 25 – 50)
STRENGTH, tsf: Qu (Rimac), Qp (0 – 2.0 – 4.0)

Completion Depth:	20.0 ft
Date Boring Started:	8/25/20
Date Boring Completed:	8/25/20
Logged By:	P.P.
Drilling Contractor:	Rubino Engineering, Inc.

Sample Types:
Auger Cutting
Split-Spoon
Rock Core
Pressuremeter
Shelby Tube
Hand Auger
No Recovery

Latitude: 41.7255680
Longitude: -88.3700200
Drill Rig: Geoprobe 7822DT
Remarks: Hole collapse at approximately 6 feet below existing grade upon auger removal.

The stratification lines represent approximate boundaries. The transition may be gradual.
***Please reference the geotechnical report text for specific groundwater / dewatering recommendations.

Rubino Engineering, Inc.
425 Shepard Drive
Elgin, IL 60123
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Fax: 847-931-1560

LOG OF BORING P2-05

Rubino Job No.:	G20.095
Project:	Proposed Montgomery Overflow Project
Location:	Fields west of Orchard Road
City, State:	Montgomery, Illinois
Client:	Engineering Enterprises, Inc.
Drilling Method:	3 ¼ Hollow Stem Auger
Sampling Method:	Split Spoon
Hammer Type:	Automatic
Boring Location:	Proposed Pond Option 2

WATER LEVELS***

While Drilling	13.5 ft
Upon Completion	4 ft
Delay	N/A

Station: N/A
Offset: N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch	Moisture, %	STANDARD PENETRATION TEST DATA / STRENGTH, tsf	Additional Remarks
	0					Approximately 14 inches of TOPSOIL					
				1	8	Medium stiff to stiff, brown silty CLAY, trace sand and gravel		7 6 6 N=12	16		>>Qp=4.5 tsf
				2	6		CL	3 3 3 N=6	17		>>Qp=4.5 tsf
	5			3	6	Loose, gray well-graded sandy GRAVEL	GW	2 3 2 N=5	13		Qp=0.5 tsf
				4	15	Medium stiff to stiff, gray silty CLAY, trace sand and gravel		0 1 4 N=5	13		Qp=0.5 tsf
	10			5	6		CL	0 5 6 N=11	12		Qp=0.8 tsf
				6	6	Loose, brown well-graded sandy GRAVEL	GW	2 3 6 N=9	10		
	15					End of boring at approximately 15 feet below existing grade.					

STANDARD PENETRATION TEST DATA: Moisture, PL, LL (0, 25, 50)
STRENGTH, tsf: Qu (Rimac), Qp (0, 2.0, 4.0)

Completion Depth:	15.0 ft
Date Boring Started:	8/25/20
Date Boring Completed:	8/25/20
Logged By:	P.P.
Drilling Contractor:	Rubino Engineering, Inc.

Sample Types:
- Auger Cutting
- Split-Spoon
- Rock Core
- Pressuremeter
- Shelby Tube
- Hand Auger
- No Recovery

Latitude: 41.7255530
Longitude: -88.3690560
Drill Rig: Geoprobe 7822DT
Remarks:

The stratification lines represent approximate boundaries. The transition may be gradual.
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Rubino Engineering, Inc.
425 Shepard Drive
Elgin, IL 60123
Telephone: 847-931-1555
Fax: 847-931-1560

LOG OF BORING P3-01

Rubino Job No.:	G20.095
Project:	Proposed Montgomery Overflow Project
Location:	Fields west of Orchard Road
City, State:	Montgomery, Illinois
Client:	Engineering Enterprises, Inc.
Drilling Method:	3 ¼ Hollow Stem Auger
Sampling Method:	Split Spoon
Hammer Type:	Automatic
Boring Location:	Proposed Pond Option 3

WATER LEVELS***

While Drilling	6 ft
Upon Completion	6 ft
Delay	N/A

Station: N/A
Offset: N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch	Moisture, %	STANDARD PENETRATION TEST DATA: Moisture, PL, LL (0 / 25 / 50); STRENGTH, tsf: Qu (Rimac), Qp (0 / 2.0 / 4.0)	Additional Remarks
	0					Approximately 3 inches of TOPSOIL					
						Stiff, brown and gray silty CLAY, trace sand and gravel					
				1	16		CL	4 4 4 N=8	21		>>Qp=4.5 tsf
						Medium dense, brown well-graded sandy GRAVEL					
				2	10			8 9 9 N=18	6		
	5										
				3	10		GW	7 12 9 N=21	12		
				4	0			4 6 7 N=13	14		
	10										
						Stiff to very stiff, gray silty CLAY, trace sand and gravel					
				5	18			5 7 7 N=14	13		Qp=4.0 tsf
							CL				
				6	15			3 3 12 N=15	13		Qp=2.5 tsf
	15					End of boring at approximately 15 feet below existing grade.					

Completion Depth:	15.0 ft
Date Boring Started:	8/3/20
Date Boring Completed:	8/3/20
Logged By:	P.P.
Drilling Contractor:	Rubino Engineering, Inc.

Sample Types:
- Auger Cutting
- Split-Spoon
- Rock Core
- Pressuremeter
- Shelby Tube
- Hand Auger
- No Recovery

Latitude: 41.72762293
Longitude: -88.37302446
Drill Rig: Geoprobe 7822DT
Remarks:

The stratification lines represent approximate boundaries. The transition may be gradual.
***Please reference the geotechnical report text for specific groundwater / dewatering recommendations.

Rubino Engineering, Inc.
425 Shepard Drive
Elgin, IL 60123
Telephone: 847-931-1555
Fax: 847-931-1560

LOG OF BORING P3-02

Rubino Job No.:	G20.095	Drilling Method:	3 ¼ Hollow Stem Auger	WATER LEVELS***	
Project:	Proposed Montgomery Overflow Project	Sampling Method:	Split Spoon	While Drilling	6 ft
Location:	Fields west of Orchard Road	Hammer Type:	Automatic	Upon Completion	3 ft
City, State:	Montgomery, Illinois	Boring Location:	Proposed Pond Option 3	Delay	N/A
Client:	Engineering Enterprises, Inc.				

Station: N/A
Offset: N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch	Moisture, %	STANDARD PENETRATION TEST DATA / STRENGTH, tsf	Additional Remarks
	0					Approximately 16 inches of TOPSOIL					
				1	7	Medium stiff, brown and gray mottled silty CLAY, trace sand and gravel		2 2 2 N=4	25		Qp=2.0 tsf 3% Organic Content
				2	0		CL	1 2 3 N=5	18		
	5					Medium dense, gray well-graded sandy GRAVEL					
				3	7			9 8 10 N=18	16		
				4	5			10 13 14 N=27	9		
	10						GW				
				5	5			14 14 9 N=23			
				6	11			3 9 10 N=19	10		
	15					End of boring at approximately 15 feet below existing grade.					

Completion Depth:	15.0 ft	Sample Types:	Auger Cutting	Pressuremeter	Latitude: 41.72761528
Date Boring Started:	8/3/20		Split-Spoon	Shelby Tube	Longitude: -88.37153242
Date Boring Completed:	8/3/20		Rock Core	Hand Auger	Drill Rig: Geoprobe 7822DT
Logged By:	P.P.			No Recovery	Remarks:
Drilling Contractor:	Rubino Engineering, Inc.				

The stratification lines represent approximate boundaries. The transition may be gradual.
***Please reference the geotechnical report text for specific groundwater / dewatering recommendations.

Rubino Engineering, Inc.
425 Shepard Drive
Elgin, IL 60123
Telephone: 847-931-1555
Fax: 847-931-1560

LOG OF BORING P3-03

Rubino Job No.:	G20.095	Drilling Method:	3 ¼ Hollow Stem Auger
Project:	Proposed Montgomery Overflow Project	Sampling Method:	Split Spoon
Location:	Fields west of Orchard Road	Hammer Type:	Automatic
City, State:	Montgomery, Illinois	Boring Location:	Proposed Pond Option 3
Client:	Engineering Enterprises, Inc.		

WATER LEVELS***

While Drilling	6 ft
Upon Completion	4 ft
Delay	N/A

Station: N/A
Offset: N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch	Moisture, %	Additional Remarks
	0					Approximately 12 inches of TOPSOIL			23	
				1	12	Medium stiff, brown and black silty CLAY, trace sand and gravel	CL	2 3 3 N=6	28	Qp=2.0 tsf LL = 49 PL = 27 7% Organic Content
				2	13	Soft, brown and gray mottled silty CLAY, trace sand and gravel	CL	1 1 1 N=2	40	Qp=0.5 tsf 3% Organic Content
	5					Gray well-graded sandy GRAVEL	GW		14	
				3	12	Stiff, gray silty CLAY, trace sand and gravel	CL	4 2 7 N=9	15	Qp=2.0 tsf
				4	6	Medium dense, gray well-graded sandy GRAVEL	GW	4 4 8 N=12	10	
	10			5	11	Stiff to hard, gray silty CLAY, trace sand and gravel		5 4 7 N=11	13	Qp=2.5 tsf
				6	4		CL	5 20 15 N=35	14	Qp=1.0 tsf
	15			7	15	Medium dense, gray well-graded SAND with gravel	SW	5 15 6 N=21	15	
	20					End of boring at approximately 20 feet below existing grade.				

STANDARD PENETRATION TEST DATA
Moisture, PL, LL (0, 25, 50)
STRENGTH, tsf: Qu (Rimac), Qp (0, 2.0, 4.0)

Completion Depth:	20.0 ft	Latitude:	41.72900194
Date Boring Started:	7/31/20	Longitude:	-88.37317314
Date Boring Completed:	7/31/20	Drill Rig:	Geoprobe 7822DT
Logged By:	P.P.	Remarks:	
Drilling Contractor:	Rubino Engineering, Inc.		

Sample Types:
Auger Cutting
Split-Spoon
Rock Core
Pressuremeter
Shelby Tube
Hand Auger
No Recovery

The stratification lines represent approximate boundaries. The transition may be gradual.
***Please reference the geotechnical report text for specific groundwater / dewatering recommendations.

Rubino Engineering, Inc.
425 Shepard Drive
Elgin, IL 60123
Telephone: 847-931-1555
Fax: 847-931-1560

LOG OF BORING P3-04

Rubino Job No.:	G20.095	Drilling Method:	3 ¼ Hollow Stem Auger
Project:	Proposed Montgomery Overflow Project	Sampling Method:	Split Spoon
Location:	Fields west of Orchard Road	Hammer Type:	Automatic
City, State:	Montgomery, Illinois	Boring Location:	Proposed Pond Option 3
Client:	Engineering Enterprises, Inc.		

WATER LEVELS***

While Drilling	8.5 ft
Upon Completion	6 ft
Delay	N/A

Station: N/A
Offset: N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch	Moisture, %	STANDARD PENETRATION TEST DATA: Moisture (0–25–50), PL, LL; STRENGTH, tsf: Qu (Rimac), Qp (0–2.0–4.0)	Additional Remarks
	0					Approximately 4 inches of TOPSOIL					
						Stiff, dark brown and black silty CLAY, trace sand and gravel					
				1	11		CL	6 6 8 N=14	18		>>Qp=4.5 tsf 6% Organic Content
						Stiff, dark brown and black SILTY CLAY of HIGH PLASTICITY, trace sand and gravel					
				2	11			4 5 6 N=11	21		>>Qp=4.5 tsf LL = 52 PL = 25 5% Organic Content
	5						CH				
				3	9	Stiff, brown and gray mottled silty CLAY, trace sand and gravel	CL	2 2 5 N=7	22		Qp=0.5 tsf
						Medium dense, gray well-graded sandy GRAVEL					
				4	10			6 8 9 N=17	11		
	10						GW				
				5	9			13 6 4 N=10	10		
						Stiff, gray silty CLAY, trace sand and gravel					
				6	12		CL	2 2 6 N=8	15		Qp=2.5 tsf
	15					End of boring at approximately 15 feet below existing grade.					

Completion Depth:	15.0 ft	Sample Types:	Pressuremeter, Auger Cutting, Shelby Tube, Split-Spoon, Hand Auger, Rock Core, No Recovery
Date Boring Started:	7/31/20		
Date Boring Completed:	7/31/20		
Logged By:	P.P.		
Drilling Contractor:	Rubino Engineering, Inc.		

Latitude: 41.72831119
Longitude: -88.37235104
Drill Rig: Geoprobe 7822DT
Remarks:

The stratification lines represent approximate boundaries. The transition may be gradual.
***Please reference the geotechnical report text for specific groundwater / dewatering recommendations.

Rubino Engineering, Inc.
425 Shepard Drive
Elgin, IL 60123
Telephone: 847-931-1555
Fax: 847-931-1560

LOG OF BORING P3-05

Rubino Job No.:	G20.095
Project:	Proposed Montgomery Overflow Project
Location:	Fields west of Orchard Road
City, State:	Montgomery, Illinois
Client:	Engineering Enterprises, Inc.

Drilling Method:	3 ¼ Hollow Stem Auger
Sampling Method:	Split Spoon
Hammer Type:	Automatic
Boring Location:	Proposed Pond Option 3

WATER LEVELS***	
While Drilling	8.5 ft
Upon Completion	5 ft
Delay	N/A

Station: N/A
Offset: N/A

Elevation (feet)	Depth, (feet)	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch	Moisture, %	Additional Remarks
	0			Approximately 6 inches of TOPSOIL				
		1	11	Stiff, brown silty CLAY, trace sand and gravel	CL	4 4 4 N=8	22	Qp=2.0 tsf 3% Organic Content
		2	8	Medium stiff, brown silty CLAY with gravel, trace sand	CL	2 3 4 N=7	17	Qp=1.0 tsf
	5	3	13	Medium stiff, gray silty CLAY, trace sand and gravel	CL	3 2 3 N=5	15	Qp=1.0 tsf
		4	2	Very stiff, gray silty CLAY with sand, trace gravel	CL	12 9 7 N=16	22	
	10	5	4	Medium dense to dense, gray well-graded sandy GRAVEL		12 16 15 N=31	13	
		6	15	*N-values may be skewed due to large rock encountered at approximately 13½ feet below existing grade*	GW	16 20 34 N=54	11	>>
	15	7	1			9 8 18 N=26	13	
	20			End of boring at approximately 20 feet below existing grade.				

STANDARD PENETRATION TEST DATA
Moisture, PL, LL (0, 25, 50)
STRENGTH, tsf: Qu (Rimac), Qp (0, 2.0, 4.0)

Completion Depth:	20.0 ft
Date Boring Started:	7/31/20
Date Boring Completed:	7/31/20
Logged By:	P.P.
Drilling Contractor:	Rubino Engineering, Inc.

Sample Types:
- Auger Cutting
- Split-Spoon
- Rock Core
- Pressuremeter
- Shelby Tube
- Hand Auger
- No Recovery

Latitude: 41.72784227
Longitude: -88.37227846
Drill Rig: Geoprobe 7822DT
Remarks:

The stratification lines represent approximate boundaries. The transition may be gradual.
***Please reference the geotechnical report text for specific groundwater / dewatering recommendations.

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Fax: 847-931-1560

LOG OF BORING P3-06

Rubino Job No.:	G20.095	Drilling Method:	3 ¼ Hollow Stem Auger
Project:	Proposed Montgomery Overflow Project	Sampling Method:	Split Spoon
Location:	Fields west of Orchard Road	Hammer Type:	Automatic
City, State:	Montgomery, Illinois	Boring Location:	Proposed Pond Option 3
Client:	Engineering Enterprises, Inc.		

WATER LEVELS***

While Drilling	14 ft
Upon Completion	14 ft
Delay	N/A

Station: N/A
Offset: N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch	Moisture, %	STANDARD PENETRATION TEST DATA: Moisture (0–25–50), PL, LL; STRENGTH, tsf: Qu (Rimac), Qp (0–2.0–4.0)	Additional Remarks
	0					Approximately 14 inches of TOPSOIL					
				1	13	Stiff, dark brown silty CLAY, trace sand and gravel	CL	5 6 7 N=13	19	>>*	Qp=4.5 tsf 7% Organic Content
				2	12	Stiff, brown and gray mottled silty CLAY, trace to with sand and gravel		4 4 4 N=8	21		Qp=2.5 tsf 4% Organic Content
	5			3	14	*Color transitions to gray at approximately 7 feet below existing grade*		3 4 6 N=10	19 15		Qp=2.0 tsf
				4	14		CL	2 2 5 N=7	13		Qp=2.5 tsf
	10			5	16			3 4 6 N=10	12		Qp=2.5 tsf
				6	10	Medium dense, gray well-graded sandy GRAVEL	GW	2 6 7 N=13	8		
	15					End of boring at approximately 15 feet below existing grade.					

Completion Depth:	15.0 ft
Date Boring Started:	8/3/20
Date Boring Completed:	8/3/20
Logged By:	P.P.
Drilling Contractor:	Rubino Engineering, Inc.

Sample Types:
- Auger Cutting
- Split-Spoon
- Rock Core
- Pressuremeter
- Shelby Tube
- Hand Auger
- No Recovery

Latitude: 41.72830847
Longitude: -88.37293569
Drill Rig: Geoprobe 7822DT
Remarks:

The stratification lines represent approximate boundaries. The transition may be gradual.
***Please reference the geotechnical report text for specific groundwater / dewatering recommendations.

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LOG OF BORING SGB-01

Rubino Job No.:	G20.095	Drilling Method:	3 ¼ Hollow Stem Auger	WATER LEVELS***	
Project:	Proposed Montgomery Overflow Project	Sampling Method:	Split Spoon	While Drilling	4 ft
Location:	Fields west of Orchard Road	Hammer Type:	Automatic	Upon Completion	3 ft
City, State:	Montgomery, Illinois	Boring Location:	Proposed Access Road	Delay	N/A
Client:	Engineering Enterprises, Inc.				

Station: N/A
Offset: N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch	Moisture, %	STANDARD PENETRATION TEST DATA / STRENGTH, tsf	Additional Remarks
	0					Approximately 14 inches of TOPSOIL					
				1	15	Medium stiff, brown and gray mottled silty CLAY, trace sand and gravel	CL	2 2 2 N=4	21		Qp=1.0 tsf
				2	11	Loose, gray well-graded sandy GRAVEL	GW	2 1 2 N=3	25		2% Organic Content
	5			3	7	Soft to medium stiff, gray silty CLAY, trace sand and gravel	CL	2 1 2 N=3	7		Qp=1.5 tsf
				4	15			3 3 4 N=7	47		Qp=1.5 tsf 2% Organic Content
	10					End of boring at approximately 10 feet below existing grade.					

STANDARD PENETRATION TEST DATA: Moisture, PL, LL (0 – 25 – 50)
STRENGTH, tsf: Qu (Rimac), Qp (0 – 2.0 – 4.0)

Completion Depth:	10.0 ft	Sample Types:	Pressuremeter
Date Boring Started:	7/31/20		Auger Cutting
Date Boring Completed:	7/31/20		Shelby Tube
Logged By:	P.P.		Split-Spoon
Drilling Contractor:	Rubino Engineering, Inc.		Hand Auger
			Rock Core
			No Recovery

Latitude: 41.72969948
Longitude: -88.37378315
Drill Rig: Geoprobe 7822DT
Remarks:

The stratification lines represent approximate boundaries. The transition may be gradual.
***Please reference the geotechnical report text for specific groundwater / dewatering recommendations.

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LOG OF BORING SGB-02

Rubino Job No.:	G20.095	Drilling Method:	3 ¼ Hollow Stem Auger
Project:	Proposed Montgomery Overflow Project	Sampling Method:	Split Spoon
Location:	Fields west of Orchard Road	Hammer Type:	Automatic
City, State:	Montgomery, Illinois	Boring Location:	Proposed Access Road
Client:	Engineering Enterprises, Inc.		

WATER LEVELS***

While Drilling	6 ft
Upon Completion	N/A
Delay	N/A

Station: N/A
Offset: N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch	Moisture, %	Additional Remarks
	0					Approximately 12 inches of TOPSOIL				
				1	16	Soft to medium stiff, black, brown, and gray silty CLAY, trace sand and gravel		1 2 3 N=5	33	Qp=1.0 tsf 6% Organic Content
				2	14		CL	0 1 2 N=3	28	Qp=0.5 tsf 2% Organic Content
	5									
				3	11	Stiff, brown and gray mottled silty CLAY, trace sand and gravel	CL	9 6 4 N=10	12 16	Qp=0.5 tsf
						Gray well-graded sandy GRAVEL	GW		13	
				4	16	Stiff, gray silty CLAY, trace sand and gravel	CL	3 4 7 N=11		Qp=2.5 tsf
	10					End of boring at approximately 10 feet below existing grade.				

STANDARD PENETRATION TEST DATA
Moisture, PL, LL (0, 25, 50)
STRENGTH, tsf: Qu (Rimac), Qp (0, 2.0, 4.0)

Completion Depth:	10.0 ft
Date Boring Started:	7/31/20
Date Boring Completed:	7/31/20
Logged By:	P.P.
Drilling Contractor:	Rubino Engineering, Inc.

Sample Types:
Auger Cutting
Split-Spoon
Rock Core
Pressuremeter
Shelby Tube
Hand Auger
No Recovery

Latitude: 41.72912504
Longitude: -88.37298699
Drill Rig: Geoprobe 7822DT
Remarks:

The stratification lines represent approximate boundaries. The transition may be gradual.
***Please reference the geotechnical report text for specific groundwater / dewatering recommendations.

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LOG OF BORING SGB-03

Rubino Job No.:	G20.095	Drilling Method:	3 ¼ Hollow Stem Auger
Project:	Proposed Montgomery Overflow Project	Sampling Method:	Split Spoon
Location:	Fields west of Orchard Road	Hammer Type:	Automatic
City, State:	Montgomery, Illinois	Boring Location:	Proposed Access Road
Client:	Engineering Enterprises, Inc.		

WATER LEVELS***

While Drilling	6 ft
Upon Completion	6 ft
Delay	N/A

Station: N/A
Offset: N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch	Moisture, %	STANDARD PENETRATION TEST DATA: Moisture (0–25–50), PL, LL; STRENGTH, tsf: Qu (Rimac), Qp (0–2.0–4.0)	Additional Remarks
	0					Approximately 4 inches of TOPSOIL					
						Medium stiff to stiff, brown and black silty CLAY, trace sand and gravel					
				1	9			3 4 5 N=9	17	>>*	Qp=4.5 tsf 2% Organic Content
							CL				
				2	13			2 1 3 N=4	31		Qp=0.5 tsf 4% Organic Content
	5										
				3	14	Medium dense, gray well-graded sandy GRAVEL		5 7 9 N=16	9		
							GW				
				4	14	Stiff, gray silty CLAY, trace sand and gravel		3 4 7 N=11	13	*	Qp=1.5 tsf
							CL				
	10					End of boring at approximately 10 feet below existing grade.					

Completion Depth:	10.0 ft	Sample Types:	Auger Cutting	Pressuremeter	Latitude: 41.728537
Date Boring Started:	7/31/20		Split-Spoon	Shelby Tube	Longitude: -88.372179
Date Boring Completed:	7/31/20		Rock Core	Hand Auger	Drill Rig: Geoprobe 7822DT
Logged By:	P.P.			No Recovery	Remarks: Boring offset approximately 15 feet SE due to underground utilities
Drilling Contractor:	Rubino Engineering, Inc.				

The stratification lines represent approximate boundaries. The transition may be gradual.
***Please reference the geotechnical report text for specific groundwater / dewatering recommendations.

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LOG OF BORING SGB-04

Rubino Job No.:	G20.095	Drilling Method:	3 ¼ Hollow Stem Auger
Project:	Proposed Montgomery Overflow Project	Sampling Method:	Split Spoon
Location:	Fields west of Orchard Road	Hammer Type:	Automatic
City, State:	Montgomery, Illinois	Boring Location:	Proposed Access Road
Client:	Engineering Enterprises, Inc.		

WATER LEVELS***

While Drilling	6 ft
Upon Completion	N/A
Delay	N/A

Station: N/A
Offset: N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch	Moisture, %	STANDARD PENETRATION TEST DATA: Moisture (PL, LL) 0–25–50; STRENGTH, tsf: Qu (Rimac), Qp 0–2.0–4.0	Additional Remarks
	0					Approximately 14 inches of TOPSOIL					
				1	11	Soft to medium stiff, black and brown silty CLAY, trace sand and gravel	CL	2 1 1 N=2	34		Qp=1.5 tsf 6% Organic Content
				2	9			0 2 3 N=5	36		Qp=0.5 tsf 4% Organic Content
	5			3	16	Medium stiff to stiff, brown and gray mottled silty CLAY, trace sand and gravel *3 inch wet sand lens observed at approximately 6½ feet below existing grade. Color transitions to gray at approximately 6½ feet below existing grade.*	CL	3 4 4 N=8	17		Qp=1.5 tsf
				4	10			2 2 3 N=5	15		Qp=1.0 tsf
	10					End of boring at approximately 10 feet below existing grade.					

Completion Depth:	10.0 ft
Date Boring Started:	7/31/20
Date Boring Completed:	7/31/20
Logged By:	P.P.
Drilling Contractor:	Rubino Engineering, Inc.

Sample Types:
Auger Cutting
Split-Spoon
Rock Core
Pressuremeter
Shelby Tube
Hand Auger
No Recovery

Latitude: 41.72794134
Longitude: -88.37142539
Drill Rig: Geoprobe 7822DT
Remarks: Hole collapse at approximately 3 feet below existing grade upon auger removal.

The stratification lines represent approximate boundaries. The transition may be gradual.
***Please reference the geotechnical report text for specific groundwater / dewatering recommendations.

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LOG OF BORING SGB-05

Rubino Job No.:	G20.095
Project:	Proposed Montgomery Overflow Project
Location:	Fields west of Orchard Road
City, State:	Montgomery, Illinois
Client:	Engineering Enterprises, Inc.
Drilling Method:	3 ¼ Hollow Stem Auger
Sampling Method:	Split Spoon
Hammer Type:	Automatic
Boring Location:	Proposed Access Road

WATER LEVELS***

While Drilling	8 ft
Upon Completion	5 ft
Delay	N/A

Station: N/A
Offset: N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch	Moisture, %	STANDARD PENETRATION TEST DATA: Moisture (0–25–50), PL, LL; STRENGTH, tsf: Qu (Rimac), Qp (0–2.0–4.0)	Additional Remarks
	0					Approximately 16 inches of TOPSOIL			28		6% Organic Content
				1	13	Medium stiff to stiff, brown silty CLAY, trace sand and gravel		1 2 3 N=5	26		Qp=1.5 tsf 4% Organic Content
				2	9	*Increased percentage of sand observed at approximately 4½ feet below existing grade*	CL	1 2 4 N=6	24		
	5			3	12			3 3 5 N=8	19		Qp=2.0 tsf
				4	11	Medium dense, gray poorly-graded SAND, trace gravel	SP	6 8 10 N=18	19		
	10					Medium dense, gray well-graded sandy GRAVEL	GW				
						End of boring at approximately 10 feet below existing grade.					

Completion Depth:	10.0 ft
Date Boring Started:	8/3/20
Date Boring Completed:	8/3/20
Logged By:	P.P.
Drilling Contractor:	Rubino Engineering, Inc.

Sample Types:
- Auger Cutting
- Split-Spoon
- Rock Core
- Pressuremeter
- Shelby Tube
- Hand Auger
- No Recovery

Latitude: 41.72746365
Longitude: -88.37115627
Drill Rig: Geoprobe 7822DT
Remarks:

The stratification lines represent approximate boundaries. The transition may be gradual.
***Please reference the geotechnical report text for specific groundwater / dewatering recommendations.

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LOG OF BORING SS-01

Rubino Job No.:	G20.095
Project:	Proposed Montgomery Overflow Project
Location:	Fields west of Orchard Road
City, State:	Montgomery, Illinois
Client:	Engineering Enterprises, Inc.
Drilling Method:	3 ¼ Hollow Stem Auger
Sampling Method:	Split Spoon
Hammer Type:	Automatic
Boring Location:	Proposed Storm Sewer

WATER LEVELS***

While Drilling	7 ft
Upon Completion	3 ft
Delay	N/A

Station: N/A
Offset: N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch	Moisture, %	Additional Remarks
	0					Approximately 14 inches of TOPSOIL				
				1	6	Soft to medium stiff, brown and gray silty CLAY, trace sand and gravel		1 1 2 N=3	32	Qp=0.5 tsf 3% Organic Content
				2	3		CL	1 2 2 N=4	15	Qp=0.5 tsf
	5			3	14			3 10 19 N=29	14	Qp=2.0 tsf
				4	9	Medium dense, gray well-graded sandy GRAVEL		9 14 14 N=28	12	
	10			5	0		GW	19 23 12 N=35		
				6	11	Soft, gray silty CLAY with sand		1 1 1 N=2	13	
	15						CL			
				7	0	Hard, gray silty CLAY with sand	CL	8 15 17 N=32		
	20					End of boring at approximately 20 feet below existing grade.				

STANDARD PENETRATION TEST DATA
Moisture, PL, LL (0, 25, 50)
STRENGTH, tsf: Qu (Rimac), Qp (0, 2.0, 4.0)

Completion Depth:	20.0 ft
Date Boring Started:	7/31/20
Date Boring Completed:	7/31/20
Logged By:	P.P.
Drilling Contractor:	Rubino Engineering, Inc.

Sample Types:
Auger Cutting
Split-Spoon
Rock Core
Pressuremeter
Shelby Tube
Hand Auger
No Recovery

Latitude: 41.7296857
Longitude: -88.37343206
Drill Rig: Geoprobe 7822DT
Remarks: Boring extended due to the soft soils encountered at depth during drilling operations.

The stratification lines represent approximate boundaries. The transition may be gradual.
***Please reference the geotechnical report text for specific groundwater / dewatering recommendations.

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LOG OF BORING SS-02

Sheet 1 of 1

Rubino Job No.:	G20.095	Drilling Method:	3 ¼ Hollow Stem Auger
Project:	Proposed Montgomery Overflow Project	Sampling Method:	Split Spoon
Location:	Fields west of Orchard Road	Hammer Type:	Automatic
City, State:	Montgomery, Illinois	Boring Location:	Proposed Storm Sewer
Client:	Engineering Enterprises, Inc.		

WATER LEVELS***

While Drilling	6 ft
Upon Completion	5 ft
Delay	N/A

Station: N/A
Offset: N/A

Depth, (feet)	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch	Moisture, %	Additional Remarks
0			Approximately 3 inches of TOPSOIL				
			Stiff, brown silty CLAY, trace sand and gravel	CL			
	1	12			4 5 5 N=10	19	>>Qp=4.5 tsf
	2	10	Medium dense, brown well-graded sandy GRAVEL	GW	5 6 11 N=17	4	
5							
	3	10			7 6 7 N=13	7	
			Brown silty CLAY, trace sand and gravel	CL			
	4	0	Medium dense, gray well-graded sandy GRAVEL	GW	3 3 7 N=10	15	
10							
	5	17	Stiff, gray silty CLAY, trace sand and gravel	CL	3 5 7 N=12	12	Qp=3.5 tsf
	6	11			3 5 6 N=11	13	Qp=3.0 tsf
15			End of boring at approximately 15 feet below existing grade.				

STANDARD PENETRATION TEST DATA: Moisture, PL, LL (0 – 25 – 50); STRENGTH, tsf: Qu (Rimac), Qp (0 – 2.0 – 4.0)

Completion Depth:	15.0 ft
Date Boring Started:	8/3/20
Date Boring Completed:	8/3/20
Logged By:	P.P.
Drilling Contractor:	Rubino Engineering, Inc.

Sample Types: Auger Cutting, Split-Spoon, Rock Core, Pressuremeter, Shelby Tube, Hand Auger, No Recovery

Latitude: 41.72770816
Longitude: -88.37337704
Drill Rig: Geoprobe 7822DT
Remarks:

The stratification lines represent approximate boundaries. The transition may be gradual.
***Please reference the geotechnical report text for specific groundwater / dewatering recommendations.

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LOG OF BORING SS-04

Rubino Job No.:	G20.095	Drilling Method:	3 ¼ Hollow Stem Auger
Project:	Proposed Montgomery Overflow Project	Sampling Method:	Split Spoon
Location:	Fields west of Orchard Road	Hammer Type:	Automatic
City, State:	Montgomery, Illinois	Boring Location:	Proposed Storm Sewer
Client:	Engineering Enterprises, Inc.		

WATER LEVELS***

While Drilling	11 ft
Upon Completion	7 ft
Delay	N/A

Station: N/A
Offset: N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch	Moisture, %	STANDARD PENETRATION TEST DATA / STRENGTH, tsf	Additional Remarks
	0					Approximately 15 inches of TOPSOIL					
				1	10	Medium stiff to stiff, brown silty CLAY, trace sand and gravel		5 5 5 N=10	13	>>	Qp=4.5 tsf
				2	12		CL	3 3 4 N=7	20		Qp=4.0 tsf
	5			3	8	Loose, gray poorly-graded SAND with fines		2 2 3 N=5	13		Qp=0.8 tsf
				4	12		SP	2 1 3 N=4	18		
	10					Stiff, gray silty CLAY with gravel, trace sand					
				5	11		CL	3 6 6 N=12	12		Qp=2.0 tsf
						Medium dense, gray well-graded sandy GRAVEL					
				6	3		GW	6 11 10 N=21	13		
	15					End of boring at approximately 15 feet below existing grade.					

STANDARD PENETRATION TEST DATA: Moisture, PL, LL (0, 25, 50)
STRENGTH, tsf: Qu (Rimac), Qp (0, 2.0, 4.0)

Completion Depth:	15.0 ft
Date Boring Started:	8/25/20
Date Boring Completed:	8/25/20
Logged By:	P.P.
Drilling Contractor:	Rubino Engineering, Inc.

Sample Types:
- Auger Cutting
- Split-Spoon
- Rock Core
- Pressuremeter
- Shelby Tube
- Hand Auger
- No Recovery

Latitude: 41.72546526
Longitude: -88.37040495
Drill Rig: Geoprobe 7822DT
Remarks:

The stratification lines represent approximate boundaries. The transition may be gradual.
***Please reference the geotechnical report text for specific groundwater / dewatering recommendations.

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LOG OF BORING SS-05

Rubino Job No.:	G20.095	Drilling Method:	3 ¼ Hollow Stem Auger
Project:	Proposed Montgomery Overflow Project	Sampling Method:	Split Spoon
Location:	Fields west of Orchard Road	Hammer Type:	Automatic
City, State:	Montgomery, Illinois	Boring Location:	Proposed Storm Sewer
Client:	Engineering Enterprises, Inc.		

WATER LEVELS***

While Drilling	6 ft
Upon Completion	N/A
Delay	N/A

Station: N/A
Offset: N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch	Moisture, %	STANDARD PENETRATION TEST DATA / STRENGTH, tsf	Additional Remarks
	0					Approximately 10 inches of TOPSOIL					
				1	16	Medium stiff, brown and gray silty CLAY, trace sand and gravel		2 3 3 N=6	24		Qp=2.5 tsf
				2	17	*Increased percentage of sand observed at approximately 3½ feet below existing grade*	CL	3 2 3 N=5	18		Qp=0.5 tsf
	5			3	15	Medium dense, brown well-graded sandy GRAVEL	GW	7 7 9 N=16	14		
				4	11	Stiff, gray silty CLAY, trace sand and gravel		4 4 7 N=11	13		Qp=1.0 tsf
	10			5	18		CL	2 3 5 N=8	12		Qp=1.5 tsf
				6	15			3 4 7 N=11	14		Qp=2.5 tsf
	15					End of boring at approximately 15 feet below existing grade.					

STANDARD PENETRATION TEST DATA: Moisture, PL, LL (0 – 25 – 50)
STRENGTH, tsf: Qu (Rimac), Qp (0 – 2.0 – 4.0)

Completion Depth:	15.0 ft
Date Boring Started:	7/27/20
Date Boring Completed:	7/27/20
Logged By:	P.P.
Drilling Contractor:	Rubino Engineering, Inc.

Sample Types:
- Auger Cutting
- Split-Spoon
- Rock Core
- Pressuremeter
- Shelby Tube
- Hand Auger
- No Recovery

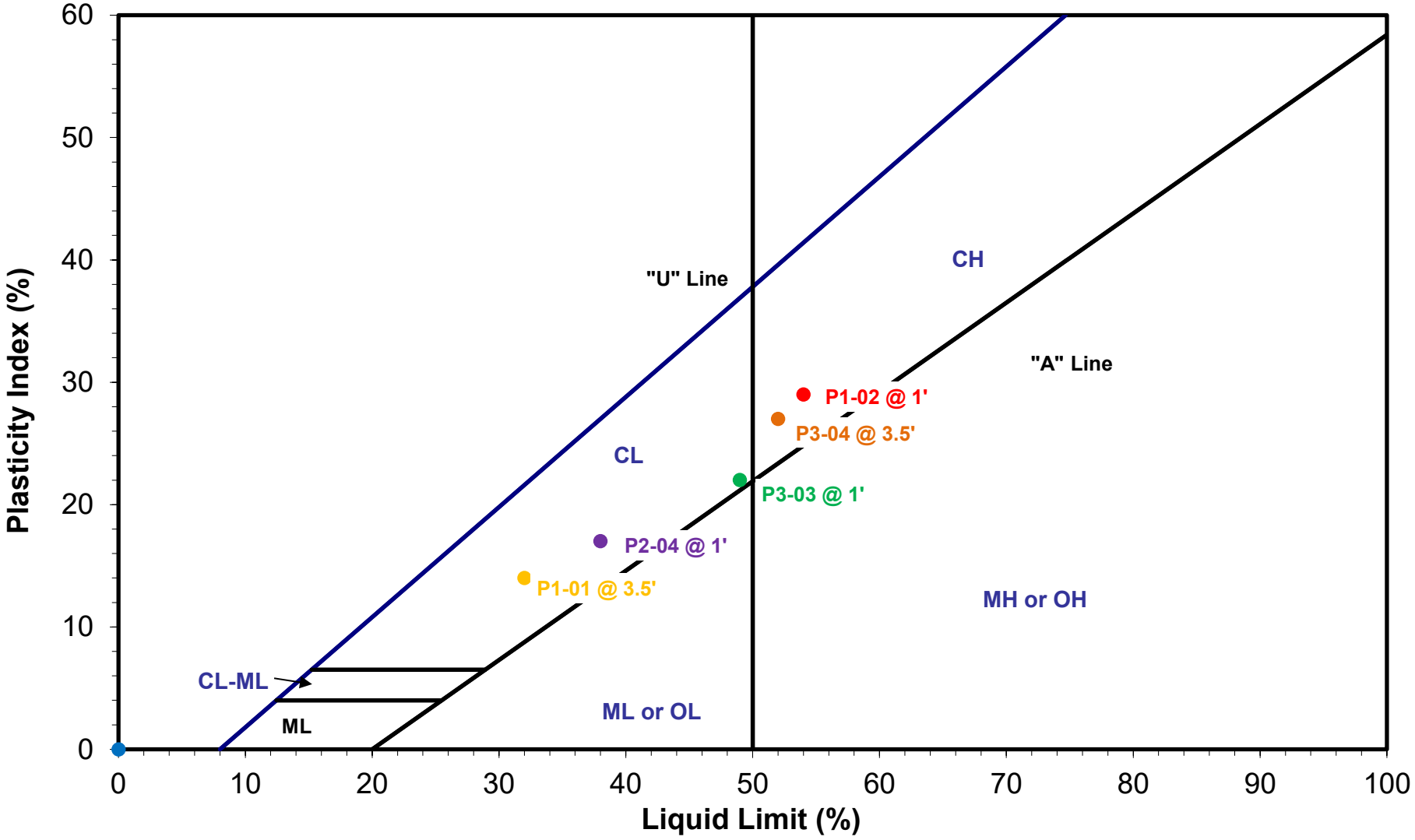
Latitude: 41.7254456
Longitude: -88.36788057
Drill Rig: Geoprobe 7822DT
Remarks: Hole collapse at approximately 8 feet below existing grade upon auger removal.

The stratification lines represent approximate boundaries. The transition may be gradual.
***Please reference the geotechnical report text for specific groundwater / dewatering recommendations.

Appendix I – Laboratory Results

rubino ENGINEERING INC.

Report of Atterberg Limits Test (ASTM D4318 / AASHTO T89 / AASHTO T90)

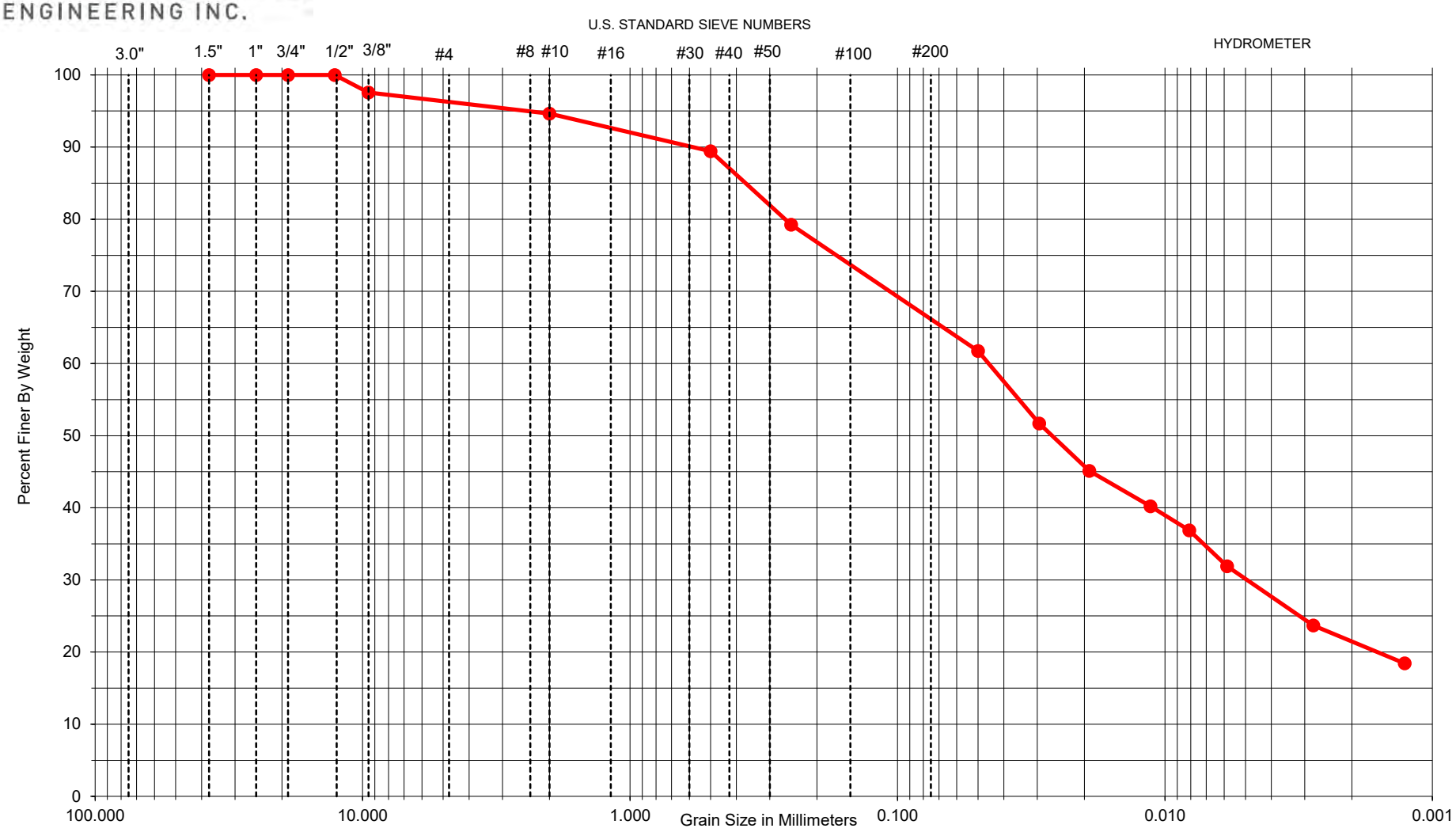


Boring #	P1-01 @ 3.5'	P1-02 @ 1'	P2-04 @ 1'	P3-03 @ 1'	P3-04 @ 3.5'	
LL	32	54	38	49	52	
PL	18	25	21	27	25	
PI	14	29	17	22	27	

Project: Montgomery Overflow Project
Location: Montgomery, Illinois
Client: Engineering Enterprises, Inc.
Project #: G20.095

rubino ENGINEERING INC.

REPORT OF PARTICLE-SIZE ANALYSIS OF SOIL



Key	Boring No.	Depth	USDA Classification	WC%	ORG%	Cc	Cu	%Gravel	%Sand	%Silt	%Clay	D60	D30	D10
●	P1-01	6'	Gray LOAM	15	NA	N/A	N/A	10.6	27.68	40.8	21.0	0.046	0.005	

REPORT OF PARTICLE-SIZE ANALYSIS OF SOIL	Montgomery Overflow Project	File No. G20.095

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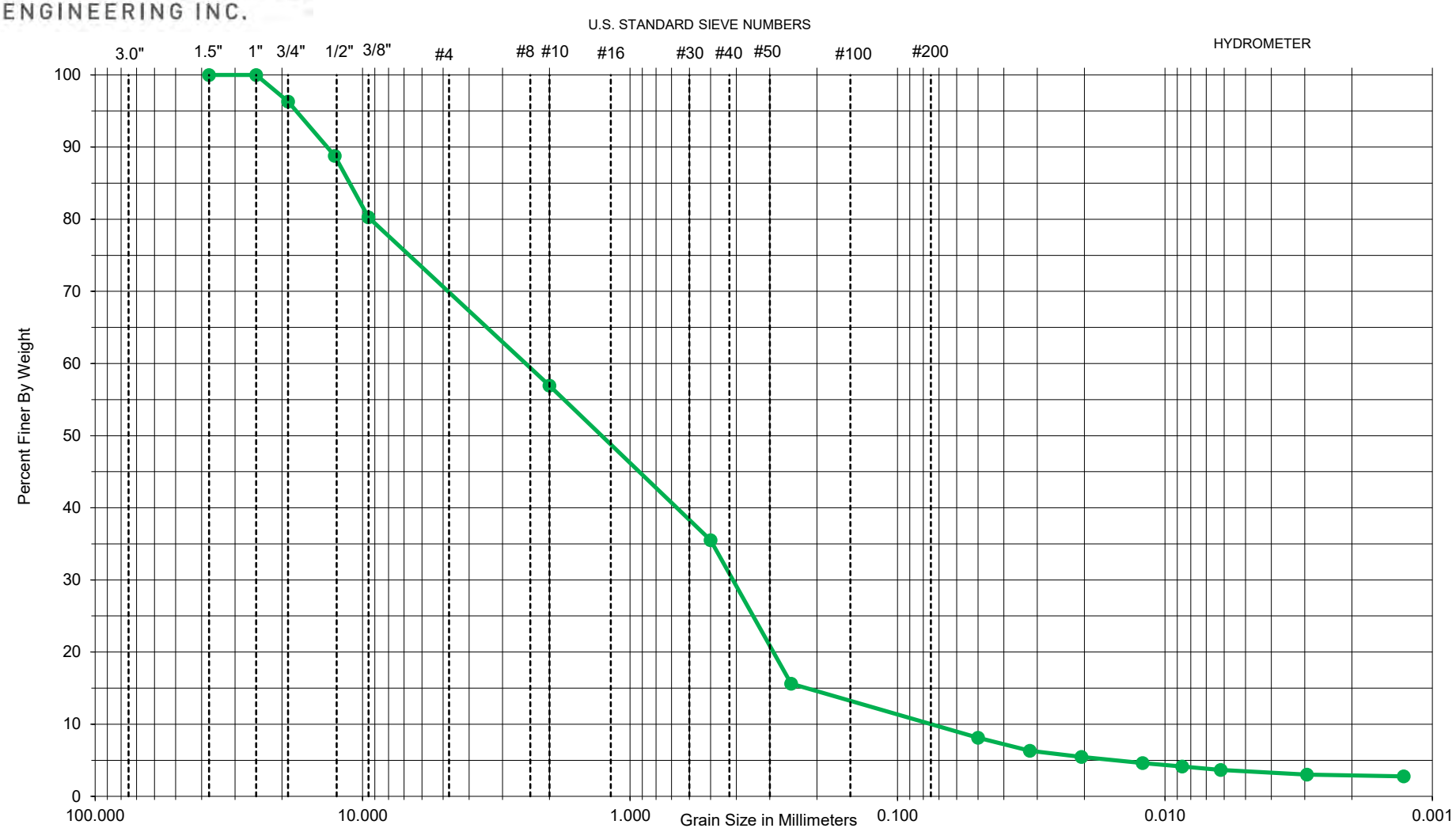
rubino ENGINEERING INC.

REPORT OF PARTICLE-SIZE ANALYSIS OF SOIL



Key	Boring No.	Depth	USDA Classification	WC%	ORG%	Cc	Cu	%Gravel	%Sand	%Silt	%Clay	D60	D30	D10
●	P1-02	6'	Gray SAND	26	4	0.617	29.76	64.5	27.41	5.2	2.9	2.990	0.431	0.100

REPORT OF PARTICLE-SIZE ANALYSIS OF SOIL	Montgomery Overflow Project	File No. G20.095

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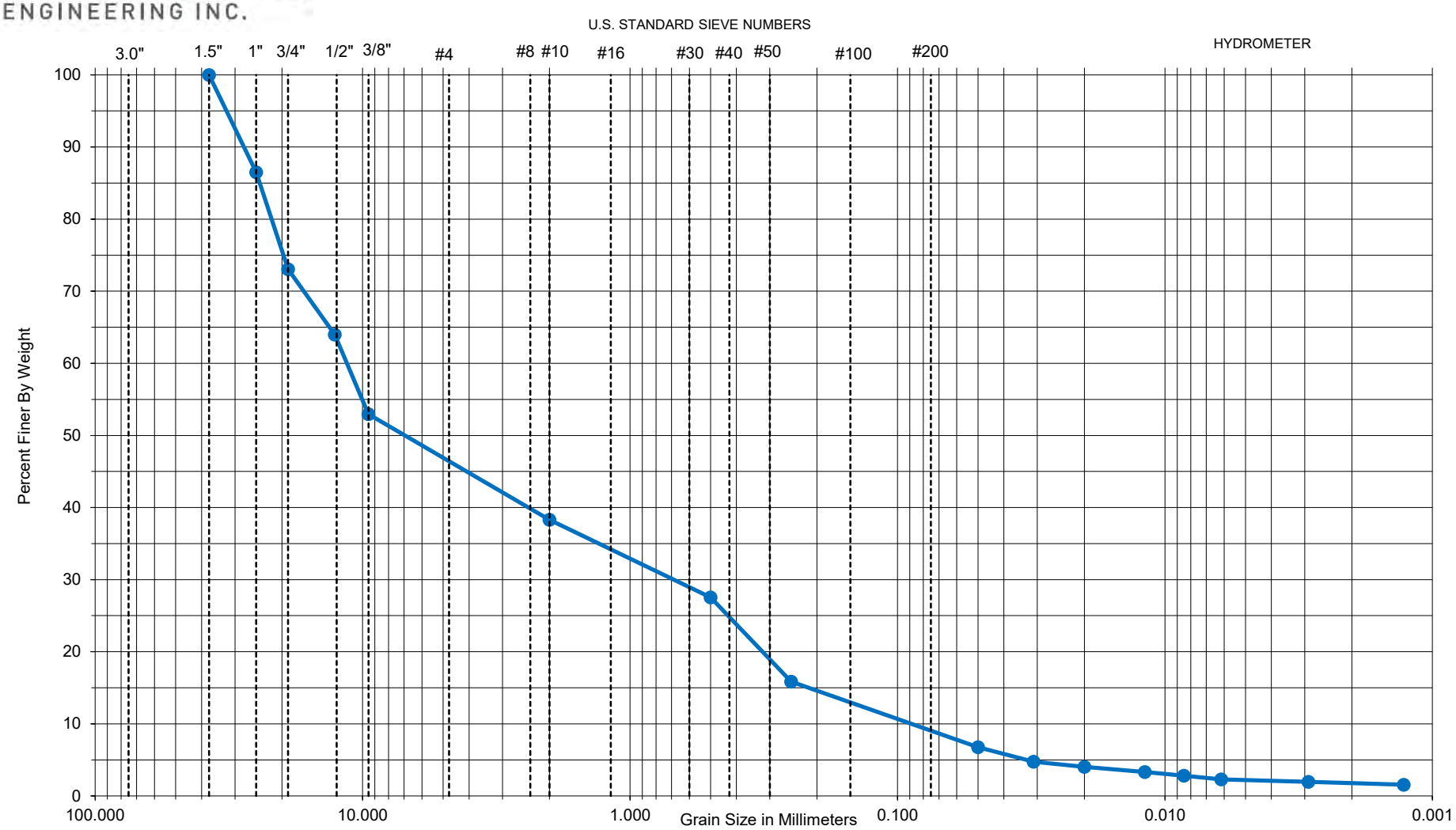

Key	Boring No.	Depth	USDA Classification	WC%	ORG%	Cc	Cu	%Gravel	%Sand	%Silt	%Clay	D60	D30	D10
●	P3-02	6'	Gray LOAM	16	N/A	0.506	95.19	72.4	20.79	5.0	1.7	11.547	0.842	0.121

REPORT OF PARTICLE-SIZE ANALYSIS OF SOIL	Montgomery Overflow Project	File No. G20.095

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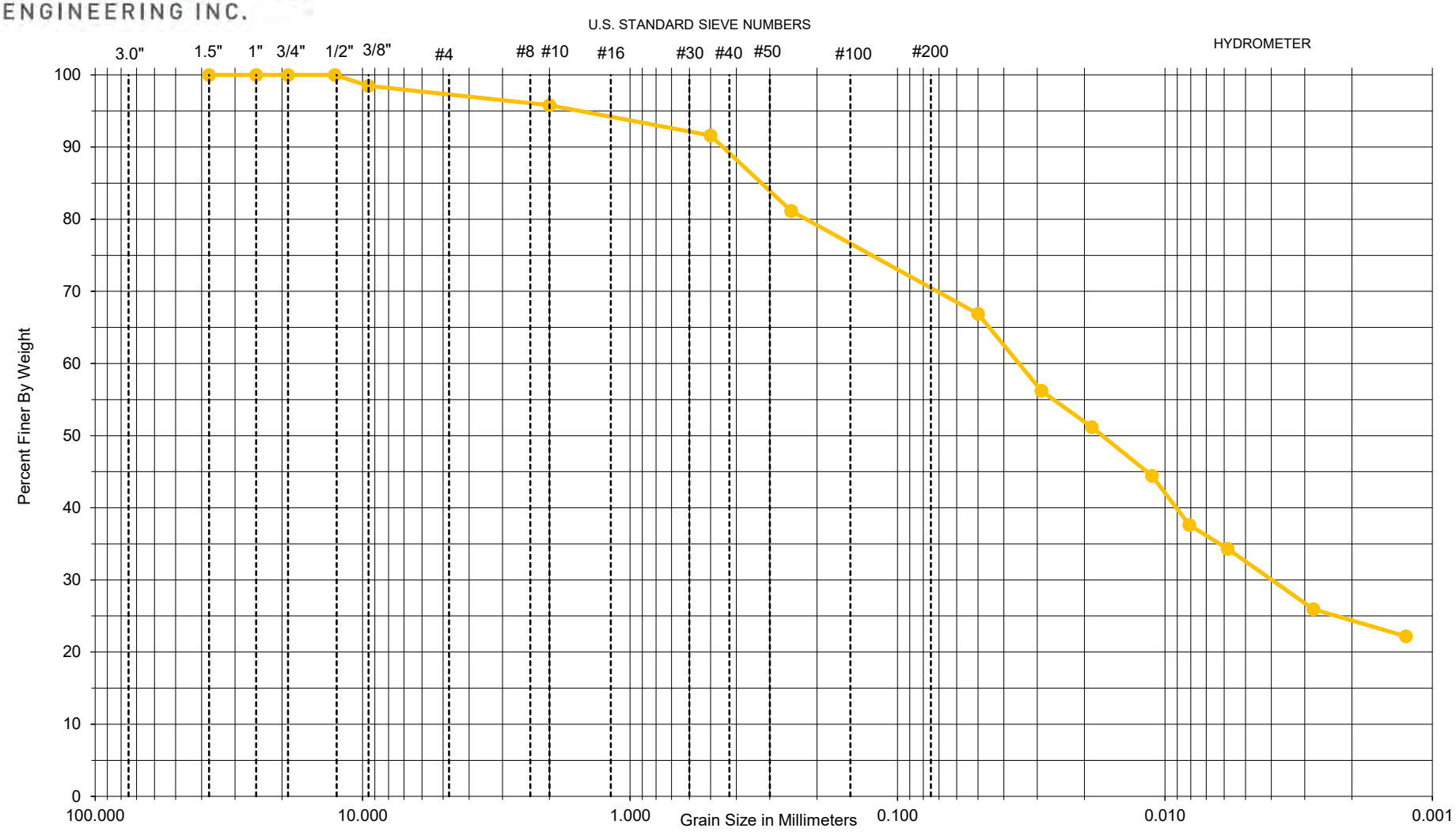
REPORT OF PARTICLE-SIZE ANALYSIS OF SOIL



Key	Boring No.	Depth	USDA Classification	WC%	ORG%	Cc	Cu	%Gravel	%Sand	%Silt	%Clay	D60	D30	D10
●	P3-06	6'	Gray LOAM	15	N/A	N/A	N/A	8.4	24.74	42.9	24.0	0.036	0.004	N/A

REPORT OF PARTICLE-SIZE ANALYSIS OF SOIL	Montgomery Overflow Project	File No. G20.095

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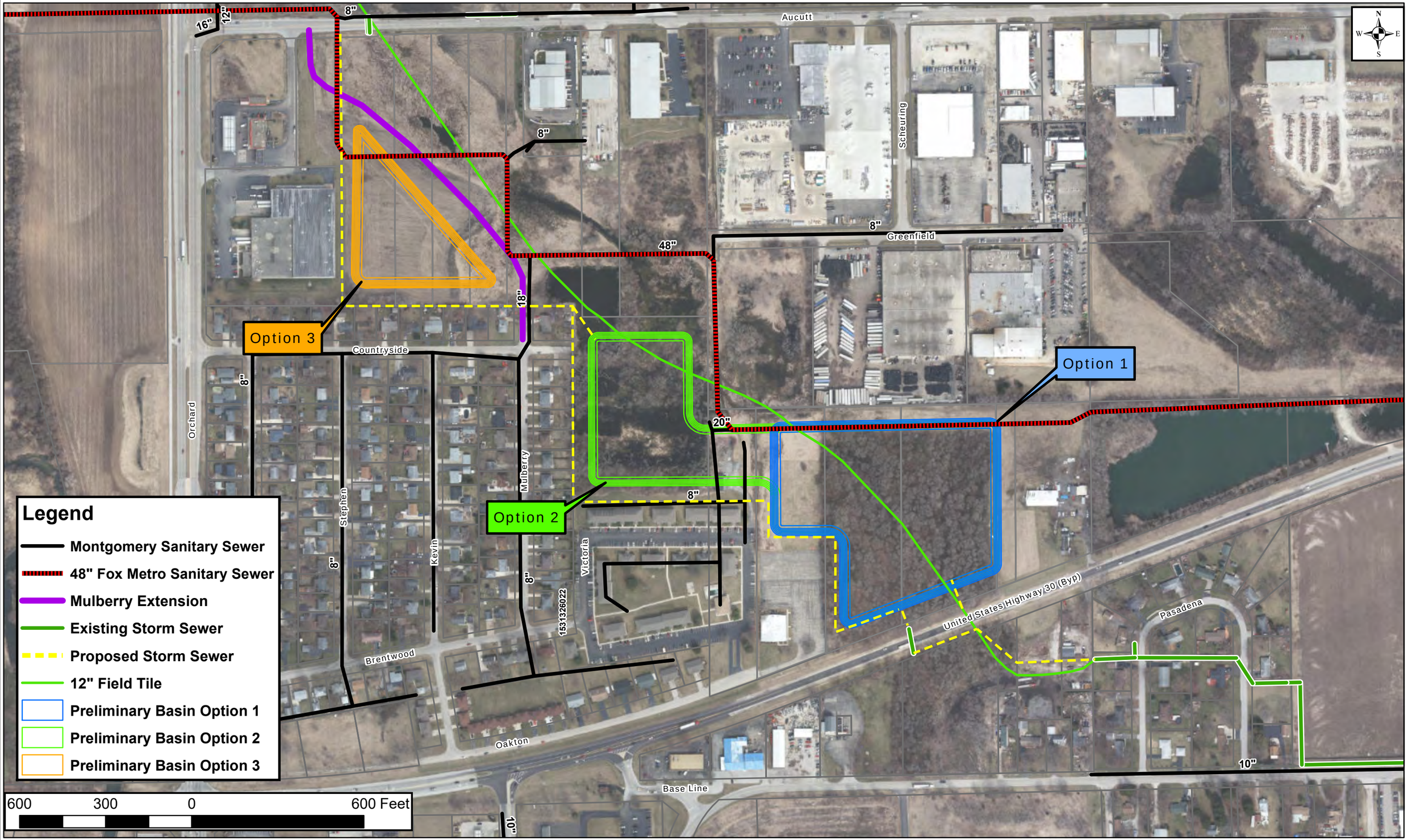

Engineering Enterprises, Inc.
CONSULTING ENGINEERS
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Sugar Grove, Illinois 60554
(630) 466-6700 / www.eeiweb.con

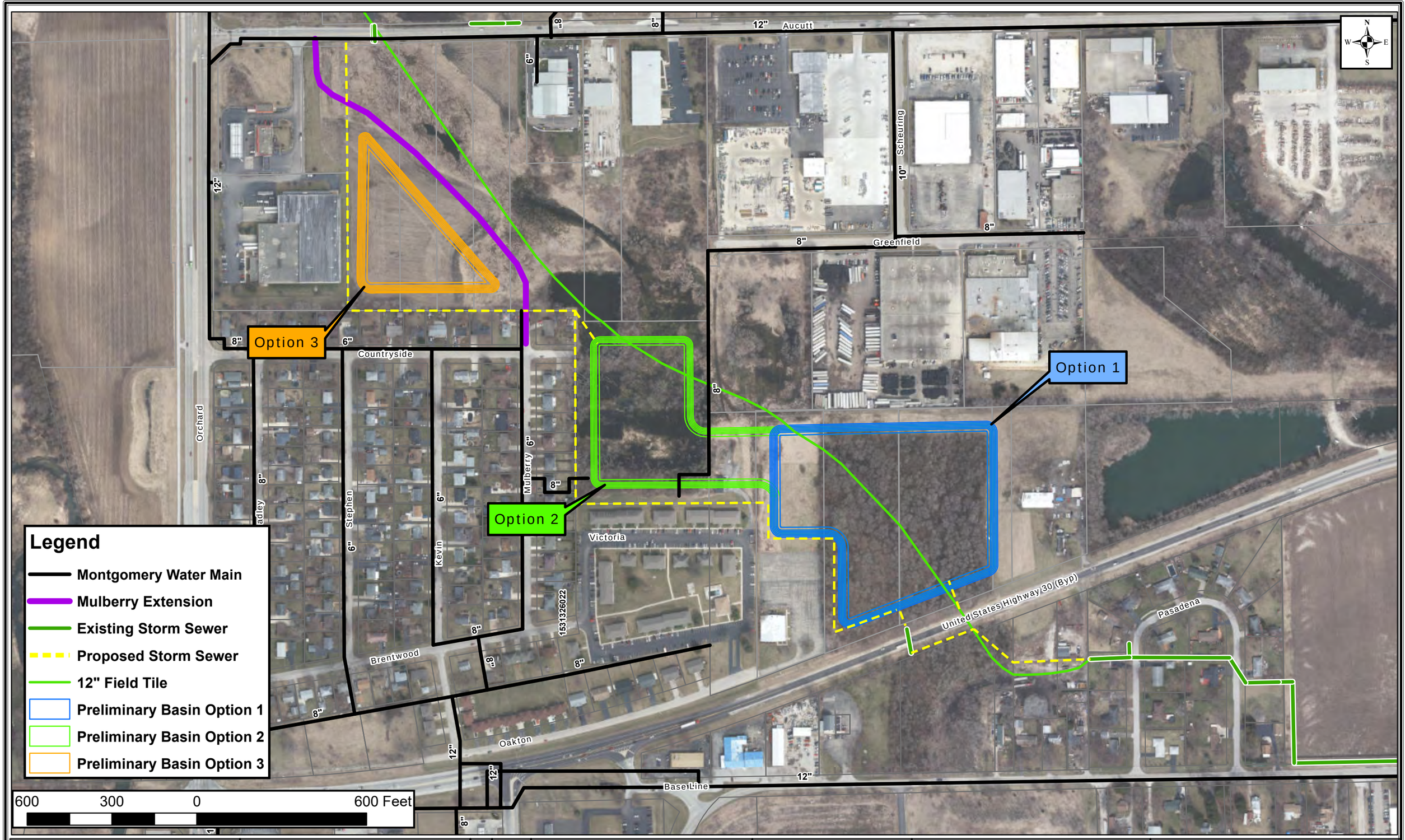
Village of Montgomery
Kane & Kendall Counties, Illinois

NO.	DATE	REVISIONS

DATE: OCTOBER 2020
PROJECT NO.: MO1702-V
PATH: H:\GIS\PUBLIC\MONTGOMERY\2017\
FILE: MO1702 APPENDIX 3 EXISTING WATER MAIN.MXD

APPENDIX 3
EXISTING SANITARY SEWER

MONTGOMERY OVERFLOW
FLOODPLAIN FEASIBILITY
STUDY



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DATE:	OCTOBER 2020
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APPENDIX 3
EXISTING WATER MAIN

MONTGOMERY OVERFLOW
FLOODPLAIN FEASIBILITY
STUDY

BLACKBERRY CREEK
TAX INCREMENT REDEVELOPMENT PROJECT AREA
LEGAL DESCRIPTION

LEGAL DESCRIPTION:

PINS 14-36-200-002, 14-36-451-001, 14-36-479-018, 14-36-381-001

THAT PART OF THE NORTHEAST QUARTER, SOUTHEAST QUARTER, AND SOUTHWEST QUARTER OF SECTION 36, TOWNSHIP 38 NORTH, RANGE 7 EAST OF THE THIRD PRINCIPAL MERIDIAN, IN KANE COUNTY, ILLINOIS DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHEAST CORNER OF US ROUTE 30 AND GRIFFIN DRIVE; THENCE NORTHERLY, ALONG THE EAST LINE OF GRIFFIN DRIVE TO THE WEST LINE OF THE SOUTHEAST QUARTER OF SAID SECTION 36; THENCE NORTHERLY, ALONG SAID WEST LINE AND ALONG THE WEST LINE OF SAID NORTHEAST QUARTER TO THE NORTHWEST CORNER THEREOF; THENCE EASTERLY, ALONG THE NORTH LINE OF SAID NORTHEAST QUARTER TO THE WEST LINE OF ORCHARD ROAD; THENCE SOUTHERLY, ALONG SAID WEST LINE TO THE SOUTH LINE OF A PARCEL WITH A PIN OF 14-36-479-018; THENCE WESTERLY, ALONG SAID SOUTH LINE TO THE EAST LINE OF A PARCEL WITH A PIN OF 14-36-451-001; THENCE SOUTHERLY AND NORTHWESTERLY, ALONG SAID EAST LINE, TO THE NORTHEAST CORNER OF LOT 4 IN CREEK VIEW MANOR UNIT 2; THENCE NORTHWESTERLY, WESTERLY, AND SOUTHERLY ALONG THE NORTH AND WEST LINES OF SAID CREEK VIEW MANOR UNIT 2 SUBDIVISION TO THE NORTH LINE OF SAID US ROUTE 30; THENCE WESTERLY, ALONG SAID NORTH LINE, TO THE POINT OF BEGINNING.