

NATIONAL CHURCH RESIDENCES

BROOKWOOD APARTMENTS

2685 East Livingston Avenue
Columbus, Ohio 43209

Type III Variance Request from the Stormwater Drainage Manual

Prepared By:



Korda/Nemeth Engineering, Inc.
1650 Watermark Drive
Columbus, Ohio 43215



Korda File: 2019-0438

A handwritten signature in blue ink, appearing to read "Chris Fleming".

8/26/2021

Chris Fleming, PE

Date

Table of Contents

1.0	Project Introduction & Variance Request	1
1.1	Purpose	1
1.2	Project Background.....	1
1.3	Stream Corridor Protection Zone (SCPZ).....	2
1.4	Type III Variance (Stream Protection)	3
2.0	Development Alternatives.....	4
2.1	Preferred Alternative.....	5
2.2	Minimal Impact Alternative.....	6
2.3	Full Compliance / No-Impact Alternative.....	6
2.4	Comparison of Project Alternatives.....	7
3.0	Proposed Mitigation	9
3.1	Mitigation Plan	9
4.0	Conclusions	10

List of Tables

Table 1: Comparison of Project Alternatives	8
Table 2: Cash Investment Comparison	8

List of Appendices

Appendix A	Project Site Data
Appendix B	Tributary Area Map & Stream Corridor Protection Zone Calculation
Appendix C	Development Plan Alternative Exhibits
Appendix D	Mitigation Plan
Appendix E	Existing Site Photos



August 26, 2021

City of Columbus
Division of Sewerage and Drainage
Attn: Mr. Greg Fedner
111 Front Street
Columbus, OH 43215

RE: National Church Residences
Brookwood Site
Type III Variance Request

Dear Mr. Fedner:

The following is our application for a Type III Variance Request from Section 1.3.2 and 1.3.3 of the City of Columbus Stormwater Drainage Manual for the proposed National Church Residences Brookwood project, submitted on behalf of National Church Residences. This project is located at 2685 East Livingston Avenue, Columbus, OH 43209.

The proposed project site includes a 215-foot-wide Stream Corridor Protection Zone (SCPZ) along Bliss run that extends through the middle of the site from north to south. The existing site improvements already encroach on the SCPZ on both the east and west sides, and the proposed development will approximately maintain the same amount of encroachment within the SCPZ. The proposed improvements will not result in direct impact to Bliss Run. We are seeking a Type III variance for approval of the proposed encroachments. Total impact is 0.62 acres.

Mitigation will be provided to offset the proposed impacts to the SCPZ. Mitigation will consist of both onsite and offsite. The onsite work will be rehabilitation of the existing SCPZ area. The offsite mitigation will be stabilization of a portion of Alum Creek near Harbour Pointe as identified in the draft report "Alum Creek Stabilization Project", dated May 17, 2021. The total mitigation will be 0.72 acres.

Additional information pertaining to the requested variance is included in the enclosed application. Please review this application and provide comments at your earliest convenience. If you have any questions, please contact our office at (614) 487-1650, or by email at justin.blood@korda.com and/or chris.fleming@korda.com.

Yours truly,

KORDA/NEMETH ENGINEERING, INC.
Consulting Engineers

Justin Blood, PE
Design Engineer

Chris Fleming, PE
Partner/Project Manager

1.0 PROJECT INTRODUCTION & VARIANCE REQUEST

1.1 PURPOSE

The purpose of this report is to request a Type III Stream Protection Variance from the City of Columbus Stormwater Drainage Manual for the Brookwood Apartments project, located at 2685 East Livingston Avenue. This variance request to the City of Columbus Stormwater Drainage Manual, August 2012, herein referred to as the SWDM, is intended to demonstrate that the application of the SWDM is impractical due to the building function, specific site conditions, and related financial hardships. The project will be in compliance with all other applicable sections of the SWDM.

Based on the existing site constraints, we are requesting a variance from Sections 1.3.2 and 1.3.3 of the SWDM to allow otherwise prohibited facilities and activities within the Stream Corridor Protection Zone (SCPZ) of Bliss Run. Per the City of Columbus guidelines for a Type III Stream Protection Variance, three detailed alternatives to the Brookwood Apartments site development are provided herein. Among these alternatives are the Preferred Alternative, Minimal Impact Alternative, and No Impact Alternative. The information provided will demonstrate how the Minimal Impact and No Impact Alternatives are not feasible options given the existing site constraints and financial impact. It will also describe how the Preferred Alternative for the project will be in compliance with all stormwater quantity and quality treatment requirements, while maintaining adequate conditions for the natural stream conveyance and riparian area even with the proposed encroachments to the SCPZ.

The Preferred Alternative will provide a benefit to the public by providing additional market-rate senior housing within the City of Columbus. It will also make good use of the existing property that currently consists of a vacated church structure that is no longer in operation and does not provide any useful benefit to the community.

1.2 PROJECT BACKGROUND

The Brookwood Apartments are to be constructed on a 4.40-acre parcel located at 2685 East Livingston Avenue, PID 010-087759. The site is located on the east side of Brookwood Road, south side of East Livingston Avenue, and west side of Kenwick Road. Refer to Appendix A for a location map of the area and other project site data. The open channel of Bliss Run begins at a 114"W x 84"H concrete box culvert on the north end of the property, and flows through the middle of the property to the south. Bliss Run upstream of this culvert was enclosed by underground storm sewers in the mid-1930's. Bliss Run continues south where it drains into Alum Creek approximately 3,900' from the project site. The existing site currently consists of the Brookwood Presbyterian Church building with associated paved parking lot, hardscapes, and green space on the west side of Bliss Run. The east side of Bliss Run consists of an asphalt parking lot used for additional church parking. The majority of the existing site sheet drains to directly to Bliss Run. The existing development has limited storm sewers and does not have a stormwater detention system. There

REQUEST FOR A TYPE III VARIANCE

are existing site improvements on both sides of Bliss Run that currently encroach on the SCPZ as shown in Appendix C, Exhibit 1.

The proposed redevelopment of the site consists of a new 4 story, 106-unit market-rate senior living apartment building with associated parking areas, hardscapes, and green space to be located on the west side of Bliss Run where the existing church building currently exists. The new parking areas on the west side of Bliss Run will provide 74 exterior parking spaces and 12 garage parking spaces. The area on the east side of Bliss Run will be redeveloped into a new parking lot with 24 additional parking spaces and additional open green space. A variance has previously been requested and approved to reduce the total minimum parking requirement from 150 spaces to 110 spaces. This approval was granted based on a study completed by a third-party consultant who has studied similar National Church Residences properties, which concluded that the planned 110 spaces represent a realistic project for a community this size. A portion of the east parking lot will be removed, and a new park area will be constructed and dedicated to the City of Columbus. Total land disturbance will be approximately 3.20 acres.

1.3 STREAM CORRIDOR PROTECTION ZONE (SCPZ)

A Stream Corridor Protection Zone exists onsite for the Bliss Run conveyance channel through the site, which consists of the stream channel and adjacent riparian area. A Stream Corridor Protection Zone is defined in the SWDM as a zone reserved to allow for the natural, lateral movement of open watercourses and prevent structures from being impacted by natural streambank erosion. The purpose of this SCPZ is to protect the stream and riparian area by preserving it in its natural state, which allows for increased stream stabilization and water quality benefits. It also reserves adequate space for flood conveyance.

The SWDM lists three criteria to determine the width of the SCPZ, and notes to use the criteria that results in the greatest SCPZ width. The first criteria to determine the limits of the SCPZ is to set the width of the SCPZ equal to the Federal Emergency Management Agency (FEMA) designated 100-year floodway. This criterion does not apply to this scenario because FEMA has currently not performed a floodway study for Bliss Run, so the limits of the 100-year floodway have not been determined. The second criterion is to utilize a provided equation based on the drainage area of the stream. This criterion is the most applicable and therefore was the one used to determine the final SCPZ limits. The third criterion is to set the limits of the SCPZ by measuring 50 feet from the top of each bank for fourth order streams or larger. This criterion does not apply because Bliss Run is not a fourth order stream or larger. The resulting SCPZ width from the third criterion would be less than the width derived from the second criterion, which further reinforces that it shouldn't be used to determine the final SCPZ width. The second criterion is the best method for determining the limits of the SCPZ. The SCPZ calculation based on this criterion is provided below.

The equation provided in the second criterion is based on the drainage area of the stream. To determine the Bliss Run drainage area, the StreamStats report for Bliss Run was first considered. The StreamStats report, which is provided in Appendix B, noted a drainage area of 1.95 square miles, but this did not appear to be accurate based on prior knowledge of the storm sewer system

REQUEST FOR A TYPE III VARIANCE

resulting from record plan and stormwater report information provided by the City of Columbus. A study was then performed to determine the drainage area to Bliss Run utilizing atlas maps, record plans, and Bliss Run stormwater reports from the City of Columbus along with auditor's mapping from Franklin County Auditor. A storm sewer map was also obtained from the City of Bexley, as a portion of the City of Bexley is tributary to Bliss Run. The atlas maps were utilized to generally delineate the tributary boundary determining which storm sewers were tributary to Bliss Run. The record plans were then used to verify and refine the tributary area boundary. The auditor's mapping was utilized to determine topography and delineate the breakpoints for surface drainage to the storm sewers. The final tributary boundary was then compared with the boundaries provided in the Bliss Run stormwater reports from the late 1990's to ensure that they generally coincided, and that any major differences were justified by improvements to the storm sewer system that occurred since the reports were made. After reviewing all of these items, it was determined that the drainage area to Bliss Run is 2.72 square miles.

The SCPZ for Bliss Run is calculated to have a minimum width of 215', based on a drainage area of 2.72 square miles. The SCPZ was calculated using the equation provided in Section 1.3.1 of the City of Columbus Stormwater Drainage Manual.

$$\begin{aligned} \text{SCPZ} &= 147(\text{DA})^{0.38} \\ \text{SCPZ} &= 147(2.72)^{0.38} \\ \text{SCPZ} &= 215 \text{ ft} \end{aligned}$$

Refer to Appendix B for the Tributary Map for Bliss Run.

1.4 TYPE III VARIANCE (STREAM PROTECTION)

National Church Residences is requesting a variance from Section 1.3.2 and 1.3.3 of the City of Columbus Stormwater Drainage Manual for the proposed redevelopment. The SWDM prohibits any structures (except for bridges) or paved parking areas within the SCPZ. The SWDM also prohibits placement of fill material, excavation, or any other changes in topography that are not caused by natural forces. This variance is being requested for approximately 0.62 acres of encroachments to the SCPZ as a part of the Preferred Alternative, Appendix C, Exhibit 2, which include asphalt and concrete pavements, grading activities, and a portion of the proposed apartment building. The proposed encroachments to the SCPZ will be located outside of the floodplain, so there will not be impacts to the stream itself. As a result, the stream's ability to convey flow will not be affected up to and including the 100 year flood. The limits of the 100 year flood plain were obtained from the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map Number 39049C0333K that is provided in Appendix A.

The Preferred Alternative will increase the overall water quality of Bliss Run from the existing condition. The amount of impervious area within the SCPZ will increase slightly (0.06 acres) in the Preferred Alternative in comparison to the existing condition, which by itself would result in a slight decrease to water quality. However, the impervious areas will generally be farther away from the stream channel, separated by grassy lawn areas that will provide some extent of water quality

REQUEST FOR A TYPE III VARIANCE

treatment before discharging into the stream. Also, a new stormwater detention (ADS Storm tech System) and water quality treatment system (Isolator Rows) will be installed with the project that will provide water quality treatment for all impervious areas on the west side of Bliss Run before discharging into the stream. This will result in a net increase to water quality in the stream.

The proposed impacts to the SCPZ will be offset through onsite and offsite mitigation as required by the SWDM. Onsite mitigation will consist of rehabilitation of the remaining SCPZ with invasive species control and native species planting. The offsite mitigation will consist of streambank stabilization of Alum Creek near Harbour Pointe. This mitigation is further described in section 3.0 of this report and Appendix D. It is our understanding that the parkland area on the east side of Bliss Run will be mowed play fields or recreation areas, so they will not comply with the allowable onsite mitigation requirements. However, this will be an improvement over the existing paved addition.

There are three existing site conditions that make full compliance with the SWDM a substantial hardship. First, the SCPZ for Bliss Run takes up approximately half of the project site, meaning full compliance with the SWDM would significantly reduce the amount of developable space on the site. The second is the existing site topography on the west side of Bliss Run. This area slopes mildly down to Bliss Run, which creates an issue matching existing grade from the proposed building and pavement areas without grading impacts to the SCPZ. A retaining wall is proposed in the Preferred Alternative to eliminate grading impacts to the flood plain, which is a significant added cost to the project. Third, there are multiple publicly owned sanitary sewers with associated easements on the site, including a 48" sewer extending north and south and a 10" sewer extending east and west. These existing sanitary sewers along with the SCPZ further reduce the amount of developable space on the site. In the Preferred Alternative, the existing 10" sanitary sewer will be relocated around the proposed building, which adds additional cost to the project. Without the relocation of this 10" sewer, there would not be enough developable space to make the project feasible. It is not financially viable for the project to relocate the 48" sanitary sewer, so space still remains limited for the proposed building in the Preferred Alternative even with the proposed encroachments to the SCPZ. The SCPZ together with the site topography and existing sewers on site significantly reduce the amount of space available for the proposed building. A smaller building decreases revenue over the long term, thus making the project financially unviable if required to fully comply with the manual.

2.0 DEVELOPMENT ALTERNATIVES

The City of Columbus Stormwater Drainage manual requires that a Type III Variance Request provide three different site development plan alternatives for the project. The first alternative is the Preferred Alternative (Exhibit 2), which allows the maximum area of land to be utilized for the project and is preferred by the Owner. The second alternative is the Minimal Impact Alternative (Exhibit 3), which minimizes the impacts to the SCPZ. The third alternative is the Full Compliance Alternative (Exhibit 4), which does not impact the SCPZ and fully complies with the manual. Exhibits for each of these alternatives are provided in Appendix C.

2.1 PREFERRED ALTERNATIVE

Under the Preferred Alternative (Appendix C, Exhibit 2), a four-story apartment building with 106 units, along with associated parking areas and hardscapes, will be constructed on the west side of Bliss Run. The development also includes an underground detention system to provide stormwater quantity control and stormwater quality treatment for the project. The total disturbed area for this option is approximately 3.20 acres. A section of the existing active 10-inch sanitary main that extends through the site from east to west is planned to be rerouted around the proposed apartment building, where it will reconnect to the existing 48" sanitary main that flows through the site from the north to the south. Under this option, a section of the sanitary main relocation and proposed easement will be located within the SCPZ and extend parallel to Bliss Run. Placing the relocated sanitary main within and parallel to the SCPZ requires a separate variance from the City of Columbus.

On the east side of bliss run, the existing paved parking area will be redeveloped to provide a new reduced parking area and additional open green space which will be dedicated to the City of Columbus as a public park. A portion of the existing asphalt pavement will be reused for the proposed parking area with a mill and overlay to prevent further disturbance of the SCPZ. The existing asphalt pavement will be sawcut, and the areas to be demolished will be removed. The total number of parking spaces for this option is 110, including 74 exterior spaces and 12 garage spaces on the west side of Bliss Run, and 24 spaces on the east side. As mentioned previously, a variance has previously been granted to reduce to the total number of parking spaces required from 150 to 110. The parking spaces provided in the Preferred Alternative are adequate to meet the parking requirement as reduced by the variance.

The Preferred Alternative will result in approximately 0.62 acres of disturbance within the SCPZ, which includes asphalt and concrete pavements, grading activities, long term mowing of lawn areas, and a portion of the proposed apartment building. It will maximize the space available for development, while not impacting the 100-year floodplain. This maximizes the financial viability of the project. The impacts to the SCPZ will be located outside of the 100-year floodplain, so there will not be any impacts to the stream itself or its ability to convey flow. The amount of impervious area located within the SCPZ will be slightly increased from 0.53 acres in the existing condition to 0.59 acres.

Impacts to Stormwater Detention and Water Quality

The Preferred Alternative for the Brookwood Apartments project will detain and improve stormwater runoff from the site. Refer to Appendix C, Exhibit 2 for site layout and grading. The site topography will be graded to maximize the amount of developed tributary area to a proposed underground detention system located underneath the parking area on the west side of the proposed building. The existing site does not currently utilize any type of stormwater detention or water quality treatment. The proposed detention system will provide stormwater detention and water quality treatment as required by the SWDM and the OEPA General Permit. Rooftop and

REQUEST FOR A TYPE III VARIANCE

paved area stormwater runoff will be captured and piped to the detention system before being discharged into Bliss Run. This will result in a decrease to the rate of runoff discharged into Bliss Run from the Site.

The area disturbed by construction is greater than 1 acre, therefore post-construction stormwater quality treatment is required in accordance with the OEPA General Permit No. OHC000005. The underground detention system will be designed to provide water quality treatment as required by the permit. Runoff from all impervious areas on the west side of Bliss Run will be conveyed to this system for treatment prior to being discharged into Bliss Run. Discharge from the west side of Bliss Run will include drainage from grassy areas and discharge from the underground detention system, which results in an increase in water quality from the existing condition. On the east side of Bliss Run, water quality will also be increased due to the removal of existing asphalt pavement and addition of grassy areas and dedicated park area.

2.2 MINIMAL IMPACT ALTERNATIVE

Under the Minimal Impact Alternative (Exhibit 3), the impacts to the SCPZ are decreased by reducing the size of the building and parking areas, and eliminating the drive around the backside of the building. The total disturbed area for this option is approximately 2.92 acres. The parking area on the east side of Bliss Run remains the same as the Preferred Alternative, so the reduction in SCPZ encroachments is limited to the west side of Bliss Run. The sanitary main relocation also remains the same as the Preferred Alternative, with a section of the new main and easement extending parallel to Bliss Run within the SCPZ. As mentioned under the Preferred Alternative, placing the relocated sanitary main within and parallel to the SCPZ requires a separate variance from the City of Columbus.

The Minimal Impact Alternative will result in approximately 0.25 acres of disturbance within the SCPZ. The impacts include asphalt and concrete pavements, grading activities, mowing of lawn areas, and a portion of the building as in the Preferred Alternative, but at a reduced amount. The amount of impervious area located within the SCPZ will be 0.20 acres, which is less than the 0.53 acres of impervious area in the existing condition. All impacts to the SCPZ for the Minimal Impact Alternative are located outside of the 100-year flood plain.

The reduction in the building foot print results in a decrease in the number of units to 88. It also eliminates the garages located on the backside of the building in the preferred option. This will result in a financial hardship due to the loss in revenue, and ultimately decrease the financial viability of the project. The total number of parking spaces will also be reduced to 88, including 64 on the west side of Bliss Run and 24 on the east side, due to the decreased size of the parking areas and elimination of the garages. The number of parking spaces provided in this alternative does not meet the 110 parking space requirement set by the previously granted parking variance.

2.3 FULL COMPLIANCE /NO-IMPACT ALTERNATIVE

The No-Impact Alternative involves further reducing the building footprint and parking areas from

REQUEST FOR A TYPE III VARIANCE

the minimal impact alternative to completely eliminate any disturbance within the SCPZ. The total disturbed area for this option is approximately 1.90 acres. The existing parking area on the east side of Bliss Run remains undisturbed for this option. The sanitary main relocation and easement are essentially the same as the Preferred and Minimal Impact Alternatives, but it is located outside of the SCPZ.

The No-Impact Alternative (Exhibit 4) will not result in any impacts to the SCPZ. The amount of impervious area within the SCPZ for this option is limited to the existing site features and is approximately 0.45 acres. The impervious area within the SCPZ will be decreased from 0.53 acres, resulting from the removal of the existing play area and sidewalk leading to the bridge over Bliss Run. The existing parking area on the east side of Bliss Run will remain unchanged, which leaves a significant amount of impervious area in the SCPZ that would otherwise be removed in the Preferred Alternative.

The No-Impact Alternative, Exhibit 4, significantly reduces the developable area on the site given the existing site constraints mentioned previously, thus not allowing for reasonable use of the land. The proposed apartment building for this option is reduced to 71 units, which is significantly lower than the Preferred Alternative. This will result in a significant long-term financial impact and will further decrease the financial viability of the project. The number of total parking spaces is increased to 139, including 64 on the west side of Bliss Run and 75 on the east side, since the existing parking lot on the east side is to remain in its entirety. The number of parking spaces provided under this alternative will meet the requirement set by the parking variance, but at the expense of leaving a significant amount of asphalt pavement within the SCPZ on the east side of Bliss Run.

2.4 COMPARISON OF PROJECT ALTERNATIVES

When commencing a new residential construction project, it is the goal of National Church Residences to assist the community in achieving rents that are affordable for the particular neighborhood, while providing the appropriate amenity package to benefit the residents so they thrive. The Brookwood project includes a rich amenity package, which increases the cost from the start. The relationship between rent and project cost is at the crux of any long-term real estate development and there is a necessary tension between the two, keeping rents down, yet providing a long-lasting building with quality and rich amenities. When unit count goes down, the cost per square foot goes up, driving the cost of rent upwards. In addition, the existing site constraints, as previously mentioned in Section 1.4, add extraordinary costs to the project, which drives the cost of rent upwards. As a result, achieving a reasonable rent for the future residents may not be feasible.

National Church Residences is a non-profit organization with a mission to advance better living for all seniors. For conventionally financed projects designed to serve middle income working seniors our policy has been to limit the size of our own cash investment to no more than \$50,000 per unit. This policy is intended to ensure we can meet commercial loan underwriting guidelines while also ensuring that our limited resources are leveraged to serve the most seniors possible.

REQUEST FOR A TYPE III VARIANCE

Preferred Alternative

Our financial projections for the Preferred Alternative indicate a required owner investment of \$47,170 per unit, with the total owner investment equaling 19% of the total project costs. This financial target aligns with the Preferred Alternative option, allowing us to maximize the number of units in order to better absorb the high development costs involved with this project while also providing a much-needed senior housing product at a mid-market price point. Table 1 below compares the financial impact of each alternative.

Minimal Impact Alternative

Under the Minimal Impact Alternative, the impacts to the SCPZ have been reduced by eliminating 19 units from the development. As a result of this loss, the required owner investment per unit would increase by 59% to \$79,011, increasing the total owner investment to 28% of the total project costs.

Full Compliance Alternative

Under the Full Compliance Alternative, there will be no impact to the SCPZ, but the financial loss is even greater. By reducing units even further than the Minimal Impact Alternative by 36, our financial projections indicate the required owner investment per unit would increase to nearly \$88,085. This results in an overall owner investment of over 33% of total project costs that would be required.

Table 1: Comparison of Project Alternatives

Alternative	SCPZ Impact (ac)	Units Eliminated	Total Units	Cost per Unit
Preferred Plan	0.62	0	106	\$47,170
Minimal Impact Plan	0.25	19	88	\$79,011
No Impact Plan	0.00	36	71	\$88,085

Table 2: Cash Investment Comparison

BROOKWOOD CASH INVESTMENT COMPARISON						
	Cash Investment per Unit			Increase in cash investment if variance not granted		
	Inniswood Village Completed	Walnut Trace Under Construction	Brookwood Preferred	Brookwood Partial Compliance with current SC	Brookwood Full Compliance with Current SC	
N^^ Cash Investment	\$ 7,530,000	\$ 4,399,500	\$5,000,000	\$ 6,953,000	\$ 6,254,000	
Number Of Units	192	93	106	88	71	
Cash Investment / Unit	\$ 39,219	\$ 47,306	\$ 47,170	\$ 79,011	\$ 88,085	
	\$ 44,565	ave per unit		Increase over average	Increase over average	
				177%	198%	

REQUEST FOR A TYPE III VARIANCE

As can be seen from Table 2, which also shows some of National Church Residences' other central Ohio mid-market projects, the Preferred Alternative meets the \$50,000 requirement very closely. However, at \$79,011 and \$88,085 the Minimal Impact and No-Impact Alternative scenarios represent a significant increase in the cash investment required by National Church Residences in order to meet commercial underwriting criteria. Moving forward under either of these scenarios would significantly impair the ability to meet the goal of serving as many seniors as possible.

The financial impact as a result from the reduction of units to the project in both the Minimal and No Impact Alternatives, include a loss of estimated annual return along with the inability to recover the cost of development infrastructure and construction. Additional site constraints also exist leading to higher-than-normal construction costs due to utility line relocation, building demolition and environmental remediation of hazardous materials. These additional site constraints make it even more critical to maximize the density of this project for these costs to be spread across more units thereby minimizing the impact.

3.0 PROPOSED MITIGATION

As required by the City of Columbus Stormwater Drainage Manual, adequate mitigation must be provided for any impacts within the SCPZ. Mitigation entails reserving additional undeveloped space along a stream as part of the SCPZ that is left in its natural state without any kind of regular maintenance. The goal of the SWDM is to provide as much mitigation onsite for impacts. In the case of their development, a portion of the mitigation can be provided, but due to site constraints, the remainder must be offsite. For offsite mitigation, Columbus Recreation and Parks was able to identify projects on Alum Creek which is located within the same watershed as Bliss Run for our mitigation.

3.1 MITIGATION PLAN

As noted previously, the Preferred Alternative will involve 0.62 acres of disturbance to the SCPZ which will require mitigation. The onsite mitigation (described in Appendix D) will consist of invasive species control and native species planting. Each of these will follow the guidelines set forth in the OEPA guidelines for stream mitigation banking and in-lieu fee programs in Ohio V.1.1 dated March 2016. This rehabilitation will cover the entire area of the remaining SCPZ. This area is 0.94 acres. The mitigation, Type, 3, buffer work only provides a credit ratio of 1:4, or 0.24 credit for each activity for a total of 0.48 acres.

The offsite mitigation will be streambank stabilization on Alum Creek near Harbour Pointe as described in City of Columbus Department of Recreation and Parks Three Streambank Stabilization Projects Preliminary Report dated, May 17, 2021. This offsite mitigation plan is described in Appendix D and will consist of two parts. The first will be installation of a vegetated riprap revetment per typical section in Appendix D. This will occur along the length of the west bank of Alum Creek as noted in the plan view in Appendix D. Since the revetment will fill area within the flood plan/floodway of Alum Creek, we are proposing to extend excavation of the creek bank

REQUEST FOR A TYPE III VARIANCE

upstream and downstream to maintain the same flood and storage capacity. Where the creek bank is excavated the revetment will be installed to protect the bank. For the purpose of the variance report, we are estimating a total of 250 feet of bank modification and stabilization. The second mitigation also shown in Appendix D will be enhanced native species planting along the 250 foot disturbed length of the creek, on the bank from the water's edge to the asphalt path.

The stream bank stabilization credit ration is 1:1 for Type 1 restoration/ enhanced effort, activity level 4. The area of the stabilization is 0.11 acres, and the native species planting is 0.17 acres. The total area of 0.28 acres results in a credit of 0.28 acres.

The total for both onsite and offsite credits will be 0.76 acres. The required mitigation is 0.65 acres. These mitigation projects will be documented and constructed separately. The onsite work will be shown and permitted on the CC plans (CC19215). The offsite work will be constructed as a separate project funded by National Church Residences. Although this work will be constructed in the same timeframe of the overall project, the design and permitting of the stream stabilization will lag behind. In order to facilitate approval of the project and start of construction on site, National Church Residences will provide a bond to the City of Columbus for the total project costs.

The offsite mitigation project cost is described as:

1. Construction Cost (from report)	\$ 130,000
2. Design Fees	\$ 30,000
3. Permit Fees	\$ 20,000
4. Inspection Fees	\$ 15,600
Total Project Cost	\$ 195,600

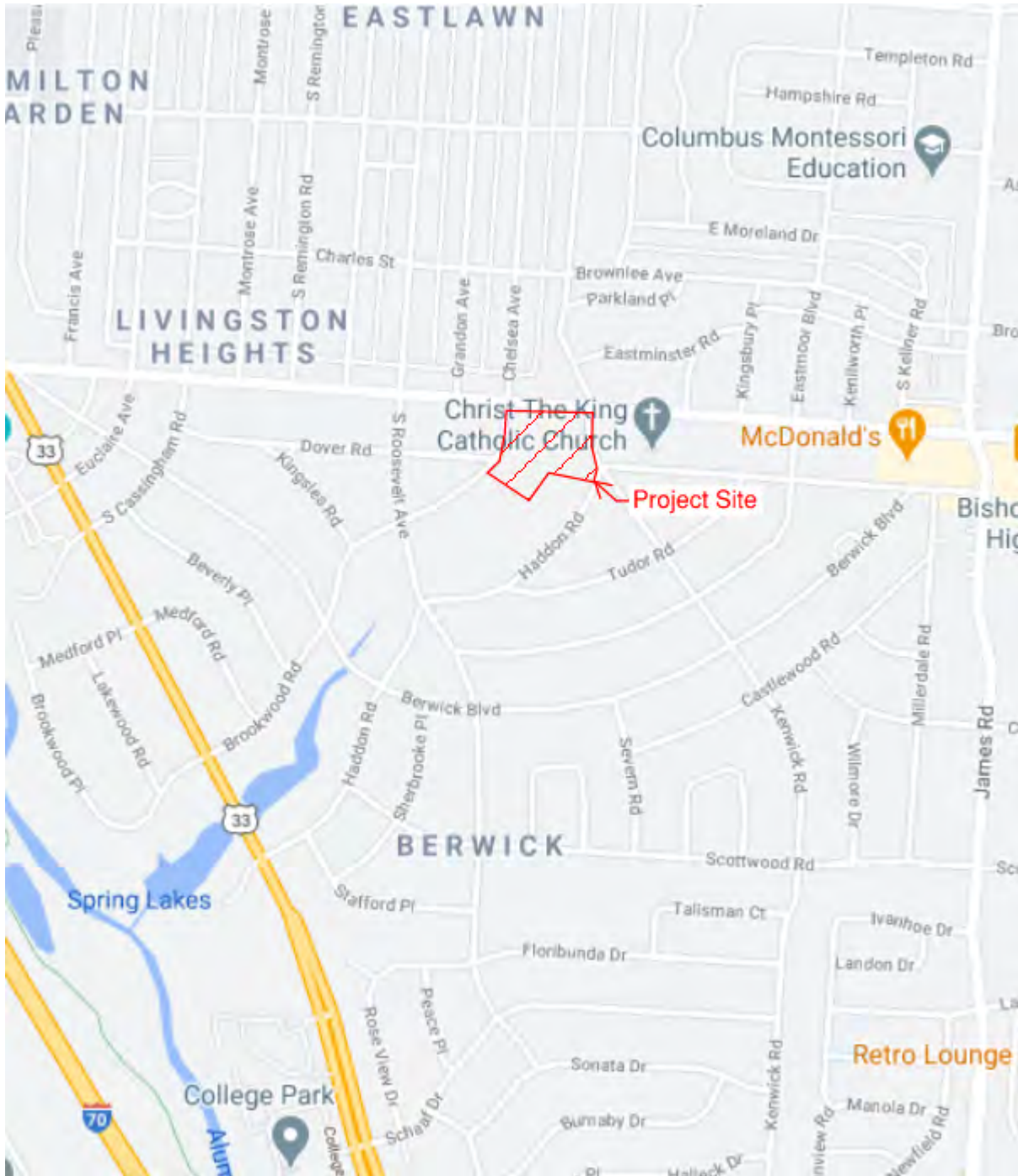
National Church Residences will contract with Elford for the construction work and the bond, which will be presented to the City of Columbus with the final variance report. Korda/Nemeth Engineering will be contracted with National Church Residences to provide the design and permit drawings, coordinate City of Columbus, OEPA and OSACE permits for the work.

4.0 CONCLUSIONS

National Church Residences respectfully requests approval of the Type III variance for the Preferred Alternative for the Brookwood Apartments project. The City's SCPZ regulations are in place to protect the stream and adjacent riparian area and ensure adequate water quality of the stream is maintained. The Preferred Alternative accomplishes these goals while still allowing for limited impacts within the SCPZ. The amount of impervious area within the SCPZ remains approximately the same, and a significant amount of impervious area is removed on the east side of Bliss Run. This restores a large portion of the SCPZ directly adjacent to the top of stream bank. Approval of the Type III variance for the Preferred Alternative will allow the amount of developable space and financial viability of the project to be maximized, while still providing adequate protection of the existing stream corridor. Overall, the project will provide a benefit to the community by creating new mid-market priced senior housing on a site that otherwise does not serve a purpose in the community.

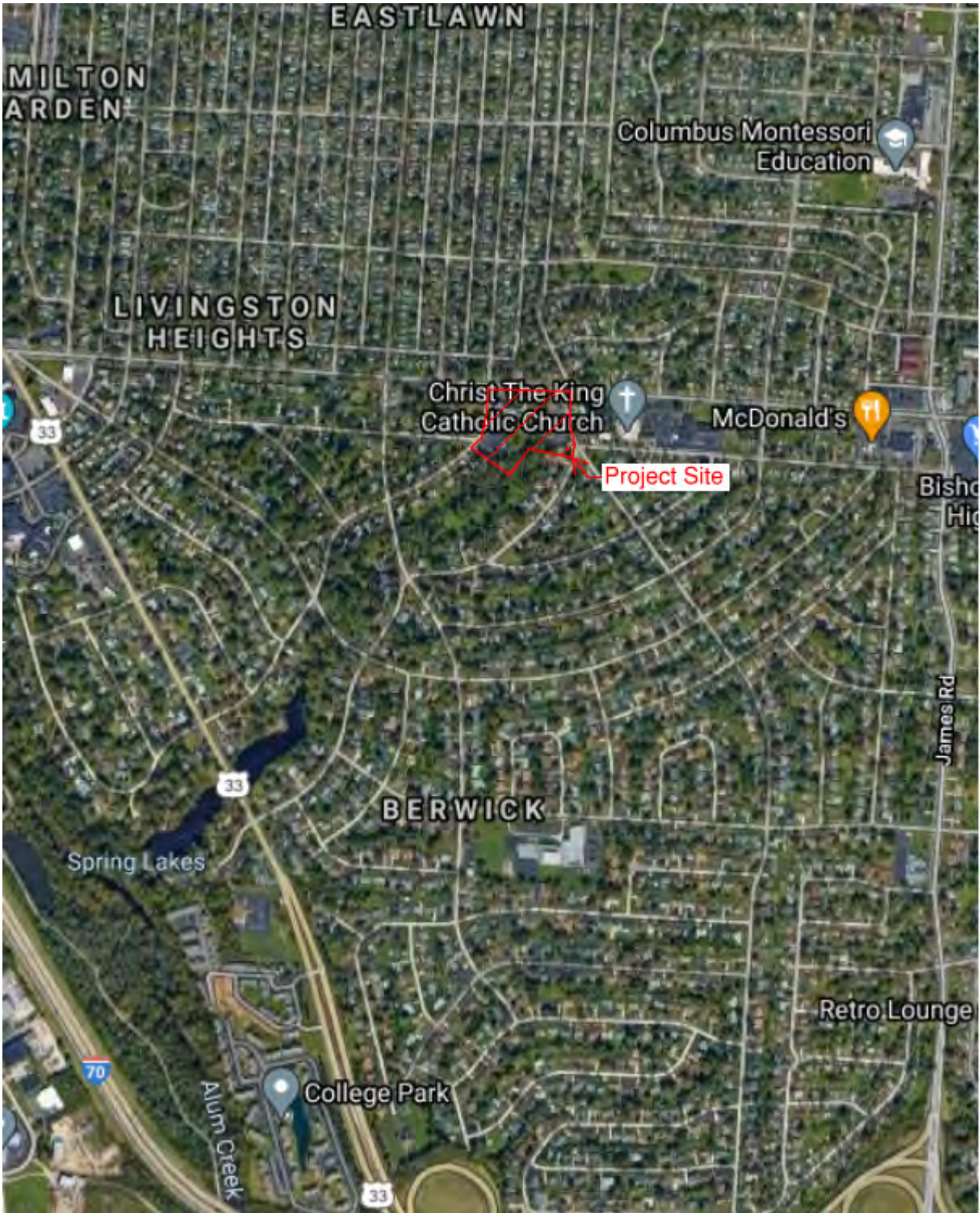
APPENDIX A PROJECT SITE DATA

REQUEST FOR A TYPE III VARIANCE



Google Maps Image of Site Location

REQUEST FOR A TYPE III VARIANCE

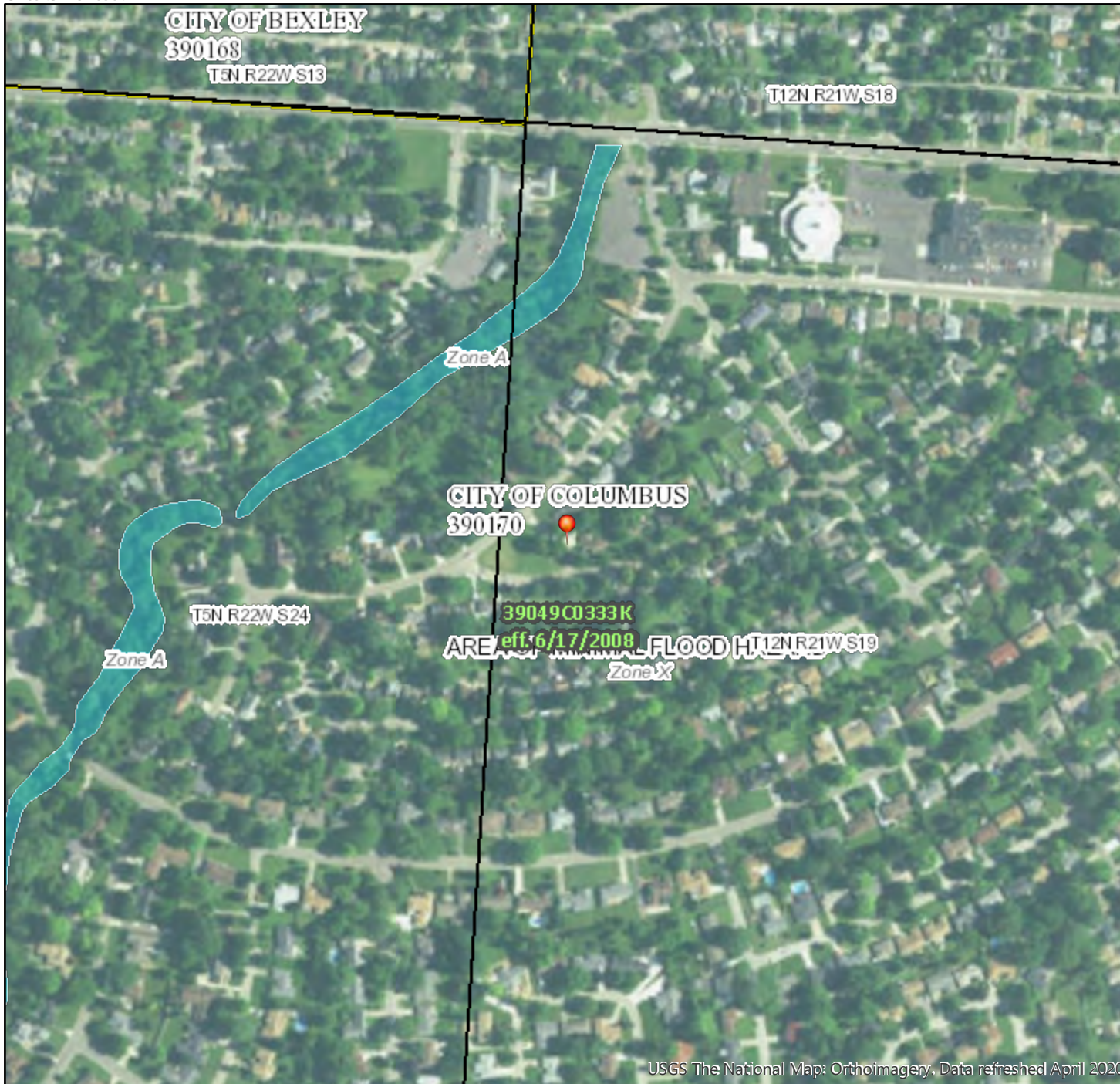


Google Aerial Image of Site Location

National Flood Hazard Layer FIRMette



82 5548'W 39 5654'N



Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) <i>Zone A, V, A99</i>
		With BFE or Depth <i>Zone AE, AO, AH, VE, AR</i>
		Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile <i>Zone X</i>
		Future Conditions 1% Annual Chance Flood Hazard <i>Zone X</i>
		Area with Reduced Flood Risk due to Levee. See Notes. <i>Zone X</i>
		Area with Flood Risk due to Levee <i>Zone D</i>

OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard <i>Zone X</i>
		Effective LOMRs
		Area of Undetermined Flood Hazard <i>Zone D</i>

GENERAL STRUCTURES		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall

OTHER FEATURES		Cross Sections with 1% Annual Chance
		Water Surface Elevation
		Coastal Transect
		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary
		Coastal Transect Baseline
		Profile Baseline
		Hydrographic Feature

MAP PANELS		Digital Data Available
		No Digital Data Available
		Unmapped

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

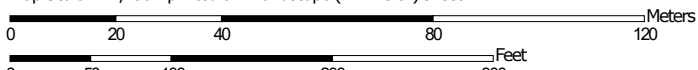
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on **6/17/2020 at 7:43 AM** and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Hydrologic Soil Group—Franklin County, Ohio



Map Scale: 1:1,430 if printed on A landscape (11" x 8.5") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84



MAP LEGEND

Area of Interest (AOI)









 Area of Interest (AOI)

Soils

Soil Rating Polygons





 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Lines


 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Points






 A
 A/D
 B
 B/D

 C
 C/D
 D
 Not rated or not available

Water Features

 Streams and Canals

Transportation

 Rails
 Interstate Highways
 US Routes
 Major Roads
 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL:
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Franklin County, Ohio
 Survey Area Data: Version 19, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 4, 2014—Aug 27, 2014

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
BfB	Bennington-Urban land complex, 0 to 6 percent slopes	C/D	3.0	59.5%
CbC	Cardington-Urban land complex, 6 to 12 percent slopes		2.1	40.5%
Totals for Area of Interest			5.1	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

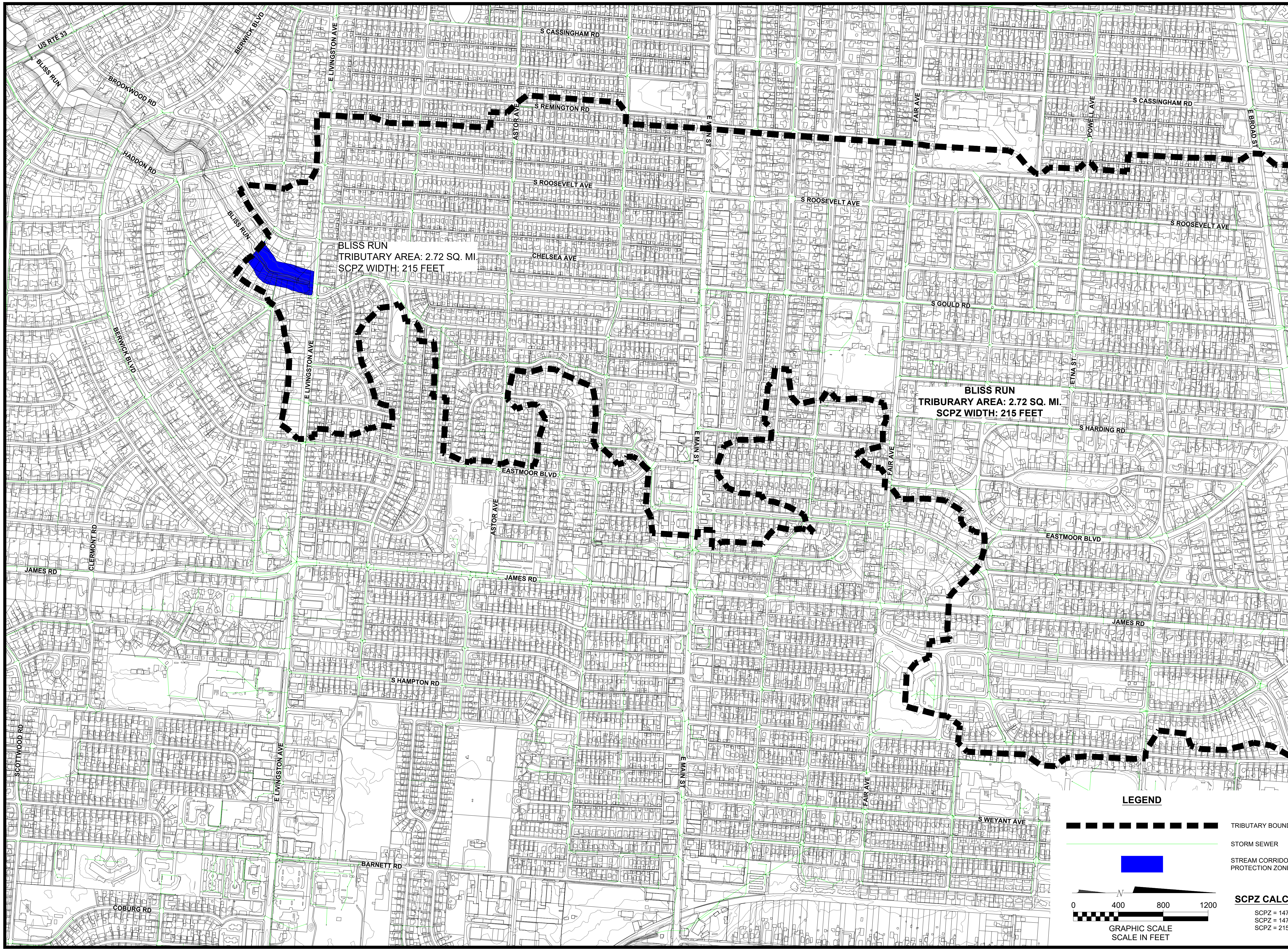
Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

**APPENDIX B TRIBUTARY AREA MAP & STREAM CORRIDOR
PROTECTION ZONE CALCULATION**



MATCHLINE, REFER TO SHEET 2

LEGEND

- TRIBUTARY BOUNDARY
- STORM SEWER
- STREAM CORRIDOR PROTECTION ZONE

SCpz CALCULATION

0 400 800 1200

GRAPHIC SCALE
SCALE IN FEET

SCpz = 147(DA)^{0.38}
 SCpz = 147(2.72)^{0.38}
 SCpz = 215 FT

REV.	DATE	DESCRIPTION	REVISION/UPLOAD DATE

BROOKWOOD SCPZ VARIANCE
 2685 E Livingston Ave
 PID: 010087759

BLISS RUN TRIBUTARY MAP

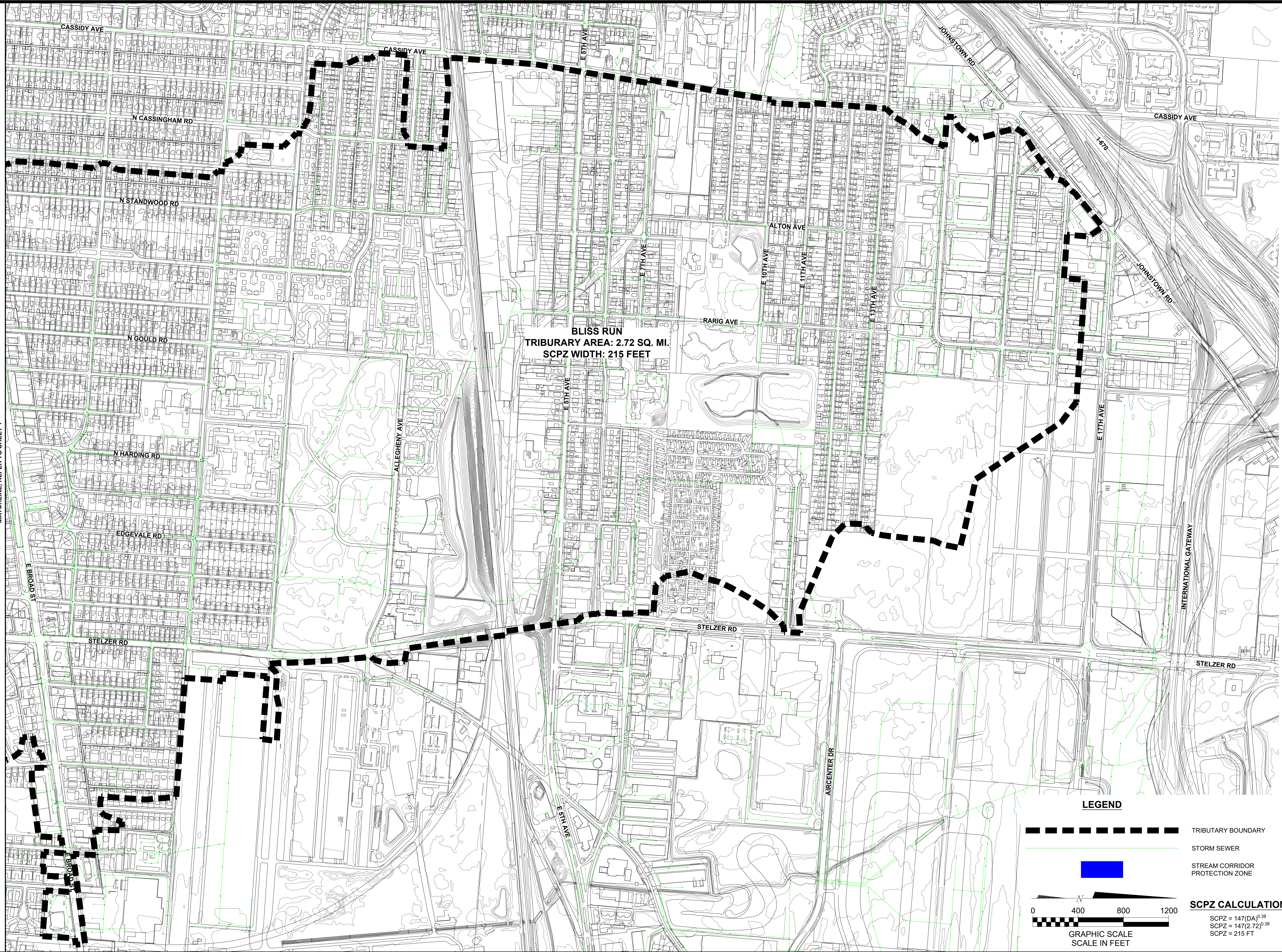
KORDA
 Korda/Nemeth Engineering, Inc. - Consulting Engineers
 1650 Watermark Drive, Suite 200 - Columbus, Ohio 43215-7010
 TEL: 614-487-1650 - FAX: 614-487-8881 - WEB: www.korda.com

DRAWN BY: JDB **CHECKED BY: CMF**




THE ARCHITECT/ENGINEER ASSUMES NO RESPONSIBILITY OR LIABILITY FOR THE USE OF THESE PLANS FOR ANY PROJECT OTHER THAN SPECIFICALLY AUTHORIZED BY THEM AND SIGNED AND SEALED FOR SUCH SPECIFIC LOCATION IN THE STATE, PROVINCE OR TERRITORY SHOWN ON THE SEAL. THIS BUILDING USE IS ONLY APPLICABLE IN AREAS MEETING THE STATED DESIGN CRITERIA.

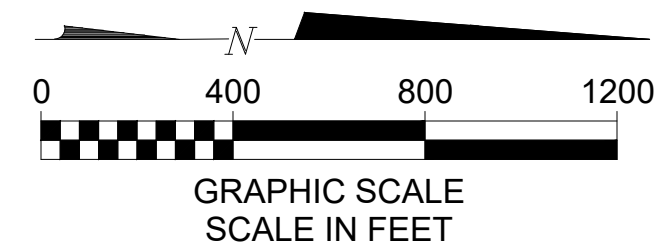
KNE JOB # 2019-0438
DRAWING NUMBER:
1/2

MATCHLINE, REFER TO SHEET 1



LEGEND

-  TRIBUTARY BOUNDARY
-  STORM SEWER
-  STREAM CORRIDOR PROTECTION ZONE



SCPZ CALCULATION

SCPZ = $147(DA)^{0.38}$
 SCPZ = $147(2.72)^{0.38}$
 SCPZ = 215 FT

REV	DATE	DESCRIPTION	REVISION/UPLOAD DATE

BROOKWOOD SCPZ VARIANCE
 2685 E Livingston Ave
 PID: 010087759

BLISS RUN TRIBUTARY MAP

KORDA
 Korda/Nemeth Engineering, Inc. - Consulting Engineers
 1650 Watermark Drive, Suite 200 - Columbus, Ohio 43215-7010
 TEL: 614-487-1650 - FAX: 614-487-8881 - WEB: www.korda.com

KNE JOB # 2019-0438

DRAWING NUMBER:

2/2

DRAWN BY: JDB CHECKED BY: JDB

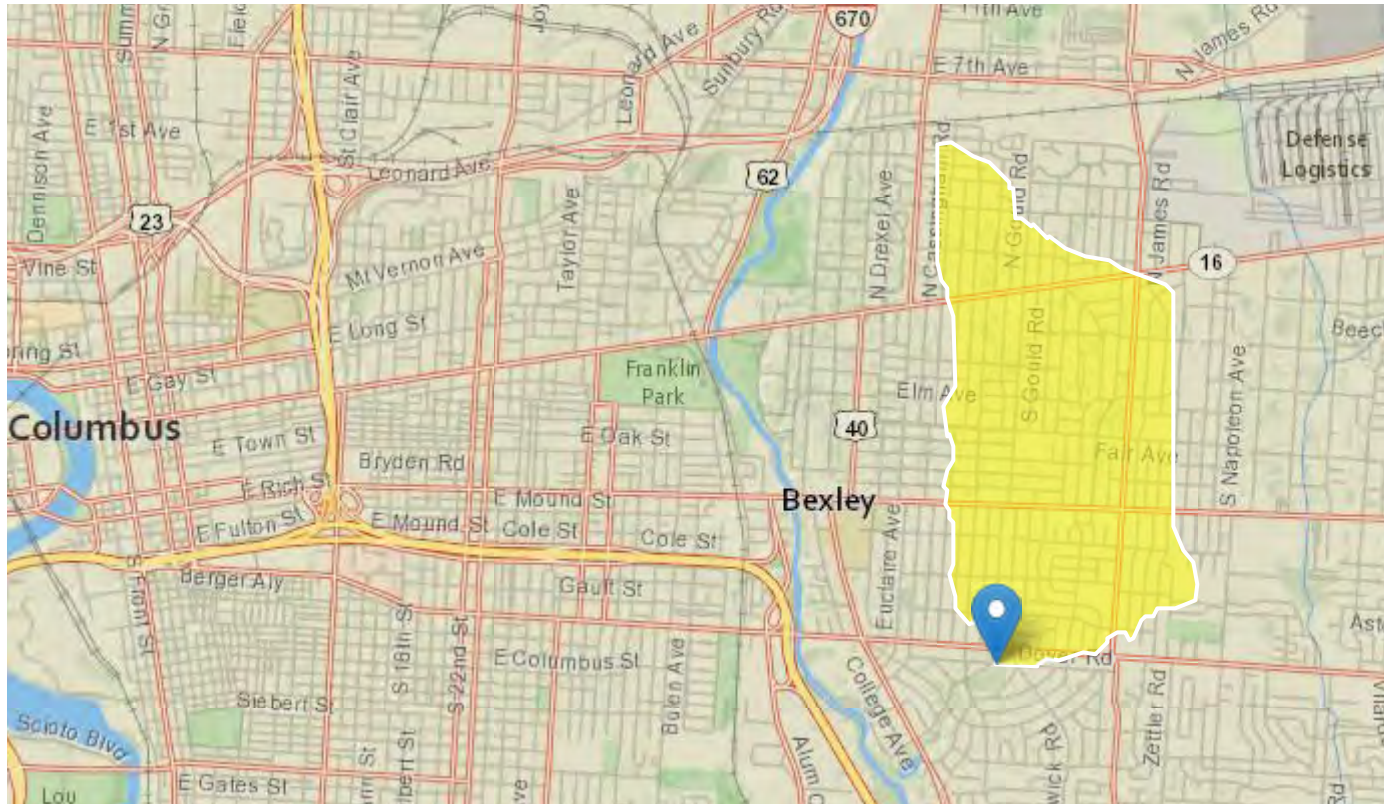
Bliss Run StreamStats Report

Region ID: OH

Workspace ID: OH20200617133344263000

Clicked Point (Latitude, Longitude): 39.94638, -82.92568

Time: 2020-06-17 09:34:00 -0400



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
CSL1085LFP	Change in elevation divided by length between points 10 and 85 percent of distance along the longest flow path to the basin divide, LFP from 2D grid	8.64	feet per mi
DRNAREA	Area that drains to a point on a stream	1.95	square miles
FOREST	Percentage of area covered by forest	14.7	percent
LAT_CENT	Latitude of Basin Centroid	39.9617	decimal degrees

Parameter Code	Parameter Description	Value	Unit
LC11DEV	Percentage of developed (urban) land from NLCD 2011 classes 21-24	100	percent
LC11IMP	Average percentage of impervious area determined from NLCD 2011 impervious dataset	43.5	percent
LC92STOR	Percentage of water bodies and wetlands determined from the NLCD	0.17	percent
LFPLENGTH	Length of longest flow path	3.34	miles
LONG_CENT	Longitude Basin Centroid	82.9206	decimal degrees
OHREGA	Ohio Region A Indicator	1	dimensionless
OHREGC	Ohio Region C Indicator	0	dimensionless
PRECIP	Mean Annual Precipitation	39.3	inches
STREAM_VARG	Streamflow variability index as defined in WRIR 02-4068, computed from regional grid	0.6	dimensionless

Peak-Flow Statistics Parameters^[Peak Flow Full Model Reg A SIR2019 5018]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	1.95	square miles	0.04	5989
OHREGC	Ohio Region C Indicator 1 if in C else 0	0	dimensionless	0	1
OHREGA	Ohio Region A Indicator 1 if in A else 0	1	dimensionless	0	1
CSL1085LFP	Stream Slope 10 and 85 Longest Flow Path	8.64	feet per mi	1.53	516
LC92STOR	Percent Storage from NLCD1992	0.17	percent	0	25.35

Peak-Flow Statistics Flow Report^[Peak Flow Full Model Reg A SIR2019 5018]

PII: Prediction Interval-Lower, Plu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	PII	Plu	SEp
2 Year Peak Flood	146	ft ³ /s	76.8	277	40.1

Statistic	Value	Unit	PII	Plu	SEp
5 Year Peak Flood	245	ft ³ /s	135	446	37.2
10 Year Peak Flood	324	ft ³ /s	177	592	37.6
25 Year Peak Flood	437	ft ³ /s	237	805	38.1
50 Year Peak Flood	530	ft ³ /s	284	989	37.8
100 Year Peak Flood	631	ft ³ /s	334	1190	39.6
500 Year Peak Flood	896	ft ³ /s	470	1710	40.3

Peak-Flow Statistics Citations

Koltun, G.F., 2019, Flood-frequency estimates for Ohio streamgages based on data through water year 2015 and techniques for estimating flood-frequency characteristics of rural, unregulated Ohio streams: U.S. Geological Survey Scientific Investigations Report 2019–5018, xx p. (<https://dx.doi.org/10.3133/sir20195018>)

Probability Statistics Parameters [P zero Flow 2012 5138]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	1.95	square miles	1	1250
STREAM_VARG	Streamflow Variability Index from Grid	0.6	dimensionless	0.24	1.12

Probability Statistics Flow Report [P zero Flow 2012 5138]

PII: Prediction Interval-Lower, Plu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	PC
Probability zero flow 1Day	0.05	dim	91
Probability zero flow 7Day	0.0225	dim	94
Probability zero flow 30Day	0.00106	dim	97

Probability Statistics Citations

Koltun, G.F., and Kula, S.P., 2013, Methods for estimating selected low-flow statistics and development of annual flow-duration statistics for Ohio: U.S. Geological Survey Scientific Investigations Report 2012–5138, 195 p. (<http://pubs.usgs.gov/sir/2012/5138/>)

Flow-Duration Statistics Parameters^[Low Flow Region A 2012 5138]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	1.95	square miles	1	1250
STREAM_VARG	Streamflow Variability Index from Grid	0.6	dimensionless	0.24	1.12

Flow-Duration Statistics Flow Report^[Low Flow Region A 2012 5138]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SE
80 Percent Duration	0.144	ft ³ /s	29.1

Flow-Duration Statistics Citations

Koltun, G.F., and Kula, S.P.,2013, Methods for estimating selected low-flow statistics and development of annual flow-duration statistics for Ohio: U.S. Geological Survey Scientific Investigations Report 2012–5138, 195 p. (<http://pubs.usgs.gov/sir/2012/5138/>)

Low-Flow Statistics Parameters^[Low Flow Region A 2012 5138]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	1.95	square miles	1	1250
STREAM_VARG	Streamflow Variability Index from Grid	0.6	dimensionless	0.24	1.12

Low-Flow Statistics Flow Report^[Low Flow Region A 2012 5138]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SE
1 Day 10 Year Low Flow	0.0162	ft ³ /s	53.1
7 Day 10 Year Low Flow	0.0217	ft ³ /s	40
30 Day 10 Year Low Flow	0.036	ft ³ /s	35.7
90 Day 10 Year Low Flow	0.0623	ft ³ /s	29.8

Low-Flow Statistics Citations

Koltun, G.F., and Kula, S.P.,2013, Methods for estimating selected low-flow statistics and development of annual flow-duration statistics for Ohio: U.S. Geological Survey Scientific Investigations Report 2012–5138, 195 p. (<http://pubs.usgs.gov/sir/2012/5138/>)

Flow Percentile Statistics Parameters[Low Flow LatLE 41.2 wri02 4068]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	1.95	square miles	0.12	7422
LC92STOR	Percent Storage from NLCD1992	0.17	percent	0	19
STREAM_VARG	Streamflow Variability Index from Grid	0.6	dimensionless	0.25	1.13
LAT_CENT	Latitude of Basin Centroid	39.9617	decimal degrees	38.68	41.2
LONG_CENT	Longitude of Basin Centroid	82.9206	decimal degrees	80.53	84.6

Flow Percentile Statistics Flow Report[Low Flow LatLE 41.2 wri02 4068]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SE	SEp
25th Percentile Flow	0.314	ft ³ /s	29.2	29.2
50th Percentile Flow Median	0.796	ft ³ /s	40.3	40.3
75th Percentile Flow	1.84	ft ³ /s	47.9	47.9

Flow Percentile Statistics Citations

Koltun, G. F., and Whitehead, M. T.,2002, Techniques for Estimating Selected Streamflow Characteristics of Rural, Unregulated Streams in Ohio: U. S. Geological Survey Water-Resources Investigations Report 02-4068, 50 p (<https://pubs.er.usgs.gov/publication/wri024068>)

General Flow Statistics Parameters[Low Flow LatLE 41.2 wri02 4068]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
----------------	----------------	-------	-------	-----------	-----------

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	1.95	square miles	0.12	7422
LC92STOR	Percent Storage from NLCD1992	0.17	percent	0	19
STREAM_VARG	Streamflow Variability Index from Grid	0.6	dimensionless	0.25	1.13
LAT_CENT	Latitude of Basin Centroid	39.9617	decimal degrees	38.68	41.2

General Flow Statistics Flow Report^[Low Flow LatLE 41.2 wri02 4068]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SE	SEp
Harmonic Mean Streamflow	0.167	ft ³ /s	65.9	65.9

General Flow Statistics Citations

Koltun, G. F., and Whitehead, M. T., 2002, Techniques for Estimating Selected Streamflow Characteristics of Rural, Unregulated Streams in Ohio: U. S. Geological Survey Water-Resources Investigations Report 02-4068, 50 p (<https://pubs.er.usgs.gov/publication/wri024068>)

Annual Flow Statistics Parameters^[Low Flow LatLE 41.2 wri02 4068]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	1.95	square miles	0.12	7422
PRECIP	Mean Annual Precipitation	39.3	inches	34	43.2
LAT_CENT	Latitude of Basin Centroid	39.9617	decimal degrees	38.68	41.2

Annual Flow Statistics Flow Report^[Low Flow LatLE 41.2 wri02 4068]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SE	SEp
Mean Annual Flow	2.1	ft ³ /s	11.4	11.4

Annual Flow Statistics Citations

Koltun, G. F., and Whitehead, M. T.,2002, Techniques for Estimating Selected Streamflow Characteristics of Rural, Unregulated Streams in Ohio: U. S. Geological Survey Water-Resources Investigations Report 02-4068, 50 p
(<https://pubs.er.usgs.gov/publication/wri024068>)

Monthly Flow Statistics Parameters^[Low Flow LatLE 41.2 wri02 4068]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	1.95	square miles	0.12	7422
LC92STOR	Percent Storage from NLCD1992	0.17	percent	0	19
PRECIP	Mean Annual Precipitation	39.3	inches	34	43.2
FOREST	Percent Forest	14.7	percent	0	99.1
LAT_CENT	Latitude of Basin Centroid	39.9617	decimal degrees	38.68	41.2
STREAM_VARG	Streamflow Variability Index from Grid	0.6	dimensionless	0.25	1.13

Monthly Flow Statistics Flow Report^[Low Flow LatLE 41.2 wri02 4068]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SE	SEp
January Mean Flow	2.85	ft ³ /s	16.6	16.6
February Mean Flow	3.69	ft ³ /s	11.9	11.9
March Mean Flow	4.03	ft ³ /s	14	14
April Mean Flow	3.79	ft ³ /s	11.2	11.2
May Mean Flow	2.36	ft ³ /s	19.5	19.5
June Mean Flow	1.45	ft ³ /s	27	27
July Mean Flow	0.86	ft ³ /s	28.2	28.2
August Mean Flow	0.648	ft ³ /s	36.8	36.8
September Mean Flow	0.391	ft ³ /s	43.6	43.6
October Mean Flow	0.367	ft ³ /s	50.8	50.8
November Mean Flow	0.963	ft ³ /s	37.5	37.5

Statistic	Value	Unit	SE	SEp
December Mean Flow	2.03	ft ³ /s	21.8	21.8

Monthly Flow Statistics Citations

Koltun, G. F., and Whitehead, M. T.,2002, Techniques for Estimating Selected Streamflow Characteristics of Rural, Unregulated Streams in Ohio: U. S. Geological Survey Water-Resources Investigations Report 02-4068, 50 p
(<https://pubs.er.usgs.gov/publication/wri024068>)

USGS Data Disclaimer: Unless otherwise stated, all data, metadata and related materials are considered to satisfy the quality standards relative to the purpose for which the data were collected. Although these data and associated metadata have been reviewed for accuracy and completeness and approved for release by the U.S. Geological Survey (USGS), no warranty expressed or implied is made regarding the display or utility of the data for other purposes, nor on all computer systems, nor shall the act of distribution constitute any such warranty.

USGS Software Disclaimer: This software has been approved for release by the U.S. Geological Survey (USGS). Although the software has been subjected to rigorous review, the USGS reserves the right to update the software as needed pursuant to further analysis and review. No warranty, expressed or implied, is made by the USGS or the U.S. Government as to the functionality of the software and related material nor shall the fact of release constitute any such warranty. Furthermore, the software is released on condition that neither the USGS nor the U.S. Government shall be held liable for any damages resulting from its authorized or unauthorized use.

USGS Product Names Disclaimer: Any use of trade, firm, or product names is for descriptive purposes only and does not imply endorsement by the U.S. Government.

Application Version: 4.3.11

APPENDIX C DEVELOPMENT PLAN ALTERNATIVES EXHIBITS



LEGEND

STREAM CORRIDOR PROTECTION ZONE (SCPZ)

EXISTING IMPROVEMENTS WITHIN SCPZ (STRUCTURES, HARDSCAPE, ETC.)

TOTAL IMPROVEMENTS WITHIN SCPZ: 0.53 AC.

REV	DATE	DESCRIPTION

BROOKWOOD SCPZ VARIANCE
 2685 E Livingston Ave
 PID: 010087759

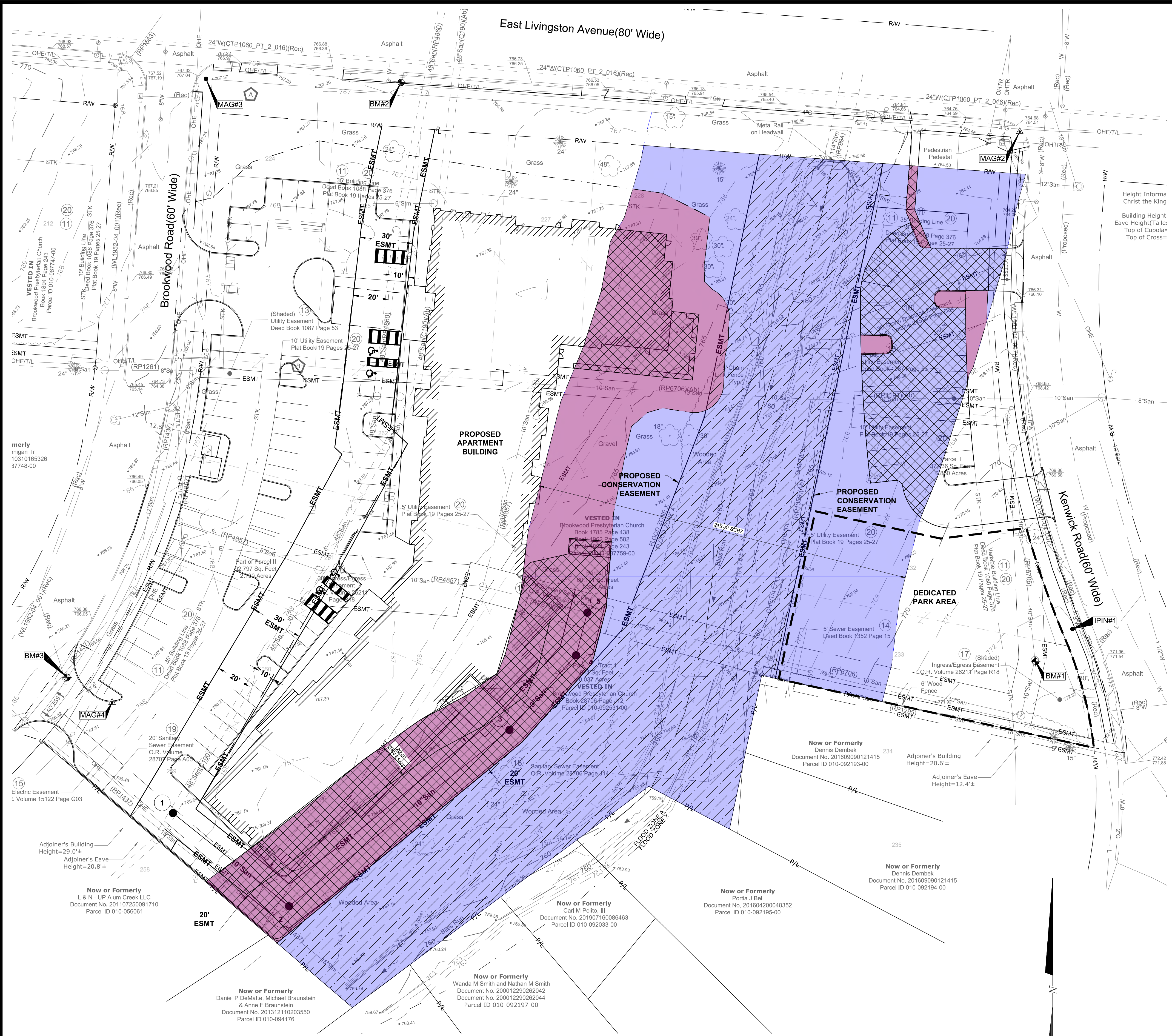
EXISTING CONDITIONS

KORDA
 Korda/Nemeth Engineering, Inc. - Consulting Engineers
 1650 Watermark Drive, Suite 200 - Columbus, Ohio 43215-7010
 TEL: 614-487-1550 - FAX: 614-487-8881 - WEB: www.korda.com

DRAWN BY: JDB CHECKED BY: CMF

THE ARCHITECT/ENGINEER ASSUMES NO RESPONSIBILITY OR LIABILITY FOR THE USE OF THESE PLANS FOR ANY PROJECT OTHER THAN SPECIFICALLY AUTHORIZED BY THEM AND BONDED AND SEALED FOR SUCH SPECIFIC LOCATION IN THE STATE, PROVINCE OR TERRITORY SHOWN ON THE SEAL. THIS BUILDING USE IS ONLY APPLICABLE IN AREAS MEETING THE STATED DESIGN CRITERIA.

KNE JOB # 2019-0438
 DRAWING NUMBER:
1/4



LEGEND

- STREAM CORRIDOR PROTECTION ZONE (SCPZ)
- DISTURBED SCPZ
- PROPOSED IMPERVIOUS AREA WITHIN SCPZ (STRUCTURES, HARDSCAPE, ETC.)
- CONSERVATION EASEMENT

TOTAL SCPZ IMPACTED: 0.62 AC.
 TOTAL IMPERVIOUS AREA WITHIN SCPZ: 0.59 AC.
 TOTAL ONSITE MITIGATION (1:1 RATIO): 0.00 AC.
 TOTAL OFFSITE MITIGATION (2:1 RATIO): 1.24 AC.

POTENTIAL DEVELOPMENT SUMMARY

RESIDENTIAL UNITS	
LEVEL	UNITS
1	15
2	30
3	30
4	25
TOTAL	106 UNITS
TOTAL PARKING SPACES: 110	

REV.	DATE	DESCRIPTION

BROOKWOOD SCPZ VARIANCE
 2685 E Livingston Ave
 PID: 010087759

PREFERRED PLAN

KORDA
 Korda/Nemeth Engineering, Inc. - Consulting Engineers
 1650 Watermark Drive, Suite 200 - Columbus, Ohio 43215-7010
 TEL: 614-487-1550 • FAX: 614-487-8881 • WEB: www.korda.com

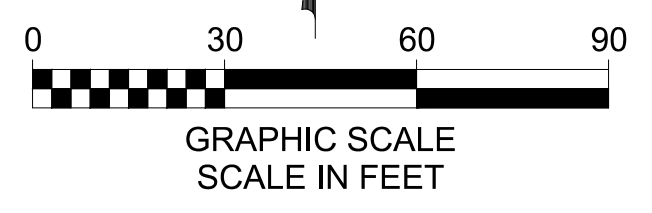
DRAWN BY: JDB CHECKED BY: CMF

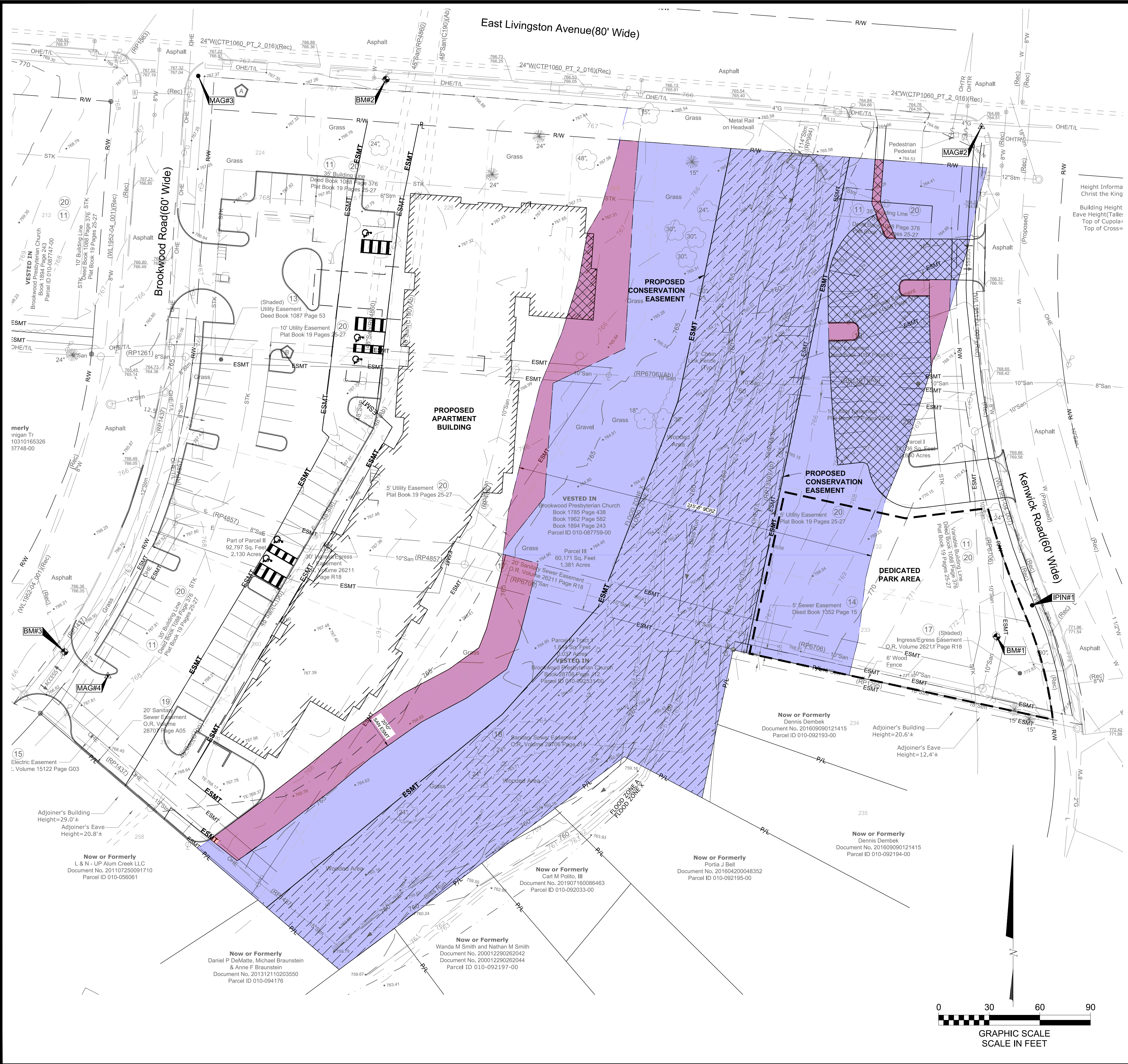
THE ARCHITECT/ENGINEER ASSUMES NO RESPONSIBILITY OR LIABILITY FOR THE USE OF THESE PLANS FOR ANY PROJECT OTHER THAN SPECIFICALLY AUTHORIZED BY THEM AND BONDED AND SEALED FOR SUCH SPECIFIC LOCATION IN THE STATE, PROVINCE OR TERRITORY SHOWN ON THE SEAL. THIS BUILDING USE IS ONLY APPLICABLE IN AREAS MEETING THE STATED DESIGN CRITERIA.

KNE JOB # 2019-0438

DRAWING NUMBER:

2/4





LEGEND

- STREAM CORRIDOR PROTECTION ZONE (SCPZ)
- DISTURBED SCPZ
- PROPOSED IMPERVIOUS AREA WITHIN SCPZ (STRUCTURES, HARDSCAPE, ETC.)
- CONSERVATION EASEMENT

TOTAL SCPZ IMPACTED: 0.25 AC.
 TOTAL IMPERVIOUS AREA WITHIN SCPZ: 0.20 AC.
 TOTAL ONSITE MITIGATION (1:1 RATIO): 0.00 AC.
 TOTAL OFFSITE MITIGATION (2:1 RATIO): 0.50 AC.

POTENTIAL DEVELOPMENT SUMMARY

RESIDENTIAL UNITS	
LEVEL	UNITS
1	17
2	24
3	24
4	17
TOTAL	88 UNITS
TOTAL PARKING SPACES: 88	

REV.	DATE	DESCRIPTION

BROOKWOOD SCPZ VARIANCE
 2685 E Livingston Ave
 PID: 010087759

MINIMAL IMPACT PLAN

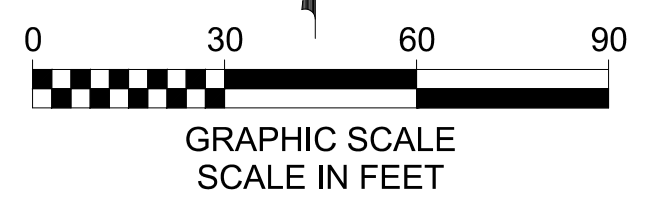
KORDA
 Korda/Nemeth Engineering, Inc. - Consulting Engineers
 1650 Watermark Drive, Suite 200 - Columbus, Ohio 43215-7010
 TEL: 614-487-1550 - FAX: 614-487-8881 - WEB: www.korda.com

DRAWN BY: JDB CHECKED BY: CMF

THE ARCHITECT/ENGINEER ASSUMES NO RESPONSIBILITY OR LIABILITY FOR THE USE OF THESE PLANS FOR ANY PROJECT OTHER THAN SPECIFICALLY AUTHORIZED BY THEM AND BOUND AND SEALED FOR SUCH SPECIFIC LOCATION IN THE STATE, PROVINCE OR TERRITORY SHOWN ON THE SEAL. THIS BUILDING USE IS ONLY APPLICABLE IN AREAS MEETING THE STATED DESIGN CRITERIA.

KNE JOB # 2019-0438

DRAWING NUMBER:
3/4





LEGEND

- STREAM CORRIDOR PROTECTION ZONE (SCPZ)
- PROPOSED IMPERVIOUS AREA WITHIN SCPZ (STRUCTURES, HARDSCAPE, ETC.)
- CONSERVATION EASEMENT

TOTAL SCPZ IMPACTED: 0.00 AC.
 TOTAL IMPERVIOUS AREA WITHIN SCPZ: 0.45 AC.
 TOTAL ONSITE MITIGATION (1:1 RATIO): 0.00 AC.
 TOTAL OFFSITE MITIGATION (2:1 RATIO): 0.00 AC.

POTENTIAL DEVELOPMENT SUMMARY

RESIDENTIAL UNITS	
LEVEL	UNITS
1	14
2	18
3	18
4	15
TOTAL	71 UNITS
TOTAL PARKING SPACES: 139	

REV	DATE	DESCRIPTION

FULL COMPLIANCE BROOKWOOD SCPZ VARIANCE PLAN

2685 E Livingston Ave
PID: 010087759

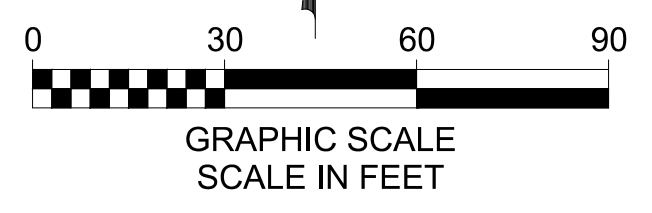
KORDA
 Korda/Nemeth Engineering, Inc. - Consulting Engineers
 1650 Watermark Drive, Suite 200 - Columbus, Ohio 43215-7010
 TEL: 614-487-1550 - FAX: 614-487-8881 - WEB: www.korda.com

DRAWN BY: AWM **CHECKED BY: CMF**

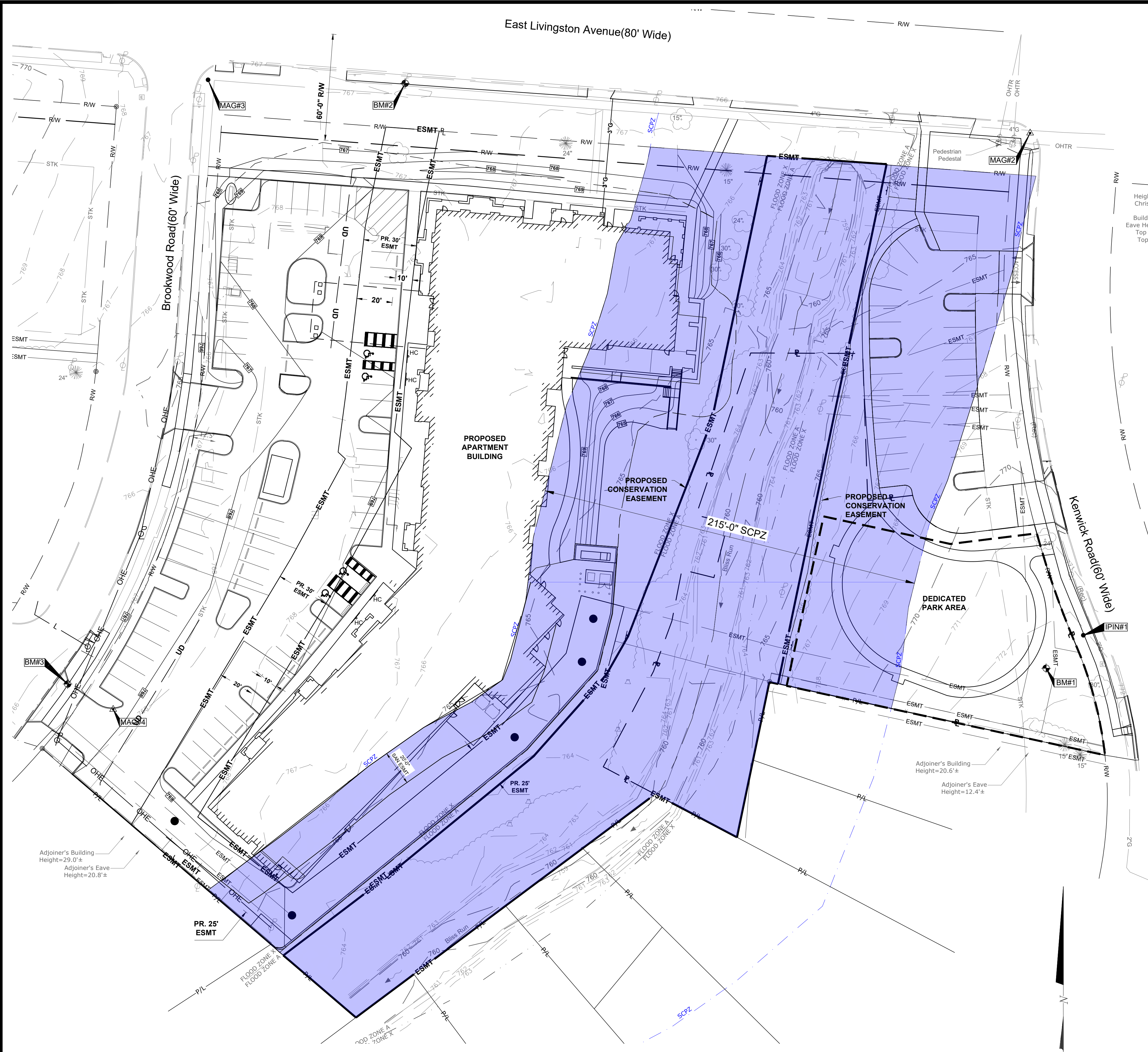
THE ARCHITECT/ENGINEER ASSUMES NO RESPONSIBILITY OR LIABILITY FOR THE USE OF THESE PLANS FOR ANY PROJECT OTHER THAN SPECIFICALLY AUTHORIZED BY THEM AND BONDED AND SEALED FOR SUCH SPECIFIC LOCATION IN THE STATE, PROVINCE OR TERRITORY SHOWN ON THE SEAL. THIS BUILDING USE IS ONLY APPLICABLE IN AREAS MEETING THE STATED DESIGN CRITERIA.

KNE JOB # 2019-0438

DRAWING NUMBER:
4/4



APPENDIX D MITIGATION PLANS



LEGEND

STREAM CORRIDOR PROTECTION ZONE (SCPZ)

NOTES:

1. WITHIN THE INDICATED STREAM CORRIDOR PROTECTION ZONE (SCPZ), INVASIVE PLANT SPECIES ARE TO BE REMOVED AND NATIVE PLANT SPECIES ARE TO BE PLANTED.

Height Informa
Christ the King
Building Height
Eave Height (Talle
Top of Cupola
Top of Cross

REV	DATE	DESCRIPTION	REVISION/UPLOAD DATE

BROOKWOOD SCPZ VARIANCE
2685 E Livingston Ave
PID: 010087759

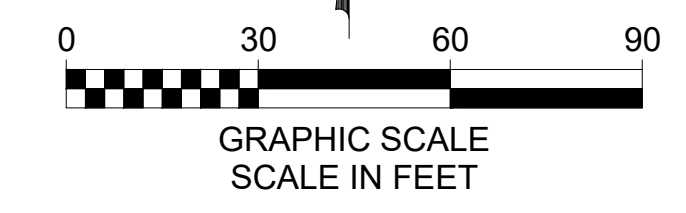
**ON-SITE
MITIGATION PLAN**

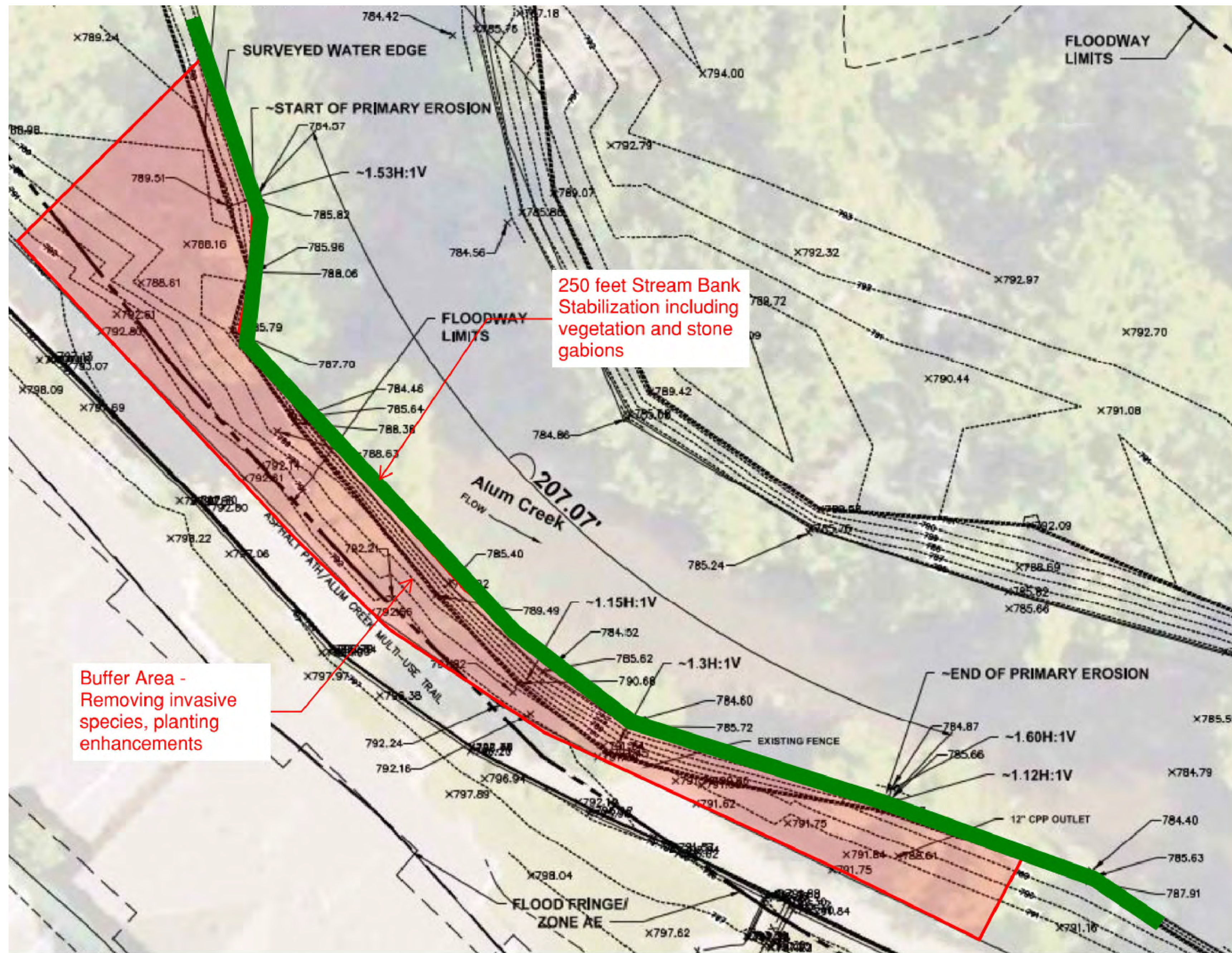
KORDA
Korda/Nemeth Engineering, Inc - Consulting Engineers
1650 Watermark Drive, Suite 200 - Columbus, Ohio 43215-7010
TEL: 614-487-1650 - FAX: 614-487-8881 - WEB: www.korda.com

DRAWN BY: AWM CHECKED BY: CMF

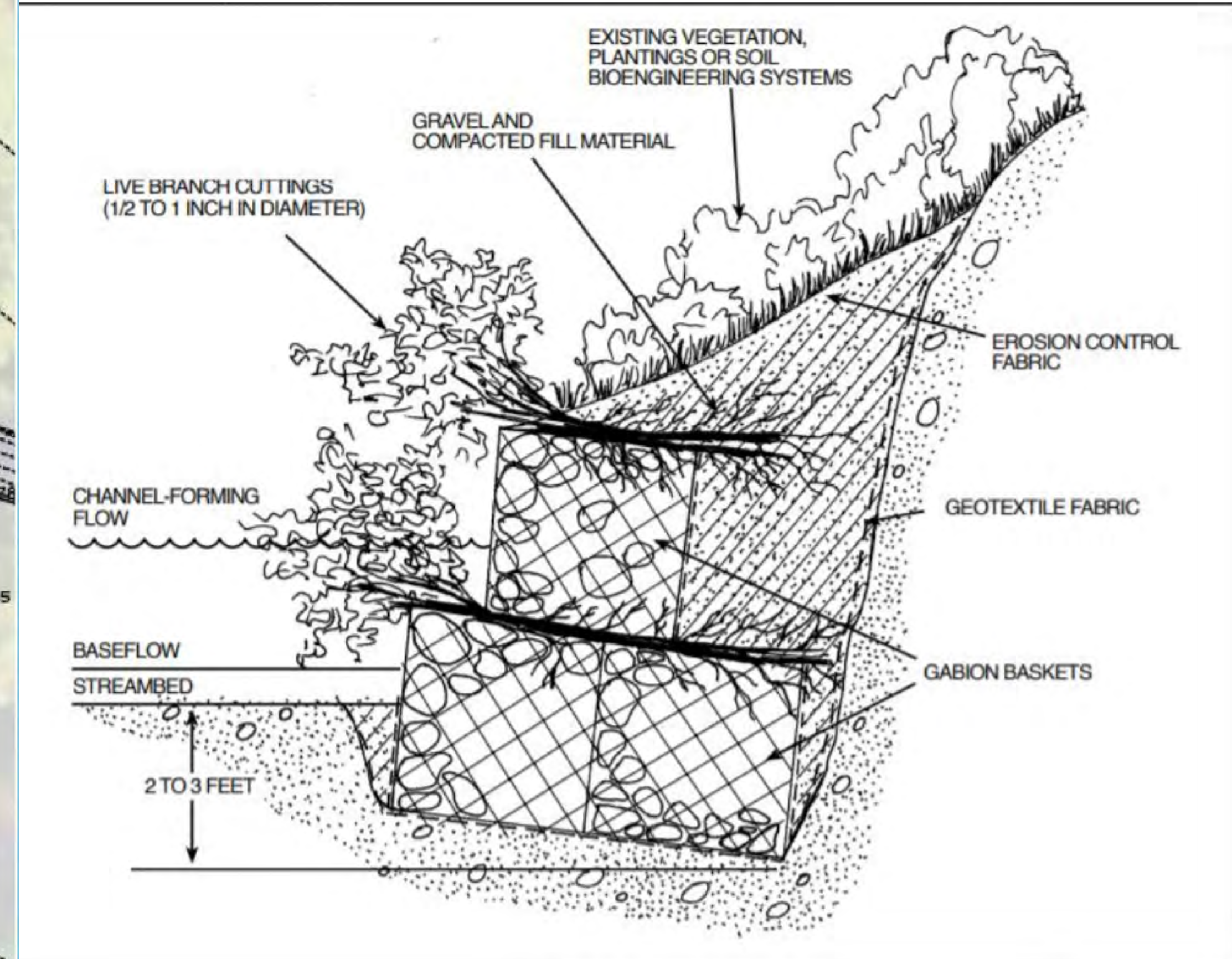
THE ARCHITECT / ENGINEER ASSUMES NO RESPONSIBILITY OR LIABILITY FOR THE USE OF THESE PLANS FOR ANY PROJECT OTHER THAN SPECIFICALLY AUTHORIZED BY THEM AND SIGNED AND SEALED FOR SUCH SPECIFIC LOCATION IN THE STATE, PROVINCE OR TERRITORY SHOWN ON THE SEAL. THIS BUILDING USE IS ONLY APPLICABLE IN AREAS MEETING THE STATED DESIGN CRITERIA.

KNE JOB # 2019-0438
EXHIBIT NUMBER:





OFF-SITE MITIGATION PLAN VIEW -
ALUM CREEK STABILIZATION
SCALE: NTS



DETAIL A - STREAM BANK STABILIZATION
SCALE: NTS

REV	DATE	DESCRIPTION

BROOKWOOD SCPZ VARIANCE
2685 E Livingston Ave
PID: 010087759

**OFF-SITE
MITIGATION PLAN**

KORDA
Korda/Nemeth Engineering, Inc - Consulting Engineers
1650 Watermark Drive, Suite 200 - Columbus, Ohio 43215-7010
TEL: 614-487-1650 - FAX: 614-487-8881 - WEB: www.korda.com

DRAWN BY: AWM CHECKED BY: CMF

THE ARCHITECT / ENGINEER ASSUMES NO RESPONSIBILITY OR LIABILITY FOR THE USE OF THESE PLANS FOR ANY PROJECT OTHER THAN SPECIFICALLY AUTHORIZED BY THEM AND SIGNED AND SEALED FOR SUCH SPECIFIC LOCATION IN THE STATE, PROVINCE OR TERRITORY SHOWN ON THE SEAL. THIS BUILDING USE IS ONLY APPLICABLE IN AREAS MEETING THE STATED DESIGN CRITERIA.

KNE JOB # 2019-0438

EXHIBIT NUMBER:

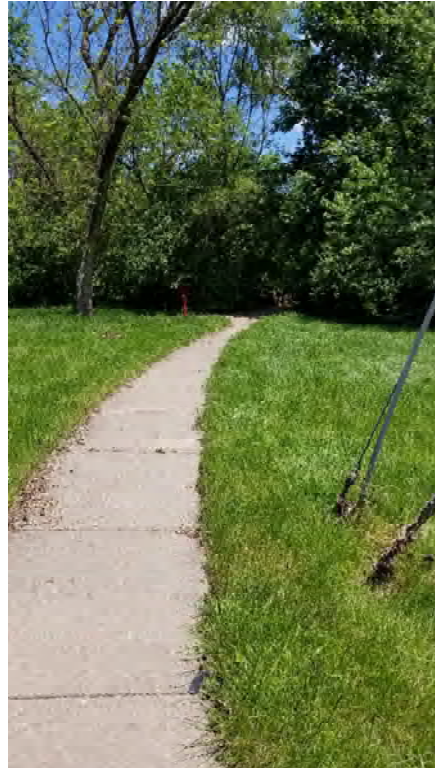
APPENDIX E EXISTING SITE PHOTOS

REQUEST FOR A TYPE III VARIANCE



View of Parking Lot on East side of Bliss Run Facing Southwest

REQUEST FOR A TYPE III VARIANCE



View of Sidewalk Leading to Bridge Facing East

REQUEST FOR A TYPE III VARIANCE



View of Playground Facing Southwest

REQUEST FOR A TYPE III VARIANCE



View of Lawn Facing South

REQUEST FOR A TYPE III VARIANCE



View of Parking Lot and Pavilion Facing East

REQUEST FOR A TYPE III VARIANCE



View of Parking Lot on West Side of Bliss Run Facing Southwest

REQUEST FOR A TYPE III VARIANCE



View of Shed Run Facing South

REQUEST FOR A TYPE III VARIANCE



View of Church Along Brookwood Rd Facing North

REQUEST FOR A TYPE III VARIANCE



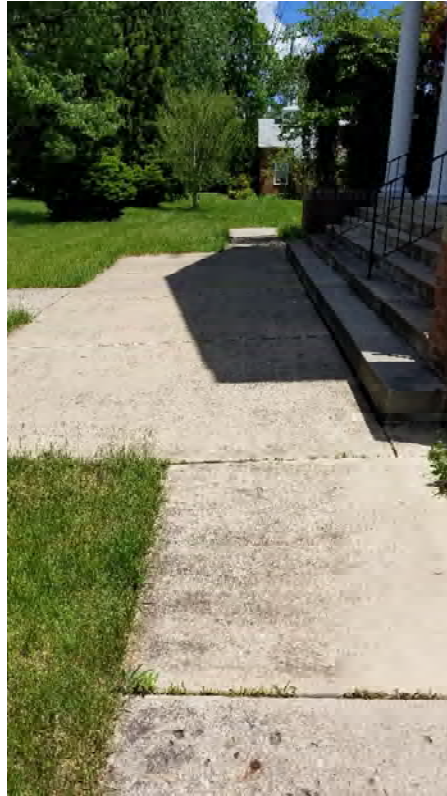
View of Sidewalk Along Brookwood Rd Facing South

REQUEST FOR A TYPE III VARIANCE



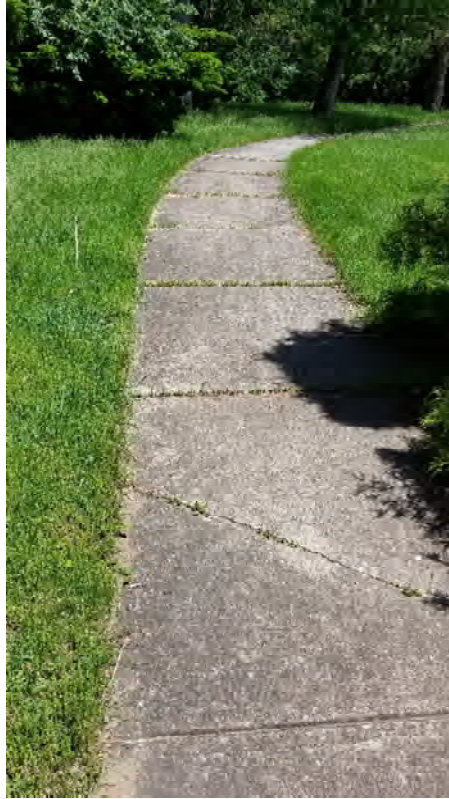
View of Front Door on E Livingston Facing Southeast

REQUEST FOR A TYPE III VARIANCE



View of Sidewalk and Lawn on North Side of Building Facing East

REQUEST FOR A TYPE III VARIANCE



View of Sidewalk Leading to Bridge Facing East

REQUEST FOR A TYPE III VARIANCE



View of Collapsed Bridge Facing West

REQUEST FOR A TYPE III VARIANCE



View of Bliss Run Culvert at E Livingstone Ave