

# OHIO EXPOSITION CENTER

## 2050 PHASE 1 (CC-20123)

717 East 17<sup>th</sup> Avenue  
Columbus, Ohio 43211

### Type II Variance Request from the Stormwater Drainage Manual

Prepared By:



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

Korda File: 2023-0003



February 08, 2024

City of Columbus  
Division of Sewerage and Drainage  
111 Front Street  
Columbus, OH 43215

RE: Ohio Exposition Center  
2050 Phase 1  
CC-20123

Dear Sir:

The following is our Type II Variance Request from the Stormwater Drainage Manual for **OEC 2050 Phase 1** at 717 East 17<sup>th</sup> Avenue in Columbus. This report was prepared in accordance with current requirements of the City of Columbus *Stormwater Drainage Manual*.

Please review this report and provide comments at your earliest convenience. If you have any questions, please contact our office at (614) 487-1650.

Yours truly,

KORDA/NEMETH ENGINEERING, INC.  
Consulting Engineers

A handwritten signature in blue ink, appearing to read "Justin Blood".

Justin Blood, PE  
Design Engineer

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

Chris Fleming, PE  
Partner

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**Type II Variance Request from the Stormwater Drainage Manual**  
for  
**Ohio Exposition Center**  
**2050 Phase 1**  
**(CC-20123)**

**Purpose**

The purpose of this report is to request a Type II Non-Stream Protection Variance from the City of Columbus' Stormwater Drainage Manual for the **Ohio Exposition Center 2050 Phase 1**, located at 717 East 17<sup>TH</sup> Avenue in Columbus.

Based on the constraints of the site and the existing conditions of the detention basin, we are requesting the following variance:

**Variance to Section 3.2.3.1 and 3.2.3.2 of the City of Columbus Stormwater Drainage Manual to allow side slopes within and adjacent to the basin to be 3 (H) to 1 (V) or flatter.**

**Variance to Section 3.4.1.10 of the City of Columbus Stormwater Drainage Manual to allow existing trees to remain within the dry detention basin slopes and on top of embankment.**

The site cannot meet the above requirements due to the following constraints:

- 1) The existing basin is sloped at 3 (H) to 1 (V) or flatter. With the expansion of the basin, it is not feasible to keep a 4 (H) to 1 (V) slope as the intent of the expansion is to keep disturbance as minimal as possible. This is to limit the amount of parking, storage area for the maintenance buildings and utilities being removed from the Ohio State Fairgrounds property.
- 2) The existing trees around Detention Basins C and F are mostly mature trees ranging from 12" to 30" diameter, with some additional smaller 8" diameter trees mixed in. Most of these existing trees are in good condition and help to provide additional tree canopy for the OEC campus, as well as create the desired park-like atmosphere. Removing them would significantly reduce the already limited tree canopy on the site, especially since other mature trees are planned to be removed elsewhere on the site resulting from infrastructure and other site improvements.

These detention basins are privately owned and maintained by OEC maintenance staff, who have the means to access and maintain them with the existing trees in place, as they have been doing for almost three decades. Leaving the existing trees in place does not change or impact access and maintenance for the new basins.

No new trees will be placed in or near the detention areas. Once the existing trees die, they will not be replaced in areas within the tree boundary prohibited by the SWDM. Refer to the Tree Survey provided in Appendix E.

Per the City of Columbus guidelines for a Type II Non-Stream Protection Variance, three alternatives for development are required to be presented. They are as follows:

- Full Compliance Alternative – Slope Compliant Site Plan 4 (H) to 1 (V)  
A site plan has been provided to show a basin design that would meet the 4 (H) to 1 (V) slopes. This option greatly increases the footprint of the basin and removes additional parking, storage area for the maintenance buildings and utilities from the site. This option includes removal of all trees within the tree boundary shown on the plan to comply with Section 3.4.1.10 of the SWDM.
- Minimal Impact Alternative – Slope Compliant Site Plan 4 (H) to 1 (V) and Underground Detention  
An alternative site plan has been provided showing a basin design that would meet the 4 (H) to 1 (V) slope requirement while keeping the existing parking, storage area for the maintenance buildings and utilities from the site. For the additional stormwater volume required, an underground detention system has been provided. This alternate greatly increases the amount of hardscape and utilities to be removed outside of the scope of this project. This option includes removal of all trees within the tree boundary shown on the plan to comply with Section 3.4.1.10 of the SWDM.
- Preferred Alternative – Preferred Site Plan 3 (H) to 1 (V) and Underground Detention  
The preferred site plan has been shown using 3 (H) to 1 (V) side slopes. For the additional stormwater volume required, an underground detention system has been provided. The preferred basin / underground detention would provide the least impact on site hardscape and utilities while conforming to all the guidelines provided by the City of Columbus Stormwater Drainage Manual. This option only includes removal of trees impacted by grading operations or pipe/structure installations. All other trees within the tree boundary will remain in place. However, no new trees will ever be placed within the tree boundary.

**NOTE:** For the purpose of this report, we are presenting the Basin C with the three alternatives, since the constraint and based of the design are the similar for Basin H and Basin F. Variance request will be applicable for all three proposed basins.

## **Section 1 – Variance Request**

### **Existing and Proposed Conditions**

Refer to **Appendix A**.

## **Section 2 – Proposed Alternatives**

Per the City of Columbus guidelines for a Type II Non-Stream Protection Variance, three alternatives for development of this project are presented in this report. They are as follows:

## **Full Compliance Alternative – Slope Compliant Site Plan 4 (H) to 1 (V)**

In order to meet the full intent of the Stormwater Drainage Manual, this is not feasible or financially responsible.

This option greatly increases the size of the basin which in turn increases our disturbed area and removes more parking, storage area for the maintenance buildings and utilities from the site. The increase in disturbed area increases the amount of storage required in the basin as well. In order to reduce impact on the site and to be reasonable financially, we do not feel this option is feasible to the Owner. It also involves removing all trees within the footprint of the basin and 15' beyond the toe of the slope, which is not desirable to the owner. Removing the trees significantly impacts the amount of tree canopy on the OEC campus.

## **Minimal Impact Alternative – Slope Compliant Site Plan 4 (H) to 1 (V) and Underground Detention**

To reduce disturbed and useful areas further from Alternative 1, another option is to propose a basin that complies with the 4 (H) to 1 (V) side slope requirement while keeping the existing parking, storage area for the maintenance buildings and utilities from the site. For the additional stormwater volume required, an underground detention system has been provided. This alternate greatly increases the amount of hardscape and utilities to be removed outside of the scope of this project. While this option reduces the disturbed areas, it still greatly increases the size of the underground detention basin and the impact on site. It also involves removing all trees within the footprint of the basin and 15' beyond the toe of the slope, which is not desirable to the owner. Removing the trees significantly impacts the amount of tree canopy on the OEC campus.

## **Preferred Alternative – Preferred Site Plan 3 (H) to 1 (V) and Underground Detention**

The current preferred alternative would be the construction of a basin with 3 (H) to 1 (V) slopes to reduce impact on the site. By minimizing the surface area and maximizing the slopes, the useable surface area is maximized. For the additional stormwater volume required, an underground detention system has been provided. Since the existing basin already has a 3:1 slope, there will be no change to from the existing condition. Flattening the slope to 4:1 in order to meet the SWDM, will result in significantly less storage volume than currently exists on the site. This lost volume would need to be made up using underground storage, as described in the Minimal Impact Alternative.

The preferred alternative remains the most cost-efficient option with minimal impact to the site as a whole. On an existing site with non-compliant conditions while trying to minimize site impact, the 3 (H) to 1 (V) basin and underground detention would provide the least impact on site hardscape and utilities.

Some existing trees will remain on the top of the embankment, but does not change from the existing condition. Leaving these trees in place significantly helps maintain the greatest tree canopy on the OEC campus, and does not create any new issues or concerns.

**Appendix A**  
Existing and Proposed Conditions  
(from Stormwater Management Report)

# From Stormwater Management Report

## Stormwater Management Narrative

### Project Description

This Stormwater Management Report is being submitted for the **OEC 2050 Phase 1** project, located at 717 East 17<sup>th</sup> Avenue in Columbus. The project property is approximately 325.2 acres in size, in which approximately 34.7 acres will be disturbed by Phase 1. The property is bounded by I-71 on the north and east, East 11<sup>th</sup> Avenue on the south, and Norfolk Southern railroad on the west.

The project includes Phase 1 of a multi-phase master plan to rework and renovate the Ohio Exposition Center campus in order to improve the state fair and other OEC event experiences. The full build-out of the project is planned to be complete by 2050, while Phase 1 is expected to be constructed by July of 2026. Phase 1 of this project consists of the demolition of the existing Taste of Ohio, Ag/Hort, Buckeye, and Maintenance Office buildings. Proposed with Phase 1 are two new buildings, consisting of a new two-story Ohio Showcase Building and Multipurpose Ag Building. A new entry gate will also be constructed at the north entrance located on East 20<sup>th</sup> Avenue to the northeast of the existing Lausche Building. New hardscape and landscape areas will be installed along the main corridor of the campus, extending south from the new entry gate located on East 20<sup>th</sup> Avenue, across East 17<sup>th</sup> Avenue between the existing Bricker and Celeste Buildings, and then east to the new to the new Multipurpose Ag Building located adjacent to Clara Avenue. Also included with Phase 1 of this project are site infrastructure improvements, including water, sanitary, gas, power, telecommunications, and stormwater management. Existing buildings and site features located outside of the Phase 1 areas will remain undisturbed.

### Existing Drainage Conditions

The existing site includes the existing OEC campus, which consists of several buildings ranging in size, extensive hardscape/pavement and parking areas, and small pervious lawn areas dispersed throughout.

The existing site slopes moderately from north to south, with the lowest point of the site located at East 11<sup>th</sup> Avenue. Several storm sewer separation projects have been completed on this campus since the early 1990's, which consisted of underground storm sewer improvements as well as several detention basins to meet stormwater detention criteria at the time of installation. There are several existing tributary areas and storm sewer outlets on the site as outlined below. Refer to **Appendix B** for tributary area exhibits.

- **Area A:** Area A consists of the large asphalt paved parking area located on the east side of the site, as well as the existing Buckeye Building located adjacent to Clara Avenue. This area is mostly impervious, and drains to the south towards the ODNR area where it is captured in a 15" combined sewer located just to the north of the ODNR area. The combined sewer routes the flow east to a 15" sanitary sewer located along Clara Avenue. There is currently no stormwater detention or water quality treatment for this area. Major flood routing for flows above and beyond the capacity of the 15" combined sewer flows south along Essex Avenue to East 11<sup>th</sup> Avenue.



- **Area B:** Area B consists of the existing ODNR area and Maintenance Complex in the southeast corner of the site. Area B includes paved walks, pervious lawn areas, and several structures. Flows from this area are routed to an existing basin (Basin B) via storm sewers that were installed as a part of CC10766 in 1998. This basin existed prior to CC10766, however a new outlet was installed to provide stormwater detention by reducing peak flows in the post-developed condition to the 2-year storm flow in the pre-developed condition. Per the Stormwater Management Report included with CC10766, the basin doesn't contain adequate storage volume to detain the 100-year post-developed storm to the 2-year pre-developed storm, however, additional storage volume wasn't provided. Basin B outlets to the existing 36" storm sewer along East 11<sup>th</sup> Avenue. The major flood for Basin B outlets overland to East 11<sup>th</sup> Avenue. This basin was not designed to provide water quality treatment.
- **Area C:** Area C is located in the southcentral part of the site, and consists of mostly asphalt paved drives and parking areas, but also includes the existing Ag/Hort (Land & Living) building and the three exhibits buildings. There are also small pervious lawn areas dispersed throughout. This area drains to an existing basin (Basin C) that was installed as a part of CC9721 in 1996, routed by storm sewers that were installed as a part of the same plan. This basin was designed to detain the 100-year post-developed storm to the 2-year pre-developed storm. This basin outlets to an existing 36" storm sewer along East 11<sup>th</sup> Avenue. The major flood for Basin C outlets overland to East 11<sup>th</sup> Avenue. This basin was not designed to provide water quality treatment.
- **Area D:** Area D is located in the northeast corner of the main fairgrounds area adjacent to the intersection of East 17<sup>th</sup> Avenue and Clara Avenue. This area consists of mostly of paved asphalt drives and parking areas, and the existing Buckeye Complex building. This area was developed in 2015 under CC16905 when the Buckeye Complex building was constructed. Flows from this area are collected by existing storm sewers and are routed to an extended dry detention basin (Basin D) located on the east side of Clara Avenue that was installed under CC16905. This basin was designed to provide both stormwater detention and water quality treatment for Area D. This basin outlets to an existing 54" storm sewer located on the opposite (west) side of Clara Avenue from the basin. The major flood for Basin D outlets overland to Clara Avenue.
- **Area E:** Area E is located on the far south side of the site directly adjacent to East 11<sup>th</sup> Avenue. It consists of paved drives and parking areas, as well as pervious lawn areas. This area was counted as undetained under CC9721, since runoff from this area sheet flows overland directly to East 11<sup>th</sup> Avenue. No stormwater detention or water quality treatment are currently provided for this area.
- **Area F:** Area F makes up the largest portion of the site and extends northeast from the southwest corner of the site to East 17<sup>th</sup> Avenue. This area consists of paved parking areas, sidewalks, and several buildings; including the Celeste, Taft Arena, Administration, Dairy, Cooper Arena, Voinovich, O'Neil, Denny Hales Arena, Cox, and Janis buildings. This area also includes some pervious lawn areas dispersed throughout. This area drains to an existing dry detention basin (Basin F) located in the southwest corner of the site. This basin, as well as the storm sewers that route flows to it, were installed under CC9721 in 1996. It was designed to provide stormwater detention only, detaining the 100-year post-developed storm to the 2-year pre-developed storm. This basin outlets to an existing 48" storm sewer located along East 11<sup>th</sup> Avenue. The major flood for Basin F outlets overland to East 11<sup>th</sup> Avenue.

- **Area F1:** Area F1 is a subarea of Area F, which ultimately drains to Basin F in the southwest corner of the site. It consists of mostly asphalt paved areas, as well as part of Celeste accessory building and Congress Pavilion. Before reaching Basin F, flows from this area are routed to a separate upstream dry detention basin (Basin F1). This basin is intended to provide additional detention to relieve peak flows to Basin F. Basin F1 outlets west to an 18" storm sewer between Celeste and the Congress Pavilion, where it is routed to Basin F. The major flood for Basin F1 outlets overland to the south, where it is eventually routed to Basin F.
- **Area F2:** Area F2 is a subarea of Area F, which ultimately drains to Basin F in the southwest corner of the site. It consists of mostly asphalt paved areas, as well as some minor pervious lawn areas. Before reaching Basin F, flows from this area are routed to a separate upstream dry detention basin (Basin F2). This basin is intended to provide additional detention to relieve peak flows to Basin F. Basin F2 outlets west to a 15" storm sewer north of Celeste, where it is routed to Basin F. The major flood for Basin F2 outlets overland to the west, where it is eventually routed to Basin F.
- **Area G:** Area G is located in the northwest corner of the main fairground area, adjacent to East 17<sup>th</sup> Avenue and the Norfolk Southern railroad. This area consists of mostly paved drives, parking areas, and walks, as well as several buildings; including Bricker, Gilligan, and the Brown Arena Sheep Barn. There are also small pervious lawn areas dispersed throughout. This area generally drains to an existing combination sewer on the west side of Gilligan, that extends west under the railroad to the adjacent residential neighborhoods. Under the original stormwater detention analysis performed under CC9721, it was assumed that that the receiving combination sewer was capable of conveying up to the 2-year storm for Area G. All storms greater than the 2-year storm exceed the capacity of the combination sewer, and flow overland to Basin F. As a result, Basin F was originally designed to receive flows from Area G for storms greater than the 2-year storm only.
- **Area H:** Area H is located north of east 17<sup>th</sup> Avenue, directly adjacent to East 17<sup>th</sup> Avenue and Velma Avenue. This area consists of asphalt drives and parking areas, pervious lawn areas, and several buildings; including the Kasich, Cardinal Shelter, Storage, and Solar Home buildings. Flows from this area drain to existing storm sewer installed as a part of CC16986 in 2015 and CC18550 in 2019. These storm sewers route flow from this area to an existing dry detention basin (Basin H) located to the south of the Kasich building. This basin was originally installed with CC16986, but was modified under CC18550. This basin outlets to an existing 24" combination sewer along the north side of the basin. Since this basin outlets to a combination sewer, it was only designed for stormwater detention and not for water quality treatment. The major flood for Basin H outlets south overland to East 17<sup>th</sup> Avenue.
- **Area I:** Area I is located directly east of the Lausche building, and consists mostly of paved drives, parking areas, and walks, as well as some minor pervious lawn areas. This area drains southwest to an existing onsite storm sewer directly east of the Rhodes Center. This storm sewer routes flow to the existing 24" combination sewer located on the site, located to the south of the Rhodes Center. No stormwater detention or water quality treatment currently exists for this area. Major flood routing for flows above and beyond the capacity of the storm sewer flows south to East 17<sup>th</sup> Avenue.

- **Area J:** Area J is located directly adjacent to East 17<sup>th</sup> Avenue to the north. This area consists of the paved entry to the site, paved sidewalks, and pervious lawn area. Flows from this area sheet drain south directly to East 17<sup>th</sup> Avenue. No stormwater detention or water quality treatment currently exists for this area.

Tables 1 and 2 below provide a summary of each tributary area in the pre-developed condition.

**Table 1 – Pre-Developed Tributary Areas  
North of 17<sup>th</sup> Avenue**

Pre-Developed Tributary Areas		
Tributary Area	Drainage Area (Ac.)	Curve Number
Area H	13.7	93
Area I	6.4	95
Area J	1.5	92
Total	21.6	94

**Table 2 – Pre-Developed Tributary Areas  
South of 17<sup>th</sup> Avenue**

Pre-Developed Tributary Areas		
Tributary Area	Drainage Area (Ac.)	Curve Number
Area A	20.1	97
Area B	10.1	89
Area C	15.1	94
Area D	11.0	97
Area E	2.8	90
Area F1	2.6	96
Area F2	4.1	94
Area F	39.6	94
Area G	21.0	97
Total	126.4	95

### **Proposed Drainage Conditions**

The **OEC 2050 Phase 1** project is re-development project that will disturb 34.7 acres and reduce approximately 3.2 acres of impervious area. It is therefore subject to the requirements of the April 2023 Ohio EPA *General Permit for Storm Water Associated with Construction Activity*, and the December 2022 City of Columbus *Stormwater Drainage Manual (SWDM)*.

The proposed project includes new onsite trunk and branch storm sewers to replace the existing. These sewers are intended to drain the Phase 1 area, as well as provide an outlet for both existing storm sewers and future OEC projects. These sewers will route flow from the site to the detention areas (Basins C, F, and H). The project meets stormwater quantity requirements of the SWDM by expanding the existing detention basins (Basins C, F, and H), as well as supplementing them with additional pipe storage and two ACO Stormbrixx underground detention systems, to provide adequate storage volume to meet the current

detention criteria. One underground detention system (Bed F) will be located to the north of the Cox Building, and will be utilized to provide peak flow relief for Basin F. The other underground system (Bed C) will be located to the west of the exhibits buildings, and will provide supplemental storage volume for Basin C. Basins F1 and F2 will remain undisturbed, and will continue to provide relief to Basin F.

The project meets water quality requirements of the permit/SWDM by renovating Basin C to provide a micropool and forebay, as well as provide the required drawdown time. The area tributary to this basin (Area C) will be expanded in order to generate a large enough water quality volume and provide adequate water quality treatment to meet the requirements of the General Permit. Being a redevelopment project, 100% of the water quality volume generated from this area shall be greater than or equal to the amount of required water quality as calculated by the redevelopment equation in the General Permit.

The tributary areas and storm sewer outlets in the post-developed condition are outlined below. Refer to **Appendix B** for tributary area exhibits.

- **Area A:** Area A will be reduced in size to exclude the areas where the new Multiuse Ag Building and proposed site renovations will occur. These excluded areas will be added to Area C and routed to Basin C. A new storm sewer will be extended to Area A to capture runoff from this area and route it to Basin F. Stormwater detention is provided for this area from Underground Detention Bed F and Basin F.
- **Area B:** Area B and Basin B will not be disturbed as a part of this project and will remain as is. For purposes of analyzing the capacity of the receiving storm sewers along East 11<sup>th</sup> Avenue, flows this area are included stormwater detention analysis for the overall site.
- **Area C:** Area C will be expanded to include the new Multiuse Ag Building and the majority of the townsquare area (areas previously in Area A). This area will be routed to Basin C, where stormwater detention and water quality treatment will be provided. This area provides adequate water quality volume to meet the requirements of the SWDM and General Permit. Basin C will continue to outlet to the existing 36" storm sewer along East 11<sup>th</sup> Avenue. The major flood routing for Basin C will remain the same as the pre-developed condition.
- **Area D:** Area D will not be disturbed as a part of this project and has its own detention and water quality basin that is completely separate from the remainder of the site, therefore, it is excluded from the analysis.
- **Area E:** Area E will remain counted as undetained, and will be slightly reduced in size. Some this area is redirected and added to Area C as to reduce the amount of undetained runoff from the site draining directly to East 17<sup>th</sup> Avenue. No stormwater detention or water quality treatment will be provided for this area.
- **Area F1:** Area F1 will remain undisturbed, and Basin F1 will remain functional and continue to provide relief to Basin F.
- **Area F2:** Area F2 will remain undisturbed, and Basin F2 will remain functional and continue to provide relief to Basin F.

- **Area F3:** Area F is further broken down into additional subareas in the post-developed condition. Area F3 consists of the mallway between Celeste and Bricker, and the new Ohio Showcase Building area. This area will be routed to Underground Detention Bed F where stormwater detention will be provided, and then eventually routed to Basin F.
- **Area F4:** This area consists of the southwestern most part of Area F, which routes directly to Basin F. Basin F will be expanded to provide additional detention volume for all of Area F. This basin is not designed for water quality treatment. The outlet and emergency overflow path for Basin F will remain the same as the pre-developed condition.
- **Area G:** Area G will remain undisturbed under Phase 1 of this project. However, for purposes of this analysis, it is assumed that Basin F receives flows from Area G for all storms in the post-developed condition. Basin F will be sized to receive these flows. New storm sewers to convey runoff from Area G to Basin F will not be constructed as a part of this phase, but may be constructed in future projects.
- **Area H:** Is expanded to include Areas I and J and route it to Basin H. Basin H is expanded to provide adequate storage volume for stormwater detention for this additional area and to meet current criteria. Basin H will also provide adequate water quality treatment for Area H. The outlet for this basin will be redirected to a new 36" storm sewer that is to be extended along East 17<sup>th</sup> Avenue, which takes some of the load off the existing 24" combination sewer. The emergency overflow for Basin H will be directed south to East 17<sup>th</sup> Avenue.

Tables 3 and 4 below provide a summary of each tributary area in the post-developed condition.

**Table 3 – Post-Developed Tributary Areas  
North of 17<sup>th</sup> Avenue**

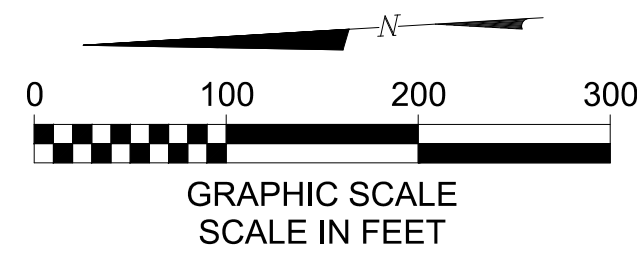
Post-Developed Tributary Areas					
Tributary Area	Drainage Area (Ac.)	Master Plan Design Curve Number (CN)	Phase 1 Curve Number (CN)	(Future Phase)	(Future Phase)
Area H	21.6	93	93		
Total	21.6	93	93		

**Table 4 – Post-Developed Tributary Areas  
South of 17<sup>th</sup> Avenue**

<b>Post-Developed Tributary Areas</b>					
<b>Tributary Area</b>	<b>Drainage Area (Ac.)</b>	<b>Master Plan Design Curve Number (CN)</b>	<b>Phase 1 Curve Number (CN)</b>	<b>(Future Phase)</b>	<b>(Future Phase)</b>
Area A	9.2	98	98		
Area B	10.1	89	89		
Area C	23.7	94	94		
Area D	11.0	97	97		
Area E	2.6	89	89		
Area F1	2.6	95	95		
Area F2	4.1	94	94		
Area F3	14.8	94	94		
Area F4	27.3	94	94		
Area G	21.0	97	97		
Total	126.4	95	95		

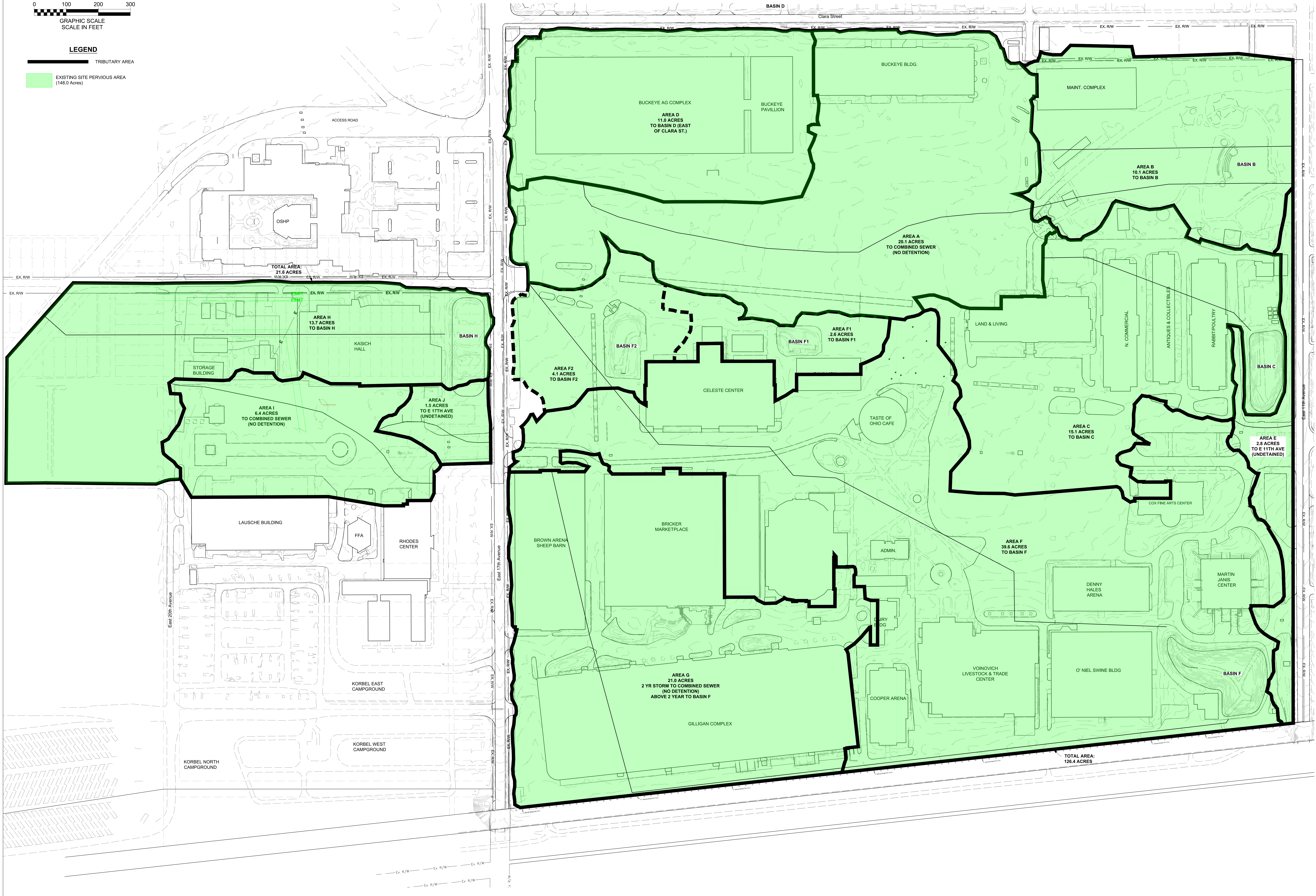
**It is the intent that this project provides all stormwater detention and water quality treatment required for the tributary areas included in the analysis, in order that all future projects within these tributary areas are covered and will not be required to provide additional stormwater detention or water quality treatment at the time they are constructed.**

OEC 2050 PHASE 1  
PRE-DEVELOPED CONDITIONS EXHIBIT (UNDEVELOPED)



LEGEND

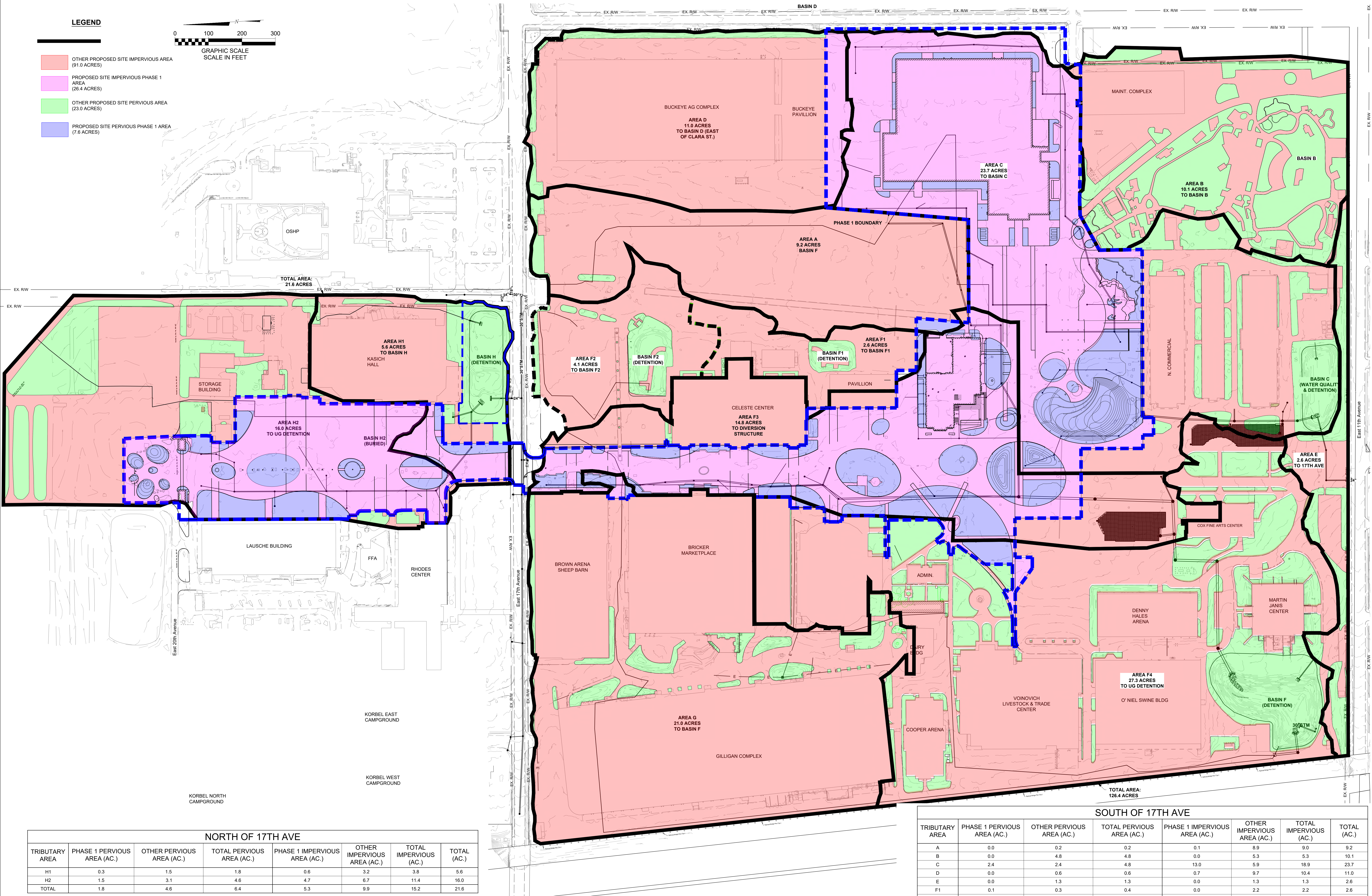
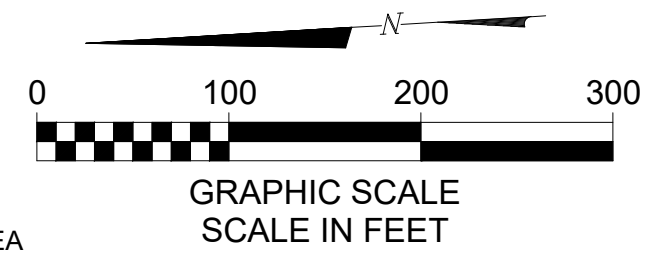
- TRIBUTARY AREA
- EXISTING SITE PERVIOUS AREA (148.0 Acres)



OEC 2050 PHASE 1  
POST-DEVELOPED CONDITIONS EXHIBIT

LEGEND

- OTHER PROPOSED SITE IMPERVIOUS AREA (91.0 ACRES)
- PROPOSED SITE IMPERVIOUS PHASE 1 AREA (26.4 ACRES)
- OTHER PROPOSED SITE PERVIOUS AREA (23.0 ACRES)
- PROPOSED SITE PERVIOUS PHASE 1 AREA (7.6 ACRES)



TOTAL AREA:  
21.6 ACRES

TOTAL AREA:  
126.4 ACRES

NORTH OF 17TH AVE

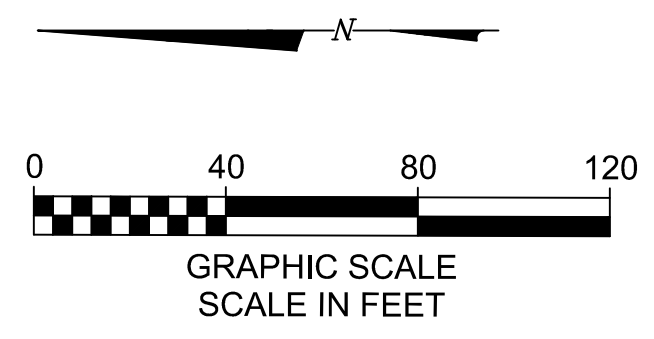
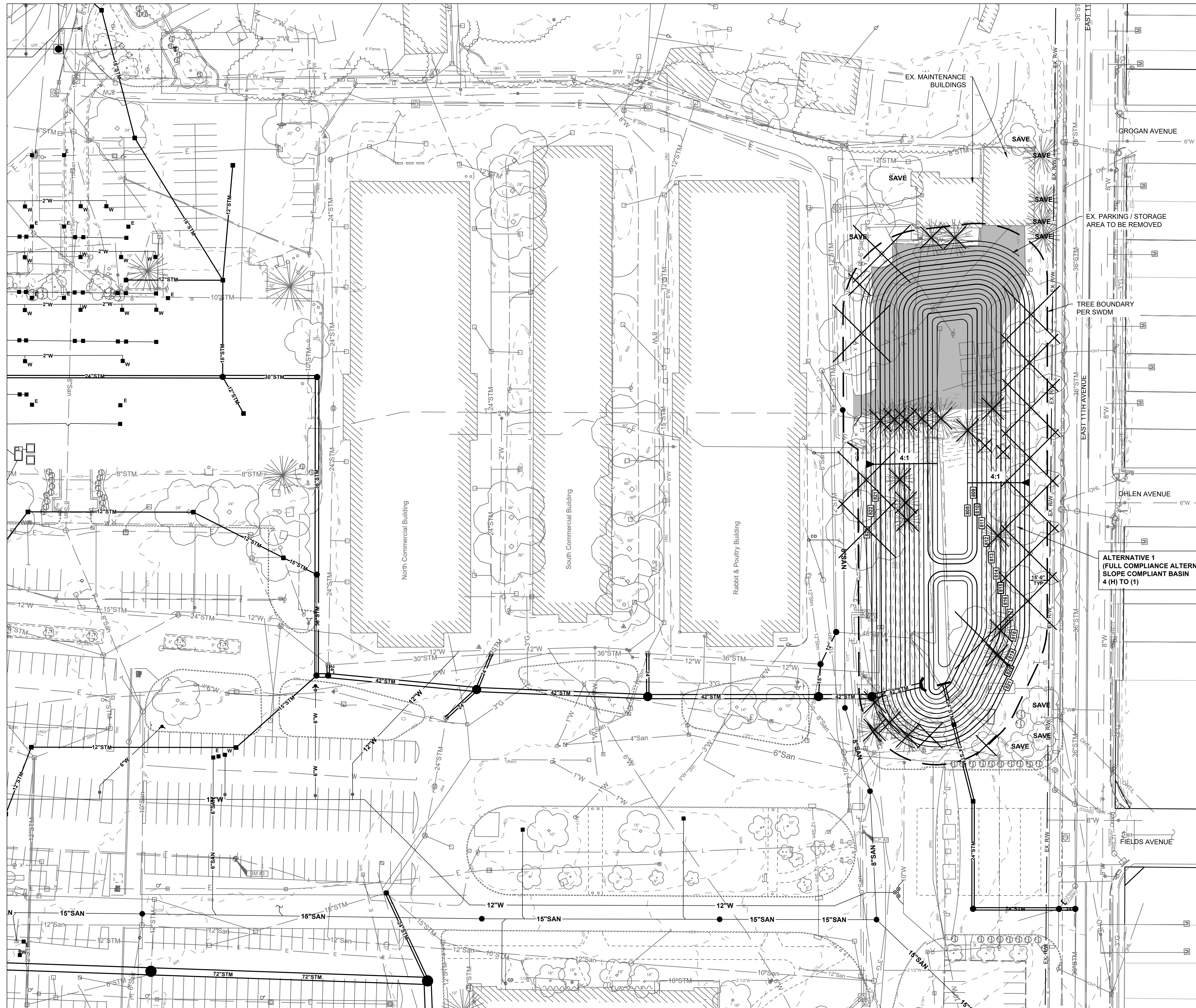
TRIBUTARY AREA	PHASE 1 PERVIOUS AREA (AC.)	OTHER PERVIOUS AREA (AC.)	TOTAL PERVIOUS AREA (AC.)	PHASE 1 IMPERVIOUS AREA (AC.)	OTHER IMPERVIOUS AREA (AC.)	TOTAL IMPERVIOUS AREA (AC.)	TOTAL (AC.)
H1	0.3	1.5	1.8	0.6	3.2	3.8	5.6
H2	1.5	3.1	4.6	4.7	6.7	11.4	16.0
TOTAL	1.8	4.6	6.4	5.3	9.9	15.2	21.6

SOUTH OF 17TH AVE

TRIBUTARY AREA	PHASE 1 PERVIOUS AREA (AC.)	OTHER PERVIOUS AREA (AC.)	TOTAL PERVIOUS AREA (AC.)	PHASE 1 IMPERVIOUS AREA (AC.)	OTHER IMPERVIOUS AREA (AC.)	TOTAL IMPERVIOUS AREA (AC.)	TOTAL (AC.)
A	0.0	0.2	0.2	0.1	8.9	9.0	9.2
B	0.0	4.8	4.8	0.0	5.3	5.3	10.1
C	2.4	2.4	4.8	13.0	5.9	18.9	23.7
D	0.0	0.6	0.6	0.7	9.7	10.4	11.0
E	0.0	1.3	1.3	0.0	1.3	1.3	2.6
F1	0.1	0.3	0.4	0.0	2.2	2.2	2.6
F2	0.0	0.8	0.8	0.0	3.3	3.3	4.1
F3	3.0	0.1	3.1	6.9	4.8	11.7	14.8
F4	0.2	6.6	6.8	0.3	20.2	20.5	27.3
G	0.1	1.3	1.4	0.1	19.5	19.6	21.0
TOTAL	5.8	18.4	24.2	21.1	81.1	102.2	126.4



**Appendix B**  
Full Compliance Alternative  
Slope Compliant Site Plan 4 (H) to 1 (V)

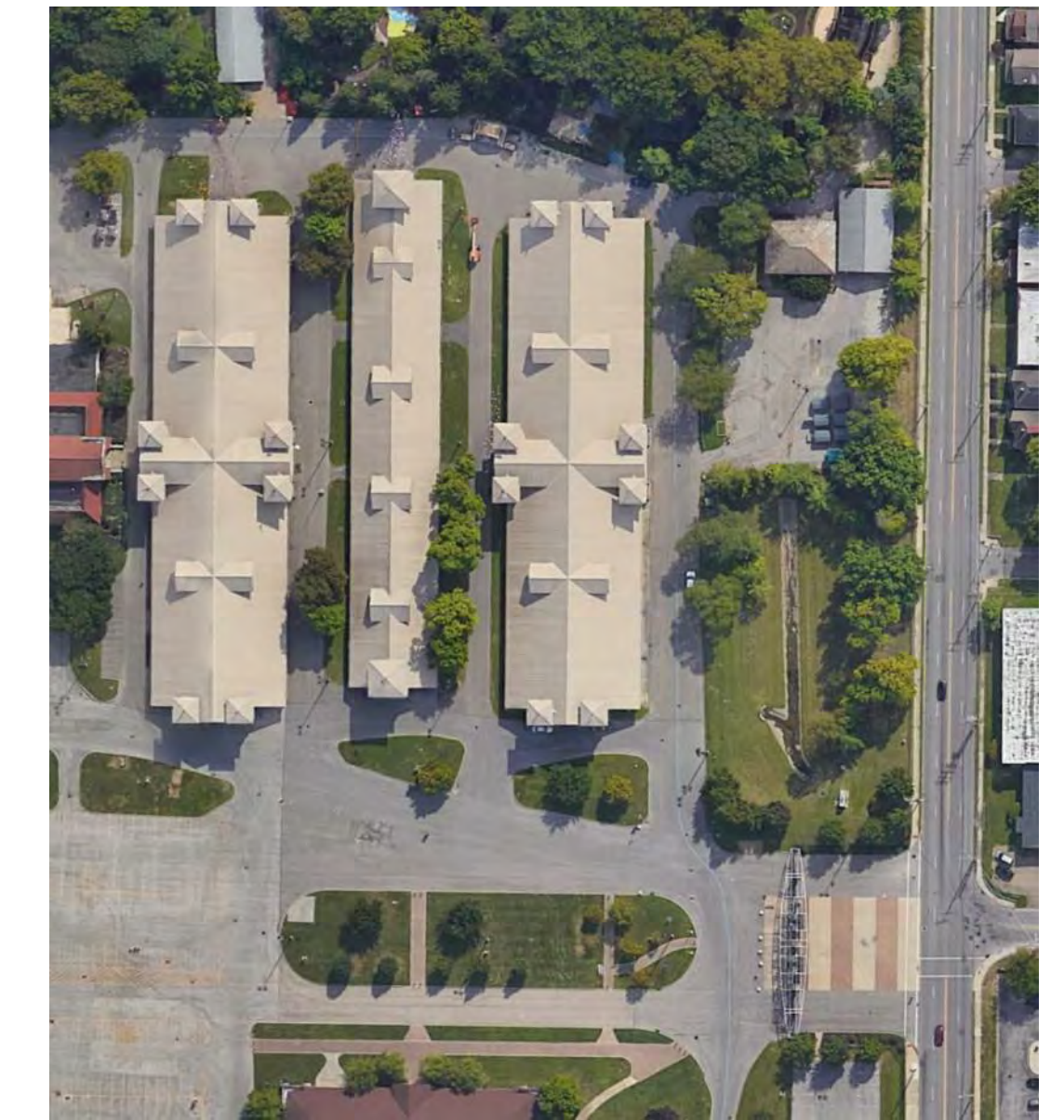


**OEC - PHASE 1  
BASIN (C) - ALTERNATIVE 1  
(FULL COMPLIANCE ALTERNATIVE)  
SLOPE COMPLIANT SITE PLAN  
4 (H) TO 1 (V)**

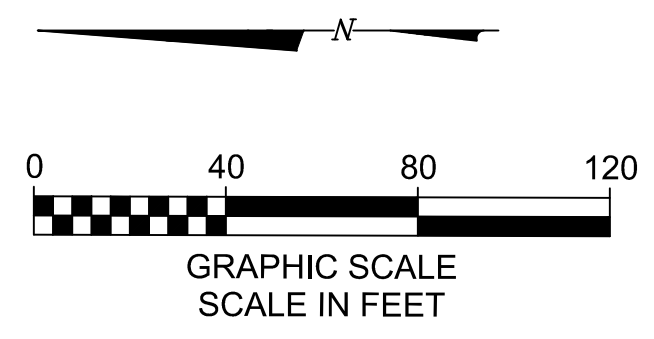
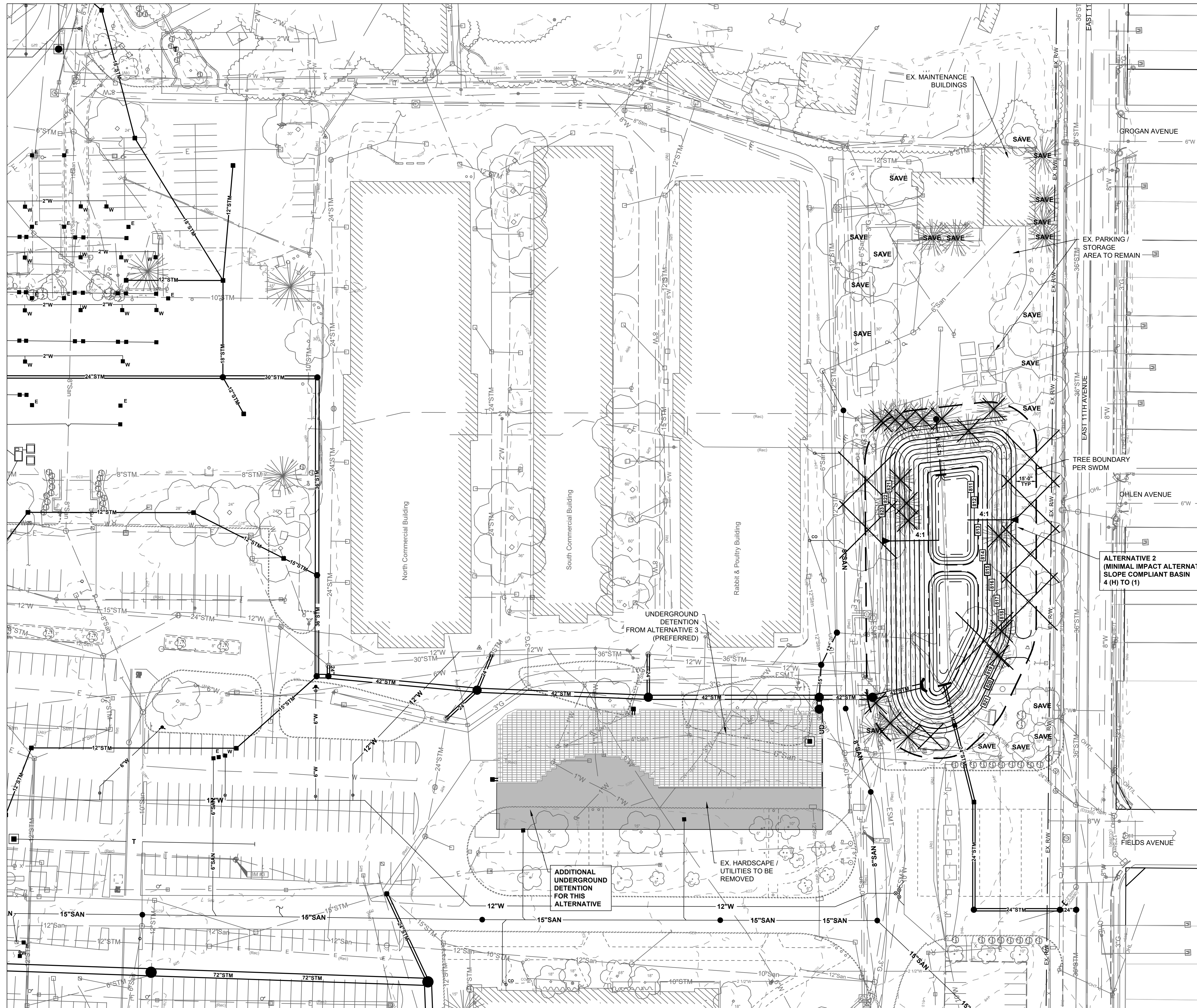
Elevation (feet)	Surf. Area (sq-ft)	Inc. Store (cubic-feet)	Cum. Store (cubic-feet)
810.00	12,465	0	0
811.00	15,324	13,895	13,895
812.00	18,284	16,804	30,699
813.00	21,344	19,814	50,513
814.00	24,504	22,924	73,437
815.00	27,765	26,135	99,571
816.00	31,127	29,446	129,017
817.00	34,589	32,858	161,875
818.00	38,152	36,371	198,246
819.00	41,815	39,984	238,229
820.00	45,579	43,697	281,926

ALTERNATIVE 1  
(FULL COMPLIANCE ALTERNATIVE)  
SLOPE COMPLIANT BASIN  
4 (H) TO 1 (V)

**LOCATION (EXISTING BASIN C)**



**Appendix C**  
Minimal Impact Alternative  
Slope Compliant Site Plan 4 (H) to 1 (V)  
And Underground Detention



**OEC - PHASE 1  
BASIN (C) - ALTERNATIVE 2  
(MINIMAL IMPACT ALTERNATIVE)  
SLOPE COMPLIANT SITE PLAN  
4 (H) TO 1 (V) AND UNDERGROUND DETENTION**

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
813.20	7,268	0	0
814.00	8,816	6,434	6,434
815.00	10,734	9,775	16,209
816.00	12,767	11,751	27,959
817.00	14,897	13,832	41,791
818.00	17,127	16,012	57,803
819.00	19,458	18,293	76,096
820.00	21,889	20,674	96,769

**ALTERNATIVE 2  
(MINIMAL IMPACT ALTERNATIVE)  
SLOPE COMPLIANT BASIN  
4 (H) TO 1 (V)**

**ADDITIONAL  
UNDERGROUND  
DETENTION  
FOR THIS  
ALTERNATIVE**

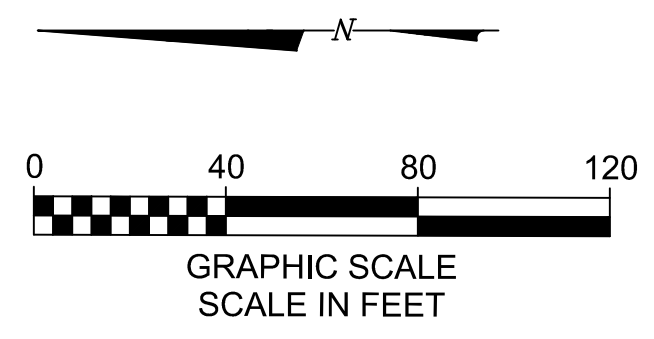
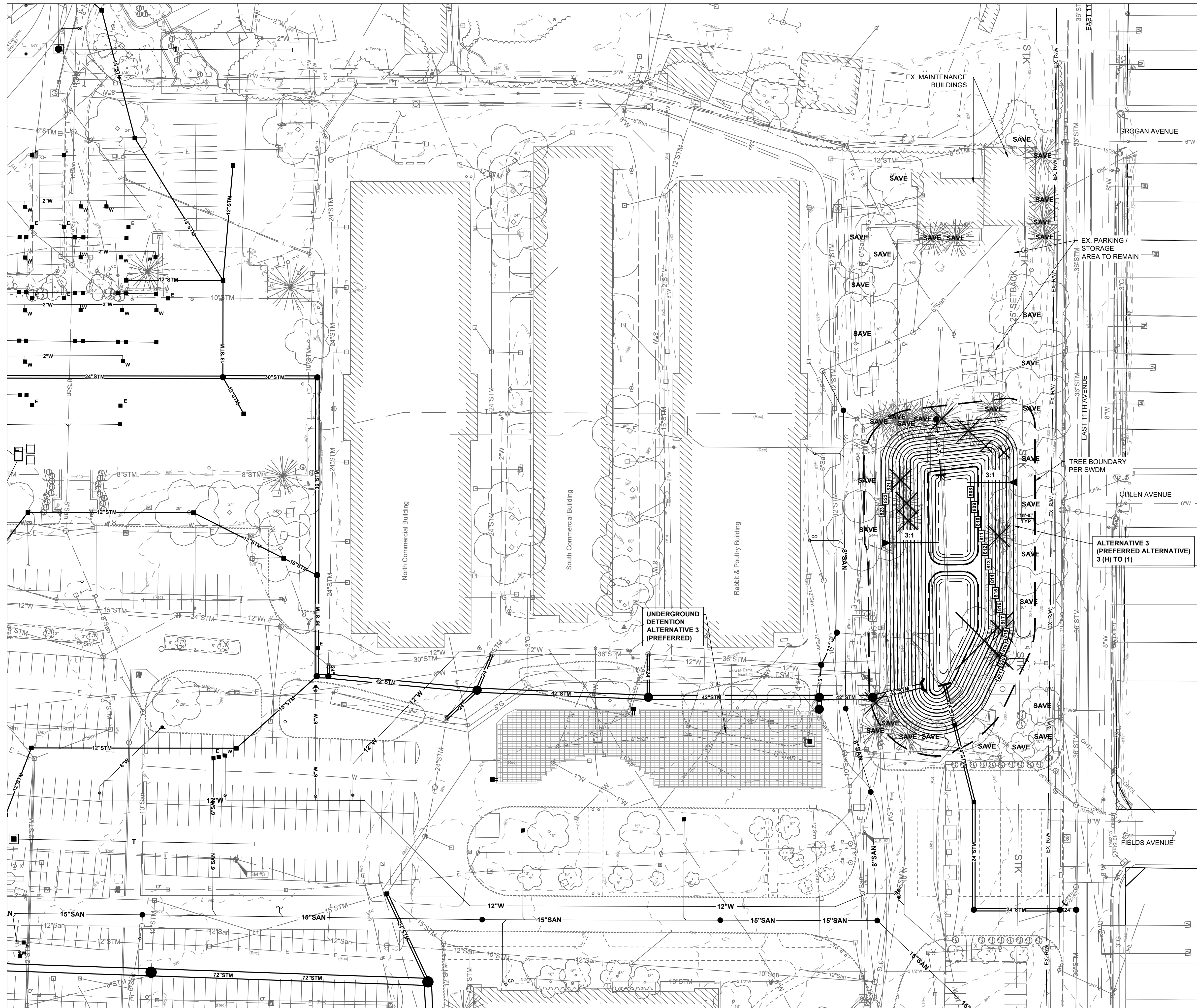
**UNDERGROUND  
DETENTION  
FROM ALTERNATIVE 3  
(PREFERRED)**

**EX. HARDSCAPE  
UTILITIES TO BE  
REMOVED**

**LOCATION (EXISTING BASIN C)**



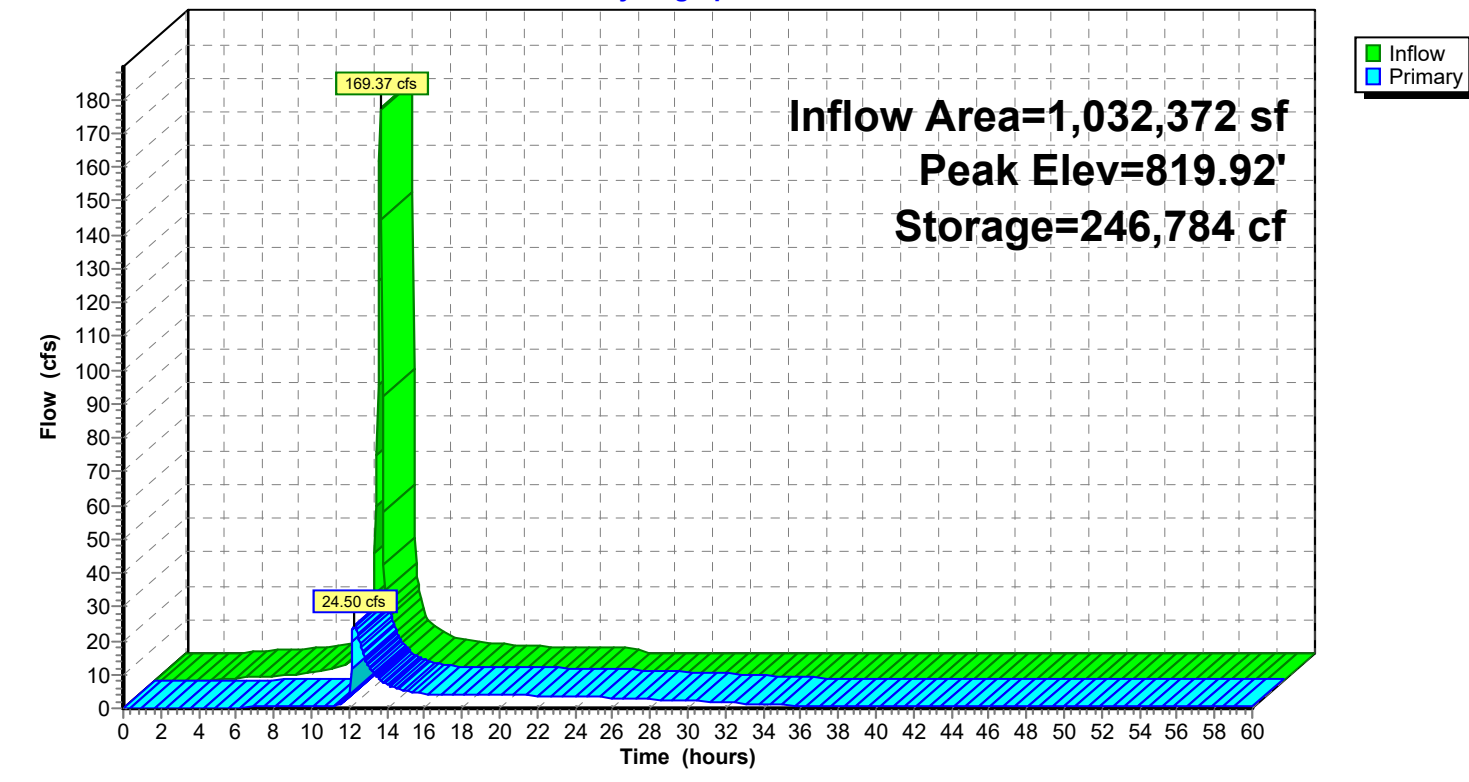
**Appendix D**  
Preferred Alternative  
Preferred Site Plan 3 (H) to 1 (V)  
And Underground Detention



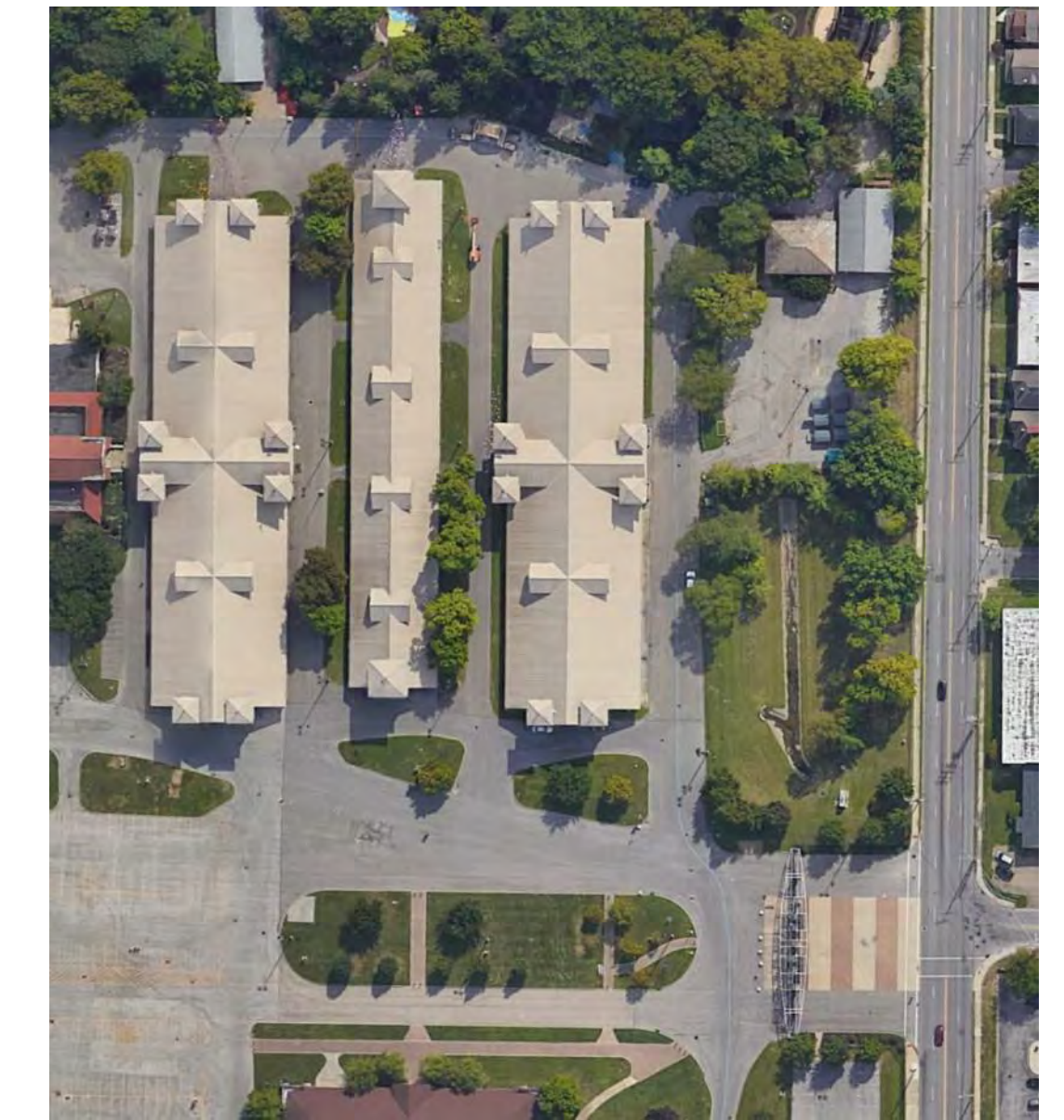
**OEC - PHASE 1  
BASIN (C) - ALTERNATIVE 3  
(PREFERRED ALTERNATIVE)  
PREFERRED SITE PLAN  
3 (H) TO 1 (V) AND UNDERGROUND DETENTION**

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
810.20	7,272	0	0
811.00	8,335	6,243	6,243
812.00	9,761	9,048	15,291
813.00	11,232	10,497	25,787
814.00	12,768	12,000	37,787
815.00	14,356	13,562	51,349
816.00	16,000	15,178	66,527
817.00	17,701	16,851	83,378
818.00	19,459	18,580	101,958
819.00	21,273	20,366	122,324
820.00	23,144	22,209	144,532

**Pond 2P: Basin C  
Hydrograph**



**LOCATION (EXISTING BASIN C)**








# **Appendix E**

## Tree Survey

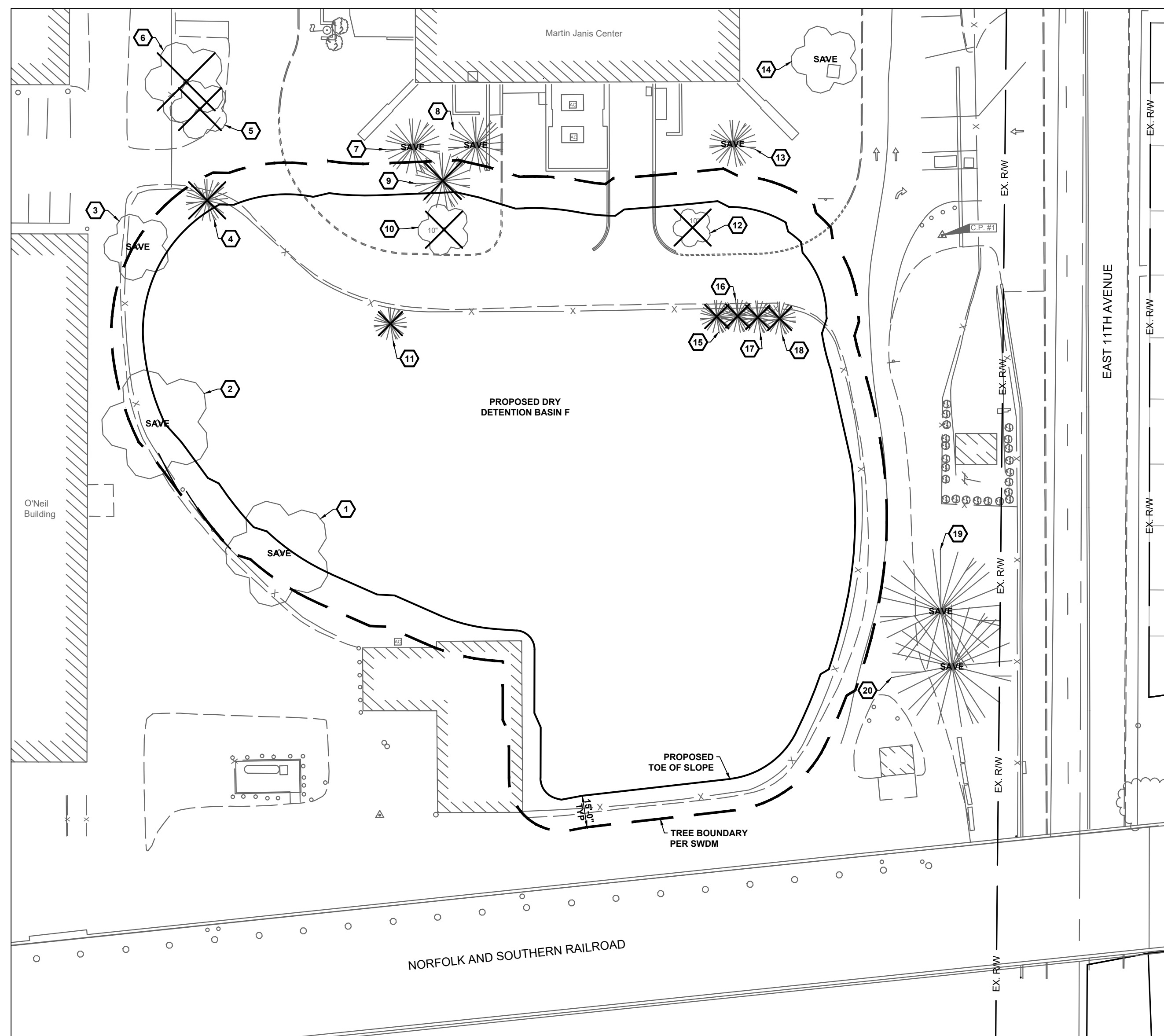
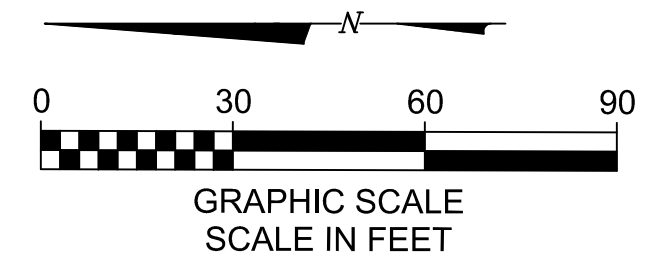
**OEC - PHASE 1  
BASIN (C) AND BASIN (F)  
TREE SURVEY**

**LEGEND**

-  TREE BOUNDARY
-  PROPOSED TOE OF SLOPE
-  REMOVE EXISTING TREE
-  PROTECT EXISTING TREE TO REMAIN
-  TREE ID NUMBER

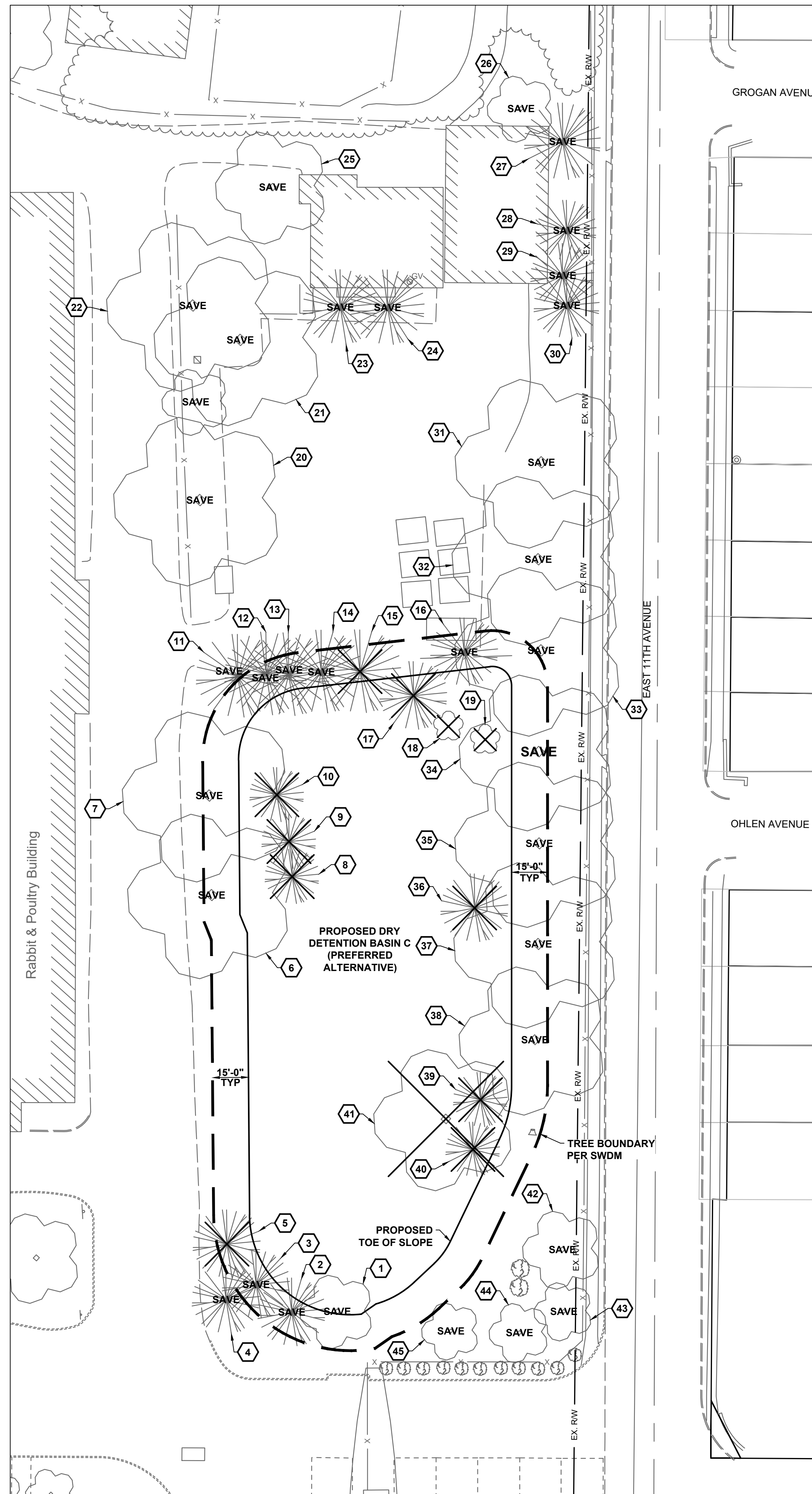
**NOTES:**

- NO NEW TREES SHALL BE PLANTED WITHIN THE BASIN TREE BOUNDARIES AS DEFINED BY SECTION 3.4.1.10 OF THE 2022 CITY OF COLUMBUS STORMWATER DRAINAGE MANUAL, ONCE THE EXISTING TREES WITHIN THESE BOUNDARIES DIE, THEY SHALL NOT BE REPLACED WITHIN THE LIMITS OF THE TREE BOUNDARIES.



**BASIN F**

BASIN F TREE SURVEY					
ID	CALIPER	SPECIES	CONDITION	WITHIN TREE BOUNDARY	REMOVE OR SAVE
1	24"	UNKNOWN	ALIVE	YES	SAVE
2	30"	UNKNOWN	ALIVE	YES	SAVE
3	12"	UNKNOWN	ALIVE	YES	SAVE
4	10"	UNKNOWN	ALIVE	YES	REMOVE
5	6"	UNKNOWN	ALIVE	NO	REMOVE
6	8"	UNKNOWN	ALIVE	NO	REMOVE
7	15"	UNKNOWN	ALIVE	NO	SAVE
8	15"	UNKNOWN	ALIVE	NO	SAVE
9	15"	UNKNOWN	ALIVE	YES	REMOVE
10	10"	UNKNOWN	ALIVE	YES	REMOVE
11	10"	UNKNOWN	ALIVE	YES	REMOVE
12	10"	UNKNOWN	ALIVE	YES	REMOVE
13	12"	UNKNOWN	ALIVE	NO	SAVE
14	10"	UNKNOWN	ALIVE	NO	SAVE
15	12"	UNKNOWN	ALIVE	YES	REMOVE
16	8"	UNKNOWN	ALIVE	YES	REMOVE
17	6"	UNKNOWN	ALIVE	YES	REMOVE
18	12"	UNKNOWN	ALIVE	YES	REMOVE
19	36"	UNKNOWN	ALIVE	NO	SAVE
20	36"	UNKNOWN	ALIVE	NO	SAVE



**BASIN C**

BASIN C TREE SURVEY					
ID	CALIPER	SPECIES	CONDITION	WITHIN TREE BOUNDARY	REMOVE OR SAVE
1	12"	UNKNOWN	ALIVE	YES	SAVE
2	8"	UNKNOWN	ALIVE	YES	SAVE
3	8"	UNKNOWN	ALIVE	YES	SAVE
4	8"	UNKNOWN	ALIVE	NO	SAVE
5	8"	UNKNOWN	ALIVE	YES	REMOVE
6	24"	UNKNOWN	ALIVE	YES	SAVE
7	30"	UNKNOWN	ALIVE	YES	SAVE
8	6"	UNKNOWN	ALIVE	YES	REMOVE
9	6"	UNKNOWN	ALIVE	YES	REMOVE
10	6"	UNKNOWN	ALIVE	YES	REMOVE
11	14"	UNKNOWN	ALIVE	NO	SAVE
12	10"	UNKNOWN	ALIVE	YES	SAVE
13	10"	UNKNOWN	ALIVE	YES	SAVE
14	8"	UNKNOWN	ALIVE	YES	SAVE
15	10"	UNKNOWN	ALIVE	YES	REMOVE
16	12"	UNKNOWN	ALIVE	YES	SAVE
17	10"	UNKNOWN	ALIVE	YES	REMOVE
18	6"	UNKNOWN	ALIVE	YES	REMOVE
19	8"	UNKNOWN	ALIVE	YES	REMOVE
20	30"	UNKNOWN	ALIVE	NO	SAVE
21	30"	UNKNOWN	ALIVE	NO	SAVE
22	30"	UNKNOWN	ALIVE	NO	SAVE
23	20"	UNKNOWN	ALIVE	NO	SAVE
24	20"	UNKNOWN	ALIVE	NO	SAVE
25	24"	UNKNOWN	ALIVE	NO	SAVE
26	6"	UNKNOWN	ALIVE	NO	SAVE
27	13"	UNKNOWN	ALIVE	NO	SAVE
28	10"	UNKNOWN	ALIVE	NO	SAVE
29	10"	UNKNOWN	ALIVE	NO	SAVE
30	10"	UNKNOWN	ALIVE	NO	SAVE
31	30"	UNKNOWN	ALIVE	NO	SAVE
32	30"	UNKNOWN	ALIVE	NO	SAVE
33	30"	UNKNOWN	ALIVE	NO	SAVE
34	30"	UNKNOWN	ALIVE	YES	SAVE
35	30"	UNKNOWN	ALIVE	YES	SAVE
36	8"	UNKNOWN	ALIVE	YES	REMOVE
37	30"	UNKNOWN	ALIVE	YES	SAVE
38	30"	UNKNOWN	ALIVE	YES	SAVE
39	8"	UNKNOWN	ALIVE	YES	REMOVE
40	8"	UNKNOWN	ALIVE	YES	REMOVE
41	12"	UNKNOWN	ALIVE	YES	REMOVE
42	12"	UNKNOWN	ALIVE	NO	REMOVE
43	10"	UNKNOWN	ALIVE	NO	REMOVE
44	8"	UNKNOWN	ALIVE	NO	REMOVE
45	10"	UNKNOWN	ALIVE	NO	REMOVE