



LEE'S SUMMIT MISSOURI

DESIGN & CONSTRUCTION MANUAL DESIGN CRITERIA MODIFICATION REQUEST

PROJECT NAME: Cobey Creek 2nd Plat

ADDRESS: Intersection of Cobey Creek Drive and Hwy-150

PERMIT NUMBER: PL2022092

OWNER'S NAME: Clayton Properties Group DBA Summit Homes KC

TO: Deputy Director of Public Works / City Engineer

In accordance with the City of Lee's Summit's Design and Construction Manual (DCM), I wish to apply for a modification to one or more provisions of the code as I feel that the spirit and intent of the DCM is observed and the public health, welfare and safety are assured. The following articulates my request for your review and action. (NOTE: Cite specific code sections, justification and all appropriate supporting documents.)

Seeking relief from Section 5608.4(C)(1) for the "peripheral drainage issue" that is inherent in most residential subdivisions due to grading changes during construction to lessen the drainage area in a particular portion of the project, and hence the peak runoff from those particular areas when compared to the pre-developed condition.

SUBMITTED BY:

NAME: Garrett Cates - Anderson Engineering Inc.
ADDRESS: 941 W 141st Ter., Suite A
CITY, STATE, ZIP: Kansas City, MO 64145
Email: gcates@ae-inc.com

() OWNER (X) OWNER'S AGENT
PHONE #: (913) 284-9362

SIGNATURE: 

KENT MONTER, P.E.

DEVELOPMENT ENGINEERING MANAGER

SIGNATURE: _____ DATE: (X) APPROVAL () DENIAL
September 22, 2022

JEFF THORN, P.E.

WATER UTILITIES ASSISTANT DIRECTOR OF ENGINEERING SERVICES

SIGNATURE: _____ DATE: () APPROVED () DENIAL

GEORGE M. BINGER III, P.E.

DEPUTY DIRECTOR OF PUBLIC WORKS/CITY ENGINEER

SIGNATURE: _____ DATE: (X) APPROVED () DENIAL
September 28, 2022

COMMENTS: The Development Engineering Group has reviewed this request and we are
recommending approval.

A COPY MUST BE ATTACHED TO THE APPROVED PLANS ON THE JOB SITE

August 26, 2022

Deputy Director of Public Works/City Engineer
Public Works
220 SE Green Street
Lee's Summit, Missouri 64063

Re: Cobey Creek - Peripheral Drainage Waiver Request

Cobey Creek is a multi-phase mixed-use development that is made up of primarily single-family and two-family residential homes. The development was started by JCM Development, LLC in 2018, and hired HG Consultants to complete the Preliminary Development Plan, Master Drainage Study, and 1st Plat design drawings. Due to a change in ownership to Summit Homes KC following the completion of Phase 1 of the development, Anderson Engineering Inc. has been hired to develop the remaining design and construction documents necessary to complete the project. Discussed in the Master Drainage Plan that was completed and approved with the 1st Plat (Phase 1), is the inherent drainage issue referred to as "fringe drainage" or "peripheral drainage". This issue is a result of grading changes during construction to lessen the drainage area in a particular portion of the project, and hence, the peak runoff from those particular areas when compared to the pre-development condition. Due to the challenges meeting Section 5608.4(C)(1) of the City of Lee's Summit Design and Construction Manual, the developer is seeking a waiver relief to allow these peripheral drainage areas that cannot feasibly be captured by the provided wet and dry detention basins, and therefore allow them to be released to adjacent properties at flow rates that are still significantly less than the pre-developed condition. The following paragraphs summarize the results of a micro drainage analysis that was conducted to assess the pre-development, intermediate, and post-development drainage areas depicted in **Exhibit A** (pre-construction), **Exhibit B** (after phase 2 is completed) and **Exhibit C** (fully developed site), located in **Appendix A**.

There are two peripheral drainage areas located within the Cobey Creek development, which are referred to as the "North" and "South" peripheral drainage areas in this analysis. The composite curve numbers for each of these areas are set to increase due to an increase in impervious area. Even with this increase in composite curve numbers however, the overall runoff is being reduced because of a decrease in total area from pre-phase 2 construction to a fully developed site. The North peripheral drainage area is reducing in size from

14.7 acres pre-construction, to 3.74 acres after phase 2, and 2.51 acres once the site is fully developed. The South peripheral drainage area is reducing in size from 1.75 acres pre-construction to 1.12 acres once phase 2 is complete as well as once fully developed. Therefore, the total contributing drainage area is reducing by a total of 12.7 acres, or approximately 86%. This decrease in area is more than enough to account for the increase in the composite curve number, which ultimately results to a net decrease in runoff for the peripheral drainage areas.

To model the total runoff for the peripheral drainage areas, Hydraflow Hydragraphs software extension for AutoDesk Civil 3d was utilized. Using the SCS TR-55 method and a Type-II 24-hour rainfall distribution, hydrographs for a 2-year, 10-year, and 100-year stormwater event were analyzed. **Table 1** and **Table 2** summarize the peak flow values from the Hydraflow model and can be further analyzed in the attached stormwater model output included in **Appendix B**. The analysis confirms that the stormwater runoff for each of the peripheral drainage areas decreases in the intermediate and fully-developed condition, due to the decrease in contributing drainage area.

Table 1: Pre vs Post North Runoff Summary					
	Pre	Inter	Post	Percent Reduction Inter	Percent Reduction Post
2-yr	28.5	8.48	7.69	70.2	73.0
10-yr	60.68	17.52	14.26	71.1	76.5
100-yr	125.76	35.62	26.57	71.7	78.9

Table 2: Pre vs Post South Runoff Summary				
	Pre	Inter	Post	Percent Reduction
2-yr	3.10	2.78	2.78	10.3
10-yr	6.52	5.57	5.57	14.6
100-yr	13.35	11.03	11.03	17.4

Due to the decrease in runoff to the adjacent properties within the peripheral drainage areas identified in this analysis, no downstream impacts are anticipated once phase 2 is completed as well as once the site is fully developed, and a waiver to the comprehensive control measures defined under Section 5608.4(C)(1) is requested for the Cobey Creek Development.

Anderson Engineering, Inc.



Garrett Cates, P.E.
GCates@ae-inc.com



APPENDIX A



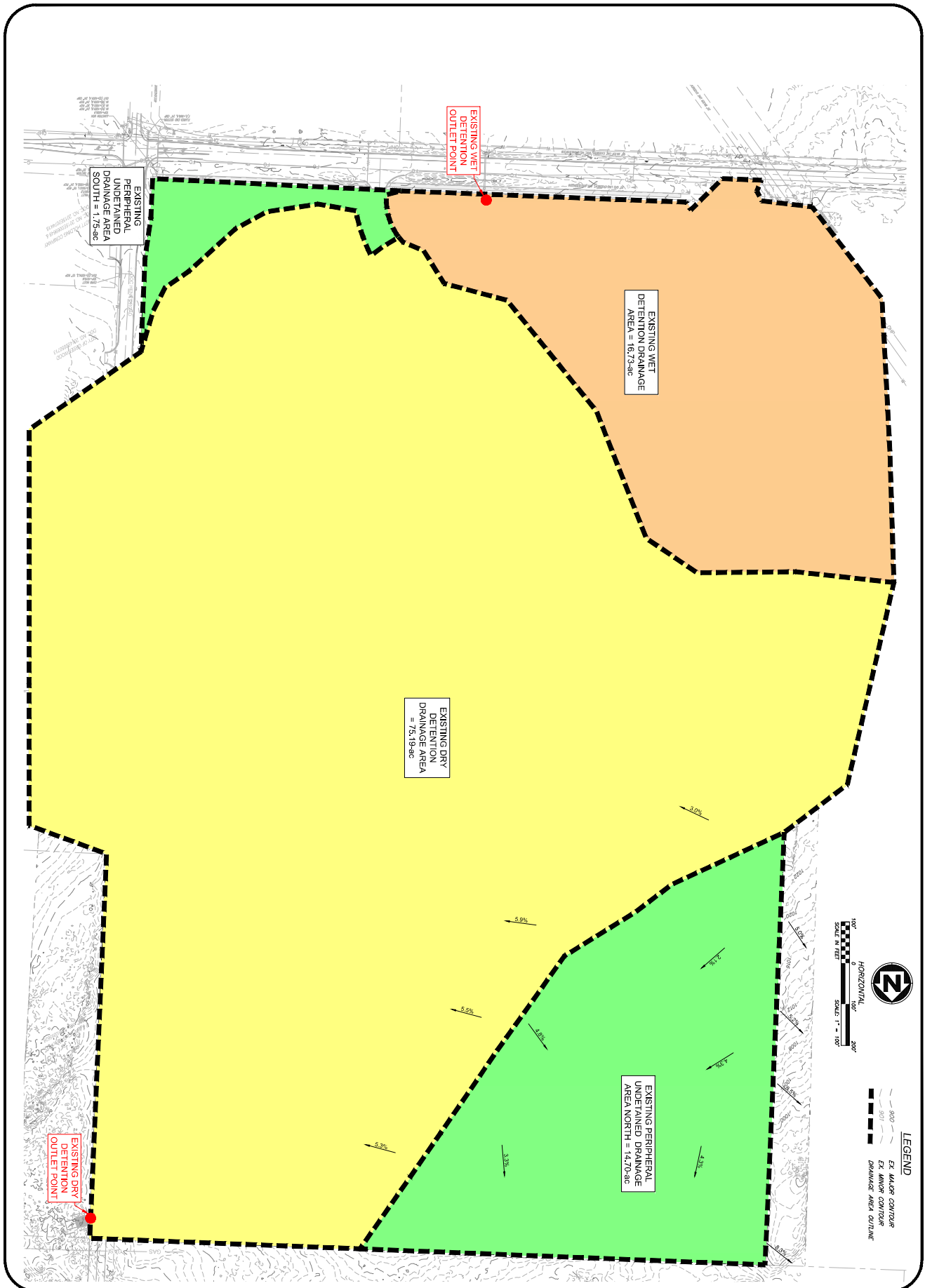


EXHIBIT A

SHEET NUMBER

CLAYTON PROPERTIES GROUP
COBEY CREEK - 2ND PLAT - STREET, STORM, & EROSION

**EXISTING DRAINAGE AREAS
(BEFORE PHASE 2)**

S29, T47N, R31W
LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

REVISIONS			
NO.	DESCRIPTION	BY	DATE

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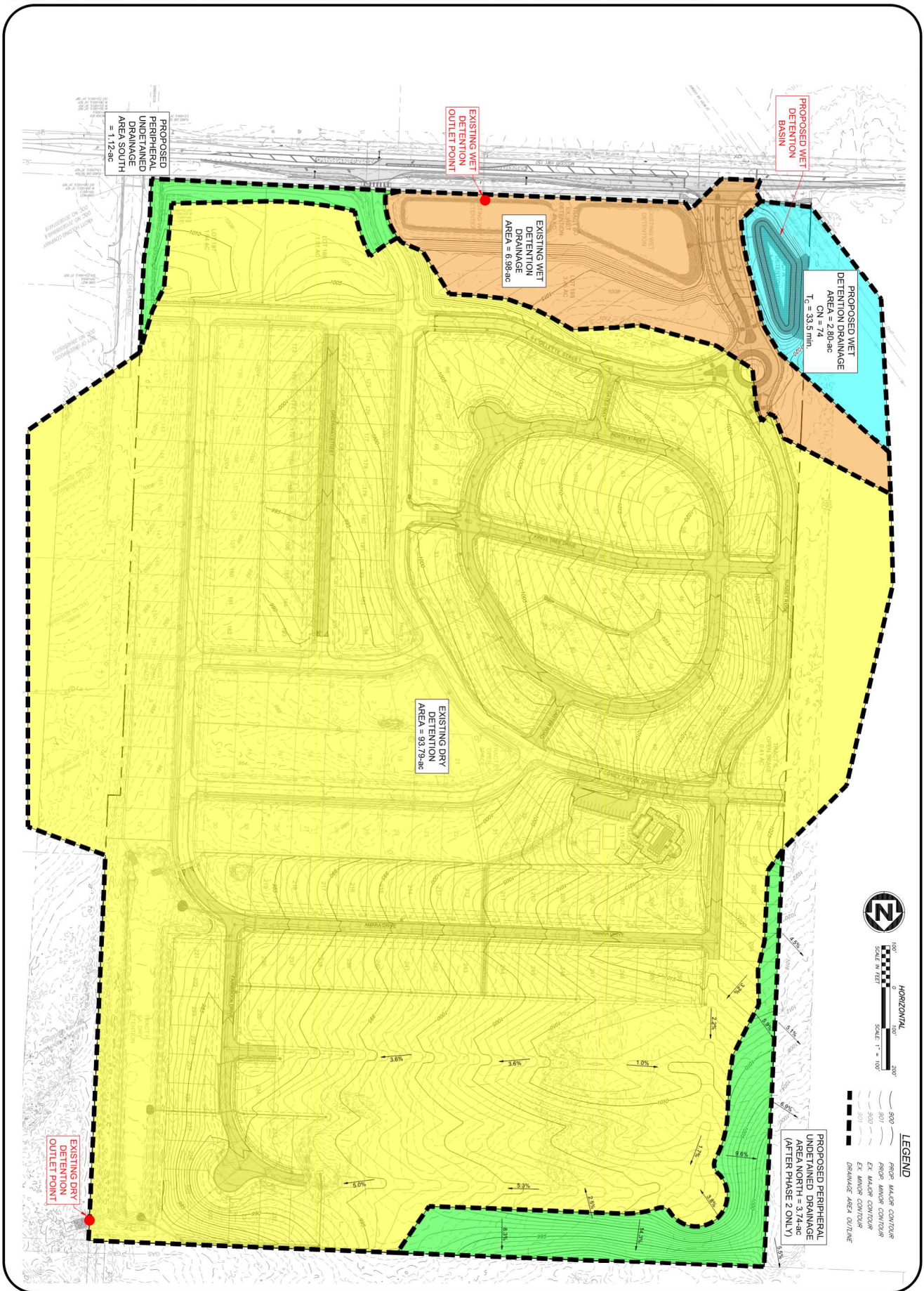
AE ANDERSON ENGINEERING

EMPLOYEE OWNED

ENGINEERS • SURVEYORS • LABORATORIES • DRILLING

941 W 141ST TERR. STE A • KANSAS CITY, MO 64145 • PHONE (816) 777-0400

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SHEET NUMBER
EXHIBIT B

CLAYTON PROPERTIES GROUP
COBEY CREEK - 2ND PLAT - STREET, STORM, & EROSION

PROPOSED DRAINAGE AREAS
(AFTER PHASE 2)

S29, T47N, R31W
LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

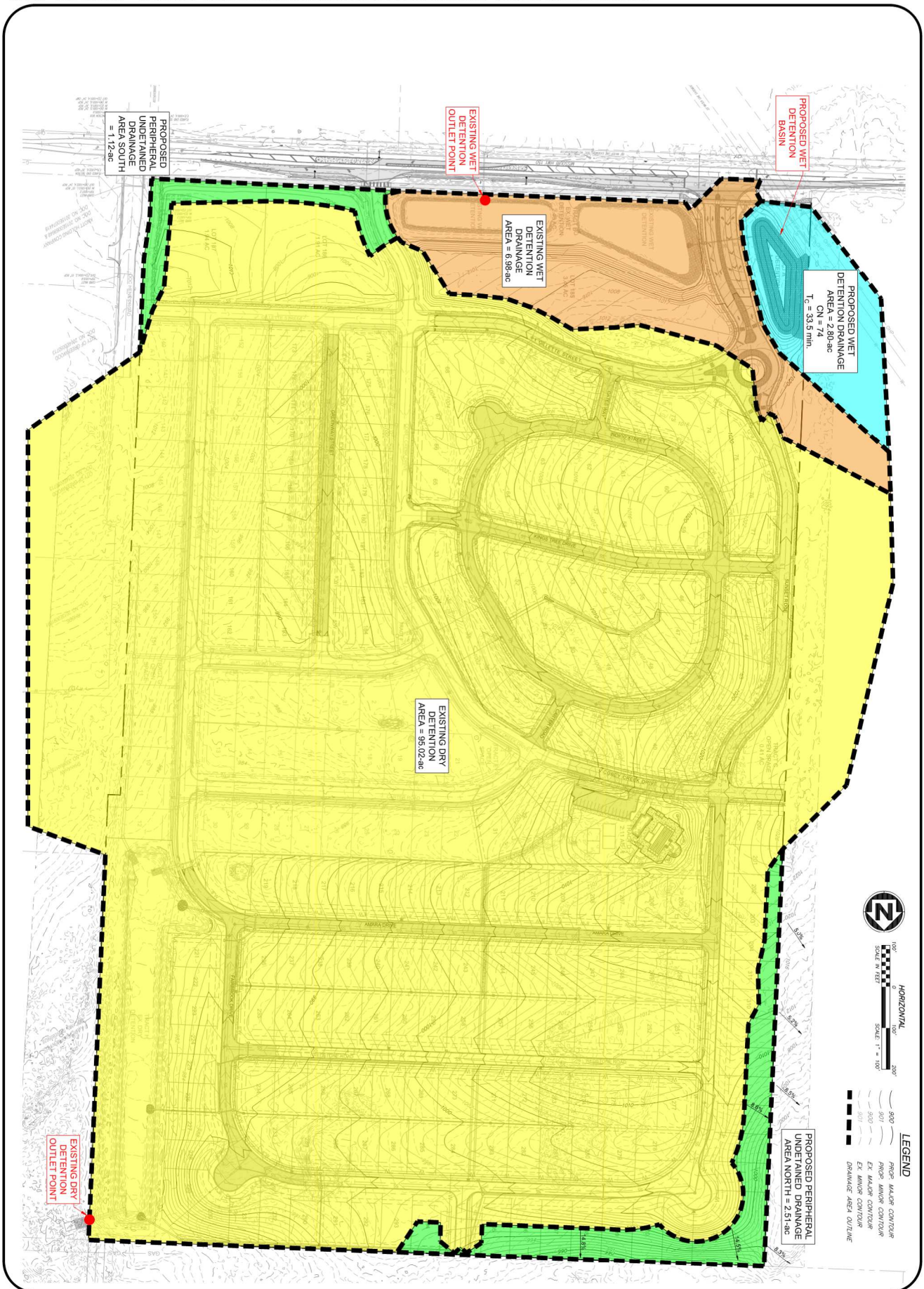
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NO.	DESCRIPTION	BY	DATE

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HORIZONTAL
SCALE 1" = 100'
SCALE IN FEET

- LEGEND**
- PROPOSED MAJOR CONTOUR
 - PROPOSED MINOR CONTOUR
 - EXISTING MAJOR CONTOUR
 - EXISTING MINOR CONTOUR
 - DRAINAGE AREA OUTLINE

SHEET NUMBER
EXHIBIT C

CLAYTON PROPERTIES GROUP
COBEY CREEK - 2ND PLAT - STREET, STORM, & EROSION

**PROPOSED DRAINAGE AREAS
(FULLY DEVELOPED CONDITION)**

S29, T47N, R31W
LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

REVISIONS			
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