

CITY OF ALBUQUERQUE

Planning Department
Brennon Williams, Director



Mayor Timothy M. Keller

October 12, 2020

Sheldon Greer, P.E.
Respec
5971 Jefferson St. NE
Albuquerque, NM 8710

**RE: Sonta Trails Unit 4 Apartments
Conceptual Grading & Drainage Plan and Drainage Report
Engineer's Stamp Date: 09/03/20
Hydrology File: C10D001A**

Dear Mr. Greer:

Based upon the information provided in your resubmittal received 09/10/2020, the Conceptual Grading & Drainage Plan and Drainage Report **are not** approved for action by the DRB on Site Plan for Building Permit and Site Plan for Subdivision. The following comments need to be addressed for approval of the above referenced project:

PO Box 1293

Albuquerque

NM 87103

www.cabq.gov

1. Drainage Report. There are several minor editorial comments within the report from both AMAFCA and the City. Please correct them as indicated on the attached pdf.
2. SWMM Final Model. Models should be run for 96 hours to confirm and document that the ponds drain in less than 96 hours.
3. SWMM Final Model. Please explain why is does Link 45 have an inlet offset of 2.46' and an outlet offset of 0.62'.
4. SWMM Final Model. Please confirmed that the outlet for Pond K is truly 2.46' above the invert of Pond K.
5. SWMM Final Model. Please verify that this 2.46' of dead storage in Pond K could be accounted for in your volume scenario since it appears it could be filled by a previous storm event.
6. SWMM Final Model. AMAFCA has asked that the Peak Flow leaving the model Outfall not exceed 45cfs and thus reduce the burden of an already overtaxed downstream infrastructure. That request was not accommodated in this submittal. Upon investigation, this request can be achieved and exceeded with the following modifications:
 - a. Change ORF_K to 2' diameter, Correct the outflow pipe (Link 45) to have an Inlet offset of only 0.72', Increase the Pond K storage (approximated at 10%). These modifications result in an outfall flow of 36 cfs.

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7. As a reminder, if the project total area of disturbance (including the staging area and any work within the adjacent Right-of-Way) is 1 acre or more, then an Erosion and Sediment Control (ESC) Plan and Owner's certified Notice of Intent (NOI) is required to be submitted to the Stormwater Quality Engineer (Doug Hughes, PE, jhughes@cabq.gov, 924-3420) 14 days prior to any earth disturbance.
8. Standard review fee of \$300 (for DRB Site) will be required at the time of resubmittal.

If you have any questions, please contact me at 924-3995 or rbrissette@cabq.gov.

Sincerely,

Renée C. Brissette

Renée C. Brissette, P.E. CFM
Senior Engineer, Hydrology
Planning Department

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NM 87103

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City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET (REV 11/2018)

Project Title: _____ **Building Permit #:** _____ **Hydrology File #:** _____

DRB#: _____ **EPC#:** _____ **Work Order#:** _____

Legal Description: _____

City Address: _____

Applicant: _____ **Contact:** _____

Address: _____

Phone#: _____ **Fax#:** _____ **E-mail:** _____

Owner: _____ **Contact:** _____

Address: _____

Phone#: _____ **Fax#:** _____ **E-mail:** _____

TYPE OF SUBMITTAL: _____ PLAT (____# OF LOTS) _____ RESIDENCE _____ DRB SITE _____ ADMIN SITE

IS THIS A RESUBMITTAL?: _____ Yes _____ No

DEPARTMENT: _____ TRAFFIC/ TRANSPORTATION _____ HYDROLOGY/ DRAINAGE

Check all that Apply:

TYPE OF SUBMITTAL:

- _____ ENGINEER/ARCHITECT CERTIFICATION
- _____ PAD CERTIFICATION
- _____ CONCEPTUAL G & D PLAN
- _____ GRADING PLAN
- _____ DRAINAGE MASTER PLAN
- _____ DRAINAGE REPORT
- _____ FLOODPLAIN DEVELOPMENT PERMIT APPLIC
- _____ ELEVATION CERTIFICATE
- _____ CLOMR/LOMR
- _____ TRAFFIC CIRCULATION LAYOUT (TCL)
- _____ TRAFFIC IMPACT STUDY (TIS)
- _____ OTHER (SPECIFY) _____
- _____ PRE-DESIGN MEETING?

TYPE OF APPROVAL/ACCEPTANCE SOUGHT:


- _____ BUILDING PERMIT APPROVAL
- _____ CERTIFICATE OF OCCUPANCY
- _____ PRELIMINARY PLAT APPROVAL
- _____ SITE PLAN FOR SUB'D APPROVAL
- _____ SITE PLAN FOR BLDG. PERMIT APPROVAL
- _____ FINAL PLAT APPROVAL
- _____ SIA/ RELEASE OF FINANCIAL GUARANTEE
- _____ FOUNDATION PERMIT APPROVAL
- _____ GRADING PERMIT APPROVAL
- _____ SO-19 APPROVAL
- _____ PAVING PERMIT APPROVAL
- _____ GRADING/ PAD CERTIFICATION
- _____ WORK ORDER APPROVAL
- _____ CLOMR/LOMR
- _____ FLOODPLAIN DEVELOPMENT PERMIT
- _____ OTHER (SPECIFY) _____

DATE SUBMITTED: _____ **By:** _____


COA STAFF:

ELECTRONIC SUBMITTAL RECEIVED: _____

FEE PAID: _____



CONCEPTUAL DRAINAGE REPORT FOR SONATA TRAILS UNIT 4 APARTMENTS



PREPARED FOR

City of Albuquerque, Planning Department
Development Review Services, Hydrology Section

PREPARED BY

RESPEC, Inc.
5971 Jefferson St. NE, Suite 101
Albuquerque, NM 87109
505.253.9718

SEPTEMBER 2020





I, Sheldon Greer, do hereby certify that this report was duly prepared by me or under my direction and that I am a duly registered Professional Engineer under the laws of the State of New Mexico.



Sheldon Greer, P.E.
NMPE No. 17154

9 / 03 / 2020

Date

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1.0 INTRODUCTION

1.1 PURPOSE

The purpose of this conceptual drainage report is to demonstrate that the proposed development of Sonata Trails Unit 4 Apartments safely conveys the peak 100-year storm runoff. The drainage intent for proposed conditions is to fully retain the 100-year, 10-day storm event.

The proposed development of Sonata Trails Unit 4 Apartments site is within the "Upper Piedras Marcadas Watershed Drainage and Water Quality Management Plan" (UPM DMP) by Wilson & Company dated April 2017. The project site ultimately drains into an Albuquerque Metropolitan Arroyo and Flood Control Authority (AMAFCA) facility, the Piedras Marcadas Dam. The proposed development impacts the existing surge pond J from the Trails Units 1, 2, and 3, Drainage Master Plan (DMP). The Amendment to the Trails Units 1, 2, and 3 DMP was completed by Thompson Engineering Consultants (TEC) in April 2014 and approved by the City Hydrologist in May 2014. All the Trails surge ponds were based on conservative assumptions when modeled initially by AHYMO but were later modeled using PCSWMM software to maximize the efficiency of the system while decreasing the footprint of Pond D. The Addendum to the Amendment to the DMP for the Trails Units 1, 2, and 3, was completed by TEC in February 2017. We have revised the Trails PCSWMM model due to the proposed confined footprint of Pond J and propose increasing the water surface elevation in Pond K, without changing the footprint of Pond K, and ultimately reducing the peak discharge in the Universe Boulevard storm drain system. All elevations mentioned in this report are based on the North American Vertical Datum of 1988 (NAVD 88). The PCSWMM model elevations differ from the elevations mentioned in this report because they were based on the National Geodetic Vertical Datum of 1929 (NGVD 29).

1.2 LOCATION AND DESCRIPTION

Sonata Trails Unit 4 Apartments is located southwest of Paseo Del Norte NW and Universe Boulevard NE intersection and contain approximately 17.4 acres. See Figure 1.2.1 below. The legal description of the property is Tracts 1 and 2, The Trails Unit 4, on the plat entitled "Bulk land plat of The Trails Unit 4 within the Town of Alameda Grant in projected Section 15, Township 11 North, Range 2 East, New Mexico Principal Meridian, City of Albuquerque, Bernalillo County, New Mexico, October, 2007." The existing site includes surge pond J for the Trails Units 1, 2, and 3, but is otherwise undeveloped. The existing conditions are described in more detail in Section 3.1 and the proposed conditions are described in Section 3.2.



FIGURE 1.2.1 – PROJECT LOCATION

2.0 METHODOLOGY

The hydrologic analysis was performed for the site in accordance with the Albuquerque Development Process Manual (DPM) Section 22.2. AHYMO-S4 (April 2018) was used to develop peak flow rates for the 100-year, 24-hour design storm to ensure all flow paths are sufficient to carry flows. The temporary public retention pond, Pond A, was designed to fully retain the 100-year, 10-day storm. The required water quality volume was calculated by multiplying the onsite impervious area by the first flush runoff value of 0.34". All hydrologic and hydraulic calculations are included in this report.

3.0 HYDROLOGY

3.1 EXISTING CONDITIONS

The Sonata Trails Unit 4 Apartment receive offsite flows from the Trails Units 1, 2, and 3 and as well as the neighboring parcel to the northwest. The existing site is 100% pervious area and a portion of the property contains a surge pond, Pond J, which receives flows from the Trails Units 1, 2, and 3. The

offsite flows received from the Trails Units 1, 2, and 3 is received via storm drain and surges into Pond J while the neighboring property sheets flows across the northern portion of our property. The total flow generated by the property under existing conditions is 47.71 cfs. The existing property has been split into three sub-basins. Exhibit 1 shows the existing sub-basin boundaries for the site.

Basin A is located in the western corner of the property and is primarily made up of existing surge pond, Pond J, and undeveloped pervious area. In general, the basin slopes from north to south and south to north at varying slopes between 1%-20%. Under existing conditions, runoff from the Universe storm drain system surges into Pond J and exits the surge pond back into the Universe storm drain system or at the overflow weir at the northwest corner of the pond and discharges into Basins B and Basin C. The existing Pond J has a maximum water surface elevation of 5418.46 ft, maximum volume of 3.70 ac-ft, maximum inflow of 136.80 cfs, and maximum outflow of 26.65 cfs. Historically, before the berm and pond were built, the basin flowed northeast into Basins B and Basin C. Basin A generates 6.88 cfs.

Basin B contains the southeast corner of the property and is undeveloped pervious area. In general, the basin slopes from south to north at varying slopes between 1-8%. After ponding a small amount, roughly 6", runoff exits this basin at the northern end of the basin and discharges into Basin C. Basin B generates 12.21 cfs.

Basin C contains of the north end of the property and offsite area west of the property boundary. The area contains undeveloped pervious area. In general, the basin slopes from southwest to northeast at varying slopes between 1-16%. Runoff exists this basin at the northern end of the basin. Basin C generates 28.63 cfs.

TABLE 3.1.1 – HYDROLOGIC DATA - EXISTING

HYDROLOGIC DATA - EXISTING							
SUB-BASIN	AREA (AC)	LAND USE PERCENTAGES				Q100 (CFS)	V100 (AC-FT)
		A	B	C	D		
A	5.14	100%	0%	0%	0%	6.88	0.188
B	9.14	100%	0%	0%	0%	12.21	0.335
C	21.44	100%	0%	0%	0%	28.63	0.785
TOTAL	35.73					47.71	1.308

3.2 PROPOSED CONDITIONS

The proposed site development for the Trails Unit 4 Apartments includes apartment buildings, parking lots, public and private streets, surge ponds, and landscaping. Under the proposed condition, approximately 80% of the site will consist of impervious area and 20% will be landscaped. The total flow generated by the proposed development is 82.34 cfs. There is no downstream infrastructure built for the watershed. Therefore, the drainage from the proposed conditions will be discharged into a temporary retention pond, Pond A, which will retain the 100-year, 10-day storm event. See Appendix A for the AHYMO input and output results, Pond A volume requirement calculations, and Pond A volume calculation. The property has been split into nine proposed basins. Exhibit 2 shows the private public basin boundaries for the site.

3.2.1 PRIVATE DRAINAGE BASINS

Basin A consists of the edges of the property from the southwest corner to the northeast corner and is made up of apartment buildings, asphalt roads and parking, and landscaping. In general, the basin slopes from southwest to northeast at varying slopes between 0.5%-1%. Runoff is collected in proposed drop inlets in the new road which discharges into a storm drain that will connect to the public storm drain system, and ultimately discharge into the proposed Pond A. The proposed flow is 23.58 cfs.

Basin B consists of the center portion of the property and is made up of apartment buildings, asphalt roads and parking, and landscaping. In general, the basin slopes from west to east at varying slopes between 0.5%-1%. Runoff is collected in the new road which discharges into Basin A. The proposed flow is 11.40 cfs.

Basin C consists of the center portion of the property and is made up of apartment buildings, asphalt roads and parking, and landscaping. In general, the basin slopes from west to east at varying slopes between 0.5%-1%. Runoff is collected in the new road which discharges into Basin A. The proposed flow is 15.56 cfs.

Basin D is an undeveloped off-site basin to the west and north of the property. The basin also includes a proposed temporary public retention Pond A at the northeast corner of the basin. In general, the basin slopes from southwest to northeast at varying slopes between 3-5%. The southwestern portion of the basin discharges into the swale in Basin F. For a storm larger than the 100-year, 10-day event, runoff will exit Basin D at the overflow weir spillway in the proposed temporary retention Pond A and discharge to the northwest to match the historic discharge. We are proposing a wide spillway to best replicate the sheet flow that historically discharges to this point. The pond will retain the 100-year, 10-day storm event. The proposed temporary public retention Pond A has a maximum water surface elevation of 5411.40 ft, maximum inflow of 82.34 cfs, and no outflow. Basin D generates 16.41 cfs.

When this off-site basin is developed in the future the runoff will no longer be allowed to discharge into temporary public retention Pond A. The runoff from the future off-site developed area must be retained within their own site until adequate downstream public infrastructure has been provided to accept the flow, per City procedure for this area.

Basin E consists of the northern end of the property and is made up of apartment buildings, landscaping, and the proposed public street, Oak Ridge Ave. In general, the basin slopes from south to north at varying slopes between 0.5%-1%. Runoff is collected in storm drain in Oak Ridge and discharges into temporary public retention Pond A. The storm drain in Oak Ridge will be stubbed to the west for future connections as Oak Ridge expands to the west, see Exhibit 3. The proposed flow is 2.38 cfs.

Basin F consists of the northwestern boundary of the property and is made up of landscaping and a swale. In general, the basin slopes east and then north at varying slopes between 0.5%-1%. Runoff is conveyed in a proposed swale. The primary purpose of the swale is to convey offsite drainage from Basin D to prevent the offsite drainage from affecting the proposed property. The proposed swale ultimately discharges into the ROW at the northwest corner of the property, into Basin D and then temporary public retention Pond A. The proposed flow is 0.84 cfs.

The hydrologic data table below depicts in further detail each private sub-basin and its characteristics.

TABLE 3.2.1 – HYDROLOGIC DATA – PROPOSED PRIVATE

HYDROLOGIC DATA - PROPOSED PRIVATE							
SUB-BASIN	AREA (AC)	LAND USE PERCENTAGES				Q100 (CFS)	V100 (AC-FT)
		A	B	C	D		
A	5.91	0%	10%	10%	80%	23.58	1.036
B	2.85	0%	10%	10%	80%	11.40	0.500
C	3.90	0%	10%	10%	80%	15.56	0.683
D	10.03	90%	0%	0%	10%	16.41	0.533
F	0.31	0%	45%	45%	10%	0.84	0.025
TOTAL	22.99					67.79	2.777

3.2.2 PUBLIC DRAINAGE BASINS

Basin E is an off-site basin and consists of the proposed public street, Oak Ridge Ave. In general, the basin slopes continuously from west to east at varying slopes between 0.5%-1%. Runoff is collected in storm drain in Oak Ridge and discharges into temporary public retention Pond A. The storm drain in Oak Ridge will be stubbed to the west for future connections as Oak Ridge expands to the west, see Exhibit 3. The proposed flow is 2.38 cfs.

Basin G is an off-site basin and consists primarily of the proposed public streets, Treeline Avenue and Chatsworth Drive but also includes small segments of on-site landscaping. The portion of on-site landscaping will discharge to the public right-of-way through sidewalk culverts and will not flow over the sidewalk. Treeline Ave is proposed as a full road width at the intersection of Treeline Ave and Universe Dr and transitions to half-road improvements at the Treeline Ave and Chatsworth Dr intersection. Chatsworth Dr is proposed as half-road improvements. In general, the basin slopes from west to east on Treeline Ave and south to north on Chatsworth Dr at varying slopes between 0.5%-1%. Chatsworth Dr will have a high point at the Treeline Ave and Chatsworth Dr intersection. Runoff north of Treeline Ave in Chatsworth Dr will flow north and future Chatsworth south of Treeline Ave will flow south. Runoff is collected in drop inlets which discharges into the proposed temporary public retention Pond A in Basin D via storm drain. There is a storm drain in Chatsworth that collects roadway flows from Treeline Ave and Chatsworth Dr as well as runoff from the private property. The proposed storm drain within Chatsworth Dr has been sized per the full developed road width. Exhibit 3 shows the proposed public and conceptual future public infrastructure. The proposed flow is 12.55 cfs.

Basin H is an off-site basin and consists of the half-street expansion of the proposed public street, Universe Boulevard. In general, the basin has a continuous slope from north to south at 0.5%. Runoff in Universe Boulevard continues south until it is collected in drop inlets immediately south of Woodmont Avenue which discharges directly into Pond K. There will be a high point in Treeline Ave at its intersection with Universe Boulevard to separate the runoff from those roadways. The proposed flow is 2.88 cfs. This flow has been accounted for in the existing PCSWMM model.

Basin I consists of the reconfiguration of Pond J and landscaping. In general, the basin slopes from north to south at varying slopes between 0.5%-1%. Runoff is collected in Pond J which discharges into the existing storm drain network paralleling Universe Blvd. The proposed flow in this basin is 2.00 cfs.

The hydrologic data table below depicts in further detail each public sub-basin and its characteristics.

TABLE 3.2.2 – HYDROLOGIC DATA – PROPOSED PUBLIC

HYDROLOGIC DATA - PROPOSED PUBLIC							
SUB-BASIN	AREA (AC)	LAND USE PERCENTAGES				Q100 (CFS)	V100 (AC-FT)
		A	B	C	D		
E	0.64	0%	17.5%	17.5%	65%	2.38	0.099
G	2.99	0%	5%	5%	90%	12.55	0.565
H	0.69	0%	5%	5%	90%	2.88	0.129
I	0.47	0%	5%	5%	90%	2.00	0.089
TOTAL	4.79					19.81	0.882

The pond data table in Appendix A depicts in further detail the characteristics of the proposed temporary public retention Pond A and summarizes the reduction in discharge volume and flowrate compared to existing conditions. The existing flowrate is 47.71 cfs, developed is 82.34, and 0.00 cfs is released from temporary public retention Pond A. The existing volume is 1.308 ac-ft, developed is 3.441 ac-ft, and nothing is released. Temporary public retention Pond A is required to retain the 100-year, 10-day storm volume, 4.64 ac-ft. Temporary public retention Pond A has 4.71 ac-ft of retention volume, 1 foot of freeboard, 5.78 ac-ft of total volume and the spillway has capacity to pass the 100-year, 24-hour peak flow rate in an emergency situation. Additional calculations regarding temporary public retention Pond A are in Appendices A & B. Exhibit 4 provides detailed grading information for temporary public retention Pond A.

As the surrounding properties are developed, temporary public retention Pond A will ultimately discharge into the Upper Piedras Marcadas future 36" storm drain system within the Oak Ridge Ave extension crossing Paseo Del Norte Blvd NE. A copy of the Upper Piedras Marcadas Watershed Drainage map by Wilson & Company has been provided in Appendix A and shown conceptually on Exhibits 2 & 3. The proposed storm drain in Chatsworth and Oak Ridge discharges into temporary public retention Pond A in the interim condition. When the adjacent property to the northeast develops and builds the next portion of the downstream storm drain in Oak Ridge, the future developer will be responsible for retaining the runoff from their development, our proposed development, and all upstream basins, per City procedure, in this area. Once the adjacent property has been developed, the temporary public retention Pond A can be removed. Once downstream infrastructure is built to accept runoff from this area, a 48" storm drain will be extended east from the Chatsworth and Oak Ridge intersection in the future, see Exhibit 3. We anticipate that the storm drain crossing Paseo Del Norte Blvd NE will be a 48" pipe rather than 36" as shown on Exhibits 2 & 3 to accommodate flows that will contribute to this system.

The total first flush value of 0.34" required water quality volume for the site was calculated based on the total proposed onsite impervious area multiplied by the is 13,064 cubic feet. The required stormwater quality volume has been provided in the proposed temporary public retention Pond A. More details regarding water quality will be provided at Building Permit review.

3.2.3 FUTURE PUBLIC/PRIVATE DRAINAGE BASINS

Future Basin D-1 is an undeveloped off-site private basin to the west and north of the property. In general, the basin slopes from southwest to northeast at varying slopes between 3-5%. For planning purposes and conceptual future storm drain sizing, we have assumed this basin will be developed with 80% impervious area and discharge into a future storm drain in future Oak Ridge Ave. If there is not adequate downstream infrastructure available when this basin is developed, then this site must fully retain their runoff and cannot be discharged into temporary public retention Pond A. Basin D-1 generates 18.63 cfs.

Future Basin D-2 is an undeveloped off-site private basin to the west and north of the property. In general, the basin slopes from southwest to northeast at varying slopes between 3-5%. For planning purposes and conceptual future storm drain sizing, we have assumed this basin will be developed with 80% impervious area and discharge into a future storm drain in future Oak Ridge Ave. If there is not adequate downstream infrastructure available when this basin is developed, then this site must fully retain their runoff and cannot be discharged into temporary public retention Pond A. Future Basin D-2 generates 19.96 cfs.

Future Basin D-3 includes a proposed temporary public retention Pond A and undeveloped area around the pond. In general, the basin slopes from west to east at varying slopes between 1-5%. Runoff is retained within temporary public retention Pond A. Future Basin D-3 generates 5.17 cfs.

Future Basin G-2 is an off-site public basin and consists of the proposed public street, Chatsworth Drive. Chatsworth Dr is proposed as future half-road improvements. In general, the basin slopes from south to north at varying slopes between 0.5%-1%. Runoff is collected in future drop inlets which discharges into the proposed temporary public retention Pond A in Basin D via storm drain within Chatsworth Dr. Exhibit 3 shows the proposed public and conceptual future public infrastructure. The proposed flow is 5.37 cfs.


Future Basin H-2 is an off-site basin and consists of the future half-street expansion of the proposed public street, Universe Blvd. In general, the basin slopes from north to south at 0.5%. Runoff in Universe Blvd continues south until it is collected in drop inlets immediately south of Woodmont Avenue which discharges directly into Pond K. The proposed flow is 1.81 cfs. This flow has been accounted for in the existing PCSWMM model.

The hydrologic data table below depicts in further detail each future public/private sub-basin and its characteristics.

TABLE 3.2.3 – HYDROLOGIC DATA – FUTURE PUBLIC/PRIVATE

HYDROLOGIC DATA – FUTURE PUBLIC/PRIVATE							
FUTURE SUB-BASIN	AREA (AC)	LAND USE PERCENTAGES				Q100 (CFS)	V100 (AC-FT)
		A	B	C	D		
D-1	4.67	0%	10%	10%	80%	18.63	0.818
D-2	5.00	0%	10%	10%	80%	19.96	0.876
D-3	1.29	0%	10%	10%	80%	5.17	0.227
G-2	1.28	0%	5%	5%	90%	5.37	0.242
H-2	0.43	0%	5%	5%	90%	1.81	0.081
TOTAL	12.67					50.94	2.244

3.2.4 PCSWMM MODEL REVISIONS

Per the (UPM DMP), Section 1.4. Boca Negra Diversion, the Universe Boulevard storm drain system is designed to convey 62 cfs from properties owned by the Trails Subdivision through existing ponds J & K. Due to Pond J losing volume, we propose sending more drainage into Pond K, raising the 100-yr water surface elevation 0.22 feet from 5407.86' to 5408.08'. Pond K will still have 2.22' of freeboard available with the increase in water surface elevation and a peak discharge of 44.61 cfs. We propose installing a 3.7' diameter orifice plate on the southern downstream outfall storm drain in storm drain manhole "SDMH-5A". The proposed Pond J has a maximum stored volume of 0.53 ac-ft, maximum inflow of 44.02 cfs, and maximum outflow of 30.77 cfs. In order to keep the hydraulic grade line below the existing manhole rim elevations, we propose installing a 24" storm drain out of the next storm drain manhole to the south into Pond K and installing a 3.5' diameter orifice plate in the Pond J manhole on the southern downstream outfall storm drain. The PCSWMM model included the offsite basin flows from Basin D discharging into Pond J, so we removed input hydrograph "12" from the model since the offsite flows do not discharge into Pond J they flow to proposed public Pond A. Also, input hydrograph "88" was revised from 12.31 cfs to 2.00 cfs to match the peak flow in Basin I. Also, after a field investigation it was discovered a 30" pipe discharges into Pond K at storm drain manhole "SDMH-5A". The 60" storm  connecting to Pond J has been reduced to 48" since it does not negatively impact the system and will be replaced during construction. Although the maximum outflow increased from Ponds J & K, due to the reduction of input hydrograph "88", the removal of input hydrograph "12", and the differences in the time to maximum HGL, the Universe Storm drain discharge improved from 61.88 cfs to 58.72 cfs and remains below the 62 cfs design capacity. Even though the flow discharging out of Pond K is increasing, the overall system is discharging less flow south to the Boca Negra Dam and, therefore, the rest of the system outside of Ponds J and K are not negatively impacted. The existing and proposed results for all of the ponds in the PCSWMM model, including Ponds J and K, an overview map of the PCSWMM model revisions, and an elevation comparison table are included in Appendix A. Exhibit 5 provides detailed grading information for Pond J.

4.0 HYDRAULICS

4.1 STREETS

Runoff flow rates and volumes for the hydraulic design of the Sonata Trails Unit 4 development are those calculated by the AHYMO model. Private street capacities were checked at certain locations throughout the roadways where flow runoff rates are critical. These include the proposed roadways in

Basins A, B, and C. The proposed public street capacities were calculated as well for their typical cross sections.

The maximum street capacity was determined for a given street section using ManningSolver Version 1.019 to ensure the design criteria mentioned in Section 2.0 of this report were met. Calculations for street capacities are shown in Appendix B.

4.2 STORM INLETS AND STORM DRAINS

Flow intercepted by drainage inlets were determined using the orifice and weir equations based on the City of Albuquerque Type "D" inlets. Flow quantities intercepted by curb inlets were determined using the Albuquerque DPM grating capacities rating curves for the appropriate inlets. All proposed storm drain capacities were determined using ManningSolver Version 1.019. The storm drain piping beneath the proposed public roads, Treeline and Chatsworth, were sized based on the full road width. For further information on drainage inlet and storm drain capacity calculations see Appendix B.

5.0 DRAINAGE COVENANTS

The existing drainage covenants for ponds J & K will need to be modified to account for the revisions made to pond J and Universe storm drain system. The modified covenant will be provided before the building permit is approved. A new drainage covenant for public Pond A will need to be written and submitted before building permit approval.

6.0 CONCLUSION

This drainage report is prepared in support of the new development for Sonata Trails Unit 4 Apartments. The existing site is undeveloped and the new development will include apartments, parking, landscaping, public roadways, public Pond A, and revising existing Pond J. The existing surge Pond J will be redesigned to allow for the development of the apartment complex sending more drainage to existing Pond K. The 100-year water surface elevation in Pond K increases from 5407.86' to 5408.08', a 0.22' increase. Pond K will have 2.22' of remaining freeboard and a peak flow of 44.61 cfs after the proposed increase. The peak discharge in the Universe storm drain system is designed to convey 62 cfs. The peak discharge in the Universe Boulevard storm drain system has been reduced from 61.88 cfs to 58.72 cfs, below the 62 cfs limit. The proposed 100-year, 10-day storm event volume, 4.64 ac-ft is fully retained in proposed temporary public retention Pond A. The proposed spillway for temporary public retention Pond A is wide to best replicate the sheet flow that historically discharges out of Basin D. Water discharging over the spillway from temporary public retention Pond A will only occur in emergency situations when the 100-year, 10-day storm event is exceeded.

As the surrounding properties are developed and capacity is made available, temporary public retention Pond A will ultimately discharge into the Upper Piedras Marcadas future 36" storm drain system within the future Oak Ridge Ave extension crossing Paseo Del Norte Blvd NE. We anticipate that the storm drain crossing Paseo Del Norte Blvd NE will be a 48" pipe rather than 36" as shown on Exhibit 2 to accommodate flows that will contribute to this system. The hydrologic calculations are included in Appendix A. The hydraulic calculations are included in Appendix B.

NAME: L:\Active Projects\04022 Sonata Trails Unit 4 Apartments\3. DWG\Onsite Plan Set\Exhibits\04022 Drainage Existing Conditions.dwg PLOT DATE: May 29, 2020 1:59pm

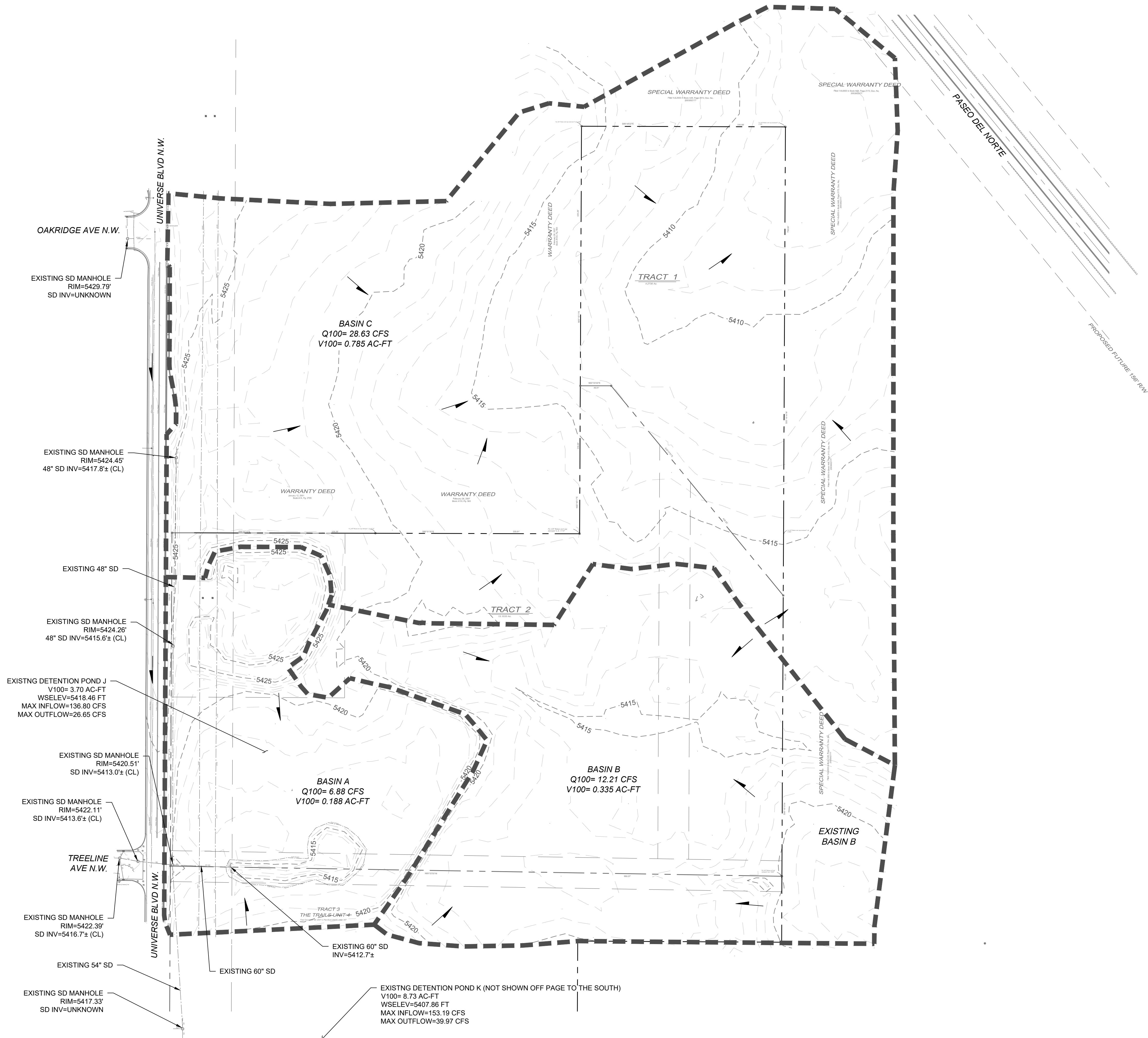


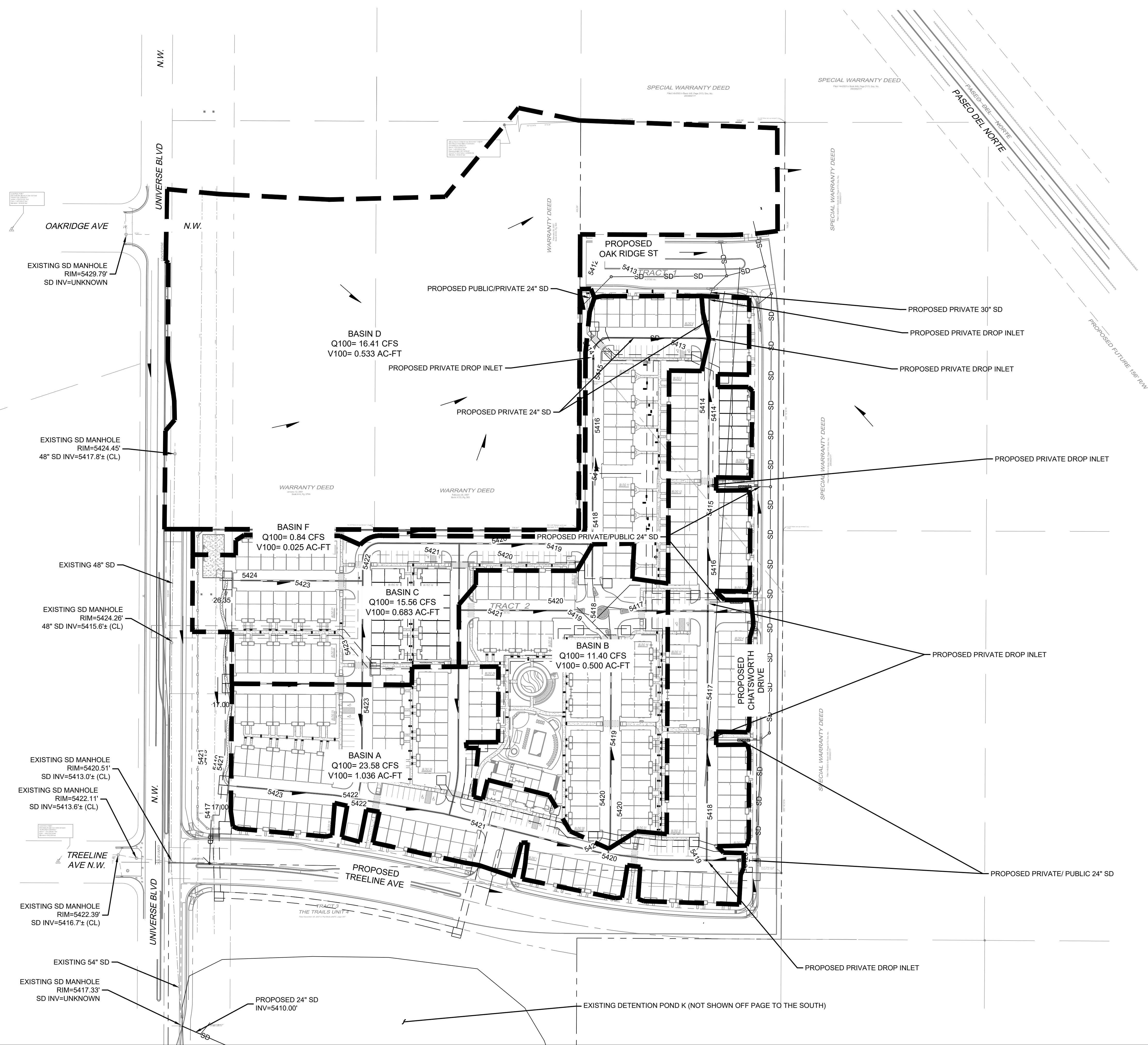
EXHIBIT 1 EXISTING BASINS



RESPEC

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5971 JEFFERSON STREET SUITE 101
ALBUQUERQUE, NEW MEXICO 87109
WWW.RESPEC.COM PHONE: (505)253-9718

NAME: L:\Active Projects\04022 Sonata Trails Unit 4 Apartments3. DWG\Onsite Plan Set\Exhibits\04022 Drainage Proposed Conditions.dwg PLOT DATE: Sep 02, 2020 11:31am



NOTE:
RUNOFF FROM PRIVATE PROPERTY THAT DISCHARGES DIRECTLY INTO THE RIGHT-OF-WAY
WILL BE EITHER SIDEWALK CULVERTS OR STORM DRAIN.

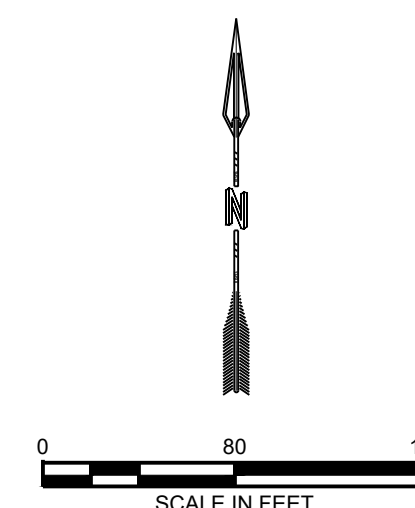
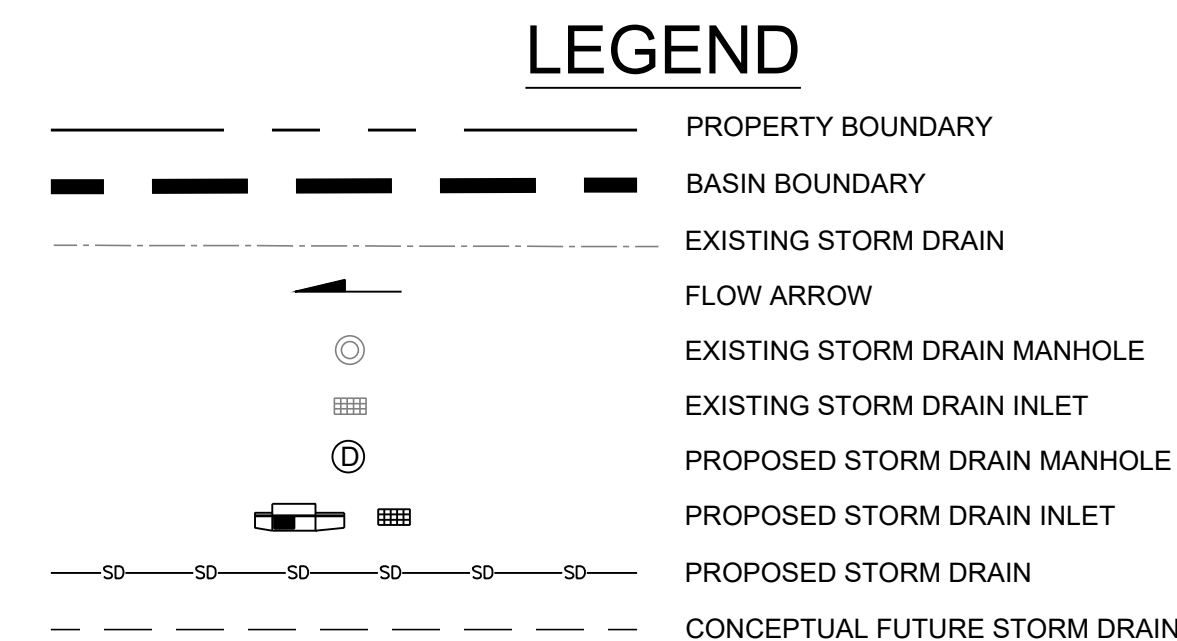
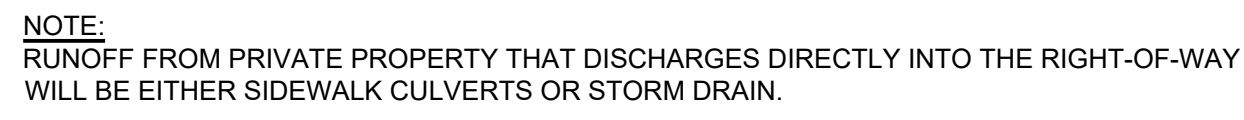


EXHIBIT 2 PROPOSED BASINS



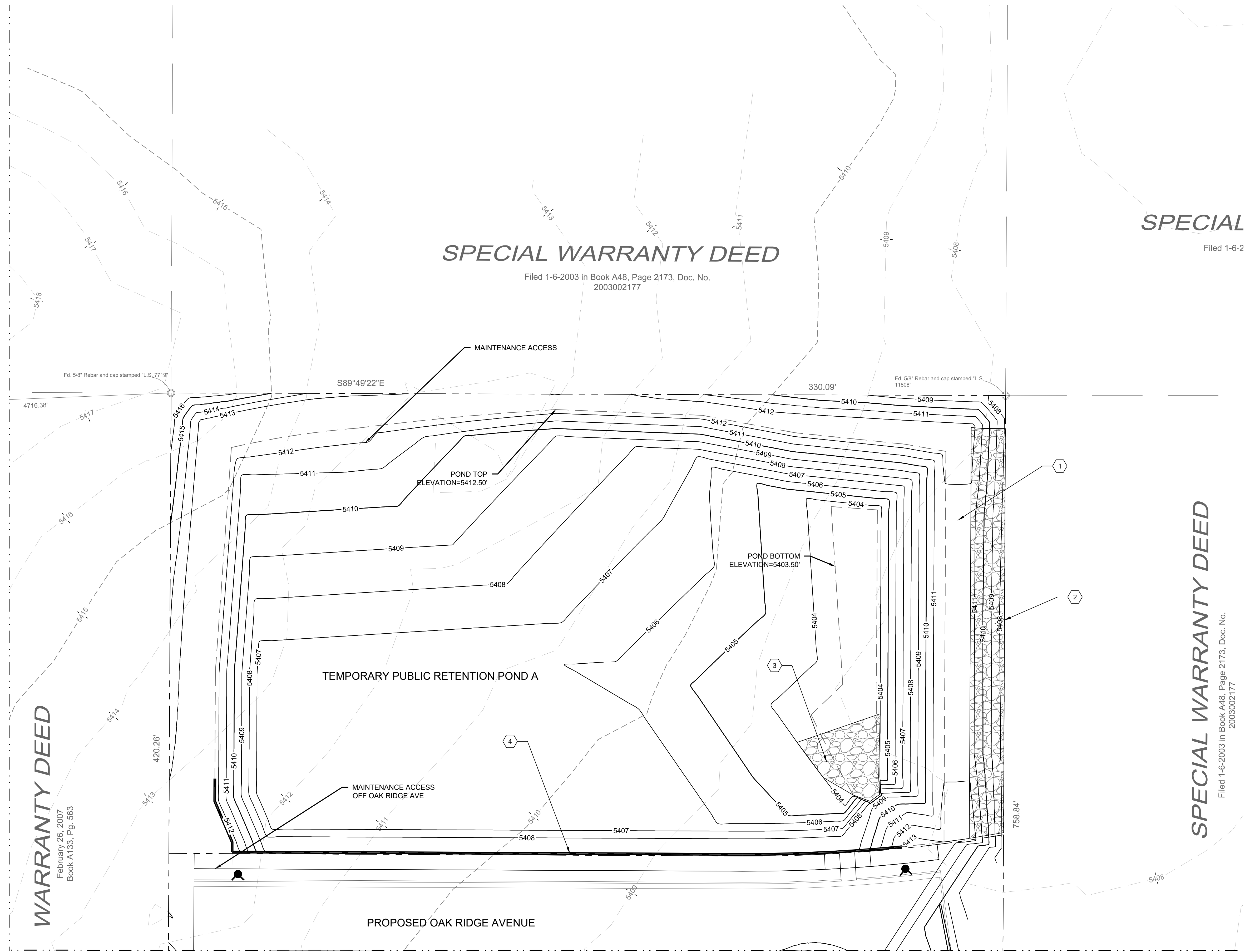
RESPEC

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ALBUQUERQUE, NEW MEXICO 87109
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NAME: L:\Active Projects\04022 Sonata Trails Unit 4 Apartments\3. DWG\Onsite Plan Set\Exhibits\04022 POND A.dwg PLOT DATE: Sep 03, 2020 2:33pm

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SPECIAL
Filed 1-6-2

SPECIAL WARRANTY DEED

LEGEND	
MAJOR CONTOUR	— 4985 —
MINOR CONTOUR	--- 4985 ---
EXISTING MAJOR CONTOUR	— 4985 —
EXISTING MINOR CONTOUR	--- 4985 ---
MATCHLINE	— · · —
SLOPE ARROW	→ 1.5% → 51.2%
SIDEWALK CULVERT	▨

KEYED NOTES

I.D.#	DESCRIPTION
1	1' OVERFLOW WEIR. TOP OF POND ELEVATION = 5412.50'. TOP OF WEIR ELEVATION = 5411.50'.
2	RIP RAP D50=8" DOWNSTREAM OF OVERFLOW WEIR.
3	RIP RAP D50=8" POND RUNDOWN.
4	WATERPROOF CMU RETAINING WALL. RETAINING WALL HEIGHT VARIES FROM 0'-6".

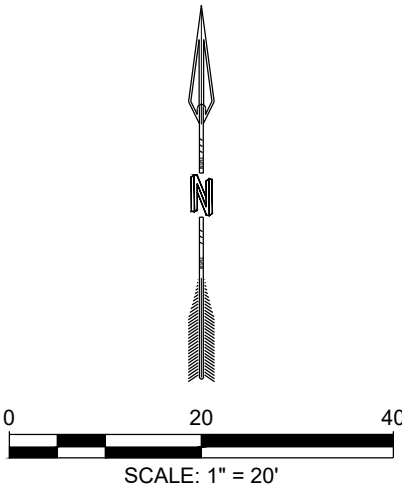
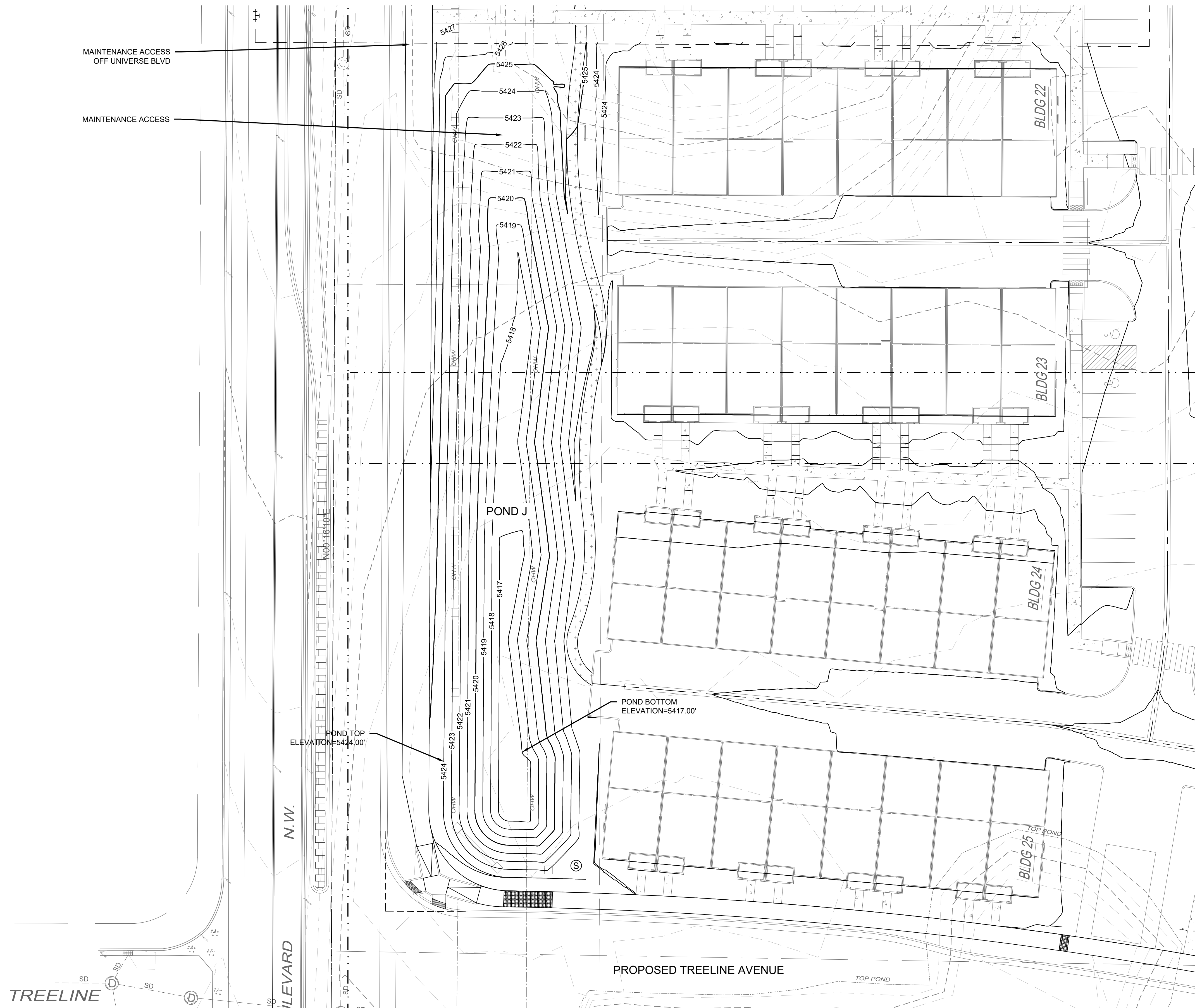



EXHIBIT 4 TEMPORARY PUBLIC
RETENTION POND A




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APPENDIX A

HYDROLOGIC CALCULATIONS



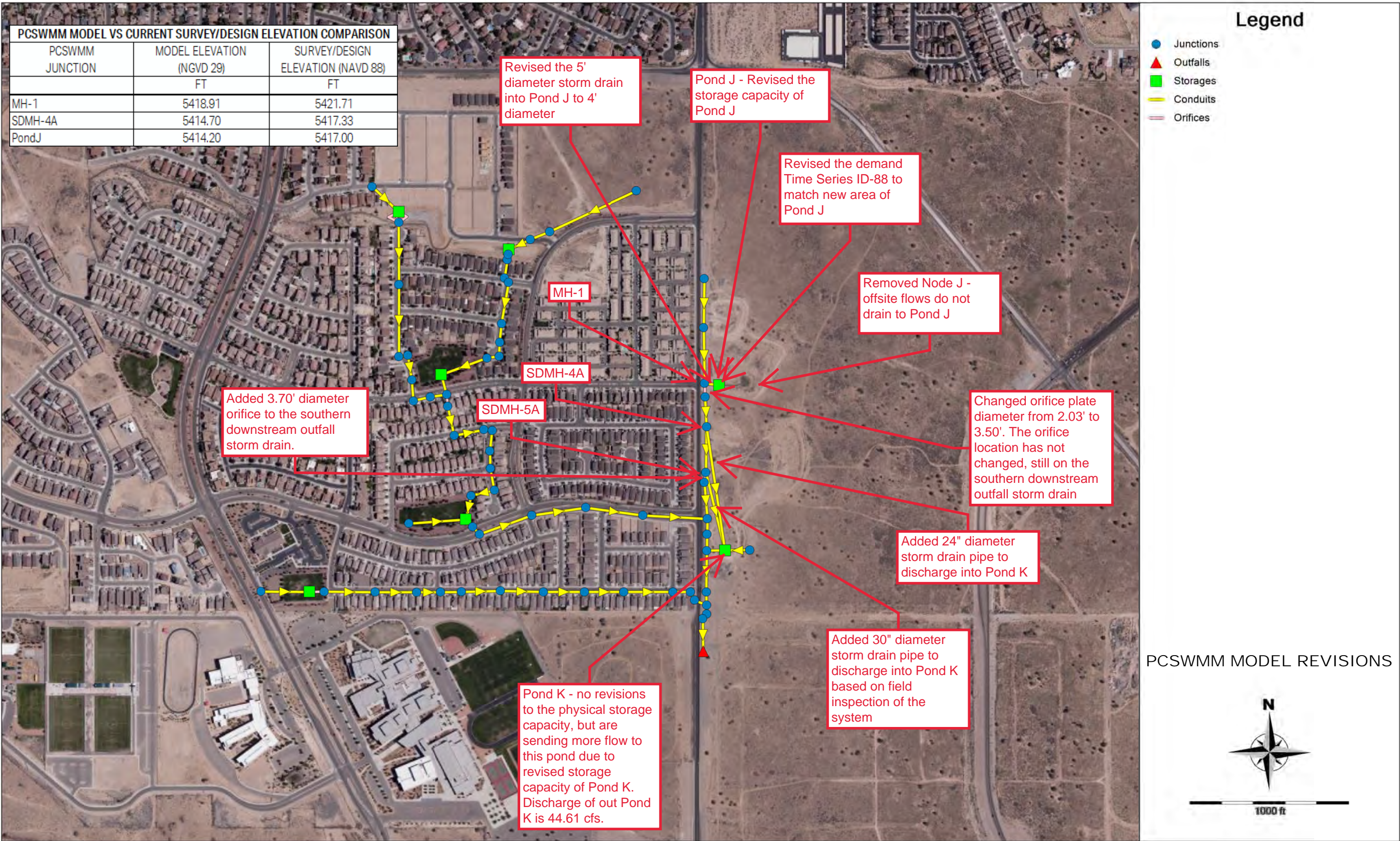
Water Quality:

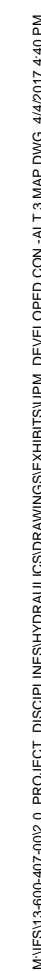
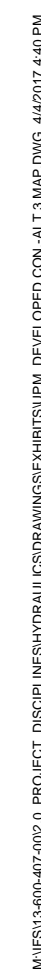
Required Water Quality volume for first flush of 0.34"

Basin	Volume (cu. ft.)	Volume Provided (cu. ft.)
Total Onsite Impervious Area	13,064	122,383

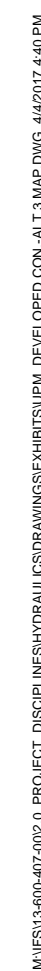
PCSWMM MODEL VS CURRENT SURVEY/DESIGN ELEVATION COMPARISON

PCSWMM JUNCTION	MODEL ELEVATION (NGVD 29)	SURVEY/DESIGN ELEVATION (NAVD 88)
	FT	FT
MH-1	5418.91	5421.71
SDMH-4A	5414.70	5417.33
PondJ	5414.20	5417.00





MAPS113400-4072002.0. PROJECT DISCIPLINES:HYDRA11358109:AVINGS:SHIRTS:IDM. DEVELOPER:CON-JAL T 3 MAP DWG. 4/6/2017 4:40 PM



Hydrology Calculations

The following calculations are based on Albuquerque's Development Process Manual, Section 22.2 (OLD DPM)

Runoff Rate:

Treatment Type Areas

Subbasin	Area _A (ac)	Area _B (ac)	Area _C (ac)	Area _D (ac)	Total (ac)
Proposed Basin A	0.00	0.59	0.59	4.72	5.91
Proposed Basin B	0.00	0.29	0.29	2.28	2.85
Proposed Basin C	0.00	0.39	0.39	3.12	3.90
Proposed Basin D	9.03	0.00	0.00	1.00	10.03
Proposed Basin E	0.00	0.11	0.11	0.41	0.64
Proposed Basin F	0.00	0.15	0.15	0.00	0.31
Proposed Basin G	0.00	0.15	0.15	2.70	2.99
Proposed Basin H	0.00	0.03	0.03	0.62	0.69
Proposed Basin I	0.00	0.02	0.02	0.43	0.47
Total	9.03	1.74	1.74	15.28	27.78
Pond A Total	9.03	1.68	1.68	14.23	26.62

Peak Discharge values based on Zone 1 from Table A-9

$$Q_A = 1.29 \text{ cfs/ac}$$

$$Q_B = 2.03 \text{ cfs/ac}$$

$$Q_C = 2.87 \text{ cfs/ac}$$

$$Q_D = 4.37 \text{ cfs/ac}$$

Peak Discharge values FOR THE 10-YR STORM EVENT based on Zone 1 from Table A-9

$$Q_A = 0.24 \text{ cfs/ac}$$

$$Q_B = 0.76 \text{ cfs/ac}$$

$$Q_C = 1.49 \text{ cfs/ac}$$

$$Q_D = 2.89 \text{ cfs/ac}$$

Peak Discharge calculation for a 100-yr, 24-hr storm event from equation A-10

Subbasin	Discharge (cfs)
Proposed Basin A	23.5
Proposed Basin B	11.4
Proposed Basin C	15.5
Proposed Basin D	16.0
Proposed Basin E	2.4
Proposed Basin F	0.8
Proposed Basin G	12.5
Proposed Basin H	2.9
Proposed Basin I	2.0
Total	82.1

Subbasin	Q10 (cfs)
Proposed Basin A	15.0
Proposed Basin B	7.2
Proposed Basin C	9.9
Proposed Basin D	5.1
Proposed Basin E	1.4
Proposed Basin F	0.3
Proposed Basin G	8.1
Proposed Basin H	1.9
Proposed Basin I	1.3
Total	47.1

Excess Precipitation values for 100-yr, 6hr storm based on Zone 1 from Table A-8

$$E_A = 0.44 \text{ in}$$

$$E_B = 0.67 \text{ in}$$

$$E_C = 0.99 \text{ in}$$

$$E_D = 1.97 \text{ in}$$

EXCESS PRECIPITATION

Weighted E (in)	V ₃₆₀ (ac-ft)	V _{10days} (ac-ft)
1.307	2.90	4.64

TEMPORARY PUBLIC RETENTION POND A - PROPOSED												
NAME	Q100-24HR EXISTING DISCHARGE	Q100-10DAY WEIR DISCHARGE	V100-24HR EXISTING VOLUME	V100-10DAY WEIR DISCHARGE	Q100-24HR MAX INFLOW	V100-10DAY MAX INFLOW VOLUME	VOLUME RETAINED	MAX WATER SURFACE ELEVATION	RETENTION VOLUME PROVIDED	TOP OF POND ELEVATION	SPILLWAY ELEVATION	BOTTOM OF POND ELEVATION
	CFS	CFS	AC-FT	AC-FT	CFS	AC-FT	AC-FT	FT	AC-FT	FT	FT	FT
POND-A	47.71	0.00	1.31	0.00	82.34	4.64	4.64	5411.40	4.71	5412.50	5411.50	5403.50

TEMPORARY PUBLIC RETENTION POND A				
Elevation	Area (Sq.Ft)	V (Cu.Ft)	Cum (Cu.Ft)	Cum (Ac.Ft)
5403.50	1918	0	0	0.00
5404.00	3421	1335	1335	0.03
5405.00	7164	5293	6627	0.15
5406.00	11749	9457	16084	0.37
5407.00	26579	19164	35248	0.81
5408.00	32142	29361	64608	1.48
5409.00	37959	35051	99659	2.29
5410.00	41815	39887	139546	3.20
5411.50	45504	65489	205035	4.71
5412.50	48297	46901	251936	5.78

EXISTING PCSWMM STORAGE SUMMARY											
NAME	POND BOTTOM	TOP OF POND	EMERGENCY SPILLWAY ELEVATION	DEPTH TO EMERGENCY SPILLWAY	MAX WATER SURFACE DEPTH	MAX HGL	TIME MAX HGL	MAX TOTAL INFLOW	FREEBOARD TO EMERGENCY SPILLWAY	MAX STORED VOLUME	MAX OUTFLOW
	FT	FT	FT	FT	FT	FT	H:M	CFS	FT	AC-FT	CFS
POND-D	5423.30	5432.30	5431.30	8.00	7.98	5431.28	6:58	159.24	0.02	6.42	14.80
POND-F	5415.08	5426.80	5424.33	9.25	8.16	5423.24	3:32	215.08	1.09	9.87	9.09
POND-F5	5419.30	5426.80	5426.30	7.00	6.91	5426.21	1:48	123.32	0.09	2.71	46.43
POND-G	5415.67	5424.00	5422.50	6.83	6.63	5422.30	14:01	117.66	0.20	6.88	15.80
POND-H	5418.65	5423.00	5422.00	3.35	3.28	5421.93	2:28	110.67	0.07	2.96	24.71
POND-J	5414.00	5418.00	5417.00	3.00	1.66	5415.66	2:03	136.06	1.34	3.70	26.64
POND-K	5404.85	5412.00	5410.30	5.45	3.01	5407.86	4:01	153.19	2.44	8.73	39.97

PROPOSED PCSWMM STORAGE SUMMARY											
NAME	POND BOTTOM	TOP OF POND	EMERGENCY SPILLWAY ELEVATION	DEPTH TO EMERGENCY SPILLWAY	MAX WATER SURFACE DEPTH	MAX HGL	TIME MAX HGL	MAX TOTAL INFLOW	FREEBOARD TO EMERGENCY SPILLWAY	MAX STORED VOLUME	MAX OUTFLOW
	FT	FT	FT	FT	FT	FT	H:M	CFS	FT	AC-FT	CFS
POND-D	5423.30	5432.30	5431.30	8.00	7.98	5431.28	6:58	159.24	0.02	6.42	14.80
POND-F	5415.08	5426.80	5424.33	9.25	8.16	5423.24	3:32	215.34	1.09	9.87	9.09
POND-F5	5419.30	5426.80	5426.30	7.00	6.91	5426.21	1:48	123.33	0.09	2.71	46.43
POND-G	5415.67	5424.00	5422.50	6.83	6.63	5422.30	14:00	117.16	0.20	6.88	15.80
POND-H	5418.65	5423.00	5422.00	3.35	3.28	5421.93	2:28	110.67	0.07	2.96	24.71
POND-J	5414.20	5421.20	5420.20	6.00	4.68	5418.88	1:36	44.02	1.32	0.53	30.77
POND-K	5404.85	5412.00	5410.30	5.45	3.23	5408.08	2:22	237.40	2.22	9.75	44.61

04022 Input.HMI

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* 100 YEAR RAINFALL TABLE
RAINFALL          TYPE=13  RAIN QUARTER=0 IN
                   RAIN ONE=1.87 IN  RAIN SIX=2.20 IN
                   RAIN DAY=2.66 IN  DT=0.033 HR
*****
*S EXISTING CONDITIONS

*S  COMPUTE HYD EXISTING BASIN A
COMPUTE NM HYD    ID=1  HYDNO=101  DA=0.00804SQ MI
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*S  COMPUTE HYD EXISTING BASIN B
COMPUTE NM HYD    ID=2  HYDNO=102  DA=0.01428SQ MI
                  PER A=100  PER B=0   PER C=0   PER D=0
                  TP=-0.13   RAIN=-1
PRINT HYD         ID=2  CODE=10

*S  COMPUTE HYD EXISTING BASIN C
COMPUTE NM HYD    ID=3  HYDNO=103  DA=0.03350SQ MI
                  PER A=100  PER B=0   PER C=0   PER D=0
                  TP=-0.13   RAIN=-1
PRINT HYD         ID=3  CODE=10

ADD HYD           ID=4  HYD=101T0102 ID I=1 II=2
PRINT HYD         ID=4  CODE=10

ADD HYD           ID=5  HYD=COMBINED101-102T0103 ID I=3 II=4
PRINT HYD         ID=5  CODE=10

*****
*S PROPOSED CONDITIONS

*S  COMPUTE HYD PROPOSED BASIN A
COMPUTE NM HYD    ID=6  HYDNO=104  DA=0.00923SQ MI
                  PER A=0   PER B=10  PER C=10  PER D=80
                  TP=-0.13   RAIN=-1
PRINT HYD         ID=6  CODE=10

*S  COMPUTE HYD PROPOSED BASIN B
COMPUTE NM HYD    ID=7  HYDNO=105  DA=0.00446SQ MI
                  PER A=0   PER B=10  PER C=10  PER D=80
                  TP=-0.13   RAIN=-1
PRINT HYD         ID=7  CODE=10

*S  COMPUTE HYD PROPOSED BASIN C
COMPUTE NM HYD    ID=8  HYDNO=106  DA=0.00609SQ MI
                  PER A=0   PER B=10  PER C=10  PER D=80
                  TP=-0.13   RAIN=-1
PRINT HYD         ID=8  CODE=10
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04022 Input.HMI

ADD HYD ID=10 HYD=BTOA ID I=6 II=7
PRINT HYD ID=10 CODE=10

ADD HYD ID=11 HYD=B-CTOA ID I=8 II=10
PRINT HYD ID=11 CODE=10

*S COMPUTE HYD PROPOSED BASIN D
COMPUTE NM HYD ID=12 HYDNO=107 DA=0.01567SQ MI
PER A=90 PER B=0 PER C=0 PER D=10
TP=-0.13 RAIN=-1
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*S COMPUTE HYD PROPOSED BASIN E
COMPUTE NM HYD ID=13 HYDNO=108 DA=0.00100SQ MI
PER A=0 PER B=17.5 PER C=17.5 PER D=65
TP=-0.13 RAIN=-1
PRINT HYD ID=13 CODE=10

*S COMPUTE HYD PROPOSED BASIN F
COMPUTE NM HYD ID=14 HYDNO=109 DA=0.00048SQ MI
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ADD HYD ID=15 HYD=DTOF ID I=12 II=14
PRINT HYD ID=15 CODE=10

ADD HYD ID=16 HYD=ETOF-D ID I=13 II=15
PRINT HYD ID=16 CODE=10

*S COMPUTE HYD PROPOSED BASIN G
COMPUTE NM HYD ID=17 HYDNO=110 DA=0.00468SQ MI
PER A=0 PER B=5 PER C=5 PER D=90
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*S COMPUTE HYD PROPOSED BASIN H
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ADD HYD ID=20 HYD=HTOI ID I=18 II=19
PRINT HYD ID=20 CODE=10

04022 Input.HMI

ADD HYD ID=21 HYD=A-CTOG ID I=11 II=17
PRINT HYD ID=21 CODE=10

ADD HYD ID=22 HYD=D-FTOA-DTOG ID I=16 II=21
PRINT HYD ID=22 CODE=10

*S FUTURE CONDITIONS

*S COMPUTE HYD FUTURE BASIN D-1

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*S COMPUTE HYD FUTURE BASIN D-2

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*S COMPUTE HYD FUTURE BASIN D-3

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*S COMPUTE HYD FUTURE BASIN G-2

COMPUTE NM HYD ID=26 HYDNO=116 DA=0.00200SQ MI
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TP=-0.13 RAIN=-1
PRINT HYD ID=26 CODE=10

*S COMPUTE HYD FUTURE BASIN H-2

COMPUTE NM HYD ID=27 HYDNO=117 DA=0.00067SQ MI
PER A=0 PER B=5 PER C=5 PER D=90
TP=-0.13 RAIN=-1
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ADD HYD ID=28 HYD=FULLROADWIDTH ID I=17 II=26
PRINT HYD ID=28 CODE=10

FINISH

04022 Input.HMI

AHYMO.OUT

AHYMO PROGRAM (AHYMO-S4) - Version: S4.02a - Rel:
02a

RUN DATE (MON/DAY/YR) = 09/01/2020
START TIME (HR:MIN:SEC) = 15:00:23 USER NO.=
AHYMO-S4TempUser05901704
INPUT FILE = y\ENG Tools\ahymo-s4-r2\ahymo-s4-r2\DISK1\program
files\AHYMO-S4\04022 Input.HMI

* 100 YEAR RAINFALL TABLE

RAINFALL TYPE=13 RAIN QUARTER=0 IN

RAIN ONE=1.87 IN RAIN SIX=2.20 IN

RAIN DAY=2.66 IN DT=0.033 HR

COMPUTED 24-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS
2 - PEAK AT 1.40 HR.

DT =	0.033000 HOURS	END TIME =	23.990999 HOURS
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0.0066	0.0084	0.0102	0.0120
0.0139	0.0158	0.0178	0.0198
0.0219	0.0240	0.0262	0.0285
0.0308	0.0332	0.0357	0.0383
0.0409	0.0437	0.0465	0.0495
0.0526	0.0558	0.0592	0.0627
0.0664	0.0704	0.0745	0.0793
0.0847	0.0904	0.0983	0.1220
0.1595	0.2144	0.2903	0.3910
0.5206	0.6830	0.8823	1.1227
1.2303	1.3056	1.3716	1.4312
1.4859	1.5365	1.5836	1.6278
1.6693	1.7085	1.7455	1.7805
1.8136	1.8451	1.8749	1.9032
1.9301	1.9482	1.9541	1.9597
1.9650	1.9700	1.9749	1.9795
1.9840	1.9883	1.9925	1.9965
2.0004	2.0041	2.0078	2.0114
2.0148	2.0182	2.0215	2.0247
2.0278	2.0309	2.0339	2.0368
2.0396	2.0425	2.0452	2.0479
2.0506	2.0532	2.0557	2.0582
2.0607	2.0631	2.0655	2.0678
2.0702	2.0724	2.0747	2.0769
2.0791	2.0812	2.0833	2.0854
2.0875	2.0895	2.0915	2.0935
2.0955	2.0974	2.0993	2.1012
2.1031	2.1049	2.1067	2.1086
2.1103	2.1121	2.1139	2.1156
2.1173	2.1190	2.1207	2.1223
2.1240	2.1256	2.1272	2.1288
2.1304	2.1320	2.1335	2.1351
2.1366	2.1381	2.1396	2.1411
2.1426	2.1440	2.1455	2.1469
2.1484	2.1498	2.1512	2.1526
2.1540	2.1553	2.1567	2.1581
2.1594	2.1607	2.1621	2.1634
2.1647	2.1660	2.1673	2.1686
2.1698	2.1711	2.1723	2.1736
2.1748	2.1761	2.1773	2.1785
2.1797	2.1809	2.1821	2.1833
2.1844	2.1856	2.1868	2.1879
2.1891	2.1902	2.1913	2.1925
2.1936	2.1947	2.1958	2.1969
2.1980	2.1991	2.2002	2.2015
2.2028	2.2041	2.2054	2.2067
2.2080	2.2092	2.2105	2.2118
2.2130	2.2143	2.2156	2.2168
2.2181	2.2193	2.2206	2.2218
2.2231	2.2243	2.2255	2.2268
2.2280	2.2292	2.2305	2.2317
2.2329	2.2341		

AHYMO.OUT

2.2354	2.2366	2.2378	2.2390	2.2402	2.2414	2.2426
2.2438	2.2450	2.2462	2.2474	2.2486	2.2497	2.2509
2.2521	2.2533	2.2545	2.2556	2.2568	2.2580	2.2591
2.2603	2.2615	2.2626	2.2638	2.2649	2.2661	2.2672
2.2684	2.2695	2.2706	2.2718	2.2729	2.2741	2.2752
2.2763	2.2774	2.2786	2.2797	2.2808	2.2819	2.2830
2.2842	2.2853	2.2864	2.2875	2.2886	2.2897	2.2908
2.2919	2.2930	2.2941	2.2952	2.2963	2.2974	2.2984
2.2995	2.3006	2.3017	2.3028	2.3038	2.3049	2.3060
2.3071	2.3081	2.3092	2.3103	2.3113	2.3124	2.3134
2.3145	2.3155	2.3166	2.3176	2.3187	2.3197	2.3208
2.3218	2.3229	2.3239	2.3249	2.3260	2.3270	2.3280
2.3291	2.3301	2.3311	2.3321	2.3331	2.3342	2.3352
2.3362	2.3372	2.3382	2.3392	2.3402	2.3413	2.3423
2.3433	2.3443	2.3453	2.3463	2.3473	2.3482	2.3492
2.3502	2.3512	2.3522	2.3532	2.3542	2.3552	2.3561
2.3571	2.3581	2.3591	2.3600	2.3610	2.3620	2.3630
2.3639	2.3649	2.3659	2.3668	2.3678	2.3687	2.3697
2.3706	2.3716	2.3726	2.3735	2.3745	2.3754	2.3763
2.3773	2.3782	2.3792	2.3801	2.3811	2.3820	2.3829
2.3839	2.3848	2.3857	2.3867	2.3876	2.3885	2.3894
2.3904	2.3913	2.3922	2.3931	2.3940	2.3950	2.3959
2.3968	2.3977	2.3986	2.3995	2.4004	2.4013	2.4022
2.4031	2.4040	2.4049	2.4058	2.4067	2.4076	2.4085
2.4094	2.4103	2.4112	2.4121	2.4130	2.4139	2.4148
2.4156	2.4165	2.4174	2.4183	2.4192	2.4200	2.4209
2.4218	2.4227	2.4235	2.4244	2.4253	2.4261	2.4270
2.4279	2.4287	2.4296	2.4305	2.4313	2.4322	2.4330
2.4339	2.4348	2.4356	2.4365	2.4373	2.4382	2.4390
2.4399	2.4407	2.4416	2.4424	2.4432	2.4441	2.4449
2.4458	2.4466	2.4474	2.4483	2.4491	2.4499	2.4508
2.4516	2.4524	2.4533	2.4541	2.4549	2.4557	2.4566
2.4574	2.4582	2.4590	2.4599	2.4607	2.4615	2.4623
2.4631	2.4639	2.4647	2.4656	2.4664	2.4672	2.4680
2.4688	2.4696	2.4704	2.4712	2.4720	2.4728	2.4736
2.4744	2.4752	2.4760	2.4768	2.4776	2.4784	2.4792
2.4800	2.4808	2.4816	2.4823	2.4831	2.4839	2.4847
2.4855	2.4863	2.4871	2.4878	2.4886	2.4894	2.4902
2.4910	2.4917	2.4925	2.4933	2.4941	2.4948	2.4956
2.4964	2.4971	2.4979	2.4987	2.4994	2.5002	2.5010
2.5017	2.5025	2.5033	2.5040	2.5048	2.5055	2.5063
2.5070	2.5078	2.5086	2.5093	2.5101	2.5108	2.5116
2.5123	2.5131	2.5138	2.5146	2.5153	2.5161	2.5168
2.5175	2.5183	2.5190	2.5198	2.5205	2.5212	2.5220
2.5227	2.5235	2.5242	2.5249	2.5257	2.5264	2.5271
2.5279	2.5286	2.5293	2.5300	2.5308	2.5315	2.5322
2.5329	2.5337	2.5344	2.5351	2.5358	2.5366	2.5373
2.5380	2.5387	2.5394	2.5401	2.5409	2.5416	2.5423
2.5430	2.5437	2.5444	2.5451	2.5458	2.5465	2.5472
2.5480	2.5487	2.5494	2.5501	2.5508	2.5515	2.5522
2.5529	2.5536	2.5543	2.5550	2.5557	2.5564	2.5571

AHYMO.OUT

2.5578	2.5585	2.5591	2.5598	2.5605	2.5612	2.5619
2.5626	2.5633	2.5640	2.5647	2.5654	2.5660	2.5667
2.5674	2.5681	2.5688	2.5695	2.5701	2.5708	2.5715
2.5722	2.5729	2.5735	2.5742	2.5749	2.5756	2.5762
2.5769	2.5776	2.5782	2.5789	2.5796	2.5803	2.5809
2.5816	2.5823	2.5829	2.5836	2.5843	2.5849	2.5856
2.5863	2.5869	2.5876	2.5882	2.5889	2.5896	2.5902
2.5909	2.5915	2.5922	2.5928	2.5935	2.5942	2.5948
2.5955	2.5961	2.5968	2.5974	2.5981	2.5987	2.5994
2.6000	2.6007	2.6013	2.6020	2.6026	2.6032	2.6039
2.6045	2.6052	2.6058	2.6065	2.6071	2.6077	2.6084
2.6090	2.6097	2.6103	2.6109	2.6116	2.6122	2.6128
2.6135	2.6141	2.6147	2.6154	2.6160	2.6166	2.6173
2.6179	2.6185	2.6191	2.6198	2.6204	2.6210	2.6217
2.6223	2.6229	2.6235	2.6241	2.6248	2.6254	2.6260
2.6266	2.6273	2.6279	2.6285	2.6291	2.6297	2.6303
2.6310	2.6316	2.6322	2.6328	2.6334	2.6340	2.6346
2.6353	2.6359	2.6365	2.6371	2.6377	2.6383	2.6389
2.6395	2.6401	2.6407	2.6413	2.6420	2.6426	2.6432
2.6438	2.6444	2.6450	2.6456	2.6462	2.6468	2.6474
2.6480	2.6486	2.6492	2.6498	2.6504	2.6510	2.6516
2.6522	2.6527	2.6533	2.6539	2.6545	2.6551	2.6557
2.6563	2.6569	2.6575	2.6581	2.6587	2.6593	2.6598

*S EXISTING CONDITIONS

*S COMPUTE HYD EXISTING BASIN A

COMPUTE NM HYD ID=1 HYDNO=101 DA=0.00804SQ MI

PER A=100 PER B=0 PER C=0 PER D=0

TP=-0.13 RAIN=-1

K = 0.159632HR TP = 0.130000HR K/TP RATIO = 1.227936
 SHAPE CONSTANT, N = 2.899626
 UNIT PEAK = 16.917 CFS UNIT VOLUME = 0.9988 B =
 273.54 P60 = 1.8700
 AREA = 0.008040 SQ MI IA = 0.65000 INCHES INF =
 1.67000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD -
 DT = 0.033000

PRINT HYD ID=1 CODE=10

AHYMO.OUT

PARTIAL HYDROGRAPH 101.00

TIME	FLOW	TIME	FLOW	TIME	FLOW
TIME	FLOW	TIME	FLOW		
HRS	CFS	HRS	CFS	HRS	CFS
HRS	CFS	HRS	CFS		
0.000	0.0	0.990	0.0	1.980	0.7
2.970	0.1	3.960	0.0		
0.330	0.0	1.320	0.0	2.310	0.3
3.300	0.0	4.290	0.0		
0.660	0.0	1.650	4.1	2.640	0.2
3.630	0.0				

RUNOFF VOLUME = 0.43934 INCHES = 0.1884 ACRE-Feet
 PEAK DISCHARGE RATE = 6.88 CFS AT 1.518 HOURS BASIN AREA =
 0.0080 SQ. MI.

*S COMPUTE HYD EXISTING BASIN B

COMPUTE NM HYD ID=2 HYDNO=102 DA=0.01428SQ MI

PER A=100 PER B=0 PER C=0 PER D=0

TP=-0.13 RAIN=-1

K = 0.159632HR TP = 0.130000HR K/TP RATIO = 1.227936
 SHAPE CONSTANT, N = 2.899626
 UNIT PEAK = 30.047 CFS UNIT VOLUME = 0.9991 B =
 273.54 P60 = 1.8700
 AREA = 0.014280 SQ MI IA = 0.65000 INCHES INF =
 1.67000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD -
 DT = 0.033000

PRINT HYD ID=2 CODE=10

PARTIAL HYDROGRAPH 102.00

TIME	FLOW	TIME	FLOW	TIME	FLOW
TIME	FLOW	TIME	FLOW		
HRS	CFS	HRS	CFS	HRS	CFS
HRS	CFS	HRS	CFS		
0.000	0.0	0.990	0.0	1.980	1.2
2.970	0.1	3.960	0.0		
0.330	0.0	1.320	0.0	2.310	0.6

			AHYMO.OUT			
3.300	0.1	4.290	0.0			
0.660	0.0	1.650	7.3	2.640	0.3	
3.630	0.0	4.620	0.0			

RUNOFF VOLUME = 0.43934 INCHES = 0.3346 ACRE-FEET
 PEAK DISCHARGE RATE = 12.21 CFS AT 1.518 HOURS BASIN AREA =
 0.0143 SQ. MI.

*S COMPUTE HYD EXISTING BASIN C

COMPUTE NM HYD ID=3 HYDNO=103 DA=0.03350SQ MI

PER A=100 PER B=0 PER C=0 PER D=0

TP=-0.13 RAIN=-1

K = 0.159632HR TP = 0.130000HR K/TP RATIO = 1.227936
 SHAPE CONSTANT, N = 2.899626
 UNIT PEAK = 70.489 CFS UNIT VOLUME = 0.9994 B =
 273.54 P60 = 1.8700
 AREA = 0.033500 SQ MI IA = 0.65000 INCHES INF =
 1.67000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD -
 DT = 0.033000

PRINT HYD ID=3 CODE=10

PARTIAL HYDROGRAPH 103.00

TIME	FLOW	TIME	FLOW	TIME	FLOW
TIME	FLOW	TIME	FLOW		
HRS	CFS	HRS	CFS	HRS	CFS
HRS	CFS	HRS	CFS		
0.000	0.0	1.320	0.0	2.640	0.7
3.960	0.0				
0.330	0.0	1.650	17.1	2.970	0.3
4.290	0.0				
0.660	0.0	1.980	2.7	3.300	0.2
4.620	0.0				
0.990	0.0	2.310	1.3	3.630	0.1
4.950	0.0				

RUNOFF VOLUME = 0.43934 INCHES = 0.7850 ACRE-FEET
 PEAK DISCHARGE RATE = 28.63 CFS AT 1.518 HOURS BASIN AREA =
 0.0335 SQ. MI.

AHYMO.OUT

ADD HYD

ID=4 HYD=101T0102 ID I=1 II=2

PRINT HYD

ID=4 CODE=10

HYDROGRAPH FROM AREA 101T0102

TIME	FLOW	TIME	FLOW	TIME	FLOW
TIME	FLOW	TIME	FLOW		
HRS	CFS	HRS	CFS	HRS	CFS
HRS	CFS	HRS	CFS		
0.000	0.0	0.990	0.0	1.980	1.8
2.970	0.2	3.960	0.0		
0.330	0.0	1.320	0.0	2.310	0.9
3.300	0.1	4.290	0.0		
0.660	0.0	1.650	11.4	2.640	0.4
3.630	0.1	4.620	0.0		

RUNOFF VOLUME = 0.43933 INCHES = 0.5230 ACRE-FEET
 PEAK DISCHARGE RATE = 19.08 CFS AT 1.518 HOURS BASIN AREA =
 0.0223 SQ. MI.

ADD HYD

ID=5 HYD=COMBINED101-102T0103 ID I=3 II=4

PRINT HYD

ID=5 CODE=10

HYDROGRAPH FROM AREA

COMBINED101-102T0103

TIME	FLOW	TIME	FLOW	TIME	FLOW
TIME	FLOW	TIME	FLOW		
HRS	CFS	HRS	CFS	HRS	CFS
HRS	CFS	HRS	CFS		
0.000	0.0	1.320	0.0	2.640	1.1
3.960	0.1				
0.330	0.0	1.650	28.5	2.970	0.6
4.290	0.0				
0.660	0.0	1.980	4.5	3.300	0.3
4.620	0.0				
0.990	0.0	2.310	2.2	3.630	0.1

AHYMO.OUT

4.950 0.0

RUNOFF VOLUME = 0.43934 INCHES = 1.3079 ACRE-FEET
 PEAK DISCHARGE RATE = 47.71 CFS AT 1.518 HOURS BASIN AREA =
 0.0558 SQ. MI.

*S PROPOSED CONDITIONS

*S COMPUTE HYD PROPOSED BASIN A

COMPUTE NM HYD ID=6 HYDNO=104 DA=0.00923SQ MI

PER A=0 PER B=10 PER C=10 PER D=80

TP=-0.13 RAIN=-1

K = 0.070850HR TP = 0.130000HR K/TP RATIO = 0.545000
 SHAPE CONSTANT, N = 7.106428
 UNIT PEAK = 29.892 CFS UNIT VOLUME = 0.9994 B =
 526.28 P60 = 1.8700
 AREA = 0.007384 SQ MI IA = 0.10000 INCHES INF =
 0.04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD -
 DT = 0.033000

K = 0.115497HR TP = 0.130000HR K/TP RATIO = 0.888442
 SHAPE CONSTANT, N = 3.992344
 UNIT PEAK = 5.0362 CFS UNIT VOLUME = 0.9977 B =
 354.66 P60 = 1.8700
 AREA = 0.001846 SQ MI IA = 0.42500 INCHES INF =
 1.04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD -
 DT = 0.033000

PRINT HYD ID=6 CODE=10

PARTIAL HYDROGRAPH 104.00

TIME	FLOW	TIME	FLOW	TIME	FLOW
TIME	FLOW	TIME	FLOW		

		AHYMO.OUT			
HRS	CFS	HRS	CFS	HRS	CFS
0.000	0.0	5.280	0.1	10.560	0.1
15.840	0.1	21.120	0.1		
0.330	0.0	5.610	0.1	10.890	0.1
16.170	0.1	21.450	0.1		
0.660	0.0	5.940	0.1	11.220	0.1
16.500	0.1	21.780	0.1		
0.990	0.0	6.270	0.2	11.550	0.1
16.830	0.1	22.110	0.1		
1.320	5.7	6.600	0.2	11.880	0.1
17.160	0.1	22.440	0.1		
1.650	12.6	6.930	0.2	12.210	0.1
17.490	0.1	22.770	0.1		
1.980	5.6	7.260	0.2	12.540	0.1
17.820	0.1	23.100	0.1		
2.310	1.2	7.590	0.2	12.870	0.1
18.150	0.1	23.430	0.1		
2.640	0.5	7.920	0.2	13.200	0.1
18.480	0.1	23.760	0.1		
2.970	0.3	8.250	0.2	13.530	0.1
18.810	0.1	24.090	0.1		
3.300	0.2	8.580	0.2	13.860	0.1
19.140	0.1	24.420	0.0		
3.630	0.1	8.910	0.2	14.190	0.1
19.470	0.1	24.750	0.0		
3.960	0.1	9.240	0.2	14.520	0.1
19.800	0.1				
4.290	0.1	9.570	0.2	14.850	0.1
20.130	0.1				
4.620	0.1	9.900	0.1	15.180	0.1
20.460	0.1				
4.950	0.1	10.230	0.1	15.510	0.1
20.790	0.1				

RUNOFF VOLUME = 2.10390 INCHES = 1.0357 ACRE-FEET
 PEAK DISCHARGE RATE = 23.58 CFS AT 1.485 HOURS BASIN AREA =
 0.0092 SQ. MI.

*S COMPUTE HYD PROPOSED BASIN B

COMPUTE NM HYD ID=7 HYDNO=105 DA=0.00446SQ MI

PER A=0 PER B=10 PER C=10 PER D=80

TP=-0.13 RAIN=-1

AHYMO.OUT

K = 0.070850HR TP = 0.130000HR K/TP RATIO = 0.545000
 SHAPE CONSTANT, N = 7.106428
 UNIT PEAK = 14.444 CFS UNIT VOLUME = 0.9991 B =
 526.28 P60 = 1.8700
 AREA = 0.003568 SQ MI IA = 0.10000 INCHES INF =
 0.04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD -
 DT = 0.033000

K = 0.115497HR TP = 0.130000HR K/TP RATIO = 0.888442
 SHAPE CONSTANT, N = 3.992344
 UNIT PEAK = 2.4335 CFS UNIT VOLUME = 0.9951 B =
 354.66 P60 = 1.8700
 AREA = 0.000892 SQ MI IA = 0.42500 INCHES INF =
 1.04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD -
 DT = 0.033000

PRINT HYD ID=7 CODE=10

PARTIAL HYDROGRAPH 105.00

TIME	FLOW	TIME	FLOW	TIME	FLOW
TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS
HRS	CFS	HRS	CFS	HRS	CFS
0.000	0.0	4.950	0.1	9.900	0.1
14.850	0.1	19.800	0.0	10.230	0.1
0.330	0.0	5.280	0.1	10.560	0.1
15.180	0.1	20.130	0.0	10.890	0.1
0.660	0.0	5.610	0.1	11.220	0.1
15.510	0.1	20.460	0.0	11.550	0.1
0.990	0.0	5.940	0.1	11.880	0.1
15.840	0.1	20.790	0.0	12.210	0.1
1.320	2.8	6.270	0.1	12.540	0.1
16.170	0.1	21.120	0.0	12.870	0.1
1.650	6.1	6.600	0.1	13.200	0.1
16.500	0.1	21.450	0.0		
1.980	2.7	6.930	0.1		
16.830	0.1	21.780	0.0		
2.310	0.6	7.260	0.1		
17.160	0.1	22.110	0.0		
2.640	0.2	7.590	0.1		
17.490	0.1	22.440	0.0		
2.970	0.1	7.920	0.1		
17.820	0.1	22.770	0.0		
3.300	0.1	8.250	0.1		
18.150	0.0	23.100	0.0		

AHYMO.OUT					
3.630	0.1	8.580	0.1	13.530	0.1
18.480	0.0	23.430	0.0		
3.960	0.1	8.910	0.1	13.860	0.1
18.810	0.0	23.760	0.0		
4.290	0.1	9.240	0.1	14.190	0.1
19.140	0.0	24.090	0.0		
4.620	0.1	9.570	0.1	14.520	0.1
19.470	0.0	24.420	0.0		

RUNOFF VOLUME = 2.10390 INCHES = 0.5004 ACRE-FEET
 PEAK DISCHARGE RATE = 11.40 CFS AT 1.485 HOURS BASIN AREA =
 0.0045 SQ. MI.

*S COMPUTE HYD PROPOSED BASIN C

COMPUTE NM HYD ID=8 HYDNO=106 DA=0.00609SQ MI

PER A=0 PER B=10 PER C=10 PER D=80

TP=-0.13 RAIN=-1

K = 0.070850HR TP = 0.130000HR K/TP RATIO = 0.545000
 SHAPE CONSTANT, N = 7.106428
 UNIT PEAK = 19.723 CFS UNIT VOLUME = 0.9993 B =
 526.28 P60 = 1.8700
 AREA = 0.004872 SQ MI IA = 0.10000 INCHES INF =
 0.04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD -
 DT = 0.033000

K = 0.115497HR TP = 0.130000HR K/TP RATIO = 0.888442
 SHAPE CONSTANT, N = 3.992344
 UNIT PEAK = 3.3229 CFS UNIT VOLUME = 0.9964 B =
 354.66 P60 = 1.8700
 AREA = 0.001218 SQ MI IA = 0.42500 INCHES INF =
 1.04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD -
 DT = 0.033000

PRINT HYD ID=8 CODE=10

PARTIAL HYDROGRAPH 106.00

TIME	FLOW	TIME	FLOW	TIME	FLOW
------	------	------	------	------	------

		AHYMO.OUT					
TIME		FLOW		TIME		FLOW	
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
0.000	0.0	4.950	0.1	9.900	0.1		
14.850	0.1	19.800	0.1				
0.330	0.0	5.280	0.1	10.230	0.1		
15.180	0.1	20.130	0.1				
0.660	0.0	5.610	0.1	10.560	0.1		
15.510	0.1	20.460	0.1				
0.990	0.0	5.940	0.1	10.890	0.1		
15.840	0.1	20.790	0.1				
1.320	3.8	6.270	0.1	11.220	0.1		
16.170	0.1	21.120	0.1				
1.650	8.3	6.600	0.1	11.550	0.1		
16.500	0.1	21.450	0.1				
1.980	3.7	6.930	0.1	11.880	0.1		
16.830	0.1	21.780	0.1				
2.310	0.8	7.260	0.1	12.210	0.1		
17.160	0.1	22.110	0.1				
2.640	0.3	7.590	0.1	12.540	0.1		
17.490	0.1	22.440	0.1				
2.970	0.2	7.920	0.1	12.870	0.1		
17.820	0.1	22.770	0.1				
3.300	0.1	8.250	0.1	13.200	0.1		
18.150	0.1	23.100	0.1				
3.630	0.1	8.580	0.1	13.530	0.1		
18.480	0.1	23.430	0.1				
3.960	0.1	8.910	0.1	13.860	0.1		
18.810	0.1	23.760	0.1				
4.290	0.1	9.240	0.1	14.190	0.1		
19.140	0.1	24.090	0.0				
4.620	0.1	9.570	0.1	14.520	0.1		
19.470	0.1	24.420	0.0				

RUNOFF VOLUME = 2.10390 INCHES = 0.6833 ACRE-FEET
 PEAK DISCHARGE RATE = 15.56 CFS AT 1.485 HOURS BASIN AREA =
 0.0061 SQ. MI.

ADD HYD ID=10 HYD=BTOA ID I=6 II=7

PRINT HYD ID=10 CODE=10

HYDROGRAPH FROM AREA BTOA

TIME	FLOW	TIME	FLOW	TIME	FLOW
------	------	------	------	------	------

		AHYMO.OUT			
TIME	FLOW	TIME	FLOW		
HRS	CFS	HRS	CFS	HRS	CFS
HRS	CFS	HRS	CFS		
0.000	0.0	5.280	0.2	10.560	0.2
15.840	0.2	21.120	0.1		
0.330	0.0	5.610	0.2	10.890	0.2
16.170	0.2	21.450	0.1		
0.660	0.0	5.940	0.2	11.220	0.2
16.500	0.2	21.780	0.1		
0.990	0.0	6.270	0.3	11.550	0.2
16.830	0.2	22.110	0.1		
1.320	8.5	6.600	0.3	11.880	0.2
17.160	0.2	22.440	0.1		
1.650	18.7	6.930	0.3	12.210	0.2
17.490	0.2	22.770	0.1		
1.980	8.3	7.260	0.3	12.540	0.2
17.820	0.2	23.100	0.1		
2.310	1.8	7.590	0.3	12.870	0.2
18.150	0.2	23.430	0.1		
2.640	0.7	7.920	0.2	13.200	0.2
18.480	0.2	23.760	0.1		
2.970	0.4	8.250	0.2	13.530	0.2
18.810	0.1	24.090	0.1		
3.300	0.2	8.580	0.2	13.860	0.2
19.140	0.1	24.420	0.0		
3.630	0.2	8.910	0.2	14.190	0.2
19.470	0.1	24.750	0.0		
3.960	0.2	9.240	0.2	14.520	0.2
19.800	0.1				
4.290	0.2	9.570	0.2	14.850	0.2
20.130	0.1				
4.620	0.2	9.900	0.2	15.180	0.2
20.460	0.1				
4.950	0.2	10.230	0.2	15.510	0.2
20.790	0.1				

RUNOFF VOLUME = 2.10386 INCHES = 1.5361 ACRE-FEET
 PEAK DISCHARGE RATE = 34.98 CFS AT 1.485 HOURS BASIN AREA =
 0.0137 SQ. MI.

ADD HYD ID=11 HYD=B-CTOA ID I=8 II=10

PRINT HYD ID=11 CODE=10

HYDROGRAPH FROM AREA B-CTOA

AHYMO.OUT

TIME TIME HRS HRS	FLOW FLOW CFS CFS	TIME TIME HRS HRS	FLOW FLOW CFS CFS	TIME TIME HRS HRS	FLOW FLOW CFS CFS
0.000	0.0	5.280	0.3	10.560	0.3
15.840	0.2	21.120	0.2	10.890	0.3
0.330	0.0	5.610	0.3	11.220	0.3
16.170	0.2	21.450	0.2	11.550	0.3
0.660	0.0	5.940	0.3	11.880	0.3
16.500	0.2	21.780	0.2	12.210	0.3
0.990	0.0	6.270	0.4	12.540	0.3
16.830	0.2	22.110	0.2	12.870	0.3
1.320	12.3	6.600	0.4	13.200	0.3
17.160	0.2	22.440	0.2	13.530	0.3
1.650	27.0	6.930	0.4	13.860	0.3
17.490	0.2	22.770	0.2	14.190	0.3
1.980	11.9	7.260	0.4	14.520	0.3
17.820	0.2	23.100	0.2	14.850	0.3
2.310	2.6	7.590	0.4	15.180	0.2
18.150	0.2	23.430	0.2	15.510	0.2
2.640	1.1	7.920	0.4		
18.480	0.2	23.760	0.2		
2.970	0.5	8.250	0.4		
18.810	0.2	24.090	0.1		
3.300	0.4	8.580	0.3		
19.140	0.2	24.420	0.0		
3.630	0.3	8.910	0.3		
19.470	0.2	24.750	0.0		
3.960	0.3	9.240	0.3		
19.800	0.2	9.570	0.3		
4.290	0.3	9.900	0.3		
20.130	0.2	10.230	0.3		
4.620	0.3				
20.460	0.2				
4.950	0.3				
20.790	0.2				

RUNOFF VOLUME = 2.10386 INCHES = 2.2194 ACRE-FEET
 PEAK DISCHARGE RATE = 50.55 CFS AT 1.485 HOURS BASIN AREA =
 0.0198 SQ. MI.

*S COMPUTE HYD PROPOSED BASIN D

COMPUTE NM HYD ID=12 HYDNO=107 DA=0.01567SQ MI

PER A=90 PER B=0 PER C=0 PER D=10

AHYMO.OUT

TP=-0.13 RAIN=-1

K = 0.070850HR TP = 0.130000HR K/TP RATIO = 0.545000
 SHAPE CONSTANT, N = 7.106428
 UNIT PEAK = 6.3436 CFS UNIT VOLUME = 0.9979 B =
 526.28 P60 = 1.8700
 AREA = 0.001567 SQ MI IA = 0.10000 INCHES INF =
 0.04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD -
 DT = 0.033000

K = 0.159632HR TP = 0.130000HR K/TP RATIO = 1.227936
 SHAPE CONSTANT, N = 2.899626
 UNIT PEAK = 29.675 CFS UNIT VOLUME = 0.9991 B =
 273.54 P60 = 1.8700
 AREA = 0.014103 SQ MI IA = 0.65000 INCHES INF =
 1.67000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD -
 DT = 0.033000

PRINT HYD

ID=12 CODE=10

PARTIAL HYDROGRAPH 107.00

TIME	FLOW	TIME	FLOW	TIME	FLOW
TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS
HRS	CFS	HRS	CFS	HRS	CFS
0.000	0.0	4.950	0.0	9.900	0.0
14.850	0.0	19.800	0.0		
0.330	0.0	5.280	0.0	10.230	0.0
15.180	0.0	20.130	0.0		
0.660	0.0	5.610	0.0	10.560	0.0
15.510	0.0	20.460	0.0		
0.990	0.0	5.940	0.0	10.890	0.0
15.840	0.0	20.790	0.0		
1.320	1.2	6.270	0.0	11.220	0.0
16.170	0.0	21.120	0.0		
1.650	9.5	6.600	0.0	11.550	0.0
16.500	0.0	21.450	0.0		
1.980	2.3	6.930	0.0	11.880	0.0
16.830	0.0	21.780	0.0		
2.310	0.8	7.260	0.0	12.210	0.0
17.160	0.0	22.110	0.0		
2.640	0.4	7.590	0.0	12.540	0.0
17.490	0.0	22.440	0.0		
2.970	0.2	7.920	0.0	12.870	0.0

AHYMO.OUT					
17.820	0.0	22.770	0.0		
3.300	0.1	8.250	0.0	13.200	0.0
18.150	0.0	23.100	0.0		
3.630	0.1	8.580	0.0	13.530	0.0
18.480	0.0	23.430	0.0		
3.960	0.0	8.910	0.0	13.860	0.0
18.810	0.0	23.760	0.0		
4.290	0.0	9.240	0.0	14.190	0.0
19.140	0.0	24.090	0.0		
4.620	0.0	9.570	0.0	14.520	0.0
19.470	0.0	24.420	0.0		

RUNOFF VOLUME = 0.63801 INCHES = 0.5332 ACRE-FEET
 PEAK DISCHARGE RATE = 16.41 CFS AT 1.518 HOURS BASIN AREA =
 0.0157 SQ. MI.

*S COMPUTE HYD PROPOSED BASIN E

COMPUTE NM HYD ID=13 HYDNO=108 DA=0.00100SQ MI

PER A=0 PER B=17.5 PER C=17.5 PER D=65

TP=-0.13 RAIN=-1

K = 0.070850HR TP = 0.130000HR K/TP RATIO = 0.545000
 SHAPE CONSTANT, N = 7.106428
 UNIT PEAK = 2.6314 CFS UNIT VOLUME = 0.9956 B =
 526.28 P60 = 1.8700
 AREA = 0.000650 SQ MI IA = 0.10000 INCHES INF =
 0.04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD -
 DT = 0.033000

K = 0.115497HR TP = 0.130000HR K/TP RATIO = 0.888442
 SHAPE CONSTANT, N = 3.992344
 UNIT PEAK = 0.95486 CFS UNIT VOLUME = 0.9868 B =
 354.66 P60 = 1.8700
 AREA = 0.000350 SQ MI IA = 0.42500 INCHES INF =
 1.04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD -
 DT = 0.033000

PRINT HYD ID=13 CODE=10

AHYMO.OUT

PARTIAL HYDROGRAPH 108.00

TIME	FLOW	TIME	FLOW	TIME	FLOW
TIME	FLOW	TIME	FLOW		
HRS	CFS	HRS	CFS	HRS	CFS
HRS	CFS	HRS	CFS		
0.000	0.0	4.950	0.0	9.900	0.0
14.850	0.0	19.800	0.0		
0.330	0.0	5.280	0.0	10.230	0.0
15.180	0.0	20.130	0.0		
0.660	0.0	5.610	0.0	10.560	0.0
15.510	0.0	20.460	0.0		
0.990	0.0	5.940	0.0	10.890	0.0
15.840	0.0	20.790	0.0		
1.320	0.5	6.270	0.0	11.220	0.0
16.170	0.0	21.120	0.0		
1.650	1.3	6.600	0.0	11.550	0.0
16.500	0.0	21.450	0.0		
1.980	0.5	6.930	0.0	11.880	0.0
16.830	0.0	21.780	0.0		
2.310	0.1	7.260	0.0	12.210	0.0
17.160	0.0	22.110	0.0		
2.640	0.0	7.590	0.0	12.540	0.0
17.490	0.0	22.440	0.0		
2.970	0.0	7.920	0.0	12.870	0.0
17.820	0.0	22.770	0.0		
3.300	0.0	8.250	0.0	13.200	0.0
18.150	0.0	23.100	0.0		
3.630	0.0	8.580	0.0	13.530	0.0
18.480	0.0	23.430	0.0		
3.960	0.0	8.910	0.0	13.860	0.0
18.810	0.0	23.760	0.0		
4.290	0.0	9.240	0.0	14.190	0.0
19.140	0.0	24.090	0.0		
4.620	0.0	9.570	0.0	14.520	0.0
19.470	0.0				

RUNOFF VOLUME = 1.86230 INCHES = 0.0993 ACRE-FEET
 PEAK DISCHARGE RATE = 2.38 CFS AT 1.485 HOURS BASIN AREA =
 0.0010 SQ. MI.

*S COMPUTE HYD PROPOSED BASIN F

COMPUTE NM HYD ID=14 HYDNO=109 DA=0.00048SQ MI

PER A=0 PER B=45 PER C=45 PER D=10

AHYMO.OUT
TP=-0.13 RAIN=-1

K = 0.070850HR TP = 0.130000HR K/TP RATIO = 0.545000
SHAPE CONSTANT, N = 7.106428
UNIT PEAK = 0.19432 CFS UNIT VOLUME = 0.9411 B =
526.28 P60 = 1.8700
AREA = 0.000048 SQ MI IA = 0.10000 INCHES INF =
0.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD -
DT = 0.033000

K = 0.115497HR TP = 0.130000HR K/TP RATIO = 0.888442
SHAPE CONSTANT, N = 3.992344
UNIT PEAK = 1.1786 CFS UNIT VOLUME = 0.9891 B =
354.66 P60 = 1.8700
AREA = 0.000432 SQ MI IA = 0.42500 INCHES INF =
1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD -
DT = 0.033000

PRINT HYD ID=14 CODE=10

PARTIAL HYDROGRAPH 109.00

TIME	FLOW	TIME	FLOW	TIME	FLOW
TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS
HRS	CFS	HRS	CFS	HRS	CFS
0.000	0.0	1.980	0.1	3.960	0.0
5.940	0.0	7.920	0.0		
0.330	0.0	2.310	0.0	4.290	0.0
6.270	0.0	8.250	0.0		
0.660	0.0	2.640	0.0	4.620	0.0
6.600	0.0	8.580	0.0		
0.990	0.0	2.970	0.0	4.950	0.0
6.930	0.0	8.910	0.0		
1.320	0.1	3.300	0.0	5.280	0.0
7.260	0.0				
1.650	0.5	3.630	0.0	5.610	0.0
7.590	0.0				

RUNOFF VOLUME = 0.97645 INCHES = 0.0250 ACRE-FEET
PEAK DISCHARGE RATE = 0.84 CFS AT 1.518 HOURS BASIN AREA =
0.0005 SQ. MI.

AHYMO.OUT

ADD HYD

ID=15 HYD=DTOF ID I=12 II=14

PRINT HYD

ID=15 CODE=10

HYDROGRAPH FROM AREA DTOF

TIME	FLOW	TIME	FLOW	TIME	FLOW
TIME	FLOW	TIME	FLOW		
HRS	CFS	HRS	CFS	HRS	CFS
HRS	CFS	HRS	CFS		
0.000	0.0	4.950	0.0	9.900	0.0
14.850	0.0	19.800	0.0		
0.330	0.0	5.280	0.0	10.230	0.0
15.180	0.0	20.130	0.0		
0.660	0.0	5.610	0.0	10.560	0.0
15.510	0.0	20.460	0.0		
0.990	0.0	5.940	0.0	10.890	0.0
15.840	0.0	20.790	0.0		
1.320	1.3	6.270	0.0	11.220	0.0
16.170	0.0	21.120	0.0		
1.650	10.0	6.600	0.0	11.550	0.0
16.500	0.0	21.450	0.0		
1.980	2.4	6.930	0.0	11.880	0.0
16.830	0.0	21.780	0.0		
2.310	0.8	7.260	0.0	12.210	0.0
17.160	0.0	22.110	0.0		
2.640	0.4	7.590	0.0	12.540	0.0
17.490	0.0	22.440	0.0		
2.970	0.2	7.920	0.0	12.870	0.0
17.820	0.0	22.770	0.0		
3.300	0.1	8.250	0.0	13.200	0.0
18.150	0.0	23.100	0.0		
3.630	0.1	8.580	0.0	13.530	0.0
18.480	0.0	23.430	0.0		
3.960	0.0	8.910	0.0	13.860	0.0
18.810	0.0	23.760	0.0		
4.290	0.0	9.240	0.0	14.190	0.0
19.140	0.0	24.090	0.0		
4.620	0.0	9.570	0.0	14.520	0.0
19.470	0.0	24.420	0.0		

RUNOFF VOLUME = 0.64701 INCHES = 0.5573 ACRE-FEET
PEAK DISCHARGE RATE = 17.25 CFS AT 1.518 HOURS BASIN AREA =
0.0162 SQ. MI.

AHYMO.OUT

ADD HYD

ID=16 HYD=ETOF-D ID I=13 II=15

PRINT HYD

ID=16 CODE=10

HYDROGRAPH FROM AREA ETOF-D

TIME	FLOW	TIME	FLOW	TIME	FLOW
TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS
HRS	CFS	HRS	CFS	HRS	CFS
0.000	0.0	4.950	0.0	9.900	0.0
14.850	0.0	19.800	0.0	10.230	0.0
0.330	0.0	5.280	0.0	10.560	0.0
15.180	0.0	20.130	0.0	10.890	0.0
0.660	0.0	5.610	0.0	11.220	0.0
15.510	0.0	20.460	0.0	11.550	0.0
0.990	0.0	5.940	0.0	11.880	0.0
15.840	0.0	20.790	0.0	12.210	0.0
1.320	1.8	6.270	0.1	12.540	0.0
16.170	0.0	21.120	0.0	12.870	0.0
1.650	11.3	6.600	0.1	13.200	0.0
16.500	0.0	21.450	0.0	13.530	0.0
1.980	2.9	6.930	0.1	13.860	0.0
16.830	0.0	21.780	0.0	14.190	0.0
2.310	0.9	7.260	0.1	14.520	0.0
17.160	0.0	22.110	0.0		
2.640	0.4	7.590	0.1		
17.490	0.0	22.440	0.0		
2.970	0.2	7.920	0.1		
17.820	0.0	22.770	0.0		
3.300	0.1	8.250	0.1		
18.150	0.0	23.100	0.0		
3.630	0.1	8.580	0.0		
18.480	0.0	23.430	0.0		
3.960	0.1	8.910	0.0		
18.810	0.0	23.760	0.0		
4.290	0.0	9.240	0.0		
19.140	0.0	24.090	0.0		
4.620	0.0	9.570	0.0		
19.470	0.0	24.420	0.0		

RUNOFF VOLUME = 0.71786 INCHES = 0.6566 ACRE-FEET
PEAK DISCHARGE RATE = 19.63 CFS AT 1.518 HOURS BASIN AREA =
0.0172 SQ. MI.

AHYMO.OUT

*S COMPUTE HYD PROPOSED BASIN G

COMPUTE NM HYD ID=17 HYDNO=110 DA=0.00468SQ MI

PER A=0 PER B=5 PER C=5 PER D=90

TP=-0.13 RAIN=-1

K = 0.070850HR TP = 0.130000HR K/TP RATIO = 0.545000
 SHAPE CONSTANT, N = 7.106428
 UNIT PEAK = 17.051 CFS UNIT VOLUME = 0.9992 B =
 526.28 P60 = 1.8700
 AREA = 0.004212 SQ MI IA = 0.10000 INCHES INF =
 0.04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD -
 DT = 0.033000

K = 0.115497HR TP = 0.130000HR K/TP RATIO = 0.888442
 SHAPE CONSTANT, N = 3.992344
 UNIT PEAK = 1.2768 CFS UNIT VOLUME = 0.9902 B =
 354.66 P60 = 1.8700
 AREA = 0.000468 SQ MI IA = 0.42500 INCHES INF =
 1.04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD -
 DT = 0.033000

PRINT HYD ID=17 CODE=10

PARTIAL HYDROGRAPH 110.00

TIME	FLOW	TIME	FLOW	TIME	FLOW
TIME	FLOW	TIME	FLOW		
HRS	CFS	HRS	CFS	HRS	CFS
HRS	CFS	HRS	CFS		
0.000	0.0	4.950	0.1	9.900	0.1
14.850	0.1	19.800	0.1		
0.330	0.0	5.280	0.1	10.230	0.1
15.180	0.1	20.130	0.1		
0.660	0.0	5.610	0.1	10.560	0.1
15.510	0.1	20.460	0.1		
0.990	0.0	5.940	0.1	10.890	0.1
15.840	0.1	20.790	0.1		
1.320	3.3	6.270	0.1	11.220	0.1
16.170	0.1	21.120	0.1		
1.650	6.7	6.600	0.1	11.550	0.1
16.500	0.1	21.450	0.1		
1.980	3.1	6.930	0.1	11.880	0.1

AHYMO.OUT					
16.830	0.1	21.780	0.1		
2.310	0.7	7.260	0.1	12.210	0.1
17.160	0.1	22.110	0.1		
2.640	0.3	7.590	0.1	12.540	0.1
17.490	0.1	22.440	0.1		
2.970	0.1	7.920	0.1	12.870	0.1
17.820	0.1	22.770	0.1		
3.300	0.1	8.250	0.1	13.200	0.1
18.150	0.1	23.100	0.1		
3.630	0.1	8.580	0.1	13.530	0.1
18.480	0.1	23.430	0.0		
3.960	0.1	8.910	0.1	13.860	0.1
18.810	0.1	23.760	0.0		
4.290	0.1	9.240	0.1	14.190	0.1
19.140	0.1	24.090	0.0		
4.620	0.1	9.570	0.1	14.520	0.1
19.470	0.1	24.420	0.0		

RUNOFF VOLUME = 2.26496 INCHES = 0.5653 ACRE-FEET
 PEAK DISCHARGE RATE = 12.55 CFS AT 1.485 HOURS BASIN AREA =
 0.0047 SQ. MI.

*S COMPUTE HYD PROPOSED BASIN H

COMPUTE NM HYD ID=18 HYDNO=111 DA=0.00107SQ MI

PER A=0 PER B=5 PER C=5 PER D=90

TP=-0.13 RAIN=-1

K = 0.070850HR TP = 0.130000HR K/TP RATIO = 0.545000
 SHAPE CONSTANT, N = 7.106428
 UNIT PEAK = 3.8985 CFS UNIT VOLUME = 0.9967 B =
 526.28 P60 = 1.8700
 AREA = 0.000963 SQ MI IA = 0.10000 INCHES INF =
 0.04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD -
 DT = 0.033000

K = 0.115497HR TP = 0.130000HR K/TP RATIO = 0.888442
 SHAPE CONSTANT, N = 3.992344
 UNIT PEAK = 0.29192 CFS UNIT VOLUME = 0.9534 B =
 354.66 P60 = 1.8700
 AREA = 0.000107 SQ MI IA = 0.42500 INCHES INF =
 1.04000 INCHES PER HOUR

AHYMO.OUT

RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD -
DT = 0.033000

PRINT HYD

ID=18 CODE=10

PARTIAL HYDROGRAPH 111.00

TIME	FLOW	TIME	FLOW	TIME	FLOW
TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS
HRS	CFS	HRS	CFS	HRS	CFS
0.000	0.0	4.950	0.0	9.900	0.0
14.850	0.0	19.800	0.0	10.230	0.0
0.330	0.0	5.280	0.0	10.560	0.0
15.180	0.0	20.130	0.0	10.890	0.0
0.660	0.0	5.610	0.0	11.220	0.0
15.510	0.0	20.460	0.0	11.550	0.0
0.990	0.0	5.940	0.0	11.880	0.0
15.840	0.0	20.790	0.0	12.210	0.0
1.320	0.7	6.270	0.0	12.540	0.0
16.170	0.0	21.120	0.0	12.870	0.0
1.650	1.5	6.600	0.0	13.200	0.0
16.500	0.0	21.450	0.0	13.530	0.0
1.980	0.7	6.930	0.0	13.860	0.0
16.830	0.0	21.780	0.0	14.190	0.0
2.310	0.1	7.260	0.0	14.520	0.0
17.160	0.0	22.110	0.0		
2.640	0.1	7.590	0.0		
17.490	0.0	22.440	0.0		
2.970	0.0	7.920	0.0		
17.820	0.0	22.770	0.0		
3.300	0.0	8.250	0.0		
18.150	0.0	23.100	0.0		
3.630	0.0	8.580	0.0		
18.480	0.0	23.430	0.0		
3.960	0.0	8.910	0.0		
18.810	0.0	23.760	0.0		
4.290	0.0	9.240	0.0		
19.140	0.0	24.090	0.0		
4.620	0.0	9.570	0.0		
19.470	0.0				

RUNOFF VOLUME = 2.26496 INCHES = 0.1293 ACRE-Feet
PEAK DISCHARGE RATE = 2.88 CFS AT 1.485 HOURS BASIN AREA =
0.0011 SQ. MI.

AHYMO.OUT

*S COMPUTE HYD PROPOSED BASIN I

COMPUTE NM HYD ID=19 HYDNO=112 DA=0.00074SQ MI

PER A=0 PER B=5 PER C=5 PER D=90

TP=-0.13 RAIN=-1

K = 0.070850HR TP = 0.130000HR K/TP RATIO = 0.545000
 SHAPE CONSTANT, N = 7.106428
 UNIT PEAK = 2.6961 CFS UNIT VOLUME = 0.9956 B =
 526.28 P60 = 1.8700
 AREA = 0.000666 SQ MI IA = 0.10000 INCHES INF =
 0.04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD -
 DT = 0.033000

K = 0.115497HR TP = 0.130000HR K/TP RATIO = 0.888442
 SHAPE CONSTANT, N = 3.992344
 UNIT PEAK = 0.20189 CFS UNIT VOLUME = 0.9316 B =
 354.66 P60 = 1.8700
 AREA = 0.000074 SQ MI IA = 0.42500 INCHES INF =
 1.04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD -
 DT = 0.033000

PRINT HYD ID=19 CODE=10

PARTIAL HYDROGRAPH 112.00

TIME	FLOW	TIME	FLOW	TIME	FLOW
TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS
HRS	CFS	HRS	CFS	HRS	CFS
0.000	0.0	4.950	0.0	9.900	0.0
14.850	0.0	19.800	0.0		
0.330	0.0	5.280	0.0	10.230	0.0
15.180	0.0	20.130	0.0		
0.660	0.0	5.610	0.0	10.560	0.0
15.510	0.0	20.460	0.0		
0.990	0.0	5.940	0.0	10.890	0.0
15.840	0.0	20.790	0.0		
1.320	0.5	6.270	0.0	11.220	0.0
16.170	0.0	21.120	0.0		
1.650	1.1	6.600	0.0	11.550	0.0
16.500	0.0	21.450	0.0		
1.980	0.5	6.930	0.0	11.880	0.0
16.830	0.0	21.780	0.0		

AHYMO.OUT					
2.310	0.1	7.260	0.0	12.210	0.0
17.160	0.0	22.110	0.0		
2.640	0.0	7.590	0.0	12.540	0.0
17.490	0.0	22.440	0.0		
2.970	0.0	7.920	0.0	12.870	0.0
17.820	0.0	22.770	0.0		
3.300	0.0	8.250	0.0	13.200	0.0
18.150	0.0	23.100	0.0		
3.630	0.0	8.580	0.0	13.530	0.0
18.480	0.0	23.430	0.0		
3.960	0.0	8.910	0.0	13.860	0.0
18.810	0.0	23.760	0.0		
4.290	0.0	9.240	0.0	14.190	0.0
19.140	0.0	24.090	0.0		
4.620	0.0	9.570	0.0	14.520	0.0
19.470	0.0				

RUNOFF VOLUME = 2.26496 INCHES = 0.0894 ACRE-FeET
 PEAK DISCHARGE RATE = 2.00 CFS AT 1.485 HOURS BASIN AREA =
 0.0007 SQ. MI.

ADD HYD ID=20 HYD=HTOI ID I=18 II=19

PRINT HYD ID=20 CODE=10

HYDROGRAPH FROM AREA HTOI

TIME	FLOW	TIME	FLOW	TIME	FLOW
TIME	FLOW	TIME	FLOW		
HRS	CFS	HRS	CFS	HRS	CFS
HRS	CFS	HRS	CFS		
0.000	0.0	4.950	0.0	9.900	0.0
14.850	0.0	19.800	0.0		
0.330	0.0	5.280	0.0	10.230	0.0
15.180	0.0	20.130	0.0		
0.660	0.0	5.610	0.0	10.560	0.0
15.510	0.0	20.460	0.0		
0.990	0.0	5.940	0.0	10.890	0.0
15.840	0.0	20.790	0.0		
1.320	1.3	6.270	0.0	11.220	0.0
16.170	0.0	21.120	0.0		
1.650	2.6	6.600	0.0	11.550	0.0
16.500	0.0	21.450	0.0		
1.980	1.2	6.930	0.0	11.880	0.0
16.830	0.0	21.780	0.0		

AHYMO.OUT					
2.310	0.2	7.260	0.0	12.210	0.0
17.160	0.0	22.110	0.0		
2.640	0.1	7.590	0.0	12.540	0.0
17.490	0.0	22.440	0.0		
2.970	0.1	7.920	0.0	12.870	0.0
17.820	0.0	22.770	0.0		
3.300	0.0	8.250	0.0	13.200	0.0
18.150	0.0	23.100	0.0		
3.630	0.0	8.580	0.0	13.530	0.0
18.480	0.0	23.430	0.0		
3.960	0.0	8.910	0.0	13.860	0.0
18.810	0.0	23.760	0.0		
4.290	0.0	9.240	0.0	14.190	0.0
19.140	0.0	24.090	0.0		
4.620	0.0	9.570	0.0	14.520	0.0
19.470	0.0				

RUNOFF VOLUME = 2.26462 INCHES = 0.2186 ACRE-FEET
 PEAK DISCHARGE RATE = 4.88 CFS AT 1.485 HOURS BASIN AREA =
 0.0018 SQ. MI.

ADD HYD ID=21 HYD=A-CTOG ID I=11 II=17

PRINT HYD ID=21 CODE=10

HYDROGRAPH FROM AREA A-CTOG

TIME	FLOW	TIME	FLOW	TIME	FLOW
TIME	FLOW	TIME	FLOW		
HRS	CFS	HRS	CFS	HRS	CFS
HRS	CFS	HRS	CFS		
0.000	0.0	5.280	0.4	10.560	0.4
15.840	0.3	21.120	0.3	10.890	0.4
0.330	0.0	5.610	0.4		
16.170	0.3	21.450	0.2	11.220	0.4
0.660	0.0	5.940	0.4		
16.500	0.3	21.780	0.2	11.550	0.4
0.990	0.0	6.270	0.5		
16.830	0.3	22.110	0.2	11.880	0.4
1.320	15.6	6.600	0.5		
17.160	0.3	22.440	0.2	12.210	0.4
1.650	33.7	6.930	0.5		
17.490	0.3	22.770	0.2		

AHYMO.OUT					
1.980	15.0	7.260	0.5	12.540	0.4
17.820	0.3	23.100	0.2		
2.310	3.3	7.590	0.5	12.870	0.3
18.150	0.3	23.430	0.2		
2.640	1.3	7.920	0.5	13.200	0.3
18.480	0.3	23.760	0.2		
2.970	0.7	8.250	0.4	13.530	0.3
18.810	0.3	24.090	0.2		
3.300	0.5	8.580	0.4	13.860	0.3
19.140	0.3	24.420	0.0		
3.630	0.4	8.910	0.4	14.190	0.3
19.470	0.3	24.750	0.0		
3.960	0.3	9.240	0.4	14.520	0.3
19.800	0.3				
4.290	0.3	9.570	0.4	14.850	0.3
20.130	0.3				
4.620	0.3	9.900	0.4	15.180	0.3
20.460	0.3				
4.950	0.3	10.230	0.4	15.510	0.3
20.790	0.3				

RUNOFF VOLUME = 2.13467 INCHES = 2.7847 ACRE-Feet
 PEAK DISCHARGE RATE = 63.10 CFS AT 1.485 HOURS BASIN AREA =
 0.0245 SQ. MI.

ADD HYD ID=22 HYD=D-FTOA-DTOG ID I=16 II=21

PRINT HYD ID=22 CODE=10

HYDROGRAPH FROM AREA D-FTOA-DTOG

TIME	FLOW	TIME	FLOW	TIME	FLOW
TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS
HRS	CFS	HRS	CFS	HRS	CFS
0.000	0.0	5.280	0.4	10.560	0.4
15.840	0.3	21.120	0.3	10.890	0.4
0.330	0.0	5.610	0.4		
16.170	0.3	21.450	0.3	11.220	0.4
0.660	0.0	5.940	0.5	11.550	0.4
16.500	0.3	21.780	0.3	11.880	0.4
0.990	0.0	6.270	0.5		
16.830	0.3	22.110	0.3		
1.320	17.3	6.600	0.5		
17.160	0.3	22.440	0.3		

AHYMO.OUT					
1.650	45.0	6.930	0.5	12.210	0.4
17.490	0.3	22.770	0.3		
1.980	17.9	7.260	0.5	12.540	0.4
17.820	0.3	23.100	0.3		
2.310	4.2	7.590	0.5	12.870	0.4
18.150	0.3	23.430	0.3		
2.640	1.8	7.920	0.5	13.200	0.4
18.480	0.3	23.760	0.3		
2.970	0.9	8.250	0.5	13.530	0.4
18.810	0.3	24.090	0.2		
3.300	0.6	8.580	0.5	13.860	0.4
19.140	0.3	24.420	0.0		
3.630	0.5	8.910	0.5	14.190	0.4
19.470	0.3	24.750	0.0		
3.960	0.4	9.240	0.5	14.520	0.4
19.800	0.3				
4.290	0.4	9.570	0.5	14.850	0.4
20.130	0.3				
4.620	0.4	9.900	0.4	15.180	0.3
20.460	0.3				
4.950	0.4	10.230	0.4	15.510	0.3
20.790	0.3				

RUNOFF VOLUME = 1.55071 INCHES = 3.4413 ACRE-FEET
 PEAK DISCHARGE RATE = 82.34 CFS AT 1.518 HOURS BASIN AREA =
 0.0416 SQ. MI.

*S FUTURE CONDITIONS

*S COMPUTE HYD FUTURE BASIN D-1

COMPUTE NM HYD ID=23 HYDNO=113 DA=0.00729SQ MI

PER A=0 PER B=10 PER C=10 PER D=80

TP=-0.13 RAIN=-1

K = 0.070850HR TP = 0.130000HR K/TP RATIO = 0.545000
 SHAPE CONSTANT, N = 7.106428
 UNIT PEAK = 23.610 CFS UNIT VOLUME = 0.9993 B =
 526.28 P60 = 1.8700
 AREA = 0.005832 SQ MI IA = 0.10000 INCHES INF =

AHYMO.OUT

0.04000 INCHES PER HOUR

RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD -
DT = 0.033000

K = 0.115497HR TP = 0.130000HR K/TP RATIO = 0.888442
SHAPE CONSTANT, N = 3.992344
UNIT PEAK = 3.9777 CFS UNIT VOLUME = 0.9971 B =
354.66 P60 = 1.8700
AREA = 0.001458 SQ MI IA = 0.42500 INCHES INF =
1.04000 INCHES PER HOUR

RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD -
DT = 0.033000

PRINT HYD

ID=23 CODE=10

PARTIAL HYDROGRAPH 113.00

TIME	FLOW	TIME	FLOW	TIME	FLOW
TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS
HRS	CFS	HRS	CFS	HRS	CFS
0.000	0.0	4.950	0.1	9.900	0.1
14.850	0.1	19.800	0.1	10.230	0.1
0.330	0.0	5.280	0.1	10.560	0.1
15.180	0.1	20.130	0.1	10.890	0.1
0.660	0.0	5.610	0.1	11.220	0.1
15.510	0.1	20.460	0.1	11.550	0.1
0.990	0.0	5.940	0.1	11.880	0.1
15.840	0.1	20.790	0.1	12.210	0.1
1.320	4.5	6.270	0.1	12.540	0.1
16.170	0.1	21.120	0.1	12.870	0.1
1.650	10.0	6.600	0.1	13.200	0.1
16.500	0.1	21.450	0.1	13.530	0.1
1.980	4.4	6.930	0.1	13.860	0.1
16.830	0.1	21.780	0.1	14.190	0.1
2.310	1.0	7.260	0.1		
17.160	0.1	22.110	0.1		
2.640	0.4	7.590	0.1		
17.490	0.1	22.440	0.1		
2.970	0.2	7.920	0.1		
17.820	0.1	22.770	0.1		
3.300	0.1	8.250	0.1		
18.150	0.1	23.100	0.1		
3.630	0.1	8.580	0.1		
18.480	0.1	23.430	0.1		
3.960	0.1	8.910	0.1		
18.810	0.1	23.760	0.1		
4.290	0.1	9.240	0.1		
19.140	0.1	24.090	0.0		

AHYMO.OUT

4.620	0.1	9.570	0.1	14.520	0.1
19.470	0.1	24.420	0.0		

RUNOFF VOLUME = 2.10390 INCHES = 0.8180 ACRE-FEET
 PEAK DISCHARGE RATE = 18.63 CFS AT 1.485 HOURS BASIN AREA =
 0.0073 SQ. MI.

*S COMPUTE HYD FUTURE BASIN D-2

COMPUTE NM HYD ID=24 HYDNO=114 DA=0.00781SQ MI

PER A=0 PER B=10 PER C=10 PER D=80

TP=-0.13 RAIN=-1

K = 0.070850HR TP = 0.130000HR K/TP RATIO = 0.545000
 SHAPE CONSTANT, N = 7.106428
 UNIT PEAK = 25.294 CFS UNIT VOLUME = 0.9993 B =
 526.28 P60 = 1.8700
 AREA = 0.006248 SQ MI IA = 0.10000 INCHES INF =
 0.04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD -
 DT = 0.033000

K = 0.115497HR TP = 0.130000HR K/TP RATIO = 0.888442
 SHAPE CONSTANT, N = 3.992344
 UNIT PEAK = 4.2614 CFS UNIT VOLUME = 0.9971 B =
 354.66 P60 = 1.8700
 AREA = 0.001562 SQ MI IA = 0.42500 INCHES INF =
 1.04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD -
 DT = 0.033000

PRINT HYD ID=24 CODE=10

PARTIAL HYDROGRAPH 114.00

TIME	FLOW	TIME	FLOW	TIME	FLOW
TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS
HRS	CFS	HRS	CFS	HRS	CFS
0.000	0.0	4.950	0.1	9.900	0.1
14.850	0.1	19.800	0.1		
0.330	0.0	5.280	0.1	10.230	0.1

AHYMO.OUT					
15.180	0.1	20.130	0.1		
0.660	0.0	5.610	0.1	10.560	0.1
15.510	0.1	20.460	0.1		
0.990	0.0	5.940	0.1	10.890	0.1
15.840	0.1	20.790	0.1		
1.320	4.9	6.270	0.2	11.220	0.1
16.170	0.1	21.120	0.1		
1.650	10.7	6.600	0.2	11.550	0.1
16.500	0.1	21.450	0.1		
1.980	4.7	6.930	0.1	11.880	0.1
16.830	0.1	21.780	0.1		
2.310	1.0	7.260	0.1	12.210	0.1
17.160	0.1	22.110	0.1		
2.640	0.4	7.590	0.1	12.540	0.1
17.490	0.1	22.440	0.1		
2.970	0.2	7.920	0.1	12.870	0.1
17.820	0.1	22.770	0.1		
3.300	0.1	8.250	0.1	13.200	0.1
18.150	0.1	23.100	0.1		
3.630	0.1	8.580	0.1	13.530	0.1
18.480	0.1	23.430	0.1		
3.960	0.1	8.910	0.1	13.860	0.1
18.810	0.1	23.760	0.1		
4.290	0.1	9.240	0.1	14.190	0.1
19.140	0.1	24.090	0.1		
4.620	0.1	9.570	0.1	14.520	0.1
19.470	0.1	24.420	0.0		

RUNOFF VOLUME = 2.10390 INCHES = 0.8763 ACRE-FEET
 PEAK DISCHARGE RATE = 19.96 CFS AT 1.485 HOURS BASIN AREA =
 0.0078 SQ. MI.

*S COMPUTE HYD FUTURE BASIN D-3

COMPUTE NM HYD ID=25 HYDNO=115 DA=0.00202SQ MI

PER A=0 PER B=10 PER C=10 PER D=80

TP=-0.13 RAIN=-1

K = 0.070850HR TP = 0.130000HR K/TP RATIO = 0.545000
 SHAPE CONSTANT, N = 7.106428
 UNIT PEAK = 6.5420 CFS UNIT VOLUME = 0.9982 B =
 526.28 P60 = 1.8700
 AREA = 0.001616 SQ MI IA = 0.10000 INCHES INF =
 0.04000 INCHES PER HOUR

AHYMO.OUT

RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD -
DT = 0.033000

K = 0.115497HR TP = 0.130000HR K/TP RATIO = 0.888442
SHAPE CONSTANT, N = 3.992344
UNIT PEAK = 1.1022 CFS UNIT VOLUME = 0.9880 B =
354.66 P60 = 1.8700
AREA = 0.000404 SQ MI IA = 0.42500 INCHES INF =
1.04000 INCHES PER HOUR

RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD -
DT = 0.033000

PRINT HYD ID=25 CODE=10

PARTIAL HYDROGRAPH 115.00

TIME	FLOW	TIME	FLOW	TIME	FLOW
TIME	FLOW	TIME	FLOW		
HRS	CFS	HRS	CFS	HRS	CFS
HRS	CFS	HRS	CFS		
0.000	0.0	4.950	0.0	9.900	0.0
14.850	0.0	19.800	0.0		
0.330	0.0	5.280	0.0	10.230	0.0
15.180	0.0	20.130	0.0		
0.660	0.0	5.610	0.0	10.560	0.0
15.510	0.0	20.460	0.0		
0.990	0.0	5.940	0.0	10.890	0.0
15.840	0.0	20.790	0.0		
1.320	1.3	6.270	0.0	11.220	0.0
16.170	0.0	21.120	0.0		
1.650	2.8	6.600	0.0	11.550	0.0
16.500	0.0	21.450	0.0		
1.980	1.2	6.930	0.0	11.880	0.0
16.830	0.0	21.780	0.0		
2.310	0.3	7.260	0.0	12.210	0.0
17.160	0.0	22.110	0.0		
2.640	0.1	7.590	0.0	12.540	0.0
17.490	0.0	22.440	0.0		
2.970	0.1	7.920	0.0	12.870	0.0
17.820	0.0	22.770	0.0		
3.300	0.0	8.250	0.0	13.200	0.0
18.150	0.0	23.100	0.0		
3.630	0.0	8.580	0.0	13.530	0.0
18.480	0.0	23.430	0.0		
3.960	0.0	8.910	0.0	13.860	0.0
18.810	0.0	23.760	0.0		
4.290	0.0	9.240	0.0	14.190	0.0
19.140	0.0	24.090	0.0		
4.620	0.0	9.570	0.0	14.520	0.0

AHYMO.OUT
 19.470 0.0 24.420 0.0

RUNOFF VOLUME = 2.10390 INCHES = 0.2267 ACRE-FEET
 PEAK DISCHARGE RATE = 5.17 CFS AT 1.485 HOURS BASIN AREA =
 0.0020 SQ. MI.

*S COMPUTE HYD FUTURE BASIN G-2

COMPUTE NM HYD ID=26 HYDNO=116 DA=0.00200SQ MI

PER A=0 PER B=5 PER C=5 PER D=90

TP=-0.13 RAIN=-1

K = 0.070850HR TP = 0.130000HR K/TP RATIO = 0.545000
 SHAPE CONSTANT, N = 7.106428
 UNIT PEAK = 7.2869 CFS UNIT VOLUME = 0.9982 B =
 526.28 P60 = 1.8700
 AREA = 0.001800 SQ MI IA = 0.10000 INCHES INF =
 0.04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD -
 DT = 0.033000

K = 0.115497HR TP = 0.130000HR K/TP RATIO = 0.888442
 SHAPE CONSTANT, N = 3.992344
 UNIT PEAK = 0.54564 CFS UNIT VOLUME = 0.9763 B =
 354.66 P60 = 1.8700
 AREA = 0.000200 SQ MI IA = 0.42500 INCHES INF =
 1.04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD -
 DT = 0.033000

PRINT HYD ID=26 CODE=10

PARTIAL HYDROGRAPH 116.00

TIME	FLOW	TIME	FLOW	TIME	FLOW
TIME	FLOW	TIME	FLOW		
HRS	CFS	HRS	CFS	HRS	CFS
HRS	CFS	HRS	CFS		
0.000	0.0	4.950	0.0	9.900	0.0
14.850	0.0	19.800	0.0		
0.330	0.0	5.280	0.0	10.230	0.0
15.180	0.0	20.130	0.0		

AHYMO.OUT					
0.660	0.0	5.610	0.0	10.560	0.0
15.510	0.0	20.460	0.0		
0.990	0.0	5.940	0.0	10.890	0.0
15.840	0.0	20.790	0.0		
1.320	1.4	6.270	0.0	11.220	0.0
16.170	0.0	21.120	0.0		
1.650	2.9	6.600	0.0	11.550	0.0
16.500	0.0	21.450	0.0		
1.980	1.3	6.930	0.0	11.880	0.0
16.830	0.0	21.780	0.0		
2.310	0.3	7.260	0.0	12.210	0.0
17.160	0.0	22.110	0.0		
2.640	0.1	7.590	0.0	12.540	0.0
17.490	0.0	22.440	0.0		
2.970	0.1	7.920	0.0	12.870	0.0
17.820	0.0	22.770	0.0		
3.300	0.0	8.250	0.0	13.200	0.0
18.150	0.0	23.100	0.0		
3.630	0.0	8.580	0.0	13.530	0.0
18.480	0.0	23.430	0.0		
3.960	0.0	8.910	0.0	13.860	0.0
18.810	0.0	23.760	0.0		
4.290	0.0	9.240	0.0	14.190	0.0
19.140	0.0	24.090	0.0		
4.620	0.0	9.570	0.0	14.520	0.0
19.470	0.0	24.420	0.0		

RUNOFF VOLUME = 2.26496 INCHES = 0.2416 ACRE-FEET
 PEAK DISCHARGE RATE = 5.37 CFS AT 1.485 HOURS BASIN AREA =
 0.0020 SQ. MI.

*S COMPUTE HYD FUTURE BASIN H-2

COMPUTE NM HYD ID=27 HYDNO=117 DA=0.00067SQ MI

PER A=0 PER B=5 PER C=5 PER D=90

TP=-0.13 RAIN=-1

K = 0.070850HR TP = 0.130000HR K/TP RATIO = 0.545000
 SHAPE CONSTANT, N = 7.106428
 UNIT PEAK = 2.4411 CFS UNIT VOLUME = 0.9949 B =
 526.28 P60 = 1.8700
 AREA = 0.000603 SQ MI IA = 0.10000 INCHES INF =
 0.04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD -

AHYMO.OUT

DT = 0.033000

K = 0.115497HR TP = 0.130000HR K/TP RATIO = 0.888442
 SHAPE CONSTANT, N = 3.992344
 UNIT PEAK = 0.18279 CFS UNIT VOLUME = 0.9248 B =
 354.66 P60 = 1.8700
 AREA = 0.000067 SQ MI IA = 0.42500 INCHES INF =
 1.04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD -
 DT = 0.033000

PRINT HYD

ID=27 CODE=10

PARTIAL HYDROGRAPH 117.00

TIME	FLOW	TIME	FLOW	TIME	FLOW
TIME	FLOW	TIME	FLOW		
HRS	CFS	HRS	CFS	HRS	CFS
HRS	CFS	HRS	CFS		
0.000	0.0	4.950	0.0	9.900	0.0
14.850	0.0	19.800	0.0		
0.330	0.0	5.280	0.0	10.230	0.0
15.180	0.0	20.130	0.0		
0.660	0.0	5.610	0.0	10.560	0.0
15.510	0.0	20.460	0.0		
0.990	0.0	5.940	0.0	10.890	0.0
15.840	0.0	20.790	0.0		
1.320	0.5	6.270	0.0	11.220	0.0
16.170	0.0	21.120	0.0		
1.650	1.0	6.600	0.0	11.550	0.0
16.500	0.0	21.450	0.0		
1.980	0.4	6.930	0.0	11.880	0.0
16.830	0.0	21.780	0.0		
2.310	0.1	7.260	0.0	12.210	0.0
17.160	0.0	22.110	0.0		
2.640	0.0	7.590	0.0	12.540	0.0
17.490	0.0	22.440	0.0		
2.970	0.0	7.920	0.0	12.870	0.0
17.820	0.0	22.770	0.0		
3.300	0.0	8.250	0.0	13.200	0.0
18.150	0.0	23.100	0.0		
3.630	0.0	8.580	0.0	13.530	0.0
18.480	0.0	23.430	0.0		
3.960	0.0	8.910	0.0	13.860	0.0
18.810	0.0	23.760	0.0		
4.290	0.0	9.240	0.0	14.190	0.0
19.140	0.0	24.090	0.0		
4.620	0.0	9.570	0.0	14.520	0.0
19.470	0.0				

AHYMO.OUT

RUNOFF VOLUME = 2.26496 INCHES = 0.0809 ACRE-FEET
 PEAK DISCHARGE RATE = 1.81 CFS AT 1.485 HOURS BASIN AREA =
 0.0007 SQ. MI.

ADD HYD

ID=28 HYD=FULLROADWIDTH ID I=17 II=26

PRINT HYD

ID=28 CODE=10

HYDROGRAPH FROM AREA

FULLROADWIDTH

TIME	FLOW	TIME	FLOW	TIME	FLOW
TIME	FLOW	TIME	FLOW		
HRS	CFS	HRS	CFS	HRS	CFS
HRS	CFS	HRS	CFS		
0.000	0.0	4.950	0.1	9.900	0.1
14.850	0.1	19.800	0.1		
0.330	0.0	5.280	0.1	10.230	0.1
15.180	0.1	20.130	0.1		
0.660	0.0	5.610	0.1	10.560	0.1
15.510	0.1	20.460	0.1		
0.990	0.0	5.940	0.1	10.890	0.1
15.840	0.1	20.790	0.1		
1.320	4.7	6.270	0.1	11.220	0.1
16.170	0.1	21.120	0.1		
1.650	9.5	6.600	0.1	11.550	0.1
16.500	0.1	21.450	0.1		
1.980	4.4	6.930	0.1	11.880	0.1
16.830	0.1	21.780	0.1		
2.310	1.0	7.260	0.1	12.210	0.1
17.160	0.1	22.110	0.1		
2.640	0.4	7.590	0.1	12.540	0.1
17.490	0.1	22.440	0.1		
2.970	0.2	7.920	0.1	12.870	0.1
17.820	0.1	22.770	0.1		
3.300	0.1	8.250	0.1	13.200	0.1
18.150	0.1	23.100	0.1		
3.630	0.1	8.580	0.1	13.530	0.1
18.480	0.1	23.430	0.1		
3.960	0.1	8.910	0.1	13.860	0.1
18.810	0.1	23.760	0.1		
4.290	0.1	9.240	0.1	14.190	0.1
19.140	0.1	24.090	0.1		

		AHYMO.OUT			
4.620	0.1	9.570	0.1	14.520	0.1
19.470	0.1	24.420	0.0		


RUNOFF VOLUME = 2.26487 INCHES = 0.8069 ACRE-FeET
 PEAK DISCHARGE RATE = 17.92 CFS AT 1.485 HOURS BASIN AREA =
 0.0067 SQ. MI.

FINISH

NORMAL PROGRAM FINISH


END TIME (HR:MIN:SEC) = 15:00:27

AHYMO.SUM										
COMPUTE NM HYD	116.00	-	26	0.00200	5.37	0.242	2.26496	1.485	4.198	PER IMP= 90.00
*S COMPUTE HYD FUTURE BASIN H-2										
COMPUTE NM HYD	117.00	-	27	0.00067	1.81	0.081	2.26496	1.485	4.225	PER IMP= 90.00
ADD HYD	FULLROADWIDT	17&26	28	0.00668	17.92	0.807	2.26487	1.485	4.193	
FINISH										



APPENDIX B

HYDRAULIC CALCULATIONS



Manning Formula: Proposed 24" SD Max Flow

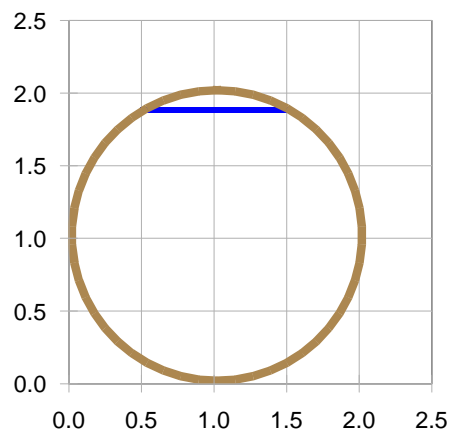
Circular Channel

Input

Flow	17.20 cfs
Slope	0.005 ft/ft
Manning's n	0.013
Diameter	24 in

Output

Depth	1.862 ft
Flow Area	3.05 sf
Velocity	5.65 fps
Velocity Head	0.495 ft
Top Width	1.01 ft
Froude Number	0.574
Critical Depth	1.495 ft
Critical Slope	0.00701 ft/ft



Manning Formula: Proposed 30" SD Max Flow

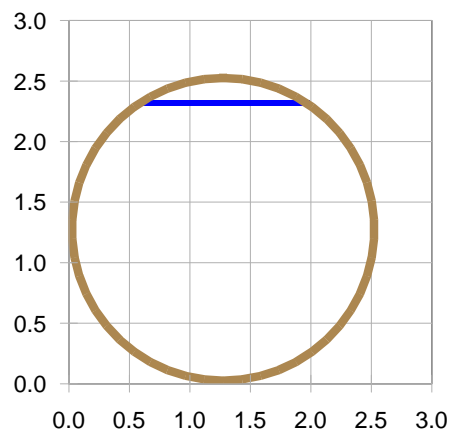
Circular Channel

Input

Flow	31.1 cfs
Slope	0.005 ft/ft
Manning's n	0.013
Diameter	30 in

Output

Depth	2.292 ft
Flow Area	4.71 sf
Velocity	6.60 fps
Velocity Head	0.677 ft
Top Width	1.38 ft
Froude Number	0.630
Critical Depth	1.900 ft
Critical Slope	0.00670 ft/ft



Manning Formula: Proposed 36" SD Max Flow

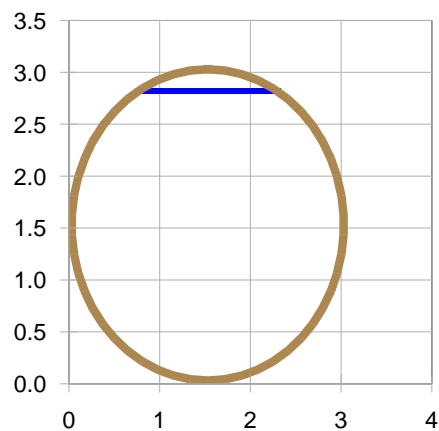
Circular Channel

Input

Flow	50.7 cfs
Slope	0.005 ft/ft
Manning's n	0.013
Diameter	36 in

Output

Depth	2.787 ft
Flow Area	6.85 sf
Velocity	7.41 fps
Velocity Head	0.852 ft
Top Width	1.54 ft
Froude Number	0.619
Critical Depth	2.317 ft
Critical Slope	0.00651 ft/ft



Manning Formula: Proposed 42" SD Max Flow

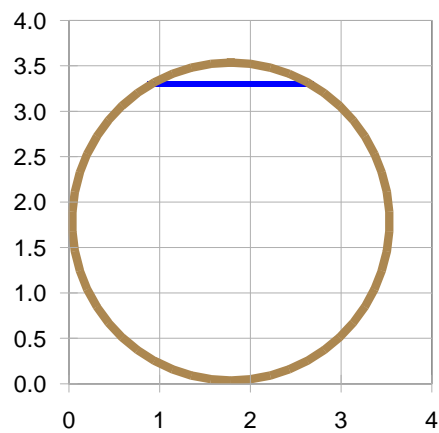
Circular Channel

Input

Flow	76.5 cfs
Slope	0.005 ft/ft
Manning's n	0.013
Diameter	42 in

Output

Depth	3.261 ft
Flow Area	9.34 sf
Velocity	8.19 fps
Velocity Head	1.04 ft
Top Width	1.77 ft
Froude Number	0.628
Critical Depth	2.737 ft
Critical Slope	0.00634 ft/ft



Manning Formula: Proposed 54" SD Max Flow

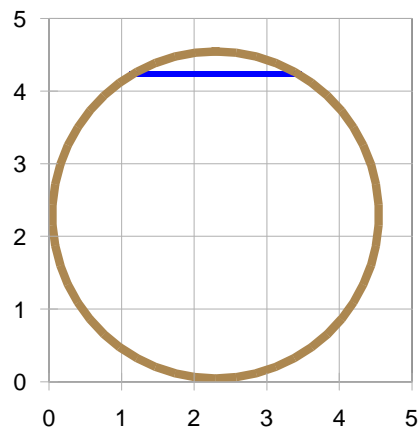
Circular Channel

Input

Flow	149.5 cfs
Slope	0.005 ft/ft
Manning's n	0.013
Diameter	54 in

Output

Depth	4.185 ft
Flow Area	15.4 sf
Velocity	9.70 fps
Velocity Head	1.46 ft
Top Width	2.30 ft
Froude Number	0.660
Critical Depth	3.588 ft
Critical Slope	0.00609 ft/ft



Manning Formula: Proposed 60" SD Max Flow

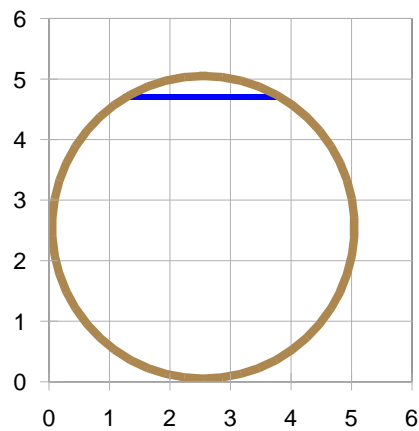
Circular Channel

Input

Flow	198.0 cfs
Slope	0.005 ft/ft
Manning's n	0.013
Diameter	60 in

Output

Depth	4.651 ft
Flow Area	19.0 sf
Velocity	10.4 fps
Velocity Head	1.68 ft
Top Width	2.55 ft
Froude Number	0.671
Critical Depth	4.019 ft
Critical Slope	0.00599 ft/ft



Basin A Type D Inlet Calculation

Orifice (Unknown Q)

Head Water Depth (h):	<input type="text" value="0.5"/>	ft	<input type="text" value="User Enter Desired Value"/>
Discharge Coeff. (C _d):	<input type="text" value="0.6"/>		
Open Area (A):	<input type="text" value="4.6900"/>	ft ²	
Gravity (g):	<input type="text" value="32.2"/>	ft/s ²	
Flow (Q) = C · A · (2 · g · h) ^ (0.5)			
Flow (Q) =	<input type="text" value="16.0"/>	cfs	

Weir (Unknown Q):

Discharge Coeff. (C _w):	<input type="text" value="3.367"/>	
Length (L):	<input type="text" value="10.67"/>	ft
Flow (Q) = C _w · L · h ^ (1.5)		
Flow (Q) =	<input type="text" value="12.7"/>	cfs

GRATING CAPACITIES FOR TYPE "A", "C" AND "D"

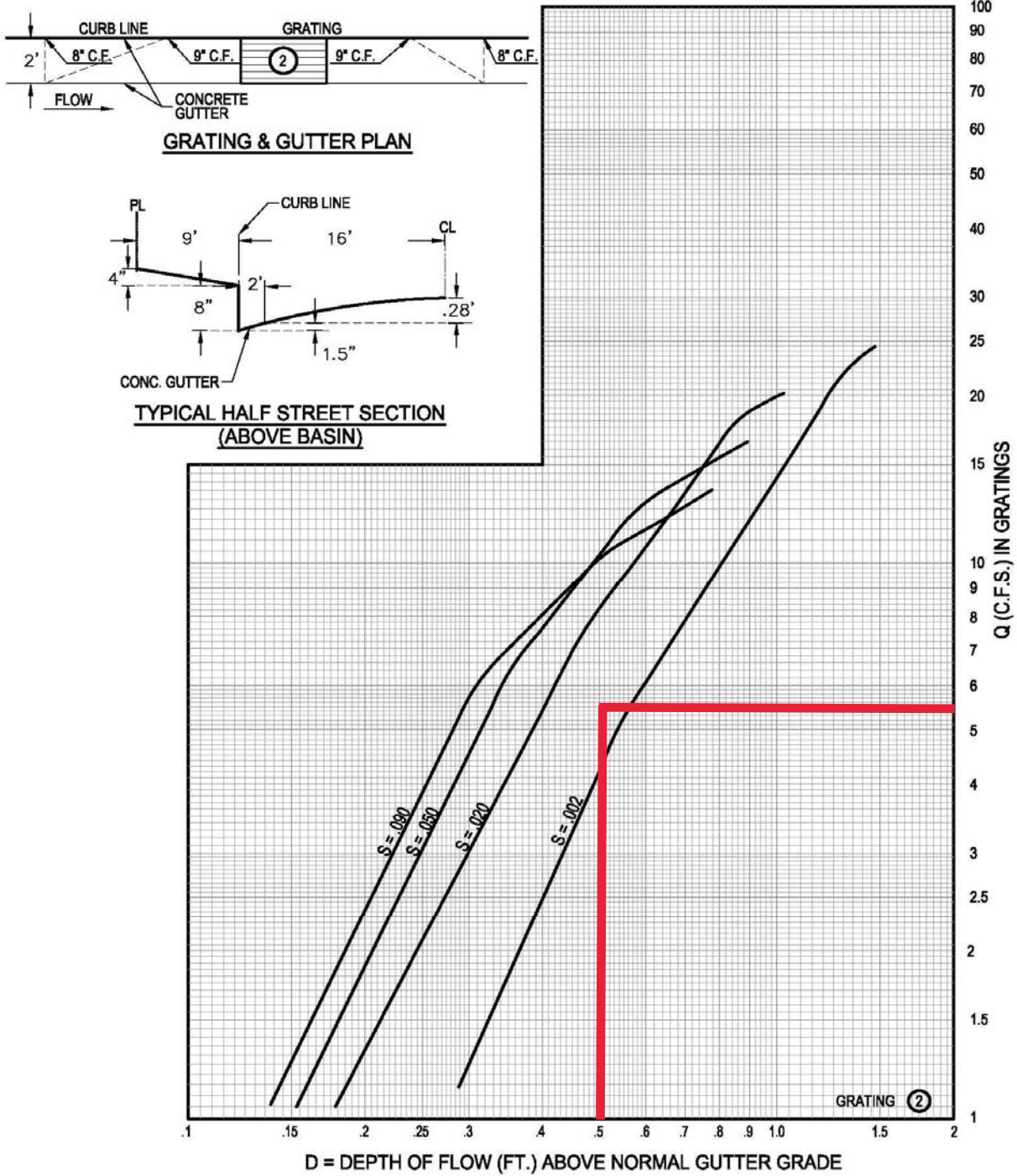


PLATE 22.3 D-5

GRATING CAPACITIES FOR TYPE "A", "C" AND "D"

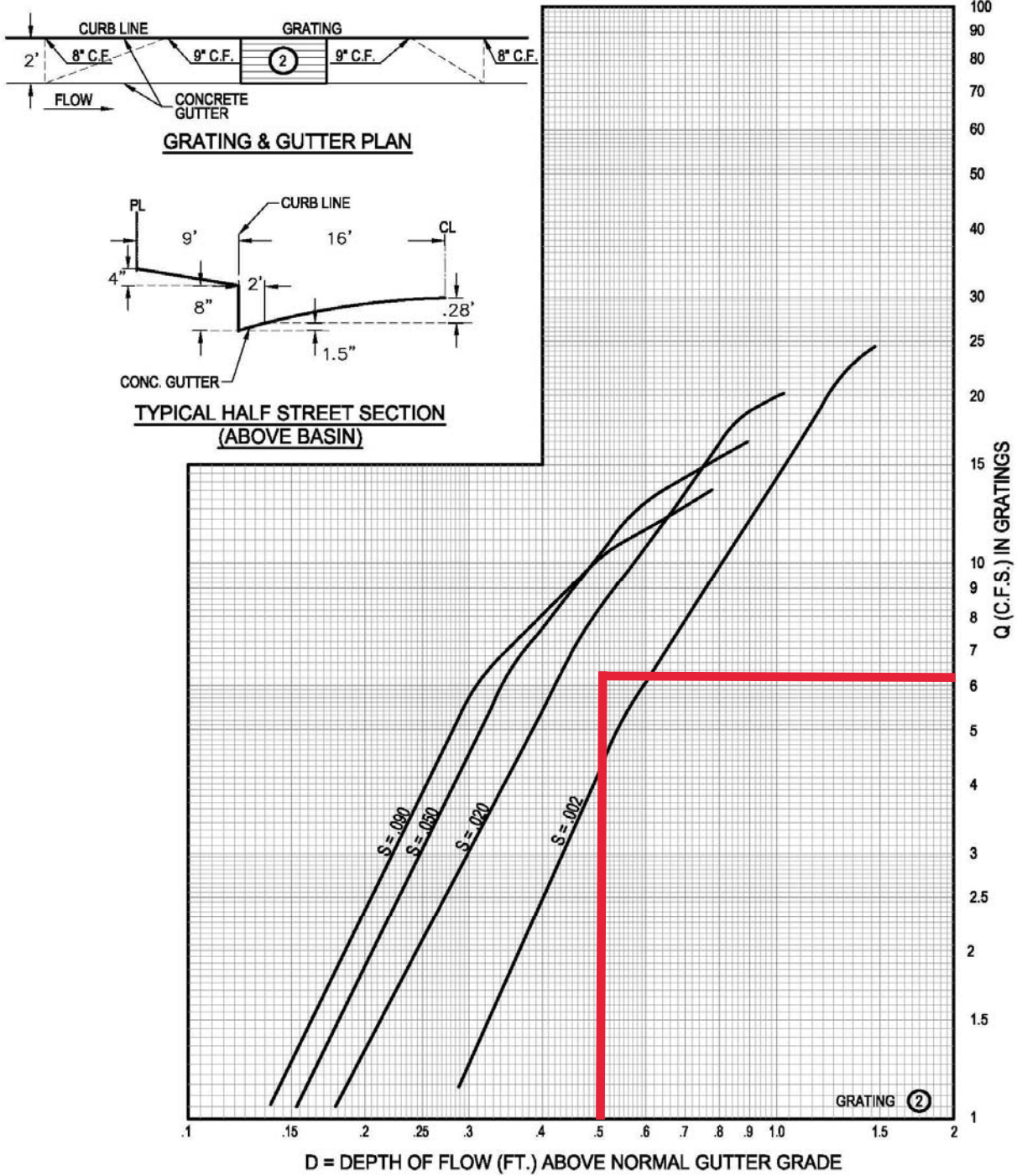
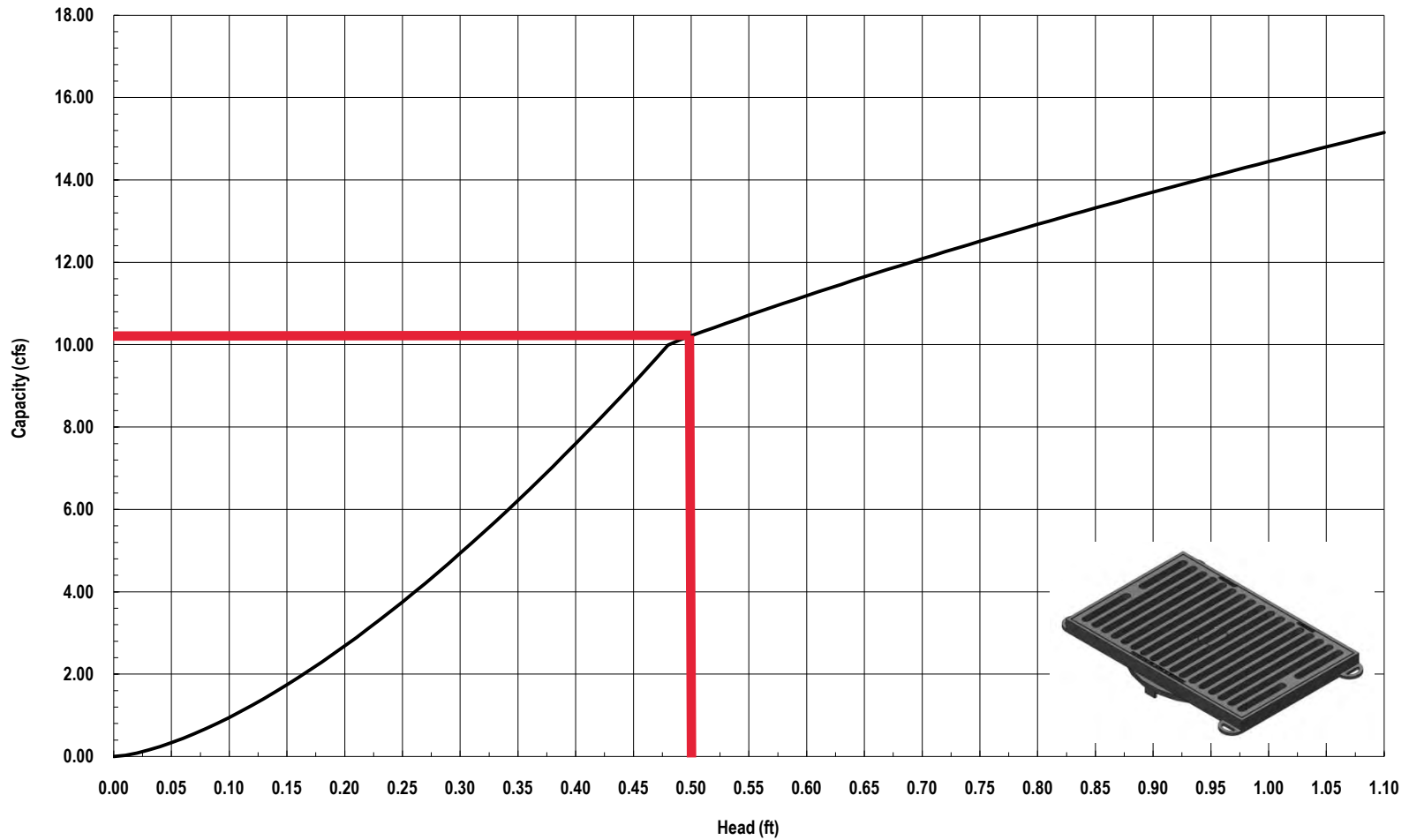


PLATE 22.3 D-5

Nyloplast 2' x 3' Road & Highway Grate Inlet Capacity Chart



Nyloplast[®]

3130 Verona Avenue • Buford, GA 30518
(866) 888-8479 / (770) 932-2443 • Fax: (770) 932-2490
© Nyloplast Inlet Capacity Charts June 2012

Manning Formula: Typical Public Half-Road Section

Irregular Section

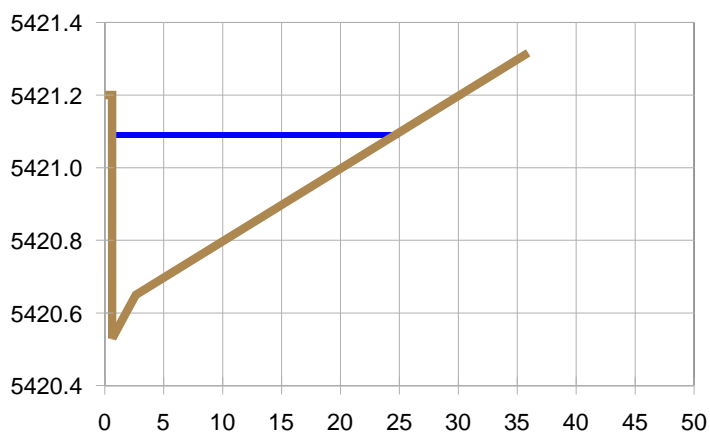
Input

Flow 14.88 cfs
Slope 0.005 ft/ft

Sta	Elev	n	Sta	Elev	n	Sta	Elev	n	Sta	Elev	n
0	5421.20	0.017	0.62	5421.20	0.017	0.63	5420.53	0.017	2.63	5420.65	0.017
35.63	5421.31	0.017	68.63	5420.65	0.017	70.63	5420.53	0.017	70.64	5421.20	0.017

Output

WSElev 5,421.091 ft
Flow Area 5.87 sf
Velocity 2.53 fps
Velocity Head 0.0999 ft
Top Width 24.1 ft
Froude Number 0.905
Critical WSElev 5,421.072 ft
Critical Slope ft/ft



Manning Formula: Typical Public Road Section

Irregular Section

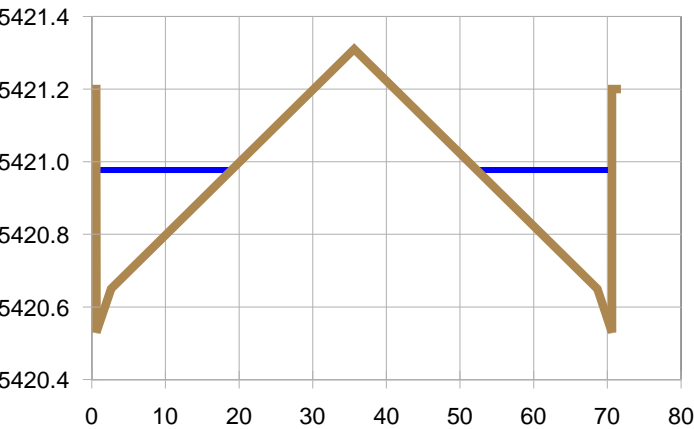
Input

Flow 14.88 cfs
Slope 0.005 ft/ft

Sta	Elev	n	Sta	Elev	n	Sta	Elev	n	Sta	Elev	n
0	5421.20	0.017	0.62	5421.20	0.017	0.63	5420.53	0.017	2.63	5420.65	0.017
35.63	5421.31	0.017	68.63	5420.65	0.017	70.63	5420.53	0.017	70.64	5421.20	0.017
71.26	5421.20	0.017									

Output

WSElev 5,420.976 ft
Flow Area 6.87 sf
Velocity 2.17 fps
Velocity Head 0.0729 ft
Top Width 36.6 ft
Froude Number 0.882
Critical WSElev 5,420.958 ft
Critical Slope ft/ft



Manning Formula: Proposed Internal Roadway Max Flow

Irregular Section

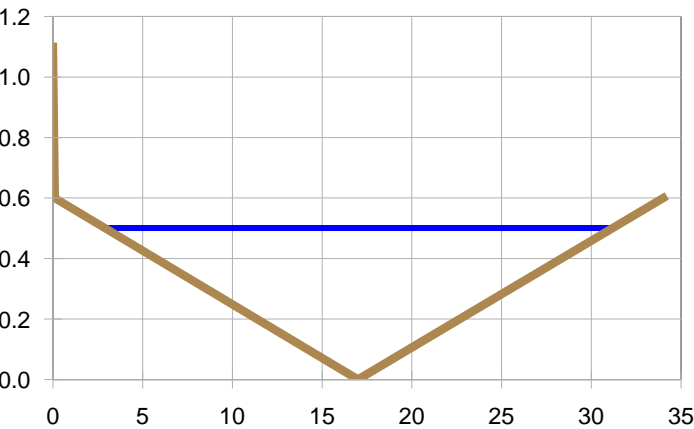
Input

Flow 17.3 cfs
Slope 0.005 ft/ft

Sta	Elev	n	Sta	Elev	n	Sta	Elev	n	Sta	Elev	n
0	1.1	0.017	0.1	0.6	0.017	17	0	0.017	34	0.6	0.017

Output

WSElev 0.500 ft
Flow Area 7.06 sf
Velocity 2.45 fps
Velocity Head 0.0934 ft
Top Width 28.2 ft
Froude Number 0.864
Critical WSElev 0.472 ft
Critical Slope ft/ft



Temporary Public Retention Pond A Weir Calculation

Head Water Depth (h):

1

ft

User Enter Desired Value

Weir (Unknown Q):

Discharge Coeff. (C_w):

3.33

Length (L):

24.70

ft

Flow (Q) = C_w · L · h ^ (1.5)

Flow (Q) =

82.3

cfs

Head Water Depth (h):

0.5

ft

Weir (Unknown Q):

Discharge Coeff. (C_w):

3.33

Length (L):

24.70

ft

Flow (Q) = C_w · L · h ^ (1.5)

Flow (Q) =

29.1

cfs

Emailed October 2, 2020

To: Renee Brissette, P.E., Senior Engineer Hydrology
City of Albuquerque

From: Nicole M. Friedt, P.E., Development Review Engineer
AMAFCA

RE: COMMENTS for PR-2020-003737 Resubmittal dated September 4, 2020

TRACTS 1, 2 & 3, UNIT 4

Sonata Trails Unit 4

Conceptual Grading and Drainage Plan, Drainage Report:

ZAP: C-10

Drainage Report

1. See minor editorial comments in attached PDF.
2. See model comments as they will impact the report write up.
3. Drainage Covenants – this section needs to be updated because you are having an impact to Pond K as well as a new discharge into Pond K. Do you have authorization or rights for any work to this facility?

Final Model

1. Models should be run for 96 hours to confirm and document that the ponds drain in less than 96 hours.
2. Why is does Link 38 have an inlet offset of 2.46' and an outlet offset of 0.62'?
3. Have you confirmed that the outlet for Pond K is truly 2.46' above the invert of Pond K?
4. This results in 2.46' of dead storage in the pond that if truly exists can not be accounted for in your volume scenario as it could be filled by a previous storm event.
5. AMAFCA has asked that the Peak Flow leaving the Outfall not exceed 45cfs and thus reduce the burden of an already overtaxed downstream infrastructure. That request was not accommodated in this submittal. Upon investigation, this request can be achieved and exceeded with the following modifications:
 - a. Change ORF_K to 2' diameter, Correct the outflow pipe (Link 45) to have an Inlet offset of only 0.72', Increase the Pond K storage (approximated at 10%). These modifications result in an outfall flow of 36 cfs.
6. AMAFCA has not verified that the elevations of the Manholes in either model scenario match those as built and is therefore going under the assumption that the model is an accurate reflection of the asbuilt conditions. Please provide a validation that the existing model/proposed model that is being used to assess the impacts of the proposed improvements reflects the

as-built conditions for the infrastructure within Universe Blvd.
and the subject ponds.