POSS LANDING SUBDIVISION PHASE 2

REVISED STORMWATER MANAGEMENT PLAN

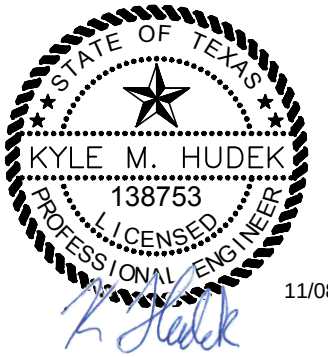
11/08/2024

PREPARED FOR:

CENTURY COMMUNITIES

2330 N Loop 1604 W Access Road, Suite 112

San Antonio, TX 78248



11/08/2024

CUDE ENGINEERS
SAN ANTONIO | AUSTIN | SAN MARCOS

4122 POND HILL ROAD, STE 101
SAN ANTONIO, TEXAS 78231

PHONE: (210) 681-2951
CUDEENGINEERS.COM

TBPE NO. 455
TBPELS NO. 10048500

September 23, 2024

City of Leon Valley
Planning and Zoning Department
6400 El Verde Road
Leon Valley, TX, 78238

Re: Poss Landing Phase 2 Subdivision
Stormwater Management Plan

To Whom This May Concern,

Please find enclosed with this submittal copies of the Poss Landing Subdivision Stormwater Report for phase 2. This site is fully within the city limits of Leon Valley, Bexar County, Texas. This tract of land is not subject to the City of San Antonio mandatory detention requirements, not located within the Edwards Aquifer Contributing or Recharge Zones, and not located within the limits of a floodplain.

If you have any questions regarding the drainage design, hydrology, hydraulics or regarding this submittal please contact Mr. Kyle Hudek, P.E. (khudek@cudeengineers.com) for more detailed assistance.

Thank you for your assistance in this matter.

Sincerely,

K Hudek

Kyle Hude, P.E.
Senior Project Manager

STORMWATER MANAGEMENT PLAN
Poss Landing Subdivision (Phase 2)

PROJECT SCOPE:

Poss Landing Subdivision Phase 2 is a proposed single-family residential development that encompasses approximately 6–acres of lightly developed land set to be dealt with before construction. Located southwest of the intersection of Huebner Road and Evers Road, in Leon Valley, Texas, this development will consist of 49 residential lots, street infrastructure, drainage improvements and utility infrastructure. Stormwater from this development flows south to Huebner Road and west towards Leon Valley Elementary School. Ultimately, the stormwater runoffs flow to Huebner Creek. Please refer to the attachments for the location map.

JURISDICTIONAL AUTHORITY:

- This property is located fully within the city limits of Leon Valley, Texas.
- This property is not located within the limits of the Edwards Aquifer Contributing or Recharge Zone.
- This property is not located within a FEMA Floodplain (FIRM Panel 48029C0240G, dated September 29, 2010).

Please refer to the attachments for the detailed jurisdictional exhibits.

METHODOLOGY:

To accurately analyze the existing and proposed drainage patterns, the stormwater runoff for the areas of this shed had to be computed. With the shed being less than 200 acres with no significant flood storage, the Rational Method was used for computing the hydrology for this development. The Time of Concentration for each drainage area was determined using the Seelye Chart for overland flow, the TR-55 method for shallow concentrated flow, and the channel flow was calculated at 6 feet per second over the length of the flow. The overall Time of Concentration was found by adding the overland flow, shallow concentrated flow, and the channel flow together. Rainfall intensities were obtained from Section 10.02, Division 9, Exhibit X of the Leon Valley Code of Ordinances for the 5-year, 25-year, and 100-year storm events. Runoff coefficients were obtained from Section 10.02.34(a)(1) of the Leon Valley Code of Ordinances. For existing conditions, the land characteristic of the undeveloped property is best described as large lot residential area and average slopes over three (3) percent up to five (5) percent. For the proposed development, the land is best described as closely built residential with average slopes over three (3) percent up to five (5) percent. These land characteristics were used to calculate a runoff coefficient for each drainage area for existing and proposed conditions.

EXISTING SITE CONDITION NARRATIVE

In existing conditions, the natural topography conveys a small portion of stormwater runoff west towards Leon Valley Elementary School and a larger portion of the stormwater runoff south towards Huebner Road. The average slopes of the north portion range from three (3) percent to five (5) percent. The stormwater runoff from the southern portion of the property is conveyed along Huebner Road to Cherryleaf Drive; ultimately flowing to Huebner Creek. The slopes of the southern portion range from three (3) percent to five (5) percent. To analyze the existing shed conditions, composite runoff coefficients were calculated using 0.47 for natural/grassed areas, 0.62 for large lot residential areas, and 0.80 for dense residential areas draining onto the property. Please refer to the attachments for the existing conditions drainage area maps.

PROPOSED SITE CONDITION NARRATIVE

The proposed development will consist of street infrastructure, drainage improvements, utility construction and single-family residential homes. To analyze the proposed shed conditions, composite runoff coefficients were calculated using 0.47 for natural/grassed areas and 0.80 for dense residential areas. The proposed topography will continue to convey stormwater to the southwestern and south sides of the development. For area A1, the watershed will be flowing towards Huebner Road in the direction of the proposed detention pond and area A2 will flow towards Huebner Road bypassing the detention pond. All flow discharging towards the school property shown in the existing conditions Area 2 has been redirected towards Huebner Road due to the proposed grading of the site. This redirection of flow has been accounted for in the detention analysis. Please refer to the attachments for the proposed conditions drainage area maps.

Existing A1 vs. Proposed A1+A2			
Storm	**Ex. Q (cfs)**	**Prop. Q (cfs)**	**Difference**
5 YR	14.93	25.54	**+10.61**
25 YR	20.53	35.12	**+14.59**
100 YR	25.34	43.36	**+18.02**

DETENTION FACILITIES

For Phase 2 of the Poss Landing development, detention will be provided to mitigate the increased runoff resulting from the increase of impervious cover that will cause rises in water surface elevations, increases in velocities, and an increase in peak flows. To mitigate these adverse impacts, one detention pond is being proposed within this development; this detention pond will mitigate the adverse impacts to the surrounding properties back to existing conditions flows. The table below shows a summary of existing and proposed flows as well as the inflow and outflow of the proposed detention pond. This comparison shows a net reduction of flow towards Huebner Road.

EX. A1 vs CP1:

	Flow Comparison		**Proposed Detention Pond 1**	
	Existing (cfs)	**Proposed (cfs)**	**Inflow (cfs)**	**Outflow (cfs)**
5 Year	14.93	11.60	17.91	5.53
25 Year	20.53	16.48	24.63	8.22
100 Year	25.34	21.26	30.41	12.17

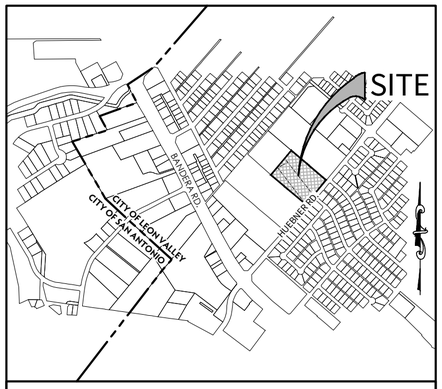
ADVERSE IMPACT STATEMENT (2,000' DOWNSTREAM ANALYSIS)

Stormwater from the site will be conveyed to outlet points on the southern side of the subdivision. Stormwater runoff from the northern portion of the property will be discharged at equal to or less than existing conditions. The stormwater runoff from the southern portion of the property will be conveyed to the proposed detention pond in the eastern corner of the property and discharged at equal to or less than existing conditions. The discharge from this pond will ultimately be conveyed to Huebner Creek.

With the proposed construction of onsite detention, the increased runoff resulting from the proposed development will not produce a significant adverse impact to other properties, habitable structures, or any drainage systems to a point 2,000 feet downstream.

ATTACHMENTS:

- Poss Landing Subdivision Plat (Phase 2)
- Location Map
- Flood Insurance Rate Map
- Exhibit E1 – Existing Site Hydrology
- Exhibit E2 – Proposed Site Hydrology
- Exhibit E3 – Impervious Cover
- Street Plan & Profile and Capacity Calculations
- Proposed Pond & Drain Exhibit
- Existing Shed Hydrograph Exhibit
- Proposed/Ultimate Shed Hydrograph Exhibit



LOCATION MAP

NOT TO SCALE

LEGEND

Ac.	= ACRES
BLK	= BLOCK
B.S.L.	= BUILDING SETBACK LINE
C1	= CURVE NUMBER
C.B.	= COUNTY BLOCK
CPS	= CITY PUBLIC SERVICE
DOC.	= DOCUMENT
D.R.	= DEED RECORDS OF BEXAR COUNTY, TEXAS
D.P.R.	= DEED AND PLAT RECORDS OF BEXAR COUNTY, TEXAS
DRN.	= DRAINAGE
E.G.T.CA ESM'T.	= ELECTRIC, GAS, TELEPHONE, AND CABLE TELEVISION = EASEMENT
L1	= LINE NUMBER
NAD	= NORTH AMERICAN DATUM
NO.	= NUMBER
O.P.R.	= OFFICIAL PUBLIC RECORDS OF BEXAR COUNTY, TEXAS
PG.	= PAGE
PGS.	= PAGES
ROW	= RIGHT-OF-WAY
VAR.	= VARIABLE
VOL.	= VOLUME
WID.	= WIDTH
"	= EQUAL TO PREVIOUS BEARING/DIMENSION
	= CITY LIMIT LINE
	= STREET CENTERLINE
ELEV.	= EXISTING GROUND MAJOR CONTOUR
ELEV.	= EXISTING GROUND MINOR CONTOUR
	= EXISTING PROPERTY LINE
1	= 10' E.G.T.CA EASEMENT POSS LANDING UNIT 1, PLAT NUMBER 2022-20
1	= 10' E.G.T.CA. EASEMENT
W	= EXISTING WELL TO BE PROPERLY CAPPED

THIS SUBDIVISION PLAT OF POSS LANDING UNIT 2 HAS BEEN SUBMITTED TO AND CONSIDERED BY THE CITY COUNCIL OF THE CITY OF LEON VALLEY, TEXAS, AND IS HEREBY APPROVED BY SUCH CITY COUNCIL.

DATED THIS _____ DAY OF _____, A.D. _____.

BY: _____
MAYOR/CITY COUNCIL

THE CITY ENGINEER OF THE CITY OF LEON VALLEY HEREBY CERTIFIES THAT THIS SUBDIVISION PLAT CONFORMS TO ALL REQUIREMENTS OF THE SUBDIVISION REGULATIONS OF THE CITY AS TO WHICH HIS APPROVAL IS REQUIRED

_____
CITY ENGINEER

STATE OF TEXAS
COUNTY OF BEXAR

I HEREBY CERTIFY THAT PROPER ENGINEERING CONSIDERATION HAS BEEN GIVEN TO THIS SUBDIVISION PLAT TO THE MATTERS OF STREETS, LOTS, AND DRAINGE LAYOUT. TO THE BEST OF MY KNOWLEDGE THIS PLAT CONFORMS TO ALL REQUIREMENTS OF THE UNIFIED DEVELOPMENT CODE, EXCEPT FOR THOSE VARIANCES GRANTED BY THE LEON VALLEY PLANNING COMMISSION.

M.W. CUDE ENGINEERS L.L.C.
CHRISTOPHER J. CHAFFEE, P.E.

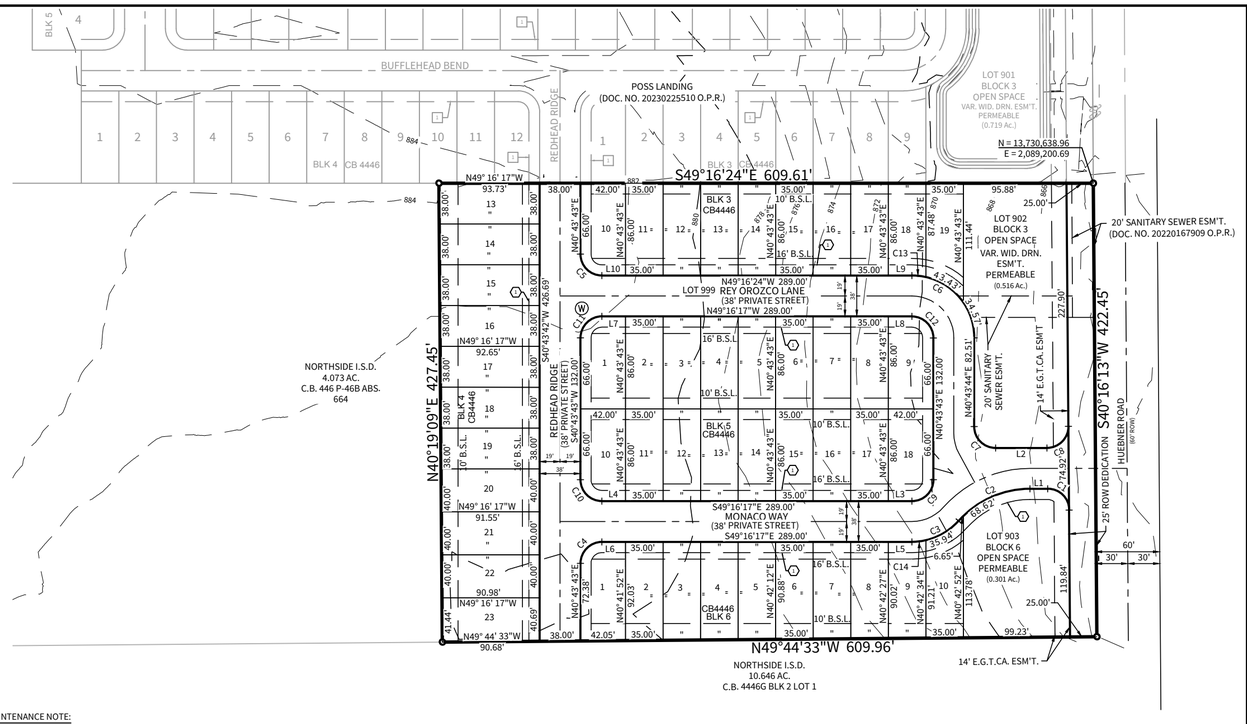
_____
LICENSED PROFESSIONAL ENGINEER

STATE OF TEXAS
COUNTY OF BEXAR

I HEREBY CERTIFY THAT THIS SUBDIVISION PLAT IS TRUE AND CORRECT AND WAS PREPARED FROM AN ACTUAL SURVEY OF THE PROPERTY MADE UNDER MY SUPERVISION ON THE GROUND.

M.W. CUDE ENGINEERS, L.L.C.
YURI V. BALMACEDA WHEELOCK, R.P.L.S.

_____
REGISTERED PROFESSIONAL LAND SURVEYOR



COMMON AREA MAINTENANCE NOTE:

THE MAINTENANCE OF ALL PRIVATE STREETS (LOT 999, BLOCK 3), OPEN SPACE, (INCLUDING LOT 902, BLOCK 3, LOT 901, BLOCK 4, AND LOT 903, BLOCK 6), DRAINAGE EASEMENTS AND EASEMENTS OF ANY OTHER NATURE WITHIN THIS SUBDIVISION SHALL BE THE RESPONSIBILITY OF THE PROPERTY OWNERS, OR THE PROPERTY OWNERS' ASSOCIATION, OR ITS SUCCESSORS OR ASSIGNS AND NOT THE RESPONSIBILITY OF THE CITY OF LEON VALLEY

FLOODPLAIN VERIFICATION NOTE:

NO PORTION OF THE FEMA 1% ANNUAL CHANCE (100-YEAR) FLOODPLAIN EXISTS WITHIN THIS PLAT AS VERIFIED BY FEMA MAP PANEL: 48029C0240G, EFFECTIVE 2010-09-29. FLOODPLAIN INFORMATION IS SUBJECT TO CHANGE AS A RESULT OF FUTURE FEMA MAP REVISIONS AND/OR AMENDMENTS.

DRAINAGE EASEMENT ENCROACHMENTS NOTE:

NO STRUCTURE, FENCES, WALLS OR OTHER OBSTRUCTIONS THAT IMPEDE DRAINAGE SHALL BE PLACED WITHIN THE LIMITS OF THE DRAINAGE EASEMENTS SHOWN ON THIS PLAT. NO LANDSCAPING OR OTHER TYPE OF MODIFICATIONS, WHICH ALTER THE CROSS-SECTIONS OF THE DRAINAGE EASEMENTS, AS APPROVED, SHALL BE ALLOWED WITHOUT THE APPROVAL OF THE CITY OF LEON VALLEY. THE CITY OF LEON VALLEY SHALL HAVE THE RIGHT OF INGRESS AND EGRESS OVER THE GRANTOR'S ADJACENT PROPERTY TO REMOVE ANY IMPEDING OBSTRUCTIONS PLACED WITHIN THE LIMITS OF SAID DRAINAGE EASEMENT AND TO MAKE ANY MODIFICATIONS OR IMPROVEMENTS WITHIN SAID DRAINAGE EASEMENTS.

DETENTION POND MAINTENANCE NOTE:

MAINTENANCE OF ON-SITE STORM WATER DETENTION SHALL BE THE SOLE RESPONSIBILITY OF THE PROPERTY OWNERS AND/OR THE PROPERTY OWNERS' ASSOCIATION AND ITS SUCCESSORS OR ASSIGNS AND IS NOT THE RESPONSIBILITY OF THE CITY OF LEON VALLEY.

PRIVATE STREET DESIGNATION NOTE:

LOT 999, BLOCK 3, CB 4446, IS A PRIVATE STREET AND IS DESIGNATED AS AN UNDERGROUND AND AT-GRADE INFRASTRUCTURE AND SERVICE FACILITIES EASEMENT FOR GAS, ELECTRIC, STREET LIGHT, TELEPHONE, CABLE TELEVISION, DRAINAGE, PEDESTRIAN, PUBLIC WATER, WASTEWATER, AND RECYCLED WATER MAINS.

CPS/ LEON VALLEY UTILITY NOTES:

1. THE CITY OF LEON VALLEY - IS HEREBY DEDICATED EASEMENTS AND RIGHTS-OF-WAY FOR UTILITY, TRANSMISSION AND DISTRIBUTION INFRASTRUCTURE AND SERVICE FACILITIES IN THE AREAS DESIGNATED ON THIS PLAT AS "ELECTRIC EASEMENT," "ANCHOR EASEMENT," "SERVICE EASEMENT," "OVERHANG EASEMENT," "UTILITY EASEMENT," "GAS EASEMENT," "TRANSFORMER EASEMENT," "WATER EASEMENT," "SANITARY SEWER EASEMENT" AND/OR "RECYCLED WATER EASEMENT" FOR THE PURPOSE OF INSTALLING, CONSTRUCTING, RECONSTRUCTING, MAINTAINING, REMOVING, INSPECTING, PATROLLING, AND ERECTING UTILITY INFRASTRUCTURE AND SERVICE FACILITIES FOR THE REASONS DESCRIBED ABOVE. CPS ENERGY SHALL ALSO HAVE THE RIGHT TO RELOCATE SAID INFRASTRUCTURE AND SERVICE FACILITIES WITHIN EASEMENT AND RIGHT-OF-WAY AREAS, TOGETHER WITH THE RIGHT OF INGRESS AND EGRESS OVER GRANTOR'S ADJACENT LANDS FOR THE PURPOSE OF ACCESSING SUCH INFRASTRUCTURE AND SERVICE FACILITIES AND THE RIGHT TO REMOVE FROM SAID LANDS ALL TREES OR PARTS THEREOF, OR OTHER OBSTRUCTIONS WHICH ENDANGER OR MAY INTERFERE WITH THE EFFICIENCY OF WATER, SEWER, GAS, AND/OR ELECTRIC INFRASTRUCTURE AND SERVICE FACILITIES. NO BUILDINGS, STRUCTURES, CONCRETE SLABS, OR WALLS WILL BE PLACED WITHIN EASEMENT AREAS WITHOUT AN ENCROACHMENT AGREEMENT WITH THE RESPECTIVE UTILITY
2. ANY CPS ENERGY MONETARY LOSS RESULTING FROM MODIFICATIONS REQUIRED OF CPS ENERGY INFRASTRUCTURE AND SERVICE FACILITIES, LOCATED WITHIN SAID EASEMENTS, DUE TO GRADE CHANGES OR GROUND ELEVATION ALTERATIONS SHALL BE CHARGED TO THE PERSON OR PERSONS DEEMED RESPONSIBLE FOR SAID GRADE CHANGES OR GROUND ELEVATION ALTERATIONS.
3. THIS PLAT DOES NOT AMEND, ALTER, RELEASE OR OTHERWISE AFFECT ANY EXISTING ELECTRIC, GAS, WATER, SEWER, DRAINAGE, TELEPHONE, CABLE TV EASEMENTS OR ANY OTHER EASEMENTS FOR UTILITIES UNLESS THE CHANGES TO SUCH EASEMENTS ARE DESCRIBED HEREON.
4. CONCRETE DRIVEWAY APPROACHES ARE ALLOWED WITHIN THE FIVE (5) AND TEN (10) FOOT WIDE ELECTRIC AND GAS EASEMENTS WHEN LOTS ARE SERVED ONLY BY UNDERGROUND ELECTRIC AND GAS FACILITIES.
5. ROOF OVERHANGS ARE ALLOWED WITHIN THE FIVE (5) AND TEN (10) FOOT WIDE ELECTRIC AND GAS EASEMENTS WHEN ONLY UNDERGROUND ELECTRIC AND GAS FACILITIES ARE PROPOSED OR EXISTING WITHIN THOSE FIVE (5) AND TEN (10) FOOT WIDE EASEMENTS.

RESIDENTIAL FIRE FLOW NOTE:

THE PUBLIC WATER MAIN SYSTEM HAS BEEN DESIGNED FOR A MINIMUM FIRE FLOW DEMAND OF 1,000 GPM AT 25 PSI RESIDUAL PRESSURE TO MEET THE CITY OF LEON VALLEY'S FIRE FLOW REQUIREMENTS FOR THE RESIDENTIAL DEVELOPMENT. THE FIRE FLOW REQUIREMENTS FOR INDIVIDUAL STRUCTURES WILL BE REVIEWED PRIOR TO BUILDING PERMIT APPROVAL IN ACCORDANCE WITH THE PROCEDURES SET FORTH BY THE CITY OF LEON VALLEY FIRE MARSHAL.

OPEN SPACE NOTE:

LOT 902, BLOCK 3, LOT 901, BLOCK 4, AND LOT 903, BLOCK 6, CB 4446, IS DESIGNATED AS OPEN SPACE AND AS A COMMON AREA AND A DRAINAGE, SEWER, WATER, ELECTRIC, GAS, TELEPHONE AND CABLE TV EASEMENT.

SURVEYOR'S NOTES:

1. THE BEARINGS AND COORDINATES SHOWN HEREON ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, NAD 83 (2011).
2. 1/2" IRON RODS WITH CAP STAMPED "CUDE" SET AT ALL PROPERTY CORNERS (IF PRACTICAL) UPON COMPLETION OF CONSTRUCTION.
3. COORDINATES SHOWN HEREON ARE GRID.
4. DISTANCES SHOWN HEREON ARE SURFACE = GRID * 1.00017

GENERAL PLATTING NOTES:

1. 16' FRONT BUILDING SETBACK
2. 10' REAR BUILDING SETBACK
3. 3' OR 10' SIDE SETBACK WHEN ADJACENT TO ROADWAY

CURVE TABLE					
CURVE	RADIUS	DELTA	LENGTH	CHORD BEARING	CHORD
C1	20.00'	89°32'30"	31.26'	S04°30'00"E	28.17'
C2	89.00'	48°27'14"	75.27'	S73°29'54"E	73.04'
C3	58.00'	48°27'14"	49.05'	S73°29'54"E	47.60'
C4	20.00'	90°00'00"	31.42'	N85°43'43"E	28.28'
C5	20.00'	90°00'07"	31.42'	N04°16'20"W	28.28'
C6	58.00'	90°00'07"	91.11'	N04°16'20"W	82.03'
C7	20.00'	90°00'00"	31.42'	N04°16'17"W	28.28'
C8	20.00'	90°27'30"	31.58'	S85°29'57"W	28.40'
C13	58.00'	12°57'15"	13.11'	N42°47'46"W	13.09'
C14	58.00'	12°57'08"	13.11'	S55°44'51"E	13.08'

LINE TABLE		
LINE	BEARING	LENGTH
L1	S49°16'17"E	16.36'
L2	N49°16'17"W	47.75'
L4	S49°16'17"E	22.00'
L5	S49°16'17"E	22.00'
L6	S49°16'17"E	22.00'
L7	N49°16'17"W	22.00'
L8	N49°16'17"W	22.00'
L9	N49°16'24"W	22.00'
L10	N49°16'24"W	22.00'

PLAT NUMBER: PZ-2024-16

SUBDIVISION PLAT ESTABLISHING POSS LANDING UNIT 2

5.949 ACRES OF LAND LOCATED IN THE MD DE LOS SANTOS SURVEY 82, ABSTRACT 664, BEXAR COUNTY, TEXAS AND BEING ALL OF THAT CALLED 138.72 ACRES OF LAND AS DESCRIBED IN VOLUME 4219, PAGE 248, AND 1.794 ACRES OF LAND AS DESCRIBED IN VOLUME 6700, PAGE 180 OF THE DEPARTMENT OF PUBLIC RECORD AND 1.076 ACRES OF LAND AS DESCRIBED IN THE DOCUMENT NUMBER 20210300205 OF THE OFFICIAL PUBLIC RECORDS OF BEXAR COUNTY, TEXAS

SCALE: 1"=100'

100 50 0 100

M.W. CUDE ENGINEERS, L.L.C.
4122 POND HILL RD. ● S-101
SAN ANTONIO, TEXAS 78231
T:210.681.2951 ● F:210.523.7112
WWW.CUDEENGINEERS.COM
TBPE #455 ● TBPELS #10048500
[MWC: CHRIS CHAFFEE, P.E.]

PRJ. NO.: 03653.005

STATE OF TEXAS
COUNTY OF BEXAR

THE OWNER OF THE LAND SHOWN ON THIS SUBDIVISION PLAT, AND WHOSE NAMES IS SUBSCIBED HERETO, AND IN PERSON OR THROUGH A DULY AUTHORIZED AGENT, DEDICATES TO THE CITY OF LEON VALLEY, TEXAS, FOR THE USE OF THE PUBLIC FOREVER, ALL STREETS, ALLYS, PARKS, WATERCOURSES, DRAINS, EASEMENTS, AND THE WATER AND SEWER LINES I N ALL OF THE AFORESAID PUBLIC PLACES AND ALL OTHER PUBIC PLACES THEREON SHOWN FOR THE PURPOSE AND CONSIDERATION THEREIN EXPRESSED.

OWNER/ DEVELOPER

BY: CENTURY LAND HOLDINGS II, LLC

_____
OWNER

2330 N LOOP 1640 W ACCESS ROAD, SUITE 112
SAN ANTONIO, TEXAS 78248
TEL: (210) 405-0195
CONTACT PERSON: RUDY MUNOZ
VICE PRESIDENT OF LAND

_____
DULY AUTHORIZED AGENT

STATE OF TEXAS
COUNTY OF BEXAR

BEFORE ME, THE UNDERSIGNED AUTHORITY ON THIS DAY PERSONALLY APPEARED

_____ KNOWN TO ME TO BE THE PERSON WHOSE NAME IS SUBSCRIBED TO THE FOREGOING INSTRUMENT, AND ACKNOWLEDGED TO ME THAT THEY EXECUTED THE SAME FOR THE PURPOSES AND CONSIDERATIONS THEREIN EXPRESSED AND IN THE CAPACITY THEREIN STATED.

GIVEN UNDER MY HAND AND SEAL OF OFFICE THIS ____ DAY OF _____,

A.D. _____.

_____
NOTARY PUBLIC, BEXAR COUNTY, TEXAS

CERTIFICATE OF APPROVAL:

This subdivision plat POSS LANDING UNIT 2 of has been submitted to and considered by the City Council of the City of Leon Valley, Texas, and is hereby approved by such City Council.

DATED THIS _____ DAY OF _____, A.D. 20 _____.

_____
COUNTY JUDGE, BEXAR COUNTY, TEXAS

_____
COUNTY CLERK, BEXAR COUNTY, TEXAS

THIS SUBDIVISION PLAT OF POSS LANDING UNIT 2 HAS BEEN SUBMITTED TO AND CONSIDERED BY THE PLANNING AND ZONING COMMISSION OF THE CITY OF LEON VALLEY, TEXAS, AND IS HEREBY APPROVED BY SUCH CITY COUNCIL.

DATED THIS _____ DAY OF _____, A.D. _____.

BY: _____
PLANNING AND ZONING COMMISSION CHAIR

SEPTEMBER 11, 2024 SHEET 1 OF 1

SITE MAPS

Poss Landing

Intersection of Heubner and Evers Rd

Legend

P Poss Landing

Poss Landing

Evers Rd

Huebner Rd

Evers Rd

Huebner Rd.

Pepper Wood

Cherrytear Dr

Peach Tree St

Grass Valley Dr

N

800 ft

Google Earth

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

The **projection** used in the preparation of this map was Texas State Plane South Central Zone (FIPS zone 4204). The **horizontal datum** was NAD 83, GRS 80 spheroid. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, NGS12
Nation Geodetic Survey
SSMC-3, #9202
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information about the **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit their website at http://www.ngs.noaa.gov/.

Base map information shown on this FIRM was provided for Bexar County by Petroleum Place Energy Solutions, L.P. The vector data was derived from Aerial Photography, dated 2006 and captured at a resolution of 1:800.

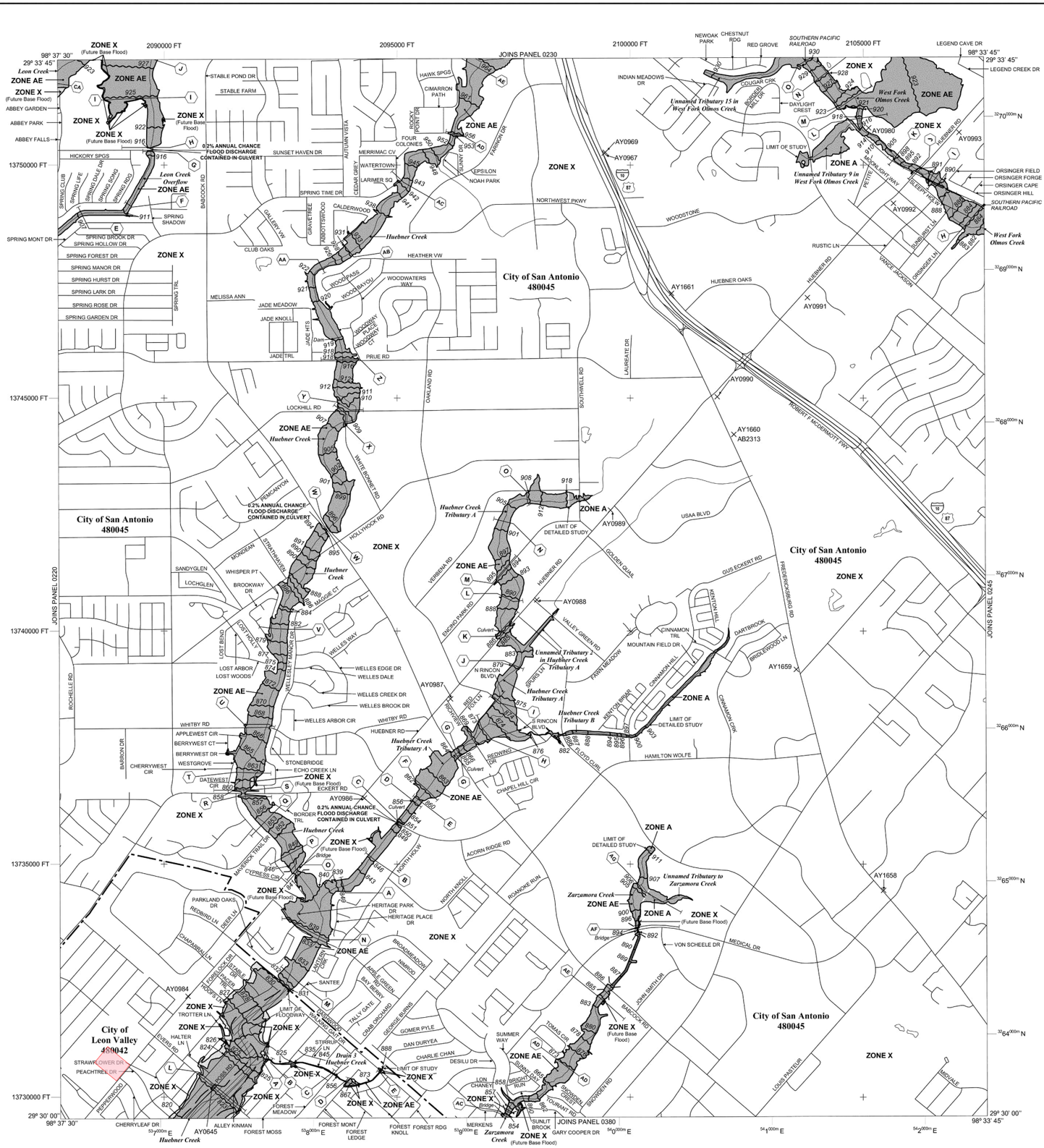
This map reflects more detailed up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and their website at http://msc.fema.gov .

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1- 877- FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip.



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Areas formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.
ZONE X (Future Base Flood)	Areas of 1% annual chance flood based on future conditions hydrology. No Base Flood Elevations determined.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain Boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

- (A)—(A) Cross section line
- (23)- - - -(23) Transect line
- 45° 02' 08", 93° 02' 12" Geographic coordinates referenced to the North American Datum of 1983 (NAD 83) Western Hemisphere
- 4989000FT 5000-foot grid ticks: Texas State Plane coordinate system, south central zone (FIPS zone 4204), Transverse Mercator
- 3399000m N 1000-meter Universal Transverse Mercator grid values, Zone 14
- DX5510 × Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 River Mile

MAP REPOSITORIES
REFER TO LISTING OF MAP REPOSITORIES ON MAP INDEX

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP

FEBRUARY 16, 1996

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

JANUARY 4, 2002 - to change Base Flood Elevations and Special Flood Hazard Areas; to add Base Flood Elevations, Special Flood Hazard Areas, updated roads and road names; and to incorporate previously issued Letters of Map Revision.

September 29, 2010 - to change the Base Flood Elevations, Special Flood Hazard Areas, floodway and zone designations; to add Base Flood Elevations, Special Flood Hazard Areas, roads and road names; to reflect updated topographic information; to incorporate previously issued Letters of Map Revision and to update corporate limits.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

500 0 1000 2000 FEET
300 0 300 600 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0240G

FIRM

FLOOD INSURANCE RATE MAP

BEXAR COUNTY, TEXAS
AND INCORPORATED AREAS

PANEL 240 OF 785

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
LEON VALLEY, CITY OF	480042	0240	G
SAN ANTONIO, CITY OF	480045	0240	G

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
48029C0240G

MAP REVISED
SEPTEMBER 29, 2010

Federal Emergency Management Agency

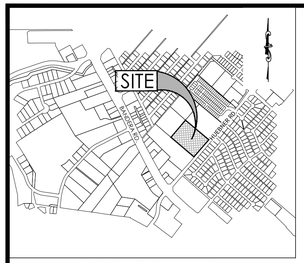
SHED DRAINAGE COMPUTATIONS

CUDE ENGINEERS
SAN ANTONIO | AUSTIN | SAN MARCOS

4122 POND HILL ROAD, STE 101
SAN ANTONIO, TEXAS 78231

PHONE: (210)681-2951
CUDEENGINEERS.COM

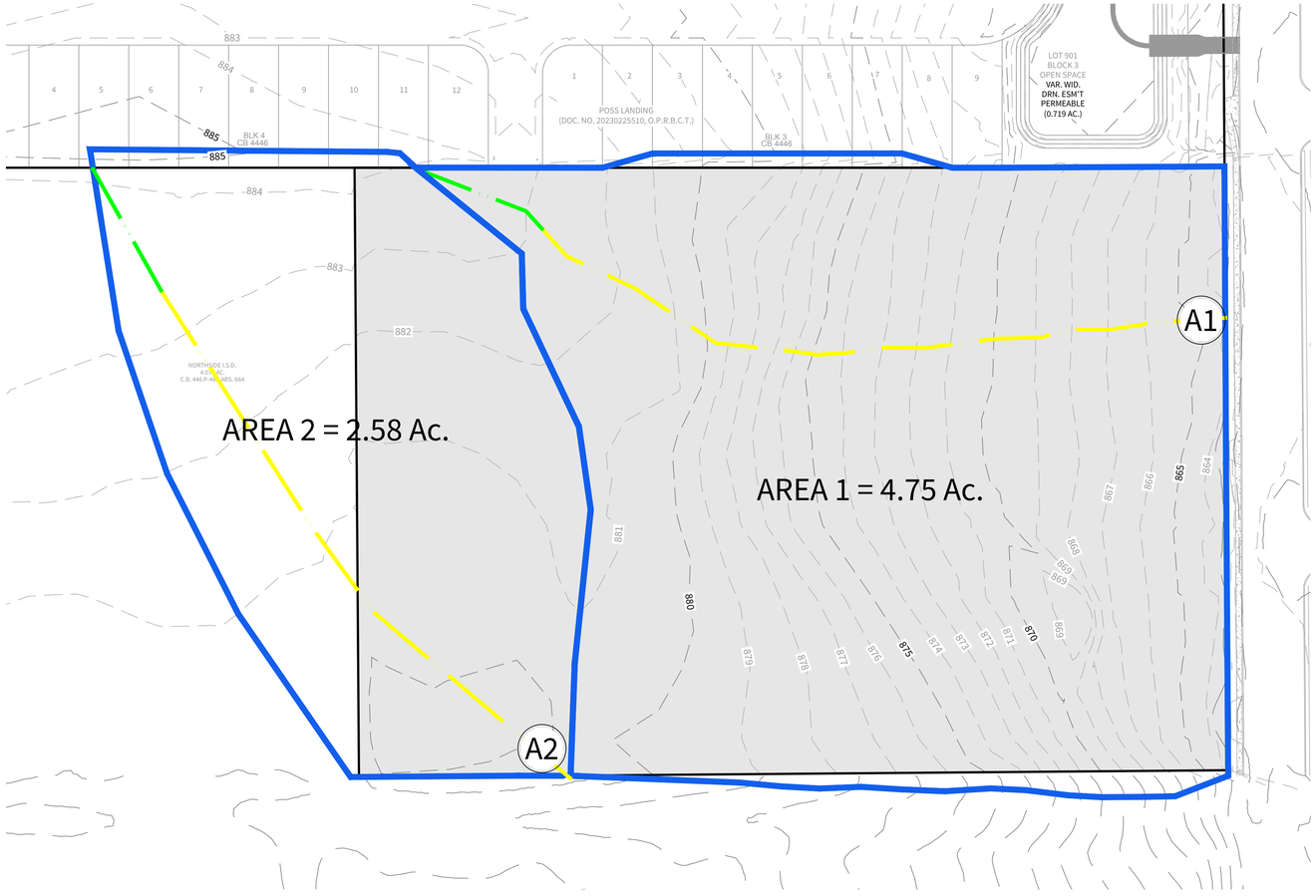
TBPE NO. 455
TBPELS NO. 10048500

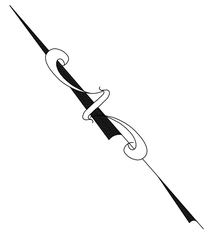


LOCATION MAP
N.T.S.

LEGEND

- = UNIT BOUNDARY
- = DRAINAGE BOUNDARY
- = SHEET FLOW Tc LINE
- = SHALLOW CONCENTRATED Tc LINE
- = CONCENTRATED Tc LINE
- = ACCUMULATION POINT





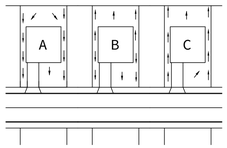
SCALE: 1"=50'
50 25 0 50

DEVELOPER
CENTURY COMMUNITIES
ATTN: VICTOR BERNAL
2330 N LOOP 1604 ACCESS ROAD, STE 112
SAN ANTONIO, TX. 78248
TEL: (210) 469-3442

NOTES:

1. THIS PRELIMINARY MASTER DRAINAGE PLAN IS FOR ILLUSTRATIVE PURPOSES ONLY AND NOT MEANT FOR DESIGN OR CONSTRUCTION PURPOSES.

2. RUN-OFF COEFFICIENTS DERIVED FROM THE CITY OF LEON CODE OF ORDINANCES SECTION 10.02.304 STORM DRAINAGE.



TYPICAL LOT SITE PLAN
N.T.S.

Poss Landing Phase 2 Subdivision								
Weighted "C" values table - Existing Conditions								
Area Number	Residential Ac.	Residential Ac. * $C_{residential}$	large lotResidential Ac.	Residential Ac. * $C_{residential}$	Undeveloped Ac.	Undeveloped Ac. * $C_{undeveloped}$	Total Ac.	Weighted C value
1	0.15	0.12	4.60	2.85	0.00	0.00	4.75	0.63
2	0.06	0.05	1.35	0.84	1.17	0.55	2.58	0.56
$C_{residential}$ =	0.80	$C_{residential}$ =	0.62	$C_{undeveloped}$ =	0.47			

Project Name: Poss Landing Subdivision Phase 2
Calculation Summary for Time of Concentrations & Ultimate Flow

HYDROLOGY				Sheet Flow Tc Compuations						Shallow Conc. Tc Compuations					Overall
Drainage Shed (Computation Point)	Shed Area (Ac.)	AREA OF ACCUMULATION (Ac.)	C	*Length < 100'*	Paved (Y or N)	Upstream Elev.	Downstream Elev	Slope	Time of Concentration	*Length < 650'*	Paved (Y or N)	Downstream Elev	Slope	Time of Concentration	Time of Concentration (min)
A1	4.75	= A1	0.63	*100.00*	N	883.89	882.84	1.05%	14.90	*506.47*	N	863.98	3.72%	2.70	17.00
A2	2.58	= A2	0.56	*100.00*	N	884.10	883.42	0.68%	16.20	*450.64*	N	880.26	0.70%	5.48	21.00

CUDEENGINEERS.COM
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POSS LANDING SUBDIVISION PHASE 2

EXISTING CONDITIONS

DATE
10/31/2024

PROJECT NO.
03653.005

DRAWN BY
MAS

CHECKED BY
KMH

REVISIONS
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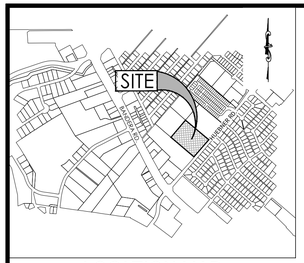
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

PLAT NO.
PZ-2024-16

E1



LOCATION MAP
N.T.S.

LEGEND

- = UNIT BOUNDARY
- = DRAINAGE BOUNDARY
- = SHEET FLOW Tc LINE
- = SHALLOW CONCENTRATED Tc LINE
- = CONCENTRATED Tc LINE
- = ACCUMULATION POINT

DEVELOPER
CENTURY COMMUNITIES
ATTN: VICTOR BERNAL
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SAN ANTONIO, TX. 78248
TEL: (210) 469-3442

NOTES:

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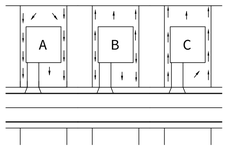
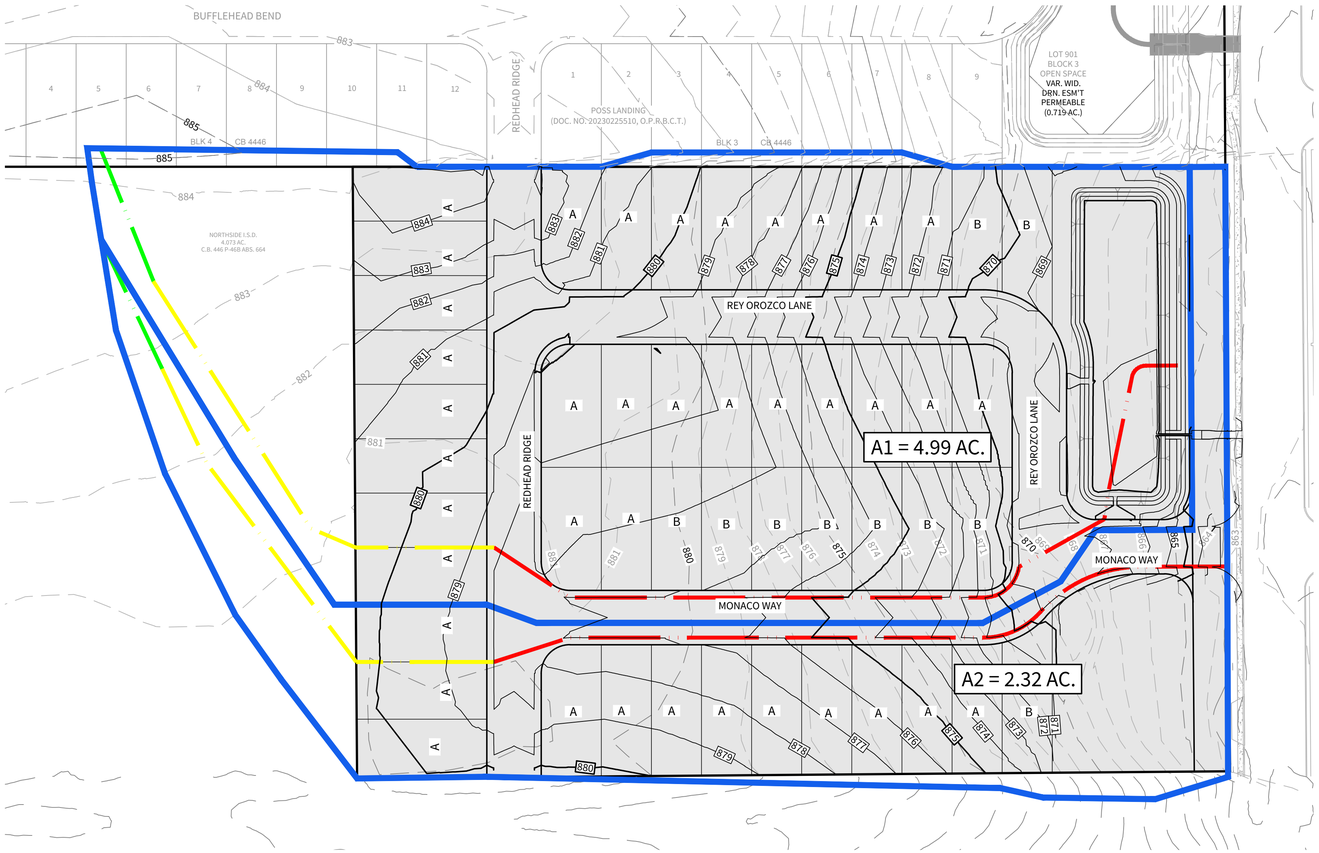
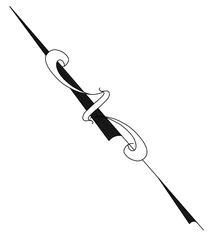
2. RUN-OFF COEFFICIENTS DERIVED FROM THE CITY OF LEON CODE OF ORDINANCES SECTION 10.02.304 STORM DRAINAGE.



TYPICAL LOT SITE PLAN
N.T.S.





SCALE: 1"=50'
50 25 0 50

Poss Landing Phase 2 Subdivision
Weighted "C" values table - Proposed Conditions

Area Number	Residential Ac.	Residential Ac. * $C_{residential}$	Undeveloped Ac.	Undeveloped Ac. * $C_{undeveloped}$	Total Ac.	Weighted C value
1	4.21	3.37	0.78	0.37	4.99	0.75
2	1.94	1.55	0.38	0.18	2.32	0.75
$C_{residential}$ =	0.80	$C_{undeveloped}$ =	0.47			

Project Name: Poss Landing Subdivision Phase 2 — **Precipitation**

Calculation Summary for Time of Concentrations & Ultimate Flow

HYDROLOGY				Sheet Flow Tc Compuations						Shallow Conc. Tc Compuations					Concentrated Tc Computations					Overall
Drainage Shed (Computation Point)	Shed Area (Ac.)	AREA OF ACCUMULATION (Ac.)	C	*Length < 100'*	Paved (Y or N)	Upstream Elev.	Downstream Elev	Slope	Time of Concentration	*Length < 650'*	Paved (Y or N)	Downstream Elev	Slope	Time of Concentration	*Length*	Paved (Y or N)	Downstream Elev	Slope	Time of Concentration	Time of Concentration (min)
A1	4.99	= A1	0.75	*100.00*	N	885.57	883.42	2.15%	12.70	*335.43*	N	880.68	0.82%	3.89	*593.56*	Y	865.49	2.56%	3.06	19.00
A2	2.32	= A2	0.75	*100.00*	N	883.63	882.82	0.81%	15.90	*342.82*	N	880.04	0.81%	3.99	*529.29*	*Y*	*863.17*	3.19%	2.42	22.00

CUDEENGINEERS.COM

CUDE ENGINEERS

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San Antonio, Texas 78231
P:(210) 681.2951 F: (210) 523.7112

POSS LANDING SUBDIVISION PHASE 2

PROPOSED CONDITIONS

DATE
10/31/2024

PROJECT NO.
03653.005

DRAWN BY
MAS

CHECKED BY
KMH

REVISIONS
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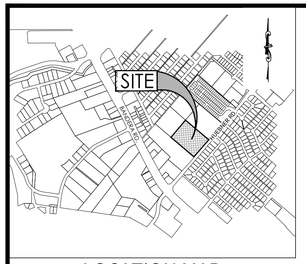
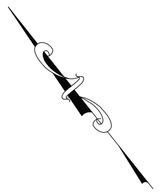
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

PLAT NO.
PZ-2024-16

E2



LOCATION MAP
N.T.S.



SCALE: 1"=50'

0 50 100

DEVELOPER
CENTURY COMMUNITIES
ATTN: VICTOR BERNAL
2330 N LOOP 1604 ACCESS ROAD, STE 112
SAN ANTONIO, TX. 78248
TEL: (210) 469-3442

LEGEND

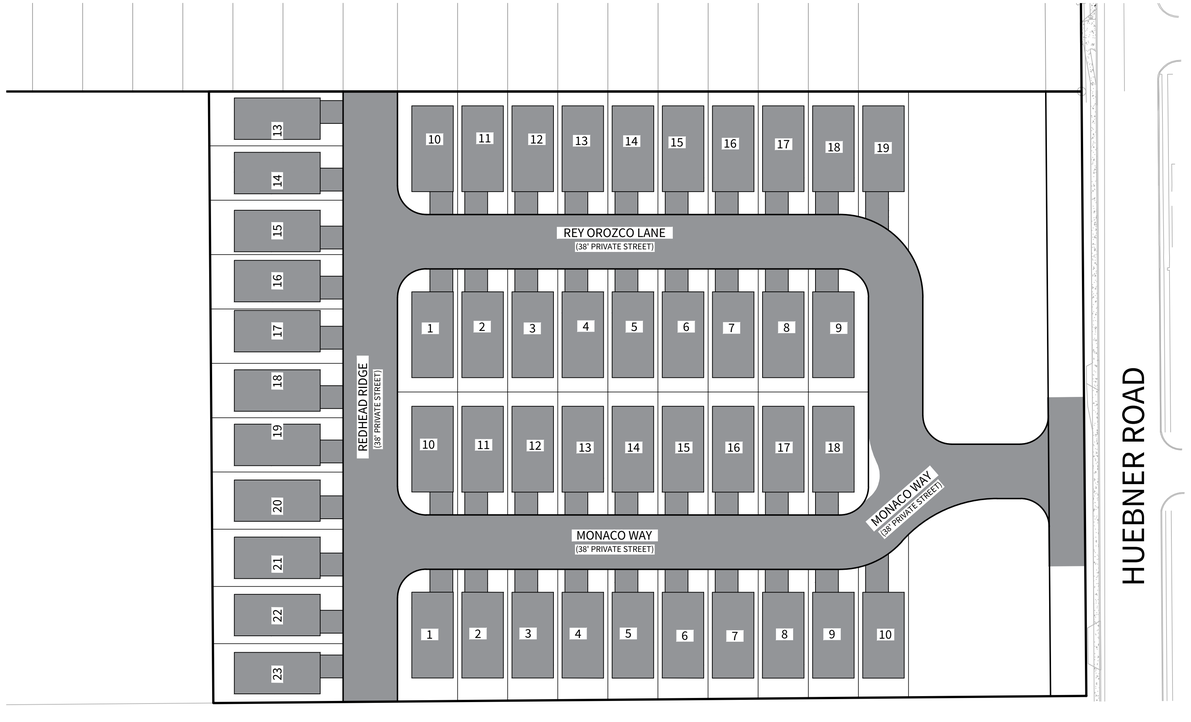
- IMPERVIOUS COVER

IMPERVIOUS COVER CALCULATIONS

EXISTING IMP COVER				
EXISTING	26447.54	SF	0.6072	AC
TOTAL LOT	262078.23	SF	6.0165	AC
IMP COVER %	10.09			

PROPOSED IMP COVER				
IMP. COVER	140656.09	SF	3.2290	AC
TOTAL LOT	262078.23	SF	6.0165	AC
IMP COVER %	53.67			

EXISTING V.S. PROPOSED				
IMP. COVER	114208.55 (INCREASE)	SF	2.6219 (INCREASE)	AC
TOTAL LOT	0	SF	0	AC
IMP COVER %	43.58 (INCREASE)			



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POSS LANDING SUBDIVISION PHASE 2

IMPERVIOUS COVER

DATE
9/19/2024

PROJECT NO.
03653.005

DRAWN BY
MAS

CHECKED BY
KMH

REVISIONS
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CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

PLAT NO.
PZ-2024-16

E4

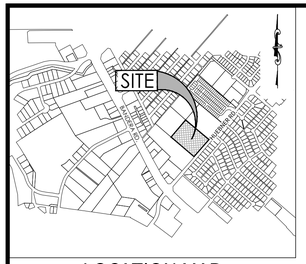
STREET CONSTRUCTION PLANS

CUDE ENGINEERS
SAN ANTONIO | AUSTIN | SAN MARCOS

4122 POND HILL ROAD, STE 101
SAN ANTONIO, TEXAS 78231

PHONE: (210) 681-2951
CUDEENGINEERS.COM

TBPE NO. 455
TBPELS NO. 10048500



LOCATION MAP

N.T.S.

DEVELOPER

CENTURY COMMUNITIES
ATTN: VICTOR BERNAL
2330 N LOOP 1604 W ACCESS ROAD, STE 112
SAN ANTONIO, TX. 78248
TEL: (210) 469-3442

NOTE:
*** - REFERENCE DRIVEWAY LOCATIONS EXHIBIT REGARDING PROPOSED DRIVEWAY LOCATION (AVAILABLE THROUGH M/I HOMES OF SAN ANTONIO, TEXAS, L.P.)

LEGEND

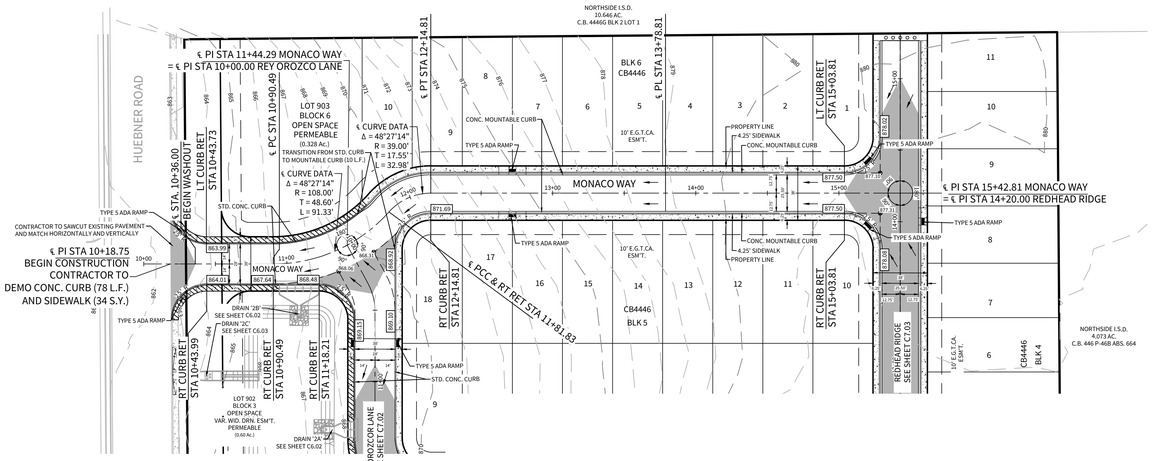
- STREET WASHOUT (SEE SHEET C7.00)
- SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE.
- SIDEWALK TO BE CONSTRUCTED WITH HOUSE CONSTRUCTION.
- DIRECTION OF FLOW
- H.P. - HIGH POINT

GENERAL NOTES

1. A LEON VALLEY R.O.W. PERMIT MUST BE OBTAINED PRIOR TO WORKING IN EXISTING LEON VALLEY R.O.W.

WHEEL CHAIR RAMPS ARE INDICATED THUS "□■□" UNLESS OTHERWISE NOTED. (SEE SHEET C7.00 FOR ADA RAMPS AT SIDEWALK INTERSECTIONS).

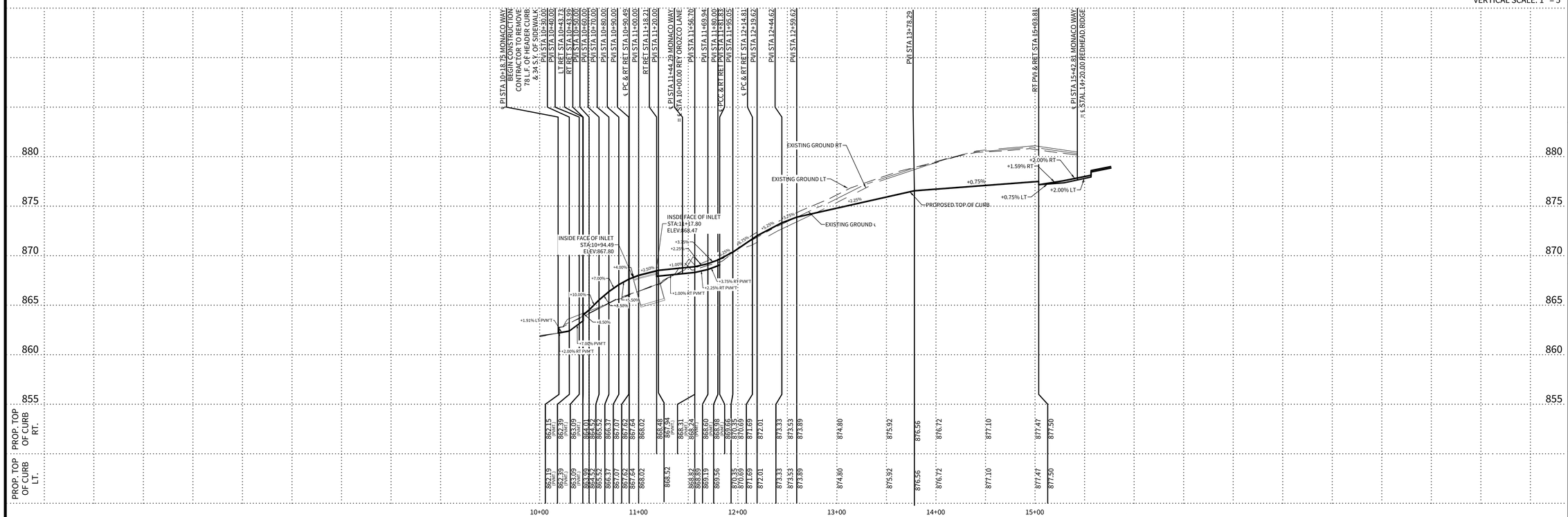
SCALE: 1"=50'
50 25 0 50



MONACO WAY

STA. 10+00.00 TO 15+39.95

HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 5'



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4122 Pond Hill Road, Suite 101
San Antonio, Texas 78231
P:(210) 681.2951 F: (210) 523.7112

POSS LANDING SUBDIVISION PHASE 2

MONACO WAY STREET PLAN AND PROFILE

DATE
11/6/2024

PROJECT NO.
03653.005

DRAWN BY
MAS

CHECKED BY
KMH

REVISIONS
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STATE OF TEXAS
KYLE M. HUDEK
138753
LICENSED
PROFESSIONAL ENGINEER
11/08/2024

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

PLAT NO.
PZ-2024-16

C7.01

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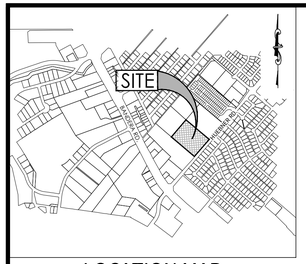

LOCATION MAP

N.T.S.

DEVELOPER

CENTURY COMMUNITIES
ATTN: VICTOR BERNAL
2330 N LOOP 1604 W ACCESS ROAD, STE 112
SAN ANTONIO, TX. 78248
TEL: (210) 469-3442

NOTE:
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LEGEND

- STREET WASHOUT (SEE SHEET C7.00)
- SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE.
- SIDEWALK TO BE CONSTRUCTED WITH HOUSE CONSTRUCTION.
- H.P. - DIRECTION OF FLOW
- HIGH POINT

GENERAL NOTES

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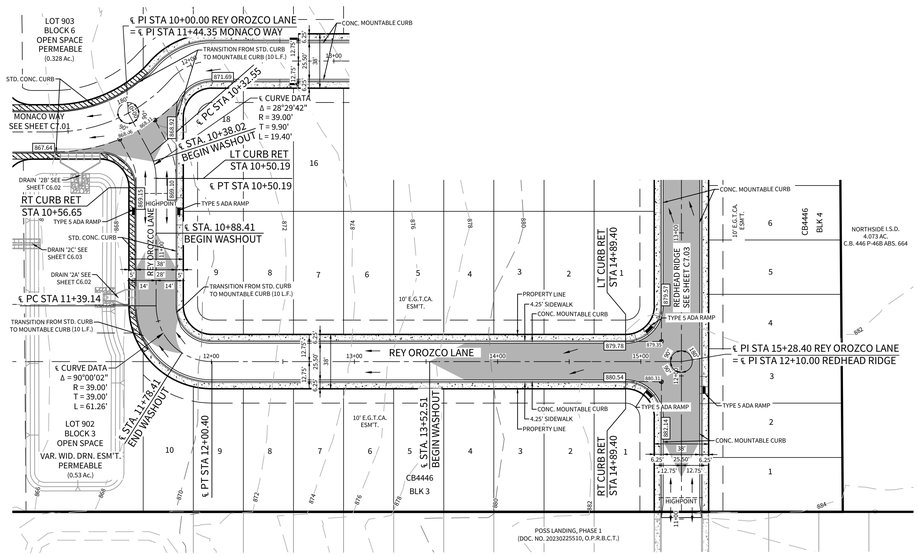
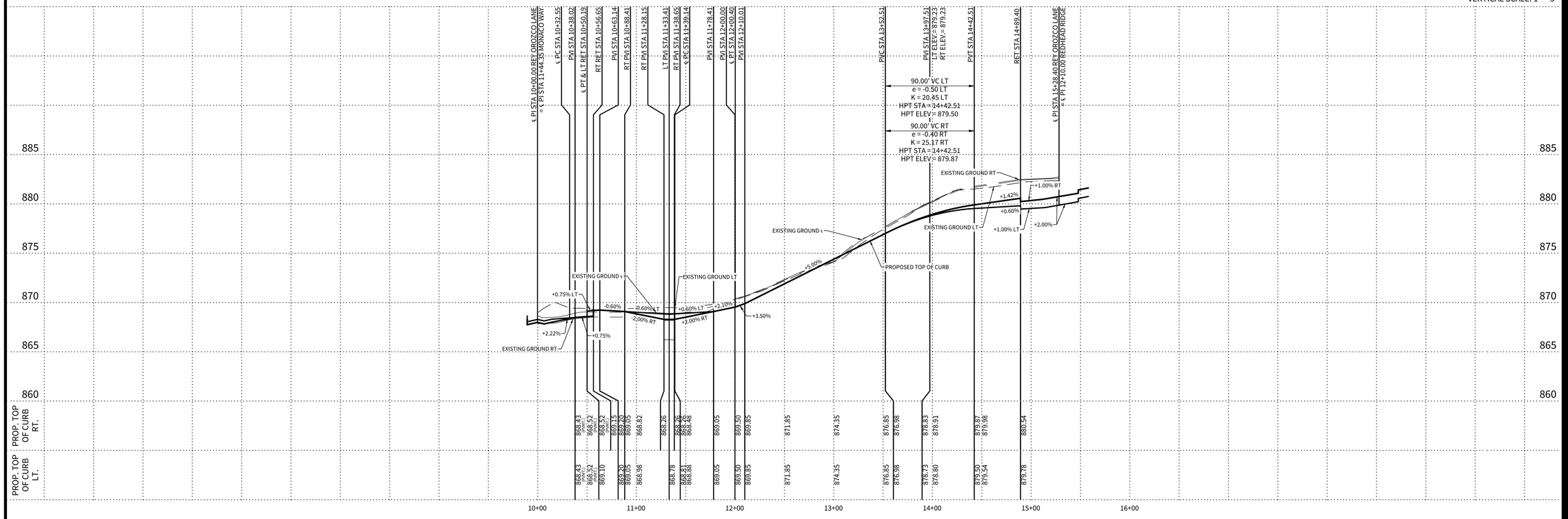
SCALE: 1"=50'
50 25 0 50



REY OROZCO LANE

STA. 10+00.00 TO 15+28.40

HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 5'



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CUDE ENGINEERS
EST. 1980
4122 Pond Hill Road, Suite 101
San Antonio, Texas 78231
P:(210) 681.2951 F: (210) 523.7112

POSS LANDING SUBDIVISION PHASE 2

REY OROZCO LANE STREET PLAN AND PROFIE

DATE
11/7/2024

PROJECT NO.
03653.005

DRAWN BY
MAS

CHECKED BY
KMH

REVISIONS
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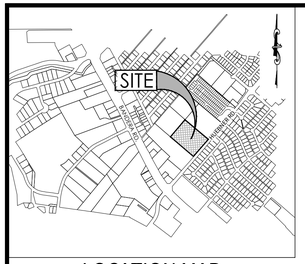
8.

STATE OF TEXAS
KYLE M. HUDEK
138753
LICENSED
PROFESSIONAL ENGINEER
11/08/2024
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

PLAT NO.
PZ-2024-16

C7.02

P:\03653\005\3 DWG\4 Plans\C7.02 STP.dwg 11/7/2024 8:45pm masonhood



LOCATION MAP

N.T.S.

DEVELOPER

CENTURY COMMUNITIES
ATTN: VICTOR BERNAL
2330 N LOOP 1604 W ACCESS ROAD, STE 112
SAN ANTONIO, TX. 78248
TEL: (210) 469-3442

NOTE:
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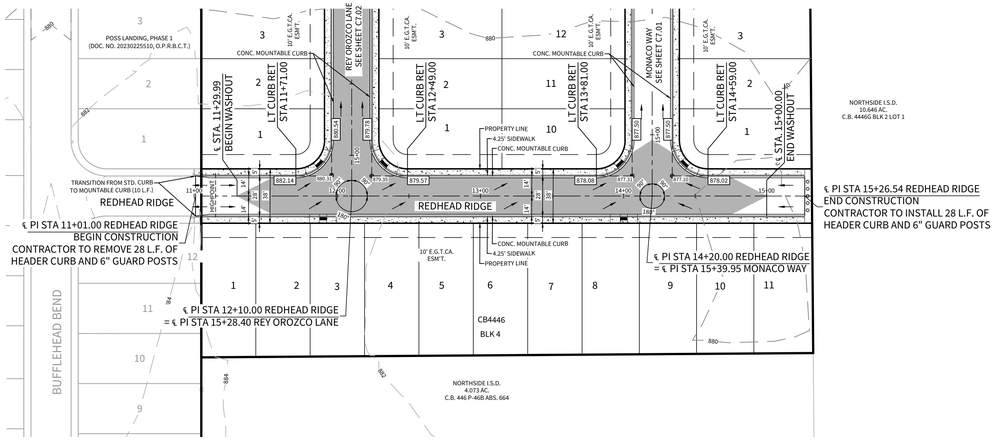
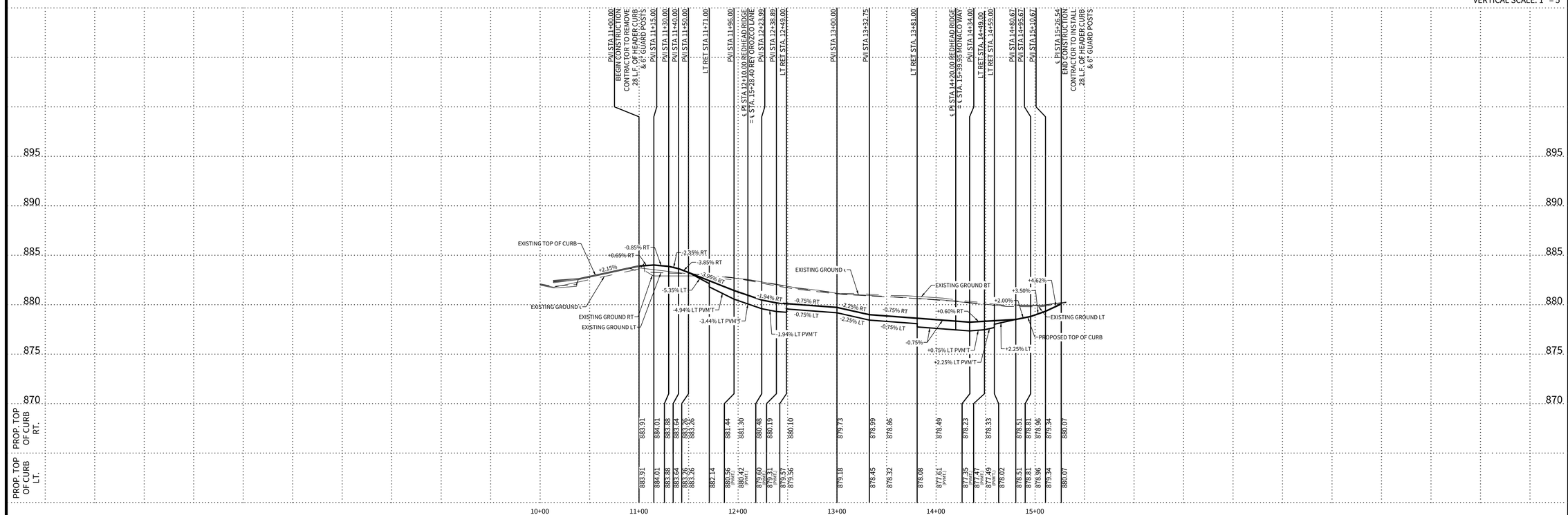


REDHEAD RIDGE

STA. 11+00.00 TO 15+26.54

HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 5'



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San Antonio, Texas 78231
P:(210) 681.2951 F: (210) 523.7112

POSS LANDING SUBDIVISION PHASE 2

REDHEAD RIDGE STREET PLAN AND PROFILE

DATE
11/6/2024

PROJECT NO.
03653.005

DRAWN BY
MAS

CHECKED BY
KMH

REVISIONS
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STATE OF TEXAS
KYLE M. HUDEK
138753
LICENSED
PROFESSIONAL ENGINEER
11/08/2024

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

PLAT NO.
PZ-2024-16

C7.03

P:\03653\005\CIVIL\Plans\C7.03_STPP.dwg 2024/11/06 2:19pm masthead

Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Tuesday, Sep 24 2024

MONACO WAY 25YR

User-defined

Invert Elev (ft)	= 799.42
Slope (%)	= 2.50
N-Value	= 0.018

Calculations

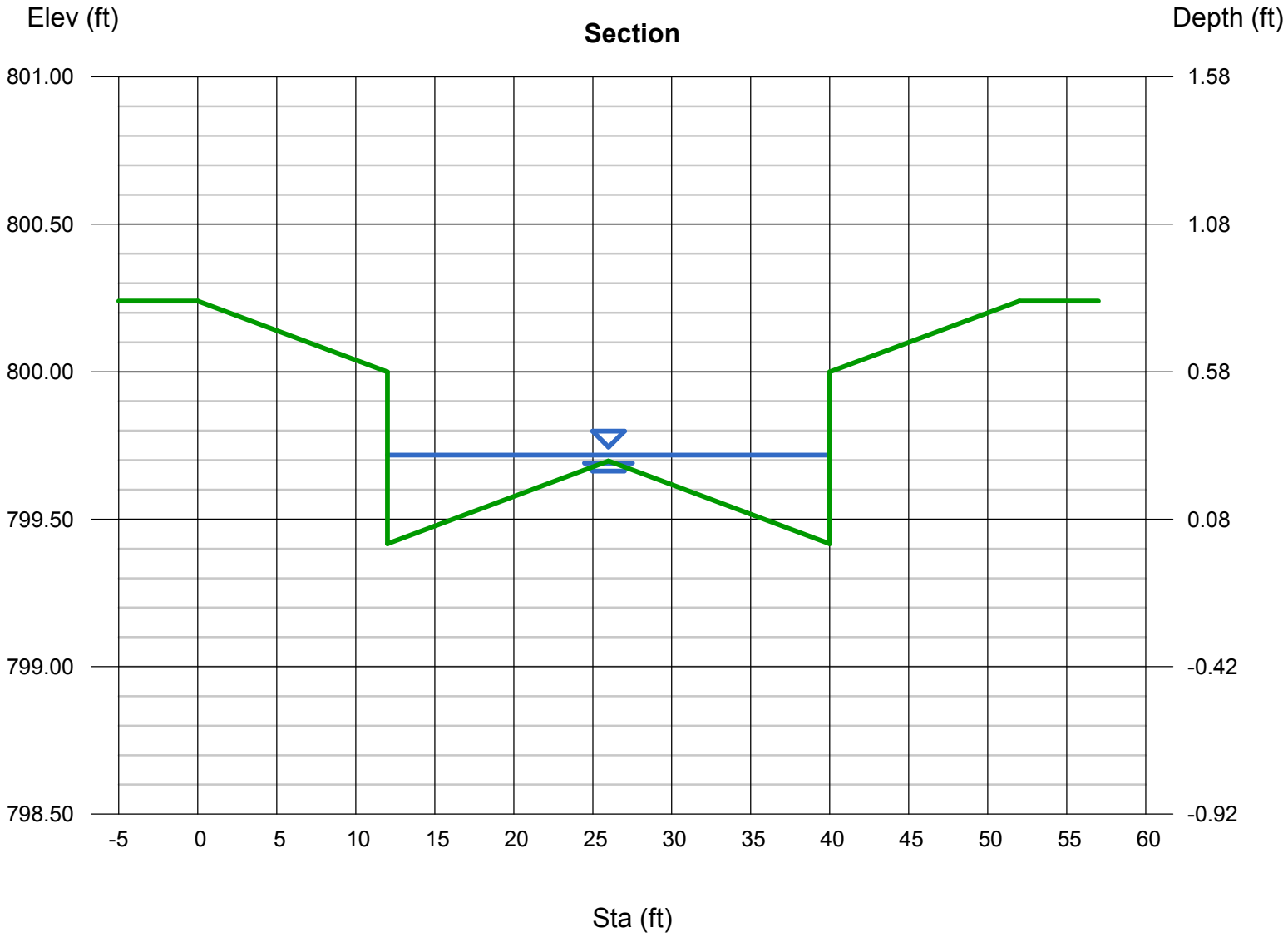
Compute by:	Known Q
Known Q (cfs)	= 15.88

Highlighted

Depth (ft)	= 0.30
Q (cfs)	= 15.88
Area (sqft)	= 4.48
Velocity (ft/s)	= 3.55
Wetted Perim (ft)	= 28.61
Crit Depth, Yc (ft)	= 0.36
Top Width (ft)	= 28.00
EGL (ft)	= 0.50

(Sta, El, n)-(Sta, El, n)...

(0.00, 800.24)-(12.00, 800.00, 0.035)-(12.00, 799.42, 0.015)-(26.00, 799.70, 0.018)-(40.00, 799.42, 0.018)-(40.00, 800.00, 0.015)-(52.00, 800.24, 0.035)



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Tuesday, Nov 5 2024

MONACO WAY 25YR UNDETAINED

User-defined

Invert Elev (ft)	= 799.42
Slope (%)	= 10.00
N-Value	= 0.018

Calculations

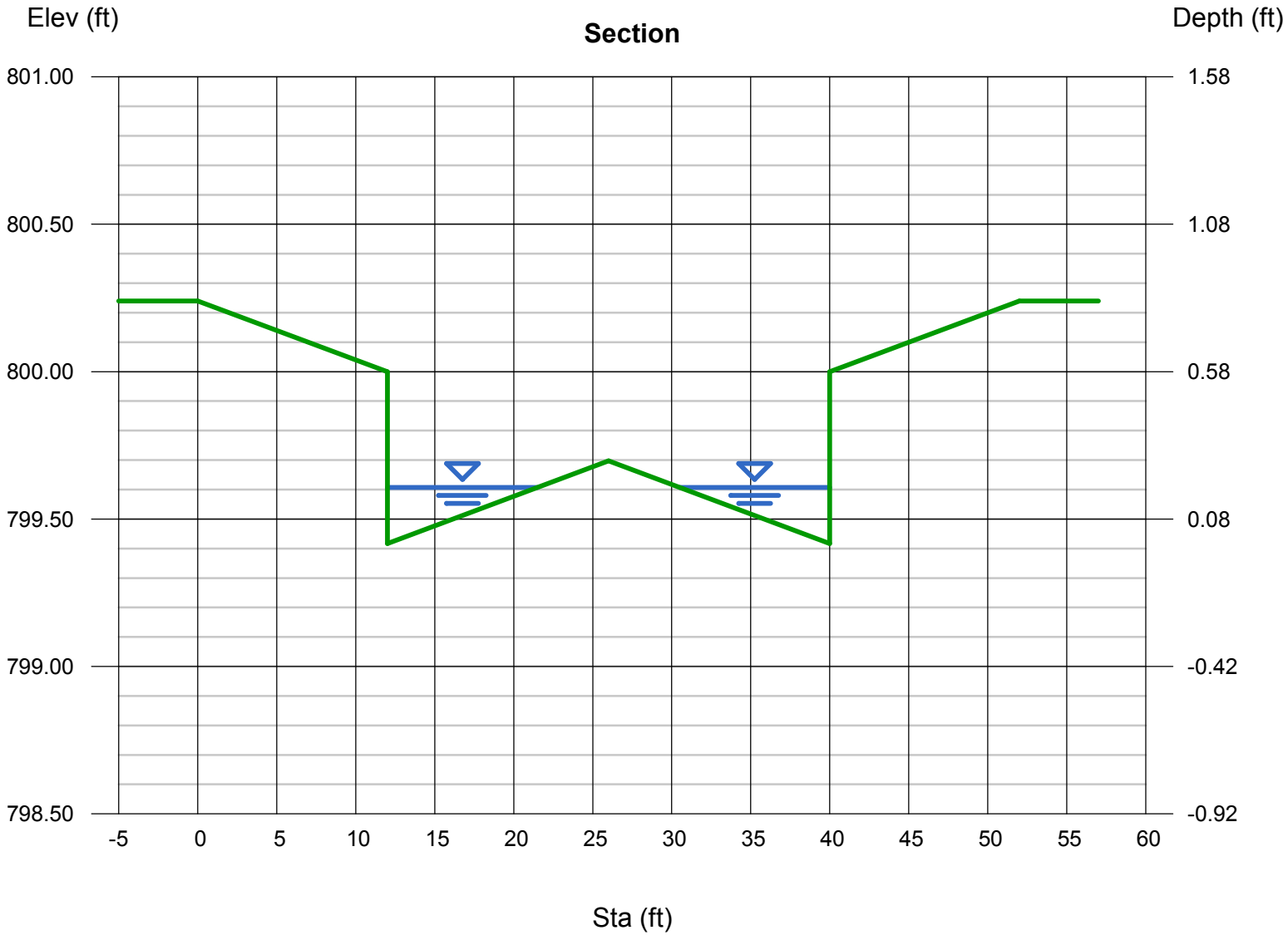
Compute by:	Known Q
Known Q (cfs)	= 8.81

Highlighted

Depth (ft)	= 0.19
Q (cfs)	= 8.810
Area (sqft)	= 1.80
Velocity (ft/s)	= 4.88
Wetted Perim (ft)	= 19.38
Crit Depth, Yc (ft)	= 0.29
Top Width (ft)	= 19.00
EGL (ft)	= 0.56

(Sta, El, n)-(Sta, El, n)...

(0.00, 800.24)-(12.00, 800.00, 0.035)-(12.00, 799.42, 0.015)-(26.00, 799.70, 0.018)-(40.00, 799.42, 0.018)-(40.00, 800.00, 0.015)-(52.00, 800.24, 0.035)



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Tuesday, Sep 24 2024

REY OROZCO LANE 25YR

User-defined

Invert Elev (ft)	= 798.86
Slope (%)	= 0.60
N-Value	= 0.018

Calculations

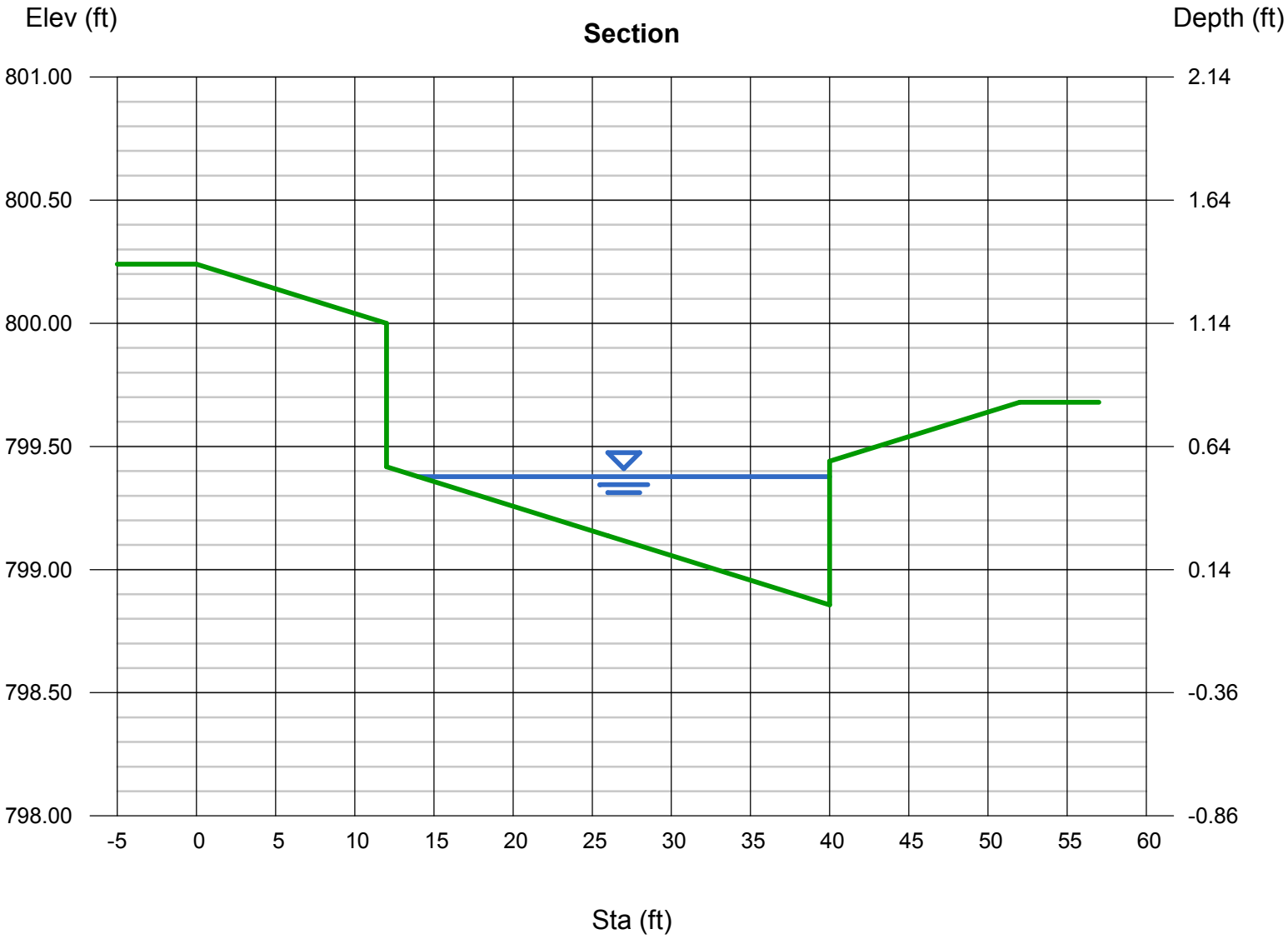
Compute by:	Known Q
Known Q (cfs)	= 16.98

Highlighted

Depth (ft)	= 0.52
Q (cfs)	= 16.98
Area (sqft)	= 6.76
Velocity (ft/s)	= 2.51
Wetted Perim (ft)	= 26.53
Crit Depth, Yc (ft)	= 0.50
Top Width (ft)	= 26.00
EGL (ft)	= 0.62

(Sta, El, n)-(Sta, El, n)...

(0.00, 800.24)-(12.00, 800.00, 0.035)-(12.00, 799.42, 0.015)-(26.00, 799.14, 0.018)-(40.00, 798.86, 0.018)-(40.00, 799.44, 0.015)-(52.00, 799.68, 0.035)



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Tuesday, Nov 5 2024

REY OROZCO LANE 25YR LOW CURB STA 16+62

User-defined

Invert Elev (ft)	= 868.40
Slope (%)	= 2.00
N-Value	= 0.018

Calculations

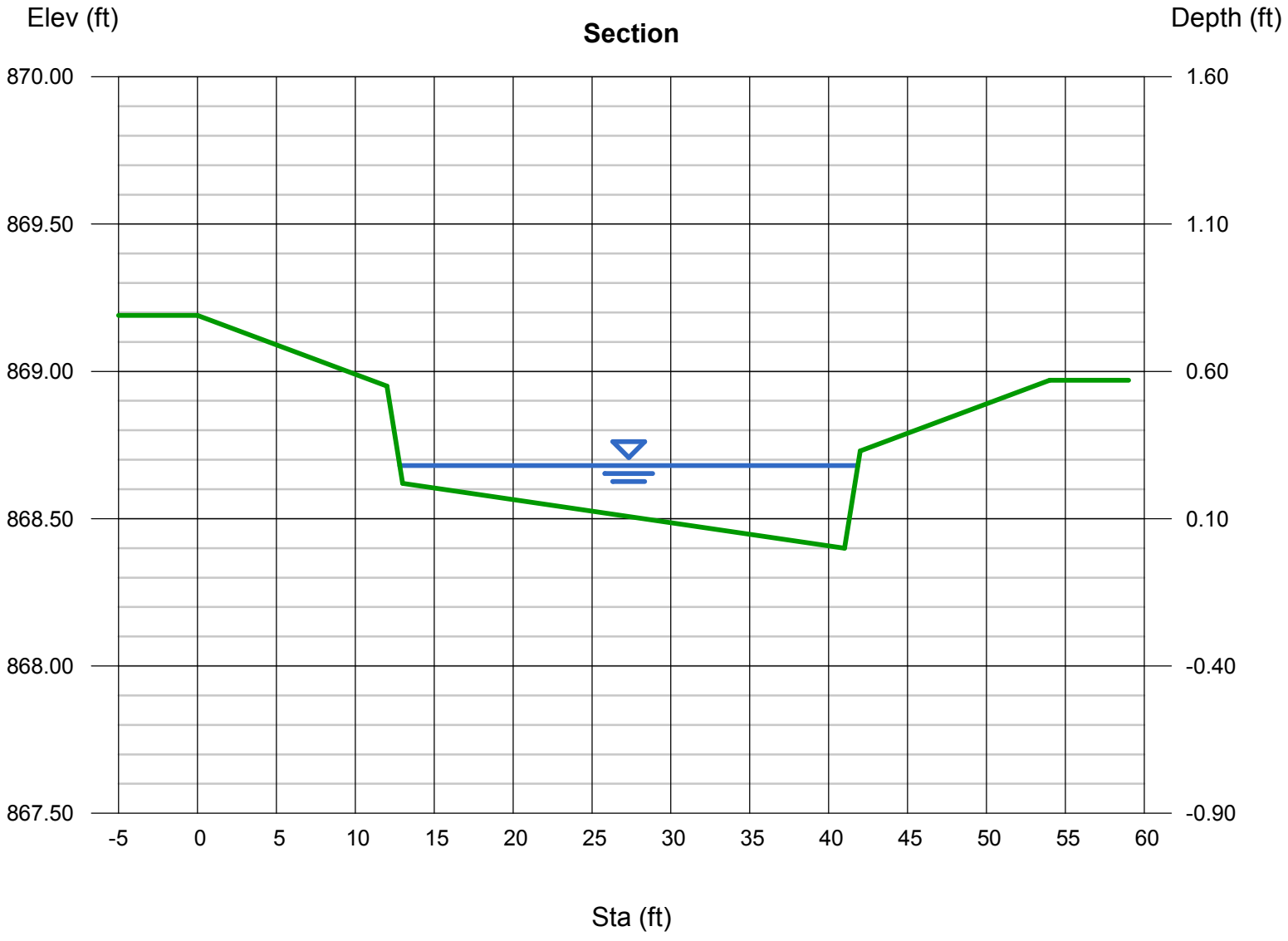
Compute by:	Known Q
Known Q (cfs)	= 15.92

Highlighted

Depth (ft)	= 0.28
Q (cfs)	= 15.92
Area (sqft)	= 4.89
Velocity (ft/s)	= 3.26
Wetted Perim (ft)	= 29.09
Crit Depth, Yc (ft)	= 0.33
Top Width (ft)	= 29.03
EGL (ft)	= 0.45

(Sta, El, n)-(Sta, El, n)...

(0.00, 869.19)-(12.00, 868.95, 0.035)-(13.00, 868.62, 0.015)-(41.00, 868.40, 0.018)-(42.00, 868.73, 0.015)-(54.00, 868.97, 0.035)



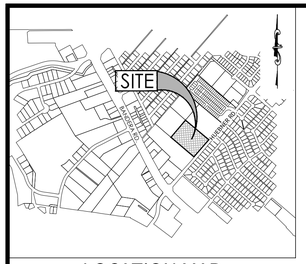
DRAINAGE CONSTRUCTION PLANS

CUDE ENGINEERS
SAN ANTONIO | AUSTIN | SAN MARCOS

4122 POND HILL ROAD, STE 101
SAN ANTONIO, TEXAS 78231

PHONE: (210) 681-2951
CUDEENGINEERS.COM

TBPE NO. 455
TBPELS NO. 10048500



LOCATION MAP
N.T.S.

LEGEND

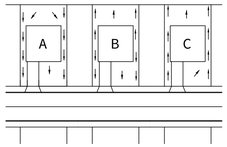
- = UNIT BOUNDARY
- = DRAINAGE BOUNDARY
- = SHEET FLOW Tc LINE
- = SHALLOW CONCENTRATED Tc LINE
- = CONCENTRATED Tc LINE
- = ACCUMULATION POINT

DEVELOPER
CENTURY COMMUNITIES
ATTN: VICTOR BERNAL
2330 N LOOP 1604 W ACCESS ROAD, STE 112
SAN ANTONIO, TX. 78248
TEL: (210) 469-3442

NOTES:

1. TIME OF CONCENTRATIONS USED FOR FLOW RATE CALCULATIONS WERE SET TO 20 MINUTES FOR ALL DRAINAGE AREAS. A DETAILED ANALYSIS OF TIME OF CONCENTRATIONS WILL BE PROVIDED DURING THE DRAINAGE DESIGN PHASE OF THE SUBDIVISION.

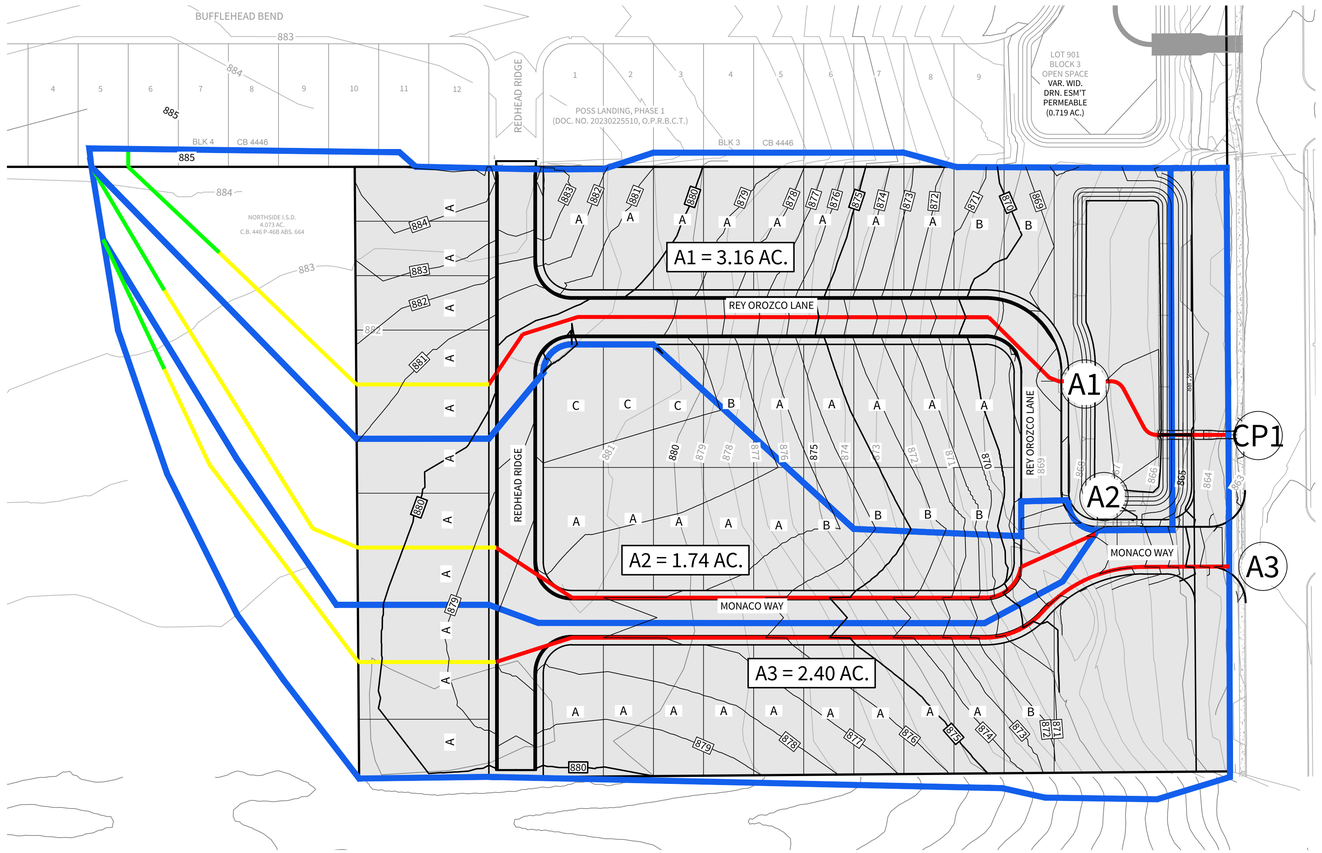
2. RUN-OFF COEFFICIENTS DERIVED FROM THE CITY OF SAN ANTONIO UDC APPENDIX H.



TYPICAL LOT SITE PLAN
N.T.S.

Poss Landing Phase 2 Subdivision
Weighted "C" values table - Ultimate Conditions

Area Number	Residential Ac.	Residential Ac. * $C_{residential}$	Undeveloped Ac.	Undeveloped Ac. * $C_{undeveloped}$	Total Ac.	Weighted C value
1	2.76	2.21	0.40	0.19	3.16	0.76
2	1.36	1.09	0.38	0.18	1.74	0.73
4	0.00	0.00	0.01	0.00	0.01	0.47
CP1	4.12	3.30	0.78	0.37	4.90	0.75
$C_{residential}$ =	0.80	$C_{undeveloped}$ =	0.47			



SCALE: 1"=50'
50 25 0 50

Project Name: Poss Landing Subdivision Phase 2 — Precipitation: **PA3**
Calculation Summary for Time of Concentrations & Ultimate Flow

HYDROLOGY				Sheet Flow Tc Compuations						Shallow Conc. Tc Compuations					Concentrated Tc Computations					Overall	INTENSITY			Q FLOW			
Drainage Shed (Computation Point)	Shed Area (Ac.)	AREA OF ACCUMULATION (Ac.)	C	*Length ‹ 100'*	Paved (Y or N)	Upstream Elev.	Downstream Elev	Slope	Time of Concentration	*Length ‹ 650'*	Paved (Y or N)	Downstream Elev	Slope	Time of Concentration	*Length*	Paved (Y or N)	Downstream Elev	Slope	Time of Concentration	Time of Concentration (min)	I5	I25	I100	Q5	Q25	Q100	Drainage Shed (Computation Point)
A1	3.16	= A1	0.76	*100.00*	N	885.67	883.47	2.20%	12.60	*225.49*	N	881.58	0.84%	2.58	*575.90*	Y	863.60	3.12%	2.67	18.00	4.80	6.63	8.24	11.53	15.92	19.79	A1
A2	1.74	= A2	0.73	*100.00*	N	884.10	883.36	0.74%	16.00	*326.87*	N	880.68	0.82%	3.78	*444.91*	Y	867.23	3.02%	2.11	22.00	4.33	5.98	7.41	5.50	7.60	9.41	A2
A3	1.99	= A3	0.74	*100.00*	N	883.63	882.82	0.81%	15.90	*342.82*	N	880.04	0.81%	3.99	*529.29*	Y	863.17	3.19%	2.42	22.00	4.33	5.98	7.41	6.38	8.81	10.91	A3
CP1	4.90	= A1+A2	0.75	*100.00*	N	884.10	883.36	0.74%	16.00	*326.87*	N	880.68	0.82%	3.78	*580.63*	Y	863.60	2.94%	2.79	23.00	4.23	5.84	7.24	15.55	21.46	26.61	CP1

CUDEENGINEERS.COM
4122 Pond Hill Road, Suite 101
San Antonio, Texas 78231
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POSS LANDING SUBDIVISION PHASE 2
PROPOSED CONDITIONS

DATE
11/5/2024

PROJECT NO.
03653.005

DRAWN BY
MAS

CHECKED BY
KMH

REVISIONS
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STATE OF TEXAS
KYLE M. HUDEK
138753
LICENSED
PROFESSIONAL ENGINEER
11/08/2024

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

PLAT NO.
PZ-2024-16

C6.00

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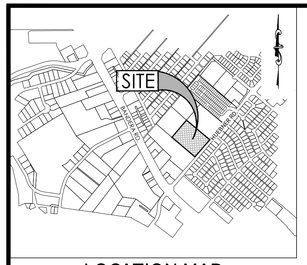
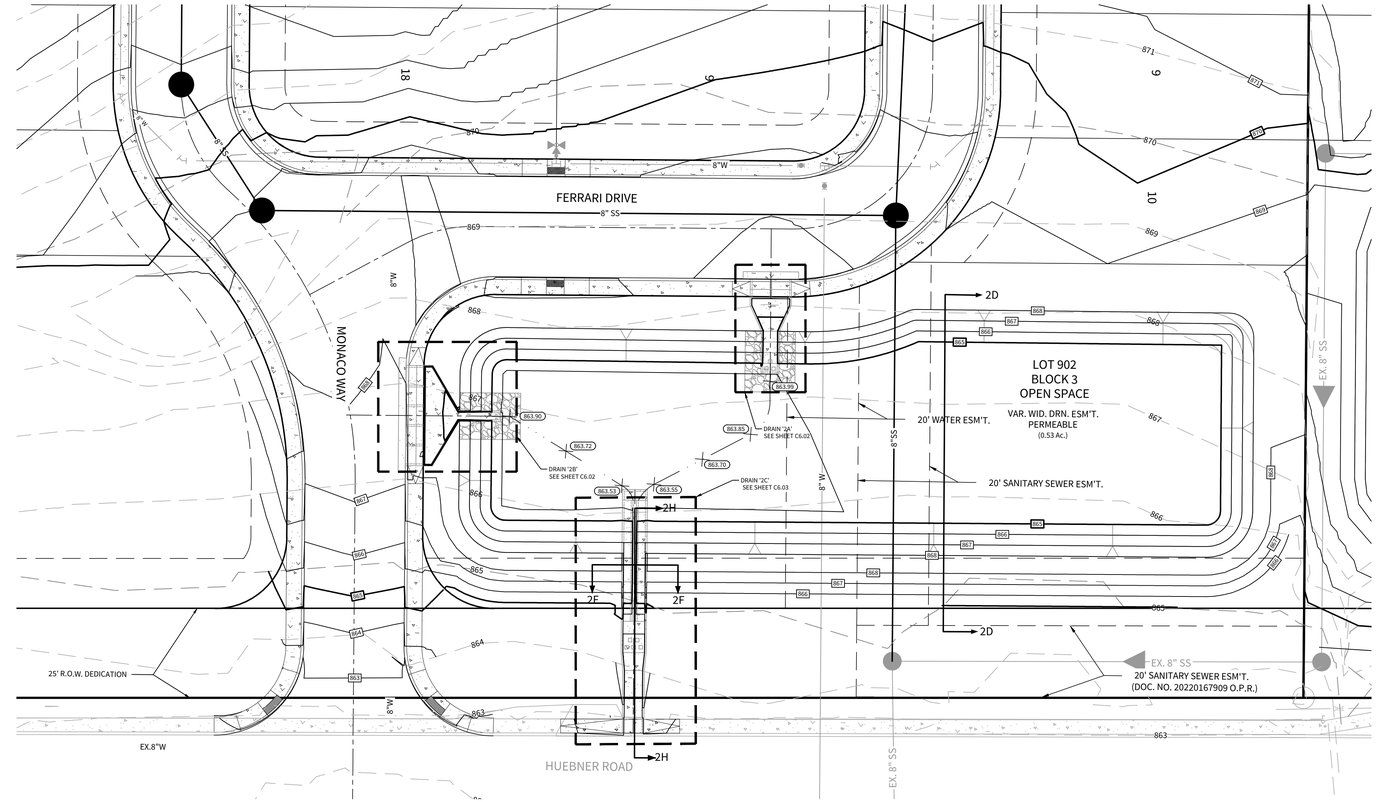


LOCATION MAP
N.T.S.

DEVELOPER
CENTURY COMMUNITIES
ATTN: VICTOR BERNAL
2330 N LOOP 1604 W ACCESS ROAD, STE 112
SAN ANTONIO, TX. 78248
TEL: (210) 469-3442

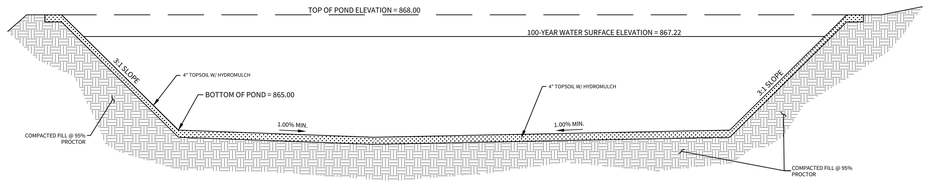
LEGEND:

= CONCRETE
= 8" X 12" ROCK RUBBLE
= COMPACT SUBGRADE
1290 = EXISTING CONTOUR
1290 = PROPOSED CONTOUR
0.67% = PROPOSED FLOW ARROW



NOTES:

1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN 3000 PSI IN 28 DAYS.
2. 85% OF CHANNEL & DETENTION POND SURFACE MUST HAVE ESTABLISHED VEGETATION PRIOR TO ACCEPTANCE OF THE CHANNEL BY THE CITY OF LEON VALLEY AND DEVELOPER. HYDROMULCH PAY ITEM TO INCLUDE SOIL, SEEDING, OR SODDING & WATERING FOR THE TIME PERIOD NEEDED TO ACHIEVE 85% VEGETATION.
3. REFERENCE TYPICAL CONCRETE CHANNEL RIP-RAP STANDARDS FOUND ON SHEET C6.04.



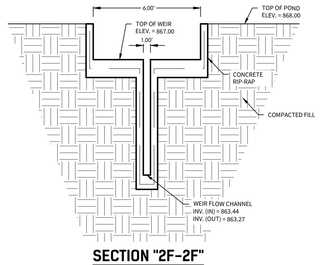
SECTION "2D-2D"
N.T.S.

DETENTION POND SUMMARY

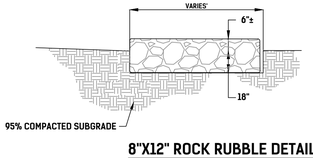
STORM EVENT	POND OUTLET FLOW (CFS)	WATER SURFACE ELEV.
5 YR	5.53	866.47
25 YR	8.22	866.92
100 YR	12.17	867.22

DETENTION POND VOLUME:

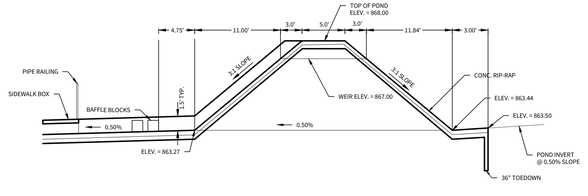
CONTOUR	AREA (SQ. FT.)	VOL. (CU. FT.)	CUM. VOL. (CU. FT.)
865	8,915	---	---
866	10,355	9,625	9,625
867	11,853	11,095	20,720
868	13,408	12,622	33,342



SECTION "2F-2F"
N.T.S.



8"X12" ROCK RUBBLE DETAIL
N.T.S.



SECTION "2H-2H"
N.T.S.

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San Antonio, Texas 78231
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POSS LANDING SUBDIVISION PHASE 2
DETENTION POND 2A

DATE
11/7/2024

PROJECT NO.
03653.005

DRAWN BY
MAS

CHECKED BY
KMH

REVISIONS
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STATE OF TEXAS
KYLE M. HUDEK
138753
LICENSED
PROFESSIONAL ENGINEER
11/08/2024
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

PLAT NO.
PZ-2024-16

C6.01

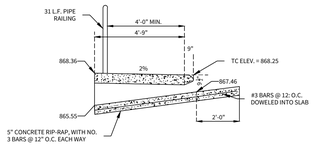
NOTES:

1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN 3000 PSI IN 28 DAYS.
2. 85% OF CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION PRIOR TO ACCEPTANCE OF THE CHANNEL BY THE CITY OF LEON VALLEY AND DEVELOPER. HYDROMULCH PAY ITEM TO INCLUDE SOIL, SEEDING, OR SODDING & WATERING FOR THE TIME PERIOD NEEDED TO ACHIEVE 85% VEGETATION.
3. REFERENCE TYPICAL CONCRETE CHANNEL RIP-RAP STANDARDS FOUND ON SHEET C6.04.

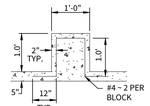
CURB INLET OPENING

$Q_{25\ ULTIMATE}$ = 15.92 c.f.s. / 2.06 = 7.73' REQ.

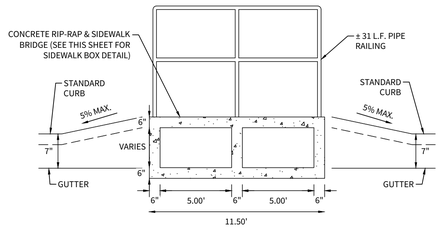
USED - 10' INLET OPENING



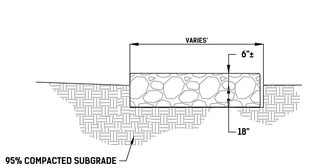
SECTION "A–A"
SIDEWALK BOX DETAIL SECTION
(N.T.S.)



1' x 1' x 1'
BAFFLE BLOCK REINFORCEMENT
(N.T.S.)



SECTION "B–B"
(N.T.S.)

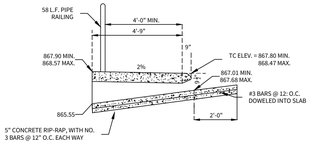


8"X12" ROCK RUBBLE DETAIL
N.T.S.

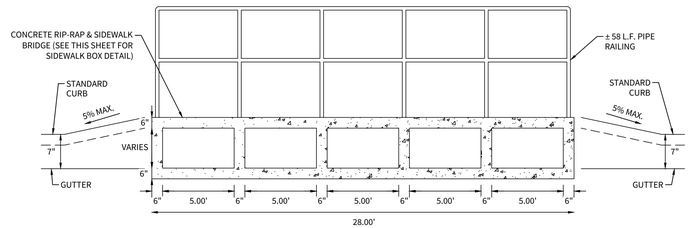
Q =	**9.41 Total Discharge (cfs)**
n =	**0.018 Manning's Roughness Coefficient**
S_x =	**0.02 Pavement Cross Slope (ft/ft)**
S =	**0.04 Pavement Longitudinal Slope (ft/ft)**
y =	**0.5 Curb Height (ft)**
a =	**2.5 Local Depression (in)**
C_W =	**3.087 Weir Coefficient ($ft^{1/2}$/s)**
C_O =	**0.67 Orifice Coefficient**
h =	**0.5 Depth of Opening (ft)**

d =	0.27 Depth of Water at the Curb Opening (ft)
T =	13.5 Ponded Width (ft)
d_o =	0.02 Effective Head at the Centroid of the Orifice (ft)
L_w =	21.73 Length of Curb Inlet Required, Weir (ft)
L_o =	24.75 Length of Curb Inlet Required, Orifice (ft)

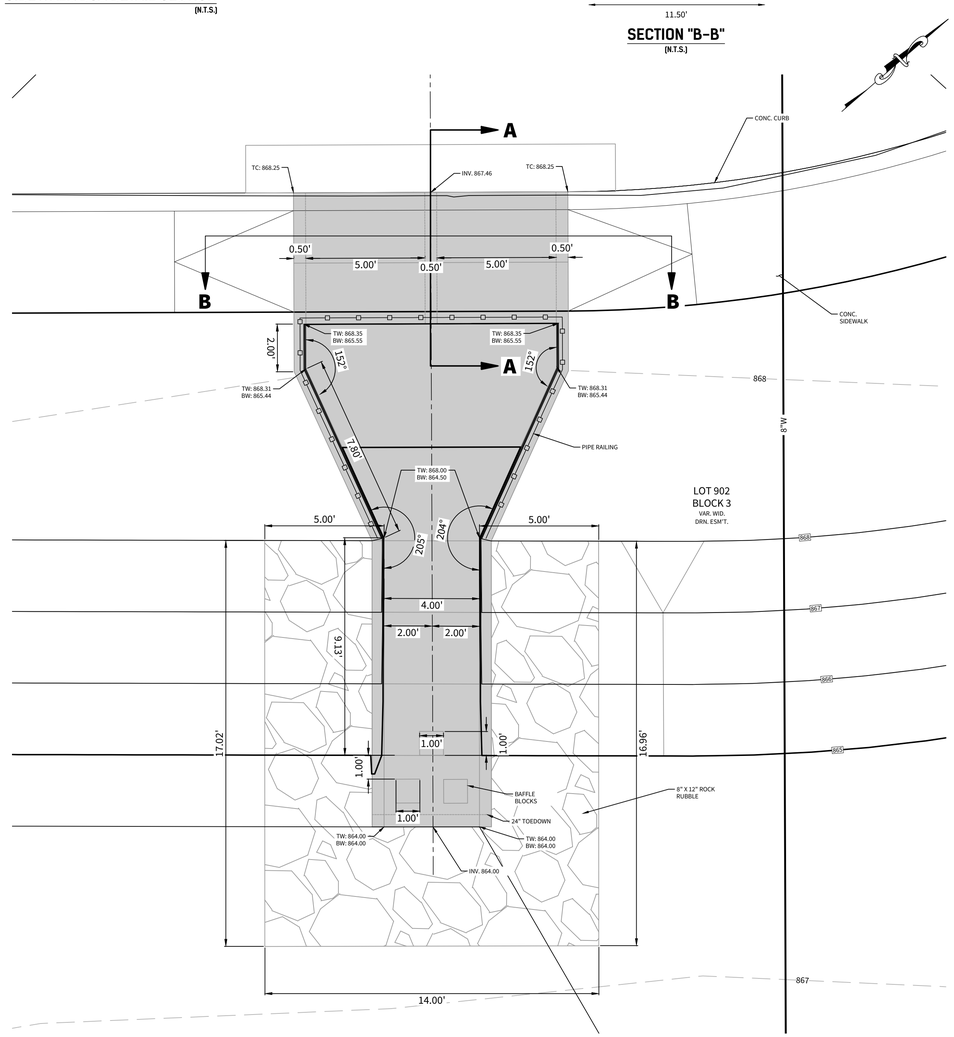
L_r =	**21.73 Length of Curb Inlet Required (ft)**



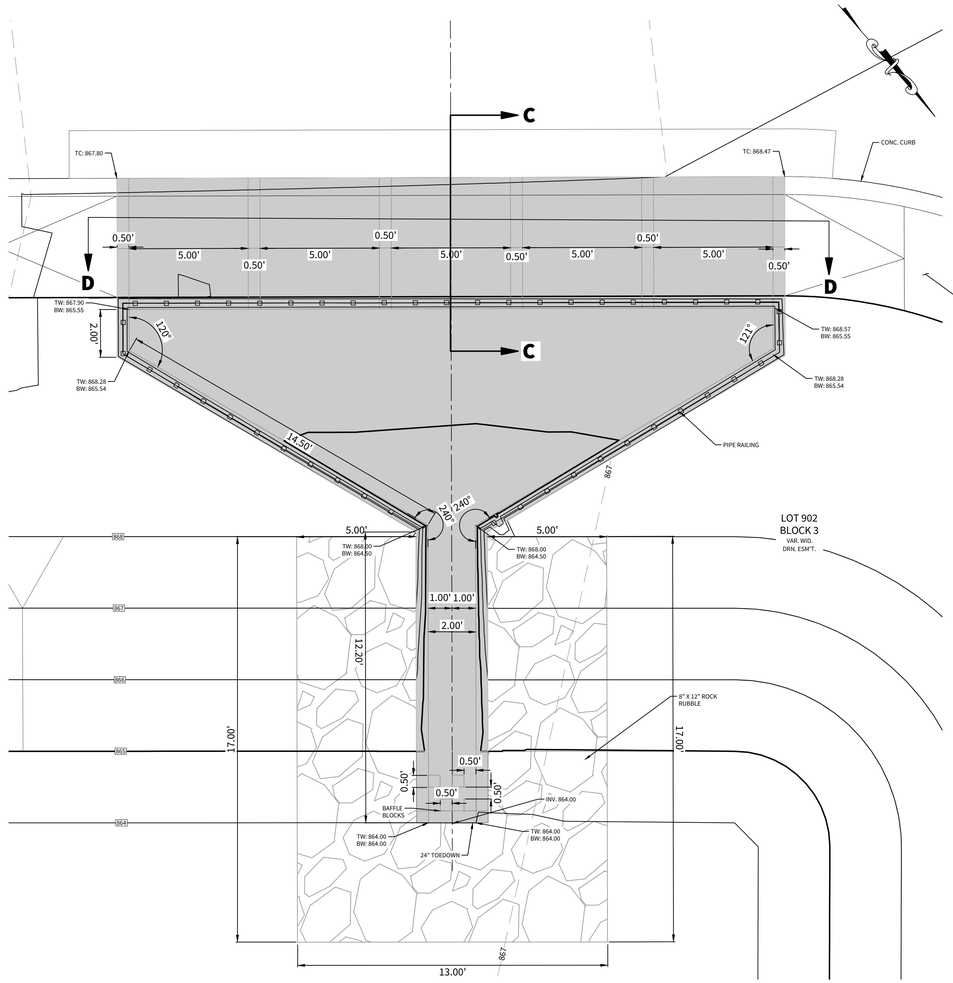
SECTION "C–C"
SIDEWALK BOX DETAIL SECTION
(N.T.S.)



SECTION "D–D"
(N.T.S.)



DRAIN '2A'



DRAIN '2B'

CUDEENGINEERS.COM

CUDE ENGINEERS

4122 Pond Hill Road, Suite 101
San Antonio, Texas 78231
P:(210) 681.2951 F: (210) 523.7112

POSS LANDING SUBDIVISION PHASE 2

DRAINAGE PLAN - DETAIL 2A & 2B

DATE
11/8/2024

PROJECT NO.
03653.005

DRAWN BY
MAS

CHECKED BY
KMH

REVISIONS
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8.

STATE OF TEXAS
KYLE M. HUDEK
138753
LICENSED
PROFESSIONAL ENGINEER
11/08/2024

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

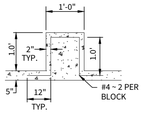
PLAT NO.
PZ-2024-16

C6.02

P:\03653\005\3 Civil\4 Plans\C6.02_DRNP Plan 20241103 12:39pm kmhudek

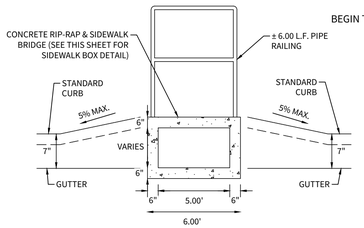
NOTES:

1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN 3000 PSI IN 28 DAYS.
2. 85% OF CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION PRIOR TO ACCEPTANCE OF THE CHANNEL BY THE CITY OF LEON VALLEY AND DEVELOPER. HYDROMULCH PAY ITEM TO INCLUDE SOIL, SEEDING, OR SODDING & WATERING FOR THE TIME PERIOD NEEDED TO ACHIEVE 85% VEGETATION.
3. REFERENCE TYPICAL CONCRETE CHANNEL RIP-RAP STANDARDS FOUND ON SHEET C6.04.



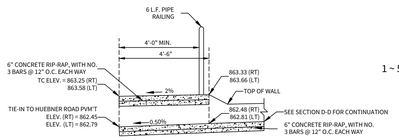
1' x 1' x 1' BAFFLE BLOCK REINFORCEMENT

(N.T.S.)



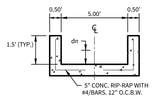
SECTION "B-B"

(N.T.S.)



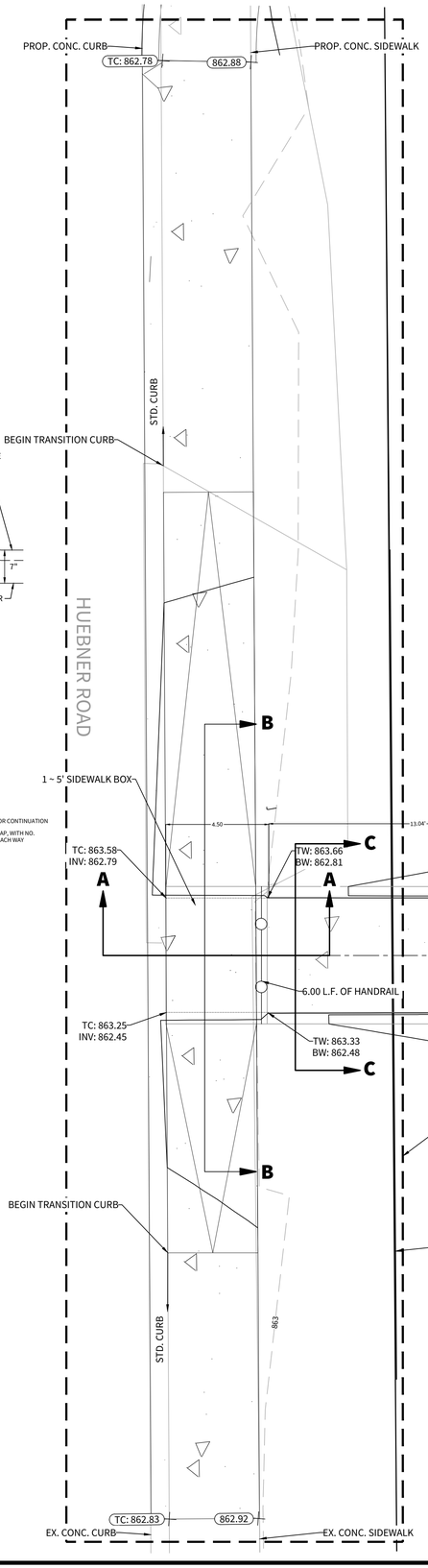
SECTION "A-A"
SIDEWALK BOX DETAIL SECTION

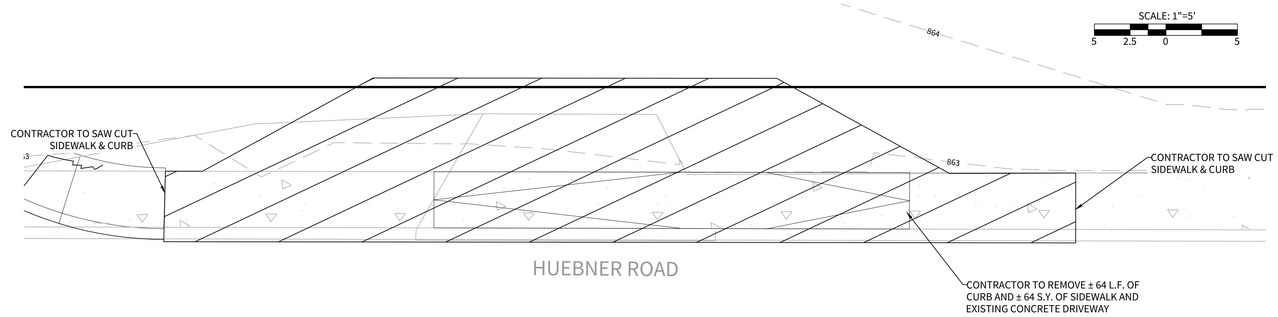
(N.T.S.)



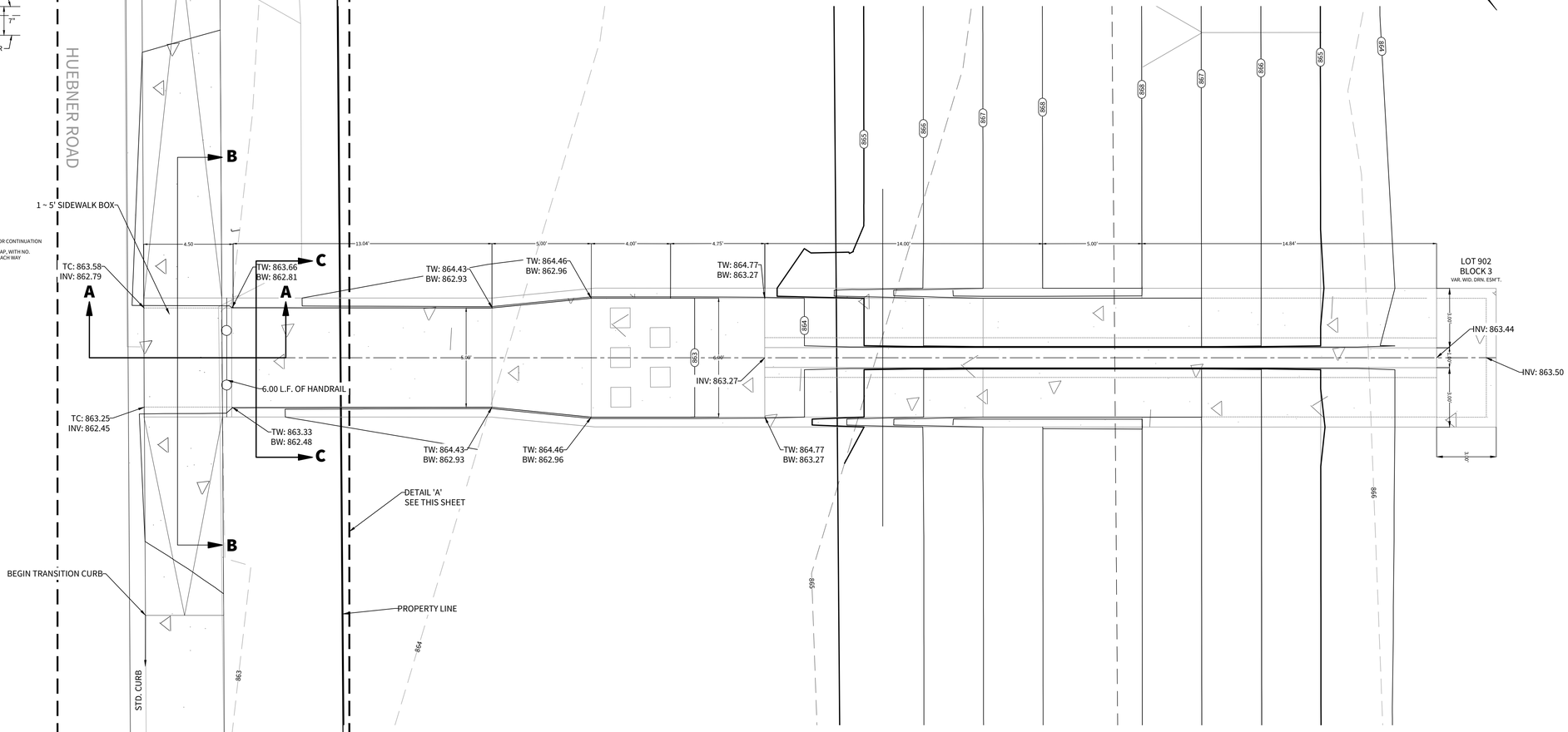
SECTION "C-C"
CHANNEL DETAIL SECTION

DRAIN '2C' HYDRAULIC SUMMARY	
SECTION	'C-C'
Q_{100} (cfs)	12.17
n	0.015
S (%)	0.80
D (ft)	1.50
d_n (ft)	0.50
V (fps)	4.87
Bw (ft)	5.00





DETAIL 'A'



DRAIN '2C'

CUDEENGINEERS.COM

4122 Pond Hill Road, Suite 101
San Antonio, Texas 78231
P:(210) 681.2951 F: (210) 523.7112

POSS LANDING SUBDIVISION PHASE 2

DRAINAGE PLAN - DETAIL 2C

DATE
11/8/2024

PROJECT NO.
03653.005

DRAWN BY
MAS

CHECKED BY
KMH

REVISIONS
1.
2.
3.
4.
5.
6.
7.
8.

STATE OF TEXAS
KYLE M. HUDEK
138753
LICENSED
PROFESSIONAL ENGINEER
11/08/2024

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

PLAT NO.
PZ-2024-16

C6.03

P:\03653\005\2-DWG\4-Plans\C6.03_DRP2-Plan-20241108 12:40pm MKudek

Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Nov 8 2024

DRIAN 2A - 25-YR

Rectangular

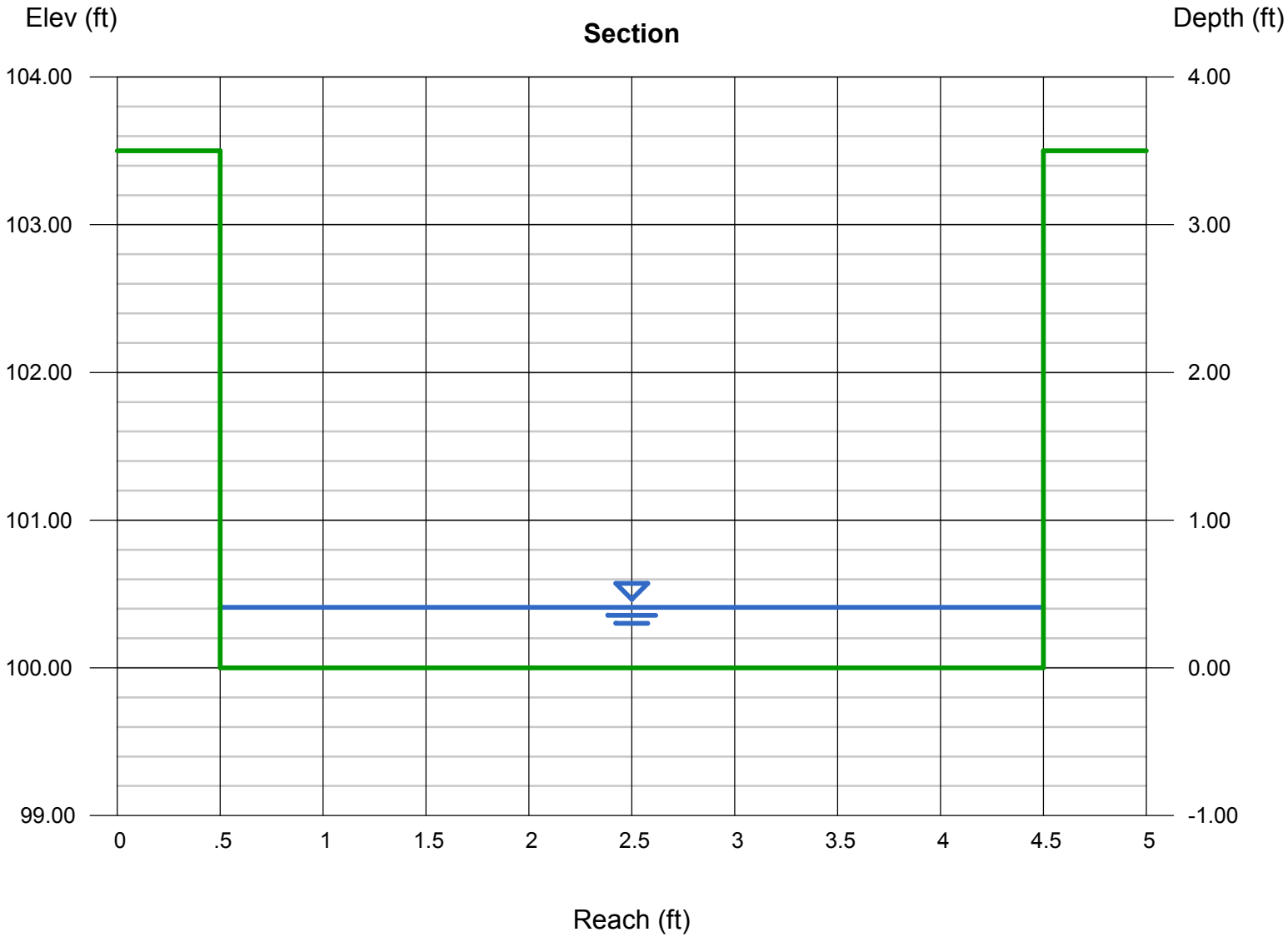
Bottom Width (ft)	= 4.00
Total Depth (ft)	= 3.50
Invert Elev (ft)	= 100.00
Slope (%)	= 4.17
N-Value	= 0.015

Calculations

Compute by:	Known Q
Known Q (cfs)	= 15.92

Highlighted

Depth (ft)	= 0.41
Q (cfs)	= 15.92
Area (sqft)	= 1.64
Velocity (ft/s)	= 9.71
Wetted Perim (ft)	= 4.82
Crit Depth, Yc (ft)	= 0.79
Top Width (ft)	= 4.00
EGL (ft)	= 1.88



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Nov 8 2024

DRIAN 2B - 25-YR

Rectangular

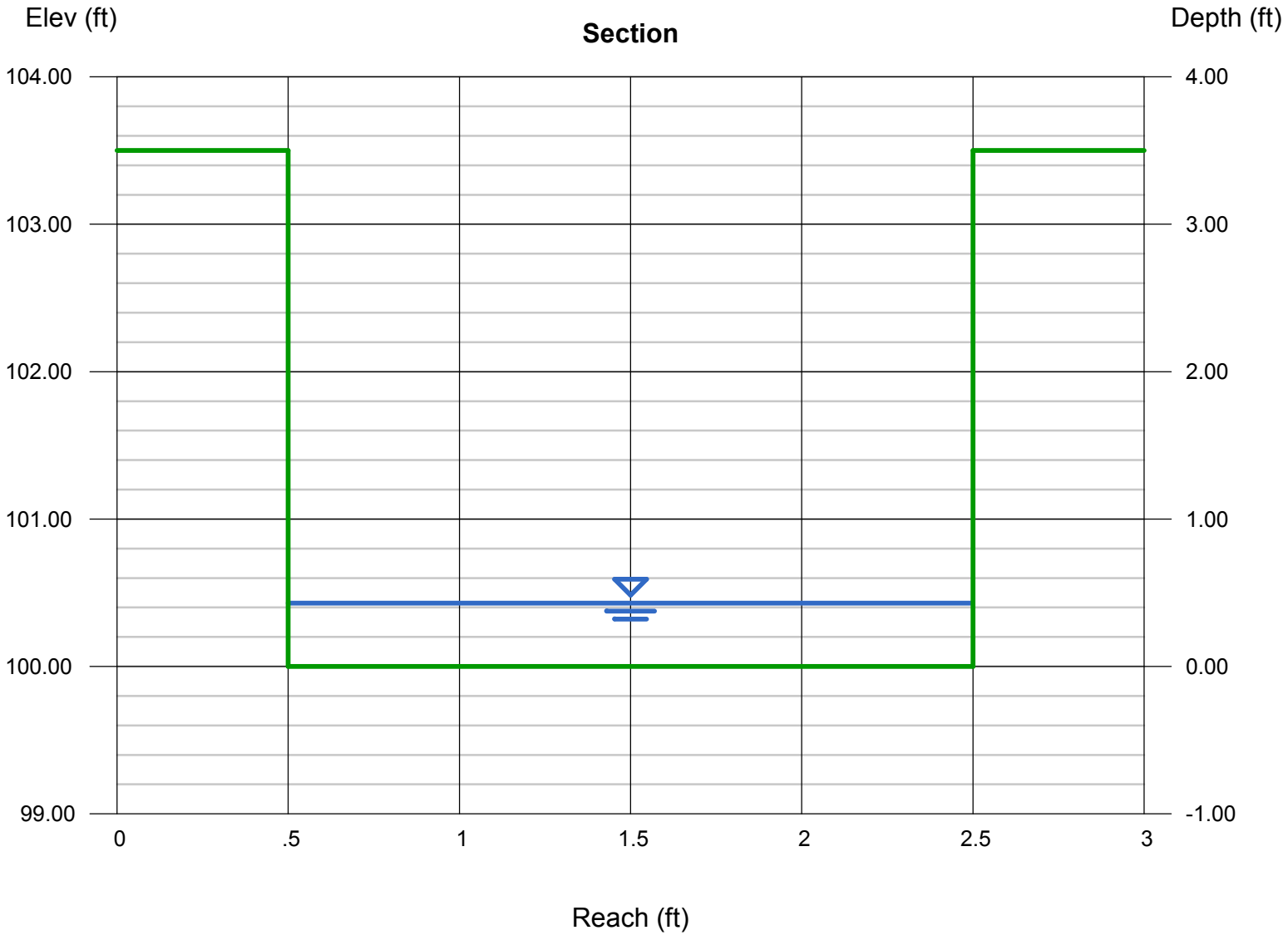
Bottom Width (ft)	= 2.00
Total Depth (ft)	= 3.50
Invert Elev (ft)	= 100.00
Slope (%)	= 4.17
N-Value	= 0.015

Calculations

Compute by:	Known Q
Known Q (cfs)	= 7.60

Highlighted

Depth (ft)	= 0.43
Q (cfs)	= 7.600
Area (sqft)	= 0.86
Velocity (ft/s)	= 8.84
Wetted Perim (ft)	= 2.86
Crit Depth, Yc (ft)	= 0.77
Top Width (ft)	= 2.00
EGL (ft)	= 1.64



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Nov 8 2024

DRIAN 2C - 100-YR

Rectangular

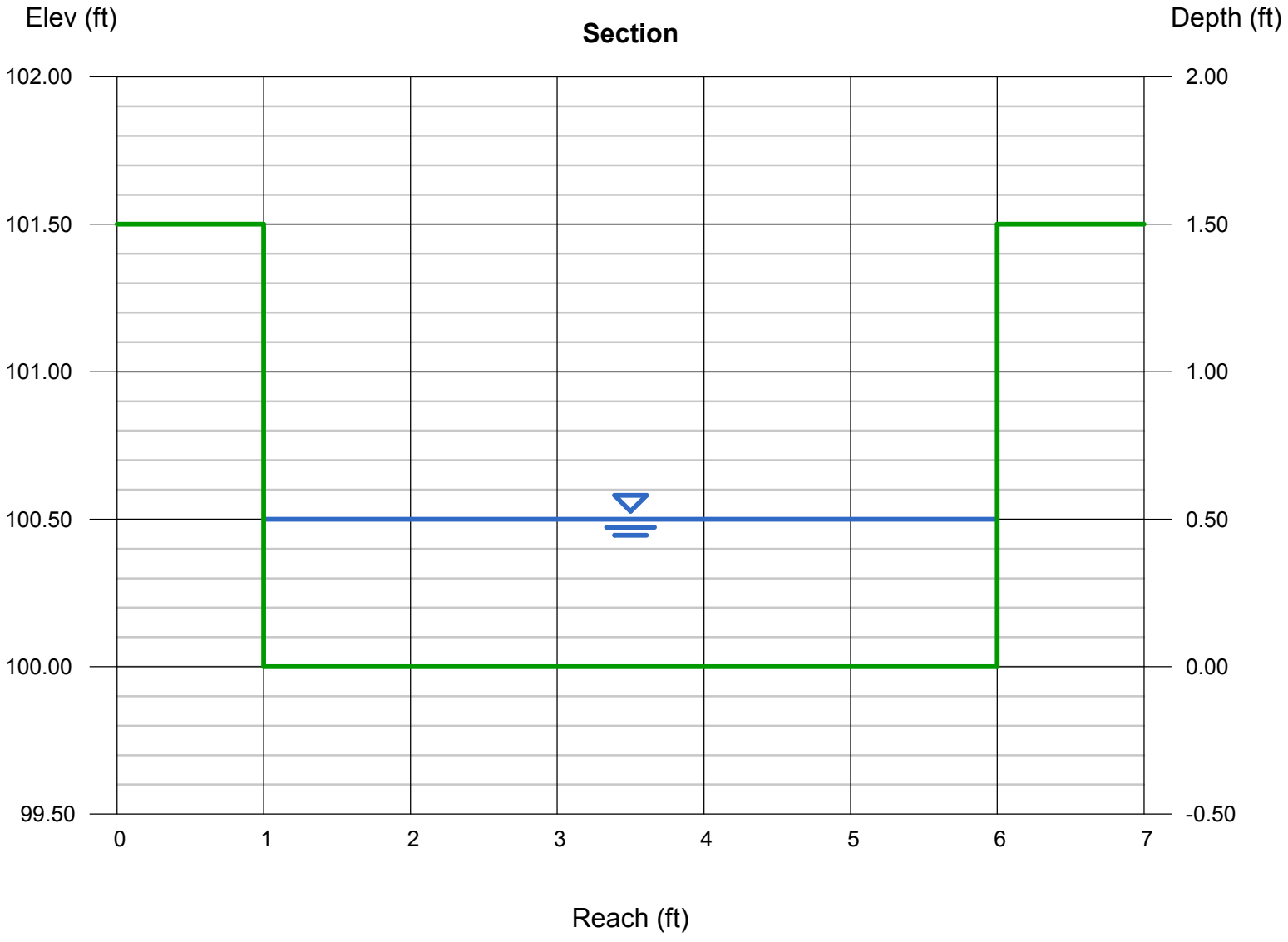
Bottom Width (ft)	= 5.00
Total Depth (ft)	= 1.50
Invert Elev (ft)	= 100.00
Slope (%)	= 0.80
N-Value	= 0.015

Calculations

Compute by:	Known Q
Known Q (cfs)	= 12.17

Highlighted

Depth (ft)	= 0.50
Q (cfs)	= 12.17
Area (sqft)	= 2.50
Velocity (ft/s)	= 4.87
Wetted Perim (ft)	= 6.00
Crit Depth, Yc (ft)	= 0.57
Top Width (ft)	= 5.00
EGL (ft)	= 0.87



DETENTION ANALYSIS

CUDE ENGINEERS
SAN ANTONIO | AUSTIN | SAN MARCOS

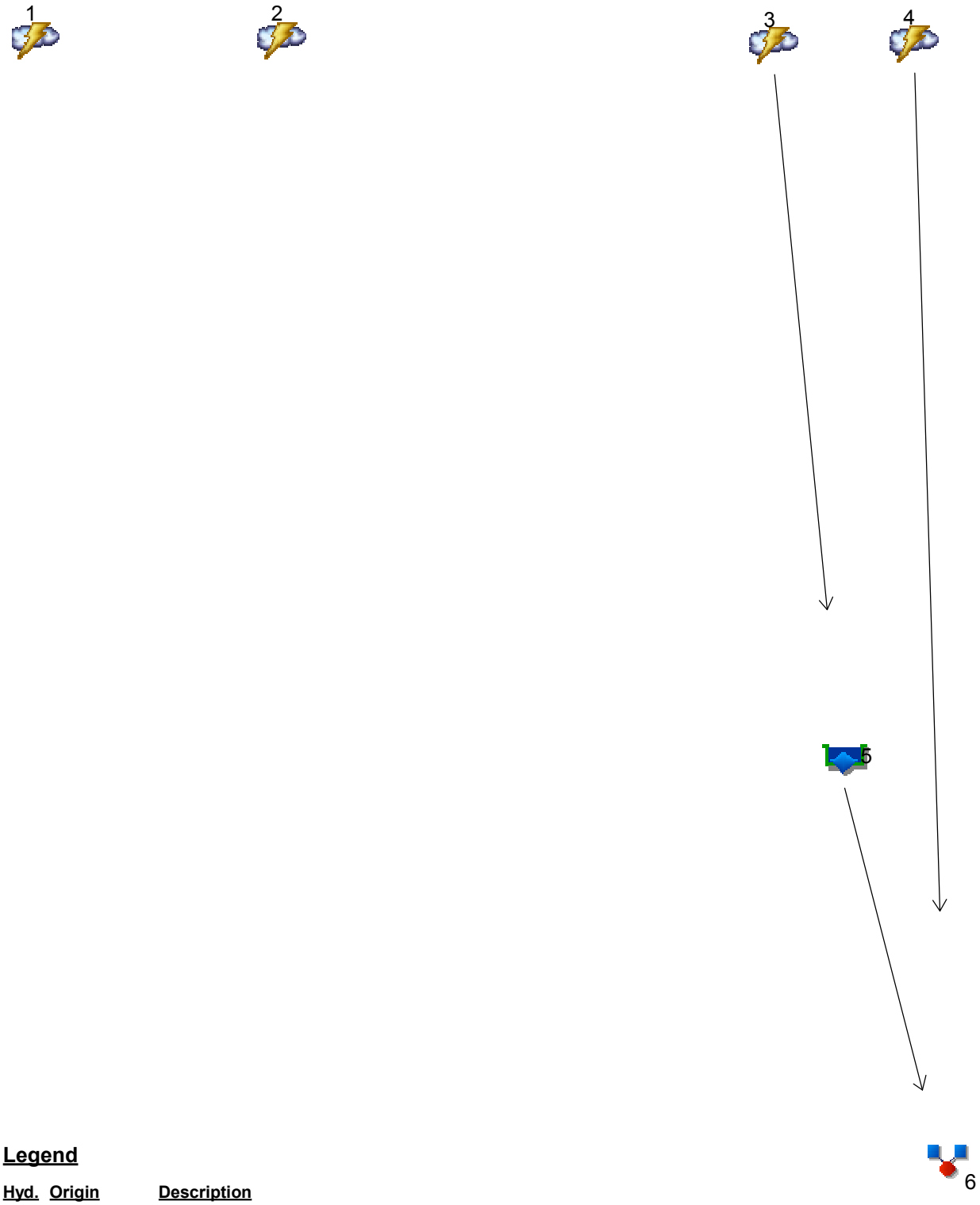
4122 POND HILL ROAD, STE 101
SAN ANTONIO, TEXAS 78231

PHONE: (210) 681-2951
CUDEENGINEERS.COM

TBPE NO. 455
TBPELS NO. 10048500

Hydraflow Table of Contents

Watershed Model Schematic



Legend

Hyd.	Origin	Description
1	Rational	AREA A1 - Existing
2	Rational	AREA A2 - Existing
3	Rational	AREA A1 - Proposed
4	Rational	AREA A2 - Proposed
5	Reservoir	Pond 2A
6	Combine	<no description>

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

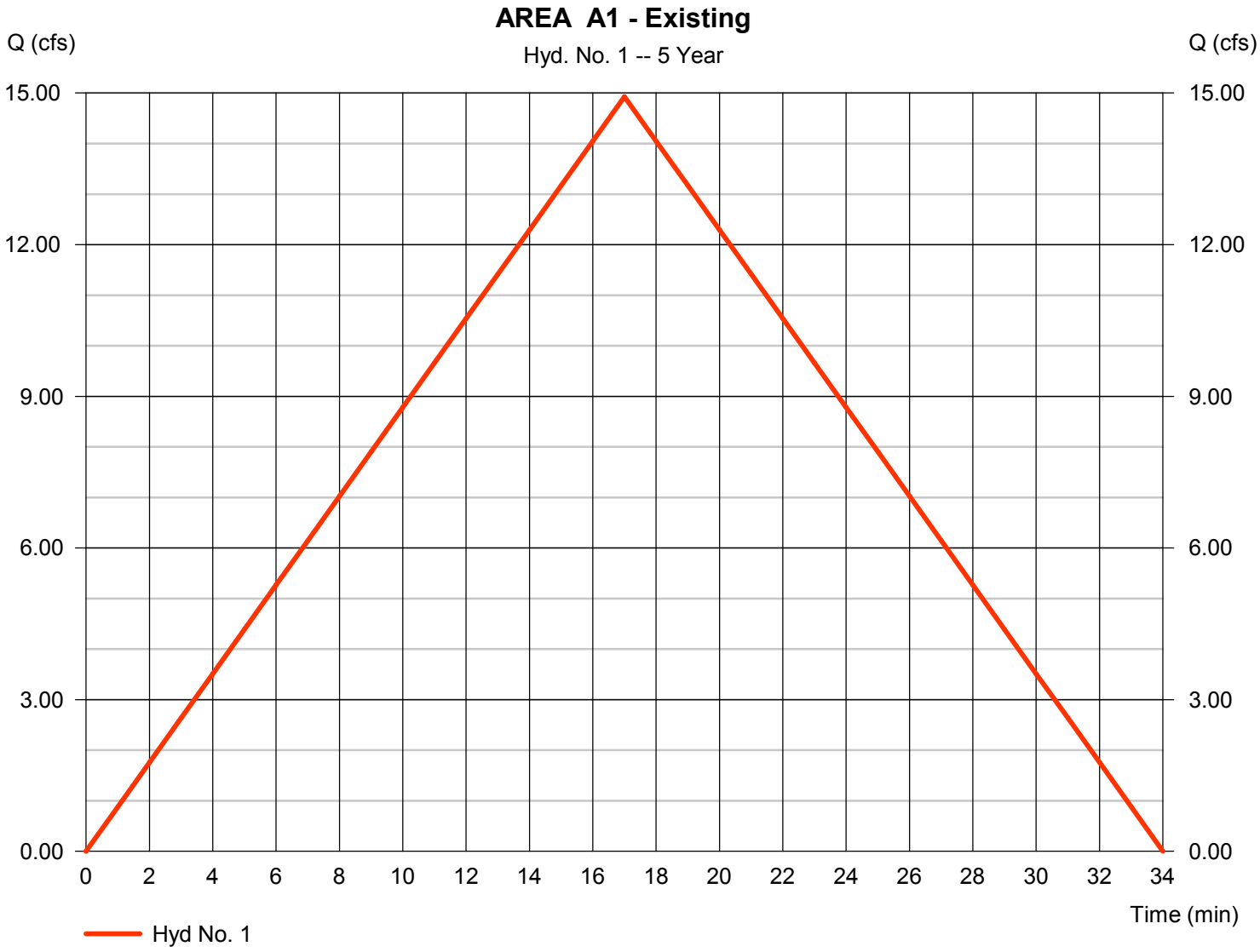
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	Rational	14.93	1	17	15,226	------	------	------	AREA A1 - Existing
2	Rational	6.486	1	21	8,172	------	------	------	AREA A2 - Existing
3	Rational	17.91	1	19	20,421	------	------	------	AREA A1 - Proposed
4	Rational	7.625	1	22	10,065	------	------	------	AREA A2 - Proposed
5	Reservoir	5.528	1	32	20,411	3	866.47	14,889	Pond 2A
6	Combine	11.60	1	22	30,475	4, 5	------	------	<no description>

Hydrograph Report

Hyd. No. 1

AREA A1 - Existing

Hydrograph type	= Rational	Peak discharge	= 14.93 cfs
Storm frequency	= 5 yrs	Time to peak	= 17 min
Time interval	= 1 min	Hyd. volume	= 15,226 cuft
Drainage area	= 4.750 ac	Runoff coeff.	= 0.63
Intensity	= 4.988 in/hr	Tc by User	= 17.00 min
IDF Curve	= PA-3.IDF	Asc/Rec limb fact	= 1/1

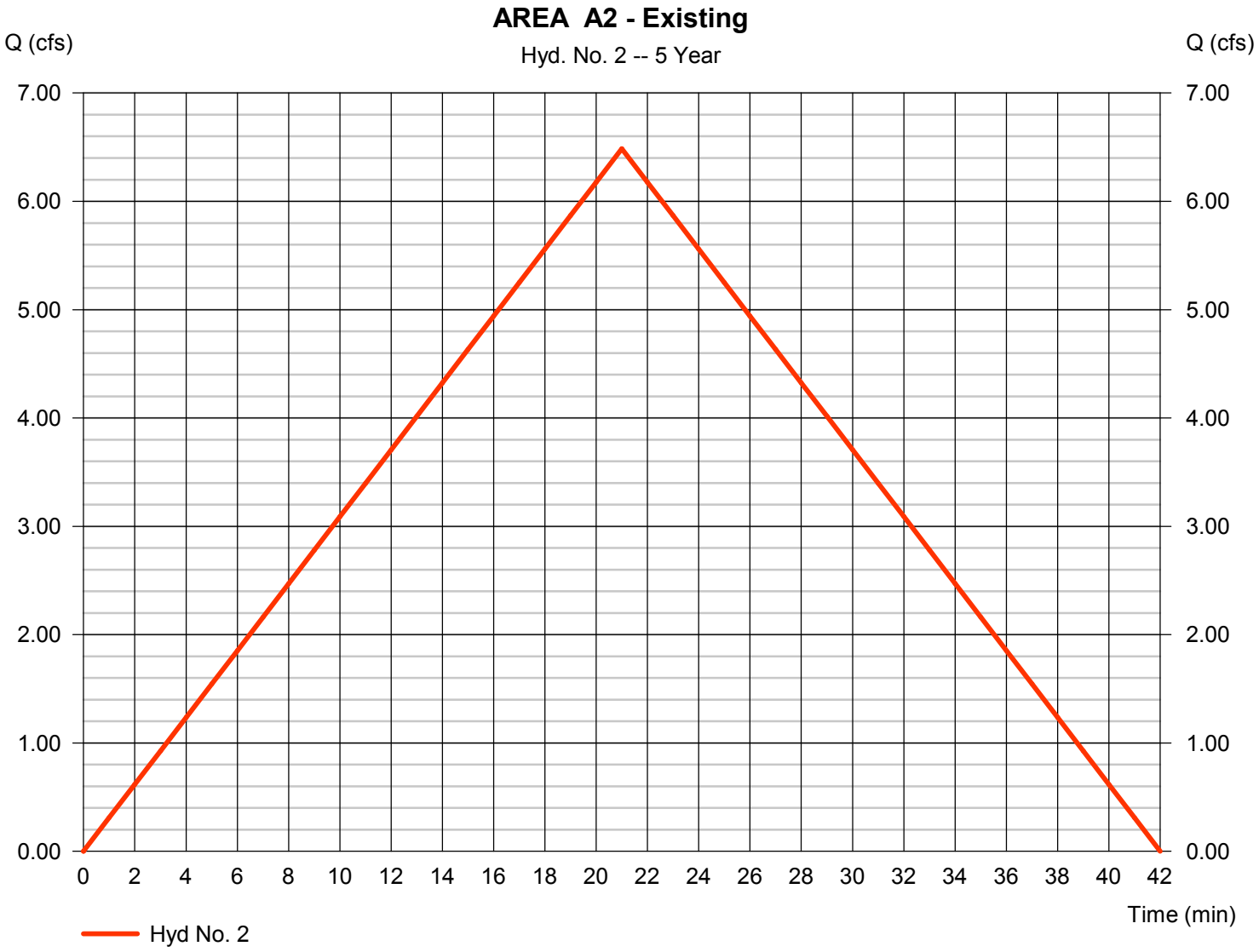


Hydrograph Report

Hyd. No. 2

AREA A2 - Existing

Hydrograph type	= Rational	Peak discharge	= 6.486 cfs
Storm frequency	= 5 yrs	Time to peak	= 21 min
Time interval	= 1 min	Hyd. volume	= 8,172 cuft
Drainage area	= 2.580 ac	Runoff coeff.	= 0.56
Intensity	= 4.489 in/hr	Tc by User	= 21.00 min
IDF Curve	= PA-3.IDF	Asc/Rec limb fact	= 1/1

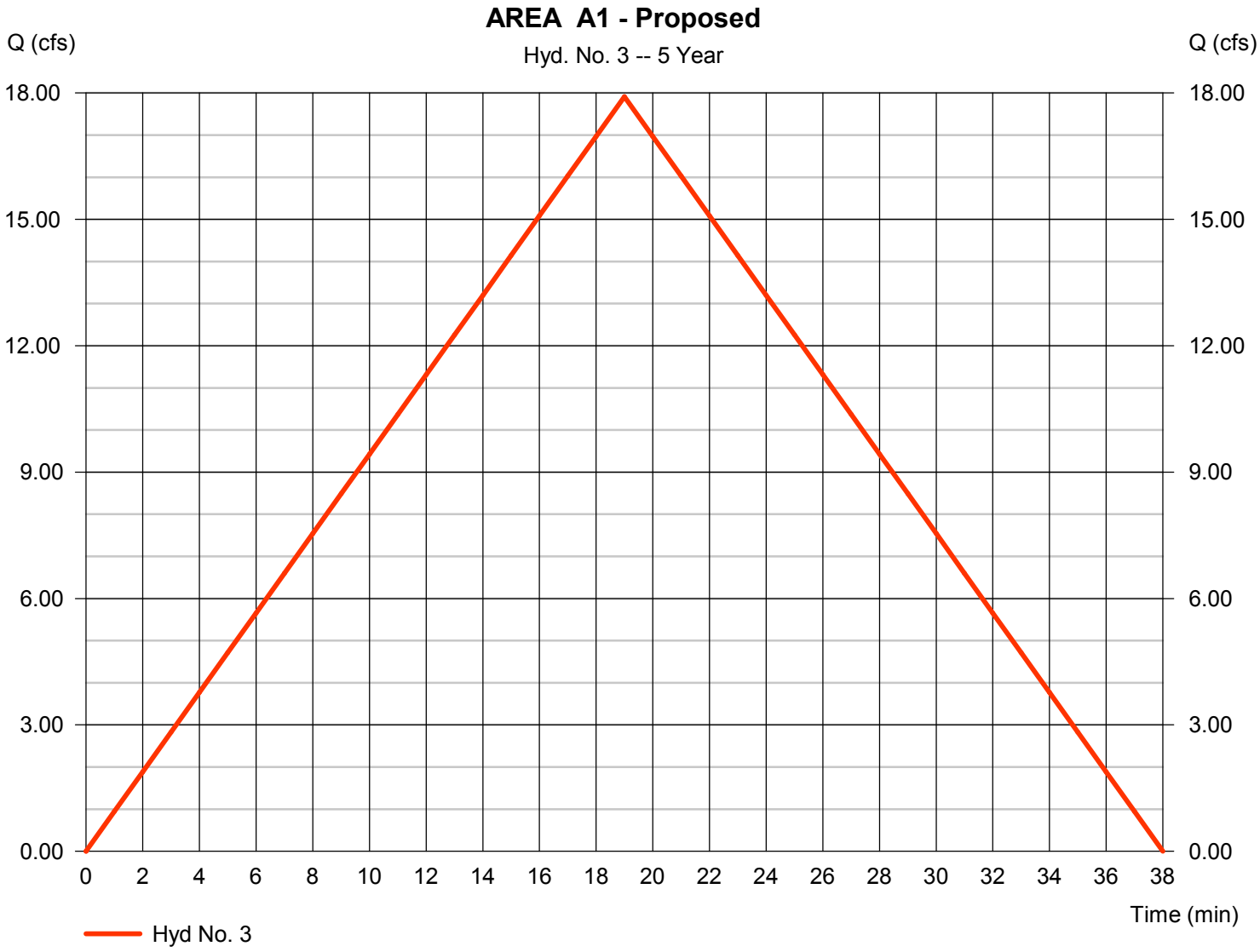


Hydrograph Report

Hyd. No. 3

AREA A1 - Proposed

Hydrograph type	=	Rational	Peak discharge	=	17.91 cfs
Storm frequency	=	5 yrs	Time to peak	=	19 min
Time interval	=	1 min	Hyd. volume	=	20,421 cuft
Drainage area	=	4.990 ac	Runoff coeff.	=	0.76
Intensity	=	4.723 in/hr	Tc by User	=	19.00 min
IDF Curve	=	PA-3.IDF	Asc/Rec limb fact	=	1/1

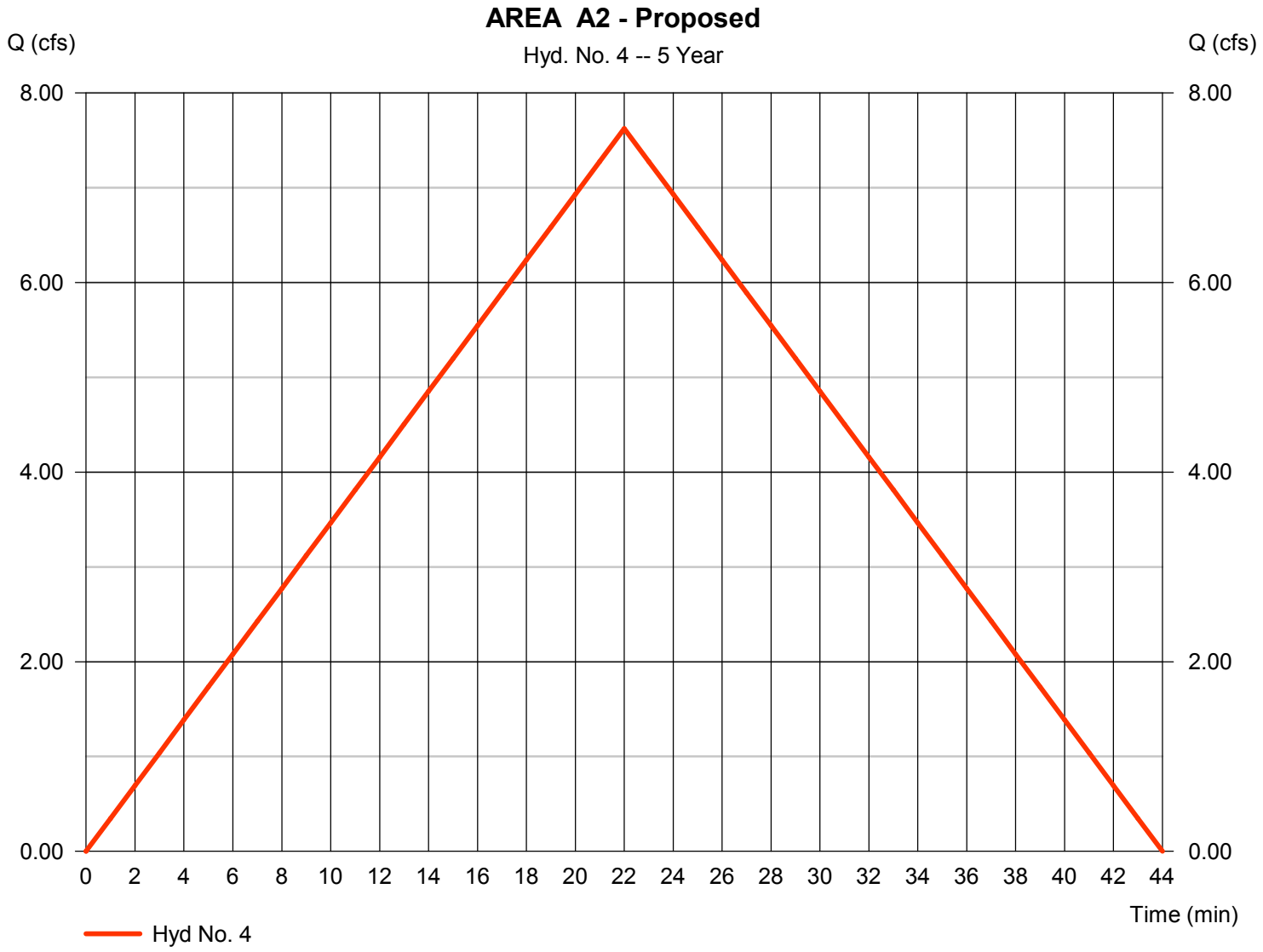


Hydrograph Report

Hyd. No. 4

AREA A2 - Proposed

Hydrograph type	=	Rational	Peak discharge	=	7.625 cfs
Storm frequency	=	5 yrs	Time to peak	=	22 min
Time interval	=	1 min	Hyd. volume	=	10,065 cuft
Drainage area	=	2.320 ac	Runoff coeff.	=	0.75
Intensity	=	4.382 in/hr	Tc by User	=	22.00 min
IDF Curve	=	PA-3.IDF	Asc/Rec limb fact	=	1/1



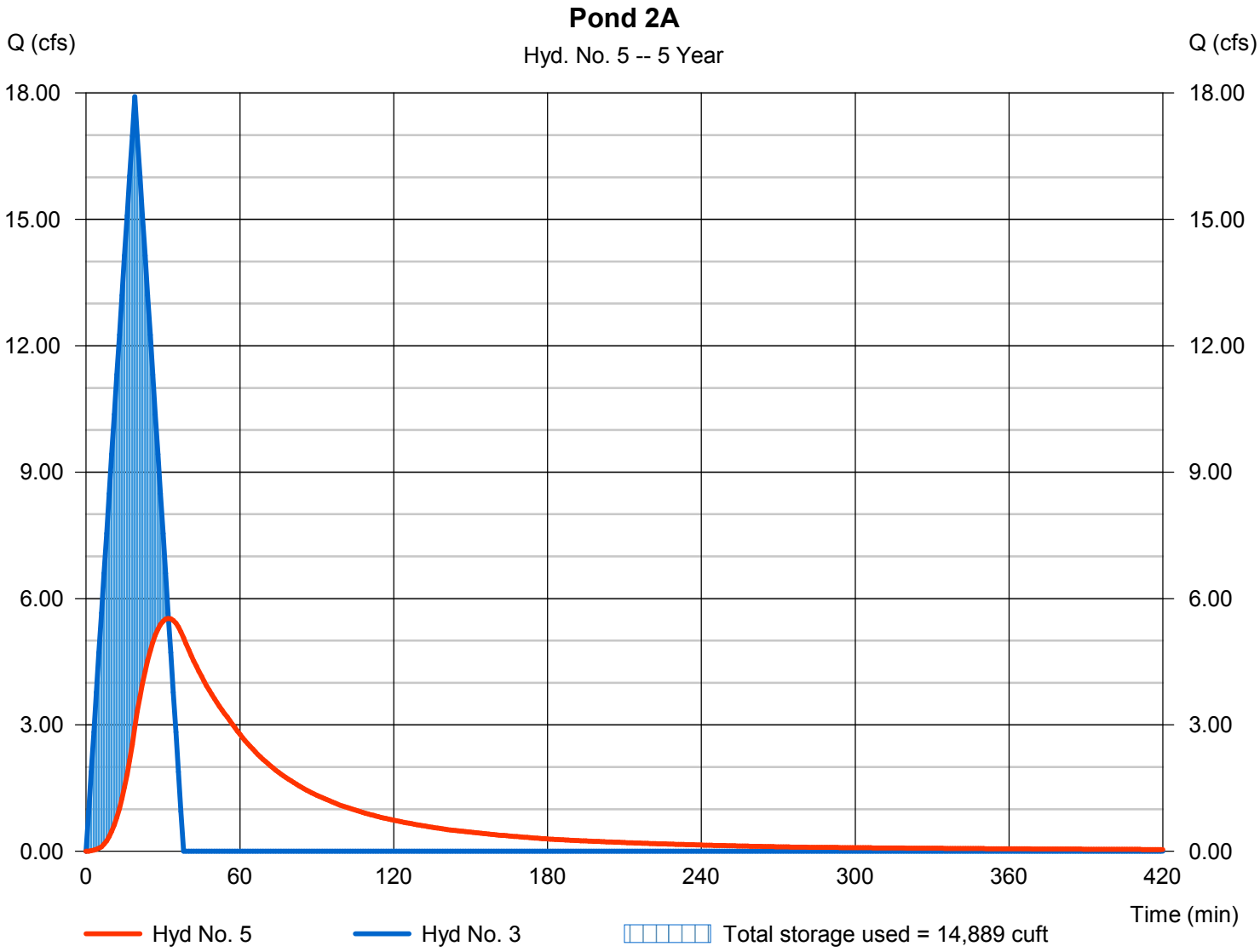
Hydrograph Report

Hyd. No. 5

Pond 2A

Hydrograph type	= Reservoir	Peak discharge	= 5.528 cfs
Storm frequency	= 5 yrs	Time to peak	= 32 min
Time interval	= 1 min	Hyd. volume	= 20,411 cuft
Inflow hyd. No.	= 3 - AREA A1 - Proposed	Max. Elevation	= 866.47 ft
Reservoir name	= Pond 1	Max. Storage	= 14,889 cuft

Storage Indication method used.



Pond Report

Pond No. 1 - Pond 1

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 865.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	865.00	8,915	0	0
1.00	866.00	10,355	9,625	9,625
2.00	867.00	11,853	11,095	20,720
3.00	868.00	13,408	12,622	33,342

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	Inactive	Inactive	Inactive	0.00
Span (in)	= 24.00	0.00	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 865.00	0.00	0.00	0.00
Length (ft)	= 25.00	0.00	0.00	0.00
Slope (%)	= 0.50	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

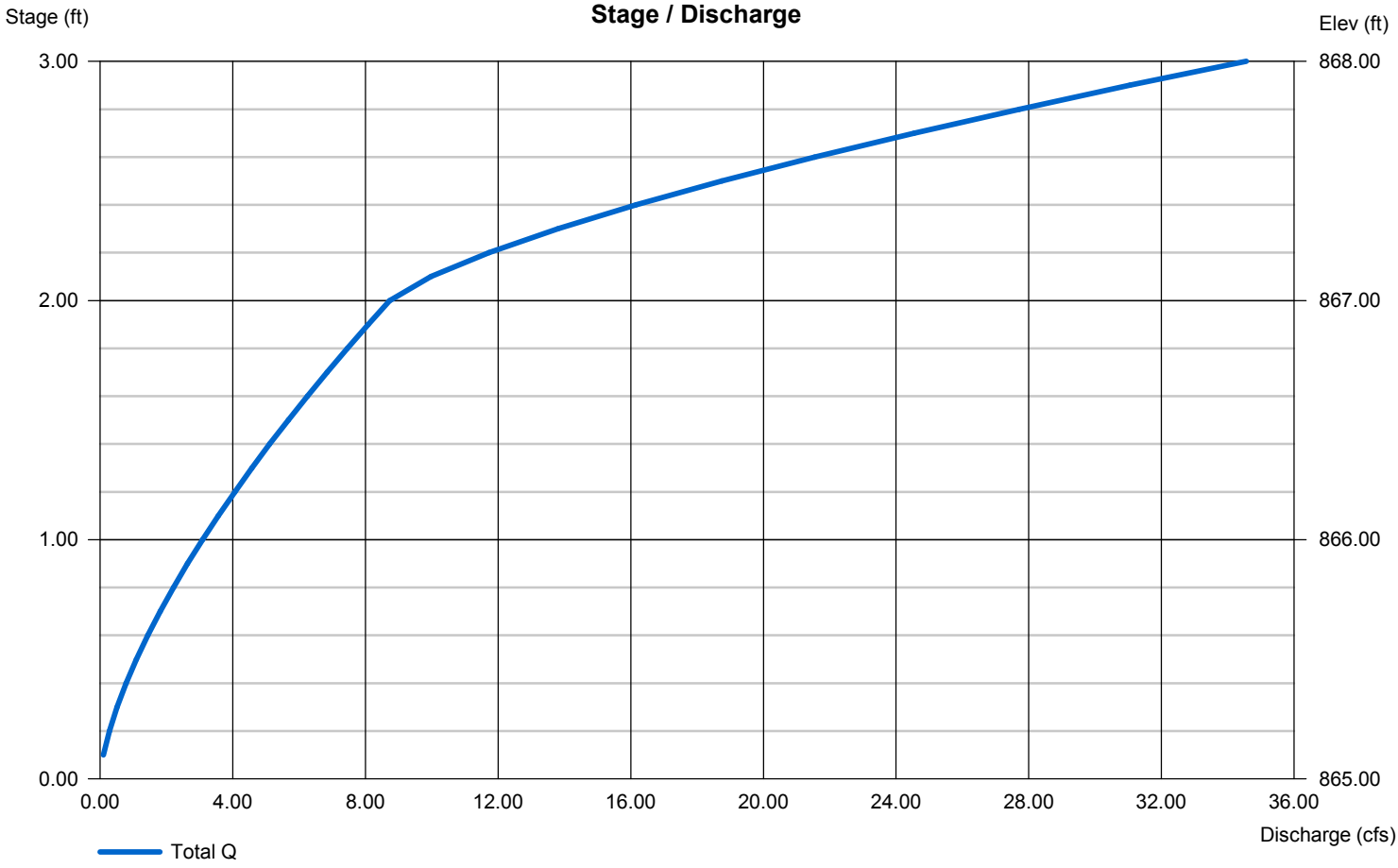
Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 1.00	6.00	Inactive	0.00
Crest El. (ft)	= 865.00	867.00	867.00	0.00
Weir Coeff.	= 3.09	3.09	3.09	3.33
Weir Type	= Rect	Rect	Rect	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 0.000 (by Contour)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

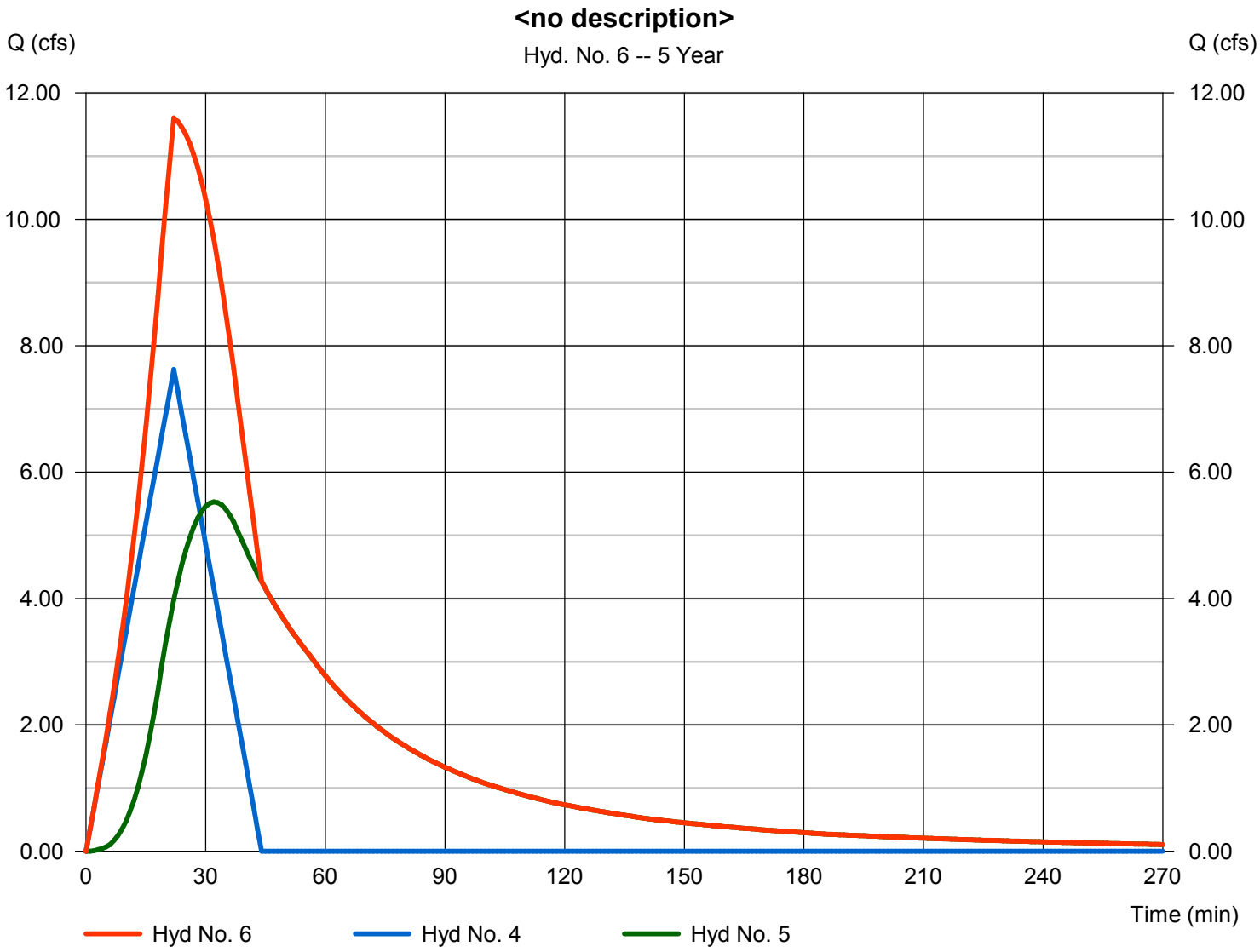


Hydrograph Report

Hyd. No. 6

<no description>

Hydrograph type	= Combine	Peak discharge	= 11.60 cfs
Storm frequency	= 5 yrs	Time to peak	= 22 min
Time interval	= 1 min	Hyd. volume	= 30,475 cuft
Inflow hyds.	= 4, 5	Contrib. drain. area	= 2.320 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

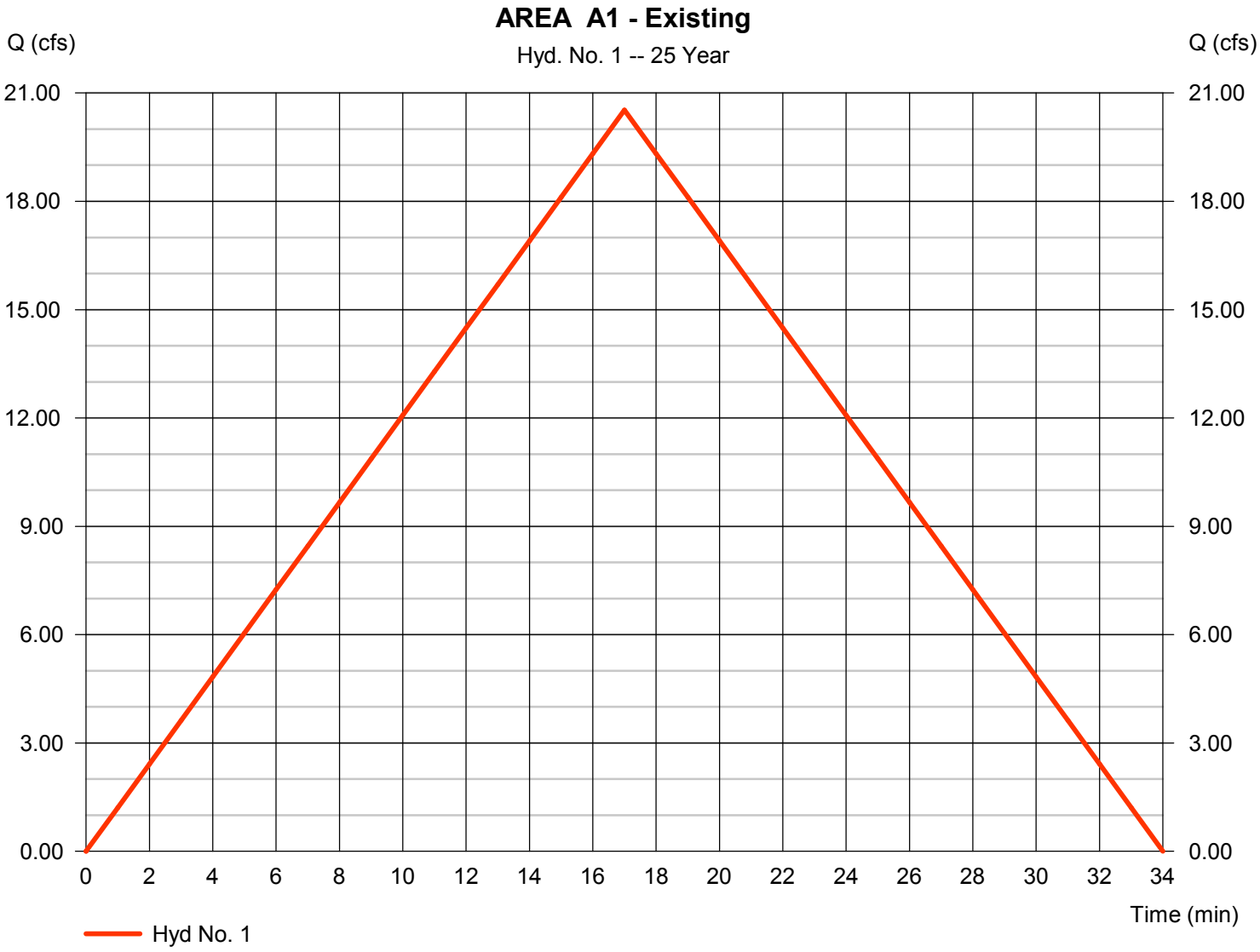
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	Rational	20.53	1	17	20,941	------	------	------	AREA A1 - Existing
2	Rational	8.920	1	21	11,239	------	------	------	AREA A2 - Existing
3	Rational	24.63	1	19	28,081	------	------	------	AREA A1 - Proposed
4	Rational	10.49	1	22	13,844	------	------	------	AREA A2 - Proposed
5	Reservoir	8.222	1	32	28,071	3	866.92	19,848	Pond 2A
6	Combine	16.48	1	22	41,914	4, 5	------	------	<no description>

Hydrograph Report

Hyd. No. 1

AREA A1 - Existing

Hydrograph type	=	Rational	Peak discharge	=	20.53 cfs
Storm frequency	=	25 yrs	Time to peak	=	17 min
Time interval	=	1 min	Hyd. volume	=	20,941 cuft
Drainage area	=	4.750 ac	Runoff coeff.	=	0.63
Intensity	=	6.861 in/hr	Tc by User	=	17.00 min
IDF Curve	=	PA-3.IDF	Asc/Rec limb fact	=	1/1

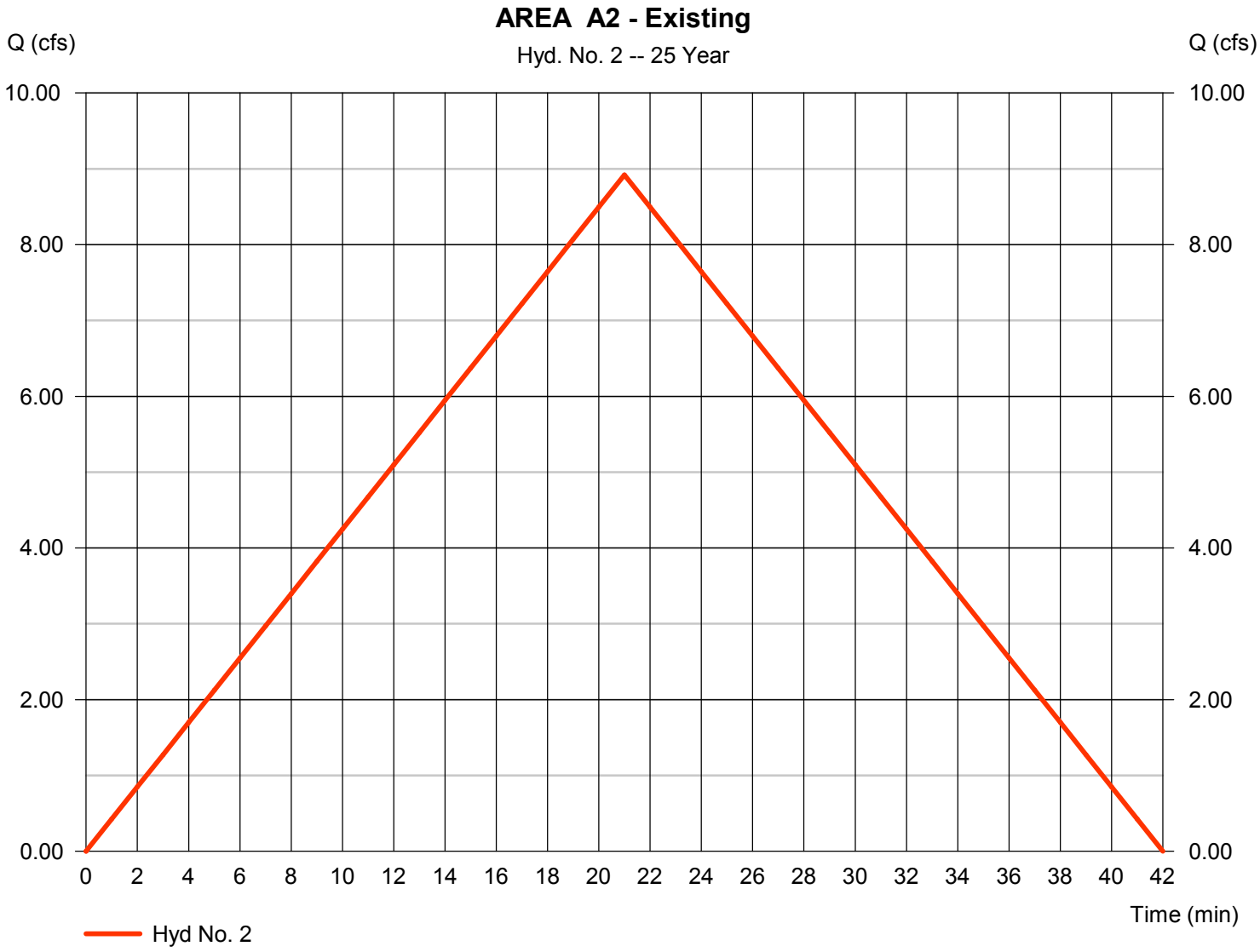


Hydrograph Report

Hyd. No. 2

AREA A2 - Existing

Hydrograph type	=	Rational	Peak discharge	=	8.920 cfs
Storm frequency	=	25 yrs	Time to peak	=	21 min
Time interval	=	1 min	Hyd. volume	=	11,239 cuft
Drainage area	=	2.580 ac	Runoff coeff.	=	0.56
Intensity	=	6.174 in/hr	Tc by User	=	21.00 min
IDF Curve	=	PA-3.IDF	Asc/Rec limb fact	=	1/1

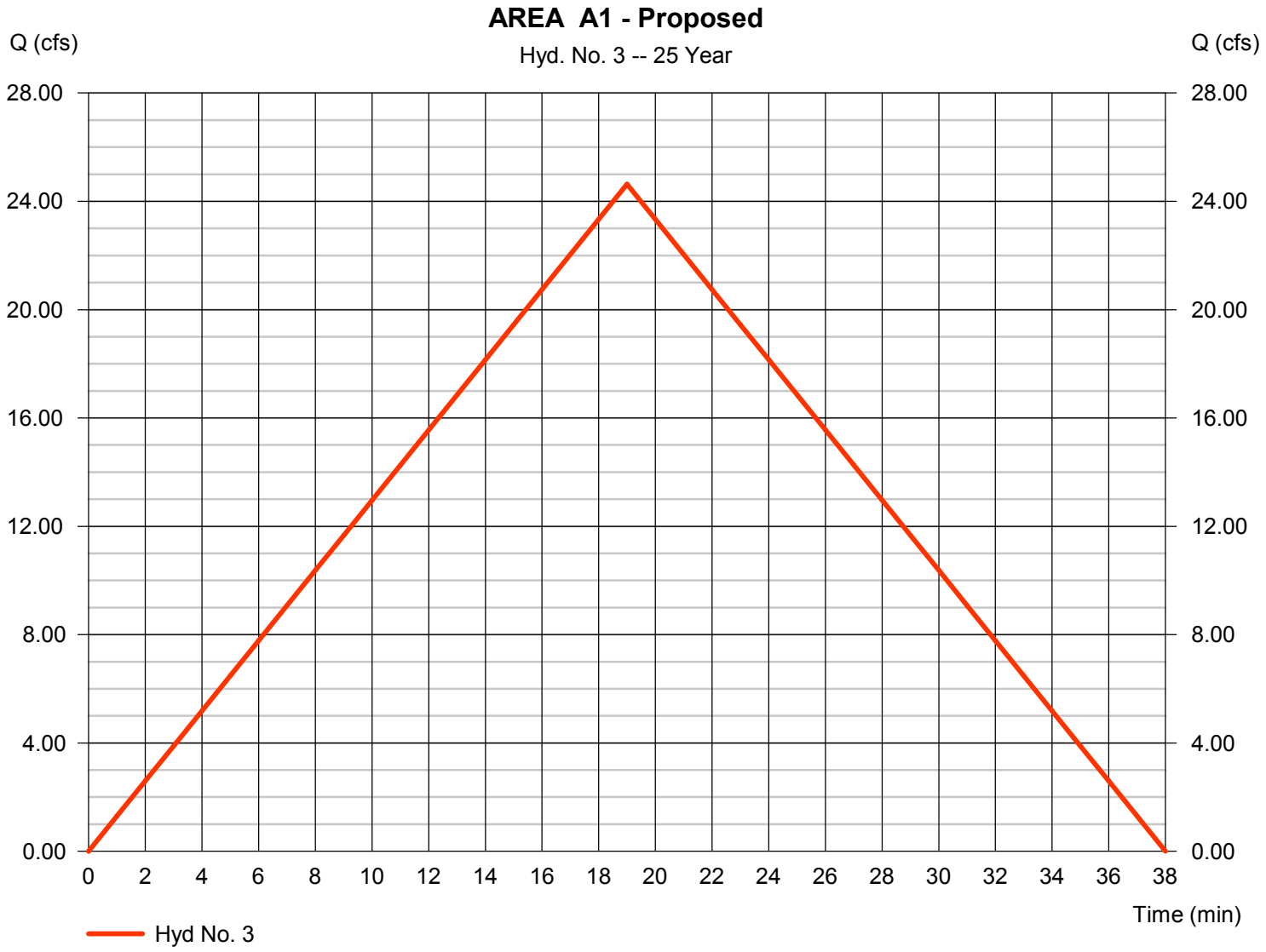


Hydrograph Report

Hyd. No. 3

AREA A1 - Proposed

Hydrograph type	=	Rational	Peak discharge	=	24.63 cfs
Storm frequency	=	25 yrs	Time to peak	=	19 min
Time interval	=	1 min	Hyd. volume	=	28,081 cuft
Drainage area	=	4.990 ac	Runoff coeff.	=	0.76
Intensity	=	6.495 in/hr	Tc by User	=	19.00 min
IDF Curve	=	PA-3.IDF	Asc/Rec limb fact	=	1/1

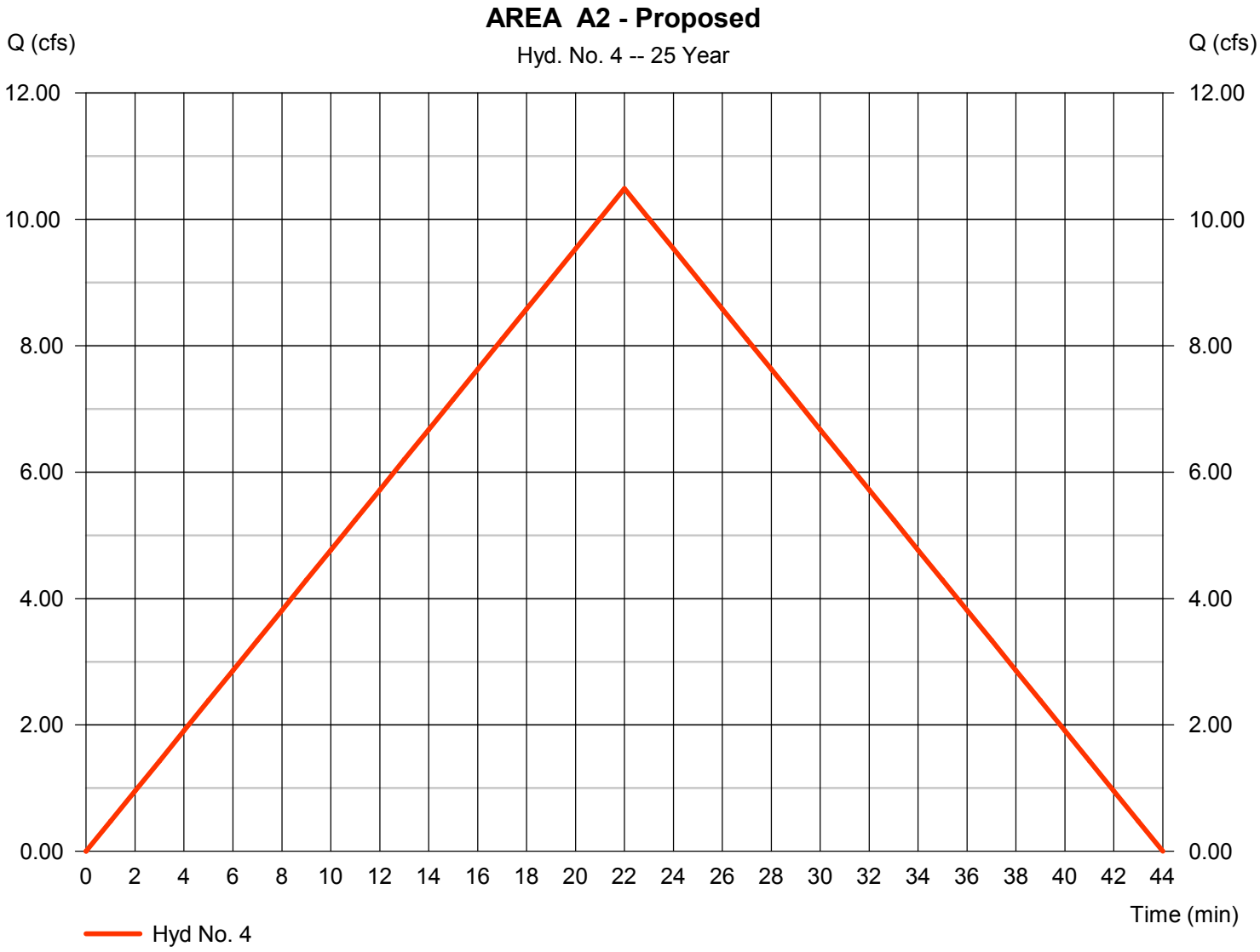


Hydrograph Report

Hyd. No. 4

AREA A2 - Proposed

Hydrograph type	=	Rational	Peak discharge	=	10.49 cfs
Storm frequency	=	25 yrs	Time to peak	=	22 min
Time interval	=	1 min	Hyd. volume	=	13,844 cuft
Drainage area	=	2.320 ac	Runoff coeff.	=	0.75
Intensity	=	6.027 in/hr	Tc by User	=	22.00 min
IDF Curve	=	PA-3.IDF	Asc/Rec limb fact	=	1/1



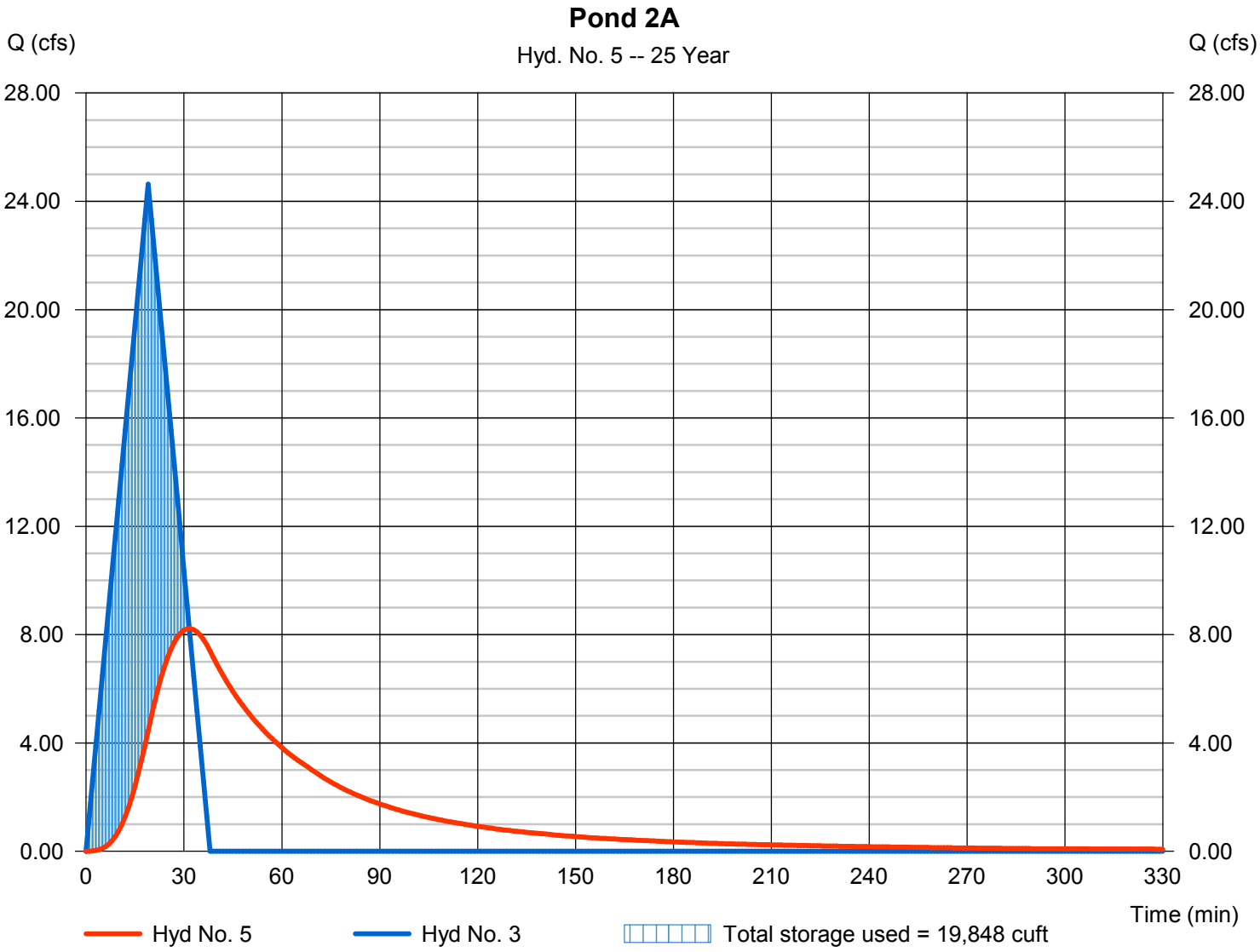
Hydrograph Report

Hyd. No. 5

Pond 2A

Hydrograph type	= Reservoir	Peak discharge	= 8.222 cfs
Storm frequency	= 25 yrs	Time to peak	= 32 min
Time interval	= 1 min	Hyd. volume	= 28,071 cuft
Inflow hyd. No.	= 3 - AREA A1 - Proposed	Max. Elevation	= 866.92 ft
Reservoir name	= Pond 1	Max. Storage	= 19,848 cuft

Storage Indication method used.

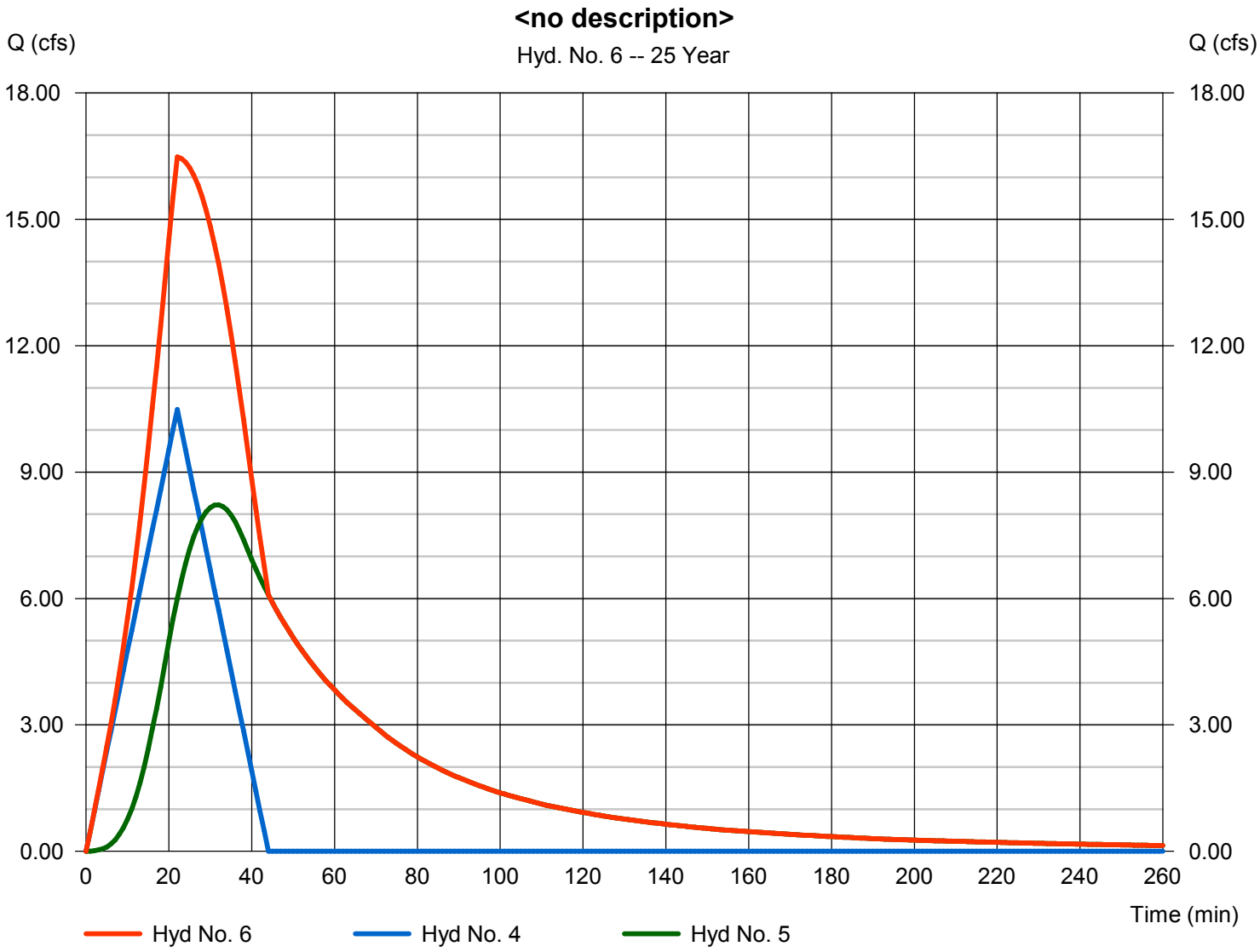


Hydrograph Report

Hyd. No. 6

<no description>

Hydrograph type	= Combine	Peak discharge	= 16.48 cfs
Storm frequency	= 25 yrs	Time to peak	= 22 min
Time interval	= 1 min	Hyd. volume	= 41,914 cuft
Inflow hyds.	= 4, 5	Contrib. drain. area	= 2.320 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

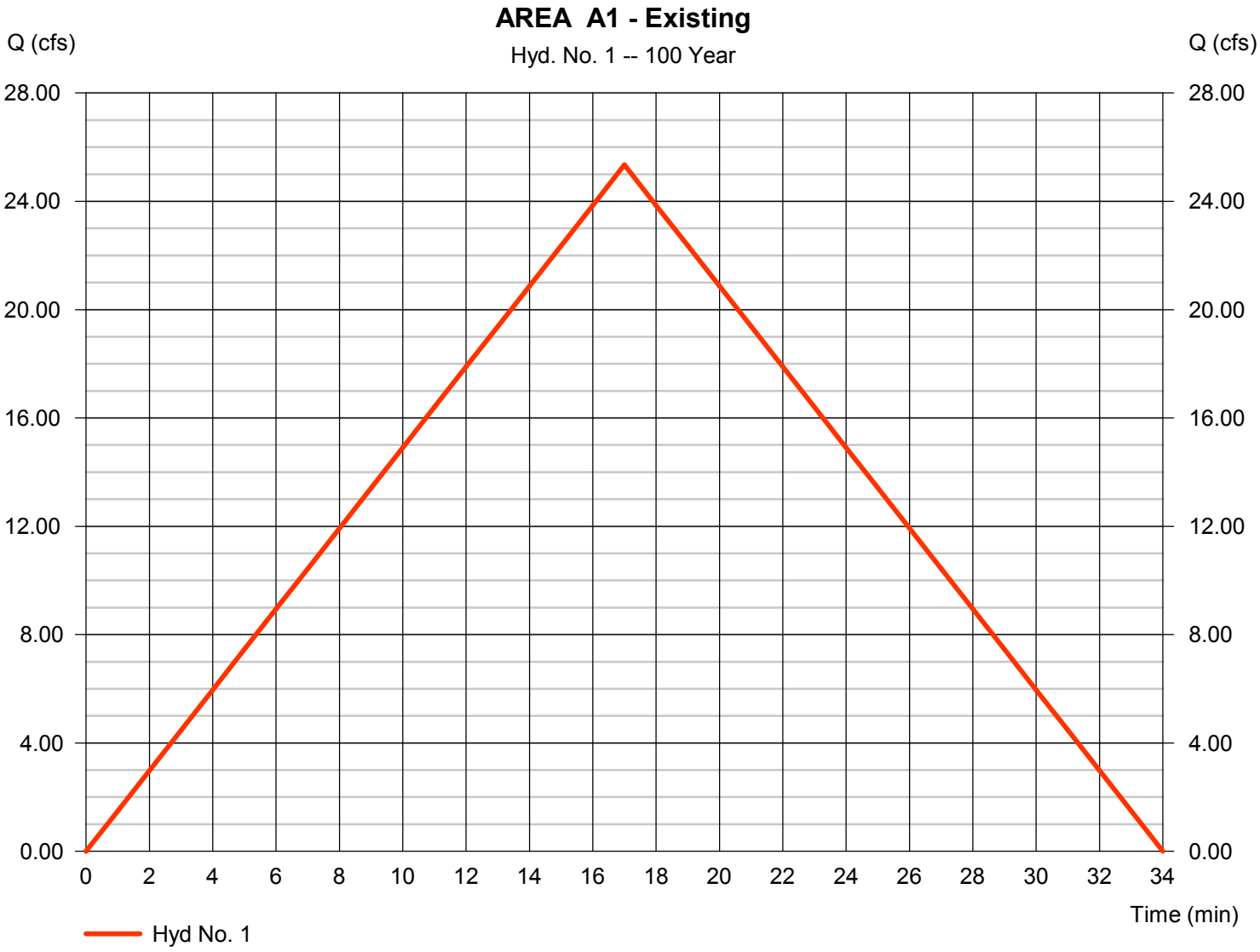
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	Rational	25.34	1	17	25,851	------	------	------	AREA A1 - Existing
2	Rational	11.01	1	21	13,876	------	------	------	AREA A2 - Existing
3	Rational	30.41	1	19	34,662	------	------	------	AREA A1 - Proposed
4	Rational	12.95	1	22	17,093	------	------	------	AREA A2 - Proposed
5	Reservoir	12.17	1	30	34,652	3	867.22	23,513	Pond 2A
6	Combine	21.26	1	27	51,745	4, 5	------	------	<no description>

Hydrograph Report

Hyd. No. 1

AREA A1 - Existing

Hydrograph type	= Rational	Peak discharge	= 25.34 cfs
Storm frequency	= 100 yrs	Time to peak	= 17 min
Time interval	= 1 min	Hyd. volume	= 25,851 cuft
Drainage area	= 4.750 ac	Runoff coeff.	= 0.63
Intensity	= 8.469 in/hr	Tc by User	= 17.00 min
IDF Curve	= PA-3.IDF	Asc/Rec limb fact	= 1/1

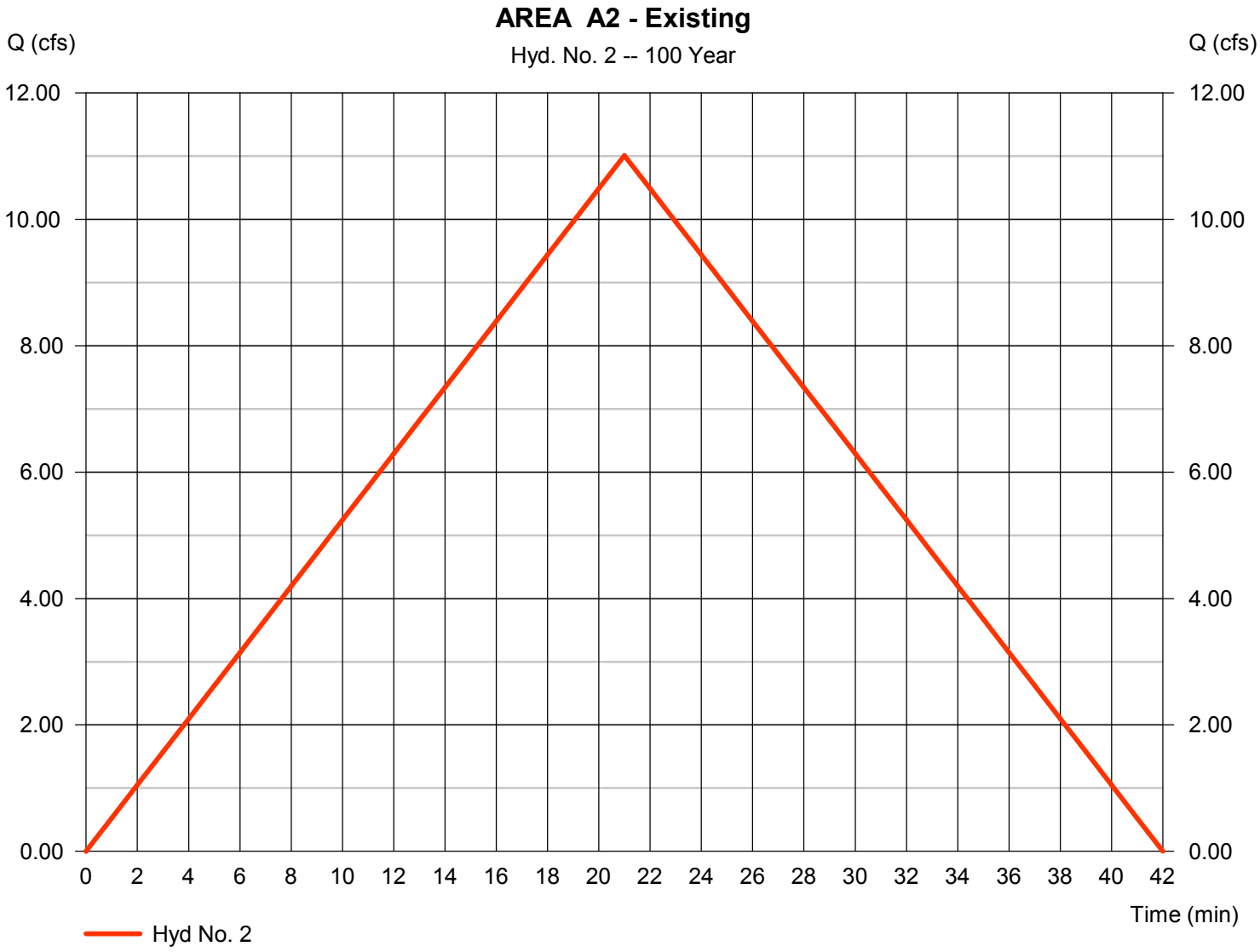


Hydrograph Report

Hyd. No. 2

AREA A2 - Existing

Hydrograph type	=	Rational	Peak discharge	=	11.01 cfs
Storm frequency	=	100 yrs	Time to peak	=	21 min
Time interval	=	1 min	Hyd. volume	=	13,876 cuft
Drainage area	=	2.580 ac	Runoff coeff.	=	0.56
Intensity	=	7.622 in/hr	Tc by User	=	21.00 min
IDF Curve	=	PA-3.IDF	Asc/Rec limb fact	=	1/1

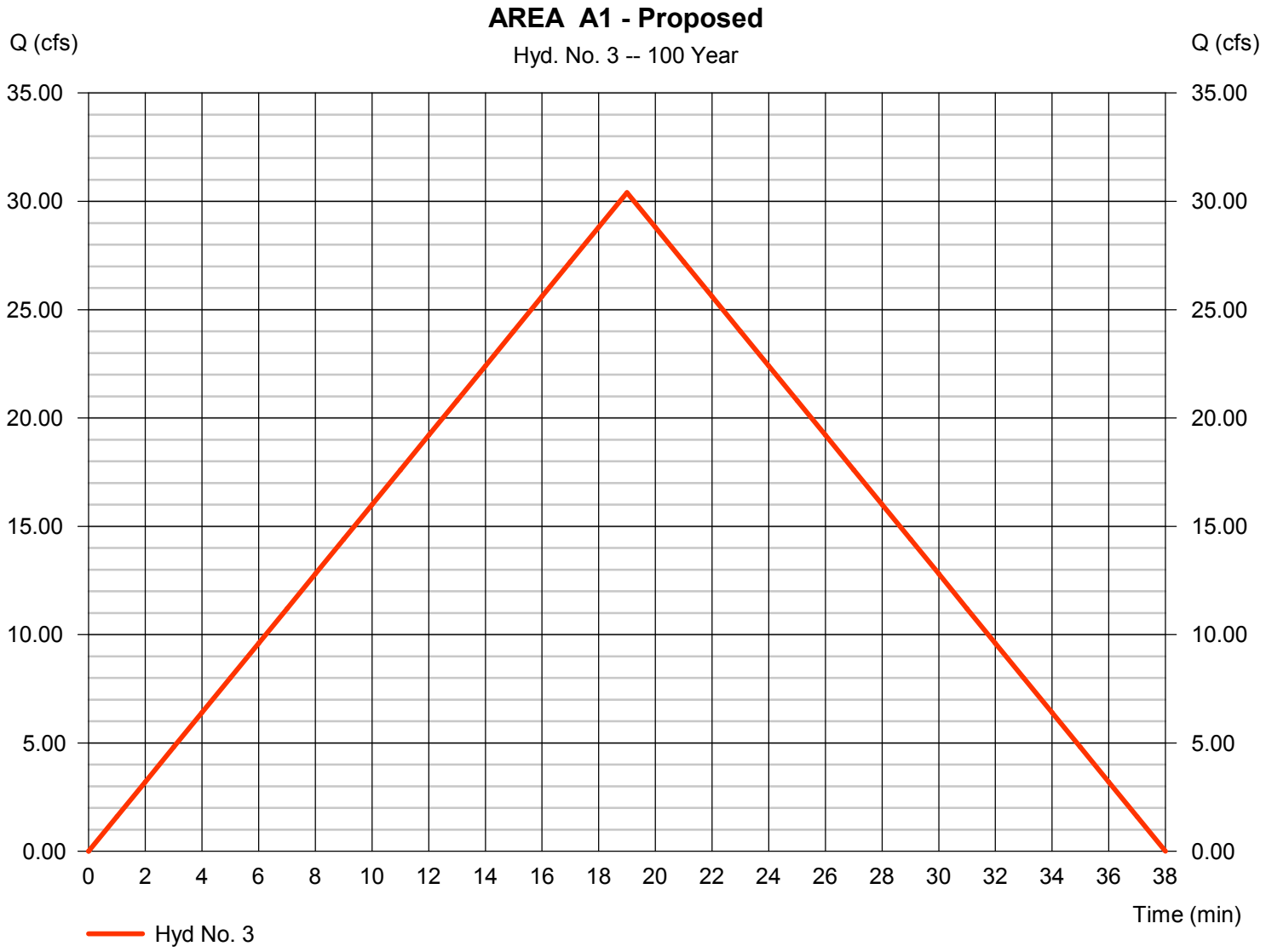


Hydrograph Report

Hyd. No. 3

AREA A1 - Proposed

Hydrograph type	=	Rational	Peak discharge	=	30.41 cfs
Storm frequency	=	100 yrs	Time to peak	=	19 min
Time interval	=	1 min	Hyd. volume	=	34,662 cuft
Drainage area	=	4.990 ac	Runoff coeff.	=	0.76
Intensity	=	8.017 in/hr	Tc by User	=	19.00 min
IDF Curve	=	PA-3.IDF	Asc/Rec limb fact	=	1/1

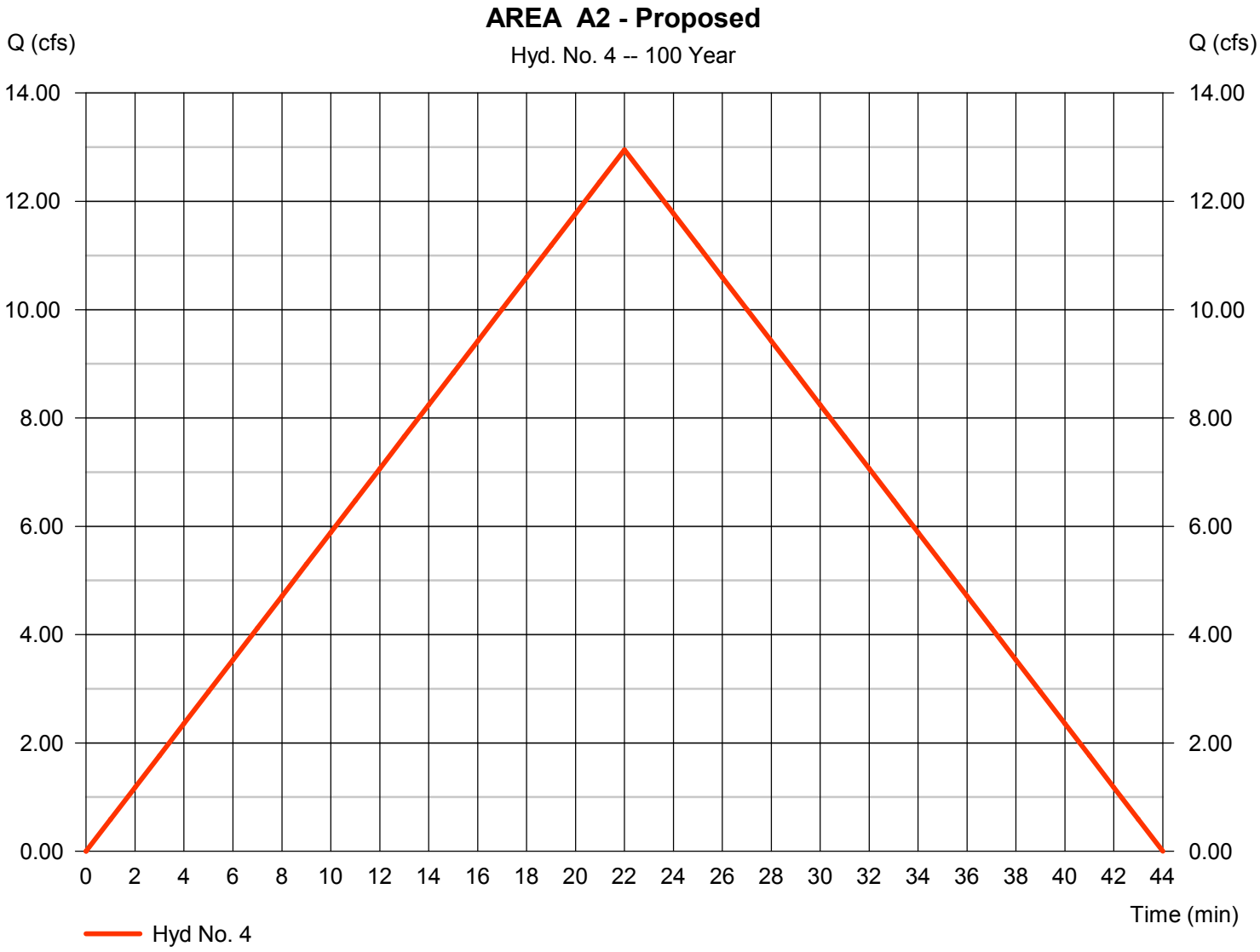


Hydrograph Report

Hyd. No. 4

AREA A2 - Proposed

Hydrograph type	=	Rational	Peak discharge	=	12.95 cfs
Storm frequency	=	100 yrs	Time to peak	=	22 min
Time interval	=	1 min	Hyd. volume	=	17,093 cuft
Drainage area	=	2.320 ac	Runoff coeff.	=	0.75
Intensity	=	7.442 in/hr	Tc by User	=	22.00 min
IDF Curve	=	PA-3.IDF	Asc/Rec limb fact	=	1/1



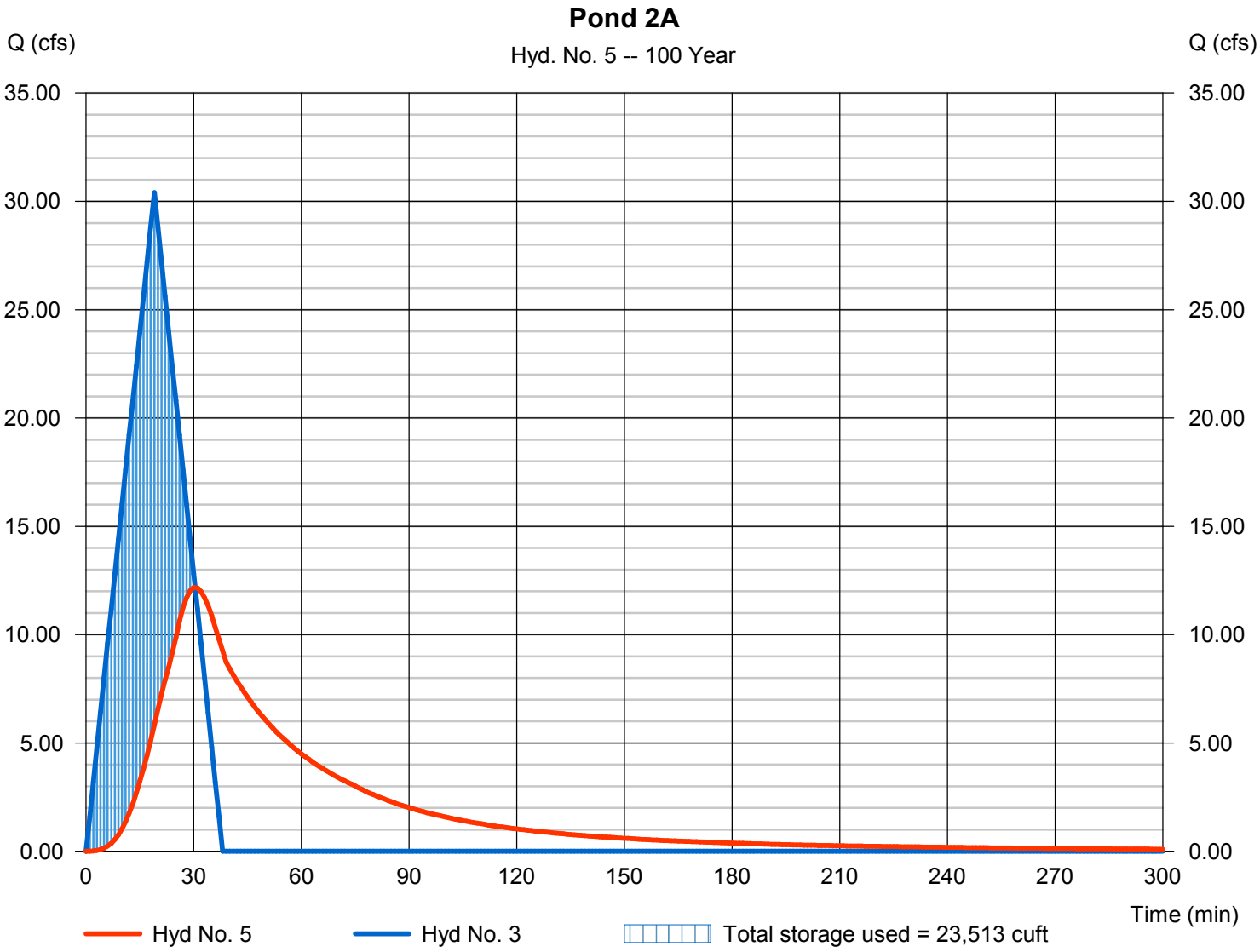
Hydrograph Report

Hyd. No. 5

Pond 2A

Hydrograph type	= Reservoir	Peak discharge	= 12.17 cfs
Storm frequency	= 100 yrs	Time to peak	= 30 min
Time interval	= 1 min	Hyd. volume	= 34,652 cuft
Inflow hyd. No.	= 3 - AREA A1 - Proposed	Max. Elevation	= 867.22 ft
Reservoir name	= Pond 1	Max. Storage	= 23,513 cuft

Storage Indication method used.



Hydrograph Report

Hyd. No. 6

<no description>

Hydrograph type	= Combine	Peak discharge	= 21.26 cfs
Storm frequency	= 100 yrs	Time to peak	= 27 min
Time interval	= 1 min	Hyd. volume	= 51,745 cuft
Inflow hyds.	= 4, 5	Contrib. drain. area	= 2.320 ac