Preliminary Stormwater Management Report

For

Shortcut Farms

October 21, 2025

Prepared for:

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Prepared By:

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Shortcut Farms
Preliminary Stormwater Management Narrative

October 21, 2025

Existing Conditions: The 51.7 acre tract owned by James & Minnie Barco is located on US-158 (Shortcut Road) in Currituck County. The site is agricultural farmland and adjacent to Airport Ditch and the Great Swamp, which contains East Creek and flows into the North River. The Natural Resource Conservation Service Soil Survey for Currituck County has mapped the soils on the site to consist primarily of Augusta fine sandy loam (At - 45%) and State fine sandy loam (StA - 36%). There are also small amounts of BoJac loamy sand (BoA), Nimmo loamy sand (No), Tomotley fine sand loam (To) and Altavosts fine sandy loam (AaA). The area adjacent to Airport Ditch contains Ponzer muck (Po). The majority of the site is between 6 and 10 feet above sea level, with the eastern and southern edge dropping to a top of ditch elevation of around 3. Most of the property is within a flood zone X, with the lower area adjacent to Airport Ditch being in an AE4 flood zone.

Proposed Development: Windansea2, LLC has an offer to purchase the parcel from James and Minnie Barco and is currently seeking a conditional rezoning from the county to rezone the land as Conditional Single Family Mainland (C-SFM) and Conditional General Business (C-GB). The 44.4 acre portion that would be in the C-SFM district is planned to be developed as a Conservation Subdivision with 33 lots (average size of near 28,000 sf) and 42.75% of the land area in conservation. The C-GB district will provide 2 lots along US-158, each of approximately 3.5 acres. These lots are anticipated to be developed independently. The project includes roads, waterlines, drainage and community amenities such as a walking trails and a pavilion area.

Stormwater Management: Runoff from the C-SFM Conservation Subdivision will be managed through opens swales along the roadside and in perimeter buffers along rear property lines. Shallow swales will be located along side property lines. The swales will convey runoff to two ponds that will restrict peak runoff from the 10-year, 24 hour rainfall event (6”) to the predeveloped 2-year, 24-hour rainfall event (4”) runoff rate in a wooded condition as required by the County Stormwater Manual.

A preliminary analysis of the conceptual plan indicates that the ponds are capable of exceeding the County requirements. This analysis was prepared using Hydroflow Hydrographs using the TR-55 hydrological analysis with the post developed C-SFM maximum allowable lot coverage of 30% plus conservation easements and right-of-way improvements in combination with the conceptual drainage routing plan. The

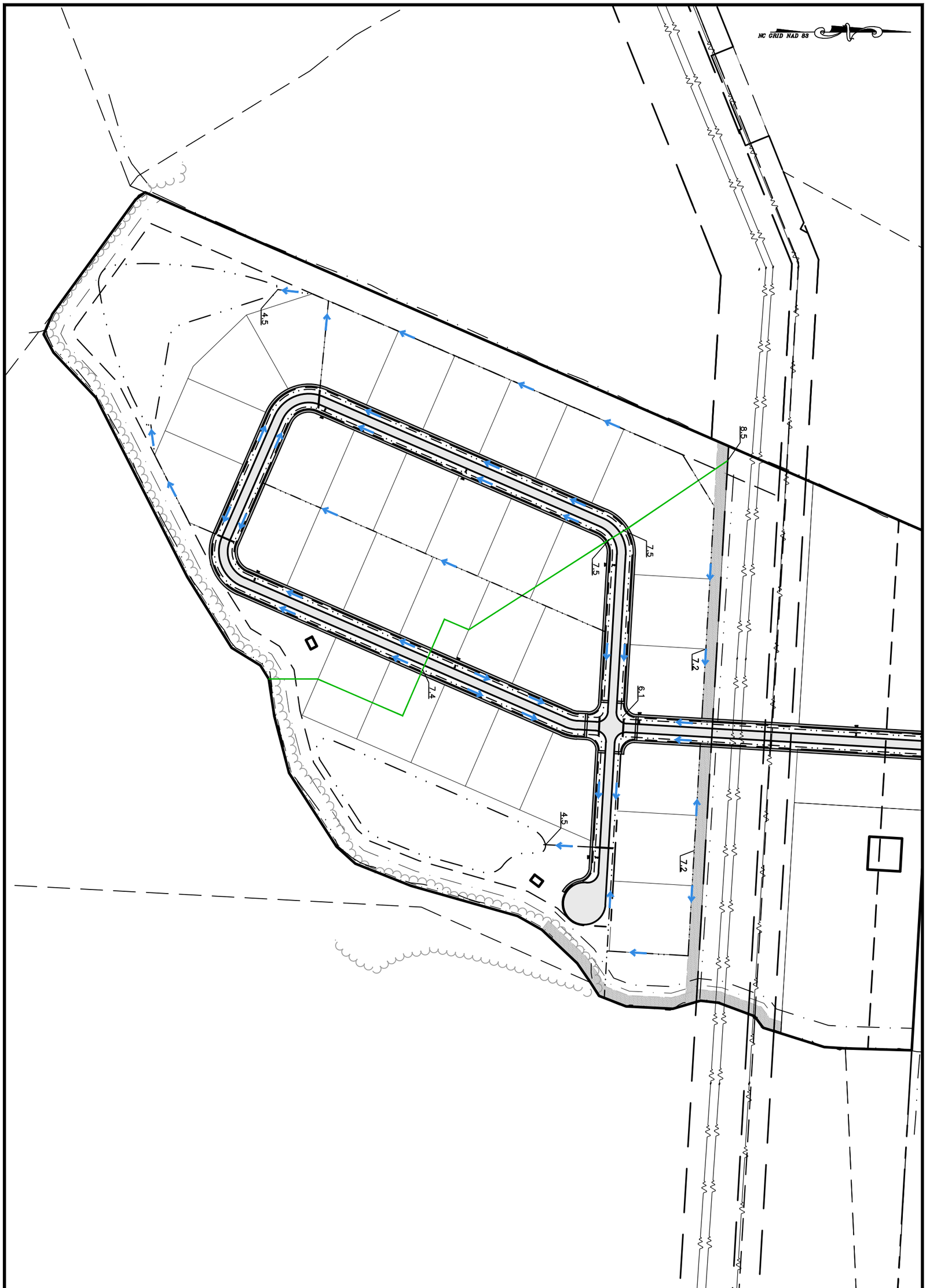
drainage area consists of Augusta (hydrologic group C) and State (hydrologic group A) soils. The net coverage in the SFM is about 18% when taking into account the conservation areas, yielding a Curve Number of 79 and 68 for group C & B soils respectively. This was compared to the predeveloped (no coverage) condition but accounting for the land in a wooded condition, the modeling utilized a Curve Number of 73 and 60 for group C & B soils respectively.

The predeveloped peak runoff rate for the 24 acre drainage area that would be draining into the eastern pond (mostly group C soils) for a 2-year, 24 hour rainfall was estimated to be 14.3 cfs. The postdeveloped peak runoff rate for the 24 acre conceptual drainage area draining into the eastern pond for a 10-year, 24-hour rainfall was estimated to be 22.5 cfs. However, with the storage volume in eastern pond and the controlled release rate from a control structure, the release rate is estimated to be 4.4 cfs, or about 30% of the predeveloped / wooded condition.

Likewise, the predeveloped peak runoff rate for the 22.1 acre drainage area that would be draining into the southern pond (mostly group B soils) for a 2-year, 24 hour rainfall was estimated to be 7.1 cfs. The postdeveloped peak runoff rate for the 22.1 acre conceptual drainage area draining into the southern pond for a 10-year, 24-hour rainfall was estimated to be 16.0 cfs. However, with the storage volume in eastern pond and the controlled release rate from a control structure, the release rate is also estimated to be 4.2 cfs, or about 60% of the predeveloped / wooded condition. With additional freeboard available, the proposed ponds will be able to handle much larger rainfall events as well.

It is noted that these calculations are preliminary as they are based upon a conceptual routing plan and will be updated once permitting/construction drawings are being prepared during the preliminary plat phase. Included within this report are:

- Conceptual drainage plan
- Predeveloped hydrographs for the 2-yr, 24-hour rainfall event (wooded condition) for the area anticipated to drain to the eastern pond
- Post developed hydrographs for the 10-yr, 24-hour rainfall event for the area anticipated to drain to the eastern pond
- Post developed hydrographs for the 10-yr, 24-hour rainfall event for eastern pond discharge
- Predeveloped hydrographs for the 2-yr, 24-hour rainfall event (wooded condition) for the area anticipated to drain to the southern pond
- Post developed hydrographs for the 10-yr, 24-hour rainfall event for the area anticipated to drain to the southern pond
- Post developed hydrographs for the 10-yr, 24-hour rainfall event for southern pond discharge



DATE:	10/22/2025		
SURVEYED:	N/A		
DESIGNED:	MJM		
DRAWN:	KCA		
CHECKED:	MJM		
FILE:	08879A		

SCALE: 1" = 200'

SHEET: C301

08879A

CONCEPTUAL DRAINAGE PLAN

SHORTCUT FARMS
51.7 ACRE BARCO TRACT ON SHORTCUT ROAD

BARCO CRAWFORD TOWNSHIP CURRITUCK COUNTY NORTH CAROLINA

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Engineering - Environmental - Land Planning

Hydrograph Plot

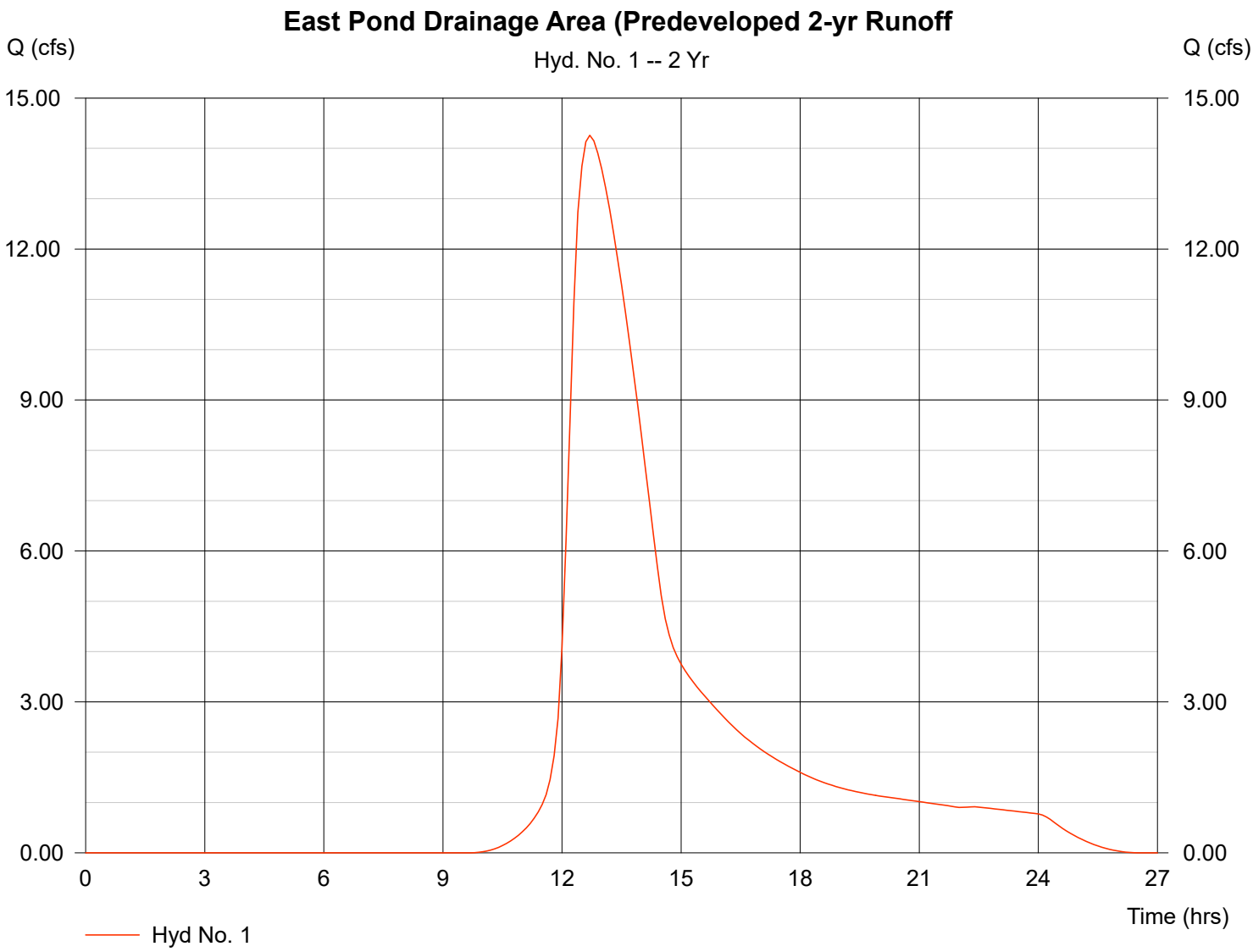
Hydraflow Hydrographs by Intelisolve | Monday, Oct 20 2025, 2:25 PM

Hyd. No. 1

East Pond Drainage Area (Predeveloped 2-yr Runoff

Hydrograph type	= SCS Runoff	Peak discharge	= 14.26 cfs
Storm frequency	= 2 yrs	Time interval	= 6 min
Drainage area	= 24.000 ac	Curve number	= 73
Basin Slope	= 0.8 %	Hydraulic length	= 750 ft
Tc method	= LAG	Time of conc. (Tc)	= 34.75 min
Total precip.	= 4.40 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 200

Hydrograph Volume = 159,755 cuft



Hydrograph Plot

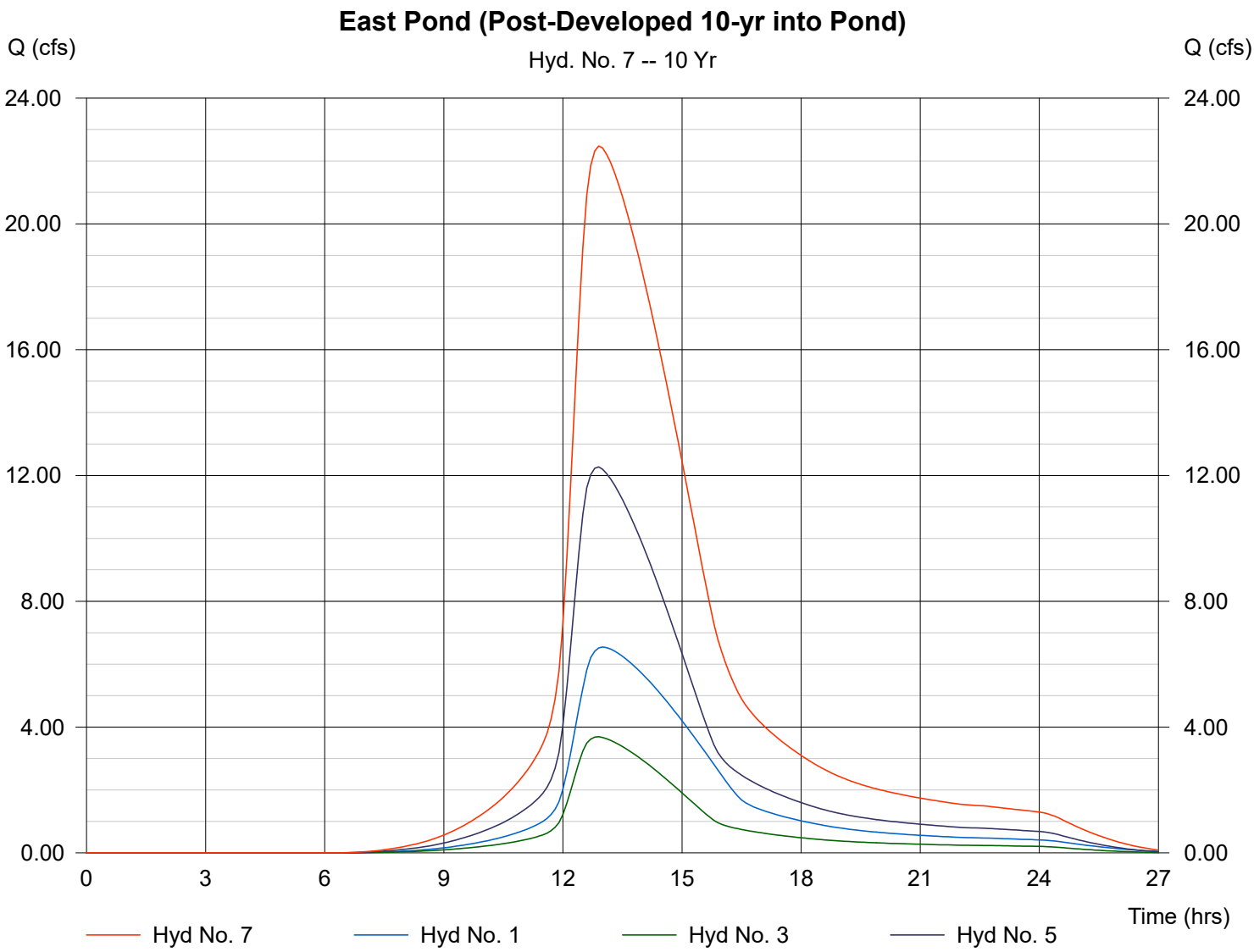
Hydraflow Hydrographs by Intelisolve | Monday, Oct 20 2025, 2:28 PM

Hyd. No. 7

East Pond (Post-Developed 10-yr into Pond)

Hydrograph type	=	Combine	Peak discharge	=	22.48 cfs
Storm frequency	=	10 yrs	Time interval	=	6 min
Inflow hyds.	=	1, 3, 5			

Hydrograph Volume = 330,180 cuft



Hydrograph Plot

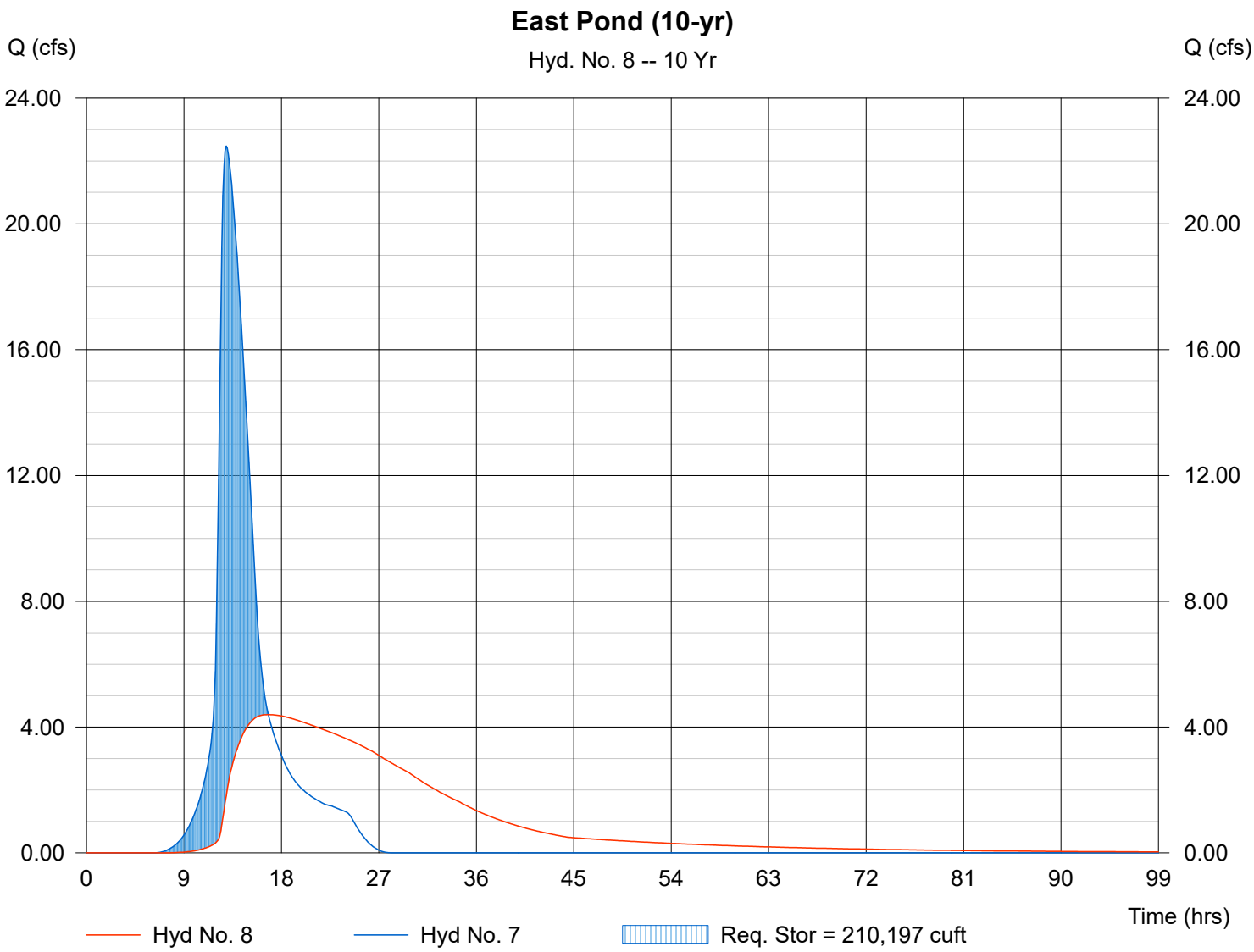
Hydraflow Hydrographs by Intelisolve | Tuesday, Oct 21 2025, 11:47 AM

Hyd. No. 8

East Pond (10-yr)

Hydrograph type	=	Reservoir	Peak discharge	=	4.396 cfs
Storm frequency	=	10 yrs	Time interval	=	6 min
Inflow hyd. No.	=	7	Max. Elevation	=	5.95 ft
Reservoir name	=	East Pond	Max. Storage	=	210,197 cuft

Storage Indication method used. | Hydrograph Volume = 330,111 cuft



Hydrograph Plot

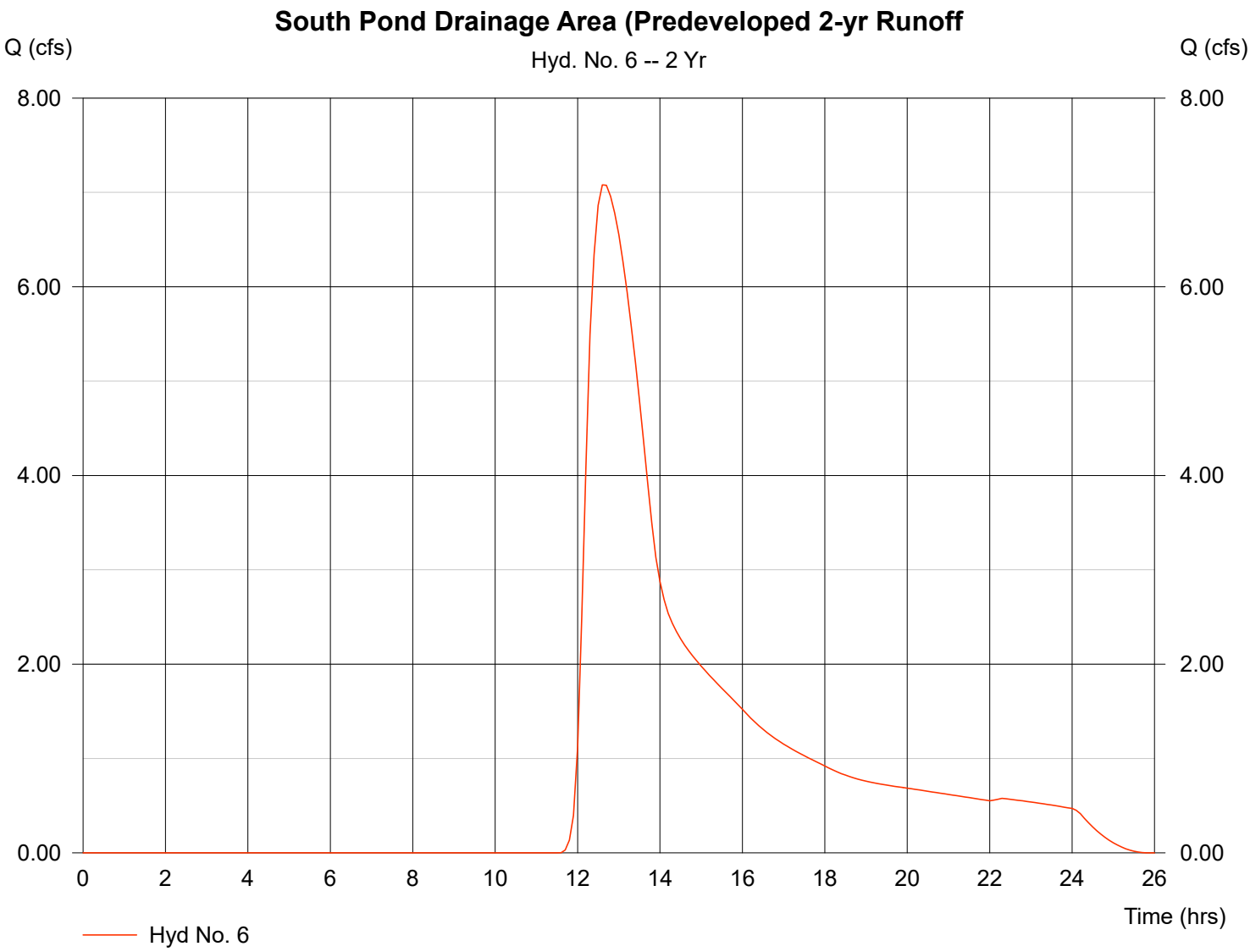
Hydraflow Hydrographs by Intelisolve | Monday, Oct 20 2025, 2:26 PM

Hyd. No. 6

South Pond Drainage Area (Predeveloped 2-yr Runoff

Hydrograph type	= SCS Runoff	Peak discharge	= 7.079 cfs
Storm frequency	= 2 yrs	Time interval	= 6 min
Drainage area	= 22.110 ac	Curve number	= 60
Basin Slope	= 1.0 %	Hydraulic length	= 460 ft
Tc method	= LAG	Time of conc. (Tc)	= 29.62 min
Total precip.	= 4.40 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 200

Hydrograph Volume = 76,100 cuft



Hydrograph Plot

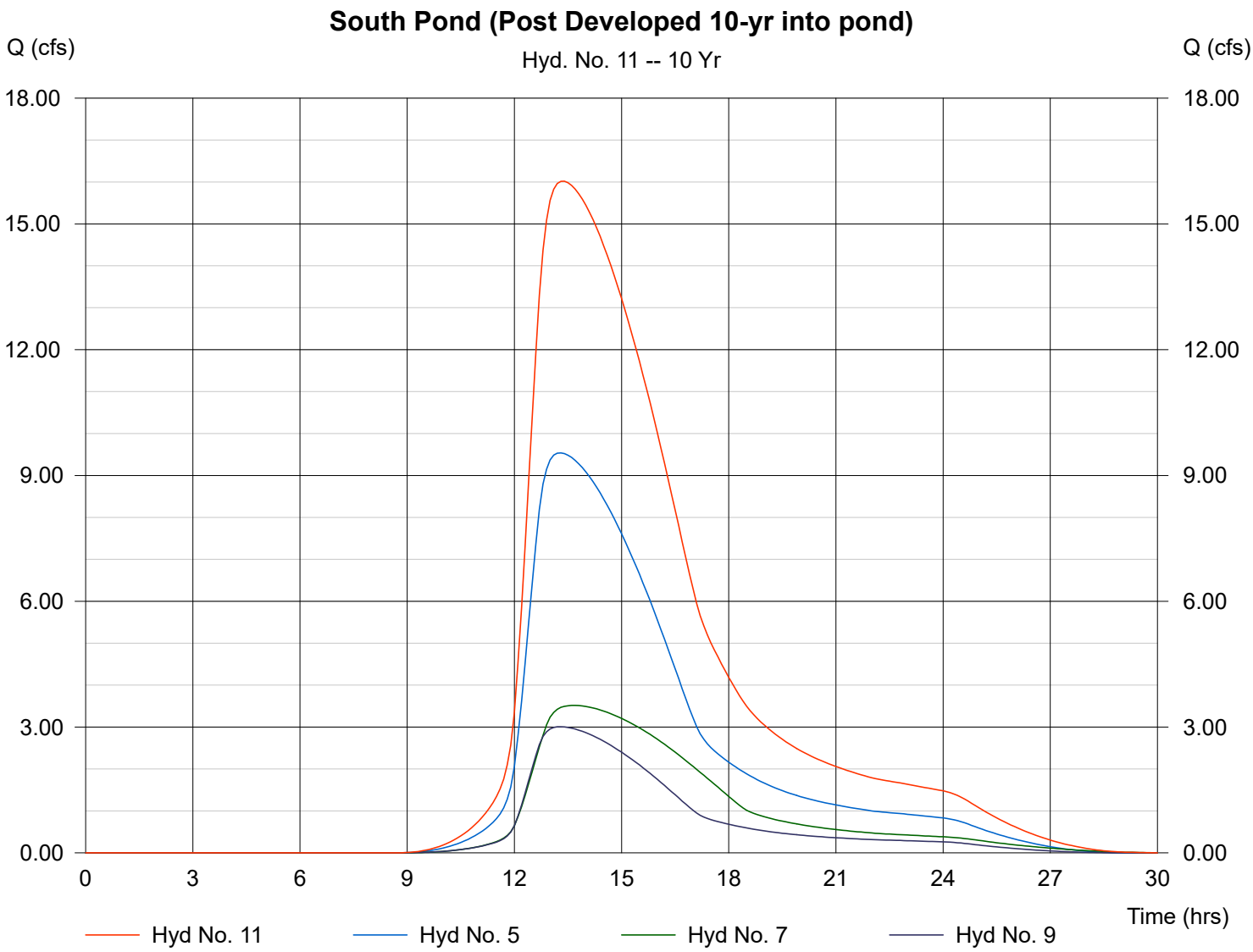
Hydraflow Hydrographs by Intelisolve | Monday, Oct 20 2025, 2:33 PM

Hyd. No. 11

South Pond (Post Developed 10-yr into pond)

Hydrograph type	= Combine	Peak discharge	= 16.02 cfs
Storm frequency	= 10 yrs	Time interval	= 6 min
Inflow hyds.	= 5, 7, 9		

Hydrograph Volume = 302,052 cuft

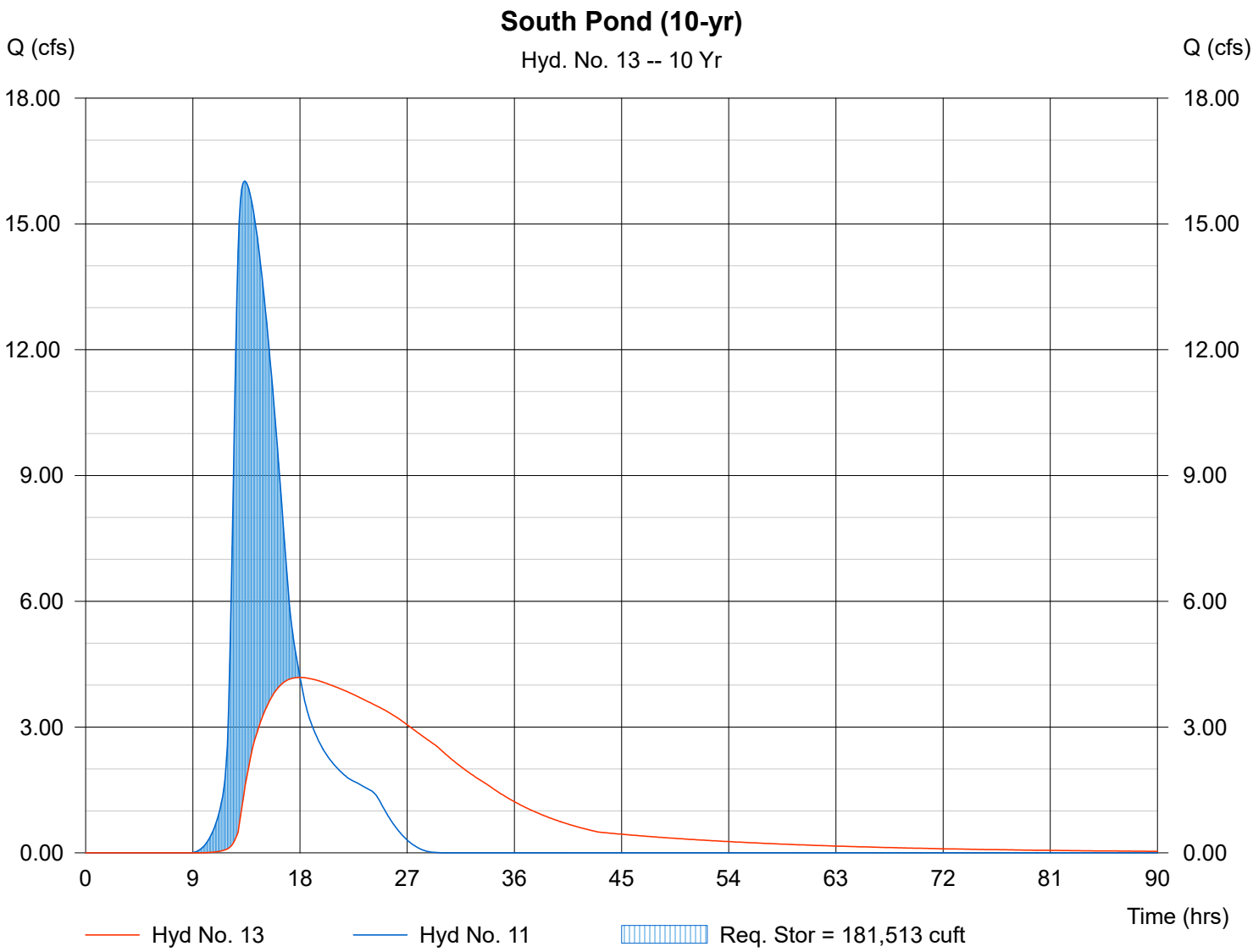


Hydrograph Plot

Hydraflow Hydrographs by Intelisolve | Monday, Oct 20 2025, 2:37 PM

Hyd. No. 13

South Pond (10-yr)

Hydrograph type	=	Reservoir	Peak discharge	=	4.183 cfs
Storm frequency	=	10 yrs	Time interval	=	6 min
Inflow hyd. No.	=	11	Max. Elevation	=	5.78 ft
Reservoir name	=	South Pond	Max. Storage	=	181,513 cuft

Storage Indication method used. | Hydrograph Volume = 301,989 cuft