Appendix O

Water Resource Information

O-1

Will Serve Letter

Buena Vista Water Storage District

P.O. Box 756 525 N. Main Street

Buttonwillow, California 93206

Phone: (661) 324-1101

(661) 764-5510

Fax: (661) 764-5053

June 11, 2008

Mr. Matt Lemons
Hydrogen Energy International LLC
One World Trade Center, Suite 1600
Long Beach, CA 90831-1600

Re: Power Project in Kern County

Dear Mr. Lemons:

We have reviewed your recent correspondence dated May 6, 2008 and would like to investigate a program with Hydrogen Energy relative to providing a brackish water supply to its proposed low carbon, environmentally sensitive power plant in Kern County.

As a bit of background, the Buena Vista Water Storage District lies in the trough of California's southern San Joaquin Valley. The District lands are within a portion of the lower Kern River watershed, where historic runoff created the heavy clay soils from former swamp and overflow lands north of Buena Vista Lake. The area lies on the western side of the valley floor, about 16 miles west of the city of Bakersfield. The District's water service area contains 49,057 acres of which about 35,000 acres are annually farmed to field and permanent crops. Buena Vista utilizes four major water supplies to provide a cost effective water supply to its landowners. 1) Buena Vista has a Pre-1914 Kern River supply known as the Second Point right equates to an average entitlement of about 158,000 acre-feet per year, delivered by First Point interests to Second Point of Measurement undiminished by delivery losses. 2) Buena Vista contracted with the State Department of Water Resources (DWR) via the Kern County Water Agency (KCWA) for an additional surface water supply in 1973. The contract provided for an annual firm entitlement of 21,300 acre feet and surplus entitlement of 3,750 acre feet. 3) Buena Vista has also been a historic user of surplus Friant-Kern Canal flows to serve irrigation demands and for groundwater recharge programs. 4) As a result of the above three mentioned surface supplies the District recharges approximately 30,000 acre-feet into the basin above its consumptive use each year. This supply has been both stored and used for various District programs. A portion of the District's groundwater supply has high salts associated with marine deposits found on the west side of the Kern groundwater basin which restricts its beneficial uses.

After discussions with the District's groundwater specialist Dr. Robert A. Crewdson it appears that a comprehensive groundwater recovery program, if properly designed and operated, could not only serve the proposed power plant with the desired long-term quantity (7500 AF/yr) and quality (1500-3000 mg/L) but serve to improve groundwater quality as a whole in the District. As we have discussed our initial thoughts are to drill/acquire a combination of shallow and medium depth production wells along or near the District's western boundary with a 15-20 mile collection pipeline for direct delivery into the proposed power plant.

We appreciate the fact that Hydrogen Energy's initial investigations indicate that this brackish water recovery program should fit favorably into the California Energy Commission's (CEC) water supply policy. We struggled for some time with a prior transfer program to the Tesla Power Plant only to be denied by the CEC. Fortunately a short time later we did however sell that long-term program to the Castaic Lake Water Agency. This District has a long history of providing industrial water supplies to various energy companies west of our main service area and water transfer, banking, and exchange programs with a host of water agencies. Currently we are preparing an initial environmental study of a four component development program which your program could fit within. We anticipate that the CEQA review process should be completed about this time next year.

Also attached for your review and comment is a draft term sheet by which we can begin drafting the necessary contract documents. If Hydrogen Energy is prepared to move forward with Buena Vista as a program partner please advised and we will begin developing project/operation designs. If you have any questions, comments, or concerns, please contact me at your earliest convenience.

Very truly yours,

BUENA VISTA WATER STORAGE DISTRICT

Dan W. Bartel
Engineer Manager

DB/at

Cc: Gene McMurtrey

O-2

Water Minimization Report

June 4, 2008

BUENA VISTA WATER STORAGE DISTRICT
Summary of Proposed Water Transfer Terms

GENERAL

Buyer:	Hydrogen Energy (the "Buyer")
Seller:	Buena Vista Water Storage District (the "Seller")
Description:	The Buyer seeks to purchase a firm quantity of water from the Seller on a long-term basis ("Sale Water").
Effective Date:	January 1, 2014
Term:	25 years

WATER SUPPLY

Source of Water:	Seller will supply Sale Water to Buyer from brackish groundwater supply available to Seller.
Quantity of Water:	Annual firm supply of seven thousand five hundred (7,500) acre-feet of Sale Water.
Quality of Water:	The Sale Water shall have a TDS of about be about 2,000 mg/L
Availability:	The Sale Water is available upon completion of environmental review for the marketing program contemplated by this agreement.

DELIVERY

Delivery Point:	Seller will deliver the Sale Water to the Buyer at the power plant within Section 16, T30S R24E.
Delivery Schedule:	Seller shall deliver 100% of the Sale Water to the power plant. Buyer will supply annual delivery schedule in a quantity not to exceed 11% of the annual amount per month.

PAYMENT

Water Rate: Buyer shall pay an initial price of four hundred and fifty dollars ($450.00) per acre-foot (the "Water Rate").

Facility Construction: Buyer shall construct all necessary recovery, monitoring, and conveyance facilities, to the full satisfaction of the Seller, and transfer said facilities to Seller upon completion.

Facility O,M,P&R: Seller shall assume all O,M,P&R duties and fully reimbursed by the Buyer.

Escalator: The Water Rate shall be adjusted each year using a meld of the Consumer Price Index (All Urban Consumers - All Items - Southern California Area) and the SWP unit cost (i.e., initial annual obligation divided by long-term reliability factor).

Payment Options: Buyer will pay for the Sale Water whether it is taken or not.

Reservation Agreement: Buyer will reserve the exclusive right to negotiate for the Sale Water by executing a deposit agreement whereby Buyer agrees to deposit with Seller a non-refundable reservation fee equal to 20% of said amount (7,500 AF x Water Rate x 20%) each year which is not subject to repayment. This annual option will be available until 2014.

General Expenses: Each party shall be responsible for its own fees and expenses arising out of the negotiation and execution of agreements related to this transaction, obtaining necessary approvals, and the like.

CEQA Compliance: Both parties shall cooperate with one another with respect to CEQA compliance for the proposed sale. Seller shall be the lead agency with respect to CEQA. Buyer shall be solely responsible for all fees and costs associated with CEQA compliance, whether incurred by Buyer or Seller, including litigation expenses if any.

Permit Costs: Buyer shall be responsible for any and all regulatory and permitting fees and costs associated with the water transfer and transportation of Sale Water.

MISCELLANEOUS

Non-Binding Effect: This document is intended to be a non-binding statement of the terms of the proposed transaction. It is subject to the negotiation, execution and delivery of a purchase agreement by Buyer and Seller not inconsistent with the basic terms and conditions set forth herein ("Purchase Agreement"). Full execution of this document does not create a binding agreement between Buyer and Seller; that will occur only upon the execution and delivery of the Purchase Agreement.

Representations and Warranties Seller will provide usual and customary representations and warranties including: 1) Seller's title to the Sale Water; 2) the adequacy and firmness of the Sale Water; 3) authority of Seller to transfer the Sale Water pursuant to the Purchase Agreement.

SELLER: ______________________________________
(signature) (date)

BUYER: ______________________________________
(signature) (date)

WATER MINIMIZATION STUDY

Rev	Date	Revision Description	By	Chkd	Apprvd
0	03-Jan-08	Initial Issue	S. Tamura	P. Johnston	G. Sims

1. EXECUTIVE SUMMARY

The purpose of this study to is to report the water usage impact with respect to the Power Block's Steam Turbine Generator's (STG) Heat Sink. Typically a Water Cooled Condenser (WCC) with a Wet Cooling Tower is a very effective method of condensing the STG exhaust. However, water is scarce in the proposed area and this study explores of sharing the condensing duty with an Air Cooled Condenser (ACC) and replacing the WCC with an ACC. The main objectives of this study are as follows:

1. Compare the water usage, performance impact, and provide a Rough Order of Magnitude (ROM) cost differences for 100% Water Cooled Condenser (WCC), 100% Air Cooled Condenser (ACC), and Parallel Cooling System (PCS).
2. Compare the water usage and provide a ROM cost difference for using brackish water versus fresh water in a 100% WCC system.

The tables below summarize the results of this study. Note: The PCS values represented in the tables below will vary with the amount of makeup water available to the Plant. The amount of makeup water required can be reduced by adding more ACC surface area.

Table 1: Fresh Water Usage Summary at Summer Design Conditions (102 °F / 16% RH)

Design	WCC	PCS	ACC
Output Effect	BASE	(16.3 MW)	(27.4 MW)
Cycles of Concentration	5	5	5
Total Plant Makeup Water	5,130 GPM	3,820 GPM	2,350 GPM
Makeup Water Savings	BASE	1,240 GPM	2,710 GPM

Table 2: Fresh Water Usage Summary at Average Ambient Conditions (65 °F / 60% RH)

Design	WCC	PCS	ACC
Output Effect	BASE	(6.8 MW)	(8.4 MW)
Cycles of Concentration	5	5	5
Total Plant Makeup Water	3,210 GPM	2,320 GPM	1,480 GPM
Makeup Water Savings	BASE	890 GPM	1,730 GPM

Table 3: ROM Cost and Plot Space Impact

Design	WCC	PCS	ACC
Cost Delta	BASE	~ +$25 mm	~ +$37 mm
Total Required Plot Space	1.5 acre	2.0 acre	2.4 acre

Table 4: Fresh Water versus Brackish Water Makeup, Power Block Cooling Tower Only

	Fresh Water CT	Brackish Water CT	Difference
Cycles	5	3	
CT Makeup at Summer Design	2,710 GPM	3,250 GPM	540 GPM
CT Makeup at Average Ambient	1,730 GPM	2,080 GPM	350 GPM
Cost Delta	BASE		~ +$5 mm

Note: The numbers represented in Table 4, does not include cooling duty for the Power Block's auxiliary load cooling.

2. CONCLUSIONS AND RECOMMENDATIONS

Results show that the WCC system is the recommended approach for the Project. WCC will have the lowest starting capital investment, highest plant output, and smallest plot space requirement. If the availability of fresh water is limiting, then the recommended path forward would be to use brackish water for the cooling tower makeup or supplement the fresh water with brackish water. The cost impact to the heat sink is relatively minor and the plot plan impact is small. Use of brackish water for cooling tower makeup would increase the PM_{10} emissions relative to a fresh water cycle.

If the availability of makeup water (fresh or brackish) is still limiting, then the recommended path forward would be to (1) proceed with the PCS and/or (2) install a cooling tower makeup water storage tank/pond to level out the summer demands. This report documents the cost and plot impact of the PCS. In addition, adding an Air Cooled Condenser to the plant will have a major impact on the plot layout since the Air Cooled Condenser must be installed near the STG.

The ROM cost of a storage tank/pond and forwarding pumps are expected to be less than the PCS option. The size of a makeup water storage tank/pond will depend on the design criteria, but the capacity would need to be in the order of magnitude of a few days to significantly reduce the peak water demand. The Storage Tank/Pond option is expected to require a significant amount of plot space, but it can be located anywhere and will have a small effect on layout.

3. BACKGROUND

The scope of this study is limited to the effects on the Power Block. This study concentrates on the Power Block's Heat Sink (Cooling Tower, Surface Condenser, Air Cooled Condenser, Cooling Water Pumps, and the back end of the Steam Turbine). In areas where water is scarce, substituting a few or all cells of the Cooling Tower for an Air Cooled Condenser is a viable option for a power plant. The study evaluates the following three common Heat Sinks:

1. A 100% Water Cooled Condenser (WCC) system consists of a Water Cooled Condenser, a Wet Cooling Tower, Cooling Water Pumps, and 40 inch Last Stage Bucket on the STG. For this location, this is the most effective Heat Sink, but it will require the largest amount of makeup water.

2. In a 100% Air Cooled Condenser (ACC) system, the STG exhaust is directly ducted to a large air cooler where the ambient air is used as the heat sink. Although this configuration is common in power plants, it is costly, requires a larger plot space than the WCC, and the STG output is decreased, especially during warmer days. Due to the higher STG exhaust pressure, a 30 inch STG Last Stage Bucket is used.

3. A Parallel Cooling System (PCS) combines the WCC and the ACC to condense the STG exhaust. For this study, the duty on an average ambient day is split 50/50 between the WCC and the ACC. This increases the output versus a 100% ACC system and lowers the makeup water demand versus the 100% WCC system. The STG for the PCS option also

uses a 30 inch Last Stage Bucket. Note that the PCS cooling duty can be divided between WCC and the ACC systems in any number of ways depending on the amount of makeup water available.

The Power Block's auxiliary cooling load is relatively small compared to the rest of the Plant and was not included as part of this study. This cooling load can be integrated with the Process Cooling Tower or with the Air Cooled Condenser.

Heat and material balances from the Phase 3 Pre-Feed Package were used as a basis. There are slight changes to the site conditions between Phase 3 and this study. However, the indicated cost and water demand deltas should be accurate enough to support project decision making.

In general Kern County is a very dusty area due to the vast desert/farm lands and high winds which will present problems with the Wet Cooling Tower fill material. The dust in the air will tend to foul up the fill and mud will collect in the basin, therefore a high efficiency film fill is not recommended for the area. A less efficient film fill with larger openings is better suited for this dusty environment for both fresh water and brackish water makeup. Fouling tolerant fill material is recommended particularly if produced water or "grey water" is used for cooling tower makeup.

Much of the information in this report is derived from Thermoflex, a power cycle simulator developed by Thermoflow Inc. This software solves the heat and material balance, calculates performance and estimates equipment pricing. This information was used in developing the delta installed costs provided in this report.

4. POWER BLOCK MAKEUP WATER REQUIREMENT

The major makeup water consumers are the Cooling Towers, Gas Turbine Evaporative Cooler, and the Slurry/Slag process. Table 5 shows the expected evaporation rates and the process user requirements. Although Table 5 does not show the total amount of Plant makeup water required, the makeup water requirement can be calculated with this information based on the water quality and the required Cycles of Concentration at the Cooling Towers and the Gas Turbine Evaporative Cooler.

Table 5: Evaporation and Process Water Consumption Rates

Ambient Condition		102 °F / 16% RH	65 °F / 60% RH	36 °F / 65%RH
Wet Cooling Tower Duties				
Power Block (STG)	mmBtu/hr	898	891	888
Power Block (Auxiliary)	mmBtu/hr	36	36	36
ASU	mmBtu/hr	269	269	269
Process	mmBtu/hr	405	405	405
Wet Cooling Tower Evaporation Rates (WCC System)				
Power Block (STG)	GPM	2,227	1,383	1,019
Power Block (Auxiliary)	GPM	89	55	41
ASU	GPM	666	417	308
Process	GPM	1,004	628	464
Total Evap from CT’s	GPM	**3,986**	**2,483**	**1,832**
Power Block (STG) Wet Cooling Tower Evap Rate for the PCS	GPM	**1175**	**671**	**277**
Gas Turbine Evap Cooler Evaporation Rate	GPM	**45**	**11**	**0**
Other Process Water Users				
Process Water to Slurry/Slag	GPM	72	72	72
Plant Water Requirement	GPM	23	23	23
Total Process Water	GPM	**95**	**95**	**95**

The Power Block’s Wet Cooling Tower’s evaporation rate accounts for a substantial amount of the makeup water demand. Reducing the size of the Power Block’s Wet Cooling Tower can have a significant reduction of the makeup water requirement. The total makeup water will depend on the water quality of the available makeup water and how many cycles of concentration the Cooling Towers and Gas Turbine Evaporative Cooler can tolerate. The makeup water to the Cooling Towers and Gas Turbine Evaporative Cooler is calculated using the following equation:

Equation 1: MU = Evap x C ÷ (C – 1)

MU = Makeup Water Rate
EVAP = Evaporation Rate
C = Cycles of Concentration

Sample Calculation (102 °F ambient and 5 cycles of concentration):
From Table 5, above, at 102 °F ambient, we get the following data:

Total Evaporation rate from the Cooling Towers: 3986 GPM
Evaporation from the Gas Turbine Evap Cooler: 45 GPM

Using 5 cycles of concentration and Equation 1, we can calculate the Cooling Towers and Gas Turbine Evaporative Cooler makeup water rate as follows:

Cooling Tower: MU(CT) = 3986 GPM x 5 ÷ (5 – 1)
MU(CT) = 4983 GPM

GT Evap Clr: MU(GT) = 45 GPM x 5 ÷ (5 – 1)
MU(GT) = 56 GPM

The total process makeup water required by the Plant is as follows:

Cooling Towers	4,983 GPM	
Gas Turbine EC	56 GPM	
Other Process Water Users:	95 GPM	
TOTAL	5,134 GPM	or round to 5,130 GPM

By repeating the Sample Calculation above, Figures 1 thru 5 were generated on the following pages to compare the different heat sink technologies. Figures 1 thru 3 show the total plant makeup water rates as a function of cycles of concentration and ambient temperatures for each heat sink technology. Figures 4 and 5 shows the water savings relative to the WCC.

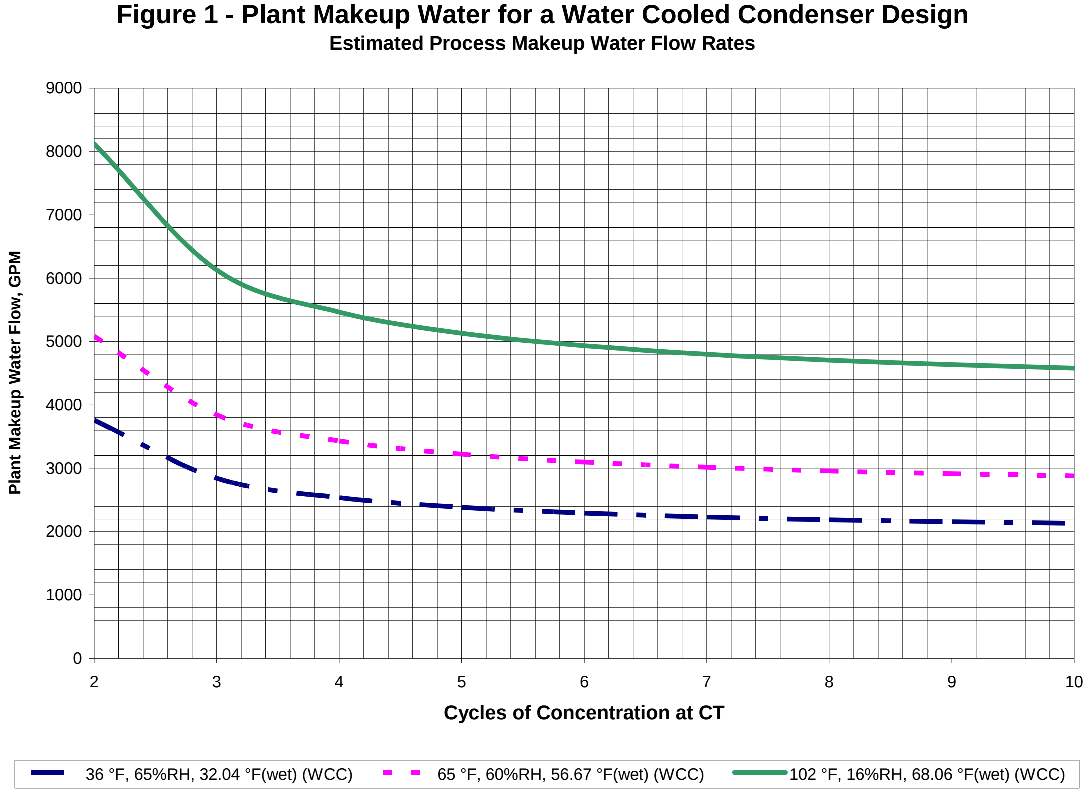


Figure 1 - Plant Makeup Water for a Water Cooled Condenser Design
Estimated Process Makeup Water Flow Rates
Plant Makeup Water Flow, GPM
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
2
3
4
5
6
7
8
9
10
Cycles of Concentration at CT
36 °F, 65%RH, 32.04 °F(wet) (WCC)
65 °F, 60%RH, 56.67 °F(wet) (WCC)
102 °F, 16%RH, 68.06 °F(wet) (WCC)

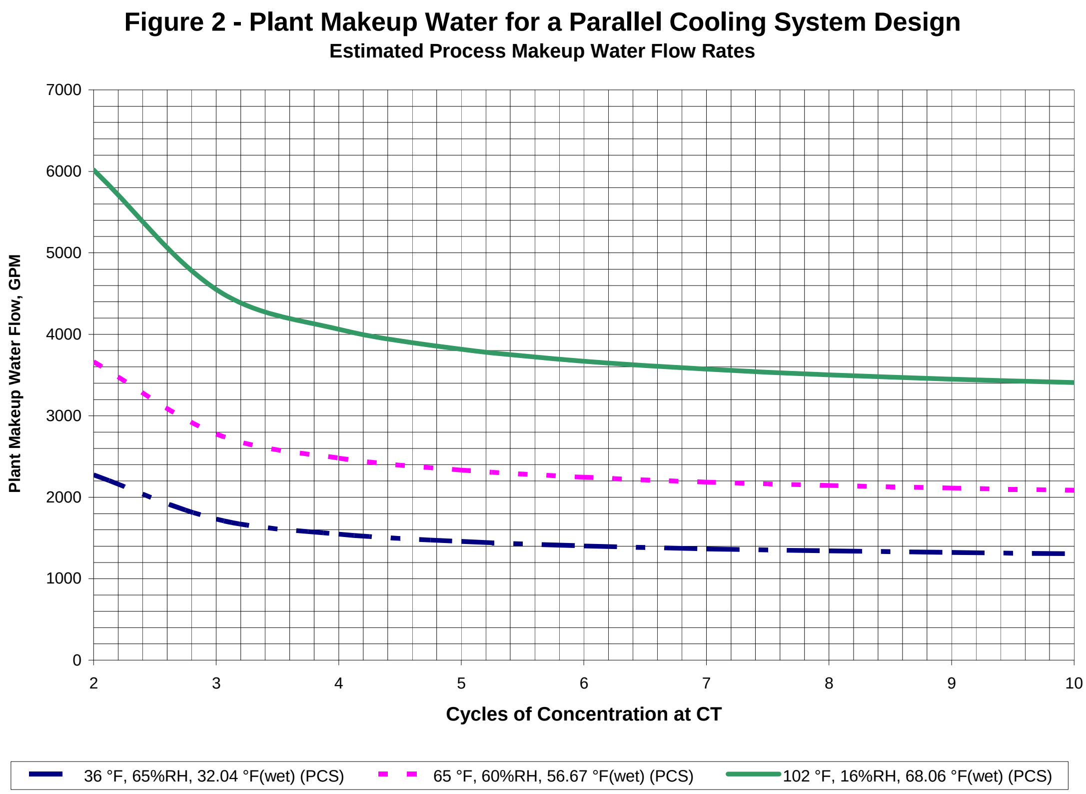


Figure 2 - Plant Makeup Water for a Parallel Cooling System Design
Estimated Process Makeup Water Flow Rates
Plant Makeup Water Flow, GPM
7000
6000
5000
4000
3000
2000
1000
0
2
3
4
5
6
7
8
9
10
Cycles of Concentration at CT
36 °F, 65%RH, 32.04 °F(wet) (PCS)
65 °F, 60%RH, 56.67 °F(wet) (PCS)
102 °F, 16%RH, 68.06 °F(wet) (PCS)

Figure 3 - Plant Makeup Water for an Air Cooled Condenser Design
Estimated Process Makeup Water Flow Rates

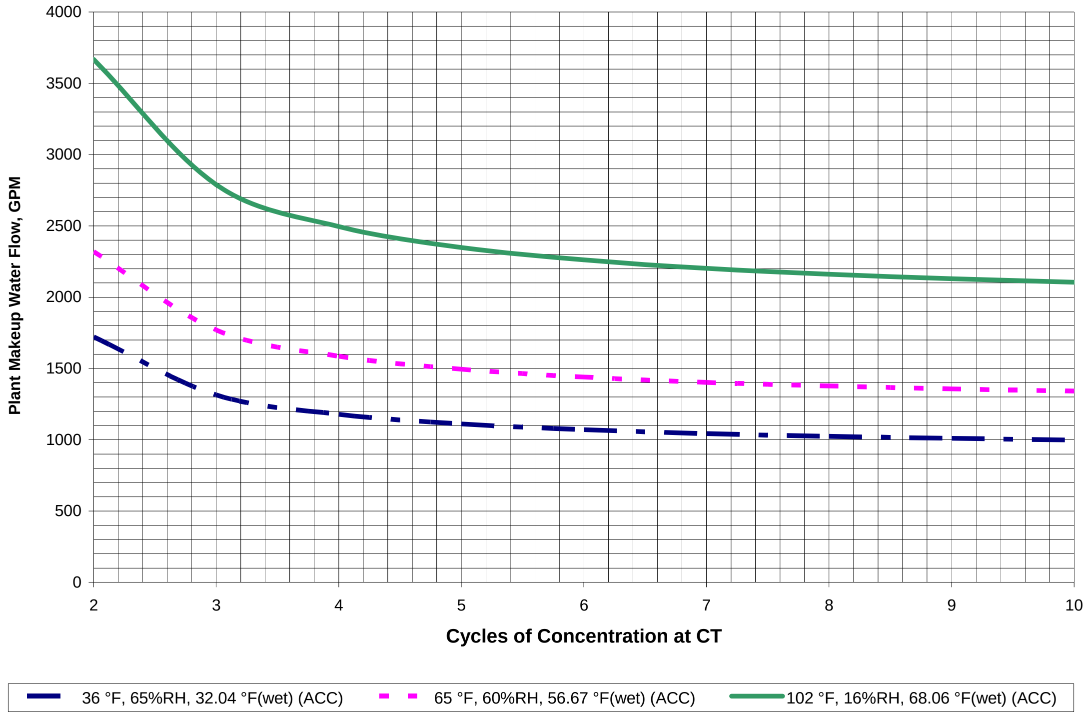
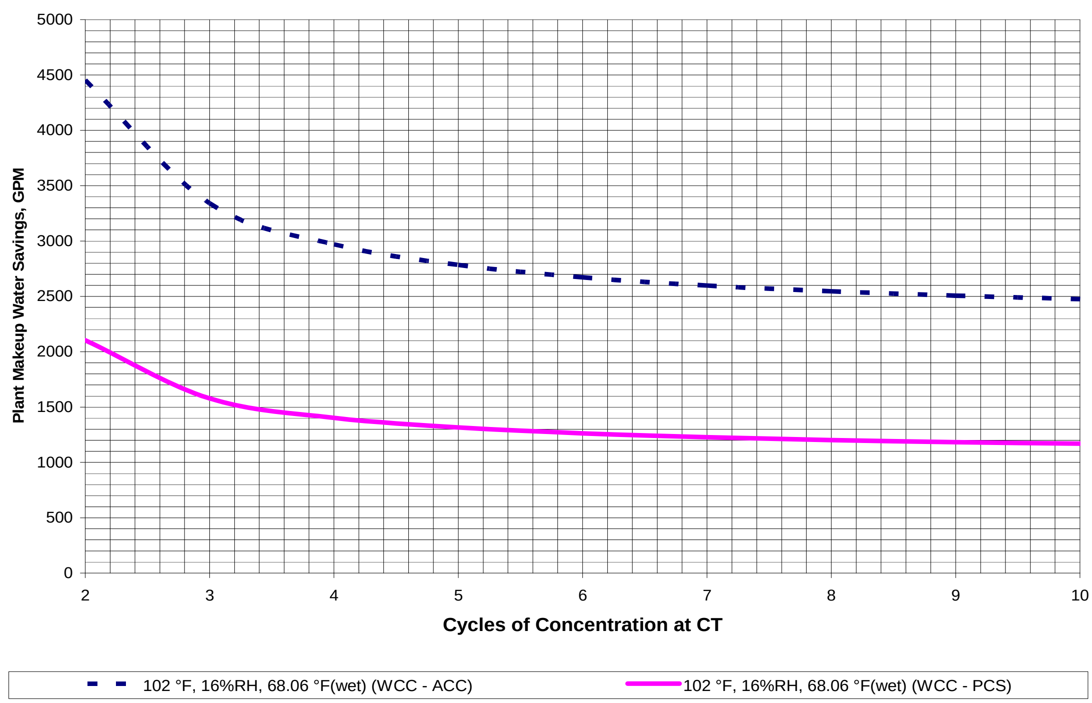
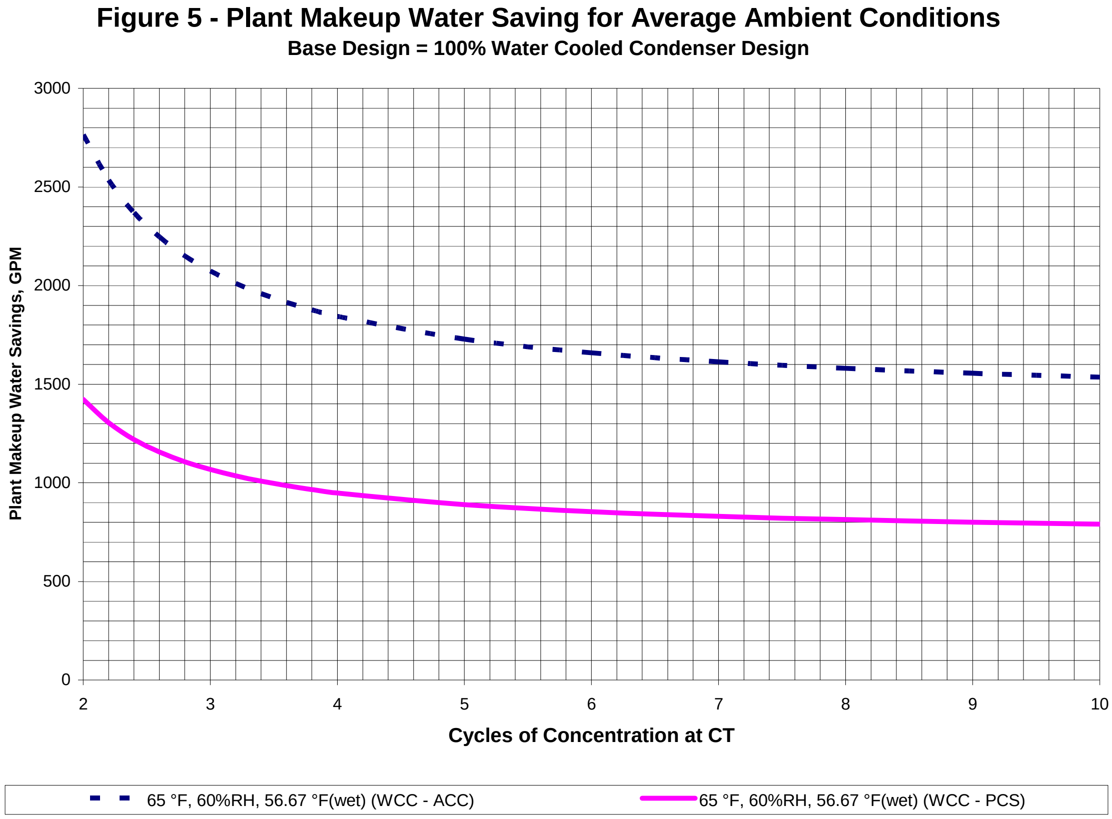


Figure 4 - Plant Makeup Water Savings for Summer Design Conditions
Base Design = 100% Water Cooled Condenser Design





5. POWER BLOCK OUTPUT

The power output for the STG is highly dependent upon the temperature of the condenser's coolant. The ACC design will have the highest coolant temperature and therefore have the lowest STG output. By using the PCS heat sink, the output will fall in between the ACC and WCC designs, depending on the split.

Table 6: Performance Impact (ΔMW)

Ambient Temperature	36 °F	65 °F	102 °F
100% WCC	BASE	BASE	BASE
50%-50% PCS	(6.2 MW)	(6.8 MW)	(16.3 MW)
100% ACC	(6.6 MW)	(8.4 MW)	(27.4 MW)

6. ROM COST AND PLOT REQUIREMENT

Several variables account for the difference in cost. Table 7, below, shows the overall ROM cost differential between the three heat sink designs. Another cost variable pertinent to this study is the plot space requirement, see Table 8 below. The Air Cooled Condenser will have the largest plot space requirement and requires to be in close proximity to the STG.

Steam Turbine: The WCC design will have a more expensive Steam Turbine due to the higher output and larger Last Stage Bucket. The WCC design will support a 40" bucket while the ACC and PCS designs will support a smaller 30" bucket.

Condenser: The WCC requires a Water Cooled Condenser, a Cooling Tower, Cooling Water Pumps, and a large diameter cooling water line. This is less costly than the single Air Cooled Condenser or a Parallel Cooling System.

Table 7: ROM Cost Differential

100% WCC	BASE
50%-50% PCS	~ +$25 mm
100% ACC	~ +$37 mm

Table 8: ROM Plot Space Requirements (Power Block Only)

	Cooling Tower Dimensions (Equipment Only)	Air Cooled Condenser Dimensions (Equipment Only)	ROM Plot Space per Train (Note)
100% WCC	546 ft x 54 ft		1.5 acre
50%-50% PCS	168 ft x 54 ft	215 ft x 85 ft	2.0 acre
100% ACC		301 ft x 127 ft	2.4 acre

Note: The "ROM Plot Space per Train" is the estimated total plot space required for the Cooling Tower, Air Cooled Condenser, Pump Pit, and maintenance accessibility.

7. POWER BLOCK FRESH WATER VS. BRACKISH WATER

Using brackish water is a viable option as makeup to the cooling tower. There are two major issues with using brackish water. First, there is a higher chance that brackish water will leave deposits on the cooling tower fill. Therefore, the cycles of concentration must be decreased to prevent the solids in the circulation water from precipitating out. A brackish water cooling tower can use an film-fill, equivalent to those used in a fresh water cooling tower. Second, the materials must be upgraded to counter the effects of the corrosive brackish water. Table 9, below, shows the major comparison between fresh water and brackish water makeup for the Power Block's Wet Cooling Tower. Third, use of brackish water for cooling tower makeup would increase the PM_{10} emissions relative to a fresh water cycle.

Table 9: Brackish Water Makeup to WCC Comparison

	Fresh Water	Brackish Water
Cycles of Concentration	5	3
Power Block CT Makeup Flow at Max Ambient	2,780 GPM	3,250 GPM
ΔMakeup Flow (Max Ambient)	BASE	+470 GPM
Power Block CT Makeup Flow at Average Ambient	1,730 GPM	2,080 GPM
ΔMakeup Flow (Ave. Ambient)	BASE	+350 GPM
Cost Delta	BASE	~ $5 mm

O-3

Hydrology Report

HYDROGEN ENERGY CALIFORNIA (HECA)

KERN COUNTY POWER PROJECT

PRELIMINARY HYDROLOGY STUDY

STORM WATER RETENTION

TABLE OF CONTENT

Analysis Parameters

Site Parameters

Area:	315.0 acres
Stream Length:	4,800 ft
Delta Elevation:	125 ft
Slope:	0.026 ft/ft

Soil Characteristic

Soil Type:	Sandy-loams
Soil Group:	B

Reference: *Prelimnary Geotechnical Investigations*
KC Hydrology Manual - Section C.3.Hydrologic Soil Group

Rainfall Event

Storm Duration:	24 h
Storm Distribution:	Type 1
Rainfall Depth:	

Storm Frequencies	***Rainfall*** (in)
2-yr	1.0
5-yr	1.4
10-yr	1.6
25-yr	1.8
50-yr	2.0

Reference: *NOAA Atlas 2 - Volume 11 California*

Ground Cover

Existing:

Surface	***Condition***	***Area*** (ac)	***CN***
Undistrubed (Annual Grass)	Fair	315	69

Proposed:

Surface	***Condition***	***Area*** (ac)	***CN***
Impervious (CC & AC)	Good	54	98
Gravel	Good	40	75
Undisturbed (Annual Grass)	Fair	221	69

Reference: *KC Hydrology Manual - Section C.8 Desert Hydrology Loss Rate*

Analysis Summary Table

	Existing		Proposed	
	Flow	Volume	Flow	Volume
Storm Frequencies	(cfs)	(cf)	(cfs)	(cf)
2-yr	0.5	2,600	1.0	34,700
5-yr	1.5	57,400	4.0	151,200
10-yr	2.5	108,000	7.0	233,500
25-yr	4.0	171,900	12.0	328,800
50-yr	6.5	247,400	18.0	435,600

For Detailed Analyses: *See Appendix A & B*

Storm Water Retention Volume Required

Storm Runoff Volume:	435,600 cf
Retention Volume Required:	10.0 ac/ft
Basin Area Calculated (4ft deep):	2.5 ac

Storm Water Retention Volume Provided

Retention Volume Provided:	500,000 cf
	11.5 ac/ft
Basin Area Provided (4ft deep):	2.9 ac

Basis of Analysis

Key Design Assumptions and Methodologies

The application **HydroFlow Storm Sewer 2005**by **Inteli Solve** has been used for calculations.
For Storm Runoff Volume calculation a return period of 50-yr has been used to size the retention basin.

Reference Drawing Number

Plot Plan SK-250-0001
Drainage Plan SK-210-0002
Paving Plan SK-210-0003

Reference Documents

Preliminary Geotechnical Investigation, Hydrogen Energy California Project, Dated May 23
Kern County Hydrology Manual
NOAA Atlas 2 - Precipitation Frequency Atlas Western United States - Volume 11 California

APPENDIX A

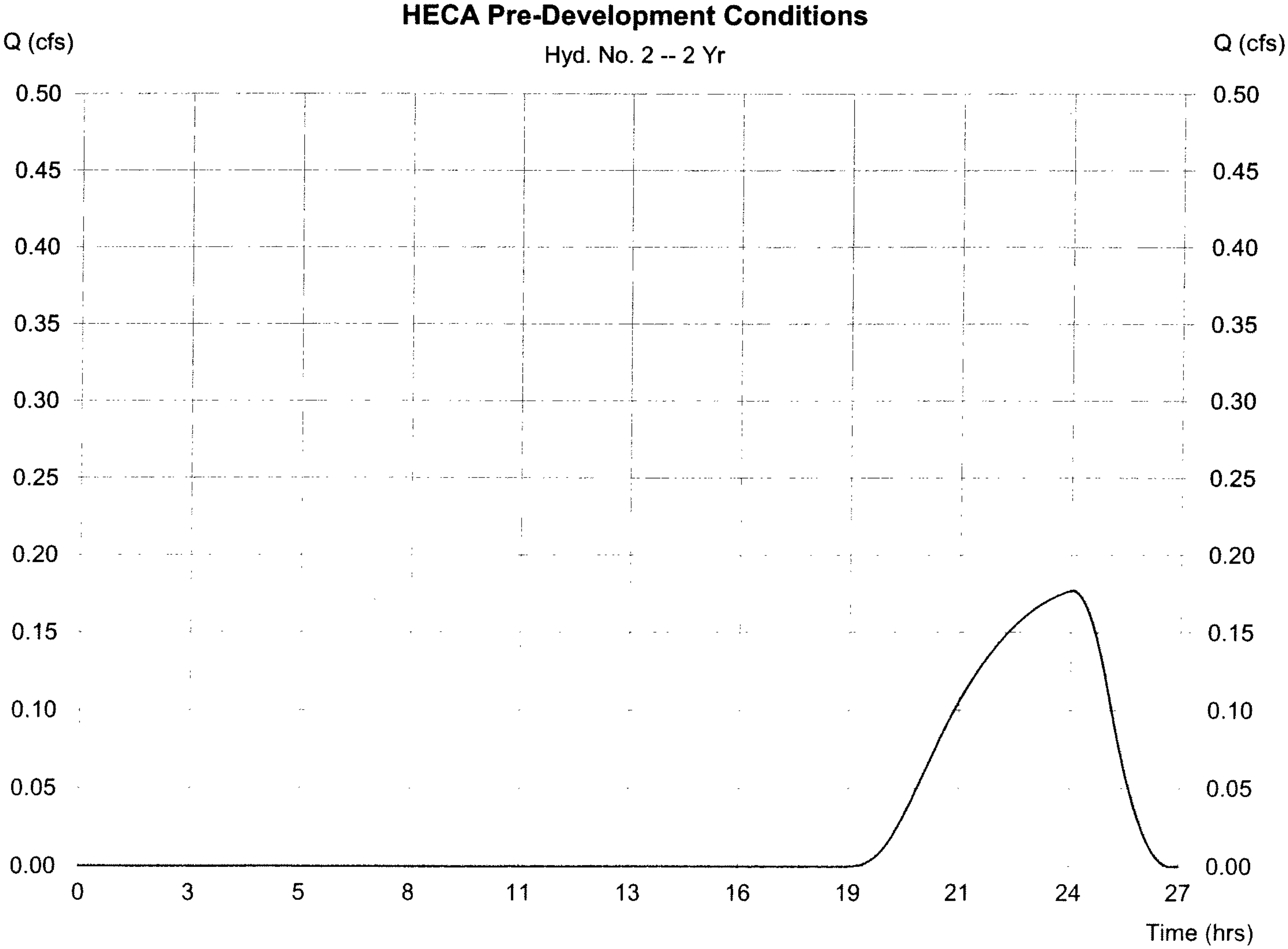
Pre-Development Analyses

Hydrograph Plot

HECA Pre-Development Conditions

Hydrograph type	= SCS Runoff	Peak discharge	= 0.18 cfs
Storm frequency	= 2 yrs	Time interval	= 1 min
Drainage area	= 315.000 ac	Curve number	= 69
Basin Slope	= 2.6 %	Hydraulic length	= 4800 ft
Tc method	= LAG	Time of conc. (Tc)	= 94.95 min
Total precip.	= 1.00 in	Distribution	= Type I
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 2,556 cuft



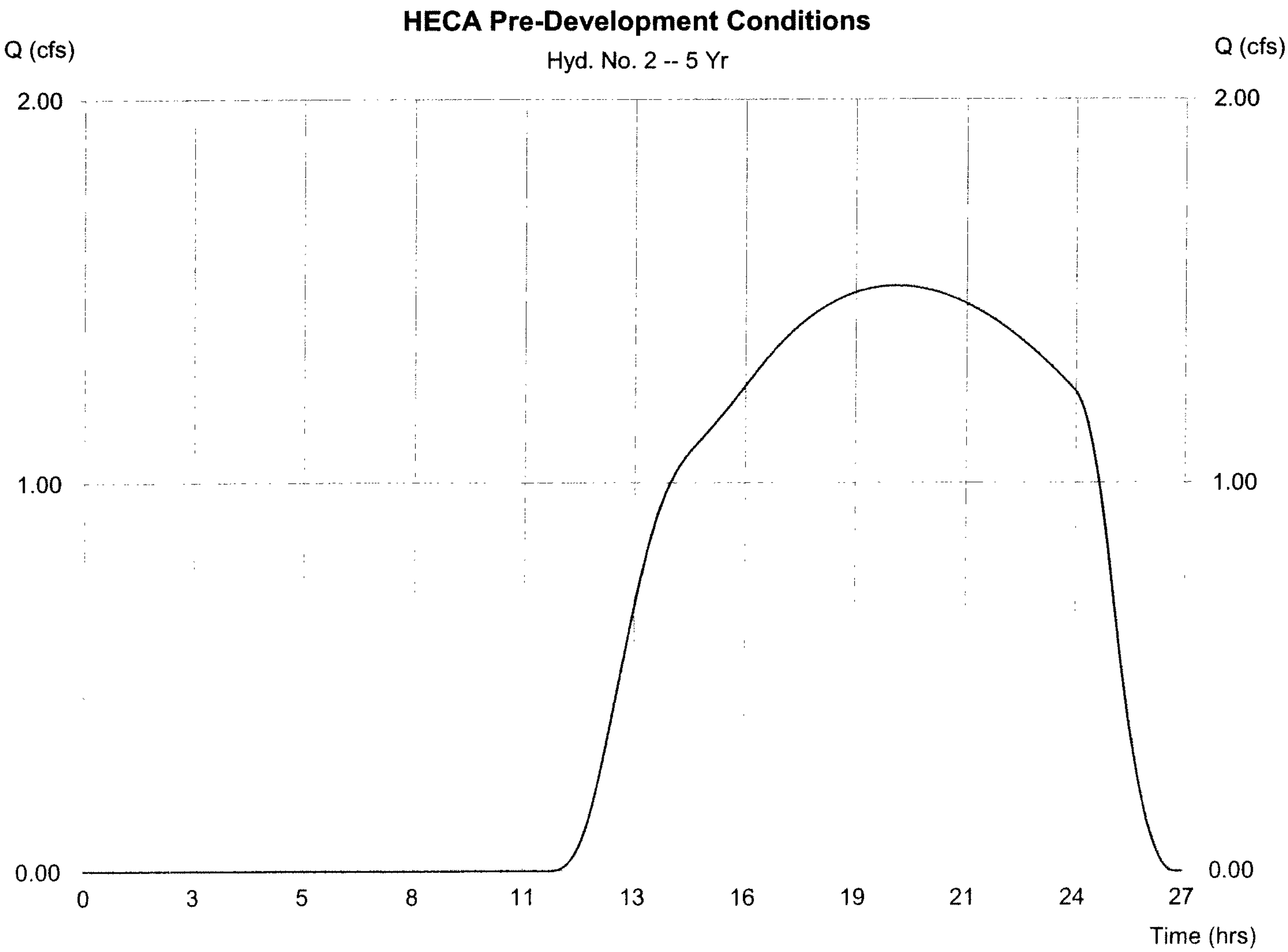
Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

HECA Pre-Development Conditions

Hydrograph type	= SCS Runoff	Peak discharge	= 1.51 cfs
Storm frequency	= 5 yrs	Time interval	= 1 min
Drainage area	= 315.000 ac	Curve number	= 69
Basin Slope	= 2.6 %	Hydraulic length	= 4800 ft
Tc method	= LAG	Time of conc. (Tc)	= 94.95 min
Total precip.	= 1.40 in	Distribution	= Type I
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 57,443 cuft



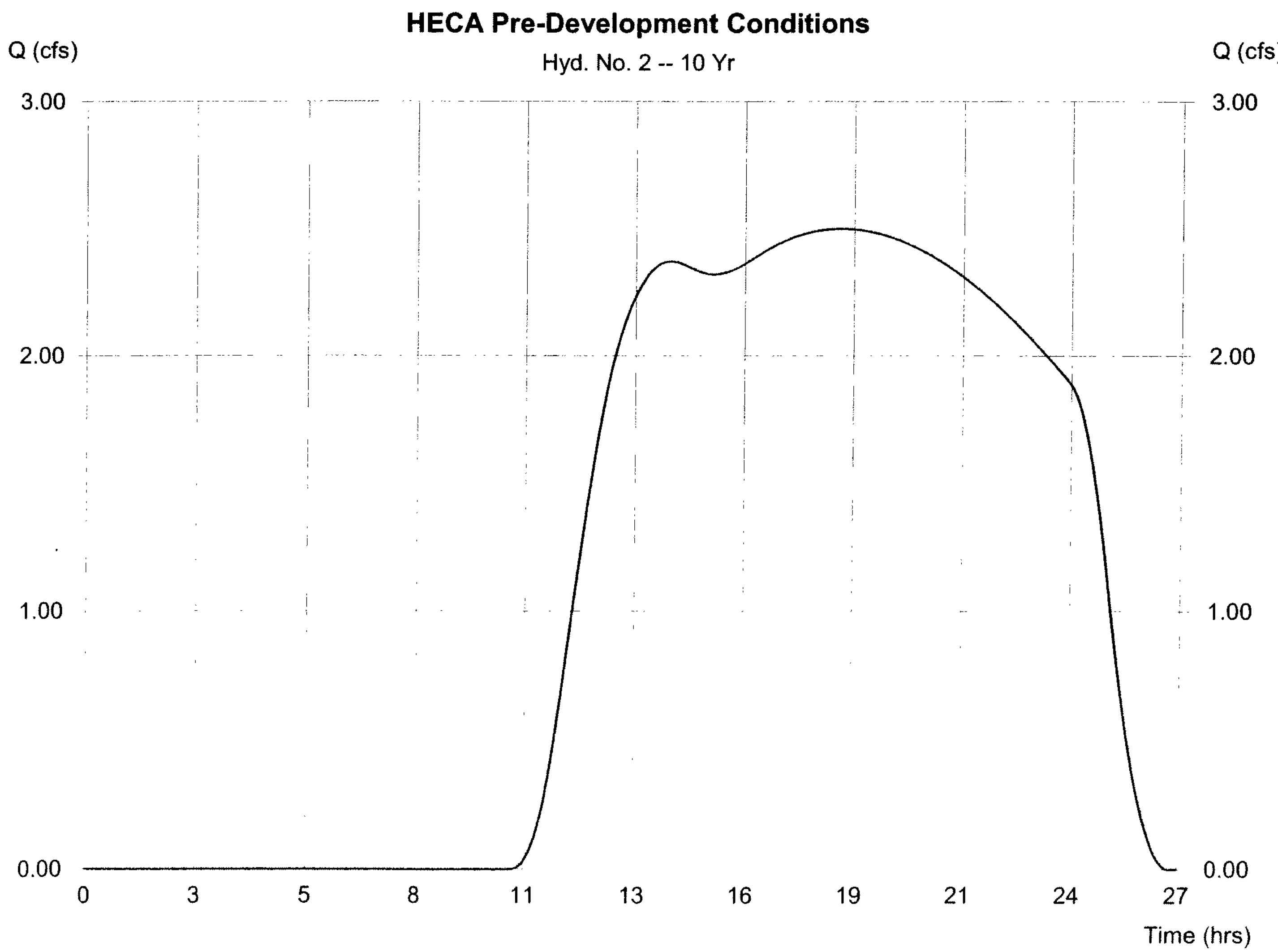
Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

HECA Pre-Development Conditions

Hydrograph type	= SCS Runoff	Peak discharge	= 2.50 cfs
Storm frequency	= 10 yrs	Time interval	= 1 min
Drainage area	= 315.000 ac	Curve number	= 69
Basin Slope	= 2.6 %	Hydraulic length	= 4800 ft
Tc method	= LAG	Time of conc. (Tc)	= 94.95 min
Total precip.	= 1.60 in	Distribution	= Type I
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 108,074 cuft



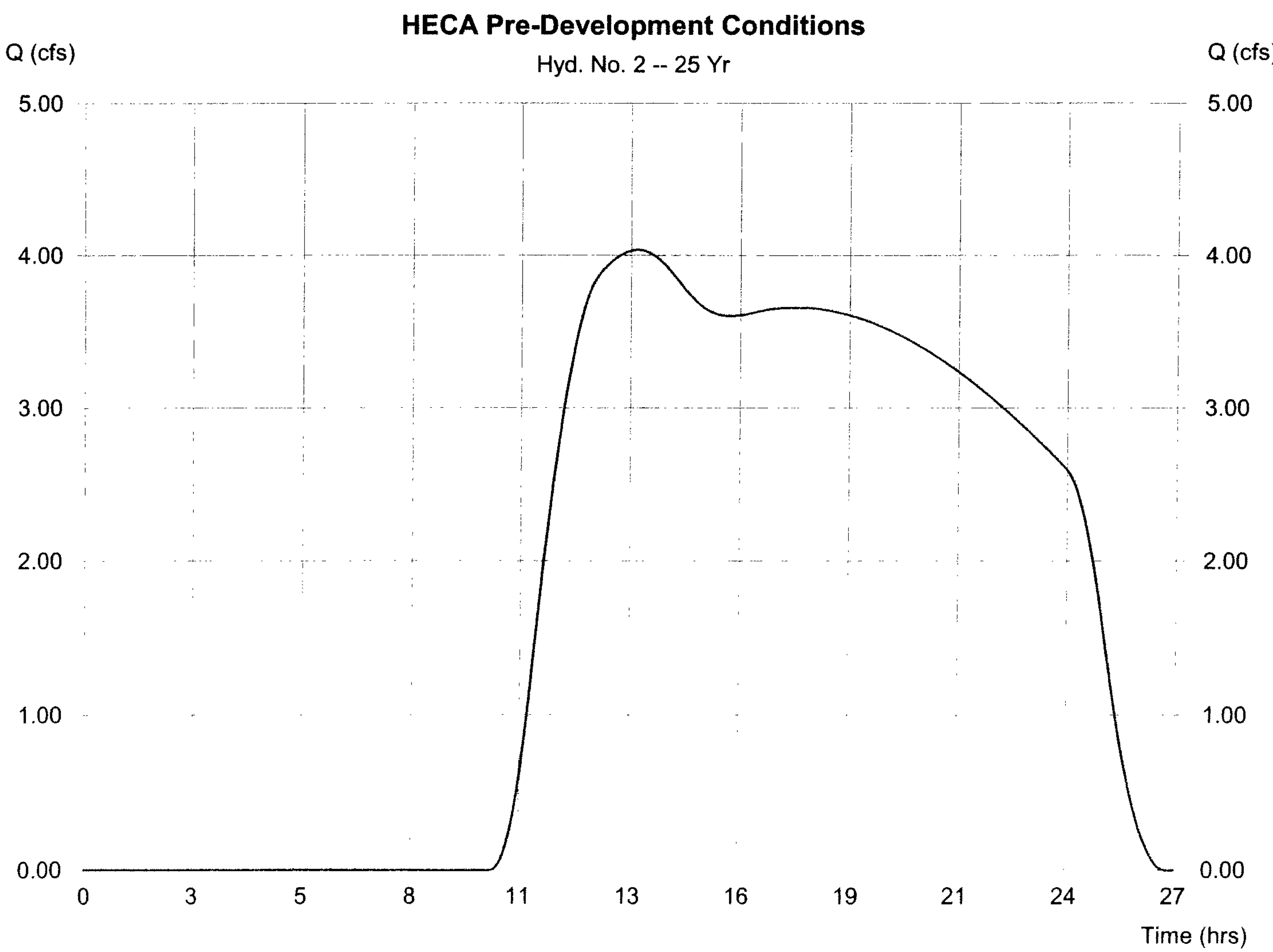
Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

HECA Pre-Development Conditions

Hydrograph type	= SCS Runoff	Peak discharge	= 4.04 cfs
Storm frequency	= 25 yrs	Time interval	= 1 min
Drainage area	= 315.000 ac	Curve number	= 69
Basin Slope	= 2.6 %	Hydraulic length	= 4800 ft
Tc method	= LAG	Time of conc. (Tc)	= 94.95 min
Total precip.	= 1.80 in	Distribution	= Type I
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 171,865 cuft



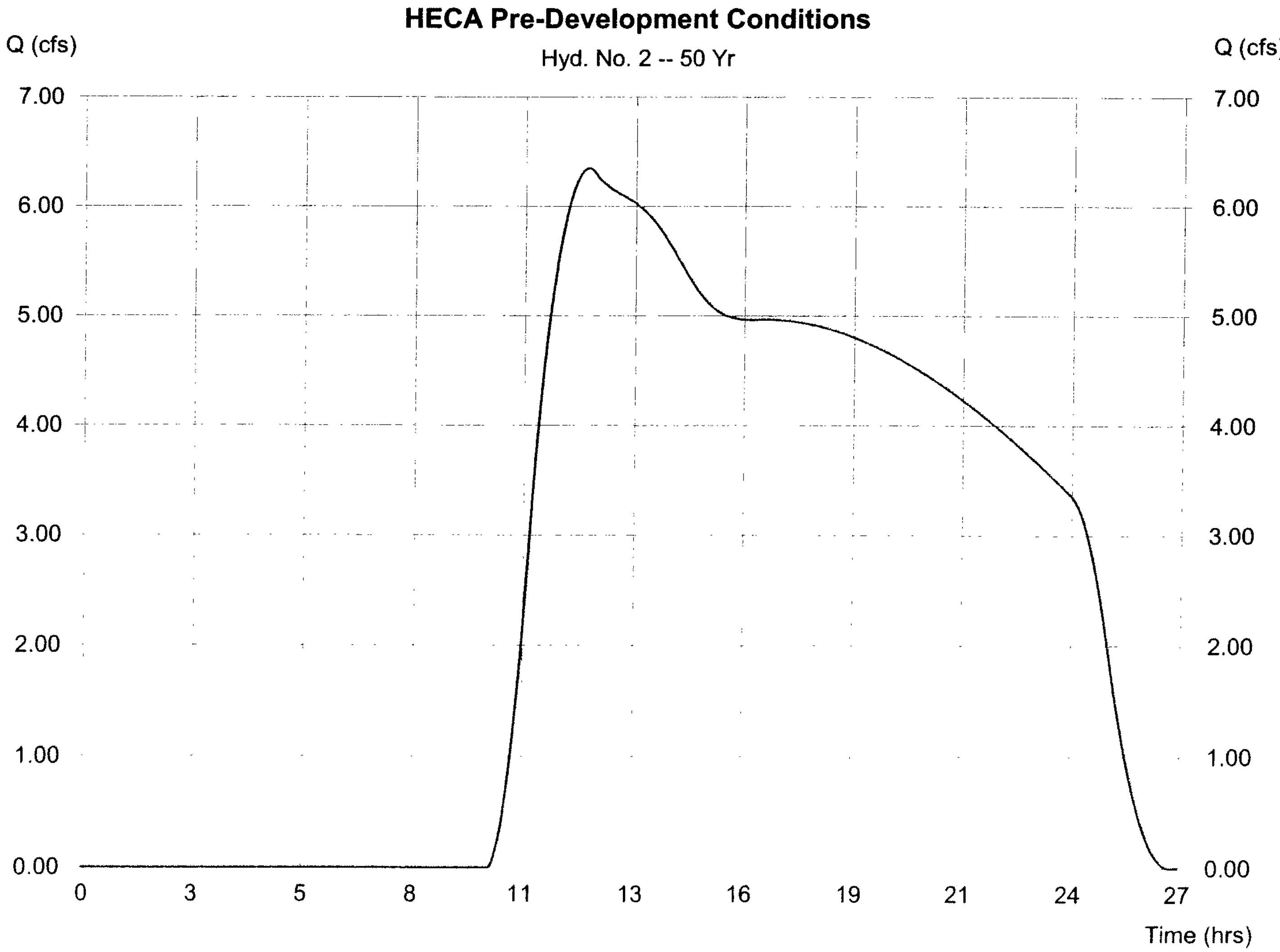
Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

HECA Pre-Development Conditions

Hydrograph type	= SCS Runoff	Peak discharge	= 6.35 cfs
Storm frequency	= 50 yrs	Time interval	= 1 min
Drainage area	= 315.000 ac	Curve number	= 69
Basin Slope	= 2.6 %	Hydraulic length	= 4800 ft
Tc method	= LAG	Time of conc. (Tc)	= 94.95 min
Total precip.	= 2.00 in	Distribution	= Type I
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 247,419 cuft



APPENDIX B

Post-Development Analyses

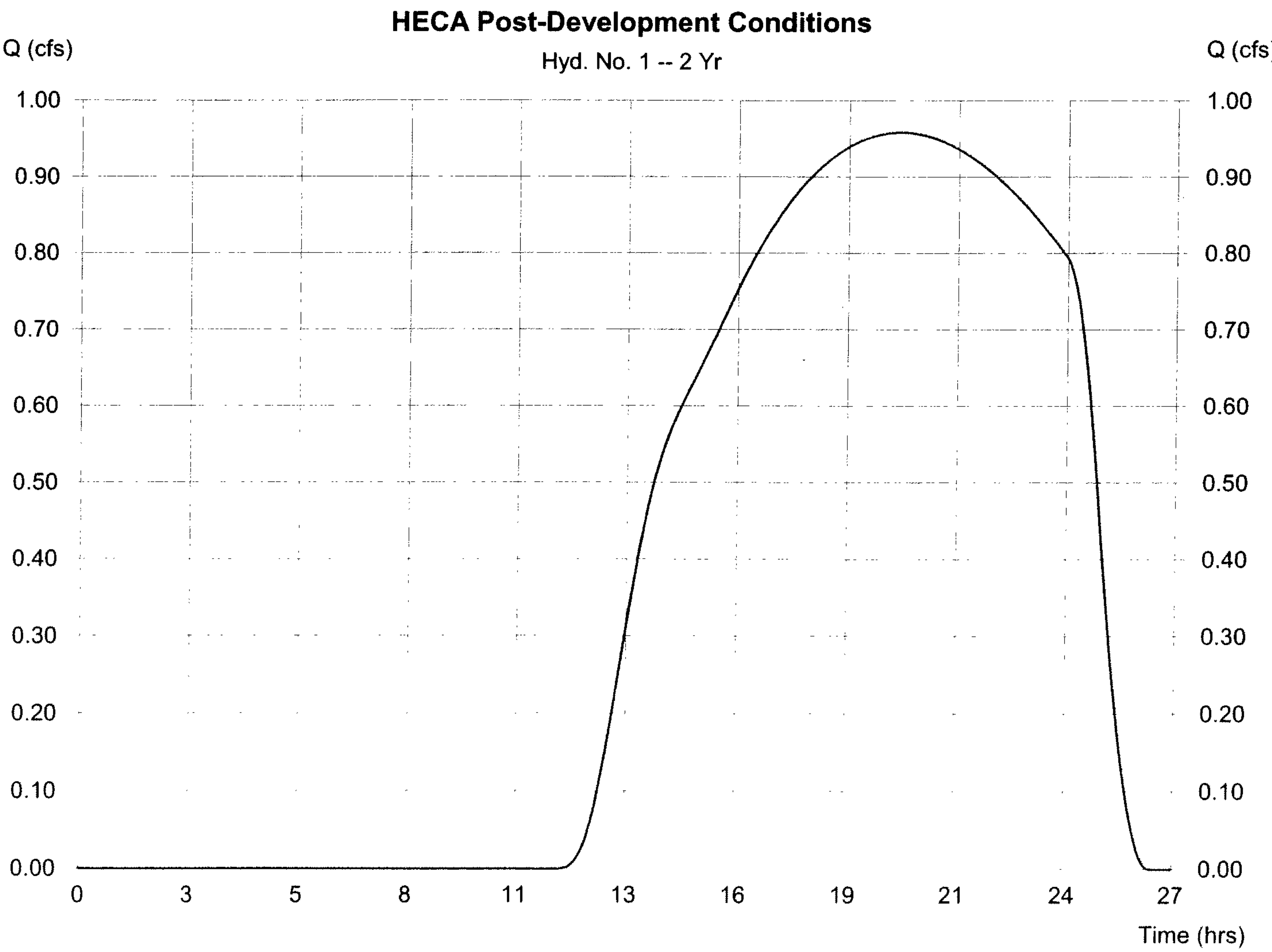
Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

HECA Post-Development Conditions

Hydrograph type	= SCS Runoff	Peak discharge	= 0.96 cfs
Storm frequency	= 2 yrs	Time interval	= 1 min
Drainage area	= 315.000 ac	Curve number	= 75
Basin Slope	= 2.6 %	Hydraulic length	= 4800 ft
Tc method	= LAG	Time of conc. (Tc)	= 80.43 min
Total precip.	= 1.00 in	Distribution	= Type I
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 34,650 cuft



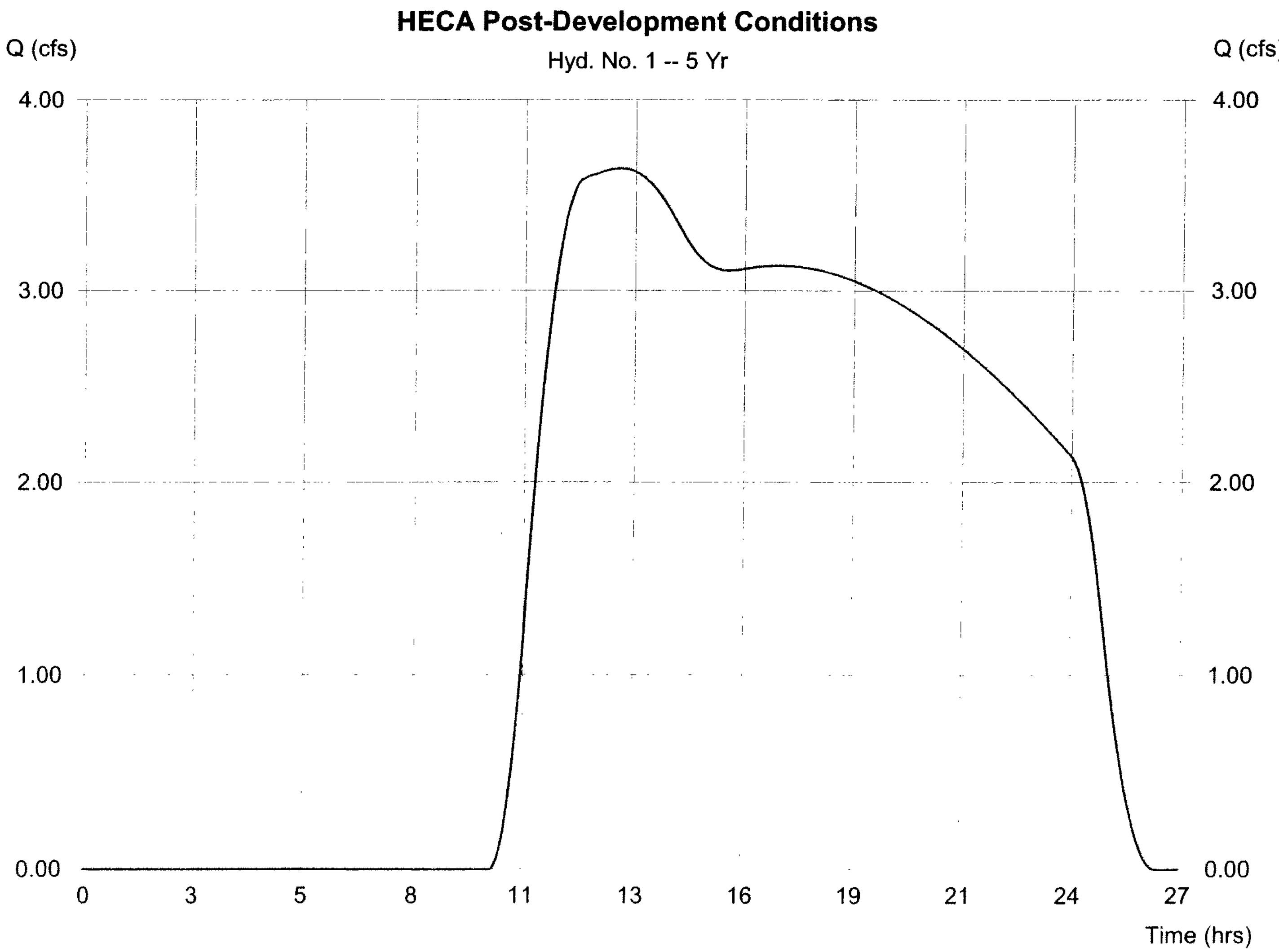
Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

HECA Post-Development Conditions

Hydrograph type	= SCS Runoff	Peak discharge	= 3.64 cfs
Storm frequency	= 5 yrs	Time interval	= 1 min
Drainage area	= 315.000 ac	Curve number	= 75
Basin Slope	= 2.6 %	Hydraulic length	= 4800 ft
Tc method	= LAG	Time of conc. (Tc)	= 80.43 min
Total precip.	= 1.40 in	Distribution	= Type I
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 151,210 cuft



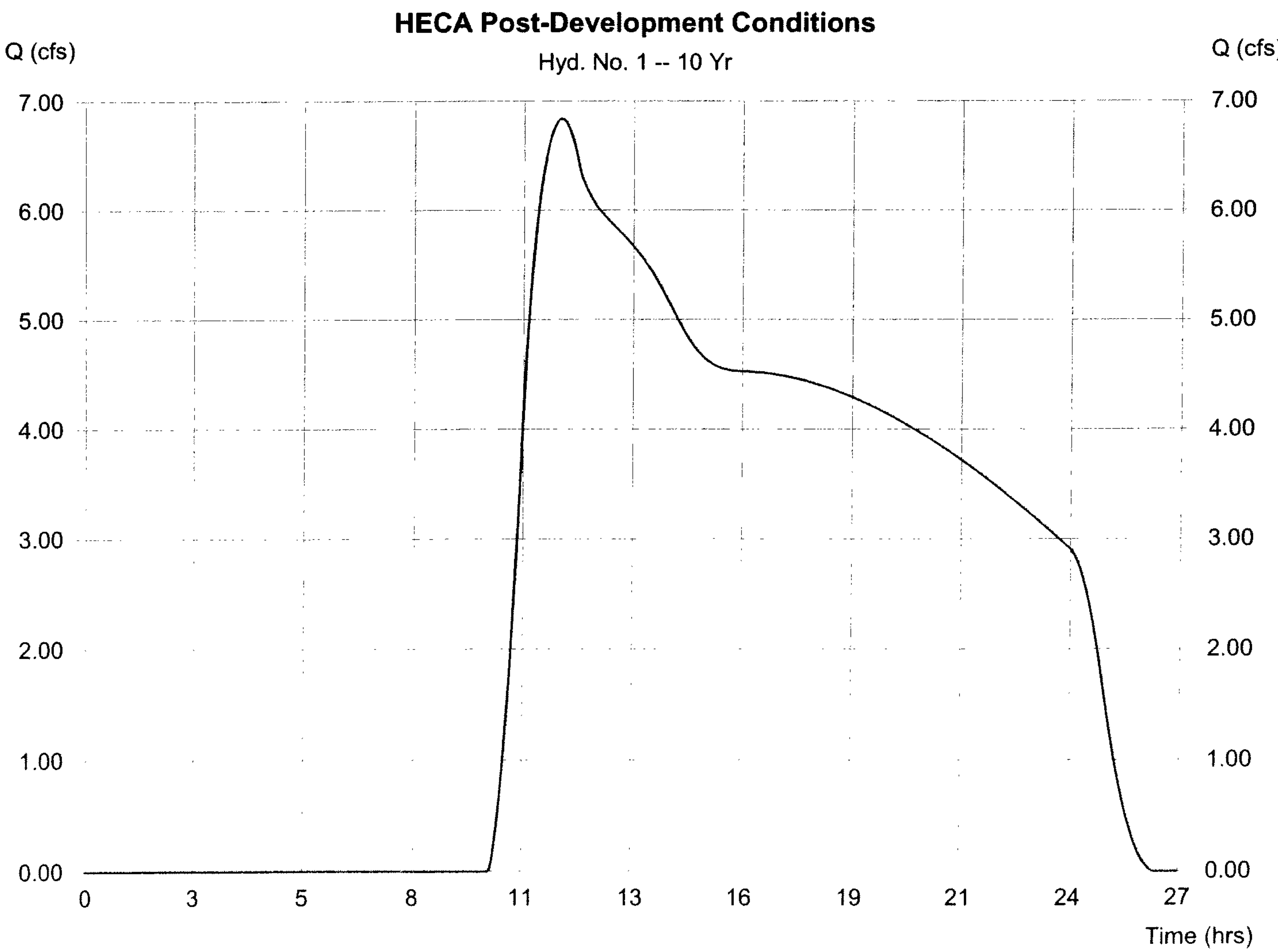
Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

HECA Post-Development Conditions

Hydrograph type	= SCS Runoff	Peak discharge	= 6.84 cfs
Storm frequency	= 10 yrs	Time interval	= 1 min
Drainage area	= 315.000 ac	Curve number	= 75
Basin Slope	= 2.6 %	Hydraulic length	= 4800 ft
Tc method	= LAG	Time of conc. (Tc)	= 80.43 min
Total precip.	= 1.60 in	Distribution	= Type I
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 233,434 cuft

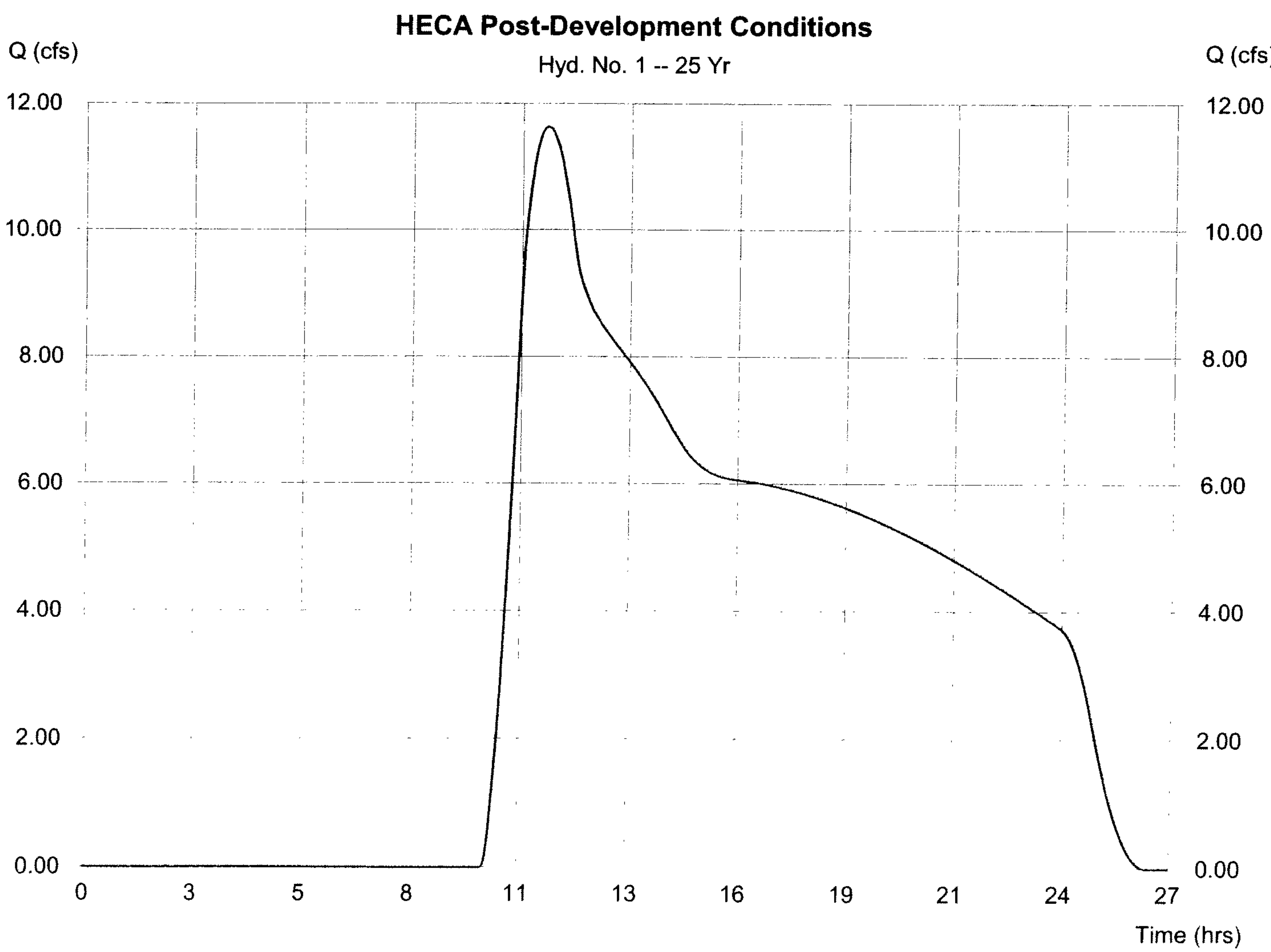


Hydrograph Plot

HECA Post-Development Conditions

Hydrograph type	= SCS Runoff	Peak discharge	= 11.64 cfs
Storm frequency	= 25 yrs	Time interval	= 1 min
Drainage area	= 315.000 ac	Curve number	= 75
Basin Slope	= 2.6 %	Hydraulic length	= 4800 ft
Tc method	= LAG	Time of conc. (Tc)	= 80.43 min
Total precip.	= 1.80 in	Distribution	= Type I
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 328,812 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

HECA Post-Development Conditions

Hydrograph type	= SCS Runoff	Peak discharge	= 17.90 cfs
Storm frequency	= 50 yrs	Time interval	= 1 min
Drainage area	= 315.000 ac	Curve number	= 75
Basin Slope	= 2.6 %	Hydraulic length	= 4800 ft
Tc method	= LAG	Time of conc. (Tc)	= 80.43 min
Total precip.	= 2.00 in	Distribution	= Type I
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 435,594 cuft