APPENDIX 5.15A

Preliminary Stormwater Management Design

CPV VACA STATION POND
HYDROLOGY CALCULATIONS

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PEI# 271120

June 4, 2008

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Proposed pond 4-16-08.gpw

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2008 by Autodesk, Inc. v6.052

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Watershed Model Schematic

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Legend

Hyd.	Origin	Description
1	Rational	Proposed site
2	Reservoir	Route to pond

Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2008 by Autodesk, Inc. v6.052

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	17.09	1	30	30,753	------	------	------	Proposed site
2	Reservoir	0.000	1	n/a	0	1	60.23	30,753	Route to pond

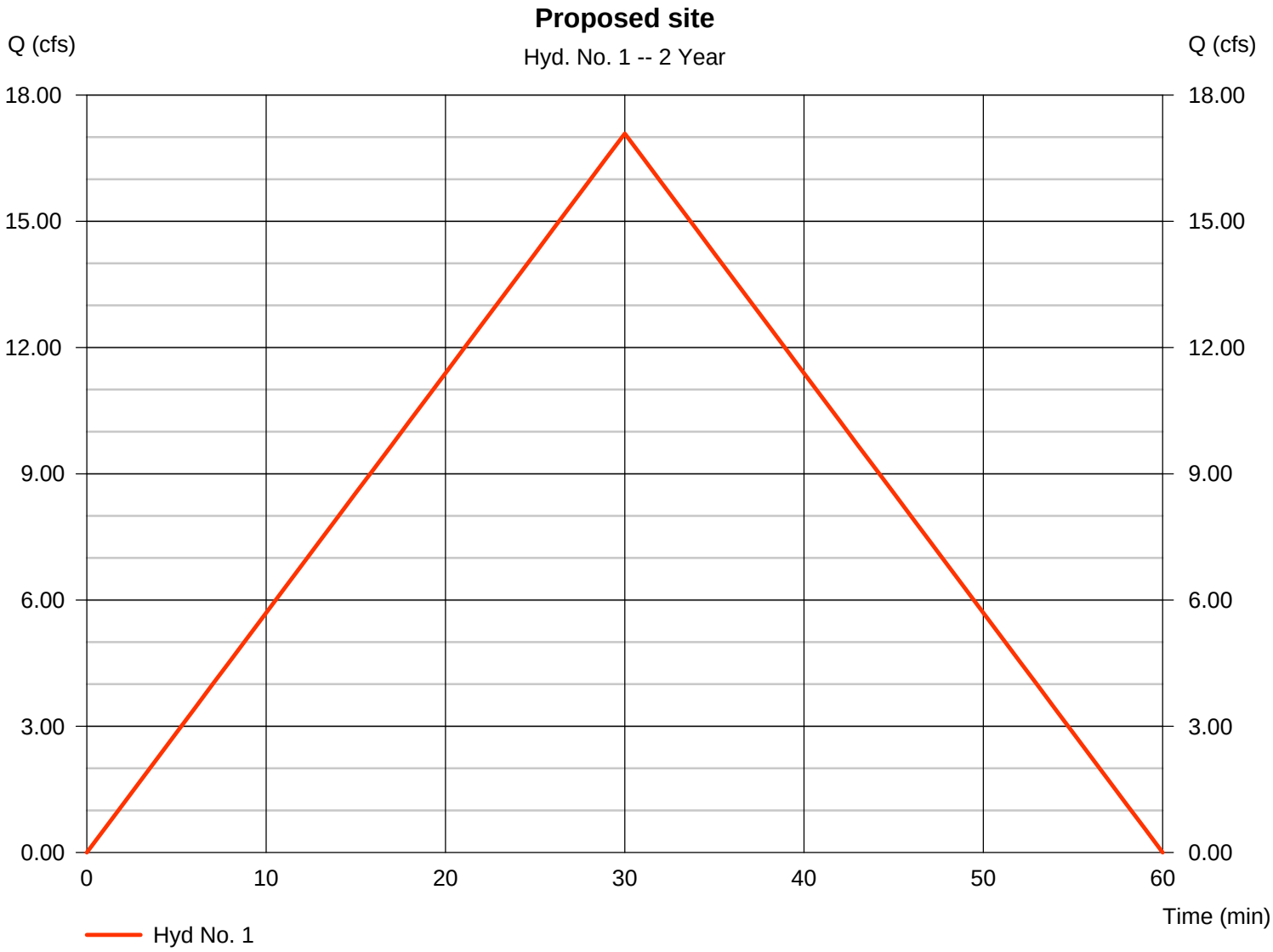
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2008 by Autodesk, Inc. v6.052 Wednesday, Jun 4, 2008

Hyd. No. 1

Proposed site

Hydrograph type	=	Rational	Peak discharge	=	17.09 cfs
Storm frequency	=	2 yrs	Time to peak	=	30 min
Time interval	=	1 min	Hyd. volume	=	30,753 cuft
Drainage area	=	25.500 ac	Runoff coeff.	=	0.67
Intensity	=	1.000 in/hr	Tc by User	=	30.00 min
IDF Curve	=	Vacaville_ISO_22.IDF	Asc/Rec limb fact	=	1/1



Hydrograph Report

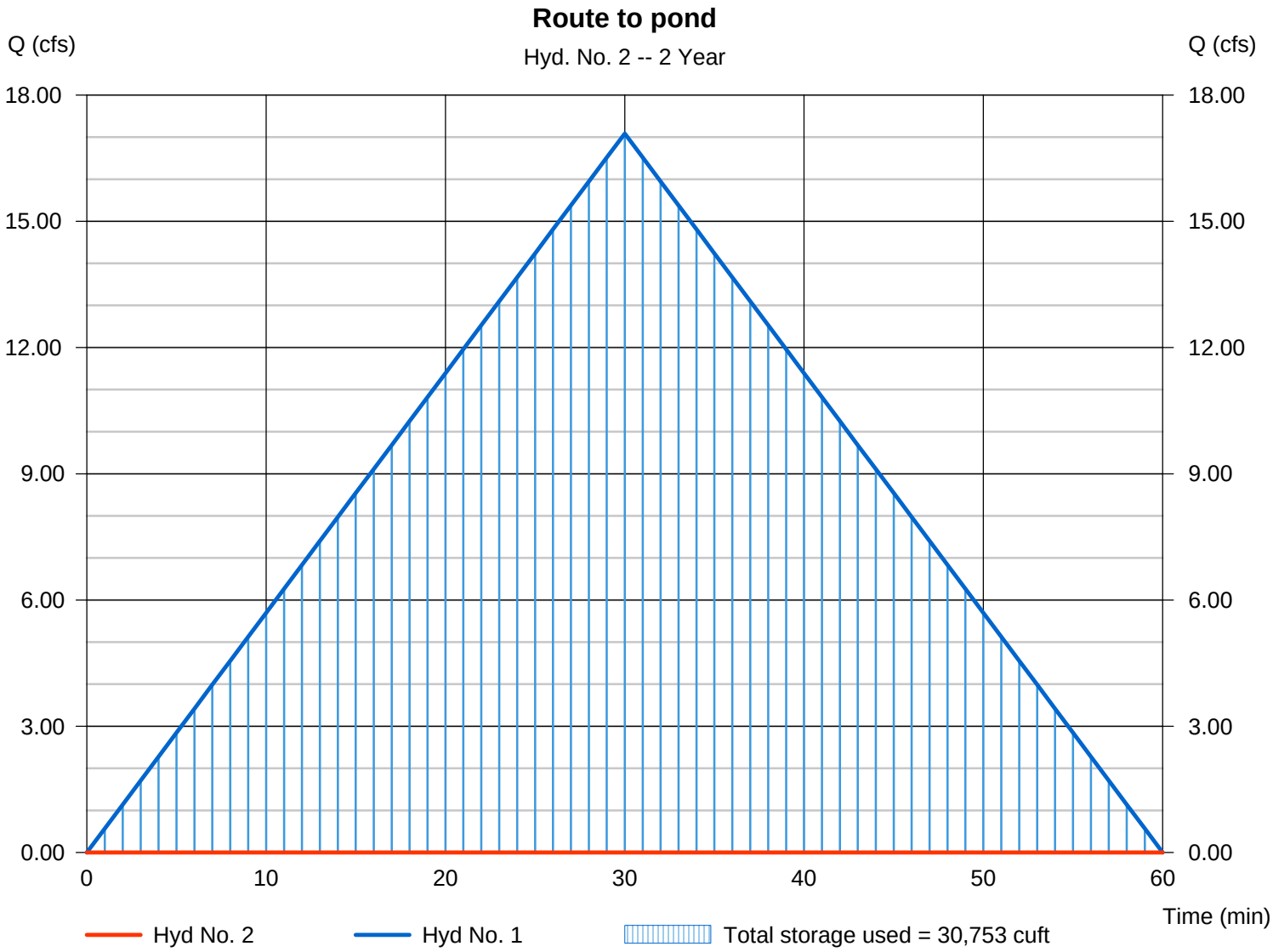
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2008 by Autodesk, Inc. v6.052 Wednesday, Jun 4, 2008

Hyd. No. 2

Route to pond

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	2 yrs	Time to peak	=	n/a
Time interval	=	1 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	1 - Proposed site	Max. Elevation	=	60.23 ft
Reservoir name	=	Proposed pond	Max. Storage	=	30,753 cuft

Storage Indication method used.



Pond Report

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Pond No. 1 - Proposed pond

Pond Data

Contours - User-defined contour areas. Average end area method used for volume calculation. Begining Elevation = 59.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	59.00	05	0	0
1.00	60.00	23,777	11,891	11,891
2.00	61.00	137,258	80,518	92,409
3.00	62.00	139,850	138,554	230,963

Culvert / Orifice Structures

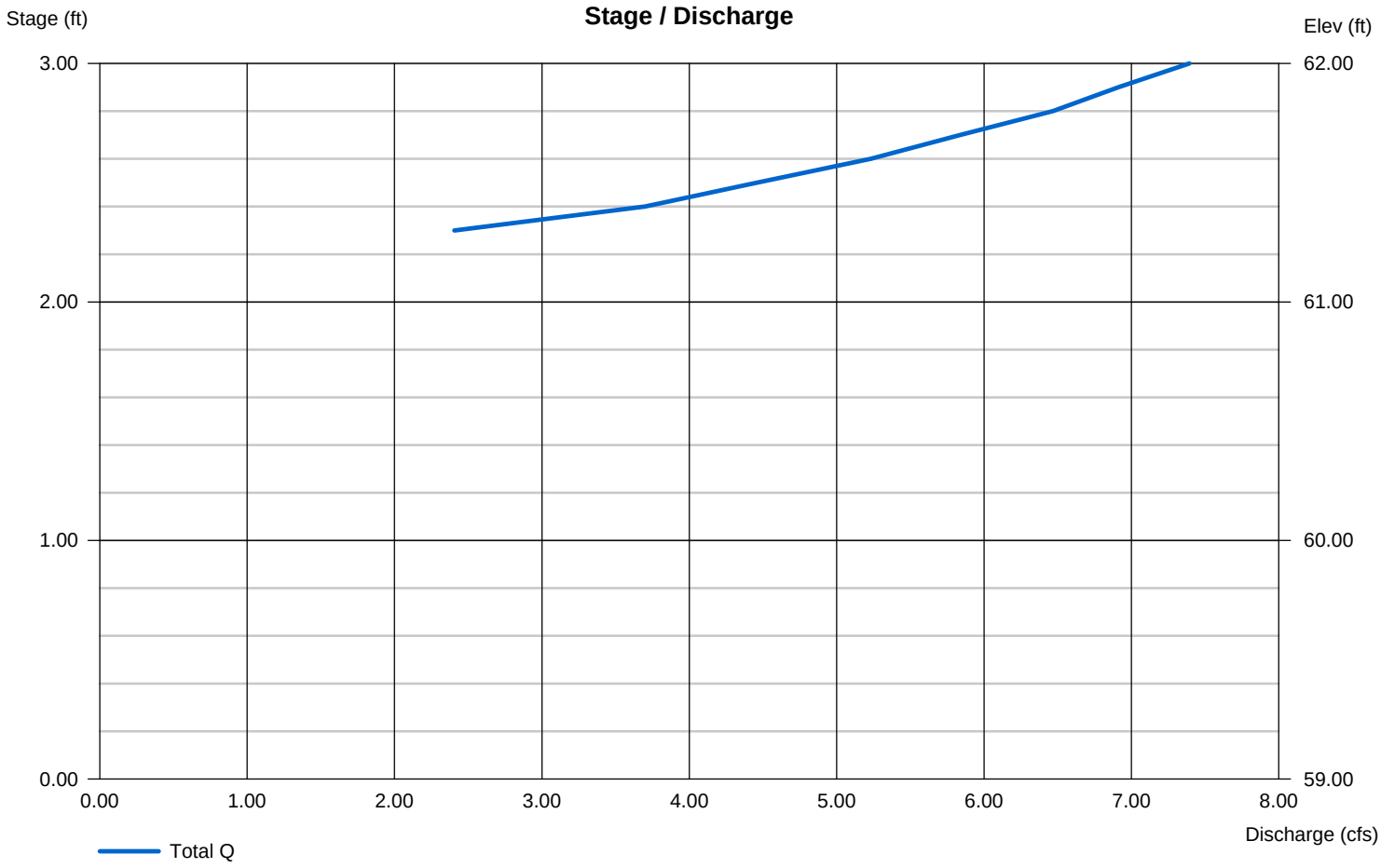
	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 18.00	18.00	0.00	0.00
Span (in)	= 18.00	18.00	0.00	0.00
No. Barrels	= 1	1	1	0
Invert El. (ft)	= 59.00	59.10	0.00	0.00
Length (ft)	= 75.00	10.00	0.00	0.00
Slope (%)	= 0.45	0.50	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 12.56	0.00	0.00	0.00
Crest El. (ft)	= 60.25	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Riser	---	---	---
Multi-Stage	= Yes	No	No	No

Exfil.(in/hr) = 0.000 (by Contour)
TW Elev. (ft) = 61.20

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



Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2008 by Autodesk, Inc. v6.052

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	26.31	1	30	47,360	------	------	------	Proposed site
2	Reservoir	0.000	1	n/a	0	1	60.44	47,360	Route to pond

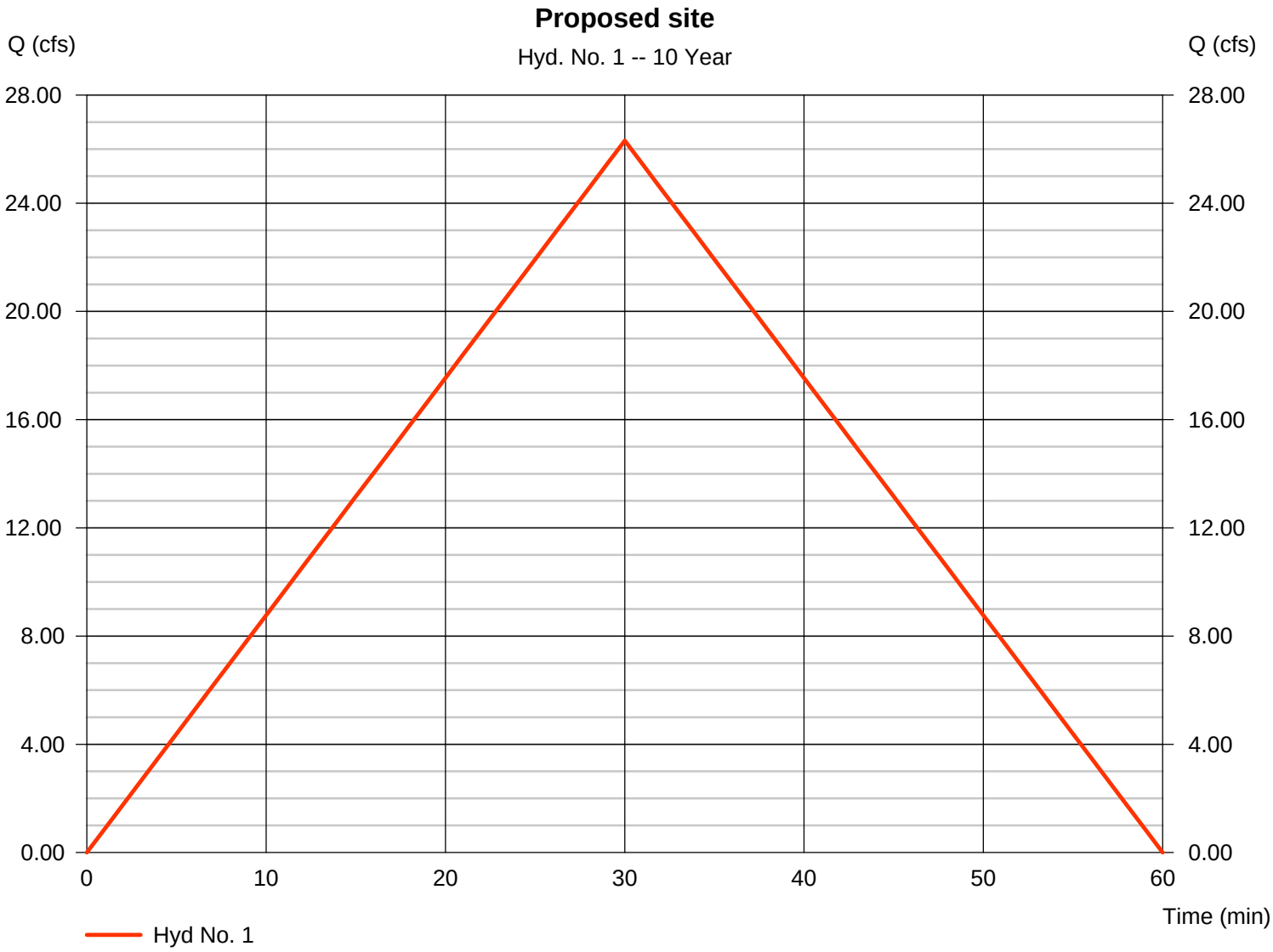
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2008 by Autodesk, Inc. v6.052 Wednesday, Jun 4, 2008

Hyd. No. 1

Proposed site

Hydrograph type	=	Rational	Peak discharge	=	26.31 cfs
Storm frequency	=	10 yrs	Time to peak	=	30 min
Time interval	=	1 min	Hyd. volume	=	47,360 cuft
Drainage area	=	25.500 ac	Runoff coeff.	=	0.67
Intensity	=	1.540 in/hr	Tc by User	=	30.00 min
IDF Curve	=	Vacaville_ISO_22.IDF	Asc/Rec limb fact	=	1/1



Hydrograph Report

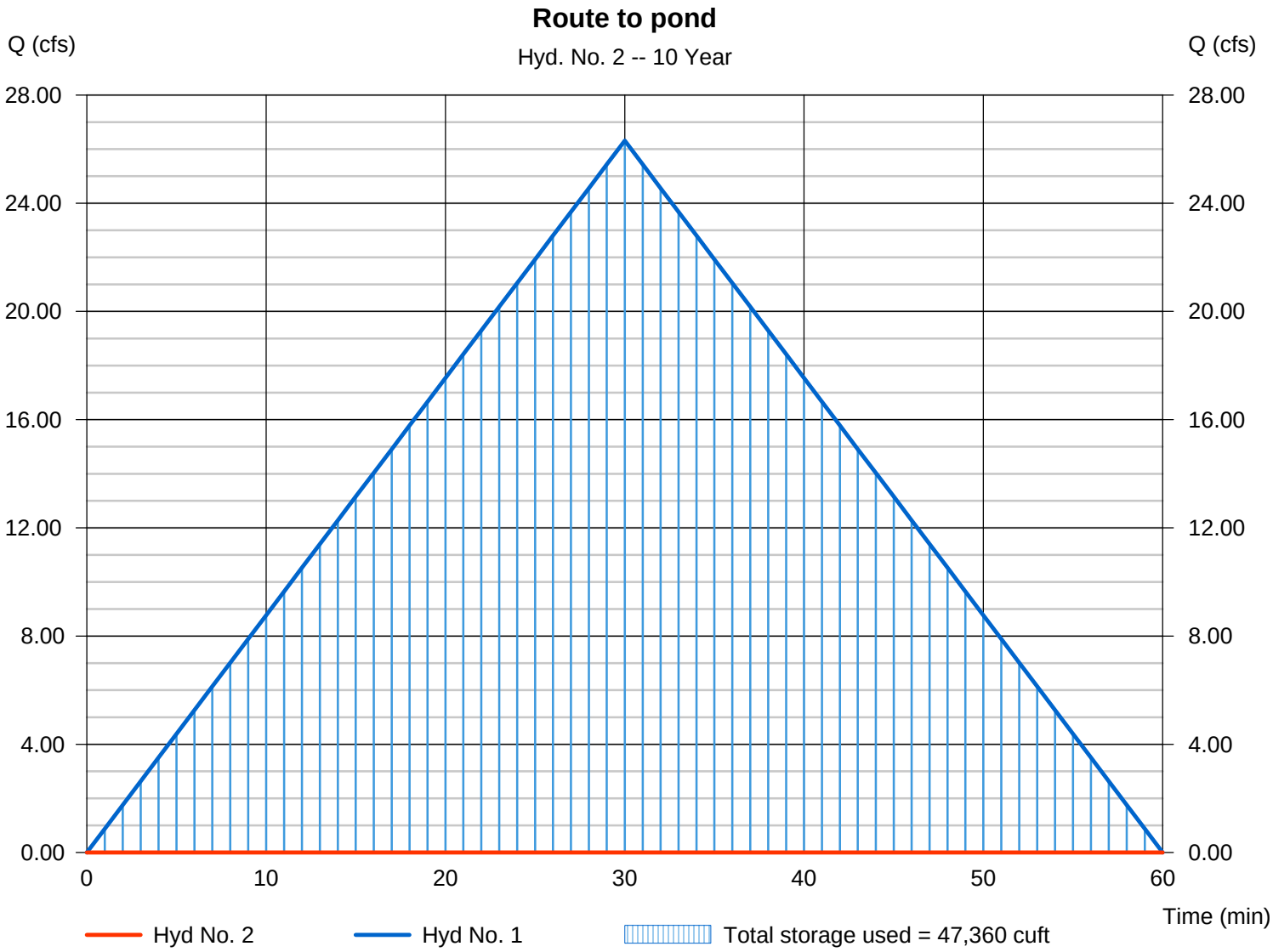
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2008 by Autodesk, Inc. v6.052 Wednesday, Jun 4, 2008

Hyd. No. 2

Route to pond

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	10 yrs	Time to peak	=	n/a
Time interval	=	1 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	1 - Proposed site	Max. Elevation	=	60.44 ft
Reservoir name	=	Proposed pond	Max. Storage	=	47,360 cuft

Storage Indication method used.



Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2008 by Autodesk, Inc. v6.052

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	37.59	1	30	67,657	------	------	------	Proposed site
2	Reservoir	0.000	1	n/a	0	1	60.69	67,657	Route to pond

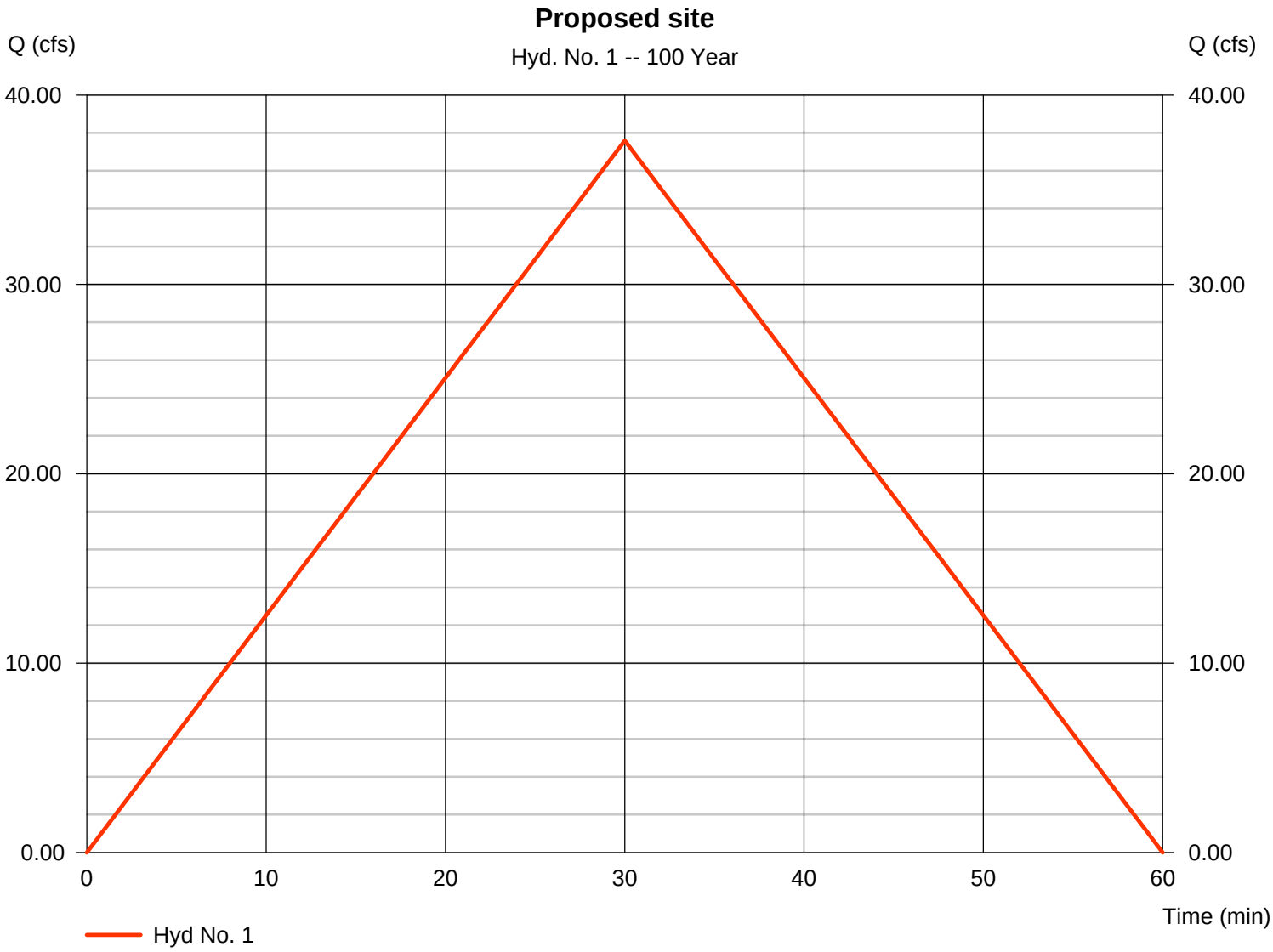
Hydrograph Report

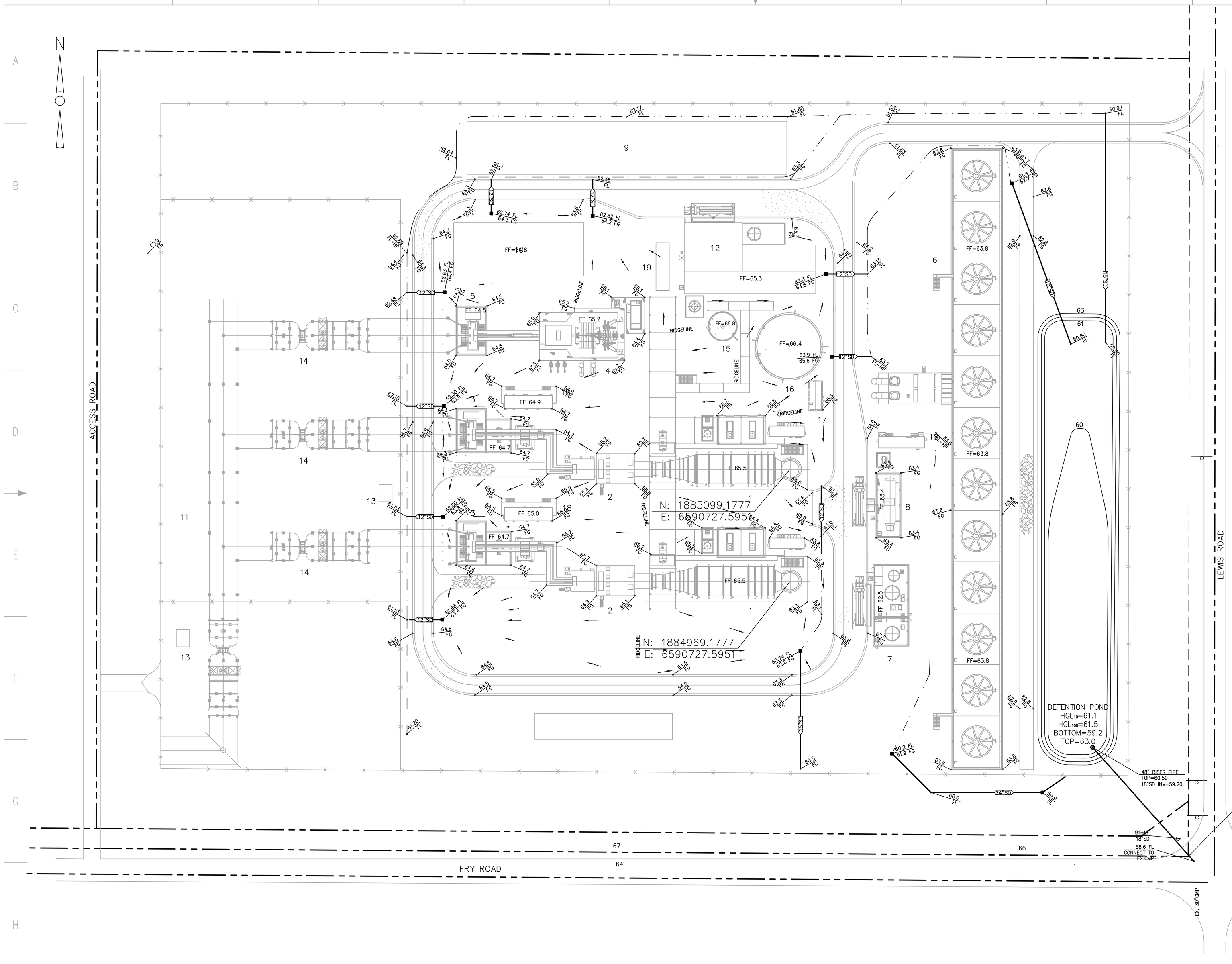
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2008 by Autodesk, Inc. v6.052 Wednesday, Jun 4, 2008

Hyd. No. 1

Proposed site

Hydrograph type	=	Rational	Peak discharge	=	37.59 cfs
Storm frequency	=	100 yrs	Time to peak	=	30 min
Time interval	=	1 min	Hyd. volume	=	67,657 cuft
Drainage area	=	25.500 ac	Runoff coeff.	=	0.67
Intensity	=	2.200 in/hr	Tc by User	=	30.00 min
IDF Curve	=	Vacaville_ISO_22.IDF	Asc/Rec limb fact	=	1/1





LEGEND:

1– HRSG
2– COMBUSTION TURBINE GENERATOR
3– CT GENERATOR STEP–UP TRANSFORMER
4– STEAM TURBINE GENERATOR
5– ST GENERATOR STEP–UP TRANSFORMER
6– COOLING TOWER
7– COOLING TOWER CHEMICAL FEED BUILDING
8– AMMONIA STORAGE TANK
9– ZLD (FUTURE)
10– CONTROL BUILDING
11– SWITCHYARD
12– WATER TREATMENT BUILDING
13– SWITCHYARD CONTROL BUILDING
14– 230kV CIRCUIT BREAKER
15– DEMINERALIZED WATER TANK
16– FIRE WATER TANK
17– FIRE WATER PUMP
18– POWER DISTRIBUTION CENTER
19– AUX BOILER

PARCEL BOUNDARY

GRAVEL

ASPHALT

50 0 50 100 150

SCALE: 1"=50'

APN: 142–200–040

Hydrograph Report

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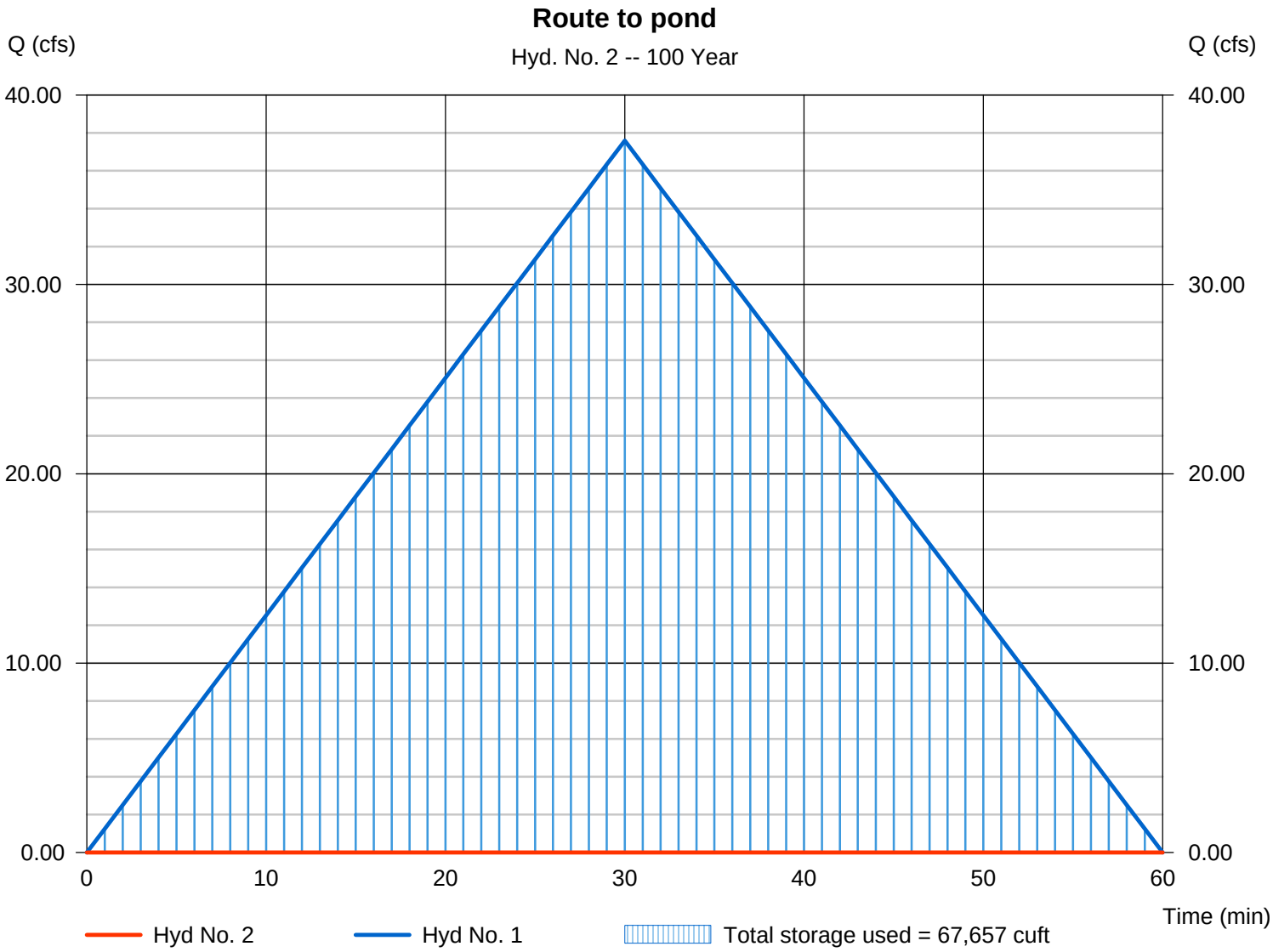
Hyd. No. 2

Route to pond

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	100 yrs	Time to peak	=	n/a
Time interval	=	1 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	1 - Proposed site	Max. Elevation	=	60.69 ft
Reservoir name	=	Proposed pond	Max. Storage	=	67,657 cuft

Storage Indication method used.