DRAINAGE CALCULATIONS, HYDRAULICS & HYDROLOGY REPORT

PVC DIRECT
2 ENTERPRISE LANE
UNCASVILLE, CT

FEBRUARY 2023

GREEN SITE DESIGN

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DRAINAGE HYDRAULICS AND HYDROLOGY REPORT
PVC DIRECT SITE PLAN

EXISTING CONDITIONS

The site is approximately 0.94 acres in area and is shown on the Existing Conditions Survey (Sheet 1 of the site plans). The site has frontage on Lakewood Drive and Enterprise Lane. There are no wetlands on the site.

PROPOSED DEVELOPMENT

The project proposes one new free standing building with a footprint of 7,500 SF. The main floor of the building will be used as manufacturing space. There is also a 1,500 SF mezzanine that will be used for office space. The proper amount of parking has been provided for the building. Virtually all of the 0.94 acres of the site will be disturbed during development. Of the 0.94 acres, the project proposes 0.64 acres of development area. The remaining 0.3 acres will be landscaped and planted. The planting schedule can be found of sheet 2 of the site plan.

EXISTING AND PROPOSED HYDRAULICS

The current site contains just one 0.94 acre drainage area. After development is complete, the site will be divided into two drainage areas.

Drainage Area 1 is 0.77 acres and contains the majority of the site including the parking lot, loading docks, and green areas. Runoff from the sites paved areas will flow into catch basins that lead to the existing drainage system on Lakewood Drive. Before connecting into the existing drainage system, the stormwater coming from the on-site catch basins will be treated by an oil-water separator.

Drainage Area 2 is 0.17 acres and only contains the proposed building. In order to reduce the amount of stormwater leaving the site, the clean runoff from the roof will outlet into an underground infiltration gallery.

Both the existing and the proposed conditions for the development site have been analyzed for the 2-year, 10-year, 25-year, 50-year, and 100 year design storms using the Rational Method. The following is the summary table for the 2-year, 10-year, 25-year, 50-year, and 100-year design storms showing first the existing conditions and proposed conditions:

	2 Year	10 Year	25 Year	50 Year	100 Year
Existing Drainage Area	1.36 cfs	2.03 cfs	2.45 cfs	2.75 cfs	3.10 cfs
Proposed Drainage Area 1	1.86 cfs	2.76 cfs	3.34 cfs	3.76 cfs	4.23 cfs
Proposed Drainage Area 2	0.00 cfs	0.00 cfs	0.00 cfs	0.00 cfs	0.00 cfs
Proposed	1.86 cfs	2.76 cfs	3.34 cfs	3.76 cfs	4.23 cfs

The drainage calculations show an insignificant increase in peak stormwater leaving the site after the development is completed. The drainage system in Lakewood Drive was designed as part of the subdivision, which created the industrial zoned lots along Lakewood Drove and Enterprise Lane. The drainage system was designed to handle the flows from industrial uses on the lots, and can handle the insignificant increases in stormwater flows from this development. As the site is less than an acre and will not disturb more then an acre of land, a sedimentation trap/ Erosion and Sedimentation Plan is not required as per Section 4.10.5 of the Zoning Regulations and the CT Guidelines for Soil Erosion and Sediment Control.

Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

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	1.361	1	5	408	------	------	------	Existing Area 1
2	Rational	0.739	1	5	222	------	------	------	Building 1
3	Reservoir	0.000	1	n/a	0	2	251.17	222	Infiltration
4	Rational	1.859	1	5	558	------	------	------	Proposed Area 1

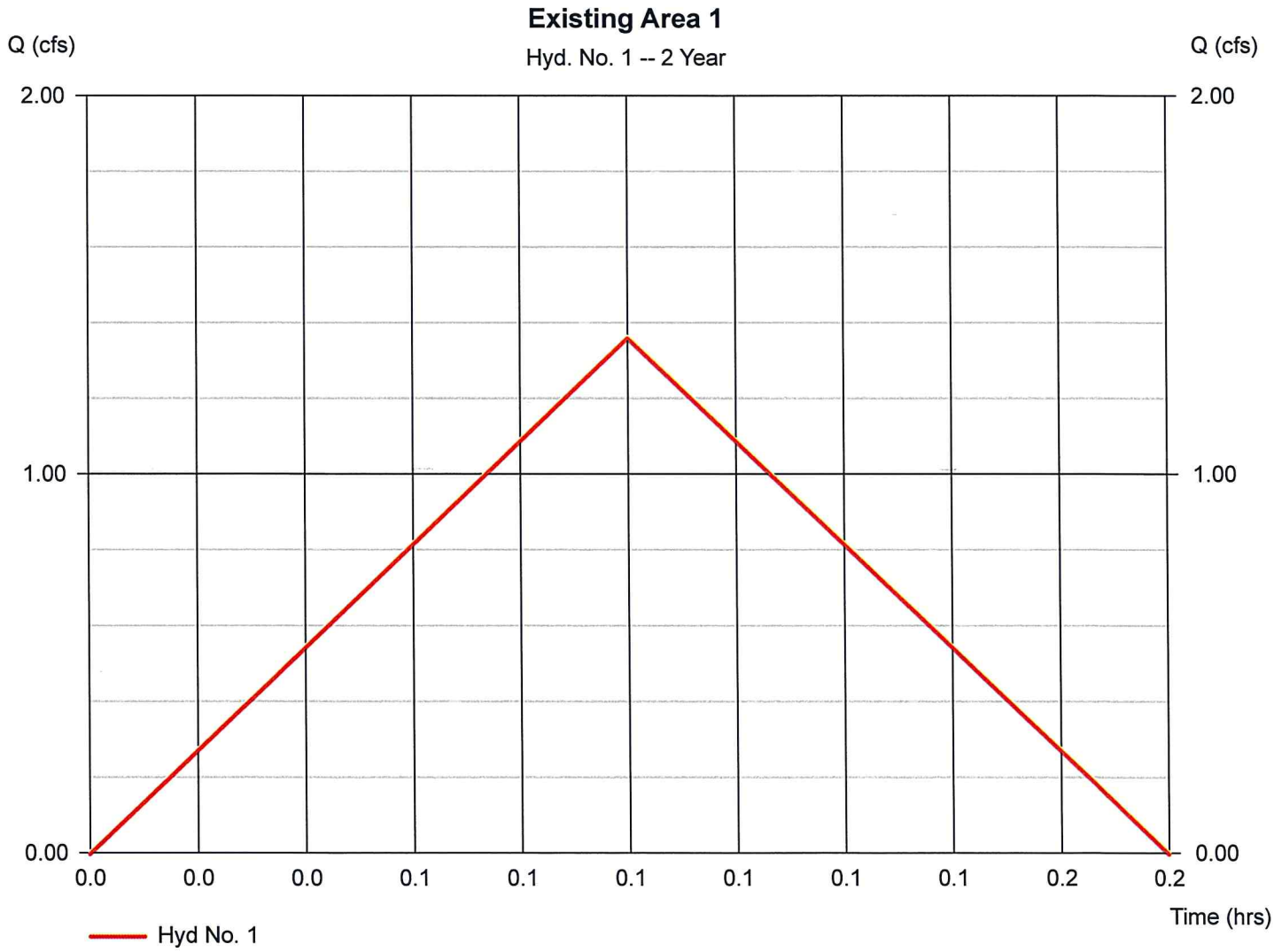
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066 Friday, Feb 17, 2023

Hyd. No. 1

Existing Area 1

Hydrograph type	= Rational	Peak discharge	= 1.361 cfs
Storm frequency	= 2 yrs	Time to peak	= 0.08 hrs
Time interval	= 1 min	Hyd. volume	= 408 cuft
Drainage area	= 0.940 ac	Runoff coeff.	= 0.3
Intensity	= 4.828 in/hr	Tc by User	= 5.00 min
IDF Curve	= GSD-60 NOAA.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066 Friday, Feb 17, 2023

Hyd. No. 2

Building 1

Hydrograph type	= Rational	Peak discharge	= 0.739 cfs
Storm frequency	= 2 yrs	Time to peak	= 0.08 hrs
Time interval	= 1 min	Hyd. volume	= 222 cuft
Drainage area	= 0.170 ac	Runoff coeff.	= 0.9
Intensity	= 4.828 in/hr	Tc by User	= 5.00 min
IDF Curve	= GSD-60 NOAA.IDF	Asc/Rec limb fact	= 1/1

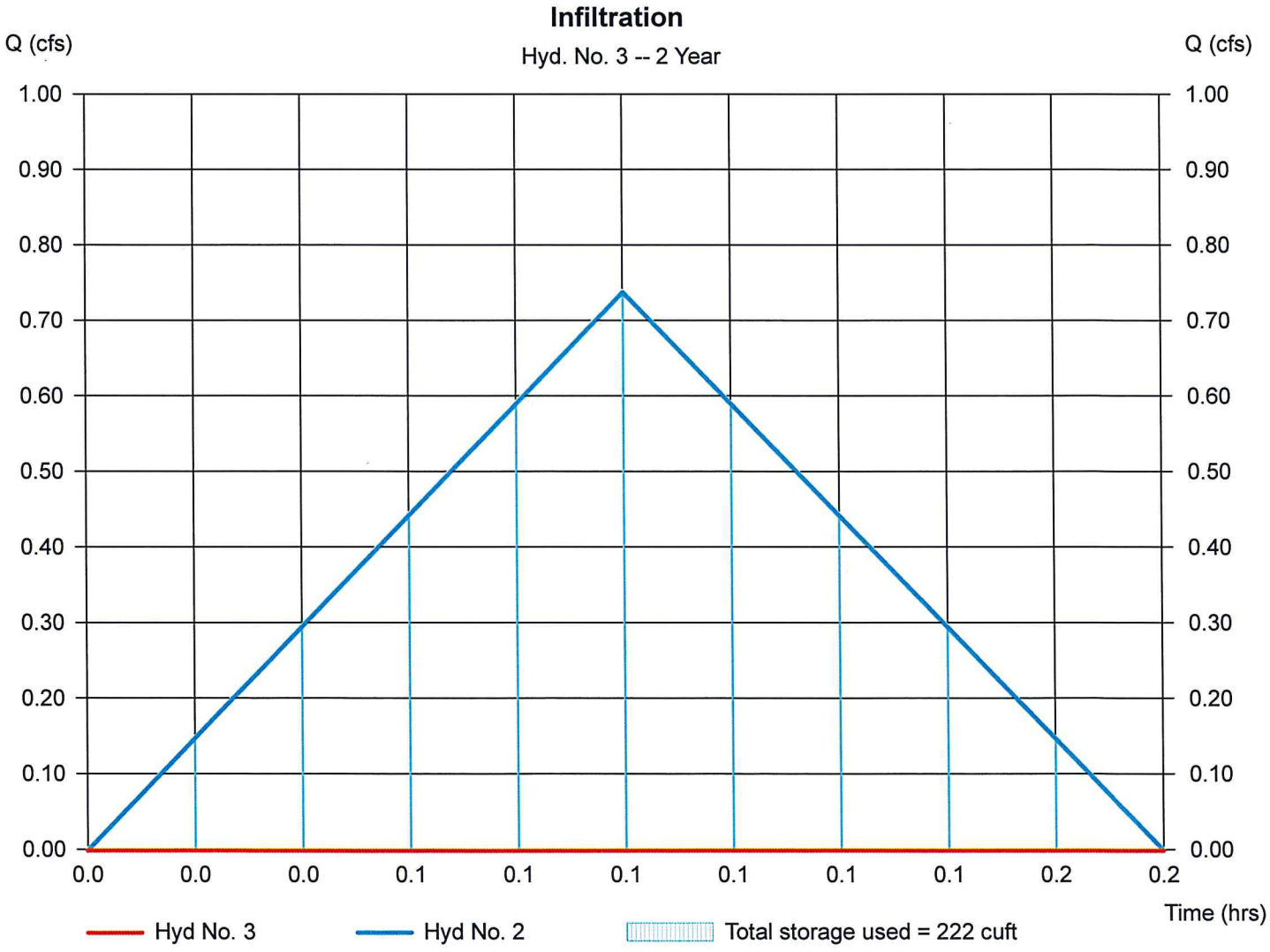
Hydrograph Report

Hyd. No. 3

Infiltration

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.	= 2 - Building 1	Max. Elevation	= 251.17 ft
Reservoir name	= Infiltration	Max. Storage	= 222 cuft

Storage Indication method used.



Hydrograph Report

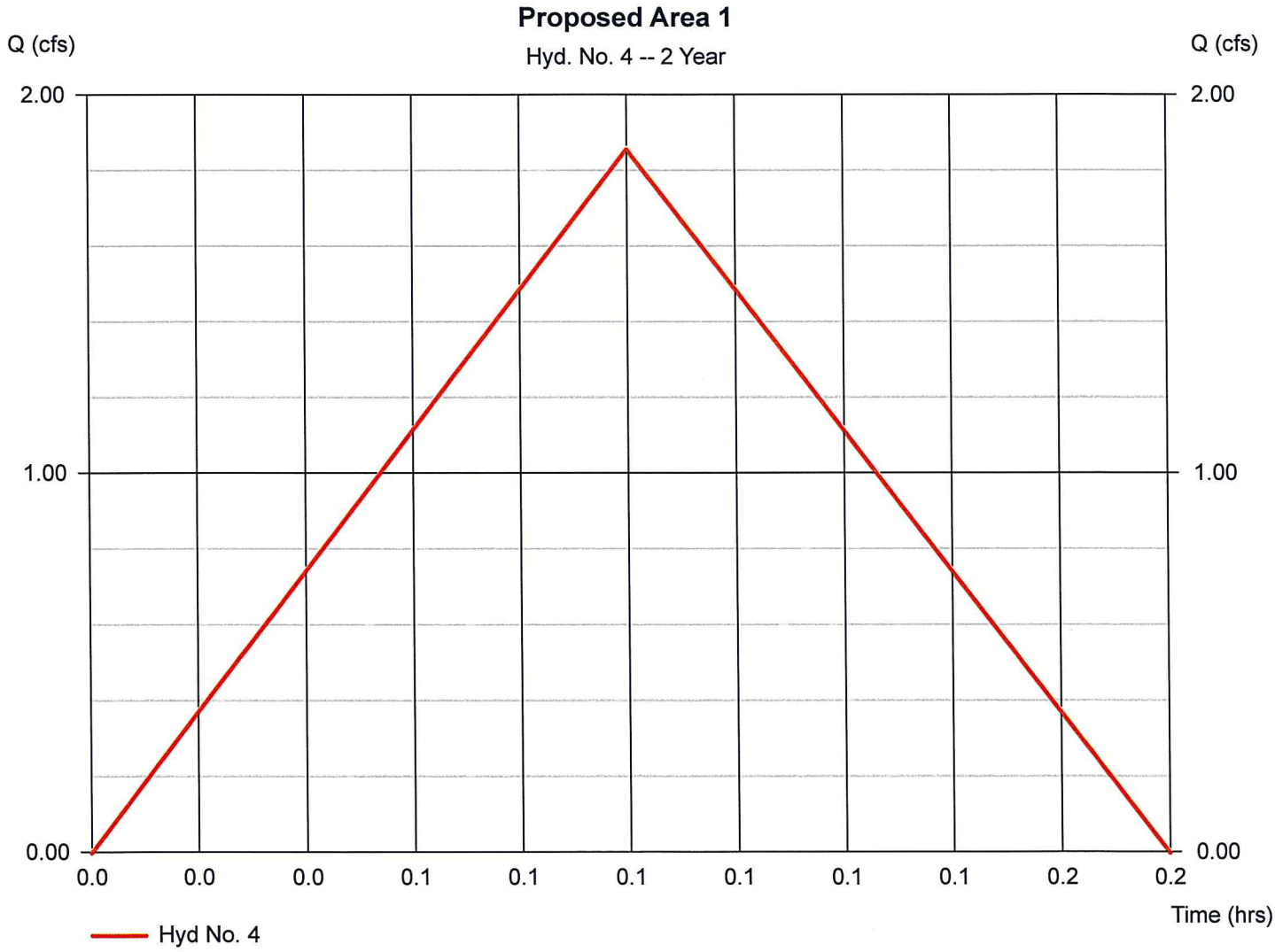
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066 Friday, Feb 17, 2023

Hyd. No. 4

Proposed Area 1

Hydrograph type	= Rational	Peak discharge	= 1.859 cfs
Storm frequency	= 2 yrs	Time to peak	= 0.08 hrs
Time interval	= 1 min	Hyd. volume	= 558 cuft
Drainage area	= 0.770 ac	Runoff coeff.	= 0.5*
Intensity	= 4.828 in/hr	Tc by User	= 5.00 min
IDF Curve	= GSD-60 NOAA.IDF	Asc/Rec limb fact	= 1/1

* Composite (Area/C) = [(0.440 x 0.90) + (0.330 x 0.20)] / 0.770



Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

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	2.033	1	5	610	------	------	------	Existing Area 1
2	Rational	1.103	1	5	331	------	------	------	Building 1
3	Reservoir	0.000	1	n/a	0	2	252.31	331	Infiltration
4	Rational	2.775	1	5	833	------	------	------	Proposed Area 1

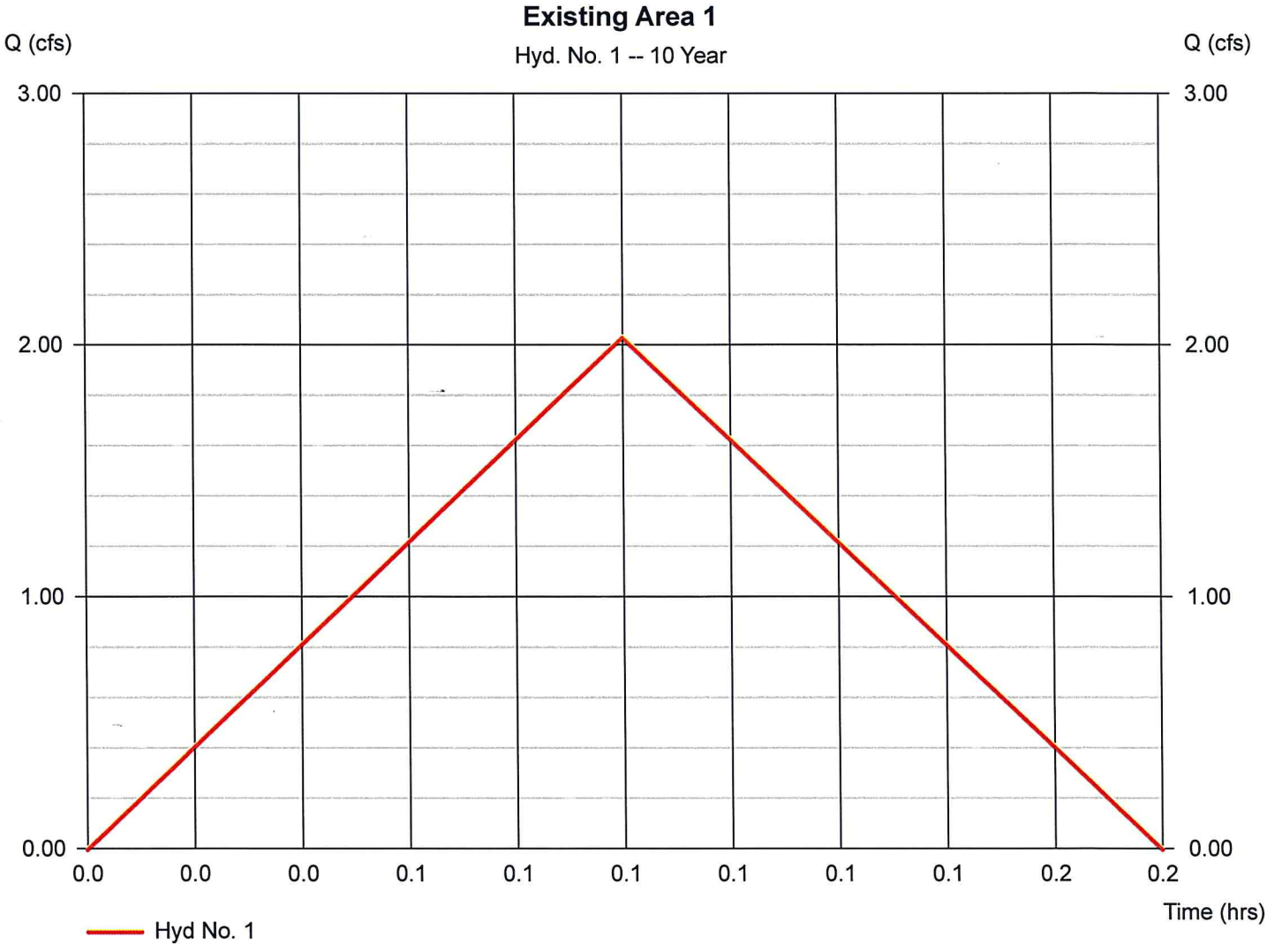
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066 Friday, Feb 17, 2023

Hyd. No. 1

Existing Area 1

Hydrograph type	= Rational	Peak discharge	= 2.033 cfs
Storm frequency	= 10 yrs	Time to peak	= 0.08 hrs
Time interval	= 1 min	Hyd. volume	= 610 cuft
Drainage area	= 0.940 ac	Runoff coeff.	= 0.3
Intensity	= 7.208 in/hr	Tc by User	= 5.00 min
IDF Curve	= GSD-60 NOAA.IDF	Asc/Rec limb fact	= 1/1

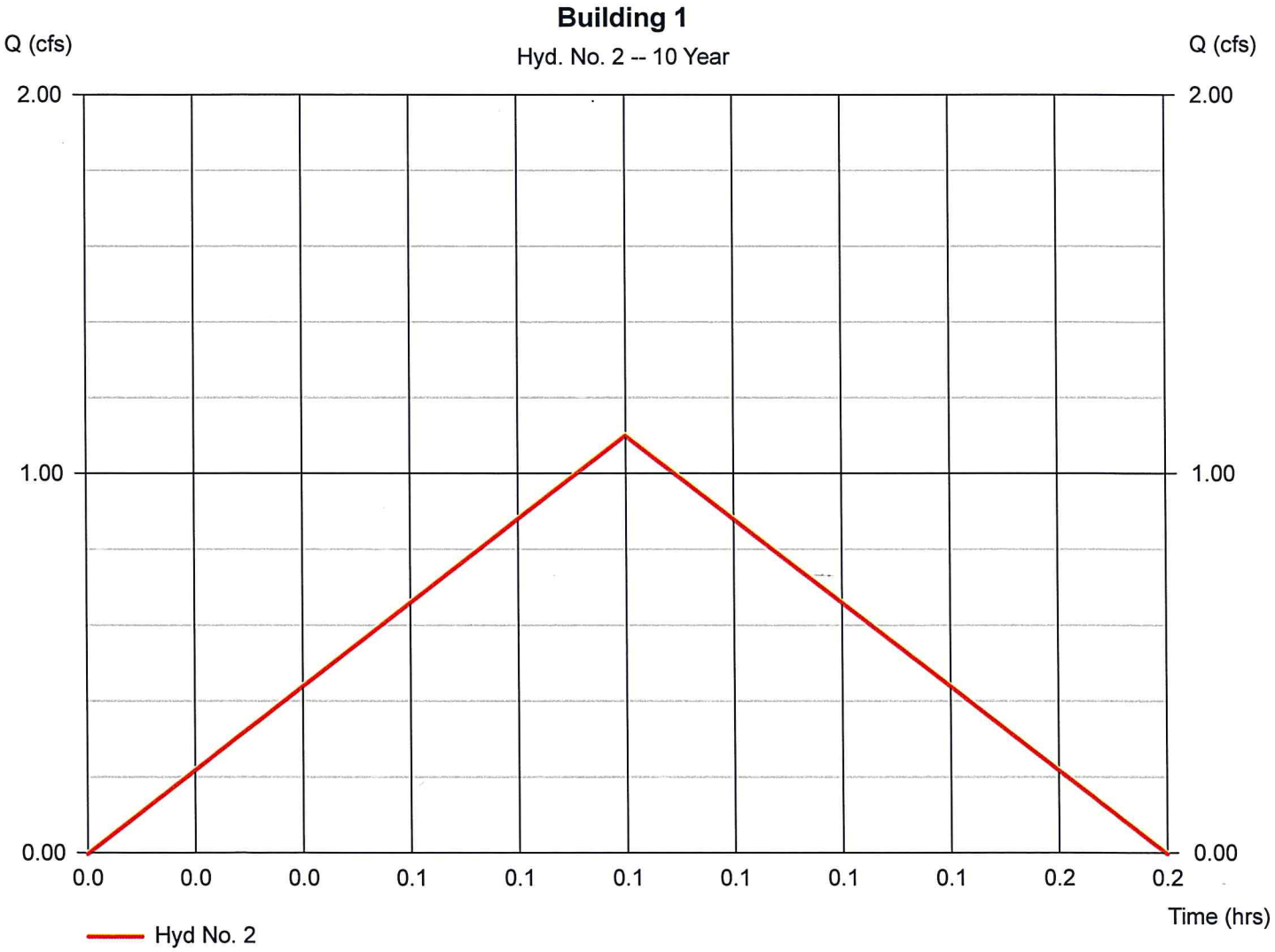


Hydrograph Report

Hyd. No. 2

Building 1

Hydrograph type	= Rational	Peak discharge	= 1.103 cfs
Storm frequency	= 10 yrs	Time to peak	= 0.08 hrs
Time interval	= 1 min	Hyd. volume	= 331 cuft
Drainage area	= 0.170 ac	Runoff coeff.	= 0.9
Intensity	= 7.208 in/hr	Tc by User	= 5.00 min
IDF Curve	= GSD-60 NOAA.IDF	Asc/Rec limb fact	= 1/1



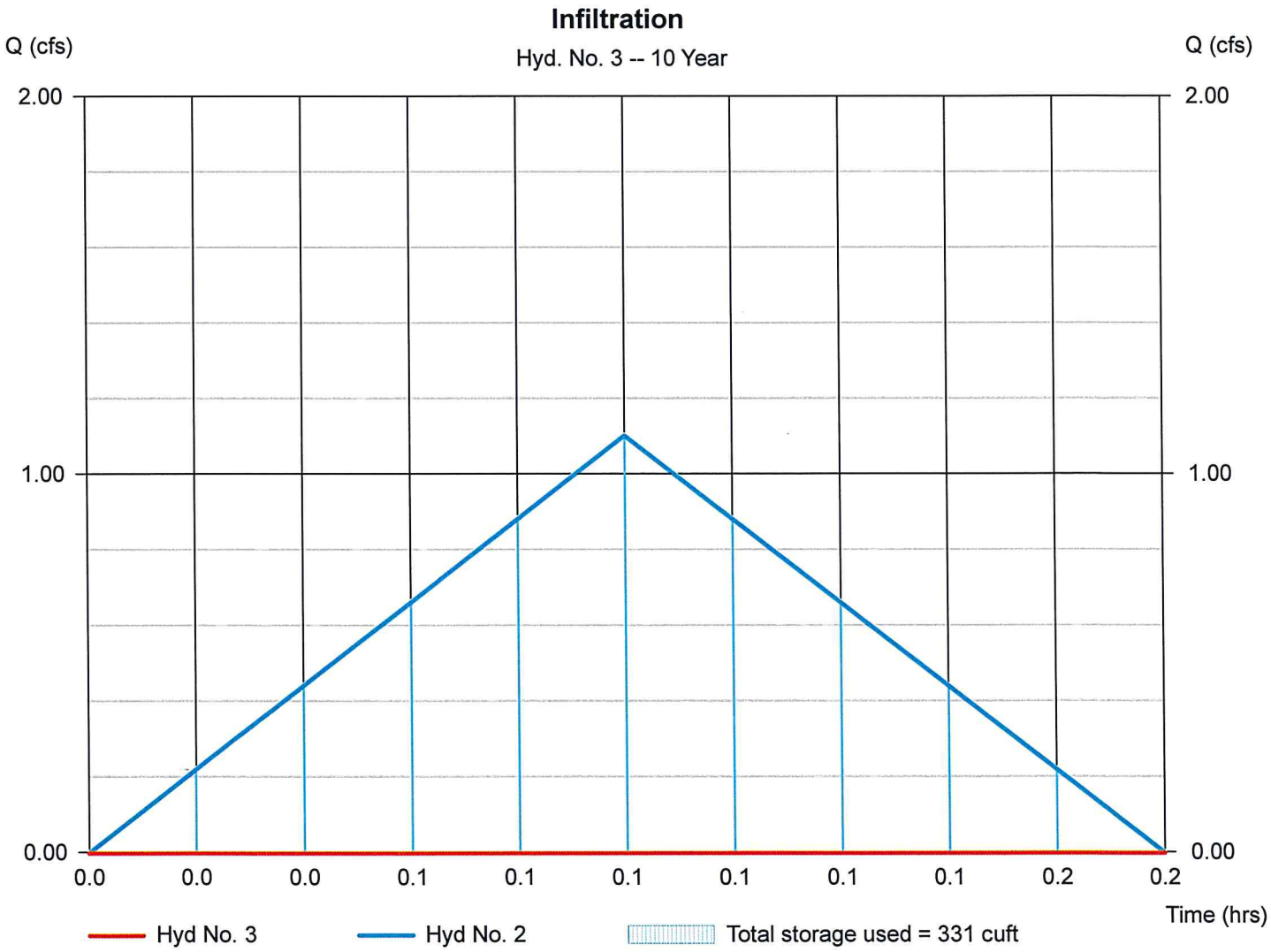
Hydrograph Report

Hyd. No. 3

Infiltration

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.	= 2 - Building 1	Max. Elevation	= 252.31 ft
Reservoir name	= Infiltration	Max. Storage	= 331 cuft

Storage Indication method used.



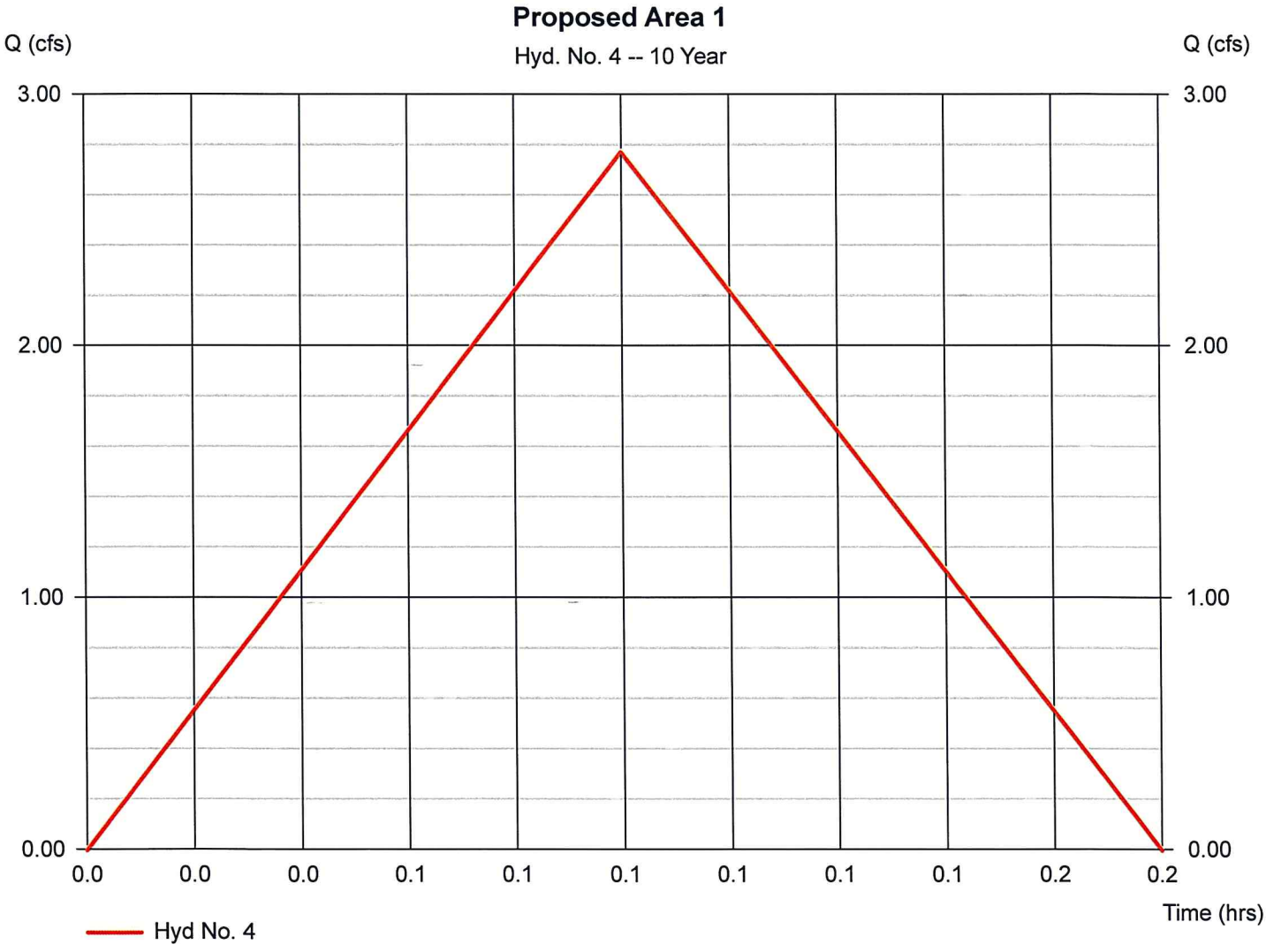
Hydrograph Report

Hyd. No. 4

Proposed Area 1

Hydrograph type	= Rational	Peak discharge	= 2.775 cfs
Storm frequency	= 10 yrs	Time to peak	= 0.08 hrs
Time interval	= 1 min	Hyd. volume	= 833 cuft
Drainage area	= 0.770 ac	Runoff coeff.	= 0.5*
Intensity	= 7.208 in/hr	Tc by User	= 5.00 min
IDF Curve	= GSD-60 NOAA.IDF	Asc/Rec limb fact	= 1/1

* Composite (Area/C) = [(0.440 x 0.90) + (0.330 x 0.20)] / 0.770



Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

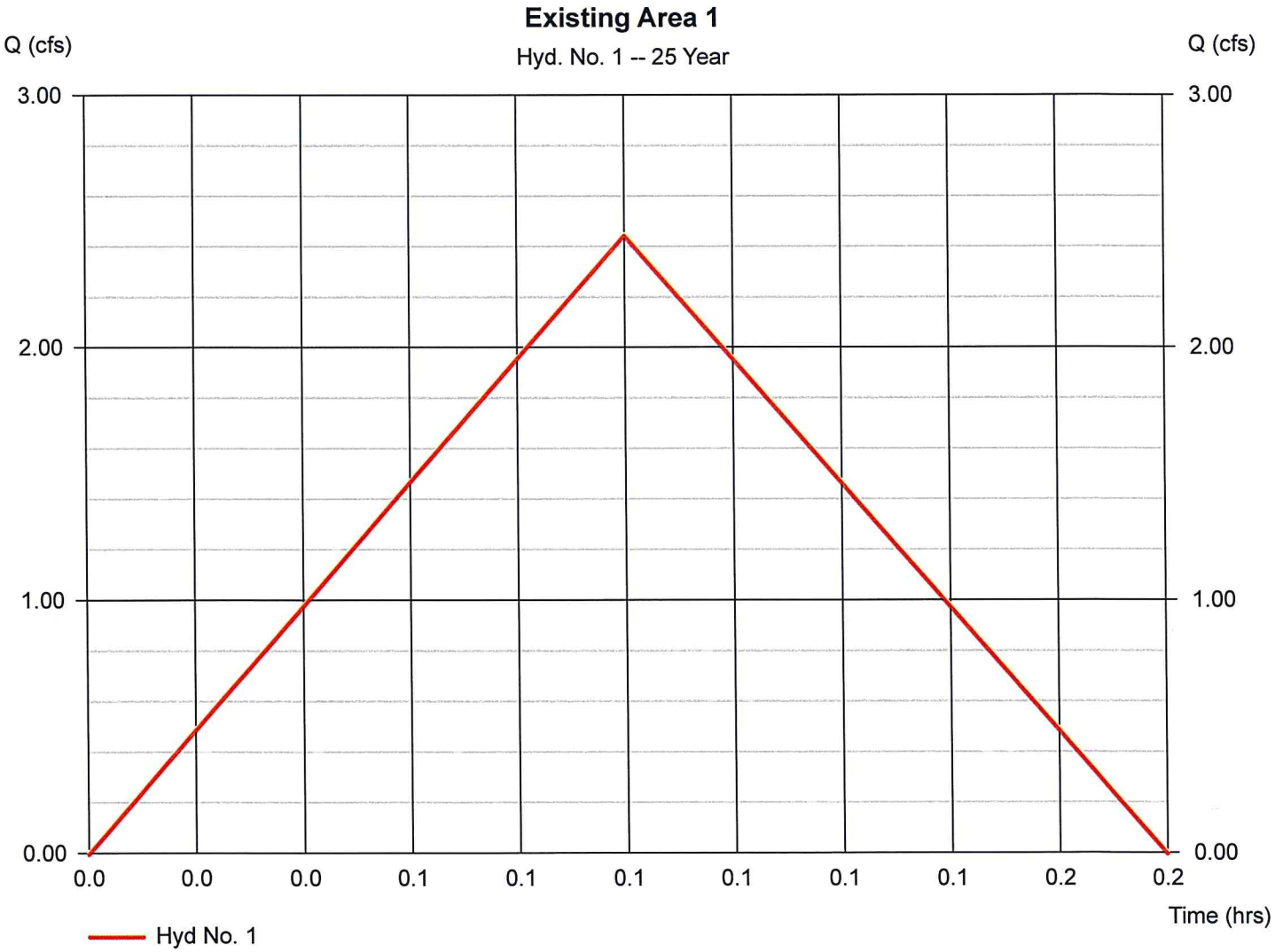
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	Rational	2.447	1	5	734	------	------	------	Existing Area 1
2	Rational	1.328	1	5	398	------	------	------	Building 1
3	Reservoir	0.000	1	n/a	0	2	252.98	398	Infiltration
4	Rational	3.341	1	5	1,002	------	------	------	Proposed Area 1

Hydrograph Report

Hyd. No. 1

Existing Area 1

Hydrograph type	= Rational	Peak discharge	= 2.447 cfs
Storm frequency	= 25 yrs	Time to peak	= 0.08 hrs
Time interval	= 1 min	Hyd. volume	= 734 cuft
Drainage area	= 0.940 ac	Runoff coeff.	= 0.3
Intensity	= 8.678 in/hr	Tc by User	= 5.00 min
IDF Curve	= GSD-60 NOAA.IDF	Asc/Rec limb fact	= 1/1

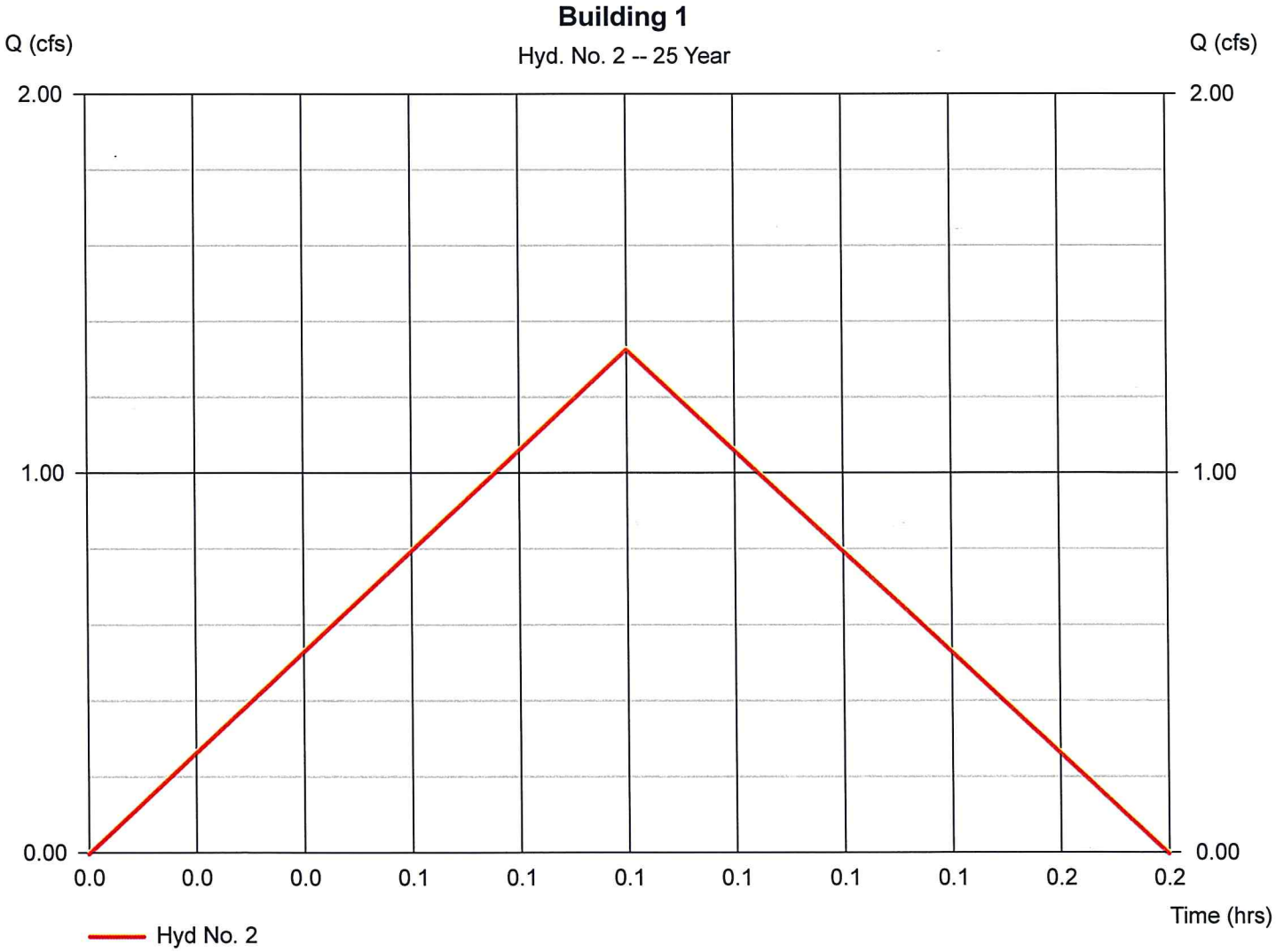


Hydrograph Report

Hyd. No. 2

Building 1

Hydrograph type	= Rational	Peak discharge	= 1.328 cfs
Storm frequency	= 25 yrs	Time to peak	= 0.08 hrs
Time interval	= 1 min	Hyd. volume	= 398 cuft
Drainage area	= 0.170 ac	Runoff coeff.	= 0.9
Intensity	= 8.678 in/hr	Tc by User	= 5.00 min
IDF Curve	= GSD-60 NOAA.IDF	Asc/Rec limb fact	= 1/1



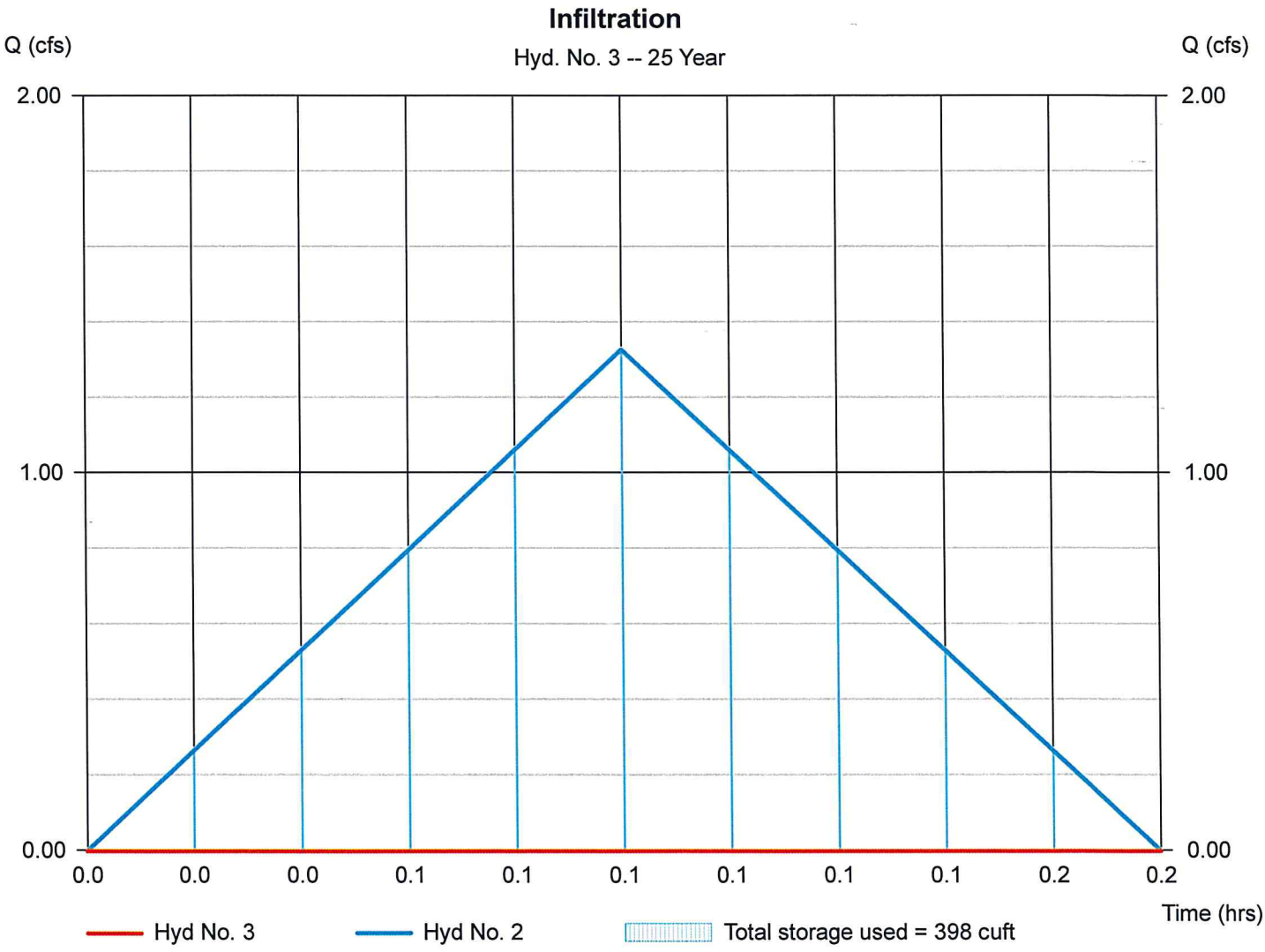
Hydrograph Report

Hyd. No. 3

Infiltration

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 25 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 2 - Building 1	Max. Elevation	= 252.98 ft
Reservoir name	= Infiltration	Max. Storage	= 398 cuft

Storage Indication method used.



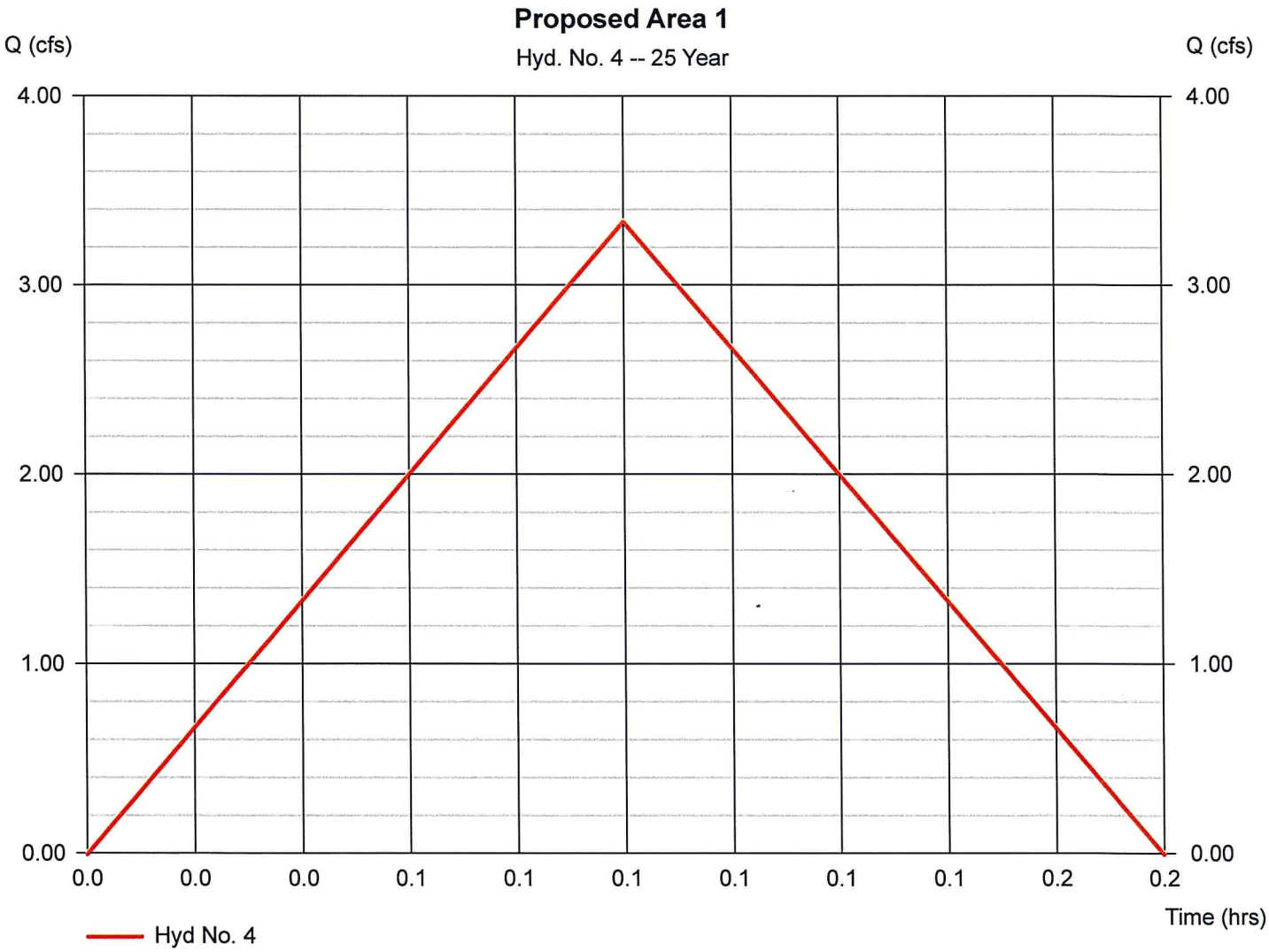
Hydrograph Report

Hyd. No. 4

Proposed Area 1

Hydrograph type	= Rational	Peak discharge	= 3.341 cfs
Storm frequency	= 25 yrs	Time to peak	= 0.08 hrs
Time interval	= 1 min	Hyd. volume	= 1,002 cuft
Drainage area	= 0.770 ac	Runoff coeff.	= 0.5*
Intensity	= 8.678 in/hr	Tc by User	= 5.00 min
IDF Curve	= GSD-60 NOAA.IDF	Asc/Rec limb fact	= 1/1

* Composite (Area/C) = [(0.440 x 0.90) + (0.330 x 0.20)] / 0.770



Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

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	2.754	1	5	826	------	------	------	Existing Area 1
2	Rational	1.494	1	5	448	------	------	------	Building 1
3	Reservoir	0.000	1	n/a	0	2	253.48	448	Infiltration
4	Rational	3.759	1	5	1,128	------	------	------	Proposed Area 1

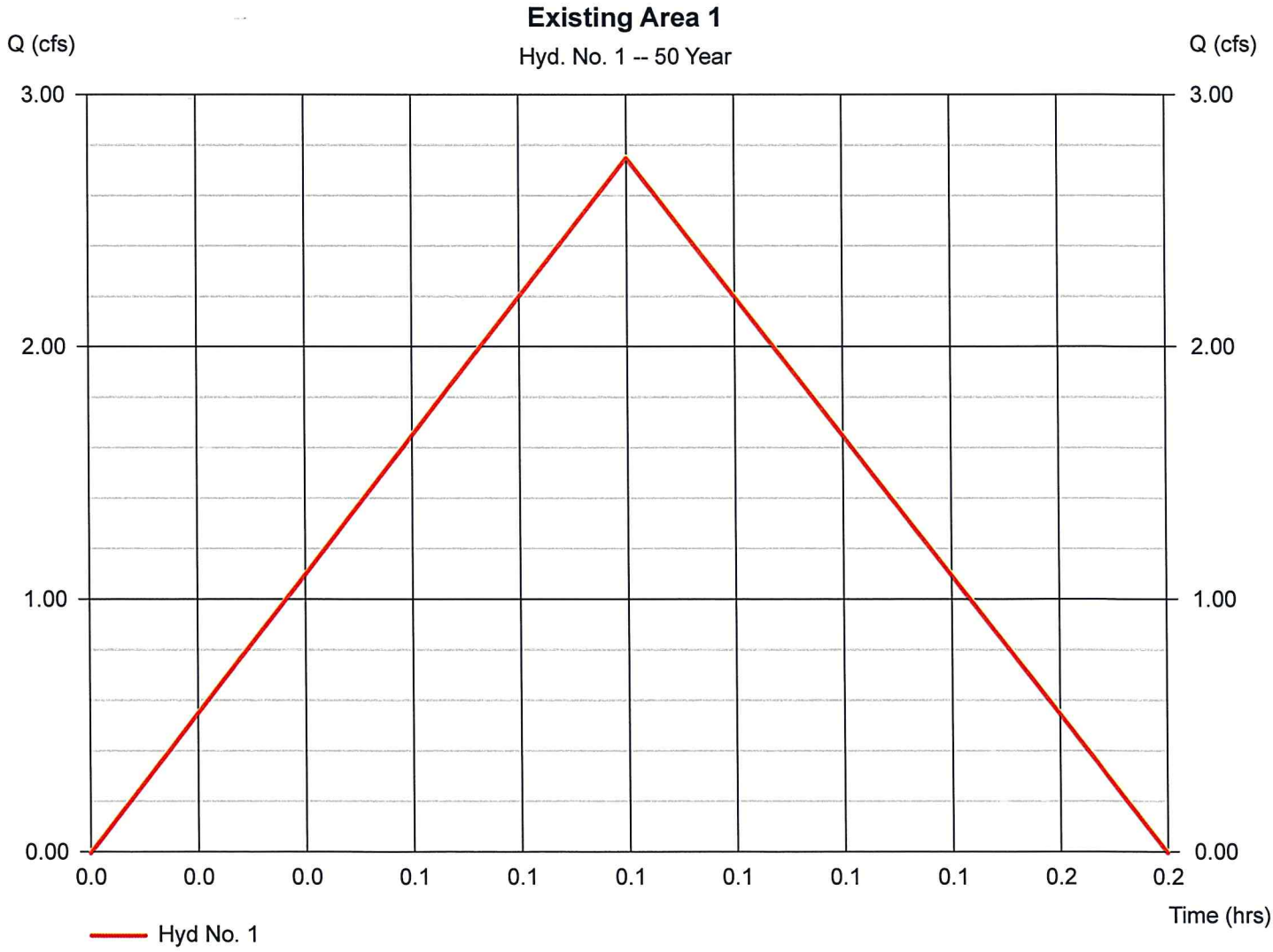
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066 Friday, Feb 17, 2023

Hyd. No. 1

Existing Area 1

Hydrograph type	= Rational	Peak discharge	= 2.754 cfs
Storm frequency	= 50 yrs	Time to peak	= 0.08 hrs
Time interval	= 1 min	Hyd. volume	= 826 cuft
Drainage area	= 0.940 ac	Runoff coeff.	= 0.3
Intensity	= 9.765 in/hr	Tc by User	= 5.00 min
IDF Curve	= GSD-60 NOAA.IDF	Asc/Rec limb fact	= 1/1

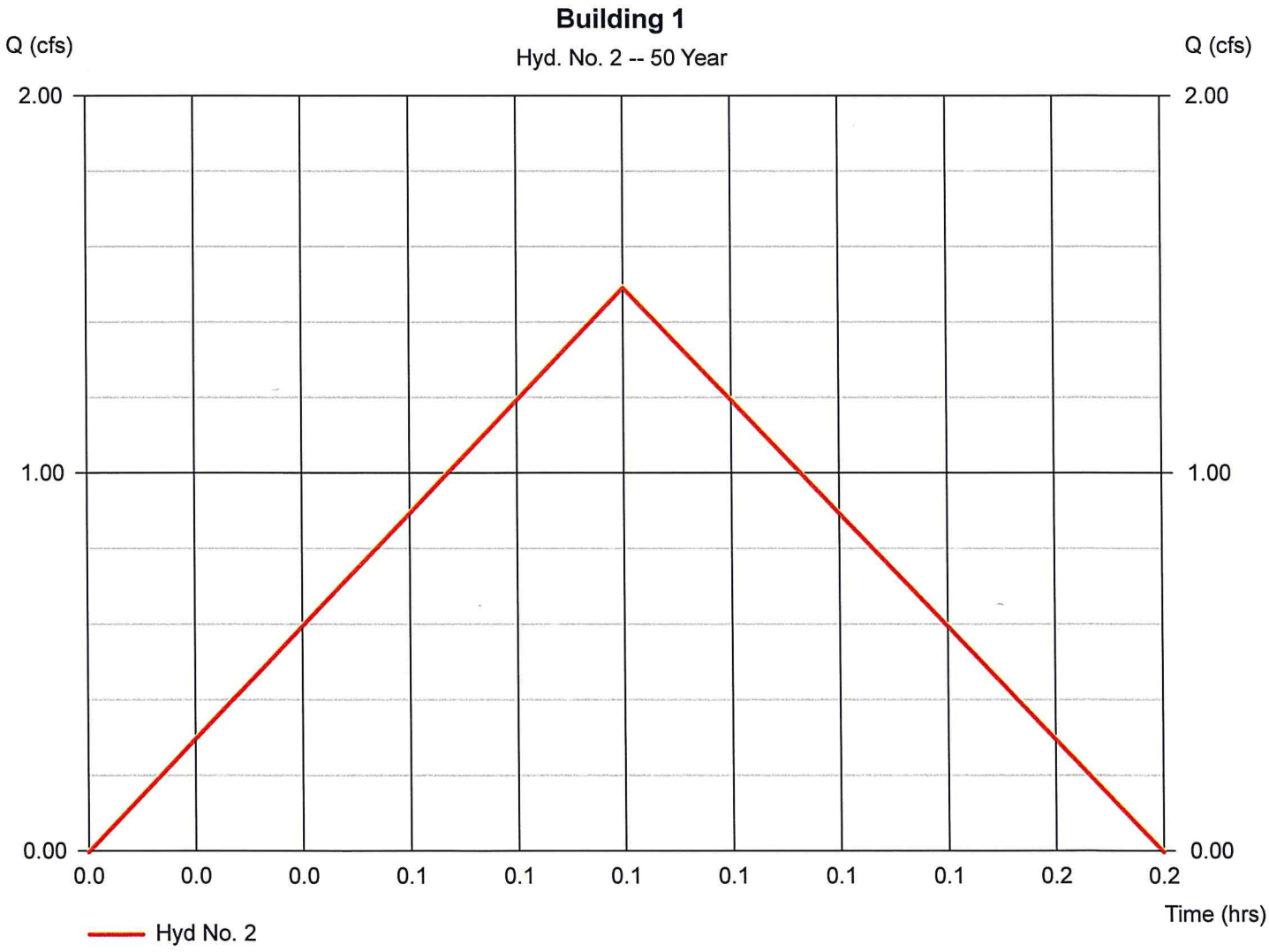


Hydrograph Report

Hyd. No. 2

Building 1

Hydrograph type	= Rational	Peak discharge	= 1.494 cfs
Storm frequency	= 50 yrs	Time to peak	= 0.08 hrs
Time interval	= 1 min	Hyd. volume	= 448 cuft
Drainage area	= 0.170 ac	Runoff coeff.	= 0.9
Intensity	= 9.765 in/hr	Tc by User	= 5.00 min
IDF Curve	= GSD-60 NOAA.IDF	Asc/Rec limb fact	= 1/1



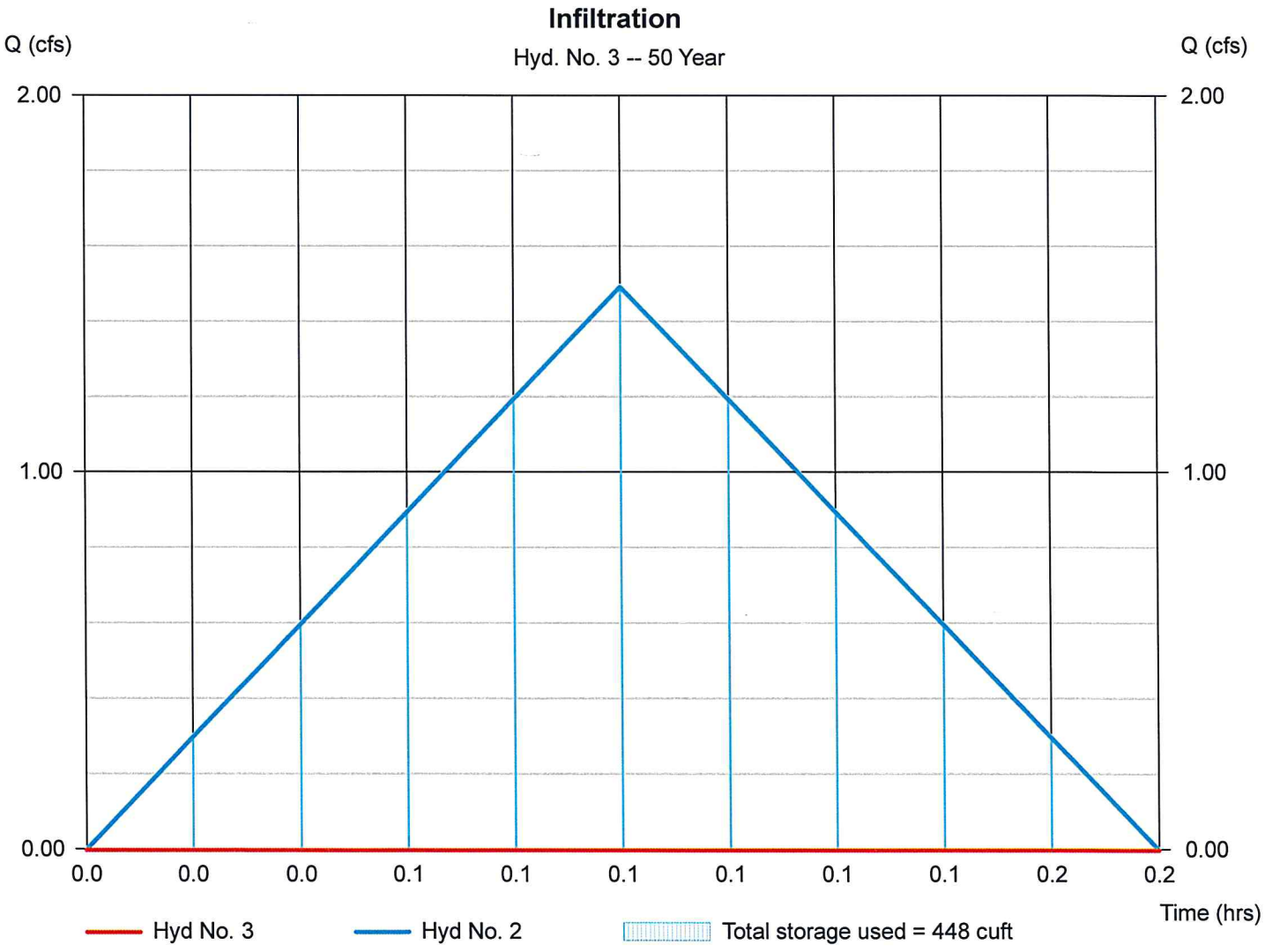
Hydrograph Report

Hyd. No. 3

Infiltration

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 50 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 2 - Building 1	Max. Elevation	= 253.48 ft
Reservoir name	= Infiltration	Max. Storage	= 448 cuft

Storage Indication method used.



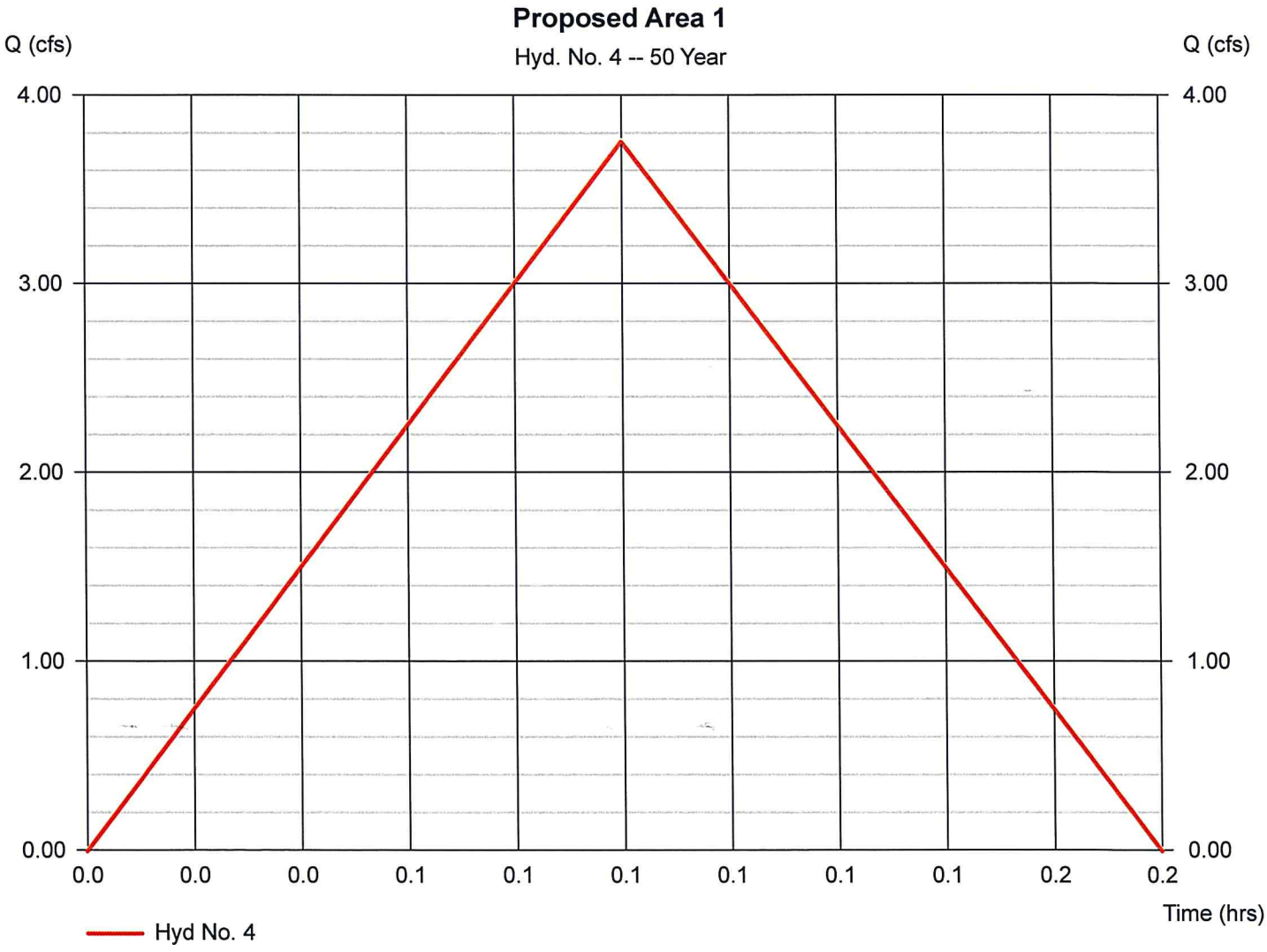
Hydrograph Report

Hyd. No. 4

Proposed Area 1

Hydrograph type	= Rational	Peak discharge	= 3.759 cfs
Storm frequency	= 50 yrs	Time to peak	= 0.08 hrs
Time interval	= 1 min	Hyd. volume	= 1,128 cuft
Drainage area	= 0.770 ac	Runoff coeff.	= 0.5*
Intensity	= 9.765 in/hr	Tc by User	= 5.00 min
IDF Curve	= GSD-60 NOAA.IDF	Asc/Rec limb fact	= 1/1

* Composite (Area/C) = [(0.440 x 0.90) + (0.330 x 0.20)] / 0.770



Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

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	3.101	1	5	930	------	------	------	Existing Area 1
2	Rational	1.682	1	5	505	------	------	------	Building 1
3	Reservoir	0.000	1	n/a	0	2	254.05	505	Infiltration
4	Rational	4.233	1	5	1,270	------	------	------	Proposed Area 1

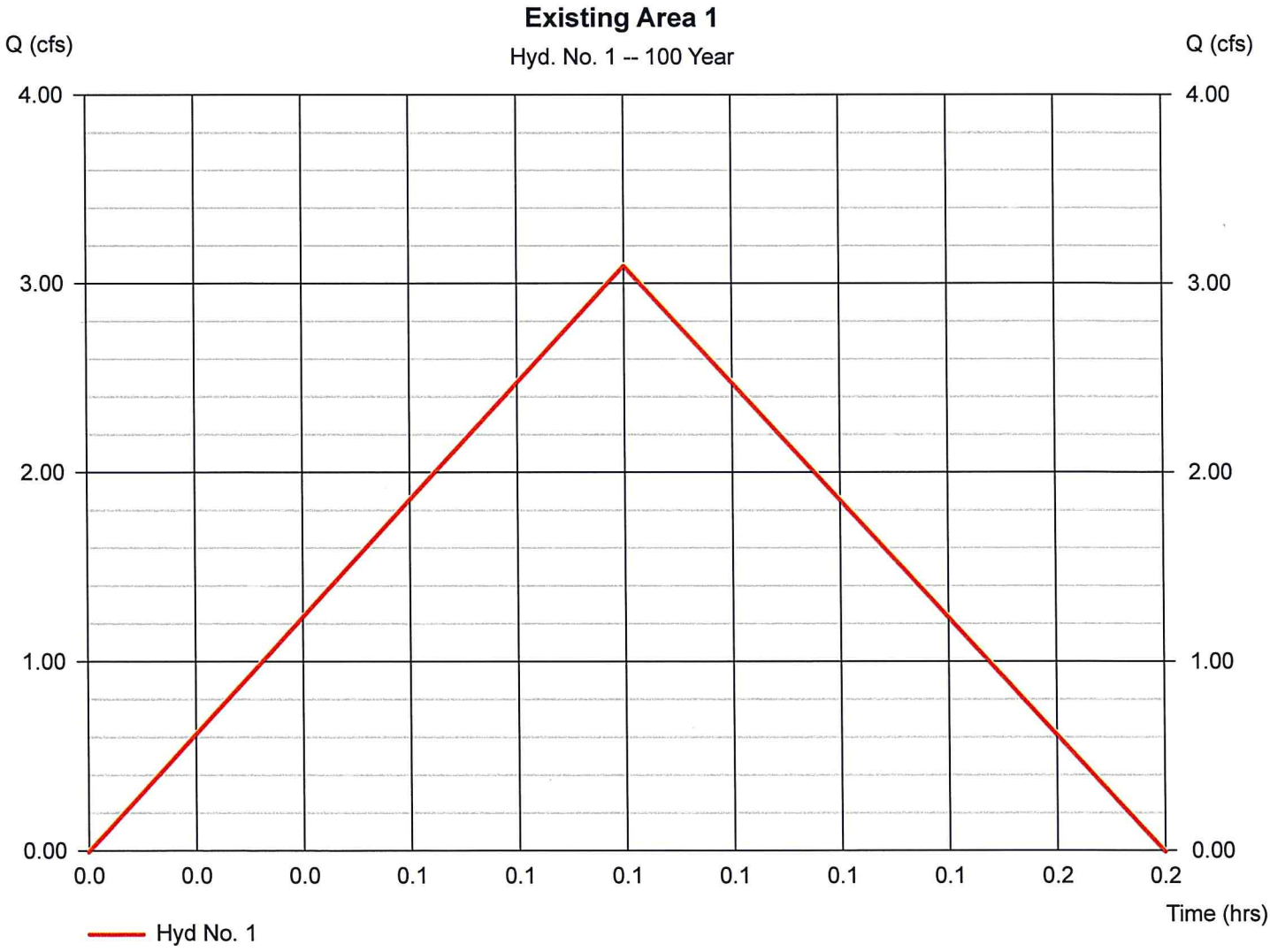
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066 Friday, Feb 17, 2023

Hyd. No. 1

Existing Area 1

Hydrograph type	= Rational	Peak discharge	= 3.101 cfs
Storm frequency	= 100 yrs	Time to peak	= 0.08 hrs
Time interval	= 1 min	Hyd. volume	= 930 cuft
Drainage area	= 0.940 ac	Runoff coeff.	= 0.3
Intensity	= 10.995 in/hr	Tc by User	= 5.00 min
IDF Curve	= GSD-60 NOAA.IDF	Asc/Rec limb fact	= 1/1

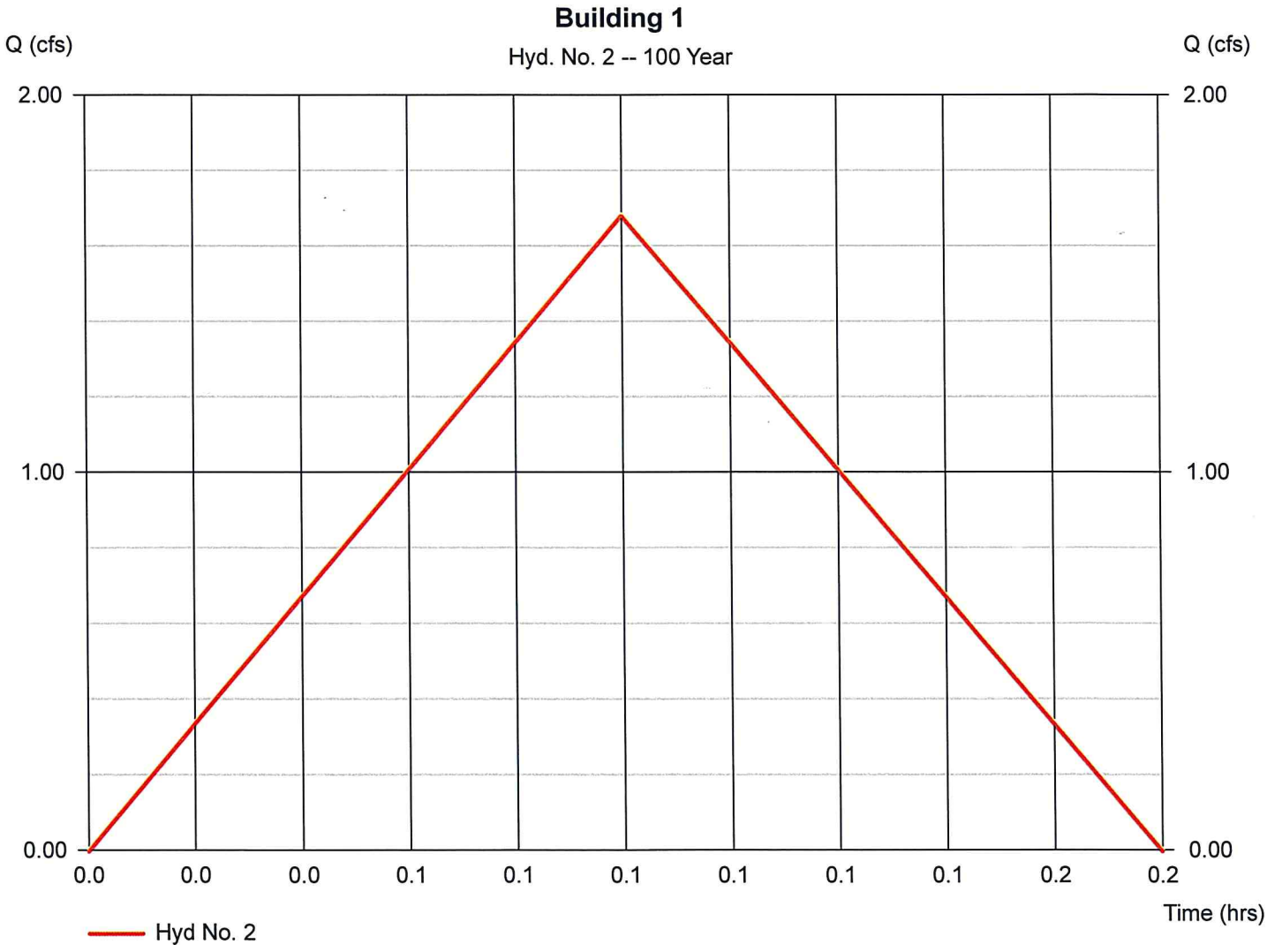


Hydrograph Report

Hyd. No. 2

Building 1

Hydrograph type	= Rational	Peak discharge	= 1.682 cfs
Storm frequency	= 100 yrs	Time to peak	= 0.08 hrs
Time interval	= 1 min	Hyd. volume	= 505 cuft
Drainage area	= 0.170 ac	Runoff coeff.	= 0.9
Intensity	= 10.995 in/hr	Tc by User	= 5.00 min
IDF Curve	= GSD-60 NOAA.IDF	Asc/Rec limb fact	= 1/1



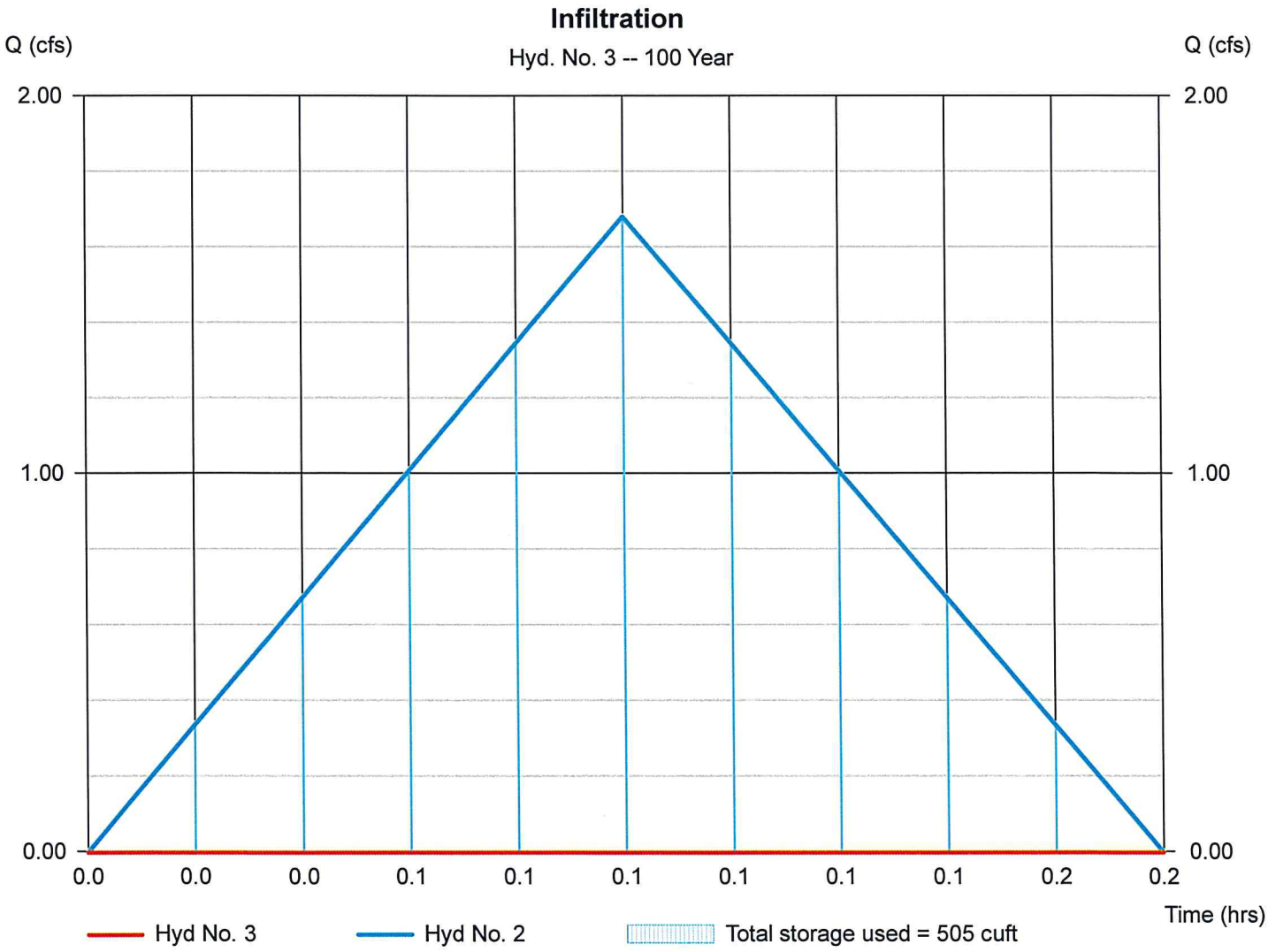
Hydrograph Report

Hyd. No. 3

Infiltration

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.	= 2 - Building 1	Max. Elevation	= 254.05 ft
Reservoir name	= Infiltration	Max. Storage	= 505 cuft

Storage Indication method used.



Hydrograph Report

Hyd. No. 4

Proposed Area 1

Hydrograph type	= Rational	Peak discharge	= 4.233 cfs
Storm frequency	= 100 yrs	Time to peak	= 0.08 hrs
Time interval	= 1 min	Hyd. volume	= 1,270 cuft
Drainage area	= 0.770 ac	Runoff coeff.	= 0.5*
Intensity	= 10.995 in/hr	Tc by User	= 5.00 min
IDF Curve	= GSD-60 NOAA.IDF	Asc/Rec limb fact	= 1/1

* Composite (Area/C) = [(0.440 x 0.90) + (0.330 x 0.20)] / 0.770