

DATE 6/15/26

2021-049

REV. 9/16/26

LINDO CONSTRUCTION, LLC

CULVERT DESIGN

82 MAPLE AVE

MONTVILLE, CONNECTICUT

DRAINAGE AREA = 5.2 ACRES,

$$C = 0.35$$

$$T_C = 18 \text{ min}$$

LENGTH 700'

SLOPE: 12%

$$i_{25} = 4.3 \text{ in/hr}$$

$$Q_{p25} = (0.35)(4.5 \text{ in/hr})(5.2 \text{ AC.})$$

$$= 7.8 \text{ CFS}$$

USE 18" CULVERT

@ HW 2.3 FT

$$Q_{MAX} = 8.1 \text{ CFS} \checkmark$$



Culvert Report

Project filename: Try 1.cst

Culvert Studio v 2.0.0.34

09-16-2026

Culvert 1

Culvert 1

CULVERT

Shape = Circular
 Inlet Edge = Beveled
 Material = Concrete
 Manning's n = 0.012
 Rise = 18 in
 Span = 18 in
 Invert Elev. Down = 106.00 ft
 Length = 56.0 ft
 Slope = 0.011 ft/ft
 Invert Elev. Up = 106.60 ft
 No. Barrels = 1
 Plan Skew Angle = 0 degrees

EMBANKMENT

Top Width = 6.00 ft
 Top Elevation = 109.50 ft
 Crest Length = 50.00 ft

DISCHARGE

Method = Rational Method
 Drainage Area = 5.20 ac
 Runoff Coefficient = 0.35
 Time of Concentration = 18 min

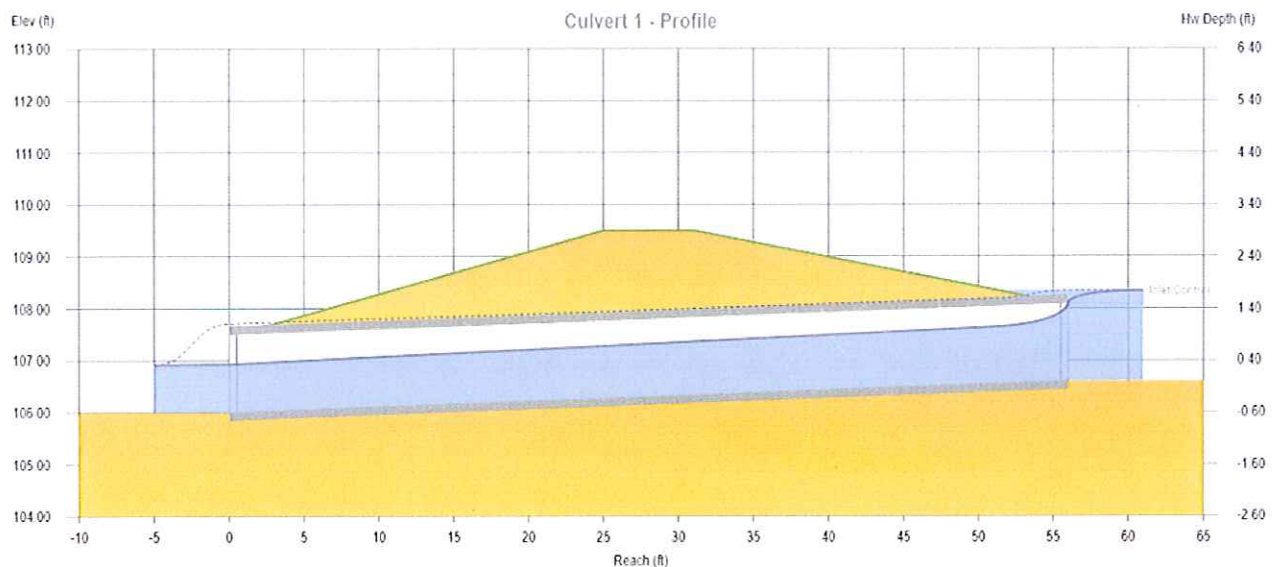
TAILWATER

Tailwater Elevation = Normal Depth

CALCULATION SAMPLE, 25 - Year Event

Discharge			Velocity		Depth		HGL @ Hw/D = 1.16		
Total	Culvert	Over Top	Down	Up	Down	Up	Down	Up	Hw
(cfs)	(cfs)	(cfs)	(ft/s)	(ft/s)	(in)	(in)	(ft)	(ft)	(ft)
8.13	8.13	0.00	7.08	5.80	11.1	13.3	106.93	107.71	108.34

Notes IDF Curves = 82 Maple Ave.idf,



Culvert Report

APRON SIZING

Project filename: Try 1.cst

Culvert Studio v 2.0.0.34

09-16-2026

Culvert 1

Culvert 1

CULVERT

Shape = Circular
Inlet Edge = Beveled
Material = Concrete
Manning's n = 0.012
Rise = 18 in
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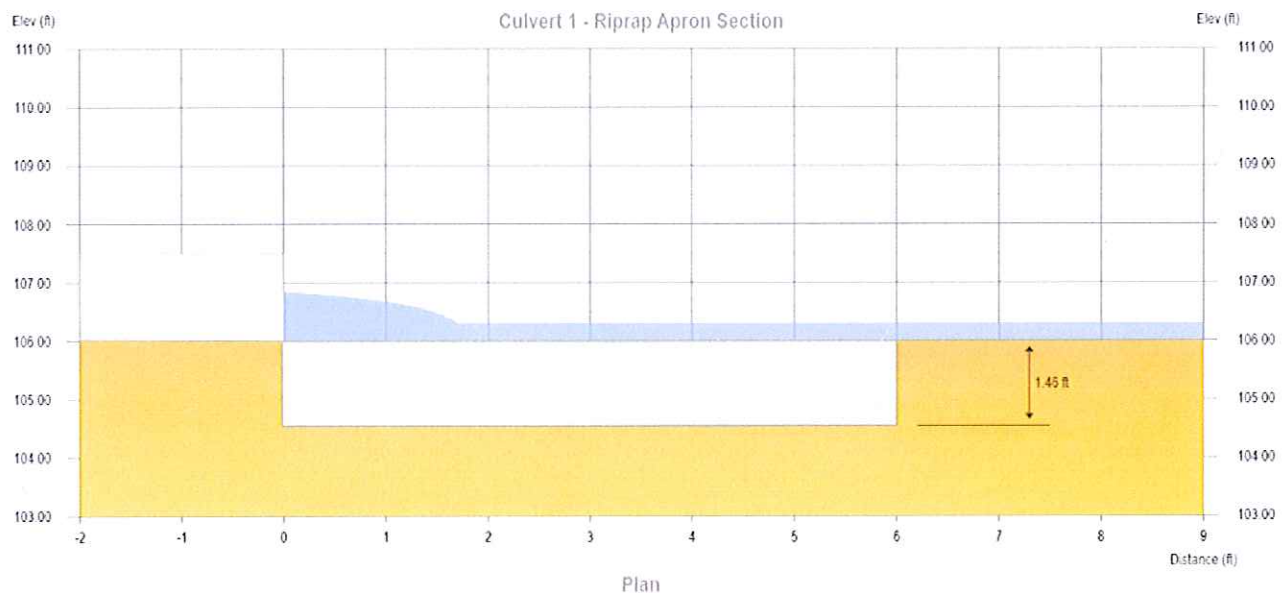
TAILWATER

Tailwater Elevation = Normal Depth

CALCULATION SAMPLE, 25 - Year Event

Discharge			Velocity		Riprap Apron Design				
Total	Culvert	Over Top	Down	Up	Length	Width	Depth	D50	Velocity
(cfs)	(cfs)	(cfs)	(ft/s)	(ft/s)	(ft)	(ft)	(ft)	(in)	(ft/s)
8.13	8.13	0.00	7.08	5.80	6.00	8.52	1.46	5	3.14

Notes IDF Curves = 82 Maple Ave idf;



FWHA Class 1, D50 = 5 in



NOAA Atlas 14, Volume 10, Version 3
 Location name: Uncasville, Connecticut, USA*
 Latitude: 41.4384°, Longitude: -72.121°
 Elevation: 149 ft**
 * source: ESRI Maps
 ** source: USGS



POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sandra Pavlovic, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Orlan Wilhite

NOAA, National Weather Service, Silver Spring, Maryland

[PF_tabular](#) | [PF_graphical](#) | [Maps & aeriels](#)

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour) ¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	4.08 (3.19-5.11)	4.87 (3.80-6.11)	6.17 (4.79-7.74)	7.25 (5.60-9.14)	8.74 (6.54-11.4)	9.85 (7.22-13.1)	11.0 (7.85-15.1)	12.3 (8.32-17.2)	14.3 (9.24-20.4)	15.8 (10.0-23.0)
10-min	2.89 (2.26-3.62)	3.46 (2.69-4.33)	4.37 (3.40-5.50)	5.14 (3.97-6.48)	6.19 (4.63-8.09)	6.98 (5.11-9.28)	7.81 (5.56-10.7)	8.75 (5.89-12.2)	10.1 (6.55-14.4)	11.2 (7.10-16.3)
15-min	2.27 (1.77-2.84)	2.71 (2.11-3.40)	3.43 (2.66-4.30)	4.03 (3.11-5.08)	4.85 (3.63-6.34)	5.47 (4.01-7.28)	6.12 (4.36-8.40)	6.86 (4.62-9.54)	7.92 (5.14-11.3)	8.80 (5.57-12.8)
30-min	1.60 (1.25-2.00)	1.91 (1.49-2.40)	2.42 (1.88-3.04)	2.84 (2.20-3.58)	3.42 (2.56-4.47)	3.85 (2.83-5.13)	4.31 (3.07-5.91)	4.83 (3.26-6.72)	5.58 (3.62-7.98)	6.19 (3.92-9.00)
60-min	1.03 (0.807-1.29)	1.23 (0.963-1.55)	1.56 (1.21-1.96)	1.83 (1.42-2.31)	2.21 (1.65-2.88)	2.49 (1.82-3.31)	2.78 (1.98-3.82)	3.12 (2.10-4.34)	3.60 (2.33-5.14)	3.99 (2.53-5.80)
2-hr	0.680 (0.535-0.845)	0.810 (0.637-1.01)	1.02 (0.802-1.28)	1.20 (0.935-1.50)	1.44 (1.09-1.88)	1.63 (1.20-2.15)	1.82 (1.31-2.48)	2.04 (1.38-2.82)	2.37 (1.54-3.36)	2.64 (1.68-3.80)
3-hr	0.526 (0.415-0.651)	0.626 (0.494-0.775)	0.790 (0.622-0.982)	0.926 (0.724-1.16)	1.11 (0.843-1.44)	1.25 (0.930-1.65)	1.40 (1.01-1.90)	1.57 (1.07-2.16)	1.83 (1.19-2.58)	2.04 (1.30-2.92)
6-hr	0.334 (0.266-0.411)	0.397 (0.316-0.488)	0.500 (0.396-0.616)	0.585 (0.461-0.724)	0.702 (0.536-0.901)	0.790 (0.590-1.03)	0.883 (0.640-1.19)	0.991 (0.676-1.35)	1.15 (0.754-1.61)	1.28 (0.820-1.82)
12-hr	0.205 (0.165-0.250)	0.243 (0.195-0.297)	0.305 (0.244-0.374)	0.357 (0.284-0.439)	0.428 (0.329-0.545)	0.481 (0.362-0.623)	0.538 (0.392-0.718)	0.603 (0.414-0.813)	0.698 (0.460-0.967)	0.777 (0.499-1.09)
24-hr	0.120 (0.097-0.146)	0.143 (0.116-0.174)	0.181 (0.146-0.220)	0.213 (0.170-0.260)	0.256 (0.198-0.323)	0.288 (0.218-0.370)	0.323 (0.237-0.428)	0.363 (0.250-0.485)	0.422 (0.279-0.579)	0.471 (0.304-0.657)
2-day	0.067 (0.055-0.081)	0.081 (0.066-0.097)	0.104 (0.084-0.125)	0.122 (0.099-0.148)	0.148 (0.115-0.186)	0.167 (0.128-0.214)	0.188 (0.139-0.248)	0.212 (0.147-0.282)	0.249 (0.166-0.339)	0.281 (0.182-0.388)
3-day	0.048 (0.040-0.058)	0.058 (0.048-0.070)	0.075 (0.061-0.090)	0.088 (0.071-0.106)	0.107 (0.084-0.134)	0.121 (0.092-0.154)	0.135 (0.101-0.178)	0.153 (0.106-0.202)	0.180 (0.120-0.244)	0.203 (0.132-0.279)
4-day	0.039 (0.032-0.047)	0.047 (0.038-0.056)	0.060 (0.049-0.071)	0.070 (0.057-0.084)	0.085 (0.067-0.106)	0.096 (0.074-0.122)	0.107 (0.080-0.141)	0.122 (0.085-0.160)	0.143 (0.095-0.192)	0.161 (0.104-0.220)
7-day	0.026 (0.022-0.031)	0.031 (0.026-0.037)	0.039 (0.032-0.047)	0.046 (0.038-0.055)	0.055 (0.043-0.068)	0.062 (0.048-0.078)	0.069 (0.052-0.090)	0.078 (0.054-0.102)	0.091 (0.061-0.121)	0.101 (0.066-0.138)
10-day	0.021 (0.018-0.025)	0.025 (0.021-0.030)	0.031 (0.025-0.037)	0.036 (0.029-0.043)	0.042 (0.033-0.052)	0.047 (0.037-0.059)	0.053 (0.039-0.068)	0.059 (0.041-0.076)	0.068 (0.045-0.090)	0.075 (0.049-0.102)
20-day	0.015 (0.013-0.018)	0.017 (0.014-0.020)	0.020 (0.017-0.024)	0.023 (0.019-0.027)	0.026 (0.021-0.032)	0.029 (0.022-0.036)	0.032 (0.024-0.040)	0.035 (0.024-0.045)	0.039 (0.026-0.051)	0.042 (0.027-0.056)
30-day	0.012 (0.010-0.015)	0.014 (0.011-0.016)	0.016 (0.013-0.019)	0.018 (0.015-0.021)	0.020 (0.016-0.024)	0.022 (0.017-0.027)	0.024 (0.018-0.030)	0.026 (0.018-0.033)	0.028 (0.019-0.037)	0.030 (0.019-0.040)
45-day	0.010 (0.009-0.012)	0.011 (0.009-0.013)	0.013 (0.011-0.015)	0.014 (0.012-0.016)	0.016 (0.012-0.019)	0.017 (0.013-0.021)	0.018 (0.014-0.023)	0.019 (0.014-0.025)	0.021 (0.014-0.027)	0.022 (0.014-0.029)
60-day	0.009 (0.007-0.010)	0.010 (0.008-0.011)	0.011 (0.009-0.013)	0.012 (0.010-0.014)	0.013 (0.010-0.016)	0.014 (0.011-0.017)	0.015 (0.011-0.019)	0.016 (0.011-0.020)	0.017 (0.011-0.022)	0.018 (0.012-0.023)

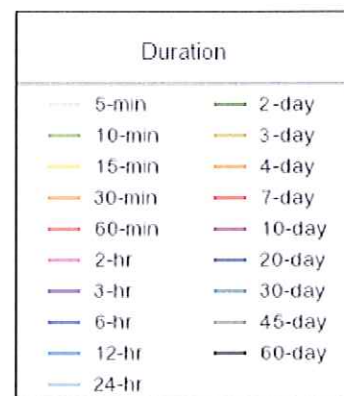
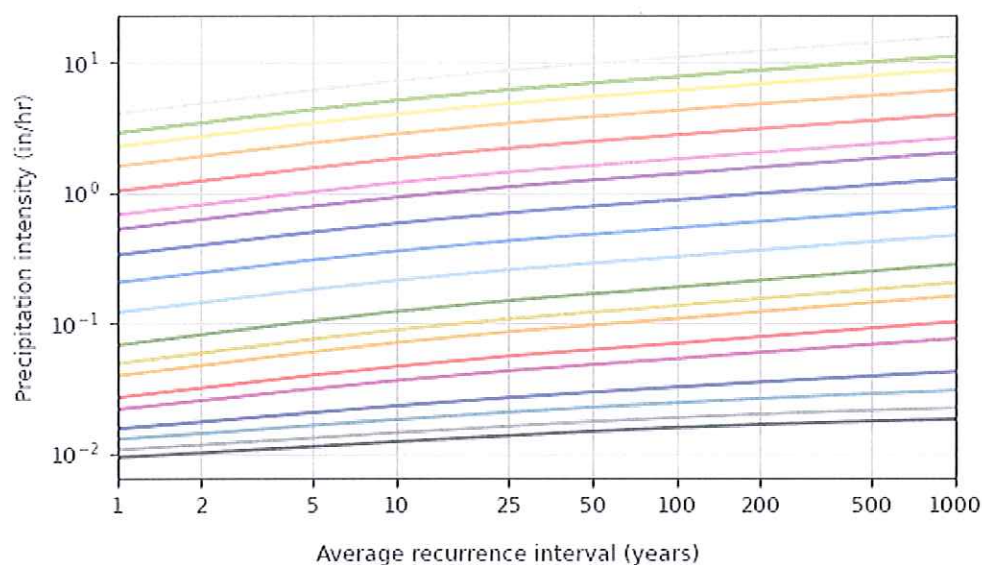
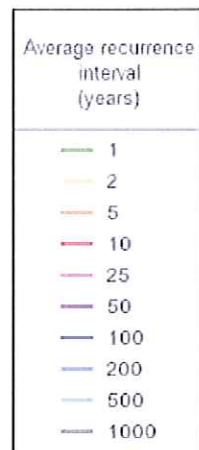
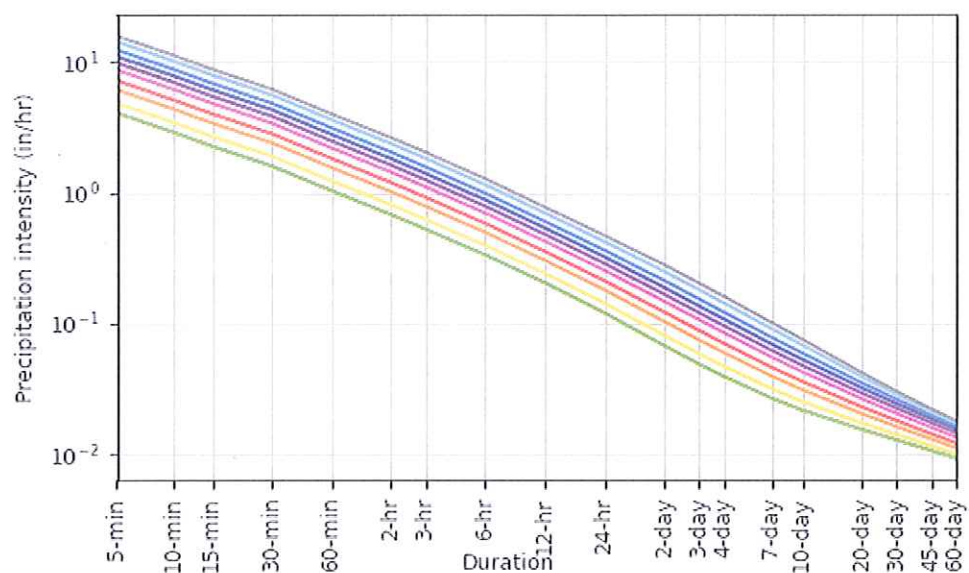
¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).
 Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.
 Please refer to NOAA Atlas 14 document for more information.

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PF graphical

PDS-based intensity-duration-frequency (IDF) curves

Latitude: 41.4384°, Longitude: -72.1210°



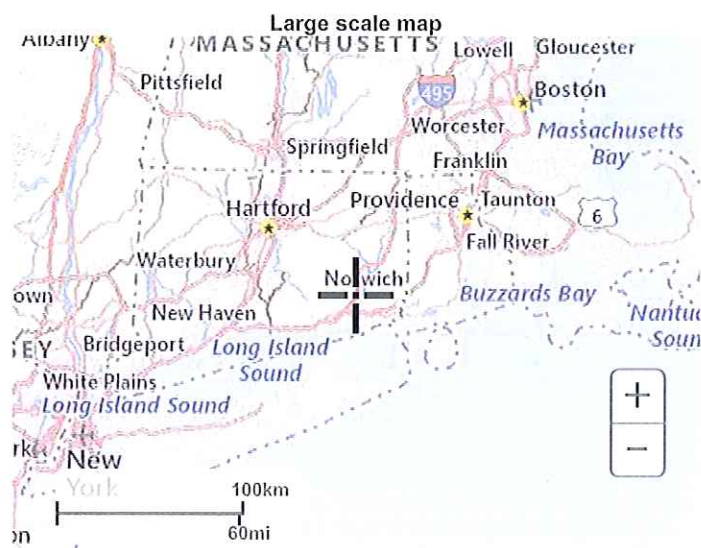
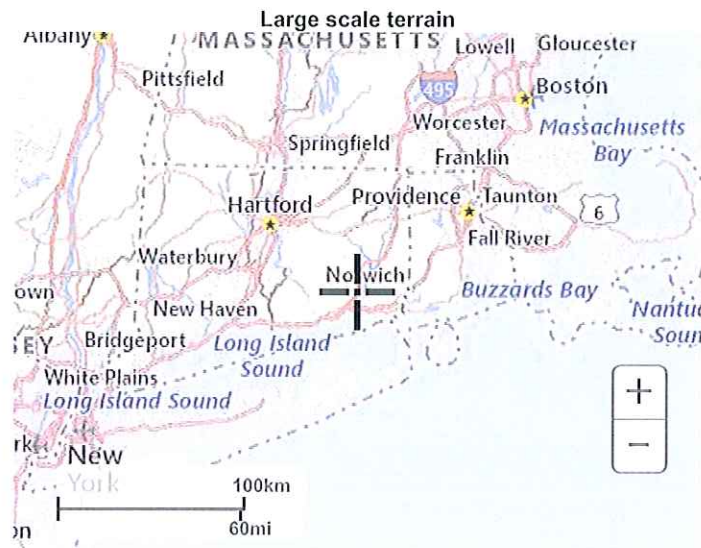
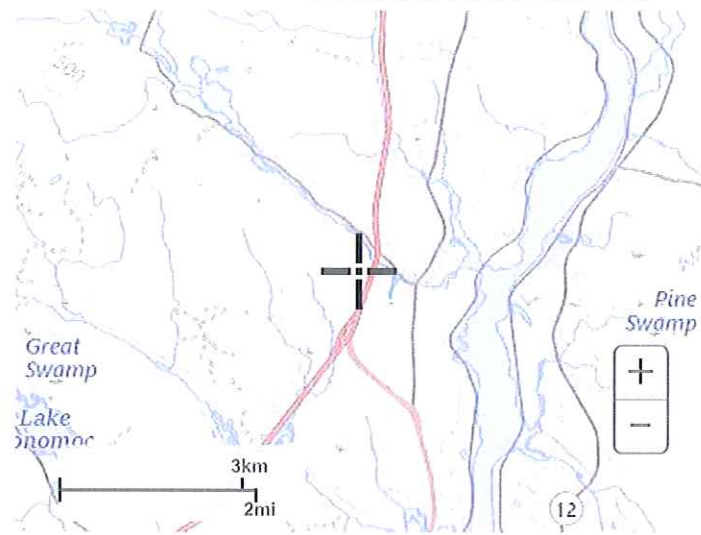
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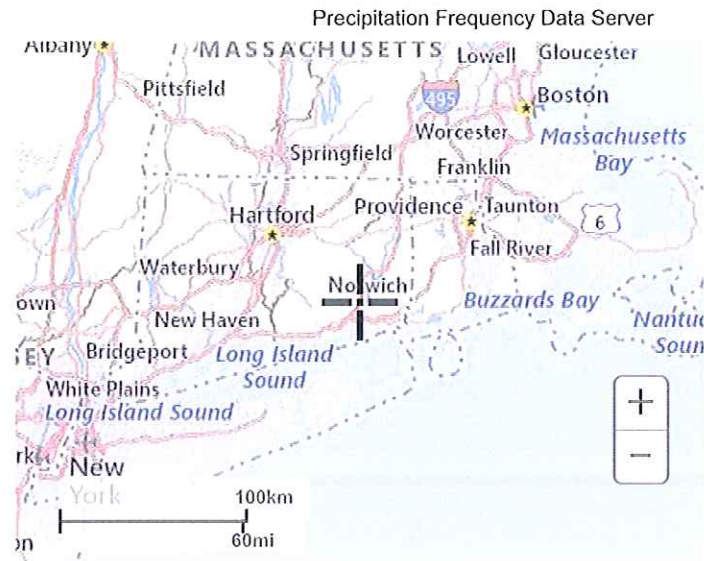
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Maps & aeriels

Small scale terrain



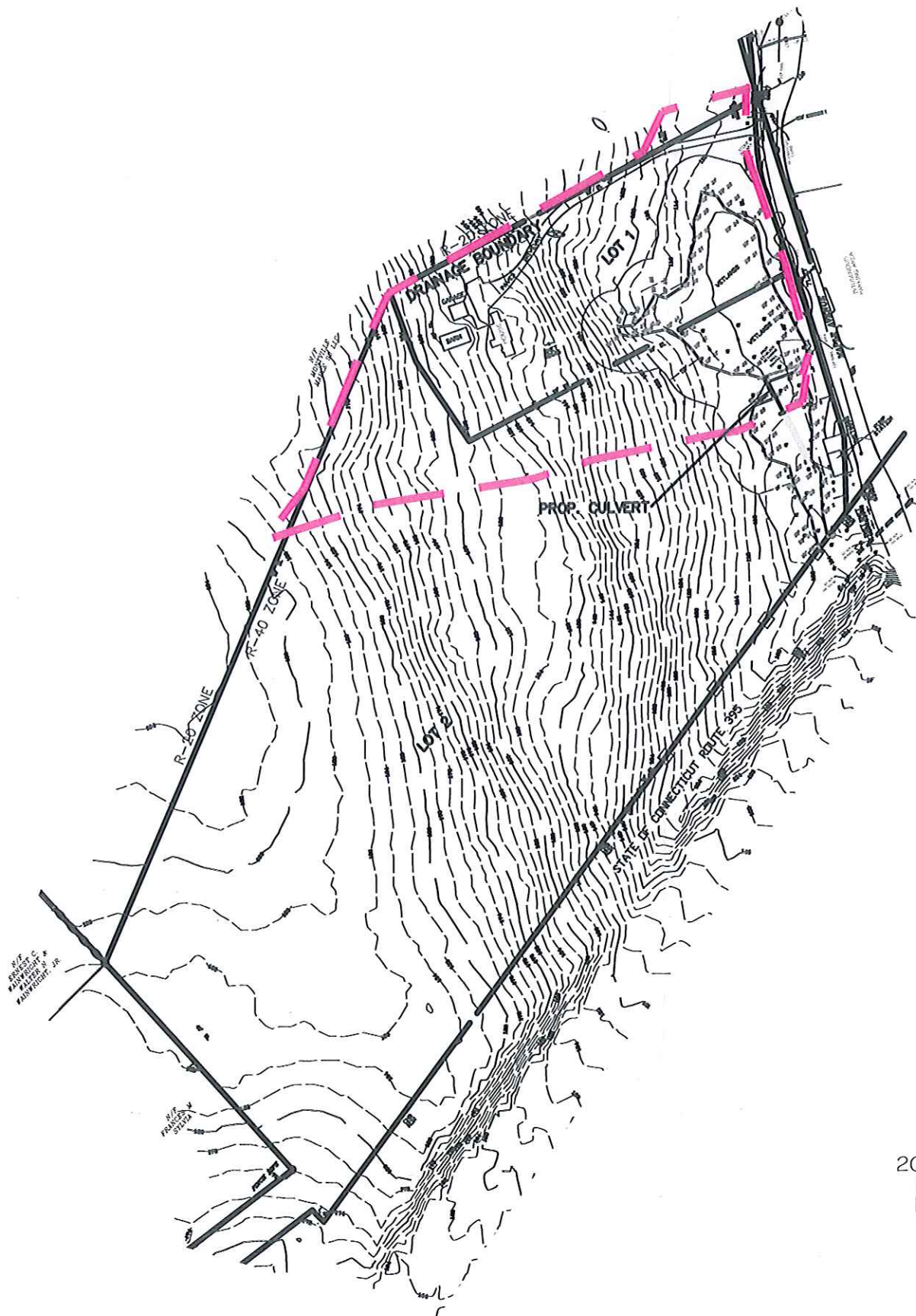
Large scale aerial



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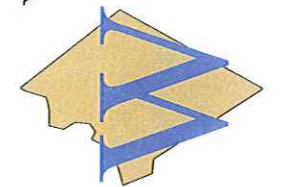


GRAPHIC SCALE

(IN FEET)
1 inch = 200 ft.
(APPROXIMATE ONLY)

PROPOSED DRIVEWAY CULVERT
OVERALL DRAINAGE MAP
82 MAPLE AVE
PREPARED FOR
LINDO CONSTRUCTION, LLC
MONTVILLE, CONNECTICUT

DATE: 6/15/26
SCALE: 1"=200'
SHEET 1 OF 1
MAP NO. 21-049-1CD



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