

**HOLISTIC WATERSHED MANAGEMENT FOR EXISTING AND FUTURE LAND  
USE DEVELOPMENT ACTIVITIES: OPPORTUNITIES FOR ACTION FOR LOCAL  
DECISION MAKERS: PHASE 1 – MODELING AND DEVELOPMENT OF FLOW  
DURATION CURVES (FDC 1 PROJECT)**

**SUPPORT FOR SUTHEAST NEW ENGLAND PROGRAM (SNEP)  
COMMUNICATIONS STRATEGY AND TECHNICAL ASSISTANCE**

**FINAL REPORT. APPENDIX C**  
**LSPC MODEL CONFIGURATION**  
**SEPTEMBER 30, 2021**

Prepared for:

**U.S. EPA Region 1**



Prepared by:

**Paradigm Environmental**



**Great Lakes Environmental Center**



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**Table 1. Land use – Land cover reclassification**

Land Cover Code	Land Cover Description	Land Use Code	Land Use Description	Land Use Reclassification	Cover Type
2	Impervious	0	Unknown	Paved Open Land	Impervious
2	Impervious	2	Open land	Paved Open Land	Impervious
2	Impervious	3	Commercial	Paved Commercial	Impervious
2	Impervious	4	Industrial	Paved Industrial	Impervious
2	Impervious	6	Forest	Paved Forest	Impervious
2	Impervious	7	Agriculture	Paved Agriculture	Impervious
2	Impervious	8	Recreation	Paved Open Land	Impervious
2	Impervious	9	Tax exempt	Paved Open Land	Impervious
2	Impervious	10	Mixed use, primarily residential	Paved Medium Density Residential	Impervious
2	Impervious	11	Residential - single family	Paved Low Density Residential	Impervious
2	Impervious	12	Residential - multi-family	Paved High Density Residential	Impervious
2	Impervious	13	Residential - other	Paved Medium Density Residential	Impervious
2	Impervious	20	Mixed use, other	Paved Open Land	Impervious
2	Impervious	30	Mixed use, primarily commercial	Paved Commercial	Impervious
2	Impervious	55	Right-of-way	Paved Transportation	Impervious
2	Impervious	88	Water	Paved Open Land	Impervious
5	Developed Open Space	N/A	N/A	Developed Open Space	Pervious
6	Cultivated	N/A	N/A	Agriculture	Pervious

Land Cover Code	Land Cover Description	Land Use Code	Land Use Description	Land Use Reclassification	Cover Type
7	Pasture/Hay	N/A	N/A	Agriculture	Pervious
8	Grassland	N/A	N/A	Agriculture	Pervious
9	Deciduous Forest	N/A	N/A	Forest	Pervious
10	Evergreen Forest	N/A	N/A	Forest	Pervious
12	Scrub/Shrub	N/A	N/A	Agriculture	Pervious
13	Palustrine Forested Wetland	N/A	N/A	Forested Wetland	Pervious
14	Palustrine Scrub/Shrub Wetland	N/A	N/A	Non-Forested Wetland	Pervious
15	Palustrine Emergent Wetland	N/A	N/A	Non-Forested Wetland	Pervious
18	Estuarine Emergent Wetland	N/A	N/A	Water	Pervious
19	Unconsolidated Shore	N/A	N/A	Water	Pervious
20	Bare Land	N/A	N/A	Developed Open Space	Pervious
21	Water	N/A	N/A	Water	Pervious
22	Palustrine Aquatic Bed	N/A	N/A	Water	Pervious

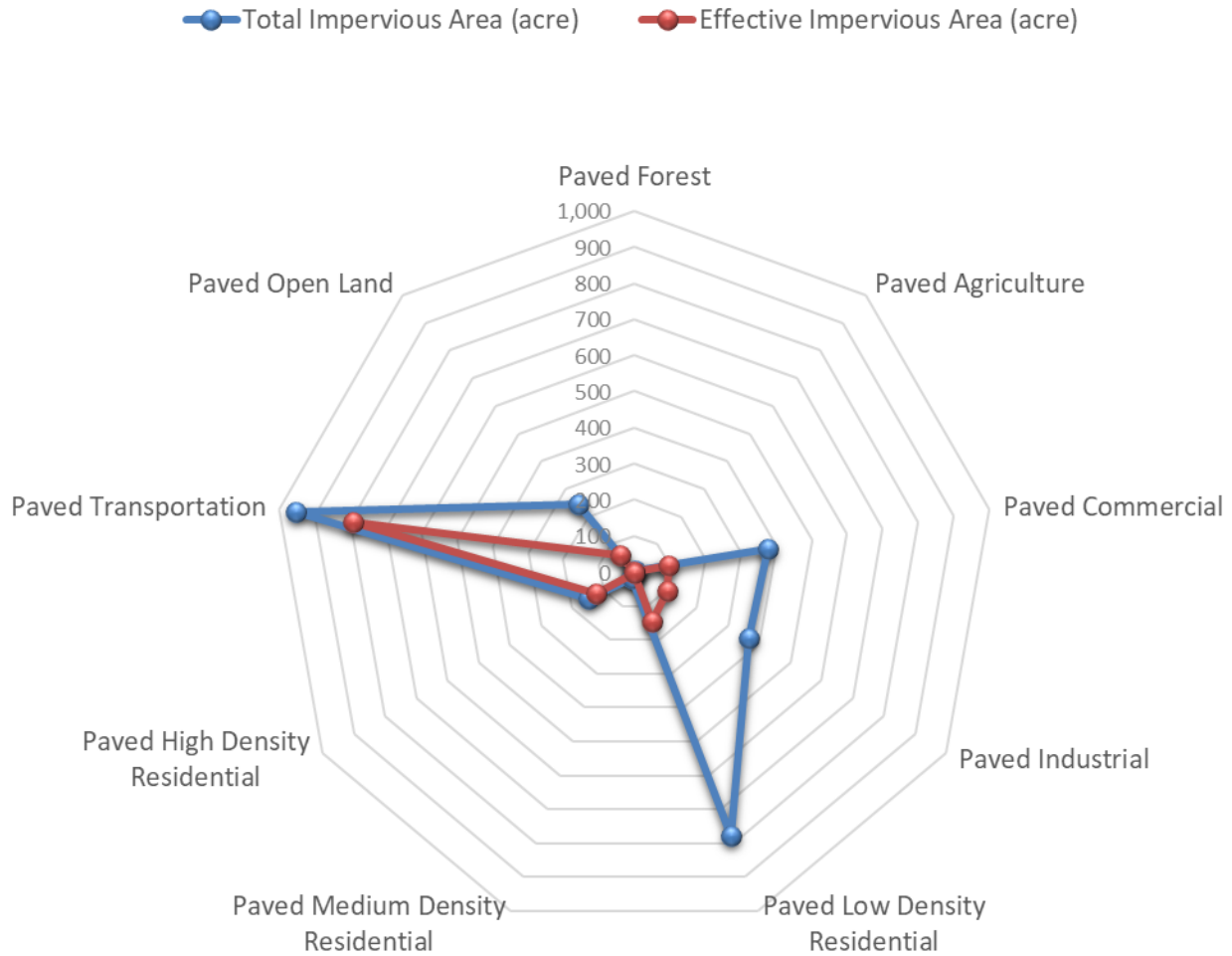
**Table 2. Soil – HSG reclassification**

HSG - SSURGO	HSG - STATSGO2	HSG Reclassification	Justification
No Data	A	A	When no other information was available, the STATSGO2 data layer was used to fill the gaps.
No Data	B	B	
No Data	C	C	
No Data	D	D	
A	N/A	A	
A/D	N/A	D	Dual HSGs were represented, and their undrained condition ('D') was selected as a conservative choice.
B	N/A	B	-
B/D	N/A	D	Dual HSGs were represented, and their undrained condition ('D') was selected as a conservative choice.
C	N/A	C	-
C/D	N/A	D	Dual HSGs were represented, and their undrained condition ('D') was selected as a conservative choice.
D	N/A	D	-

**Table 3. Percent slope reclassification**

Percent Slope	Slope Reclassification
<5%	Low
5% - 15%	Medium
>15%	High

# Wading River Watershed



**Figure 1. Mapped Impervious Area and Effective Impervious Areas distribution in Wading River watershed.**

**Table 4. Mapped (MIA) and Modeled (EIA) HRU area distribution in Wading River watershed**

HRU Code	HRU Description	Mapped Acres	Modeled Acres	Percent Change
1001	Paved Forest	0.3	0.0	-100.0%
2001	Paved Agriculture	3.4	0.0	-100.0%
3001	Paved Commercial	375.8	96.5	-74.3%
4001	Paved Industrial	366.2	103.5	-71.8%
5001	Paved Low Density Residential	778.4	147.4	-81.1%
6001	Paved Medium Density Residential	20.5	5.6	-72.8%
7001	Paved High Density Residential	147.4	122.3	-17.1%
8001	Paved Transportation	956.5	793.7	-17.0%
9001	Paved Open Land	245.7	61.9	-74.8%
10110	Developed OpenSpace-A-Low	1,572.4	2,262.1	43.9%
10120	Developed OpenSpace-A-Med	301.9	431.6	43.0%
10210	Developed OpenSpace-B-Low	203.9	301.5	47.9%
10220	Developed OpenSpace-B-Med	130.1	191.6	47.3%
10310	Developed OpenSpace-C-Low	479.1	739.0	54.2%
10320	Developed OpenSpace-C-Med	134.6	194.0	44.2%
10410	Developed OpenSpace-D-Low	446.5	677.8	51.8%
10420	Developed OpenSpace-D-Med	89.4	119.8	33.9%
11000	Forested Wetland	5,281.2	5,281.2	0.0%
12000	Non-Forested Wetland	720.0	720.0	0.0%
13110	Forest-A-Low	2,949.9	2,949.9	0.0%
13120	Forest-A-Med	2,006.5	2,006.5	0.0%
13210	Forest-B-Low	750.1	750.2	0.0%

HRU Code	HRU Description	Mapped Acres	Modeled Acres	Percent Change
13220	Forest-B-Med	1,535.8	1,535.8	0.0%
13310	Forest-C-Low	1,460.5	1,460.5	0.0%
13320	Forest-C-Med	564.4	564.5	0.0%
13410	Forest-D-Low	2,821.1	2,821.1	0.0%
13420	Forest-D-Med	1,447.7	1,447.7	0.0%
14110	Agriculture-A-Low	417.8	418.8	0.2%
14120	Agriculture-A-Med	203.4	203.4	0.0%
14210	Agriculture-B-Low	82.0	82.1	0.2%
14220	Agriculture-B-Med	53.6	53.6	0.0%
14310	Agriculture-C-Low	106.1	106.1	0.0%
14320	Agriculture-C-Med	70.8	70.8	0.0%
14410	Agriculture-D-Low	196.2	198.4	1.1%
14420	Agriculture-D-Med	33.1	33.1	0.1%
15000	Water	649.2	649.2	0.0%
<b>Total</b>		<b>27,601.2</b>	<b>27,601.2</b>	<b>0.0%</b>

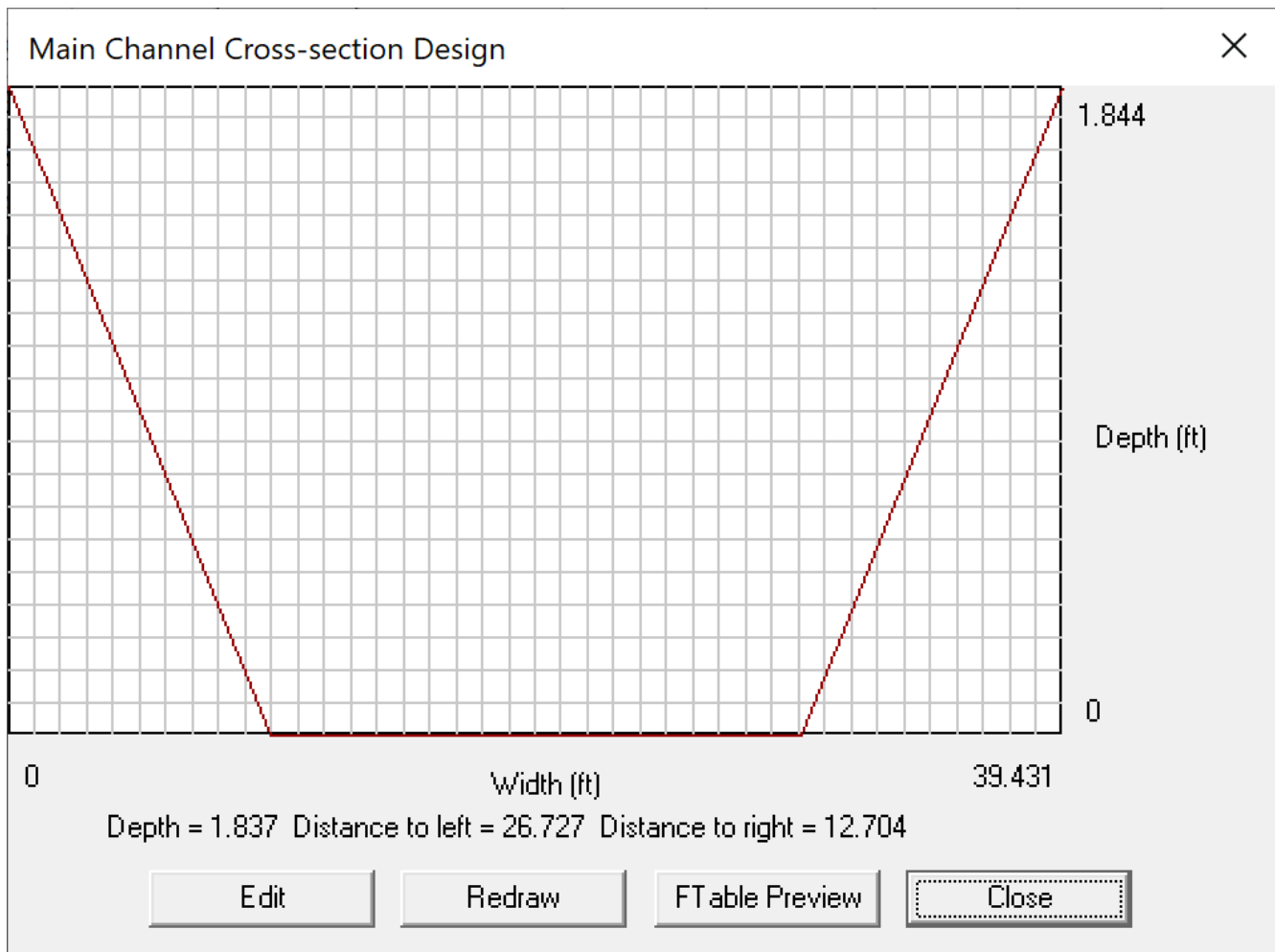


Figure 2. Wading River Cross Section (SWS 4) in LSPC.



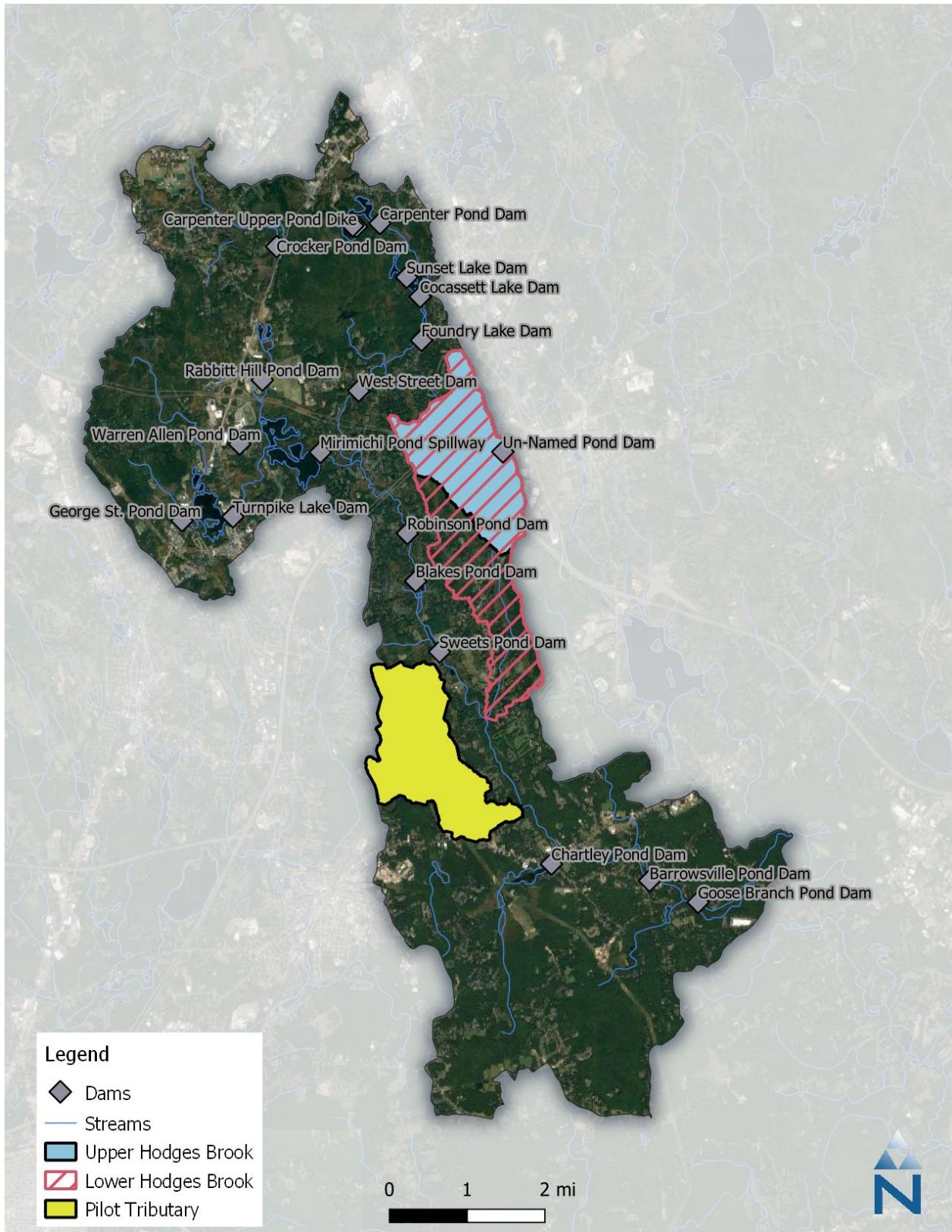


Figure 3. Location of dams and study sub-watersheds.

**Table 5. Summary of Public Water Supply (PWS) and Non-Public Water Supply (NPWS) water use data incorporated into LSPC Wading River Model**

Supply	Observed data
Foxboro PWS Wells	Jan 2009 - Dec 2019
Mansfield PWS Wells	Jan 2009 - Dec 2019
Foxboro PWS Wells	Jan 2009 - Dec 2019
Foxboro NPWS Wells	Jan 2017 - Jan 2018
Wrentham PWS Wells	Jan 2009 - Dec 2019

**Table 6. Summary of Permitted Groundwater Discharge data incorporated into the LSPC Wading River Model**

Permit #	Observed data
632	Jan 2017 – Dec 2020
973	Jan 2019 – Dec 2020