

ECHO-SEYMOUR LAKE WATERSHED ACTION PLAN

PROJECT
PRIORITIZATION
MEETING
AUG 7, 2024

ORLEANS COUNTY
CONSERVATION DISTRICT,
MEMPHREMAGOG
WATERSHED ASSOC,
& VTDEC

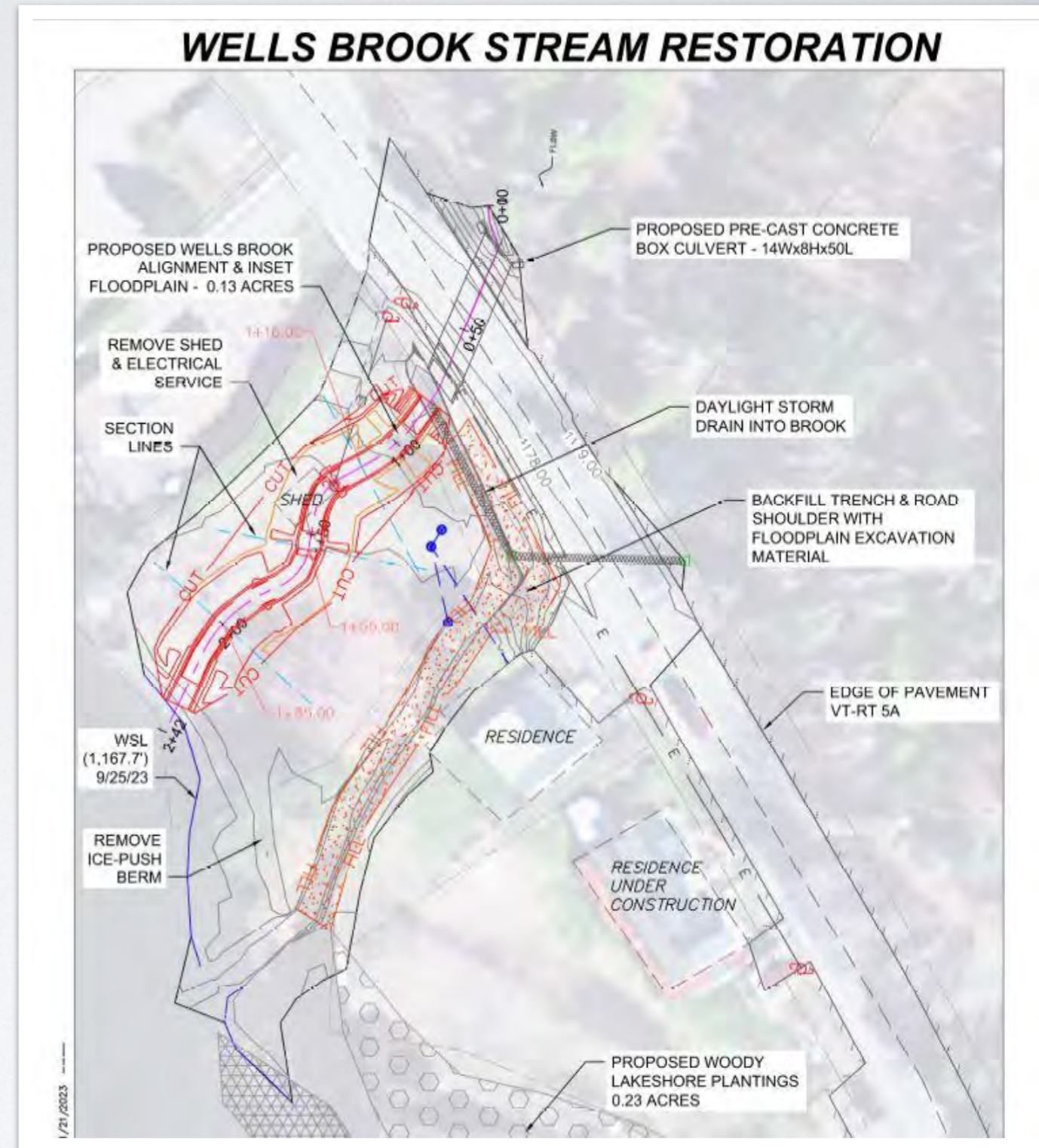


Orleans County
Natural Resources
Conservation District



AGENDA

- Welcome & Introductions
- Objective - Task #6 of LWAP
 - *Evaluate identified problem areas & potential projects*
 - *Develop & present the Project Prioritization Table*
 - *Select 3 projects for 30% design*
- What is a LWAP?
- Review Work Plan & Timeline
- **Project Summaries & Ranking**
- Community Input & Questions
- Next Steps – Tasks #7 & #8
- Flooding Questions



WHAT IS A LWAP?

Tool - *Assessment and planning tool* that identifies the greatest threats (stressors & conditions)* to the lake ecosystem.

**including stormwater runoff, sedimentation & nutrients, erosion, invasive species, habitat loss*

Process - 2-year process of *field assessments* of shorelines, roadways & streams, *community input and prioritization*

Report – LWAP Final Report is a guide



Outcomes & Deliverables:

- Digital library, maps of sediment & phosphorus sources
- Core Assessment Areas
- Identify & prioritize 30 projects
- Preliminary restoration designs for 3 projects
- Final Report

WORK PLAN & TIMELINE

July 2023 – Kick-off Meeting

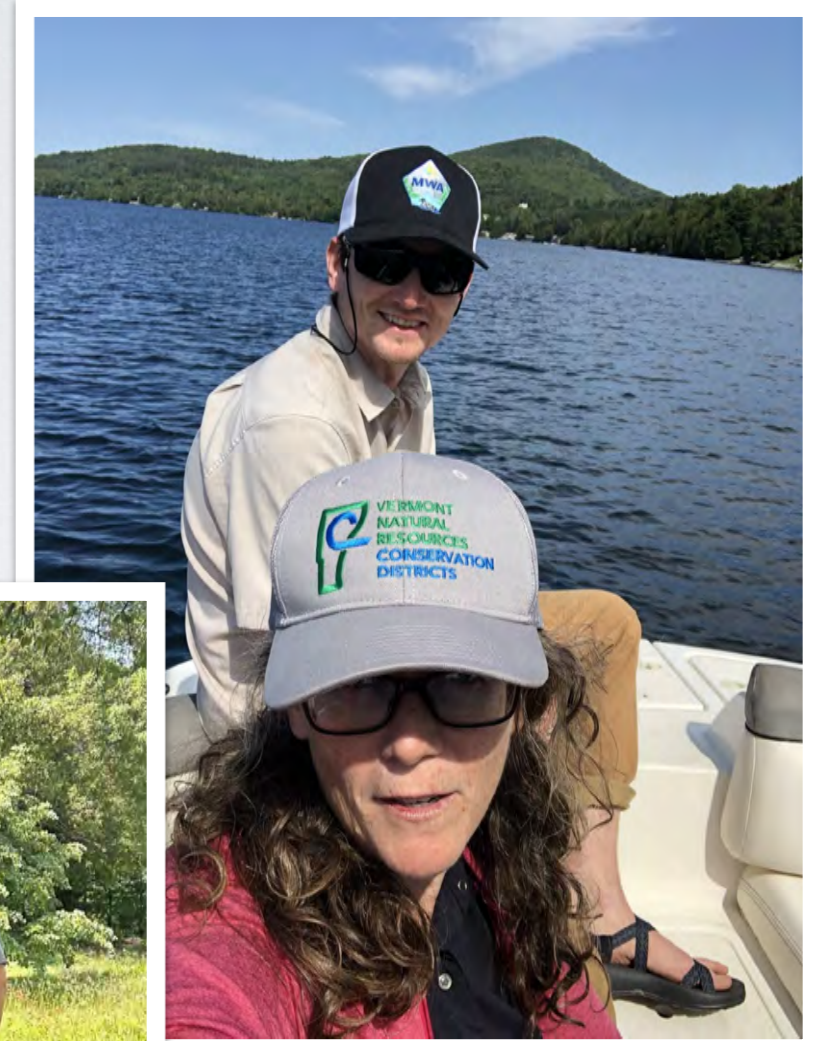
Fall 2023 – Summer 2024

Field Work: Assessment in 3 core areas

Aug 2024 – Prioritization Meeting - Present project prioritization & recommendations

Oct 2024 - Develop 30% designs; seek landowner commitment to implement projects

Nov 2024 – Final Plan completed & presented to stakeholders



ECHO-SEYMOUR LAKE
WATERSHED ACTION PLAN

Project Prioritization & Selection



Charleston VT

East and West



Town of Morgan

Home of Lake Seymour



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August 7, 2024

Watershed-Scale Assessments



What Constitutes a Potential Project?

GRANT ELIGIBILITY!

a.k.a. Clean Water Initiative Program Funding Policy

Natural Resource Projects

- Riparian Buffer Plantings
- Lakeshore Restoration
- Floodplain/Stream Restoration
- Dam Removal
- Forest Roads
- Wetland Restoration

Stormwater Projects

- Developed Lands (<3 acres)
- Town & Private Roads (no State Highways)

Agricultural Projects

- Barnyard Stormwater Runoff
- Riparian Buffer Plantings



Valley Brook Restoration




Shadow Lake Shoreland Restoration




Farrant St Stormwater Improvements



Lake Wise & Lake Shoreland Assessments

 Lake Shoreland Assessment (15.1 miles)

 Completed Lake Wise Assessments (11)

4 Echo Lake Awards; 1 Certificate

3 Seymour Lake Awards; 3 Certificates



FIGURE 3



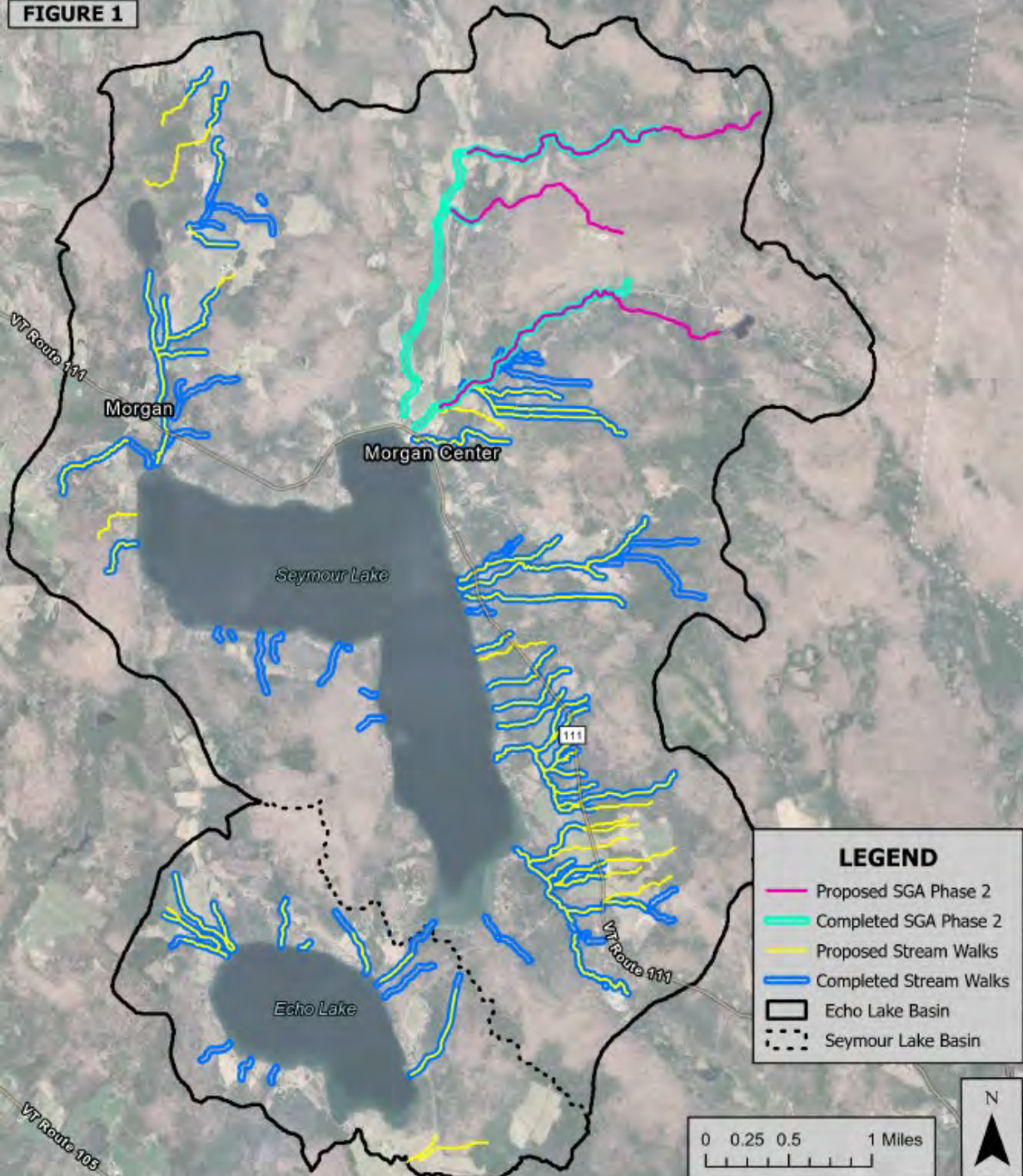
Stream Walks & Riparian Assessments

- Proposed Stream Geomorphic Assessments (5.8 miles)
- Completed SGA (5.4 miles)
- Proposed Stream Walks (24.6 miles)
- Completed Stream Walks (32.4 miles)

200+ Separate Properties

186 Stream Crossings (culverts, bridges, fords)

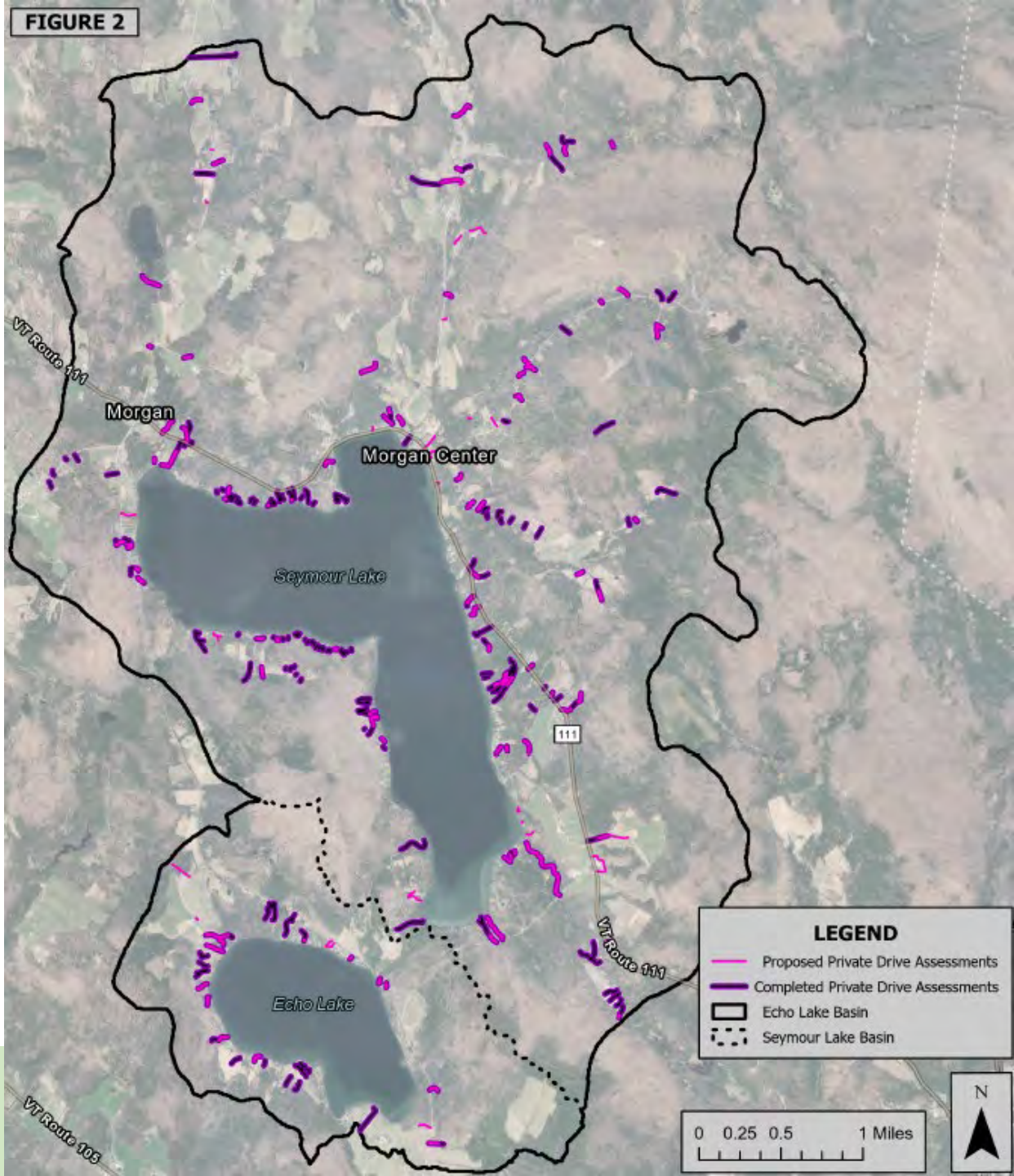
FIGURE 1



Private Driveway & Road Assessments

- Proposed Private Road & Driveway Assessments (7 miles)
- Completed Private Road & Driveway Assessments (13.3 miles)

218 private driveway segments evaluated for erosion or drainage issues

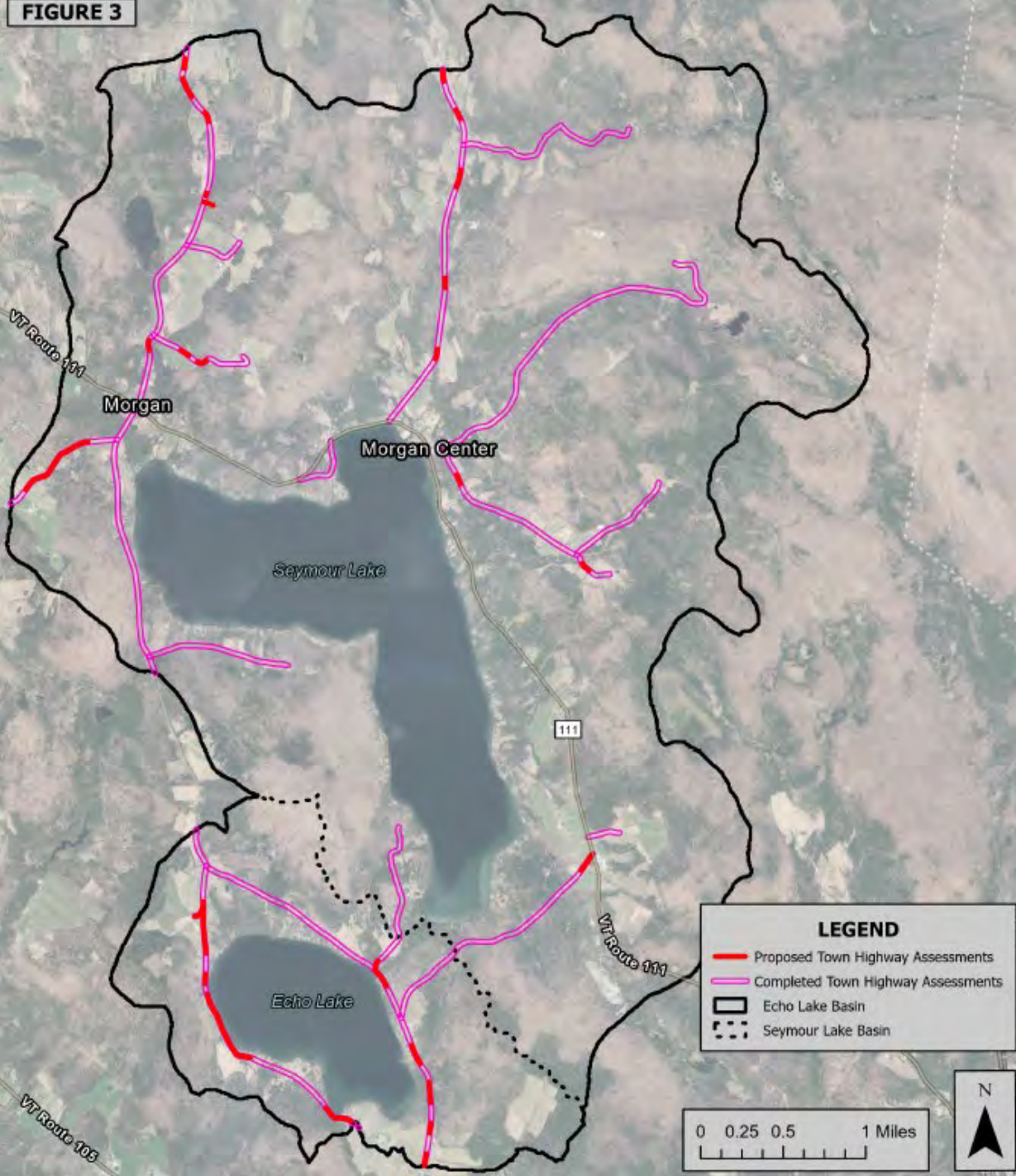


Town Highway & Road Assessments

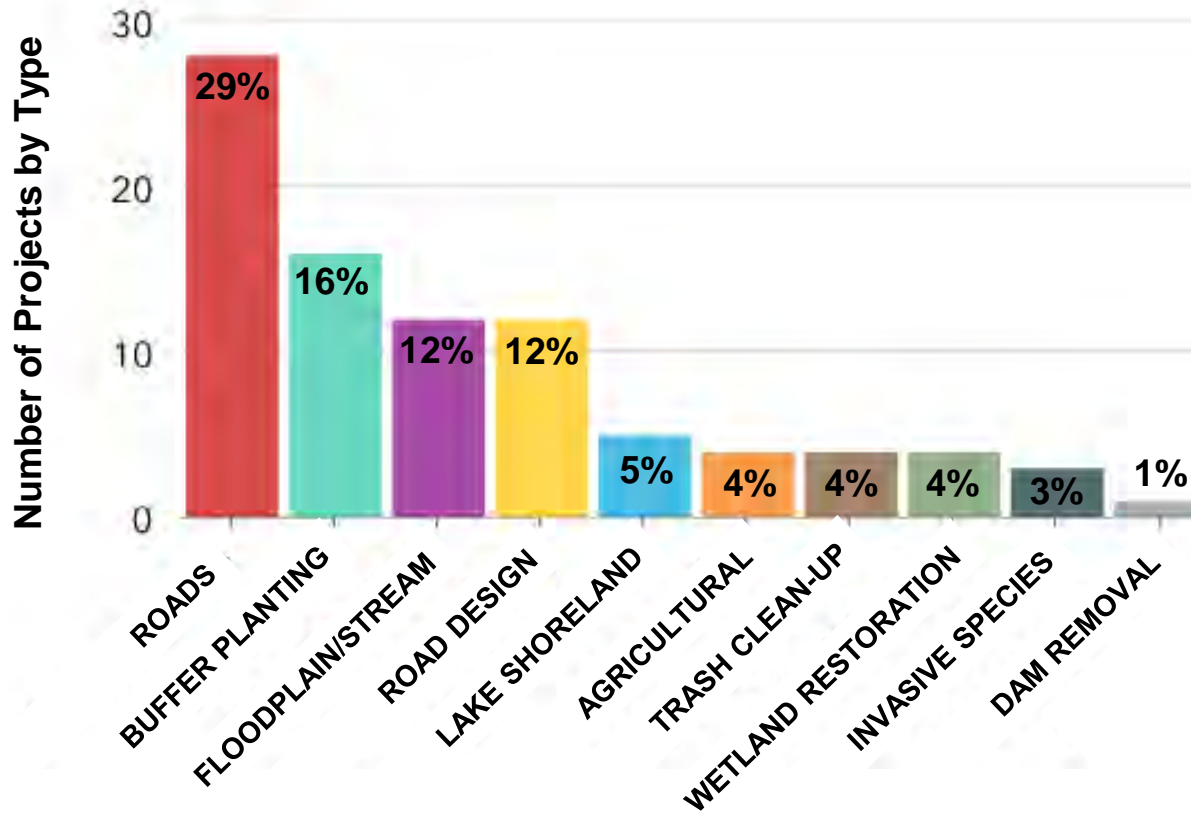
-  Completed Town Road Assessments (3.9 miles)
-  Completed Private Road Assessments (22.7 miles)

415 road segments screened for erosion or drainage issues

FIGURE 3



Project Types



Project Prioritization Matrix

94 Potential Priority Projects

ID Code	PROJECT NAME	SITE DESCRIPTION	PROJECT TYPE	Priority	Score	Lat	Long	Town	Subbasin	Partners	Funding	Year	BMP DESCRIPTION	Sediment Removal (tpy)	Sediment Retention (tpy)	Drainage Area (Acres)	Impervious or Ag (tpy)	Connectivity to Surf	WQ BENE FITS (16pts)	Landowner Support	Cost / Feasibility (6pts)	OB / Project Long	Co-Benefits (10pts)	TOTAL SCORE (36p)	Description of Co-Benefits	Notes/ Comments	Cost Range	P Reduction kg/yr (STP or P Calculator)	Sediment Load	Linear Feet	Drainage Area (acres)	Impervious / Ag / Developed Area (acres & %)	Treatment Area (sq ft) e.g. buffer	Proposed Treatment Area (sq ft) e.g. buffer	CWIP COST	NOTES			
ROAD_14	Road erosion BMPs on Toad Pond Rd in Morgan	There are also overwhelmed ditches full of sediment and cross culverts that are frequently full and overtop from being plugged with sediment and debris during high flows. The second Road in July washed out the road completely to bedrock, stranding several landowners along the entire stretch.	Road Project - Implementation	48	48	44.91349443	-71.96872544	Morgan	Upper Clyde River	OCNCRD, MWA, Morgan, Seymour Lake Association	Other	Assessment	Upgrade and or replace undersized and perched culverts to better handle high flows, improve aquatic organism passage, and protect the road. Clean out clogged culverts. Stabilize gullies by filling and regrading.	5	4	1	0	3	13	2	3	1	6	23	Fisheries Habitat Enhancement, Improves Existing BMPs, High visibility, flood resilient infrastructure, reduces flood risk, chronic problem area					4950				5	217800	\$ 500,000.00	MRGP unified scoring matrix		
RVR_14	Buffer planting on unnamed streams off Bennett Farm Rd in Charleston	Channelized streams lacking an adequate woody buffer with multiple headcuts and some eroding banks. SPAN: 135-042-10045	River - Planting	48	48	44.86872065	-72.0096521	Charleston	Upper Clyde River	OCNCRD, MWA, Charleston, Echo Lake Association, Stewardship Center, VFWD	Other	Assessment	Plant woody buffer along all streams to improve bank stability and filtration of nutrients. Stabilize headcuts to reduce erosion upstream.	5	2	1	3	3	14	1	2	2	5	24	High visibility or potential to influence behavior, Agricultural land use compatibility, Improves existing BMPs, Enhances fish habitat, Reduces flood risk, peak flows, or seasonal flooding			4.98	Moderate				8.1	352836	\$ 58,433.40	3.15+2.75+.5+1.5+1+2			
FOR_02	Forest gully stabilization off Wayneses Dr in Morgan	Several gullies eroding down steep slope as a result of stormwater management upgrades over the years. SPAN: 411-128-10403	Forestry - Design	48	48	44.8005647	-71.99151711	Morgan	Upper Clyde River	OCNCRD, MWA, Morgan, Seymour Lake Association, Northwoods Stewardship Center, VFWD	Other	Assessment	Stabilize gullies and headcuts with wood to reduce erosion and sediment input into the lake. Consider road erosion BMP upgrades on intersecting roads.	5	4	1	0	3	13	2	2	1	5	23	Chronic problem area, Reduces flood risk, peak flows, or seasonal flooding, Improves existing BMPs, Enhances lakeshore natural communities, Flood resilient infrastructure					700			0.5	21780	\$ 65,000.00	Estimate			
RVR_01	Buffer planting in pasture off Cranberry Lane Morgan	Small woody buffer along Cranberry brook that would benefit from interplanting native trees and shrubs. Opportunity to extend cattle fencing to avoid wetland areas. SPAN: 411-128-10517	River - Planting	48	48	44.908863	-72.01222	Morgan	Upper Clyde River	OCNCRD, MWA, Morgan, Seymour Lake Association	Other	Assessment	Plant trees and shrubs along brook to improve bank stability and filtration of nutrients. Consider extending the fencing around the wetland area as it is sensitive to trampling which increases the sediment input into the stream from overland flows. Wetland could be enhanced with native plantings to stabilize areas without vegetative cover and improve wetland function and wildlife habitat.	2	2	0	3	3	10	0	5	2	6	23	High visibility, agricultural land use compatibility, improve existing BMPs, enhances lakeshore natural community, enhances fish habitat, chronic problem area	Landowner installed fencing several years ago to keep cows out of the brook. Up to 12 head observed in pasture at times.			1.33	Moderate			895	7	7 (100%)	1.40	60984	\$ 15,000.00	DEC average buffer cost. Assumes 100ft buffer.
DAM_01	Dam removal on Cranberry Brook in Morgan	Breached and collapsing dam poses flood risk. SPAN: 411-128-10770	Dam Removal - Preliminary Design	48	48	44.912925	-72.01176167	Morgan	Upper Clyde River	OCNCRD, MWA, Morgan, Seymour Lake Association, Northwoods	Other	Assessment	Remove dam abutments and restore channel and floodplain morphology.	1	4	1	0	3	9	1	3	2	7	23	Reduces flood risk, improves existing BMPs, high visibility, educational potential, chronic problem area, enhances fish habitat, chronic problem area	Dam has been breached and flanked, gully and bank erosion are present			.48	Moderate	150	1479	320 (21.5%)	0.21	9147.6	\$ 49,714.05	DEC avg floodplain restoration cost plus \$15000 contingency		
FLPN_08	Culvert upgrade on W Echo Rd in Charleston	18 inch culvert draining a ditched stream and road swale is perched 1ft. The outlet has an eroding header and gully around culvert, and the right bank is eroding.	Floodplain/Stream Restoration - Preliminary Design	48	48	44.86556888	-72.00674992	Charleston	Upper Clyde River	OCNCRD, MWA, Charleston, Echo Lake Association, Northwoods	Other	Assessment	Consider upgrading to a 2ft culvert and regrading culvert to account for perched outlet to reduce erosion and improve filtration of nutrients.	2	3	1	2	3	11	1	3	1	6	23	Reduces flood risk, improves existing BMPs, Enhances fish habitat, Flood resilient infrastructure, Chronic			108.00	Moderate	75	934	6.67 (71.4%)	0.05	2178	\$ 30,000.00	Estimate based on similar structures in region.			
LS_03	Lakeshore buffer planting off W Echo Lake Rd in Charleston	Lakeshore lacking a woody buffer on agricultural property. SPAN: 135-042-10527	Lake Shoreland - Implementation	48	48	44.85067214	-71.98433002	Charleston	Upper Clyde River	OCNCRD, MWA, Charleston, Echo Lake Association	Other	Assessment	Plant woody buffer and widen no mow zone to improve lakeshore stability and filtration of nutrients.	1	2	1	3	3	10	0	5	2	5	22	High visibility or potential to influence behavior, Agricultural land use compatibility, Improves existing BMPs, Enhances fish habitat, Flood resilient infrastructure, Chronic			0.46	Moderate	395	5	5 (100%)	0.5	21780	\$ 7,500.00	Assumed a 35ft buffer.			
RVR_15	Stream restoration and buffer planting off unnamed stream off Sunset Dr in Morgan	Winded stream with eroding banks, headcuts, and a narrow buffer. VASA trail follows stream. Evidence of vehicles traveling in the stream without a ford.	River - Planting	48	48	44.90959813	-72.01891386	Morgan	Upper Clyde River	OCNCRD, MWA, Morgan, Seymour Lake Association, Northwoods	Other	Assessment	Stabilize eroding features to reduce sediment inputs. Widen no mow zone and plant trees to improve bank stability	1	2	1	3	3	10	0	5	2	5	22	High visibility or potential to influence behavior, Improves existing BMPs, Enhances fish			0.64 without headcut stabilization	High	860	6	6 (100%)	1.2	52272	\$ 8,656.80	Assumed a 30-40ft buffer where possible.			



Project Prioritization Criteria

Water Quality Benefits (16 Points)

- Phosphorus Load Reduction (5 points)
- Sediment Retention (4 points)
- Drainage Area Size (1 point)
- Percent Impervious or Agricultural (3 points)
- Connectivity to Perennial & Intermittent Surface Waters (3 points)

Level of Landowner Support (2 points)

Cost & Feasibility (6 points)

Operations, Maintenance, & Longevity (2 points)

Co-Benefits (10 points)

- Chronic Problem Area
- Reduces Flood Risk, Peak Flows, or Seasonal Flooding
- Educational
- High Visibility or Potential to Influence Community
- Agricultural Land Use Compatibility
- Improves Existing BMPs
- Enhances Natural Lakeshore Communities
- Fisheries Habitat Enhancement
- Flood Resilient Infrastructure
- Invasive Species Control

The Memphremagog Watershed Association (MWA) and Orleans County Natural Resources Conservation District (OCNRCD) performed focus area assessments throughout the Echo-Seymour Lakes watershed as part of the development of their Lake Watershed Action Plan (LWAP). Potential projects identified during assessments are evaluated and prioritized based on various scoring metrics adapted from similar LWAP efforts in other watersheds (Fitzgerald Environmental Associates, 2020). The following metrics are customized to the Echo and Seymour Lake communities residing with Morgan, Charleston, and Holland, Vermont. Metrics are weighted to reflect the relative importance of each criterion in prioritizing potential projects given the complex economic, social, and ecological factors involved. The overarching prioritization criteria include water quality benefits, landowner support, cost and feasibility, and co-benefits. Several criteria have sub-categories to address related factors. Each potential project is evaluated, and points are assigned to each criterion based on quantitative and qualitative measures. The maximum possible score is 36 points. Each category is described below and includes a description of the scoring for each criterion.

- **Water Quality Benefits (16 points total)**
 - **Phosphorus (P) Load Reduction (5 points)** – Represents the magnitude of potential P load reduction achieved through project implementation, estimated in kg/yr. Values may be chosen to represent relative P loading rates, removal efficiency, and/or P removal capacity. P loading, reductions, and efficiencies will be quantified using the VTDEC “Interim Phosphorus Calculator Tool”.
 - 0 points – No P source and/or no increased treatment (0 kg/yr)
 - 1 point – Minor P source and/or minor increase in treatment (0 – 1 kg/yr)
 - 2 points – Moderate P source with some increase in treatment (1 – 2 kg/yr)
 - 3 points – Moderate P source with significant increase in treatment (2 – 3 lbs/yr)
 - 4 points – Major P source with significant increase in treatment (3 – 5 kg/yr)
 - 5 points – Major P source with significant increase in treatment (> 5 lbs/yr)
 - **Sediment Retention (4 points)** – Represents the magnitude of potential sediment load reduction or retention achieved through project implementation. Values may be chosen to represent existing sediment loading rates, reductions through stabilization, and/or retention through treatment capacity. Sediment retention will be characterized using the following qualitative classes based on dominant contributing sources of runoff and sediment:
 - 0 points – No meaningful sediment source and/or no treatment (e.g., rooftop runoff infiltration)

ce with significant increase in treatment (e.g.,
er treatment practice)
ite drainage area to site is greater than 2 acres
Drainage (3 points) – Score based on
in the contributing drainage area. Percent
in GIS.
face or agricultural lands <25%
face or agricultural lands 25-50%
face or agricultural lands 50-75%
face or agricultural lands >75%
Stream Surface Waters (3 points)
in site or is treated through natural or artificial
runoff before discharge to receiving waters (e.g.,
moff via conveyance or drainage infrastructure
sters (e.g., stone lined ditch, lawn)
ff prior to discharge to receiving waters (e.g.,

lined or expressed
support for the project
expressed full support of the project

Cost and Feasibility (6 points) – Cost and feasibility represents both the lifetime project
cost and planning and design constraints that may influence implementation of the project.
Lifetime project costs include planning, design, engineering, permitting, implementation, and
operations and maintenance (O&M). Feasibility focuses on site constraints like utilities, land
ownership, long-term treatment reliability, degree of required O&M, and public interest.
○ 1 point – >\$100,000
○ 2 points – \$50,000 – 100,000
○ 3 points – \$25,000 – 50,000
○ 4 points – \$10,000 – 25,000
○ 5 points – \$2,500 – 10,000
○ 6 points – <\$2,500

O&M and Project Longevity (2 points total) – Projects with minimal and/or inexpensive
operations & maintenance requirements should be prioritized over those that have expensive
or intensive O&M requirements.
○ 0 points – expensive & intensive labor requirements
○ 1 point – moderate expense & labor requirements
○ 2 points – low expense & labor requirements

**Maximum
36 Points**

then provide co-benefits beyond P
ug co-benefits were selected by the
! the watershed and the community
ization are as follows:
quent maintenance and/or is an

Flooding – The site is affected by
.
/to educate the public about
.
Community – The site is highly visible
fit aesthetically from a property
rareness of stakeholders who

project supports functional,
ther existing best management

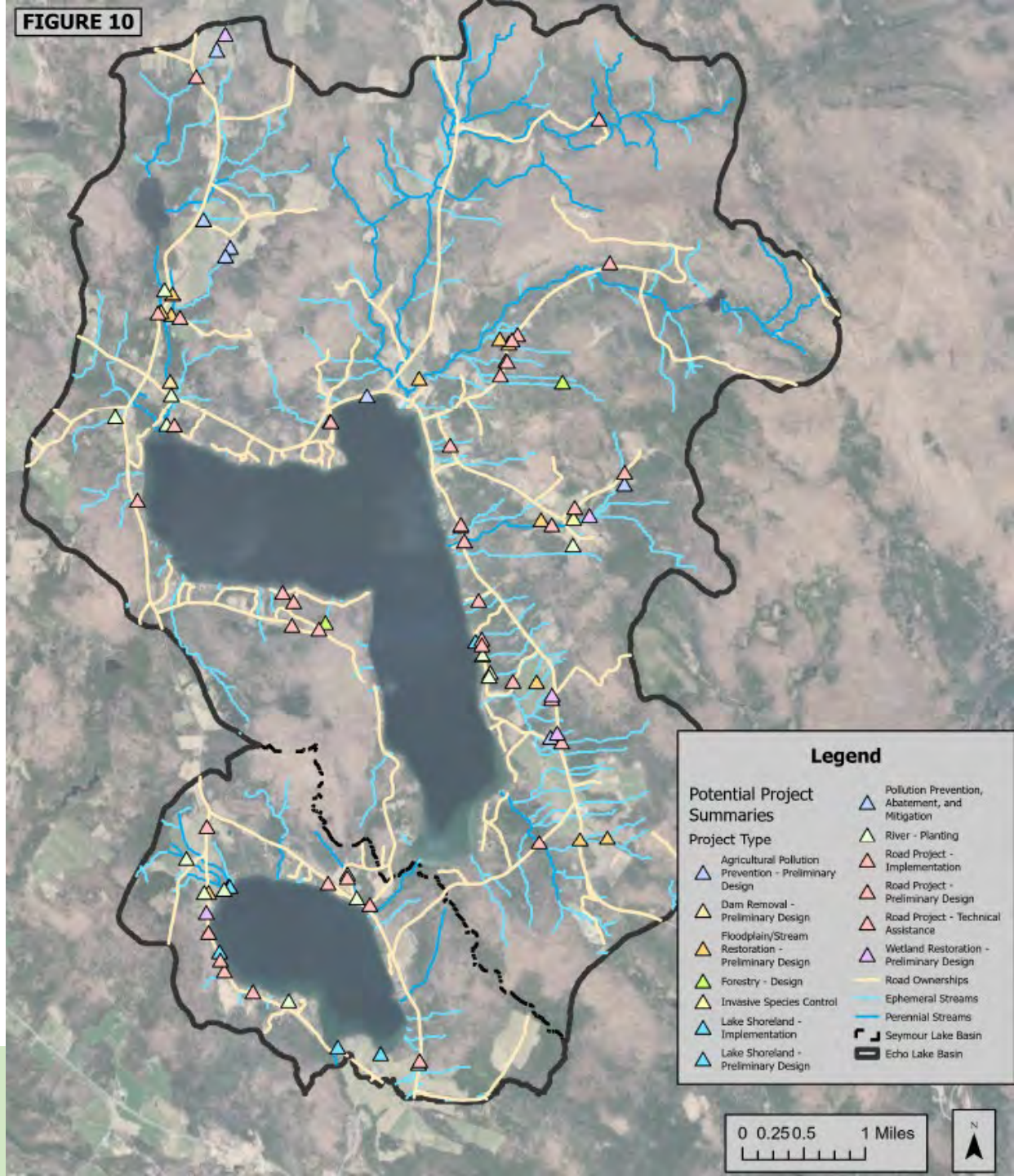
improve the performance of existing
ality improvements
- The project will promote a native
habitat along the lakeshore



Project Priorities By Location & Project Type

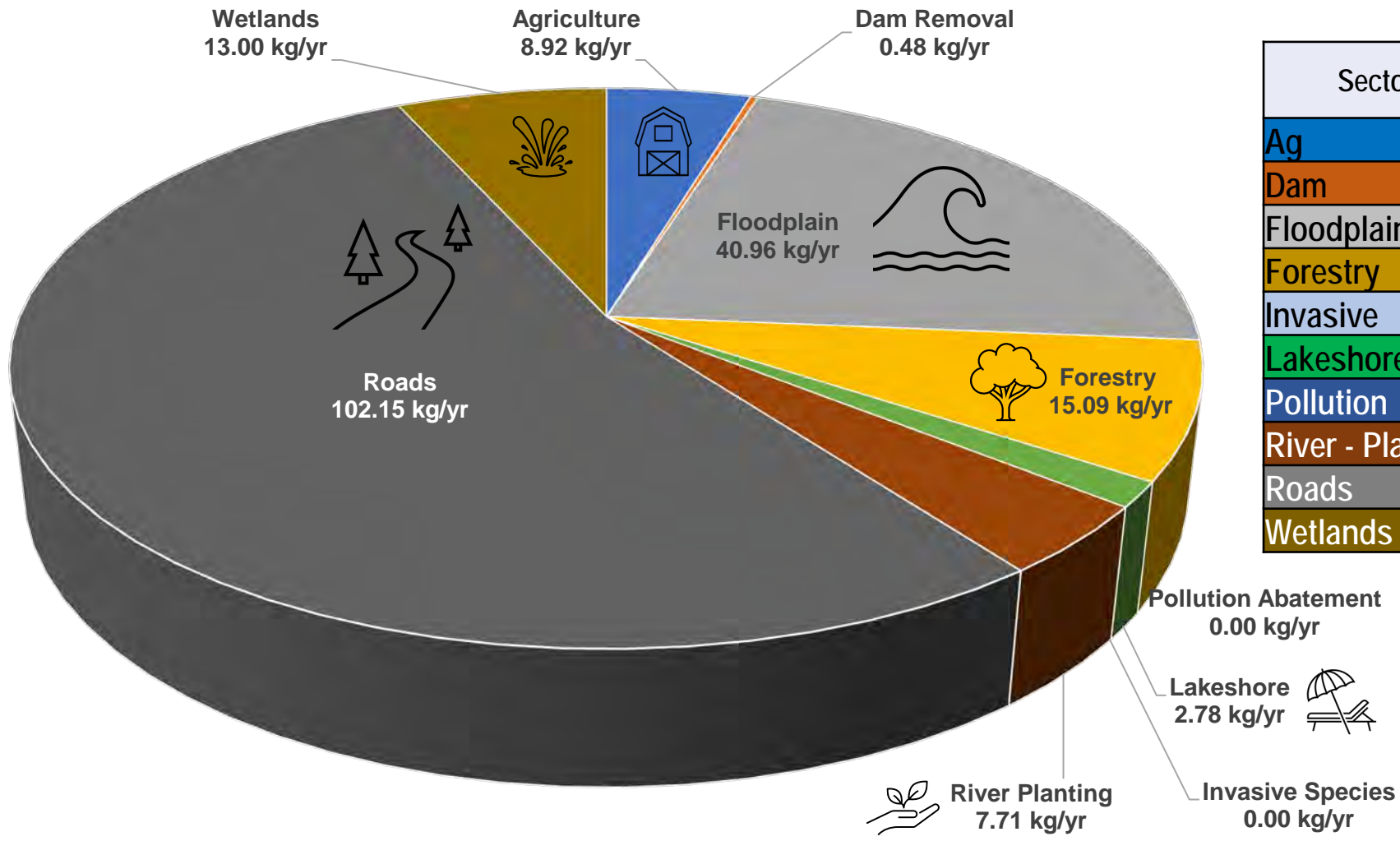


FIGURE 10



Water Quality Stressors by Sector

Based on *potential P reduction values* of 94 projects



Sector	P Reduction (kg/yr)	% Contribution
Ag	8.92	5%
Dam	0.48	0%
Floodplain	40.96	21%
Forestry	15.09	8%
Invasive	0.00	0%
Lakeshore	2.78	1%
Pollution	0.00	0%
River - Planting	7.71	4%
Roads	102.15	53%
Wetlands	13.00	7%

■ Ag ■ Dam ■ Floodplain ■ Forestry ■ Invasive ■ Lakeshore ■ Pollution ■ River - Planting ■ Roads ■ Wetlands



Top 30 Priority Projects

PROJECT CODE	PROJECT NAME	TOTAL SCORE (36pts)	P REDUCTION (kg/yr)
FLPN_15	Sucker Brook SMA floodplain restoration off Valley Rd in Morgan	27	10.3
PD_19	Private driveway BMPs on farm camp near Cranberry Ln in Morgan	26	3.69
ROAD_05	Road erosion BMPs on W Echo Lake Rd in Charleston	25	6.31
ROAD_14	Road erosion BMPs on Toad Pond Rd in Morgan	25	6.18
RVR_14	Buffer planting on unnamed streams off Bennett Farm Rd in Charleston	24	4.98
FOR_02	Forest gully stabilization off Wayeeses Dr in Morgan	23	8.18
RVR_01	Buffer planting in pasture off Cranberry Lane in Morgan	23	1.33
DAM_01	Dam removal on Cranberry Brook in Morgan	22	.48
FLPN_08	Culvert upgrade on W Echo Rd in Charleston	22	1.08
LS_03	Lakeshore buffer planting off W Echo Lake Rd in Charleston	22	0.46
RVR_15	Stream restoration and buffer planting off unnamed stream off Sunset Dr in Morgan	22	0.64
ROAD_17	Road Erosion BMPs on Williams Rd in Morgan	22	3.28
AG_03	Wetland and stream restoration in corn fields off Mead Hill Rd in Holland	21	1.5
FLPN_02	Buffer planting and stream restoration on unnamed tributary off Hatton Hgts road in Morgan	21	4.49
FLPN_05	Gully stabilization in hayfields off Williams Rd in Morgan	21	7.79
FOR_01	Forest trails & stream stabilization off Mossa Rd in Morgan	21	6.91
LS_04	Lake access BMPs off West Echo Lake Rd in Charleston	21	0.41
ROAD_07	Road erosion BMPs on Curtis Rd in Morgan	21	3.38
ROAD_15	Private road BMPs on Hunting Camp Rd in Holland	21	0.47
RVR_13	Buffer planting and headcut stabilization on unnamed streams off W Echo Lake Rd in Charleston	20	0.47
FLPN_09	Buffer planting and headcut stabilization upstream of W Echo Rd in Charleston	20	0.17
ROAD_18	Road Erosion BMPs on Wayeeses Shore West in Morgan	20	0.22
ROAD_20	Road Erosion BMPs on Sugar Bush Rd in Morgan	20	0.64
ROAD_16	Road Erosion BMPs on Wayeeses Shore in Morgan	20	1.75
WL_04	Wetland restoration off W Echo Lake Rd in Charleston	20	3.68
AG_02	Barnyard & manure pit runoff and erosion on unnamed tributary off Gonyaw Rd in Morgan.	19	3.89
AG_05	Gully Stabilization in pasture off E Echo Lake Rd. In Charleston	19	3.51
FLPN_03	Culvert upgrade on Hatton Heights in Morgan	19	1.18
FLPN_12	Culvert replacement on Toad Pond Rd #2 in Morgan	19	2.99
ROAD_08	Road Erosion BMPS on Wayeeses Dr in Morgan	19	1.08

Sucker & Valley Brook Confluence Restoration

Total Score: 27/36

Priority Rank: #1

Water Quality Stressors:

- Streambank erosion
- Up-drainage flooding & sediment loading
- Water St flood damages
- Siltation of FWD Access Area
- **10.3 lbs P reduction per year**

Potential Co-benefits:

- Chronic problem area
- Reduces flood risk, peak flows, or seasonal flooding
- Improves existing BMPs
- Enhances lakeshore natural communities
- Enhances fish habitat
- Flood resilient infrastructure

Potential Remedies:

- Increase floodplain connection & storage
- Wetland enhancement
- Riparian buffer plantings
- Woody additions



Driveway & Buffer BMPs – Cranberry Brook

Total Score: 26/36
Priority Rank: #2 & #7

Water Quality Stressors:

- Driveway runoff & erosion
- Streambank & lakeshore erosion
- Low-quality shoreland habitat
- Cattle grazing
- **5.7 lbs P reduction per year (combined)**

Potential Co-benefits:

- Reduces flood risk, peak flows, or seasonal flooding
- High visibility or potential to influence behavior
- Improves existing BMPs
- Enhances lakeshore natural communities
- Enhances fish habitat
- Flood resilient infrastructure
- Invasive species control

Potential Remedies:

- Lakeshore & riparian buffer plantings
- Shoreline stabilization & restoration
- Private driveway BMPs



Road Erosion BMPs – West Echo Lake Road

Total Score: 25/36
Priority Rank: #3 & #9

Water Quality Stressors:

- Major road & driveway wash-outs
- Major sediment & phosphorus loading
- Stream channel & bank erosion
- **7.39 lbs P reduction per year (combined)**

Potential Co-benefits:

- Chronic Problem Area
- Improves Existing BMPs
- High visibility
- Reduces flood risk
- Flood resilient infrastructure
- Enhances lakeshore natural communities
- Enhances fish habitat

Potential Remedies:

- Upsize driveway & cross-drainage culverts
- Upgrade stream crossings
- Stone lined ditches
- Remove grader berms to improve sheet flow



Road Erosion BMPs – Toad Pond Road

Total Score: 25/36

Priority Rank: #4

Water Quality Stressors:

- Major road & driveway wash-outs
- Major sediment & phosphorus loading
- Stream channel & bank erosion
- No AOP passage
- **6.18 lbs P reduction per year**

Potential Co-benefits:

- Chronic Problem Area
- Improves Existing BMPs
- High visibility
- Reduces flood risk
- Flood resilient infrastructure
- Enhances lakeshore natural communities
- Enhances fish habitat

Potential Remedies:

- Upsize driveway & cross-drainage culverts
- Upgrade stream crossings
- Stone lined ditches & out-sloped road surfaces
- Remove grader berms to improve sheet flow



Riparian Buffer Plantings off Bennett Farm Road

Total Score: 24/36
Priority Rank: #5

Water Quality Stressors:

- Agricultural runoff & legacy P
- Streambank erosion & soil loss
- Gulying & wetland loss
- **4.98 lbs P reduction per year**

Potential Co-benefits:

- High visibility or potential to influence behavior
- Agricultural land use compatibility
- Improves existing BMPs
- Enhances fish habitat
- Reduces flood risk, peak flows, or seasonal flooding

Potential Remedies:

- Streamside buffer plantings
- Headcut stabilization
- Culvert upgrades



Wayeeses & Sugarbush Roads BMPs & Gully Stabilizations

Total Score: 23/36
Priority Rank: #6, #22-24, #30

Water Quality Stressors:

- Major road & driveway wash-outs
- Major sediment & phosphorus loading
- Forested gully erosion
- Shoreland habitat degradation
- **11.9 lbs P reduction per year (combined)**

Potential Co-benefits:

- Chronic problem area
- Reduces flood risk, peak flows, or seasonal flooding
- Improves existing BMPs
- Enhances lakeshore natural communities
- Flood resilient infrastructure

Potential Remedies:

- Road drainage BMPs & runoff management
- Culvert upgrades
- Gully stabilization



Derelict Dam Removal – Cranberry Brook

Total Score: 22/36
Priority Rank: #8

Water Quality Stressors:

- Bank & channel erosion
- Potential flood & safety risk
- Fish & aquatic organism passage barrier
- **0.48 lbs P reduction per year**

Potential Co-benefits:

- Reduces flood risk
- Improves existing BMPs
- High visibility
- educational potential
- Chronic problem area
- Enhances fish habitat
- Flood resilient infrastructure

Potential Remedies:

- Buffer plantings



Lakeshore Buffer Planting in Pastures

Total Score: 22/36
Priority Rank: #10

Water Quality Stressors:

- Cattle grazing
- Potential shoreland erosion
- Pasture & hayfield runoff
- **0.46 lbs P reduction per year**

Potential Co-benefits:

- High visibility or potential to influence behavior
- Agricultural land use compatibility
- Improves existing BMPs
- Enhances lakeshore natural communities
- Enhances fish habitat

Potential Remedies:

- Lakeshore buffer plantings
- Livestock exclosure fencing
- Passive wetland restoration



Stream Restoration & Ditch BMPs near Sunset Dr

Total Score: 22/36
Priority Rank: #11

Water Quality Stressors:

- Hayfield runoff & legacy P loading
- Headcutting & incision
- Streambank & channel erosion
- Road runoff & sediment inputs
- **0.64 lbs P reduction per year**

Potential Co-benefits:

- Chronic problem area
- High visibility or potential to influence behavior
- Improves existing BMPs
- Enhances fish habitat
- Agricultural land use compatibility

Potential Remedies:

- Riparian buffer plantings
- Headcut stabilization
- Road erosion & runoff BMPs



Road Erosion BMPs – Williams Rd

Total Score: 22/36
Priority Rank: #12

Water Quality Stressors:

- Major road & driveway wash-outs
- Major sediment & phosphorus loading
- Stream channel & bank erosion
- No AOP passage
- **3.28 lbs P reduction per year**

Potential Co-benefits:

- BMPs will reduce peak flows
- Culvert replacement will restore AOP

Potential Remedies:

- Remove grader berms
- Add stone-lined ditch
- Add roadside turn-outs
- Replace undersized/incompatible culvert



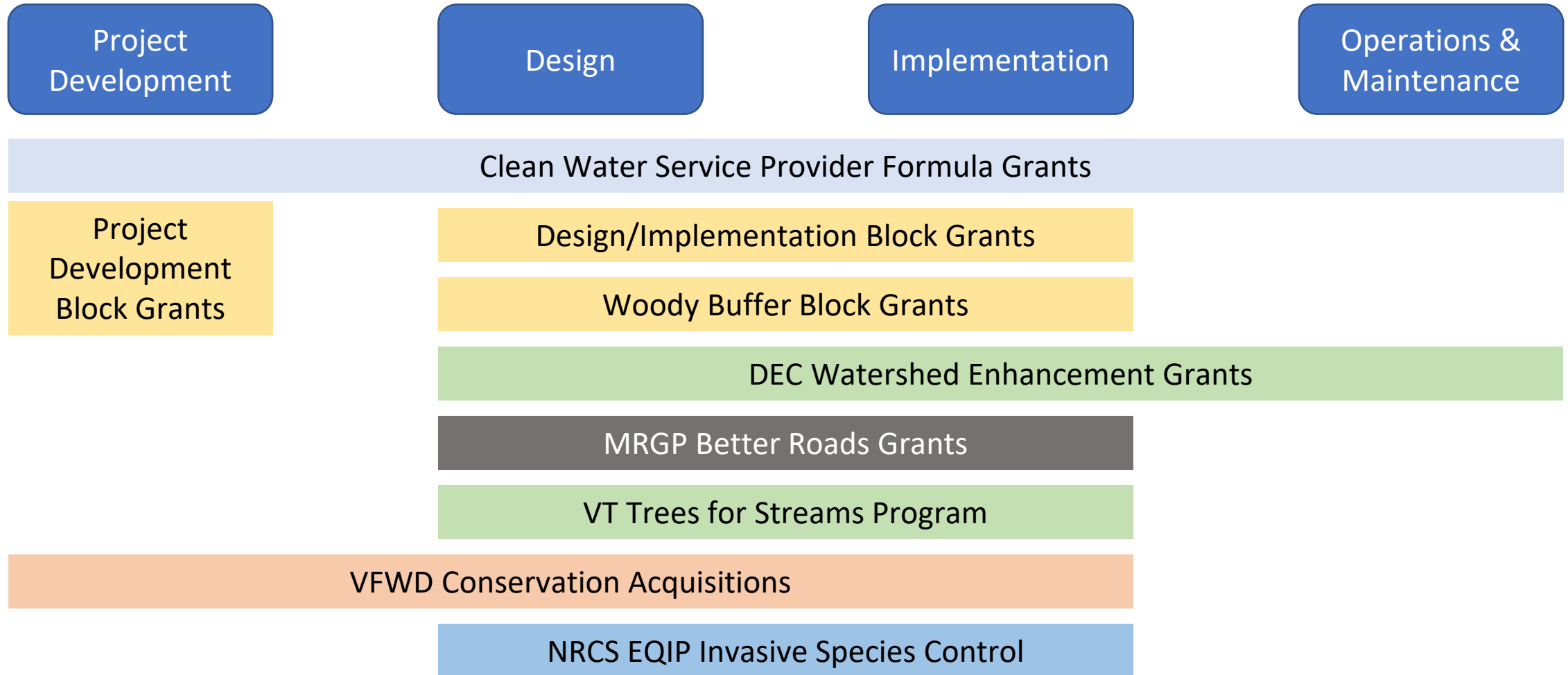
LWAP Team Design Project Recommendations

- | | |
|--|----------------|
| 1. Sucker-Valley Brook Confluence Restoration | <i>SEYMOUR</i> |
| 2. West Echo Lake Road Erosion BMPs | <i>ECHO</i> |
| 3. Toad Pond Road Erosion BMPs | <i>SEYMOUR</i> |
| 4. Bennett Farm Road Riparian Buffer Plantings | <i>ECHO</i> |
| 5. Cranberry Brook Buffer & Driveway BMPs | <i>SEYMOUR</i> |



Funding Opportunities

PROJECT PHASE



Core Assessment Areas

Stream Walks & Riparian Assessments:

- *Proposed*
 - 30 stream miles
- *Completed*
 - 37.7 stream miles & 186 crossings
 - 187 properties
 - 750+ geotagged observations

Lake Wise & Lake Shoreland Assessments:

- *Proposed*
 - 10 properties
 - 15.1 miles of shoreland
- *Completed*
 - 5 Echo & 6 Seymour properties
 - 10.7 miles Seymour Lake shoreland
 - 4.4 miles Echo Lake shoreland

Road Assessments:

- *Proposed*
 - 3.4 miles public roads
 - 7 miles private roads/driveways
- *Completed*
 - 22.7 miles public roads
 - 13.3 miles private roads/driveways

Developed, Forest, & Agricultural Lands:

- *Proposed*
 - 5 properties
- *Completed*
 - 10 properties

