

O&M of Clean Water Projects

April 12, 2024

Online Training

DEC Clean Water Initiative Program and
Lake Champlain Sea Grant

Introductions



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Presentation Goals

- Discuss clean water projects and importance of routine O&M.
- Provide an overview of the current process and policy for Verification and O&M for projects funded or adopted by CWSPs.
- Outline next steps for O&M Trainings and provide resources.

Training Audience

Required Attendees

- CWSP Staff
- Entities serving as verifiers
- Anyone interested in performing verification services

Suggested Attendees

- BWQC Members
- Maintainers who will be maintaining multiple sites
- Municipal staff

Training Outline:



Background on Clean Water Projects and TMDLs

Clean Water Service Provider Program

Site Access Agreements and O&M Plan

O&M Process

Verification Results

O&M Reporting

Key Takeaways, resources, and follow up survey

What are Clean Water Projects?

Prevent nutrient and sediment pollution from washing off the landscape into Vermont's rivers, lakes, and wetlands.



Dam removal and river & floodplain restoration



Road erosion mitigation projects



Lakeshore practices



Green stormwater infrastructure

[CWIP Funding Policy Appendix B: Project Types Table](#)
[Clean Water Project Explorer \(vt.gov\)](#)

Clean Water Project Life Cycle



Assessment/Identification

Development

Design

Implementation

Maintenance

What does maintenance look like?



- Stabilizing eroded areas
- Mowing
- Removing trash and debris
- Removing accumulated sediment
- Replanting dead vegetation

OPERATION & MAINTENANCE MANUAL

For Clean Water Projects in Vermont

Developed by the Clean Water Initiative Program



Coming soon! – *for now please use professional knowledge for maintenance guidance.*

Manual contains:

- Descriptions of practice types.
- Verification guidance.
- Equipment, materials, and labor for routine maintenance.
- Factors known to affect the lifespan of the clean water project.

CWIP Funding Opportunities

- Acknowledge non-formula grants administered by CWIP
- O&M considerations

Currently Active Clean Water Project Development, Design, and Implementation Funding Programs

Funding Program	Funding Program Purpose	Geographic Availability	Funding Program Administrator
Clean Water Workforce Capacity Development Initiative Block Grant	Support and invest in the capacity of our clean water partners in Vermont, both current and potential, in an equitable and inclusive way to address unmet capacity needs and ensure a strong partnership network that continues to efficiently deliver high quality and high priority clean water projects.	Statewide	Watersheds United Vermont
Dam Removal Design/Implementation Block Grant	Support design and implementation of selected priority water quality Dam Removal projects from the DEC Watershed Projects Database to achieve measurable improvements to Vermont's water quality.	Statewide	Watersheds United Vermont
Design/Implementation Block Grant	Support design and implementation of clean water projects that reduce sediment and nutrient pollution, including phosphorus from runoff and soil erosion that discharge into Vermont's rivers, streams, lakes, ponds, and wetlands. This block grant is projected to sunset by 2024.	Statewide	Mount Ascutney Regional Commission Natural Resource Conservation Council Watersheds United Vermont
Municipal Separate Storm Sewer System (MS4) Community Formula Grant	Assist MS4 communities with MS4 permit compliance to reduce the adverse impacts to water quality of a discharge or stormwater runoff. Grant recipients must use the grant to design and/or implement eligible stormwater management practices to help with MS4 community make progress towards phosphorus reduced targets assigned within their Phosphorus Control Plans.	N/A - Must be an MS4 community	N/A
Project Development Block Grant	Help project implementers line up high priority clean water projects that Clean Water Service Providers and their associated Basin Water Quality Councils (BWQCs) can consider advancing through Water Quality Restoration Formula grant funding, or that can be pursued through the Water Quality Enhancement Grant Program or other water quality grants. Learn more about Project Development . This block grant is projected to sunset by 2024.	Statewide	Addison County Regional Planning Commission Natural Resource Conservation Council Watersheds United Vermont
Water Quality Enhancement Development, Design, and Implementation Block Grant	To support the development, design, and implementation of priority water quality enhancement projects. View the Water Quality Enhancement Grants Summary document to learn more.	Statewide (Prioritized outside Lake Champlain and Lake Memphremagog basins)	Mount Ascutney Regional Commission Natural Resource Conservation Council Watersheds United Vermont
Water Quality Restoration Formula Grant	To award grants to Clean Water Service Providers to meet pollutant reduction requirements through funding clean water project assessments, identification, development, design, implementation, operation and maintenance.	Lake Champlain and Lake Memphremagog basins	Clean Water Service Provider Network
	...ort projects that establish, and steward forested riparian buffers.	Statewide	Natural Resource Conservation Council Watersheds United Vermont

O&M for Non-Formula Grants

Operation and Maintenance Agreement

For [Project Name]

Installed under the following agreement: [Agreement number]

This Operations and Maintenance Agreement, ("Agreement") is made and entered into this ____ day of _____, 20____, between _____ (hereinafter referred to as the "Responsible Party") and _____ (hereinafter referred to as the "Landowner" if different from the Responsible party) and the Department of Environmental Conservation, (hereinafter referred to as the "DEC").

1. The Responsible Party agrees to inspect and maintain the above-mentioned project(s) or practice(s) at regular intervals, according to the attached Operation and Maintenance Plan.
2. The Responsible Party agrees to correct any maintenance issues or conduct needed repairs that are observed during inspections, such as the as-needed maintenance and repairs listed in the attached plan.
3. The Responsible Party agrees to maintain the practice outlined according to the attached plan for ____ years from the date the project installation and/or construction.
4. DEC staff may periodically visit the project site to inspect the condition of the installed practice(s). If the project is on private land, the grantee and responsible party/landowner will be notified by DEC staff at least 48 hours prior to any site visit. The landowner agrees to provide DEC staff or contractors with access to the site during State of Vermont Business hours (8:00-4:30).
5. If a project or practice is found to be in need of maintenance or in a state of disrepair, DEC will conduct the following steps:
 - a. Notify the Responsible Party of the items that need to be corrected.
 - b. Provide the Responsible Party a reasonable schedule to correct the items in need of maintenance.
 - c. If the items cannot be corrected within the allotted time, require the Responsible Party to establish a schedule to complete the correction
 - d. If no adequate response or correction action has been taken within the allotted time, provide the Responsible Party a written warning that failure to meet all grant conditions could result in the Responsible Party being ineligible for future clean water grants.
6. The Responsible Party and/or Landowner shall not be able to transfer or modify its responsibilities with respect to this agreement without the DEC's written prior consent.
7. Any delays in or failures of performance by a party under this Agreement shall not be considered a breach of this Agreement if caused by occurrences beyond the reasonable control of the party affected, including but not limited to: severe storms, floods or other natural events and sabotage. Any time for performance hereunder shall be extended by the time of delay caused by such occurrence.

Signature of Responsible Party: _____ Date: _____

Signature of Landowner: _____ Date: _____

Updated 12/11/2019

Y:\WID_CWIP\Grants\Grants\Ecosystem Restoration\Documents uploaded to Website\FY 2020 updates

O&M Agreement

- Required 10-year (minimum) O&M Plan signed by O&M Responsible party and landowner for implementation phase projects
- Third party O&M Agreement template

[Applicant & Recipient Resources | Department of Environmental Conservation \(vermont.gov\)](https://www.vermont.gov)

O&M Agreement

- Contact information for landowner and responsible party
- Project location
- Project type and completion date
- Identified maintenance practices and frequency to maintain project function

[Applicant & Recipient Resources | Department of Environmental Conservation \(vermont.gov\)](#)

Operation and Maintenance Plan

For Project Title., BMP/Practice name., installed under the following agreement:
Agreement Number.

The purpose of this Operation and Maintenance Plan and Agreement is to ensure that the projects and/or practices supported by the Vermont Department of Environmental Conservation (DEC) continue to function properly throughout their useful lives and contribute to improving water quality conditions of Vermont's waterways.

Responsible Party Name(s):	
Responsible Party Phone:	() ___-____
Responsible Party Email:	
Landowner Name (if different):	
Landowner Phone:	() ___-____
Landowner Email:	
Property Address/description: (or attach site plan)	
Practice Latitude Longitude (center point in Decimal Degrees):	Latitude °N , Longitude °W
BMP Construction Completion date:	
BMP Useful Life End Date (minimum of 10 years from construction):	
BMP Type:	Choose a BMP.
Special Equipment Required, if any: (e.g., Vector truck, anything other than hand tools)	
Frequency of Regular Inspections: (recommend 2-3/yr for Stormwater, 1/yr for Natural Resource Projects)	

Regular Maintenance and Frequency: If engineer or designer had designed the project, engineer or designer shall complete the following. Include activities such as weeding, mowing, sediment and debris removal, inlet and/or outlet cleaning, and equipment maintenance per manufacturer.

Maintenance Item	Frequency

As needed maintenance and repair: (e.g. replanting, major erosion or damage repair):

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O&M for Formula Grants

Vermont's Clean Water Priorities and Clean Water Restoration Plans (i.e., Total Maximum Daily Loads, or TMDLs)

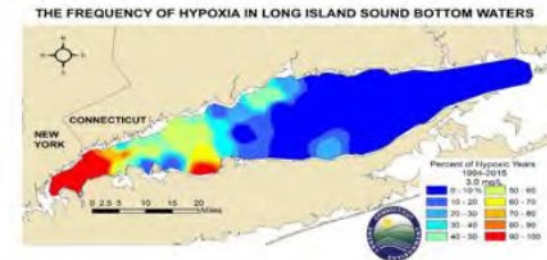
Phosphorus TMDLs for Vermont Segments of Lake Champlain



Lake Memphremagog Phosphorus TMDL

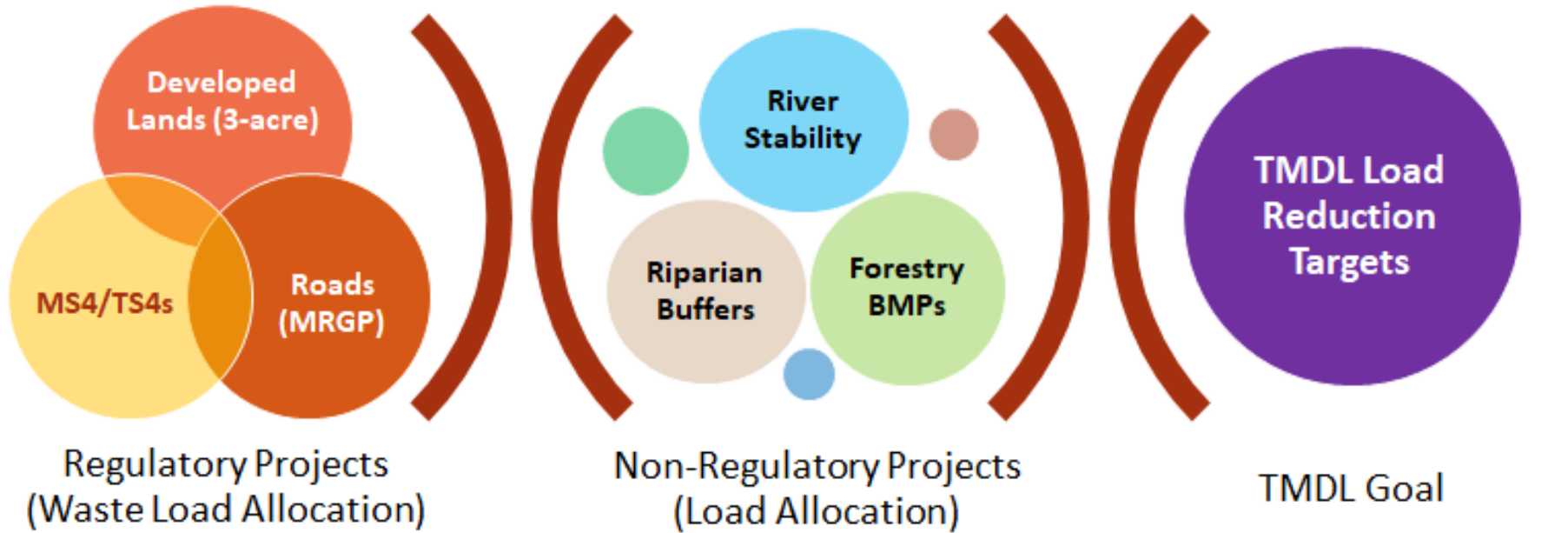


Nitrogen TMDL for Dissolved Oxygen in Long Island Sound

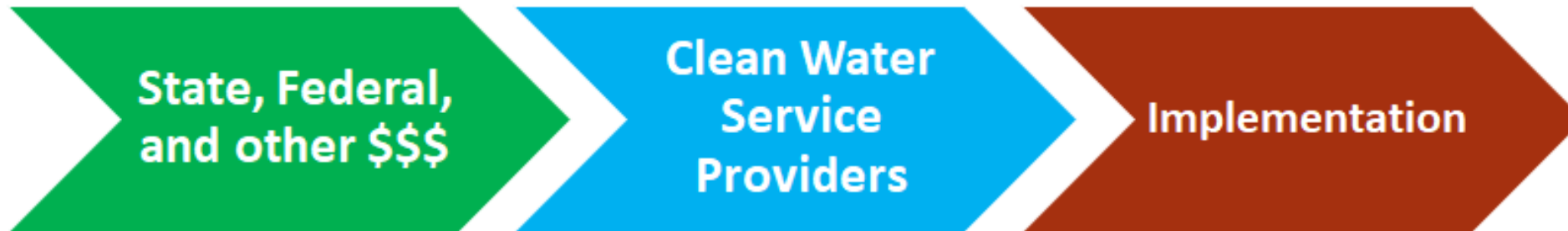


Learn more about Vermont's TMDLs in [this webinar](#)

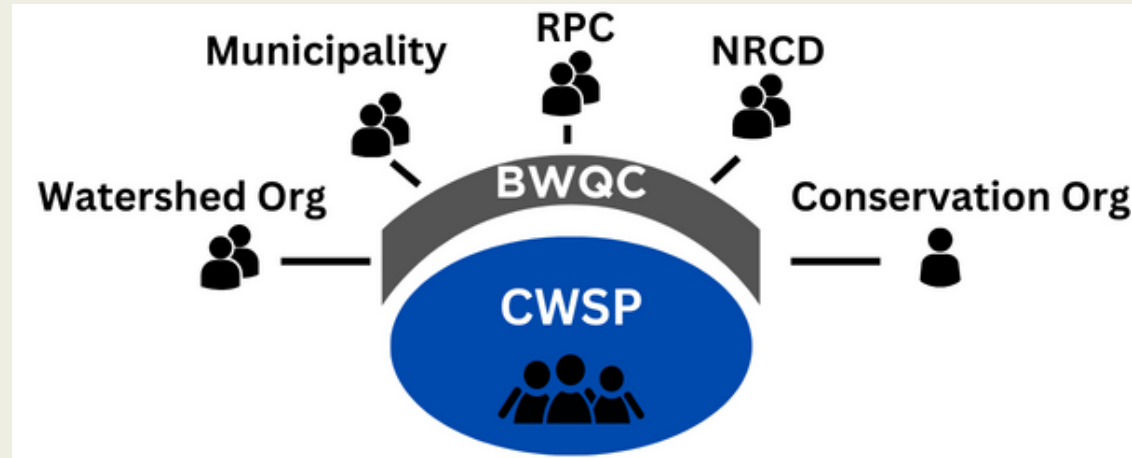
How will Vermont achieve the TMDLs?



TMDL targets will be met by implementing state regulatory programs plus non-regulatory projects funded through Clean Water Service providers



Clean Water Service Providers (CWSPs)

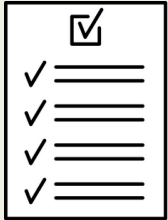


- Regional organizations who receive **Water Quality Restoration Formula Grant** funding to implement, **operate, and maintain**, non-regulatory clean water projects.
- Basin Water Quality Councils guide CWSP activities.
- Each Vermont tactical basin planning watershed has (or will have in the coming years) a CWSP established.
- For more information about CWSPs and the implementation of Act 76, see this [Clean Water Conversation](#) and the [VT DEC Website](#).

O&M Definitions



➤ **Design life:** *The period of time that a clean water project is designed to operate according to its intended purpose.*



➤ **Verification:** *The use of visual indicators to assess clean water project function on a regular schedule.*



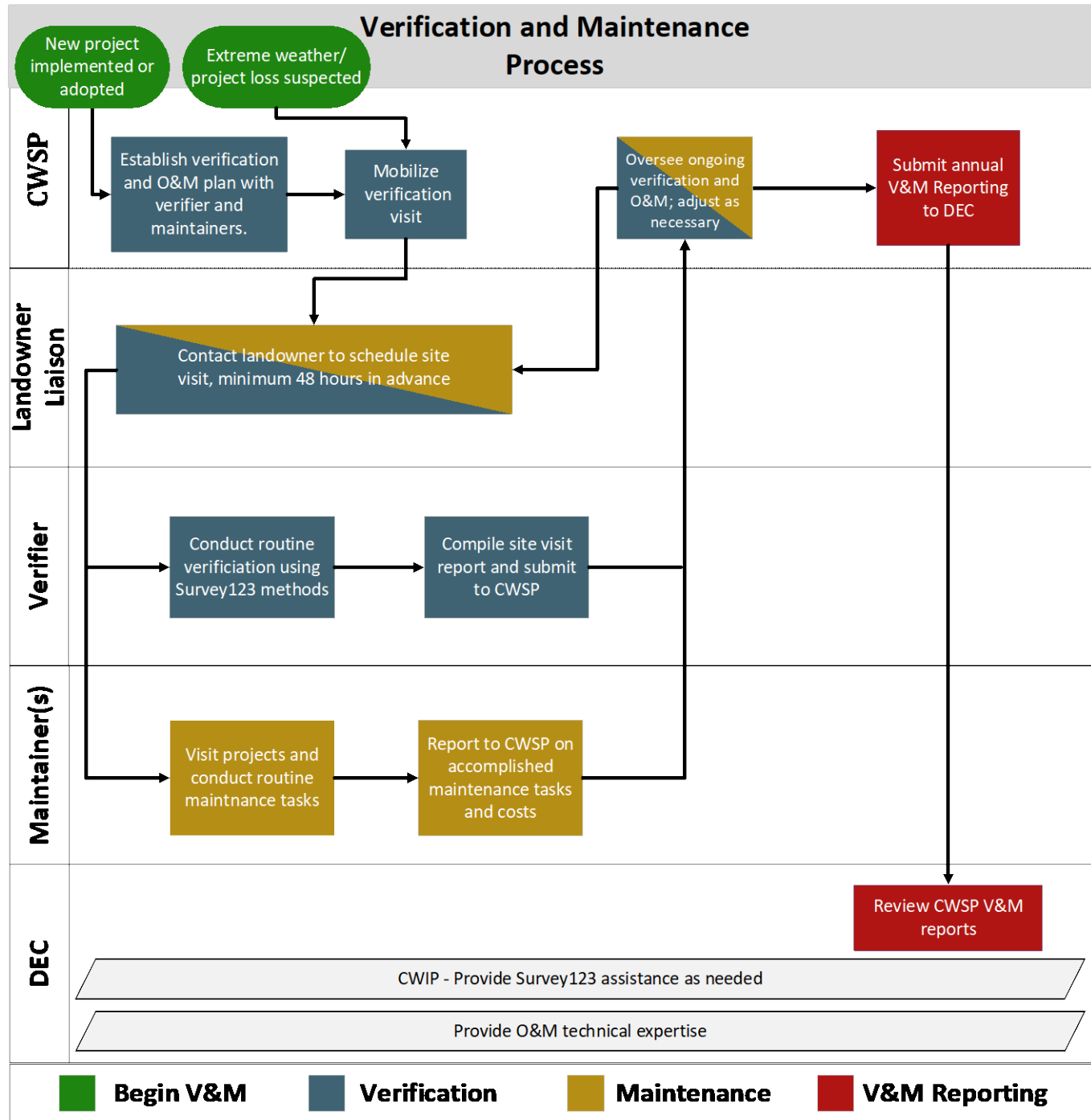
➤ **Maintenance:** *Actions taken with the goal of holding installed projects up to standards that ensure clean water projects provide water quality benefits throughout their design life.*



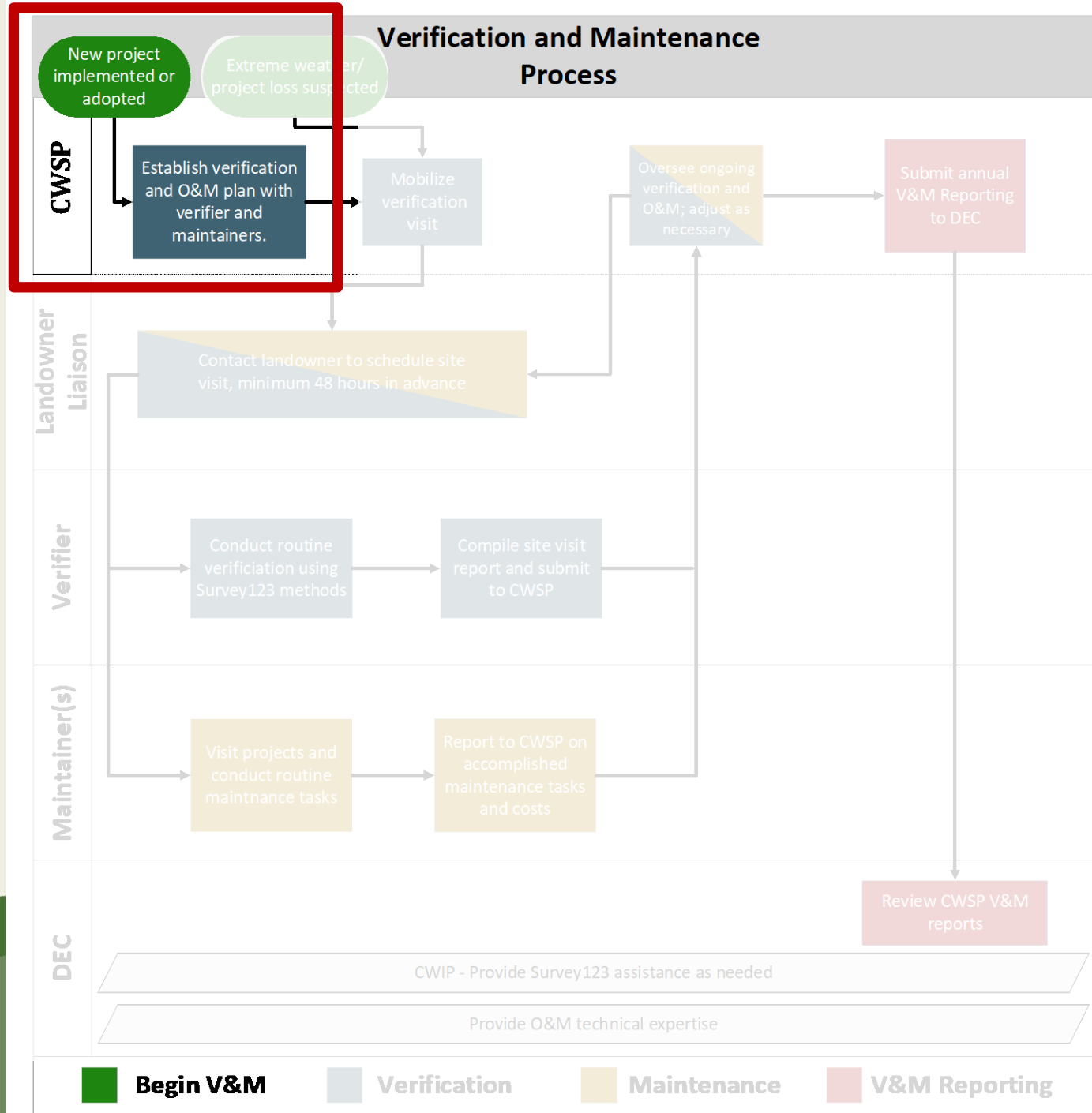
➤ **Project Portfolio:** *List of completed, implementation phase projects with active operating periods CWSPs have funded and adopted.*

O&M Roles and Responsibilities

CWSP	Oversees O&M activities for clean water projects in their portfolio and responsible for projects staying in performance.
Landowner Liaison	The agent designated by the landowner as their preferred point of contact.
Verifier	Conducts site visits to assess project condition and function. Trained and certified in DEC verification methods.
Maintainer	Conducts routine maintenance tasks in the O&M plan. Repairs failed projects.
DEC	Provides tools, guidance, & trainings to support successful O&M across the network. Adaptively manages the program.



Projects become part of CWSP portfolio: implementation & adoption



CWSP Project Portfolio

Project Implementation: *Funded by CWSPs Formula Grants*

Project Adoption: *Entails a CWSP assuming maintenance responsibilities for a previously implemented clean water project that was not funded under the Water Quality Restoration Formula Grants.*

Adoption Eligibility:

- 1) Must be a non-regulatory clean water project.
- 2) Has an existing implementation phase Watershed Projects Database (WPD) ID that was funded by eligible funding sources identified in Guidance.
- 3) The current O&M responsible party is amenable to the project being adopted.
- 4) Landowner is interested and willing to sign a site access agreement.

Site Access to Verify and Maintain

- Required in CWSP Rule that CWSPs maintain site control for access to project area to:
 - Install a project.
 - **Conduct routine maintenance.**
 - **Verify project is functioning as intended.**
 - **Repair damage.**
- Signed agreement between CWSP and landowner(s).
- Either a license or an easement.

SITE ACCESS EASEMENT AGREEMENT FOR A CLEAN WATER PROJECT

THIS SITE ACCESS EASEMENT AGREEMENT FOR A CLEAN WATER PROJECT (Agreement) is made and entered into this ____ day of _____, 20__ by and between: _____ of _____, Vermont, [add additional landowner lines if needed] and their heirs, administrators, successors, and assigns (collectively, "Landowner"); and _____ ("Clean Water Service Provider" or "CWSP" and with Landowner, the "Parties").

WHEREAS, the Landowner owns certain land and premises located at _____ in _____, Vermont ("Property"), as set forth in Exhibit A, within the _____ watershed basin ("Basin"); and

WHEREAS, the CWSP has been assigned by the Secretary of the Vermont Agency of Natural Resources for the purpose of achieving pollutant reduction values, in accordance with the Clean Water Service Delivery Act (Act 76 of 2019) at 10 V.S.A. §§ 921-930 and the Clean Water Service Provider Rule, Environmental Protection Rule Chapter 39 ("Rule"); and

WHEREAS, the CWSP is responsible for implementation and operation and maintenance of clean water projects designed to improve water quality to achieve certain pollutant reduction targets (10 V.S.A. § 924 and the Rule §§ 39-101 and 39-403); and

WHEREAS, maintenance means ensuring that a clean water project continues to achieve its designed pollution reduction value for its design life and design life means the period of time that a clean water project is designed to operate according to its intended purpose; and

WHEREAS, Landowner wishes to voluntarily provide the CWSP with Property access for the clean water project, and the project is anticipated to result in a clean water improvement and possibly related environmental improvement outcomes; and

WHEREAS, the Parties desire that a clean water project be implemented and operated and maintained on the Property, as more particularly described in Sections 2 and 3 below (the Project); and

WHEREAS, the Project may require the CWSP, with its own forces or those of contractors, to enter upon the Property; and

Site Access Agreements

Agreement Type	Terms	Duration	DEC Policy
Site Access License	A signed agreement between landowner(s) and CWSP.	<p>Initial term lasts for the project's design life.</p> <p>Following initial term, agreement automatically renews for consecutive terms, until the agreement is terminated by either party.</p> <p>Does not run with the land (i.e., if land is sold CWSP/Landowner liaison will need to renegotiate terms to maintain access)</p>	Only for projects with implementation costs below \$200K.
Site Access Easement	A signed agreement between landowner(s) and CWSP that is filed in the municipal land record.	<p>Initial term lasts for the project's design life.</p> <p>Following initial term, the agreement automatically renews for consecutive terms, until renewal is declined by either party.</p> <p>Runs with the land (i.e., even if the land is sold the easement still applies).</p>	<p>Can be used for all project types, if desired by landowner/CWSP.</p> <p>Required for projects with implementation costs equal to/over \$200K.</p>

Cover Letter

- Cover letter template is adjusted based on site access license or easement.
- Plain language explanation of access agreements.

Installing and Maintaining your Clean Water Project

Dear _____ [*landowner's name*],

Thank you for partnering with us to host a voluntary clean water project on your property. This project is intended to protect the quality of Vermont's rivers, lakes, streams, and wetlands. Your participation is a valuable contribution to Vermont's water quality goals. This cover letter provides an overview of the attached Site Access **License/Easement Agreement** and Operation and Maintenance Plan and highlights some key aspects of how we will work together to help the project succeed. Please read the attached **Agreement carefully for the complete agreement terms.**

What is this agreement saying?

Introduction

Page One describes the parties to the Agreement, the property, the general clean water project context (with reference to the state statute and rule that supports this project), and the parties' intent for access to the property and installation, maintenance, and inspection of the project.

Project Description

Pages Two and Three provide contact information as well as project details including location, expected "design life" (the number of years we expect that the project will protect water quality), maintenance activities needed to keep the project in good condition, and the frequency of those maintenance activities.

Terms of Agreement

After the project description topics, the document lists the terms of the Agreement—what the parties agree to, how long you're agreeing to it, and other expectations for both parties.

The Agreement allows _____ [*list the relevant organizations*] and staff from the Vermont Department of Environmental Conservation to access the project on your property for planned visits with necessary equipment for the following purposes: 1) to install the project, 2) to regularly inspect the project to ensure proper function, and 3) to conduct routine maintenance activities that include _____ [*short description of common maintenance activities*] to keep the project working properly. We may also request to visit your property if damage is suspected (such as after a large storm) to inspect and possibly perform repairs. If you have concerns about damage to a project or if there is something you feel is not working properly, please contact us to request a site visit. All visits will be scheduled by _____ [*landowner liaison organization*] via phone or email [*indicate landowner's preferred contact method*] with at least 48 hours' notice. Refer to the Operation and Maintenance Plan in the Agreement for more details.

Note that the Agreement prevents you from making a trespass or similar claim against the parties that are being authorized to enter your property for the reasons listed, but you retain the right to make a claim for negligent acts or omissions by those parties.

Agreement Duration

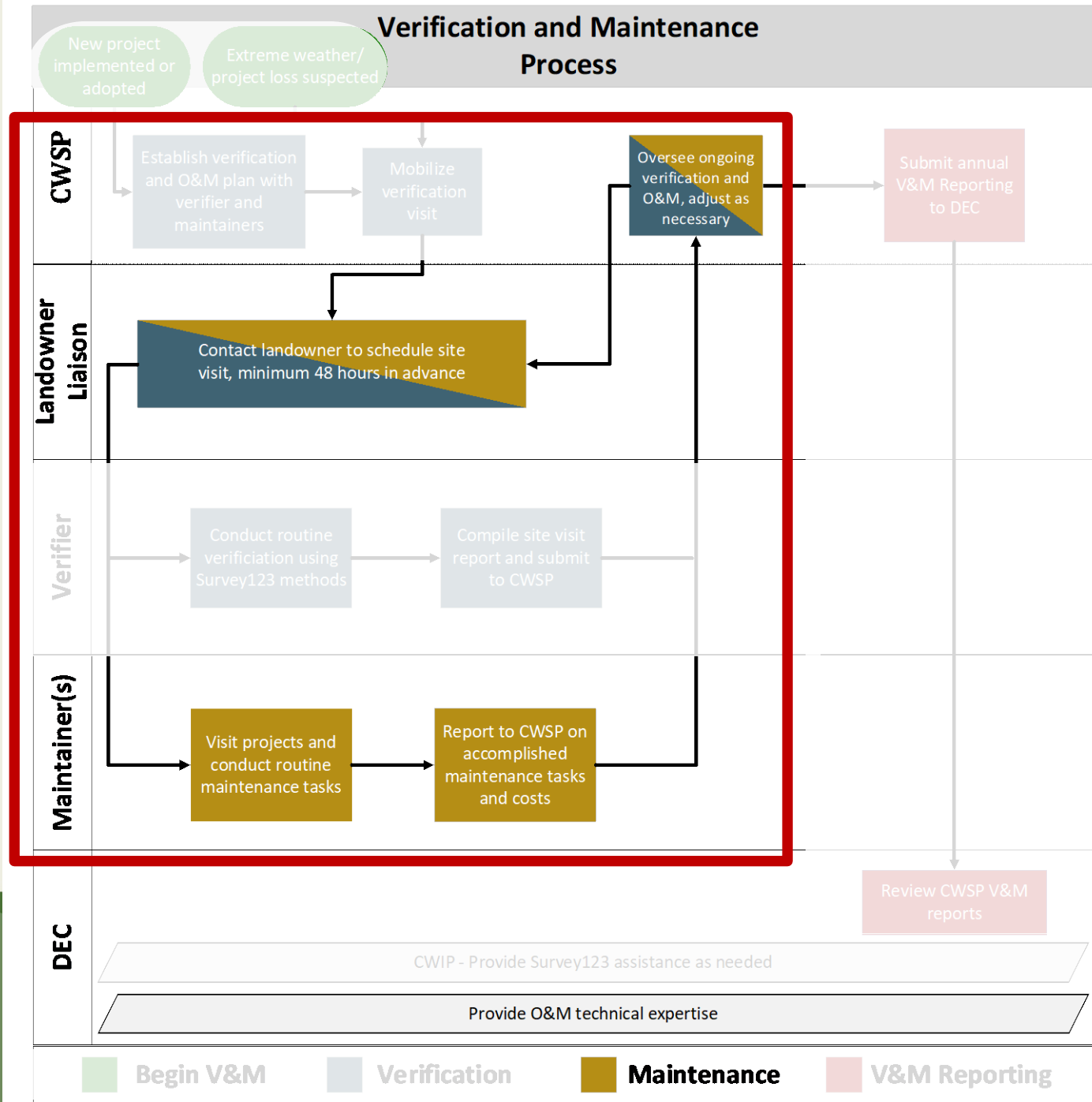
More on Site Access Agreements

August 2023 training on the Site Access License and Easement Agreements and cover letter.

Please complete this [form](#) to request a link to the recorded training.

Templates can be found here: [Applicant & Recipient Resources | Department of Environmental Conservation \(vermont.gov\)](#)

Maintenance



O&M Plan: Tasks & Frequency

- Project description
- Maintenance and verification visit frequency
- Equipment
- Routine maintenance activities

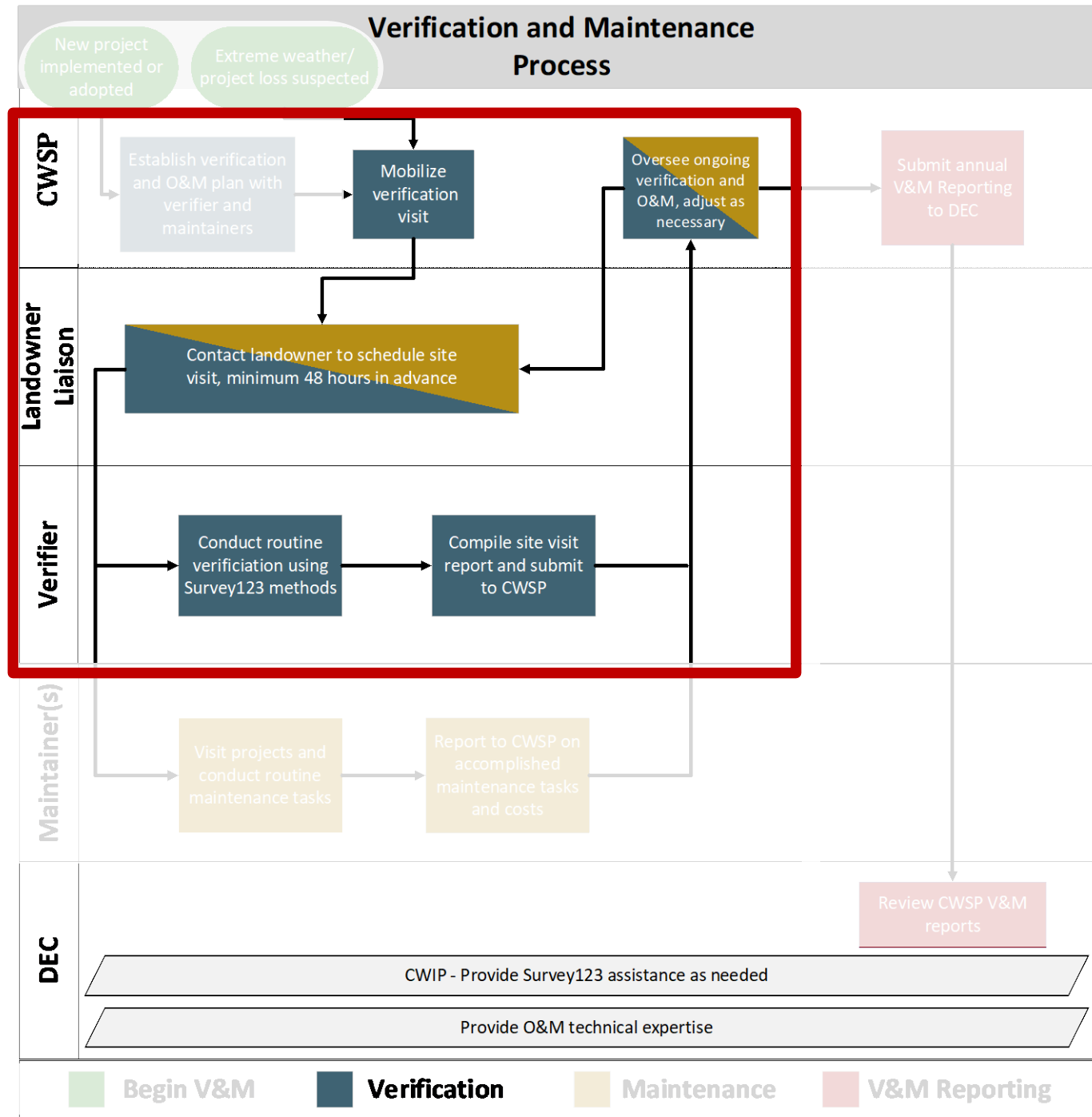
3. **Description of Project.** The Project and operation and maintenance will consist of the following:

Project Type:	Choose a Project Type
Practice Type:	Choose a Practice Type
Watershed Projects Database ID:	
Project Title:	
Project Implementation Completion Date:	
Project Design Life*:	
Special Equipment Required, if any* (e.g., Vactor truck, anything other than hand tools)	
Frequency of Regular Inspections*:	

[Add additional project description table if multiple practices]

Operation and Maintenance Plan	
Operation and maintenance will include the following activities (such as weeding, mowing, sediment and debris removal, inlet and/or outlet cleaning, and equipment maintenance) and project repairs on an as-needed basis within the reasonable discretion of the CWSP*.	Frequency (e.g., quarterly, annually, or as needed)

Verification



Clean Water Project Verification Goals



- ✓ Verify that projects funded with DEC funds are being maintained and functioning as intended.
- 📊 Support tracking and accounting of clean water projects and their contribution toward Vermont's water quality goals.
- 🤝 Expand partnerships with landowners and Vermont's Clean Water Network.
- 📣 Increase confidence that state dollars are being spent effectively.

Verification Site Visit Process

Review site designs and
O&M plan

Contact landowner liaison to
alert them of the visit

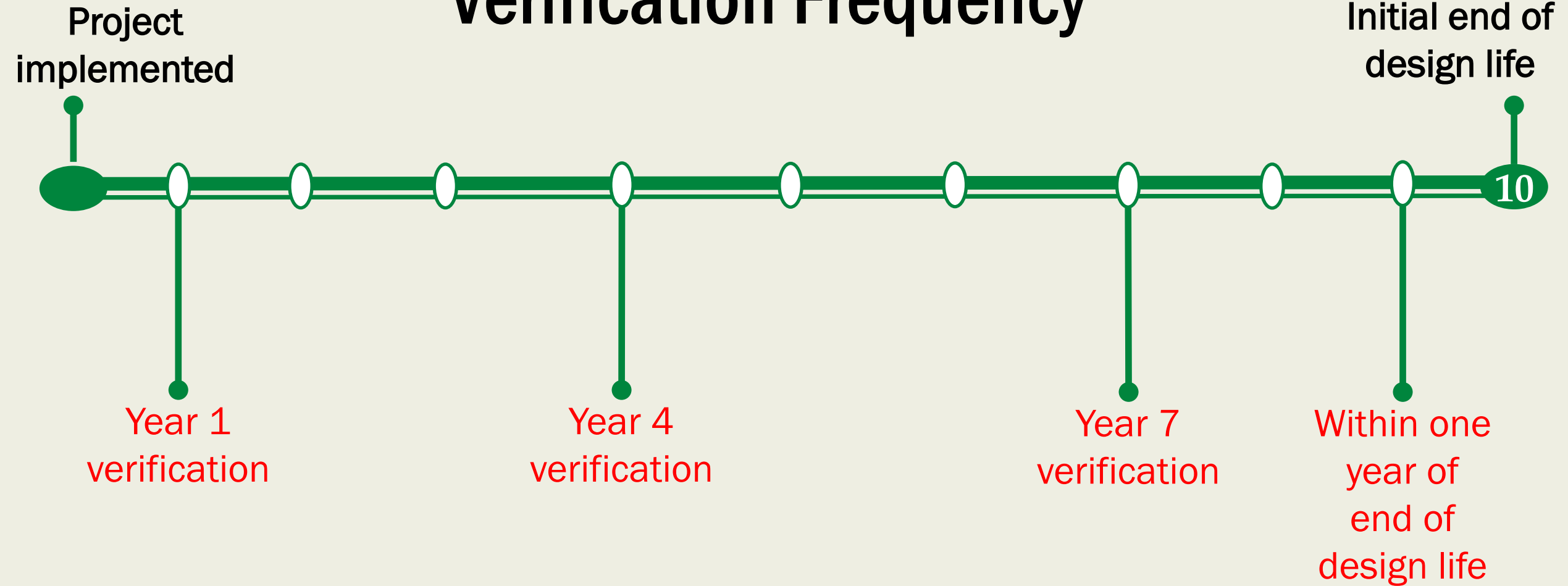
Visit site and collect
information using Survey123

Review and submit
collected data

Follow up with CWSP to
report on the project's status

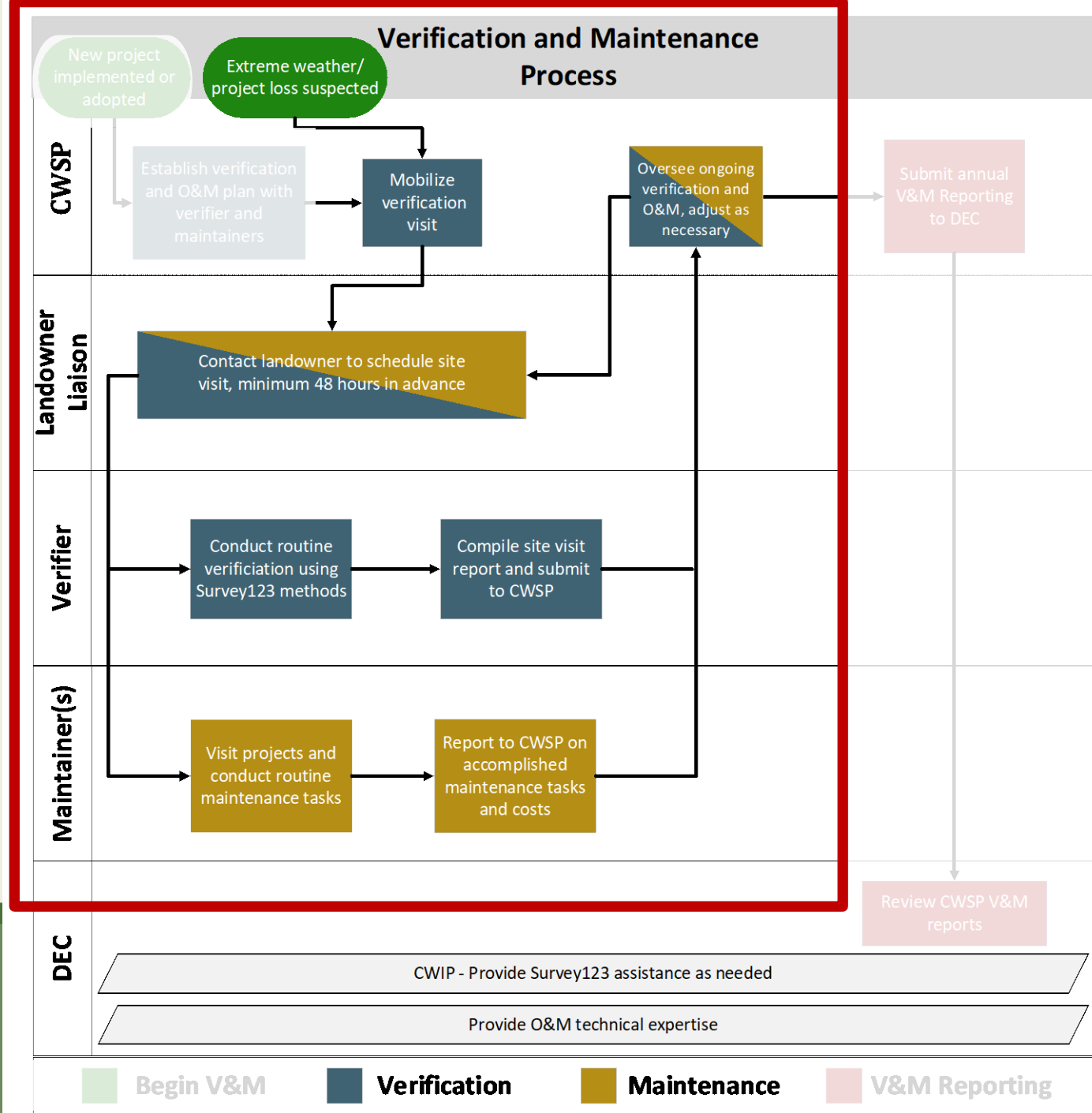


Verification Frequency



Required visits

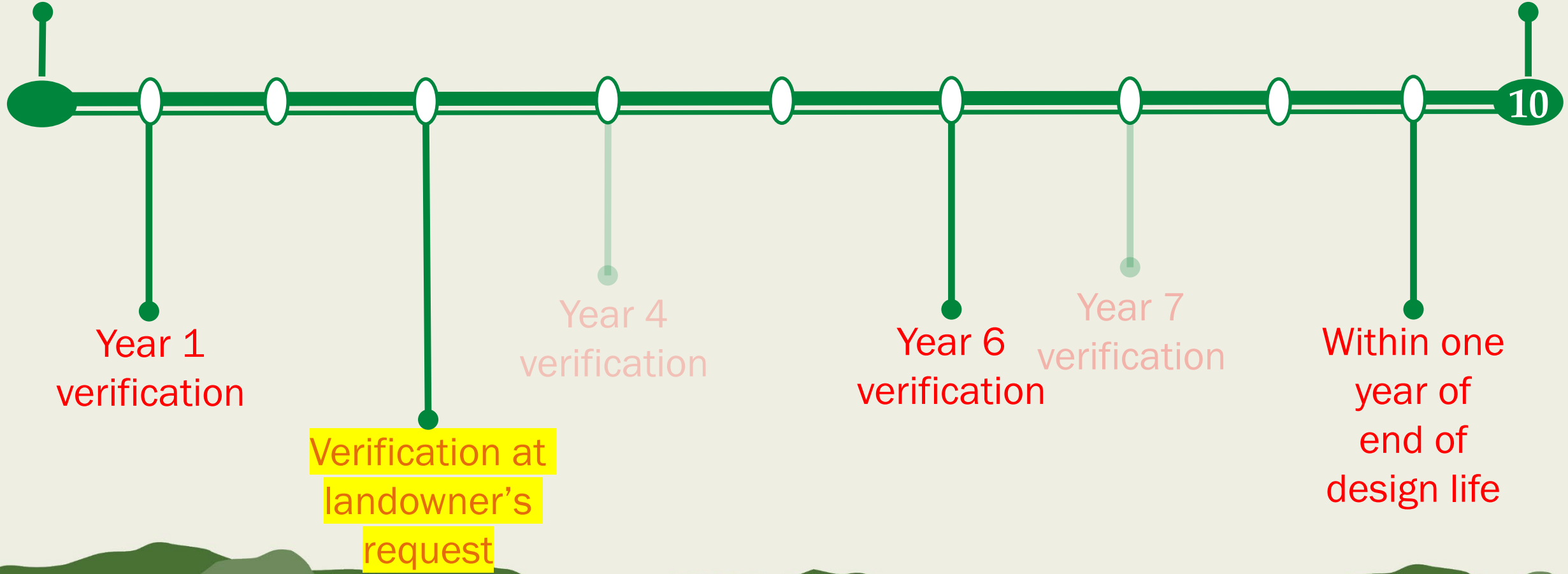
As needed verification visit can be triggered due to extreme weather



Verification Frequency

Project implemented

Initial end of design life



Required visits

Additional as needed visits

Verification Surveys

- Each eligible project type has, or will have, a survey associated with it.
- Created in coordination with DEC partners.
- Verifiers will be trained in surveys specifically designed for each project type.
- Verifiers shall use best judgement to assess a project's condition and need for maintenance.

What is the extent of...

Erosion within the BMP?



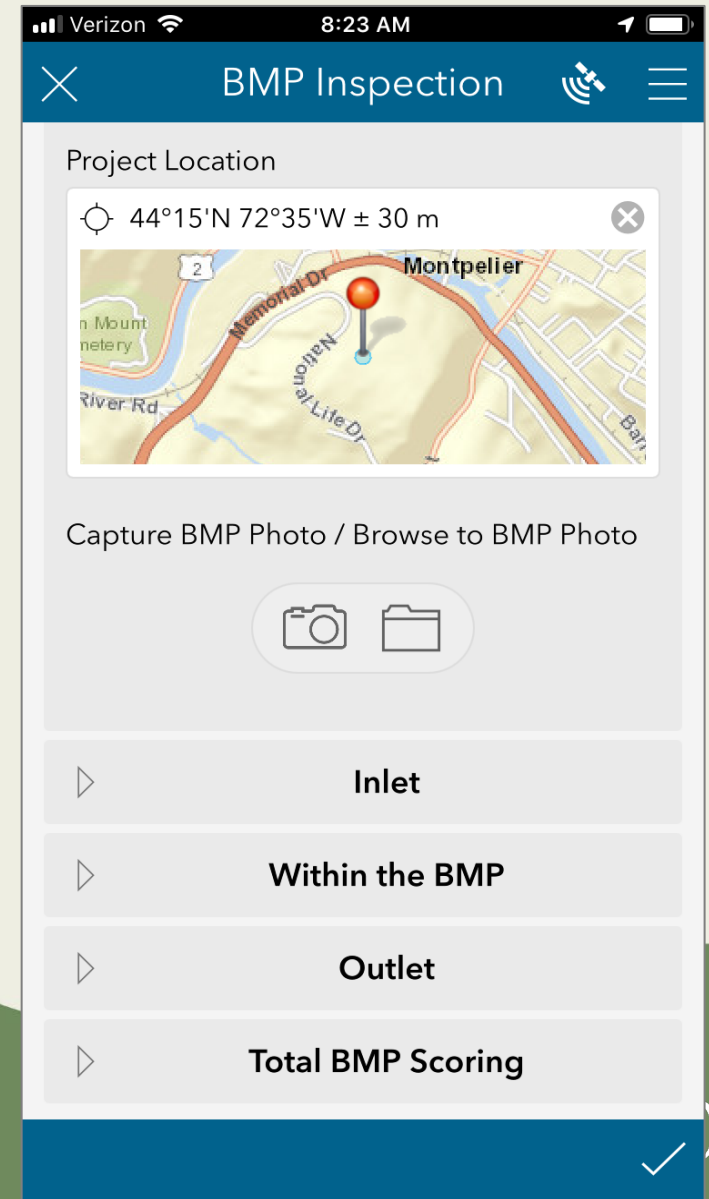
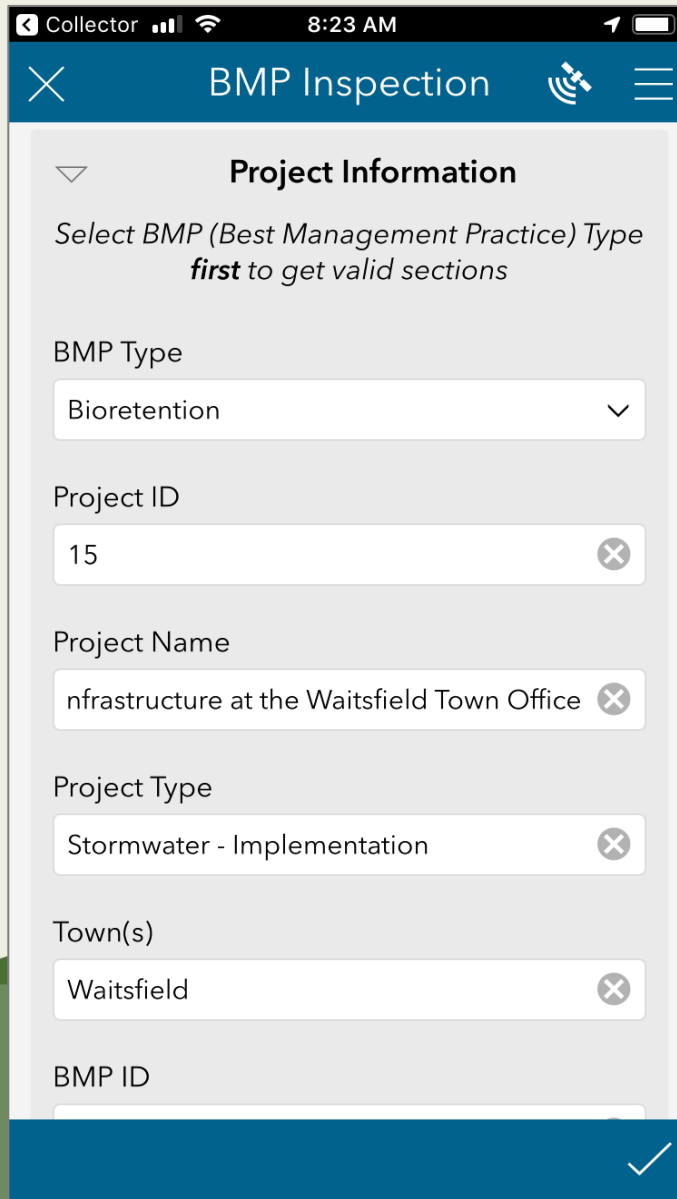
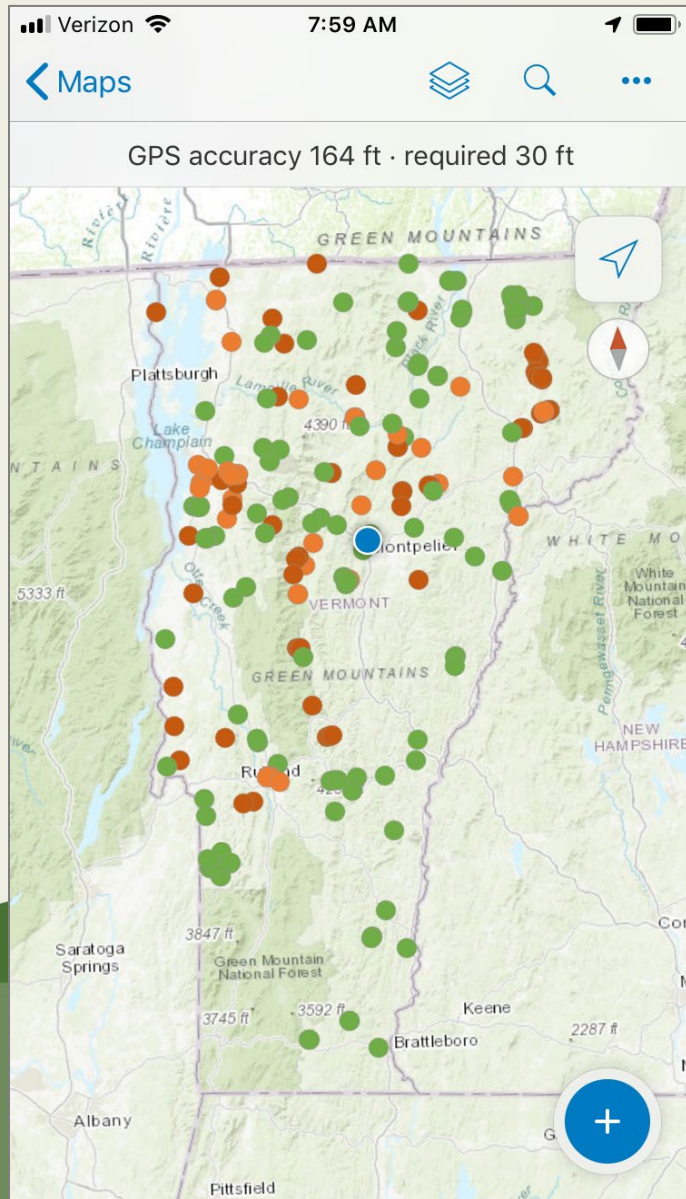
Sediment accumulation within the BMP?



Trash or natural **debris** within the BMP?



Survey 123 Mobile Application



Stormwater Projects: Visual Indicators

✓ Erosion



✓ Sediment
Accumulation



✓ Trash and
Natural Debris



✓ Standing Water



Riparian Buffer Projects: Visual Indicators

✓ Buffer Width
✓ Invasive Species

✓ Human Activity

✓ Plant Growth & Density



Road Projects: Visual Indicators

✓ Erosion

✓ Road Crown and Tilt

✓ Deposition

✓ Culvert Function



Floodplain and Stream Restoration: Visual Indicators

✓ Erosion & Deposition

✓ Stable Channel

✓ Floodplain Access

✓ Structures



Wetland Projects: Visual Indicators

- ✓ Erosion/Deposition
- ✓ Wetland Size
- ✓ Land Use of Surrounding Area
- ✓ Flow of water



Lake Shoreland Projects: Visual Indicators

- ✓ Erosion/Deposition
- ✓ Human Disturbance
- ✓ Plant Growth & Density

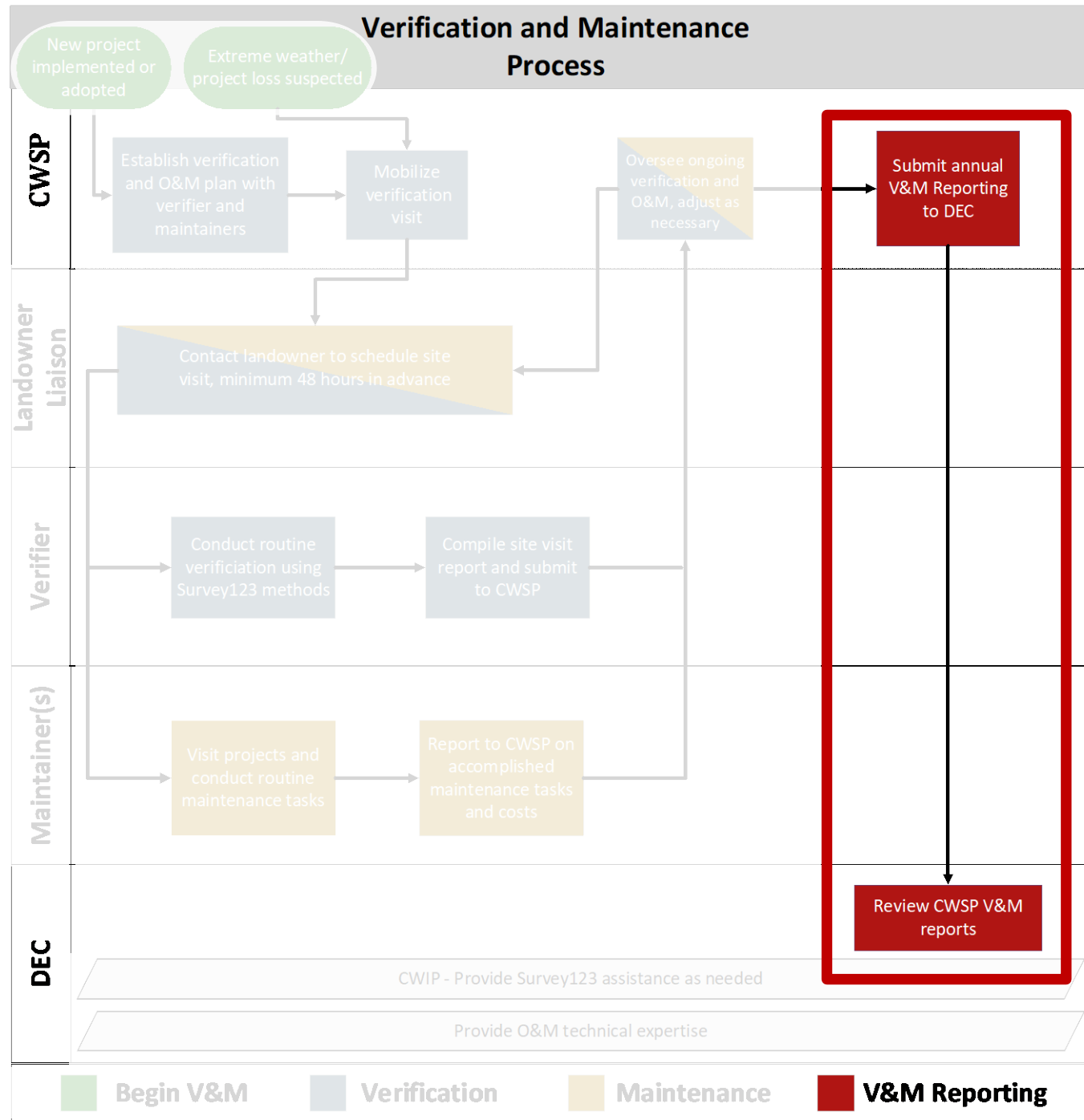


Verification Findings

Score	Grade Equivalent	Action
3-4	Functional	Project is functioning, current O&M practices are sufficient
2	Marginal	Project is functioning, maintenance required
1	Compromised	Project is functioning, maintenance required
0	Failed	Project has failed, repair required

**Full process will be outlined in detail in a
Verification Standard Operating Procedure**

O&M Reporting



O&M Annual Reporting Template

- Verifiers and maintainers will provide project details to enable CWSPs to complete the annual reporting template.
- Purpose:
 - Track O&M costs
 - Monitor status of projects and O&M activities
 - Collect lessons learned
 - Adaptively manage O&M program



Key Takeaways:

- This is new for everyone, so we appreciate your patience and help directing O&M questions back to our team.
- As we roll out O&M program, provide feedback to further improve the program into the future.



CWSP Guidance Chapter 7 Update

- Thank you to all partners and O&M Subgroup who supported the development of Chapter 7.
- Completed 30-day public comment period on March 8th.
- DEC is drafting a responsiveness summary on comments received.
- Finalized Chapter 7 Guidance and Responsiveness Summary will be posted soon.

O&M Trainings

	Training Topic	Target Audience	Description
Tier 1	★ O&M of Clean Water Projects	CWSP staff, current and potential verifiers , BWQC members, municipal staff, maintainers responsible for multiple sites, DEC technical program staff	Roles and responsibilities in the O&M program.
	Site Access Agreements	CWSP staff, interested landowners, project implementors	Provide orientation to the new agreement templates.

Resources

- **Guidance:** [Background on the Law, Rule and Guidance | Department of Environmental Conservation \(vermont.gov\)](#)
- **Site Access Agreement Templates:** [Applicant & Recipient Resources | Department of Environmental Conservation \(vermont.gov\)](#)
- **DEC O&M Website:** [Clean Water Project Verification | Department of Environmental Conservation \(vermont.gov\)](#)
- **Annual Performance Report:** [Reports | Department of Environmental Conservation \(vermont.gov\)](#)

Thank you for listening! Questions?

[Post Presentation Survey](#)

For follow up questions, please email us:

Rachel Wood, CWIP O&M Specialist, Rachel.Wood@vermont.gov

Jill Sarazen, LCSG Green Infrastructure Collaborative Coordinator, jillian.sarazen@uvm.edu