

VT NRCDs Conservation Action Plan

Name of District: Orleans County NRCD

Geographic Territory: Orleans County

Person Preparing the Report: Sarah Damsell, District Manager

Date: 03/17/2025

Methodology for Creating Plan

| Method | Description |
|---|---|
| Stakeholder Surveys | Data collection in 2022 from 51 respondents and 2025 from 100 respondents through online surveys to gather input from various stakeholders including landowners, residents, farmers, partners and other stakeholders on natural resource, agriculture, and food security concerns and priorities in Orleans County. |
| Community and Partners Meetings | Public gatherings to discuss natural resource conditions and priorities and gather input from community members and partners. <ul style="list-style-type: none">• April 7th 2022, had 25 natural resource professionals in attendance from 10 local, state, and federal organizations.• May 18, 2023 Community and Partners meeting with 35 participants including representation from 10 organizations.• (2) February 10th 2025 LWG Community Meetings with 50 participants.• February 19th 2025 LWG Partners Meeting with 17 participants from 11 organizations. |
| Direct Work with NRCS Newport Field Staff | Collaboration and consultation with the Natural Resources Conservation Service field staff located in Newport. |

*You can find the majority of the community engagement survey and meeting results on our website:
<https://www.orleanscountynrcd.org/locally-led-conservation-planning>

The overarching vision of the Orleans County Conservation Activity Plan

To foster a thriving Orleans County through resilient, smart, and sustainable agriculture and forestry practices that protect and enhance our natural resources, support our community's well-being, and ensure long-term economic viability.

Soil

Orleans County Soil Conditions and Challenges

There are several soil-related challenges in Orleans County, including erosion, loss of organic matter, degradation of soil organism habitat, and overall soil quality limitations. These issues are interconnected and contribute to broader farm, forest and community viability and productivity. Soil erosion is recognized

as a significant portion of the top natural resource concern of water quality and is an issue affecting the county.

Orleans County soils are predominantly poorly drained with high runoff potential and low pH. The parent material is glacial till, which contains an inherent compacted layer. The agricultural setting significantly influences soil conditions. This land use can lead to soil compaction, nutrient depletion, and erosion if not managed properly. These conditions, combined with a short growing season, unstable weather patterns causing increased soil loss on fields and river banks and other management challenges like working in the woods with lack of consistently frozen soils in winter, contribute to the poor soil health of the majority of annual cropland, forest land, contributing to bank erosion, and concentrated flows in gullies, ditch systems and small eroding channels in upland forests in Orleans County that is linked to increasing flood risks.

There also is concern about potential farmland loss due to economic pressures, farm closures, and lack of succession. This loss could impact soil management and soil conservation efforts.

Priorities for Addressing Conservation Needs:

1. **Address erosion in conveyance areas:** reducing erosion and soil loss with under utilized measures like erosion control structures to reduce erosion in fields, gullies, ditches and upland channel soil erosion.
2. **Address instability of the range of soil moisture** from drought to excessive moisture and increase infiltration through improved soil health.
 - a. Support early cover cropping, crop rotation of corn to hay, harvestable buffers and irrigation systems.
3. **Address poor soil health and low productivity.** There's concern about soil health and maintaining productivity, with practices that enhance soil quality and fertility. Assisting small-scale farmers in implementing conservation practices. This would likely include technical assistance and financial incentives for practices that improve soil health.
 - a. Improved soil organic matter, pH and biological activity for optimal nutrient cycling and management to improve forage quality and quantity.
 - b. Continued soil and manure sampling.
4. **Address improvements in existing systems** like supporting producers with FSA HEL plans.
5. **Address over land flow on cropland with C/D soils.** Improve runoff management with underutilized practices that can directly relate to preventing soil erosion and maintaining soil health.
 - a. Keyline plow
 - b. Pocket ponds with swales
 - c. Creation of and enhancement of wetlands
 - d. Vegetative buffers
 - e. Underground outlets

Measurable Conservation Goals and Objectives:

- Work with at least 10 landowners to implement practices and track improvements soil test pH and soil health.

Conservation Technology Needed:

In field soil health and precision ag tools tools and offer key line plow, rock picker for rotations, lime/woodash spreader as equipment rentals.

Responsibility for Action and Time Schedule:

NRCS and NRCD work together to implement local fund pools and other related offerings 2025-2030.

Programs and Services:

- Eliminate redundant partner efforts by leveraging NRCDs with annual legislative core funding to fulfill their mandated duties. These duties include coordinating and publicizing all available resources, opportunities, and achievements of all conservation programs and partnerships providing services within the county.
- There are many positive examples of existing efforts by landowners and farm operators to implement conservation practices to improve soil health. There is an awareness of soil challenges and a move towards better management.
- Continue nutrient management planning technical assistance services but expand financial assistance services for soil health and plant productivity.
- Expanding landowner education programs and improving access to technical assistance are seen as crucial. More programs that inform landowners about soil conservation practices and how to implement them.

Need for New Programs or Processes:

- Tile drainage being put into a swale system would need to be planned for.
- Hayable buffers - need herbicide creep witness process.
- Use the Penn State study results to target outreach in the Black River watershed.
- Need a bigger incentive on the table to offer folks for providing the down stream public good benefits.
- Address bottlenecks in key line plowing practice needing archaeology review.
- Communications activities to address cultural norms, build awareness and reach new landowners.
- Consider paying farmers to build organic matter in the soil and incentivizing the use of alternatives to synthetic and commercial fertilizers
- Need to better understand the effect on crop production and other barriers to crop rotation.
- Consider paying farmers the loss of tonnage to cut hay crops at 3-4 inches to improve forage and to possibly reduce manure runoff.

Water

Orleans County Water Conditions and Challenges

Water resources, especially clean lakes and rivers, emerged as central points of pride and concern. There are strong values of local water bodies not only for their purity but also for recreational activities like kayaking, swimming, and fishing, while expressing concern about protecting them from issues like phosphorus pollution and algae blooms. Heavy rainfall with outdated infrastructure on forest and farm roads, town dirt roads, VAST and ski trails.

Water quality emerges as a dominant priority. There is expressed particular concern about Lake

Memphremagog and its watershed, with many suggesting funds be used for water quality monitoring, testing for pollutants like PFAS, and addressing runoff issues. Several responses specifically mention the Coventry landfill as a source of water quality concerns that needs attention. This focus on water extends to flood prevention and mitigation, with many suggesting investments in infrastructure like culvert improvements and stream bank stabilization to handle increasing flood risks from climate change.

Priorities for Addressing Water Related Conservation Needs:

1. **Address erosion from high flows:** Control nutrient and sediment runoff, prioritizing tributaries and ditches. Improve farm and forest road systems. Consider “chop and drop” practices ideally with forest thinning practices. Install beaver analogs and deceivers practices. Enhance headwater wetlands. Reducing runoff from private roads, driveways, farm roads and forest access roads and culverts in forests. Addressing culvert runoff around lakes, particularly stabilizing outlets. Ditch maintenance best practices. Runoff from Boat Launches and Septic Systems.
2. **Address fisheries improvements, river corridor conservation, bank erosion and floodplain enhancements:** Giving rivers space and addressing river banks. Increase stream complexity. Improve lakeshore revegetation and stabilization and practices for addressing impervious surfaces. Protection of riparian habitat in heavily farmed river valleys and lands adjacent to upland creeks and uncontrolled erosion and nutrient runoff from grazing and cropping in these zones.
3. **Address needed conservation work with small farms.** For example mini NMPs, livestock exclusion fencing and reduce winter feeding areas. Increase non traditional waste management practices - compost systems, water management.

Measurable Conservation Goals and Objectives:

- Work with at least 10 landowners to implement practices

Conservation Technology Needed:

- Continuation or expansion of water quality monitoring
- Expand outreach and software tools to meet landowners where they are at.

Responsibility for Action and Time Schedule:

- NRCS and NRCD work together to implement local fund pools and other related offerings 2025-2030.

Programs and Services:

- Eliminate redundant partner efforts by leveraging NRCDs with annual legislative core funding to fulfill their mandated duties. These duties include coordinating and publicizing all available resources, opportunities, and achievements of all conservation programs and partnerships providing services within the county.
- Efforts are underway to address these challenges through conservation practices and community engagement. Continue conservation planning and technical assistance services but expand

financial assistance services for addressing high flows.

Need for New Programs or Processes:

- Need better incentives for wetland restoration work.
- Vermont NRCS consider “turning on” more available practices.
- Beaver habitat priority assessment and a screening tool then paired with “beaver easements”.
- Increased conservation easement holder organizations.

Air

Orleans County Air Conditions and Challenges

Orleans County generally has good air quality with air pollution causing little to no risk. Because of this air quality concerns were not a primary focus of our community engagement work but there are underlying themes and issues discussed that have connections to air quality.

Priorities for Addressing Conservation Needs:

- Maintain good air quality.

Measurable Conservation Goals and Objectives:

- No current goals or objectives.

Plants

Orleans County Plant Conditions and Challenges

There are strong values of "diversity of the landscape" and "rich biodiversity" The community has an emphasized interest in biodiversity and sustainable agriculture to maintain healthy and diverse plant communities while there are several plant-related challenges in Orleans County. These include pest pressure, invasive species, degraded plant health, forest health issues, climate change impacts, land use change, habitat loss, and the need for more native plants and better management of plant communities, especially in riparian areas.

Priorities for Addressing Conservation Needs:

1. **Address terrestrial invasive species:**
 - a. Native plantings behind treatments in the riparian zones / edge of field
 - b. Riparian areas and roadways (roadsides) are primary vectors.
 - c. High flow events exacerbate the spread through erosion and roadwork.
 - d. Edges of pasture/hayfield, sugarbush (where competing understory is removed), clear-cut woodlots, stream edges, and banks lacking vegetation are vulnerable.

- e. Forest lands, riparian areas, and other agricultural/retired agricultural fields are affected.
 - f. Herbaceous weed treatment is a feasible priority solution.
 - g. Introduction of new species and management of existing ones is needed.
2. **Address native species establishment:**
- a. Woody native species establishment (planting and maintenance).
 - b. Continue Plant sale and expand sources to native species
3. **Address effects of native and cropland vegetation on wet soils.**
- a. Land productivity - soil health, WQ, maintain healthy crops and pasture productivity, Height of the hay
 - b. Nutrient efficiency – incorporate with climate smart
 - c. Plant Productivity - nutrient uptake, SOM building, improved quality, different types of vegetation interact with wet soil conditions.
 - d. High tunnel, low tunnel systems
 - e. Concerns of the forest health, regeneration and seed viability
 - i. Guidelines from ANR to get ahead of climate change to plant certain species - forestry assisted mitigation. planting guidelines for public lands.
 - ii. Issues like disease, pests, and climate change can impact forest health.
4. **Address climate change impacts:** changing weather patterns and temperatures are affecting plant growth and survival, especially heard from maple producers. Climate change can also make plants more vulnerable to pests and diseases.
5. **Address land use changes:** Development pressure on agricultural and forest lands is an environmental concern. Land conversion can lead to habitat loss and fragmentation, which negatively impacts native plant populations.
- a. Maintain healthy unfragmented forests.
 - b. Riparian areas and roadways (roadsides) are primary vectors.
 - c. High flow events exacerbate the spread through erosion and roadwork.
 - d. Edges of pasture/hayfield, sugarbush (where competing understory is removed), clear-cut woodlots, stream edges, and banks lacking vegetation are vulnerable.
 - e. Forest lands, riparian areas, and other agricultural/retired agricultural fields are affected.
 - f. Introduction of new species and management of existing ones is needed.

Measurable Conservation Goals and Objectives:

- Work with at least 10 landowners to implement practices

Conservation Technology Needed:

- More native plant nurseries
- Tools for mechanical control of invasive species - weed wrenches

Responsibility for Action and Time Schedule:

- NRCS and NRCD work together to implement local fund pools and other related offerings 2025-2030.

Programs and Services:

- Eliminate redundant partner efforts by leveraging NRCDs with annual legislative core funding to fulfill their mandated duties. These duties include coordinating and publicizing all available resources, opportunities, and achievements of all conservation programs and partnerships providing services within the county.

Need for New Programs or Processes:

- Go to the list of plants for each practice.
- Payment rates for mechanical management of invasive plants is too low to hire out the work.
- Go to the list of plants for each practice and Payment rates for mechanical management of invasive plants is too low to hire out the work.

Animals

Orleans County Animal Conditions and Challenges

There are broad ecological concerns have implications for animal conservation, including habitat health, biodiversity, and climate change. Conservation needs for animals in Orleans County revolve around managing deer populations, protecting and connecting habitats through wildlife corridors, addressing threats from invasive species, and generally maintaining healthy forest ecosystems that support diverse animal life.

Priorities for Addressing Conservation Needs:

1. **Address Deer Defoliation:** Deer defoliation was brought up as a significant issue. There's a concern about a high deer population impacting tree regeneration, as young trees are a "buffet" for deer, hindering forest growth and utilizing hunters to control deer populations, and ensuring adequate food for deer
2. **Address Habitat Degradation Wildlife Corridors:** Concerns about habitat degradation, loss of woodlands, and development encroaching on streambanks and wetlands are mentioned, all of which affect animal populations. Broad concern for animal species beyond just deer. Support wildlife through wildlife corridors and improving road crossing and culverts. Identify these corridors and connect them to state initiatives, informing landowners and encouraging a collective effort.
3. **Forest Management for Wildlife:** Issues like invasive species management, wetland restoration, and maintaining biodiversity are discussed, all of which indirectly relate to animal conservation ensuring deer have adequate food to thrive
4. **Address Invasive Insects:** Invasive insects like emerald ash borer were mentioned as impacting forest health, which indirectly affects animals that rely on those forests for habitat and food.
5. **Address Water Quality Impacts:** Discussions around phosphorus reduction, agricultural runoff, and development impacts on water quality are relevant to aquatic animals and their habitats.
6. **Address Climate Impacts:** The document notes climate impacts such as drought, flooding, heat, and shifting weather patterns, which can affect animal habitats and populations. Animal climate related stress

Measurable Conservation Goals and Objectives:

- Work with at least 10 landowners to implement practices

Conservation Technology Needed:

- None identified at this time.

Responsibility for Action and Time Schedule:

- NRCS and NRCD work together to implement local fund pools and other related offerings 2025-2030.

Programs and Services:

- Eliminate redundant partner efforts by leveraging NRCDs with annual legislative core funding to fulfill their mandated duties. These duties include coordinating and publicizing all available resources, opportunities, and achievements of all conservation programs and partnerships providing services within the county.
- None identified at this time.

Need for New Programs or Processes:

- None identified at this time.

Energy

Orleans County Energy Conditions and Challenges

The current state of energy in Orleans County shows support for renewable energy, a need for increased energy efficiency in buildings and practices.

Priorities for Addressing Conservation Needs:

1. **Address needed investment in renewable energy infrastructure systems and climate resilience:** Energy demands and the conversion to new energy systems is an emerging issue. Investment in renewable energy infrastructure is needed to expand and improve renewable energy capabilities in the county.
2. **Addressing the role of the management** of natural resources related to climate resilience includes sequestering carbon, which can be influenced by energy choices and practices.

Measurable Conservation Goals and Objectives:

- Complete CEMA plans and implementation of outcomes.

Conservation Technology Needed:

- Reasonable method of calculating energy improvements - using NH spreadsheets don't work with replacements. The Franklin County USDA office might have a new tool.

Responsibility for Action and Time Schedule:

- NRCS and NRCD work together to implement local fund pools and other related offerings 2025-2030.

Programs and Services:

- Eliminate redundant partner efforts by leveraging NRCDs with annual legislative core funding to fulfill their mandated duties. These duties include coordinating and publicizing all available resources, opportunities, and achievements of all conservation programs and partnerships providing services within the county.
- More accessible programs and incentives to encourage energy-saving practices and incentives for improved energy production for local farm production
- Support local and regional energy generation and independence
- Converting fossil fuel equipment to battery power.
- Continue program for upgrading existing farm energy use like new plate coolers, RO systems and pre-heater, variable speed fans - high tunnels and barns, automatic side openers in a high tunnel and improved irrigation systems - grazing and small scale production.

Need for New Programs or Processes:

- Address the the length of the electric tractor battery life is a limiting factor and the maintenance of electric tractors etc is not available in Northern VT/
- Improvement is needed for sharing with the public existing programs, how they can work together and what is needed etc.

Humans

Orleans County Human Conditions and Challenges

Orleans County is primarily rural, where the health of natural resources is vital to the community and conservation efforts are not just about protecting the environment, but also about supporting the people who live and work here. Addressing the human dimensions of conservation is crucial for achieving long-term sustainability.

Key population highlights include:

- 2024 population estimate of 27,726
- a median household income of \$66,426
- a per capita income of \$36,459.
- The majority of the population is White alone (95.7%)
- 23.9% of persons aged 65 years and over.
- The median value of owner-occupied housing units is \$213,300

- 79.9% of housing units are owner-occupied.
- 23 miles is the average commute distance
- have a 28% Bachelor's degree or higher
- 5% increase in population since 2020

Orleans County residents highly value the area's natural beauty, agricultural heritage, and mix of working and natural lands. They are aware of current environmental issues, agricultural challenges, and the need for conservation efforts. Economic concerns are prevalent, particularly regarding the viability of small farms, cost of living, job availability and youth involvement. Community engagement in natural resource planning varies, and there are diverse perspectives on how to address these issues, including differing views on regulation and the role of experts.

Priorities for Addressing Conservation Needs:

1. **Address public safety concerns** to reduce overland flow and impacts of flooding in community centers.
2. **Address increased community engagement:** There's a priority need to improve community engagement in natural resource planning and decision-making. This includes reaching out to underrepresented groups, addressing barriers to participation (like time constraints and lack of access), and providing education. There's a need to ensure that everyone in the community has an equal opportunity to participate in natural resource planning, regardless of their background, economic status, or access to resources.
3. **Address needed support for farmers and rural livelihoods:** There's a need to support small-scale farmers and other individuals who work the land. This includes providing financial assistance, technical support, and market development opportunities. Increasing access to infrastructure projects and addressing labor shortages and inefficiencies.
4. **Education and Outreach:** There's a need for more education and outreach about environmental issues, sustainable practices, and the importance of conservation. This includes educating both landowners and the broader community, including youth.
5. **Addressing economic barriers:** There's a need to address economic barriers that prevent people from engaging in conservation or adopting sustainable practices. This includes providing financial incentives, grants, and affordable solutions.
6. **Promoting social cohesion:** There's a need to foster social cohesion and collaboration around natural resource issues. This includes creating platforms for dialogue, building trust, and addressing misinformation.
7. **Improving access to information and resources:** There's a need to improve access to information about natural resource planning, available programs, and technical assistance. This includes utilizing multiple communication channels and reaching out to those with limited access to technology and increasing technical service providers for addressing conservation needs like invasive species and energy plans.
8. **Addressing hopelessness and complacency:** There's a need to address feelings of hopelessness about the scale of environmental challenges and complacency about the need for action. This includes highlighting success stories, demonstrating tangible benefits of conservation, and empowering individuals to make a difference.
9. **Balancing development and conservation:** There's a need to find a balance between development and conservation that supports both economic growth and environmental protection.

This includes smart growth planning, infrastructure development, and supporting natural resource-based businesses.

Measurable Conservation Goals and Objectives:

- Have dedicated local staff to address the above priorities.

Conservation Technology Needed:

- None identified at this time.

Responsibility for Action and Time Schedule:

- NRCS and NRCD work together to implement local fund pools and other related offerings 2025-2030.

Programs and Services:

- Eliminate redundant partner efforts by leveraging NRCDs with annual legislative core funding to fulfill their mandated duties. These duties include coordinating and publicizing all available resources, opportunities, and achievements of all conservation programs and partnerships providing services within the county.
- Improve partner coordination to better utilize resources.

Need for New Programs or Processes:

- Highlight conservation work, projects and practice through a variety of ways like workshops, success stories and newspapers.