Ecosystem Based Management

Sandy Creeks Pollution Prevention Program

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Sandy Creeks Demonstration Project Area

The Sandy Creeks Watershed geographic area is made up of four drainage areas on the eastern shore of Lake Ontario in northern New York State. These include: Stony Creek, Sandy Creek, South Sandy Creek and Little Sandy Creek. The upper reaches of the watershed include the forested landscapes of the Tug Hill Plateau and then transition to lowland fields, which support numerous dairy farms, and eventually drain to one of the most significant freshwater marshes in the Eastern Great Lakes. The New York State Department of Environmental Conservation (NYSDEC) considers this area to be "one of the most intact landscapes in the state with thousands of miles of rivers and streams, complex drainage patterns, and a regionally important sole source aquifer."

The Sandy Creeks watershed has been identified as a priority area by the Jefferson County Soil and Water Conservation District since 1997. The Jefferson County portion of this watershed has over 200 farms, 12 of them being large farms regulated under the State permit program for Concentrated Animal Feeding Operations. The NYS Department of Environmental Conservation's Priority Waterbodies List considers the Sandy Creeks watershed area to exhibit minor water quality impairments in some areas, while many of the tributaries are considered to exhibit no impairments. This is particularly important since portions of the watershed are considered to be "globally significant" fish habitat by New York Heritage Program/Nature Conservancy.

The Sandy Creeks Pollution Prevention Pilot Project provides an opportunity to recognize the water quality benefits of the tributaries comprising the Sandy Creeks Watershed and the need to maintain them. Water quality protection is a term often discussed, but seldom implemented. Limited financial resources are rarely used to implement practices in areas where water quality is good. Rather, practices most often are used to remediate water quality problems that have already occurred. This pilot was the first step in implementing practices that seek to protect water quality. It is a demonstration of agricultural stewardship and farmers commitment to the environment. All the practices involved with this pilot project were voluntarily implemented, often by regulated farms that were willing to go beyond their permit requirements to benefit the Sandy Creeks Ecosystem.

Pilot Project Objectives

The installation of conservation Best Management Practices (BMP) is most often done to remediate a known or suspected pollution problem. Farms rely heavily on these practices to ensure that they are not having any adverse impacts on the environment. Remediation of known problems is always a high priority; however, ideally farms will implement conservation practices to prevent problems before they occur. Unfortunately, with limited resources available to assist, most State and federal funding programs favor projects which correct existing problems rather than potential future problems. The Ecosystem Based Management (EBM) program is an ideal opportunity for the farms in the Sandy Creeks watershed to demonstrate the benefits of environmental protection rather than remediation.

The Sandy Creeks Watershed has been described by the State Department of Environmental Conservation (DEC) as "one of the most intact landscapes in the state with thousands of miles of rivers and streams, complex drainage patterns, and a regionally important sole source aquifer." The EBM approach, in cooperation with existing funding opportunities for remediation, will demonstrate the environmental and economic benefits of installing pollution prevention practices. By focusing on practices that are not normally funded through existing programs, the Sandy Creeks Pollution Prevention Initiative will assist the EBM effort in this watershed in reaching its goal to maintain and restore healthy, productive ecosystems that can deliver services humans want and need.

Cover crop on steep slope with water body at bottom

While all BMPs are installed to prevent pollution, some are considered as being protective measures. Examples include practices such as petroleum bulk storage facilities and pesticide mixing facilities, which prevent potential contamination from accidental spills and practices such as cover cropping and nutrient management, which prevent sediment and nutrient transport from routine agronomic practices (exposed soil and fertilizer application).

This pilot project will implement pollution prevention practices to complement the ongoing remediation practices on farms. Water quality will be protected by replacing or upgrading petroleum bulk storage tanks on 12 farms. In addition, the pilot will demonstrate the value of conservation cover cropping by making a large-scale seed drill available to all farms in the watershed. As a demonstration, 450 acres of no-till seeding will be planted on corn silage fields to prevent erosion. An outreach campaign will be conducted which will include hosting at least two demonstration workshops. This project will afford the opportunity to initiate a proactive approach to watershed sustainability.

Outline of Objectives and Tasks

Objective 1: Develop an Erosion Control Program for Agricultural Fields on Large Farms

Tasks:

a. Purchase a large-scale no-till seed drill and make it available to all farms with fields identified as high-risk.

b. Develop a protocol and inventory farm fields consider to have a high-risk for pollution potential.

c. Host two (2) demonstration workshops on the benefits of cover cropping to water quality and the Sandy Creeks ecosystem.

Objective 2: Develop a sustainable approach to farm field erosion control

Tasks:

a. Continue to promote and make available the no-till seed drill to farms in the watershed

b. Track the number of acres planted and promote cover crops on fields as a sound agricultural practice.

Objective 3: Install petroleum bulk storage protection practices on Concentrated Animal Feeding Operations (CAFO) farms

Tasks:

a. To help eliminate the potential for groundwater contamination from fuel storage tanks, petroleum bulk storage systems will be upgraded to meet State and federal regulations.

b. Where necessary, tanks that are in poor condition will be replaced with new double-walled storage tanks.

Summary of Work Completed

Objective 1: Develop an Erosion Control Program for Agricultural Fields on Large Farms

Many Soil and Water Conservation Districts across the State own conservation equipment, which they lease to farmers that are interested in implementing practices to reduce erosion and runoff. One of the primary drawbacks of convincing farmers to change their management practices (i.e. tillage systems, cover cropping practices) is the cost of equipment. Often, farmers are willing to experiment with new practices, but the cost of purchasing expensive equipment makes it difficult to convince them to make this change. By leasing the equipment, or offering its use, farmers are able to try new practices without the financial risk.

Prior to this pilot project, the Jefferson County Soil and Water Conservation District owned a small no-till grain drill that was leased to farms for planting cover crops and renovating pastures. The no-till grain drill enables farmers to plant a winter crop, or reseed a pasture, without disturbing the soil surface. Conventional tillage systems disturb the entire soil surface, leaving loose soil exposed during seed germination and establishment. Heavy rainfall events during this time can result in large quantities of soil being transported off the field, while increasing the potential for deposition in surface waterbodies. The small no-till grain drill was well accepted by the small farms in the county and used often for cover cropping. Larger farms, or those with large tracts of contiguous fields, were less likely to use the equipment due to the size. The small grain drill was not suitable for large fields and the extra fuel, time and compaction cause by the equipment were listed as the primary deterrents to its use. It was determine that in order to get the larger farms to participate in a no-till seeding program, it would be necessary to purchase a larger grain drill.

The pilot project for pollution prevention committed to demonstrating the no-till seeding on a minimum of 450 acres. While cover crops have benefits beyond erosion control (e.g. green manure, pest control) the focus of the pilot was to prevent sediment from reaching tributary streams. For that reason, a protocol for assessing farm fields with a high-risk of erosion potential was developed. Working with the certified planners within the watershed and using Geographical Information Systems (GIS) maps, the Conservation District prioritized fields that were adjacent and sloping towards a watercourse and not currently using cover crops. This protocol identified 650 acres that would be eligible under the Pollution Prevention Pilot Program. Of those fields, 520 acres were seeded with winter rye, a commonly used cover crop in New York.

In the fall of 2010 the District was approached to develop a webinar about cover crops for the Northeast Beginning Farms Project. This session was a component of the six week class, *Soil Health – Investing in the Vitality of Your Farm.* The webinar was developed and hosted by Christine Watkins, Agronomist, Jefferson County Soil and Water Conservation District. There were 20 participants in the webinar, which was taped and will be replayed for future classes. In February of 2011, the District developed a display and gave a presentation to the Crop Congress, held in Carthage, NY. The presentation showcased the new no-till drill, in addition to providing pictures of different types of cover crops and their conservation benefits. Approximately 70 producers were present at the session. This meeting gave the District an opportunity to announce the opportunity for farms in the Sandy Creeks Watershed to participate in the fall.

Objective 2: Develop a sustainable approach to farm field erosion control

No till seeding is the practice of planting crops directly into a field without turning the soil over in the process. Reduced or no till seeding has multiple benefits, both environmentally and economically. By implementing a reduced tillage system, such as no-till, the roots and residue of the previous crop greatly reduce erosion by minimizing the amount of soil exposed during runoff events. Reduced tillage systems also promote water conservation by increasing infiltration rates, increasing soil organic matter and reducing the formation of a soil crust and plow pan layer. If the prior crop was a high residue crop, the residue left on the field also helps moderate the soil temperature and lowers the likelihood of evaporation. Economically, reduced tillage systems require less fertilizer and far less inputs from farm machinery; resulting in fuel and labor savings. Less traffic on the field from tractors also reduces soil compaction.

JEFFERSON COUNTY SOIL & WATER CONSERVATION DISTRICT 3

No-Till Seeders Available

Worn out hayfields? Like to reseed them?
Have more weeds than grass?
Switching a hayfield into a grain crop or maybe soybeans?
Want to create a wildlife food plot?
Have some pasture that isn't producing great grazing?

Why a no-till drill? Using a no-till increases soil quality (soil function), and protects the soil from erosion, evaporation of water, and structural breakdown. Crop residues left intact help precipitation infiltrate the soil where it can be used. The crop residue left on the soil surface limits evaporation, conserving water for plant growth. A reduction in tillage passes helps prevent compaction of soil. Less tillage of the soil reduces labor and related fuel and machinery costs. Less soil plowing means less airborne dust.

We have two no-till drills available for rent. Our new 15' grain drill has 7 1/2" spacing between rows and a standard, small, and native seed box. The native seed box has an agitator. This grain drill is able to plant most small grains, legumes, and grasses. It has been equipped to fold for easier road transportation. The manufacturer suggests using a 150 (or larger) horse tractor.

If you are interested in renting either of our drills, please contact our the Soil and Water office for more information, 782-2749. We will have a schedule for spring plantings.

Jake Ambrose

Can a soil group worksheet save you money?

YES —A SOIL GROUP WORKSHEET can save you money on your taxes!! We complete the first portion by breaking each parcel down by specific soil types. This allows the land to be assessed based on the agricultural potential productivity, rather than road frontage and development potential. (Sugar bushes now qualify!)

In order to qualify for the 2011 season, all assessments had to be completed and submitted to your assessor for processing by March 1. However, we can do them NOW to save on your 2012 taxes. It is recommended that you contact your assessor first to see if your land qualifies.

When you contact our office, please have your tax parcel number(s) available. There is a fee of $25 per parcel, but the money you save on property taxes makes it a great deal!

Contact Jake or Levi at 782-2749.

Jake Ambrose

Green Grass—A Welcomed Sign

With spring on the way, it's time to have a plan for this year's farm projects. If you intend to graze animals this year, will you do exactly what you did last season? Could a few small changes maximize yields? improve water systems? or avoid erosion and trampling potential feed? Probably. If you have grazed animals in the past, you have some idea about what works and what doesn't. Why not write them down? No time? That's where we come in. Seasons tend to run together unless you take the time to record this valuable information.

If you have never had the pleasure of watching your animals graze before, but hope to this year, it is wise to start planning now. A few maps can simplify and consolidate all sorts of ideas.

Depending on your needs and expectations, grazing can be very simple or extremely complex. Maximizing feed value while minimizing labor is most likely your goal, but how do you do this? There are several decisions that need to be thought through. Grazing plans simply document and record your plan of action.

In addition to our current AEM program, this year we are able to help you with your plan from start to finish. We can review current plans and make modifications as needed.

Call the Conservation District to schedule a pasture visit, 782-2749.

Levi Rudd

New phones were installed on February 23 and each phone is now equipped with voice mail.
You can still reach us by dialing our main number, 782-2749 or through the USDA service center's main line: 782-7289, choose extension 6 when you hear the message.

Thank you for your patience and cooperation while we adapt to the upgrade in technology.

In addition to cover cropping, the Conservation District promotes the use of the grain drill for renovating pastures and creating wildlife habitats. Pasture renovation can improve both forage quality and quantity and using a no-till approach greatly reduces the risk of erosion during seed establishment. For wildlife, studies have shown that no-till fields have a greater diversity and a higher density of birds and nests than reduced till or conventionally tilled fields. The crop residue left on the field during no-till seeding has also been shown to improve habitat for small mammals.

As part of this pilot, an additional 70 acres of cover crop was seeded beyond the 450 acres planted by the Conservation District. Two other farms were interested in using the drill to plant approximately 300 acres of cover crop, but due to the time constraints of the project and priority fields identified, they were unable to lease the drill during the span of the contract.

As part of their on-going promotion of no-till seeding, the Conservation District has added the new drill to their website and newsletter publications. In addition, Cornell Cooperative Extension has published an article with pictures about the drill in one of their monthly publications. The Conservation District plans to continue to track acres planted as part of a larger, county-wide program.

Objective 3: Install petroleum bulk storage protection practices on CAFO farms

According to the US Environmental Protection Agency (EPA), nearly one out of four underground storage tanks in the United States may be leaking. Both above and below- ground containers of petroleum products have the potential to damage public health and the environment, should leaks occur. Older underground petroleum tanks, especially those 15 years old or more, are more likely to leak. Even minor petroleum leaks can have major environmental impacts. For example, a few quarts of gasoline can contaminate an entire farmstead's drinking water supply. Human health is threatened with even low levels of petroleum contamination that are undetectable by taste or smell. This is because petroleum products contain numerous potentially toxic compounds, as well as carcinogens.

It is a common practice of farms to have bulk supplies of fuels stored on the farm. Whether it is diesel fuels for machinery or heating fuels for buildings, a typical farm will have at least one fuel storage tank. Larger farms may have several. In comparison to may businesses, the quantity of fuel stored on farms is quite small, making it a lower priority for agricultural cost-share assistance. However, even small spills of petroleum products can have detrimental affects on soil and water resources.

Under this pilot project, the Conservation District targeted the 12 regulated farms in the Sandy Creeks Watershed to demonstrate the benefits for petroleum pollution prevention. Larger farms are more likely to store larger quantities of petroleum products and as they are routinely inspected for compliance with their State CAFO permits, they are most likely to be penalized for inadequate petroleum storage practices.

Of the 12 regulated farms, 11 chose to participate in the pilot program by upgrading at least one fuel storage tank on the farm. The farm that declined did so based on an expected change in the farmstead layout, which would result in a need to relocate the petroleum storage tanks in the near future. The District replaced this farm with an unregulated farm that is located at the confluence of two streams. Risks to water quality from both spills and flooding were highest for this farm.

District staff inventoried and evaluated all 12 participating farms to develop the necessary practices for each facility. Identified practices included; installation of secondary containment (pre-fab structure), installation of secondary containment with a roof to exclude rain water, and replacement of existing tanks with new double-wall tanks with leak detection. Existing tanks that were replaced were decommissioned by the participating farm.

Summary of Individual Farm Implementation:

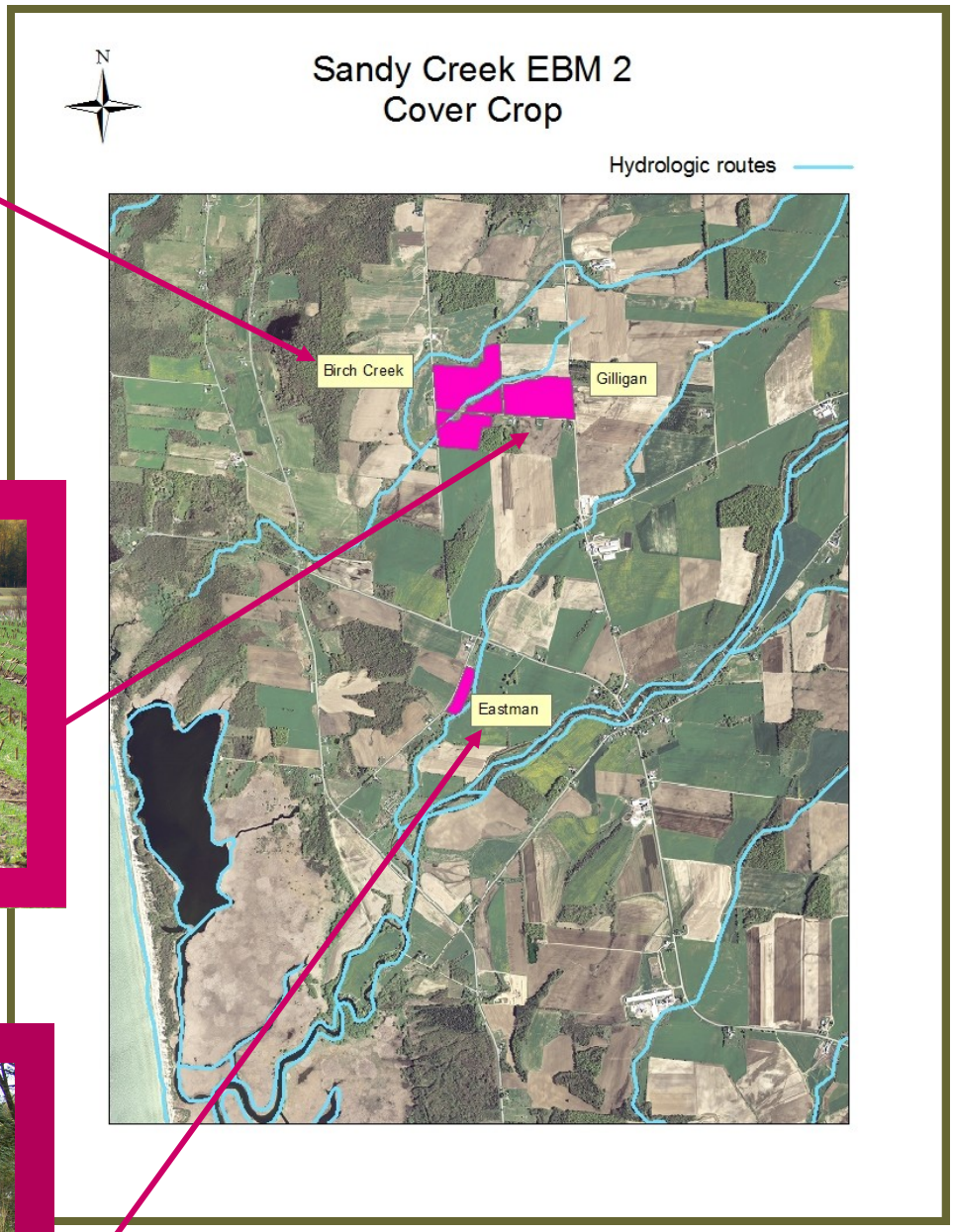
No-Till Cover Crop Implementation

Birch Creek Farm seeded 61 acres adjacent to a perennial stream.

Gilligan Farm seeded 43 acres adjacent to a perennial stream on moderately sloping fields.

Eastman Farm seeded 8 acres adjacent to the Sandy Creek.

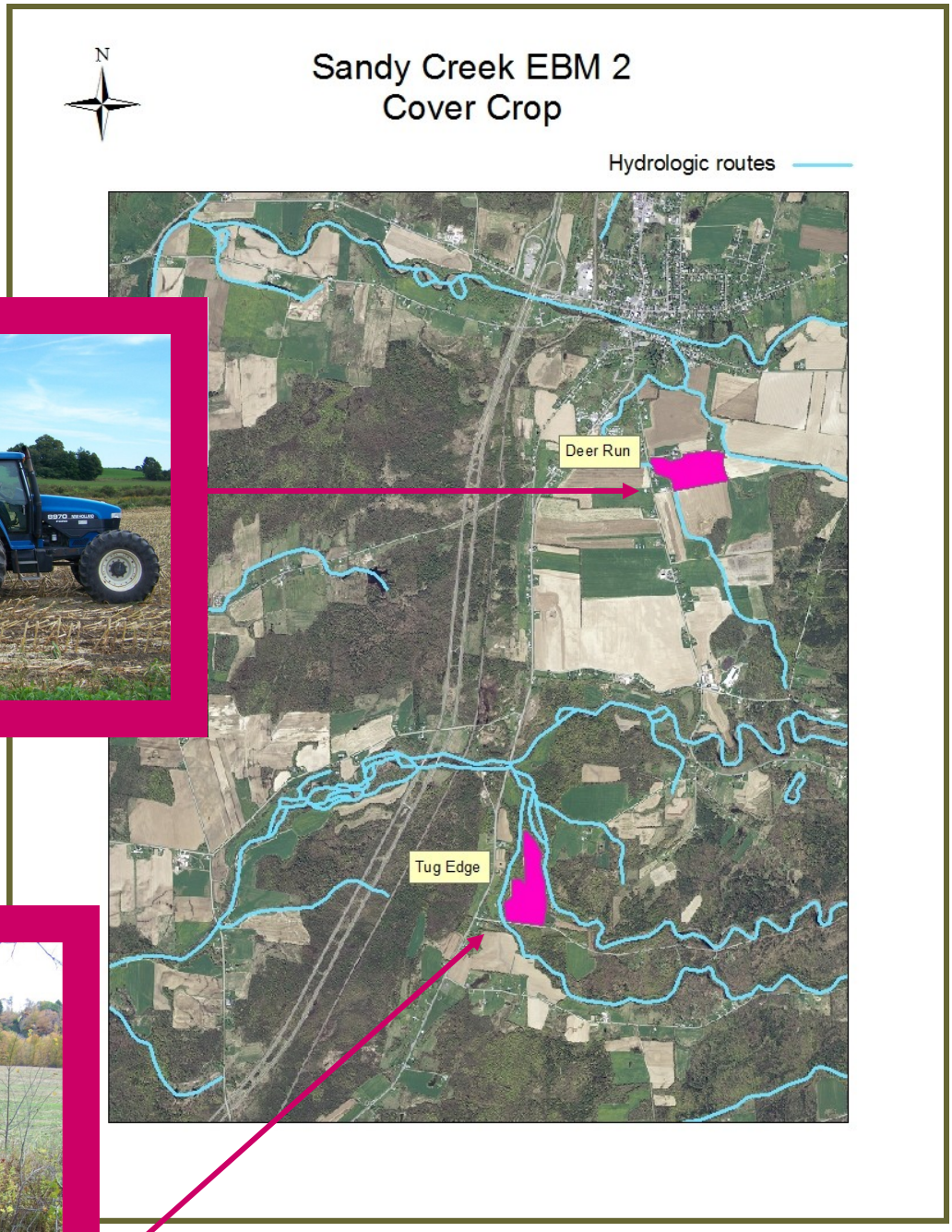
South Sandy Creek Watershed



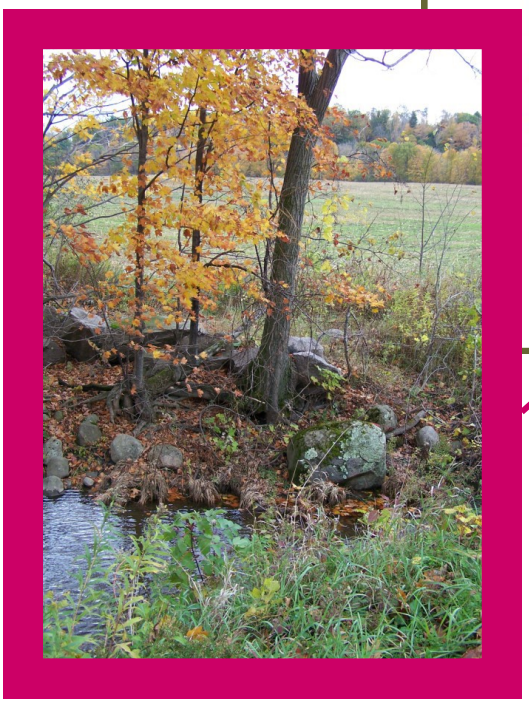
Summary of Individual Farm Implementation:

No-Till Cover Crop Implementation

Lower Sandy and South Sandy Creek Watersheds



Deer Run Farm seeded 35 acres adjacent to a stream.

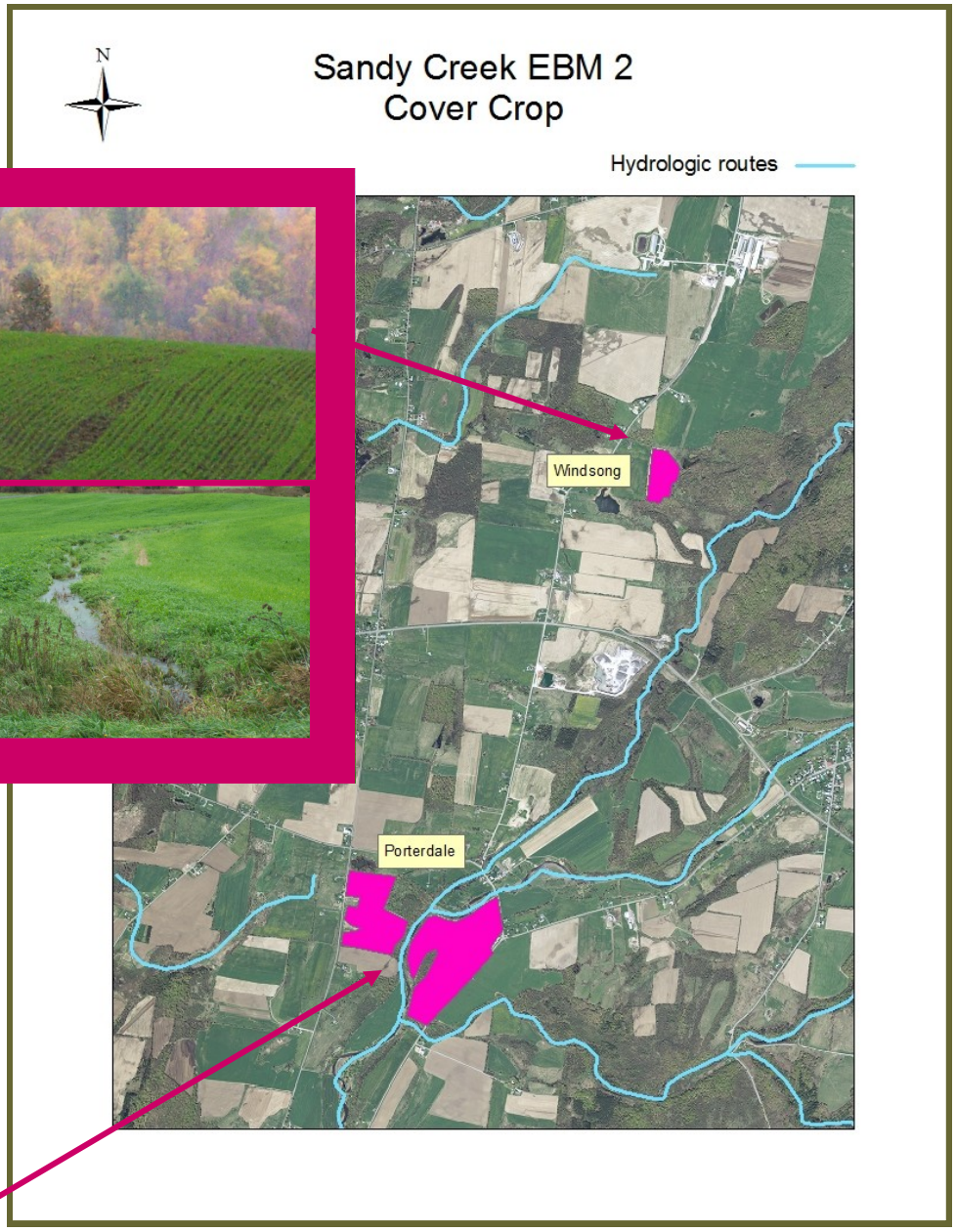


Tug Edge seeded 51 acres in a field adjacent to two streams.

Summary of Individual Farm Implementation:

No-Till Cover Crop Implementation

North Sandy Creek Watershed



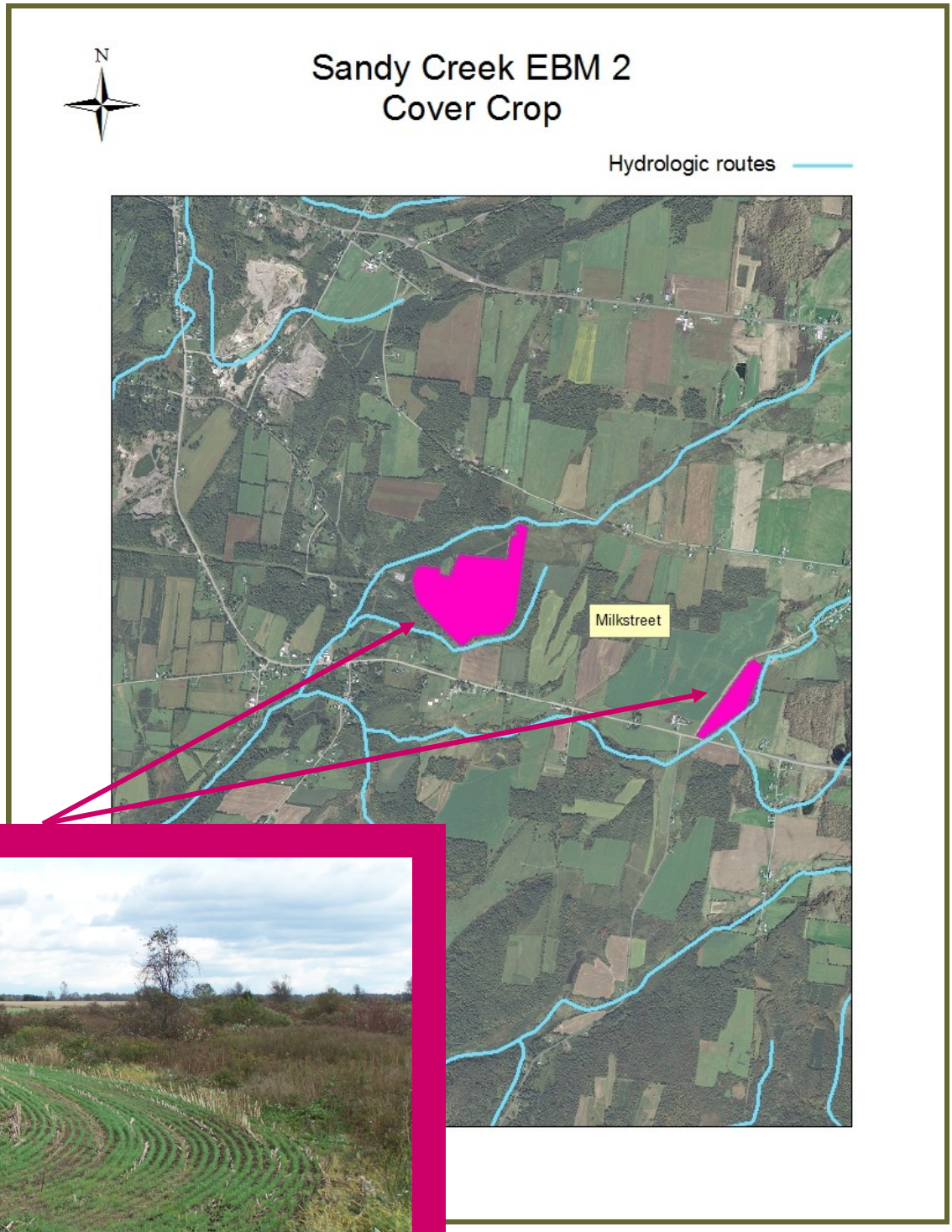
Windsong Dairy Farm seeded 15 acres on a steep slope with a concentrated flow and stream at the bottom.

Porterdale Farm seeded 114 acres upslope from the riparian buffer project that was implemented as part of the first Ecosystem Based Management Pilot Project in the Sandy Creeks Watershed.

Summary of Individual Farm Implementation:

No-Till Cover Crop Implementation

North Sandy Creek Watershed

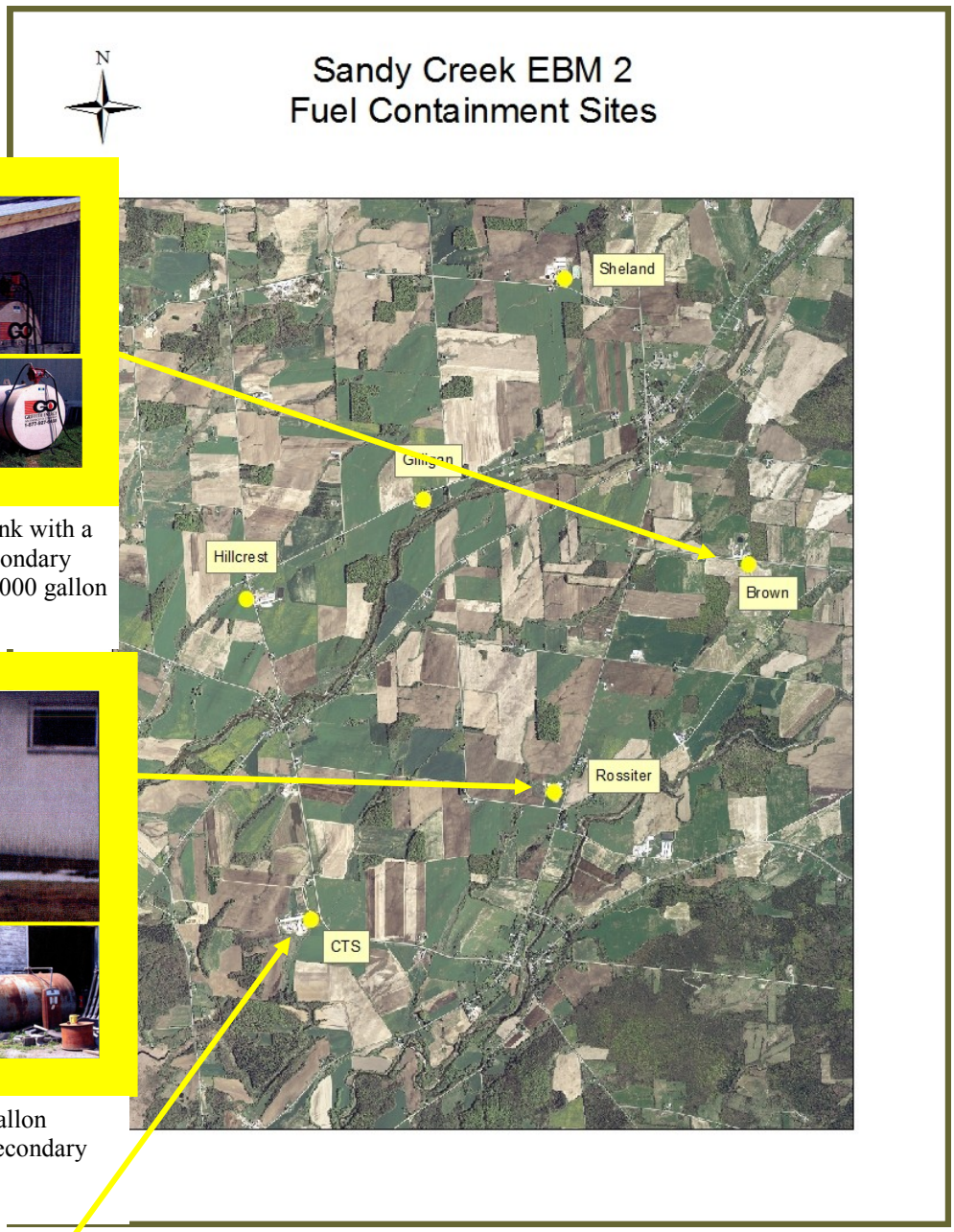


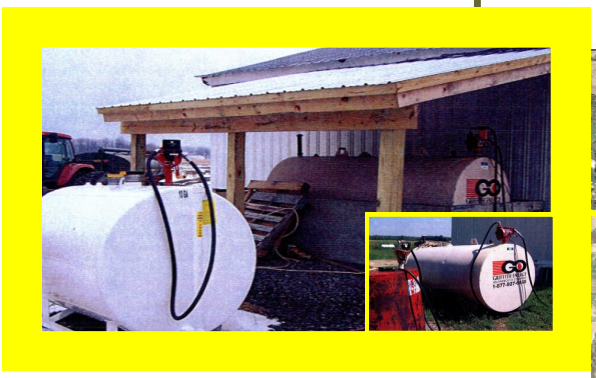
Milkstreet Dairy Farm seeded 123 acres on two tracts, both adjacent to perennial streams.

Summary of Individual Farm Implementation:

Petroleum Storage Upgrades:

Sandy Creek and South Sandy Creek Watersheds





Brown Farm—replaced one 500 gallon tank with a new double-walled tank and installed a secondary containment unit and roof for an existing 1000 gallon tank.

Rossiter Farm—upgraded to a new 500 gallon double-walled tank and installed another secondary containment unit for an existing tank.

CTS Dairy—upgrade the existing fuel storage tank by installing a 1000 gallon secondary containment unit.

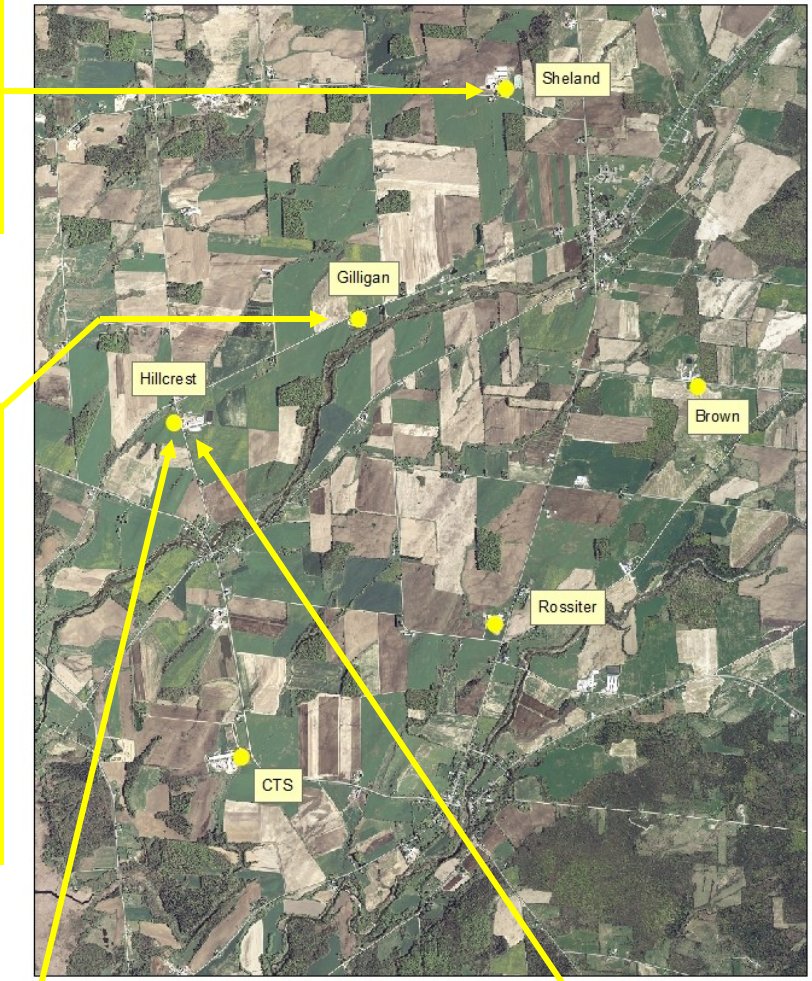
Summary of Individual Farm Implementation:

Petroleum Storage Upgrades:

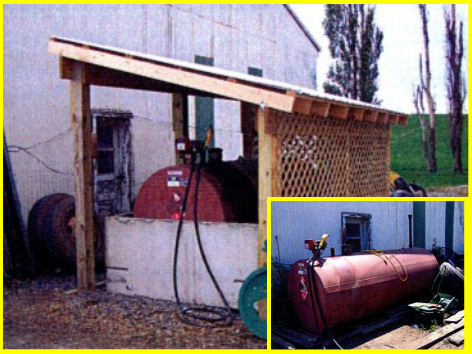
Sandy Creek and South Sandy Creek Watersheds

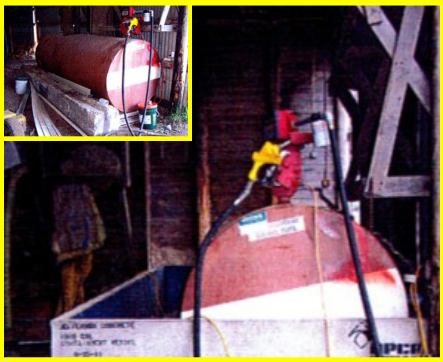
Sheland Farm—replaced on 1000 gallon tank with a new double-walled tank. Installed secondary containment units for two 1000 gallon tanks and one 500 gallon tank.

Gilligan Farm—Installed two secondary containment units for 500 gallon tanks.



Hillcrest Farm—Installed two secondary containment units. A roof was built over the outdoor unit to exclude rainwater and eliminate the need to pump clean water from the containment structure.

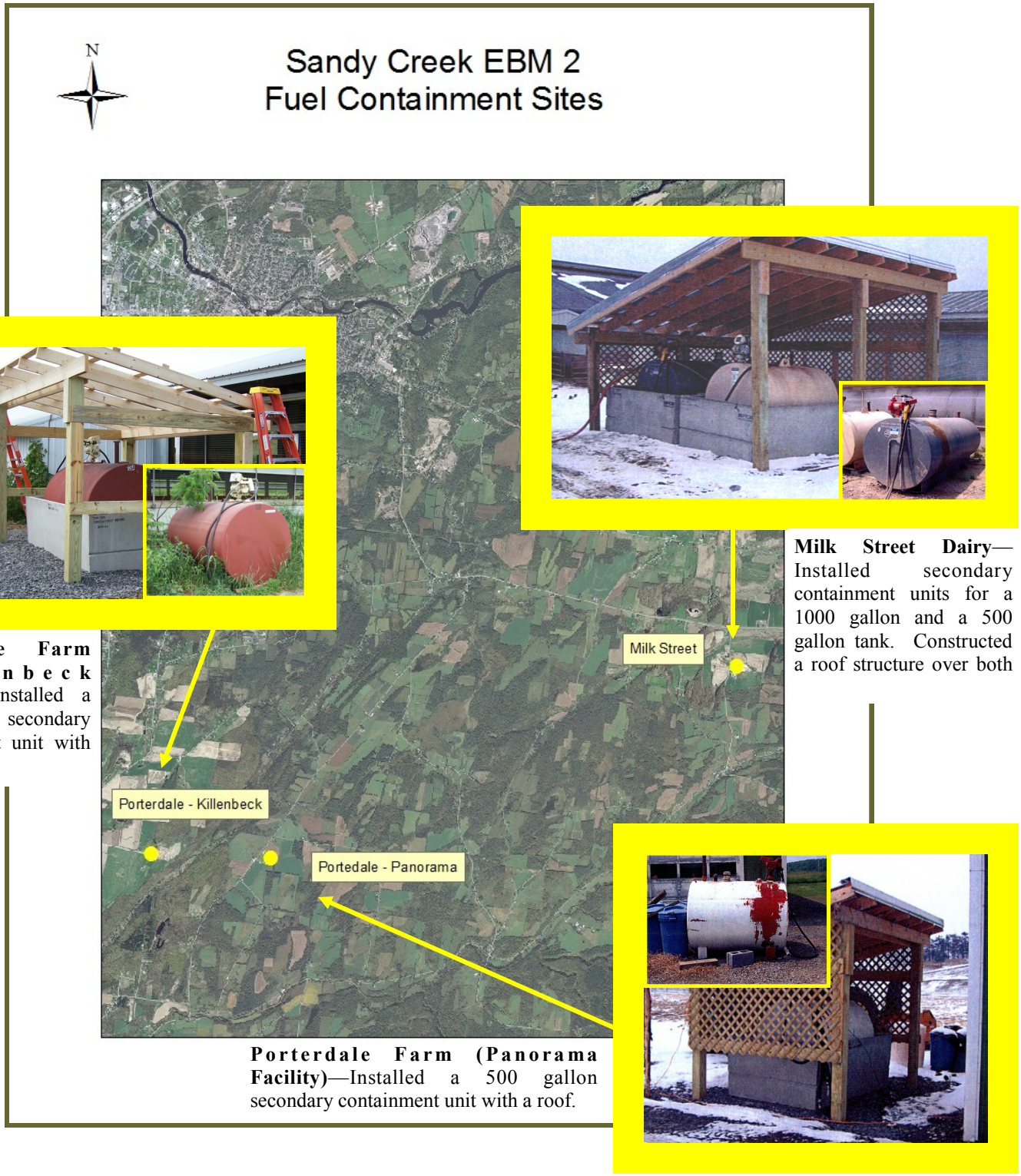




Summary of Individual Farm Implementation:

Petroleum Storage Upgrades:

North Branch of Sandy Creek



Porterdale Farm (Killenbeck Facility)—Installed a 500 gallon secondary containment unit with a roof.

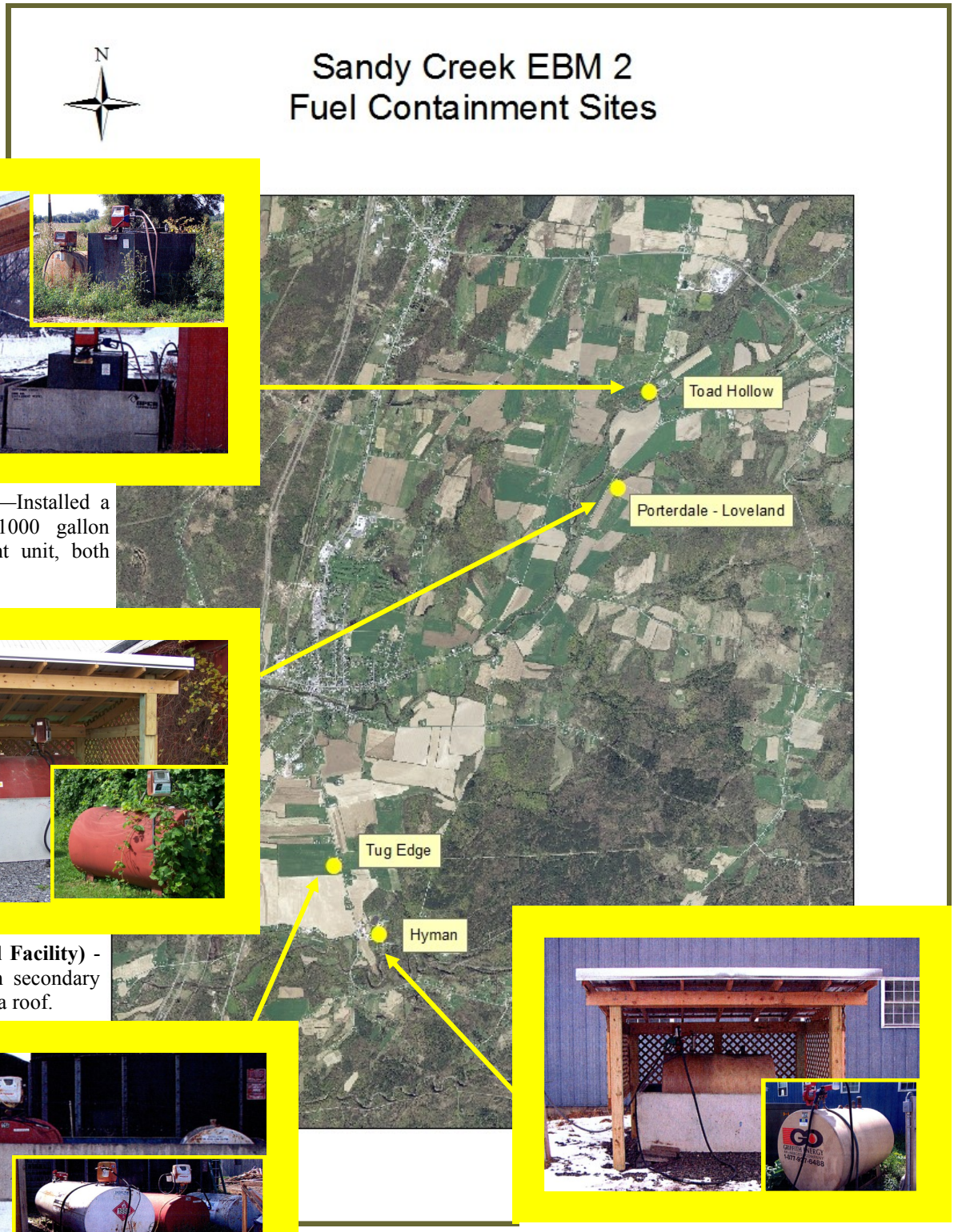
Milk Street Dairy—Installed secondary containment units for a 1000 gallon and a 500 gallon tank. Constructed a roof structure over both

Porterdale Farm (Panorama Facility)—Installed a 500 gallon secondary containment unit with a roof.

Summary of Individual Farm Implementation:

Petroleum Storage Upgrades:

Sandy Creek Watershed



Toad Hollow Farm—Installed a 500 gallon and a 1000 gallon secondary containment unit, both under one roof.

Porterdale (Loveland Facility) - Installed a 500 gallon secondary containment unit with a roof.

Tug Edge Farm - Replaced one 1000 gallon tank with a new double-walled tank and installed a 1000 gallon secondary containment unit to hold two smaller tanks.

Hyman Farm - Installed a 500 gallon secondary containment unit with a roof.

Summary and Lessons Learned

The Sandy Creeks Watershed Pollution Prevention Pilot demonstrated the benefits of natural resource protection. While most water quality cost-share programs in the State focus strongly on correcting the problems of our past, this pilot aimed to examine the benefits of investing in clean water. Unlike the days of the Dust Bowl, most farmers today are well aware of their impact on natural resources and they understand that it is in the best interest of their farm to protect the resources that they rely on. Today, the implementation of environmental best management practices has become a balance of cost and time. The work completed under this pilot demonstrates that farmers are not opposed to implementing conservation practices, working with government agencies or changing their management practices, even when an environmental concern is not readily apparent. Under the conservation cover cropping, the pilot exceeded its expectations and the strong interest in this practice provides further confidence that the investment in this pilot will have lasting effects through on-going implementation. Furthermore, the positive response from the petroleum bulk storage upgrades demonstrated that regulated farms are willing to exceed the level of mandated compliance already being implemented. Eleven of the 12 regulated farms in the watershed chose to voluntarily update their fuel storage practices. The one farm that declined did so for practical purposes associated with a future layout plan, and did not object to installing the practice itself. In conclusion, the deliverables were exceeded for all components and all participants were satisfied with the results.

<u>The key lessons learned are as follows:</u>

- Large farms are not opposed to implementing no-till cover crops, but the availability of the equipment and time are the major deterrents.

    - ◊ The pilot was able to address the concerns of having equipment appropriate to the larger fields often used by bigger farm operations, but the time investment required was still an obstacle.

    - ◊ In addition to the farmers not having the time available to seed the cover crops, a bid put out to custom applicators also did not receive any responses, as cover crops are implemented during the harvest season. In the end, the Conservation District staff rented the additional equipment necessary to implement the practice themselves.

- In order to achieve the highest level of environmental protection possible, the Conservation District prioritized the farm fields eligible for the cover cropping. Farms with fields considered a lower priority showed interest and were willing to implement the practice.

- Seeding dates listed in the Natural Resource Conservation Service (NRCS) standards provided a small window for implementation. The unusually warm fall and winter season allowed additional time for seed establishment. Farms may be willing to take the risk of seeding past recommended dates, but the constraints of this project did not permit funding those seedings.

- Fuel storage is not a high priority for farms. Most were willing to implement upgrades when the costs were covered by the State, but most likely, this practice would not be implemented without the funding.

    - ◊ The cost associated with the secondary containment structures is the largest detterent. Farmers find it difficult to justify the expenditure when there is not an identified need (leaking tank).

- Some of the same farms that participated in the first pilot also participated in the Pollution Prevention Pilot, demonstrating their on-going support for the Ecosystem Based Management Program.