KENNEBECASIS WATERSHED RESTORATION COMMITTEE

Restoration Site Portfolio

1995-2017

RESTORATION SITE LIST

Trout Creek Sites

1. DeForest Reach – Lanigan Site
2. DeForest Reach – Robert Smith Site
3. DeForest Reach – Gary Erb & Hugh Doherty Site
4. Trout Creek Planting Site – Lisa McLean
5. Maxwell Drive Riparian Enhancement Site
6. Walkerville Farms Restoration Site
7. Lower Ward's Creek - Magnolia Ave Restoration Site
8. Lower Ward's Creek - McGibbon Farm Restoration Site
9. Baird's Plaza Restoration Site
10. Bioengineering on Wards Creek: Celeste Site
11. Brown Field Floodplain Restoration Site
12. Shannon Farm Riparian Enhancement and Ruffed Grouse Habitat Site
13. Turkey Hollow ATV and Riparian Corridor Enhancement Site
14. Improving Industrial Riparian Areas: Brown's Paving
15. Improving Riparian Habitat Connectivity at Bluffhaven Farms
16. Lower Ward's Creek - Bioengineering Restoration McGibbon Farm
17. Lower Ward's Creek – Lower McGibbon Farm Bioengineering Restoration Site
18. Lower Ward's Creek – Trent White Rock Armour Restoration Site
19. Lower Ward's Creek – Bioengineering Restoration Malone Property
20. Lower Ward's Creek – Fowler Avenue Restoration Site

Smith's Creek Sites

21. McDermott Farm Riparian Zone Restoration Through Bioengineering
22. Culvert and Alternate Watering System Installation and Riparian Enhancement: Keohanlane Farms
23. Kurihipi Station Crossing Enhancement Project
24. Smith's Creek Headwaters Enhancement Project – Justin Carll
25. Smith's Creek Headwaters Enhancement Project – Ken Carll

Millstream River Sites

26. Dave Hayes Tree Revetment Site
27. Pleasant Ridge Demo Site
28. Apohaqui Lower Millstream Recreation Council Boat Launch Enhancement
29. McNair Brook Restoration Project: Moffett Site
30. Bioengineering Restoration Project: Don Folkins Site
31. Sheck Brook Riparian Enhancement Project: Millstream Farm
32. Berwick Corner Restoration Site: Roy Pope and Sons/Ron Davis

Upper Kennebecasis River Sites

33. McLeod Brook Restoration Project
34. Upper Kennebecasis Triage – Kingsco
35. Upper Kennebecasis Triage – Sussex Fish and Game
36. Upper Kennebecasis Triage – Sandra & Bob Allaby
37. Upper Kennebecasis Triage – Wayne & Mary Snyder
38. Upper Kennebecasis Triage – Ryan MacEachern
39. Upper Kennebecasis Triage – Ron Demille
40. Upper Kennebecasis Triage – Bob Missen
41. Upper Kennebecasis Triage – Stephen Moffetts

Lower Kennebecasis River Sites

42. Lissondale Farm – Musquash Brook Restoration Project
43. Hampton Bible Camp Riparian Restoration Project
44. Derm and Mary-Claire Murphy – Planting Based Restoration Site

Trout Creek Restoration Site Bio

DeForest Reach Lanigan Restoration Site (N45° 40.958' W65° 22.478')

In 2013 Chris Lanigan approached the KWRC after purchasing a property along Trout Creek. He had concerns about his access point to the property. In 2014 land owners from DeForest Road had similar concerns and the KWRC hosted a meeting of land owners along the reach and 3 sites were identified as concerns for aquatic habitat and sustainable land use. The Lanigan site possessed a 45m bank ranging from 1.5-2m high that was severely eroding and introducing sediments into the river. The KWRC proposed a rip rap approach due to the limited space available and it could be done in conjunction with rock kickers to maintain habitat function and protect a deep pool at the site. Funding for the project came from the Atlantic Salmon Conservation Foundation, Recreational Fisheries Conservation Program, NB Wildlife Trust Fund, CN EcoConnexions, and Tree Canada.

The Lanigan site as it looked in the spring of 2015.

During work in the summer of 2015, rock was placed by an excavator.

Trout Creek Restoration Site Bio

DeForest Reach Smith Restoration Site (N45° 41.032' W65° 22.736')

From a planning perspective this site was challenging due to the presence of a wetland adjacent the site. This required the KWRC to amend the restoration site plan a couple of times in order to attain proper permitting and land owner support. It should be noted that the KWRC are also trying to facilitate the relocation of a public – non-maintained road that is adjacent the site so that it is out of the flood plain. Rock toe armoring, fascine bundles, and geo-roll installation were utilized to stabilize the degrading stream bank while also protecting the integrity of the wetland. At the same time this effort will reduce the chance that the river will flow onto the road creating land use conflicts. KWRC staff also peformed some willow staking along the gravel bar below the main site to further separate the creek channel from the road way. Funding for the project came from the Atlantic Salmon Conservation Foundation, Recreational Fisheries Conservation Program, NB Wildlife Trust Fund, CN EcoConnexions, and Tree Canada.

Trout Creek Restoration Site Bio

DeForest Reach Erb Restoration Site (N45° 40.995' W65° 22.965')

This site possessed a long and extremely high bank. The Trout Creek was threatening two septic systems and thus the bank had to be stabilized. By using rock armoring the slope could be adjusted to 2:1 and thus provide enough room for the septic systems in question. The armoring will also result in a reduction of sediment transfer into the Trout Creek and this will serve to enhance breeding habitat for salmonids in the system. The eroding bank was over 3m high in some spots which meant large rock material was needed. The work took approximately 3 days from the first rock delivery to when grass seed was spread. Tree planting took place in the fall of 2015 when caliper trees were planted. Funding for the project came from the Atlantic Salmon Conservation Foundation, Recreational Fisheries Conservation Program, NB Wildlife Trust Fund, CN EcoConnexions, and Tree Canada.

Trout Creek Restoration Site Bio

Trout Creek Planting Site – Lisa McLean (N45° 40.031' W65° 20.844')

The landowner at this property reached out to the KWRC in 2017, concerned about the severe bank erosion they were encountering on their property. The Bank is extremely high and steep along their stretch of Trout Creek. We completed a site assessment and determined that planting willow would be our best option in 2017. Our field crew staked a total of 537 willow stakes along the toe of the 80m length of bank. We plan to revisit the site in the years to come to spot plant as needed until the vegetation takes.

Trout Creek Restoration Site Bio

Maxwell Drive Riparian Enhancement (N45° 43.653' W65° 30.693')

As part of our 2015 Connecting Riparian Communities Project, funded in part by CN EcoConnexions, the KWRC planted trees on property of the Town of Sussex. The property along Trout Creek also borders houses and thus caliper and potted stock trees were planted. This will reduce the likelihood of them being mowed over. All landowners were notified of the plan and no letters of concern were received. Students from Sussex Middle School assisted in the planting effort and we had an event day at the site to kick off our 2015 restoration season. In total there were 84 trees planted at the site which is approximately 145m long. A setback of 8m was established and this should serve to establish the needed vegetated riparian area and protect homes from future flooding impacts.

CN EcoConnexions and Sussex Middle School representatives dig in.

By August of 2015 the riparian setback was drastically changed for the better and most of the trees were growing successfully.

Trout Creek Restoration Site Bio

Walkerville Farms Restoration Site (N45 38.982 W65 29.918)

The Kennebecasis Watershed Restoration Committee commenced this project in 2009 with the objective of restoring the aquatic and riparian habitat for 1.4km of stream on a farm operated by Jim and Paul Walker. With funding from Potash Corp we were able to plant over 8500 trees along the degraded riparian area, stabilize more than 200m or eroding stream bank while installing more than 12 rock groynes to improve fish habitat, install 5 stabilized fording sites, and erect more than 2km of 3 strand barbed wire fencing. The final tree for this site was planted on October 5, 2011 during an open house event which acknowledged the partners involved in this large undertaking. Ongoing stream temperature monitoring is taking place to evaluate the success of the site.

BEFORE AFTER

Trout Creek Restoration Site Bio

Lower Ward's Creek Magnolia Ave. Restoration Site (N45 42.661 W65 30.285)

This project was carried out through the summer of 2011 with the final touches being done that same fall. The objective of this project was to stabilize a severely eroding bank in order to protect the Town of Sussex infrastructure, including Magnolia Avenue. Approximately 80m of stream bank was stabilized which will result in a reduction of sediment from erosion as well as chemicals from the roadway. Six rock groynes were also installed to improve fish habitat conditions and slow the flow of the stream during high water events. To further enhance the site a number of willows, oak, cherry, maple, and pine trees were planted. Of note on this project was our use of a hand made floating silt curtain, which was not only cost effective but also very effective at knocking silt down during the construction phase of the project.

Trout Creek Restoration Site Bio

Lower Ward's Creek McGibbon Farm Restoration Site (N45 42.805 W65 30.048)

With work being completed above this farm site it was important that the Kennebecasis Watershed Restoration Committee (KWRC) work to also protect and enhance this farm site. With a long, severely eroding, and in places very high, stream bank that has been on our priority issue list for sometime it was rewarding to complete this site in 2011. The farmer had already been fencing his cattle away from this stream bank but with available resources the KWRC stabilized a 95m section of stream bank, installed 5 rock groynes to improve fish habitat, and planted a number of trees to improve site biodiversity and improve riparian zone health. During our fish rescue efforts, before construction, staff discovered a burbot. This was the first time it had been seen in Ward's Creek.

Trout Creek Restoration Site Bio

Trout Creek Baird's Plaza Restoration Site (N45 43.454 W65 30.382)

In 2008, with a partnership with the NB Department of Transportation, the KWRC completed bank stabilization and the installation of a rock sill at this site. It was also decided due to the high visibility of the site and the adjacent land use that calliper trees would be planted on the site along with some one gallon potted stock. Maple, ash, and pine have been planted here. One year after the work was completed, the very mobile Trout Creek shifted an entire gravel bar and further site work is planned at this site.

Trout Creek Restoration Site Bio

Bioengineering on Wards Creek: Celeste Site (N45 40.970 W65 22.456)

This site was facing erosion issues and the landowner was concerned with loss of topsoil into Wards Creek. The bank was planted with willow seedlings and stakes in the summer of 2013 to decrease erosion. Beginning on September 16th 2013 the KWRC excavated the bank back to add rock armouring and willow stakes to the bank. A trench was dug in order to bury 8ft lengths of willow stakes within placed rock and soil. The riparian area was then planted with a variety of tree species in order to establish some shade cover over the stream.

BEFORE

AFTER

Trout Creek Restoration Site Bio

Trout Creek Brownfield Floodplain Restoration Site (N45 43.982 W65 30.537)

This site was originally a sewage treatment facility and aeration pond and it was then filled in with scrap rock, asphalt and concrete. To restore this site, the area had to be levelled and sloped to allow rainwater runoff smoothly back into the Trout Creek. Large rocks were placed at the toe of the slope in hope that this will create a channel that will drain into Trout Creek. A variety of tree species were planted and a mulch trail and a raised flower bed were added to the site to create a recreational area for residents of Sussex. Many groups have volunteered their time to make improve the quality of this site including Sussex Middle School, the University of New Brunswick's Environment and Natural Resources graduating class and local Scouts groups.

BEFORE

AFTER

Trout Creek Restoration Site Bio

Shannon Farm Riparian Restoration & Ruffed Grouse Habitat Project (N45 42.413 W65 22.721)
In 2013 riparian area on Shannon Brook was restored on Sam Shannon's farm in Waterford. Two kilometres of livestock fencing was installed and trees of a variety of species were planted in the riparian area. Nose pumps were installed to give cattle access to drinking water from the stream. In conjunction with our Ruffed Grouse Habitat Project trembling aspen (*populus tremuloides*) were planted and drumming logs were installed. Trembling aspen provide habitat and food for ruffed grouse. Drumming logs give ruffed grouse an area to attract a mate and mark their territory by drumming their wings on their breast.

Trout Creek Restoration Site Bio

Turkey Hollow ATV and Riparian Corridor Enhancement Site (N45 39.095 W65 17.530)

In 2013, an ATV trail in Turkey Hollow was having flooding issues as an ephemeral stream crossed the trail. Instead of the stream remaining in the channel, the water flowed down the trail. The stream was channelized and a trail built along side to separate the two. Bridges were built in three areas where the stream crosses the trail so that the stream channel can be re-established.

BEFORE

AFTER

Trout Creek Restoration Site Bio

Improving Industrial Riparian Areas: Brown's Paving (N45 42.992 W65 28.762)

In 2014, the KWRC underwent a stream bank restoration project in partnership with Brown's Paving with the goal to help improve industrial riparian areas along the Trout Creek. The KWRC also hosted a workshop for the Brown's paving employees about working responsibly near watercourses. Rock armouring was installed, and trees were re-planted to help stabilize the bank on their property which was being heavily eroded.

Trout Creek Restoration Site Bio

Improving Riparian Habitat Connectivity at Bluffhaven Farms (N45 41.562 W65 25.809)

The KRWC began consultation with the landowner in 2013 to potentially restore an eroded bank. After the spring of 2014, the landowner lost a considerable amount of land after the stream broke its right bank and formed a new channel through the eroded area into the adjacent field. The KWRC decided to use rock armour to stabilize the 70 m bank, and instead of fixing the channel, they chose to let the stream run its new course and restored the surrounding land and planted 570 trees, 6 of which were calliper trees, as well as planting willow stakes. The design of the site has been created so that there are any major floods, the water will come up and be negated by the slope of the bank.

Trout Creek Restoration Site Bio

Ward's Creek Bioengineering Restoration McGibbon Farm (N45° 42.963' W65° 30.111')
This site served as one of the locations of a pilot project for the use of a biodegradable geo-textile product in our bank stabilization endeavours in 2014. Farm land adjacent to the waterway and the bank was eroding away and the farmer wanted to maintain as much of his use as possible and the geo-roll meant only having to establish a 7-8m. The total bank length was 54m and trees and shrubs were planted following the stabilization of the erosion site. Funding was provided by ASCF, WTF, RFCPP, ETF, Walmart-Evergreen, and student subsidy programs.

Trout Creek Restoration Site Bio

Lower Ward's Creek, Lower McGibbon Farm Restoration Site (N45° 42.997' W65° 30.138')

In 2017 John McGibbon approached the KWRC and proposed we establish another restoration site on his farm property. The section below our past bioengineering site on his property is encountering a change in stream hydraulics. The channel has split, creating a new channel. The new channel has created some erosion along its banks. We tackled the slight erosion by staking a number of willow stakes near the toe of the bank. Below the newly established channel, where it meets the old channel, severe erosion was occurring. We decided to use the same technique we used above on his property, as it was very successful in stabilizing the bank. We installed a rock toe along the 35m long bank, installed two georoll steps, paired with brush layering of willow whips. On the upper and lower end of this bank, the banks were rock armoured as well. As this site matures and vegetation matures it will serve to protect the bank as well as be able to absorb the access energy formed during high water events. Through this stretch of Ward's Creek the KWRC planted a total of 5013 willow (233 seedlings, 3780 stakes, 1000 whips). Tree stock was also planted throughout the newly establish riparian area, 55 in total (18 Rd, 30 sM, 2 bF, 2bS, 1sB, 2rO).

Below the newly stabilized bank we created a 20m long tree revetment, using woods from the site. Some of the wood was laying horizontal to the flow of the creek, impeding flow and/or directing flow towards an already eroding stream bank. Others had to be removed to install the rock and bioengineering. The tree revetments will help protect and build up the bank by catching sediments and other debris during high water events. This effort was done to protect those landowners and their properties behind the revetments.

Trout Creek Restoration Site Bio

Lower Ward's Creek – Trent White Rock Armour Restoration Site (N 45° 42.782' W65° 30.141')

The landowner at this location was continuously loosing parts of his property to erosion each year during spring flush. This 22m long bank was back sloped to improve floodplain connectivity and rock armoured to prevent further erosion. Rock kickers were installed on the upper and lower end of the bank to mitigate possible changes in hydraulic flow. Trees and shrubs were planted within a 5m buffer zone along the banks riparian zone, this included 6 service berry shrubs and 4 caliper stock red oak. Willow stakes were also planted along the toe of the bank, 345 in total.

Trout Creek Restoration Site Bio

Lower Ward's Creek, John Malone Property (N45° 42.603' W65° 30.280')

This restoration site began in 2014 with funding from Wal-Mart Evergreen, ASCF, RFCPP, and student subsidy programs. In cooperation with John Malone who built an access road into the site, the KWRC established a 30m riparian setback and utilize georolls to stabilize a 90m long eroding stream bank and enhance an existing fording site. A number of trees and shrubs were also planted and bird habitat structures and a bee box were installed as well. The geo-rolls were utilized because access to the site for dump trucks was not feasible and as a new approach we wanted to test the installation methods of this site to a site on the McGibbon Farm. Here we did not use any rock while at the McGibbon site we toe armored the base of the slope.

Trout Creek Restoration Site Bio

Lower Ward's Creek Fowler Avenue Restoration Site (N45° 42.989' W65° 30.101')

This project was part of our 2014 Habitat Connectivity Project and also part of the Industrial Riparian Zone project. The KWRC removed 3 dumptruck loads of junk cars scrap metal etc. from the site, stabilized a degraded stream bank, installed bird boxes and bird habitat, and planted native trees and shrubs along the disturbed area.

Smith's Creek Restoration Site Bio

McDermott Farm Riparian Zone Restoration Through Bioengineering (N45 47.201 W65 28.663)
This site was established in 2011 with a great deal of work being completed in the summer of 2012. Following up on previous work completed in the area, which included riparian planting and a stabilized fording site, the KWRC wanted to utilize bioengineering techniques to stabilize an eroding bank. The prescription for this site was wattle fencing along with planting the upper banks with various tree species. The wattle fencing was built using willows harvested from near the site. The length of bank stabilized was 90m with an average bank height of approximately 1.25m. In 2013 trees were planted on the top bank to establish a riparian area around the stream.

Smith's Creek Restoration Site Bio

Culvert and Alternate Watering System Installation and Riparian Zone Enhancement, Keohanlane Farms (N45 47.865 W65 28.426)

A small tributary to the Smith's Creek was being choked with sediment and lacked the natural habitat functions of a healthy stream. To improve grazing and farming conditions on this property and to enhance riparian and aquatic habitat the KWRC suggested a number of tasks be undertaken. Cattle were fenced away from the riparian zones for the entire field and a bank of six nose pumps were installed for water. A degraded culvert was replaced to improve stream hydraulics and various trees were planted along the stream to improve bank stability and add site biodiversity. Future work on this site may be needed to improve natural flow conditions which are being hampered by high sediment deposition along this low gradient stream section. It may be necessary to remove woody debris from the channel in order to attain a more natural flow pattern.

Smith's Creek Restoration Site Bio

Kurihipi Station Crossing Enhancement Project (N45°48.053 W65°28.32247.865)

Poorly designed fording sites and crossings contribute greatly to habitat disruption across our watershed. When a landowner in the Upper Smith's Creek sub-watershed asked if the KWRC could aid in improving the conditions of his fording sites we agreed. A new culvert was installed on a first order stream and a bridge was replaced on a second order stream located on the farm. Partnering with Agriculture and Agri-Foods Canada allowed us to purchase the culvert and timber materials and working with the Southern NB Wood Co-op allowed us to determine the requirements for the bridge.

BEFORE

AFTER

Smith's Creek Restoration Site Bio

Smith's Creek Headwaters Enhancement Project – Justin Carll (N45 52.001' W65 21.421')

A 1.8km stretch of badly eroding stream bank on two tributaries in the Smith's Creek Headwaters was identified on Justin Carll's property, during habitat assessment efforts in 2015. The channel, which flows from the road down through the cattle pasture and connects to the second tributary in question at the bottom of the pasture, was deepening, the banks were steepening, which wasn't allowing for floodplain connectivity. There was a lack of vegetation and the lack of cattle restrictions to both tributaries, paired with high volumes of water during the spring, was causing heavy erosion, which negatively impacts aquatic life. Fencing was erected along 1.1 km of the tributaries, which established a 5m buffer on both the left and right bank of the tributaries through Carll's pasture. Rock armouring and rock toeing was installed throughout several locations along the tributary that travels from the road down through the pasture. ____ Tonnes of rock were installed. Where rock toeing was installed, georolls and bioengineering in the form of fascine bundles were also used, 5800 willow stakes were used in this process. Planting was also utilized on this site, in the future we hope to see decreased stream temperatures as the shade cover increases with the growth of the newly planted vegetation. Vegetation planted along the 1.8km stretch included, 894 willow seedlings, 827 tree seedlings, 175 potted stock trees and 22 caliper stock trees. Four nose pumps were also installed to ensure cattle still had access to water.

BEFORE

AFTER

NOSE PUMPS

Smith's Creek Restoration Site Bio

Smith's Creek Headwaters Enhancement Project – Ken Carll (N45 51.740' W65 22.216')

The tributary running through Kenneth Carll's property was discovered to be one of the main tributaries that flows into the Smith Creek from Knightville. A multitude of tributaries flow into it, including the tributaries we worked on, on his son Justin Carll's property. The 257m stretch that flows through Kenneth's property was badly eroded. The substrate is composed of mostly fines and sands, which can cause oxygen depletion when disturbed by cattle and/or high water events. The banks are low and the floodplain connectivity was sufficient but the lack of vegetation and lack of cattle restriction to the tributary was having negative impacts on the tributary itself and thus potentially the Smith Creek. The KWRC erected 514m of fencing to create a 5m buffer around the tributary on Kenneth's property. Four nose pumps were installed to allow cattle access to water. The area was also heavily planted, which will aid in decreasing stream temperatures in the future as well as helping to deposit out fines during high water events in the future, which will in turn help aquatic species. 939 willow seedlings were planted along the tributary, as well as 69 potted stock and 6 calliper stock tress, all water tolerant species as this area is very wet for most of the year. A volunteer planting event will also be held at this location to further plant the area.

BEFORE

AFTER

NOSE PUMPS

Smith's Creek Restoration Site Bio

Duivenvoorden Farm Site (Lat: 45.7487496, Lon: -65.5129123)

Smith's Creek Restoration Site Bio

Schiedel Farms Site (Lat: 45.8358336, Lon: -65.4309011)

Rock sills aid in narrowing the stream and re-establishing the hydrology. The water flowing over the structure creates a waterfall effect, increasing the dissolved oxygen content of the water, digging pools and helping to remove fine sediments that have been impacted into the stream's substrate. Rock sills have been completed on the Schiedel farms will contribute to the restoration of Smith Creek's natural habitat and hydrological pattern while increasing the dissolved oxygen in the water and reducing the damage due to ice.

Smith's Creek Restoration Site Bio

Anderson Farm Site (Lat: 45.8272293, Lon: -65.4476166)

Some of the banks on Smith Creek needed immediate attention due to excessive erosion. Planting trees and fencing cattle out would not have help these actively eroding sites. More direct actions such as riprap and backsloping were used to stabilize the banks. Riprap is the armoring of a bank with blasted rock. The stream banks are back sloped and blasted rock is placed with an excavator to create an armor for the bank against water and ice. Eight sites were subject to riprap on Smith's Creek, protecting a total of 782m of banks from further erosion, including Anderson Farm in 2000.

Smith's Creek Restoration Site Bio

Kuin Farm Site (Lat: 45.8402213 Lon: -65.4267812)

Kuin Farms was restored beginning in 2000 through tree planting and back slopping. First, tree planting occurs once the livestock is fenced out of the riparian zone. The riparian vegetation provides cover for fish and shade to maintain cooler water temperatures. The vegetation also helps water quality by filtering out sediment and harmful substances while the roots trap the excess nutrients. A total of 4,500 seedlings and 450 large stock trees, donated by J D Irving Woodland Division and 1000 donated by the Department of Natural Resources and Energy, were planted on Smith Creek in 2000. Back sloping can be used along banks in straighter sections of streams when the conditions are right. The banks are sloped and a rock toe is usually placed at the bottom of the slope for added protection. Once the bank is sloped it is seeded to accelerate regrowth, and trees are planted to offer future protection with their root systems. A 63 meter stretch of bank was back sloped on the Kuin Farm.

Smith's Creek Restoration Site Bio

Ford/Cogger Site (Lat: 45.7527024, Lon: -65.5101657)

Millstream River Restoration Site Bio

David Hayes Tree Revetment Site (N45° 45.323' W65° 36.744')

A transfer in land ownership resulted in the KWRC being able to re-assess a reach considered as a priority previously. With a solid restoration plan presented and agreed to by the land owner the KWRC is hoping this project site will be the first along this valuable reach of Millstream River. The trees for the tree revetments came from non-merchantable stock being harvested by the Town of Sussex off O'Connell Hill. The goal is to encourage the formation of a more stable stream bank while maintain river connection to the flood plain. This will reduce gravel deposit from occurring on the farm field while also reducing sediment and nutrient flow into the river from the crop fields.

This site resulted from a flood event that started to form a flood channel and deposition area in the field. We reshaped and stabilized the bank using tree revetments.

Millstream River Restoration Site Bio

Pleasant Ridge Demo Site (N45 48.473 W65 35.654)

The Kennebecasis Watershed Restoration Committee (KWRC) has been working on this site since 2000. The Millstream River, which flows through the site once suffered from eroding stream banks, over widened channel width, and possessed no riparian vegetation. The associated fields serve as pasture ground for approximately 15-40 heifers (young or non-milking cows,) depending on the year. The site is a little greater than 400m in stream length. There are 6 rock sills down through the site, a stabilized agriculture fording site, and two strand electric fence to restrict cattle access to the ford only. The fence is powered using two portable solar fencing panels. There have been approximately 3200 trees planted at this site with willow, pine, and spruce making up the bulk of that number.

Millstream Restoration Site Bio

Apohaqui/Lower Millstream Recreation Council Boat Launch Enhancement Project (N45 42.184 W65 35.954)

A long established boat launch at Jones Memorial Park at the mouth of the Millstream River was becoming degraded and vehicles were tearing up the stream bank and park grounds when launching small boats. To improve this condition, the KWRC, in partnership with the Apohaqui/Lower Millstream Recreation Council Inc. enhanced the access road and the launch site by decreasing the slope of the access road and using large boulders to help the site resist future erosion while maintaining the natural look and feel of the site.

Millstream River Restoration Site Bio

McNair Brook Restoration Project – Moffett Site (N45 45.900 W65 37.188)

McNair Brook is a relatively healthy stream until you near its confluence with the Millstream River. The Moffett family though has been working hard to improve stream conditions here as well as improving deer and wetland habitat adjacent to the stream as well. Three eroding stream banks and an over widened channel were hindering his light farming activities however, and with funds from the Growing Forward program and EcoAction the KWRC was able to help him stabilize these banks and improve channel conditions with rock groynes.

One of the improved banks

An installed rock groyne

Lower bank under high water conditions

Millstream River Restoration Site Bio

Bioengineering Restoration Project – Don Folkins Site (N45 47.585 W65 35.979)

This project site is along the main stem of the Millstream River. Completed in 2012 the project allowed us to build upon work completed upstream around 1999-2002. The KWRC used fascine bundles to stabilize the eroding stream bank and improve riparian health. The land owner, Don Folkins, approached us through the Kings County Agri-Conservation Club to address a severely eroding bank and in a short time we were able to attain the permits required to complete the project in under a full year, not including monitoring. Volunteers were utilized to actually install the first 50m of bank stabilization as part of our "2012 Water and Willows" event.

Millstream River Restoration Site Bio

Sheck Brook Riparian Enhancement Project – Milkstream Farms (N45 53.448 W65 31.848)
With corporate funding from Cargill Ltd and from NB WTF, the KWRC were able to fence off and enhance 2km of this important head water tributary to the Millstream River. A strong partnership was also formed with Crosswinds Activity Center where their clients aided in planting a good portion of this site in 2012. The site was revisited in 2013 to finish the fencing and to spot plant the area once more. This effort will restore the site biodiversity, provide shade to the stream which will buffer stream temperatures, and pollinator friendly shrub species have been planted to improve pollination of farm crops.


Getting ready for planting, note the degraded riparian area.


Crosswinds aided in the planting of this long site.


Looking up stream across the lower reach of Sheck Brook in the fall of 2012.

Millstream River Restoration Site Bio

Berwick Corner Restoration Site – Roy Pope and Sons/ Ron Davis (N45 46.785 W65 35.914)
This site is one of our more mature willow planting sites and we now harvest willow stock from this site to propagate willow for other restoration efforts. The site contains rock sills and riparian planting both above and below the bridge on Hwy 10. The restoration efforts here will provide more stable stream banks, improved water quality and temperatures, and a reduction in nutrient loss for the crops. The landowners are providing more than an adequate setback for the agricultural needs.

The Berwick Corner site circa 1999.

The Berwick Corner site in 2010.

Upper Kennebecasis River Restoration Site Bio

McLeod Brook Restoration Project (N45 46.376 W65 23.351)

One of our oldest restoration projects, this site was completed originally in 1996 and has required some maintenance from time to time. Digger logs were installed, fording sites created, fence erected to keep livestock out of the riparian zone, and trees planted. The site has become a large success and the before and after pictures are a great indication of that success. The more than 30 digger logs have stabilized the stream dynamics and created deep pools for salmonid refuge. As a cold water stream, this tributary was deemed to be an important component of the overall health of the Upper Kennebecasis sub-watershed. By restricting livestock access to the riparian zones the trees that were planted were given a chance to grow and re-establish the highly degraded and poorly functioning riparian ecosystem.

Upper Kennebecasis River Restoration Site Bio

Upper Kennebecasis Triage – Kingsco (N 45° 44.645' W65° 29.811')

As part of our Upper Kennebecasis Triage project for 2017 this location was identified through online efforts of our Data Technician. Once the site was identified the field crew performed a thorough site assessment to determine what route of restoration efforts we would like to pursue. Kingsco was approached and approved the planting efforts we had outlined for the location. The bank in this location is severely eroded and composed of fine sediments. We decided our best effort would be spent working to achieve better vegetative cover at this location. Thus a total of 1142 willow (450 willow seedlings, 692 willow stakes) were planted along the toe of this site. A 5m setback was also established along the 50m of bank we stabilized as well. Within that newly established setback we planted 28 potted stock trees, 26 bF and 2 eH. We also installed a duck box on the property facing the overflow area next to the river.

Upper Kennebecasis River Restoration Site Bio

Upper Kennebecasis Triage – Sussex Fish and Game (N 45° 44.511' W65° 26.699')

As part of our Upper Kennebecasis Triage project for 2017 this location was identified through online efforts of our Data Technician. Once the site was identified the field crew performed a thorough site assessment to determine what route of restoration efforts we would like to pursue. SFG was approached and approved the planting efforts we had outlined for the location. The bank in this location is severely eroded and composed of fine sediments. We decided our best effort would be spent working to achieve better vegetative cover at this location. Thus a total of 1044 willow (660 willow seedlings, 384 willow stakes) were planted along the toe of this site. A 5m setback was also established along the 108m of bank we stabilized as well. Within that newly established setback we planted 28 potted stock trees, 9 bF and 3 eH, 8 bS and 8 wS. We also installed a duck box on the property.

Upper Kennebecasis River Restoration Site Bio

Upper Kennebecasis Triage – Sandra & Bob Allaby (N 45° 47.710' W65° 19.642')

As part of our Upper Kennebecasis Triage project for 2017we chose this location as one of our potential restoration sites. It was first identified in 2016 during our Upper Kennebecasis Habitat Assessment efforts. This site suffers from severe erosion and lack of vegetation. It is 81m in length and the landowner was on board with any restoration work we could do for them. They had attempting planting some trees in the past unsuccessfully. The KWRC decided to stake the toe of the bank with willow, a total of 1556 willow stakes were planted. As these mature we hope they will serve to stabilize the bank and halt any further erosion of the area. We also planted 12 shrubs, 5 Rd and 7 sB, as well as 6 large caliper stock trees, including 2 rO, 2 sB and 2 rP. We plan to re-assess this site in the future to ensure stabilization. If the planting doesn't help we may re-assess for more substantial stabilization techniques as there is room for back sloping at this location and good assess as well.

Upper Kennebecasis River Restoration Site Bio

Upper Kennebecasis Triage – Wayne & Mary Snyder (N45° 48.221' W65° 18.522')

As part of our Upper Kennebecasis Triage project for 2017 this location was identified through online efforts of our Data Technician. Once the site was identified the field crew performed a thorough site assessment to determine what route of restoration efforts we would like to pursue. The landowner has a large portion of stream bank that isn't eroding but does lack vegetative cover. The landowner wasn't interested in planting that portion of their property, as they would prefer to keep sight lines open to the river. They did however agree to planting on a small 10m portion of their bank. Our field crew planted 20 willow seedlings and 2 wS. For this site in particular it is important to remember that even a small win is a win and it is important is to improve the areas of the river that we can, when we can and gradually we will see a difference.

Upper Kennebecasis River Restoration Site Bio

Upper Kennebecasis Triage – Ryan MacEachern (N45° 48.272' W65° 18.434')

As part of our Upper Kennebecasis Triage project for 2017we chose this location as one of our restoration sites. It was first identified in 2016 during our Upper Kennebecasis Habitat Assessment efforts. This site is 48m in length and suffers from heavy erosion and lack of vegetative cover. The landowner was on board in 2016 when we approached them during our Habitat Assessment, so in 2017 when we received funding for our Upper Kennebecasis Triage Project it was a no brainer to involve this co-operative landowner and improve some viable fish habitat on the Upper Kennebecasis River. We installed a rock toe along the 48m long bank, installed two georoll steps, paired with brush layering of 300 willow whips. Tree stock was also planted throughout the newly establish riparian area. Since this is a residential area, it was important to take into consideration the look of the project. We couldn't reclaim the area as a forest and plant excessively thick vegetation because that wasn't what the landowner wanted. We shifted the willow stock to the upper and lower ends of the georoll steps and left a good 20m open so that the landowner and their pets would still have access to the river. When planting the tree and shrub species we maintained the same sequence. They have a fire pit near the river's edge, in the middle of the 48m bank, this is where the gap in vegetation was claimed. The tree species we planted included 6 Rd shrubs and 4SiM and 2sB caliper stock trees. The area was re-seeded and watered weekly to remediate the site back to its prior visual appeal. As this site matures and vegetation matures it will serve to protect the bank, create substantial shade cover, as well as be able to absorb the access energy formed during high water events.

Upper Kennebecasis River Restoration Site Bio

Upper Kennebecasis Triage – Ron Demille (N45° 48.169' W65° 10.067')

As part of our Upper Kennebecasis Triage project for 2017 this location was identified through online efforts of our Data Technician. Once the site was identified the field crew performed a thorough site assessment to determine what route of restoration efforts we would like to pursue. The landowner has a 90m long portion of bank that is severely eroded. The stream channel split and washed away a large portion of his farm field at this location. The landowner would have preferred to push the new channel back and fill it in but the KWRC believes in giving the river space within its riparian boundaries to meander naturally. Instead we suggested we could heavily stake the new eroding stream bank with willow and plant vegetation within a 5m riparian boundary above the bank, as to protect this new bank in the future. The landowner was aggregable to the work we suggested and thus we planted a total of 2039 willow stakes along the 90m reach as well as 26 potted stock softwoods along the riparian zone (24bF & 2wS). The root base that will establish on this newly established vegetation will help stabilize the bank and as they mature the shade cover they will produce will be beneficial to fish species in the river. Two bird boxes were also installed on top of the a couple of the riparian stop sign posts that were installed at this location as well.

Upper Kennebecasis River Restoration Site Bio

Upper Kennebecasis Triage – Bob Missen (N45° 48.705' W65° 17.624')

This location was established as part of our Upper Kennebecasis Triage Project in 2017. Bob Missen is a new landowner on the Upper Kennebecasis and he found, in the last couple years since acquiring the property, he has lost a significant percent of his bank to the river. The area of concern is 63m in length and it lacks significant vegetation and was being mowed right up to the top of the bank. Though it was late in the field season when this property was brought to our attention, we decided to aggressively plant the stream bank and hope that enough vegetation establishes in the last month of summer, so that it will hold up against the spring flush waters next year. We staked 1084 willows along the bank in late 2017. We intend to monitor this site in 2018 and depending on how it hold up this coming spring we plan to consider it for more substantial restoration work.

Upper Kennebecasis River Restoration Site Bio

Upper Kennebecasis Triage – Stephen Moffetts
N45° 48.237' W65° 18.516' & N45° 46.725' W65° 22.361'

As part of our Upper Kennebecasis Triage Project in 2017 we established three planting sites on Stephen Moffetts properties. One small section on the Upper Kennebecasis, which spanned 20m, suffered from severe erosion. Through this section we simply planted 99 willow seedlings. The area is currently being hayed with a sufficient 5m setback. We plan to revisit and spot plant this area as needed.

The second and third planting sites are across from each other downstream from the first site on the Upper Kennebecasis. One on the right bank is 75m in the length and abuts a hayfield and down from it along the left bank is an additional 87m of eroding stream bank that abuts a cattle grazing field. The cattle are sufficiently fenced and a good 5m setback has been established. Throughout this stretch of river, 773 willow seedlings were planted, 139 willow stakes and 20 trees (16bF & 4 wS). The KWRC intends to revisit these sites as well in the future to spot plant as necessary.

Lower Kennebecasis River Restoration Site Bio

Lissondale Farm Musquash Brook Restoration Project (N45 42.472 W65 34.070)

In 2008, with cooperation from Ken and Carolyn Lisson, this project stabilized a high profile eroding bank while also improving riparian zone health on the Musquash Brook. Just over 45m of eroding stream bank was stabilized using rock armour in association with rock kickers to slow water flow. Beef cows were fenced from the site and provided a restricted area for watering. The farmer also agreed to alter his practice of grazing both sides of the stream and changed one pasture into a crop field. The following year two other eroding banks were stabilized and the riparian zones were enhanced through tree planting further down the stream.

The site fall 2007

The site during work in 2008

The site in 2010

Lower Kennebecasis River Restoration Site Bio

Hampton Bible Camp Riparian Restoration Project (N45 29.841 W65 49.908)

The Board of the Hampton Bible camp approached the KWRC to request we work with them to improve the conditions of the stream running through their property and pond. The pond is used for swimming and boating by campers and the stream is a trout bearing tributary to Grooms Brook. Before restoration took place the stream was over widened and horses from the camp's stables had free access to the stream. The riparian zone was completely denuded and nutrients and bacteria issues were arising in the pond. The KWRC fenced the stream out to restrict livestock access and then planted the area with cedar, willow, spruce, and maple.

Crews planted seedlings and spread triple mix grass seed to enhance the site.

Through one season, the difference in site aesthetics and ecological integrity is astounding.

Lower Kennebecasis River Restoration Site Bio

Derm and Mary-Claire Murphy – Planting Based Restoration Site (N45 42.276' W65 35.170')

The KWRC approached Derm and Mary-Claire Murphy in June of 2017 after identifying their property through satellite imagery online. It appeared online, that the property, which abuts up against the Lower Kennebecasis, lacked vegetation along its riparian area. Our restoration coordinator, with the help of our habitat technicians assessed the site and decided to heavily stake the bank with willow as well as plant trays of willow seedlings. A total of 900 willow seedlings and 2328 willow stakes were planted along the 90m long bank on this property. The willow will serve to stabilize the bank as they grow. Willow has a substantially extensive root base and it is a very resilient plant, which is why it serves as an easy and quick solution to bank erosion. On top of the bank, within a 5m setback, KWRC staff planted 3 red osier dogwood, 16 balsam fir and 3 red oak. These species will also help stabilize the bank, as well as provide shade cover to the river as they grow into mature trees. This effort will help in keeping stream temperatures down and provide viable fish habitat. The KWRC will revisit this site year to year to spot plant as necessary.

Before

After