

Reach 4c (VanEtten Trucking to County Route 17)

Reach 4c begins behind the Greene County Highway Department Ashland Facility, and continues 2,700 feet to County Route 17 (**Map VI-5**). The drainage area of the reach ranges from 50.8mi² to 51.2mi², with a single unnamed intermittent tributary entering the reach. Reach 4c is located in Valley Zone 2 (**Figure V-11**) and has an average valley slope of 0.3%. The valley is moderate to broad in width, with adequate belt width available for stream migration. Land use in the reach is variable, with low density residential and forest cover on the south side of the stream, and institutional, high density residential, and commercial use on the north side. Significant land uses within the reach include the county highway facility and a small trailer park.

Stream Morphology/Stability

The Phase I Inventory and Assessment conducted in 1997 revealed that 35% of the streambanks exhibited signs of active erosion, with nearly 1,050 feet of exposed streambank along only 2,700 feet of channel. An average of 2 ft² of exposed streambank surface per linear foot of stream length was inventoried. The predominant stream type in reach 4c is C4, with sections of braided channel characteristic of a D stream type (Rosgen 1996) present at the upper end. Overall, stream morphology is characterized by significant areas of aggradation, channel over widening, and an increase in the channel's width to depth ratio. Typical of over-widened channels, reach 4c is characterized by lateral streambank erosion (**Figure VI-53 photo C,G,H,I**) and frequent channel shift. Historically, the channel has been inefficient at carrying its sediment load, leading to extensive deposition and point bar formations. In **Figure VI-50**, a 1959 aerial photograph is overlain with the stream channel pattern from 1969, 1980, 1997 and 2000, while **Figure VI-51** represents a side by side comparison of the reach as shown in aerial photographs from 1959, 1967, 1997 and 2000.

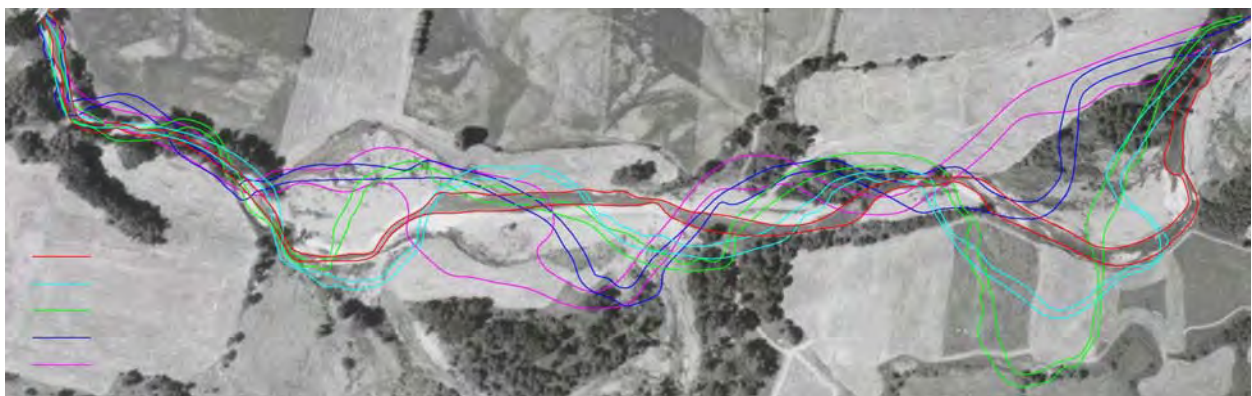


Figure VI-50: 1959 Aerial photograph of reach 4c with 1968, 1980, 1997 and 2000 channel planform locations overlaid. Note extreme channel migration on former farmlands in lower right corner.

Lateral channel migration has averaged 150 feet to 475 feet, with major shifts most likely associated with channel avulsions during the larger flood events. Both figures show the

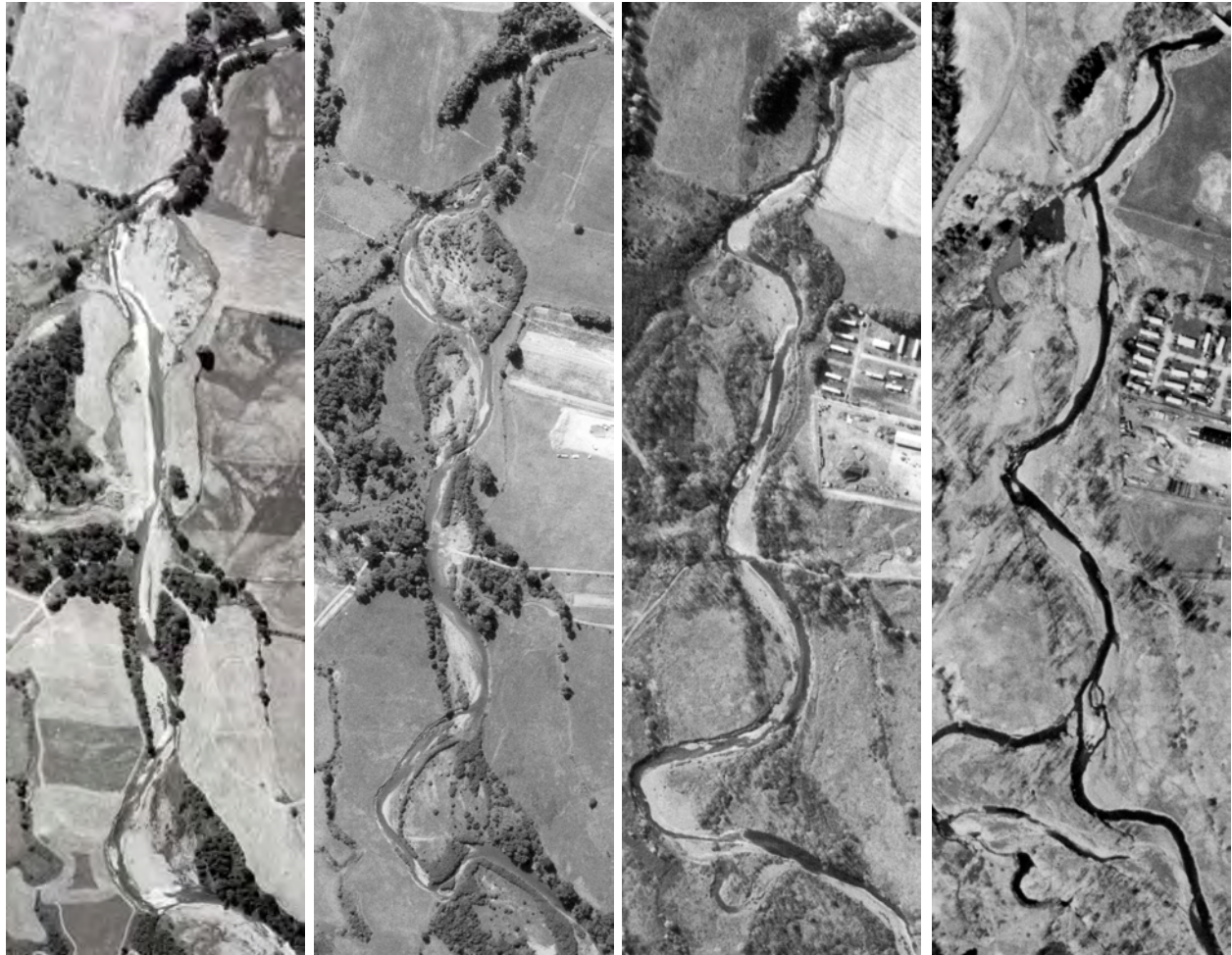


Figure VI-51: Comparison of stream planform in reach 4c. Aerial photographs from right to left include 1959, 1967, 1980 and 1997.

major shifts in the stream channel location during the period of record. The floodplain in reach 4c is characterized by numerous oxbows created by meander cutoff, several of which have filled with sediment. The presence of older, revegetated oxbow cutoffs suggests that extreme channel migrations may actually predate available aerial photography. The stream alignment is currently irregular, with multiple channels and numerous channel avulsions. A fairly large manmade pond on the left floodplain is currently threatened by lateral migration of the channel (**Figure VI-52**), and may be breached if the meander continues to erode.

Minimal vegetation is present above the apex of the gravel bars, indicating recent channel shift and subsequent sediment deposition. GCSWCD observations during the assessment period, as well as historic aerial photographs, have also shown evidence of gravel bar and floodplain mining in the reach. While floodplain mining has been discontinued on the south side of the stream at the lower end of the reach, excavation for topsoil is ongoing on the north floodplain. Reach 4c is characterized as being highly unstable, with a trend toward



Figure VI-52: Active channel migration threatens this floodplain pond in reach 4c.

over-widening on-going, as well as severe streambank erosion at the channel margins. Rapid channel shifts after flood events are common, and the channel clearly cannot effectively transport sediment through the reach.

Riparian Vegetation

Reach 4c is characterized by an extremely poor riparian condition, and is heavily dominated by Japanese knotweed. While

woody vegetation is present on the adjoining high terrace, and several locations on the outer edges of the floodplain, the active stream corridor is almost completely covered by knotweed. At the top of the reach, active erosion of the south bank is occurring in spite of the presence of a moderately dense stand of locust trees. The entire north bank of the reach has essentially no riparian buffer other than knotweed. Similar to reach 4b, the dense communities of knotweed present a significant limiting factor to the likelihood of the reach regaining natural stability.

Numerous wetlands and a man-made pond are located on the south floodplain. The wetlands are contiguous with extensive wetland conditions in reach 4b, and in most cases are the result of channel adjustments that abandoned meander scrolls. The wetland and pond contribute to the diverse habitat potential of the reach. The wetlands within reach 4c should be considered a priority for protection due to the scarcity of established riparian wetlands within the Batavia Kill watershed. The historic channel shifts have periodically impacted these wetlands by removing much of the wetland soils and vegetation. Insufficient sediment conveyance through the reach has also resulted in deposition (filling) of many low wetland areas in the reach.

Water Quality

Any stream or streamside activity that would increase streambed incision or streambank erosion will increase the Batavia Kill's cutting into glacial lake clay and clay rich glacial tills that underlay or are adjacent to the stream and negatively impacting clarity of the stream.

Other potential water quality impacts in reach 4c are associated with stormwater runoff from NYS Route 23 and the Greene County Highway Department Facility, as well as on-site waste water treatment at a trailer park located on the north streambank. At the time of this SMP, the Greene County Highway Department Ashland Facility has already received significant upgrades to protect water quality. The facility has a new salt storage structure that was constructed in 2000, and which should mitigate potential concentrated water quality impacts from chlorides and road abrasives. In addition, the highway facility fuel

station has also received a significant upgrade, with a concrete pad in the filling area as well as double wall safety tanks being installed to meet NYCDEP requirements. The GCSWCD suggests that additional improvements in the treatment of stormwater runoff from impervious surfaces, as well as the gravel parking areas at the highway facility is appropriate, and should be an excellent project under the CWC Stormwater Retrofits Program.

While the GCSWCD did not specifically investigate the status of waste water treatment associated with the trailer park, it is known that this area will not be included in the Windham sewer district. The septic system at this facility is overseen by NYSDEC under a SPDES permit, and the GCSWCD is confident that NYSDEC and NYCDEP have made adequate assessments of the system. The GCSWCD will investigate the type of system present, and determine if the system will qualify for upgrade under the watershed SPDES upgrade program.

Infrastructure

Infrastructure issues in reach 4c are limited to the County Route 17 crossing at the bottom of the reach (**Figure VI-53 photo A,E**). At this time, the GCSWCD cannot make a final determination regarding the impact of the bridge on the stream channel. The bridge currently does not appear to have any problems associated with scour or downstream erosion, although aggradation upstream of the bridge may be partially due to a back-water condition at the bridge. While the bridge is wide enough to span the expected bankfull width at this point in the watershed, extensive fill across the north floodplain between the bridge and NYS Route 23 may be contributing to aggradation during larger flood events. The GCSWCD feels the County Route 17 bridge would be an excellent candidate for installation of a large floodplain drain.

In addition to the potential backwater effect, the County Route 17 bridge will soon be threatened by a down-valley meander migration that is occurring on the right bank above the bridge. As of 2002, the meander continues to move downstream and will eventually result in an improper alignment with the bridge opening. The actively eroding bank is currently approximately 75 feet from the bridge, and a large flood may result in damage to the right abutment or the roadway fill.

Flooding Issues

At the present time, the primary flooding issue in reach 4c is associated with large scale erosion of the streambanks. The adjoining highway department and trailer park are located on the adjoining floodplain, but did not report any flooding problems in either the 1996 or 1999 flood events, which were the largest floods of record. Upon completion of the new digital flood maps, the GCSWCD will reevaluate the threat of flooding to structures within the reach.

Reach 4c Summary

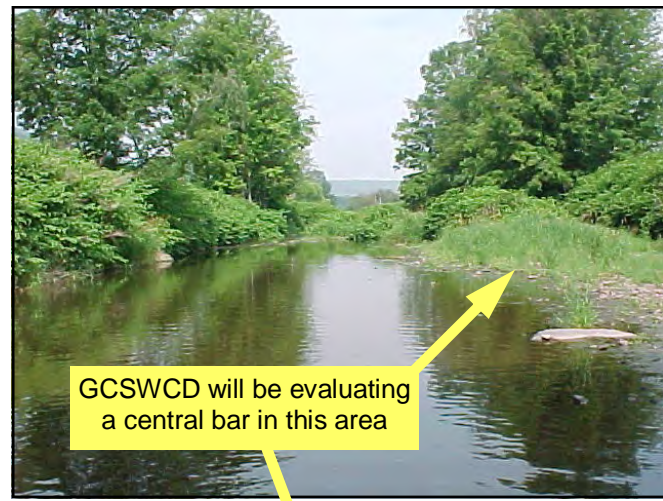
Reach 4c exhibits signs of extreme instability, with aggradation, channel widening and streambank erosion prevalent throughout most of its length. Channel planform adjustments have been active for at least 40 years, and the on-going instability may have been initiated many years ago as the result of frequent attempts to manage the channel. Riparian conditions are poor, and continued instability of the reach will soon breach a floodplain pond, as well as impact the bridge at County Route 17. The GCSWCD and NYCDEP have identified this reach for future restoration under Phase II of the Batavia Kill Restoration Program. Construction is slated for 2006. When completed, the restoration project will join the Brandywine and Maier Farm demonstration projects, resulting in over 2 miles of restored channels.

Table VI-13: Management Recommendations Reach 4c.

Reach 4c: VanEtten Trucking to County Route 17.	
Intervention Level	Full Restoration
Stream Morphology	The GCSWCD and NYCDEP have identified reach 4c as a priority for full restoration to be funded under Phase II of the Batavia Kill Stream Project. Restoration will start at the downstream limit of the Brandywine project, and will include the entire reach length. Restoration would include the establishment of a stable C4 stream type, with restoration of floodplain function and maintenance and/or improvements to riparian wetlands.
Riparian Buffers	Due to current instability conditions, the GCSWCD recommends that improvements to the riparian buffer be undertaken in conjunction with the restoration project. Improvements to buffers outside the belt-width required for the restoration project would be advisable. The site should be evaluated for control of Japanese knotweed.
Water Quality	<ol style="list-style-type: none"> 1. Restoration will ameliorate excess loading of suspended sediments. 2. The GCSWCD Watershed Assistance Program will evaluate the Greene County Highway Facility to determine if stormwater management practices would benefit water quality. 3. The GCSWCD will further evaluate the status of the trailer park waste water treatment system, and as appropriate, will assist the owner with accessing CWC, NYCDEP, and other finding sources for upgrade of the system.
Infrastructure	<ol style="list-style-type: none"> 1. The County Route 17 bridge at the bottom of the reach should be closely observed for potential damage by the shifting stream channel. Emergency repairs should be reviewed by the GCSWCD prior to implementation. 2. During the stream restoration project design phase, the GCSWCD will work with the NYCDEP and Greene County Highway Department to evaluate potential benefits of floodplain drains.
Habitat	See General Recommendations; habitat improvements will be an objective in future restoration efforts.
Flooding	<ol style="list-style-type: none"> 1. Avoid additional development within the floodplain limits. Prohibit fill and additional construction in flood vulnerable areas.
Future Assessments	<ol style="list-style-type: none"> 1. Continue to monitor channel instability. Project team will review need to establish level III/IV monitoring cross sections. 2. Evaluate hydraulic impact of County Route 17 bridge, this will be done upon completion of the NYSDEC digital flood mapping project.

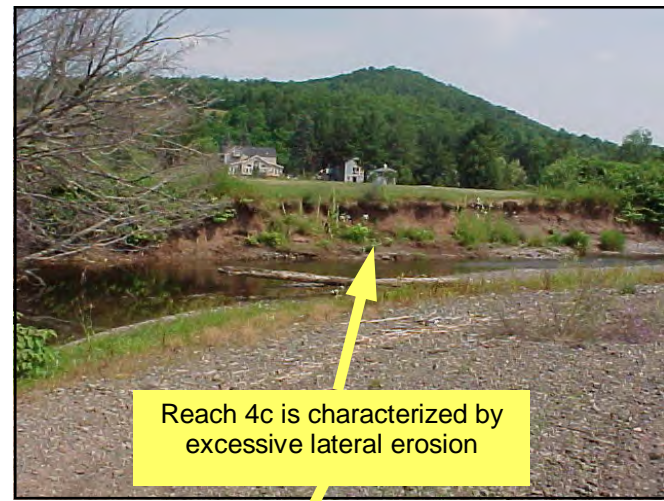


A



B

GCSWCD will be evaluating a central bar in this area



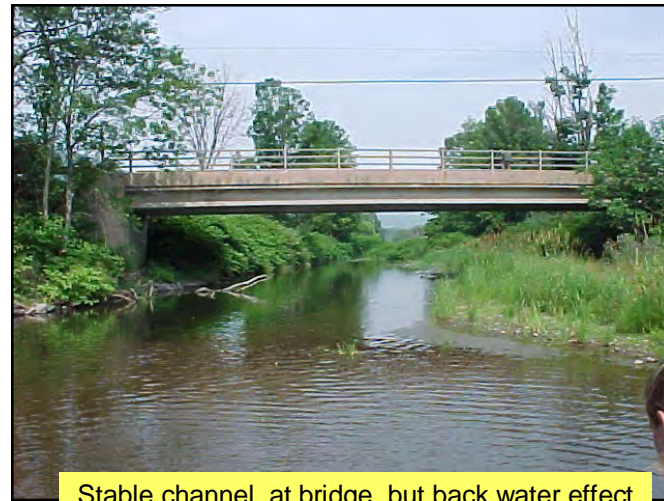
C

Reach 4c is characterized by excessive lateral erosion



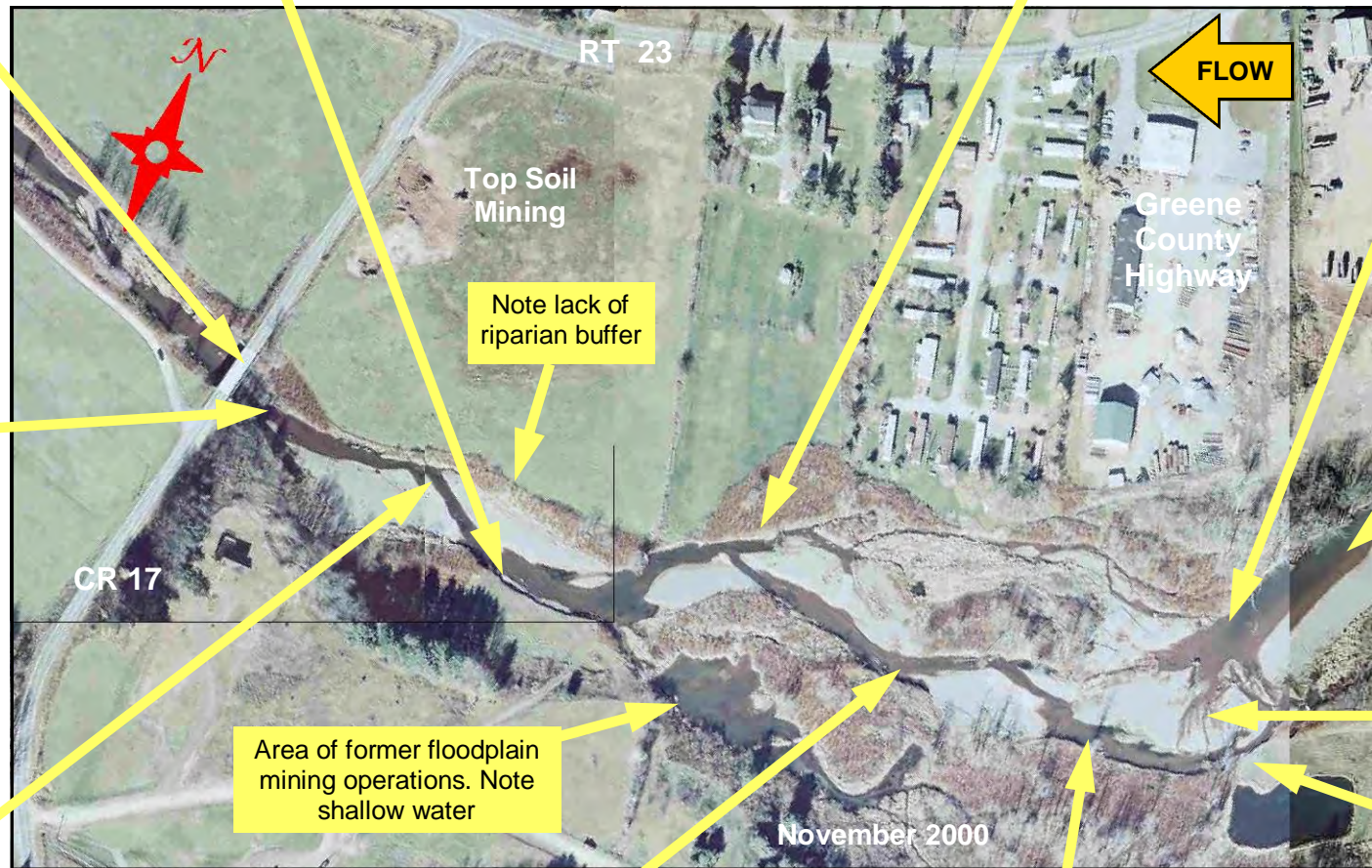
D

Extensive areas of Japanese knotweed is thought to be a significant factor in the reach's instability



E

Stable channel at bridge, but back water effect may be increasing aggradation upstream



Note lack of riparian buffer

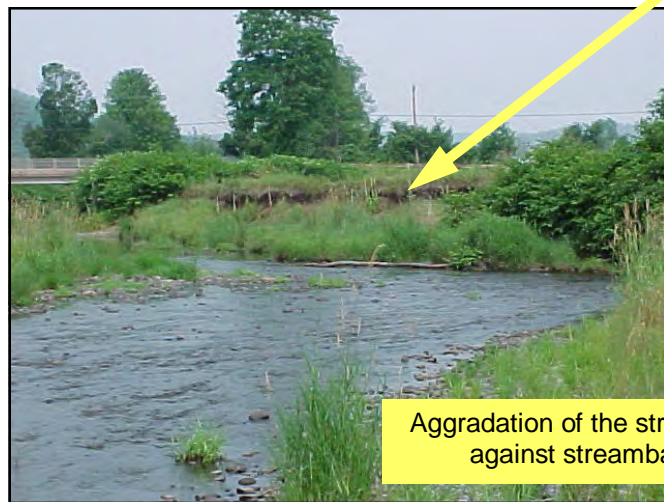
Area of former floodplain mining operations. Note shallow water



F

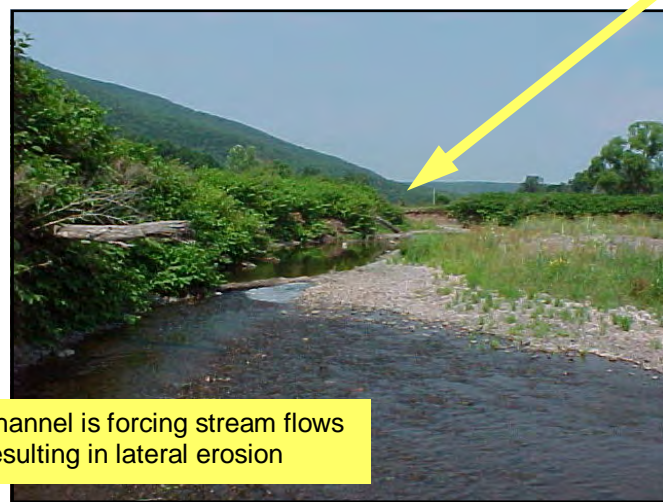
Note fresh depositional materials. This is typical of stream channels that are aggrading

Erosion will soon "capture" pond causing further instability



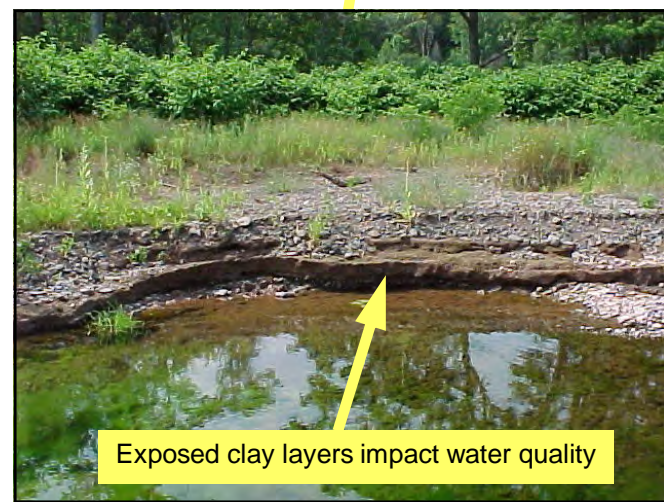
G

Aggradation of the stream channel is forcing stream flows against streambanks resulting in lateral erosion

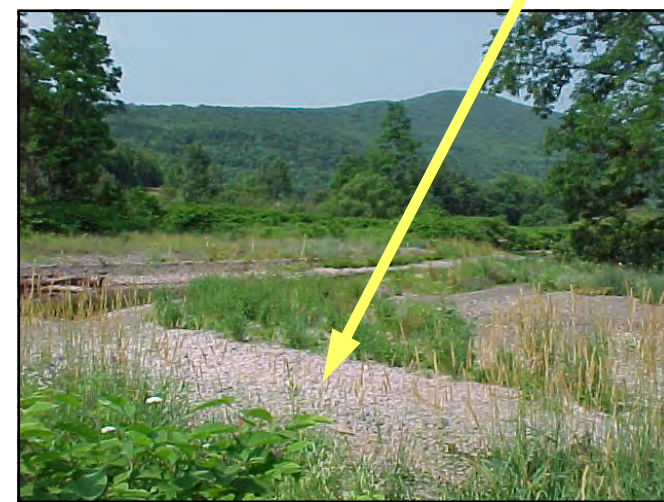


H

Exposed clay layers impact water quality



I



J