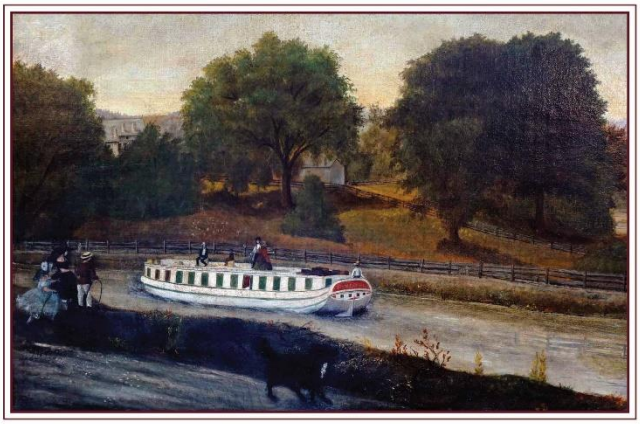
SAMUEL CENTER
for
CANAL HISTORY



CANAL SOCIETY OF NEW YORK STATE

Field Trip Guide
April 23-24, 2023

-The Samuel Center for Canal History-
Erie Canal Heritage Park
Cayuga-Seneca Canal
Cayuga Nation - Gayogo̱hó꞉nǫ’
Montezuma Heritage Park

Canal Society of New York State

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Samuel Center for Canal History

The Canal Society's Spring 2023 Study Tour is a celebration of a momentous year in the Society's history. The Samuel Center for Canal History, the former Saint John's Roman Catholic Church, is the inspiration for the Tour. It was purchased by the Society in May 2022, marking a new, dramatic, and positive direction for the future of the Society. Since its 1956 founding, the Society has never had its own headquarters, one that could provide for programming and safe and accessible space for its legendary collections. For its first fifty years, the Society was fortunate to share space with the Onondaga Historical Association in its home on Montgomery Street in Syracuse. The several hundred cubic feet of manuscripts, books, photographs, and other artifacts then led a nomadic life for several years, being placed in temporary storage at various repositories across Upstate New York. In 2012 much of the collection was consolidated at the Erie Canal Museum, part of a remarkable partnership that resulted in tremendous strides in collections care through several grant-funded projects. On the other hand, the attic of the 1850 Syracuse Weighlock Building has had its drawbacks in terms of access (a rickety narrow stairway) and environment (yeah, an attic). No one understood these opportunities better than the late Tom Grasso, president emeritus of the Society. He urged the Society to move ahead with the Samuel Center. Tom's decades of leadership will also be remembered and honored during the Tour.

Tom Grasso also inspired the Society with its other great step forward. With the 2016 opening of the Society's Erie Canal Heritage Park in Port Byron, still more new opportunities developed. The Society had acquired the Erie House several years earlier to add to the Park's interpretive scheme. The Erie House, however, offered only very limited space for the Society's other functions and collections. With the Park, the Society was also blessed with a dedicated corps of volunteers who have made the Park such a great success. Jim and Sherry Samuel have been long-time volunteers at the Park and it is to them that the Society owes great thanks and appreciation for fully underwriting the purchase of the former Saint John's.

Built in 1899, Saint John's was constructed on the alignment of the Clinton's Ditch, that first Erie Canal having been replaced a half century earlier with the Enlarged Erie that is so wonderfully on display at the Heritage Park. Indeed, the altar was nearly directly over the footprint of the Ditch towpath. Likely, the parishioners were aware of that connection. It was also a connection that the Society was well familiar with, having visited in its very first Study Tours the Ditch aqueduct in its parking lot. Interestingly, the State's ownership of that alignment remained on the books until the 1930s. In 1971 the parish added to that footprint with the addition of a wing wrapping around the southeast corner of the building, now housing the Thomas X. Grasso Library and Archives. The Rochester Diocese closed the church in 2020 with the final Mass being held on June 27, 2020.

Figure 1 (top). Saint John's Roman Catholic Church with Saint Paul's Episcopal Church to the left, c1920 (courtesy of the Lock 52 Historical Society); Figure 2 (bottom). The Clinton's Ditch Owasco Creek Aqueduct with Saint John's to the left, c1905.

Owasco Creek Aqueduct

This lowly stone arch of the 1819 Erie Canal Aqueduct has powerful connections, ones that are getting even greater recognition during this bicentennial period of one of the Nation's greatest public works. The very first boats of the Erie Canal crossed over this arch late in 1819. It was one of four that supported the all-stone aqueduct over Owasco Creek, itself one of the few all-stone such structures on the system at that time. Nearby aqueducts depended on wooden trunks to carry the canal channel.

This easternmost of the four is all that remains. It was constructed in the first phase of the Erie's construction, the middle section that connected the Seneca River with the Mohawk. This crossing of the Creek had been laid out by Benjamin Wright in 1812. Work began on the foundations for the aqueduct in late 1818, work that was performed by the State's own personnel, a practice done at many of the masonry structures on this initial middle section of the Erie Canal. The superstructure was built under a contract to Uri Doolittle, Junior, and largely completed such that boats could cross by November 1819. Doolittle also built the lift lock a short distance (afterwards called "Doolittle's Lock") as well as several other locks further east. Final completion was done in 1820 with the installation of lead clamps on the coping stones.

DeWitt Clinton's "Wedding of the Waters" flotilla was towed over the arch in October 1825 on its way to making the "Clinton's Ditch" a hallmark in our history. The legendary success of the early years of the Erie Canal was built on such structures, soon deemed insufficient for the task. In 1836 a wooden trunk was installed on the Owasco Aqueduct, perhaps due to leakage in the stone or, more likely, due to the State-wide efforts to increase the width such that two boats could cross. The original design of the Ditch aqueducts only had widths sufficient for one boat. At the same time, the towpath on the aqueduct was widened.[1]

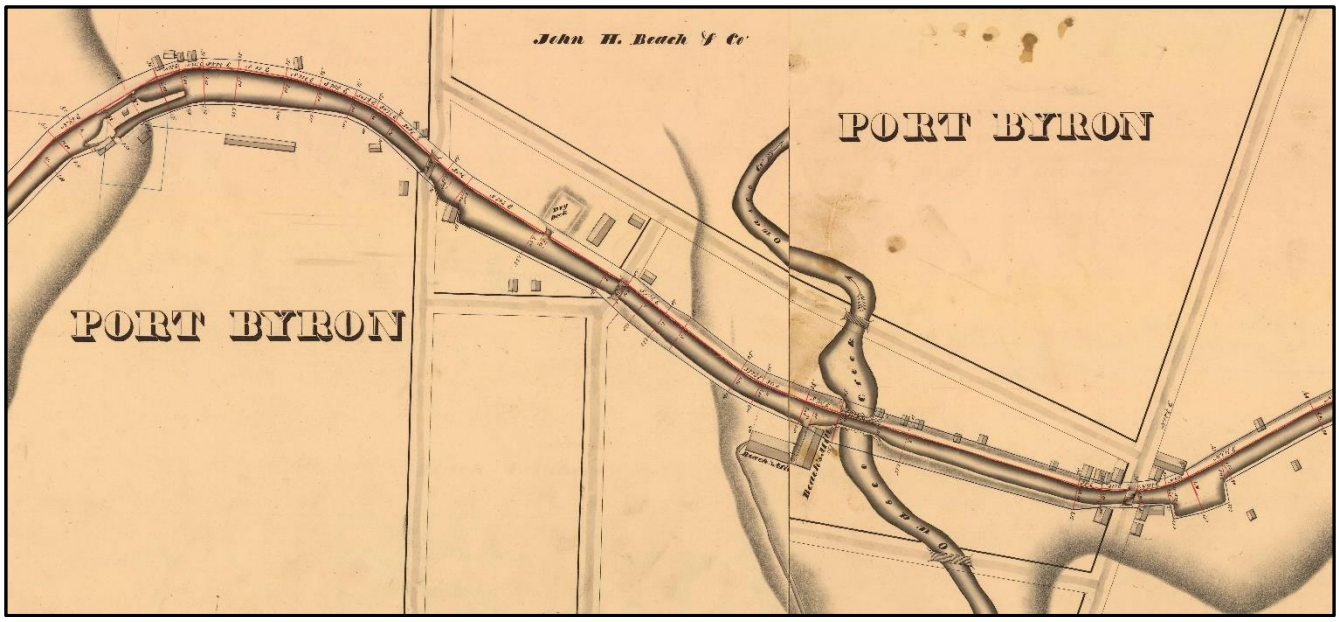
The Erie's early and dramatic success further inspired the mid-19th century enlargement and straightening of the canal, leading to the 1858 replacement of this alignment for one further north and the abandonment of the aqueduct as a canal structure. Ironically, that abandonment ensured the survival of this touchstone of the Erie's most famous early years. Statewide, that first enlargement generally followed the route of the first Erie Canal. In doing so, nearly all of the first-generation structures were destroyed to make way for their enlarged descendants. Another goal of that enlargement was to eliminate the terrain-hugging loops of the first canal in order to make a straighter and thus shorter overall canal. This Owasco Creek loop in Port Byron was one such target and the enlargement removed the canal from the village that had grown up around it. By 1858 the aqueduct was replaced by a larger structure further north. Nonetheless, it continued to be a recognized landmark in the village, for several years serving as a road bridge. Historic images show a largely intact structure well into the 20th century. In 1901 it was considered for use as the crossing for a proposed electric railway. In 1921 the *Port Byron Chronicle* reported that the aqueduct was

[1] Annual Report of the Canal Commissioners (1837), p.8.

to be removed by the State, that the "old structure is crumbling under the assaults of wind and storm and is a menace to the water powers on the stream.[2] Now only the easternmost arch survives. Even that remaining arch was appreciated and frequently photographed. It was one of the first historic canal sites that the Canal Society visited after its 1956 founding.

Figure 3 (top). Looking north at the south side of the Clinton's Ditch Owasco Aqueduct, c1905; Figure 4 (bottom). Looking north at the surviving arch with Saint John's Church (now the Samuel Center) to upper right, c1956.

[2] Port Byron Chronicle, August 20, 1921.



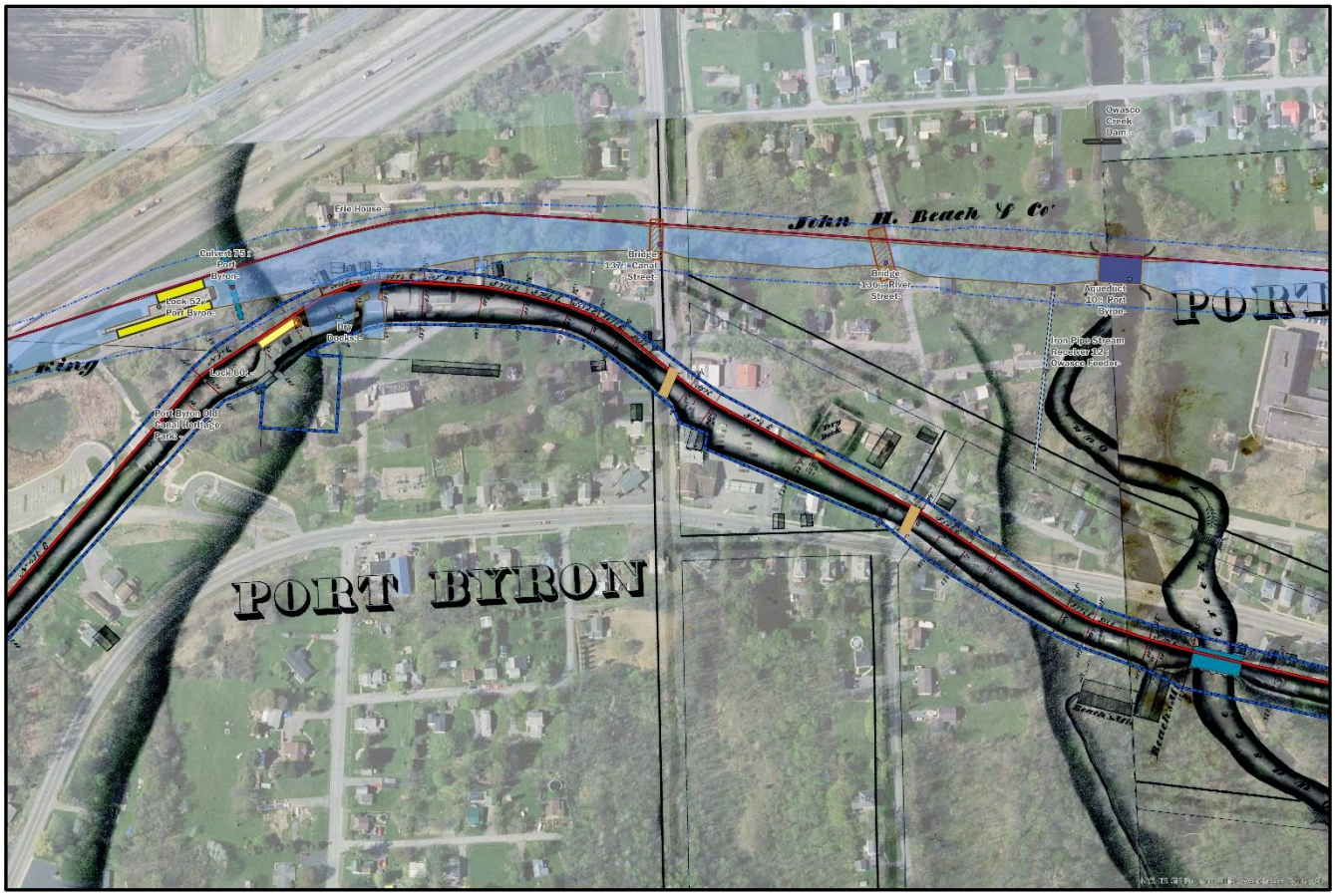


Figure 5 (top). The 1834 Hutchinson map of Port Bryon; Figure 6 (bottom). The Hutchinson map over a modern aerial (courtesy of Steven Talbot).

Owasco Creek Feeder

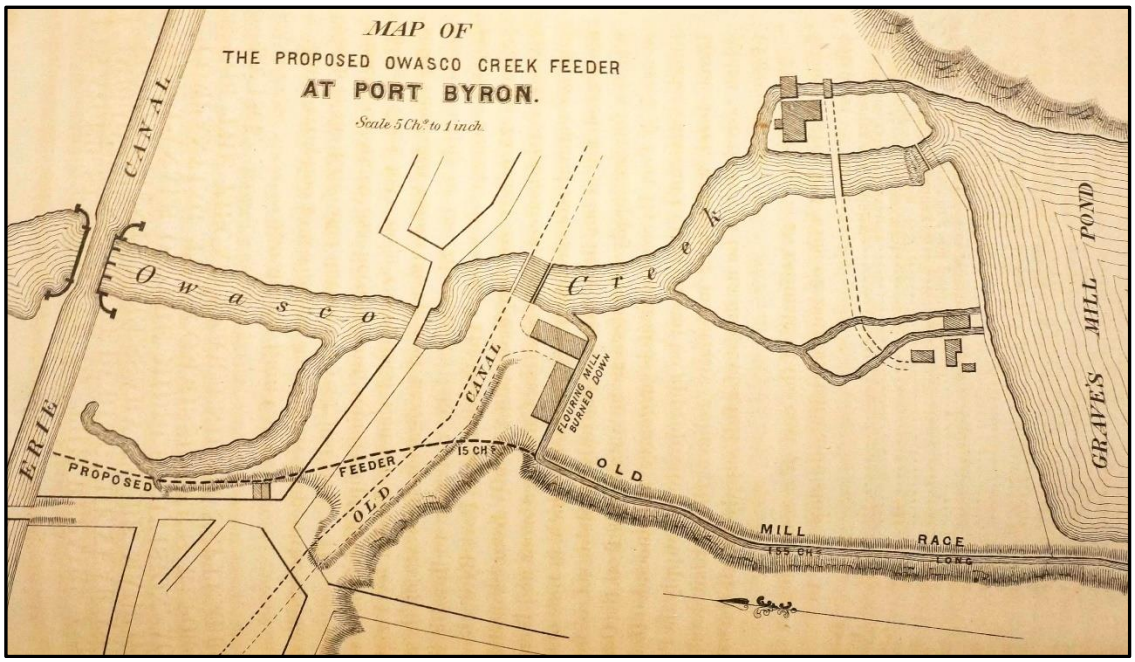
It was last used about 1917 to supply water from Owasco Lake to the Jordan Summit level of the Erie Canal, just above Enlarged Erie Canal Lock 52. That busy lock dumped water to the west and the channel above was always in need of more. The story goes back to the very first days of the Erie Canal. As DeWitt Clinton was leading the "Wedding of the Waters" flotilla across the State, Cayuga County citizens were making even bigger plans. The great success of the canal was already apparent in the County as it had been in operation since 1819. Like many other communities, Cayuga County was soon struck with "Canal Fever." In November 1825 a "Canal Meeting" was held in Auburn to promote a waterway from the Erie to Auburn and Owasco Lake "and thence southerly, in the most advisable way to the waters of the Susquehanna river." The noted canal engineer, David Thomas, presented the following month a survey of a possible route. As with so many other "Canal Fever" ventures, the plan was never completed though work and thoughts continued for several years. In 1835 the Owasco Canal Company laid the foundation for a dam on the Owasco outlet that would hopefully be a major step. The financial depression of a few years later ended those hopes.[3]

John Beach of Auburn was almost certainly aware of these plans and may have been actively involved with them. In 1830 he constructed a two-mile long hydraulic canal to supply waterpower to his massive mill on the south bank of the Clinton's Ditch, immediately west of the Owasco Aqueduct. Maybe he thought this mill race would one day become the northern end of the Owasco Canal? In 1851 the mill was described at the largest in New York State, "turning out about 800 barrels of flour per day," with most probably being loaded onto canal boats in the slip alongside his mill.[4] Perhaps in response to the coming realignment of the Enlarged Erie Canal away from the mill and the village, the Beach family sold the mill in 1855. It burned in 1857.

In 1866 the State acquired the race and mill property. The western half of the Erie Canal's Jordan Summit had been suffering from a chronic shortage of water, often grounding boats above Enlarged Erie Canal Lock 52. The State reactivated the race and built a wooden trough to bring the water from the northern end of the race to the Erie. In 1876 the rotting and leaky trough was replaced by the iron pipe that is still visible on the hillside. "The pipe is buried below the reach of frost, and protected from the invasion of rust by thoroughly coating with asphaltum and coal tar. As a further security, a layer of concrete of four inches in thickness has been added around the outer side." It apparently resurfaced just south of the canal bank, raised on bents, where it emptied water into the channel. The underground pipe is apparently still there. As part of the 1876 work, improvements were also made to the outlet dam at Owasco Lake.[5]

[3] Auburn Free Press, December 14, 1825.
[4] Albany Evening Atlas, November 18, 1851.
[5] Annual Report of the Canal Commissioners (1877), p.119.

Even with the 1917 closing of the Enlarged Erie Canal in Port Byron, the potential of this waterway corridor was still appreciated. In March 1918 the State Engineer released the detailed plans to build a Barge Canal-dimensioned canal from Montezuma to Auburn, going right through Port Byron. Lock 2 of this proposed canal was placed directly on the bulkhead of the feeder.[6]



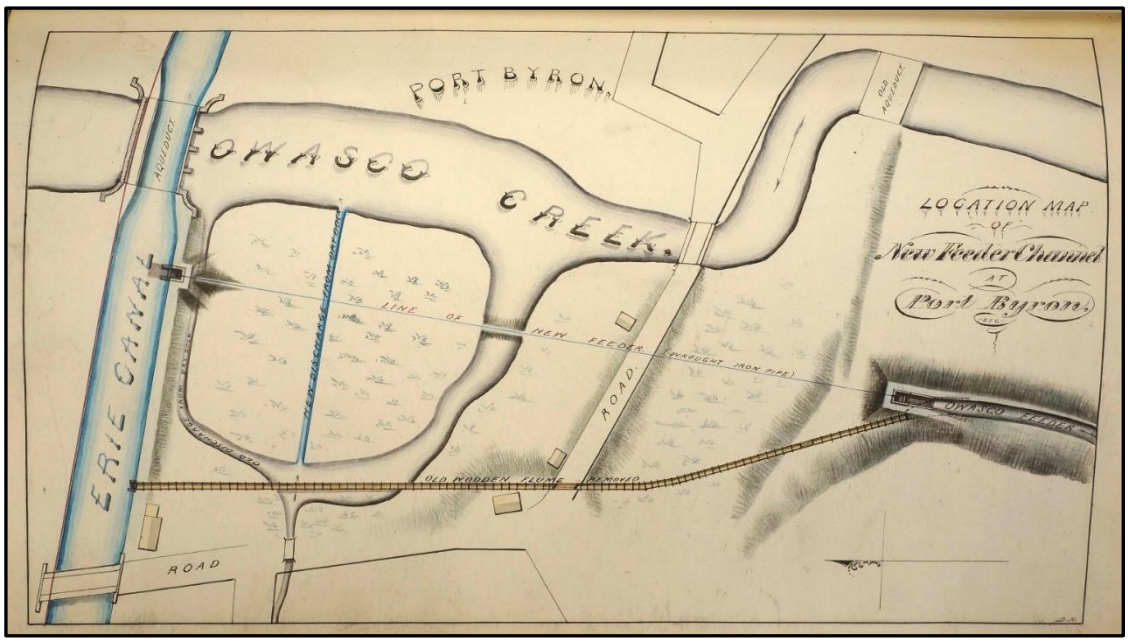


Figure 7 (top). 1866 plan for the State's Owasco Feeder; Figure 8 (bottom). 1876 plan of improvements to the Feeder.

[6] Senate Document 45 (1918).

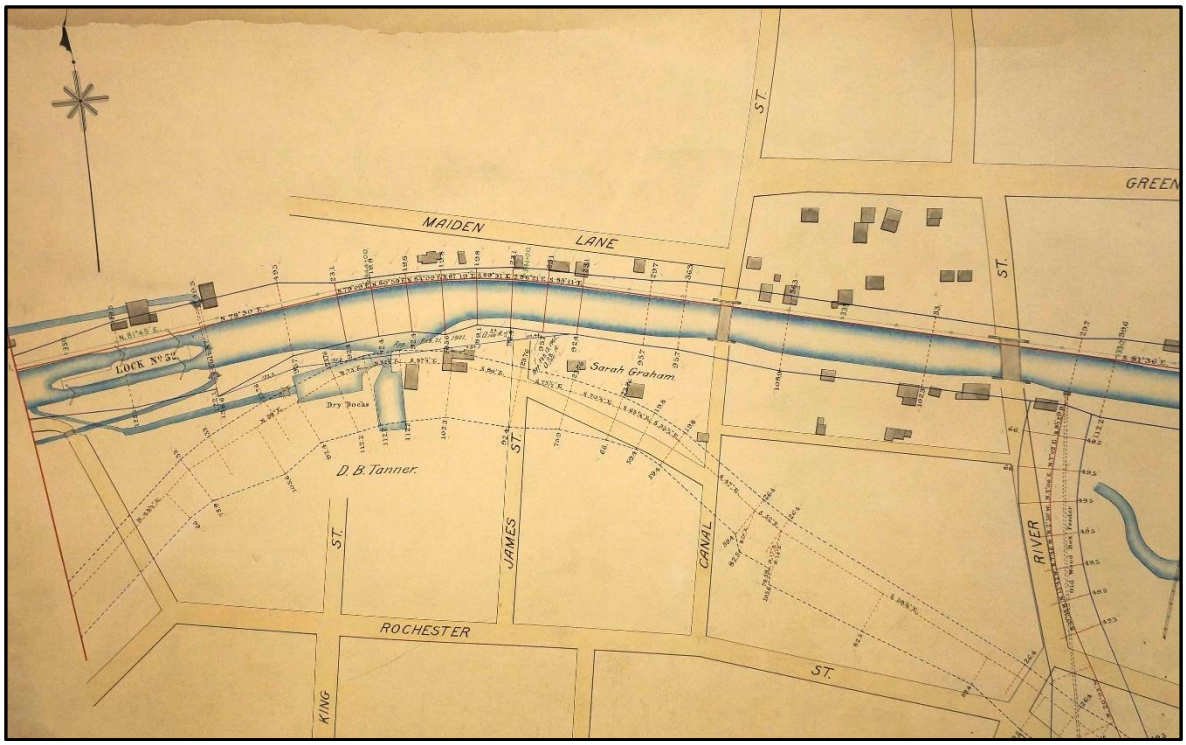
Figure 9 (top) and Figure 10 (bottom). 2015 views of the Owasco Feeder bulkhead (courtesy of Mike Riley).

Erie Canal Heritage Park

The Erie Canal Heritage Park at Port Byron opened in October 2016 to share the exceptional historical connections and accessibility of an 1853 Enlarged Erie Canal Lock located on the New York State Thruway. The concept dates to the construction of the Thruway when State officials and private citizens recognized the potential of linking the State's iconic Erie Canal with an international audience. In the late 1950s the site became a poster child for the legislative committee established to create what became the State historic site system, marking it as a high priority site. The hope never faded. The 1995 Canal Recreationway Plan highlighted the potential. The 2006 Erie Canalway Preservation and Management Plan did likewise, citing the developing plans for the Heritage Park as a major goal to help preserve the legacy and promote the appreciation of the Erie Canal.

The Canal Society of New York State has also been a promoter of the project since the 1950s. Its first study tours were held at the site. It became more actively involved in the late 1990s with its acquisition of the adjoining Erie House property, the 1894 saloon established by the Van Detto family. In partnership with the New York State Thruway Authority, the Society invested its own funds and grant support to stabilize the Erie House and to create a truly nationally unique historic setting on the Interstate highway system. The Park is now open from May 1st to October 31st and features a dedicated access ramp from the Thruway, a custom-designed interpretive center and over a mile of trails, including Lock 52, the Erie House and its restored blacksmith and stables, and a natural wetland for wildlife studies. In 2019 over eighty percent of its visitors were from the Thruway. That visitation, averaging about 100 daily, represented over sixty countries and every state in the nation, many eager to know more of the 19th-century waterway as well as the still-operating system. The Visitors Center doubles as a gateway for tourism information for other regional sites. In 2023 a fortuitous addition was made to the Park. Thanks to an anonymous Park volunteer who donated the needed funds, the Society purchased the site of Kerns store immediately south of the lock chamber. Hopefully, the Society will soon develop an interpretive trail along that new corridor.

The success of the Park owes much to many circumstances and individuals. In 1953 during the construction of the Thruway a temporary exit was constructed at Port Byron to channel traffic off NY 31 while it was undergoing repair just west of the village. The property acquired for that exit never left Thruway hands and it is the reason for the odd diagonal orientation of the Park to the Thruway. That temporary exit also created the pond just north of the Visitors Center. In 1994 the State Council of Waterways purchased the Erie House. With Tom Prindle's passion and guidance, SCOW established the first footings for the Heritage Park. Joining him was Canal Society president, Tom Grasso. Soon the Society was fully committed, taking possession of the Erie House property as SCOW's resources diminished. It is a statement of fact that the Park would never have happened without the determination and dedication of the late Tom Grasso, exemplifying his devotion to an active educational mission for the Society.



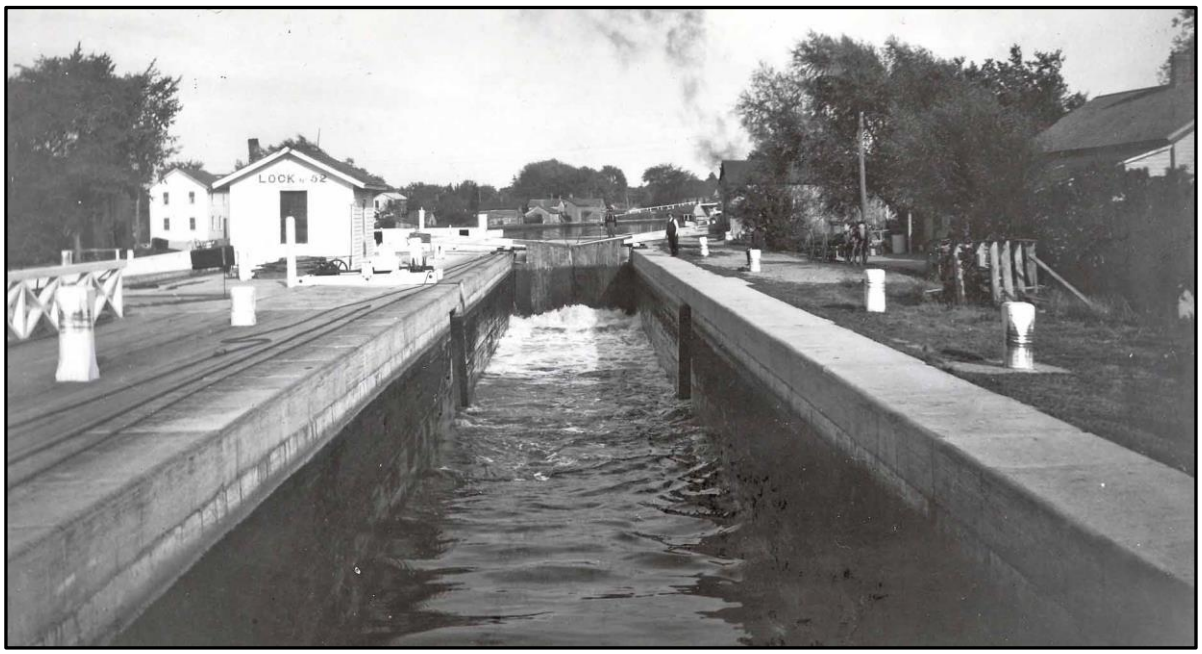


Figure 11 (top). The c1896 Schillner map of the Enlarged Erie Canal in Port Byron and showing the Clinton's Ditch with the dotted lines; Figure 12 (bottom). The lengthened chamber of Lock 52, looking east, with the Kerns store to the right, c1908 (courtesy of the Lock 52 Historical Society).

Enlarged Erie Canal Lock 52

The siting of lock was influenced by the intent of the Enlargement program to eliminate many of the loops in the Clinton's Ditch Canal. These bends in the alignment of the 1825 canal were especially noticeable near Port Byron. By hugging the southern hillside of this glacial meltwater channel through a field of drumlins, the canal's original construction was facilitated. The hill served as the berm of the canal, thus requiring only one embankment to be constructed. The sinuous routing, however, dampened the canal's use. A nearby surviving portion of the Clinton's Ditch canal clearly shows this effect. It is seen immediately west of the Port Byron service plaza of the New York State Thruway, at the northern point of a drumlin. The Ditch ran along the base of the drumlin and is still intact on its west side. The plaza itself sits on the Ditch's alignment. The direction of the Clinton's Ditch lock at Port Byron was pointed towards another one of these loops as the canal veered south on the terrain immediately west of the lock. These loops west of the village were a clear target of the enlargement program. A more direct route to Montezuma was sought early on. The loop of the Ditch to the east of the lock, into the village, was not so easily eliminated. Debates over that eastern alignment impacted the first years of use of the Enlarged lock.[7]

Soon after the Enlargement program was launched, the State's Canal Commissioners made plans for the new routes and structures near Port Byron. In early 1839 they predicted that those portions of the Enlargement between Syracuse and Montezuma not already under contract at the time would be let during the coming season. A completion date of early 1843 was intended. The location of the new lock was probably determined by 1839. Unfortunately, all of these best laid plans crashed against the Stop and Tax Law of 1842. Work on the enlargement stalled for nearly a decade until the State got its financial house in order.[8]

The new enlarged locks overcame several deficiencies of their Ditch predecessors. Each chamber was bigger than those of the 1825 canal, having dimensions of 110 feet by 18 feet versus the 90 feet by 15 feet of the Ditch. Instead of a single chamber, each lock now had two. The doubling obviously enabled more traffic to go through as well as traffic from either direction. Perhaps more important was the ability to keep traffic going if one of the chambers failed, avoiding the bottlenecks that occurred on the Ditch when a single lock gate went amiss.

Another factor that entered early into the lock's design was the decision to cross the Seneca River with an aqueduct instead of the Ditch's slackwater arrangement. The aqueduct required a higher water level. This lessened the amount of lockage needed between Port Byron and Montezuma. The Ditch required two locks down to the river from Port Byron, the other being "Sackett's" to the east of Montezuma. By raising the grade of the Enlargement and increasing the lift at Port Byron, Sackett's lock was eliminated.[9]

The contract for the construction of Lock 52 was let on 7 September 1849 to Joseph M. Kasson, Arthur Lewis, and John A. Dodge. Completion was initially expected for the

[7] New York State Assembly Document 99 (1836).

[8] Annual Report of the Canal Commissioners (1839), Assembly Document 86, p.21.

[9] Annual Report of the Canal Commissioners (1842), Assembly Document 42, p.45; (1848), Assembly Document 16, p.73.

spring of 1852. By the following year, that completion date had been moved to the spring of 1853. The manuscript final account for the Lock 52 work includes several renderings of the lock's cross sections. It also documents the installation of twelve snubbing posts and the painting of the wooden lock gates. Payments to the contractors began in January 1850 and concluded with a relatively small payment on 9 December 1858, though all of the other payments ended in October 1851. Conceivably, most of the work would have thus been done by October 1851. The contract was closed in December 1858. A 1854 report mentions that the "lock house at lock No. 52 has also been rebuilt", perhaps representing the locktender's nearby residence and its possible relocation closer to the new lock.[10]

The delay in bringing Lock 52 into operation was complicated by the contentious debate going on at the time between the citizens of Port Byron and state officials as to whether a new alignment north of the village should be used or the existing Ditch route enlarged. By the end of 1852, the commissioners reported that a stop gap measure might enable the use of the new lock before the old Ditch lock failed entirely. Additionally, the new channel to Montezuma could thus be used.[11]

The stop gap measure was implemented by installing new and higher gates and by raising the side walls of the lock two feet.[12] The contract for these adjustments was awarded to Noah Palmer, Henry D. Denison, Obadiah W. Candee, Joseph A. Scoville, Horace Candee on 13 November 1852. It specified the task to be "to raise the walls and Embankment to Lock No. 52 and to construct the Section work necessary to being said Lock into use." The manuscript contract provides more detailed specifications. "The walls of the heel posts of the gates shall be raised with cut stone quoins 2 feet thick... The walls above the upper, and between the upper and lower hollow quoins shall be raised with timber and rubble masonry... The timbers shall be placed along the inner edge of the coping so as to bring the inner edge of the same flush with the face of the lock walls... A wall of rubble masonry 2 feet in height and three feet thick shall be built in rear of the face timbers... to be laid in the best quality of hydraulic cement and clean sharp sand."[13] Under these conditions, Enlarged Lock 52 was brought into use in September 1853.[14]

The manuscript final account for the temporary work mentions the use of nails for a protection fence to the "Grocery". Extra work included bearing piles for the protection fence around the "old house". These clues are made clearer with a final remark about protection for the "Grocery Store and Dwelling situated on the Berme Side of Canal above Lock."[15]

While certainly appreciated, the initial use of new Lock 52 was not without its costs. By using the lock in manner for which it was not design, it soon reflected structural and other strains. Reporting on the first use of the lock, the canal commissioners commented that:

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[10] See Series B0377, Volume 58 ("Book C"), p.165-194, New York State Archives, for the final account of the Lock 52 construction; Annual Report of the Canal Commissioners (1850), Assembly Document 45, p.20; (1851), Assembly Document 26, p.28; (1854), Assembly Document 65, p.79; Series A1899, New York State Archives.

[11] Annual Report of the Canal Commissioners (1853), Assembly Document 23, p.104-105.

[12] Annual Report of the Canal Commissioners (1853), Assembly Document 23, p.104.

[13] Series A1899?, New York State Archives; Denison is not listed among the contractors in the final account.

[14] Annual Report of the Canal Commissioners (1854), Assembly Document 65, p.79.

[15] Series B0377, Volume 58 ("Book C"), p.149-163, New York State Archives.

> *When the water was let into the new canal between Port Byron and Montezuma in September, the gates of lock No. 52 were found to be so leaky that it become [sic] necessary to build a dam above the lock and draw off the water; when this was done the new embankment slid into the canal. Its removal interrupted navigation for one day, and cost two hundred and two dollars and forty-six cent.*[16]

In 1854 "the south lock at Port Byron has required large expenditures the past season, upon the foundation, which was poorly secured when built, and upon the gates, one of which failed entirely."[17] In 1856 "considerable repairs" were required.[18] Reviewing its last year of use with the extra height, the canal commissioners noted that:

> *[T]his lock has been used with a head of water three feet higher than it was intended to sustain when it was constructed, or than it will have to sustain hereafter. It has consequently required large annual expenditures, on the wood work of the locks, and particularly the gates, to maintain it.*[19]

Additionally, the double lock put additional strains on the old, still-in-use system to the east. The lock required substantially more water than its predecessor lock. As the western end of the Jordan summit, the lock needed a continual flow from the east to allow transit to the lower section to the west. Hampering an adequate flow was the continued use of the Ditch alignment. The Ditch's smaller channel could not carry enough water. Efforts were undertaken to raise and improve the banks of the old route until the Port Byron debate was resolved and a new larger channel established. These efforts were not completely effective.[20]

By State legislative action, the debates over the alignments at Port Byron were ended with a decision to opt for the northern, straighter route. No longer did the Ditch alignment through the village need to be factored into the use of Lock 52. In planning for the coming 1858 season, the commissioners stated that "the gates of lock 52 must be reduced, by cutting down or construction of new gates, and the temporary wood work on the top of the lock be removed, so as to adapt it to the new level between Jordan and Port Byron, which will be brought into use next spring." Perhaps with a sigh of relief, State officials could report that the new enlarged portion of the canal between the lock and Jordan "was brought into use last spring."[21]

That new enlarged prism immediately to the east of the lock was included within the contract for Section 197 of the enlargement. It was let to John Shanahan on 14 October 1854. Payments to Shanahan began on 2 April 1855 and continued until 1 July 1858. The concentration of largest payments, perhaps reflecting the greatest amount of work, are at the

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[16] Annual Report of the Canal Commissioners (1854), Assembly Document 65, p.80.

[17] Annual Report of the Canal Commissioners (1855), Assembly Document 32, p.63.

[18] Annual Report of the Canal Commissioners (1857), Assembly Document 145, p.76.

[19] Annual Report of the Canal Commissioners (1858), Assembly Document 20, p.58.

[20] Annual Report of the Canal Commissioners (1854), Assembly Document 65, p.79-80; (1857), Assembly Document 145, p.77, 98.

[21] Annual Report of the Canal Commissioners (1858), Assembly Document 20, p.60; (1859), Assembly Document 40, p.23.

end of 1857 and the beginning of 1858. The contract's final account mentions the use of masonry from the old Port Bryon lock, probably for incorporation into the riprap walls of the prism. It allowed under extra work a payment for taking down the top of the walls of Lock 52. The latter reference probably concerns the temporary height that was added to the lock while it was used in conjunction with the old Ditch alignment.

Within the work for Section 197, besides the lock, was the construction of a stone culvert just to the east side of the lock. In Noble Whitford's list of structures, this culvert is described as Culvert No. 75 of the Middle Division with a six-foot span. This may be the same culvert that is documented in the contract to Samuel A. Hetfield and Gardner Woolson, dated 13 November 1852. It called for an "arch culvert six feet chord".[22]

The completion of the Enlargement program locally in 1858 did not eliminate all of the problems that had plagued the first years of the lock's use or even of its predecessor Ditch lock. The control and distribution of water in the canal and in the lock chambers caused the most concern and actions. Despite now having a fully enlarged prism to its east to deliver water from the Skaneateles feeder at Jordan, the lock was still hampered by an inadequate supply. Beginning with the temporary appropriation of water from the Beach flour mill in 1854 and concluding with the complete incorporation of the mill's race as a feeder to the canal in the 1860s, the State increased the available flow that could be dumped by the lock to the lower Montezuma level to the west.[23]

The situation at Lock 52 as far as the water was concerned was severely aggravated by it being the first lock where traffic from the west encountered a lift up. From Buffalo up to Lock 52, all of the Erie's locks lowered eastbound boats, frequently full of grain. As the first step up from the west to the Jordan summit, Lock 52 forced boats that were often heavily loaded to enter the chamber in its down condition. Already hugging the bottom of the canal with the heavy loads, the boats were also designed with the dimensions of Erie locks in mind. As the boats entered the chamber, they pushed water ahead of them against the approaching miter sill and gate. The boats left little room on the sides or underneath for the water to escape. As the boat got further into the chamber, this water would push the boat back out of the lock. Approaching the lock from the upper level, boats had sufficient clearance below them in the full chamber to let water pass. Similar conditions occurred at the other locks that lifted up to the east (47, 48, 49, and 51), though the situation at Lock 52 was felt to be "particularly difficult". With a relatively high lift (eleven feet), the lock had a greater amount of leakage through the upper gate that added still more water to the problem.[24]

This struggle with eastbound boats predated the Enlargement. During the 1846 season, heavily loaded boats so fully filled the chamber that water built up ahead. Compounding the trouble of the situation was the volume of traffic. Towards the end of the 1847 season, averages of about 150 lockages a day for the single chambered Ditch lock

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[22] Noble Whitford, History of the Canal System (1906), p.1093; Series B0377, Volume 58 ("Book C"), p.102-110, New York State Archives; another Section 197 culvert is mentioned in Volume 59 ("Book E") but it appears to be located still further east.

[23] Annual Report of the Canal Commissioners (1855), Assembly Document 32, p.64; (1860), Assembly Document 51, p.48-49; (1863) Senate Document 7, p.86; (1866), Assembly Document 9, p.58-59; (1867), Assembly Document 7, p.84-85; (1868), Assembly Document 9, p.70.

[24] Annual Report of the Canal Commissioners (1868), Assembly Document 9, p.71-72; (1870), Assembly Document 4, p.37-38, 40; Annual Report of the State Engineer and Surveyor (1883), Senate Document 9, p.82.

were not uncommon. These numbers probably represented constant 24-hour a day use of the lock.[25]

Various solutions were suggested. Early on, payments were made for the employment of teams, blocks, and ropes to assist pulling the boats into the Lock 52 chambers.[26] One engineer suggested cutting a bypass channel in the lock chamber's wall so that water could spill into the center sluice.[27] By the mid-1870s, several of the locks with this characteristic were widened to twenty feet from the Enlargement standard of eighteen feet. Though consideration was given to doing this at Lock 52, the work was never done.[28]

Lock 52 earned the recognition for being the first lock on the State's system to truly solve the problem. Winches were built into the upper head of the center pier of the lock and were powered by a waterwheel positioned at the bottom of the center sluice. The forerunner of the capstans now on Barge Canal locks, this device offered a very practical solution to pulling boats into the lock. First used during the 1880 season, the Lock 52 winching system was thoroughly documented and, due to its "marked success", soon became standard equipment.[29]

Making the lock more suitable for improvements in canal traffic soon led to another structural change. Newly introduced steam-powered canalboats could pull another barge along. The efficiency of the new technique suffered at each lock where the connected barges had to be separated and locked through individually. To facilitate the tandem barges, the State undertook the lengthening of one chamber of the Erie locks. Nearly all were done and Lock 52's turn for the addition came in 1886. On 1 July of that year a contract was let to John J. McLean to lengthen the berm chamber at the lower end. A report on the construction of the lengthened chamber stated that "The material around this lock was known to be soft, and careful soundings with an iron rod were made before the work was let. Piles twenty to twenty-five feet long were used and came to a firm bearing at that depth. The old locks rested on a pile foundation." The work was probably completed before the 1887 season. The once-western gates of the berm chamber, now in the center, were apparently left intact. A call for their removal did not come until 1897 though it is doubtful that they were in active use.[30]

The final alterations to Lock 52 also came in order to make a more commercially viable system. The 1895 Improvement sought to deepen the Erie's depth from seven to nine feet. The Improvement is better recognized today for failing to accomplish this goal statewide. The work, however, was accomplished in the Port Byron area. Instead of digging a lower bottom

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[25] Annual Report of the Canal Commissioners (1847), Assembly Document 20, p.33-34; (1848), Assembly Document 16, p.85; (1853), Assembly Document 23, p.88.

[26] Annual Report of the Canal Commissioners (1869), Assembly Document 4, p.58-59, list payments to Kearns and Lewis at Lock 52, perhaps the same Kearns whose family operated the adjoining grocery.

[27] Annual Report of the Canal Commissioners (1868), Assembly Document 9, p.71-72.

[28] Annual Report of the Canal Commissioners (1875), Assembly Document 6, p.214; Annual Report of the State Engineer and Surveyor (1880), Assembly Document 88, p.80.

[29] Annual Report of the State Engineer and Surveyor (1881), Assembly Document 28, p.56; (1882), Senate Document 54, p.140; (1883), Senate Document 9, p.82.

[30] Series B0377, Volume 89, p.1-91, New York State Archives; Annual Report of the State Engineer and Surveyor (1888), Assembly Document 25, p.65; Annual Report of the Superintendent of Public Works (1897), p.153.

in this section, the engineers proposed raising the towpath. The decision to go up instead of down was probably due to the limited clearances below the trunks of the nearby aqueducts. At Lock 52, the new depth was accomplished by placing a new layer of capstones placed there as part of this work. Thus, the original top surface of the lock is now under a row of limestone block. Work on the lock was included in Improvement Contract 27, let to William B. Priddy. The contract encompassed a stretch of the Erie between Centerport and the Crane Brook Aqueduct. Payments were made to Priddy by the State between 1 October 1897 and 1 September 1898, with a peak in the amounts in the spring of 1898. Coincidently, photographs taken in April 1898 show extensive work just east of the lock and the winch mechanism dismantled.[31]

The last recorded work done on Lock 52 as an operating structure was accomplished in 1917. Indeed, a new gate was installed at the lock only the year before. With the demolition of the Seneca River Aqueduct at the end of 1917 as part of the completion of the Erie Barge Canal, the lock was probably closed to traffic.[32]

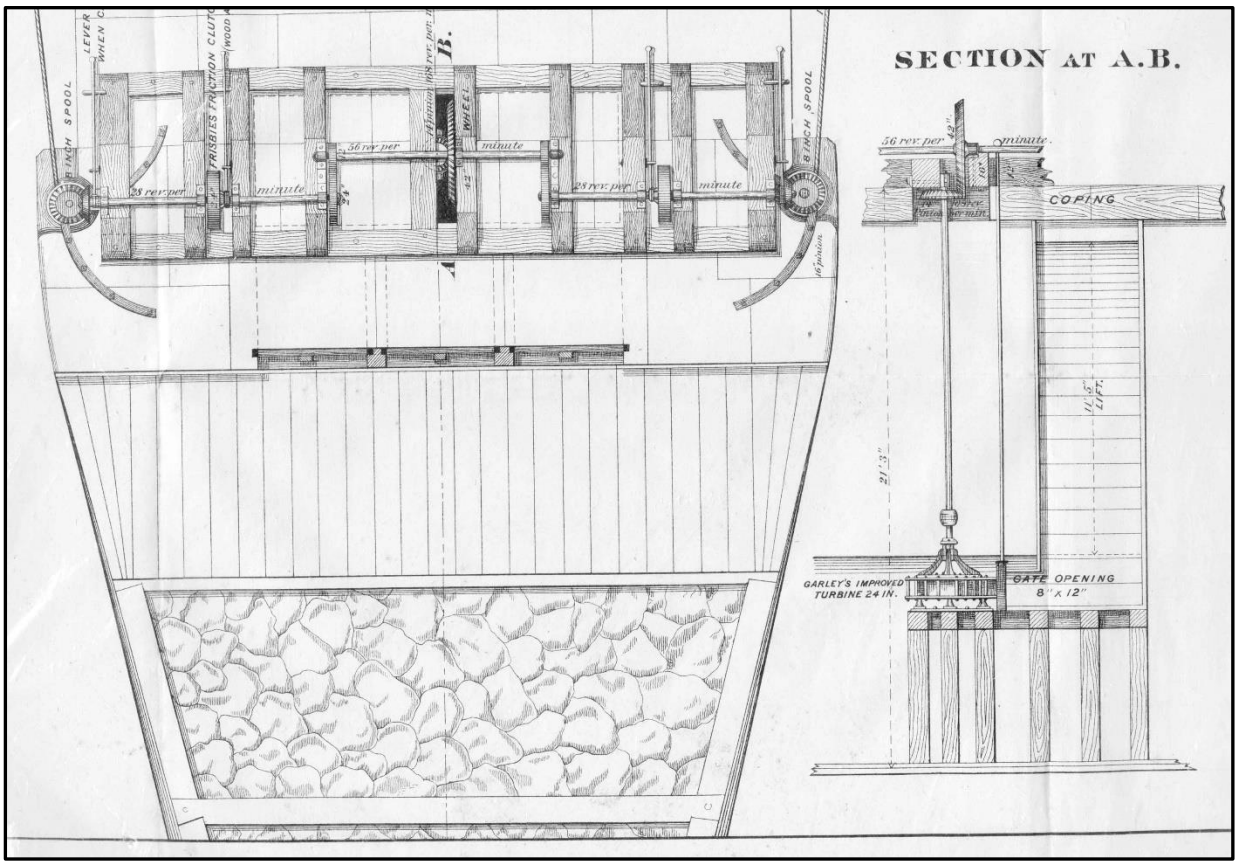


Figure 13. 1880 plan for "Device for Drawing Loaded Boats into Lock 52."

[31] Series B0395-85, Volume 106 ("Volume 8"), p.192-403, New York State Archives; for detailed drawings of the Lock 52 work, see Series B0395-85, Roll 26.

[32] Annual Report of the Superintendent of Public Works (1918), p.160; (1917), p.180.

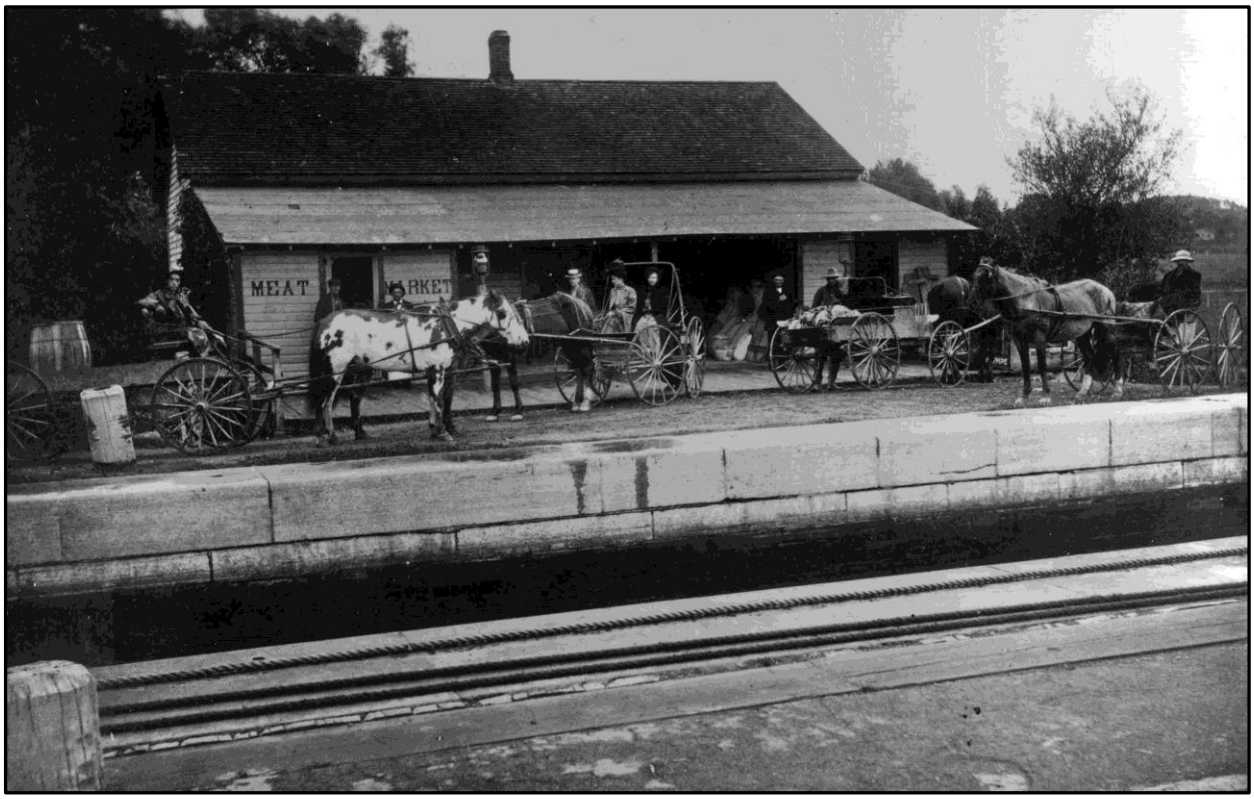


Figure 14 (top). The Kerns Store, c1907; Figure 15 (bottom). The Nine Million Dollar Improvement, looking east from east end of Lock 52 with Erie House to left, c1897.

The Erie House

Tom Grasso explains the early history of the Erie House in his interpretive guide, "The Old Erie Canal Heritage Park at Port Byron - An Illustrated Tour with Text" (4th Edition, June 2021), showing great respect for the Italian heritage that he also shared. Indeed, that immigrant story is one of the primary interpretive elements of the Park, demonstrating the role of immigrants in making America. "It was built in 1894-95 by Pietro Van Detto [and] his brother Salvatore… They came from the Region of Campania (Naples, Mt. Vesuvius, Pompeii, Salerno, Amalfi Coast all here), and the small village of Santa Croce in the far northeast corner immediately bordered by the Regions of Molise on the north and Apulia on the east. Pietro immigrated to America in 1888 when he was 20 years old. An addition to the building was added to the west side c.1905. The Erie House catered to the needs of boatmen, canal workers, boatyard/drydock workers on the opposite side of the canal, the Italian immigrant population located in a small settlement just west of here, and other locals. The ladies' entrance was the first side door and the second led to lodging rooms." The Erie House remained in the Van Detto family until 1993 with the passing of Marie Van Detto, one of two daughters of Pietro and Adelina (Costa). Theresa died in 1986.

That continuity is another interpretive strength of the Heritage Park. The Park prides itself on its authenticity, which is well on display at the Erie House. The two daughters were early members of the Canal Society and in the 1960s donated remarkable artifacts from the House. These included the original Erie House sign and the 1897 cash register. During the renovation, the lower portion of the bar was found in the basement. Restored, it is now positioned in nearly the exact location that it had during saloon days. That authenticity is also reflected by our volunteers. The two daughters were local school teachers and many of our volunteers were their students. Making that connection to the past often awes our visitors.

The mule stable and blacksmith shop are other examples of authenticity. To some surprise, they were "discovered" soon after the 1994 transfer of the property. A very 1950s-era garage was located just east of the house. When more closely studied, it revealed that it was made of the two older buildings that had been pushed together shortly after the canal closed. They have been restored and repositioned on their original sites.

In 2023 another addition was made to the Park. Alongside the towpath near the Erie House is now a large stone that is "fossiliferous," to use Tom Grasso terminology. Tom would have been very familiar with this type of stone, its source and history, as explained later in this guide. It Is dedicated to Tom's memory and his hard work in making the Park a reality.

Figure 16 (top). The Erie House with Pietro Van Detto in the light shirt and with Maud the dog alongside, c1900; Figure 17 (bottom). Erie House volunteers in March 2016 with Tom Grasso on bottom right.

DeWitt Clinton and Tom Grasso (Oakwood Quarry)

The Oakwood Quarry has been in operation since 1975.[33] The Heritage Park memorial to Tom Grasso is made of Oriskany Sandstone, a stratum of rock from the Lower Devonian. It came from a remarkable outcrop not far from Port Byron, just east of Cayuga, NY, and immediately north of the quarry. The very apparent fossils will hopefully inspire young and old to learn more about just why they are there. That inspiration would be very much in keeping with Tom's enthusiasm to teach. The Society is grateful to Ted and Kelly O'Hara for the donation of the memorial.

Tom likely walked by this rock before it was removed to the Park. Few other nearby places provide such a clear and accessible approach to this layer of geologic history. He often brought his Monroe Community College students to the site as well as escorting tours there for the New York State Geological Association. The fossils are indeed striking. For Tom, however, there was another part of the story that was just as significant. Tom knew that he was following in the footsteps of DeWitt Clinton. With his keen interest in the natural sciences, Clinton explored this same outcrop during his famous 1810 journey to study possible routes for the Erie Canal. Tom was well familiar with Clinton's description of the site and his wonderings on how marine fossils could be found so high on the landscape.

We dined at Henry Moore's tavern, four miles from the Cayuga Lake, fourteen from Musquito Point on the Seneca River… and four and a half from Auburn. He migrated from Southold, in Suffolk county, to this place, about eighteen years ago, and purchased 500 acres, in 62 Aurelius where he lives, for $150. He now owns upwards of 1000 acres of land, is opulent and respectable. Moore is a Republican, as all emigrants from Suffolk county are.

About a half-a-mile from his house, and three and a-half from the Cayuga Lake, there is on Lot 69 of the Cayuga Reservation, containing 240 acres and owned by him, a ledge of rocks and stones extending a mile in a parallel direction with the lake. The higher stratum is composed of limestone, and the next adjoining one of sandstone embedded with marine substances. There is but one stratum of sandstone, of the thickness of two or three feet, and below and beneath as well as above it, there is limestone. The sandstone contains several marine shells, which appear to be strange, and I should therefore pronounce them oceanic. There are littoral ones also, such as scallops, and in one instance a periwinkle was found and sent to Peale's Museum in Philadelphia. One strange substance is larger than a scallop, and one is like a horse-shoe in miniature. From the propinquity to the limestone, I should suppose that the sand and marine substances were connected by a solution of the calcereous matter. Some of the stones are ejected probably by torrents, from the regular layer. The sandstone is easily broken, and when pounded or burnt is converted into a fine marine sand. This collection of sandstone demonstrates the existence of the ocean here. These sandstones are found singly, all over the field in this place. We have now seen shells and other marine substances in limestone, in sandstone, and in flint, at Mynderse's Mills.

[33] Auburn Citizen Advertiser, April 23, 1975.

Moore's cellar is partly dug out of a slate rock, and the walls of it are made of sandstone. When the women of the family want sand, they reduce the stone by ignition.[34]

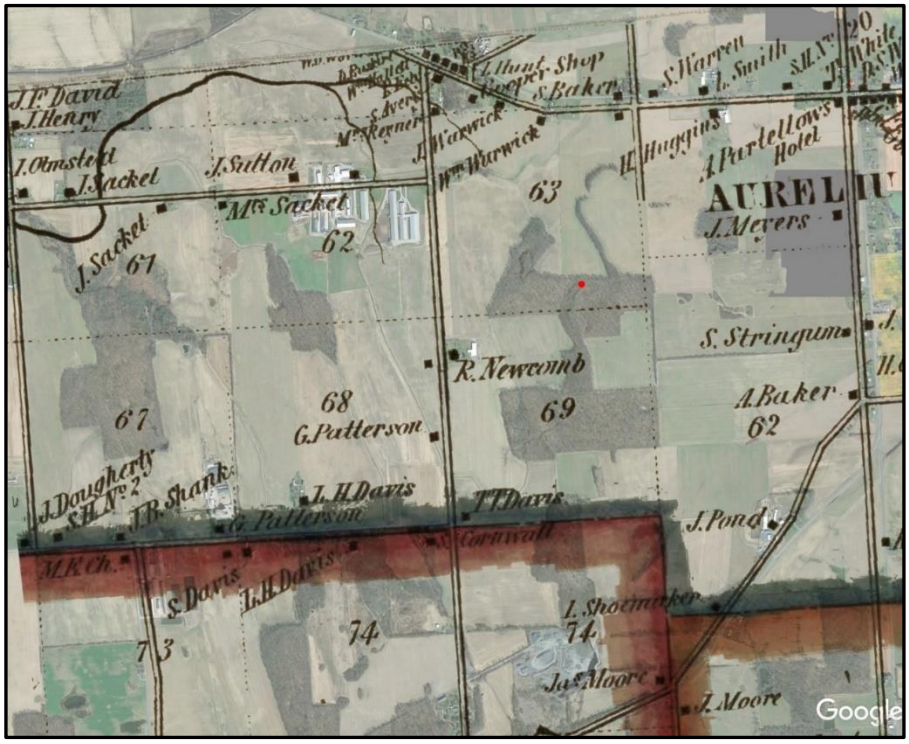


Figure 18 (top). The 1853 Cayuga County map on a modern aerial, with the Oakwood Quarry at bottom, just right of center, and the red dot showing where the memorial stone was recovered; Figure 19 (bottom). Oriskany Sandstone from the same outcrop.

[34] William W. Campell, Life and Writings of DeWitt Clinton, p.167-168.

Cayuga Nation - Gayogo̱hó꞉nǫ’

The Spring 2023 Study Tour will travel across the ancestral lands of the Cayuga Nation and the Canal Society acknowledges their legacy and cultural ownership. As the below 1817 map clearly shows, even their post Revolutionary War reservation encompassed a vast tract of the Finger Lakes, even then a much-reduced definition of their ancestral lands. In the decades that followed, the Nation's lands were taken and occupied by others. How all of this happened is beyond the scope of this guide to thoroughly explain. We encourage participants to continue the study.

In their words, "The Cayuga Nation is a member of the Haudenosaunee or Iroquois. The Haudenosaunee is an alliance of Native Nations that reside in the state of New York. The Nations that make up this confederacy are the Seneca, Cayuga, Onondaga, Oneida, Mohawk, and the Tuscarora. The people of the Cayuga Nation have called the land surrounding Cayuga Lake their homeland for hundreds of years. Cayuga land lays between that of the Seneca Nation to the west and the Onondaga Nation to the east. Archeologists have found evidence of Cayuga settlements in many areas surrounding the lake including the present-day villages of Union Springs, Aurora, Cayuga, Seneca Falls, Ithaca and Canoga.

"All was stable until the Revolutionary War. Although the Cayuga Nation remained neutral, it became the target of U.S. military attacks. Cayuga villages were destroyed and its orchards burned during the campaigns of General Sullivan and Colonel Butler. The Cayugas were forced from their homeland and the land was dispersed in parcels to American soldiers. In November of 1794 it appeared that the wrongful taking of Cayuga land would be made right. The Treaty of Canandaigua was signed between the Sachems of the Confederacy Nations and the United States of America. This Treaty affirmed the Cayuga Nation’s rightful reservation as 64,015 acres of sovereign land. Unfortunately, the Treaty was ignored by New York. The Cayuga homeland was not returned to its owners. For the next 250 years the Cayuga Nation pursued its land claim against New York State. In the early 21st century we made the decision to take affirmative action. The Cayuga Nation decided to start reacquiring its land by simply purchasing it.

"The Cayuga Nation focuses on Land Rights and Economic Development. The Nation continues to be challenged on its Treaty Rights and its established reservation. Its businesses also are challenged and are currently in litigation in New York State courts. The Nation has approximately 493 enrolled members who primarily live in Western New York, but also can be found throughout the United States. Land acquisition continues to be a primary focus within the Land Claim area both in Seneca and Cayuga counties. The Nation currently holds approximately 824 acres in its land portfolio inside the land claim."

The Study Tour will be visiting one of these first properties, so reacquired in 2003.

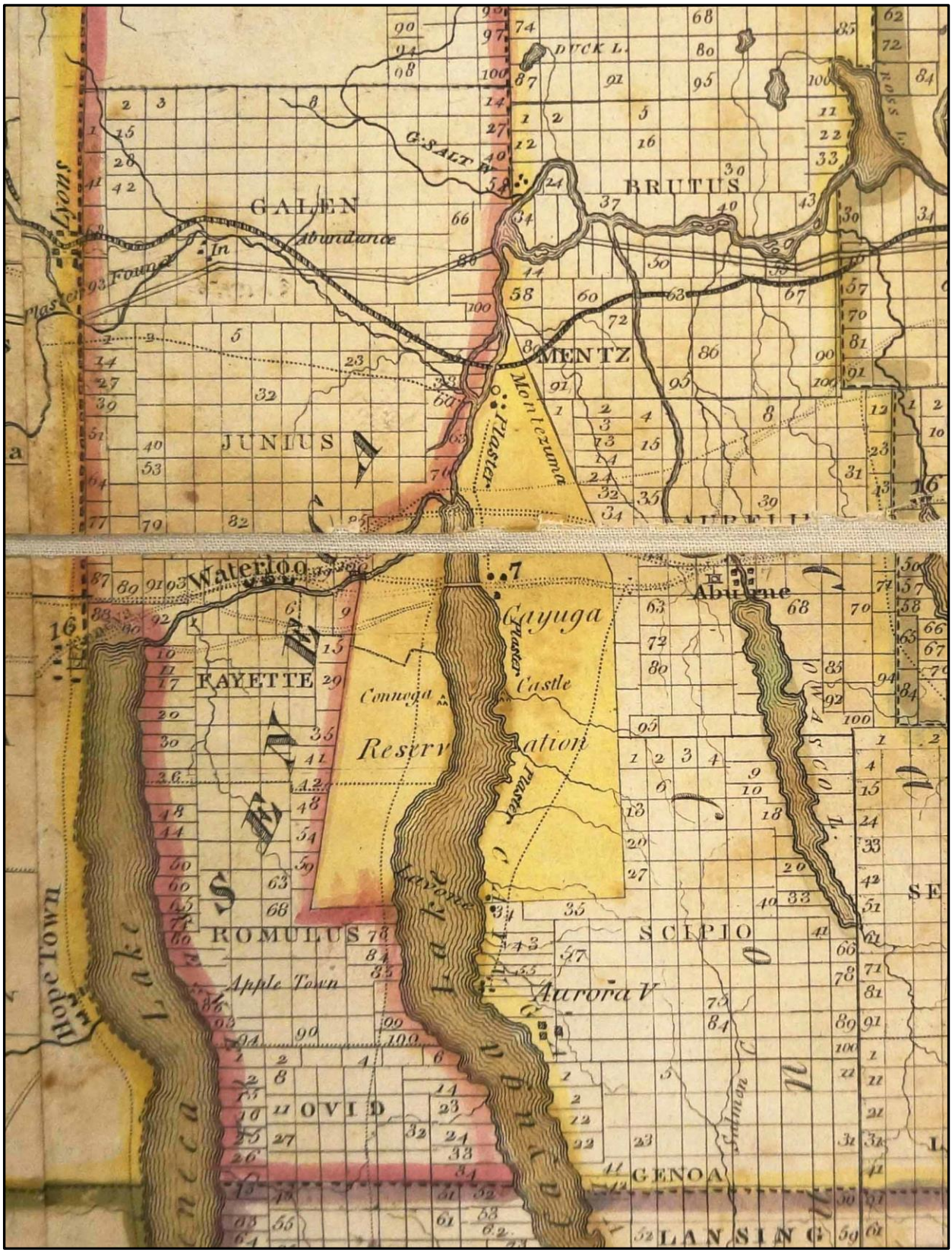


Figure 20. 1817 map of the Finger Lakes showing the Cayuga Reservation.

Beacon Bay Marina

One might consider the Beacon Bay Marina as being the last hurrah of the 19th-century "Cayuga" part of the Cayuga and Seneca Canal. The legendary Cayuga toll bridge, being followed by the 1848 causeway for the Auburn and Rochester Railroad (later New York Central) created a protected harbor at the southern end of this Cayuga spur. While canal boats could make their way under or through these impediments, the classic and much larger Cayuga Lake steamboats could not. Thus, the location became a transfer point for passengers and some cargo. Industries soon located along the shore, including the 1866 malt house of Kyle, Howell and Company. The transition to the Cayuga-Seneca Barge Canal appears to have provided even more inspiration for commercial growth. In 1920 the construction of the large grain elevator of the Beacon Milling Company was underway. Though the rail connections were also vital, the Company regularly took advantage of the commercial advantages offered by the new waterway.

Times change. By 1982 the former mayor of Cayuga, Orville Mills, began his purchase and planning for a marina at the site. The feed company had been shuttered for several years. Soon work began on dismantling the giant structures, creating a new landscape that is also adapting to the potentials of the State's Barge Canal system.

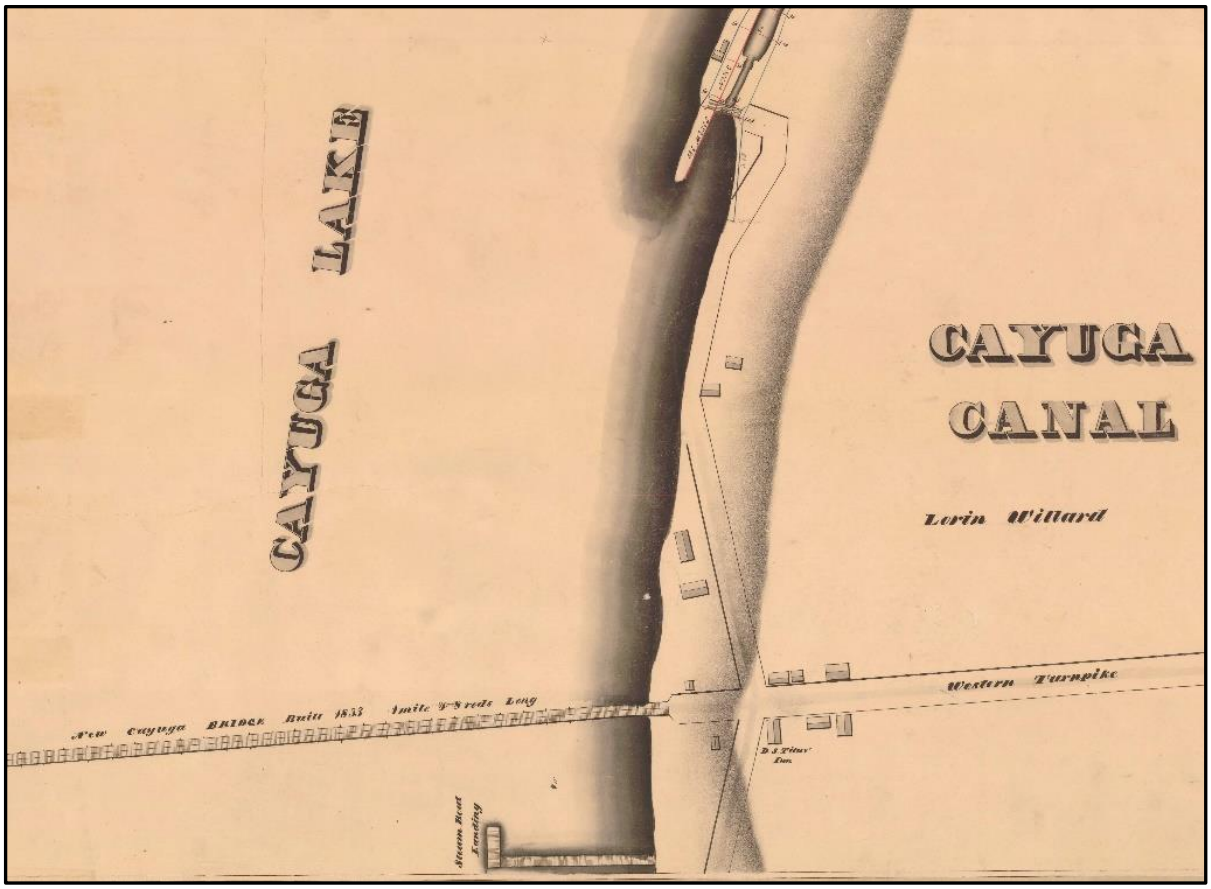
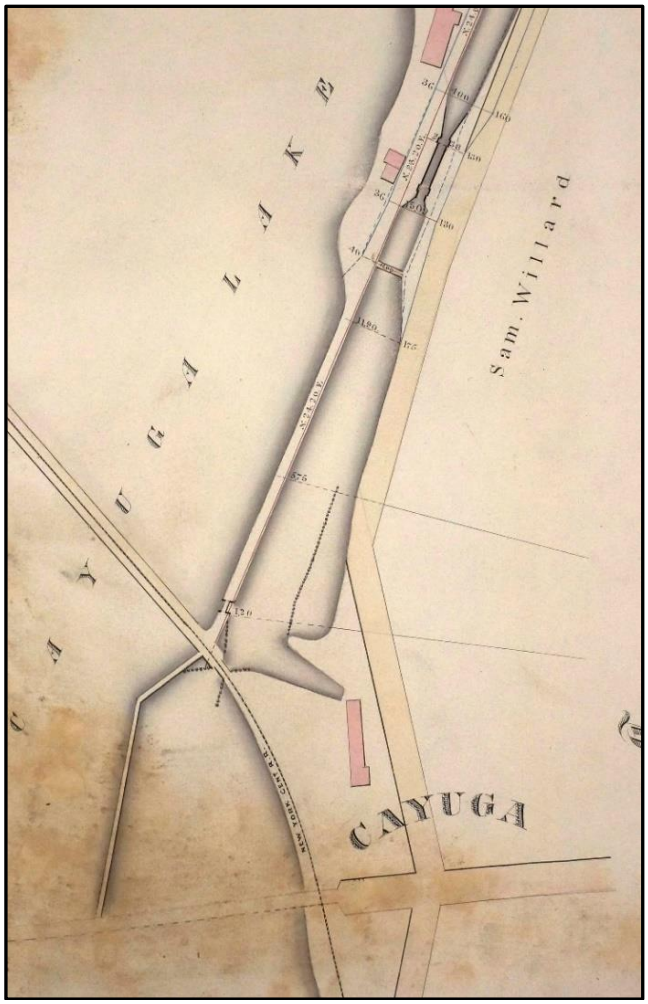


Figure 21.1834 Hutchinson map of Cayuga, NY.



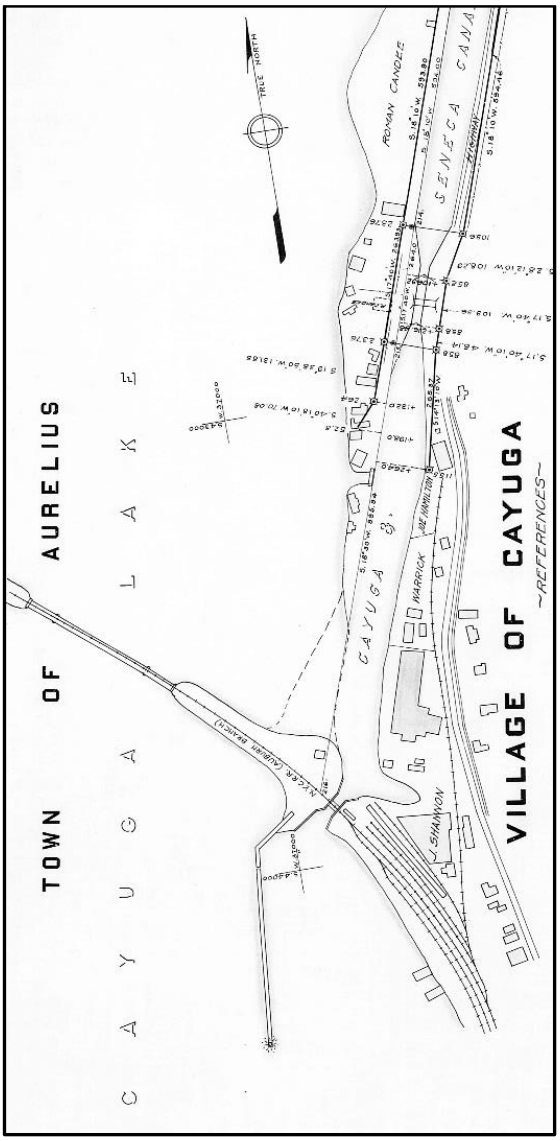


Figure 22 (left). 1874 map of Cayuga, NY; Figure 23 (right). 1921 map of same.

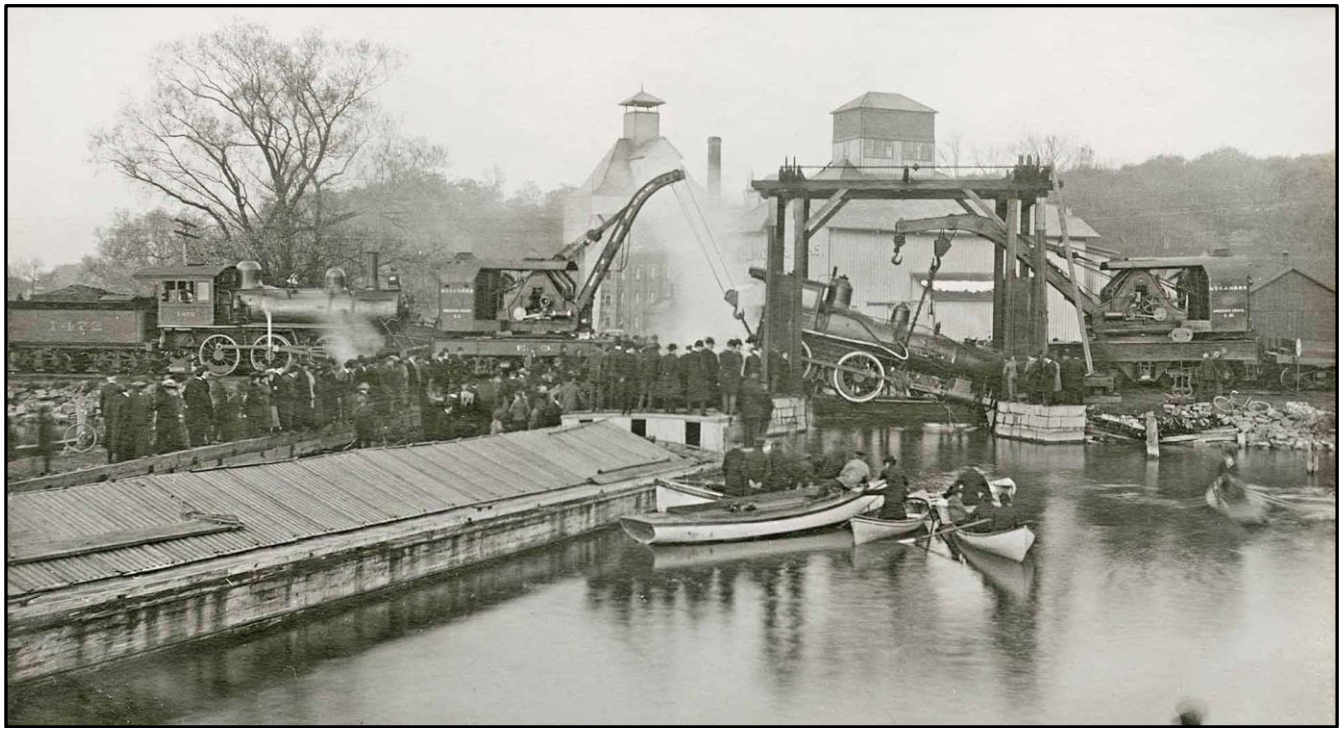


Figure 24 (top) and Figure 25 (bottom). 1903 New York Central wreck at Cayuga lift bridge (courtesy of Richard Palmer).

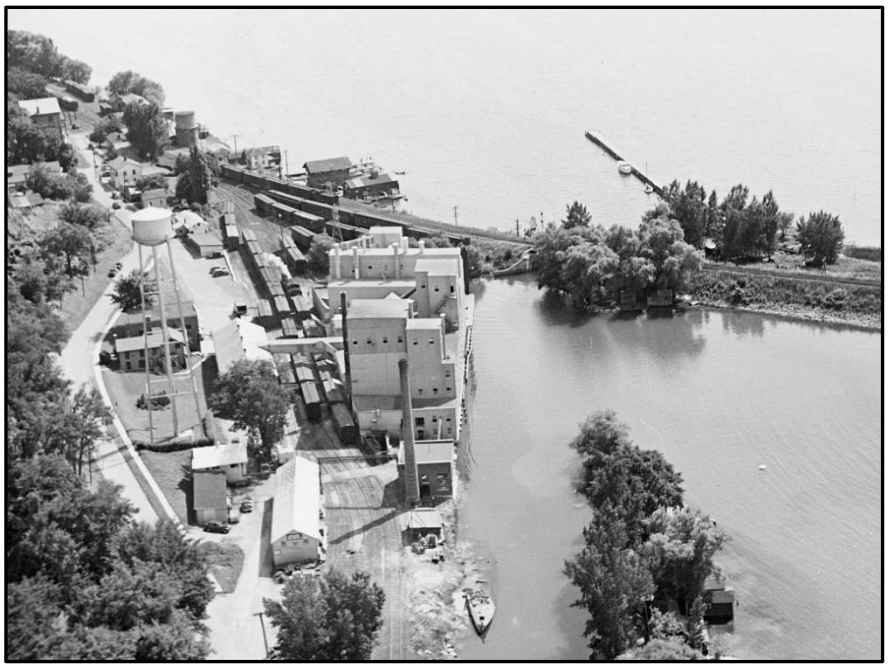


Figure 26 (top). Looking north up the Cayuga spur with Lock 10 in distance, c1920; Figure 27 (middle). Molasses barge at Beacon Milling Company, c1950; Figure 28 (bottom). Aerial view looking south of Beacon Milling Company, c1950.

Cayuga-Seneca Barge Canal Lock 1

The construction of Cayuga-Seneca Barge Canal Lock 1 and its neighboring taintor-gate dam was encompassed under Contract A, awarded to the Scott Brothers of Rome in December 1910, not much more than a year after the enlargement of the Cayuga-Seneca was authorized by the legislature. Note that this enlargement was not part of the original Barge Canal law of 1903, that the 19th-century canal was only to be kept as a navigable feeder to the new system. By January 1911 the contractors were erecting their plant. In April a field office for the engineer was built and stone and cement started to arrive by the following month. The first concrete was poured in June. In August 1912 the lock gates were being erected. On May 7, 1913, the lock was filled with water (intentionally!). Work on the lock and the dam were largely completed in May of the following year.

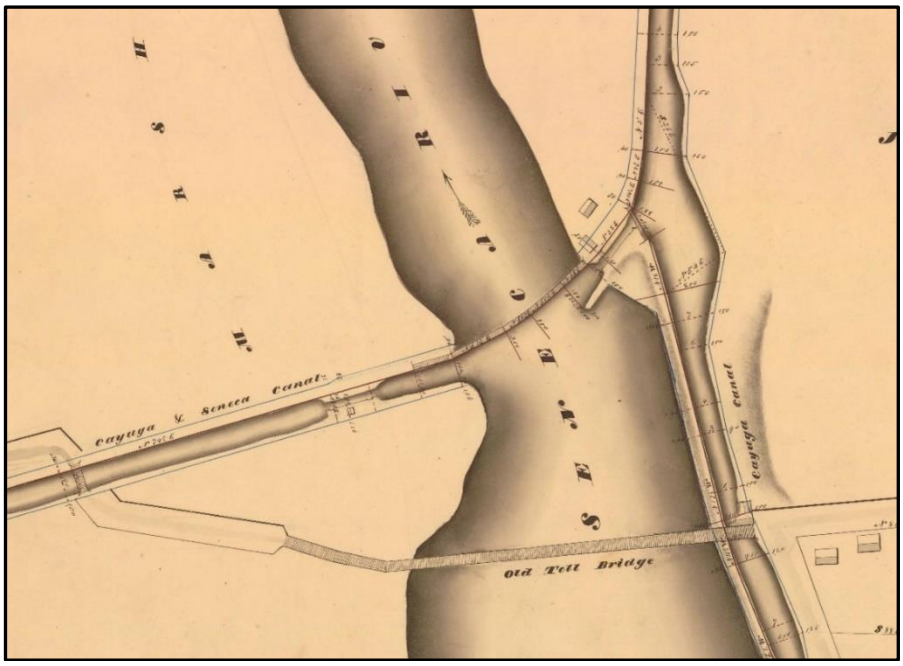
Contract M covered power supply for all the Cayuga-Seneca locks. It was let on November 5, 1914 and largely completed early in 1916. Lock 1 had a gasoline-electric powerhouse not unlike those in the Mohawk Valley. It and a concrete storehouse (built in 1913) were likely removed during the 1966 rehabilitation of the lock, being replaced with the current structure on the east side and power now being supplied commercially. The 1966 work was done by the Bouley Company of Auburn, the same firm that restored the Erie House at the Heritage Park.

After the completion of Contract M, Lock 1 was "all dressed up and no place to go." Its actual operation would have to wait until completion of work elsewhere, most notably the removal of the Richmond Aqueduct. A fish ladder was constructed in 1916. Old Lock 9 continued to be used in the interim. Contract R was let on April 30, 1918 and included the removal of the western portion of Lock 9 from the new channel, though the contract did specify filling the east end with spoil.

Lock 9 and Lock 8 to the west were both composite locks, very unlike the concrete walls of its descendant lock. The timber side walls were considered inexpensive and a useful option, despite the need for constant repair. These second-generation locks were built to enlarged dimensions; both being sited slightly north of the Ditch counterparts. The contracts for both were let in August 1853. The final account for Lock 8 is dated December 1854 with that for Lock 9 not being completed until September 1855. An interesting digression is that in lieu of the locks, the State engineers briefly considered crossing the the outlet on an aqueduct, à la the Richmond Aqueduct.

That tradition of wooden locks began with the first-generation of the Cayuga-Seneca Canal. Completed in November 1828, its construction was plagued with the same untimely weather and high water that continues to this day. The very initial numbering of those locks was the reverse of later in the century, with Lock 1 being the parent of later Lock 9. Lewis McCloud took that contract, likely the same McCloud who helped build the Erie Canal in the Port Byron area a decade earlier. The five-foot high Lock 2 (later Lock 8) was built under a contract dated May 12, 1828 to Alonzo B. Hovey and William Wines. The Hovey name frequently appears in the list of contractors for the Erie's construction nearby, indicating a possible connection. In a remarkable document requesting additional payment for his work on nearly all the other Cayuga-Seneca Canal locks, Andrew Tillman of Seneca Falls noted

what must have been a common scene at these lock construction sites. "They had 50 men at work at the excavation and 30 carpenters and for about ten days they employed 20 hands from another job, and every third night they had to employ from 20 to 25 hands to assist in bailing as their hands became too fatigued to continue the work."[35]



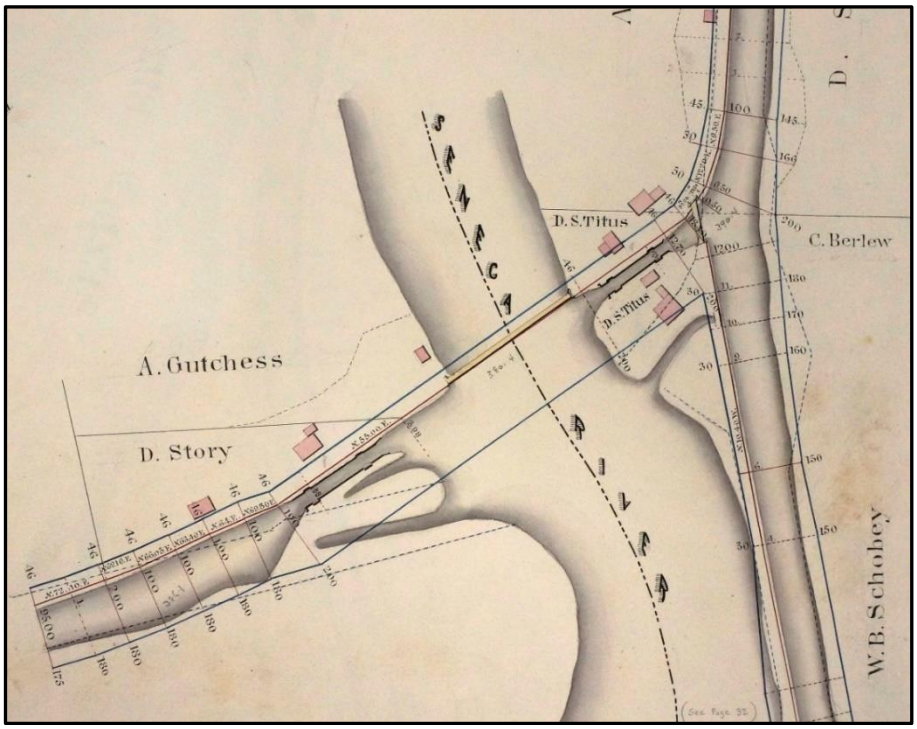


Figure 29 (top). 1834 Hutchinson map of Cayuga Lake outlet; Figure 30 (bottom). 1874 map of same.

[35] 1830 (20), Canal Board Papers, Series A1140, New York State Archives.

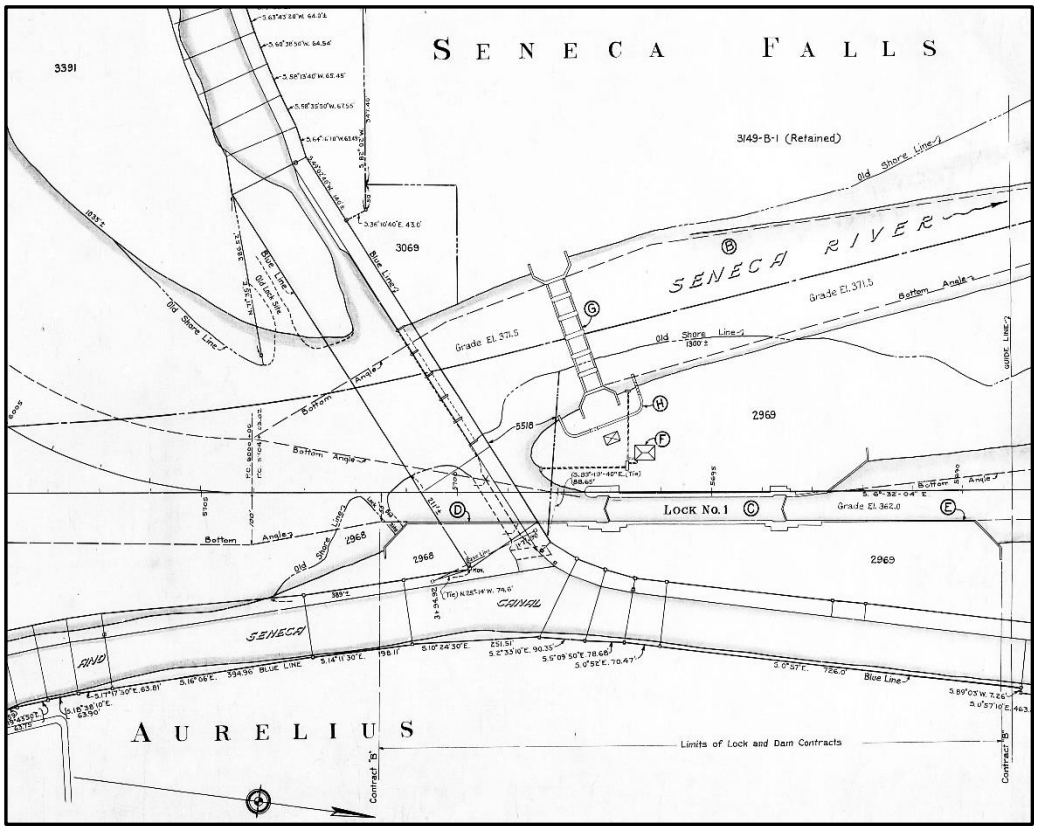


Figure 31 (top). Cayuga Lake outlet showing all three generations of locks, 1927; Figure 32 (bottom). Looking west over Lock 9 with Lock 8 in the distance, c1905.

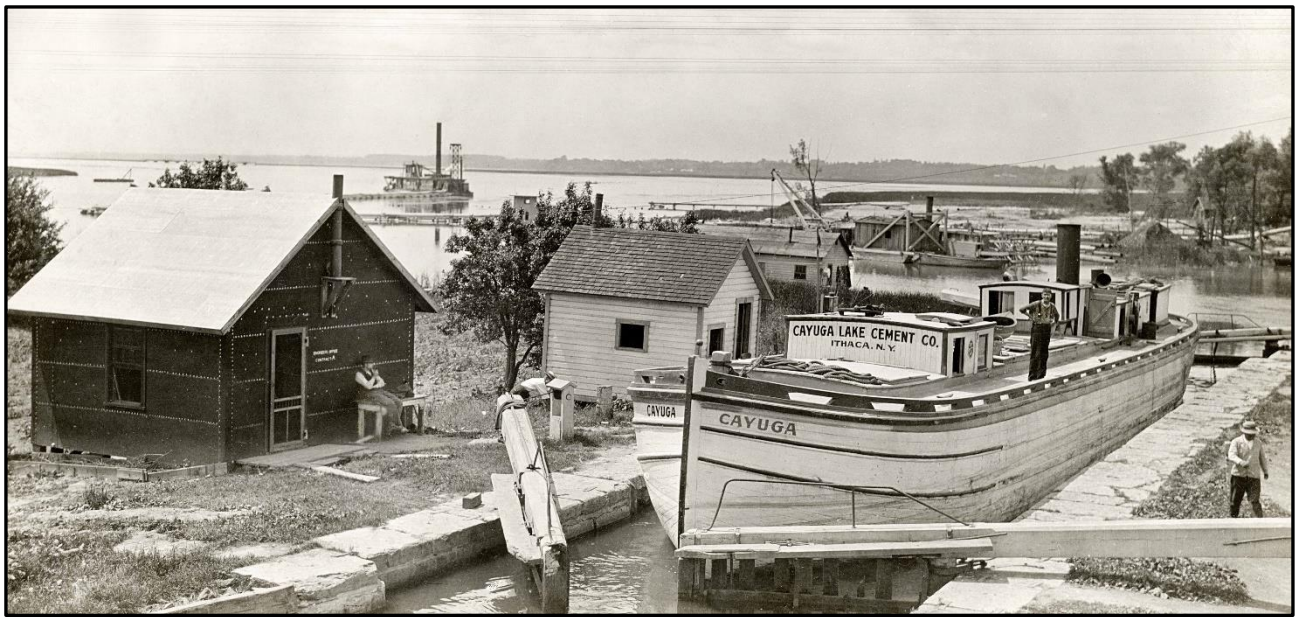
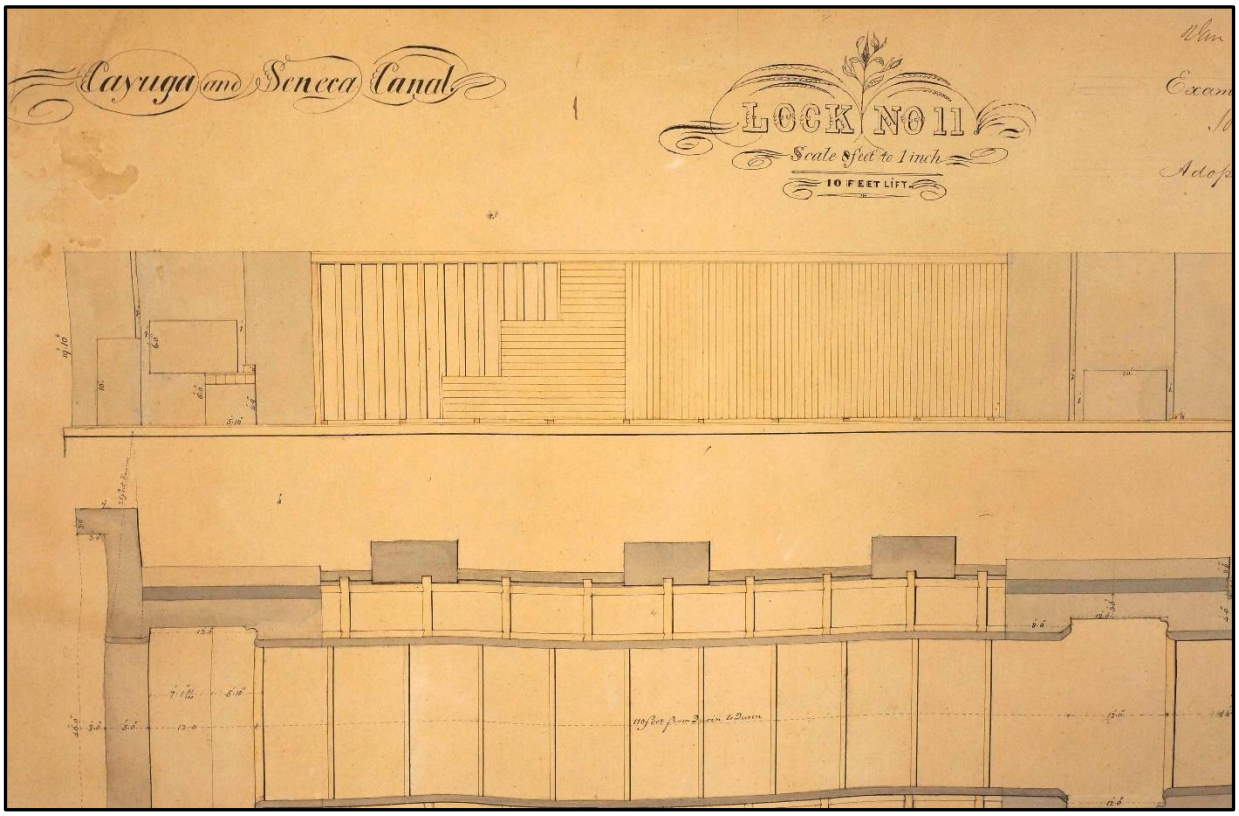


Figure 33 (top). Cement boat going east through Lock 9, c1911; Figure 34 (bottom). Looking northwest over Lock 9 during Barge Canal construction, June 10, 1913.



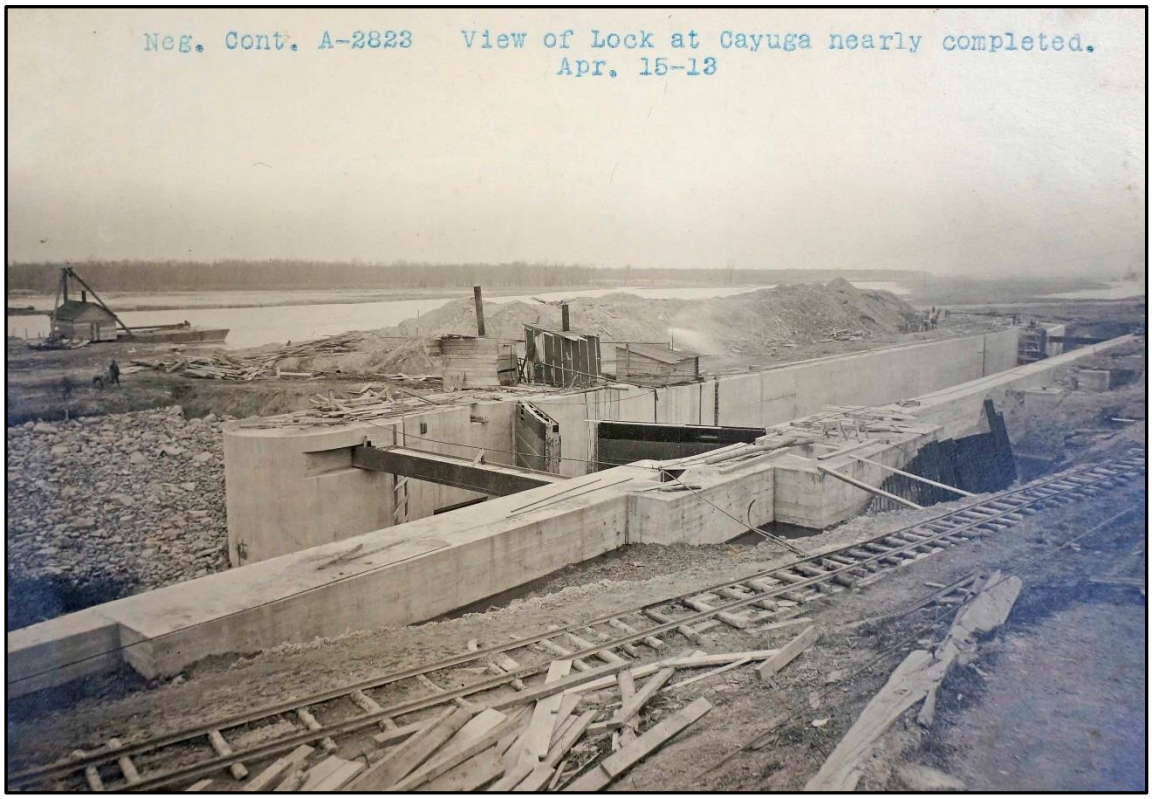


Figure 35 (top). Plan for composite lock, 1854; Figure 36 (bottom). View northwest over Cayuga-Seneca Barge Canal Lock 1, April 15, 1913.

Montezuma Heritage Park

As the Town's website states, "The Montezuma Heritage Park consists of 160 acres of parkland acquired by the Town of Montezuma in the 1960s to be preserved and protected. It holds many significant natural and historic resource sites along the Seneca River / Erie Canal that tell the story of New York State's Canal System…"

"There are now eleven connecting nature trails located along interpreted historic sites of the Erie and the Cayuga-Seneca Canals in various stages of development. The remains of the magnificent Richmond Aqueduct, second longest aqueduct on the Enlarged Erie Canal, can be visited along the original towpath trail. Enjoy walking, biking, cross-country skiing, bird watching, and fishing."

One very notable visitor to this landscape was DeWitt Clinton, on the same 1810 journey where he visited the "fossiliferous" Oriskany Sandstone described at the Oakwood Quarry stop.

"We arrived at Montezuma at three o'clock, and put up at I. H. Terry's, physician and tavern-keeper, where we dined and lodged.

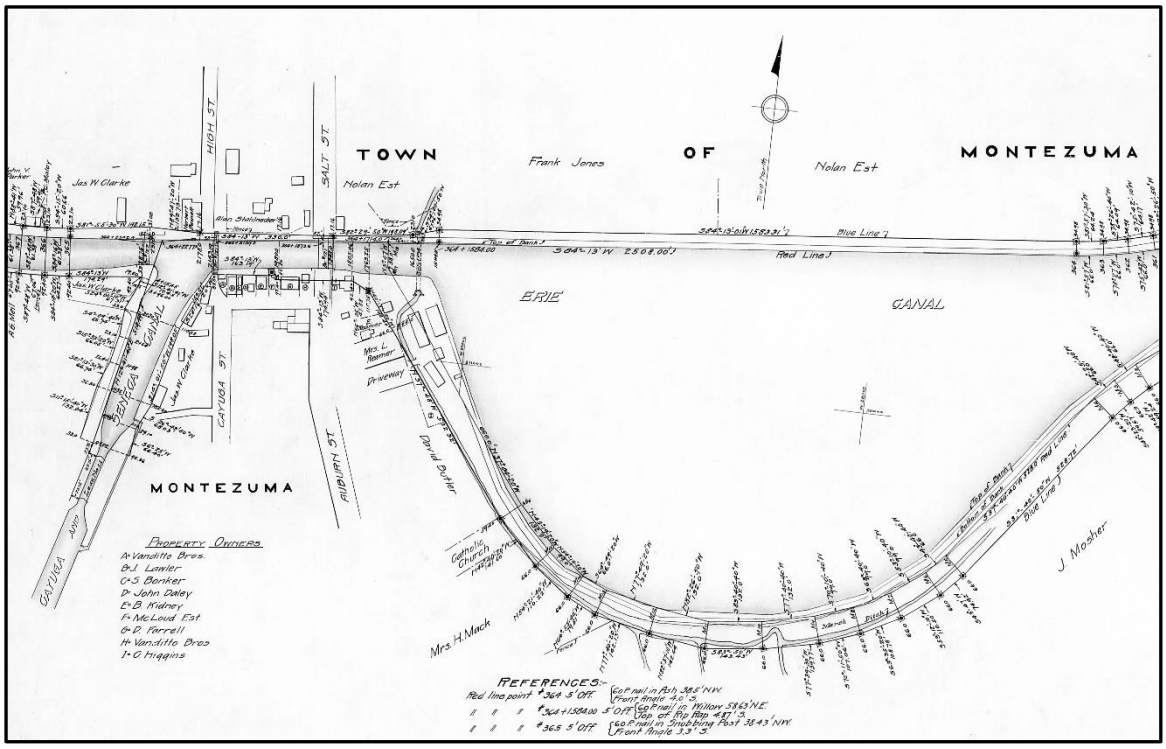
Montezuma… is situated on a strip of land between the river and Cayuga marshes and marsh in the rear, and cannot therefore be healthy. It contains a few houses, which have sprung up in a short time. The hill furnishes a beautiful prospect of the marshes, and the Seneca and Canandaigua Rivers winding through them. A few scattering trees of willow and elm are to be seen. The whole was clearly a lake, choked up by alluvions. The channel of the river is said to be in the tract of the greenest grass. Dr. Clark, one of the present proprietors, formerly of New York, and John Swartwout, the former proprietor, have handsome houses on this hill.

The salt works, and whole establishment, are owned by a company, of whom Mr. Andrews, a very fat man, formerly a tavern-keeper in Skeneatelas [sic], is the manager; and his intelligence and activity qualify him for trust. Gen. North and myself slept at his house, and were handsomely accommodated.

It takes from 80 to 100 gallons to make a bushel of Salt here. Near 2,000 barrels have been made since November last… There are several springs. The principal one that supplies the establishment is in the middle of a fresh water creek. The salt water is extricated from below the waters of this stream.

The Indians had discovered a spring near the marshes, by digging twelve or fourteen feet, where they made salt. On the site of this old spring a well is now digging for the fossil salt, and has been sunk to the depth 102 feet. The lower they go the salter the water is found. This manufactory contains eighteen kettles and twelve pans; each arch contains two kettles, and consumes a cord of wood in twenty four hours.

There is also a manufactory of red earthen ware; four or five kilns have been burnt."



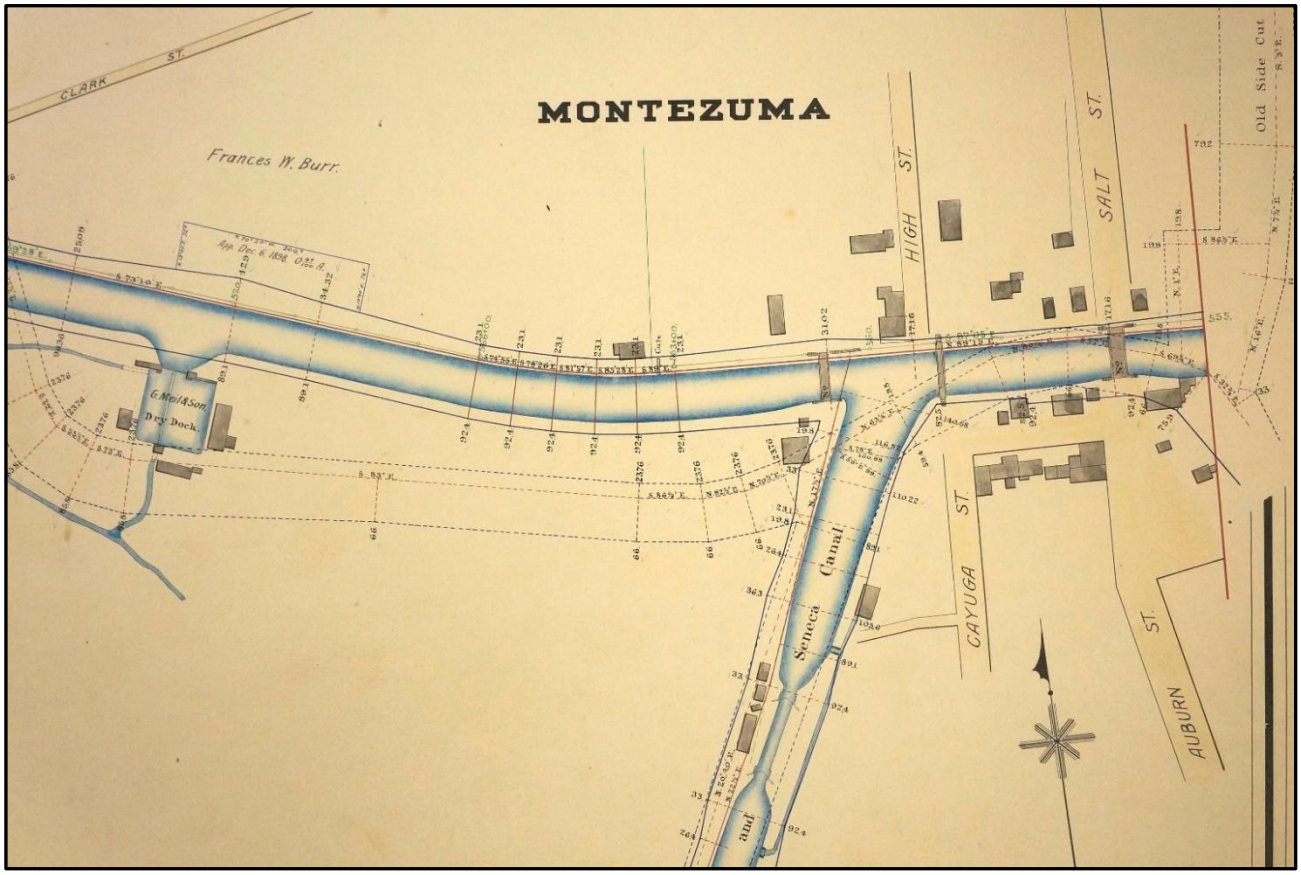
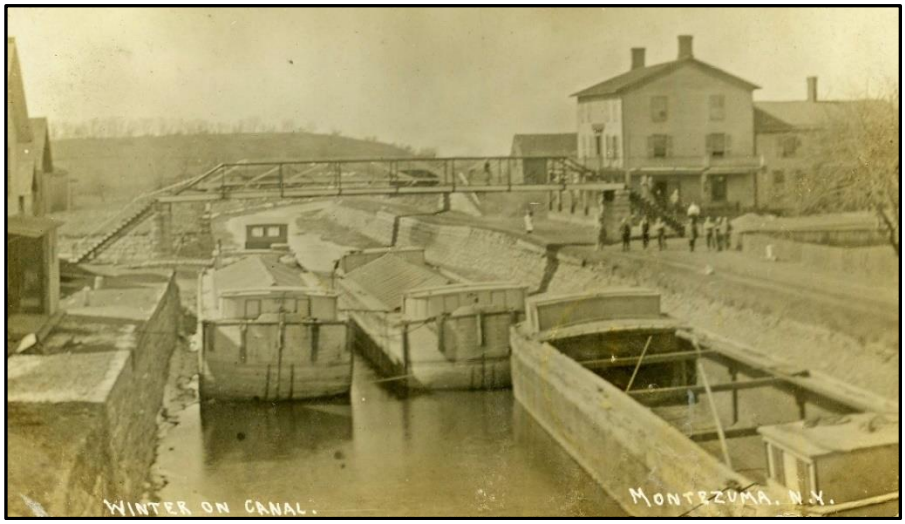


Figure 37 (top). 1918 map of Montezuma showing the widewaters formed with the Clinton's Ditch alignment to the south; Figure 38 (bottom). The c1896 Schillner map of Montezuma.



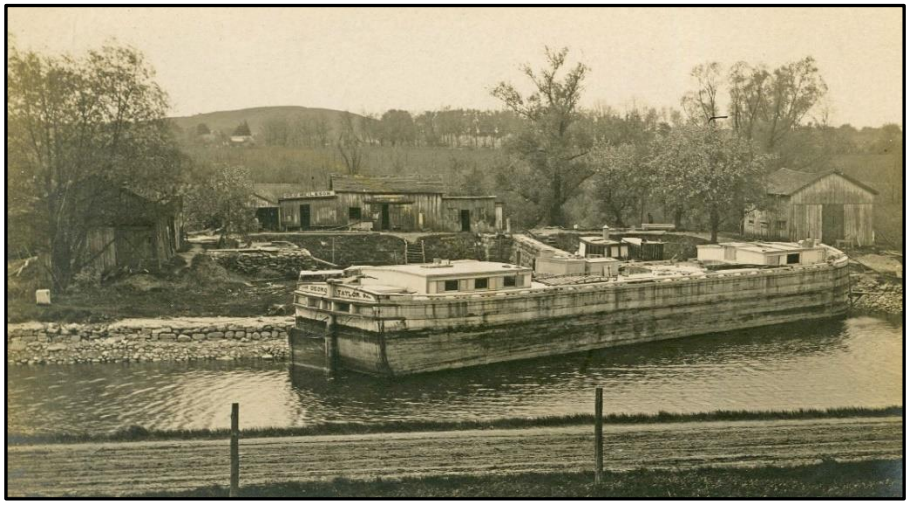


Figure 39 (top). Looking east over the Erie Canal in Montezuma, c1905; Figure 40 (middle). Looking west along the Erie Canal toward the junction with the Cayuga-Seneca Canal, c1905; Figure 41 (bottom). Drydock in Montezuma, c1905.

Richmond Aqueduct

When the Erie Canal was completed across the Cayuga Marsh about 1822, the crossing of the Seneca River by boats did not use an aqueduct. Boats were locked down at Montezuma to the river level and then pulled across the channel by their teams on an adjoining bridge just north of the channel. The technique was about the best that could be expected given the contemporary engineering expertise. This solution did not mean that it always worked well. The river continually silted in the boat channel. Also, what little success that was accomplished with draining the Cayuga Marshes meant that the navigable depth was reduced still further. Use of the slackwater crossing would become increasingly awkward if the draining continued. With the latter efforts in mind, canal officials began about 1840 to consider the use of an aqueduct as part of the enlargement of this section. The pause given by the Stop and Tax Act of 1842 may have ironically given canal engineers time to consider the magnitude of this option.[36]

In September 1849 a contract for the Enlarged aqueduct was let to Joseph M. Kasson, Arthur Lewis, and Philip Ostrander. The structure was sited slightly south of the Ditch crossing. With good reason, this Seneca River aqueduct was also known as the Richmond Aqueduct in recognition of the fortitude and expertise of the supervising engineer, Van Richmond. The construction of the aqueduct included two challenges. In Ditch days, heading west, a second slackwater crossing was made soon after the Seneca River. This Clyde/Canandaigua River crossing could also be made by an aqueduct during the enlargement. Instead, the latter river was realigned into the Seneca just south of the Richmond Aqueduct. To be extra sure that enough water could pass below the aqueduct, the Kasson contract was modified by the addition of six more spans. The other challenge was how to build a heavy stone structure on a soft, muddy base. Richmond designed a raft-like bed of integrated timbers and pilings to support the aqueduct.

As planning and construction of the aqueduct slowly continued, the river lock on the east bank of the river was modified to allow the use of Enlarged boats, being lengthened and widened as were several other locks in Wayne County. Authorized by the legislature in 1849, the Montezuma modifications were completed in 1853.[37]

The Canal Commissioners were justifiably proud of the new structure when it was first used in 1856. "The aqueduct… is one of the largest and most important structures on the Erie Canal. It has a wooden trunk fifty feet wide in the clear, resting on two abutments and thirty piers of hydraulic stone masonry. The openings or water ways for the river, 31 in number, are each 22 feet wide and 11 feet high. The foundation floor covers an area of 79,783 square feet, or nearly two acres, and supported by 4,464 bearing piles, varying in length from 15 to 30 feet. The towing path is carried over on 31 stone arches." The final

[36] Annual Report of the Canal Commissioners (1840), p.8; (1841), p.39-40; (1842), p.45-47; (1845), p.51.
[37] Annual Report of the Canal Commissioners (1853), p.105.

account for the Kasson contract states that limestone was brought from quarries near Fayetteville, Amboy, and Onondaga.[38]

The aqueduct stood the test of time, at least as far as the whims of nature were considered. It did not survive construction of the Barge Canal. Instead of the artificial channel of the Enlarged Erie, the Barge Canal uses the Seneca River. The aqueduct was in the way. The contract to clear a channel through the no-longer needed aqueduct was awarded in November 1917 to the Mohawk Dredge and Dock Company of Herkimer. Stonework and pilings were removed before the end of the year. The work as effectively completed by October 1918.[39]

Figure 42 (top). 1834 Hutchinson map of Seneca River crossing; Figure 43 (bottom). The c1896 Schillner map of the Seneca River crossing.

[38] Final Account Volume 58, Series B0377, New York State Archives; History of the Canal System of New York State (1906), p.800-803; Annual Report of the Canal Commissioners (1856), p.63, 84.
[39] Barge Canal Bulletin (December 1917), p.354; (January 1918), p.14; (November 1918), p.321.

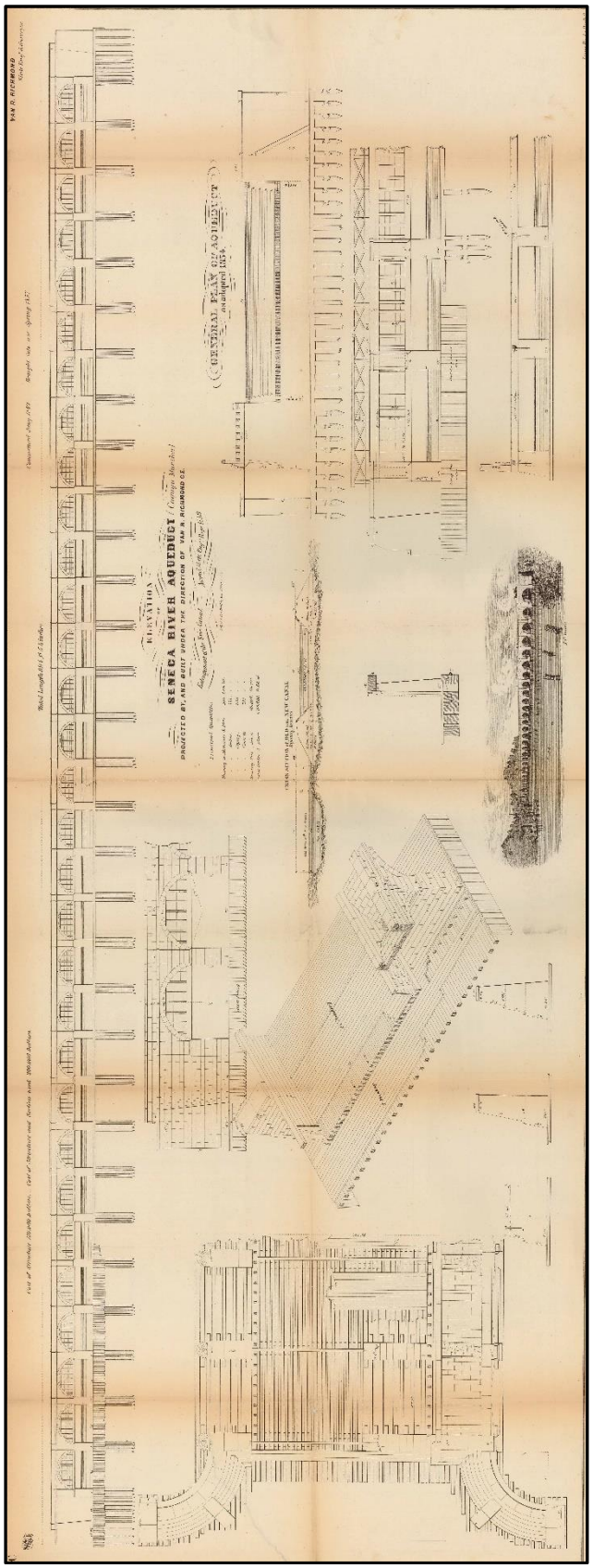


Figure 44. 1859 plan of the Seneca River (Richmond) Aqueduct.

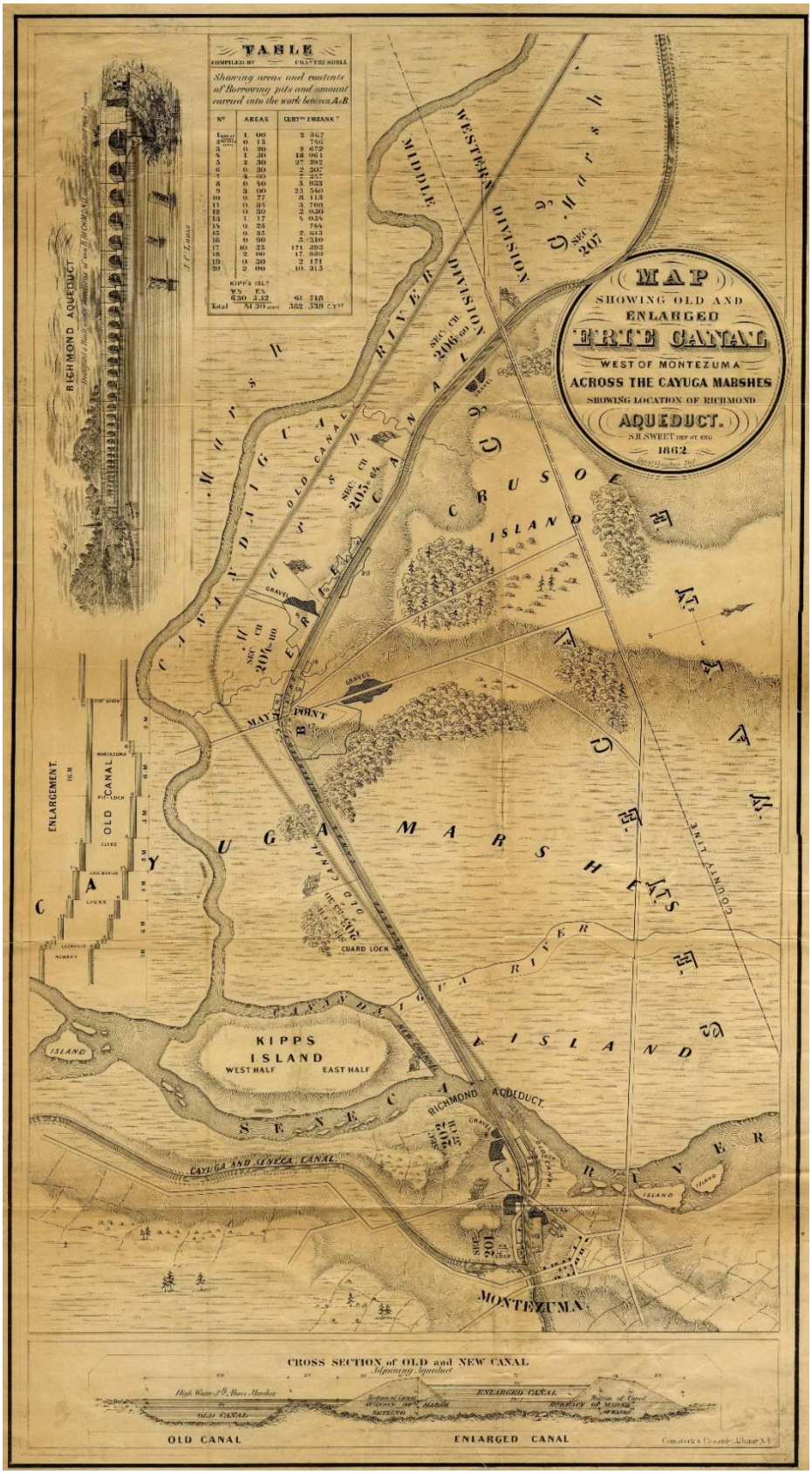


Figure 45. David Vaughan's 1862 map of the Cayuga Marshes and the Erie Canal.

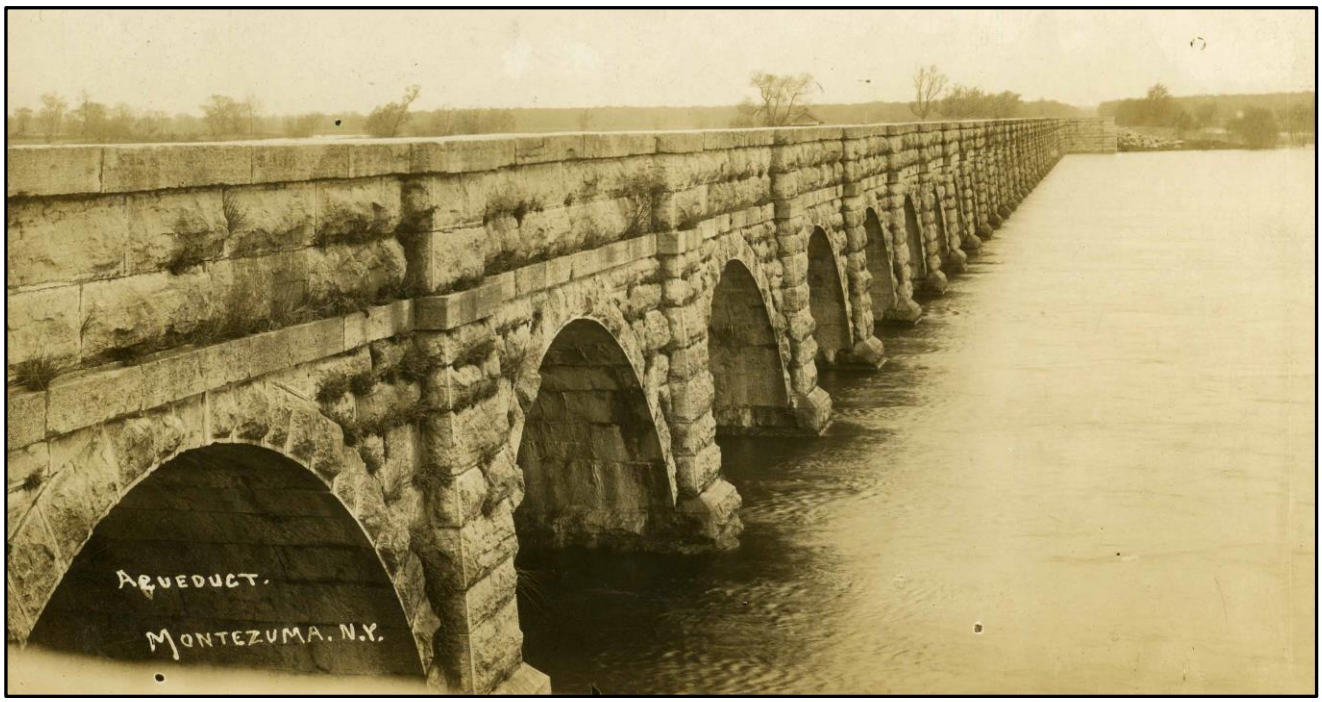


Figure 46 (top). Looking west along the north face of the Richmond Aqueduct, c1905; Figure 47 (bottom). Looking east through the dry trunk of the Richmond Aqueduct, c1917.

Figure 48. Arnold Barben's wonderful diagram of Cayuga-Seneca Canal history.

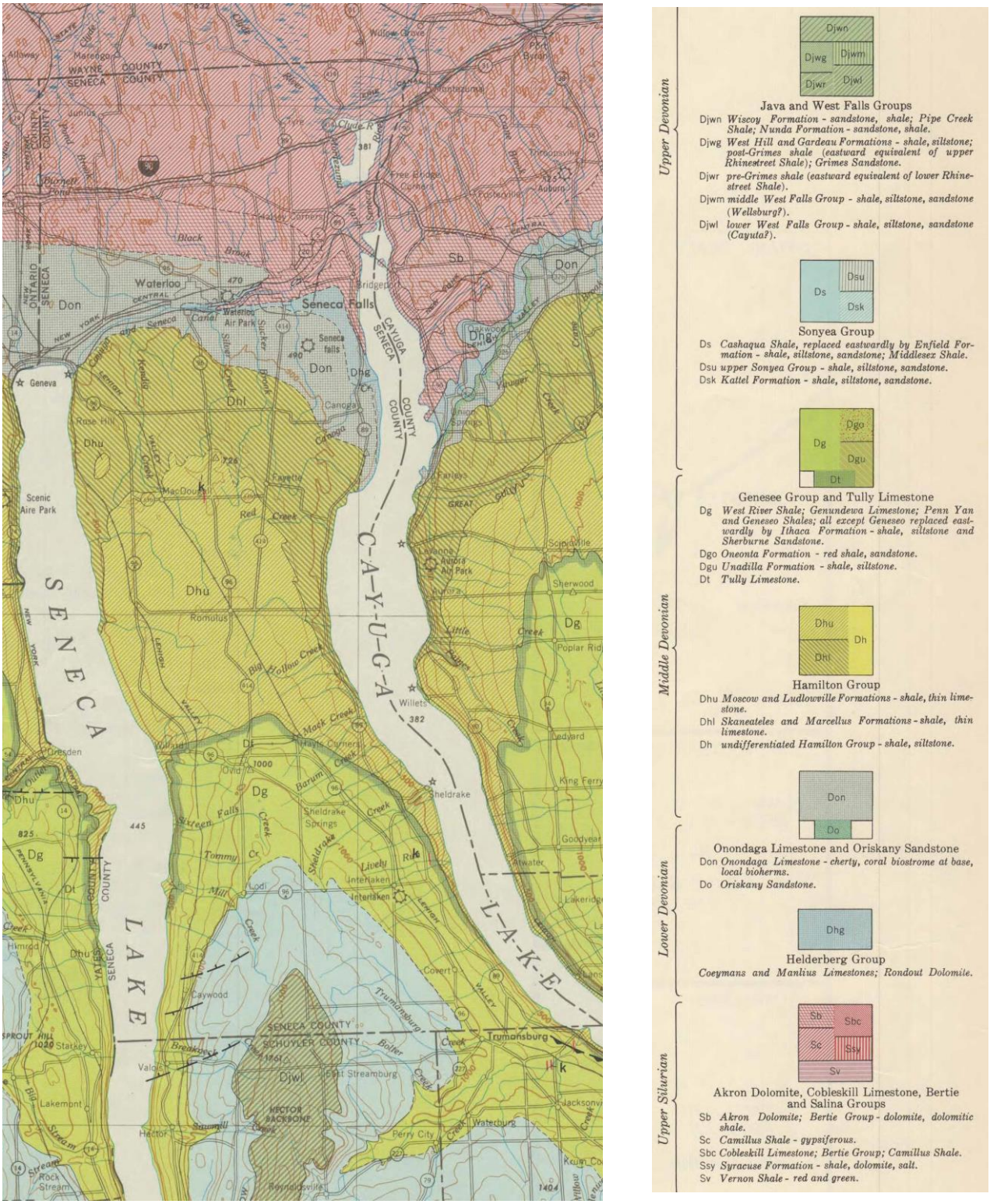


Figure 49. Bedrock geology of the Finger Lakes.