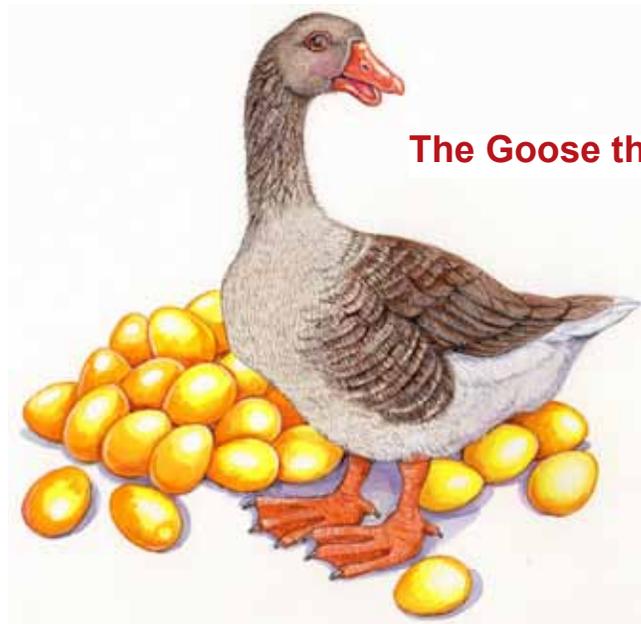


OPERATION BOOTSTRAP

**Proposed Downtown Petersburg, Virginia
Revitalization Program**

Appomattox River Development Plan



The Goose that lays the Golden Eggs

By Marvin Broyhill
Draft 117; June 22, 2012

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Introduction

Operation Bootstrap is an economic revitalization program for the City of Petersburg, Virginia. The title was inspired by the term “bootstrapping,” which refers to a group of metaphors that share a common meaning: a self-sustaining process that proceeds without external help. The most common usage is “booting up a computer.” *Operation Bootstrap* recognizes that far too much time has passed with nothing being done. It calls for us to..

Do what we can with what we have and DO IT NOW.

Operation Bootstrap recognizes that the effort must begin in the Old Towne Historic District and that the Appomattox River is by far the most prominent physical feature and resource. This led to extensive research that revealed issues not previously identified.

For the past 40 years, the city has talked about a riverfront development, but to my knowledge, it has never developed a viable plan for it. The Appomattox River harbor is silted up, dirty, and ugly, and it is widely accepted that such a project cannot begin until the river is dredged. The U.S. Army Corps of Engineers began the \$9 million dredging in 1990, but a few dead fish suggested environmental issues and the work was suspended. An environmental study was undertaken. The research revealed that dredging will not take place within the foreseeable future. (See Dredging, page 23.)

Operation Bootstrap includes a highly viable alternative waterfront development plan, one that is not dependent on dredging. It can be implemented within a fairly short period of time at a very low cost. It meets the requirement of doing what we can with what we have and do it now.

a brief summary of this plan is included in Introduction to Operation Bootstrap. This report sets forth the Appomattox River Development Plan in detail.

The Appomattox River



Greatly simplified route of the Appomattox River

The Appomattox River is a tributary of the James River located in south-central and southeast Virginia. It is approximately 157 miles long. It begins in northeastern Appomattox County, about 10 miles northeast of the town of Appomattox. It flows southeast to Farmville, then to Petersburg, and from there to Hopewell.

Most of North America sits on an enormous tectonic plate of bedrock. In Virginia, its edge runs south by southeast of the Atlantic Ocean between 75 and 100 miles inland. The land to the east of this edge is sedimentary, the result of the continuous erosion of the mountains to the west and the agricultural piedmont area between them and the edge. Rapids mark the line where the bedrock ends. The area to the east of them is geographically referred to as the “tidewater,” as the water level and water quality are influenced by ocean tides.

The rapids were a natural obstacle to westward expansion, so trading centers sprang up around them and they evolved into the fall line cities: Georgetown on the Potomac, Fredericksburg on the Rappahannock, Richmond on the James, and Petersburg on the Appomattox.

Traditionally, the Appomattox River has been divided into two sections. The Upper Appomattox extends from the Petersburg rapids west. The Lower Appomattox extends from Petersburg to City Point, about 10 miles to the east. It is very narrow and very shallow, but it did provide access to the deep water port of City Point on the James River. City Point is now part of Hopewell, Virginia.

This report is primarily concerned with the section of the river that flows through Petersburg.

History of the Appomattox River

Historians have long maintained that “you can’t tell where you are going until you know where you have been.” Closely related is the belief, “The world is not in need of learning as much as it is in need of remembering, as all the great lessons have already been learned.” So it is wise for us to review the events that led to our being where we are today.

The Appomattox Indians

“Appomattox” is an anglicized version of “Appomattux,” the name of the tribe of Native Americans that once lived along its banks. Virginia was colonized by the Virginia Company of London. Its first three ships of colonists dropped anchor in the “County of the Appomattux” on May 8, 1607. It was at the confluence of the Appomattox and James Rivers, but the precise location is unknown.

The Native Americans resented the intrusion of foreigners and their fierce demeanor and appearance deterred the English from settling in the area. These first colonists sailed back down the James River and established their settlement at Jamestown, largely because of its riverfront location, deep water close to shore, and the absence of Native Americans. The Indians knew that the marshy area with its brackish water was unhealthy, so they had the good sense to live on higher ground, further upstream, where the water was fresh.

The important thing is that the history of the United States actually began on the banks of the Appomattox River, not at Jamestown.

America's First "Gateway to the West"

In 1644, a widespread Indian massacre led the House of Burgesses to establish a line of four forts stretching from present day Richmond to Petersburg. The line between them was our first national boundary. The English claimed the falls and the land to the east of them; they forced the Native Americans to move west of the falls. Three of the forts were soon abandoned and played no important role in our history. The southernmost fort - Fort Henry - was commanded by Abraham Wood. After a year, he was deeded the land on which it stood and several hundred acres surrounding it. Wood conducted extensive trade with the Indians and led expeditions into the wilderness that resulted in the discovery of the New and Roanoke rivers. He sponsored the 1670 expedition that covered 3,300 miles and discovered 12 future states. Prior to that, he was running trains of 50 to 100 heavily laden horses as far south as Augusta, Georgia. Fort Henry was our nation's first "Gateway to the West."

When Wood died, his son-in-law Peter Jones took over the business. Around 1675, he constructed the stone Peter Jones' Trading post that survives today. There was surely an earlier one. It was referred to as "Peter's Point," so it was probably located at or near the point which was about two blocks downstream.

The Bollings and Their Tobacco Warehouses

Tobacco was Virginia's largest export crop and south central Virginia produced a great deal of it. The men who raised it were known as planters and their small farms (generally less than 300 acres) were called plantations. There were no roads so tobacco was prized (packed) into hogsheads for shipment. These were large drums with an axle through the center. They were pulled by horses, mules and oxen.



Rolling a hogshead of tobacco

Robert Bolling immigrated to Virginia in 1660, at the age of fourteen. In 1674, he married Jane Rolfe, the daughter of Thomas Rolfe and his wife Jane. Bolling's bride was the granddaughter of John Rolfe and the famous Indian princess Pocahontas. Jane Rolfe Bolling died shortly after the birth of her daughter. In 1681, Robert Bolling married his second wife, Anne Stith, and they had many children. This resulted in two Bolling clans. The "red Bollings" descend from Pocahontas through the first wife, Jane Rolfe, who had Indian blood, and the "white Bollings," descend from his second wife, Anne Stith, who had no Indian blood. Members of both clans played a major role in the development of what became Petersburg.



The only surviving tobacco warehouse is in Lynchburg, Va. It was built in 1791.

Between 1714 and 1724, cousins John and Robert Bolling established tobacco warehouses just east of the "Falls of the Appomattox" as collection points. Robert Bolling (a white Bolling) constructed his on the south bank of the Appomattox River at the site now occupied by the Farmers' Market. His cousin, John Bolling (a red Bolling), built his warehouse directly across the river.

Some unscrupulous planters prized inferior grade tobacco and even worthless stalks into their hogsheads. This led the Bollings to establish an inspection system. The hogsheads were unpacked, the tobacco inspected, and only the best quality was prized for export. The "Bolling label" insured the buyer that he was receiving quality goods. This proved so successful that the Virginia Legislature passed the Tobacco Inspection Act of 1730, which required all Virginia tobacco to be subjected to this quality control process.

The Appomattox River is narrow and shallow. Branches from trees on both banks covered large sections of the river. The tall masts of sailing ships could not pass under them. Plus there was no wind to power the sails. These problems prevented ocean-going ships from coming up river. To overcome this, hogsheads of tobacco were carried down river on shallow draft boats to Bermuda Hundred, the deep water port at the confluence of the Appomattox and James rivers. There it was put on ocean-going sailing ships and carried to England. Later, ports were established at City Point (now part of Hopewell) and Broadway, a now-extinct site a half-mile or so upriver.

Nothing is known of the river boats used in early 18th Century, but the James River batteau was patented in 1775 and was extensively used on the Appomattox River. The current carried it downstream. It was poled upstream. Almost all of the batteaus were owned and operated by the Free Blacks who lived in what became Pocahontas village.

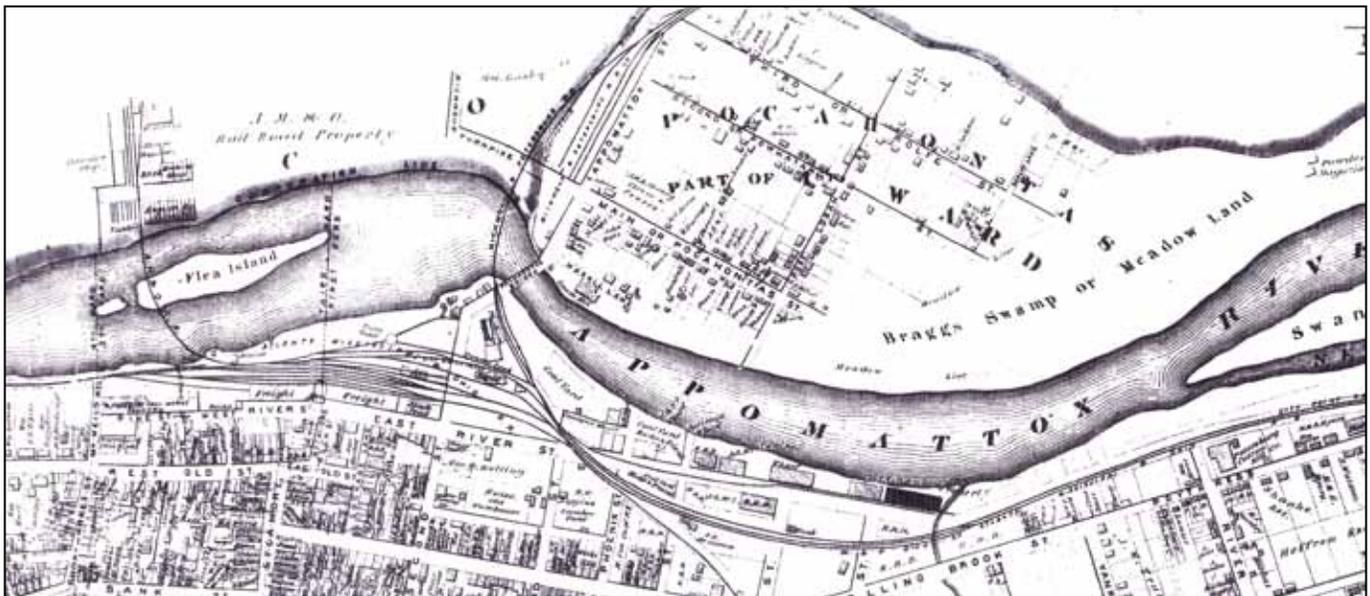


Reconstruction of James River batteau

The Birth of Petersburg

The Tobacco Act resulted in another half dozen tobacco warehouses springing up near the falls. The men who ran them built homes. Soon stores were opened to provide needed goods. What began as a remote trading post evolved into a trade and transportation center. The tobacco trade had resulted in such an economic boom that in 1733, Col. William Byrd II, who had just completed his *A Journey to Land of Eden*, wrote, “When we got home, we laid the foundation of two large Citys [sic]: one at Shacco’s to be called Richmond and the other at the Point of Appomattox River, to be named Petersburg. [sic].”

Major Mayo offered to lay these proposed cities into lots at no charge. A map of Petersburg showing these lots and listing their owners was made in 1738. The town extended along the river on both sides of Old Street. It was bounded on the east by Market Street. This section of Old Street is now known as Grove Avenue. The village of Blandford was about a mile down river. Little is known of it. The Virginia General Assembly formally incorporated both Petersburg and Blandford on December 17, 1748.



Part of 1877 Petersburg map showing the downtown Petersburg section of the Appomattox River. It also shows Pocahontas and adjacent area of downtown Petersburg

People began settling along the north side of the Appomattox River as early as 1749. In 1752, Richard Wittont laid out 66 half-acre lots, which he planned to call Wittontown. They were adjacent to the land of John Bolling, one of the most prominent men in the area. When the city was established in 1752, it was named Pocahontas, almost surely as a result of the influence of John Bolling, who wanted to honor his famous ancestor.

The previous year, the first of the many Pocahontas bridges was constructed. All were located at the same place. The above map shows that the south end was located on a point of land. It is most likely the “Peters’s Point” from which the city takes its name. Surprisingly, it was located about two blocks east of the trading post built by Peter Jones in 1675, which suggests that it may have been the site of an earlier trading post.

In May 1784, old Petersburg, Blandford, Pocahontas and adjoining properties that included land owned by the estate of Colonel Robert Bolling, the land of John Tabb (half of present-day Old Towne), Ravencroft town, land owned by the heirs of Peter Jones and the “Subberbs” [sic] were incorporated into a new City of Petersburg.

Early Use of the Appomattox River

Petersburg's economy and, in fact, its very existence was based on its central location and easy access to river transportation. Without the Appomattox River, there would not have been a Petersburg. The fast-moving current carried sediment downstream. Once the river crossed the rapids, it became wider and the current slowed. This resulted in silt being deposited. A small accumulation quickly attracted more sediment, resulting in a sandbar. Other deposits led to increasingly shallow water. This greatly hindered transportation. In 1743, the first legislation was passed to provide funds for improving the river - removing sandbars and dredging.

In 1751, the first bridge was built across the river from the south shore to Pocahontas. Over the next two centuries, there were many replacements. In 1925-26, a new steel-reinforced concrete bridge was constructed across the river to carry U.S. route 1 - the East Coast's primary north-south highway. It ran from Colonial Heights on the north to Petersburg on the south. It was appropriately named the Appomattox River Bridge. Between 2000 and 2003, it was demolished and replaced by the more modern and wider Martin Luther King Jr. Memorial Bridge.

The U.S. National Park Service manages the Historic American Buildings Survey (HABS), Historic American Engineering Record (HAER), and Historic American Landscapes Survey (HALS). These programs were established for the purpose of documenting historic places in the United States. During 2001-2003, HAER prepared a report on the Appomattox River Bridge. It includes the most extensively researched and documented history of the Petersburg portion of the Appomattox River ever written. [HAER report number VA-124.]

It's authors wrote "As a port city since the early eighteen century, Petersburg had long been concerned with maintaining navigability in the lower breaches of the Appomattox River, which was constantly plagued by large silt depots washed down from the heavily cultivated Piedmont region to the west.

The North Carolina Influence

The Virginia Company's charter granted it virtually all of North America. The northern border began at the 41st parallel (Long Island Sound) and ran northwest to present-day Alaska. The southern border began at the 34th parallel (Cape Fear) and ran west to California. The Virginia Company lost its charter in 1624 and Virginia became a crown colony. Over the years that followed, additional colonies were established within this area. North Carolina was originally known as Province of Carolina, along with South Carolina. The northern and southern parts of the original province separated in 1729.

By this time the land along the James River was extensively cultivated and had become quite expensive. Many of those who lived south of the James River migrated southward into North Carolina, where land was free. They immediately encountered a problem. The Roanoke river originates near Roanoke, Virginia, curves southeast into North Carolina then runs east, creating a mighty river highway. It continues to Albemarle Sound, but there the barrier islands prevent it flowing into the ocean. This resulted in goods being transported from the sound north to Norfolk, Virginia, which became the primary port for North Carolina.

Impact of the Revolutions

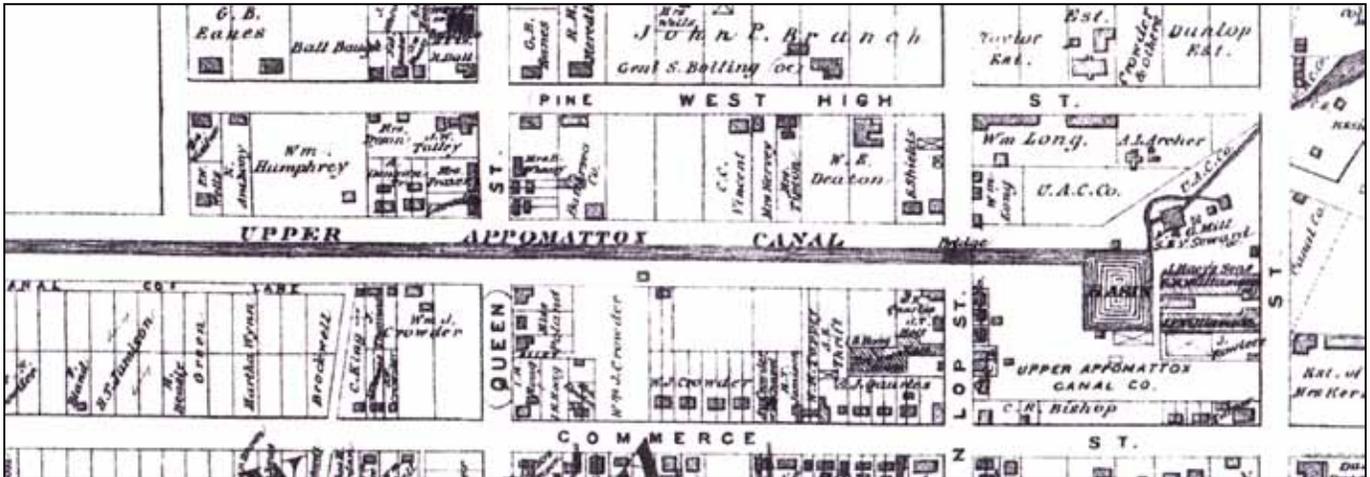
1776 was an incredible year, as it saw three revolutions. They would change the world forever. In July, the American Colonies proclaimed their independence from England. This political revolution laid the groundwork for democratic government. Less than three months later, James Watt installed the first commercial steam engine. It, the development of machine tools - machines that made machines - and the introduction of low-cost iron ushered in the Industrial Revolution. Factories could mass-produce goods at far lower cost than those individually made by skilled craftsmen. In September, Adam Smith published *Wealth of Nations*, the manifesto for capitalism. It resulted in an Economic Revolution. The democratic, industrial, capitalist nation that we are today is the direct result of three events that took place in 1776. Petersburg was quickly impacted by all three of them.

Westward Expansion

England was an island nation that had few natural resources. This motivated it to establish colonies around the world to provide them. England's strategy was to import raw materials from the colonies, then export finished goods to them. The colonies were not permitted to manufacture competing products. The English kept the American colonist close to the coast so that it could maintain control over them. American independence resulted in extensive westward migrations.

During the second half of the eighteenth century, many planters settled near Petersburg, but most stayed relatively close to the town because of its tobacco warehouses and river transportation. In the wake of the Revolutionary War, the Virginia legislature rewarded its veterans with land grants in its most westward county, Kentucky. Petersburg was the last city they visited before entering the wilderness of the unknown west. Its merchants equipped and supplied many a westward settler. A hundred and thirty years after Fort Henry was established, Petersburg was still the "gateway to the west."

The Upper Appomattox Canal Company



Section of 1877 Petersburg City Map showing the Upper Appomattox Canal

All of the colonies suffered from lack of internal transportation and canals seemed to provide the ideal solution, as boats could transport large quantities of goods over long distances far less expensively than having them hauled by horse. One of the most ambitious early projects was the 22-mile long Dismal Swamp Canal that was to run from the Elizabeth River near Norfolk to a tributary of Albemarle Sound. Work began in 1793, but it would not be completed until 1805. It inspired the incorporation of the Upper Appomattox Navigation Company to provide transportation around the falls, thus linking the two sections of the river. It did not quite meet that goal, as its basin was dug at what is now the intersection of High and South streets. Although it was four blocks east of the Lower Appomattox tobacco warehouses, it did reduce the overland route by seven miles.

In 1807, the canal was described as being 16 feet wide and three feet deep. Each of the shallow draft batteaus could carry six to eight hogsheads of tobacco. They floated downstream to Petersburg, unloaded, and then poled back upstream to Farmville, 70 miles away. This opened up the interior and the venture was highly successful, as up to 125 batteaus were in Petersburg at one time.

The Roanoke River

The population of central North Carolina increased rapidly. Due to the rich soil, the area quickly became a major agricultural producer. The problem was transporting the goods to market. The Roanoke River is only 60 miles south of Petersburg, but this area is over 80 miles to the western edge of Albemarle Sound and from there another 100 miles to Norfolk. Because of the much shorter distance, central North Carolina planters found it far more economical to ship their goods to Petersburg. This began its transportation competition with Norfolk..



Dray

By the 1820s, there was a wagon road between Petersburg and the village of Halifax located on the Roanoke River. It was appropriately named the Halifax Road. Several large transportation companies were established at the Petersburg end. They utilized huge wagons called drays. They were pulled by six huge draft horses. The drays could carry three hogsheads of tobacco. Under ideal conditions, the trip took three days each way.

Cotton

Small patches of cotton had been raised in Virginia at a very early date, but the multitude of seeds had to be picked out of the fiber by hand, making it too expensive to raise commercially. That changed with the invention of the cotton gin in 1793. The little machine used small hooks to pull the fibers through a wire screen that caught the seeds. Cotton is a great material and the gin made it practical to grow.

Tobacco was Virginia's primary crop, but it quickly exhausts the soil. Planters discovered crop rotation. They grew tobacco one year and grain the next and then let the land lay fallow for a year before repeating the process. Cotton provided a third crop and cotton plantations sprang up all around southern Virginia and central North Carolina.

Industrialization

The South was so largely agricultural that it is often thought of as one vast plantation. Petersburg was a very big exception, as it became an industrial center.

Virginia planters first exported their tobacco to England, where it was processed for sale. As the domestic market for tobacco products increased, Petersburg became the home of several tobacco factories that processed the leaves into chewing tobacco (then very popular). Some manufactured cigars.

Grain was another important locally grown agricultural product. Mills sprung up along the Appomattox River to grind the grain into flour. The strong current provided the power to turn water wheels. The power was transmitted to the grinding machines through shafts and gears.

By 1800, English inventors had used the newly developed machine tools to create machines that could spin the cotton fibers into thread and yarn and then weave it into cloth. This technology was imported into Lowell, Massachusetts in 1810 and it became the center of our nation's new textile industry. Within a few years, cotton mills sprang up along the Appomattox River. Their machines were also powered by the Appomattox River.

The Transportation Bottleneck

Agricultural goods were pouring into Petersburg from as far west as Farmville. Halifax was the collection point for central North Carolina. The Roanoke River permitted goods to be shipped to it from the far west and even the east. They were shipped into Petersburg for export. Plus the cotton mills and tobacco factories were producing goods for export. The small fleet of pole-driven batteaus was overwhelmed and vast quantities of freight was stacked up awaiting shipment. One merchant complained, "It takes longer to get goods to City Point (ten miles away) than it does to get them from City Point to Baltimore and New York City."

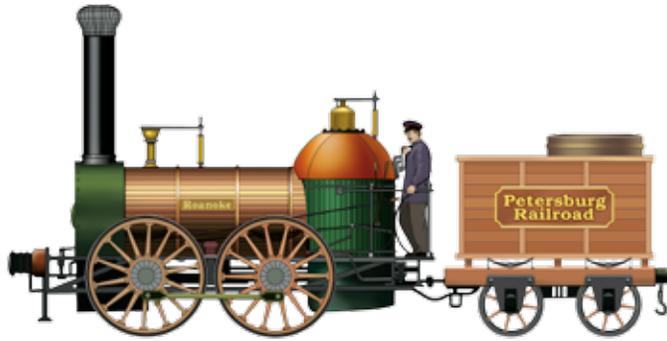
The Lower Appomattox Company was chartered in 1788. The HAER report states that by 1802, "it made progress in the improvement of the channel." Boats drawing seven feet of water or less could make their way "through the island from the Pocahontas Bridge down to the James River, which had deep water."

The HAER report adds this was only the first in a series of public works projects spanning a century and a half. Keeping Petersburg's harbor accessible proved to be an endless task, prompting one observer to liken the frequency of dredging the lower Appomattox to "shaving a man's beard."

In 1819, the steamboat *Petersburg* began to make trips between Petersburg and Norfolk. The shallow and narrow river was filled with sand bars and other obstructions and it was quickly discovered that navigating it was impractical. It began picking up its passengers at City Point. A few small steamboats were used on the river, but the ports of entry to city were the deep-water ports at Broadway, City Point and Walthall.

In 1824, a new Lower Appomattox Company contracted with Albert Stein, an engineer who drew upon his experience in Holland and along the Rhine River. Stein thought that dredging was an ineffective short-term solution so he dug cuts and constructed jetties to reduce the width of the river. This resulted in faster currents, which both precluded the sediment from being deposited while scouring the bottom. This was a very expensive project for the day (\$60,000) and took five years to implement, but it did result in a consistent seven-foot depth. Edmund Ruffin wrote in his *Farmers' Register* in 1833 that larger ships could then visit Petersburg.

Railroads



The "Roanoke" - first locomotive of the Petersburg Railroad

The city of Petersburg sought a faster, more economical way to transport these goods from the Roanoke River. This resulted in the Petersburg Railroad being chartered in 1830. The first thirty miles of track were in place by October of 1832. The track to Weldon, North Carolina was completed the next year. It's little locomotive, the *Roanoke*, left Petersburg in the morning carrying tools and household products. It arrived around noon. It returned that afternoon hauling 14 freight cars, each carrying two hogsheads of tobacco. The little engine burned wood, which was virtually free. Transportation costs dropped by 90 percent. The Petersburg Railroad was the third common carrier in the United States, the first in the South and the nation's first interstate railroad.

The Petersburg Railroad was enormously successful. Within five years, it had a dozen locomotives and over 200 freight and passenger cars. It drastically changed the city. Merchants had long had stores on Old Street (earlier called River Street.) to be close to the river. Their store was on the first floor and they lived upstairs. Many of them moved up the Walnut (now Sycamore) Street hill to be close to the railroad terminal, located on the south side of Washington Street, between Walnut and Union. Old Street went from being the city's commercial center to its industrial slum almost overnight. The former upper floor homes were converted into tenements.

This enormous new influx of goods made the transportation bottleneck ever worse. Local businessmen quickly formed and raised the money for the City Point Railroad. Richmond merchants were envious of Petersburg's great success and formed the Richmond and Petersburg Railroad. Both began operations in October 1837. Freight charges were based on distance, so the Richmond and Petersburg constructed a branch line to Walthall. This deep-water James River port was about ten miles northeast of Petersburg, the same distance as City Point, so rates were competitive. The Richmond and Petersburg was far better financed. It constructed piers that ran out into the river. Freight cars were pushed on it. Steam-powered tug boats pushed the huge sailing ships up to the piers, where they were quickly loaded using cranes.

The Appomattox River had been replaced with a far more efficient and reliable transportation system and it was to grow even more. By 1854, the Southside Railroad was constructed to connect Petersburg to Farmville and points west. It was part of an ambitious program that would link it with other railroads that would eventually connect the city to the Mississippi River at New Orleans. Norfolk merchants wanted to cut in on the export business and in 1858 the Norfolk and Petersburg Railroad began operations.

The Lower Appomattox

Many Petersburg merchants became concerned about the city's dependence on the railroads. They also believed that if deep water ships could be brought all the way up to Petersburg, it would eliminate the railroad freight charges thus increasing their profits.

In 1846-47, Petersburg became interested in a plan to construct an ambitious ship canal. It was to be 17 feet deep and 600 feet wide. It would lead from the Petersburg harbor to Broadway. Due to the high expense, the project was abandoned, but in the 1850s, the river was dredged to a depth of nine feet.

The Petersburg harbor was described in the newspapers of the 1850s as an active and colorful place. One story said that, "here were some twenty to thirty vessels in port, mostly first class schooners and that they represented six of first Atlantic cities - New York, Philadelphia, Boston, Portland, Baltimore and Charleston. This was the golden age of the Petersburg Harbor. It was short-lived.

The Diversion Channel

The HAER history stated, "By the 1880s, the silting problem in the Appomattox River had reached a critical juncture. Petersburg's leaders held a deep and ingrained fear of the economic power of railroads especially of the Norfolk & Western (formed by various mergers, it included the former City Point and Southside Railroad)." They reasoned that keeping the harbor open as a viable center of trade would lessen the city's dependents on the powerful railroad interests. Trade in the harbor declined, despite the fact that in 1881-1882, the U.S. Army Corps of Engineers had undertaken an extensive dredging and jetty-building project. Nonetheless, Petersburg maintained the hope that its harbor could effectively compete with the Norfolk and Western and other railroads. In 1885, the city granted free use of the harbor docks to the Atlantic and Danville Railroad's steamboats.

In 1892, Lieutenant Edward Burr of the U. S. Army Corps of Engineers presented the first plan for the diversion of the Appomattox River. "Freshets bring down from the upper part of the stream large quantities of sand," Burr wrote, "which is deposited in the harbor of Petersburg as shoals in the channel when the velocity of the current is from any cause slackened." He observed further that "the wharves in the city and the lowlands bordering the river are subject to overflow during freshets" (U.S. Army Corps of Engineers Report for 1892, p. 347). Having succinctly described the harbor's age-old problem. Burr advised again the U.S. Congress's plan for continuing to dredge the Appomattox River and the city harbor. He wrote, "The river is not worth of improvement in the manner mentioned in the 1882 Rivers and Harbors Act." Burr instead offered the following plan for the diversion of the river:

From an engineering standpoint [this] project is practicable and offers no peculiar difficulties. It consists in the excavation of an artificial channel, the construction of a dam to direct the water into this channel, and an embankment to retain it there, and the construction of a bridge to carry wagon road and railroads across the proposed new channel. The artificial channel naturally begins above Pocahontas Bridge, follows the low ground back of Pocahontas Hill and through the Roslyn Meadows, and ends in the old channel at the head of Puddledock Cut. The embankment lies between the present and proposed channel, being so placed as to permit the economical use of the excavated material in its construction and to permit a sufficient lateral spread of freshets over the adjacent low ground. The location for the dam would be at Pocahontas Bridge

This was apparently not the first suggestions of a diversion channel, as reportedly a map showing its proposed location was prepared in 1889, soon after a major flood. The City of Petersburg was slow to act on the diversion channel recommendation. Finally in 1900, the city's business organization and the Common Council sent a committee to Washington to meet with Virginia's congressmen and lobby for the problem (Petersburg Chamber of Commerce 1904, page 28.)

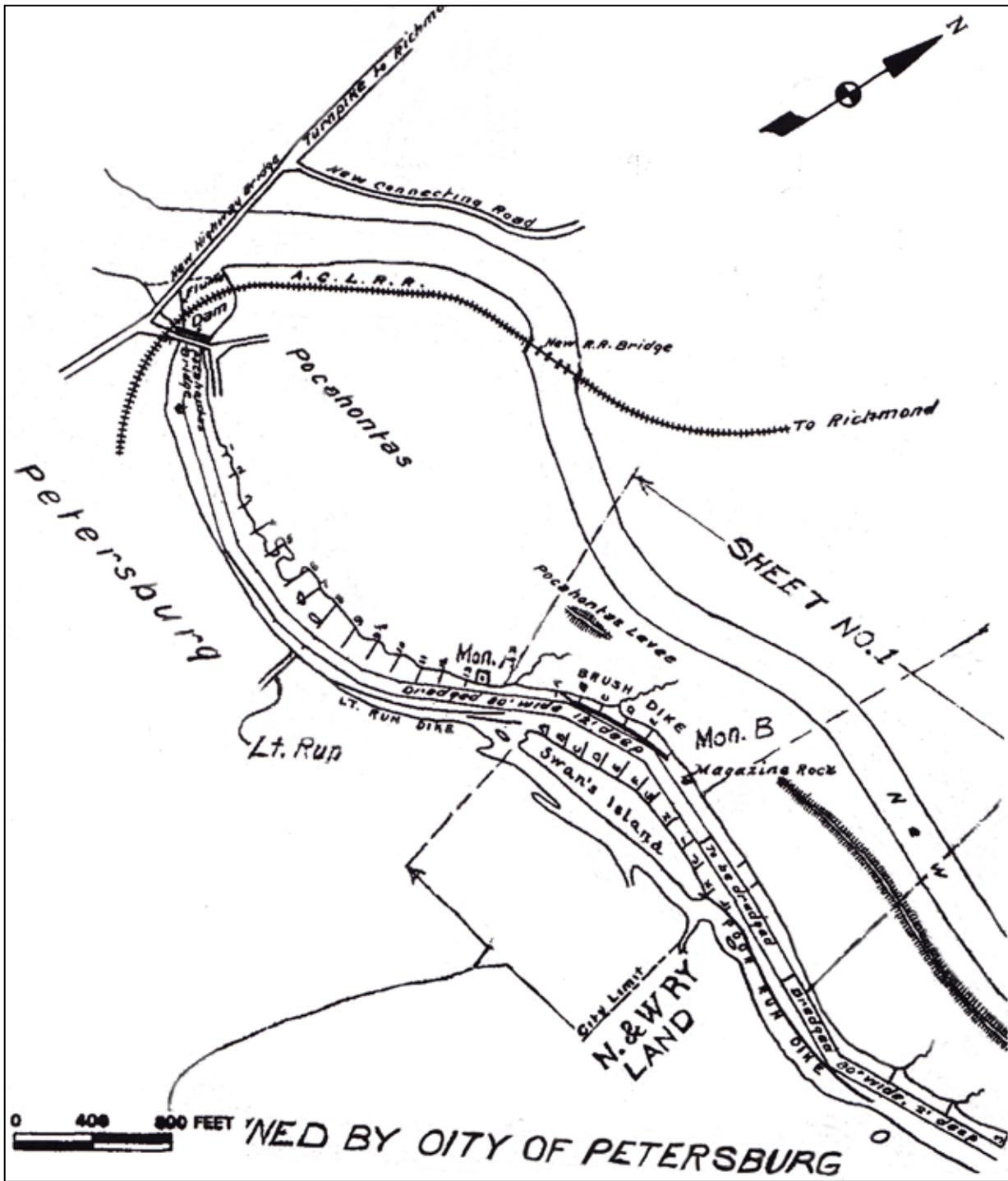
Congressional Edition, Volume 5289 states that in 1902, the United States Congress approved the "project to build a diversion channel for the Appomattox River at Petersburg into a former geological channel north of Pocahontas Island and its discharge into the old channel at a point about 1 1/2 miles below the city. The object of the diversion scheme is to relieve the navigable channel entirely from carrying the discharge of the river, and in this way to obviate the shoaling caused by freshets. The principal works involved in the diversion scheme are an artificial channel about 2 1/2 miles long, a highway and railroad bridge across the above artificial channel, a dam across the river, and a levee to separate the navigable and artificial channels, all as indicated as Tracing No. 2, attached." The article also stated "the work is now under contract."

The new diversion channel was to be 12 feet deep and 80 feet wide. In mid-1903, the U.S. Army Corps Engineers reported that difficulty in acquiring the necessary land was delaying the project.

The problem was soon resolved. *Petersburg Deed Book 67*, page 591 conveys "...all of the lands hereinafter described and intended to be hereby conveyed have been acquired by the said City of Petersburg, either by purchase or condemnation, for the use of the United States of America in connection with the proposed 'Diversion Scheme' [the original text includes these quotes] of the Appomattox River as it runs through said City of Petersburg and the County of Chesterfield." Mayor William M. Jones was authorized to convey the land by a resolution of the Common Council April 1, 1904. The price was in excess of \$6,000. The typewritten deed fills six very large pages. A great many parcels are involved. The deed does not contain any reference to a plat. No plat has been found in the Hastings Court Clerk's Office or the Petersburg City Engineer's Office.

In July of 1904, the U.S. Army Corps of Engineers contracted with the Atlantic Dredging Company of Philadelphia to dig the proposed channel, build a dam, dredge the river, and build embankments, a new highway bridge, a railroad bridge piers and a flume.

The first task was to construct the highway bridge, as once the excavation of the diversion channel had begun, Pocahontas would become an island and the Pocahontas bridge would be replaced by a dam and could no longer provide access to the Chesterfield side of the river. Construction of the new bridge was subcontracted to the Philadelphia firm of Armstrong and Latta. The ground-breaking ceremony was held on October 24, 1904. The new "Bishop's Bridge" was constructed entirely of wood. The approaches on both sides of the river were steep inclines, as the new bridge stood only 20 feet above the river. It was constructed in only seven weeks. It opened to traffic on December 13, 1904.



Apomattox River Diversion Channel, 1904
 from HAER Report. Cited source: "Kuhn 1909."

The diversion channel was completed in 1909. Once it was in place, a rock dam was constructed on the north side of Pocahontas Bridge. It diverted the Appomattox River into the new channel. During the next few years, the U.S. Army Corps of Engineers filled in some of the area between the dam and the old channel. In 1918, this area was a narrow flume. In 1921, as preparations for the new Appomattox River Bridge were underway, the U.S. Army Corps of Engineers was planning to fill in much of the old channel and the west side of Pocahontas from material resulting from the continuing dredging of the harbor and the diversion channel. An embankment, along with the filled area, would service to hold back the river from the old channel. The embankment and filled area would also provide a larger earth base for a new bridge.. It is important to note that the U. S. Army Corps of Engineers disposed of the dredged material on site. This plan advocates the same solution.

According to the October 2002 Environmental Report of the Appomattox River prepared by U.S. Army Corps of Engineers, the great flood of 1972 covered a large portion of the former harbor with sediment. Backwash from the river caused by incoming tides added more. This area is now solid land. This report refers to it as the “land bridge.”



The same area as it is today.
 Blue - part of former harbor filled in by the U.S. Army Corps of Engineers
 Yellow - “Land Bridge” - solid ground.

During the third quarter of the 20th century, the Appomattox Harbor was virtually abandoned. In 1974, the City of Petersburg commissioned Arthur Cotton Moore to come up with a plan to use the former harbor for recreational purposes. The city council vote was a tie. Mayor Arnold cast the deciding vote. He was against the project because of the expense. He later said that it was the worst mistake that he had ever made.

Over the next fifteen years, the city strived to receive federal funding harbor for dredging, the intention being to use it as a marina for recreational boats. The dredging began in 1990, but a few dead fish resulted in it being halted so that environmental issues could be studied. The environmental report was not published until 2002, twelve years later. Over the past few years, Congress has allocated \$900,000 for environmental and development studies. No money has actually been allocated for dredging.

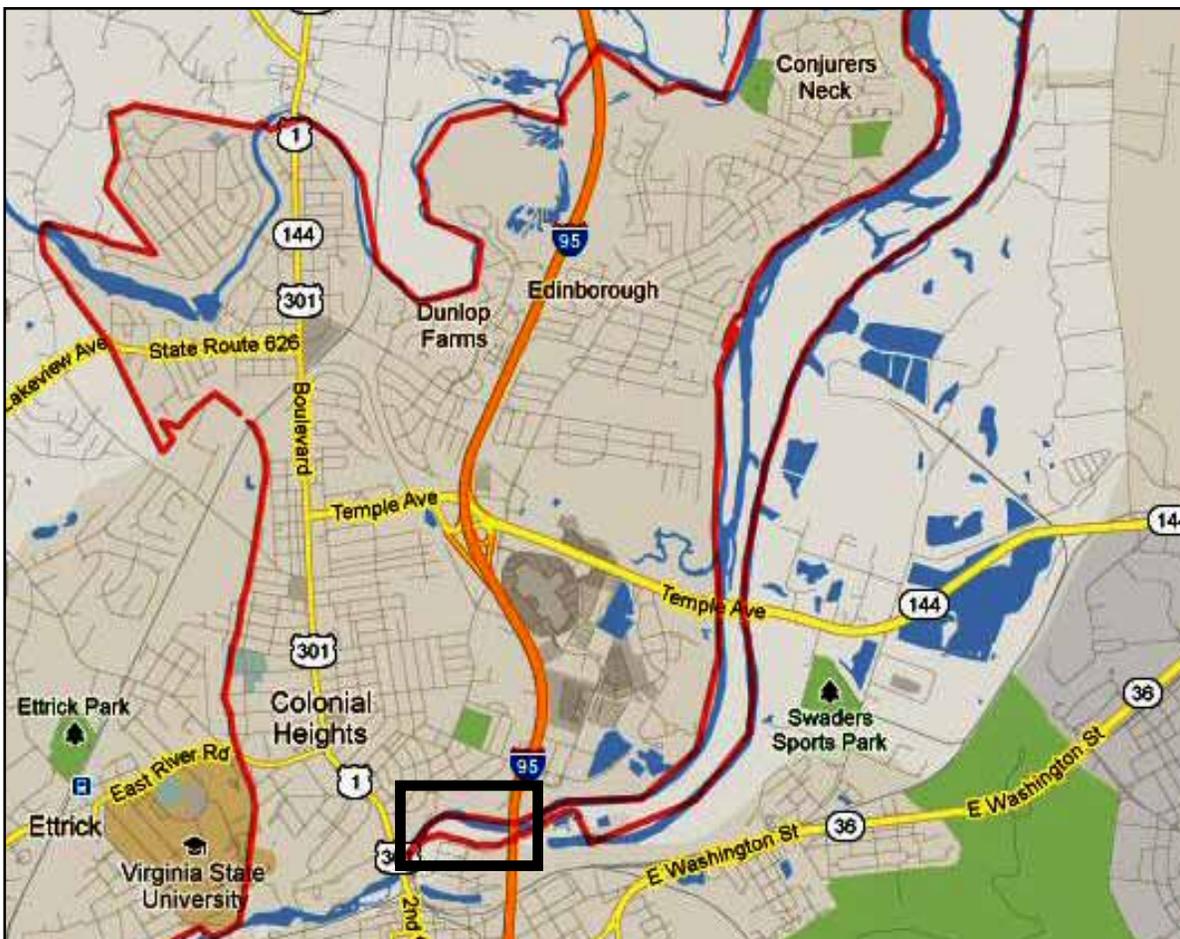
Political Jurisdiction

Colonial Heights was on the north side of the diversion channel. In 1926, it became an incorporated town in Chesterfield County. It became an independent city in 1948. Its current charter was granted in 1960.



Lines dividing the three jurisdictions

The result is that Chesterfield County includes a small sliver of “nuisance land” between Colonial Heights and Petersburg. The above map shows that half of the Petersburg sewage treatment plant is in Chesterfield County. The City of Petersburg pays property taxes to Chesterfield County on this sliver of land.



Boundaries of the three jurisdictions

The above political map shows that when Colonial Heights was formed, Chesterfield County kept the Appomattox River. This results in it having a very long thin strip of land that runs along the Appomattox River. The area shown in the top photograph is indicated by the black box.



Blue line - existing city boundary
Yellow line - proposed city boundary

The most obvious question is: why isn't the north side of Pocahontas Island part of the City of Petersburg? The city owns almost all of the land in this area and the land even includes half of the city's water treatment plant. It is of no value to Chesterfield County.

Municipal annexation is a process whereby a city government expands the city limits into adjacent areas not already incorporated into cities, towns or other municipalities, and sometimes when they are. In the United States, all local governments are considered "creatures of the state" according to Dillon's Rule, which implies, among other things, that the boundaries of any jurisdiction falling under state government can be modified by state government action. This little stretch of land is not part of an incorporated city, town or other municipality. It is simply a small stretch of "nuisance land."

The City of Petersburg should annex the land up to the south border of Colonial Heights, as having both sides of the river under the same jurisdiction would make development much easier than if Petersburg only annexed the south bank and Colonial Heights annexed north bank. It is highly likely that if Petersburg initiates such an action, then Colonial Heights will want to annex the north bank. Because of that, Petersburg should first acquire the land, as it will be difficult for Colonial Heights to justify annexing land that is owned by Petersburg.

A discussion of land ownership follows.

Ownership



Chesterfield County GIS Map
County and city lines indicated by dashes. Property boundaries are indicated by solid lines

Chesterfield County has a wonderful online map system, which shows property lines superimposed over aerial photos. Click on a parcel and it pulls up a host of information. It is hard to find. Go to the Chesterfield County website, click on “Online Services,” then click on “CitizensGIS” (Geographical Information Services).

The above map is from the website. It shows that this land is divided into four parcels. Three are owned by the City of Petersburg. From left to right, it identifies the properties as 420, 410 and 430 Magazine Road. It appears that the street numbers are wrong, as they are out of sequence. Petersburg’s tax maps show that the street numbers run from left to right, so they should be 410, 420 and 430.

Chesterfield County tax records show that the City of Petersburg owns the following:

420 Magazine Road. 0.25 acres
Parcel ID 802612905000000
Owner: City of Petersburg; City Hall Room 104; Petersburg, VA 23803
Sale Date: 6/20/1996. Sale Price: \$20,000. Deed Book 2884, Page 91
Property Class: Exempt. Land Use Value: 0. Land Value: 0

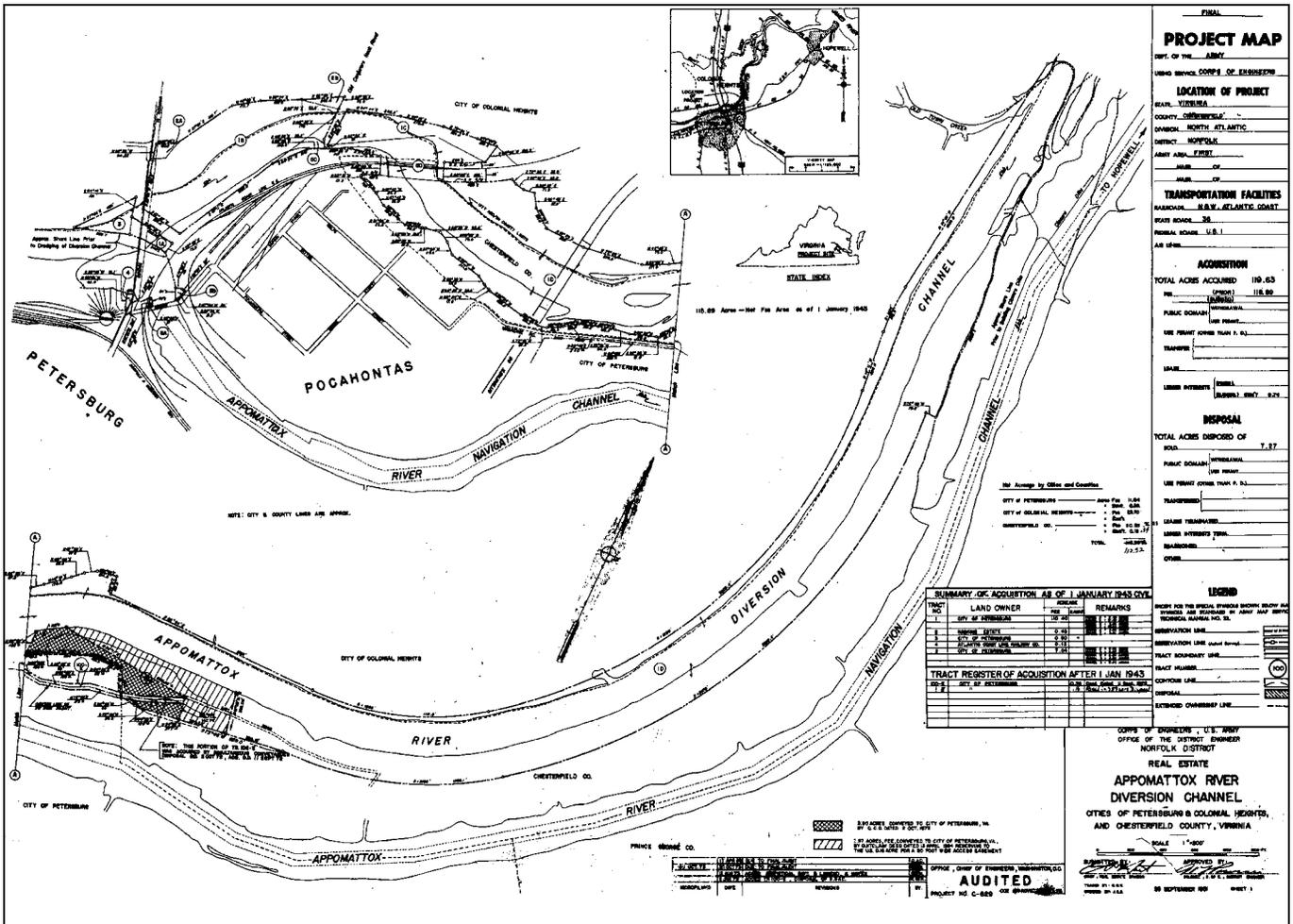
410 Magazine Road. 0.75 acres
Owner: City of Petersburg; City Hall Room 104; Petersburg, VA 23803
Parcel ID 803612143700000
Sale Date: 6/20/1996. Sale Price: \$20,000. Deed Book 2884, Page 91

430 Magazine Road. 3.555 acres
Owner: City of Petersburg; City Hall Room 104; Petersburg, VA 23803
Parcel ID 80361261310000
Sale Date: 1/13/1977. Sale Price: 0. Deed Book 1233, Page 462

The largest of the four lots is owned by the U.S. federal government. It includes land on both shores of the diversion channel and the diversion channel itself. The property is identified as “Halls Island.” According to Google Maps, Halls Island is several miles long. The Chesterfield County tax record follows:



No Mailing Address listed. 26.7 acres
 Owner: Federal Government. No address listed.
 Parcel ID 8096152568000000
 Sale Date: Not Listed. Sale price: Not Listed. Deed Book 88. Page 249
 Legal Description: Halls Island. Property class: Exempt.
 Remarks 4/15.1991
 30.000 ACRES FROM 88-249, 110-282 & 110-504.
 3.300 ACRES TO CITY OF PETERSBURG 1063-656, 1972.
 PRIVATE EASEMENT TO COMM OF VA 1604-921, 3/25/83. EASEMENT FOR RD



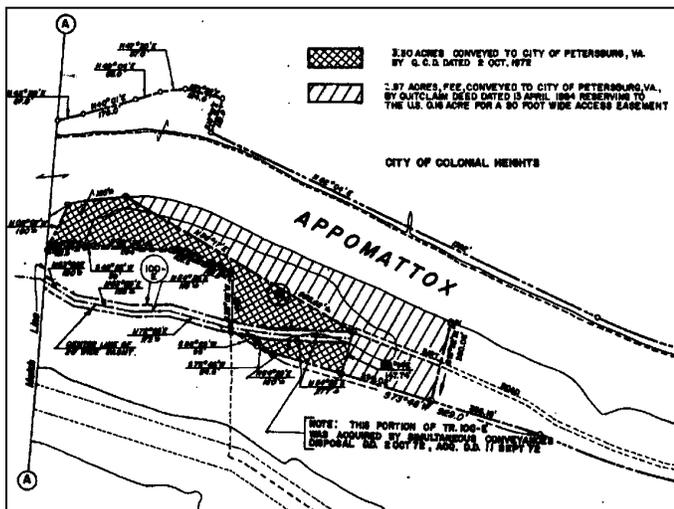
U.S. Army Corps of Engineers Appomattox River Project Map

The preceding plat is dated September 25, 1951, but information has subsequently been added to it. Note that it is actually one plat, but appears to be two. The top part shows the west end of project and the bottom one shows the east end. Match lines indicate how they fit together. This map shows both the diversion channel and the original riverbed.

The legend summarizes land acquisitions and shows that the U.S. Army Corps of Engineers owns a little less than 120 acres of land in the map area. It consists of the diversion channel and the land along its banks. There is nothing on the map to indicate that the Corps owns the original navigation channel (original riverbed) or any of the land along its banks.

The *Submerged Land Act of 1953* [43 U.S.C. 1301-1315 (revised 2002)] required the federal government to convey all submerged lands (rivers and streams) to the states. The exception is land that was purchased by the U.S. Government or otherwise conveyed to the U.S. Government by any state or party. This land is one of those exceptions. It is managed by the U.S. Army Corps of Engineers.

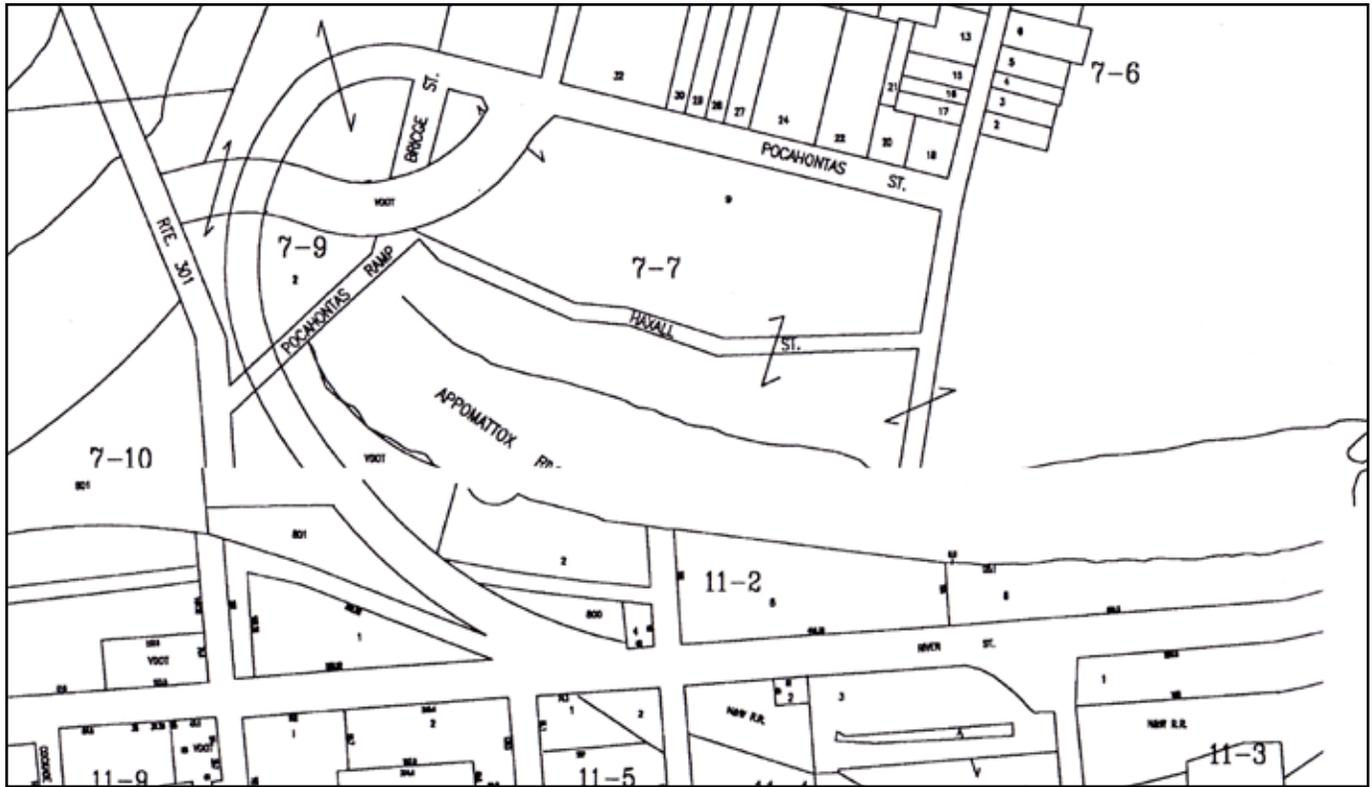
Although the U.S. Government did purchase this land as proven by the previously cited deed, it can be argued that the exemption should not apply. The basis of this argument is that the United States Government made the famous Louisiana Purchase from another party, France, in 1803. It paid approximately \$15 million for it in cash or cancellation of debt. The tract contained 828,000 acres and evolved into 15 states or parts of states. It contains thousands of miles of rivers. All of those rivers were conveyed to the states.



The previously cited Corps of Engineers map shows that the Corps conveyed to the City of Petersburg two parcels on the south shore of the diversion channel by quit claim deed. This appears to be the land used for the city's sewage treatment plant.

Land quit-claimed to the City of Petersburg

This land is of absolutely no use to the U.S. Government. The diversion channel is now the actual Appomattox River. It should be conveyed to the Commonwealth of Virginia in accordance with the purpose and spirit of the Submerged Land Act. The land on both shores should be conveyed to the City of Petersburg. The easiest way to accomplish this is for the U.S. Army Corps of Engineers to quit claim this land to the city, as it did for the sewage treatment plant. In absence of that, the city should purchase the land.



Composite of City of Petersburg tax maps 7 and 11.

The preceding information applies to the diversion channel. It is a totally different situation from the original Appomattox River Harbor. This is reflected by Petersburg's tax maps. They show it on the south side of Pocahontas Island, immediately north of River Street. No lot number is indicated. It does not appear to be the subject of any deed. It is highly significant that the 1951 map prepared by the U.S. Army Corps of Engineers does not indicate that it owns the original navigation channel or the land along its banks.

The *Virginia Title Examiner's Manual* devotes a chapter to riparian and other water rights. Section 39-3 discusses navigable and non-navigable streams. It states that the navigable water and the soil under it are the property of the state, to be controlled by the state at its own discretion for the people of the state, subject to the exclusive right of Congress to regulate navigation thereon. It states: "Each riparian proprietor has *ex jure naturae* an equal right to the reasonable use of the water running in a natural course through or by his land for every useful purpose. The owner of the land on one side of a non-navigable stream owns the bed of the stream to its middle."

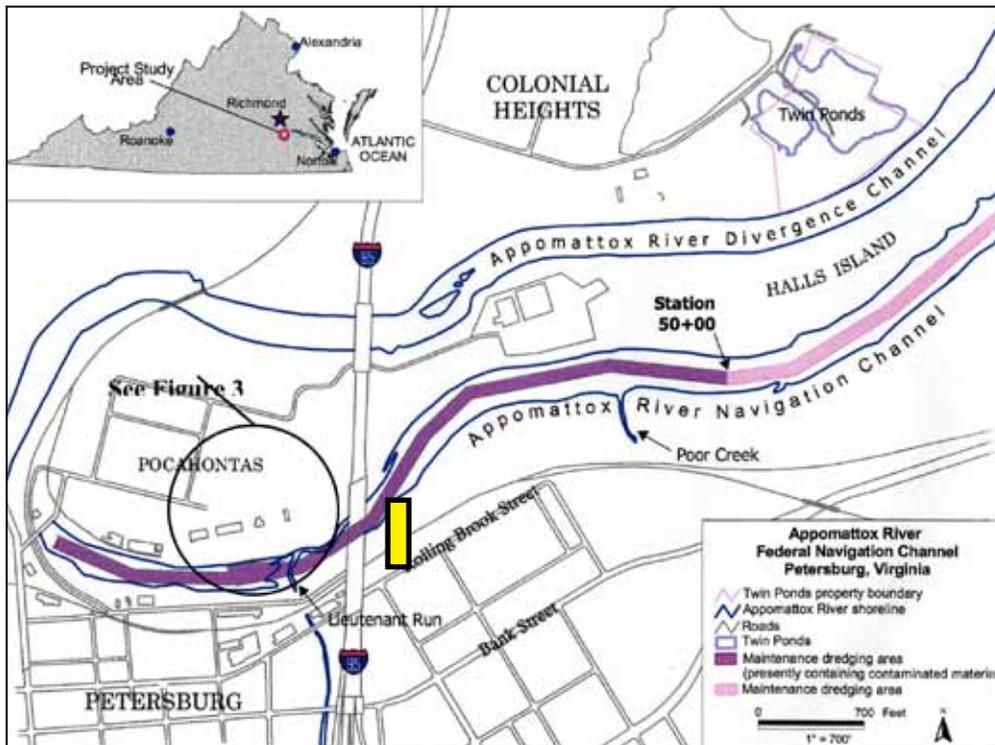
The controlling factor in ownership is "navigability." Through various court cases, federal courts have articulated the following test, which is known as the "Federal Test of Navigability" for title purposes: (1) the waterway must be capable of or susceptible to use as a highway for the transportation of people or goods; (2) the waterway must be usable for transportation conducted in customary modes of trade and travel on water; (3) waters must be navigable in their *natural and ordinary condition*.

In its current condition, the harbor does not meet any of the navigability requirements. The body of water is totally surrounded by lots clearly identified on tax maps. All are owned by the City of Petersburg. All of this establishes the City of Petersburg has a valid legal claim to this land.

This area has always been a part of the Corps of Engineer's dredging project. In fact there is an old, faded sign in front of it erected by the Corps of Engineers stating that it is to be dredged soon. It was probably erected in the late 1980s. Dredging is discussed later in this report. It reveals that dredging is not forthcoming in the foreseeable future and, contrary to popular belief, dredging will not accomplish the desired goals.

Environmental

In October 2002, the U.S. Army Corps of Engineers published *Evaluation of Dredged Material Disposal and Management for Appomattox River Federal Navigation Channel, Petersburg, Virginia. Phases I and II - Environmental and Engineering Studies*. It is a very comprehensive 150-page report. The summary did not mention any environmental problems. In fact, it stated: "The TCLP results of the Appomattox River sediment passed the RCRA criteria. The TCLP results show that each analyte concentrations were below detection standards." Thus there do not seem to be any environmental issues. This report seems to be far more concerned with the disposal of the dredged material.



Map from 2002 U.S. Army Corps of Engineers Environmental and Development Study
Position of proposed dam is shown in yellow.

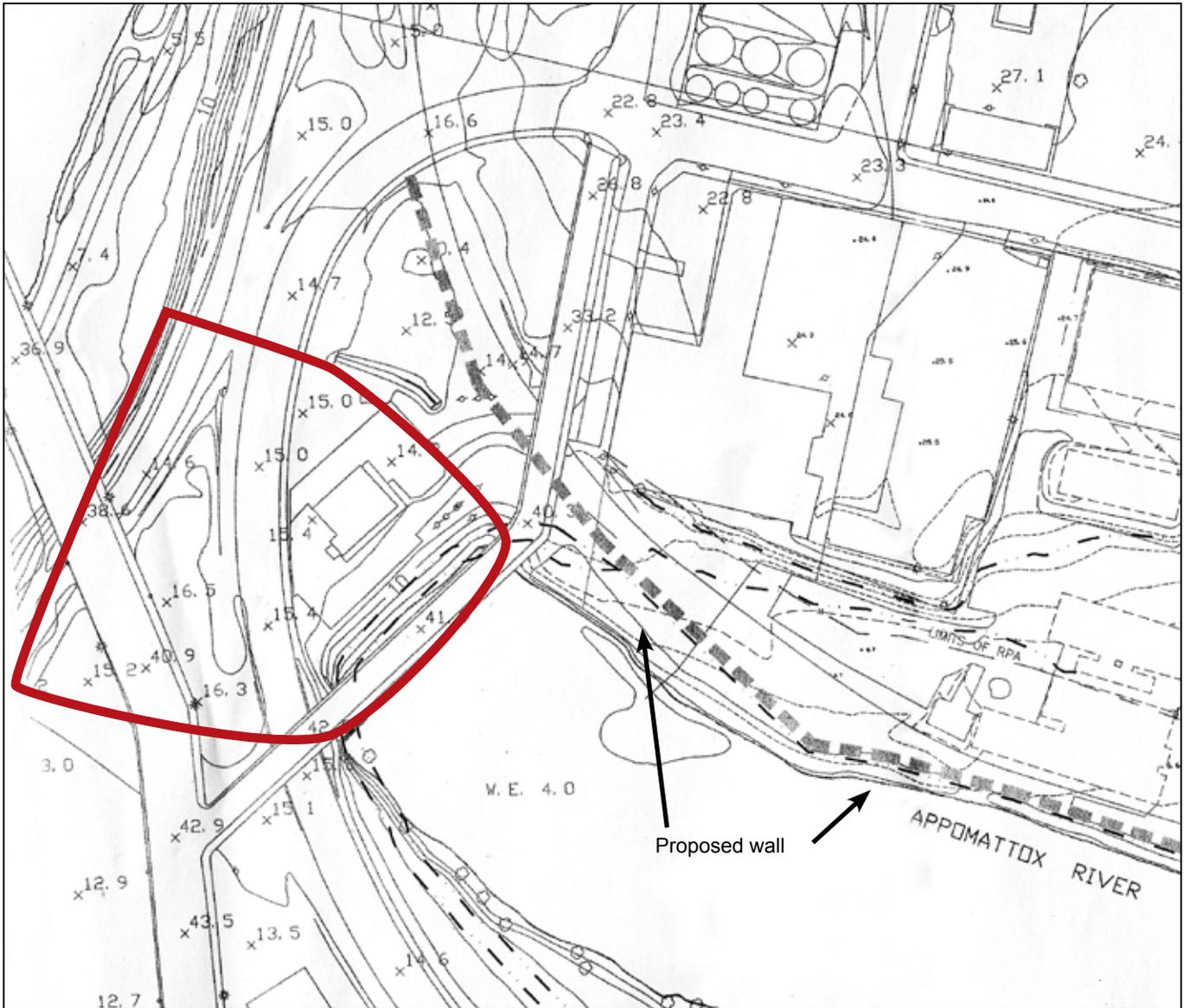
The map contained within the report seem to contradict the above. It indicates that the area indicated in dark purple above does contain contaminated materials.

As I recall, the newspaper accounts that followed the dredging shutdown in 1990 said that the contamination consisted of creosote. It is a chemical obtained by the distilling of tar. Wood pilings used for boat docks, utility poles and railroad ties are routinely saturated with it for preservation. Since the Roper Lumber Yard was on the north side of the harbor for many years, it probably made creosote products at one time. To be effective, creosote must fully penetrate thick pieces of wood. To do that, the creosote solution would have been very thin. Wood was surely soaked in it for some time, most likely under pressure.

From time to time, it would appear that Roper dumped creosote into the river as a means of disposing of it. Due to its lightness, most probably floated downstream, just as gasoline floats on water. Heavier sludge may have settled to the bottom. The harbor was then between 8 and 10 feet deep. Assuming that there is creosote on the original river bed, then it had to have been deposited prior to 1972, because the sediment left by that flood covered it with a thick layer of sediment. The creosote did not cause any environmental problems because it was totally encapsulated. (The U.S. Army Corps of Engineers uses the word "contained." The few available facts suggest that the dredging resulted in the removal of the covering sediment which apparently released a one-time small concentration of it into the water, which is what killed the fish. This area was covered back up, so it does not now present a problem. It will not be a problem as long as it remains contained.

Another environmental problem is the lack of circulation. Although not addressed by the U.S. Army Corps of Engineers, this results in lack of aeration necessary to support plant and animal life. The lack of circulation and aeration has resulted in much of the former harbor being covered with pond scum. It can also attract mosquitoes. This makes it a health hazard.

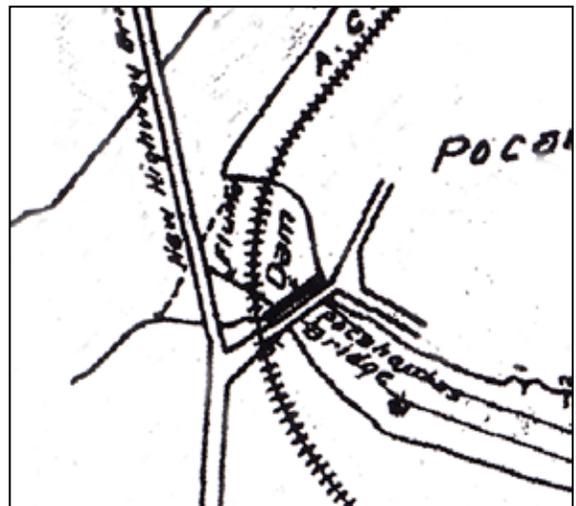
Size of the harbor



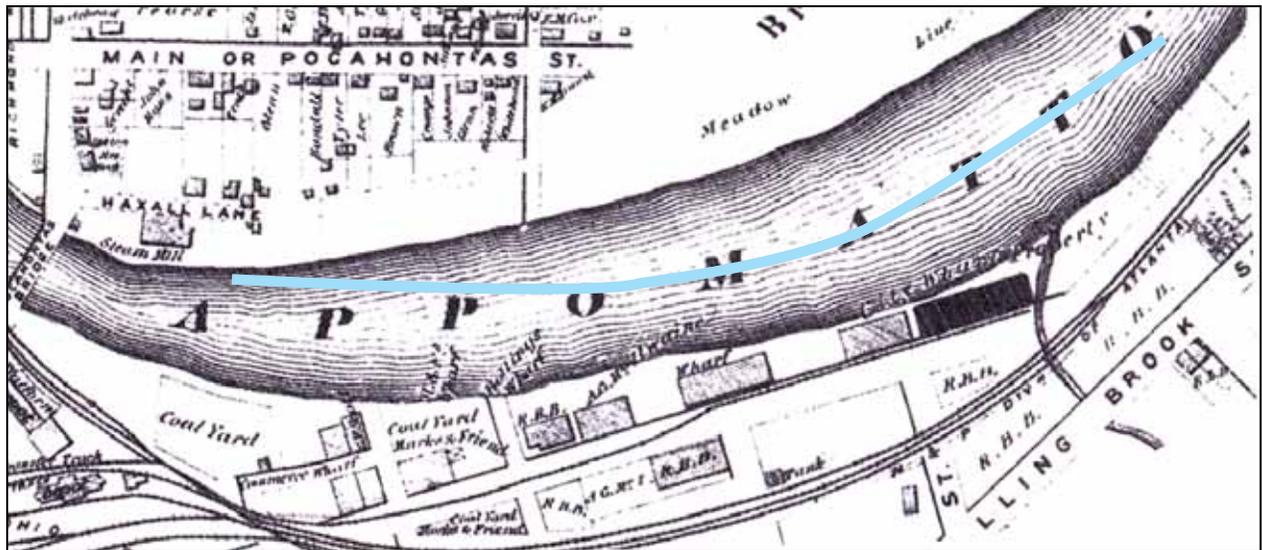
Detail from 2001 Roper Lumber plat
Approximate area of 1904-1909 land fill outlined in red.

The size of the original harbor has been substantially reduced since 1900. The circa 1904 U.S. Army Corps of Engineers diversion channel plan called for a dam to be located immediately west of the Pocahontas Bridge. The river to the east of the dam was filled in resulting in a levee.

In 2000, Roper Lumber wanted to construct a concrete wall along the north bank of the former harbor. The above plat was prepared for that purpose. The location of the proposed wall is shown by the dashed stack of horizontal lines on the north bank of the river. This plat shows that the Pocahontas off ramp from the Martin Luther King bridge and Pocahontas Street are now on this fill area.



Detail from c. 1904 U.S. Army Corps of Engineers Plan



Petersburg Harbor area in 1878
Blue line indicates approximate position of new north shore.



Same area today

In working with maps and plats from various periods, I began to suspect the former Appomattox River harbor is smaller than it was in the past. This led me to compare the area as shown on the 1877 city map with a contemporary aerial photograph of the same area. In both of the pictures shown above, Pocahontas Street is perfectly horizontal. This insures that both pictures showed the same angle. Both pictures were sized to the same scale.

The harbor is more narrow than it was in the past, almost surely the result of the Roper Lumber Company having “improved” the site over the years. The 1892 report by Lt. Burr described the north shore as a meadow, which is also indicated on the top map. It is obviously low ground, as no houses are on it. In fact, it may have been one step above being a marsh. The photograph shows that all of this land is usable. Obviously it was filled to raise the elevation. It also appears that Roper enlarged the amount of available land by filling in the north shore of the river. The blue line on the top map provides a rough indication of the present shore line.

The narrower harbor provides less room for boats to turn around.

Sediment



Former Petersburg harbor west of Interstate 95 from 2001 Roper Lumber Plat
The west end of the "Land Bridge" area is outlined in blue

The history at the beginning of this report documents that the Appomattox River has always silted up. According to the U.S. Army Corps of Engineers report, the large flood of 1972 deposited a great deal of sediment in the former harbor area. Since then, the depth of this sediment has been increased due to backwash from the river caused by incoming tides. This has resulted in much of the area being so completely covered with sediment that it is solid ground. This report refers to it as a "land bridge." This area begins around 1,000 feet west of the Interstate 95 bridge and continues down river for over a half mile. It is essentially the area marked in purple of the plat shown on page 19.

Dredging

In planning future usage, we must keep in mind that the diversion channel and the former harbor present different circumstances and this will require that each be developed independently of the other.

Diversion Channel



Diversion channel and the wilderness area on the south shore.

The Appomattox River originates in the mountains in the west. It is fed by freshwater springs, rain and dew and it is relatively clean. There is some vegetation in the water causing it to appear green. Heavy rains flush out sediment and the river carries it downstream, resulting in it being muddy. When the river falls over the rapids, air is added providing good aeration. The current then slows and the sediment is deposited, which is what has resulted in the constant need for dredging over the past three and half centuries.

The U.S. Army Corps of Engineers designed the diversion channel to have a comparatively narrow 80-foot width. This provides a good flow and prevents sediment from filling it up. Overall, the diversion channel seems to be in good condition and does not require any improvements.

Former Harbor

By contrast, the former harbor is a disaster area. The diversion channel was constructed to carry the silt around the harbor. This has been only partially successful, as evidenced by the great amount of silt that is now present. Much of it came from the 1972 flood, but river backwash has added much more sediment.

A pipe reportedly brings in water from the diversion channel, but it seems to have very little flow. A ditch has been cut through the land bridge to provide an outlet. There is no circulation and thus no aeration. The water level is controlled by the river flow and by tides. The water level is usually very low, about two feet below the river banks. The exposed banks are covered with mud and are very ugly.

In researching this subject, I met with several city officials who assumed that dredging would solve all the problems, but that is not the case. Dredging accomplishes one goal: it make the river deeper. It does not correct the other problems. But all of this is academic, as it is highly doubtful that the Appomattox River will be dredged in the foreseeable future.

The 1990 dredging was shut down because of probable environmental issues. As previously noted, the U.S. Army Corps of Engineers published *Evaluation of Dredged Material Disposal and Management for Appomattox River Federal Navigation Channel, Petersburg, Virginia. Phases I and II - Environmental and Engineering Studies*. It was published in October 2002, almost twelve years later.

I contacted the U.S. Army Corps of Engineers and have had a number of conversations with the Appomattox River dredging project engineer. He told me that over the past few years, Uncle Sam has allocated \$900,000 for environmental and development studies. No funds have actually been allocated for dredging. Work just began on the new environmental studies and he said that such studies generally take from three from five years. It identifies the problem that may need to be addressed. Once it is complete, then a development study will set forth the details of the project that include everything from determining the amount of sediment that will have to be removed and where it will be relocated. This may another three to five years. Thus the studies can take anywhere from 6 to 12 years. Only then can a budget be prepared for submission to Congress for the needed appropriations.

Then comes the question of funding. The U.S. Army Corps of Engineers website lists 60 dredging projects for Virginia alone. The project manager told me that many of them are essential to the transportation of goods and thus have priority. Dredging of the Appomattox River has a very low priority. Our nation is now being subjected to enormous deficits and Congress is trying to cut costs. In view of these factors, it is highly doubtful that dredging will take place in the foreseeable future.

Petersburg Marina?

There has never been a comprehensive plan for the use of the Appomattox River once it is dredged, if it ever is. Common wisdom is that a marina will attract the boating community. That is a false premise. Petersburg is much too far off the beaten path to attract boats. That is well proven by the Hopewell Yacht Club, which attracts no more than a dozen transient boats a year. Most of the Appomattox River is 175 to 200 feet wide. Some sections are only 100 feet wide. Bringing up a small 40-foot yacht would be like threading a needle.

The most such a marina could hope to accomplish is to house a couple of dozen small boats, but that isn't even viable. The Appomattox Small Boat Harbor is a mile and a half downstream, about two blocks north of the new Temple Avenue extension. The boats are owned by fishermen who use them on the James River. Why should they move upstream, further away from their destination?



Appomattox Small Boat Harbor

Operation Bootstrap

The City of Petersburg owns around 149 acres of land that includes most of Pocahontas Island, land on the east side of the Interstate 95 bridge, that along River Street and the Southside and Union train stations. This is one of the most history-rich locations in the United States. The first step in the Operation Bootstrap Economic Development Plan is to develop this land into a complex of historic theme parks. They will surely attract large crowds of people into the city. Other reports recommend ways that the traffic can be used to build a viable retail community and spur the creations of news locally owned industries to supply the parks many needs.

These subjects and other topics are described in *Introduction of Operation Bootstrap*. It may be downloaded from www.Petersburg-Parks.com The development plan calls for utilizing both the diversion channel and the former harbor. This report was actually researched and written as part of that plan. The below simply presents a very brief summary of that development. See the plan for details.

Diversion Channel

The banks of the diversion channel are now a “wilderness area.” It is very rare for any city to have such a wonderful asset in the downtown area and it needs to be properly developed and managed. The highest and best use would be a wildlife refuge that could double as a recreation area. Unfortunately the trees do not provide the food needed to support this use. Many of the trees should be removed and replaced with ones that provide acorns, nuts, berries and seeds for wildlife.

There are a great many historic resources along the river. They include the ruins of the many mills of yesterday and a stone fish trap constructed by the Native Americans prior to the arrival of the English. The Appomattox River Trail is now being constructed to provide walkways along the river. Rapids provide a great course for those who like to run white-water rapids. At the very least, there should be a kayak and canoe rental facility. There should also be a picnic and camping area.

Former Harbor

For over four decades it has been widely believed that the dredging of the Appomattox River will spur economic development, but that is academic as dredging will not place any time in the foreseeable future. History has shown that continual dredging will be necessary to keep the harbor usable. What has not been realized is that dredging will result in deeper water, but will not solve the big problems, such as water quality and appearance. The *Operation Bootstrap Development Plan* calls for transforming the former harbor into a scenic lake and creating a multi-function recreational area now referred to as *Lafayette Park*, a multi-function recreational resources. The details are presented in *Introduction to Operation Bootstrap*.

Harbor Transformation



Proposed transformation of former harbor to a scenic lake.

The goal of harbor improvement has always been to create a more scenic environment that will be conducive to viable development. The dredging of the harbor results in deeper water, but does not fix the cosmetic problems - the quality of the water and the level of the water.

These goals can only be achieved by transforming the former harbor into a scenic lake, which is herein referred to as "Lake Petersburg." This is easily accomplished. A temporary coffer dam is installed at the east end and the water input pipe from the diversion channel is closed. This isolates the former harbor from the Appomattox River, which permits the important variables to be controlled.

Permanent Dam

A coffer dam is temporary. Once the former harbor is drained, a permanent dam should be constructed. It should be designed by a professional dam engineers and made of dirt. Such dams are widely used throughout the world and are often used to hold back great depths (and weight) of water. By comparison, our little dam is holding back very little water.

The top of the dam should be level with the Roper Lumber lot. It should be at least 100 feet wide so that it can accommodate walkways and a new road. This great width provides tremendous strength. As the lake is the low point in the area, strong rains will result in a great deal of water flowing into it. Thus there must be large outlets for overflow. These should be made of a material that will not erode.

Grading

The biggest cost of dredging is disposing of the excess sediment, often called the spoil or spoils. The plan developed by the U.S. Army Corps of Engineers calls for it to be excavated and placed on barges. It would then be moved to a containment site, where it would have to be unloaded and moved to its final destination. This plan avoids that tremendous expense by using all of it on the site.

When completed, the bulk of the lake should be shallow, between three and four feet in depth. This is for safety. The lake should later be used for canoes and other small boats. If a boat tips over, then the water will be shallow enough for the person to stand up and walk to shore. This drastically reduces the risk of drowning.

One of the goals is to raise the water level to the top of the existing banks, thus eliminating an unsightly area. In the early 20th century, the harbor had a depth of 10 feet. No contour maps are available, but is certainly now far more shallow, perhaps three to five feet. The spoils will be used to raise the bottom to permit the new depth.

The former harbor is now a long, thin ditch. It is about 2,500 feet long and 175 feet wide. It can be made visually interesting by using the spoils to add a couple of points. The new lake will be more than a mile in circumference, so bridges can be constructed at the points. On the above photo, a blue line indicates the approximate outline of the lake. The actual outline will be more accurately defined during construction.

The land on the south side of the lake, near the Interstate 95 bridge, is very low. Spoil should be used to raise it to the same level as the land on the north shore. The final depth of the lake will be determined by the amount of silt available. In the event there is more than needed, the excess can be used to create some low, rolling hills on the banks, as both are now very flat. In the event, there is not enough silt, then a second temporary coffer dam can be built downstream, permitting access to the spoil in the land bridge.

Environmental Issues

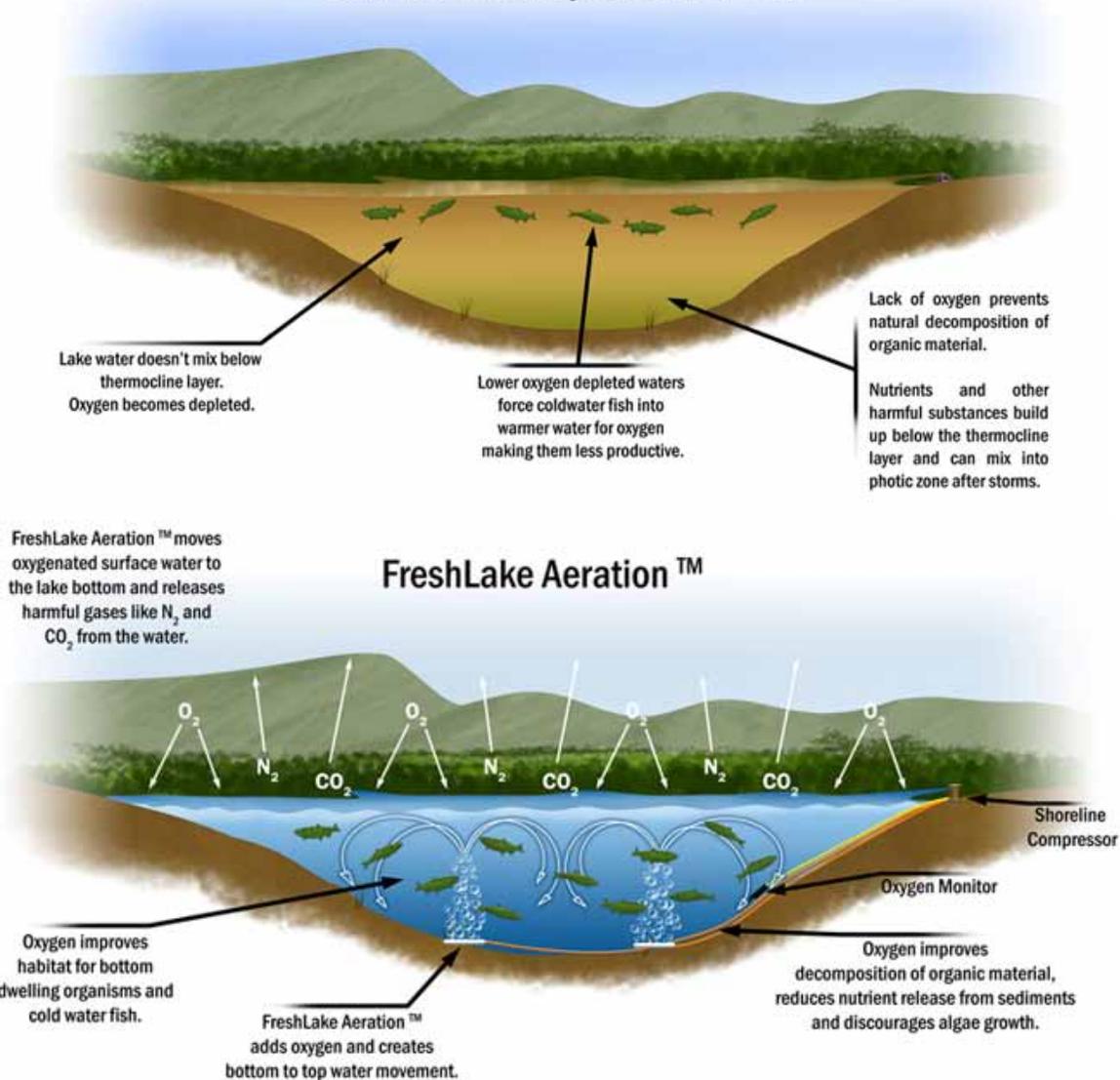
As previously discussed, there may be a layer of creosote trapped below the existing sediment. This is a classic case of "it's best to let sleeping dogs lie," because as long it remains contained, it is not a problem. It became a problem during the 1990 dredging because once the covering sediment was removed, the creosote was released into the water, where it killed a few fish. We completely avoid this problem because we are adding sediments to the river bottom, not removing it. This further encapsulates it.

This should make it impossible to uncover the layer of creosote level, if it exists. If by some quirk some creosote is revealed, then it will not be a problem. Since the lake bed is dry, none can be released into the river. It can be covered up, or moved and contained on site.

Aeration

There should be a 20-foot-wide, by six-to-eight-foot deep channel down the length of the lake to accommodate an aeration system. A pump forces air through a pipe that will run the length of the channel. Aeration heads every ten to twenty feet will continually release an abundance of small air bubbles into the water. They rise to the surface. This creates circulation that moves algae, fish and bird excrement, and rotten vegetation to the surface, where natural processes dispose of it. This results in very clean water. Visitors will actually be able to see into it. Aeration also provides an extremely healthy environment for fish, water birds and aquatic plants, just as it does in a home aquarium. The result is a far better aquatic environment than that provided by nature. Such systems are widely used in lakes, ponds and historic canals throughout the United States.

Stratified or Poorly Circulated Lake



Bridges



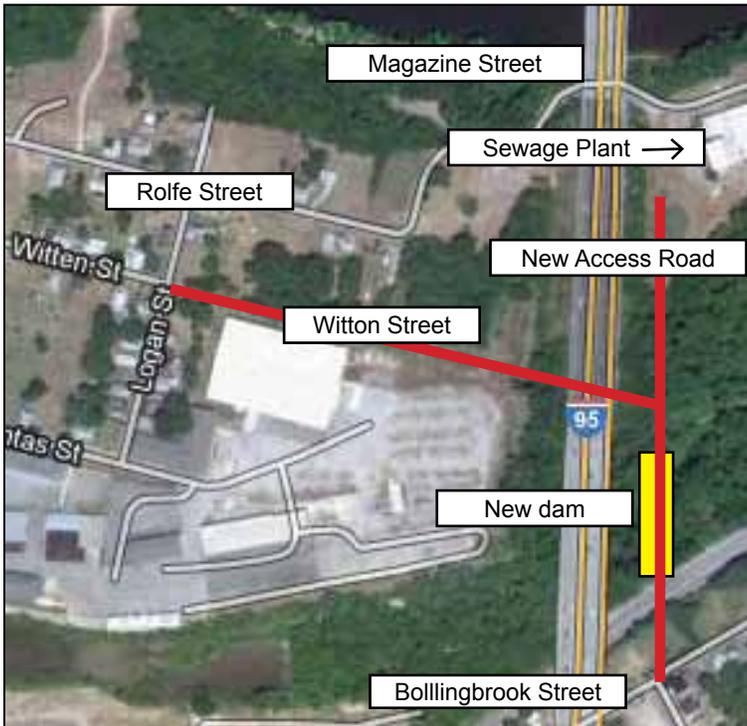
Early Pocahontas Bridge



Pocahontas Bridge, circa 1900

The distance around the lake will be around one mile. Bridges between the north and south side will make going from one side to the other much easier. The bridges should be constructed at the points and it would be nice if they were reconstructions of the earlier historic bridges, which were about the same length.

New Road



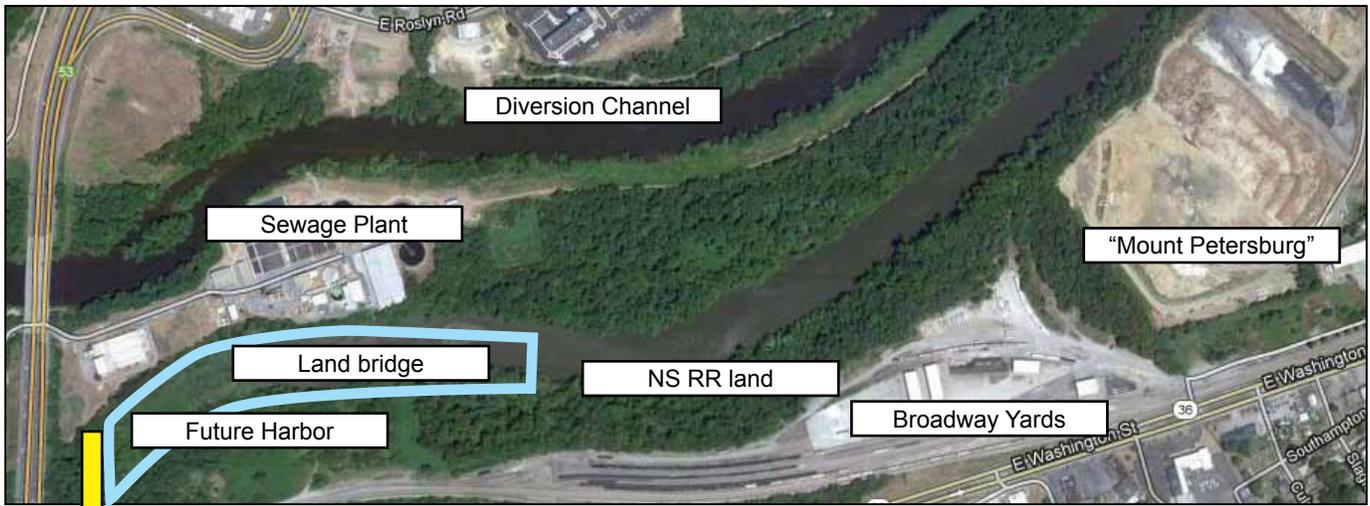
A new access road will run from the intersection of Bollingbrook Street and Crater Road to the sewage treatment plant. Trucks will now be able to access it directly without having to drive through the village. Magazine Street will no longer be needed and should be eliminated. This frees up land that can be used to expand the parks complex.

Witton Street will be extended to connect to this new access road. It will provide Pocahontas residents with quicker access to Crater Road then the ramp. It also provides an excellent way to reach downtown if the ramp from the Martin Luther King bridge is clogged up with park visitors on summer weekends.

These roads will also be needed for access to the park's service building and warehouse. This permits delivery trucks to come and go without disrupting park operations.

These will not be public streets. Access will be limited to Pocahontas residents, sewage treatment plant employees and American Adventures employees. A parking lot for the latter will be located at the south end of this new street, near Bollingbrook. This leaves the north end of this 28 acres lot - next to the river - free for harbor development if the river is ever dredged.

Future Harbor



Diversion channel and old harbor east of Interstate 95 bridge

The U.S. Army Corps of Engineers Appomattox River Development Plan calls for the river to be dredged to a depth of ten feet. That is excessive, as the width of the river limits the size of boats to less than 40 feet. Such boats typically draw about two and half feet of water. The portion of the land bridge on the east side of the dam can be dredged to a depth of four to five feet. If there is creosote in this area, this shallower depth will keep it contained. The spoil can be used to fill in the low-lying land on both banks or can be used to make the dam wider.

These revisions to the dredging specifications will substantially lower the cost of the dredging, so much so that it may be possible for the Petersburg Parks to undertake the project. The south shore can then be used for the long-awaited Petersburg Harbor. An old-time shallow-draft steamboat could take tourists to City Point. The new road will provide direct and easy access to the new harbor.

Land Acquisition

The City of Petersburg owns 28 acres immediately east of the Interstate 95 bridge. It is the land that can be used for the new harbor, shown above. To the east of it, Norfolk Southern Railroad owns 35 acres of forested land between its Broadway rail yards and the river. It is of no use to the railroad and should be purchased. The new land-fill area is immediately to the east of it and is now being used to create "Mount Petersburg." It is my understanding that this land will later revert back to the city. If not, once the mountain is completed, the city should purchase the land for future use. In short, the City of Petersburg should acquire the land adjacent to the future harbor at an early date because the historic theme parks will tremendously increase the value of this land. .

Future Flooding

This report has shown that Appomattox River has continually silted up and has been dredged so many times that it was compared to shaving a man's beard. Floods make the situation even worse. Much of the Old Towne is in the 100 year flood plain. That's because it floods. Years ago I discussed this with Guthrie Smith, who was then the Petersburg City Engineer. He told me of several major floods prior the great one of 1972 and that flooding is characterized by slowly rising water with little current..

An Internet search did not result in discovering the history of flooding in Petersburg, but the National Oceanic and Atmospheric Administration website (www.noaa.gov) provides one for the Appomattox River at Farmville, which is around 70 miles upriver. It listed 17 instances in which the river crested by more than 16 feet since 1928. All of these floods were caused by extensive rains from hurricanes. Hurricane Agnes of June 22, 1972 was the worst. It crested at 29.70 feet. It was the one that destroyed our harbor.

It is quite possible that much of the excess water overflowed elsewhere before reaching us as Guthrie cited only three prior floods prior to 1972 that caused extensive damage. The point is that the Appomattox River has always flooded and will flood again. It's only a matter of when.

How will that impact downtown development? Assume for a moment that the harbor is now dredged and millions of dollars have been spent on a development surrounding it. It will only be a matter of time before the day-to-day sediment depots fill up the harbor again. A major flood will do that overnight. In both cases, the development has been left without a river. How many years will it take for us to get the river dredged again? Meanwhile, the riverfront development loses much, if not all of its value. We've wasted a great deal of money and have nothing to show for it.

On the other hand, converting the former harbor into Lake Petersburg results in a totally different situation. First, there is no ongoing sediment deposit. The only risk is flood. A major one will "drown" the lake. When flood waters recede, the lake will most likely be filled with silt. Since the floods are slowly rising water with no significant current, our dam should be intact, We simply drain the lake and excavate again. Since our lake was only three feet deep, this will certainly not be a major project. We can have it back in operation within a few months at very little cost.

Losing the dredged harbor would be a catastrophe and recovery will almost surely require a great many years. By comparison the temporary loss of the lake is simply a short term inconvenience.

Recommendations

This report identifies and explores the issues. It also sets forth a viable development plan. The following actions are recommended:

1. The City of Petersburg should first acquire both banks of the diversion channel from the U.S. government. It should also purchase the 35 acres of forested land owned by Norfolk Southern. The Corps of Engineers should convey the diversion channel (which is now the actual Appomattox River) to the Commonwealth of Virginia in accordance with the spirit and intent of the Submerged Lands Act.
2. Once the City of Petersburg owns this land, then it should expand its northern city limit to that of Colonial Heights, thus eliminating the nuisance land giving it total control over both banks of the river. This can possibly be done by annexation, but such action has hostile overtones. Petersburg should first attempt to enter into an agreement with Chesterfield County that would provide for this adjustment.
3. The city should acquire formal ownership of the former harbor and transform it into a scenic lake.
4. If and when the Appomattox River is ever dredged, a new harbor can be built east of the lake.

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