MID-ATLANTIC HISTORIC BUILDINGS AND LANDSCAPES SURVEY

Significance Evaluation of the White Clay Creek Dam One

White Clay Creek and Mill Creek Hundred

New Castle County, Delaware

University of Delaware | Center for Historic Architecture + Design

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White Clay Creek Dam One (DE CRS # N06670)

White Clay Creek and Mill Creek Hundred

New Castle County, Delaware

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Project Description

In March 2011, the Center for Historic Architecture and Design contracted with the Delaware Water Resources Agency and the White Clay Creek Wild and Scenic River Program to evaluate the significance of the White Clay Creek Dam #1 and its surviving raceway, also known as the Byrnes Mill Dam (CRS# N06670). The Water Resources Agency, a unit of the Institute for Public Policy at the University of Delaware, is undertaking a project to restore the shad population to the White Clay Creek by altering or removing the dams along the creek. Because the Water Resources Agency received federal funding from the National Fish and Wildlife Foundation for the project and required permits from the U.S. Army Corps of Engineers and DNREC Division of Water Resources Subaqueous Land, Section 106 of the National Historic Preservation Act of 1966 requires an evaluation of the impact on any historic resources. Since the proposed project initially intended to completely remove the Byrnes Mill Dam, the first dam encountered moving up the river, the DE SHPO requested a full evaluation of the resource and its significance.[1]

White Clay Creek Dam #1, also known as the Byrnes Mill Dam, is located on the White Clay Creek, approximately 1.2 miles upstream from the mouth of the Creek. It lies within the grounds of the White Clay Creek Country Club's golf course, northwest of the intersection of Ogletown-Stanton Road (Route 4) and Churchmans Road (Route 58) in the vicinity of Stanton, New Castle County, Delaware (Figure 1). The milldam spans the White Clay Creek, and is located in both Mill Creek and White Clay Creek hundreds. Historically the parcel associated with the property was entirely in White Clay Creek Hundred until the mid-nineteenth century. Subsequent land divisions in the twentieth century significantly changed the nature of the parcel that contains the dam. The majority of the current parcel is located in Mill Creek Hundred.

[1] Narvaez, Martha Corrozi, et al. "Restoration of Shad and Anadromous Fish to the White Clay Creek National Wild and Scenic River: A Feasibility Report," from the Water Resources Agency, a unit of the Institute for Public Administration, College of Education & Public Policy, University of Delaware, June 2010, p. 1.

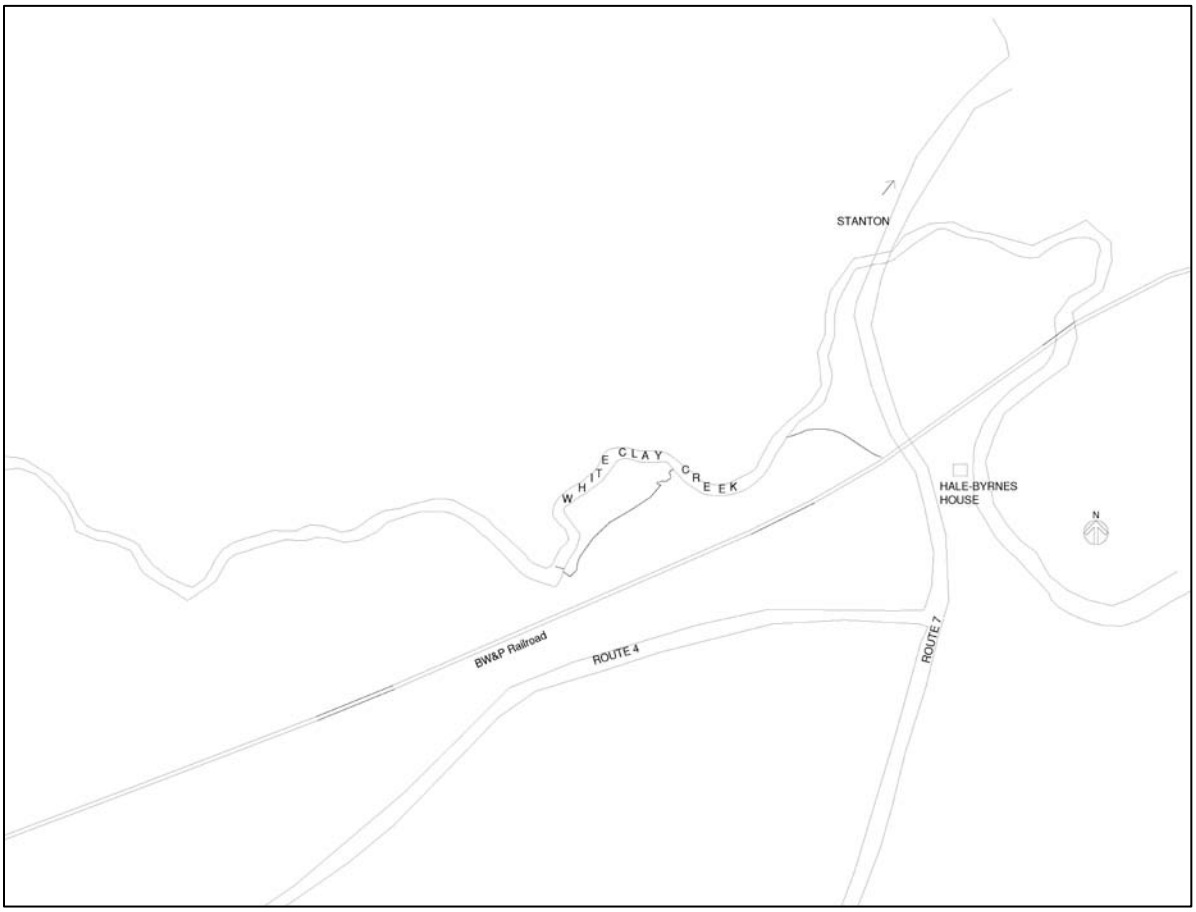

Figure 1: Site Plan showing mill race

Initially constructed by Daniel Byrnes between 1773 and 1777, the Byrnes Mill Dam is significant for its role in the development of milling and related technologies in Delaware's Piedmont region during the late eighteenth and early nineteenth centuries, as well as for its association with several notable families.

Figure 2: Environmental view of the dam from the north bank of the White Clay Creek

Figure 3: View of the raceway, looking east

Byrnes Mill Dam and Timber Mill Dam Construction

Daniel Byrnes constructed the millrace and dam circa 1776-1777. The milldam is a variation on the plank crib dam, which was known for its strength and economy of construction.[2] Typical of plank crib dams, the Byrnes milldam has four main building elements: abutments (or cribs), aprons, foundation, and a dam wall. Currently the north side of the dam is breached, and all of the building elements on that side of the creek washed away. The most intact remains of the dam are on the south side of the creek, where the plank crib dam construction is evident. The discussion of what is left on the landscape in terms of milldam elements is almost entirely confined to the south side of the creek.

In the nineteenth century, pattern books were published to standardize the operation and construction of mills, just as they were for architecture and landscape design.[3] Pattern books provided guidelines for non-professional readers, through detailed descriptions, and diagrams.[4] Books such as Oliver Evans' *The Young Mill-wright and Miller's Guide* (1848) as well as James Leffel & Co.'s *The Construction of Mill Dams* (1874) facilitate the interpretation of the Byrnes milldam's original construction, and also reinforce the importance of scientific standardization of the milling process.[5] These guidebooks describe all nuances of the milling industry, and construction of mills, including economy, construction materials, hierarchy of dam construction, types of foundations, and types of dams. The guidebooks aid our understanding of the construction of eighteenth-century plank crib dams. From them we can discuss the Byrnes milldam in terms of four main building elements: abutments (or cribs), aprons, foundation, and a dam wall.

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[2] J. Leffel & Co., p. 71.

[3] Jackson, p. 61-67. Pattern books were a prolific part of the 19th century. Most famously Andrew Jackson Downing, Catherine Beecher and Calvert Vaux wrote on link between morality and architecture. These pattern books were able to reach a wider audience through print, standardize building forms, and language for a new unskilled audience.

[4] Jackson, Kenneth T. *Crabgrass Frontier: The Suburbanization of the United States*, Oxford University Press, 1985, p. 127.

[5] Similar guidebooks can be found for the construction of mills themselves. Frank Eugene Kidder's *Building Construction and Superintendence Vol. 2,* talks in detail about how best to construct a mill, including several detailed plans, estimated costs, and dimensions for materials.

The plank crib dam was certainly not the cheapest method of construction. The fact that Byrnes chose this method indicated that he had both knowledge of best practice for milldam construction and the financial resources to support that knowledge. Byrnes had been milling in Brandywine Village for some years prior to purchasing the land along the White Clay Creek and had plenty of experience with success and failure of milldams.

As the later pattern books would have told him, the easiest and the most "hastily and cheaply built" dam was a temporary structure composed of boulder stones thrown across the stream in a diagonal or slanting direction.[6] These dams were immediately effective but had no longevity. They were often constructed as a quick, temporary solution. Another inexpensive dam diverted stream flows into a small weir made of packed earth.[7] This form was susceptible to the same problems as the thrown stone dam. Constructing cheap dams came with a caveat: "The cost of rebuilding or repairing a dam will usually be several times greater than the additional outlay."[8] The prudent Quaker in Daniel Byrnes chose to invest in a more substantial dam, but still one built of timber rather than stone.

The cheapest of timber dams were crib dams. Crib dams were particularly cheap to construct "in a country where timber is abundant."[9] With this type of dam, logs were left in the round and v-notched together.[10] "If properly built, [they provide an] ample degree of strength and durability at comparatively small cost aside from the labor involved…"[11] For this building method there was no treatment of the timbers (logs were left in the round versus being hewn square), the v-notches provided a joint to the structure, and the crib dams lacked strong iron pins, making this dam more economical than the plank crib dam.

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[6] J. Leffel & Co., p. 9.
[7] Stevens, Henry, *The Book of the Farm: Detailing the Farm and Farm-Steward, Sheperd Henger, Farm-Labourer, Field-Worker, and Cattle-Man,* Fourth ed., William Blackwood and Sons, Edinburgh, and London:1889, p.457.
[8] Henry, p. 26.
[9] Henry, p. 21.
[10] Henry, pp. 45-50.
[11] Henry, p. 21.

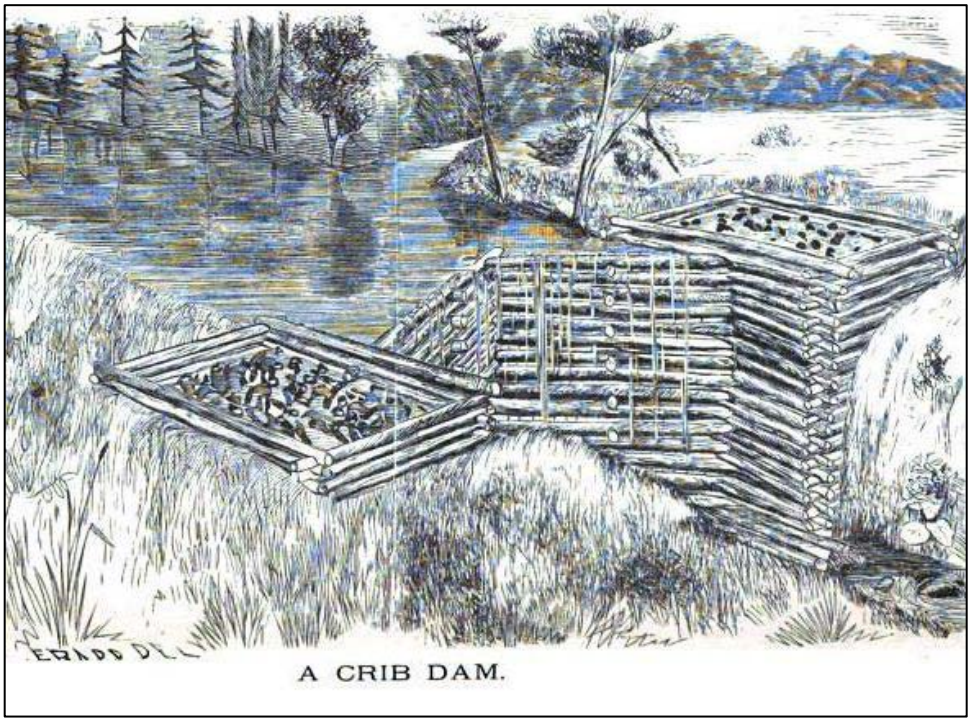

Figure 4: Crib Dam Construction (Source J. Leffel & Co., via Google Books)

The most important factors in the selection of a construction method for a mill dam were the water course, and its bed, specifically whether it was sandy, muddy, or rocky.[12] The first building phase in milldam construction was to lay a foundation. On this topic Oliver Evans stated,

> If the bottom be sand of clay, make a foundation of the trunks of long trees, laid close together on the bottom of the creek, with their butt ends down stream, as low and as close as possible, across the whole tumbling space. On these the dam may be built, either of stone or wood, leaving 12 or 15 feet below the breast or fall for the water to fall upon.[13]

Evans also described the design of foundations in great detail:

[12] J. Leffel & Co., *The Construction of MillDams: Comprising Also the Building of Race and Reservoir Embankments, and Head-Gates, the Measurement of Streams, Gauging of Water Supply, &c.,* James Leffel & Co., Springfield, Ohio: 1874, p. 26.
[13] Evans, Oliver, *The Young Mill-Wright and Miller's Guide*, Lea and Blanchard, Philadelphia, 1848, p.199.

> [Timbers] should be imbedded in ditches crossing the stream transversely, and of sufficient depth to bring the upper surface of the logs nearly on a level with the bed of the stream. One of these logs is laid at the foot of the apron, another at the point where the dam is to be raised, and the third, fourth and fifth farther up stream…the distance between them being six or eight feet…The second series of logs, are laid across the first course, lengthwise of the stream, and about six feet apart, the butt ends resting upon the lower log of the first course…[14]

Because this part of the dam is entirely submerged, as well as supporting the remaining dam structure, we can only assume that Byrnes's dam followed a similar pattern.

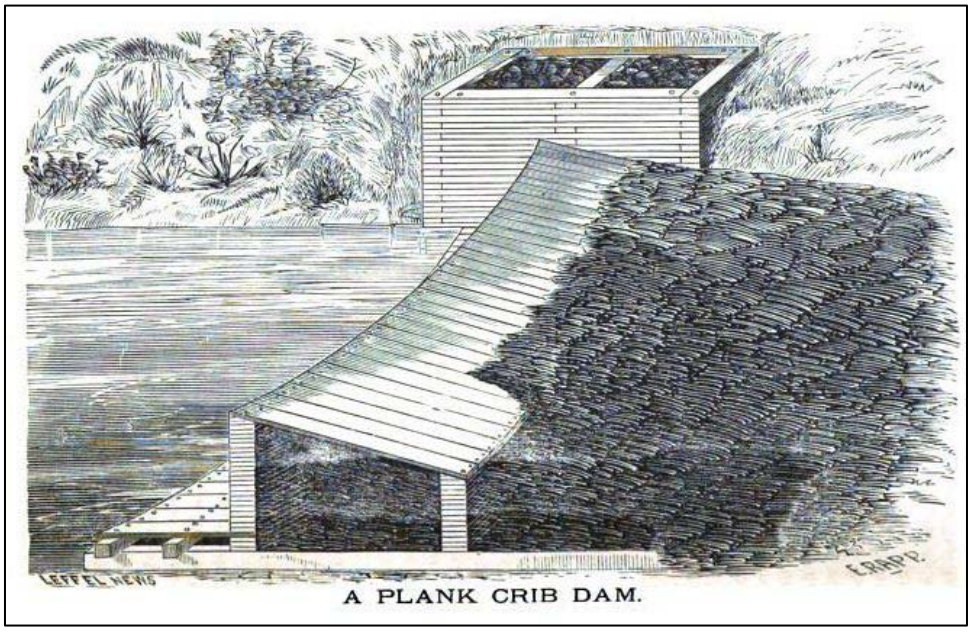

Figure 5: Plank Crib Dam Construction (Source J. Leffel & Co., via Google Books)

The milldam wall is one of the most visible parts of the dam. Milldam walls span across the face of the water body and sits on top of the dam foundation. Evans described the construction of plank crib dam walls:

[14] J.Leffel & co., p. 27.

> if the dam be built of timber and small stones, &c., make the breast perpendicular, with straight logs, laid close one upon another, putting the largest, longest and best logs on the top…tie these walls together, at every 6 feet, with cross logs, with the butts down stream, dove-tailed and bolted strongly to the logs of the lower wall, especially the upper log, which should be strongly bolted down to them. The spaces between these log walls, are to be filled up with stones, gravel, &c.[15]

Based on the description provided in the guidebooks, we are better able to understand the construction of the Byrnes Milldam. The milldam wall spans from the field stone abutment on the south side of the White Clay Creek to the remains of the abutment, now breached, on the north side, and is 76.5 feet in length. The logs are squared hewn timbers, which measure on average 9.75 inches wide. The milldam wall is constructed with timbers laid across the creek, notched neatly together with logs running parallel to the course of the creek, and strongly bolted together with large wrought iron spikes measuring 2 feet 3 inches in length, and 1 inch square in area at the head. The milldam wall is four timbers high, and rests directly on top of the milldam apron. Roughly two-thirds of the top 3 timbers of the milldam wall are breached at the north end, leaving only portions of the bottom timber and the apron intact. The portion of the wall closest to the south abutment is largely intact.

Figure 6: Environmental view of dam showing breach on north side

[15] Evans, p. 199.

Figure 6 shows how the hewn timbers in the Byrnes milldam wall are notched together, and fastened with large wrought-iron spikes. It also shows some modern accidental chinking, made of beer cans and other debris from the stream. While these items obviously were not part of the original milldam wall, they currently help seal the cracks between the laid timbers.

Figure 7: Detail of milldam wall, showing accidental chinking

The next major part of the milldam, the apron, functioned as a support to the dam foundation, to negate the effects of the higher waterfall cresting the dam wall.[16] It also provided a means of a flat sure-footed access to the middle of the dam, if repair work was necessary. In *The Construction of Mill Dams*, J. Leffel & Co. described the construction of aprons: "the planks are laid up so as to form a solid barrier across the stream, breaking joints, and each plank strongly pinned to those below it, and neatly fitted and jointed where they meet, also where they come in contact with the crib."[17]

The Byrnes Milldam apron, which originally would have spanned the entire creek, survives only on the south side, and extends 22 feet 7 inches towards the center of the creek. The apron is entirely submerged, under approximately 2 feet of water at the time of documentation. The milldam apron is made of planks

[16] J. Leffel & Co., p. 167.
[17] J. Leffel & Co., p. 72.

about 2 inches thick and is pinned to the foundation that extends underneath the dam wall face.[18] The recommended size of a wooden apron for a plank crib dam was 12 feet on a soft bottom;[19] the Byrnes' milldam apron measures 10 feet 4 inches.

Abutments support and anchor the foundations and bear the weight and force of the river. "The weight of the abutment resting upon them [foundation] will have the effect to hold the dam in its place and prevent it from being lifted or moved forward by the force of the current."[20] Stone was the most common building material recommended for abutments**.** As Oliver Evans stated, "if the dam be of logs, the abutments will be best made of stone." Stone construction helped prevent breaches, and was favored over earthen or timber abutments for that reason.[21]

The Byrnes milldam originally was supported by two stone abutments, however only one survives. The remaining fieldstone abutment is almost square, measuring 14 feet by 14 feet 9 inches and roughly 9 feet high at the creek edge, with two additional side supports built at later dates. It is coated with poured cement over the fieldstone, dated 1900, for stabilization of the structure. The support that extends northeast into the creek measures 11 feet long by 4 feet 10 inches wide. The banked wall that extends along the west side facing the millrace is 27 feet 2 inches long and roughly 2 feet 6 inches feet in width.

[18] J. Leffel & Co., p. 28.
[19] J. Leffel & Co., p. 72.
[20] J. Leffel & Co., p. 27.
[21] Evans, p. 200.

Figure 8: Detail of southern abutment

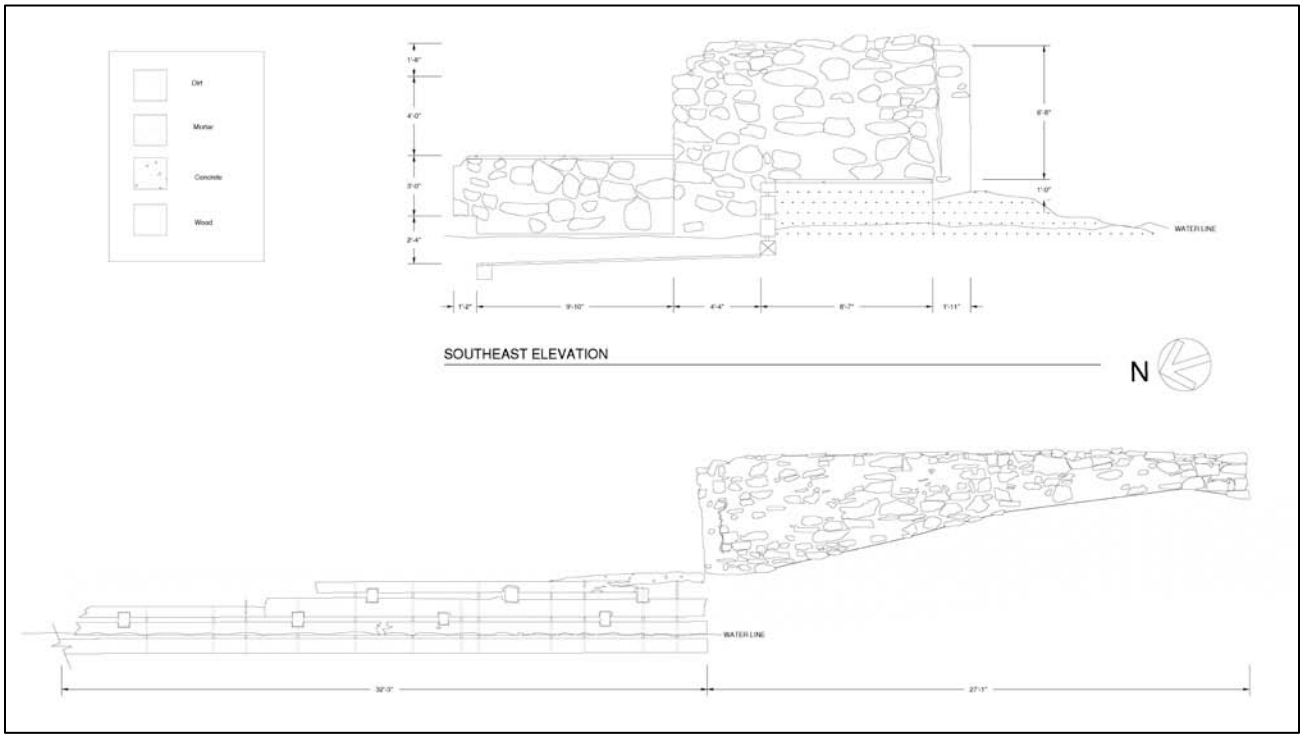

Figure 9: Elevations of the southern abutment

There are several other structures associated with dams, including races, spill ways, millponds, and head-gates. The only one of these elements that survives on the landscape of the Byrnes milldam is the millrace, which originally stretched almost 2 miles from the dam to the mill located near the Hale-Byrnes

House. Evans' recommendation on building raceways was to "let the dam and mill be a sufficient distance apart; so that the dam will not raise the water on the mill, in times of high floods."[22] Races were purposely constructed to be long, to prevent breaches in times of flood. However in the case of the Byrnes Mill Dam, the race needed to be especially long because the land is flat, and the change in elevation is very gradual, requiring greater length in order to generate sufficient fall power. Most likely this raceway never caused the type of flooding problems Evans was concerned about.

The race itself ranges from 4 to 10 feet in width, and is a dug earthen race that originally terminated downstream on the White Clay Creek by Bread and Cheese Island. The race often has a v-cut shape, indicating that it was clearly a man-made feature. Today, the race collects water only from rainfall and when the creek rises high enough to flood slightly, and is stagnant much of the time. With the breach of the dam, the water is no longer high enough to fill the raceway on a regular basis. Most of the raceway is still visible and can be followed on foot across the golf course. However, the course of the White Clay Creek was altered in the twentieth century, and part of the raceway was absorbed by the creek's new course around the racetrack on the north side of the Creek, while another part was cut off with the reconfiguration of Route 7 and 4. The race is no longer visible at its terminus point near the Hale-Byrnes House.

[22] Evans., p. 200.

Figure 10: Photo of millrace

Milling on the White Clay Creek

White Clay Creek Hundred was originally settled in 1668 with the first land patent granted to Thomas Wollaston, John Ogle, John Hendrick, and Harmon Jansen or Johnson, for 800 acres known as "Muscle Cripple."[23] From an early date, settlers saw the value of the water power along the White Clay Creek. From the late seventeenth century through the mid-nineteenth century, mills sprang up on the White Clay Creek, in both Mill Creek and White Clay Creek hundreds. "The earliest mill was built at Stanton...by Charles Rumsey and John Watkins...On October 14, 1679."[24] The mill was built on Bread and Cheese Island in Mill Creek Hundred "...to cutt timbers at all times."[25] In 1702 John Guest received a patent for 223 acres, and a mill was erected on this property sometime between 1715 and 1738, thought to be the first in White Clay Creek Hundred.[26]

In 1804, a tax assessment for Mill Creek Hundred identified mill owners and the types of mills they owned (Table 1). Most commonly the mills were for the grinding locally-grown grain into flour (grist mills) or

[23] Scharf, J. Thomas, *History of Delaware: 1609-1888*, p. 932. Historian J. Thomas Scharf, wrote a two-volume massive tome, on the history of Delaware, is also a helpful source for historical information about the milling industry. Scharf provided a detailed history by hundred, on both the Mill Creek, and White Clay Creek hundred sections he provided information about the manufacturing industries.
[24] Scharf, p. 923.
[25] Scharf, p. 923.
[26] Scharf, p. 923.

saw mills to provide the communities with building materials. Of the 34 mills listed in 1804, there were 16 grist mills, 16 saw mills, and only two mills of other types (fulling and paper). In addition, 10 individuals owned both saw and grist mills.

In 1816, a tax assessment for White Clay Creek Hundred lists ten mills owned by seven individuals; although the numbers of mills were much smaller than in Mill Creek Hundred, they suggest similar patterns of grist and saw milling by a limited number of people (Table 2). This assessment also indicates that mills were typically part of larger complexes including multiple dwellings and agricultural buildings, and that they were more commonly owned by the wealthy. Stone and brick buildings cost more to build than frame or log houses and these materials were used by less than one-quarter of the population in this time period. Yet 5 of the 12 dwellings associated with the mills in 1816, nearly one-half, were built of stone or brick. The largest mill complex listed in 1816 was owned by men named Smith and Richards, and was valued at $10,615, far in excess even of the other mill properties. Part of this mill complex includes the mill, race, and dam that Daniel Byrnes built in the 1770s. It has been assumed that the "brick house" described in the tax assessment is the Hale-Byrnes House.

Table 1: Mill Owners in Mill Creek Hundred, 1804[27]

Owner	Type of Mill
Joshua Johnson	Fulling-mill
James Armstrong & Samuel Meeter	Paper-mill and saw-mill
James Black est.	Grist-mill
Henry Brackin	Grist-mill and saw-mill
Joseph England	Grist-mill and saw-mill
William Foulk	Grist-mill and saw-mill
Caleb Harlin, Sr.	Grist-mill and saw-mill
Isaac & Benjamin Hersey	Grist-mill and saw-mill
Robert Johnson	Grist-mill and saw-mill

[27] Scharf, p. 923.

John Marshal	Grist mill
James Mendenhall	Grist-mill and saw-mill
John Phillips	Grist mill
Robert Phillips' estate	Grist-mill and saw-mill
John Reece's estate	Grist-mill and saw-mill
John Robinson	Grist mill
Andrew Reynolds	Grist mill
Thomas Stapler and Joshua Stroud's estate	Grist mill
Jacob Wollaston	Grist-mill and saw-mill
William &Abraham Barker	Saw mill
Ephraim Jackson	Saw mill
William Little	Saw mill
Thomas McDaniel	Saw mill
David Morrison's estate	Saw mill

Table 2: Mill Owners in White Clay Creek Hundred, 1816

Owner	**Type**	**Other Structures**	**Total Property Value($)**
James Crawford	Mill, Saw Mill	2 houses	1500
Joseph R. Ferguson	Saw Mill	Log House	36
John Tho. Glenn	Mill	Log House	500
Rodney Horsey	Mill, Saw Mill	Brick house, 2 houses, log house, etc.	4000
Thomas Phillips	Merchant Mill	Stone House etc.	2850
Smith and Richards	Mill, etc.	Brick House, 3 log houses, brick house, frame house, barn, etc.	10615
Isaac T (?)	Mill	Brick House, log houses	2070

In 1868, The Pomperoy and Beers Co. of Philadelphia created a set of detailed maps, by hundred, for the state of Delaware. From the maps, we can learn the location of old roads, water courses, houses, farms,

amenities such as post offices, schools, and churches, and industries such as mills. The Beers maps for Mill Creek and White Clay Creek hundreds show 10 mills along the White Clay Creek (Figures 11 and 12).

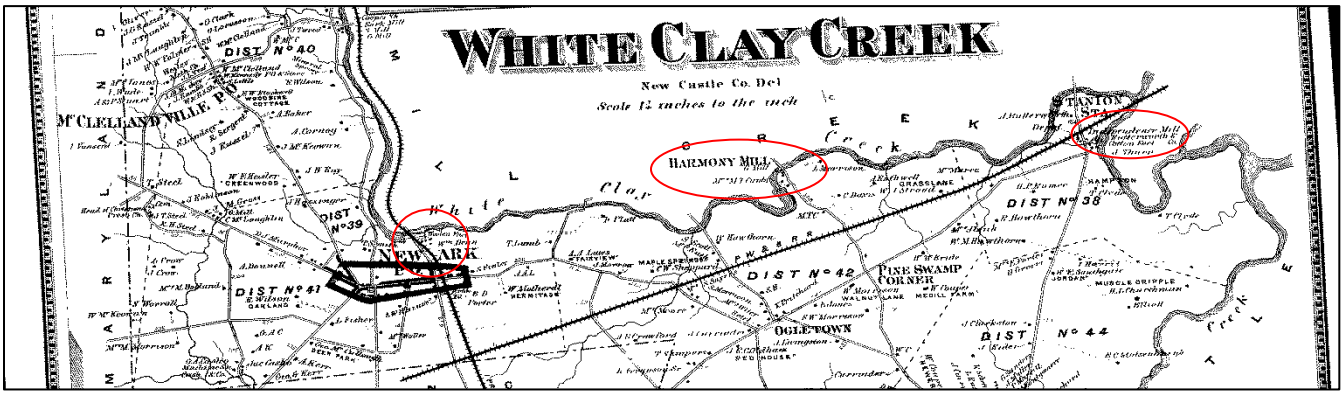

Figure 11: Beers map of White Clay Creek Hundred—mills circled in red

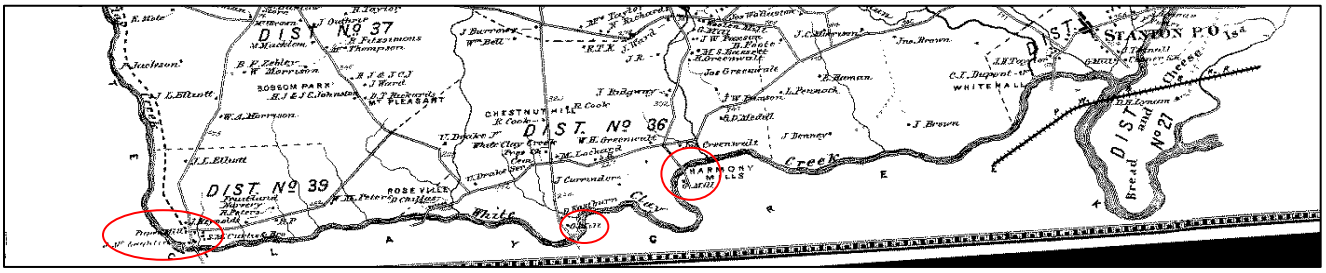

Figure 12: Beers Atlas Map of Mill Creek –mills circled in red

In 1868, the Byrnes milldam is shown cutting across the land in roughly the same course it follows today. It terminates at Bread and Cheese Island, near a label for "Independence Mill," and "Butterworth & Co. Cotton Factory." The information that cannot be ascertained from this historic map is if either of these structures contained the former Byrnes Mill, or if the race was even functional in 1868. On the Mill Creek Hundred map, C.I. DuPont appears on the north side of the White Clay Creek, owning a property called "Whitehall," which included the dam and raceway at that time. The majority of this property is now owned by the Delaware Raceway.

The big business of milling "played a central part in American economic development."[28] In the eighteenth and nineteenth centuries a series of mill acts were passed, starting in 1719, whose sole purpose was to allow millers to easily build and operate new mills. The mill acts delegated the power of eminent domain, sometimes referred to as condemnation, to millers who wanted to erect new gristmills, and needed adjacent land for the creation of any part of their complex.[29] This mill act facilitated and lessened the cost of construction of new mills to spur land owners to create mills.[30] Before the creation of this act, Delawareans sometimes took their grain as far as Philadelphia to be milled, because there was not a sufficient industry locally.[31]

The Delaware Assembly continued to pass laws in favor of condemnation, allowing anyone to condemn land acquired for the purpose of mill construction prior to 1726, and legally excused them from their land leases.[32] Predictably mill creation exploded, and began to over-populate the landscape. In 1760, it became a requirement to prove to the Delaware Assembly that the creation of a new mill would not injure any existing mills, before condemnation could proceed.[33]

Another beneficiary of the mill acts were small farmers. The last important legal action imposed an obligation for gristmills to "devote part of their capacity to the needs of individual households."[34] In exchange for the right to condemn lands, millers needed to provide a service for the community. This act brought down the cost for farmers to mill their corn and grain at local mills.[35]Despite the initial importance place upon the

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[28] Hart, John F., Property Rights, Costs, and Welfare: Delaware Water Mill Legislation, 1719-1859, *The Journal of Legal Studies,* Vol. 27 No. 2, p. 455.
[29] Hart, p. 455.
[30] This part of the act is interesting to keep in mind in regards to Daniel Byrnes. He bought four parcels of land from his neighbors; the language in the deeds clearly indicates that he is buying this land solely for the construction of a mill. Sources indicate that he did erect a grist-mill. Perhaps this land condemnation is the source of Daniel Byrnes agreeing to a ground rent for 2,000 years to David Finney's heirs and assigns.
[31] Hart, p. 459.
[32] Hart, p. 460.
[33] Hart, p. 461.
[34] Hart, p. 456.
[35] Hart, p. 456.

creation of mill acts, most of the previous legislation, especially in regards to condemnation, was repealed 1773 (except for under-represented areas). The Delaware assembly continued to amend the mill acts as late as 1859.[36]

History of the Byrnes Milldam

By the 1760s Daniel Byrnes, a miller and Quaker minister, and his brother, Joseph, constructed a mill and dam in Brandywine Village. Both men left that location for new mills in the 1770s. Joseph Byrnes acquired a mill on the Red Clay Creek, near Stanton.[37] Daniel Byrnes started to acquire land in White Clay Creek Hundred in 1773 for the express purpose of building a milldam, mill seat, and mill race. He continued to operate the Brandywine mill while he worked on acquiring the land along the White Clay Creek.[38] In a *Pennsylvania Gazette* article published in July 1774, Byrnes was credited with providing millers with cloth "as fine as any found in Philadelphia."[39] He pieced together the parcels for the dam between 1773 and 1776. The process required four deeds from three property owners: David Finney, Thomas Adams, and Joseph Chambers.[40]

David Finney owned two of the four parcels that would become the mill property; one he bought at sheriff's sale in 1750, but the second deed does not survive and the history of it remains unknown.[41] Finney owned a substantial amount of land in the vicinity of the mill property, and may have built on portions of that land, but it is clear from the language in the deeds that no previous milling structures existed on the land included in Byrnes' purchase. On January 1, 1773, Daniel Byrnes purchased four acres and twenty perches of

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[36] Hart, p. 471.
[37] Burdick, Kim Rogers, *I Remain Your, Daniel Byrnes. A Quaker in the Revolutionary Era 1730-1797,* 2011, available at http://www.halebyrnes.org/history/iremain.pdf (accessed on August, 2, 2011), p. 3.
[38] NCCRD, David Finney to Daniel Byrnes, G-1-180, 1773.
[39] Pennsylvania Gazette, July 20, 1774, found in Welsh, Peter. C., "The Brandywine Mills: A Chronicle of Industry, 1762-1816," *Delaware History*, offprint, March 1956, p. 20.
[40] NCCRD. Daniel Byrnes to Blair McClenahan I-2-191, 1790.
[41] NCCRD, Sheriff Sale to David Finney, Q-1-355, 1750.

land from David Finney for 300 pounds specifically to build "a mill seat and race" and control "the waters of the said White Clay Creek."[42]

The second parcel purchased from Finney, on March 25, 1776, was eighteen acres explicitly for a millrace. This is the largest parcel of land purchased by Byrnes in the area. The position of this parcel suggests that it was used to erect Byrnes' mill complex on the White Clay Creek near Bread and Cheese Island. Interestingly, with the purchase of this parcel of land Daniel Byrnes agreed to pay a ground rent of 20 pounds per annum, for 2000 years to Finney and his heirs.[43] This rent obligation transferred to Blair McClenachan with the subsequent sale of the land, but the reason the rent existed remains unknown.

The other two parcels purchased by Byrnes were related to the mill race and the dam. On April 10, 1773, Byrnes bought 2 acres of land and marsh from Thomas Adams.[44] The land itself was for the use of a millrace to be two perches in width (approximately 34 feet).[45] Lastly, Joseph Chambers sold Byrnes 80 perches of land on the north side of the White Clay Creek, in Mill Creek Hundred, for the support of his milldam, clearly to build the northern abutment, and milldam wall. Byrnes also purchased in this deed from Chambers "the right of claiming the waters of the creek for a mill race."[46] This was the last parcel acquired by Byrnes, and was purchased August 4th, 1777, just weeks before the Revolutionary War campaigns were fought in Delaware.

[42] NCCRD, David Finney to Daniel Byrnes, G-1-180, 1773.
[43] NCCRD. Daniel Byrnes to Blair McClenahan I-2-191, 1790.
[44] NCCRD, Thomas Adams to Daniel Byrnes, A-2-376, 1773, DEED BOOK MISSING.
[45] NCCRD. Daniel Byrnes to Blair McClenahan I-2-191, 1790.
[46] NCCRD. Daniel Byrnes to Blair McClenahan I-2-191, 1790.

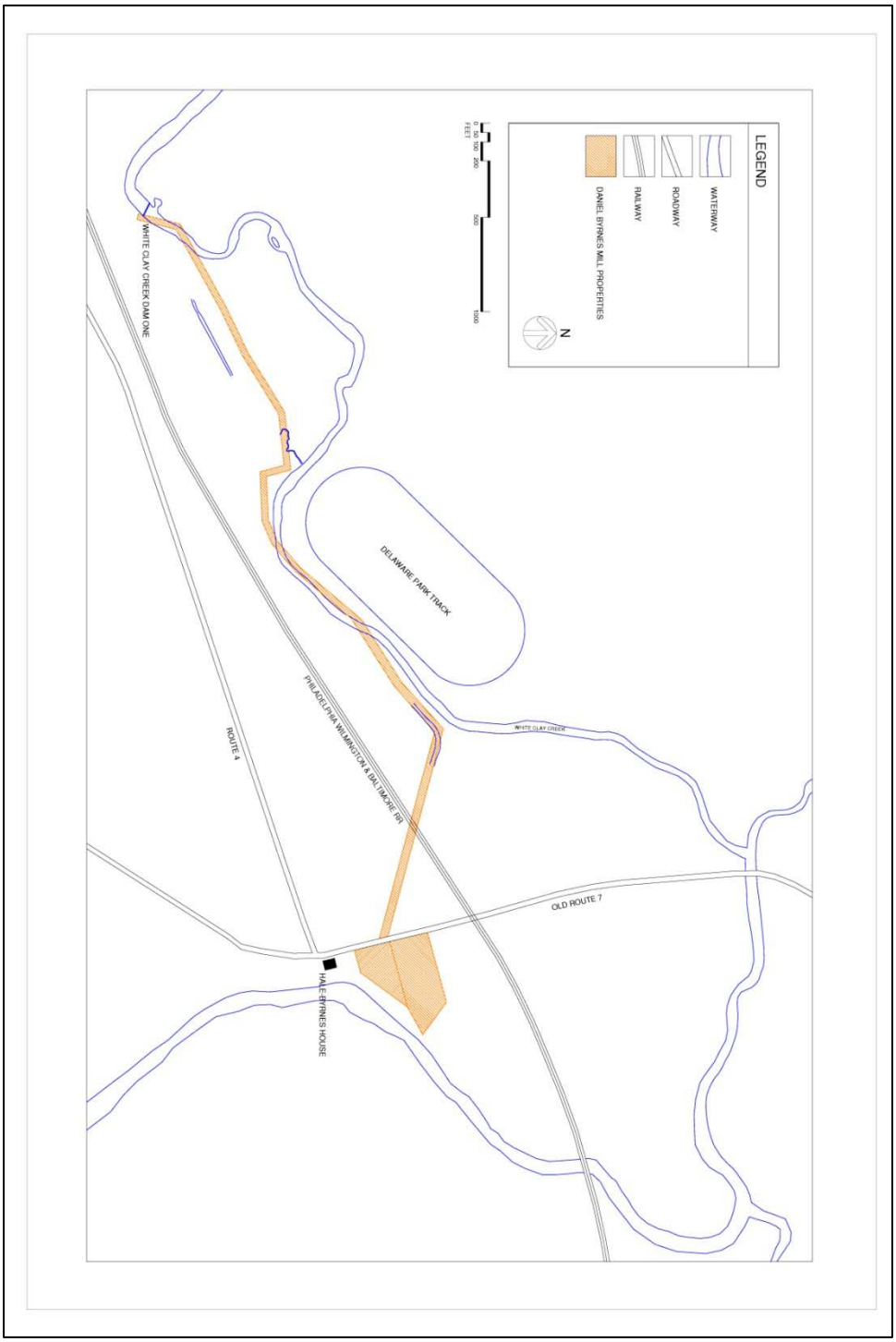

Figure 13: CAD plotted parcels of Daniel Byrnes Mill Property (in orange)

It is unclear exactly when Byrnes built the mill, dam, and race, but it certainly was in operation by September 1777. Local history related to the Hale-Byrnes-Boyce House claims that Byrnes owned the house at the time that General George Washington held a council of war with his senior staff just prior to the Battle of

the Brandywine. Our research has not yet been able to confirm that Byrnes owned or occupied the house in question at the time, but Byrnes and his mill certainly felt the impact of the war. In 1793, Byrnes wrote to George Washington, seeking reimbursement from the federal government for the food taken from his mill on the White Clay Creek by September of 1777:

> …in the year 1777 I was owner of and Lived at them Mills in the State of Dallaware on the side of White Clay Creek abought two Miles north of Christiana Bridge at the time the English Army Lay between my Mills and the head of Elk and the American Army Some of them on the Hill by White Clay Creek Bridge in Sight of my House & Mills and Some of them nearer to Newport…an officer as I Supose in thy Army Came to my House and informed me that General Woshington had Sent him to let me know that the wheat & Flour in my Mills must be Removed and told me that thou Said the English Army wod be quite likely to Come that way and wod Distroy what I had but that thou wod take it and I Should be paid for it. I Did then belive thou intended it as a favour to me as I was not Looked on as an Enemy to my Countery and therefore I could Do no other thing but Submit to thy orders accordingly he Sent that Day twenty Wagons and Loaded with Wheat and Flour and next Day being first Day of the week came twenty more Wagons and Loaded…with wheat and flour the also that Day took Eight Large Cheese away which was put in the Mill to be out of the way of the Flies they Laft with Some of my young men Recipts for the Wheat & Flour but not for the Cheese they ware to come again the Next Day being the Second Day of the week for more wheat & Flour as there was Some Still Lafft but that Day the English Army Crossed white Clay…thy Army moved away. I saw Clement Biddle that Day on Horseback he told me he wod pay me but the Army was moving and all Seemed in a hurry. I Supose he had not time and want away without paying after that time there was Much Difucalties with the Army I knew not whare to apply for pay…[47]

By 1784 Byrnes and his family moved again, this time to Philadelphia, where he ran a flour store for awhile.[48] Not satisfied, however, they moved again, this time to New Windsor, New York, where he built a new set of mills and lived until his death in 1797.[49] While living in Philadelphia, he seems to have rented the mill to someone else for operation. In 1790, he decided to sell the entire property to Blair McClenachan.

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[47] Patrick, Christine S. and John C. Pinheiro, eds., *The Papers of George Washington: Presidential Series volume 12, January – May 1793,* Charlottesville and London: University Press of Virginia, 2005, pages 14-18 (excerpt available at http://www.halebyrnes.org/history/gwletter.pdf (Accessed October 4, 2011).

[48] Descendents of Daniel Byrnes, p. 4

[49] Burdick, p. 43-44 Referencing Daniel Byrnes Will, Daniel Byrnes. Kingston Courthouse records. BYRNES, DANIEL NEW WINDSOR NY-56-C-13. Ulster County, New York Will Testators. See also www.sampubco.com/wills/ny/nyulster01.htm

Blair McClenachan, was a wealthy Philadelphia merchant, politician, and privateer. He amassed a significant fortune, with his reputed income as high as 1.1 million pounds annually during the American Revolution.[50] His large income allowed him to speculate in land investments, which included several properties in multiple counties in Pennsylvania, as well as Delaware.[51] McClenachan divided his time between his Philadelphia home, and his "summer-retreat," Cliveden, sometimes referred to as the Chew House, in Lower Merion Township.[52] He was living at Cliveden when he purchased the mill complex.

Despite economic problems caused by the war,[53] McClenachan purchased the dam for $4,000 from Daniel Byrnes in 1790.[54] It is unlikely that McClenachan did anything but rent this property; there is no evidence that he ever operated the mill himself or resided at the mill location. In 1796, the year before he sold Cliveden and the year he was elected to the U.S. House of Representatives for Pennsylvania, Blair McClenachan sold 20 parcels of property in White Clay Creek Hundred, the mill and dam among them, to his son George McClenachan for $100,000.[55]

Besides the Byrnes' mill complex, George McClenachan owned other mill properties. In 1797 he purchased a mill complex in Lower Merion, Pennsylvania. It contained a three-story merchant mill, a two-story stone grist mill, a stone paper mill, and a saw mill.[56] George McClenachan was also likely a land speculator rather than a miller, but he appears to have a history of buying profitable industries. After buying the 20 parcels from his father, George immediately sold half of the property to his “infant” sister Ann.[57] However, all

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[50] “Cliveden Chronology,”available from http://www.cliveden.org/Content/Research/Chronology.pdf (Accessed October 1, 2011), p. 19.
[51] Richards, Nancy E., “Cliveden: The Chew Mansion in German Town,” available from http://www.cliveden.org/Content/Research/The%20Chew%20Mansion%20in%20Germantown.pdf (accessed on October 1, 2011) p. 22.
[52] Richards, p.22.
[53] Richards, pp. 22-23.
NCCRD. Daniel Byrnes to Blair McClenahan I-2-191, 1790.
[55] NCCRD, Blair McClenachan to George McClenachan P-2-303, 1796.
[56] Barker, Charles R., “Old Mills of Mill Creek, Lower Merion,” *The Pennsylvania Magazine of History and Biography,* vol. 50, no. 1, (1926), p. 5.
[57] NCCRD, George to Ann McClenachan, P-2-314, 1796.

of the properties Blair McClenachan sold to his children went into default, and the land was sold at sheriff's sale sometime between 1800 and 1803. At this point the mill parcel became part of a 1200-acre parcel of land purchased by John Hallowell.[58]

The research undertaken for this project has proven that much of what is currently accepted as truth about this property came directly from secondary resources and may not be accurate. Certain periods of the property's history remain shrouded in mystery. But what is certain, and proven, is that the property containing the mill, race, and dam passed from David Finney to Daniel Byrnes to Blair McClenachan and his son over the second half of the eighteenth century, and that Daniel Byrnes built the first dam and mill on the property. These men were all prominent figures in their communities, and had complex social, familial, and financial relationships with one another. Blair McClenachan's older brother was married to David Finney's aunt, while Daniel Byrnes' older brother was a shipmaster on one of David Finney's ships. All spent time in Philadelphia and played roles of different types during the American Revolution.

What remains less clear is the history of the mill in the early nineteenth century. John Hallowell's purchase of the massive 1200-acre property is the first documented evidence that the Hale-Byrnes House and the mill property were united, but even in that deed they were described as separate parcels. It has been assumed previously that Byrnes' had purchased and lived in the brick house on the White Clay Creek at the time he purchased the mill property, but that cannot be substantiated. What remains true is that Byrnes built and assembled a mill complex on the White Clay Creek, and all that survives from the late eighteenth-century complex is the milldam and race.

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[58] NCCRD, Sheriff Sale (Blair McClenachan) to John Hallowell, U-2-520, 1800. NCCRD Blair McClenachan to John Hallowell, W-2-250, 1801. NCCRD Walter Simms to John Hallowell W-2-287, 1801.

From Hallowell, the land went to another sheriff's sale and was purchased by Samuel Richards in 1802. The following year, William T. Smith bought the property from Richards, although the tax assessment suggests that the two operated the mill in partnership through at least 1816.[59] The land remained in the Smith family through the death of Richard in 1829, when an Orphan's Court valuation described the property.

> ...A Merchant and bark mill 100 ft by 30 ft. 3 stories high built of frame in good order, except foundation walls next the Creek, and in the West end, and about 60 feet in length of the roof, which want renewing or repairing to the estimated cost of $250. - Corn Kiln adjoining Mill wants enlarging and repairing estimated expense $250. - A Saw Mill in a very delapidated State, not worth repair. Frame House 34 by 31 ft 1/4 of which is cellared & 1 1/2 Stories high, the remainder one story wants roofing [cost - $100.00]...A Smoke House of Brick 9 by 10 ft in good condition. To this House is attached a Small Lot A Frame house and garden house 20 by 16 1 1/2 Stories with cellar in tolerable order. A weather boarded log kitchen 19 by 16 ft wants new roof [cost - $25.00]...Cooper Shop 18 by 21 ft in tolerable order, Frame building adjoining Mill 22 by 20 ft one Story high, with cellar in good order. Stable 24 by 20 with cellar, and cart house joining want a new roof [cost $40.00]...annual value $500.00 [60]

Tracing the deed backward also provided a complex, and complicated history from the present back to 1833. The White Clay Creek Country Club bought the dam and millrace from the Delaware Raceway (formerly known as Delaware Steeplechase and Raceway Association) in 2006, and the parcel is almost entirely located within Mill Creek Hundred. The Delaware Steeplechase and Race Association acquired the dam and raceway as part of a 255.5-acre parcel in 1935 from James and Mary Cunningham and it still owns the rest of that parcel.[61] The Cunninghams purchased 284 acres for $8,500 from Alice duPont et al in 1934.[62] Mary and Victor duPont purchased the 284-acre parcel of land for $18,000 in 1856 from George Janvier.[63] In 1833 Thomas Janvier acquired 217 acres from George Reynolds for $8,680, after an 1832 Deed of Partition carried out for

[59] NCC Recorder of Deeds (hereafter NCCRD), John Hallowell to Samuel Richards, Y-2-219, 1802, Samuel Richards to William T. Smith, Z-2-1, 1803.
[60] NCC Orphans Court, SMITH, RICHARD E. (child-Samuel/Stafford) N-399 (1829),White Clay Creek Hundred.

[61] NCCRD, James and Mary Cunningham to Delaware Steeplechase and Raceway Association, T-39-468, 1935.
[62] NCCRD, Alice duPont et al to James and Mary Cunningham, P-39-398,1934.
[63] NCCRD, George Janvier to Mary V. and Victor DuPont, W-6-193, 1856.

the Reynolds family.[64] All of these parcels are described as being in Mill Creek Hundred. To date, we have been unable to definitively connect this portion of the title trace with the Smith estate from 1829.

National Register Assessment for the Byrnes Mill Dam (CRS #N06670)

Daniel Byrnes built the milldam and race between 1773 and 1777, during the "Early Industrial 1770-1830" period, in the Piedmont region (Mill Creek and White Clay Creek hundreds). It is significant under the historic themes of manufacturing, engineering, and settlement patterns.

The Byrnes Mill Dam is considered eligible in the National Register of Historic Places under criteria A and C for its role in the development of milling in the Piedmont region and as a rare surviving example of timber crib dam and mill race construction. While the northern section of the dam has been breached, the structure on the southern bank remains intact, along with a significant portion of the milldam wall and apron. The remaining portion of the dam is in excellent condition, and retains evidence of materials, workmanship, and design. The wrought-iron spikes, timber crib wall and apron, the fieldstone pier, and the dug mill race all retain a high level of integrity.

[64] NCCRD, George Reynolds to Thomas Janvier, Q-4-140, 1833.

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Appendix A: White Clay Creek Dam One Title Trace

18th Century Title Trace related to the milldam property

Unless otherwise noted, all references are to New Castle County Recorder of Deeds Books

Q-1-355, August 24, 1750
Sheriff Sale to David Finney
21 pounds 5 shillings
3 acres

G-2-180, January 16, 1773
David Finney to Daniel Byrnes
300 pounds
4 acres 20 perches

I-2-191, August 1, 1790
Daniel Byrnes to Blair McClenachan
4,000 pounds
Deed contains 4 parcels of land constructed for the millrace

P-2-303, November 8, 1796
Blair McClenachan to George McClenachan
$100,000
Deed contains 20 different parcels of land

19th Century Deed Trace conjecturally related to the mill seat, and Hale-Byrnes House

S-2-24, April 10, 1797
Sheriff Sale (Blair McClenachan) to Walter Simms
19,700 pounds
900 acres of land and marsh, all 20 parcels from Blair McClenachan's 1796 deed
No. 11 on muscle cripple "Sixty acres more or less [Except and out of the above described premises always reserved twelve acres of arable Land and twelve acres of cripple or marsh heretofore sold and conveyed by David Finney and Ann his wife to a certain James Partridge in fee and a mill race and lot for a mill seat whereon a mill is now erected containing about three acres heretofore granted and conveyed by the said David Finney unto a certain Daniel Byrnes in fee, and also sundry leases for terms of years made and executed by the said David Finney heretofore]" (p.25)

U-2-520, April 18, 1800
Sheriff Sale (Blair McClenachan) to John Hallowell
$45,000
1200-acres
"whereon are erected a two story Brick House, and sundry Frame and log Messuages, Grist Mills, Barn, etc."

W-2-250 April 10, 1801
Blair McClenachan to John Hallowell
1,000 Pounds

W-2-287, May 21, 1801
Walter Simms to John Hallowell
$10
Deed references the parcels in the 1796 deed from Blair McClenachan

Y-2-219, July 17, 1802
John Hallowell to Samuel Richards
$32,200
Selling property acquired in deeds U-2-520, W-2-250, S-2-24, W-2-287

Z-2-1, April 27, 1803
Samuel Richards to William T. Smith
$26,000

NCC Orphan's Court N-399 (1829) Smith, Richard E. (children Samuel/Stafford)
Three properties: 1. Farm 180-acres, "contained a dwelling house two stories high" likely the Hale-Byrnes House, $300. 2. Mill Property adjoining first farm $500. 3. Farm near Ogletown 150 acres.

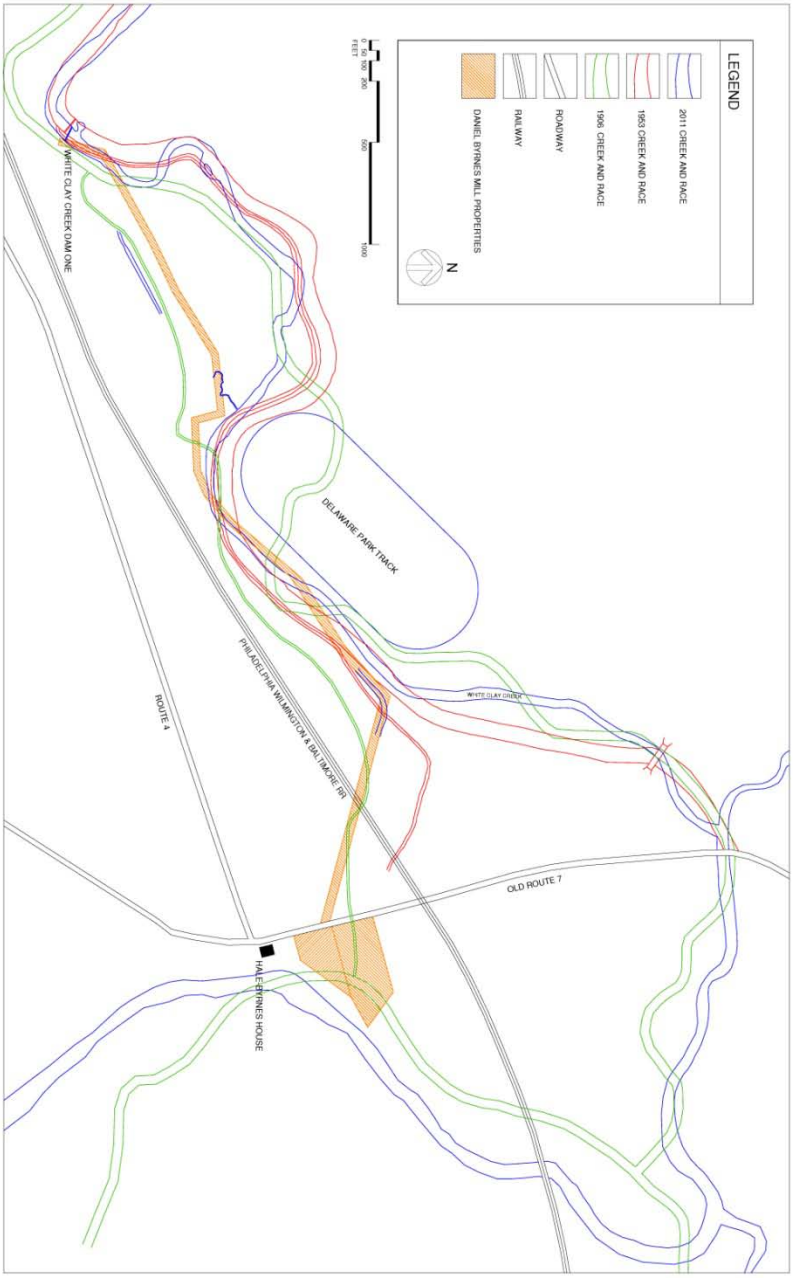
21st Century Deed Trace backwards for the parcel of land that the milldam and race are now located on New Castle County Parcel #0805500005 owned by Delaware Park

T-39-268, December 31, 1935
James and Mary Cunningham to Delaware Steeplechase and Raceway Association
$19,000
255.5-acres

P-39-398, December 29, 1934
Alice duPont et al to James and Mary Cunningham
$8,500
284-acres

W-6-193, March 24, 1856
George Janvier to Mary V. and Victor duPont
$18,000
2840acres

Q-4-140, March 26,1833
George Reynolds to Thomas Janvier
$8,680
217-acres

P-4-1, March 2,1832
Deed of Partition by the Reynolds family

Appendix B: The Evolution of the Raceway and the Course of White Clay Creek