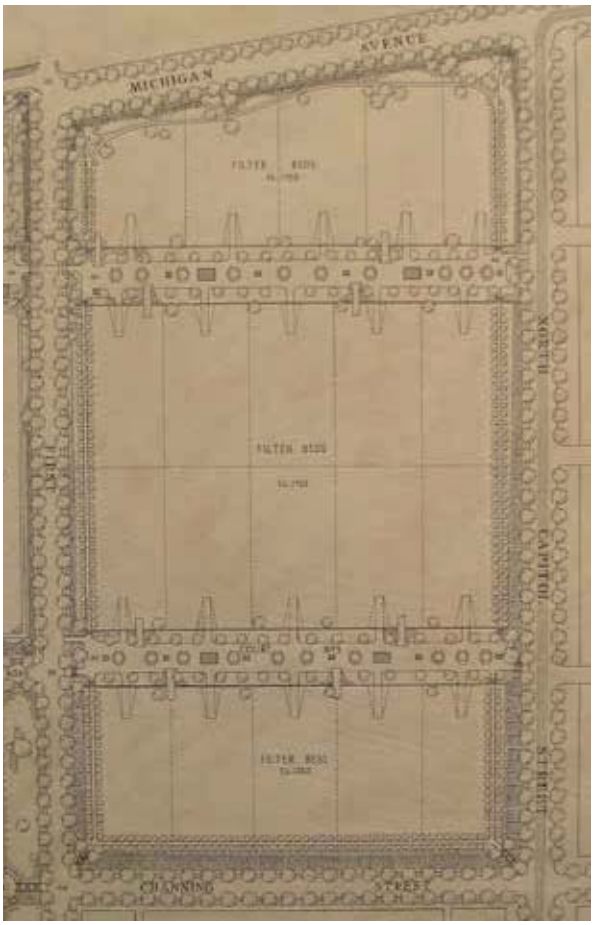
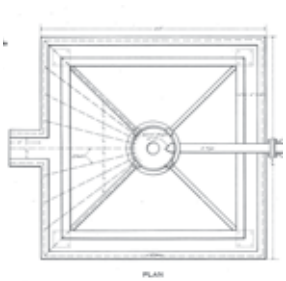
McMillan Sand Filtration Plant

Washington, DC

Historic Preservation Plan

May 2016





EHT TRACERIES

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Introduction

Purpose of Historic Preservation Plan

VMP retained EHT Traceries to prepare a historic preservation plan (HPP) in accordance with the requirements of the DC Historic Preservation Review Board (HPRB), the DC Zoning Commission, and the DC Mayor's Agent on Historic Preservation. This historic preservation plan is a record of the information and guidance provided to VMP during this consultation period and is intended to achieve the following:

- **EXPLAIN THE HISTORIC SIGNIFICANCE** of the McMillan Site. This report does not include a re-evaluation of the property's significance but instead relies on the evaluation of significance provided in 1989 landmark nomination form that was completed for the McMillan Park Reservoir Historic Landmark. This reports offers a framework for the evaluation of the historic integrity of the McMillan Site and the development of preservation recommendations for the McMillan Redevelopment Project based on the identified significance.

- **EVALUATE THE HISTORIC INTEGRITY** of the McMillan Site. The historic integrity of the Landmark was evaluated as part of its local landmark nomination in 1989. An updated evaluation of the integrity of the McMillan Site, as a distinct component of the Landmark, is necessary for the development of preservation recommendations for the McMillan Redevelopment Project.

- **PROVIDE GUIDANCE AND RECOMMENDATIONS FOR PRESERVATION** of the McMillan Site within the context of redevelopment. The recommendations are specific to the McMillan Site and are intended to inform a successful preservation strategy for a McMillan Redevelopment Project within the general parameters set by the city. The recommendations take into consideration the site's significance and integrity and are based on the Secretary of the Interior's Standards for the Treatment of Historic Properties. General recommendations and resource-specific recommendations are included and will be incorporated into the site plan for the redevelopment as appropriate.

- **GUIDE THE PRESERVATION-RELATED APPROVAL PROCESSES** for the McMillan Redevelopment Project. Because the McMillan Site is part of the larger McMillan Park Reservoir Historic Landmark, any construction or demolition on the site is subject to a variety of preservation-related reviews on the federal and local level. This report is intended to meet DC HPRB expectations, and form the basis for their formal approval of preservation work on the site's historic resources.

This report identifies, summarizes, and supplements previous documentation efforts. It is designed to be used as a resource and a tool for VMP in its discussions with the city and community about the appropriate treatment of historic resources, as well as the design of new construction on the site. This report does not attempt to replace or correct the numerous documentation efforts and reports that have addressed the McMillan Site or the Landmark over the last twenty years.

CONTENTS OF THE HISTORIC PRESERVATION PLAN

This report includes the following:

- A description of the McMillan Site and updated inventory of resource types located within the site. The inventory includes a brief description of each type, a site key, historic images, and current images. A more comprehensive and detailed inventory was conducted by Engineering Science, in 1990, as required by Section 106. The 1990 inventory provides thorough documentation of all historic resources on the site and is maintained as a public record at the District of Columbia Historic Preservation Office;
- A summary and expansion of the history and significance of the Landmark and an evaluation of the historic significance of the McMillan Site.

Figure 1 McMillan Site Boundary Map, 2010. *Google, Inc. prepared by EHT Traceries.*

- An evaluation of the historic integrity of the McMillan Site.
- A summary of historic preservation compliance requirements applicable to the redevelopment of the McMillan Site;
- Preservation recommendations for the treatment of the McMillan Site to inform the preservation strategy for the proposed redevelopment efforts;
- Appendices: Appendices that provide selected plans, photographs, and other documentation collected as part of the research effort for this report.

PROJECT PURPOSE

Figure 2 Bowen & Co. Map of the Washington Aqueduct, 1864. *Library of Congress.*

EHT Traceries was retained to provide documentation and recommendations related to the treatment of the historic resources on the McMillan Sand Filtration Plant site. As stated in Quitclaim Deed, dated September 25, 1987, between the United States Government and the District of Columbia, addressed the treatment of historic resources. The deed stipulates the inventory and evaluation of the historic resources for their potential eligibility for listing in the National Register of Historic Places.[1] This report was completed, and a National Register nomination was in turn presented to the District of Columbia Historic Preservation Review Board in 1991, who acting as the state review board, recommended the property for listing in the National Register of Historic Places. The property was listed in 2013. The deed also stipulated *"any and all rehabilitation and renovation work at the parcel will be undertaken in accordance with "The Secretary of Interior Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings (Standards)".*

The approval of the implementation of the redevelopment project required extensive public reviews, including the DC Historic Preservation Review Board (HPRB), the DC Zoning Commission (OZ), and the DC Mayor's Agent on Historic Preservation (MA). Each of these reviews resulted in a refinement of the design to meet the various goals of each agency; however, throughout these reviews, the obligation to treat the historic resources in accordance with the Standards has been constant. To resolve the goals of the various stakes of interest, this historic preservation plan (HPP) provides a single document that presents a unified approach to the historic rehabilitation that meets all agency requirements in a manner consistent with the Standards.

This document presents information necessary to gain an understanding of the original appearance and function of the site and individual resources, incorporates findings from other project team members related to existing conditions, and recommend the treatment of the historic resources that will remain on the site. It is designed to be included as a section in the project's Basis of Design for the project, but also stand as an independent reference document.

1 The Quitclaim Deed contains no mention of the DC Inventory of Historic Sites.

SITE OVERVIEW

The site for the redevelopment of the McMillan Slow Sand Filtration Plant (McMillan Site) is a 24.69-acre parcel located on the eastern edge of the northwest quadrant of the Washington, DC. The McMillan Site was once part of the larger 92-acre McMillan Reservoir and Filtration Plant, owned and operated by the United States government. The larger site was comprised of the McMillan Slow Sand Filtration Plant, the McMillan Reservoir, and the McMillan Pumping Station. The McMillan Site is the section of the McMillan Slow Sand Filtration Plant located east of First Street, NW and is defined by First Street to the west, Michigan Avenue to the north, North Capitol Street to the east, and Channing Street to the south. The McMillan Site was divided off from the original property and sold to the District of Columbia in 1987. The federal government retains ownership of the McMillan Reservoir and a small section of the original filtration plant site located west of First Street, both of which are operated by the Washington Aqueduct Division of the Baltimore District of the U.S. Army Corps of Engineers (USACE).

The McMillan Site is within the McMillan Park Reservoir Historic Landmark, which was individually listed in the District of Columbia Inventory of Historic Sites in 1991 and was listed in the National Register of Historic Places as a Historic District in 2013. As such, the McMillan Site is protected under the District of Columbia's preservation law (Historic Landmark and Historic District Protection Act of 1978, DC Law 2-144 as amended). The Landmark includes the 92 acres that were originally associated with the federal property.

This section of the slow sand filtration plant on the McMillan Site has been non-operational since the 1980s. The District of Columbia (DC) government has targeted this property for redevelopment since its acquisition of the property from the federal government in 1987. Plans to develop the property were approved by the Zoning Commission, the Mayor's Agent, and HPRB in 2015.

METHODOLOGY

EHT Traceries acknowledges that the District of Columbia is redeveloping the McMillan Site. Therefore, EHT Traceries does not seek to identify what level of development is appropriate for the McMillan Site; rather we are providing preservation recommendations that ensure that the redevelopment plan for the McMillan Site incorporates historic preservation in the most effective manner. Therefore, the recommendations in this report assume the following parameters:

- The 1987 Quitclaim Deed between the United States and the District of Columbia requires that any work on the site be completed in accordance with the Secretary of the Interior's Standards;
- The District of Columbia has prescribed a level of development for the 24-acre McMillan Sand Filtration site;
- The Site will be developed in a manner that will accommodate an inter-modal transportation system;
- The development will consist of a combination of residential, retail, commercial/office, cultural, community, and hospitality uses;
- The site plan for the redevelopment will include passive and active open space; and
- It is known that a portion of the filter bed structures proposed for preservation are structurally unstable and that further structural and geotechnical analysis must occur to inform the final feasibility of the preservation of these resources.

The determination of recommendations for the preservation work proposed for the historic resources located at the Site was based on the Secretary of the Interior Standards for the Treatment of Historic Properties and the associated Guidelines for Preserving, Restoring, Rehabilitating, and Reconstructing Historic Properties.

METHODS

The basis for the methodology is found in the McMillan Sand Filtration Plant Historic Preservation Report (HPR) that was completed in 2012 by EHT Traceries and accepted by the District of Columbia Historic Preservation Review Board in 2014.

Figure 3 Olmsted Brothers. General Plan of McMillan Park, 1911. *Olmsted Archives.*

The HPR presented a three-step inventory and evaluation. First, it provided an updated inventory of the resources found on the site, organized the resources by type; Second, it presented an evaluation of the significance of each resource type in the context of the larger McMillan Park Reservoir property as a D.C. Historic Landmark. This context includes a tri-partite significance: its association with the history of water purification; its association with Senator James McMillan; and its distinctive design and construction as a public works facility and public park. Third, the integrity of each resource was examined using the National Park Service's Aspects of Integrity. This work resulted in the development of a hierarchy of resource types based on their Relative Level of Significance (RLS), which, in turn, provided a basis for an assessment of individual resources.

The methods used to develop Resource-specific Treatment Recommendations for the McMillan Site are designed to be systematic and transparent. Because the 1987 Quitclaim Deed for the transfer of the McMillan Site requires that any work on the Site be completed in accordance with the Secretary of the Interior's Standards (Standards), these recommendations rely on several tools that were created based on the Standards. The Standards state that choosing a treatment approach for a resource depends on the following factors: "relative importance" of the resource, integrity, proposed use, and mandated code requirements. For the purposes of providing recommendations for design development, the methods for developing resource recommendations have been based on these factors and include the following four steps:

(1) Evaluate the relative importance of each resource type

The relative importance of each resource type was determined through the process of evaluating the Relative Level of Significance (RLS) of each resource type. The methodology for evaluating the RLS was outlined in the 2014 Historic Preservation Report, and the detailed findings of the RLS evaluation are included in Appendix I of that report.

(2) Evaluate the integrity of each resource type

The methodology for evaluating the integrity of each resource type is outlined in Chapter 3 of this report, and the detailed findings of the integrity evaluation are included in Appendix I of the 2014 Historic Preservation Report.

(3) Provide a range of treatment approaches for each resource type.

A range of treatment approaches is provided for each individual resource type that is listed in the Resource Inventory in Chapter 1 of this report. The Quitclaim Deed that transferred ownership of the McMillan Site from the United States to the District of Columbia addresses the protection of the site. The deed states that any work proposed to take place on the McMillan Park Reservoir Historic Landmark must be consistent with the Secretary of the Interior's Standards for Rehabilitation. Rehabilitation of the McMillan Site may include a variety of treatment approaches for its individual resources. Therefore, the range of treatment approaches proposed in this report for each resource type is based on the four treatment approaches provided in the Standards: Preservation, Rehabilitation, Restoration, and Reconstruction. These approaches are defined as follows:

- **PRESERVATION:** The act or process of applying measures necessary to sustain the existing form, integrity, and materials of an historic property. Work, including preliminary measures to protect and stabilize the property, generally focuses upon the ongoing maintenance and repair of historic materials and features rather than extensive replacement, new construction, or exterior additions.

- **REHABILITATION:** The act or process of making possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features that convey its historical, cultural, or architectural values.

- **RESTORATION:** The act or process of accurately depicting the form, features, and character of a property as it appeared at a particular period of time by means of the removal of features from other periods in its history and reconstruction of missing features from the restoration period.

• **RECONSTRUCTION:** The act or process of depicting, by means of new construction, the form, features, and detailing of a non-surviving site, landscape, building, structure, or object for the purpose of replicating its appearance at a specific period of time and in its historic location.

(4) Determine Appropriate Treatment Approach

The Preferred Treatment Approach is selected for each resource type using the range of treatment approaches provided in this report. The determination of the Preferred Treatment Approach is made using the following guidance provided in the *Standards*[2]:

• **PRESERVATION**: Preservation may be considered as a treatment when the property's distinctive materials, features, and spaces are essentially intact and thus convey the historic significance without extensive repair or replacement; when depiction at a particular period of time is not appropriate; and when a continuing or new use does not require additions or extensive alterations.

• **REHABILITATION**: Rehabilitation may be considered as a treatment when repair and replacement of deteriorated features are necessary; when alterations or additions to the property are planned for a new or continued use; and when its depiction at a particular period of time is not appropriate.

• **RESTORATION:** Restoration may be considered as a treatment when the property's design, architectural, or historical significance during a particular period of time outweighs the potential loss of extant materials, features, spaces, and finishes that characterize other historical periods; when there is substantial physical and documentary evidence for the work; and when contemporary alterations and additions are not planned.

• **RECONSTRUCTION:** Reconstruction may be considered as a treatment when a contemporary depiction is required to understand and interpret a property's historic value (including the re-creation of missing components in a historic district or site); when no other property with the same associative value has survived, and when sufficient historical documentation exists to ensure an accurate reproduction.

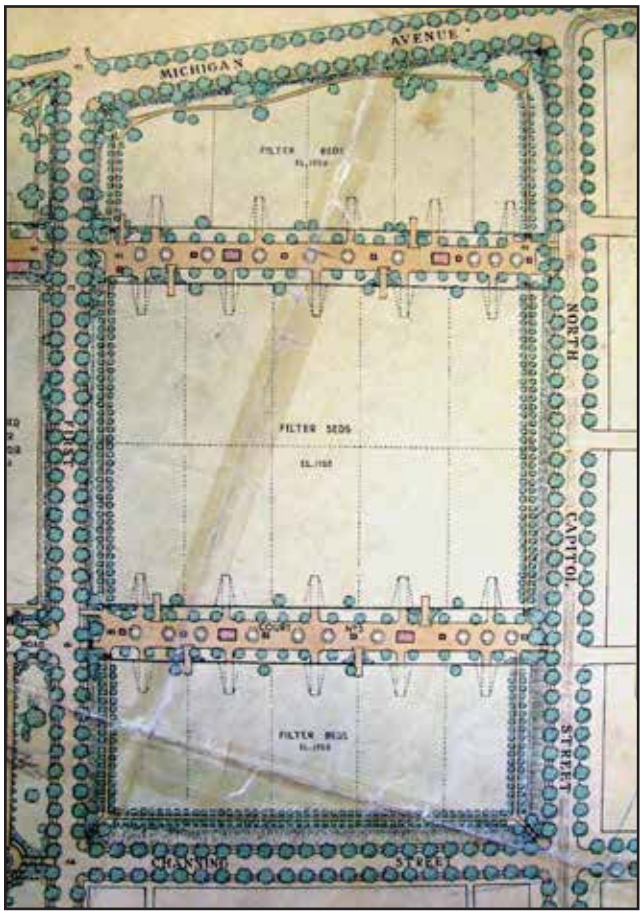


Figure 4 Landscape Plan of Slow-Sand Filtration Plant, 1911. *Washington Aqueduct Archives.*

Using this guidance, a Preferred Treatment Approach is assigned to each resource type based on the combination of its RLS and integrity. When the combination of RLS and integrity of a resource type does not warrant preservation, as when a resource is missing in its entirety or has so little materiality that it cannot be restored, "n/a" is given as the

2 Secretary of the Interiors Standards for the Treatment of Historic Properties. Code of Federal Regulation, title 36, sec. 68 (1998).

Figure 5 Construction of Filter Beds, persons unknown, c. 1904. *Washington Aqueduct Archives.*

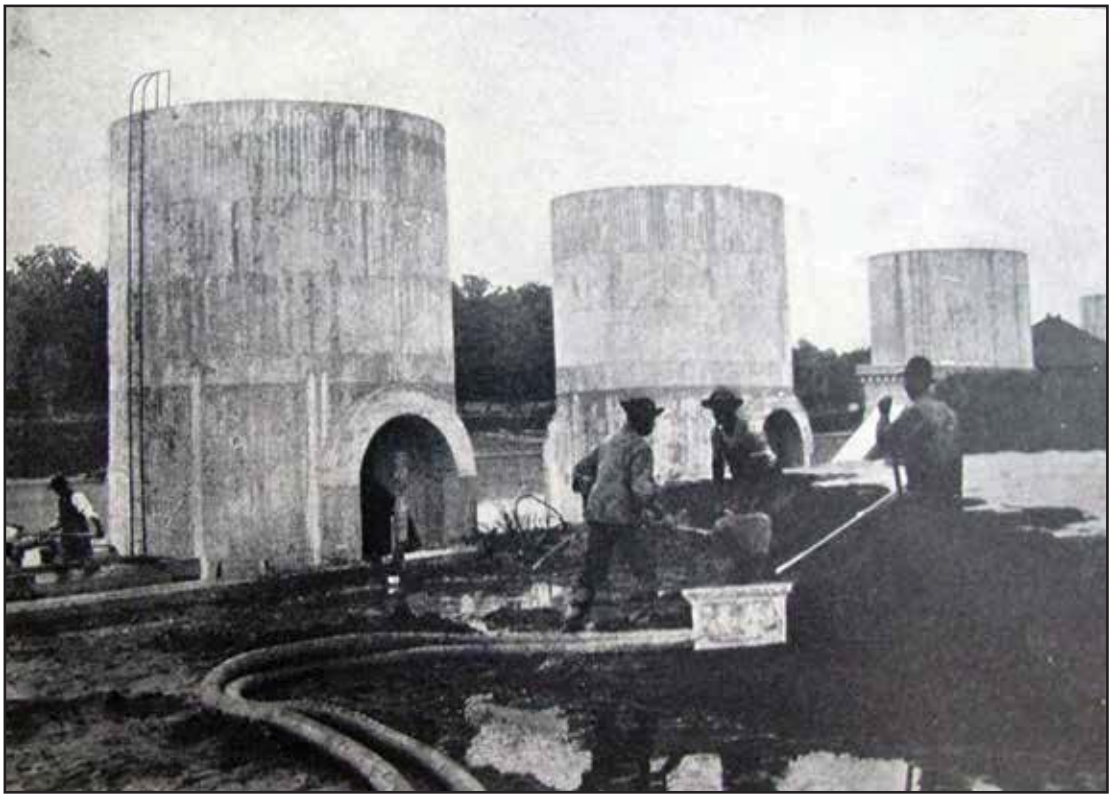


Figure 6 Movable ejector at work moving sand temporarily stored on top of filter from *Purification of the Washington Water Supply*, c. 1904. *Historical Society of Washington.*

Figure 7 McMillan Fountain and Plaza, 1913. *Washington Aqueduct Archives.*

recommended treatment approach. All recommendations are consistent with the Mayor's Agent decision and order (HPA No. 14-393).

The following table lists the Preferred Treatment Approach and Alternative Treatment Approach for each combination of RLS and integrity:

RLS	INTEGRITY	PREFERRED TREATMENT APPROACH	ALTERNATIVE TREATMENT APPROACH
Key	High	Preservation	Rehabilitation
Key	Moderate	Preservation	Rehabilitation
Key	Low	Rehabilitation	
Key	No Integrity	n/a	n/a
Supporting	High	Preservation	Rehabilitation

RLS	INTEGRITY	PREFERRED TREATMENT APPROACH	ALTERNATIVE TREATMENT APPROACH
Supporting	Moderate	Rehabilitation	
Supporting	Low	Rehabilitation	
Supporting	No Integrity	n/a	n/a
Minor	High	Rehabilitation	
Minor	Moderate	Rehabilitation	
Minor	Low	n/a	n/a
Minor	No Integrity	n/a	n/a

The final component of the HPR was the recommendation for an approach to mitigation for loss of resources. The recommendation advocated for maximum retention, but in light of the understanding that any development plan would require the loss of historic resources, it recommended levels of mitigation commensurate with the degree of projected loss. In each case, it called for the retention and restoration of at least one example of each resource type.

APPLICATION

In 2012, the proposed development plan was put forward to the DC Historic Preservation Review Board (HPRB) for its review, comment, and ultimate approval. This action followed years of community outreach and response. The proposed development of the site identified those resources that could be preserved and those that could not, based on information related to their conditions and structural integrity. This information was used to refine development plans to maximize retention of historic above-ground resources, as the understanding was that the below ground cells were not sufficiently structurally sound to remain in place if development was to occur at the site. The final concept plan as approved called for the retention of the majority of the above ground historic resources and the demolition of almost all of the underground cells.

Figure 8 View of service court of, c.1938. *Martin Luther King, Jr. Memorial Library.*

Once the conceptual development plan was approved by the HPRB, the DC Zoning Commission, and the Mayor's Agent for Historic Preservation, schematic design development was begun. EHT Traceries, as the project preservation consultants, were integrated into the project team from the beginning. This effort resulted in the identification of practical opportunities and limitations in the design. As regular participants in the design process, they were made aware of problems as they appeared and they were able to draw attention to other problems that had not been identified by the team members. Numerous refinements affected the historic resources; however, in each case, the retention of the historic resource was maintained. Selection of preservation treatment generated the primary discussion, as there was often more than one way to preserve the historic resource while still meeting the Secretary of the Interior's Standards.

With the completion of 30% Design Development, the drawings were reviewed in detail for compliance with the

Figure 9 Aerial of McMillan Reservoir and Filtration Plant, 1921. *National Archives and Records Administration.*

Secretary of the Interior Standards, focusing on the four treatment possibilities: preservation; restoration, rehabilitation, and reconstruction. When necessary, alternate recommendations were made to ensure compliance, including allowing for individual examples of resource types to receive different preservation treatments. The final review of the drawings indicates that the work is generally consistent with the preservation recommendations. In contrast to the project drawings, which are organized by location and discipline, this report presents the individual recommendations for each resource as a type and individually as is necessary by resource type.

Historic Context

The Washington City Aqueduct and Reservoir

The McMillan Slow Sand Filtration Plant and the neighboring McMillan Reservoir are components of the expansive Washington Aqueduct system; the only municipal water system within the United States built and operated by the U.S. Army Corps of Engineers.[3] The single integrated water supply system was initially built from 1852 to 1863 and placed in service in 1864. The original realized system was completed to the designs of Civil War Quartermaster General Montgomery Meigs, but saw later additions including the McMillan Reservoir (1883-1888) and the Sand Filtration Plant (1902-1905). The gravity-fed Washington Aqueduct system begins at Great Falls, Maryland, and extends approximately sixteen miles into the city center.

Including the McMillan Reservoir and Sand Filtration Plant, the Washington Aqueduct system which is still in use today, includes a masonry dam at Great Falls, a total of six bridges, several miles of tunnels, twelve miles of water conduits, brick air vents, siphons, pumping stations, reservoirs, and filtration and treatments plants.[4] The McMillan Reservoir (1883-1888) and the Sand Filtration Plant (1902-1905) are part of subsequent phases of the Washington Aqueduct system, built to improve the quantity and quality of the water that was being distributed throughout Washington to the city's residents.

Population growth in Washington, following the Civil War called for an increased capacity in the city's water supply. Not only was the quantity of water a concern but also the overall quality of water that the Washington Aqueduct provided. To address these concerns, a series of improvements to the Aqueduct were undertaken over the next several years. The three most significant changes to the system included the modification of the dam at Great Falls to increase the volume of water that was diverted to the aqueduct, the construction of a second reservoir north of the city center of Washington to improve service to the eastern portion of the city, and the establishment of a filtration plant to provide an adequate water supply.[5] The last two ultimately became known as the McMillan Reservoir and the adjacent Slow Sand Filtration Plant.

Originally known as the Washington City Reservoir, the creation of the McMillan Reservoir was authorized by Congress on July 15, 1882. The site, chosen by then Engineer Commissioner Major Garrett J. Lydecker, was one of the city's largest and most well-known natural springs. Known as Smith's Springs after the lands original owner Joseph A. Smith, the spring had already been supplying water to the city for nearly fifty years.[6] Excavation of the new reservoir began in 1883 and was completed five years later in 1888. Despite the reservoir's completion in 1888, it remained dry awaiting the completion of the tunnel which was being constructed to connect it to the existing Georgetown Reservoir. Construction on the four-mile-long Washington City Tunnel began in 1882 but was not completed until 1902. Upon the completion of the Washington City Tunnel in 1902, which connected the McMillan Reservoir to the Georgetown Reservoir, the McMillan Reservoir was put into operation.

Although this addition to the Washington Aqueduct system expanded its serviceable area, the quality of the water was still not considered to be adequate. In response, Congress authorized a study of filtration systems for the District in 1898. The study led to a recommendation by U.S. Army Corps of Engineers Lieutenant Colonel Alexander M. Miller to

3 National Register of Historic Places, McMillan Park Reservoir Historic District, Washington, D.C., National Register #13000022, 14.

4 National Register of Historic Places, McMillan Park Reservoir Historic District, 15.

5 National Register of Historic Places, McMillan Park Reservoir Historic District, 15.

6 National Register of Historic Places, McMillan Park Reservoir Historic District, 15. In 1832, Congress had purchased one-acre of land that included several springs from Joseph A. Smith, the then deputy clerk of the Old Circuit Court. In 1833 pipers were constructed for distributing water two miles south to the U.S. Capitol for fire protection and drinking water. Four years later a six-inch cast iron water main fed by Smith;s Spring supplied water to twelve fire hydrants along Pennsylvania Avenue.

implement a mechanical rapid-sand filtration system which would introduce chemicals into the water supply during the filtration process.[7] Concerns raised over the use of chemicals led to a subsequent hearing by the Senate Committee on the District of Columbia. The Senate appointed a second committee of civilian experts who recommended a slow-sand filtration system, which filtered the water without chemicals. Continued opposition to the chemical filtration system and support of the slow-sand filtration method led to Congress approving the construction of a slow sand filtration system in 1901.

Three sites were considered for the new filtration plant throughout the greater Washington area but ultimately a site adjacent to the new Washington City Reservoir was selected and construction began in 1902. The new filtration plant was designed by Lieutenant Colonel Miller, assisted by Edward Dana Hardy and Allen Hazen. Prior to this period, Hazen served as the first director of the State Board of Health Experiment Station in Lawrence, Massachusetts and was chosen to manage the sewage plant at the 1893 Columbian Exposition in Chicago. An early supporter of the slow-sand filtration method in the United States, Hazen designed his first slow-sand system in Albany, New York, in 1899. This system served as a model for the facility that was constructed in Washington, D.C. The new plant was sited and constructed almost entire according to the original plan submitted by Colonel Miller in his 1900 feasibility report.[8] The plant encompassed twenty-nine, slow-sand filter beds, a pumping station to transfer water from the reservoir to the filter beds, sand washers, sand storage bins, and underground clear-water reservoir. The new Slow Sand Filtration Plant was put into service in October of 1905.

The McMillan Reservoir and Slow Sand Filtration Plant and Olmsted's Vision

In1906, by an order of Secretary of War, who in three years would become the 27th President of the United States, officially designated the new reservoir and filtration plant 'McMillan Park,' in honor of Michigan Senator James McMillan for his contributions to both the water supply system and his work in the overall beautification of the federal city. This naming was enacted into law by Congress until1911.

In 1907, Frederick Law Olmsted, Jr. was hired by the McMillan Memorial Corporation's, a fund established by the Senator's widow to fund the design of the 'McMillan Park" and to provide a memorial to the late Senator, to design the landscaping for the 'McMillan Park'. His father, Frederick Law Olmsted Sr. had designed one of the first island parks in the country at Belle Isle in Detroit. James McMillan, before he was Senator living in Detroit in the 1880s, was a large supporter of this project and the committee felt that Olmsted, Jr. was a natural selection as the landscape designer for the 'McMillan Park'.[9]

Olmsted, Jr. developed his vision of how the 'McMillan Park' would be developed upon his first site visit with Captain Cosby of the Army Corps of Engineers in 1907. Since the site only contained two feet of topsoil over the concrete vaults, it was unsuitable for planting any trees. Olmsted decided to take advantage of the south end of the western half of the site "because of its good views southward toward the city," and considered an ideal area for "an important playground for the people of the neighborhood."[10] This organic design would contrast with the orthogonally treated filtration plant to the east; the filter beds would be lined geometrically with low-growing trees, shrubbery would be placed at the entrances to the filter beds, and there would be groups of trees at the regulator houses.

From 1907 to 1911, noted landscape designer Frederick Law Olmsted, Jr. developed the landscape design for the various components of the 92-acre reservoir and filtration plant complex. This landscape plan was substantially implemented between 1907 and 1919. His "General Plan for the Landscape Treatment of McMillan Park," (March 27, 1908), provides

7 Harry C. Hays, The Washington Aqueduct: 1852-1992, Baltimore: U.S. Army Corps of Engineers, Baltimore District, 1996, 95.

8 Hays, The Washington Aqueduct, 95.

9 National Register of Historic Places, McMillan Park Reservoir Historic District, 18.

10 National Register of Historic Places, McMillan Park Reservoir Historic District, 19.

a narrative of his design intentions for the 'McMillan Park'. The plan starts by dividing the entire site into three distinct parts – Part A, Part B, and Part C – which Olmsted, Jr. described as follows:

- **Part A:** "The area including the covered reservoirs, filter beds, sand-washers and their appurtences [sic], consisting of a series of engineering constructions of a strikingly artificial and formal appearance."

- **Part B:** "The spacious and impressive open reservoir with its enclosing banks and hillsides, including the curvilinear banks of the filter beds which face toward it."

- **Part C:** "The southerly part, lying in the main below the dam of the reservoir but sweeping up gradually to the hill top in the southeast corner of part B."[11]

The 25-acre McMillan Slow Sand Filtration Site comprises the majority of **Part A**. Olmsted, Jr.'s design for this section was based on the primary physical structures of the site: the "straight banks" bordering the site; the "formal plain" created by the roofs of the filter beds; and the architectural elements found in the two service courts.[12] From the 1908 general plan, it is apparent that one of Olmsted, Jr.'s primary design intentions was to emphasize and reinforce the border of the formal plain, through the introduction of a perimeter path and multiple layers of perimeter plantings. Olmsted, Jr. started the design with a "low formal hedge bordering the formal plain and marking the top edge of the bank."[13] He specified the "low" hedge because of his concern that a high, solid hedge would obscure visibility to the site from the street and would be ill-proportioned to the "straight banks" at certain points.

As a result, he limited the perimeter hedge to three feet in height. The designer did not think the small hedge would "in itself provide as strong an emphasis of the border as the scale of the plain demands," and therefore, he also recommended planting a double row of small-scale trees inside the hedge, "beneath the foliage of which the view could pass and between which a border path could be provided whence the plain could be overlooked."[14] This idea of overlooking the formal plain from a perimeter path, rather than allowing public access on the plain, was based on Olmsted, Jr.'s recognition of the dangerous condition created by the hundreds of open manholes across the plains. Records indicate that between three and four acres of manholes would be open at any given time to provide light and air to the workers that were cleaning the sand in the filter beds below.

In addition to safety issues, Olmsted, Jr. was cognizant of the detrimental effects the roots of the trees could have on the concrete substructure. Olmsted, Jr.'s concept for the hedge and double row of trees was implemented, and he addressed his various concerns through the species and placement of plantings. To avoid having a fenced condition, he created natural barrier around the perimeter path with closely spaced thorny plantings. The 1908 and 1910 planting plans for the site show that the specifications called for Japanese Barberry with one-foot spacing for the hedge and Cockspur Thorns for the double row of trees. Other thorny species, including Japanese Climbing Rose, Double-flowering Scarlet Thorne, Dwarf Wild Rose, and Early Wild Rose, were used to frame entry stairs at the four corners of the site. The trees and hedges were planted in straight lines around the perimeter, except at the north side of the site, where the spacing and configuration of the trees were more appropriate for the curvilinear character of the north leg of the perimeter path. Larger species, Yellowwood, American Elm, Pagoda Tree, Catulpa Tree, etc., were used to mark and frame entrances located at the east and west ends of the two service courts, but in general, Olmsted, Jr. used smaller plantings to avoid blocking views into the site.[15]

11 Frederick Law Olmsted, Jr., "An Outline of the General Plan for the Landscape Treatment of McMillan Park," March 27, 1908, Olmsted Papers, Manuscript Division, Library of Congress.
12 Olmsted, Jr., "An Outline of the General Plan for the Landscape Treatment of McMillan Park," 1908.
13 Olmsted, Jr., "An Outline of the General Plan for the Landscape Treatment of McMillan Park," 1908.
14 Olmsted, Jr., "An Outline of the General Plan for the Landscape Treatment of McMillan Park," 1908.
15 EHT Traceries, Inc, "McMillan Slow Sand Filtration Plant: Historic Preservation Report for the Proposed Redevelopment of the McMillan Slow Sand Filtration Plant," 15 September 2014, 4.

He also designed plantings in the two east-west service courts to emphasize the rhythms created by the arrangement of the sand storage bins. His recommendation called for rows of widely spaced Chinese Cork Trees and the replacement of the Boston Ivy that was already planted along the surfaces of the sand bins, regulator houses, and court walls with "creepers of a…more picturesque and less flatly enveloping habit."[16]

Olmsted, Jr.'s planting and grading plans for all areas around the reservoir, which comprised **Part B**, reflected the "informal and irregular" character of the reservoir through a more picturesque treatment than was used for Part A. Olmsted, Jr. intended that all landscape improvements of Part B "should be governed before everything else by the purpose of presenting this expanse of water agreeably to those who use the 'McMillan Park'—of securing for it an agreeable backgrounds [sic] of foliage and pleasing foregrounds as seen from the roads and paths frequented by the public."[17]

While a majority of Olmsted, Jr.'s landscape design focused on the enhancement of the water purification complex (Parts A and B), he briefly addressed the land south and southeast of the reservoir, known as **Part C**. He identified this section as having "no practical functions in the operation of the water works and presenting a distinct landscape unit" so he sought to shape this area into "an agreeable and consistent piece of informal park landscape with provision at the westerly end for a children's playground."[18] So, this area of 'McMillan Park' was set aside for public recreation and for the installation of a public memorial to Senator James McMillan.

Olmsted, Jr.'s 1908 plan for the public recreational park area specifies the provision of a wading pool and a track south of the reservoir. It is not known whether his design for these recreational areas was implemented as planned; however, historic documentation indicates that the Bloomingdale Playground was located in the area south of the McMillan Reservoir. The playground accommodated numerous community activities, including soccer games, basketball games, baseball games, folk festivals, marble tournaments, Halloween parties, track events, children's exhibits, kite contests, pet shows, and club meetings. In 1934, the Bloomingdale Playground was officially renamed the "McMillan Playground." Plans for the renovation of the playground from that same year indicate the provision of tennis courts, volleyball courts, horseshoe courts, and a new field house.[19]

Olmsted's first idea for a memorial to Senator McMillan of large memorial arch spanning First Street was jettisoned for a statue, mostly likely the idea favored by the McMillan family. In1913 a memorial fountain was erected for the senator at McMillan Park. Designed between 1908 and 1911, the fountained was a collaboration between sculptor Herbert Adams, who designed the fountain, and architect Charles Adams Platt, who designed the base of the foundation and surrounding plaza and ceremonial stair.[20]

The monument was a gift from the citizens of the state of Michigan to the District of Columbia in the memory of the late senator. The $25,000 cost of the bronze figures of the *Three Graces* that adorned the apex of the fountain was contributed by citizens of the state of Michigan through the McMillan Memorial Corporation. Congress, authorized an additional $15,000 for site and landscape preparations. Olmsted selected the site for the fountain on a high point on the grounds of the reservoir, directly adjacent to the Bryant Street Pumping Station at the north side of the Bloomingdale neighborhood, "upon the summit of the summit of the hill [that commanded] the best views over the reservoir and across the city to the southwest." [21] At its site, the water that fed the fountain was on its way from the reservoir to the initial filter beds before its final treatment and dispersal throughout the city, providing an endless, waste-less supply of water as long as the water treatment facility was in operation.[22]

16 Olmsted, Jr., "An Outline of the General Plan for the Landscape Treatment of McMillan Park," 1908.
17 Olmsted, Jr., "An Outline of the General Plan for the Landscape Treatment of McMillan Park," 1908.
18 Olmsted, Jr., "An Outline of the General Plan for the Landscape Treatment of McMillan Park," 1908.
19 EHT Traceries, Inc, "McMillan Slow Sand Filtration Plant," 4.
20 Hays, The Washington Aqueduct, 98.
21 National Register of Historic Places, McMillan Park Reservoir Historic District, 20-21.
22 National Register of Historic Places, McMillan Park Reservoir Historic District, 21.

On the eve of World War II in 1941, the McMillan Fountain was dismantled and placed in storage at Fort Washington to accommodate the expansion of the reservoir by the U.S. Army Corps of Engineers. The fountain remained disassembled in storage despite several efforts to find it a permanent resting place. In 1983, portions of the original fountain, including the bronze sculpture of the *Three Graces*, where removed from storage and re-erected in a section of Crispus Attucks Museum in the Bloomingdale neighborhood just south of the fountain's original site. In 1990, a fire destroyed the museum, and damaged discolored portions of the fountain. In 1992, the blackened bronze portions of the fountain were removed from the remains of the Crispus Attucks museum and moved to the statues current site, just within the First Street entrance to the McMillan Water Treatment Plant, approximately fifty-yards from the fountains original site.[23] The remaining portions of the fountain, surrounding plaza, and landscape stairs remain in storage at Fort Washington.

The Legacy of the McMillan Slow-Sand Filtration Plant

The McMillan Reservoir and Slow-Sand Filtration Plant, the first water treatment facility for the residents of Washington, D.C. served the city until 1986 when a new treatment facility was built, rendering the slow-sand filtration plant obsolete. The reservoir and filtration plant served the city close to how it was originally designed and built between 1902-1905. The site and method of filtering water experienced little change. In 1910, the original sand washers were modified and in 1945 they were replaced with self-contained and self-propelled washers that cleaned and re-deposited the sand in a single operation. The introduction of chemical processing, which began in 1922 with the use of liquid chlorine and lime at an unknown date, facilitated the conversion of the former shelter building on the reservoir site to a chemical treatment plant in 1939.[24]

Originally accessible to the public, the reservoir site was fenced during World War II for security purposes and the southern portion of the site was converted into a second clear water reservoir. Around this time, following the removal of the fountain and adjacent plantings on the southern portions of the site, the area was converted into a second clear water reservoir and gun emplacements were installed. During the course of the twentieth century, the rest of the Washington water supply system, still under the control of the U.S. Army Corps of Engineers, also expanded its service to support the expanding population of the city. During the 1980s, a new filter plant was constructed at McMillan Reservoir. The new facility, built on the site of three original filter beds, contained twelve rapid sand filter beds, chemical treatment equipment, a chemical storage area, pumps and control equipment in a single building.

With the opening of this facility in 1986, one of the very last slow-sand filtration systems still in operation in the country was abandoned. In 1987, the federal government transferred the twenty-five-acre filtration plant property to the city of Washington D.C. for development. Though no longer in use, the filtration beds, sand bins, washers, and regulator houses survive at the Sand Filtration Plant as a testimonial to the civil engineering infrastructure of the city and a reminder of growth and evolution of the federal city.

23 National Register of Historic Places, McMillan Park Reservoir Historic District, 21.
24 National Register of Historic Places, McMillan Park Reservoir Historic District, 17.

Historic Significance

This chapter summarizes and expands upon the DC Inventory of Historic Places nomination for the McMillan Park Reservoir Historic Landmark by providing a summary chronology of the history of the Landmark and an outline of its historic significance. This information is then used to evaluate the historic significance of the McMillan Site within the context of the significance of the Landmark as whole.

I. SUMMARY CHRONOLOGY FOR THE MCMILLAN PARK RESERVOIR HISTORIC LANDMARK

The timeline provides a brief chronology for the McMillan Site. The information provided in the timeline is based on numerous previous documentation efforts and does not present new or corrected information about the history of the property.

1898: Appropriations are made to investigate experimentally the filtration of the Potomac River and to report upon its advantages and cost.

1898: A feasibility study is completed for water purification system the City of Washington.

1900, July: The American Society of Civil Engineers (ASCE) holds meeting in London to discuss benefits of rapid sand filtration versus slow sand filtration.

1900, December: The Medical Society of the District of Columbia submits a report to the Senate District Committee denouncing the rapid sand filtration process and the use of chemical to purify the water supply for the City of Washington.

1901, January: The Senate Committee on the District of Columbia holds a hearing in New York City to discuss filtration for the City of Washington; the Senate Committee forms an engineering committee to conduct a new feasibility study for slow sand filtration, which recommends the use of rapid sand filtration.

1901, March: Despite the engineering committee's recommendation for rapid sand filtration, Congress appropriates funds to construct a slow sand filtration plant in Washington.

1901-1902: A site is selected and plans prepared for a slow sand filtration plant by the Army Corps of Engineers.

1902-1905: The Army Corps of Engineers constructs a slow sand filtration plant adjacent to the existing Washington City Reservoir.

1905, August: Limited operation of the slow sand filtration plant begins.

1905, October: Full operation of the slow sand filtration plant begins.

1906: Secretary of War Taft renames the Washington City Reservoir and slow sand filtration plant as "McMillan Park" following the death of James McMillan, Senator from Michigan and chair of the Senate District Committee.

1906: Charles Moore, staff of the Senate District Committee, contacts F.L. Olmsted, Jr., to discuss the possibility of a landscape design for "McMillan Park."

1907: Olmsted, Jr. begins plans for a landscape design of "McMillan Park."

1907-1919: Olmsted, Jr.'s landscape design is developed and implemented at "McMillan Park."

1911: McMillan Memorial Fountain is installed west of the intersection of Channing and 1st streets, NW.

1914: "McMillan Park" is added to the schedule of concerts for the Engineer Band and United States Cavalry Band.

1941: "McMillan Park" is closed to public access for security reasons.

1986: A rapid sand filtration plant is constructed west of First Street, functionally replacing the slow sand filtration plant.

1987: The District of Columbia purchases of the eastern section of the slow sand filtration plant for development.

1988: All operation of the slow sand filtration plant is abandoned.

1990: The DC Preservation League submits a landmark nomination for the McMillan Park Reservoir for listing in the DC Inventory of Historic Sites.

1991: The McMillan Park Reservoir is listed as an individual landmark in the DC Inventory of Historic Sites, and the Historic Preservation Review Board (HPRB) recommends the property for listing in the National Register of Historic Places.

2013: The McMillan Park Reservoir Historic District is listed in the National Register of Historic Places. It's period of significance is identified as 1883-1963 (fifty years from the filing date).

II. HISTORIC SIGNIFICANCE OF THE MCMILLAN PARK RESERVOIR HISTORIC LANDMARK

The following text summarizes and expands upon the evaluation of historic significance of the 92-acre McMillan Park Reservoir Historic Landmark as stated in the 1991 DC landmark nomination application. This text is organized based on the evaluation criteria for which the property is listed in the National Register of Historic Places (NRHP), as presented in the HPRB designation decision for the Landmark (Case No. 90-20, August 21, 1991).[1] To provide further context, each evaluation criterion is supported with one or more of the statements provided in the HPRB landmark decision that explain the reasons for which the McMillan Park Reservoir is designated as an individual landmark.

CRITERION A: ASSOCIATION WITH THE HISTORY OF WATER PURIFICATION

- *[The McMillan Park Reservoir] was the first water treatment facility in the City of Washington, and its operation resulted in the elimination of typhoid epidemics and reduced incidence of other diseases.*
- *Construction of its slow sand water filtration system represented a triumph of the pure water advocates over those who advocated chemical treatment of water.*[2]

During the last half of the nineteenth century, the Potomac River, which was the primary water supply for the City of Washington, was becoming increasingly polluted by household and industrial waste, as well as runoff from the fast developing areas within the watershed. Instances of typhoid fever were high and increasing, and sedimentation of water in the city's reservoirs was not sufficient to address the types of intestinal bacteria that contaminated the water supply. By the end of the century, the issue of water purification had become imperative. In 1898, Congress appropriated funds for the investigation of filtration options for the Potomac River water, as well as for the completion of a report on its advantages and cost. From 1898 to 1901, a heated debate took place about the method by which water would be purified for use in the District of Columbia. Although several reports commissioned by the Senate District Committee concluded that the use of coagulants was the optimal filtration method, the Medical Society of the District of Columbia adamantly opposed the use of chemical treatments and persistently promoted the use of the slow sand filtration method. The debate over the benefits and drawbacks of the two filtration methods prompted meetings by the American Society of Civil Engineers (ASCE) and the Senate District Committee, which was chaired by Senator James

1 Definitions for evaluation criteria taken directly from *National Register Bulletin: How to Complete the National Register Registration Form*

2 Designation decision for McMillan Park Reservoir (Case No. 90-20, August 21, 1991).

McMillan from Michigan. In March 1901, despite a strong recommendation for the rapid sand filtration method by its own committee, Congress appropriated money to construct a slow sand filtration plant with an understanding that the appliances needed for use of a coagulant could be installed subsequently if needed.[3] The description of the completed site is provided in the 1906 Annual Report of the Chief of Engineers:

> The Washington filtration plant consists of a pumping station for raising the water from the Washington City reservoir to the filters; of 29 filter beds of the slow-sand type, having an effective filter area of 1 acre each; of the filtered water reservoir, having a capacity of about 15,000,000 gallons; of the necessary piping and valves for carrying the water controlling the rates of filtration, etc.; of a sand washing and storage system, and of a laboratory for testing the water.[4]

The McMillan Slow Sand Filtration Plant was one of the last slow sand filtration facilities constructed in the United States and represented the success of advocates for the traditional filtration system at a time when new technologies were being introduced into water purification processes.

CRITERION B: ASSOCIATION WITH SENATOR JAMES MCMILLAN

> *[The McMillan Park Reservoir] is a memorial to Senator James McMillan who spearheaded development and implementation of the monumental McMillan Park Plan, completing and refining the 1794 Plan of the Federal City in the context of the 1893 City Beautiful aesthetic.*[5]

In 1906, Secretary of War William Howard Taft officially renamed the Washington City Reservoir and the Slow Sand Filtration Plant as "McMillan Park" in honor of Michigan Senator James McMillan. McMillan is credited as the drive behind the creation of the 1901 Senate Committee report titled "The Improvement of the Park System of the District of Columbia," which established a comprehensive plan based on the completion, expansion, and enhancement of the 1792 L'Enfant plan for the city. Now widely known as "The McMillan Plan," the 1901 report was one of the first attempts to implement the City Beautiful Movement, which was born out of the 1893 World's Columbian Exposition in Chicago. The McMillan Plan called for the completion of the National Mall, the articulation of ceremonial boulevards throughout the city, the establishment of a comprehensive park and recreation system, and the overall beautification of the city. McMillan's sudden death in 1901, before the implementation of his plan, was a shock to many in Washington and in his home state of Michigan. As such, James McMillan's name was given to the reservoir and filtration plant complex in honor of his integral role in the introduction of water purification. The designation of the reservoir and sand filtration site as a publicly accessible park was a testament to his efforts to beautify the nation's capital by enlarging and enhancing its system of public open spaces as part of the City Beautiful Movement at the turn of the century. Frederick Law Olmsted, Jr. was retained to design a landscape plan that transformed the public works facility into a designed landscape

CRITERION C: DISTINCTIVE DESIGN AND CONSTRUCTION AS A PUBLIC WORKS FACILITY AND PUBLIC PARK

- *The McMillan Park Reservoir is a major element of the water system of the District of Columbia, an urban American engineering resource of great historic, cultural, landscape, planning, engineering, and architectural significance.*[6]

3 Allen Hazen and E.D. Hardy, "Works for the Purification of the Water Supply of Washington, D.C.", Transactions of the American Society of Civil Engineers, Vol. LVII, 1907.

4 Annual Report of the Chief of Engineers, U.S. Army, Part 1, 1906, p. 818. The 24.69-acre McMillan Site comprises the eastern section of the original slow sand filtration plant (east of First Street, NW), containing 20 of the original 29 filter beds. The pumping station, filtered water reservoir, and the Washington City Reservoir (now known as the McMillan Reservoir) are on the western section of the site (west of First Street, NW) and are still owned and operated by the United States Government. Very few changes took place on the eastern section of the slow sand filtration plant, and most changes to the infrastructure of the plant took place on the western section, including the addition and demolition of various structures and buildings. The eastern section of the site continued in full operation until 1986, when a new rapid sand filtration plant was constructed on the western section of the site. The eastern section was operated or maintained in some capacity until January 1988 and has since been abandoned.

5 Designation decision for McMillan Park Reservoir (Case No. 90-20, August 21, 1991).

6 Designation decision for McMillan Park Reservoir (Case No. 90-20, August 21, 1991).

- *[The McMillan Park Reservoir] is a major element of the McMillan Park System which envisioned a linkage of green open spaces from Rock Creek to Anacostia through the developing suburbs north of the Federal City.*
- *The McMillan Park Reservoir] is the result of the collaboration of major figures in the City Beautiful movement who later contributed to the aesthetic and architectural development of Washington.*[7]

In the nineteenth and the first half of the twentieth century, public utilities were often integrated into a city's built fabric or park system and prominently displayed as evidence of urban progress and accomplishments of design and technology. Today, public utilities are hidden from view, either by burying them underground or locating them outside of the city. These two approaches for the treatment of civic structures strongly relate to the discussion of "infrastructure" versus "public works" as presented by Elissa Rosenberg's article "Public Works and Public Space: Rethinking the Urban Park." According to Rosenberg, "infrastructure" is a socially neutral term that is narrowly defined by engineering works that serve public functions; "public works," however, is more strongly associated with an architectural character capable of contributing to civic imagery and identity to that infrastructure. The McMillan Park Reservoir Historic Landmark stands as a prominent example of Rosenberg's characterization of "public works." Both the incorporation of fashionable academic architectural vocabularies and the commissioning of prominent landscape architect Frederick Law Olmsted, Jr., are testaments to the effort to contribute to the aesthetic qualities of the growing City of Washington at the turn of the twentieth century. The philosophy of "public works" is presently not embraced in Washington, D.C., (nor, generally, in the United States) and the design and construction methods featured within the McMillan Park Reservoir Historic Landmark make the Landmark and important reminders of the prominence that was given to civic architecture in Washington during the City Beautiful Movement.

The landscape plan of McMillan Park was in itself a symbol of the importance given to the design and aesthetic of the filtration plant and reservoir. In 1906, the Army Corps of Engineers commissioned Frederick Law Olmsted, Jr., as the landscape architect for the design of 'McMillan Park'. Olmsted, Jr. was the son of renowned landscape architect Frederick Law Olmsted, Sr. and was himself one of the preeminent landscape designers in the United States in the early twentieth century. Olmsted, Jr. had worked on the 1901 "McMillan Plan," and was a major advocate of the City Beautiful Movement at the turn of the twentieth century. Olmsted, Jr. is well known for his extensive work in planning metropolitan park systems and greenways across the country, as well as for his establishment of the first formal training program in landscape architecture at Harvard in 1900.[8] The application of landscape design by a prominent landscape architect as a means to enhance utilitarian infrastructure of the District of Columbia's water system represents the critical understanding of the importance of public works as a part of the City Beautiful Movement. Through the abilities of Frederick Law Olmsted, Jr., the slow sand filtration plant and reservoir were transformed into 'McMillan Park', a place intended to honor Senator McMillan's extraordinary role in the transformation of Washington, DC.

The Period of Significance for the McMillan Park Reservoir Historic District is identified in the National Register listing as 1883-1963

III. HISTORIC SIGNIFICANCE OF THE MCMILLAN SITE

The following text provides an evaluation of the significance of the McMillan Site as part of the larger McMillan Park Reservoir Historic Landmark using the evaluation criteria and information regarding the significance of the Landmark.

CRITERION A: ASSOCIATION WITH THE HISTORY OF WATER PURIFICATION

The McMillan Site contains a majority of the infrastructure associated with the filtration capabilities of the slow sand filtration plant. Therefore, the McMillan Site is crucial to understanding how the slow sand filtration plant operated, as well as to conveying the scale of the slow sand filtration plant as a facility for the water purification for the entire City of Washington.

7 Designation decision for McMillan Park Reservoir (Case No. 90-20, August 21, 1991).
8 Rolf Diamont, "Biographical Vignette of Frederick Law Olmsted, Jr.," National Park Service: The First 75 Years, 1990.

CRITERION B: ASSOCIATION WITH SENATOR JAMES MCMILLAN
The McMillan Site was planned as a distinct component of 'McMillan Park', which was a memorial to Senator James McMillan. Within 'McMillan Park', the McMillan Site was designed to have a unique function as a perimeter pedestrian park through which the public could stroll and visually experience the unusual landscape of the Site's open plains and structures.

CRITERION C: DISTINCTIVE DESIGN AND CONSTRUCTION AS A PUBLIC WORKS FACILITY AND PUBLIC PARK
The architectural design and construction methods used within the McMillan Site embody the aesthetics that associate this public works facility with the principles of the City Beautiful Movement. Further, Olmsted, Jr. recognized and acknowledged that the McMillan Site had a unique character and designed the landscape for the McMillan Site as a distinct component of his overall landscape plan for 'McMillan Park'.

In conclusion, the McMillan Site is significant as a distinct component of the McMillan Park Reservoir Historic Landmark and contributes to the significance of the Landmark under each of the criteria for which it was designated.

IV: NATIONAL REGISTER OF HISTORIC PLACES

In 2013, the McMillan Park Reservoir was listed as a Historic District in the National Register of Historic Places, based on the following criterion:

The McMillan Park Reservoir Historic District meets National Register Criterion A for its association with the development of water supply and water treatment in Washington, D.C. and as an urban engineering feat and testament to the City Beautiful Movement. The property is a major element of the water system of the nation's capital. The McMillan Reservoir and filtration system is significant at the local level as the first water treatment facility for Washington and is an important element in the federal city's aqueduct and water supply system. The slow sand filtration plant was designed in 1902 by the U.S. Army Corps of Engineers, with consultant Allen Hazen serving as Supervising Engineer for the project, along with E.M. Hardy and Lieutenant-Colonel A.M. Miller, head of the U.S. Army Corps of Engineers. The slow sand water filtration system, put into operation in 1905, resulted in a dramatic drop in colon bacilli in the public water supply and to the eventual end of typhoid and malaria epidemics in the city.

The McMillan Park Reservoir Historic District meets National Register Criterion B as a memorial to Michigan Senator James McMillan and his McMillan Commission Plan of 1901-1902 which he spearheaded and which transformed the urban fabric of the Nation's Capital in the early 20th century The McMillan Commission Plan, formally titled "The Improvement of the Park System of the District of Columbia" established a comprehensive plan based on the completion, expansion, and enhancement of the 1791 L'Enfant plan for the city. The 1901-1902 report was one of the first attempts to implement the City Beautiful Movement, which was born out of the 1893 World's Columbian Exposition in Chicago. The McMillan Plan called for the completion of the National Mall, the articulation of ceremonial boulevards throughout the city, the establishment of a comprehensive park and recreation system, and the overall beautification of the city. McMillan's sudden death in 1902 before the implementation of his plan, came as a shock to many in Washington and in his home state of Michigan. James McMillan's name was given to the reservoir and filtration plant complex in honor of his integral role in the development of the city's infrastructure, namely water purification. The designation of the reservoir and sand filtration site as a publicly accessible park was a testament to his efforts to beautify the nation's capital by enlarging and enhancing its system of public open spaces as part of the City Beautiful Movement at the turn of the century.
The McMillan Park historically had, at its centerpiece, a fountain, designed by architect Charles Platt and sculptor Herbert Adams and erected in memory of the senator and called the McMillan Fountain. Although the park has been closed to the public since World War II and the fountain dismantled and placed in storage, the central feature of the fountain has been re-erected within the grounds of the reservoir, reviving an important memorial to a significant figure in the history of urban planning in Washington.

The McMillan Park Reservoir Historic District meets National Register Criterion C as an excellent and important example of a reservoir, water filtration complex, and public park that was the result of a collaborative engineering and design effort of experts in their respective fields of engineering, city planning, art and architecture, and landscape architecture. The structures and buildings associated with the reservoir and the slow sand filtration plant survive as intact examples of the city's

water supply and cleansing system. The slow sand filtration plant is one of the sole-surviving such complexes in the nation. The sand filtration plant was principally the work of engineer Allen Hazen, while the park and fountain were the result of design collaboration between Frederick Law Olmsted, Jr., Charles Platt, architect, and Herbert Adams, all of whom had been participants in the World's Columbian Exposition of 1893 in Chicago. The buildings at the plant all reflect a consistency of design that required an academic understanding of the building traditions and features of Colonial America and Georgian architecture and, as such, embody the distinctive characteristics of a type and period of design.

The Period of Significance for the McMillan Park Reservoir Historic District extends from 1883 when excavation for the reservoir basin began until 1963, a point fifty years from the present.

V: RELATIVE LEVEL OF SIGNIFICANCE OF INDIVIDUAL RESOURCE TYPES

Relative Level of Significance (RLS) of individual resources has been developed as a preservation-planning tool to assess the relative importance of resource types, as recommended by the Secretary of the Interior's Standards. The RLS ranks each resource based on its contribution to the historic significance of the landmark as a whole. **The detailed findings of the evaluation of the relative level of significance of each resource type are included in Appendix I of the 2014 Historic Preservation Report.**

The first step in evaluating the RLS of the resources within the McMillan Site is an understanding of the significance of the McMillan Site within the context of the entire McMillan Park Reservoir Landmark. Based on the evaluation provided in this chapter, the following principles are accepted:

- The McMillan Site is understood as a distinct component of the McMillan Park Reservoir Landmark and the relative level of significance of the individual resources within the McMillan Site should be evaluated for the resource's role in conveying this distinction;
- The McMillan Site is significant for the same reasons that the Landmark was judged to be significant; thus the relative level of significance of the individual resources within the McMillan Site should be evaluated based on the same criteria.

Using these principles, each of the resource types identified in the Resource Inventory in Chapter 3 was evaluated for its contribution to the significance of the McMillan Site based on the following criteria:

- **CRITERION A:** Association with the History of Water Purification
- **CRITERION B:** Association with Senator James McMillan
- **CRITERION C:** Distinctive Design and Construction as a Public Works Facility and Public Park

The following considerations were then made to determine the RLS of each resource type under each of the above criterion:

- **CRITERION A:**
  - How does/did the resource convey the operations of a slow sand filtration plant?
  - How does/did the resource convey the role of a slow sand filtration plant within the water purification system of the City of Washington?
  - How does/did the resource convey the original operational scale of this slow sand filtration plant?
  - How does/did the resource convey the story of the Site's construction as a distinct component of the first water treatment facility for the City of Washington?
  - How does/did the resource convey the importance of water purification to the City of Washington?
- **CRITERION B:**
  - How does/did the resource convey the Site's association as a distinct component of the first water treatment facility within the larger District of Columbia park system that is associated with the leadership of Senator James McMillan?
  - How does/did the resource convey the experience of the Site as a distinct component of McMillan Park and

as a memorial to Senator James McMillan.

- **CRITERION C:**
  - How does/did the resource convey the original construction methods of this slow sand filtration plant?
  - How does/did the resource contribute to the Site's distinctive architectural character and aesthetic and its role as a distinct component of the first water treatment facility for the City of Washington?
  - How does/did the resource convey Olmsted, Jr.'s design intentions for the Site's original landscape plan as a distinct component of McMillan Park?

Using these considerations, each resource was then ranked on a scale of 0 to 3 for its contribution to the significance of the McMillan Site under each of the evaluation criterion, with 3 corresponding to the greatest level of contribution. Based on the sum of the rankings for each criterion, the resource type was then assigned an RLS as follows:

RELATIVE LEVEL OF SIGNIFICANCE	SUM OF RANKINGS	DESCRIPTION
KEY	8-9	The resource is of the highest level of contribution to the historic significance of the McMillan Site and is essential to understanding the most significant aspects of the McMillan's Site's history and historic character.
SUPPORTING	4-7	The resource is moderately important to conveying the significant aspects of the McMillan's Site's history and historic character.
MINOR	1-3	The resource is minimally important to conveying the significant aspects of the McMillan Site's history and historic character.
NON-CONTRIBUTING	0	The resource does not contribute to the historic significance or historic character of the McMillan Site.

Historic Integrity

The 1991 HPRB landmark decision for the McMillan Park Reservoir states that the property possessed sufficient integrity to convey, represent, or contain the values and qualities for which it is judged significant. The following provides an updated integrity evaluation based on contemporary professional methodology using the seven aspects of integrity established by the National Park Service: materials, workmanship, design, location, setting, feeling, and association.[9] An assessment of the significance statement for the McMillan Site indicates that all seven aspects of integrity are important to conveying the significance of the landmark.

The integrity evaluation is organized into three parts: (1) the integrity of the Site's slow sand filtration plant; (2) the integrity of the Site's designed landscape; and (3) the integrity of individual resource types at the Site.

I. HISTORIC INTEGRITY OF THE SLOW SAND FILTRATION PLANT

The McMillan Site is occupied by a large section of the slow sand filtration plant, including several below-ground and above-ground built resources associated with the water purification process: filter beds, service courts, sand bins, regulator houses, stairs, ramps, sand washers, and manholes. All of these resources were included in the original plans

9 This evaluation does not address the integrity of the areas of the 92-acre landmark that are located outside the 25-acre McMillan Site.

for the filtration plant and were designed as part of its intended operation for the purification of water.[10]

DESIGN

The design of the Sand Filtration Plant gives the McMillan Site a unique character, defined by its artificial topography, trapezoidal footprint, spatial organization, and utilitarian aesthetic. These design components have remained intact since the original construction of the filtration plant in the first years of the twentieth century.

From above, the Site is defined by its large trapezoidal footprint bounded by North Capitol Street to the east, Michigan Avenue to the north, First Street to the west, and Channing Street to the south. Within the trapezoid, the site is divided horizontally by two paved service courts that traverse east-west across the full width of the Site. These service courts create a tripartite organization of expansive open spaces, which correspond to the grassy roofs of the subterranean filter beds. The linear organization of built resources within the service courts makes this tripartite organization of open space legible from the ground, as well, as the buildings and structures rise above the horizontal plane of the adjacent open spaces.

The Site's original design is also conveyed through the distinct structural forms and rhythms of its above-ground and below-ground built resources. The above-ground resources of the sand filtration plant are confined to the two east-west service courts. A linear configuration of large concrete cylindrical sand storage bins rhythmically marches east-to-west from First Street to North Capitol Street. The series of sand bins is occasionally interrupted by a one-story red brick regulator house with hipped roofs clad in red clay tiles. Several concrete stationary sand washers are also located in the service courts within the east-west lines of storage bins and regulator houses. The service courts themselves are defined by concrete retaining walls, which are punctuated by regularly spaced arched portals that lead to the filter beds below. Various types of arches are evident throughout the site: the passageways through the storage bins, the window and door openings of the regulator houses, and the door openings of the filter bed portals. Once below ground, these arched shapes take on another dimension, where rows of unreinforced concrete vaults convey the structural system of the site's subterranean filter beds. The repetition of these strong architectural forms—cylinders, arches, and vaults—gives the site a strong rhythmic expression, both above and below ground. All of these architectural forms and rhythms are part of the original design of the sand filtration plant on the McMillan Site and are critical aspects of its historic character.

As viewed from surrounding areas, the site is also defined by a unique topography that is a product of the original design of the sand filtration plant. At the beginning of construction of the facility in 1903, the property's natural rolling topography was re-graded to accommodate a level foundation for the concrete filter bed structures. Once the filter beds were in place, an additional layer of fill was placed on top, creating a grassy plateau that conceals the concrete structures. Because the re-grading was confined to the Site, its topography is dramatically different from that of the surrounding streets. From points south, the plateau rises approximately sixteen feet above the elevation of Channing Street. At its north end, the plateau is depressed approximately twelve feet from the elevation of Michigan Avenue. These changes in elevation, along with the application of an additional layer of fill on top of the filter beds allows the McMillan Site to read as a topographical feature rather an expanse of concrete structures.

While the distinct architectural forms of the built resources provide visual interest to the Site, the forms of most of the built resources were dictated by their functions. As such, the architectural forms play an important role in conveying the specific purpose each element had in the water purification process. Further, the spatial relationships that create the Site's characteristic architectural rhythms fundamentally convey the operational relationships of the various structures and how they were used during the day-to-day operation of the sand filtration plant.

A majority of the Site's original above-ground and below-ground built resources remain in place, and no new construction has occurred. All material loss due to deterioration or demolition is localized and does not detract from the ability of extant resources to collectively convey the Site's architectural design, as documented in the original plans and drawings for the filtration plant. The spatial relationships of these resources have also been retained, as no extant built resources

10 The current stationary sand washers were replaced in 1910 and are in the same locations as the original. The washers are the only built resources with wholesale alterations since the original construction of the site.

have been moved from their original locations. Therefore, the Site has a high degree of integrity of architectural and engineering design.

MATERIALS

The sand filtration plant on the McMillan Site was constructed using a variety of materials, including reinforced and unreinforced concrete, brick, clay tile, wood, and metal. The construction materials give each type of built resource a characteristic color and texture that is consistent for that resource type throughout the site. Cylinders of smooth gray-toned concrete define the sand storage bins, while warmer tones of exposed-aggregate concrete define the walls and portals of the service courts. From afar, red brick walls and terracotta tile roofs make the four regulator houses on the Site stand in stark contrast to the gray concrete cylinders of the storage bins. More subtle blues, greens, and grays define the isolated instances of painted wood in the doors and window screens of the regulator houses and filter bed portals. Although not as visible from afar, various types of metal elements provide some of the most intricate details on the Site, from the portal door hinges to the patterns of the more ornamental manhole covers within the service courts. The grassy roofs of the filter beds provide some relief against the hard, solid character of the masonry service courts and associated resources, and thousands of metal manhole covers rhythmically interrupt the seemingly natural character of these grassy plains, reminding visitors of the artificial character of the Site and the structures below.

Through years of neglect, various degrees of material deterioration and loss have occurred throughout the Site. A substantial amount of material deterioration is due to inherent structural issues that were first documented in a 1906 report by civil engineers Allen Hazen and E.D. Hardy, entitled "Works for the Purification of the Water Supply of Washington, D.C."[11] The report describes the structural deterioration of specific filter beds and identifies the cause of the deterioration to be the inconsistencies in the original cut and fill work for the construction of the facility. The areas of deterioration identified in that report are mostly consistent with the conditions documented in a 2001 structural investigation of the Site, which concluded that eight of the twenty filter beds are structurally unsound. Despite these conditions, all twenty original filter beds are extant on the site. Although there are various degrees of above-ground and below-ground material deterioration, the Site continues to owe a significant part of its historic character to the original palette of materials. Therefore, the Site retains a high degree of integrity of materials.

WORKMANSHIP

The original workmanship of the sand filtration plant is still evident on both a large and small scale and contributes to the McMillan Site's historic character. The markings of original concrete formwork provide a linear texture to the otherwise smooth concrete surfaces of the cylindrical sand bins and the concrete vaults of the filter beds. Flemish-bond coursing of the brick walls of the regulator houses gives this public works facility a sense of permanency and high style for an otherwise utilitarian Site. Where original concrete ramps and floors exist, various joint and scoring patterns in the concrete provide additional layers of texture. Evidence of workmanship and attention to detail is one of the primary characteristics that differentiate the McMillan Site from examples of modern civic infrastructure, and the Site retains a high degree of integrity of workmanship.

FEELING

Presently, all structures that were built on the McMillan Site for the specific purpose of facilitating water purification are non-operational, and the Site is not planned to be used again for its intended purpose. However, the forms of the extant structures still convey their original functions within the filtration plant. The adjacency to the McMillan Reservoir further reinforces the retention of the Site's character as part of a functioning water purification plant. Therefore, the Site retains a high degree of integrity of feeling as a public works facility.

ASSOCIATION

The McMillan Site is part of the facility that was originally and is still referred to as the McMillan Sand Filtration Plant. This name retains the Site's association with Senator James McMillan, for whom the facility was dedicated in 1906. Further, the Site retains its association with the history of water purification through the retention of a majority of the buildings and structures that were associated with the operation of the sand filtration plant. Therefore, the McMillan Site retains a

11 Allen Hazen and E.D. Hardy, "Works for the Purification of the Water Supply of Washington, D.C.", Transactions of the American Society of Civil Engineers, Vol. LVII, 1907.

high degree of integrity of association.

SETTING
The sand filtration plant was constructed on several city blocks that were undeveloped but had been approved for subdivision into residential lots. Therefore, the original setting of the McMillan Site was defined by undeveloped residential plats to the east and south, the Washington City Reservoir site to the west, and the pastoral landscape of the United States Soldiers' Home to the north. Row houses were constructed on the residential plats soon after the filtration plant was constructed; these residential developments still exist and continue to define the setting to the east and south. Further, the reservoir and the section of the filtration plant located west of First Street, although altered over time, continue to define the setting to the west. During the latter half of the twentieth century, the construction of the medical complexes to the north severed the physical relationship that originally existed between the McMillan Site and the Soldiers' Home and interrupted the once continuous open space of the McMillan Site and Home's dairy pastures. Despite this intrusion, the Site retains its overall setting as a public works facility placed within the sprawling urban development of the city and in close proximity to large institutions. Therefore, the McMillan Site retains a moderate degree of integrity of setting.

LOCATION
The current site of the filtration plant was one of three locations originally considered by the Army Corps of Engineers in 1902. According to the 1906 report, the Corps selected this site for its central location within the city, as well as its proximity to the existing reservoir. Today, the McMillan Site remains in its original location and retains the characteristics of its location that dictated its selection: the sand filtration plant is still located centrally within the city boundaries and still retains its relationship with the historic reservoir. Therefore, the McMillan Site has a high degree of integrity of location.

CONCLUSION
In summary, the slow sand filtration plant on the McMillan Site retains a high degree of integrity of architectural and engineering design, materials, workmanship, feeling, association and location, and a moderate degree of integrity of setting. Therefore, the McMillan Site and its built resources retain sufficient integrity to convey the significance of the McMillan Park Reservoir Landmark.

II. HISTORIC INTEGRITY OF THE DESIGNED LANDSCAPE

Landscape resources for the McMillan Site include all resources associated with Frederick Law Olmsted. Jr.'s landscape plans dating from 1907 to 1911 and implemented between 1907 and 1919. Olmsted, Jr.'s designed landscape included plantings, a perimeter pedestrian path, and corner stairs.[12]

DESIGN, MATERIALS, WORKMANSHIP, ASSOCIATION, FEELING, SETTING, AND LOCATION
The McMillan Site today retains only a few remnants of the designed landscape conceived by Olmsted, Jr. A 2002 report prepared by Parsons Infrastructure and Tech (Fairfax, VA) for the DC Office of Planning gives a detailed description of the condition of the remaining elements.[13] Parsons states that although the Site is covered in vegetation, extant plantings consist primarily of grasses, as well as annual and perennial herbaceous species. These plants and grasses are "volunteers" and can be classified as weeds. The identified species of the existing vegetation do not represent species that were specified by Olmsted, Jr. However, there are some remnants of Olmsted, Jr.'s plan, mostly in the form of tree and shrubbery stumps, that can be used to ascertain the original patterns of some of his plantings; these patterns include the double row of small trees lining the pedestrian path, the larger trees at the Site's entry points, and the more picturesque configuration of small trees on the north end of the site.

12 The McMillan Memorial Fountain and other built landscape resources were included on the western section of the site, west of First Street.

13 Parsons Infrastructure and Tech, "McMillan Water Treatment Plant: Landscape Survey and Treatment Plan – HPF Grant 11-01-16408," Prepared for the DC Office of Planning Historic Preservation Division. July 2002

Creepers continue to grow on the many of the structures in the service courts, contributing to the character of the Site as they change colors through the seasons. However, the Parsons report identifies these creepers as Boston Ivy, which was the original species planted on the site, not the species recommended by Olmsted, Jr. The report also identifies two extant trees, an Elm and a Mulberry, that are of sufficient age to have been part of the original design. Despite these remnants, there is sufficient material to convey the overall vision of Olmsted, Jr.'s landscape plan.

Despite the lack of remaining original planting material, there remains more substantial evidence of the built resources associated with Olmsted, Jr.'s designed landscape. Sufficient sections of the pedestrian path remain to allow the original route of the path to be legible. Only one of the original sets of corner stairs is still extant, but the locations of the other three sets of stairs are indicated by depressions in the topography, as well as scattered remnants of material.

CONCLUSION

Because few remnants of Olmsted, Jr.'s original landscape plan remain, McMillan Site's designed landscape retains a low degree of integrity of materials, workmanship, feeling, setting, association, and location. Although the remnants that do remain (stumps, spatial voids, concrete remnants) indicate some aspects of the original configuration of plantings in specific areas of the site, the overall character of the landscape plan is only evident through historic documentation; therefore, the site's landscape design does not retain sufficient integrity to convey its significance in the history of the McMillan Park Reservoir Historic Landmark.

Despite the lack of integrity of the designed landscape, Olmsted's vision for the site is fully documented and preserved in his professional records. Although past documentation efforts have consulted the Olmsted, Jr. manuscripts at the Library of Congress, none of the previous reports, including the Parsons report and the landmark nomination, were able to consult the Olmsted Archives in Brookline, Massachusetts. EHT Traceries was given the opportunity to consult these records for the McMillan Redevelopment Project. Records reviewed included Olmsted, Jr.'s planting plans and lists for all areas of the filtration plant and reservoir. Select plans and lists are provided in this report, along with a full inventory of the records available and consulted at the Olmsted Archives.

III. HISTORIC INTEGRITY OF INDIVIDUAL RESOURCES

The integrity of each resource type was evaluated based on a comparison of historic documentation (plans, drawings, photographs, and narrative descriptions) with on-site investigations of existing conditions. This integrity evaluation conveys whether each resource type is extant and appears to be consistent with the original location and design that is reflected in historic documentation - the structural integrity of individual resources can be found in the resource conditions section of this report. Based on the evaluation in this section, each resource type was assigned one of the following levels of integrity:

INTEGRITY	DESCRIPTION
High	All resources within the resource type are extant, in their original locations, and appear to be visually consistent with the historic character of the resource as seen in historic documentation.
Moderate	All resources within the resource type are extant and in their original locations, but the general physical condition of the resource type does not fully convey the original character of the resource type as seen in historic documentation.
Low	Not all resources within the resource type are extant and/or the general physical condition of the resource type has diminished its overall integrity so that its historic character is not fully legible.
No Integrity	The resource is no longer extant and retains no material integrity.

Preservation Recommendations

The McMillan Site has a unique character and history. Its importance to the heritage of the District of Columbia and the Nation as a public works was recognized by the District with a landmark designation of the McMillan Park Reservoir. This larger site was listed on the National Register of Historic Places as a Historic District in 2013. The project at the McMillan Site, located on the former Sand Filtration Plant to the east of First Street, remains in the forefront of the community. The preservation of this site is an extraordinary but necessary challenge, and a comprehensive preservation strategy was developed and implemented as an integral part of the proposed redevelopment.

The recommendations in this report are intended to ensure that the proposal for the redevelopment submitted by VMP incorporates an effective strategy for preservation and protection of the McMillan Site by providing a rationale for the recommended preservation approach. These recommendations look to the historic significance and period of significance of the McMillan Park Reservoir Historic District as identified in the National Register listing. The site experienced change during the extended period of significance; the redevelopment will result in greater change. The goal of these recommendations is to retain the historic character of the site as much as possible while allowing the integration of new construction and activities. The Mayor's Agent on Historic Preservation has reviewed and approved the project and its associated demolition, finding it an appropriate balance and a project of special merit. These recommendations are consistent his findings. Further, the determination of recommendations for the preservation work proposed for the historic resources located at the Site was based on the Secretary of the Interior Standards for the Treatment of Historic Properties and the associated Guidelines for the Preserving, Restoring, Rehabilitating, and Reconstructing Historic Properties.

Two types of recommendations are provided:

1. General Recommendations
2. Resource Type Treatment Recommendations

The General Recommendations are intended to provide overall preservation objectives for the redevelopment project and establish protections for the Site and its resources as plans for redevelopment are prepared. The Resource-specific Treatment Recommendations address the preservation of individual character-defining features based on the resource type's contribution to the Site's historic significance and integrity. All recommendations are provided at a level of detail intended to inform the design development of the Site.

GENERAL RECOMMENDATIONS

The following General Recommendations provide overall preservation goals for the McMillan Redevelopment Project. These recommendations will help balance the historic preservation strategies of the McMillan Site with the development to create an effective strategy for considering the resource-specific recommendations in this plan.

1. Pursuant to the 1987 Quitclaim Deed transferring the McMillan Site from the United States to District of Columbia, the treatment of all historic resources retained on the redeveloped McMillan Site should be consistent with the Secretary of the Interior's Standards.

2. The redevelopment of the McMillan Site should allow the landmark to retain sufficient historic integrity to convey the site's significance to the history of public works, water purification, and landscape design, as well as the site's association with Senator James McMillan.

3. Preservation of historic resources at the McMillan Sand Filtration Site can and should be a critical component of the success of the redevelopment project.

4. If critical to the preservation of the overall character of the McMillan Site, the preservation of a significant individual features should be considered regardless of whether it will directly contribute to the ideal use and aesthetic of the redevelopment.

5. The redevelopment of the McMillan Site should be based on planning and design principles that are specific to this historic site by reflecting the landmark's unique aesthetic, character, and history in all aspects of the redevelopment.

6. In all cases, materials resulting from demolition of historic resources should be reused and/or recycled, if possible on site.

7. The character, history, and technical operations of the McMillan Site should be celebrated through both preservation and interpretation.

8. The development team should continue to incorporate assistance from qualified preservation specialists throughout the development of the site plan, design development, and construction to ensure that a meaningful preservation strategy is coordinated with the DC Historic Preservation Office (DCHPO) and implemented. Preservation specialists must meet professional qualifications for their respective disciplines, as provided in the Secretary of the Interior's Standards.

9. These recommendations are based on the understanding of the significance, integrity, and condition of the site and individual resources at the time of the 2015 study. As the project progresses into the construction phase, identified conditions will be reevaluated based on the field conditions at that time. Recommendations should be reevaluated as needed to respond appropriately to the changed circumstances.

10. In the event that a recommendation for the treatment of a specific individual resource is in conflict with the above general recommendations, the recommendation associated with the specific individual resource takes precedence.

RESOURCE TYPE TREATMENT RECOMMENDATIONS

The Resource Type Treatment Recommendations are provided for the preservation of individual historic resource types at the McMillan Site. These recommendations are made in an attempt to provide a holistic preservation strategy that preserves those features that EHT Traceries has identified as most significant to the Site's historic character and integrity. These recommendations should be used for the purpose of guiding the development of the site plan.

The following tables provide the resource type treatment recommendations based on the RLS and integrity assessment integrated into the development plan as approved by the Mayor's Agent and the PUD in 2015. The resource type treatment recommendations are organized by resource type, including built resources, site resources, and natural landscape resources. These recommendations are informed by structural survey conducted by Silman Associates, and materials conditions assessment conducted by CSI, and are coordinated with the Final Concept Design submission prepared by Perkins Eastman and associated consultants. For further detail, survey data, and photographic documentation, refer to their reports. Historic images and drawings are located in the Appendices of this report.

BUILT RESOURCES

RESOURCE	RLS	INTEGRITY	TREATMENT	
Regulator Houses (4)	Key	High	Preservation (1)	Rehabilitation (3)
Sand Bins (20)	Key	High	Preservation (1)	Rehabilitation (19)
Filter Bed Portals (20)	Key	High	Restoration (11)	Demolition (9)

RESOURCE	RLS	INTEGRITY	TREATMENT	
Sand Washers (12)	Supporting	High	Rehabilitation (1)	Rehabilitation (11)
Tunnel (1)	Supporting	High	Preservation (1)	Partial Demolition (1)
Filter Beds (18)	Supporting	Moderate	Rehabilitation (2)	Demolition (18)
Service Courts (2)	Supporting	Moderate	Demolition/ Reconstruction (2)	N/A
Service Court Walls (4)	Supporting	Moderate	Rehabilitation (2)	Demolition (2)
Manholes (~2,100)	Supporting	Moderate	Rehabilitation (100)	Demolition (~2,000)
Pedestrian Path (1)	Supporting	Low	Rehabilitation (1)	N/A
Corner Stairs (1)	Supporting	Low	Demolition (1)	Reconstruction (2)*
Filter Bed Ramps (18)	Minor	High	Restoration (1 at Filter Bed 14)	Demolition (17)
Service Ramps (6) and Stairs (23)	Minor	Moderate	Restoration (1 at Filter Bed 14)	Demolition (all remaining on site)

* Two of the non-extant original corner stairs will be reconstructed.

PROCEDURE FOR EMERGENCY ACTION IN THE CASE OF UNANTICIPATED DAMAGE TO AN HISTORIC RESOURCE:

In the event that an historic resource suffers damage during an effort to stabilize, reinforce, preserve, restore, or rehabilitate that resource or another resource, the following actions shall be taken:

Statement of Emergency Procedures in Case of Unanticipated Damage

1) The work that is causing the damage should be stopped immediately, unless doing so will cause additional damage or risk the safety of the site.
2) The on-site supervisor shall be called to the site of the incident and the area of the work should be secured.
3) The on-site supervisor shall contact the structural engineer, the historic preservation specialist, and the owner using emergency contact information.
4) The on-site supervisor shall photograph the historic resource to document the damage. Date and time of the photographs shall be recorded.
5) Upon arrival at the site, the project structural engineer shall examine the resource and recommend the appropriate action to minimize additional damage to the historic resource. This examination should take place within hours of the incident.
6) The structural engineer shall report to the owner and the historic preservation specialist his/her observations and recommendations for the best actions to be taken to ensure a structurally sound resource.
    a. If the finding of the structural engineer is that the resource is structurally sound following the damage, the owner, the structural engineer, and the historic preservation specialist shall discuss the structural engineer's recommendations and concur on the action that will preserve or rehabilitate the resource.
    b. If the finding of the structural engineer is that resource is structurally unsound following the damage, the owner, the structural engineer, and the historic preservation specialist shall discuss the structural engineer's recommendations and concur on the recommendation for restoration or reconstruction of the resource. This may include salvage of parts of the resource. The DCSHPO shall then be informed of the recommended action and determine the restoration or reconstruction of the resource in consultation with DCRA and the owner.
7) If the structural engineer determines that the action is required immediately, the structural engineer shall advise

the owner and on-site supervisor of the immediate action to be undertaken. The structural engineer will provide a written statement to support his/her decision recommending immediate action and provide that statement to the on-site supervisor for inclusion in his/her emergency circumstance report. The owner shall immediately advise the DCSHPO of the immediate action to be undertaken. The owner and on-site supervisor shall cause immediate action to commence on the resource with the concurrence of the DCSHPO and DCRA.

8) Within 48 hours of the incident, the on-site supervisor shall complete an emergency circumstance report and submit to the owner. This report shall include the following information:

a. date and time of incident;
b. action being pursued when incident occurred;
c. names of workers involved in the incident and their supervisors;
d. a brief statement of what occurred;
e. photographic documentation of the resource at the time when the incident resulted in damage and additional photographs to document changes when and if they occur until such time as the structural engineer arrives on site;
f. the structural engineer's recommendations;
g. the actions taken to resolve the damage and secure site safety.

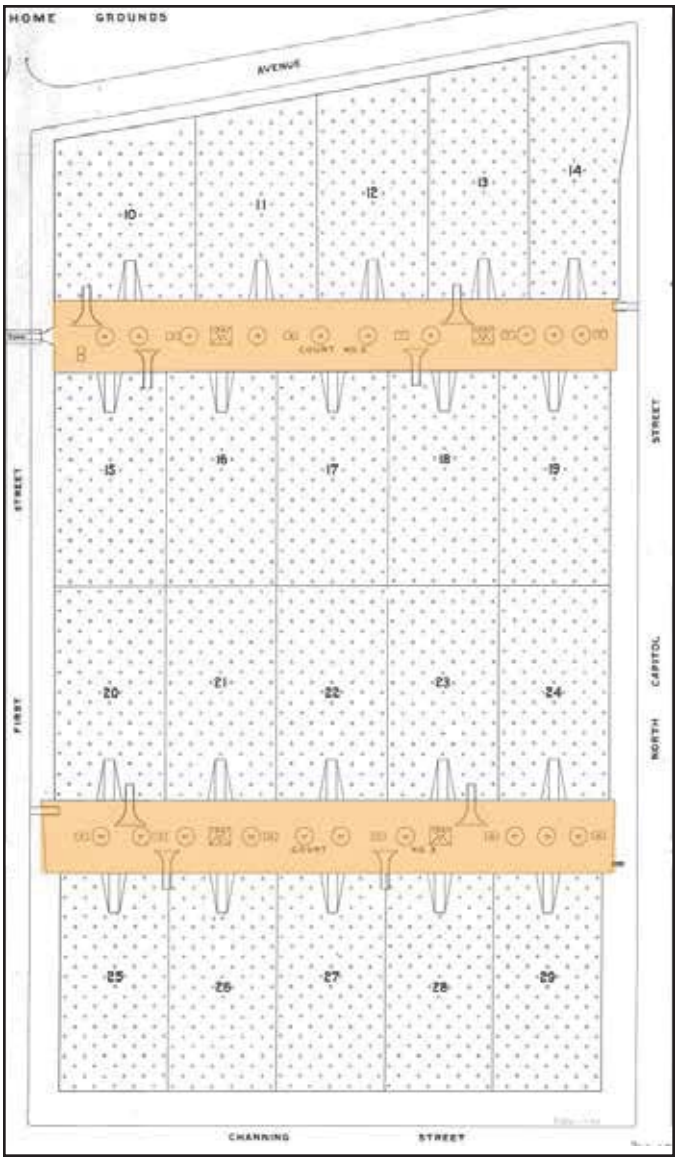
9) Within 48 hours of the incident, the on-site supervisor shall submit the emergency circumstance report to the owner, with photographs, the structural engineer's written recommendation, and documentation of the actions taken to resolve the damage and secure site safety. As appropriate, this report shall be submitted to the DCSHPO documenting the incident, the action taken, and the reasons for that action.

Procedure for Unanticipated Archaeological Discovery:

Although the McMillan Site has not been identified by the District of Columbia as a potential archaeological site, in the event that resources are discovered, the on site supervisor and owner shall be called to the site of the discovery and the area of discovery secured. The on-site supervisor shall contact the owner representative using emergency contact information, who will immediately contact the District of Columbia Archaeologist, Dr. Ruth Trocolli (202-442-8836). Following the call to City Archaeologist, the owner representative should call the historic preservation specialists (EHT Traceries). The owner representative will be informed by the Archaeologist of next steps.

Documentation and Recommendations: Historic and Existing Conditions and Recommended Treatment for Adaptive Reuse

Service Courts



Material: Concrete

Quantity: 2

Date: 1903-1905 (original)

Relative Level of Significance: Supporting

Integrity: Moderate

Context: The Site contains two paved service courts that run in an east-west direction, dividing the Site into three areas. A majority of the above-ground resources on the Site are located within these courts. The courts sit five feet below the grade of the adjacent plains and are bordered to the north and south by concrete parapets that are integrated into the structure of the subterranean filter beds. The courts are accessed by stairs that lead to the public streets and to the plains that form the "roof" of the filter beds. The service courts remain in their original locations. Pipes and tracks that appear in historic photographs are no longer extant.

Service Court 2

Existing Conditions: The northernmost service court on the Site is a concrete surface containing two regulator houses (4 and 5), six sand washers, 10 sand bins, the entrances to filter beds 10-19, and the entrance to the tunnel that connects Service Court 2 to section of the filtration bed located west of First Street.

The surface of the service court is clad with square concrete pavers of varying dimensions. The concrete pavers are in very poor condition. Over time, in some areas, cracks in the pavers have been poorly patched with inconsistent concrete or removed in their entirety. Where removed, poured concrete stamped with a variety of patterns inconsistent with the original design are found. Small herbaceous plant material is growing along the edges of the pavers, obscuring the continuous expanse of concrete associated with their original design.

Treatment: Demolition

Recommendations: The service court concrete pavers will be removed in their entirety and replaced with new masonry pavers. This removal and replacement is consistent with the Mayor's Agent Decision and Order HPA No. 14-393. The design of the new service court should be stamped or scored concrete, per the original service court design. Masonry and concrete should be neutral in color, referencing the industrial character of the service court. Curbs should be avoided if possible; pedestrian and vehicular areas should be differentiated using pattern, texture, and color. This area will be shared by pedestrians and vehicles, and additional safety requirements that were not previously required will be needed. The new design and safety components should take into account the historic appearance of the service courts.

Detail of paving at SM Mill Court 2 looking Southeast Refer to Drawing: McMillan Adaptive Reuse AV00. Filter Bed 10. 2015.

Detail of paving at Service Court 2, looking southeast from First Street. 2015.

Detail of paving at Service Court 3, looking east from Sand Bin 14. 2015.

Detail of paving at Service Court 2, looking north from Regulator House 5. 2015.

Service Court 3

Existing Conditions: The southernmost service court on the Site is a concrete surface containing two regulator houses (4 and 5), six sand washers, 10 sand bins, the entrances to filter beds 10-19, and the entrance to the tunnel that connects Service Court 2 to section of the filtration bed located west of First Street.

The surface of the service court is clad with square concrete pavers of varying dimensions. The concrete pavers are in very poor condition. Over time, in some areas, the cracks in the pavers have been poorly patched with inconsistent

concrete or removed in their entirety. Where removed, poured concrete stamped with a variety of patterns inconsistent with the original design are found. Small herbaceous plant material is growing along the edges of the pavers, obscuring the continuous expanse of concrete associated with their original design.

The condition of the pavement in Service Court 3 has been further damaged by the construction effort employed by DC Water with the construction of the First Street Tunnel entrance immediately to the south at the western end of the court adjacent to Filter Beds 25 and 26. This work has resulted in a substantive number of broken pavers.

Treatment: Demolition

Recommendations: The service court concrete pavers will be removed in their entirety and replaced with new masonry pavers. This removal and replacement is consistent with the Mayor's Agent Decision and Order HPA No. 14-393. The design of the new masonry pavers should be simple and relate to the flat, planar character of the original pavers. Overuse of multiple patterns should be avoided. Masonry and concrete should be neutral in color, referencing the industrial character of the service court. Curbs should be avoided if possible; pedestrian and vehicular areas should be differentiated using pattern, texture, and color. This area will be shared by pedestrians and vehicles, and additional safety requirements that were not previously required will be needed. The new design and safety components should take into account the historic appearance of the service courts.

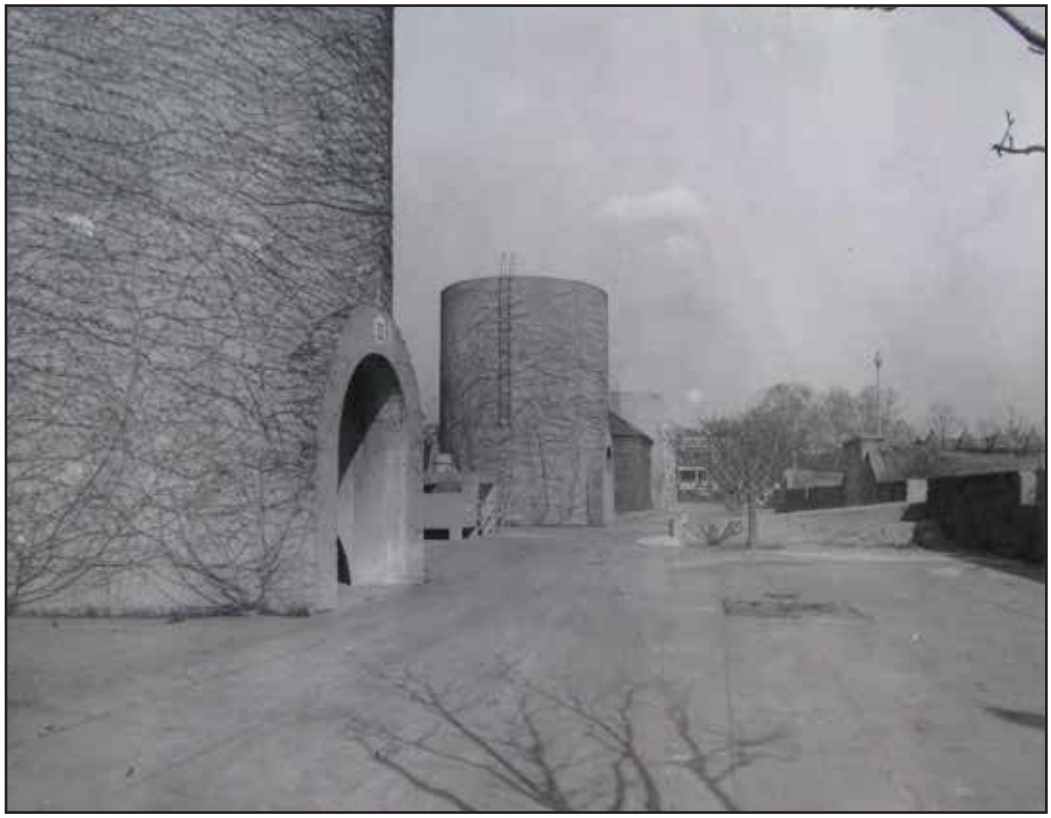
Refer to Drawing: McMillan Adaptive Reuse A100, A101.

Detail of paving at Service Court 3, looking east from Filter Bed 24. 2015.

Detail of paving at Service Court 3, looking east from First Street. 2015.

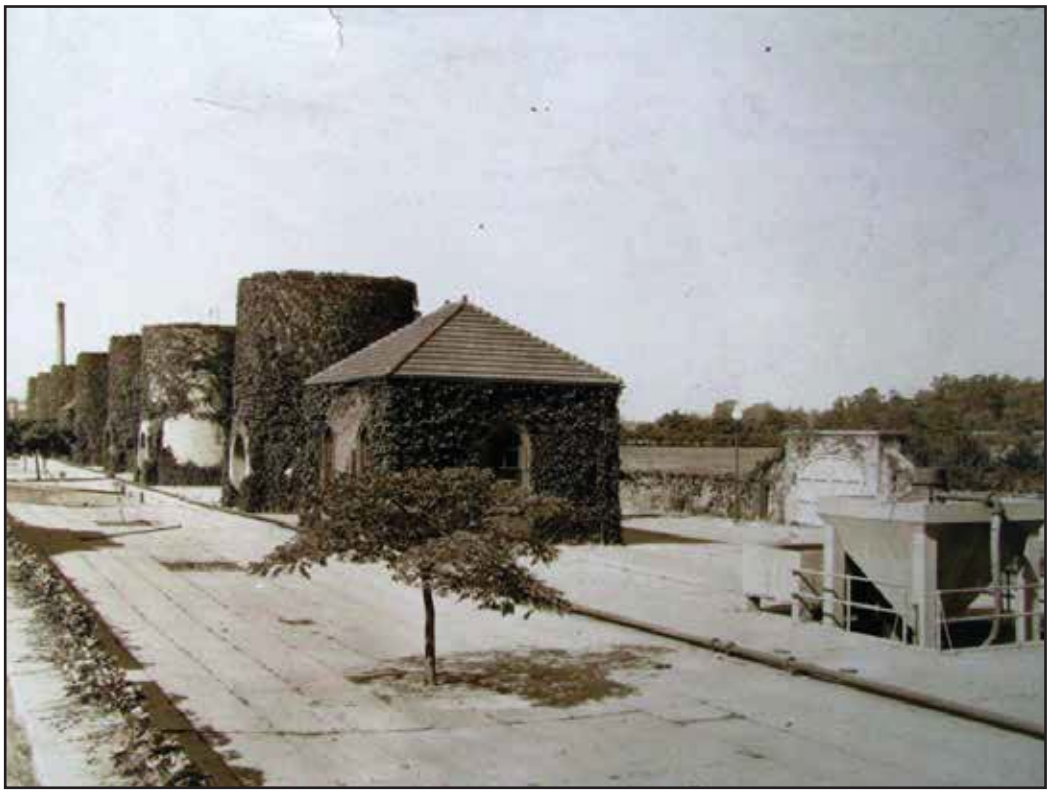
Detail of paving at Service Court 3, looking southwest from Sand Bin 27. 2015.

Detail of paving at Service Court 3, looking west from Ramp 14. 2015.



Service Court 2 from about center, looking east. March 25, 1944. Courtesy of the Archives of Washington Aqueduct

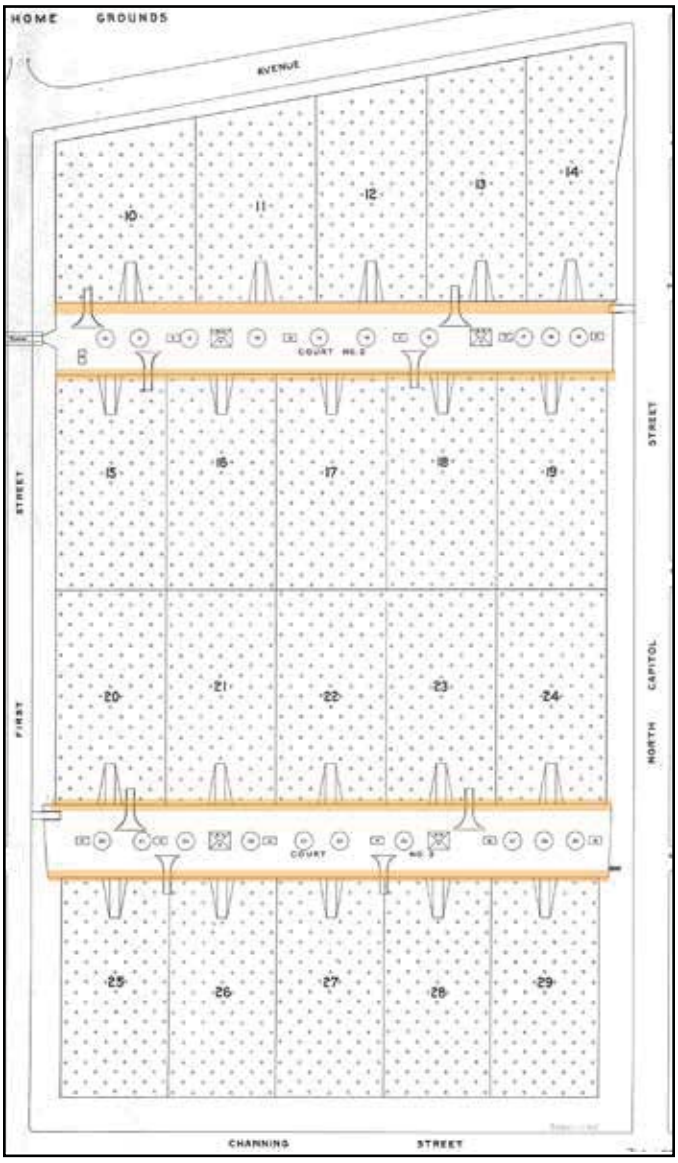
Service Court 2 from about center, looking east. 2015.



Service Court 3, looking west. Circa 1928. Courtesy of the Archives of Washington Aqueduct

Service Court 3, looking west. 2015.

Service Court Walls



Material: Concrete

Quantity: 4

Date: 1903-1905 (original)

Relative Level of Significance: Supporting

Integrity: Moderate

Context: Low walls composed of poured-in-place unreinforced concrete with a large pebble aggregate bound the north and south sides of both service courts. These walls are the parapets of the subterranean filter bed structures and also function as retaining walls to the land fill that was placed on top of the concrete roofs of the filter beds. The walls are slightly canted outward at the base, providing buttressing for the vault system within the filter beds. The walls have a simple, unadorned concrete coping but feature no other architectural detailing. Ramps and stairs, also of poured unreinforced cast concrete, pierce each wall at several locations in both service courts to provide access from the courts to the tops of the filter beds.

CSI *Resource Assessment & Survey, II. General Condition of Structures D. Court Walls*.

Silman, *McMillan Reservoir Existing Conditions Assessment & Feasibility Evaluation – Sand Filters 14, 27-29, Portals and Walls*, pages 48-53.

Service Court 2 - North Wall

Existing Conditions: The service court wall is extant in its original location, with various degrees of material deterioration. Vertical cracks, spalling, and loss of material are evident throughout the visible surfaces. Since this wall acts both as a parapet and a retaining wall, the cracks speak to structural failure.

Treatment: Restoration of section of wall adjacent to Filter Bed 14; Demolition of remaining wall.

Recommendations: The north wall flanking Service Court 2 will be removed, except for the portion adjacent to Filter Bed 14 at the northeast corner of the Site. The section will be restored. This removal and restoration is consistent with the Mayor's Agent Decision and Order HPA No. 14-393.

During Construction: Vertical reinforcement is required to be drilled into the centerline of the wall (similar to the process recommended for the filter bed columns). Vertical reinforcement will tie portions of the wall that have cracked (particularly at the portal to the filter bed) and provide additional moment capacity to the new wall condition. Flashing should be applied at the top of the wall to protect the wall's coping and conceal bore hole resulting from the reinforcement. Prior to the demolition of adjacent the filter beds, temporary bracing will be

required to resist the soil pressure from the service court until compacted soil on the filter bed is in place. Temporary bracing is necessary. This may be accomplished using whalers and braces on the interior of the filter bed.
Thermal movements have caused vertical cracking in the walls of the filter beds along the service courts. There are two ways to address the thermal movements: the first approach involves cutting through thickness control joints to insert a sealant; an alternative approach is to leave the walls as-is, allowing uncontrolled thermal movement and routine maintenance. The architect and conservator should study and provide recommendations to the owner as to the best approach to address thermal movements.

Restoration:
Following structural stabilization, the sections of the concrete wall to be retained will be restored in accordance with National Park Service Preservation Brief 15: Preservation of Historic Concrete. Where the wall is removed adjacent to Filter Bed 14, the demolition shall be accomplished by hand to avoid any additional damage to the structure. Upon removal of the section, the repair work shall be accomplished using a concrete mix compatible with the material of the original concrete; however it should not replicate the original material, but instead use a texture and/or color that will allow for a visual differentiation between the original and new concrete work. Test patches of potential concrete mixes and applications should be prepared and reviewed by DC HPO.

North wall at Service Court 2, near North Capitol Street. 2015.

North wall at Service Court 2, at Filter Bed 14. 2015.

Service Court 2 - South Wall

Existing Conditions: The service court wall is extant in its original location, with various degrees of material deterioration. Vertical cracks, spalling, and loss of material is evident throughout the visible surfaces. Since this wall acts both as a parapet and a retaining wall, the cracks speak to structural failure.

Treatment: Demolition

Recommendations: This demolition is consistent with the Mayor's Agent Decision and Order HPA No. 14-393.

See *McMillan Adaptive Reuse Drawing A100* for further detail.

Service Court 3 – North Wall

Existing Conditions: The service court wall is extant in its original location, with various degrees of material deterioration. Vertical cracks, spalling, and loss of material are evident throughout the visible surfaces. Since this wall acts both as a parapet and a retaining wall, the cracks speak to structural failure.

Treatment: Rehabilitation

Recommendations: The north wall flanking Service Court 3 will be retained for the most part with sections to the west of the portals to filter bed 21, 22, and 23 removed. This rehabilitation with partial removal of the wall is consistent with the Mayor's Agent Decision and Order HPA No. 14-393. The wall will be rehabilitated in accordance with the SOI Standards and Guidelines for Rehabilitation.

During Construction: Vertical reinforcement is required to be drilled into the centerline of the wall (similar to the process recommended for the filter bed columns). Vertical reinforcement will tie portions of the wall that have cracked (particularly at the portal to the filter bed) and provide additional moment capacity to the new wall condition. Flashing should be applied at the top of the wall to protect the wall's coping and conceal core hole resulting from the reinforcement. Prior to the demolition of adjacent the filter beds, temporary bracing will be required to resist the soil pressure from the service court until compacted soil on the filter bed is in place. Temporary bracing is necessary. This may be accomplished using whalers and braces on the interior of the filter bed.

Thermal movements have caused vertical cracking in the walls of the filter beds along the service courts. Rather than using through-thickness control joints with sealant, the wall cracks should be allowed to move , relying on routine maintenance to manage.

Rehabilitation: Following structural stabilization, the sections of the concrete wall to be retained will be restored in accordance with National Park Service Preservation Brief 15: Preservation of Historic Concrete. Where sections of the wall are removed, the demolition shall be accomplished by hand to avoid any additional damage to the structure. Upon removal of the section, the repair work shall be accomplished using a concrete mix compatible with the material of the original concrete; however it should not replicate the original material but instead use a texture and/or color that will allow for a visual differentiation between the original and new concrete work.

In the event of unanticipated damage during construction, the wall should be repaired in kind, or reconstructed using original drawings. Please refer to the Emergency Procedures in Case of Unanticipated Damage statement in the front of this document.

See *McMillan Adaptive Reuse Drawing A101* for further detail**.**

North Wall at Service Court 3. 2015.

Service Court 3 – South Wall

Existing Conditions: The service court wall is extant in its original location, with various degrees of material deterioration. Vertical cracks, spalling, and loss of material are evident throughout the visible surfaces. Since this wall acts both as a parapet and a retaining wall, the cracks speak to structural failure.

Treatment: Rehabilitation

Recommendations: The south wall flanking Service Court 3 will be retained with only two small areas removed to allow pedestrian access to the public park to the south. An 8' section of the wall to the west and an 11'10" section to the east of the access steps at filter bed 26 and a 15'5" section of wall at filter bed 27 will be removed. This work is consistent with the Mayor's Agent Decision and Order HPA No. 14-393. The wall will be rehabilitated in accordance with the SOI Standards and Guidelines for Rehabilitation.

During Construction: Vertical reinforcement is required to be drilled into the centerline of the wall (similar to the process recommended for the filter bed columns). Vertical reinforcement will tie portions of the wall that have cracked (particularly at the portal to the filter bed) and provide additional movement capacity to the new wall condition. Flashing should be applied at the top of the wall to protect the wall's coping and conceal sore hole resulting from the reinforcement. Prior to the demolition of adjacent the filter beds, temporary bracing will be required to resist the soil pressure from the service court until compacted soil on the filter bed is in place. Temporary bracing is necessary. This may be accomplished using whalers and braces on the interior of the filter bed.

Thermal movements have caused vertical cracking in the walls of the filter beds along the service courts. Rather than using through-thickness control joints with sealant, the wall cracks should be allowed to move , relying on routine maintenance to manage.

Rehabilitation: Following structural stabilization, the sections of the concrete wall to be retained will be restored in accordance with National Park Service Preservation Brief 15: Preservation of Historic Concrete. Where sections of the wall are removed, the demolition shall be accomplished by hand to avoid any additional damage to the structure. Upon removal of the section, the repair work shall be accomplished using a concrete mix compatible with the material of the original concrete; however it should not replicate the original material but instead use a texture and/or color that will allow for a visual differentiation between the original and new concrete work.

In the event of unanticipated damage during construction, the wall should be repaired in kind, or reconstructed using original drawings. Please refer to the Emergency Procedures in Case of Unanticipated Damage statement in the front of this document.

See *McMillan Adaptive Reuse Drawing A101* for further detail**.**

South Wall at Service Court 3, near Filter Bed. 2015.

South Wall at Service Court 3, near Filter Bed. Looking northeast from south of the wall. 2015.

Filter Beds

Material: Concrete

Quantity: 20

Date: 1903-1905 (original)

Relative Level of Significance: Supporting

Integrity: Moderate

Context: The site features twenty unreinforced concrete filter beds, each of which is approximately one acre in area. All of the filter beds are concealed beneath a thin concrete slab (ceiling/roof) that is covered with a layer of fill and appear from above-grade as flat plains of grass. Each filter bed is independent of the other filter beds and has its own entrance that opens into the service courts. The floors of the filter beds are inverted, groined arches that carry piers with a slight batter near the bottom. The roof consists of elliptical groin arches that are pierced with holes serving as access to the Filter Beds below. The walls of the beds are built in sections not exceeding 30 feet in length, the joints being tongued and grooved. The filter beds have substantial parapets along the perimeter that act as retaining walls along the north and south sides of the service courts. For the facility to operate properly, substantial re-grading of the site was completed to allow the filter beds to be constructed at a level grade across the site, resulting in a maximum depth of cut of 35 feet and a maximum height of 30 feet at the top of the fill. Several of the filter beds that were constructed on fill settled substantially within the first few years of the facility's operation. The rapid settlement led to chronic structural issues that have resulted in partial collapse of some of the filter bed roofs.

Filter Bed conditions diagram; X denotes demolished Filter Beds per DC Water project.

Existing Conditions: Filter Beds 25 and 26 have been demolished as part of DC Water's First Street Tunnel project. According to a 2014 structural assessment, approximately seven of the remaining eighteen filter beds exhibit server structural deterioration.[1] Other filter beds show varying degrees of cracking and material deterioration but were said to be stable at the time of the assessment. Several types of previous structural reinforcements, in the form of displacement arrestors, are visible within some of the beds. The filter beds fall into the following conditions categories:

Collapsed Vaults

There are three areas of collapse, concentrated along the eastern bays adjacent to North Capitol Street located in Filter Beds 19 and 24.

1 Robert Silman Associates, *Existing Conditions Assessment & Feasibility Evaluation, McMillan Slow Sand Filtration Plant Site, Washington, DC* dated April 10, 2014, provides additional information on the condition of cells.

Severe Damage
This level of damage includes filters with minor and moderate damage, but with more significant conditions such as areas where collapse appears imminent. Filters within this category are Filters 22, 23, 26, 27, 28 and 29.

Moderate Damage
Filters within this category have cracks having widths measuring 1/16 to 3/16 inch, and typically exhibit moderate shifting at vault joints, concrete spalls, and rotations at the pier-to-ceiling slab interface. Filters assessed within this category are Filters 10, 11, 12, 13, 14, 15, 18, 20, and 25.

Minor Damage
Damage at these filters is limited to hairline cracking. Minor damage noted on previous surveys from 1944, 1967, and 2000 appears to have increased only marginally.

See Silman, *McMillan Reservoir Existing Conditions Assessment & Feasibility Evaluation - Sand Filters 14, 27-29, Portals and Walls,* page 8, for further detail.

Filter Beds 25 and 26: No Longer Extant - Demolished 2014 by DC Water.

Filter Beds 10-13, 15-27, 29

Treatment: Demolition

Recommendations: These filters on site will be removed for development. Removal is consistent with the Mayor's Agent decision and order (HPA No. 14-393).

Filter Bed 15. 2015.

Filter Bed 14

Treatment: Restoration (Please note that the work on Filter Bed 14 cannot take place until Filter Bed 14 is released by DC Water, expected to be in 2022.)

Recommendations: Filter Bed 14 will be retained and restored. This restoration is consistent with the Mayor's Agent Decision and Order HPA No. 14-393.

During Construction: It is anticipated that DC Water will control this structure until 2022. DC Government should inform DC Water that proper precautions will be taken during construction to stabilize the structure.

See Silman, *McMillan Reservoir Existing Conditions Assessment & Feasibility Evaluation – Sand Filters 14, 27-29, Portals and Walls*, pages 55-66 for Condition Assessment of Filter Bed 14.

Filter Bed 14. 2015.

Filter Bed 28

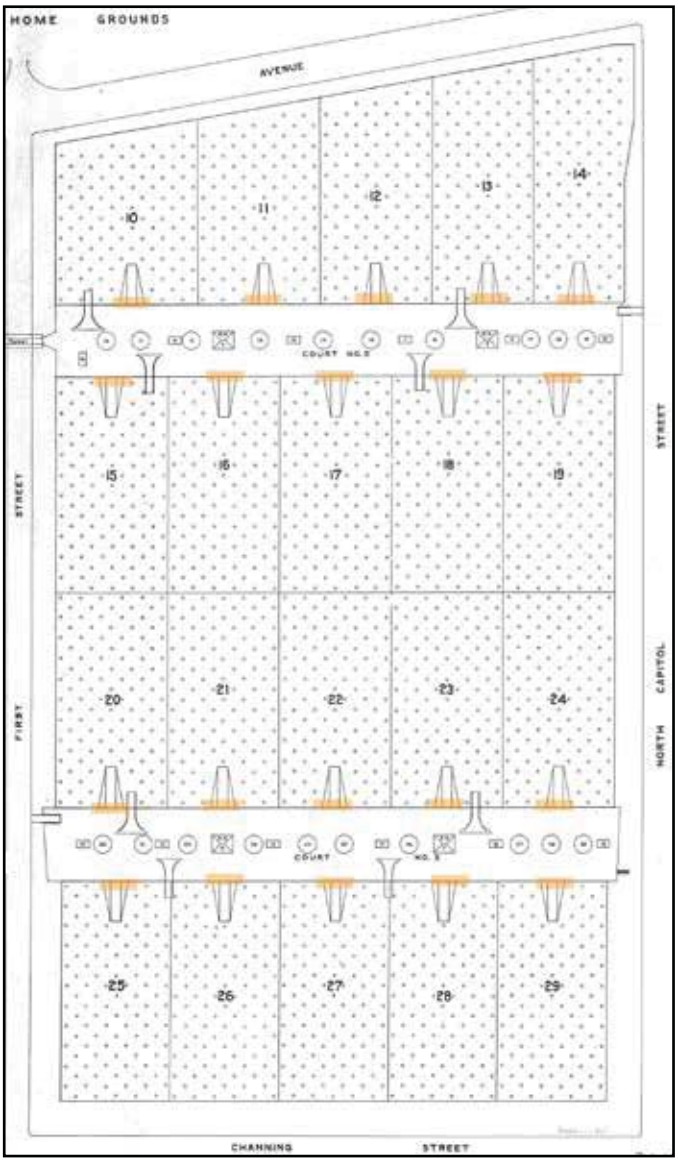
Treatment: Rehabilitation

Recommendations: Filter Bed 28 will be rehabilitated. This treatment is consistent with the Mayor's Agent Decision and Order HPA No. 14-393. This work will rely on recommendations by the structural engineer and landscape architect. It is understood that the Filter Bed components are composed of unreinforced concrete that was designed to be in a moist environment. All efforts should be made with the greatest of caution to minimize loss.

In the event of unanticipated damage to Filter Bed 28 during construction, the structure and its components should be repaired in kind, or reconstructed using original drawings. However, they should be constructed to meet current load capacities.

See Silman, *McMillan Reservoir Existing Conditions Assessment & Feasibility Evaluation – Sand Filters 14, 27-29, Portals and Walls*, pages 77-85 for Condition Assessment of Filter Bed 28.

Filter Bed Portals



Material: Concrete, wood, and metal

Quantity: 20

Date: 1903-1905 (original)

Relative Level of Significance: Key

Integrity: High

Context: The Site features twenty portals, each leading to one of the twenty subterranean filter beds. The portals are integrated into the parapets of the filter beds that line the north and south service sides of the service courts. The portals are constructed of brick parged in concrete, featuring a projecting central block with denticulated concrete cornice. Within each central block of each portal there is an elliptical arched opening fitted with a double-leaf painted paneled wood door. Six oversize decorative (trefoil) wrought iron T-hinges (three per leaf) are bolted to the door using hinge plates.

Existing Conditions: Many of the filter bed portals are extant and intact. The parged brick portion of the majority of the portals exhibit moderate to severe cracking, especially at the arched openings. In most locations, cracks have formed at the door hinge, extending away into the wall, (Silman Figures 15 and 16). Several arched openings feature a crack at the very top (Silman Figure 16). Many locations also exhibit cracks along the top of the arch under the cornice (Silman Figure 17). The cracks in the arched openings typically extend through the thickness of the wall (Silman Figure 18), and in certain cases into the arched roof of the filter beyond. Where exposed, the hairline cracks are observed along the length of the portal wall at regular intervals of several feet. (Silman Figure 19)[1]

The following chart indicates which of the wood doors are extant on the site:

Extant	Not Extant
Filter Bed Portal 10	Filter Bed Portal 15
Filter Bed Portal 11	Filter Bed Portal 17 (right leaf)
Filter Bed Portal 12 (detached right leaf)	Filter Bed Portal 18 (left leaf)
Filter Bed Portal 13	Filter Bed Portal 20
Filter Bed Portal 14	Filter Bed Portal 22 (right leaf)
Filter Bed Portal 16 (both detached)	Filter Bed Portal 23 (right leaf)
Filter Bed Portal 17 (left leaf)	Filter Bed Portal 24 (left leaf)

1 Robert Silman Associates, *Existing Conditions Assessment & Feasibility Evaluation - Sand Filter 14, 27-29, Portals and Walls*

Filter Bed Portal 18 (right leaf)	Filter Bed Portal 25
Filter Bed Portal 19	Filter Bed Portal 26
Filter Bed Portal 22 (left leaf)	Filter Bed Portal 29
Filter Bed Portal 23 (left leaf)	
Filter Bed Portal 24 (right leaf)	
Filter Bed Portal 27	
Filter Bed Portal 28	

* *Filter Bed Portal 21 was not accessible during survey, but CSI photograph indicates the left leaf may be partially intact.*

Temporary supports are currently in place at the portals at arched entrances at Filter Beds 25 and 26, as the filter beds have been demolished as a result of DC Water's First Street Tunnel Project (Silman Figure 20). Sections of the portal walls at Filter Beds 25 and 26 have been removed to create a driveway to the DC Water construction site beyond. Monitoring data from DC Water and Sewer Authority dated July 2015 confirms that a section of the entrance to Filter Bed 26 broke away from the rest of the portal wall and was lifted back into place. For material properties, see page 49 of Silman's *Conditions Assessment and Feasibility Evaluation – Sand Filters 14, 27-29, Portals and Walls.*

CSI's survey included all portals in Service Court 3, and the portal at Filter Bed 14, at the northeast corner of Service Court 2. Their findings of typical conditions confirm that all the portals exhibit horizontal cracks at the arch spring level. Several of the wood doors show significant deterioration and have disconnected from their hinges. Hinge plates still attached to concrete.

For further detail, see CSI's *Resource Assessment & Survey, II. General Condition of Structures E. Vault Portals;* and Silman's *McMillan Reservoir Existing Conditions Assessment & Feasibility Evaluation – Sand Filters 14, 27-29, Portals and Wall,* pages 17-21 for Condition Assessment of Portals.

Filter Bed Portal 14

Treatment: The treatment for the Portal Wall at Filter Bed 14 will be determined upon inspection of its condition when it is made available for work. (Please note that the work on Portal Wall 14 cannot take place until Filter Bed 14 is released by DC Water, expected to be in 2022).

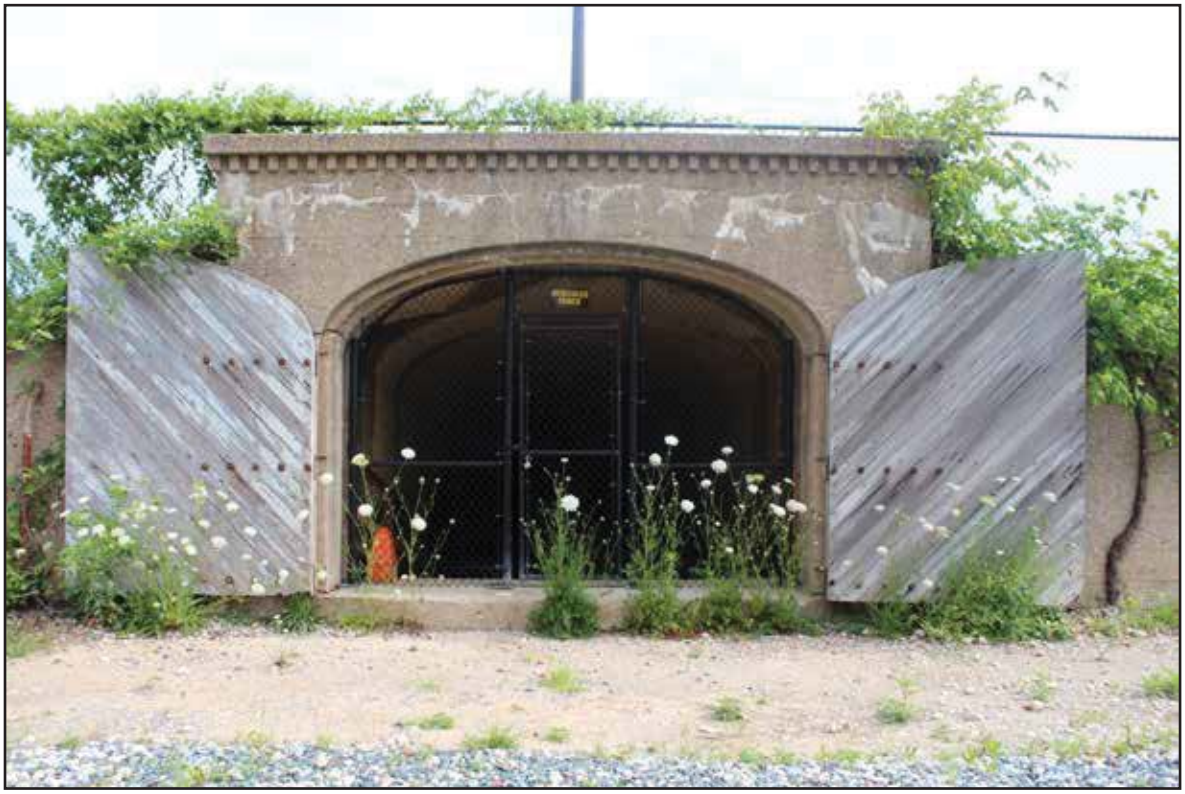
During Construction: It is anticipated that DC Water will control this structure until 2022. DC Government should inform DC Water that proper precautions will be taken during construction to stabilize the structure.

Restoration: When the Portal at Filter Bed 14 is made available for preservation work, the following, based on an analysis of the CSI and Silman reports, is recommended:

- The Filter Bed Portal would be rehabilitated in accordance with the SOI Standards and Guidelines for Rehabilitation.
- Vegetation on Concrete: Vegetation should be removed from the wall. All work should be consistent with GSA Standard 0420004R: *Removing Climbing Plants and Creepers from Masonry* (https://www.gsa.gov/portal/content/aaa782). Biologic growth should be cleaned from the surface using mechanical means and herbicides as needed. A general cleaning should be done with a mild cleansing solution that is formulated for restoring concrete. Stains should be removed with special formulated stain remover. Test patches of cleaning solutions on the concrete should be prepared and reviewed by DC HPO
- Concrete: Following structural stabilization, the sections of the concrete wall to be retained should be restored in accordance with National Park Service Preservation Brief 15: *Preservation of Historic Concrete*. The concrete that is no longer in plane should be pushed back into plane in a manner in accordance with Silman's recommendations.

- Wood Doors:
  - The wood doors should be temporarily removed during the concrete repair work. If possible, the doors should be repaired by replacing missing or damaged pieces with pieces from the portal doors that are not being retained. This will ensure that the original dimensions, profile, and species are used. If new pieces are required, they should match the historic pieces in dimensions, profile, and species.
  - The connection of the replacement pieces should be square and plumb.
  - Each assembled unit should be sanded, primed, and coated with a high quality exterior paint in the color and gloss level matching that used on the historic doors. To determine this color and the gloss level of the original coating, a paint analysis should be conducted by a qualified preservation technician to provide the information necessary for restoration.
  - Where possible, hardware (including wrought iron T-hinges and hinge plates) should be removed from the doors and repaired by removing scaling materials down to sound material and applying a coat of corrosion inhibiting primer and finish to match the original. If there is insufficient number of hinges for all doors, then replicas of the hardware should be custom-made to match in material, dimension, and profile. To ensure the strength of the hardware installation, all bolts should be replaced by replicas to match the original in material, dimension, and profile.
  - Please note that there is no wood door casing and the hinge plates are attached directly to the masonry.

See *McMillan Adaptive Reuse Drawing A101; A110; A111* for further detail.



Filter Bed Portal 14. 2015.

Filter Bed Portals 10, 11, 12, 13, 15, 16, 17, 18, and 19

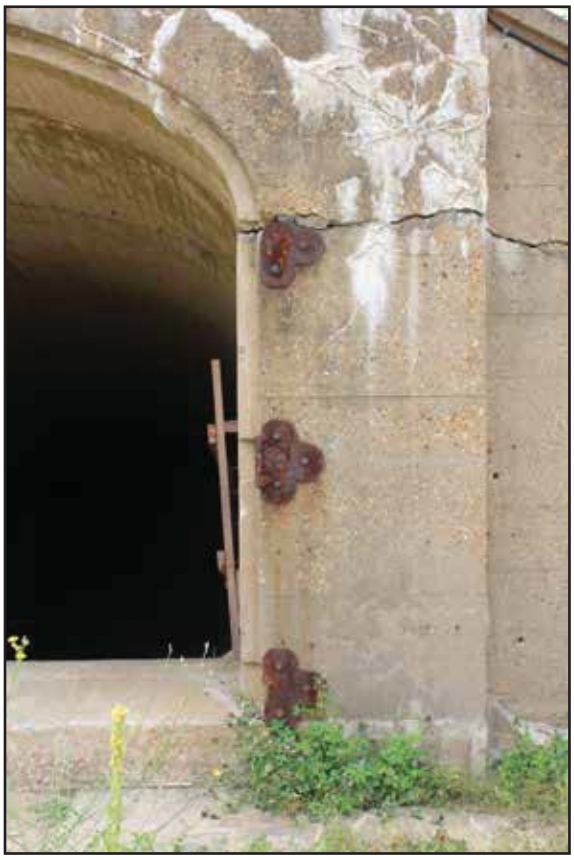
Treatment: Demolition

Recommendations: Portals 10, 11, 12, 13, 15, 16, 17, 18, and 19 will be demolished. This demolition is consistent with the Mayor's Agent Decision and Order HPA No. 14-393.

The metal light posts above Filter Bed Portals should be salvaged for reuse in Service Court 3, if the metal light posts there are not reusable.

The wood doors and hardware should be salvaged for use by the Army Corps of Engineers for use on the portion of the site that they maintain. If any of these doors and hardware is determined to be in significantly better condition that the doors and hardware that is being retained in place, then the doors and hardware should be reused at the remaining portals. If possible, the concrete should be salvaged and recycled for use on the Site.

See *McMillan Adaptive Reuse Drawing A101; A110; A111* for further detail.



Crack at arch spring on Filter Bed Portal 15. 2015.

Filter Bed Portal 10, showing wood doors, hardware, and cracks along arch and walls. 2015.

Filter Bed Portals: 20, 21, 22, 23, 24, 25, 26, 27, 28, and 29

Treatment: Restoration

Recommendations: Portals 20, 21, 22, 23, 24, 25, 26, 27, 28, and 29 will be restored. This treatment is consistent with the Mayor's Agent Decision and Order HPA No. 14-393.

During Construction: The area of Service Court 3 near the portals and service court walls where Filter Beds 25 and 26 were located before their demolition is experiencing heavy truck loads and are experiencing greater stress than the other portal walls. Silman recommends that DC Water establish design criteria for the First Street Tunnel project team to complete calculations and design drawings for the final wall condition, including placement of soil up to then original plinth elevation of 170.0'. These calculations and drawings should be reviewed by Silman for potential adverse effects on the historic resources.

Restoration: Based on an analysis of the CSI and Silman reports, the following is recommended:

- The Filter Bed Portals would be rehabilitated in accordance with the SOI Standards and Guidelines for Rehabilitation.
- Vegetation on Concrete: Vegetation should be removed from the wall. All work should be consistent with GSA Standard 0420004R: *Removing Climbing Plants and Creepers from Masonry* (https://www.gsa.gov/portal/content/aaa782. Biologic growth should be cleaned from the surface using mechanical means and herbicides as needed. A general cleaning should be done with a mild cleansing solution that is formulated for restoring concrete. Stains should be removed with special formulated stain remover. Test patches of cleaning solutions on the concrete should be prepared and reviewed by DCSHPO.
- Concrete: Following structural stabilization, the sections of the concrete wall to be retained should be restored in accordance with National Park Service Preservation Brief 15: *Preservation of Historic Concrete*. The concrete that is no longer in plane should be pushed back into plane in a manner in accordance with Silman's recommendations.
- Metal light posts above Filter Bed Portals should be retained. If practicable, they should be rewired for ongoing use along the service courts. If it not possible for them to be functional again, they should be attached to the portal doorways in a manner that simulates their original appearance.
- Existing painted numbers should be restored to match the original in appearance, dimension, and color.
- Wood Doors:
    - The wood doors and hardware are to be replaced to match historic doors by wood species, hardware, and paint color.
    - Wood doors and hardware should be salvaged for use by the Army Corps of Engineers for use on the portion of the site that they maintain.
    - Each assembled unit should be sanded, primed, and coated with a high quality exterior paint in the color and gloss level matching that used on the historic doors. To determine this color and the gloss level of the original coating, a paint analysis should be conducted by a qualified preservation technician.

In the event of unanticipated damage during construction, the portals should be repaired in kind, or reconstructed using original drawings. Please refer to the Emergency Procedures in Case of Unanticipated Damage statement in the front of this document.

See *McMillan Adaptive Reuse Drawing A101; A110; A111* for further detail.

Filter Bed Portal 22. 2015.

Wood door and hardware at Filter Bed Portal 24. 2015.

Temporary supports at Filter Bed Portal 25. 2015.

Filter Bed Portal 27. 2015.

Filter Bed Portal 28. 2015.

Filter Bed Portal 29. 2015.

Filter Bed Ramps

Material: Concrete

Quantity: 18

Date: 1903-1905 (original)

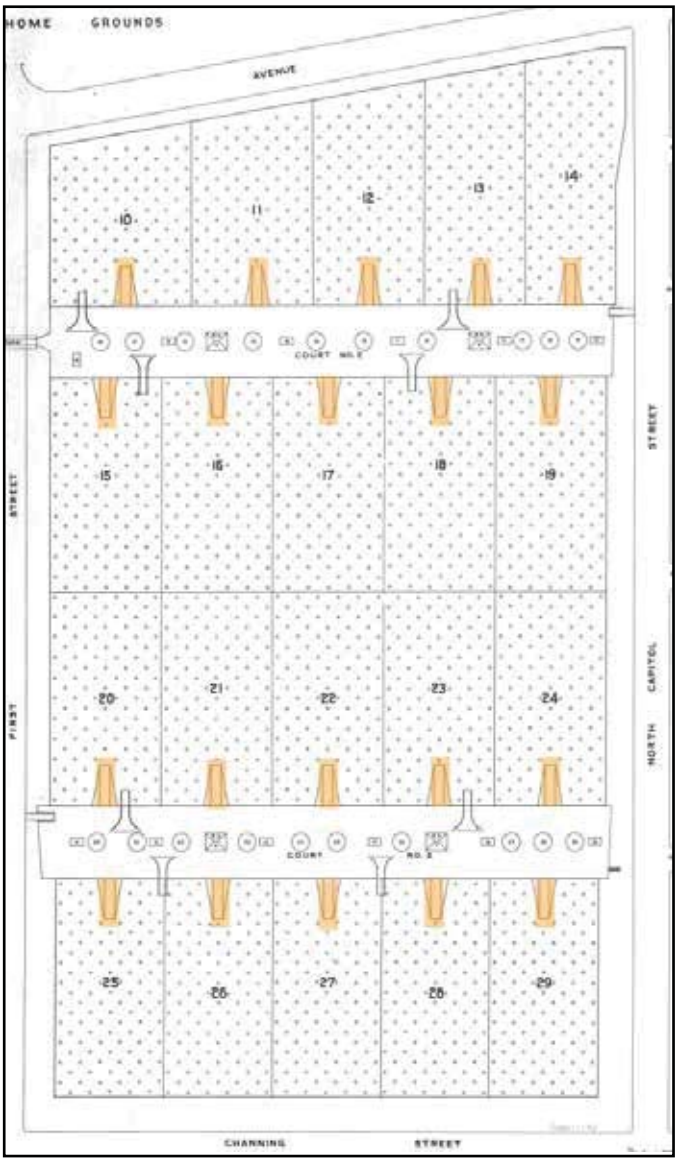
Relative Level of Significance: Minor

Integrity: High

Context: The Site features twenty ramps, each of which leads from each of the portals to their respective subterranean filter beds. These ramps were typical for this type of facility to assist the movement of sand in and out of the filter beds. At McMillan, however, a different system of moving sand was developed, and the ramps were constructed primarily as an alternate access point in the case that the sand-handling apparatus failed to perform. The ramps were designed at an incline to accommodate horses, which would have been used to bring wagons into the filter beds to move the sand. Later, these ramps were used to provide access for mechanized sand raking tractors. The ramp floors were scored for traction.

Existing Conditions: Eighteen of the original twenty Filter Bed Ramps are extant in their original locations, with some signs of structural deterioration, primarily in those filter beds that also exhibit signs of deterioration. The ramps at Filter Beds 25 and 26 were demolished during DC Water work.

See Silman, *McMillan Reservoir Existing Conditions Assessment & Feasibility Evaluation – Sand Filters 14, 27-29, Portals and Walls,* pages 12-15 for discussion of Filter Bed Ramps.



Filter Bed Ramp 14

Treatment: The treatment for the Portal Wall at Filter Bed 14 will be determined upon inspection of its condition when it is made available for work. (Please note that the work on Portal Wall 14 cannot take place until Filter Bed 14 is released by DC Water, expected to be in 2022).

During Construction: It is anticipated that DC Water will control this structure until 2022. DC Government should inform DC Water that proper precautions will be taken during construction to stabilize the structure.

Ramp in Filter Bed 14. 2015.

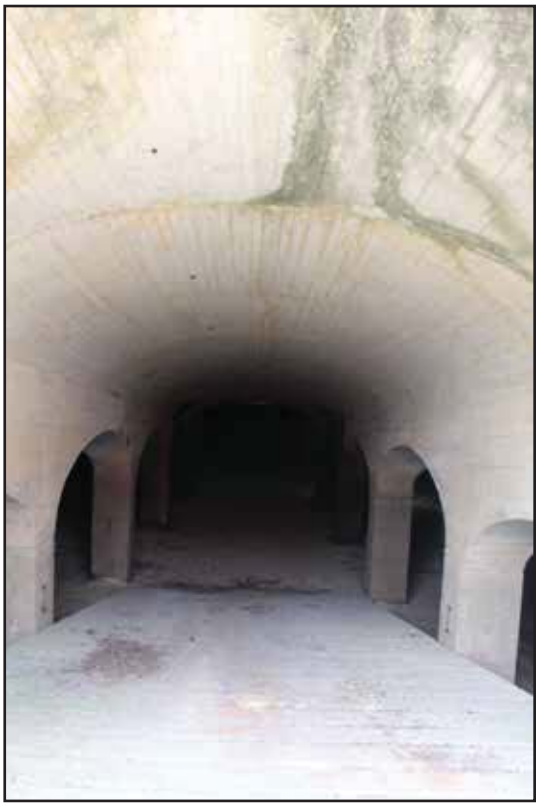
Filter Bed Ramps 25 and 26 (NO LONGER EXTANT)

Filter Bed Ramps 10, 11, 12, 13, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 27, 28, 29

Treatment*:* Demolition

Recommendations*:* With the exception Filter Bed Ramp 14, which is to be restored, 25 and 26, which are no longer extant, Filter Bed Ramps 20, 21, 22, 23, 24, 27, 28, and 29 will be demolished. This treatment is consistent with the Mayor's Agent Decision and Order HPA No. 14-393.

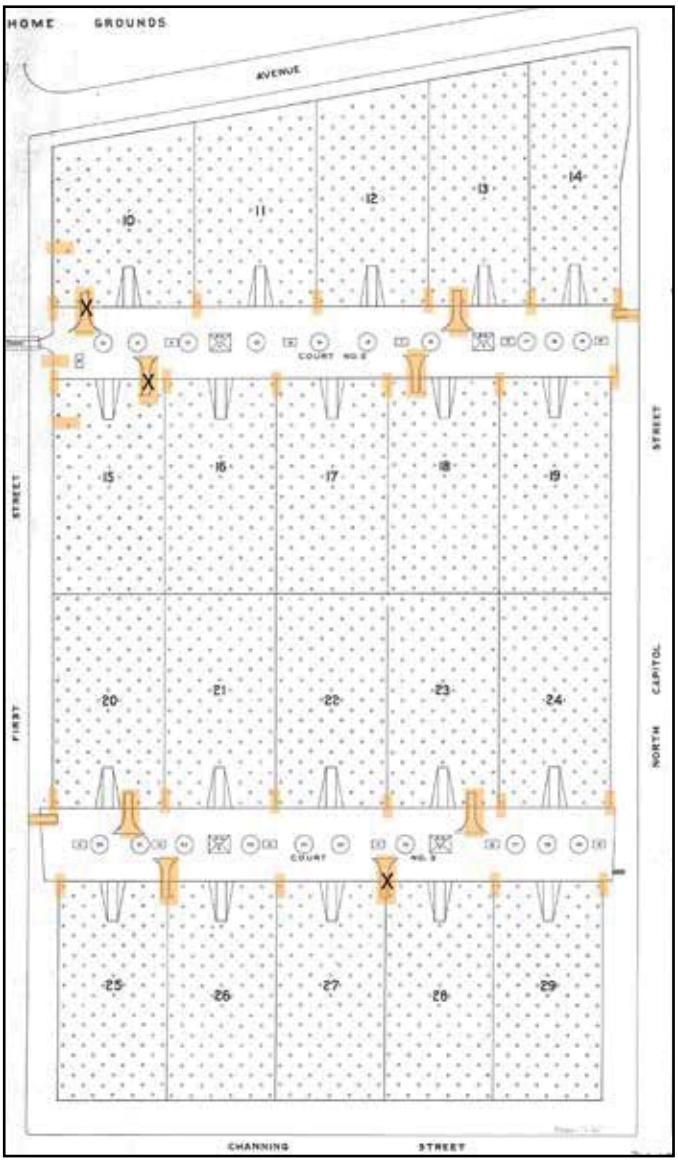
See *McMillan Adaptive Reuse Drawing A100 and A101* for further detail.



Ramp in Filter Bed 16. 2015.

Ramp in Filter Bed 11. 2015.

Service Ramps and Service Stairs



Material: Concrete

Quantity (extant ramps): 6

Quantity (extant stairs): 23

Date: 1903-1905 (original), and circa 1910

Relative Level of Significance: Minor

Integrity: Moderate

Context: The Site features 6 of the original 10 service court ramps. All 23 service court stairs are extant. These ramps and stairs provide access from the courts to the tops of the filter beds, to adjacent streets, and to the perimeter path. Two sets of concrete stairs lead from First Street to the tops of the filter beds located adjacent to the north service court (service court 2). These stairs and ramps were used as part of the operation of the facility as workers moved throughout the Site, and many of these stairs and ramps are integral to the structure of the service court walls.

Existing Conditions: Three original concrete ramps leading from the service courts to the tops of the filter beds were previously demolished and their locations in the service courts were in-filled (areas shown with an X in the site key). The remaining ramps and stairs are mostly intact, with varying degrees of deterioration.

Treatment: Demolition

Recommendations: All service ramps and all but one set of service stairs (at Filter Bed 14) will be demolished. This is in accordance with the Mayor's Agent (HPA No. 14-393)

Service stair at Filter Bed 14: Restoration (Please note that the work on Filter Bed14 cannot take place until Filter Bed 14 is released by DC Water, expected to be in 2022.)

- Refer to National Park Service *Preservation Brief 15: Preservation of Historic Concrete: Problems and General Approaches* - http://www.gsa.gov/portal/content/111618

Ramp leading from Service Court 2 to top of Filter Bed 18. 2015.

Stairs leading from Service Court 2 to First Street. 2015.

Regulator Houses

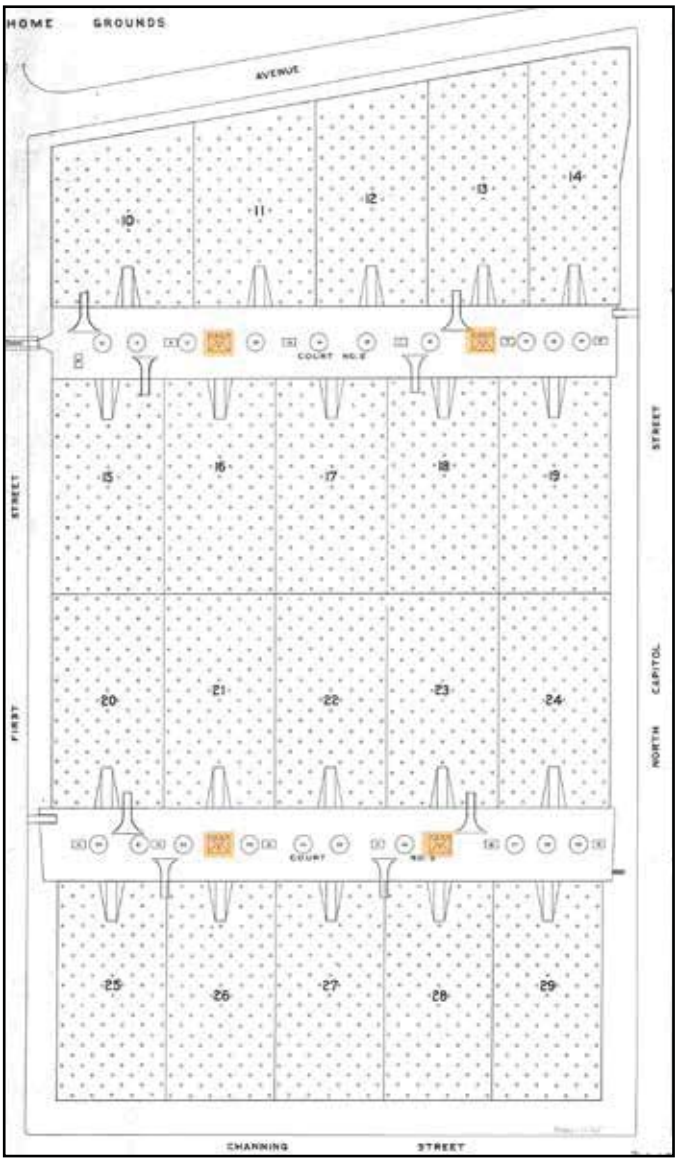
Material: Brick, clay tile, wood, concrete

Quantity: 4

Date: 1903-1905 (original)

Relative Level of Significance: Key

Integrity: High



Context: The Site features four regulator houses, with two located in each service court. These one-story masonry buildings are constructed of pressed red brick with glazed headers coursed in Flemish bond and feature hipped roofs clad in molded terra-cotta tiles. A molded brick water table encompasses the structures. The regulator houses are detailed with arched entrances and window openings edged in molded brick and feature a pair of solid paneled wood doors with a multi-light transom above and double-hung multi-light sash windows. The structures of the regulator houses extend below grade with concrete pits and original mechanical systems. These systems were originally used to regulate the speed of pumps and to maintain the desired water level within the adjacent filter beds.

Existing Conditions: All four brick structures are extant in their original locations, and some original wood elements are extant although in various states of deterioration. The regulator houses were found to be in good condition overall. Walls and the concrete slabs are generally in good condition, where observable. The majority of issues observed stem from problems with the roofs, including leaks that have resulted in decay of the underlying sheathing and framing. The lack of gutters and downspouts has likely contributed to some of the observed masonry conditions.

Cracks at the exterior corners of the foundation slabs are consistently present where the slabs are visible. The cause of the cracking is unknown, however, Silman notes that potential causes include subsidence of the underlying soil at the corner of the buildings, or an interaction with the concrete tunnels and other substructures below the building.

The conditions of the pits, tunnels, and floor slabs were not investigated. Access to observe these items was hindered by the presence of deep standing water and debris in the pits. Further investigation of these items is recommended.

General conditions exhibited on the regulator houses include:

<u>Visibility</u>

- *Vegetative Growth*: Dense vegetative growth obscured the visibility of a portion of the exterior walls of the regulator houses, which prevented observation of wall conditions in those areas during the survey.
- *Plywood*: Plywood covers approximately half of all walls at regulator houses 6 and 7, which prevented observation of wall conditions during the survey.

Masonry

- *Embedded Anchors*: Numerous holes from embedded anchor that formerly supported downspouts, guard rails, and other attachments to the walls are present at all regulator houses. Holes are generally 3/4" in diameter or less. Wood pegs are present in some of the exterior embedded anchor holes. At the interior of the regulator houses, embedded anchors to support guard rails and equipment remain in-use. Rusting of abandoned ferrous embedded anchors has resulted in damage to the surrounding masonry in some locations.
- *Minor spalling of brick*: Minor spalling or chipping of brick is present at some exterior corners and some localized areas of the walls. The depth of the spalling or shipping is generally less than 1/2".
- *Cracks in masonry*: Minor cracks in the masonry less than 1/4" in width were observed in a limited number of areas. Observed cracks were limited to a stepped crack at the interior of regulator house 4, and a cracked brick lintel/arch over the interior of a window in regulator house 7.
- *Loss of mortar*: Loss of mortar was observed in localized areas at some of the regulator houses. The extends of loss vary from approximately 1/4" deep to nearly the full-depth of one wythe.
- *Displacement of brick*: Vegetative growth in some brick joints has resulted in displacement of brick and the wall in some areas.

Concrete

- *Cracks in concrete less than 1/4"*: The concrete slabs below the exterior walls exhibit diagonal cracks approximately 1'6" away from the wall edge at the majority of the regulator house corners that were visible.

Wood

Samples of roof framing were obtained for laboratory identification of wood species. The rafters, ceiling joists, and sill plates were all identified as Southern Yellow Pine. The majority of wood is in good condition, with the exception of the issues noted below. Damaged wood is typically limited to small areas in the vicinity of damaged roofing.

- *Water damage/moisture present*: Roof leaks have resulted in moisture infiltration and damage to roof framing, ceiling framing, and roof sheathing. Damage is limited to localized areas shown on the keynotes in Appendix A of Silman's *McMillan Regulator Houses Conditions Assessment Report*. Water damaged wood exhibits staining, and may exhibit softening or section loss.
- *Significant section loss of framing*: Loss of the cross-section of members greater than 10% is categorized as "significant". The majority of members with section loss are adjacent to a hole in the roof, and exhibit signs of wood decay.
- *Ceiling joist hanger*: Ceiling joist hanger sizes and locations vary between all four regulator houses. Hanger locations are shown on the keynotes in Appendix A of Silman's *McMillan Regulator Houses Conditions Assessment Report*.

Roof

- *Damaged/missing roof tiles:* Terra-cotta roof tiles are cracked or missing at several locations, as noted in the keynotes in Appendix A of Silman's *McMillan Regulator Houses Conditions Assessment Report*.
- *Holes in roof sheathing*: Decay of the wood sheathing has resulted in several holes. In one instance at regulator house 5, section loss of wood sheathing has occurred due to insect or rodent damage. Remnants of tar paper between the sheathing and tiles above are present above the sheathing in some locations; however, tar paper was not observed at the majority of locations.

For full extent and locations of various conditions at each regulator house, see Silman's *McMillan Regulator Houses Conditions Assessment Report*.

Probes and Testing

Silman recommends probes of representative areas of the foundation and walls to provide a better understanding of their conditions and configuration. Assessment of the foundation walls and footings is recommended to understand their construction and any conditions that might be creating the observed cracks at the exterior slab corners. Probes in the wall would allow for better assessment of their conditions and to determine if there is a void present, as shown in the construction documents.

See Regulator House Conditions Matrix on the following page.

REGULATOR HOUSES CONDITIONS MATRIX

Regulator House #	Court #	Exterior Conditions	Mortar Failure	Brick Failures (cracks/damaged)	Vegetation	Biological Growth	Unknown Black Deposit	Fan Window Missing/Damage (Yes/No)	Window Screens Missing	Wood Window Casing Failure	Window Sash Damage/Missing	Copper Flashing Replacement	Downspouts Replacements Needed	Foundation Cracking	Notes
RH 4	Court 2		High	High	Low	High	High	Yes	1	High	High	High	High	High	
RH 5	Court 2		High	High	High	High	High	Yes	3	High	High	High	High	High	
RH 6	Court 3		NV	NV	NV	NV	NV	No	0	NV	High	High	High	NV	Regulator Houses 6 & 7 obstructed bottom half, exterior percentage, if given, based on visible half only.
RH 7	Court 3		NV	NV	NV	NV	NV	No	0	High	High	High	High	NV	Regulator Houses 6 & 7 obstructed half, exterior percentage, if given, based on visible half only.

Regulator House #	Roof Conditions	Mortar Failure	Roof Tile Loss	Extant Decorative Tile Corner	Vegetation	Interior Conditions	Mortar Failure	Water Infiltration	Flow Meter Service Boxes Remaining	Damaged Flow Meter Service Box	Extant Flow Meter Gauges	Flow Meter Patent Labels Remaining	Flow meter Counter Weights Remaining	Flow Meter Numerical Tracks Remaining	Missing Flow Meter Stand Pipe	Gate Valves Present	Exposed Rebar
RH 4		Med	High	2	Low		Med	Med	5	3	3	5	2	3	0	5	Low
RH 5		Med	High	4	High		Med	Med	4	4	0	3	1	0	1	5	High
RH 6		High	Med	2	High		Med	Low	5	3	3	3	5	5	2	5	Low
RH 7		High	Med	2	High		Med	High	4	4	0	4	0	4	1	5	Low

This matrix contains information based on CSI's survey. Their numerical measurements have been reinterpreted into value ranges to depict relative levels of existing conditions present on the individual historic resources. See *CSI Resource Assessment & Survey* for further information.

Unless otherwise noted, the following values are defined as:
Low = Low level presence of condition
High = High level presence of condition
NV = Not Visible (due to visual obstructions such as protective boards, construction equipment and materials, vegetation, etc.)

REGULATOR HOUSES CONDITIONS MATRIX

Regulator House #	Interior Condition Continued	Damaged Concrete Lip on Floor	Window Mesh Present (Total #)	Lower Sash Present (Total #)	Upper Window Arch Sash Present	Masonry Displacement	Notes on Window Trim & Door	Interior Ceiling Conditions	Water Infiltration Totals	Plaster Crack Totals	Overall Notes
RH 4		Med	4	6	0	No	Trim missing in localized areas, original door panels lost, door trim maybe salvaged.		Low	High	With the exception of the collapsed arch in Regulator House 7, bricks only exhibit hairline fractures or minimal damage and do not need to be replaced, therefore no square feet totals are provided. Due to the recommended removing of all the roof tiles, the entirety of the roof will need to be repointed and precentages of mortar loss given are meant for documentation purposes only.
RH 5		Med	2	4	1	No	Trim missing in localized areas, original door panels lost, door trim maybe salvaged.		Med	High	With the exception of the collapsed arch in Regulator House 7, bricks only exhibit hairline fractures or minimal damage and do not need to be replaced, therefore no square feet totals are provided. Due to the recommended removing of all the roof tiles, the entirety of the roof will need to be repointed and precentages of mortar loss given are meant for documentation purposes only.
RH 6		Med	6	0	0	No	Windows boarded up.		High	Med	With the exception of the collapsed arch in Regulator House 7, bricks only exhibit hairline fractures or minimal damage and do not need to be replaced, therefore no square feet totals are provided. Due to the recommended removing of all the roof tiles, the entirety of the roof will need to be repointed and precentages of mortar loss given are meant for documentation purposes only.
RH 7		Med	0	1	1	Yes	Trim missing in localized areas, original door panels lost, door trim maybe salvaged.		Low	High	With the exception of the collapsed arch in Regulator House 7, bricks only exhibit hairline fractures or minimal damage and do not need to be replaced, therefore no square feet totals are provided. Due to the recommended removing of all the roof tiles, the entirety of the roof will need to be repointed and precentages of mortar loss given are meant for documentation purposes only.

Recommendations:
General:

- The regulator houses should be preserved or rehabilitated in place.
- At least one of the regulator houses should be preserved or restored to museum quality.
- See GSA standard procedures for:
    - GSA Standard 0420004R, Removing Climbing Plants and Creepers from Masonry (http://www.gsa.gov/portal/content/111782)
    - GSA Standard 0421107S/National Park Service Preservation Brief 2: Repointing Mortar Joints in Historic Brick Buildings (http://www.gsa.gov/portal/content/113478)
    - GSA standard 0450002R, Removing Salts/Efflorescence from Brick and Stone Masonry (http://www.gsa.gov/portal/content/112242)
    - GSA standard 0501001R, Repairing Corrosion Pitting and Cracks in Cast Iron (http://www.gsa.gov/portal/content/111726)
    - GSA Standard 0452002R, Repointing Masonry using Lime Mortar (http://www.gsa.gov/portal/content/111722)
    - GSA Standard 0421102R, Removing and Replacing Deteriorated Brick Masonry (http://www.gsa.gov/portal/content/111798

Treatment: Preservation.
One regulator house will be identified to serve as an historic artifact. This regulator house will be fitted out for the purposes of educational interpretation and will be open to the public. This effort will include the retention of all existing architectural and mechanical features to provide the opportunity for the public to understand how the regulator houses were used.

Specific Recommendations:

- Regulator houses proposed for preservation would be preserved in place, and treated in accordance with the SOI Standards and Guidelines for Preservation.
- This public resource would be made safe and accessible. This may include the use of glass to cover the subterranean openings, thereby allowing visual access without posing a safety risk. Should ADA requirements necessitate further action, the preservation consultants should be contacted.
- All existing interior and exterior, above-ground and below-ground architectural and mechanical features would be retained for interpretation.
- Roof framing should be repaired in kind, or replaced in kind if necessary.
- Where doors and windows are missing or deteriorated beyond repair, they would be replicated to allow the building to be protected from the elements.
- Where doors and windows remain, efforts to restore these components should be undertaken. Door and window components from rehabilitated regulator houses should be salvaged and reinstalled in preserved regulator house.
    - Where necessary, repairs of framing and trim may be done in place.
    - Remove remaining paint from surface using hand scrapers and chemical based gel strippers.
    - Check all joints and edges for wood rot and damage.
    - Repair deteriorated areas of minor damage with epoxy consolidant formulated for use on wood.
    - Ensure that the epoxy is of an appropriate viscosity to penetrate the wood.
    - Wood dutchman repairs may be used where practical.
    - Where damage is extensive, replicate the wood element to match original profile, dimension, and wood species (Cyprus).
    - Check all joints to ensure that they are weather tight and structurally sound.
    - Where necessary, disassemble joints in order to make repairs.
    - See CSI *Resource Assessment III. General Conditions of Materials, 4. Wood* for further information.
- Limited mechanical and electrical upgrades could be installed in a sensitive manner to make the building

inhabitable and ensure its preservation.
- No additions or major alterations to the interiors or exteriors of the structures would be appropriate.
- To aid in the explanation of the resource of demonstrate its historic significance, elements such as hanging signs, lighting, displays, can be introduced as long as they do not damage the historic resource.

Treatment: Rehabilitation.

Specific Recommendations:
- Regulator houses proposed for rehabilitation would be rehabilitated in accordance with the SOI Standards and Guidelines for Rehabilitation.
- Further assessment should be conducted to select which regulator house(s) would be most appropriate for type of adaptive reuse.
- For the regulator houses not slated for restoration or preservation, the exterior architectural features should be retained and repaired as necessary. The interiors of the buildings can be rehabilitated to accommodate new uses. If practicable, the subterranean mechanical equipment should be kept in place as an artifact but does not have to be visible.
- Any penetrations into historic fabric, including but not limited to pipes and conduits, required for contemporary systems must be minimized.
- There should be no major additions or exterior alterations to the regulator houses.
- Remove hardware and equipment for relocation elsewhere on site and use as museum artifact.
- Doors and windows should be replaced with new components to match original in profile, dimension, and wood species.
- Door and window components should be salvaged for reuse in the preserved regulator house.
- Documentation of the original design is available and should be referenced during design. See Appendix A of Silman Report, A-36 through A-39.

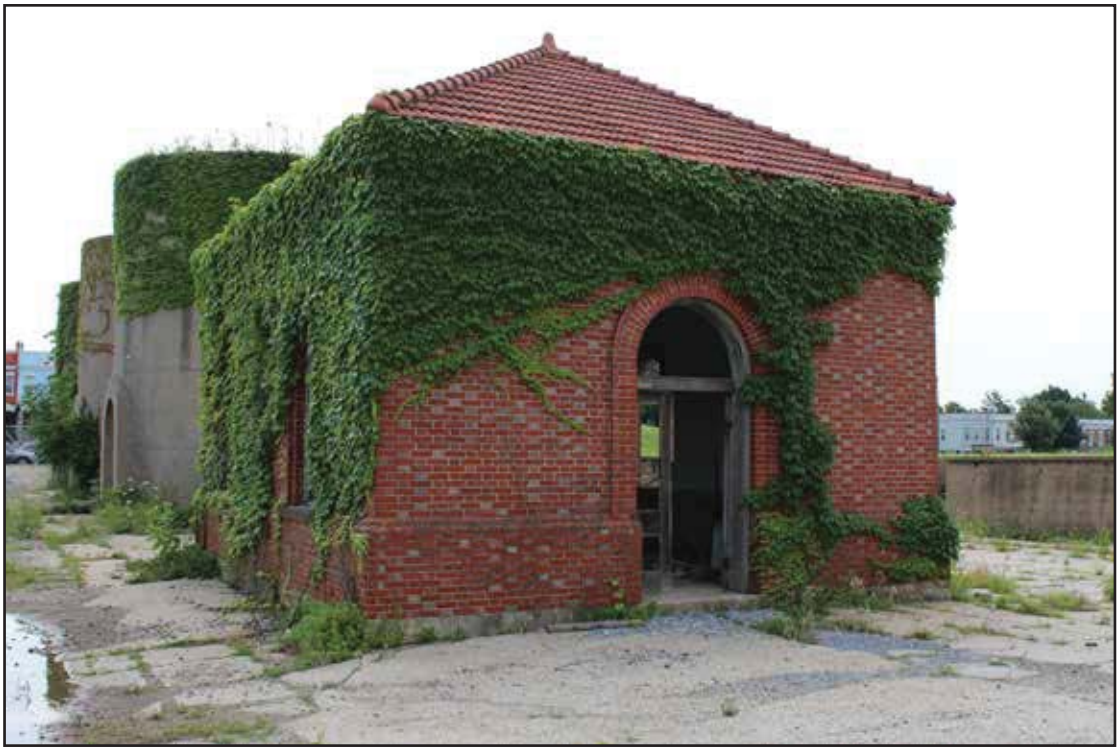
During Construction: In the event of unanticipated damage during construction, the regulator houses should be repaired in kind, or reconstructed with the original materials, and using original drawings.

Regulator House 5, looking east. 2015.

Regulator House 5, looking northeast. Circa 1944. Courtesy of the Washington Aqueduct Archives.

Regulator House 5, looking northeast. 2015.

Regulator House 5, looking southeast. Circa 1944. Courtesy of the Washington Aqueduct Archives.



Regulator House 5, looking southeast. 2015.

Regulator House 6, looking east. 2015.

Regulator House 7, looking southeast. 2015

Sand Bins

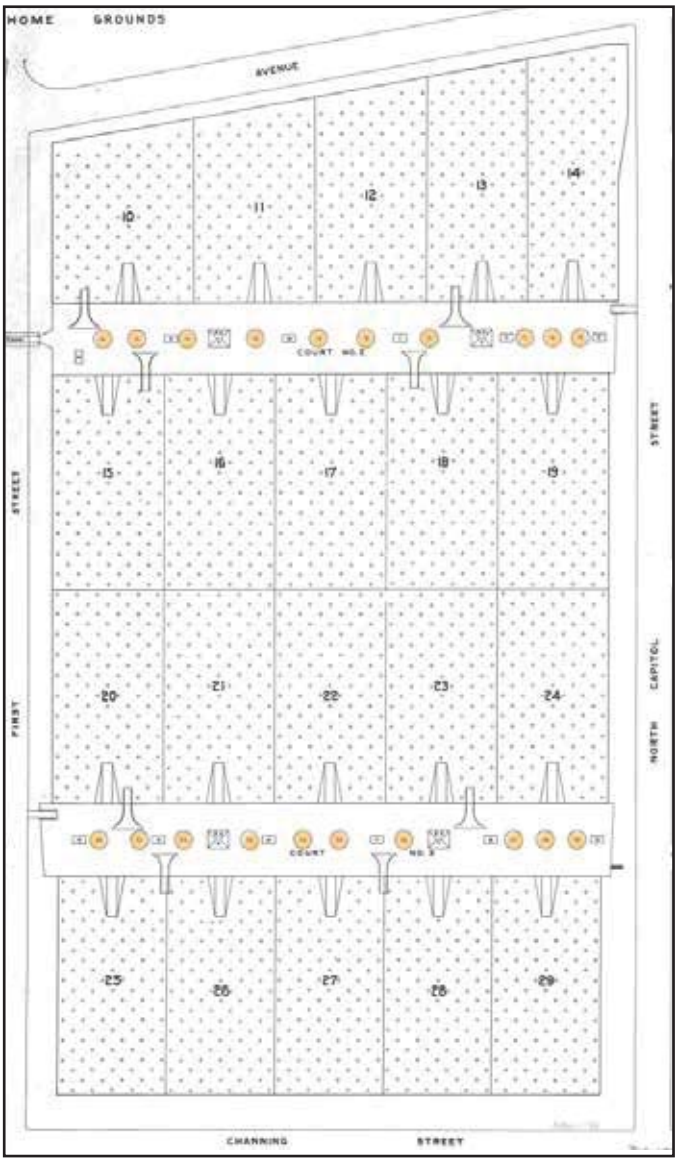
Material: Concrete

Quantity: 20

Date: 1903-1905 (original)

Relative Level of Significance: Key

Integrity: High



Context: The site features twenty cylindrical sand bins (one for each filter bed, with ten located on each of the service courts) that were originally used to store clean sand. The sand bin identification numbers begin at 10, as sand bins 1-9 are located across First Street on the McMillan Reservoir. Bins 10-19 are located in Service Court 2, and bins 20-29 are located in Service Court 3. The sand bins stand approximately 32' above grade and 23' 6" in diameter, and are constructed of formed concrete, and the base of each bin is pierced by an arched opening through which clean sand was delivered. A single port hole is punched through the concrete wall. The lower portion of the above-grade superstructure (from the funnel down)is composed of unreinforced concrete, while the upper portion is reinforced with steel. The foundations of the sand bins extend approximately ten feet below grade. Sand Bin 19 in Service Court 2, and Sand Bins 28 and 29 in Service Court 3 have foundations that are more shallow than the other 17 Sand Bins. Each bin features original appurtenances that aided in the collection and ejection of clean sand. Each sand bin also has an exterior ladder leading to the top of the structure. These ladders originally extended to the ground. Four of the Sand Bins (numbers 12, 16, 22, and 26) were originally used as water closets and urinals, and have four circular holes for window openings.

Existing Conditions: The condition assessment was limited due to a number of obstructions. All of the sand bins were found to be filled with sand and/or water, and vegetation at the time of the survey, resulting in incomplete findings. Existing bathroom partitions obstructed the interior survey of several sand bins. Plywood protective sheeting obstructed the lowest 8' of all sand bins located in Service Court 3, and the interiors of several sand bins were being used for construction material storage and were not accessible at the time of the survey. Construction activity and the placement of storage trailers limited the ability to survey the upper portions of several sand bins in Service Court 3. Vegetation growth along the walls of the sand bins, in addition to the an unknown white substance were observed on the majority of the resources. All observations are limited to the exterior of the sand bins.

All of the sand bins are extant and in their original locations. Using the results of the condition assessment survey, the sand bins were grouped into overall condition ranges. The summary conditions range from poor to good. The assigned condition summaries are dependent on the extend of the observed spalling, cracking, and deterioration. Individual reviews of observed conditions at each sand bin are included in Appendix A, and field notes can be found in Appendix B of Silman's *McMillan Reservoir Existing Conditions Assessment & Feasibility Evaluation - Sand Bins 10-29.*

General conditions exhibited on the regulator houses include:

- *Cracking and open cold joints*: A cold joint is a plane of weakness in concrete that occurs during construction when a batch of concrete has begun to set before the next batch is added, preventing the two batches from intermixing. Circumferential cracks approximately 7' from the top of the sand bins were observed to be typical. Two different cold joints were observed to have separated - 1) between the funnel and the arched walls (mostly visible at sand bins in service court 3), and 2) circumferential cold joints along the walls of the sand bins.
- *Vertical cracking* in the concrete walls was observed extending up from grade at six locations equally spaced around the perimeter of the sand bins (Figure 14 in Silman report). The cracking extended to the first cold joint location. Two of these cracks were centered along the arched headers (Figure 15 in Silman report).
- The slab on grade within the sand bins showed damage that includes cracking and missing sections of concrete, differential settlement and cracking propagating in the above-grade structure adjacent to the arched support walls. In locations where the underside of the slab was accessible, the slab was measured in some locations to have a minimum thickness of 3". Below the accessible portions of the slab on grade, much of the sub-base appeared to have been washed away over time.
- Small hairline cracking was observed throughout all of the sand bin structures. Unlike the vertical cracking that extended up from grade equally spaced around the perimeter of the sand bins (Figure 14 in Silman report), these hairline cracks appear random and were not observed to correlate throughout multiple sand bin structures.

<u>Concrete Deterioration (spalling, delamination, efflorescence, soft concrete patches)</u>

- In many locations, significant white and black staining was observed along the outer surface of the sand bins (Figures 17 and 18 in Silman report). The extent of the black staining varied significantly between sand bins and was observed to be the worst along sand bin 16. The black staining typically emanates from the horizontal crack at the upper section of the sand bin. The black staining was typically accompanied by secondary white staining, which may be mineral deposits, which follow the lines and patterns of the vines growing on the exterior of the sand bins and do not appear to be directly associated with any cracks.
- CSI's visual observation indicates that lower portions of the interiors (below the funnel) of several sand bins are typically covered with mineral deposits including stalactites. The condition is likely exacerbated by the presence of water inside the upper portion of the sand bin.
- Sounding of the concrete in the stained areas indicated that the concrete integrity varied from sound concrete to poor/fully delaminated areas. The extent of the poor/delaminated areas varies in size from 1' to 6' in diameter. The largest delaminated surface area was observed along sand bin 22, which exhibited extensive white staining.
- Other areas of concrete spalling were observed minimally along areas of the sand bins with insufficient reinforcing steel cover. In some locations the reinforcement steel appeared to have less than 1/4" of concrete cover, which is well below the 3/4" inch of concrete cover recommended for a structure of this nature and exposure.

<u>Probes and Testing Recommendations (Silman)</u>

- Remove obstructions that limited observation of exterior and interior during survey (vegetation, sand from within the bins, water, plywood, construction materials) prior to next design phase in order to fully understand the conditions of the sand bins
- Test pit at location of shallow and deep foundation to validate foundation configuration as depicted on historic drawings. This configuration will need to be confirmed if adjacent excavations plan to extend to the edge of the sand bins or alterations to the sand bin structures are proposed
- Perform laboratory testing and analysis of concrete cores extracted along the exterior of the sand bins to determine the physical properties and chemical composition of the concrete (compressive strength, chloride content, etc.) in order to understand the rate and root cause of concrete deterioration
- Perform tests of repair and treatment options upon concrete testing is complete
- Determine the origin and composition of the observed black and white staining

- Geotechnical investigations
- Evaluate existing interior drainage at the floor elevation
- Removal and replacement of existing slab on grade with new slab on grade
- Develop method for removal of deteriorated and spalled concrete on sand bins proposed for reuse, as well as protocol for replacement prior to installation of new structural elements
- Develop drainage system to remove and prevent water from collecting in the upper portion of the structure
- Explore waterproofing methods to avoid further deterioration
- Evaluate proposed reuse options for effects on the historic fabric of the structures

CSI Recommendations:

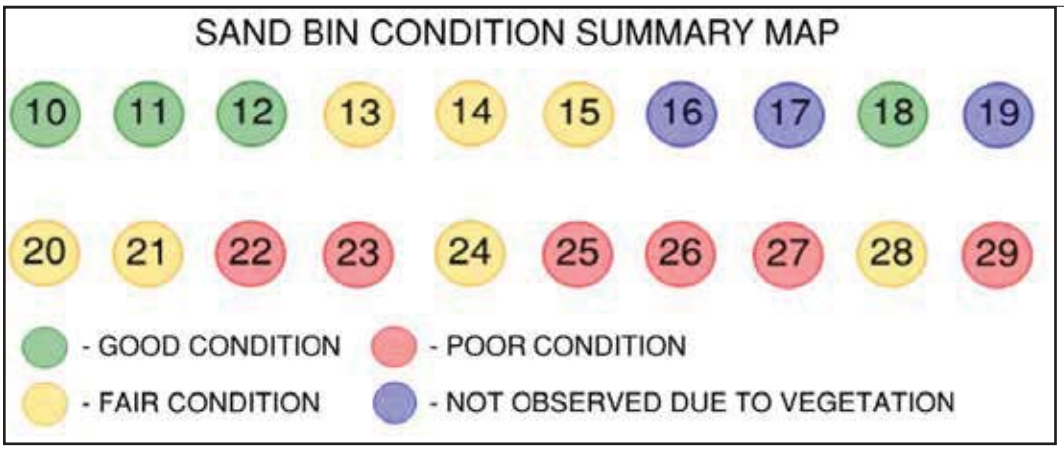
- Remove all vegetation, especially at foundation
- Remove water from inside the upper portions of the sand bins and design system to either allow water to drain or to prevent water from collecting in the sand bin
- Clean the exterior of the sand bin
- Remove all stains and mineral deposits
- Grout cracks in concrete
- Where rebar is exposed, scrape off flaking material with a steel wire bristle brush and apply a corrosion inhibiting primer
- Patch area with concrete path to match color and appearance of original surface
- Stabilize ferrous metal equipment and fittings to remain
- Restore painted numbers as directed by site design

SAND BIN CONDITIONS MATRIX

Sand Bin #	Service Court #	Length of Cracks	Concrete Loss	Concrete Spall	Vegetation	Calcium Deposits	Unknown Black Deposit	Exposed Rebar	Graffiti	Biological Growth	Level of damage to Exterior Medallions (North then South)	Level of damage to "Keep Out" Medallions (North then South)	Notes
Sand Bin #10	Court 2	Low	High	Med	Med	High	High	Med	Low	High	High, High	Med, Med	
Sand Bin #11	Court 2	Med	High	Low	Med	High	High	Med	High	High	High, High	Med, Low	May have more conditions under vegetation.
Sand Bin #12	Court 2	Med	Med	Low	Med	High	High	Med	Low	Med	High, High	Med, Low	May have more conditions under thick vegetation. bathroom occupies large area of the interior, making concrete difficult to survey. Bathroom wall has 143 inches of cracking.
Sand Bin #13	Court 2	High	Med	High	Low	High	High	Low	High	Low	Med, Med	Low, Med	
Sand Bin #14	Court 2	High	Med	Med	Med	High	High	Med	Low	Low	Med, Med	Med, Med	May have conditions under thick vegetation.
Sand Bin #15	Court 2	High	High	Med	Low	Med	Med	Low	Med	Low	High, Med	High, Med	
Sand Bin #16	Court 2	Med	Med	Low	High	High	High	Low	Low	Med	Med, High	High, Med	May have conditions under thick vegetation.
Sand Bin #17	Court 2	Med	Med	Med	High	High	High	Low	Low	Low	High, High	Med, Low	May have conditions under thick vegetation.
Sand Bin #18	Court 2	Med	Med	Med	High	High	High	Low	Low	Low	Med, Med	Med, Med	May have conditions under thick vegetation. Sand present on the floor at about 2' high, deep orange discoloration on bulkhead.
Sand Bin #19	Court 2	Low	Med	Low	High	High	High	Low	Low	NV	Med, High	Med, High	May have conditions under thick vegetation.
Sand Bin #20	Court 3	Low	Low	Low	High	Low	Low	Low	Low	Med	High, High	High, High	May have conditions under thick vegetation. Protection obstructs lower 8' of Sand Bin; estimates are provided for only what can be seen. Construction equipment and materials obstructing survey of the interior.
Sand Bin #21	Court 3	Low	Low	Low	High	Med	Med	Low	Low	Med	High, Med	Med, High	May have conditions under thick vegetation. May have conditions under thick vegetation. Protection obstructs lower 8' of Sand Bin, estimates are provided for only what can be seen. Construction equipment and materials obstructing survey of the interior.
Sand Bin #22	Court 3	Low	Low	Low	Med	High	Med	Low	Low	Low	High, Med	High, High	Protection obstructs lower 8' of Sand Bin; estimates are provided for only what can be seen. Construction equipment and materials obstructing survey of the interior.
Sand Bin #23	Court 3	Low	Low	Low	High	High	Med	Low	Low	Low	High, High	High, High	May have conditions under thick vegetation. Protection obstructs lower 8' of Sand Bin; estimates are provided for only what can be seen. Construction equipment and materials obstructing survey of the interior.
Sand Bin #24	Court 3	Low	Low	Low	Low	Low	Med	Low	Low	Low	High, High	Med, Med	Protection obstructs lower 8' of Sand Bin; estimates are provided for only what can be seen. Construction equipment and materials obstructing survey of the interior.
Sand Bin #25	Court 3	Low	Low	Low	Med	Med	Med	Low	Low	Med	High, High	High, High	Protection obstructs lower 8' of Sand Bin; estimates are provided for only what can be seen. Construction equipment and materials obstructing survey of the interior.
Sand Bin #26	Court 3	Low	Low	Low	Med	Med	High	Low	Low	Med	High, High	High, Med	Protection obstructs lower 8' of Sand Bin;estimates are provided for only what can be seen. Construction equipment and materials obstructing survey of the interior.
Sand Bin #27	Court 3	Med	Low	Low	Low	Low	Low	Low	Med	High	High, High	High, High	Protection obstructs lower 8' of Sand Bin; estimates are provided for only what can be seen. Construction equipment and materials obstructing survey of the interior.
Sand Bin #28	Court 3	Med	Low	Low	Med	Low	Med	Low	Low	High	High, High	Med, Med	Protection obstructs lower 8' of Sand Bin; estimates are provided for only what can be seen. Construction equipment and materials obstructing survey of the interior.
Sand Bin #29	Court 3	Med	Med	Low	Med	Med	Med	Low	Med	High	High, High	High, High	May have conditions under thick vegetation. Protection obstructs lower 8' of Sand Bin; estimates are provided for only what can be seen. Construction equipment and materials obstructing survey of the interior.

This matrix contains information based on CSI's survey. Their numerical measurements have been reinterpreted into value ranges to depict relative levels of existing conditions present on the individual historic resources. See *CSI Resource Assessment & Survey* for further information.

Unless otherwise noted, the following values are defined as:
Low = Low level presence of condition
High = High level presence of condition
NV = Not Visible (due to visual obstructions such as protective boards, construction equipment and materials, vegetation, etc.)



Sand Bins 10, 11, 12, and 18

Existing Conditions: Good

Recommendations: Rehabilitation

Sand Bins 13, 14, 15, 20, 21, 24, and 28

Existing Conditions: Fair

Recommendations: Rehabilitation

Sand Bins 22, 23, 25, 26, 27, and 29

Existing Conditions: Poor

Recommendations: Rehabilitation (23, 25, 26, 27, 29) and Preservation (22)

Sand Bins 16, 17, and 19

Existing Conditions: Unable to observe owing to vegetation.

Recommendations: Preservation

The vegetation should be removed and the bins assessed to determine which condition category each belongs. Then the appropriate treatment recommendations should be followed.

SPECIAL ADAPTIVE REUSE TREATMENT:

Three types of use are proposed for the sand bins including museum artifact, active reuse, and utility.

The matching of the Sand Bin with the proposed use will be completed as the program is developed. When the matching is determined, then the bins identified for museum use will be restored, while the other bins will be rehabilitated to the level appropriate for their adaptive use.

General Recommendation:

- The exterior concrete surfaces of all sand bins will be restored. This will include all repairs necessary to stabilize the concrete and provide it with a uniform surface. The approach to the restoration will seek to provide an appearance that presents a patina appropriate to the current age of the sand bins, rather than a new appearance.
- All sand bins will receive security screens in a design and material that meets HPO approval.
- Original sand from the structures should be considered for reuse for museum components or salvaged for elsewhere on the site, as appropriate.
- Refer to National Park Service *Preservation Brief 15: Preservation of Historic Concrete: Problems and General Approaches* - http://www.gsa.gov/portal/content/111618
- Existing painted numbers and "keep out" signs should be restored to match the original in appearance, dimension, and color.

Treatment: Preservation as museum artifact.

Specific Recommendations:

- The sand bin (22) proposed for preservation will be preserved in place, including its appurtenances, in accordance with the SOI Standards and Guidelines for Preservation.
- Missing hardware and appurtenances should be replaced using salvaged pieces from non-museum sand bins.
- No additions or major alterations to the sand bin would be appropriate.
- To aid in the explanation of the resource of demonstrate its historic significance, elements such as hanging signs, lighting, displays, can be introduced as long as they do not damage the historic resource.

Treatment: Rehabilitation.

Specific Recommendations:

- Sand bins proposed for rehabilitation in accordance with the SOI Standards and Guidelines for Rehabilitation.
- All rehabilitated sand bins would be retained in place.
- Further assessment of structural feasibility would be conducted to determine which sand bins could accommodate alterations (removal of mechanical equipment, removal of the internal storage structure, removal of concrete floors and drains, new openings, etc.) to allow for new uses.
- Sand bins could be adapted for a new use or incorporated into a new streetscape or landscape design.
- Any new treatment or installation of equipment must be accomplished with minimal contact with or destruction of historic fabric.
- Remove hardware and equipment for relocation elsewhere on site and use as museum artifact.
- Documentation of the original design is available and should be referenced during design. See below, and Appendix A, A-34 and A-35.

In the event of unanticipated damage during construction, the sand bins should be reconstructed as contemporary versions of the original structures. This will preserve the spatial relationship of these key historic resources to the Site's organization.

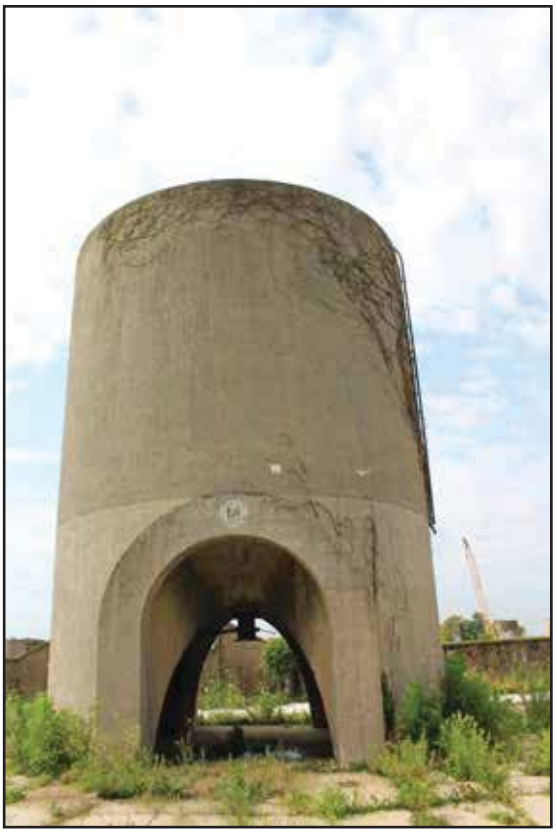
See CSI's *Resource Assessment & Survey, II. General Condition of Structures B. Sand Bins,* and Silman, *McMillan Reservoir Existing Conditions Assessment & Feasibility Evaluation – Sand Bins 10-29* for further detail.

Sand bin 10, looking south. 2015.

Sand bin 11, looking east. 2015.

Interior of sand bin 12, looking south. 2015.

Sand bin 13, looking west. 2015.



Sand bin 14, looking south. 2015.

Sand bin 18, looking south. 2015.

Sand bin 21, looking south. 2015.

Sand bin 20, looking northwest. 2015.

Sand bin 26, looking southwest. 2015.

Looking southeast from Sand bin 24. 2015.

Stationary Sand Washers

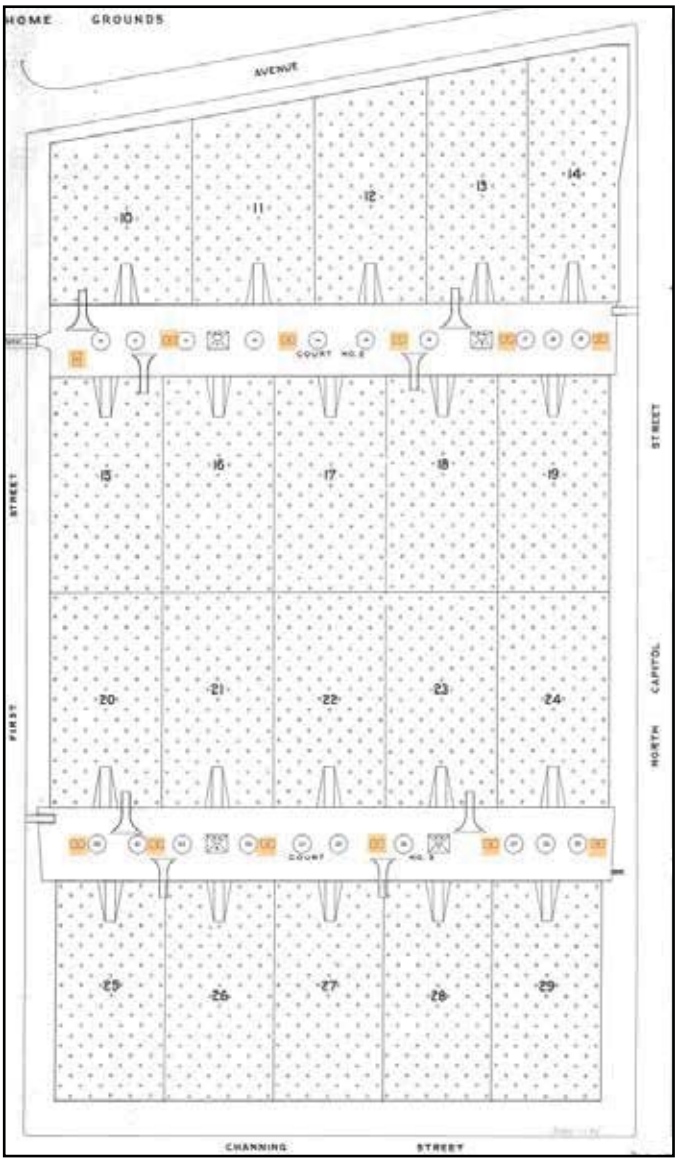
Material: Concrete

Quantity: 12

Date: circa 1910

Relative Level of Significance: Supporting

Integrity: High



Context: The site features twelve stationary sand washers, six in each service court. The sand washer identification numbers begin at 8, as sand washers 1-7 are located across First Street on the McMillan Reservoir. The sand washers are generally aligned with the sand bins and regulator houses except for the westernmost washer in the north service court (sand washer 8), that is not aligned with the other resources. The reinforced concrete structures have a unique shape that is generally defined by an upside-down pyramid set within an open concrete box frame, supported by a concrete slab and shallow foundation. The adjacent discharge bins are composed of four walls and a base slab supported by posts in each corner. The sand washers were installed in 1910.

Existing Conditions: All of the sand washers are extant and in their original locations. Visual observations were made in all readily accessible areas. Visibility of the exterior of several of the sand washers and discharge bins was limited by vegetative growth and protective plywood boards. Some discharge bins were found to be filled with water, limited visibility of the bin interior. Locations where observations were obscured are included in Appendix A of Silman's *Existing Condition Assessment & Feasibility Evaluation - Sand Washers and Discharge Bins*.

General conditions exhibited on the sand washers include:

<u>Obscured Visibility</u>

- *Vegetative growth*: Dense vegetative growth obscured the visibility of a portion of the sand washers and discharge bins, preventing observations of wall conditions.
- *Water*: Water filled a portion of the discharge bins, preventing observations of interior conditions.
- *Plywood*: Plywood boards placed around the resources in the south service court to protect them during construction work obscured the visibility, prevented observations.

<u>Concrete</u>

- *Corroded reinforcement*: In numerous locations, corrosion of the reinforcement has caused concrete spalling.
- *Cracking of concrete between discharge bin and posts*: A number of discharge bins show significant cracking between the discharge bins and the supporting posts. In some cases the post was no longer supporting the bin (see Silman Figure 12)
- *Cracking in concrete pit - face between washer and bin*: In a portion of the washer pits, a horizontal crack has formed near the top of the pit, extending along the entire length (See Silman Figure 13).

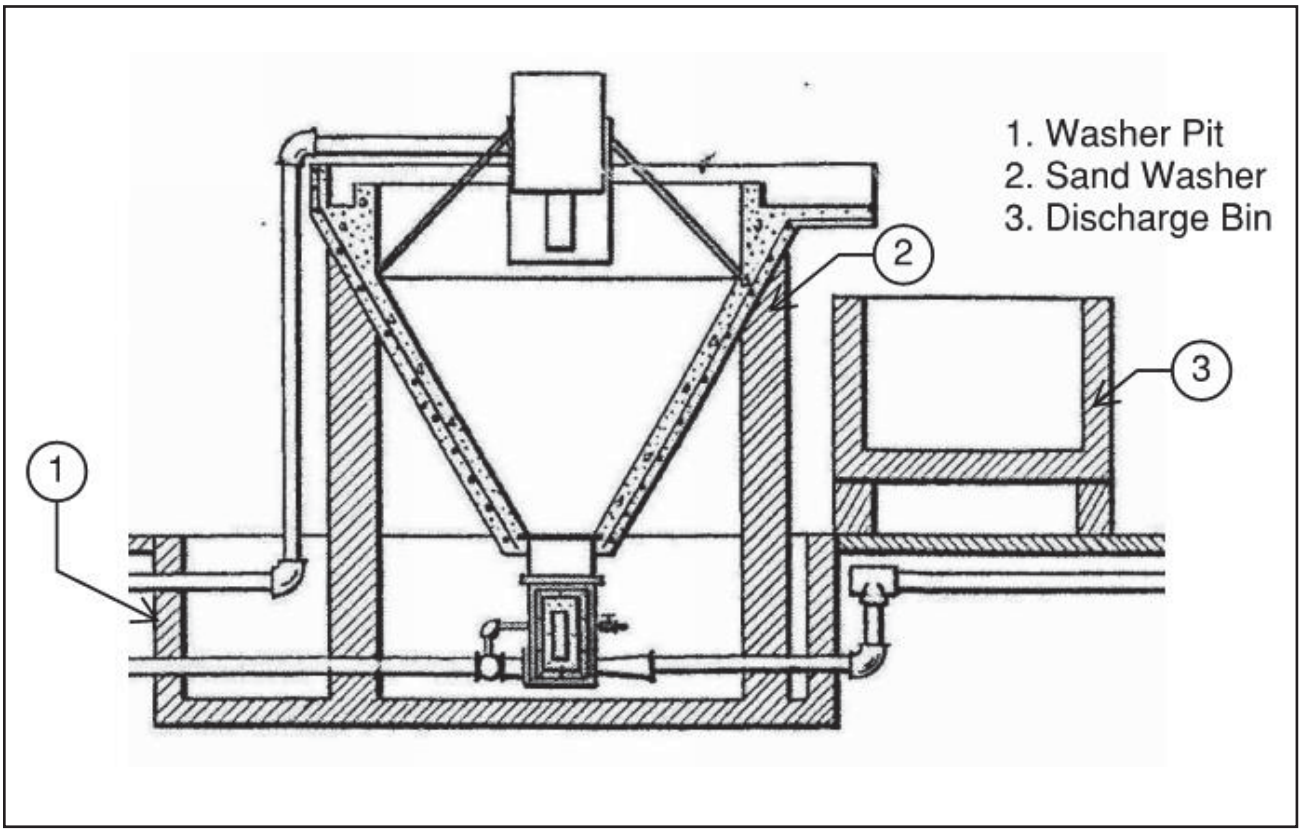
Railing Connections

- *Railing to discharge bin connection*: In the connection of the metal railing surrounding the washer pits to the discharge bin, a portion of the railings are no longer connected. Where this is the case, remnants of the connectors are still in the concrete (See Silman Figure 14).
- *Railing post to slab connection*: The steel post of the railing is anchored in the slab at the edge of the washer pit at various locations around the washer pit. At multiple locations, the concrete surrounding the anchor has cracked and spalled, and at some locations the post and the concrete are no longer connected. In a few cases, a wide crack in the concrete has formed at the pipe location and continues vertically to the base of the concrete (See Silman Figure 15).

Analysis

Analysis of sand washers assumes they are to be non-building structures per ASCE7-10 chapter 15. Both the sand washers and the discharge bins were found to be structurally adequate to hold soil, medium for plants, or water for a fountain. The washer pits were not analyzed, as more information is required from test pits.

See Sand Washer Conditions Matrix on the following page.



Front and side elevations. "Superstructure for Regulator Houses", US Army Corps of Engineers. August 20, 1904.

SAND WASHER CONDITIONS MATRIX

Sand Washer #	Court #	Calcium Deposit	Exposed Rebar	Concrete Cracks	Concrete Material Loss	Concrete Spall	Vegetation	Biological Growth	Unknown Black Deposit	Ferras Equipment Losses and Deterioration	Hopper Ferras Equipment Losses	Level of damage to Medallions (North then South)	Notes	Overall Summary of Conditions
Sand Washer 8	Court 2	Low	High	Low	Med	Med	Med	Med	Med	Yes, funnel missing completely, railing detached and failed completely.	Low	High, High		Good
Sand Washer 9	Court 2	High	High	Low	Med	Low	High	High	Med	18" square of funnel lost, railings detached.	Low	High, High		Poor
Sand Washer 10	Court 2	Med	Med	Med	Med	Low	Low	Low	Med	Railings detached.	Low	High, High	Water remains in the tub and unable to survey it in its entirety.	Good
Sand Washer 11	Court 2	Low	Med	Med	Low	Med	Low	High	Low	Yes, funnel missing completely, railings detached.	Med	Med, High		Good
Sand Washer 12	Court 2	High	Low	High	Low	High	Med	High	High	21" square of funnel lost, railings detached.	Low	Med, High	Water fills half of the tub, unable to survey those areas, west and east elevations not accessible, height between washer and bin different than others.	Poor
Sand Washer 13	Court 2	High	High	High	Med	High	Low	Med	High	Yes, funnel missing completely, railings detached.	Med	High, high		Poor
Sand Washer 14	Court 3	High	High	Med	High	Low	Low	High	Med	Railings failed.	Low	High, High	Partially not visible due to water.	Poor
Sand Washer 15	Court 3	Med	Med	Low	Low	Low	High	Med	Med	Yes, funnel missing completely, railings detached, not original.	NV	High, High	Sections and elevations are difficult to survey due to extensive vegetation overgrowth.	Fair
Sand Washer 16	Court 3	NV	NV	NV	NV	NV	NV	Low	Low	Railings detached, not original.	NV	NV		Overall condition undetermined due to obstructions
Sand Washer 17	Court 3	NV	NV	NV	NV	NV	NV	Low	Low	Yes, funnel missing completely, railing failure.	NV	NV		Overall condition undetermined due to obstructions
Sand Washer 18	Court 3	NV	NV	NV	NV	NV	NV	NV	NV	Yes, funnel missing completely, railings detached.	NV	NV	Construction materials obstruct view.	Overall condition undetermined due to obstructions
Sand Washer 19	Court 3	Low	Low	Low	Med	High	High	Med	Low	Railings detached.	NV	High, Med	Unable to survey the section due to 100% extensive vegetation overgrowth.	Fair

This matrix contains information based on CSI's survey. Their numerical measurements have been reinterpreted into value ranges to depict relative levels of existing conditions present on the individual historic resources. See *CSI Resource Assessment & Survey* for further information.

Unless otherwise noted, the following values are defined as:
Low = Low level presence of condition
High = High level presence of condition
NV = Not Visible (due to visual obstructions such as protective boards, construction equipment and materials, vegetation, etc.)

Treatment: Rehabilitation

Recommendations:

- All sand washers would be retained.
- The sand washers would be rehabilitated in accordance with the SOI Standards and Guidelines for Rehabilitation.
- An assessment would be conducted to determine the best method for relocating the sand washers elsewhere on site, and/or accommodate alterations for cultural installations or to be used as landscape features, such as planters.
- Sand washers would be preserved or restored in place, where possible.
- Relocation of 6 sand washers, when necessary, is appropriate.
- Documentation of the original design is available and should be referenced during design. See below, and Appendix A, A-44.

Sand washer 10 in Service Court 2, looking south. 2015.

Sand washer 12 in Service Court 2, looking south. 2015.

Sand washer 14 in Service Court 2, looking southwest. 2015.

Sand washer 8 in Service Court 2, looking south. 2015.

Sand washer 13 and discharge bin in Service Court 2, looking north. 2015.

Corner Stairs

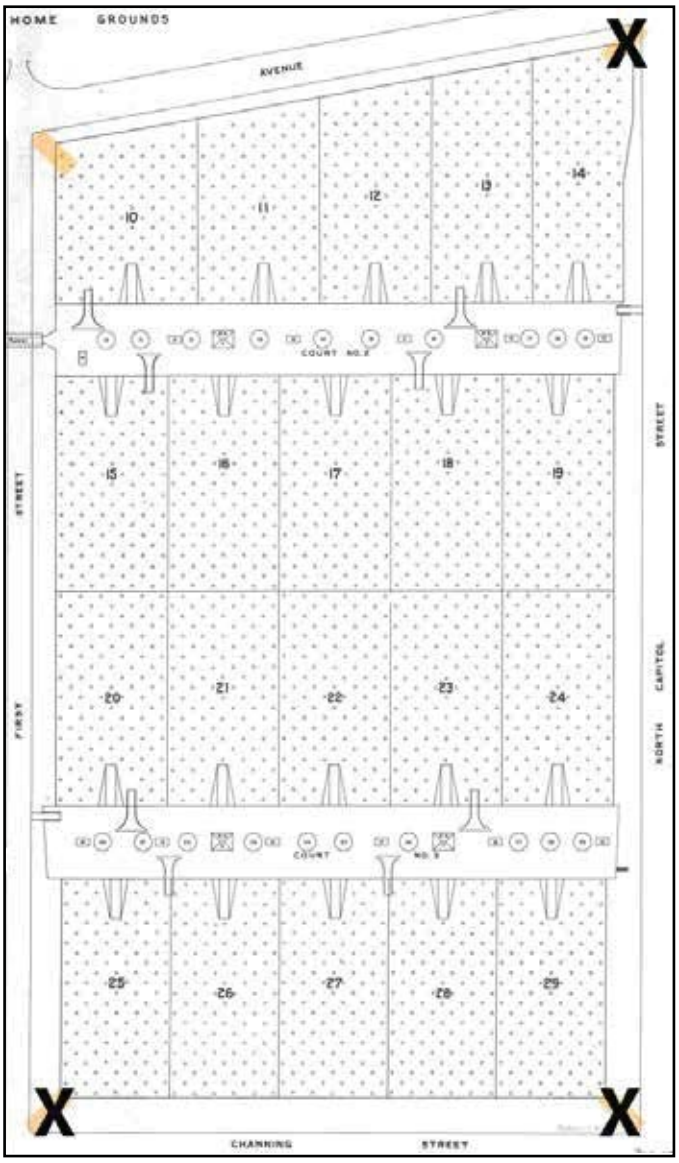
Material: Concrete

Quantity: 1

Date: 1903-1905 (original)

Relative Level of Significance: Supporting

Integrity: Low



Context: The site originally featured four sets of simple concrete stairs, one at each of its four corners. These stairs provided the primary access points for the public use of the site, directly connecting to the perimeter pedestrian path.

The stairs at the southwest and southeast corners led up from the public sidewalk to the pedestrian path at the top of the filter beds, approximately 16 feet above First Street. The stairs at the northeast and northwest corners led down from the public sidewalk to the pedestrian path at the tops of the filter beds, which was approximately 12 feet below Michigan Avenue. These stairs were intended solely for the purpose of providing access to the perimeter pedestrian park and were not part of the operation of the slow sand filtration plant.

Existing Conditions: Three of the four corner stairs (southeast, southwest, and northeast) are no longer extant. The remaining stair at the northwest corner is a straight run from the grade at First Street, N.W. to the top of Filter Bed 10. The extant stair is composed of 17 steps, eight feet in width, and constructed of poured concrete with a smooth surface. The run is flanked by low concrete coping approximately 12" wide with a simple flared end at the top and bottom of the run. Although relatively intact, the concrete is cracked and spalling.

See McMillan 50% Design Development Adaptive Reuse Drawings A100 and A101.

NW Corner Stairs

Existing Conditions: The remaining stair at the northwest corner is a straight run from the grade at First Street., N.W. to the top of Filter Bed 10. The extant stair is composed of 17 steps, eight feet in width, and constructed of poured concrete with a smooth surface. The run is flanked by low concrete coping approximately 12" wide with a simple flared end at the top and bottom of the run. Although relatively intact, the concrete is cracked and spalling.

Recommendations

Treatment: Demolition

The extant concrete stairs will be removed in their entirety. This removal is consistent with the Mayor's Agent Decision and Order HPA No. 14-393.

Stairs at northwest corner, looking northwest. 2015.

NE Corner Stairs

Existing Conditions: Not extant

Recommendations

Treatment: No Action

No action will be taken at this time. This action is consistent with the Mayor's Agent Decision and Order HPA No. 14-393.

There are no stairs extant at this corner. This corner is related to Filter Bed 14, which is under the control of DC Water until approximately 2022. The work proposed at the time calls for the retention of the existing grade which will not require stairs.

SE and SW Corner Stairs

Existing Conditions: Not extant

Recommendations

Treatment: Reconstruction

The two sets of stairs at the southern end of the Site that are no longer extant will be reconstructed in concrete in their original position. This reconstruction is consistent with the Mayor's Agent Decision and Order HPA No. 14-393.

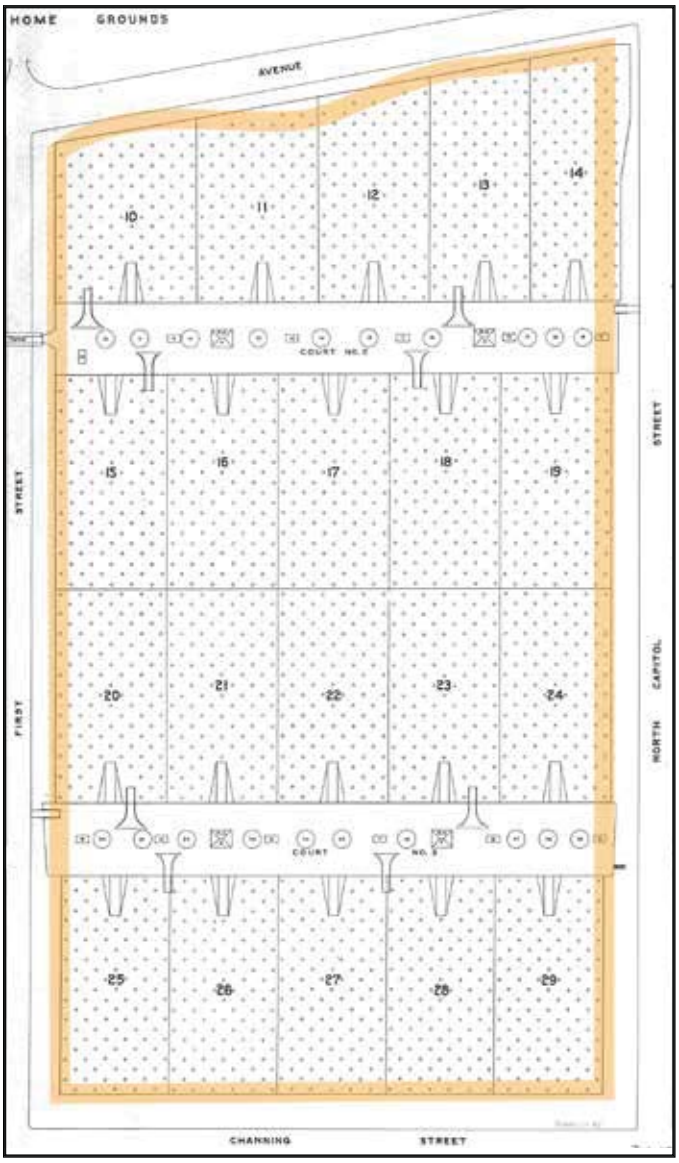
The original drawings, historic photographs, and current photographs of the remaining extant NW stairs should be referenced during design and development of specifications with the intent of recreating the original appearance in dimension, form, material, and treatment as closely as possible.

In the event that the historic McMillan Memorial Fountain is relocated to the SW corner of the Site, it is recommended that the original fountain stairs be considered for use in place of the reconstructed steps.

The large existing tree at the corner of First Street and Channing is not part of the historic planting of the Site, and should be removed.

Looking northeast up First Street from Channing Street, showing SW corner stairs. Circa 1920s. Courtesy of the Washington Aqueduct Archives.

Perimeter Pedestrian Path



Material: Concrete

Quantity: 1

Date: Circa 1910

Relative Level of Significance: Supporting

Integrity: Low

Context: The site features a narrow pedestrian path around the perimeter of the top of the filter beds. When the complex was dedicated as McMillan Park in 1906 and Frederick Law Olmsted, Jr. was retained to design its landscape, he activated the perimeter of this section of the complex with this pedestrian path, providing a place for visitors to stroll and admire the views across the planes of open space above the filter beds. The east, west, and south legs of the path run in straight lines parallel to the adjacent streets. The north leg is curvilinear to reflect the more picturesque qualities that once defined the character of the land on the other side of Michigan Avenue. Olmsted, Jr. focused on the enhancement of the pedestrian path in his planting plan, which further emphasized the perimeter of the site and, through the use of thorny shrubbery and trees, provided a physical barrier between the path and the working area of the plains.

Existing Conditions: The route of the pedestrian path is still legible, but the original concrete is broken and only partial remnants of the pavers are extant.

Treatment*:* Reconstruction

Recommendations: The remnants of the original concrete sidewalk pavers, similar to the standard municipal concrete pavers used for public sidewalks, will be removed and salvaged for recycling on site. This removal and replacement is consistent with the Mayor's Agent Decision and Order HPA No. 14-393.

The new pedestrian path will be constructed of concrete pavers to replicate the original appearance in pattern, texture, and color. The location and width of the new path will be similar, although not identical, to the location and width of the original path along the east, south, and west edges of the new plinth. The northern edge will be constructed following a curved layout that is similar to the original path along the northern edge.

See McMillan 50% Design Development Adaptive Reuse Drawings A100 and A101.

Remnants of pedestrian path, north of Service Court 2. 2015.

Remnants of pedestrian path at NW corner of site. 2015.

Tunnel

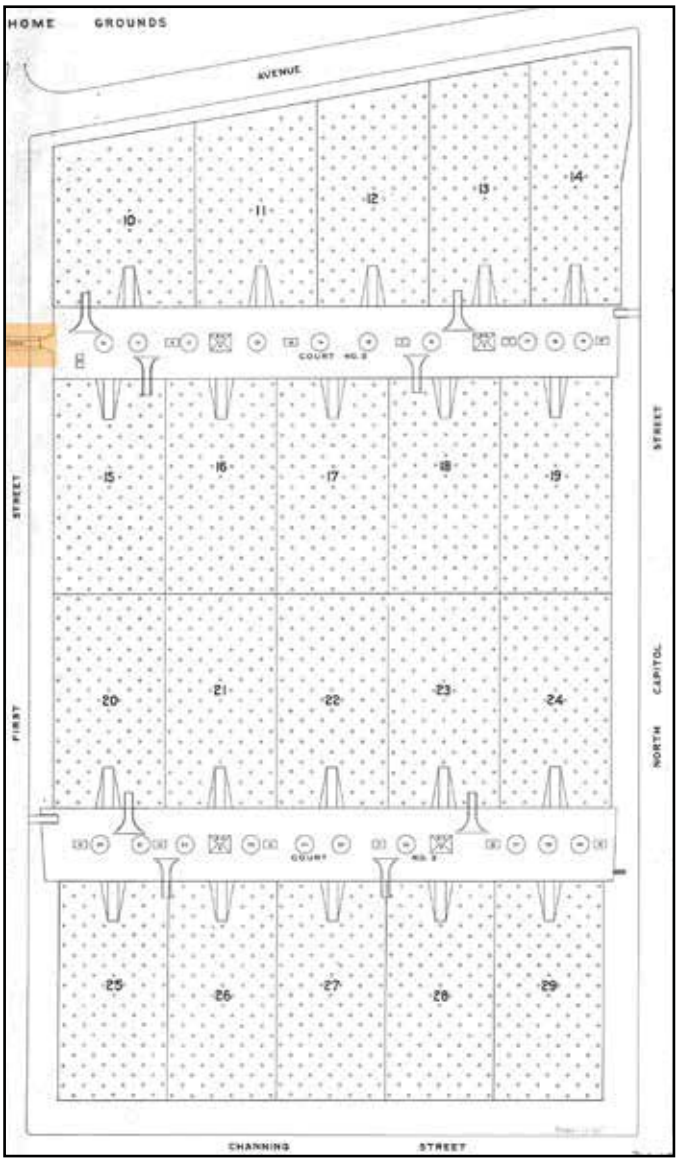
Material: Concrete

Quantity: 1

Date: 1903-1905 (original)

Relative Level of Significance: Supporting

Integrity: High



Context: A single tunnel connects Service Court 2 (north) of the McMillan Site to the service court of the section of the U. S. operated filtration plant located west of First Street. The design of the tunnel is consistent with the architectural detailing of the filter bed portals, with a denticulated cornice and flat-arched opening. Although there are pipes and other subterranean connections between the west and east sides of the filtration plant, this tunnel is the only visible connection.

Existing Conditions: The tunnel is constructed of the same concrete as the rest of the service court walls and portals. It is in fair condition with cracks and spalling. Although intact as a connector between the two sections of the filter beds to either side of First Street, a concrete masonry unit wall is located near the west entrance to prohibit access for security reasons. This wall was most likely erected in the late 1980s at the time that the east side, referred to here as the Site, was sold to the District of Columbia.

See Silman, *McMillan Reservoir Existing Conditions Assessment First Street Tunnel,* for further detail.

Treatment: Preservation

Recommendations:

General: Design drawings propose the removal of the tunnel wing walls at the east entrance for introduction of new traffic ramps and a stair on grade to connect vehicular and pedestrian traffic from First Street to Service Court 2. The entrance to the tunnel from the east is proposed to be closed off. Silman notes that closing the tunnel on both ends would leave an unreinforced concrete structure supporting load from an active roadway (First Street), with no means for access, inspection, and maintenance.

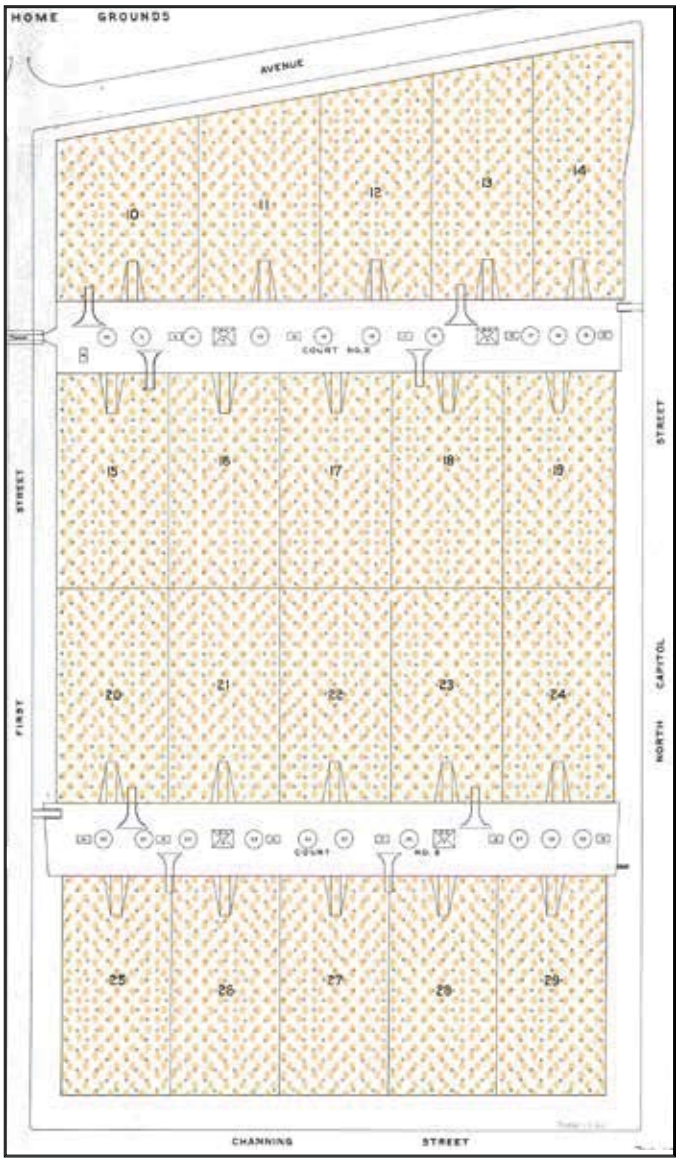
Specific Recommendations:

- The existing tunnel would be preserved in place in accordance with the SOI Standards and Guidelines for Preservation
- The tunnel will be filled in and closed off to preclude access.

First Street Tunnel, looking west. 2015.

First Street Tunnel, looking northwest. 2015.

Manholes and Covers



Material: Concrete (manholes), Metal (covers)

Quantity: Approximately 2,100

Date: 1903-1905 (original)

Relative Level of Significance: Supporting

Integrity: Moderate

Context: The site features approximately 2,100 manholes spaced evenly across the three sections of open space. These manholes lead to the subterranean filter beds and were used to provide the workers with access to the filter beds, as well as natural light and fresh air. During operation of the facility between three and four acres of manholes would be open at any given time to allow for the cleaning of the sand in the filter beds below. The concrete manholes are an integral part of the subterranean filter bed structures and are marked above grave by iron covers, most of which are severely deteriorated or no longer extant.

Existing Conditions: The manholes and covers are intact in their original locations, except those in the area of the collapsed filter beds in the east section of the site (filter beds 19 and 24). Various covers throughout the site have disintegrated and fallen into the filter beds below.

Recommendations

General: The majority of the manholes and covers are slated for removal, per site design plans. A portion of manholes on top of filter bed 28 are proposed to be preserved or recreated. Removal is consistent with the Mayor's Agent decision and order (HPA No. 14-393).

Treatment: Demolition

Specific Recommendations:

- The manholes would be rehabilitated in accordance with the SOI Standards and Guidelines for Rehabilitation.
- As many manhole structures as possible should be retained in place within Filter Bed 28.
- As many manhole covers should be retained as possible. If retention of the manhole covers in place is a safety hazard, a new use for the retained manhole covers, such as an artistic expression for display on site would be identified.
- Retained manhole structures could be treated in various ways to make them a prominent feature of the development. Lighting, transparent covers, various materials and designs for infill, and other treatments should be considered.
- Should it be decided to include lighting within the manholes in place of the covers, this lighting should be thoughtfully designed to resemble sunlight coming through the manhole as it did historically.
- See below, and Appendix A of Silman Report, A-5 andA-11.

Manhole cover at southwest corner of filter bed 10. 2015.

Intact manhole cover. 2015.

Manhole in Filter Bed 29. 2015.

References

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