Washington Park Reservoir Improvements Project

Application for Historic Demolition Review

Prepared for:
Portland Water Bureau

Prepared by:
Winterbrook Planning

In Collaboration with:
AECOM Technical Service, Inc. &
Peter Meijer Architect, PC

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Contents

Appendices

Figures

Acronyms and Abbreviations

BDS	Bureau of Development Services
CSB	Community Sounding Board
DAR	Design Advice Request
EA	Early Assistance
EN	Environmental Review
EPA	US Environmental Protection Agency
HD	Historic District
HLC	Historic Landmarks Commission
HR	Historic Resource Review
LT2	Long Term 2 Enhanced Surface Water Treatment Rule
LUR	Land Use Review
MOA	Memorandum of Agreement
OHA	Oregon Health Authority
PP&R	Portland Parks & Recreation
PWB	Portland Water Bureau
PZC	Portland Zoning Code
SHPO	State Historic Preservation Office

Applicant & Land Use Information

Applicant:	City of Portland Water Bureau 1120 SW 5th Avenue, Room 600 Portland, Oregon 97204 (Contact: Teresa Elliott, 503.823.7622)
Representatives:	Winterbrook Planning 310 SW 4th Avenue, Suite 1100 Portland, Oregon 97204 (Contact: Greg Winterowd, 503.827.4422)
Owner:	City of Portland, managed by Portland Water Bureau (PWB)
Location:	Washington Park
Site Address:	2403 SW Jefferson St.
Tax Account #s:	R316752, R485200, R485207, R485390, R485392, R485394
Neighborhood Assoc.:	Arlington Heights
District Coalition:	Neighbors West/Northwest
Base Zone:	Open Space (OS)
Overlays:	Environmental Conservation (c) and Protection (p) Scenic Resource (s) Washington Park Reservoirs Historic District
Procedure:	Type IV Demolition Review
Pre-app Conference:	Pre-app EA 14-139549 (see Appendix A)
Proposal:	There are 11 resources contributing to the Washington Park Reservoirs Historic District. In order to meet EPA safe drinking water rules and to address landslide hazard and other issues, PWB proposes to demolish three of these structures: the Weir Building (1946) and Reservoir 3 and 4 basins (1894). In a separate Type III process, the Portland Historic Landmarks Commission (HLC) will review PWB's proposal to replace Reservoirs 3 and 4 with surface water features and new buried reservoir. The HLC will also review proposals to: (a) reconstruct portions of existing parapet walls, wrought iron fencing and lamp posts associated with the two demolished reservoir basins; and (b) rehabilitate the remaining contributing structures, buildings and objects.

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Part 1. Background Information and Context

Introduction

Washington Park is one of the oldest and most widely used parks in the City of Portland (Portland). The Washington Park Reservoirs 3 and 4 are concrete lined, open basins that were constructed in 1894. The reservoirs were created to be more than utilities and were constructed as publicly accessible open water amenities due to their locations within "City Park." Washington Park as we know it today grew up around the reservoirs after the turn of the 20th century. The reservoir site was listed in 2004 on the National Register for Historic Places as the Washington Park Reservoirs Historic District (Historic District) and is designated as a Historic District by the City of Portland.

The Historic District includes 11 contributing resources. The two reservoirs and other contributing buildings, structures and objects are an integral part of Portland's water system. However, the reservoirs themselves face four major issues:

- Recurrent and ongoing landslide damage
- Drinking water quality/EPA ruling for uncovered finished drinking water reservoirs
- Seismic vulnerability of the system (part of an essential utility for the City) and vulnerability of downhill areas below the site
- Age and deterioration of the system and structures (120 years old)

To address these issues, the Portland Water Bureau (PWB) proposes to build a new below-ground reservoir in the same general footprint as the existing Reservoir No. 3, with a reflecting pool on top. The Reservoir No. 4 basin and the slope to the west are needed to provide landslide abatement; the slope will be restored to its pre-reservoir condition. This area will also provide stormwater management, reservoir overflow and related functions; a reflecting pool is also proposed. As described in this application, these proposed changes necessitate the demolition of three of the Historic District's contributing structures: the Weir Building and Reservoir 3 and 4 basins (see Sheet 2.0 in Appendix E). These demolitions are the subject of this land use review.

Organization of this Application

This application supports PWB's request to demolish three of the 11 contributing historic structures that comprise the Washington Park Reservoirs Historic District.

The narrative portion of the application includes two parts:

- **Part 1** provides the background and context for the demolition review. Part 1 provides much of the factual basis for the evaluation of demolition criteria found in Part 2.
- **Part 2** addresses applicable demolition criteria found in the Portland Zoning Code (PZC) 33.846.080. Part 2 demonstrates that, on balance, the demolition proposal is supportive of the goals and policies of the Portland Comprehensive Plan.

Landmark Commission Review of Final Design and Rehabilitation Proposal

To address landslide damage, EPA safe drinking water regulations, and other project drivers, PWB needs to demolish three of the contributing structures: the Weir Building and Reservoir 3 and 4 basins. In a separate land use review, the Historic Landmarks Commission (HLC) will consider the details of PWB's proposal to replace Reservoirs 3 and 4 with surface water features (including reconstruction of portions of existing walkways, parapet walls, wrought iron fencing and lamp posts associated with the two demolished reservoir basins). The HLC will also review preservation and rehabilitation proposals for the eight remaining contributing structures, buildings and objects within the Historic District.

Importantly, no demolition permit may be issued until, among other things, a permit for new development on the site has been issued; hence, no demolition will proceed until the HLC has reviewed and approved the detailed plans for Historic District improvements.

The design of the surface water features, restoration work and other site improvements:

a) Represents the consensus view of the Washington Park Reservoirs "Community Sounding Board" and the strong preferences of the public as developed over the course of an extensive public involvement process that began in June 2013;
b) Addresses the aesthetic and social objectives of the of the "City Beautiful" movement of the 1890s and the Olmsted park system plan for Portland;
c) Meets the Washington Park Master Plan policies related to maintaining and providing access to water features; and
d) Carries out the recommendations of the HLC in three separate "design advice" meetings.

Overall, the project preserves one of the two original uses at the site (drinking water storage and distribution for the west side of Portland) and restores the other original use (recreational destination).

Section 1-1: History & Context[1]

1-1.1 Brief History of Portland's Water System

Washington Park Reservoirs 3 and 4 were part of an ingenious gravity-fed water system constructed in the late nineteenth and early twentieth centuries. The system originates in the Bull Run watershed near Mt. Hood (Figure 1).

[1] The following historical narrative is summarized from several key sources: National Register Nomination for the Washington Park Reservoirs Historic District (C. Geller, 2003); Washington Park Master Plan (City of Portland, 1981); Water: Portland's Precious Heritage (C. Short, 2011); "A Phenomenal Land Slide"(D.D. Clarke, American Society of Civil Engineers, 1904); and Report of the Park Board (Olmsted Brothers, 1903).

In 1885, the Oregon State Legislature approved a Portland City Charter amendment that authorized, for the first time, a City-owned water system and provided bonding authority to finance it.[2] The amendment also created the Portland Water Committee to oversee the establishment of the municipal water works. The Committee appointed Colonel Isaac Smith as Chief Engineer of the city water works and charged him with studying water supply options to replace the Willamette River with cleaner and more affordable water. After eliminating several of the proposed options (e.g., Sucker Lake (now Lake Oswego), Eagle Creek, Clackamas River), Colonel Smith and the Water Committee turned their attention to the Bull Run watershed.

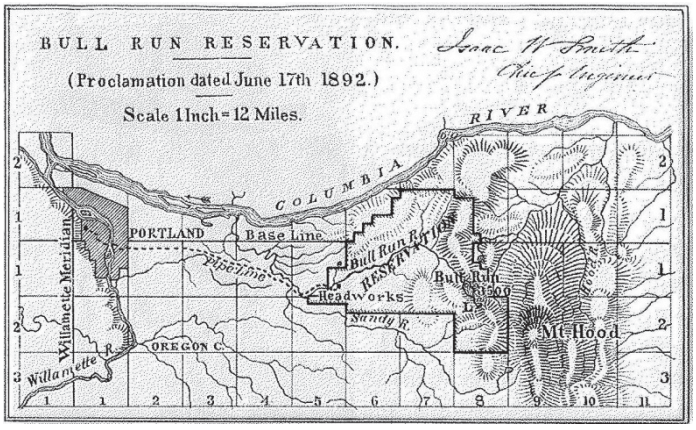

Figure 1. The Bull Run pipeline to Portland

After completing surveys of the watershed and possible pipeline routes from Bull Run to Portland, Colonel Smith concluded that a gravity system was feasible using a system of pipes to supply water to reservoirs at Grants Butte,[3] Mount Tabor, and Washington Park (originally named City Park). The system was entirely gravity-fed, with the exception of "extra high" locations up in the west hills, which would receive pumped water from the Washington Park reservoirs.

For the layout of the west side water system, the Portland Water Committee engineers explained the selection of the location of the Washington Park reservoir site as follows:

"On account of the elevation of the headworks on Bull Run, the fall required to overcome the friction of the water in the pipe and the allowable pressure on the city mains and the submerged pipe under the Willamette River, the reservoir must be placed at an elevation of about 300 ft. above the base of city grades.

By survey made from the southern to the northern boundary of the city, it was ascertained that all the lands at this elevation were on a steep hillside; that the reservoir could only be constructed in ravines in which the required capacity could be obtained by dams of moderate height, and the depression in the City Park was best suited for the purpose of a reservoir, and was the only one into which the water could be discharged without encountering great and almost insuperable difficulties in the extension of the supply main from the crossing of the Willamette River westward." (Portland Water Committee, as quoted in D.D. Clarke, 1904)

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2 Portland Water Bureau. Water: Portland's Precious Heritage (Portland, City of Portland, 1983)

[3] Grants Butte was originally identified. Powell Butte was selected as the site in 1925 when the Water Bureau started purchasing land on the butte.

The Washington Park Reservoirs 3 and 4 were constructed between 1893 and 1894, concurrently with the construction of the water conduit and distribution system from the Bull Run watershed. The reservoir basins, buildings, and dams were constructed in a Romanesque style for an "Old World" feel important to the City Beautiful movement's idealization of the natural landscape. The site and the built elements were carefully integrated, with both reservoirs in "naturalistic" shapes situated within a ravine. This was an experiential destination - a place where Portlanders could get out of the crowded, dirty streets and into a naturalistic landscape. Carriageways and pathways were constructed around the reservoirs, and light posts extended the public visitation hours and enhanced the "romance" of the site with lights reflecting on the water. Viewpoints were also integrated in the design.

In January 1895, Portland's new Bull Run water system went on line. In the 120 years since that time, Portland has enjoyed (and continues to enjoy) some of the purest drinking water available. However, as described in Section 1-3, recurrent landslide damage to the Washington Park reservoirs over the years has required ongoing repairs and maintenance; the Design Concept is intended to preserve the water storage, gravity system and water distribution function of this historic site.

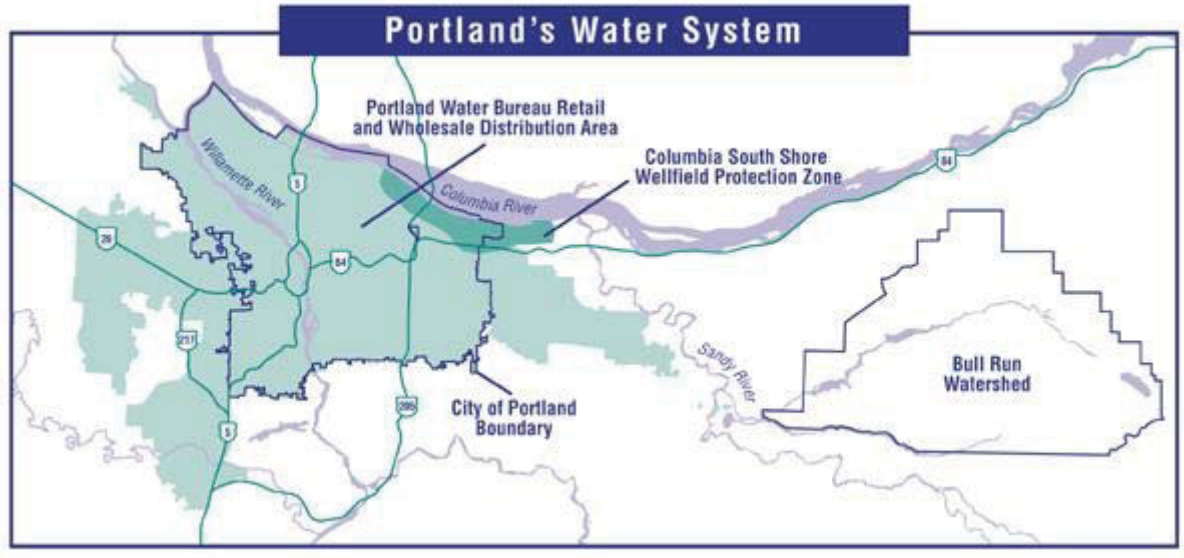


Figure 2. Portland's Drinking Water System

Today, Portland's water system (Figure 2) serves drinking water to about 939,000 people, or nearly one-quarter of Oregon's population. The gravity fed system helps reduce dependence on expensive pumping and its intensive energy needs with only the higher elevations needing to be pumped. Water is delivered to the City and to wholesale customers in the metropolitan area through three large conduits (pipelines) that feed storage reservoirs at Powell Butte, and from there supply the Mt. Tabor and Washington Park reservoirs. From these reservoirs, water is distributed to smaller reservoirs and tanks, to local water districts, and to customers through underground pipes.

The primary source of this water, the Bull Run Watershed, was established by President Benjamin Harrison as the nation's fifth Forest Reserve in 1892. [4] Federal legislation, state law, and city code have strengthened protections of the watershed since that time. In 1904, President Theodore Roosevelt signed the Bull Run Trespass Act, which restricted access into the watershed and the surrounding area. Subsequent federal and local legislation defined management goals and limited uses such as logging within the watershed.

1-1.2 Olmsted Recommendations

In 1903, John Charles Olmsted[5] toured Portland and made recommendations of lasting usefulness to Portland's fledgling park system, and Washington Park in particular. In the 1903 Report of the Park Board, Olmsted recommended an interconnected park system for the Portland area. He advocated for the acquisition of additional park lands before "buildings and high land values…prevent the extension of the park [system]."

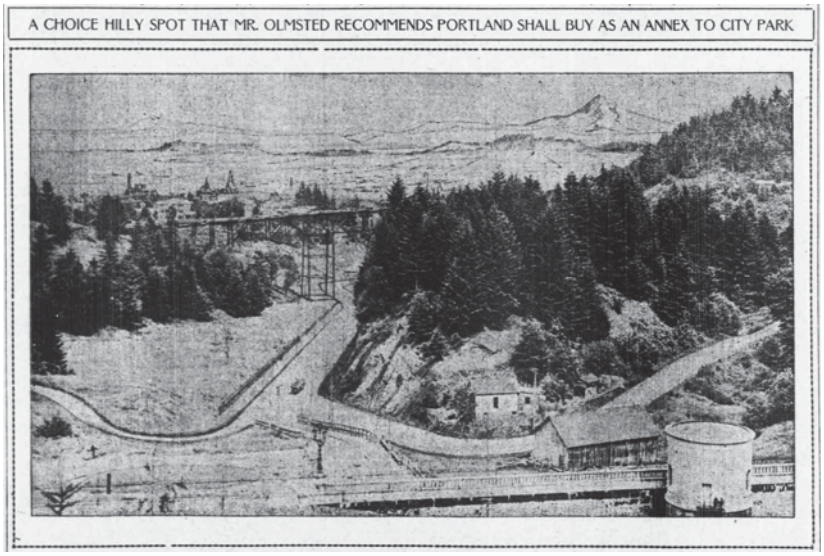


Figure 2. Olmsted view over Reservoir 4 toward downtown Portland (The Sunday Oregonian. June 19, 1904)

For Washington Park, then known as City Park, he advised moving the main entrance to Park Place, separating vehicular traffic from foot traffic, and changing the name from City Park to one of more distinction. He also advised restoring some of the formally planted areas to their natural beauty with native shrubs and ground cover. Another recommendation was to extend the drive to "the fine viewpoint west of the lower reservoir" (see Figure 3, with view over Reservoir 4 towards the Ford Street - now

> *"All reservoirs, have, in addition to their essential quality of storing water, an element of landscape effect; namely, that of an expanse of clear, sparkling water. This same element forms the chief feature of many landscapes in public parks, where it is created at large cost, and it is clearly a thing of great value to the public when it can be made available. In itself, regardless of its outline or setting, a body of water is beautiful and refreshing, and its value to the public is so well recognized that provision is very often made for giving the public access to the enclosure about a reservoir, whence it surface may be seen."*
>
> Frederick Law Olmsted, Jr. *The Relation of Reservoirs to Parks*. (Boston: Rockwell and Churchill Press, 1899.)

[4] Portland created a secondary water source along the south shore of the Columbia River in the 1980s.
[5] A partner in the Olmsted Brothers Landscape Architects firm of Central Park fame.

Vista - Bridge). He suggested "a widening or concourse" at the viewpoint that would "encourage people to stop and enjoy the view."

Many of Olmsted's recommendations were carried out, including the new park entrance, the creation of separated pedestrian pathways, and the park name change. The drive was extended to and beyond the viewpoint, though no particular widening or concourse was created at the viewpoint.[6]

In the early 1900s, the character of City Park was typical of the parks developed during the national urban park movement of the period. Formal plantings and clipped hedges were interspersed with lawns, walkways and a series of scenic carriage drives. In 1903, Olmsted recommended that formal plantings be kept to minimum both to better fit the nature of the setting and to save money for further expansion of the park. He advised restoring the formally planted areas to their natural beauty with native trees, low shrubs and ground cover. In 1908, the new Park Board Superintendent Emanuel Mische (who had worked for the Olmsted firm) began to alter the landscape according to Olmsted's vision. Despite his efforts, however, there remained a strong interest in formal plantings (especially roses) and Olmsted's ideas were never fully realized.

Over time, the landscape in the area of the reservoirs has changed as Douglas fir and other trees have matured. Many of the views of the reservoirs from surrounding roadways are partially or completely obscured. In the view pictured in the Oregonian, for example, there are now many more trees at much greater height, and the viewpoint itself is obscured by vegetation and fencing.

1-1.3 Washington Park Master Plan

Recognizing that little planning had been done "in the 77 years that have elapsed since [Olmsted] submitted [his] recommendations for improving Portland's park system," the Portland City Council set out in 1981 to create the first comprehensive plan for the park: the Washington Park Master Plan (Master Plan) (Figure 4). In those 77 years, the park had grown from 40 to more than 500 acres, and park use had intensified to the point where "facilities which were intended to accommodate yesterdays crowds…are seasonally inundated by today's enthusiasts." (Master Plan, 1981)

Figure 3. 1981 Master Plan cover

The purpose of the Master Plan study was to define and clarify present and future programming and development

[6] Proposed plans for the restoration of historic features at the site include the creation of a small viewpoint at this location.

of the park and to provide a framework in which decisions about the park could be made in the best interest of current and future generations.

The Master Plan noted how Washington Park occupied a prominent position within the 40-Mile Loop Trail, a regional park and trail system that would one day link up with state and national trail systems and provide ready access to a wide variety of recreational opportunities for city residents. Washington Park's section of the Wildwood Trail was part of this system, and park was connected by the Wildwood Trail to other parks north and south, including Pittock Acres and Forest Park. The Master Plan called for expanded pathway systems to improve pedestrian and bicycle options, provide greater safety and connectivity, and increase opportunities for outdoor recreational use of the park and regional trail system.

The Master Plan recognized Washington Park's commanding views from its prominent location: "on the face of the west hills close to downtown Portland, it provides many opportunities for viewing the city, the river, and the mountains beyond." The plan also noted the Park's scenic and historic qualities: "The north park area, particularly the International Rose Test Gardens, water reservoirs numbers 3 and 4, and the amphitheater and Hoyt Arboretum reflects the Park's history. Enclosed in wrought iron fencing the stone reservoirs are visual amenity as are the rose gardens amphitheater and arboretum."

The Master Plan's Park Features & Traditional Uses Policy states:

> *"Initiate program of scheduled improvements to Washington Park's major features with first priority given to their maintenance and preservation and second priority to their redevelopment to increase their recreational, educational, and cultural value."*

Most of these features are located in the northern end of the park and they include the reservoirs. The 1981 Master Plan also addressed reservoir-specific issues:

> *"Reservoirs numbers 3 and 4 are fine features of the north part of the park. The Water Bureau affirms that, although expensive to maintain, the reservoirs will continue in their present use for the foreseeable future.*
>
> *There is some fear of contamination of these facilities in spite of the protective chain link fence. The Environmental Protective Agency had, at one time, urged that all such open reservoirs be covered. They have since softened their stand, both because of non-supportive cost-benefit analysis, and controversy over the potential change in use of the newly covered areas. Although the Portland Water Bureau has been agreeable to covering these reservoirs, the decision to do so has been deferred for the time being."*

The Master Plan included two recommendations specific to the reservoirs:

> *"A. Move the chain-link fence around the reservoirs to less unsightly position lower on the slope.*
> *B. If the reservoirs are covered, flood the covered area with shallow water to preserve their traditional attractive appearance."*

Portland Parks and Recreation (PP&R) plans to prepare an update of the Master Plan in the near future. The updated plan is intended to address the current challenges and needs of the park and guide park improvements over the next 20 years.

Section 1-2: Washington Park Reservoirs Historic District

On January 15, 2004, the Washington Park Reservoirs Historic District was listed on the National Historic Registry. The nomination is included in Appendix D.

1-2.1 Areas of Significance

The National Register Nomination notes four Areas of Significance for the Historic District:

1. Community Planning and Development,
2. Engineering,
3. Architecture, and
4. Entertainment/Recreation.

Key features of each of these areas are summarized from nomination below.

Community Planning and Development

- Oregon legislature gave Portland authorization to create a **City-owned drinking water system** in 1885. The system had been privately owned prior to that, utilizing the Willamette River.
- The Water Committee appointed Colonel Isaac Smith, a civil engineer, as Chief Engineer, and directed him to find water sources that would allow the **system to be gravity-fed**.
- The Bull Run Watershed rights were acquired and legislatively protected by President Harrison as the **nation's fifth national forest reserve**.

Engineering

- Chief Engineer Isaac Smith proposed a system of piping from the **Bull Run watershed**, 30 miles away, with two reservoirs at two different heights at Washington Park and additional reservoirs on the east side of Portland at Mount Tabor and Grants Butte. The system was almost entirely gravity-fed, with the exception of "extra high" locations up in the west hills, which would receive pumped water.
- The **conduit and distribution system** took almost two years and $2.4 million to build, using "day labor."
- The method of **concrete construction used in the basins was patented by Ernest Ransome** as the "concrete and twisted iron patent." This was an early step in concrete reinforcing and one of its early large-scale applications.
- The **concrete finish work on the buildings**, as well as the circular lights cast into the floors of the gatehouses and pump house roof, were also patented by Ransome. The gatehouses were finished with a hand-tooling technique simulating rusticated stone.

Architecture

- The basins, buildings, and dams were constructed in a **Romanesque style** for an "Old World" feel important to the City Beautiful movement's idealization of the natural landscape.
- The site and the built elements were carefully integrated, with both reservoirs in **"naturalistic" shapes** set within a ravine. **Viewpoints** were also carefully considered.
- **Carriageways and pathways** were constructed around the reservoirs, creating a recreational destination. Light posts were included, extending potential hours of visitation by the public and further enhancing the "romance" of the site by the lights reflecting on the water.
- Prominent Portland architects Whidden and Lewis designed the **lamp-posts, fencing, and gates**, which were constructed by Johann Tuerck, a noted Portland master iron worker.

Entertainment/Recreation

- The addition of open water reservoirs to City Park was immediately understood as a **scenic and recreational amenity**, and the reservoirs were designed as such, with walkways around the basins and pedestrian connection points.

1-2.2 Contributing Historic Resources

The National Register nomination consists of a total of 11 contributing resources within the Historic District. These include five contributing buildings (Gatehouses 3 and 4, Pump House 1, Generator House, Weir Building), four structures (Basins 3 and 4 - with parapet walls, fences, lampposts, walkways - and Dams 3 and 4), and two objects (drinking water fountains). These resources and the Historic District boundary are shown in Figure 5.

Table 1.1 provides a summary of the context, current condition, and proposed changes to the District's Contributing Resources. A Historic Resources Condition Assessment is provided in Appendix B.

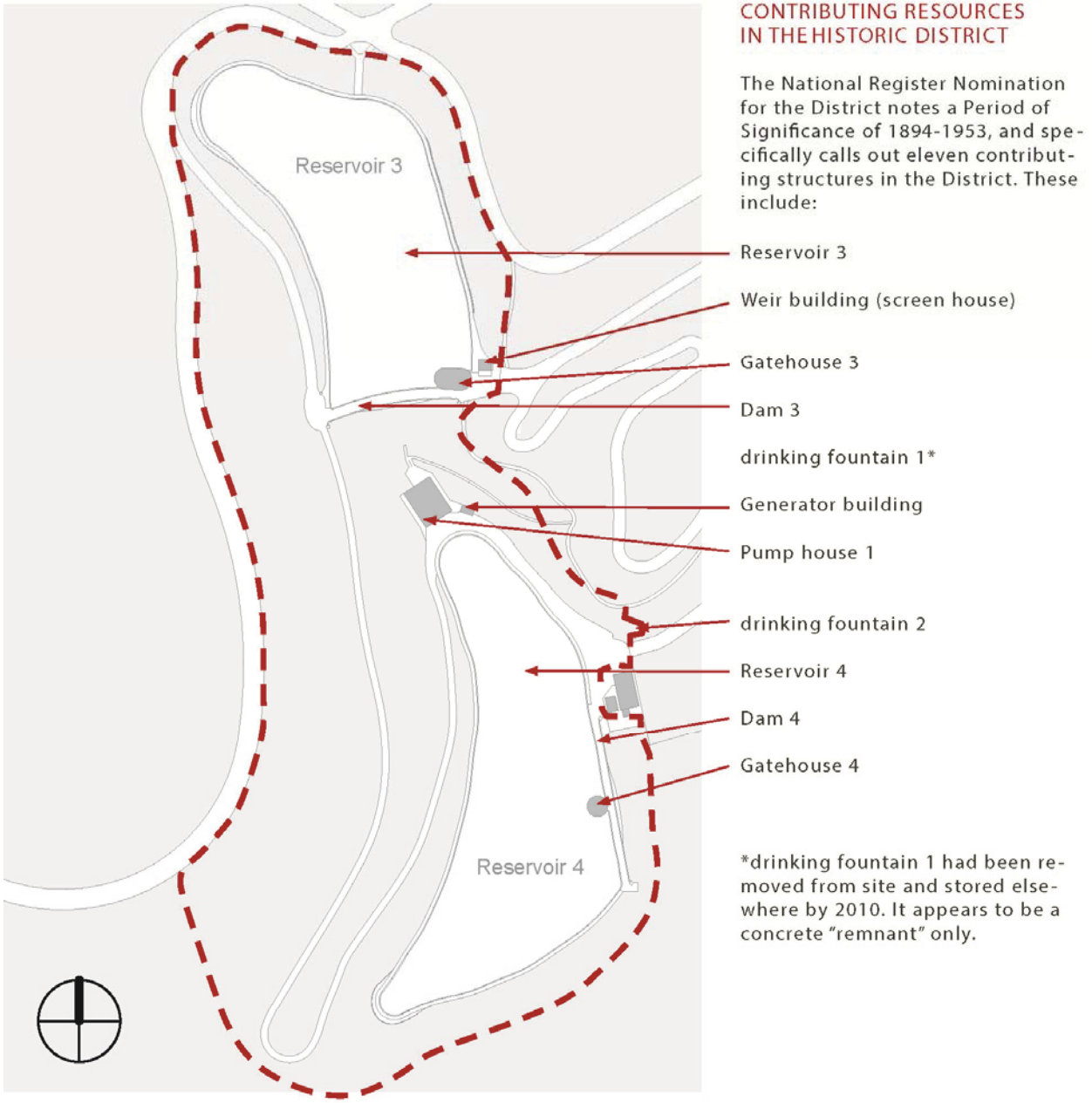


Figure 4. Historic District with contributing resources

Table 1.1: Washington Park Reservoirs Historic District – Contributing Historic Resources

Contributing feature	Photo	Historic context	Current condition	Proposed
Reservoir 3		Irregularly shaped components were constructed in sympathy with the topography. The basin is gravity-fed from Bull Run via Mt. Tabor's reservoirs and was constructed using Ransome's "twisted iron" reinforcing.	The reservoir is functional. Much of its west side has been rebuilt several times due to the landslide. Liners have been in place since the 1970s. The parapet wall no longer has its original finish.	A new buried drinking water reservoir will preserve the historic drinking water storage function at the site. A new reflecting pool/water feature will retain the historic relationship between water and the dam and gatehouse. The footprint of the new reflecting pool will closely follow the footprint of the existing basin, and the new edge will include new perimeter walkways with a seat-wall/retaining wall on the outer edge. The existing basin and its parapet wall, fence, lampposts and perimeter walkway must be removed to construct the buried reservoir. The fence and lampposts will be rehabilitated and installed in the new curb wall.
Reservoir 4		Similar to the upper reservoir (Reservoir 3), the shape echoes the topography of the ravine, and the construction was the Ransome reinforced concrete.	The reservoir is functional but is rarely used due to changes in customer demands along the Willamette River. Much of the existing basin's west side and parapet edge has been rebuilt multiple times due to the landslide. As a whole, parapet walls are cracked, and at the southwest corner, large areas are broken.	A reflecting pool of water at the original water height will be located along the dam and gatehouse, with vegetated swale and habitat areas in the remainder of the basin. The vegetated areas provide a new water-related (and required) function. The basin's west side and the slope above it must be buried by heavy fill dirt to stabilize the landslide. Parapet walls, fence and lampposts at the east and south sides are in poor condition, and will be rehabilitated. The new parapet edge at the west side and north end will be differentiated from the historic condition by having no fence or parapet wall.
Dam 3		The dam has a curving decorative form, and is battered in section with two different angles. The dam face drops approximately 70 feet down to the lower reservoir.	Dam 3 is still original concrete, except at the parapet finish and the added asphalt surface. Documented damage is a result of weather and age.	The dam will be preserved, and unneeded piping and equipment removed. Original elements across the top, including the parapet walls, balustrade, and existing fence, will be rehabilitated. This includes cleaning, baluster reconstruction, and crack and spall repair.

Table 1.1: Washington Park Reservoirs Historic District – Contributing Historic Resources

Contributing feature	Photo	Historic context	Current condition	Proposed
Dam 4		Ransome's patented concrete rustication and Romanesque styling, using a blind arcade, create an Old World feel.	Dam 4 has an added asphalt surface. Documented damage is a result of weather and age.	The dam will be preserved, and unneeded piping and equipment removed. Original elements across the top, including the parapet walls, balustrade, and existing fence, will be rehabilitated. This includes cleaning, parapet wall and baluster repair and (as needed) reconstruction, and crack and spall repair.
Pump House 1		Pump House 1 (aka Pump Station 1) is a one-story reinforced concrete building, with flat parapet roof under an added gable. It was built to house water flow equipment, including the original 1894 Pelton wheel water pump, "Thumper No. 1."	Due to ground movement and resulting cracking, the Pump House is structurally damaged. Two historic windows remain; four have been removed and infilled. A gable roof was installed over the flat roof to correct roof leak issues, and spray-on synthetic stucco was added.	Although some critical equipment for drinking water system distribution will be removed from Pump House 1 and put into Pump House 3, Pump House 1 will still house back-up pumps and related equipment as well as historic "Thumper." The building will be cleaned, and visible cracking will be repaired. The two missing (infilled) front windows will be reconstructed to match the existing side windows and replaced in their original openings.
Weir Building		The Weir building (Screen House) was added in 1946 in a style not matching the Richardsonian Romanesque architecture of other structures. It was built to screen the water and function as a weir.	The 1946 Weir building has had doors and windows replaced. It will no longer serve a function as part of the new water facility, and has not been used as a weir in years.	Construction of the new reservoir requires the installation of shoring during reservoir excavation to protect Gatehouse 3 from damage during reservoir construction. The Weir Building will need to be permanently removed during construction to protect Gatehouse 3 and allow construction access to the reservoir from the east side.

Table 1.1: Washington Park Reservoirs Historic District – Contributing Historic Resources

Contributing feature	Photo	Historic context	Current condition	Proposed
Gatehouse 3		The gatehouse is oval in shape and was designed to hold various system piping and equipment. It is Romanesque in style and constructed of concrete with Ransome's patented hand-tooled finish technique. Round glass lights (also patented by Ransome) were cast into the floors.	Gatehouse 3 has continuous horizontal hairline cracks, though window sashes are in good condition. The exterior has a visible coating of biological growth. Metal doors are modern. Structurally, the building is unreinforced.	Gatehouse 3 will continue to house system piping, instrumentation, and reflecting pool and circulation equipment. The building will be structurally upgraded and the roof replaced. The exterior will be cleaned. Unneeded (non-historic) exterior equipment will be removed, and holes patched. The solid metal doors will be replaced with more historically appropriate looking doors. The original window sashes and frames were recently (2009) repaired and rehabilitated, but will be repainted. The gatehouse entry stairs will be rebuilt with a lower rise to run to meet code and will be built with a similar curve and design.
Gatehouse 4		The lower gatehouse is round in footprint with similar features to Gatehouse 3. Both gatehouses can enable water to bypass the reservoirs to go directly to consumers.	Cracking runs around the building similarly to Gatehouse 3. Metal coping was added in 1988-89. The water table base is heavily damaged.	Gatehouse 4 will continue to be an access point for the existing tunnel drain and site drains, and house reflecting pool and circulation equipment and piping. Extraneous (unneeded) exterior equipment will be removed, and holes patched. The exterior will be cleaned, concrete holes patched and spalls repaired. The original window sashes and frames were recently (2009) repaired and rehabilitated, but will be repainted. The metal doors will be replaced with more visually appropriate doors.
Generator Building		The 1920 building's original use was to power the on-site lights. It is a small, concrete building with three wood windows and toothed cornice.	The building is in good to fair condition. The windows and door have been replaced.	The building will be retained as a generator building. The exterior will be cleaned.

Table 1.1: Washington Park Reservoirs Historic District – Contributing Historic Resources

Contributing feature	Photo	Historic context	Current condition	Proposed
Drinking Fountain 1		Fountain 1 was located on the concrete plinth outside the Pump House. It illustrated the two functions of the site; recreational and clean drinking water.	Fountain 1 is a broken concrete remnant only, consisting of the pedestal and stem, but no basin or metal piping. It is currently stored in Pump House 3.	There are no known historic drawings of this object, and no clear photographs. The nomination describes the concrete bowl as being "1-inch" in diameter, which is clearly an error. No restorative work is proposed in the absence of information about the original design.
Drinking Fountain 2		Fountain 2 is located inside the fence near the Reservoir 4-area entry in its apparent original location. It illustrated the two functions of the site; recreational and clean drinking water.	Fountain 2 is in its original location, but is inoperable and missing a few components.	Fountain 2 will remain in place, made functional and will be protected during construction.

Table 1.1: Washington Park Reservoirs Historic District – Contributing Historic Resources

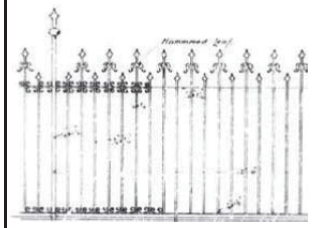
Other features (not separately contributing)	Photo	Historic context	Current condition	Proposed
Wrought Iron Fence		The wrought iron components are ornate and rather formal. They were designed by Portland architects Whidden and Lewis and constructed by Johann Tuerck. The fence is approximately 9 feet from grade (to top of Fleur-de-lis verticals) including a 36-inch tall concrete parapet.	The fence has surface corrosion and a few missing components. It has previously been repaired, re-installed and/or welded.	The wrought iron fence will be retained and rehabilitated along both Dam 3 and Dam 4. Additionally, the historic fence will be re-used at the rehabilitated east and south edges of Reservoir 4, but not along the west edge where there is a new configuration and all-new materials. At the Reservoir 3 reflecting pool, the historic fence will be rehabilitated and adapted (shortened, with some flourishes removed) and reinstalled around the water.
Reservoir Path Lighting		The reservoirs were both lit by a series of single-fixture wrought iron gas lamps, interconnected to the fence. The light posts with all components (as initially designed) were about 22 feet high from grade.	There are 5 historic lamp-posts around the Reservoir 3 basin and 7 at the Reservoir 4 basin perimeter. All are missing their lantern components and have surface corrosion, similar to the fence. Modern light poles were installed in the 1970s.	The 1970s-era light poles will be removed. The historic light post ironwork will be refurbished and reinstalled at walking paths. New visually unobtrusive lighting will be installed along walking paths to increase the lighting levels to code requirements.
Triple-lantern Gas Lamps		At both Dam 3 and Dam 4, there were two three-globe wrought iron lights mounted on concrete pedestals, one at each end of the dams.	Freestanding lamp posts at Dam 4 are missing. The freestanding iron lamp post columns are partially intact at Dam 3, but multi-lamp fixtures and components are missing.	The four existing concrete pedestals, including the two with wrought iron posts, will remain in place and will be protected during construction.

Table 1.1: Washington Park Reservoirs Historic District – Contributing Historic Resources

Other features (not separately contributing)	Photo	Historic context	Current condition	Proposed
Site Retaining Walls, Perimeter Walkways, Gutter		There are two concrete retaining walls at the upper Reservoir 3 (NW and SE) and one at the lower Reservoir 4 (SW). All are constructed with Ransome concrete finish. Walkways are 5 feet wide (or wider in some places) and concrete, with edge gutter.	Retaining walls are cracked, sporadically patched, and spalling. The lower wall is especially degraded due to water saturation.	Public access to the overall site, including the Reservoir 3 and 4 areas, will be restored. The original retaining walls and perimeter walkways will be removed with the construction of the buried tank at the upper reservoir area and the landslide-stabilizing earth fill at the lower reservoir area. New visually compatible retaining walls and pathways will be constructed. It is anticipated that perimeter walkways will be approx. 12 feet in width.
Grand Stairway		The stairway was one of two major entry points to the walking paths around the reservoirs. It was originally a 7-foot wide, straight run.	The stairway was covered in vegetation until the mid-2000s. The stairway was altered both at the top and along the length with concrete repair, landings, and new railings in 2008-09.	The existing stairway will be removed with the construction of the buried tank at the upper reservoir area. A new stairway, in the same approximate position and using original design drawings for some of the details, will be constructed. The stairway will be similar to the original, but will be wider, with several landings, and will include handrails in historically compatible style. The stair will meet current code requirements.
Decorative Features (Urns)		It is not clear whether there were more than 3 urns on site.	There are three decorative urns on site, as well as some low walls and pedestals. The "Dam 3" urn and low wall shows cracking, spalling, and significant biological growth.	These decorative site features will be cleaned, refurbished, and stabilized. The three urns will be temporarily moved and then reinstalled close to their original position.

Table 1.1: Washington Park Reservoirs Historic District – Contributing Historic Resources

Other features (not separately contributing)	Photo	Historic context	Current condition	Proposed
Roadways and Basalt Walls at Roadway		The circa 1917 roadway was installed to create access between the two reservoir areas. The road slope was a constant 1:20 (5%). A 5-foot tall retaining wall maintained a constant height on the downhill side.	The roadway has been repaved and is in fair condition, with some root damage and cracking. An asphalt curb has been added. The low wall is deteriorated and has fallen in places, with a significant growth of vegetation over much of its length.	The roadway and low wall will be removed to construct the landslide-stabilizing earth fill at the lower reservoir area. A new roadway will be constructed in keeping with the character of the site. The basalt from the demolished walls will be removed, protected, and may be re-used on the site.

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Section 1-3: Project Drivers and Locational Considerations

1-3.1 Landslide

One of the key issues driving this project is the presence of an active, ancient landslide at the reservoir site. When the Washington Park Reservoirs were constructed in 1893-1894, this landslide was reactivated by the excavation of part of the toe of the landslide. D. D. Clarke, the engineer who led the stabilization efforts over the next decade, described it as follows:

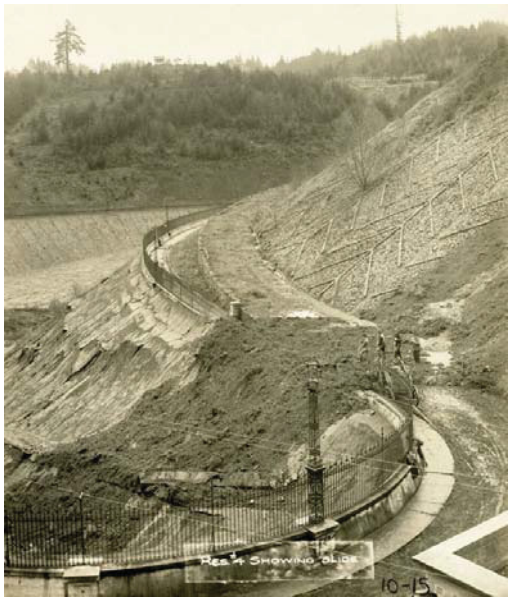


Figure 5. Early landslide damage to Reservoir 4

"These two reservoirs were formed by dressing down the banks of the ravine in which they are located; and, since their completion, a serious derangement of the western slopes of both reservoirs has taken place, owing to movement of the adjacent hillside." (A Phenomenal Land Slide, D.D. Clarke, 1904)

This "dressing down" involved the excavation of massive quantities of soil from the bottom of the ravine. The "serious derangement" was the cracking and failure of the reservoir walls, which occurred repeatedly over the first decade of operation. Figure 6 shows some of the landslide damage soon after construction. Figure 7 shows the outline of the ancient landslide and Figure 8 illustrates its plan and section views. By 1904, the Oregonian reported:

"Shrubs [are] growing luxuriantly in the bottom [of Reservoir 4] subsisting on soil which has washed through the broken walls. Squirrels live in the bushes..."

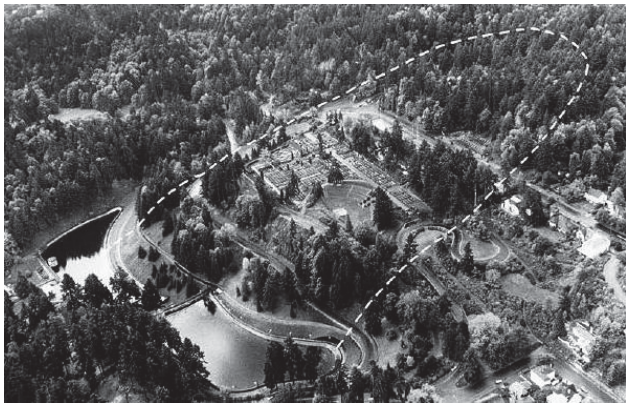


Figure 6. Outline of ancient landslide (Turner Schuster)

Prior to construction of the reservoirs, the heavy weight of the soil at the bottom of the slope resisted being pushed by the force of the landslide. When the reservoir construction removed this soil (and weight), the landslide began to move more rapidly as documented by D.D. Clarke (1904).

Project engineers believed the problem to be poor drainage and set out to construct a system of drainage tunnels as deep as 115 feet below grade. The tunnel system was completed in 1905 and succeeded in slowing

the landslide considerably. Since then, the ancient landslide has continued to move and damage both Reservoirs 3 and 4, and Pump House 1, requiring PWB to periodically make repairs.

The City's proposed landslide mitigation strategy for the project is to resist further movement by returning as much of that soil weight as possible. The proposal is to re-create a similar topography to what existed before Reservoir 4 was constructed. The replaced soil fill on the toe of the slide at the Reservoir 4 site will help slow the overall slide movement above both Reservoirs 3 and 4. The new below-ground reservoir will be located to the east of the toe of the slide in the area of Reservoir 3, protected from further ground movement.

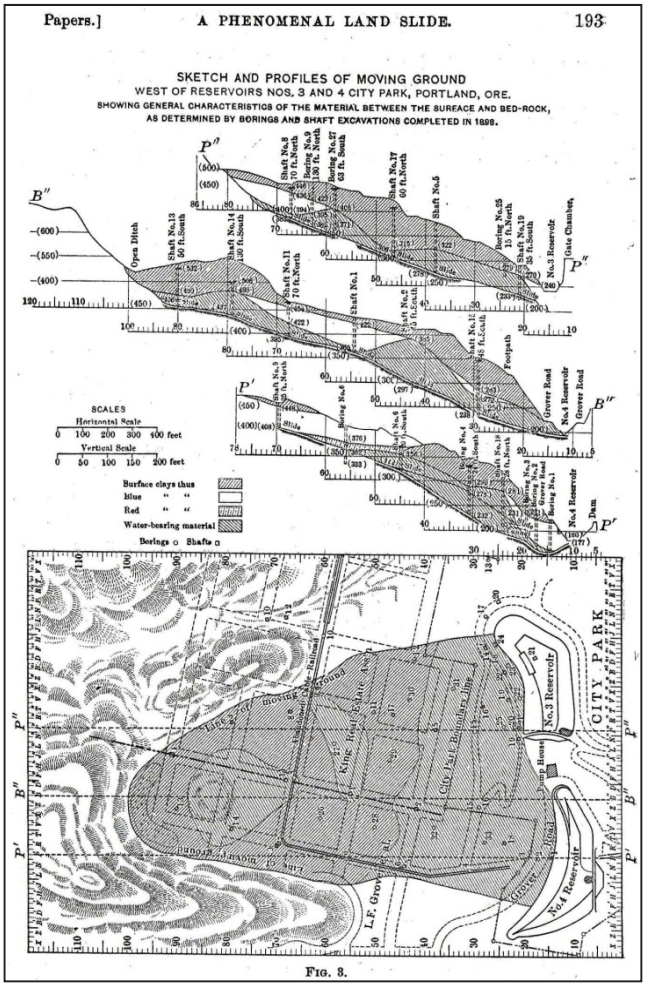


Figure 7. Plan and section views of landslide (Clarke, 1904)

1-3.2 EPA Rule

Another key driver for this project and its current timeline is the Long Term 2 Enhanced Surface Water Treatment Rule (LT2) promulgated by the U.S. Environmental Protection Agency (EPA) on January 5, 2006.[7] The goal of the rule is to "reduce illness linked with the contaminant *Cryptosporidium* and other disease-causing microorganisms in drinking water."

There are two major requirements of the LT2 Rule that apply to Portland's drinking water system:

1. Provide additional Bull Run source water treatment to specifically address *Cryptosporidium.*
2. Cover, treat or replace uncovered finished drinking water reservoirs.[8] Portland has five uncovered reservoirs, two of which are located at Washington Park.

[7] 71 FR 654, January 5, 2006, Vol. 71, No. 3

[8] In 2003-04, treatment at the outlets was studied and deemed to be infeasible. Construction of treatment plants to treat five reservoirs would also be completely incompatible with the local residential neighborhoods and the reservoir historic districts. The cost of treatment at the outlets was also considerably higher than the cost of other forms of compliance.

Portland does not treat for *Cryptosporidium* and has challenged and sought variances and extensions to the LT2 Rule since it was first issued. In 2012, the State of Oregon issued Portland a variance for the source water treatment requirements of LT2 in accordance with federal and state law. However, the City was not successful in its attempts to avoid or delay the second LT2 requirement related to uncovered reservoirs. To address this requirement, the City is constructing additional storage capacity, allowing the uncovered reservoirs to be taken off-line. The City has a schedule to replace its uncovered finished drinking water Reservoir 3 with enclosed storage by December 31, 2019 and disconnect Reservoir 4 from the public water system by December 31, 2020.

1-3.3 Aging Infrastructure

Condition assessments were performed at the Washington Park Reservoir site in 1997 and 2001. Based on these condition assessments, the 120 year old reservoirs and structures are nearing the end of their useful service life. Should the existing reservoirs be maintained, they would require significant maintenance and retrofitting as they continue to age and will ultimately need to be completely replaced. Both reservoirs would continue to require ongoing repairs due to landslide activity (see Figure 9). The reservoir piping, gate houses and other historical features would require maintenance and upgrades or would continue to deteriorate.

Figure 8. Photo of reservoir basin deterioration due to aging and slide movement

1-3.4 Seismic Susceptibility

The original facilities were designed and constructed prior to current seismic standards and do not meet structural requirements for current anticipated seismic activity. Therefore, they are vulnerable to severe damage or failure during a significant seismic event. Failure of these reservoirs and structures could be catastrophic and result in loss of PWB's ability to provide drinking water to the west side of Portland including all of downtown. Therefore, the existing reservoirs need to be replaced with a new seismically resilient reservoir and associated critical water facilities require considerable upgrades to meet current seismic codes.

Section 1-4: Public Involvement, Community Values & Design Options

1-4.1 Public Involvement Process

Since June 2013, the Washington Park Reservoir Improvements Project team has conducted stakeholder interviews, met nine times with a Community Sounding Board (CSB), briefed seven Neighborhood Associations (NA), met with a historic advocacy group, presented the project to the Historic Landmarks Commission (HLC) four times (one briefing and three Design Advice requests), and given several walking tours. Outreach has included sending mailers to neighboring addresses, media and press releases, outreach in Washington Park, open tours of the site, and three rounds of public open houses (both in-person and online open houses).

Figure 9. CSB rating design concepts

Public Involvement Goals

The primary goals for public outreach were to:

- Reach park users and nearby neighbors
- Build project awareness
- Update stakeholders and the general public on the recommendations made to date
- Encourage people to participate in the process and provide feedback.

Community Sounding Board

The CSB is composed of park users, neighborhood association and coalition representatives and PP&R staff. Collectively, CSB members have knowledge of their community, Washington Park and the variety of park use activities. The CSB includes representatives from:

- Arlington Heights NA
- Goose Hollow NA
- Northwest Heights NA
- Sylvan-Highlands NA
- Northwest District Association
- Neighbors West Northwest (NWNW) Coalition
- Portland Chapter American Institute of Architects, Historic Resources Committee
- Portland Parks & Recreation

A total of nine CSB meetings were held between July 12, 2013 and October 29, 2014. These meetings took place from 6-8p.m. at meeting locations near the project site. These meetings were open to the public and time was reserved of the agenda for public comment. Figure 10 shows CSB members rating design concepts.

Stakeholder Interviews

The project team held stakeholder interviews early on in the project. The purpose of the interviews was to gain a better understanding of stakeholder issues and concerns, as well as how the Washington Park Reservoirs area is currently used. Opportunities themes identified by stakeholders are illustrated in Figure 11. Information gathered during these interviews informed the public involvement and outreach plan for the design process, and helped identify key stakeholders to serve on the CSB. In total, 10 interviews were conducted with 29 individuals. Interviewees represented stakeholders who work or live in the area and/or represent community interests in Washington Park.

Figure 10. "Opportunities" themes from stakeholder interviews

Project Briefings

Members of the project team reached out to nearby neighborhood associations and coalitions that were anticipated to have interest in the project. That outreach resulted in invitations to present project information with seven neighborhood associations.

Project briefings to date have included:

- NWNW (September 2013, February 2014)
- Northwest (September 2013, February 2014)
- Arlington Heights (September 2013, February 2014, March 2014)
- Sylvan-Highlands (September 2013, February 2014, March 2014)
- Goose Hollow (September 2013, February 2014, March 2014)
- Downtown (September 2013, February 2014)
- Pearl (September 2013, February 2014)

Additional neighborhood briefings are planned in late 2014 and early 2015.

American Institute of Architects (AIA) Historic Resources Committee Briefings

Members of the Portland Chapter of the AIA Historic Resources Committee participated on the Community Sounding Board, attended tours of the reservoirs and participated in two briefings on the project. A total of 12 members participated. Comments and issues raised include:

- **Fence or barrier** – Fence should be used, but it could be altered (shortened) - some members did not feel it should be used in its original location (separating people from water) while others wanted it re-used as an edge barrier. Most members agreed there should be a barrier. The fence provides complexity of ornamentation yet simplicity as a larger element. It creates a sequence of views.
- **Historic elements** - Be careful to take a cue from the historic elements when designing the new elements - provide cultural and design continuity.

- **Interpretive displays and elements** - Start thinking about the entry sequence and the interpretive elements. The Reservoir 4 area could have a more complex story and experience, more than simply "stormwater function."

Public Meetings

The following public meetings were held to provide feedback on the project.

Open House #1 (July 25, 2013**,** First United Methodist Church – 1838 SW Jefferson)
Virtual Event: Available on the project website from July 25 to August 5, 2013.
This open house introduced the project to neighbors, community members and stakeholders; and to confirm an understanding of local community issues and opportunities. The team shared input from stakeholder interviews and the first CSB meeting with 38 participants. Figure 12 shows some of the attendees at Open House #1. The project team also hosted an online open house for the public to learn about the project and provide feedback at their convenience; 29 people participated in the online event. Notification of the open house included postcards mailed to approximately 5,000 addresses in the project area, an email reminder to the interested parties list and area neighborhood associations, PWB media release and blog post, posts to the project website and Facebook, and area canvassing to businesses and residences near Washington Park.

Figure 11. Attendees at a public open house

Open House #2 (October 16, 2013**,** Zion Lutheran Church, 1015 SW 18th Ave)
Virtual Event: Available on the project website from October 11 through October 30, 2013.
The second public open house targeted stakeholder feedback on design concepts for the visible features of the reservoir sites (i.e. what they will see and experience after construction). Information from this event was also shared with the CSB as they selected a preferred concept. A total of 13 people attended the open house. Notification of the open house followed the same process as the first open house. The project team hosted a second online open house at which 80 people learned about and provided feedback on the project. The online open house replicated the in-person open house by providing the same information that was displayed at the public event and offered similar feedback options and survey questions as the event comment form.

Open House #3 – *Online Only*
Virtual Event: Available on the project website from February 12 through February 28, 2014.

The third open house online event was intended to gather feedback on the community-selected Design Concept for the visible features of the reservoir site (Figure 13 shows a sample illustration). Information from the event was shared with the project team as designs were finalized. A total of 156 people participated in the online event. In addition to the online open house, targeted outreach was done during the same time period to further educate the public about the project and solicit their feedback.

Figure 12. Sample paired concept for Open House #3

Additional Outreach

Providing project information at businesses in the project area was an important outreach approach for this project. Project information was provided to over 150 businesses with high foot traffic in the project area, concentrated along NW 21st Ave., NW 23rd Ave., and the Goose Hollow neighborhood. The project team also coordinated project information booths at community events and locations in the project area. Project information was provided, including the latest project schedule, fact sheet and relevant illustrations.

Reservoir Tours

Three guided reservoir tours were held to help the public understand the geographic constraints of the project and to better visualize the proposed concepts. Figure 14 shows participants on one tour. The tours were open to the public and advertised along with the materials for the second round open house. Tours included history of the existing reservoirs and engineering constraints for the proposed concepts. Tour participants were provided with draft concepts for the two reservoirs and were encouraged to fill out a comment form. Generally, participants were thankful for the opportunity to tour the reservoirs and learn more about the project. A total of 47 members of the public participated in the tours, mostly residents of the adjacent neighborhoods.

Figure 13. Community members on a reservoir tour

Stakeholder Database and Project Website

The stakeholder database included over 130 stakeholders and interested parties who received regular project updates and notification about events. PWB developed and maintained the project web site (www.portlandoregon.gov/water/62547). The site included a project overview and background, historic information, frequently asked questions, committee information, details about public events, and contact information.

1-4.2 General Agreement on Key Values

Based on feedback from neighborhood groups, interviews, the CSB, the HLC, the general public, and other groups, most people generally prefer:

- **Large expanses of open water** – The desire to retain significant areas of water at the site has been consistently and almost universally raised throughout the process and through all forms of outreach and consultation.
- **Retaining as much historic character as possible** – Desire to retain the historic character of the reservoirs has also been consistently heard by the project team. Different stakeholders have focused on different historic aspects, including: *elements,* such as the fence and buildings; the tranquil *character*; and the *function* as part of the City's highly regarded water system.
- **Historic interpretive elements; providing quiet spaces and habitat** – There has been almost universal interest in providing educational elements about the history of the site into any design. Many people would also like to see quiet/contemplative areas and areas for native habitat.
- **Being responsible with ratepayers' money** – This value has been consistently raised through all forms of outreach. While people support the visible features process, they want to ensure spending is kept within reason and adds value, not necessarily the cheapest solution.

Based on these values, the public and the CSB reviewed and helped develop early options for the upper and lower reservoirs (Reservoirs 3 and 4, respectively).

Stakeholder Feedback: Key Themes

Throughout the three rounds of public outreach, several consistent themes were heard:

- **Water Features –** Many participants commented that the project design should incorporate a reflecting pond or water feature on top of the new reservoir.
- **Historic features** – The project team heard that it is important to preserve the historic structures and character of the site.
- **Cost** – Many people voiced concern over project financing and their desire for PWB to use water rates wisely.
- **Public Access** – One area of opportunity that many stakeholders were excited about was the potential to increase public access to the reservoir sites.
- **Neighbors** – It was important to project area neighbors that construction and site use concepts minimize the impact on surrounding neighborhoods.

- **Wildlife** – Many community members requested that the project maintain or create wildlife habitat, with an emphasis on wetland or water-based habitats.
- **Maintenance** – Many people wanted to make sure there would be long-term maintenance of the reservoirs and landscaping.
- **Project not needed** – At each outreach event, there were some people who commented that the project was not needed and that the current reservoirs should be maintained.

Design Concepts Feedback

During the second round of outreach, stakeholders were asked to provide feedback and select their preference out of four design concepts for Reservoir 3 and three design concepts for Reservoir 4 (see Figure 15).

Figure 14. Concepts for Reservoir 3 & Reservoir 4

The following charts show that the Cascades concept was the preferred concept for Reservoir 3 and that two concepts (Reflecting Pool and Lowland Habitat) were almost tied as preferred concepts for Reservoir 4.

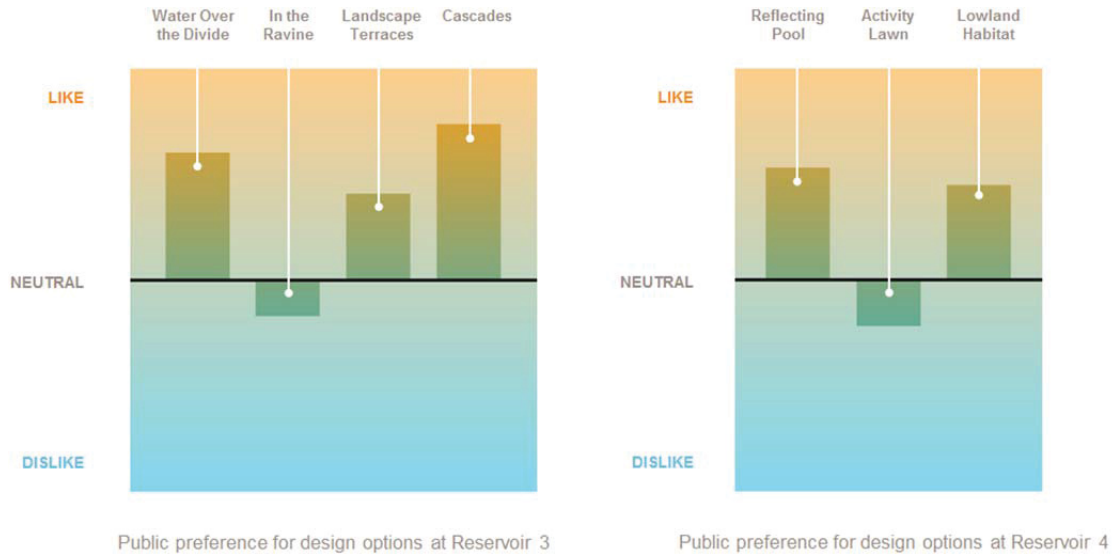


Figure 15. Public preferences for design options

Proposed Concept Feedback

In the third round of outreach, the staff presented the overall proposed concept for the project: Cascade for Reservoir 3 and the Lowlands Habitat for Reservoir 4. The public was asked to provide feedback on the proposed concept.

Figure 16. Public preferred design options

Generally, most people liked the proposed concept. Specific feedback included:

- People were supportive of the large expanse of water in the upper reservoir.
- They also supported the potential for habitat in the lower reservoir.
- Many commented that they like the potential for improved access to the reservoirs.
- Many people were thankful to learn about the project and were supportive of the process and the direction the PWB is headed with the designs.
- A few comments expressed that the project is not needed but that if it has to move forward, the designs are well done.

In addition to feedback included above, the project team heard the following additional comment themes about the proposed concept:

- **Effective wildlife habitat** – Some people expressed a concern that the Lowland Habitat should be designed to attract wildlife, and not just be a habitat in name only. It was

suggested that the project team coordinate with the Portland Audubon Society to ensure habitat acts as a functional wildlife habitat. Others noted that plantings should be native.

- **Mosquito habitat** – Both supporters and detractors of the Lowland Habitat had concerns about mosquitoes.
- **Secure our water** – Many people thought that burying a reservoir for security reasons was important. Some suggested that all access to the reservoirs should be limited, even with a buried reservoir. A minority of commenters continued to question the need to cover or bury the reservoirs for security reasons.
- **Construction coordination** – Concerns were raised that construction should avoid overlap with the Japanese Garden construction (which will extend into 2016). The construction process also was the focus of the October 29, 2014 CSB meeting. The contractor reviewed new steps proposed to reduce neighborhood impacts; CSB members supported these steps and offered additional creative ideas that are currently being evaluated.

Summary

To date, the feedback the project has received can generally be summarized as positive. Most people contacted have gained a clear understanding for the need for this project. They support the ongoing level of public process and opportunities for input. They support the direction the project team is moving with the visible features of the project. The Historic Landmarks Commission feedback enabled the team to continue to make design decisions and look at successively more layers of detail.

Community and business outreach, stakeholder communications and coordination, and advocacy group briefings will continue throughout the design, permitting, and construction of the Washington Park Reservoir Improvements Project. Another series of neighborhood association meetings occurred September and October, 2014.

1-4.3 Historic Landmark Commission Design Advice

In addition to the extensive public outreach efforts, the project team presented the project to the HLC four times during 2013 and 2014 (one briefing and three Design Advice Request (DAR) requests).

The HLC meetings were coordinated with the ongoing meetings of the CSB and Public Open Houses. This allowed the design team to share public feedback with the HLC and to bring its feedback back to the CSB. In addition, CSB members participated in the HLC

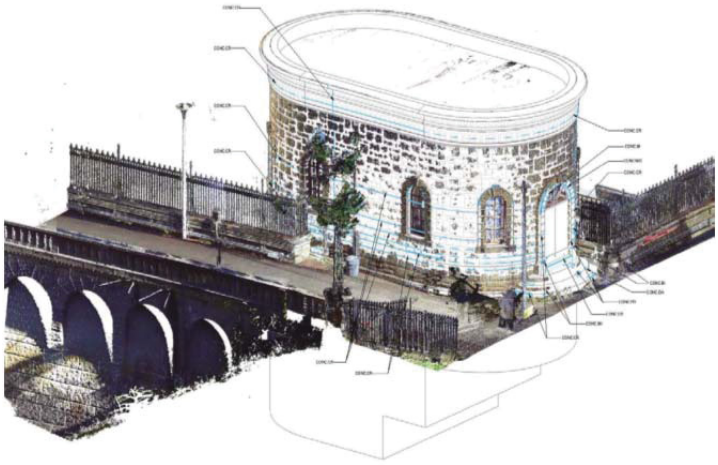


Figure 17. Gatehouse 3 preservation assessment

meetings, highlighting areas of CSB interest and the rationale for its recommendations. While earlier outreach included design alternatives for the major visible features at the site, the HLC feedback received enabled the team to continue to make design decisions and look at successively more layers of detail.

Over the course of the four meetings, the questions and advice from the HLC, with project team responses, included:

- Have other sites been explored for a buried reservoir?
  Team: Copies and summaries of siting and related studies and criteria were provided. A range of other sites have been explored, but do not meet the siting criteria.

- Preserve and restore as much as possible, including restoration of drinking fountains and other features, important views, lighting, etc.
  Team: Proposed reservation and restoration activities have been expanded and additional detail provided to respond to HLC observations.

- The "Cascade" design at Reservoir 3 is the best option, with the most water and following the same general footprint of the original reservoir.
  Team: This is the proposed design option the team moved forward with.

- At Reservoir 4, Historic Landmarks Commissioners want to see more water.
  Team: The amount of visible water at Reservoir 4 has been increased through redesign and reduction of the lowland habitat and stormwater facility while still avoiding the stabilizing fill to the west.

- Keep as much as possible of the historic fence, even if it does get shortened, steps, or is otherwise adapted.
  Team: Restored or rebuilt historic fence has been expanded at both reservoirs.

- Design the entry points - these are important - and include educational components at these places and at major view points.
  Team: The project team is paying special attention to the design of entry points. PWB is also working with SHPO on a formal Memorandum of Agreement. Educational components have been offered as a mitigation item, but details are still under development and will need to be approved by PWB and SHPO.

- Want to see historic restoration done to the front of Pump House 1.
  Team: Pump house façade restoration is now planned, including restoration of two original windows (that are now infilled).

- Reservoir 4 original footprint should be demarcated in some fashion.
  Team: This is a point also raised by SHPO. The project team has developed a demarcation strategy and these plans are included as part of the interpretive design.

At the last DAR meeting in April, 2014, the HLC reviewed and provided comment on design options for the grand staircase, fencing, seating wall, and other elements. A few commissioners agreed that they were pleased to see the Pump House windows and doors restored. Most commissioners agreed that the first concepts for marking the historic footprint of Reservoir 4 still needed further development but they were glad to see them included in the project.

Overall, the majority of commissioners expressed support for the direction of the design and the improvements to the plan that the project team had made in response to HLC concerns and questions. Commissioners also praised the work with neighborhood groups, stakeholders, and the public.

1-4.4 Coordination with State Historic Preservation Office

The Oregon State Historic Preservation Office (SHPO) has been and continues to be actively involved in the project. Because the site is a designated historic district and is publically owned, documentation of the project's effects on the historic property are required by ORS 358.653. Several meetings were held to brief SHPO on the project as it developed through early 2014, and copies of the City of Portland Design Advice Review packets were also provided to SHPO. Documentation of the project was submitted in May 2014; this documentation will be updated when the project is finished with its land use process through the City of Portland. In this documentation, PWB and SHPO have agreed that there are adverse effects, which will require mitigation. The mitigation agreement, or Memorandum of Agreement (MOA), is in the negotiation process but appears to be nearing final signature phase as of early November, 2014.

Components of the MOA include a number of preservation items that PWB commits to carrying out. These will be reviewed by SHPO in stages as they are designed, and include the construction of a number of interpretive elements on site; replication of some missing historic lights; restoration of a drinking fountain; and submittal of the site as a Historic American Engineering Record to the Library of Congress.

1-4.5 Design Concept

The combined feedback and recommendations of the HLC, CSB, stakeholders, and public have guided the development of the Design Concept for this site. The team started with a set of project goals, from which initial concepts were developed. These goals were to:

- Address the project drivers (i.e., aging infrastructure, seismic susceptibility, historic landslide, safe drinking water rules),
- Provide public space adjacent to Washington Park, and
- Respect and preserve as much as possible of the historic character of the site.

The initial concepts were developed and then evaluated through the public involvement process that incorporated the input of the HLC, CSB, other stakeholders, and the general public. Several options were eliminated based on feedback received, such as any option that did not

include water in its historic relationship to both dams and gatehouses. Over the course of this public process, the project team refined the design concepts to include a two-level cascading reflecting pool at Reservoir 3 and a smaller reflecting pool at Reservoir 4 with an adjacent habitat area that functions as a stormwater facility.

The proposal brings back the major objectives achieved by the original design, including public access. The site has not been static, however, as shown in the "time-lapse" maps in Appendix C. While much of the change has been caused by landslide damage, other changes to the site and existing structures resulted from physical deterioration over 120 years and from human activity, such as alterations to windows and ongoing use as an active utility site. Thus, the site has lost some of its physical and visual integrity.

In the late 1800s, the City Beautiful movement embraced the ideal of nature as a restorative destination for people longing to escape the dirty, crowded city. The Washington Park Reservoirs provided a naturalistic open setting for Romanesque architecture in the midst of nature lightly tamed by walkways offering a series of experiential views. The Design Concept for the proposed project seeks to preserve the beauty and restorative character of the historic structures and setting in the park while using elements of nature to satisfy some of the functional requirements of the site.

At Washington Park, the site can again be a destination point and not just a fenced "utility." Visitors can again descend the Grand Stairway, appreciate the views, the water, and the story of the built elements. Further change to the site is necessary and desirable, and will take place using the following restorative objectives, to guide design choices and restoration work at the site:

- Use and Function
- Visible and Accessible Water
- Views
- Historic Character

Each of these in turn is used as a lens to illustrate the past, the present, and the future of the site shown on the following pages. These design objectives are supported by the historic significance of the site and are further explained in the following series of figures, Figure 19 through 24. At the end of the series, Figure 25 shows the Design Concept for the site.

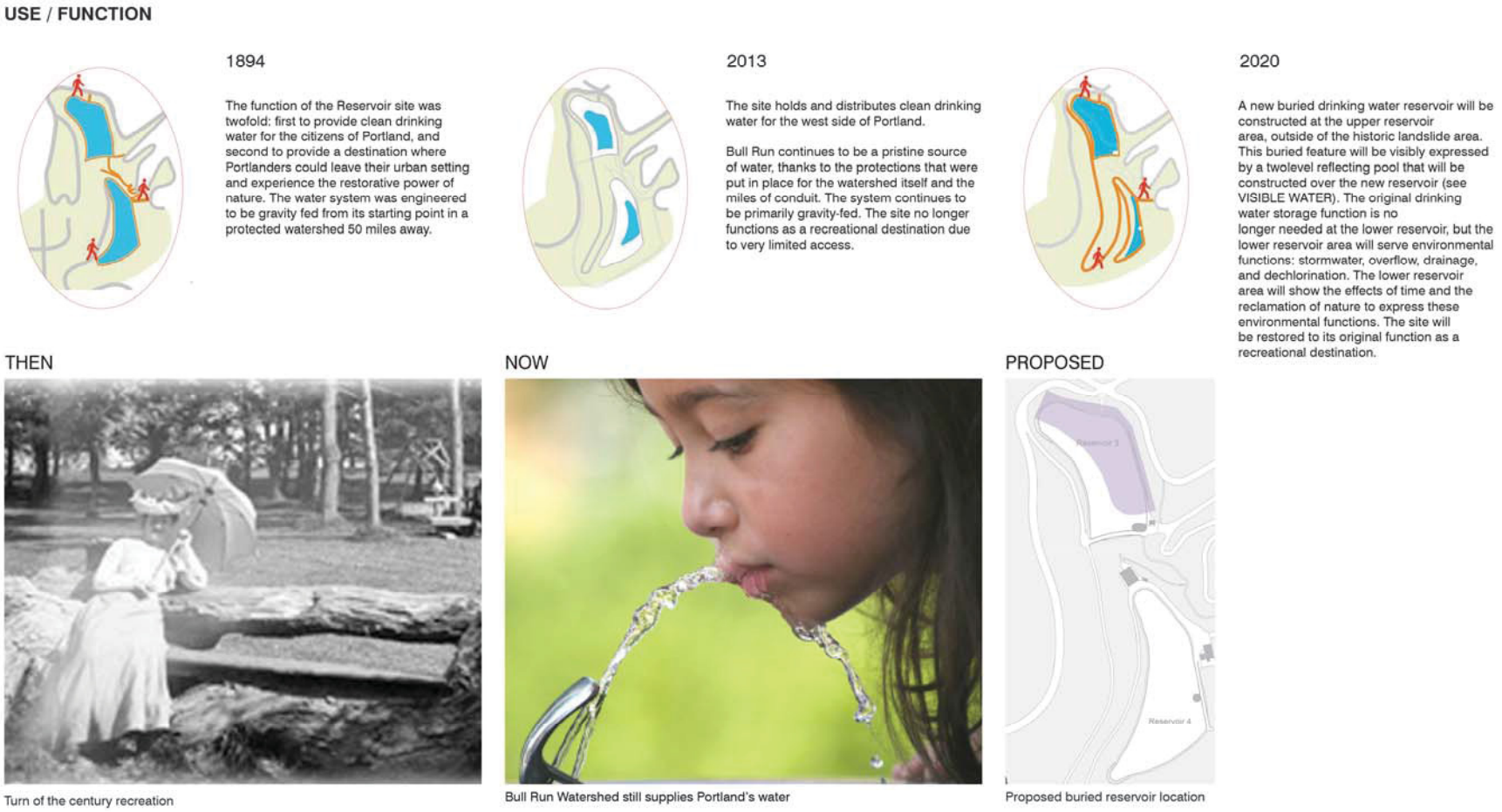


Figure 18. Washington Park changes in use and function

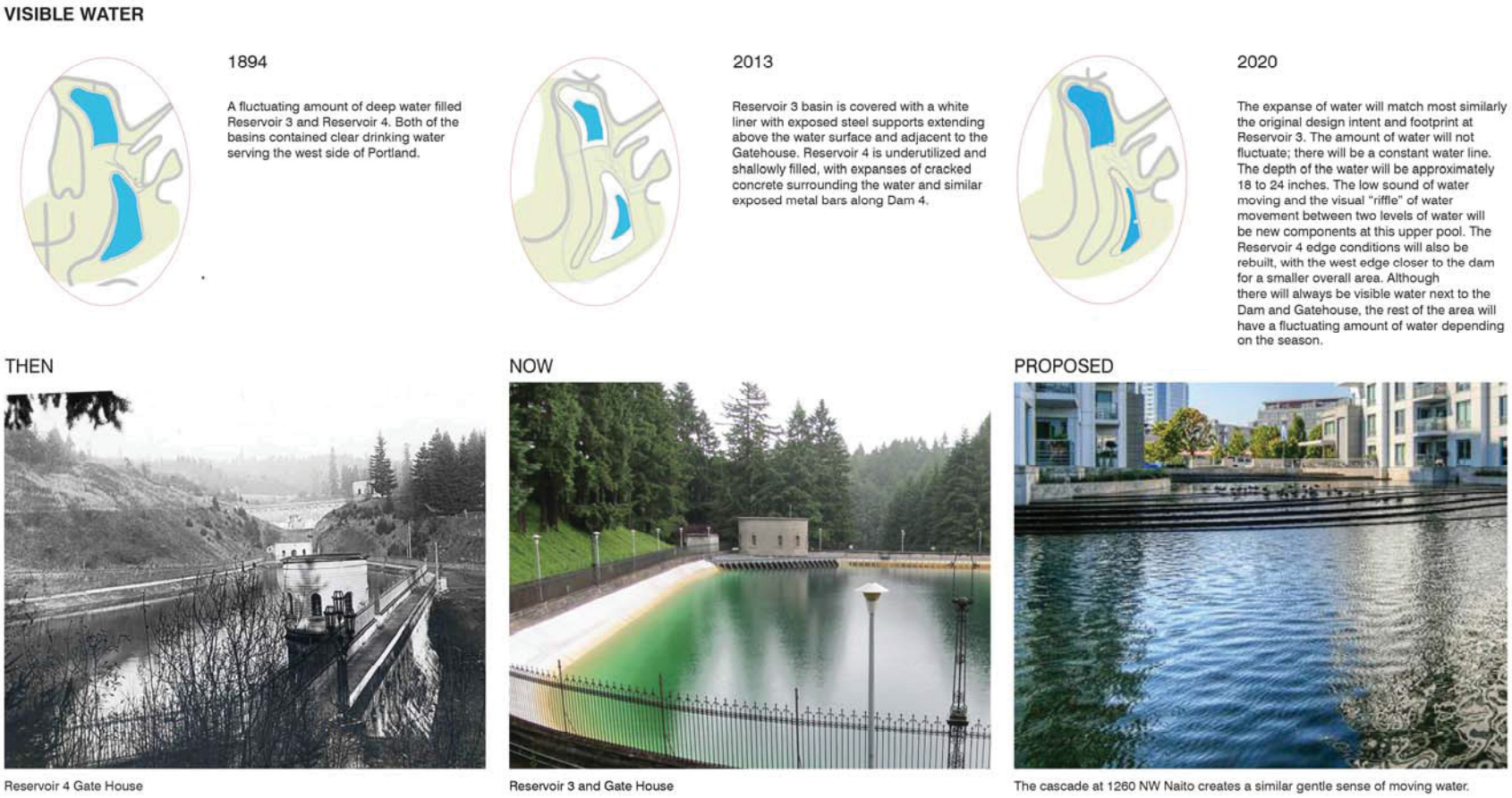


Figure 19. Washington Park changes in visible water

ACCESS

1894

The WPR site was designed to be a public recreational amenity. The lower Reservoir 4 area entry was one of two primary entry points to the site, and included a circular cable car turnaround and stop. Cars could also enter the reservoir area via Jefferson St. up until 1998.

The top of the Grand Stairway, north of the upper Reservoir, could be reached either from the roadway via West Burnside, or from the Park Place entry. The stair itself was a single wide flight, with a simple low, capped wall on either side. At bottom were a pair of square low piers and at top were a pair of taller piers capped with planted urns.

The 1920s-era roadway was put in to create a carriage road connecting the two reservoirs. A low retaining wall was constructed out of basalt blocks in rusticated finish.

2013

The lower Reservoir 4 site is inaccessible to the general public, while the upper Reservoir 3 has limited access. A combination of chain link fence and a newer black picket-style fence surround the site area.

The Grand Stairway was altered both at the top (with new split run) and along the length, with concrete repair and new railings in 2008-09. It has a fence across the top of the stair, preventing access.

The lower entry to the Reservoir 4 area has been functioning as a back of house" area. Trash dumpsters, paving across the entire entry area, sheds, and modern pole lights detract from the historic character. The roadway connecting the west end of Dam 3 to the lower area has been asphalted, but is in good condition. It is typically inaccessible to the public.

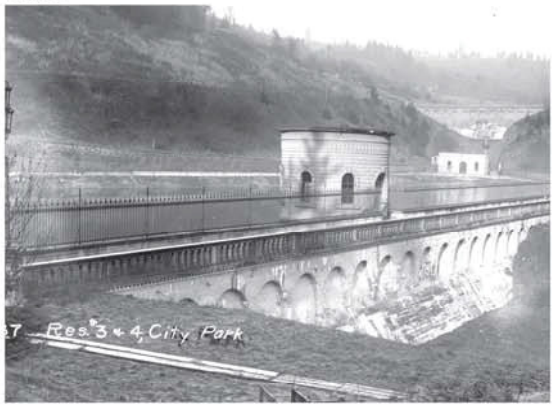
2020

The site will be open during Park hours (unless maintenance requires closure). The modern access point near Gatehouse 3 will remain as one of the pedestrian entries to the site.

The primary historic lower reservoir entry point will be reopened and visually improved. Modern pole lights will be replaced by a combination of historic light poles and new, visually unobtrusive lights. The entry area's Drinking Fountain 2 will be repaired and placed in working order, and the remnant of Drinking Fountain 1 will also be displayed. Educational components about the historic site will be placed at this area.

The Grand Stairway will be reconstructed in a design close to the original stair. It will be generally open to the public during Park hours. The roadway between the two reservoir areas will be rebuilt in harmony with the new topography (landslide-stabilizing fill added). The roadway will include retaining walls. The roadway will be open to pedestrians as an ADA-accessible route and to service vehicles.

THEN



Gate House and Dam 4

NOW

Gate House 3

PROPOSED

The historic sense of open water is maintained.

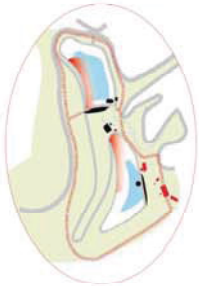
Figure 20. Washington Park changes in access

HISTORIC CHARACTER

1894

Even when just constructed, the site had a "historic" character. The buildings and structures were designed to recall Western European landscapes, with massive old stone structures in lush, rural settings. The Romanesque style first emerged in the early 11th C, and is most strongly characterized by the round (Roman) arch. The style was popular as a revival in the second half of the 19th C.

The Romanesque revival style worked perfectly in the City Beautiful movement, providing a romantic, idealized vision of harmony between nature and built structures. The site itself, in a natural ravine, allowed the structures to unfold in a series of views and experiences shaped by the topography.



2013

Reservoir 3 and Reservoir 4 basins have lost integrity on their west sides, a result of multiple landslidesand consequent rebuilding. Parapets are damaged and are ringed by multiple pipes and other contemporary elements. The Pump House has similarly lost its original finish and many of its original features.

The historic character of the site is still strongly evident, but the site has lost much of its connection to the public. This is not only a result of limited access, but is also due to the length of time that has passed since the original engineering, design, and construction of the site.

2020

The historic character of the site will be restored through physical restoration of many of the structures Contributing to the Historic District (see Appendix: Contributing Features Impacts). The design of the new elements will provide an overall level of finish detail in keeping with the historic structures.

The design also restores the experience of the site for pedestrians, who will be able to learn about the original design and the changes at the site.

The sense of nature in harmony with the structures on the site will also be brought back. Allowing the lower reservoir to be "reclaimed" by nature, with the dam and gatehouse presiding over a body of water partly colonized by plant species, restores a romantic feeling to the site, as if the structures were ruins. The upper reflecting pool, like a bubbling spring, will more directly represent the clean drinking water buried beneath it.

THEN

Historic Pump House 4

NOW

Pump House 4

PROPOSED

Historic dam and Gate House 3.

Figure 21. Washington Park changes in historic character

VIEWS

1894

Prior to the construction of the facility, the site had been completely logged and views were wide open. By 1904, Olmsted noted a critical vista at Res 4, with another noted in the Historic Nomination at the upper reservoir. The hillside view overlooking Res 4 was celebrated by Olmsted and published in the Oregonian. From the east edge of SW Sherwood Blvd, the Vista Bridge is visible beyond the reservoir. Mt. Hood was also visible before trees in the distance grew up.

2013

The two views noted in the Historic Nomination have been partially obstructed due to vegetation. Other views from surrounding roadways have been completely obscured.

The Olmsted "City Vista" looking east has been degraded by contemporary light poles, sheds, and other elements east of Reservoir 4. A chainlink fence along the upper roadway prevents pedestrian access to the viewpoint and detracts from the historic feel. Distant trees obscure the Mt. Hood view, while on-site trees partially block the bridge view.

2020

Landscape work will remove selected trees in the viewshed (as long as they are on the reservoir property) to restore the significant views. If large trees can be saved and selectively limbed, every effort will be made to do so.

At the edge of Sherwood Boulevard, trees will be selectively limbed to open the "City Vista" over the lower reservoir. Improvements to the lower entry area will also "de-clutter" the view by screening or visually mitigating some of the contemporary elements, and removing the modern light poles.

THEN

Reservoir 3 Promenade, gas lamps, and Gate House 3.

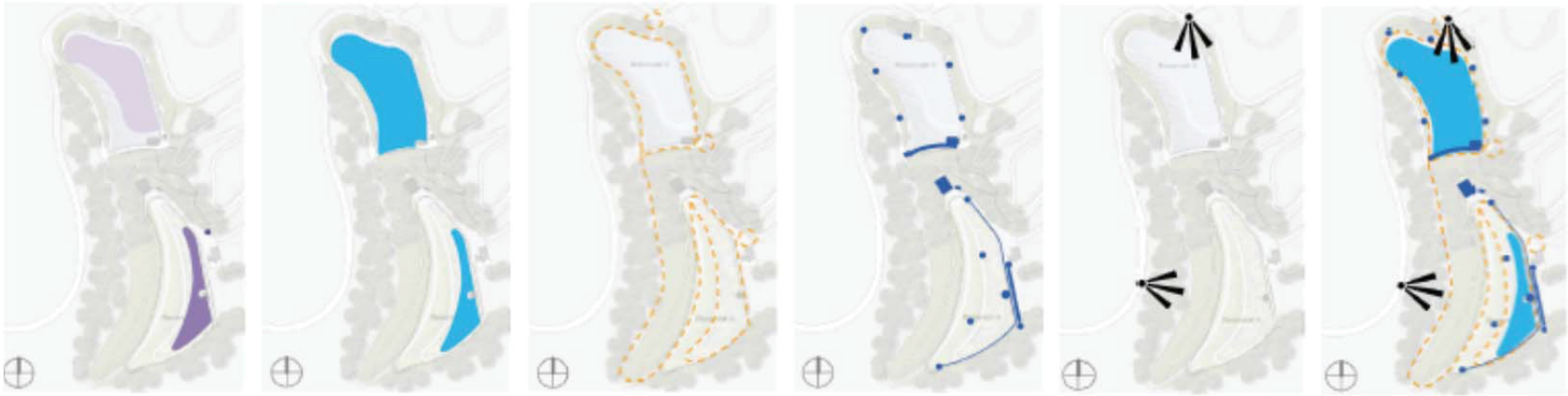
NOW

Large trees and other vegetation have grown to obscure views.

PROPOSED

Proposed view across Reservoir 4 to the Vista Bridge.

Figure 22. Washington Park changes in views



USE/ FUNCTION

A buried drinking water reservoir is constructed at the upper reservoir. The lower reservoir area has a storm-water, overflow, drainage, and dechlorination function. The visible aspects of the water facility function are shown darker, including a dot representing the historic drinking fountains. The fountains also represent the original public recreational function of the Historic District. The lower reservoir's closer relationship to nature will be evident in the vegetation colonizing its west edge.

VISIBLE WATER

At the upper reservoir area, the approximate footprint of the original reservoir is used to create a new reflecting pool with long, curving steps of cascading water between two water levels. The lower reservoir area will have water along the east edge next to the Dam and Gatehouse. The clean, clear water of the buried reservoir in the upper area is represented in the visible water of the reflecting pool, while the lower pool will have the appearance of natural pond water.

ACCESS

The public will be able to enter the site at both historic entry points as well as the more contemporary central entry point (all represented by orange circles). These points are all potential sites for educational components about the history of the site. The site will be open during park hours except during required maintanance. Pedestrians will be able to walk around both water features and between the two.

HISTORIC CHARACTER

Dam 3 and Dam 4 will be retained with the original fencing intact. Gatehouse 3, Gatehouse 4, and the Generator building will all be retained and preserved. Pumphouse 1 will receive some restorative work. Historic lightposts (represented by blue dots) will be refurbished and reinstalled around the walking paths. The lower water feature, a pool with vegetated western half, is both functional and "romantic," seemingly a ruin in the landscape.

VIEWS

Views in general will be reopened, with special attention paid to the view from the top of the Grand Stair and the Olmsted City Vista overlooking the lower reservoir and the City beyond. These are also potential sites for educational components about the history of the site.

OVERALL

The site represents both the new and the historic drinking water storage functions. The visitor will be able to experience the site by moving around and through it. The upper reflecting pool with its clean, moving water emphasizes the active water storage and distribution use below it. At the lower area, the visitor will see an "abandoned" reservoir being acted on by natural forces. The contours of the historic landslide encroach into the basin, and plants can be seen establishing themselves along the western edge.

Figure 23. Washington Park summary of restorative objectives

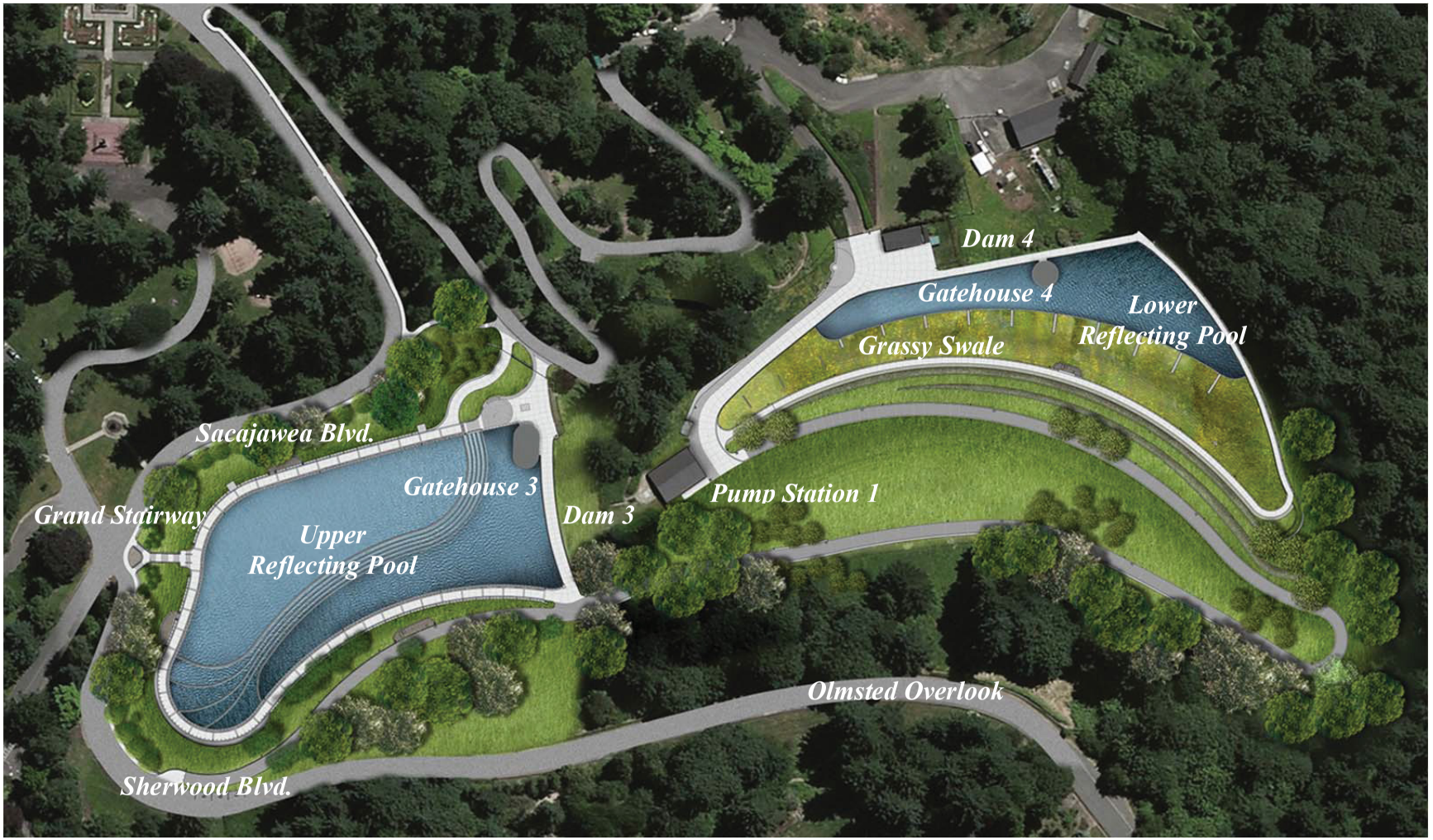


Figure 24. Design Concept Plan

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1-4.6 Looking Forward: A Visitor's Experience

From the top of a restored Grand Stairway, the visitor can hear a gentle flow and see an expanse of water stretching out below, anchored by the beautiful oval form of Gatehouse 3 at the far end. The water cascades over steps to the historic water overflow level and forms a calm pool along the face of the historic dam. Gatehouse 3, the historic fence, and the historic balustrade stand restored atop the dam. A new accessible pathway connects with the restored Grand Stairway, inviting the visitor to walk the perimeter of the water feature. This promenade is accessible and lit in the evenings, much as it was historically. The visitor may not know it, but the upper pool outlines the buried reservoir's western edge and the moving clear water symbolizes the active use of this site in providing drinking water to the City.

From the top of Dam 3, the visitor looks down toward Dam 4 and Gatehouse 4. The contours of the earth removed to build Reservoir 4 have been restored, and it appears that the landslide is gradually encroaching into the basin. Because of this encroachment, natural lowland habitat seems to be developing at the water's edge, while a deeper clear reflecting pool remains against the dam face. The lowland habitat area provides stormwater management and related functions, reflecting Portlander's commitment to clean water and restoring natural habitats. As at the upper reservoir, Gatehouse 4 and Dam 4 are both restored, and an accessible, lighted promenade surrounds the reflecting pool.

The visitor could have arrived at any of the main entrances located at Dam 4, the Grand Stairway, Sherwood Boulevard, or adjacent to Gatehouse 3. In addition to the paths surrounding each reservoir site, a dual-purpose utility road/path connects the two and winds down the landslide mitigation slope. Above this path to the west, a small overlook offers views over Gatehouse 4, the reflecting pool, and Portland from the same vantage point where Mr. Olmsted stood admiring the view in 1904. Interpretive materials will expose features of the site's history through interactive, experiential elements that are woven into the site.

1-4.7 Summary

The Washington Park Reservoir Improvement Project addresses each of the four project drivers:

- Aging infrastructure
- Seismic susceptibility
- Historic landslide
- Provision of safe drinking water

Of the two original uses at the site, the Design Concept preserves one original use (drinking water storage and distribution for the west side of Portland) and restores the other original use (accessible open water that provides visual relief from urban development and a recreational destination). Public access is restored to the site, and the historic character of the site is respected and preserved to the greatest extent possible thanks to the input of the HLC, the CSB, other stakeholders, and the general public.

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Part 2. Proposed Demolition Review Findings

Section 2-1: Introduction

The Washington Park Reservoirs Historic District (Historic District) was listed on the National Register of Historic Places in 2004 and includes 11 contributing historic resources – three of which are proposed for demolition: Reservoir 3, Reservoir 4 and the Weir Building.
If this application is approved, PWB will submit a consolidated Type III application (conditional use, environmental review, and historic resource review) for the historically sensitive redevelopment of the two reservoirs and for the preservation, rehabilitation and/or restoration of the eight remaining historic resources.

The Historic District Nomination (the Nomination) includes a map of the District (Figure 26). This map, and the photos and written description of the contributing structures proposed for demolition (Reservoir 3 basin, Reservoir 4 basin and Weir Building) on the following page are quoted from the Nomination prepared by the Friends of Reservoirs (2003).

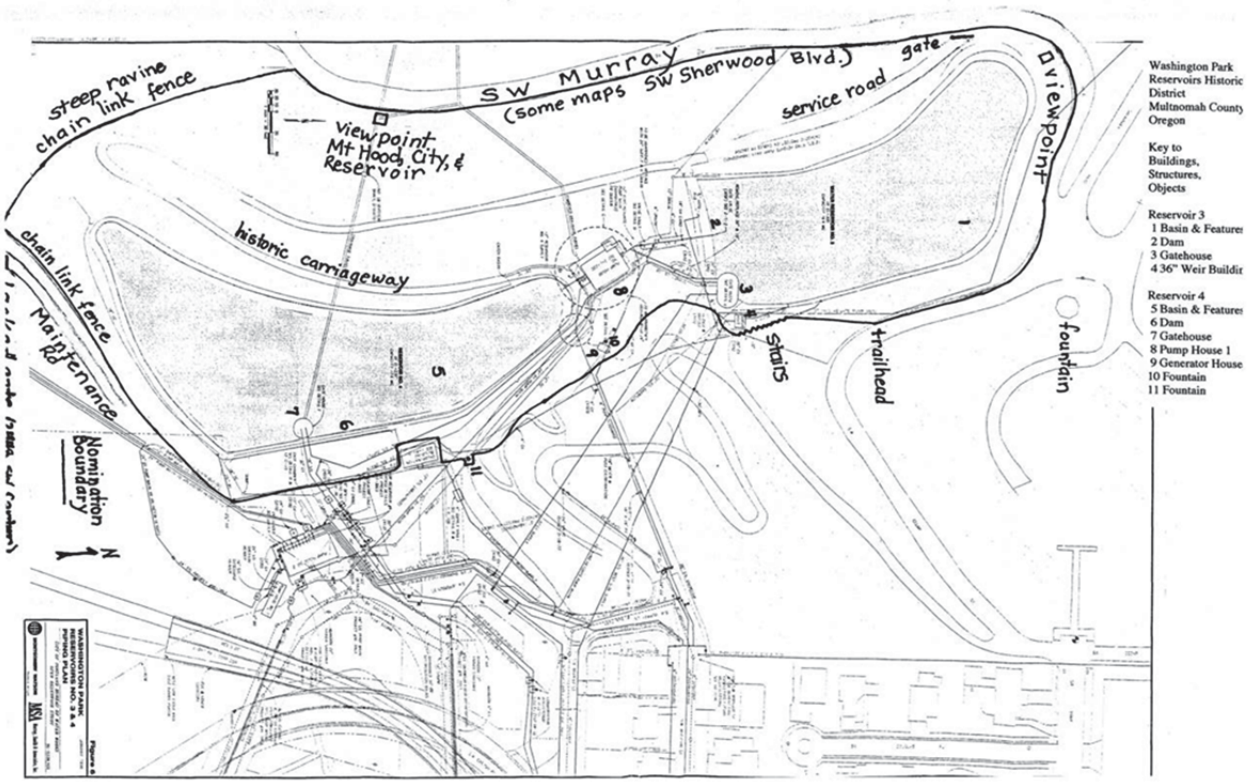


Figure 25. Map of Washington Park Reservoirs Historic District

"Reservoirs 3 and 4, along with Mount Tabor Park Reservoirs 1, 2, 5, and 6, were constructed as part of the Bull Run water system, a gravity-fed mountain watershed system built during the late nineteenth and early twentieth centuries to provide the city of Portland with drinking water. Reservoirs 1, 3, 4, 5, and 6 continue to function as the city's primary water distribution sources."

Figure 26. Reservoir 3 (National Register Nomination, 2004)

"They serve as a recreational amenity as well, enriching the landscape of two of Portland's largest and oldest parks with vistas of deep open water, period historic structures, and water sounds from small gravity fed inlet waterfalls. Also, due to their location on hills on the east and west sides of the city, scenic views are afforded across the reservoir water."

Figure 27. Reservoir 4 (National Register Nomination, 2004)

"Adjacent to the east is a smaller utilitarian concrete "36 Weir Building" (Screen House). Construction of this building is thought to date back to the building of the Westside Supply Line in 1945. It has a metal door facing east and two over two fixed pane wood windows on each of the other facades. Concrete steps lead up to this building. It is in good condition."

Figure 28. Weir Building (NR Nomination 2004)

Section 2-2: Historic Resource Demolition Review

Demolition review is required when a contributing historic resource within a historic district is proposed for demolition (PZC 33.445.330.A) and is not exempt from demolition review (PZC 33.445.330.B):

A.1. When demolition review is required. Unless exempted by Subsection B, below, demolition of a historic resource in a Historic District is subject to demolition review if:
   a. It is a structure that is identified as contributing to the historic significance of a Historic District; or
   b. There is a covenant with the City that requires the owner to obtain City approval before demolishing or relocating the historic resource.
2. Issuance of a demolition permit after demolition review. If the review body for demolition review approves demolition of the resource, a permit for demolition will not be issued until the following are met:
   a. The decision in the demolition review is final;
   b. At least 120 days have passed since the date the Director of the Bureau of Development Services determined that the application was complete; and
   c. A permit for a new building on the site has been issued. The demolition and building permits may be issued simultaneously.
B. Exempt from demolition review. Historic resources in Historic Districts required to be demolished because of the following are exempt from demolition review:
1. The Bureau of Development Services requires demolition due to an immediate danger to the health, safety, or welfare of the occupants, the owner, or that of the general public, as stated in Section 29.40.030 of Title 29, Property Maintenance Regulations; or
2. The Code Hearings Officer requires demolition, as provided for in Section 29.60.080 of Title 29, Property Maintenance Regulations.

Proposed Finding: Demolition review is required because three Historic District contributing resources are proposed for demolition; none are listed individually as historic landmarks. (PZC 33.445.330.A.1.a) The demolition proposed does not qualify for Section B exemptions because there is no immediate danger to health, safety, or welfare of workers at the facilities proposed for demolition and the Code Hearings Officer has not required demolition pursuant to Section 29.40.030.

The three following structures are proposed for demolition as follows:

1. **Reservoir 3 and its supporting elements will be demolished**. The storage function of Reservoir 3 and the screening function of the Weir Building will be replaced by the new underground reservoir. The basin itself, and the parapet wall, are both in poor condition and will be removed from the site. Portions of the wrought iron fencing and existing lamp posts will be rehabilitated off-site and incorporated into a partially reconstructed parapet wall that will provide historic context to the redeveloped surface water feature.

2. **Reservoir 4 will be demolished and buried**. The remains of the concrete reservoir will be used as fill; holes will be punched in the concrete basin to allow for drainage. Reservoir 4 has not been used to store drinking water for many years and is no longer needed for this purpose. A new stormwater bioswale and wildlife habitat area, with open water and connecting walkways, will be constructed in the same location. Portions of the existing wrought iron fencing and existing lamp posts will be rehabilitated off-site and incorporated into the partially-reconstructed parapet wall (which will include sections of the existing wall where feasible) to provide historic context.
3. The **1946 Weir Building will be completely demolished** to allow for construction of the new underground reservoir below Reservoir 3 and to facilitate the preservation of Gatehouse 3. As noted in Section 2-2.3, the Weir Building has a "utilitarian" design and is considered to be "contributing" primarily because it was constructed during the period of significance (which extends to 1954). This building has none of the classical Romanesque design features that distinguish other contributing buildings – including Dams 3 and 4 and Gatehouses 3 and 4. The screening function of the Weir Building is no longer needed because water will be stored below ground and therefore will be less likely to collect detritus.

This application relies on the preferred redevelopment concept plan (Design Concept) to show (a) future redevelopment of the two demolished reservoirs; and (b) rehabilitation / preservation of the eight remaining historic resources. The Design Concept is summarized and graphically illustrated in Figures 19-25. Because the Design Concept resulted from three HLC design advice work sessions and extensive public outreach, this Design Concept is unlikely to change substantially. Importantly, permits for demolitions of the three historic resources cannot be issued until construction permits for historic redevelopment are issued. Moreover, redevelopment permits must gain future Type III historic resource, conditional use and environmental review approvals before construction permits are issued. (PZC 33.445.330.B) Thus, the City and community will know precisely what will *replace* the historic structures proposed demolition *before* permits for demolition can be approved.

Organization of Remaining Findings

PWB's remaining findings respond to the demolition criteria found in PZC 33.846.080 Demolition Review. This code section describes the process and criteria for review of historic resource demolition proposals.

- PZC 33.846.080 Subsection A describes the purpose of demolition review. Since this purpose is cited as a review criterion in PZC 33.846.080.C, Demolition Evaluation Factor "e," findings explaining how the proposed demolition (with proposed redevelopment and historic rehabilitation as shown on the Design Concept) is consistent with the purpose of demolition review are provided in Section 2-2.3 below.
- PZC 33.846.080 Subsection B describes the process for demolition review. Section 2-2.2 below includes findings explaining the role of the HLC in making a recommendation to the City Council in this Type IV demolition review, and how the Council's decision relates

to the anticipated historic review by the HLC for proposed improvements in this Historic District and the potentially affected area that surrounds the Historic District.

- PZC 33.846.080 Subsection C lists applicable approval criteria. Section 2-2.3 below explains why the first approval criterion related to economic hardship is not applicable. Section 2-2.3 explains why the second criterion *is* applicable and how six suggested "evaluation factors" will be applied to explain why, on balance, the proposed demolitions are supportive of comprehensive plan goals and policies. This section also suggests four logical steps that set the stage for application of evaluation factors to comprehensive plan goals and policies.

Section 2-3 of these findings explains why demolishing the three contributing historic resources is, on balance supportive of applicable comprehensive plan goals and policies. This evaluation is based on six evaluation factors suggested in PZC 33.846.080(C). Because the six evaluation factors overlap, the findings in Section 2-3 are organized as follows:

- **Section 2-3.1 Merits of demolition with replacement reservoir and stormwater swale redevelopment (Evaluation Factors "a" and "b")**
- **Section 2-3.2 Merits of replacement development; proposed mitigation; and effects of both on area's desired character (Evaluation Factors "b", "d" and "f")**
- **Section 2-3.3 Merits of preserving the resource and effect of demolition on the area's desired character (Evaluation Factors "c" and "e")**

Thus, in Section 2-3.1 through 2-3.3, the six evaluation factors are used as a lens to explain why, on balance, the demolition of three contributing resources in the Historic District is supportive of applicable goals and policies of the Portland Comprehensive Plan.

2-2.1 Demolition Review Purpose (PZC 33.846.080(A))

> ***A. Purpose.*** *Demolition review protects resources that have been individually listed in the National Register of Historic Places and those that have been classified as contributing in the analysis done in support of a Historic District's creation. It also protects Historic Landmarks and Conservation Landmarks that have taken advantage of an incentive for historic preservation and historic resources that have a preservation agreement. Demolition review recognizes that historic resources are irreplaceable assets that preserve our heritage, beautify the city, enhance civic identity, and promote economic vitality.*

Proposed Findings: Unlike private owners who benefit from property tax reductions, the city does not pay property taxes, the city does not benefit from tax incentives available to privately-owned historic district nominations. There is no preservation agreement.

Section 2-3.3 addresses Evaluation Criteria "c" and "e" by considering the effects that demolition would have on the area's desired character and the merits of preserving the resource, **taking into consideration the purpose described in Subsection A** (quoted above).

Part 1 of this narrative includes background information regarding the Historic District that provides the context and underlying rationale for this demolition request. **The information provided in Part 1 is incorporated into these findings by reference and is summarized in relevant part below.**

Section 1-2.1 summarizes the four areas of significance described in the Nomination:

1. **Community Planning and Development** (economic, political and engineering history of Portland's water system and the importance of the Washington Park Reservoirs in that system);
2. **Engineering** (storage and piping of exceptionally clear water from the Bull Run watershed 30 miles to the east, gravity-fed storage and distribution system, patented reinforced concrete structural design);
3. **Architecture** (classical Romanesque style, naturalistic setting in a ravine above the city, careful attention to viewpoints, carriageways and pathways to provide access to open water amenities, and beautifully designed lamp-posts, wrought iron fencing and gates);
4. **Entertainment and Recreation** (open and accessible water provides a scenic respite from urban living, reservoirs incorporated as scenic and recreational amenities in an urban but naturalistic park).

The first two areas of significance (1 and 2 above) are considered in Section 2-3.1, which describes how historic values related to community planning and engineering history have been considered and incorporated into the Design Concept for Reservoirs 3 and 4. The second two areas of significance (3 and 4 above) are considered in Section 2-3.2, which describes how historic architectural, recreational and entertainment values are considered and incorporated into the Design Concept.

Section 1-3 describes the 11 contributing resources that comprise the Historic District. Table 1.1 shows how these resources appear today; describes their historic context and architectural features, and how each of the resources has changed over time; and summarizes whether and how each resource will be demolished, redeveloped, rehabilitated and/or preserved. Table 1.1 was shared with the HLC and provides the basis for Design Concept plan.

Finally, several comprehensive plan goals and policies are related to: 1) preservation of irreplaceable historic assets that preserve our heritage, 2) beautification of the city, 3) enhancement of civic identity, and 4) promotion of economic vitality. By showing balanced support for applicable comprehensive goals and policies, the findings in Section 2-3 support overall consistency with the Section PZC 33.846.080(A) Purpose.

2-2.2 Demolition Review Procedure and Related Land Use Reviews

B. Review procedure. *Demolition reviews are processed through a Type IV procedure.*

Proposed Findings: The HLC will make a recommendation to the City Council regarding this demolition request. Because this is a Type IV review, the City Council will make the decision as to whether to grant the demolition request. In so doing, the Council must hold a public hearing and make its decision consistent with the criteria set forth in PZC 33.846.080.C below.

In a separate land use review following Council's decision on the demolition review, the HLC will consider the details of PWB's proposal to replace Reservoirs 3 and 4 with surface water features served by accessible pathways. The redeveloped surface water features will have a modern design but will incorporate reconstructed and/or rehabilitated historic elements. As described in Part 1, the design of the surface water features that will replace Reservoir 3 and 4 basins:

- Represent the consensus view of the Washington Park Reservoirs "Community Sounding Board";
- Address the aesthetic and social objectives of the original Olmsted plan for City Park;
- Meet Washington Park Master Plan policies related to maintaining and providing access to surface water features; and
- Respond to the recommendations of the HLC in three separate "design advice" meetings by reconstructing historic parapet walls and walkways, and incorporating rehabilitated wrought iron fencing and lamp posts into the new surface water features.

Through a Type III review process, the HLC will review the following proposals at a separate public hearing to be held following the Council's decision on this demolition request:

1. The final design of the surface water replacement features (including historic reconstruction of portions of existing walkways, parapet walls, wrought iron fencing, walkways, carriageways and lamp posts associated with the two demolished reservoir basins); and
2. Preservation, rehabilitation and/or restoration proposals for the eight remaining contributing structures, buildings and objects within the Historic District.

Figure 30 on the following page shows the 11 historic resources in the Historic District and identifies which resources are proposed for demolition/redevelopment, and which resources are proposed for historic reconstruction, rehabilitation and/or preservation.

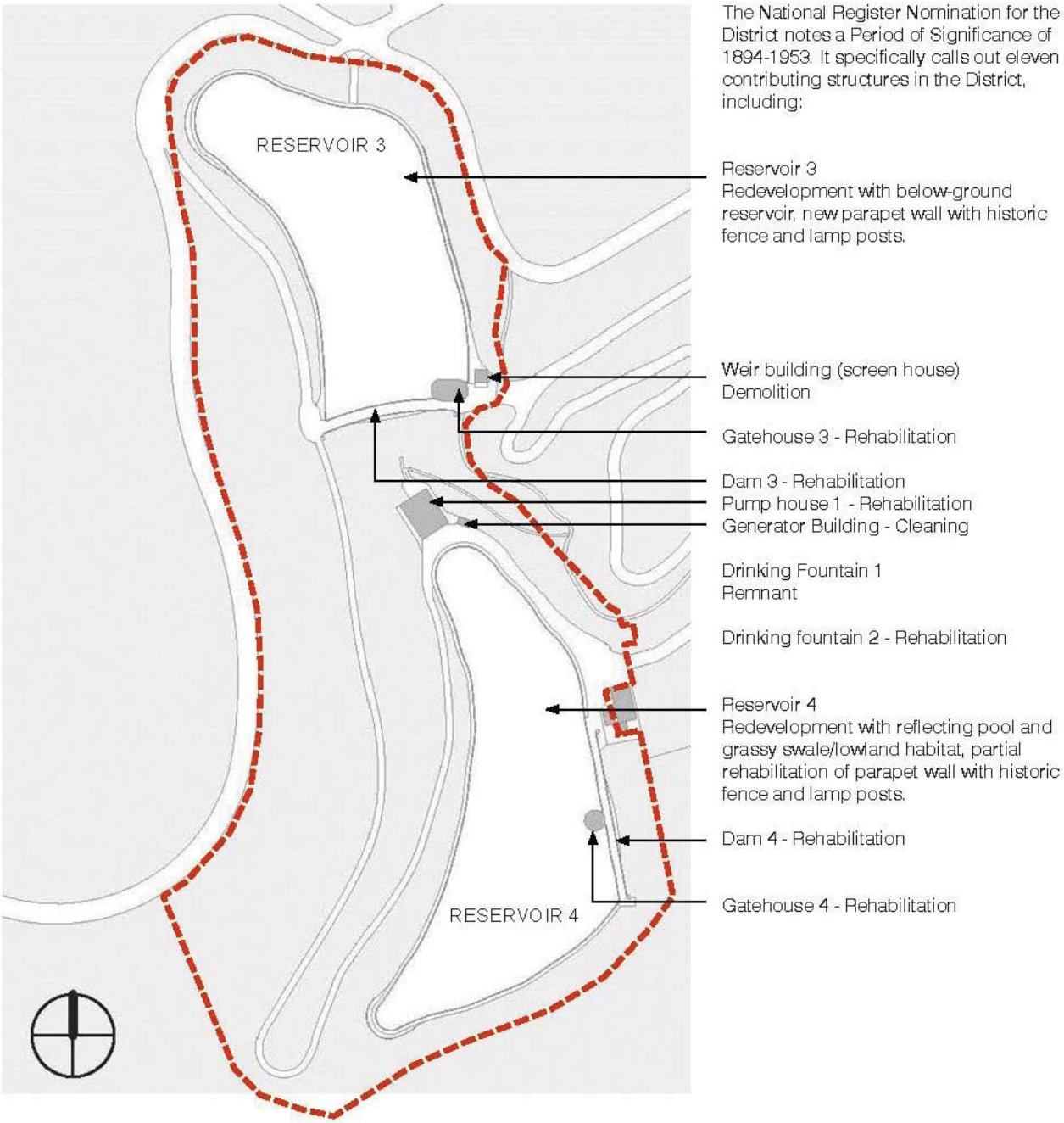


Figure 29. Contributing Historic Resources Proposed for Demolition

2-2.3 Demolition Review Approval Criteria and Organization of Findings

Subsection C below identifies two possible demolition review approval criteria – only one of which needs to be met in order for the City Council to approve a demolition request. Subsection C.2 suggests six factors that may be used to evaluate whether, on balance, the demolition is consistent with the goals and policies of the Comprehensive Plan.

> ***C. Approval criteria.*** *Proposals to demolish a historic resource will be approved if the review body finds that* ***one*** *of the following approval criteria is met:*
> 1. *Denial of a demolition permit would effectively deprive the owner of all reasonable economic use of the site; or*
> 2. *Demolition of the resource has been evaluated against and, on balance, has been found supportive of the goals and policies of the Comprehensive Plan, and any relevant area plans. The evaluation may consider [demolition evaluation] factors such as:*
>   a. *The merits of demolition;*
>   b. *The merits of development that could replace the demolished resource, either as specifically proposed for the site or as allowed under the existing zoning;*
>   c. *The effect demolition of the resources would have on the area's desired character;*
>   d. *The effect that redevelopment on the site would have on the area's desired character;*
>   e. *The merits of preserving the resource, taking into consideration the purposes described in Subsection A; and*
>   f. *Any proposed mitigation for the demolition.*

Proposed Findings: The first criterion is not applicable. The Historic District site is owned by the City of Portland and is located within Washington Park. This criterion normally applies to private entities that could be deprived of any reasonable economic use of a site if a demolition request were denied. In this case, even if the demolition request were denied, the Open Space site would continue to be used as a park and thus would retain some economic value.

The second review criterion as considered in the context of the six suggested evaluation factors (quoted above) is applicable. In order for the City Council to approve this demolition request, it must find that on balance, the goals and policies of the Comprehensive Plan (including any adopted area plans) are supported by demolition of the Weir Building and Reservoirs 3 and 4. **PWB will apply the six suggested evaluation factors to determine whether, on balance, the three demolition requests are supportive of applicable comprehensive plan goal and policies.**

As noted in the City Council's March 3, 2010, decision to authorize demolition of the Kieran Building (aka the "Dirty Duck" – LU 09-171259 DM), the Council determined that it has broad discretion to decide how to balance applicable comprehensive plan goals and policies:

> *"The Council has broad discretion in establishing how to balance the relevant goals given a particular proposal and that property's location in a particular historic district. No code provision or city policy requires the Council to give equal weight in the balancing process to*

every Comprehensive Plan goal, nor does anything mandate that equal weight be given to every goal and policy found in other relevant area plans. The Council has the authority to give certain relevant goals and policies more weight and other relevant goals and policies less weight in reaching its final decision as to whether the proposal, on balance, supports the Comprehensive Plan and other relevant area plans."

As noted above, the City Council may consider review factors (a) through (f) in when evaluating and balancing applicable comprehensive goals and policies. In Table 2.1 and Section 2-4 of this narrative, these six factors are combined into three related factors to facilitate the evaluation of applicable comprehensive plan goals and policies. For evaluation purposes, PWB will review applicable comprehensive plan goals and policies with respect to:

- Demolition Evaluation Factors "a" and "b" in Section 2-3.1;
- Demolition Review Factors "b," "d" and "f" in Section 2-3.2; and
- Demolition Factors "c" and "e" in Section 2-3.3.

Section 2-3.4 provides a summary of the findings in Sections 2-3.1 through 2-3.3 and recommends that substantial weight be given to Goal 11E – Water Service. The provision of water service is an essential city service that cannot be provided effectively without the proposed demolitions and construction of a new below-ground reservoir. As summarized in Section 2-3.4 of this narrative, most comprehensive plan goals and policies support demolition of the three historic resources – with proposed redevelopment and historic mitigation measures that will have a positive effect on the desired character of the area.

Evaluation Steps

There are four logical steps in the demolition review process that are followed in this balancing effort:

1. Determine the area that will be affected by the demolition and describe its character. (Section 2-2.4)
2. Determine which comprehensive plan goals – and related policies – apply to this demolition request and how these policies relate to demolition evaluation factors (a) through (f). (Section 2-2.5)
3. Based on demolition evaluation factors (2)(a) through (f), explain why the proposed demolitions (with proposed historically-sensitive redevelopment and mitigation) are supportive of, do not support, or are mixed with respect to applicable goal and related policies. (Sections 2-3.1 through 2-3.3)
4. Explain why, on balance, applicable Comprehensive Plan goals and policies support the demolition of Weir Building and Reservoirs 3 and 4. (Section 2-3.4)

2-2.4 Area Potentially Affected by Demolition and this Area's Desired Character

For purposes of this application, the "site" is the Historic District, as shown on Figure 31. The site is located entirely within Washington Park and is zoned Open Space (OS) with a Historic Resource overlay. The Historic District site includes 11 contributing structures – three of which are proposed for demolition: Reservoirs 3 and 4 (1894) and the Weir Building (1946). The remaining structures will be protected, rehabilitated and/or restored.

Figure 31 also identifies land within Washington Park and nearby neighborhoods that potentially *could* be affected by the proposed demolitions and redevelopment plan. The potentially affected area extends approximately 1,000 feet from the boundary of the Historic District and includes portions of the Arlington Heights, Kings Hill Historic District, and Goose Hollow neighborhoods as well as notable Washington Park attractions such as the Japanese Garden, the International Rose Garden and Amphitheater, a soccer field and tennis courts.

- To the north, the potentially affected area boundary generally follows W Burnside Street, recognizing that Northwest District residents frequently access the park from the north. Some construction access is tentatively planned from W Burnside via SW Tichner Drive.
- To the east, the potentially affected area includes the western portions of the Kings Hill Historic District (including the primary park access from SW Park Place) and Goose Hollow. A work staging area is tentatively proposed immediately east of Reservoir 4.
- To the south, the potentially affected area includes largely undeveloped portions of the park. This steeply-sloped area includes SW Kingston Avenue and trails.
- To the west, the potentially affected area includes the eastern portions of Arlington Heights and the Japanese Garden, as well as the Rose Garden complex.

Desired Character of the Area

The desired character of the area is determined primarily by the applicable base zones and overlay zones. Figure 32 shows most of the potentially affected area zoned for Open Space use, with a mosaic of overlay zones. The potentially affected area outside of Washington Park is zoned for residential or commercial uses.

As shown on Figure 32, Washington Park is zoned Open Space (OS). Several portions of the potentially affected area have scenic and/or environmental overlays. As noted in PZC 33.100.101:

> *"The Open Space zone is intended to preserve and enhance public and private open, natural, and improved park and recreational areas identified in the Comprehensive Plan. These areas serve many functions including: Providing opportunities for outdoor recreation; Providing contrasts to the built environment; Preserving scenic qualities; Protecting sensitive or fragile environmental areas; Enhancing and protecting the values and functions of trees and the urban forest; Preserving the capacity and water quality of the stormwater drainage system; and Providing pedestrian and bicycle transportation connections."*

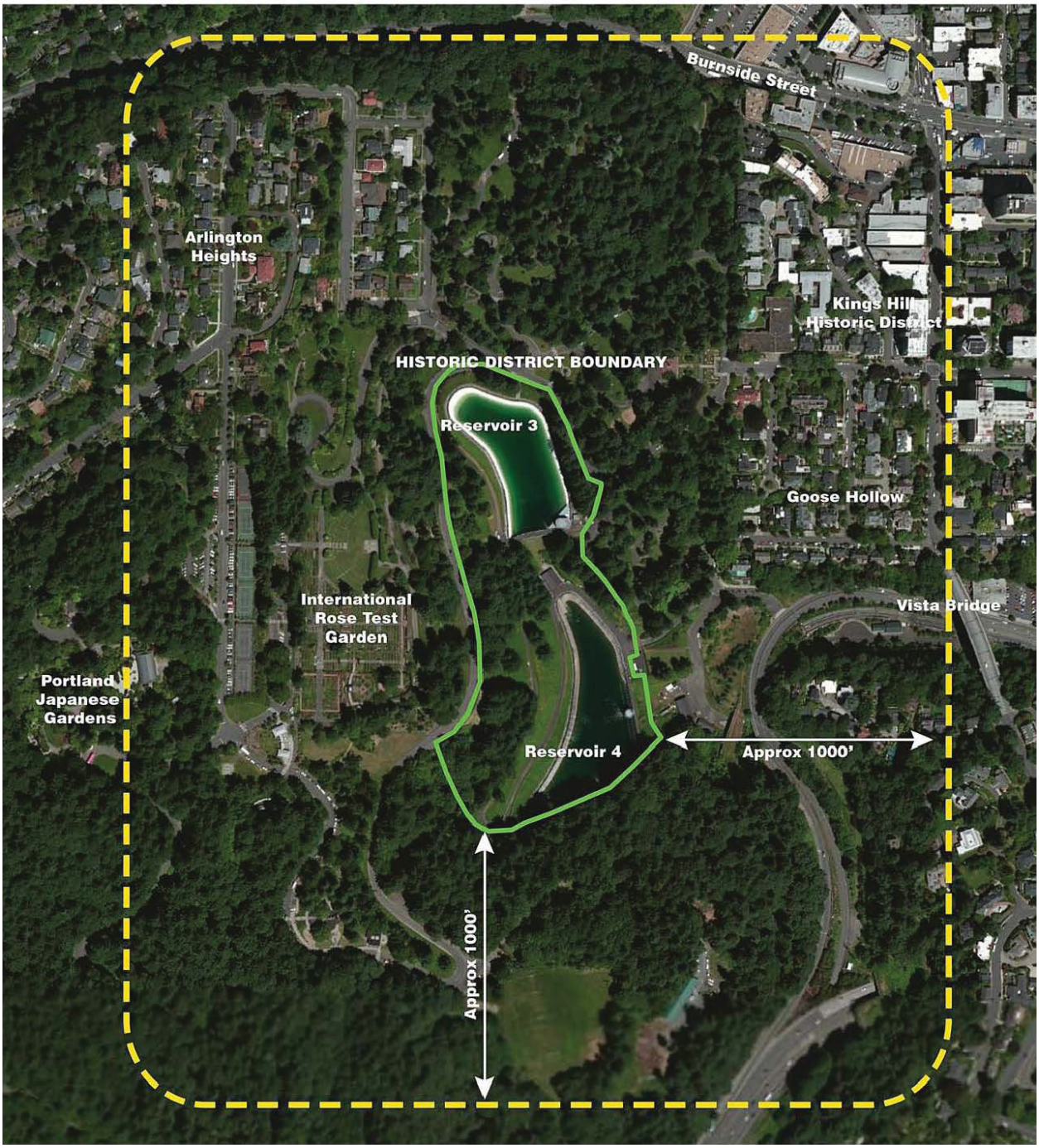


Figure 30. WPR Historic District in Relation to Park and Area Potentially Affected

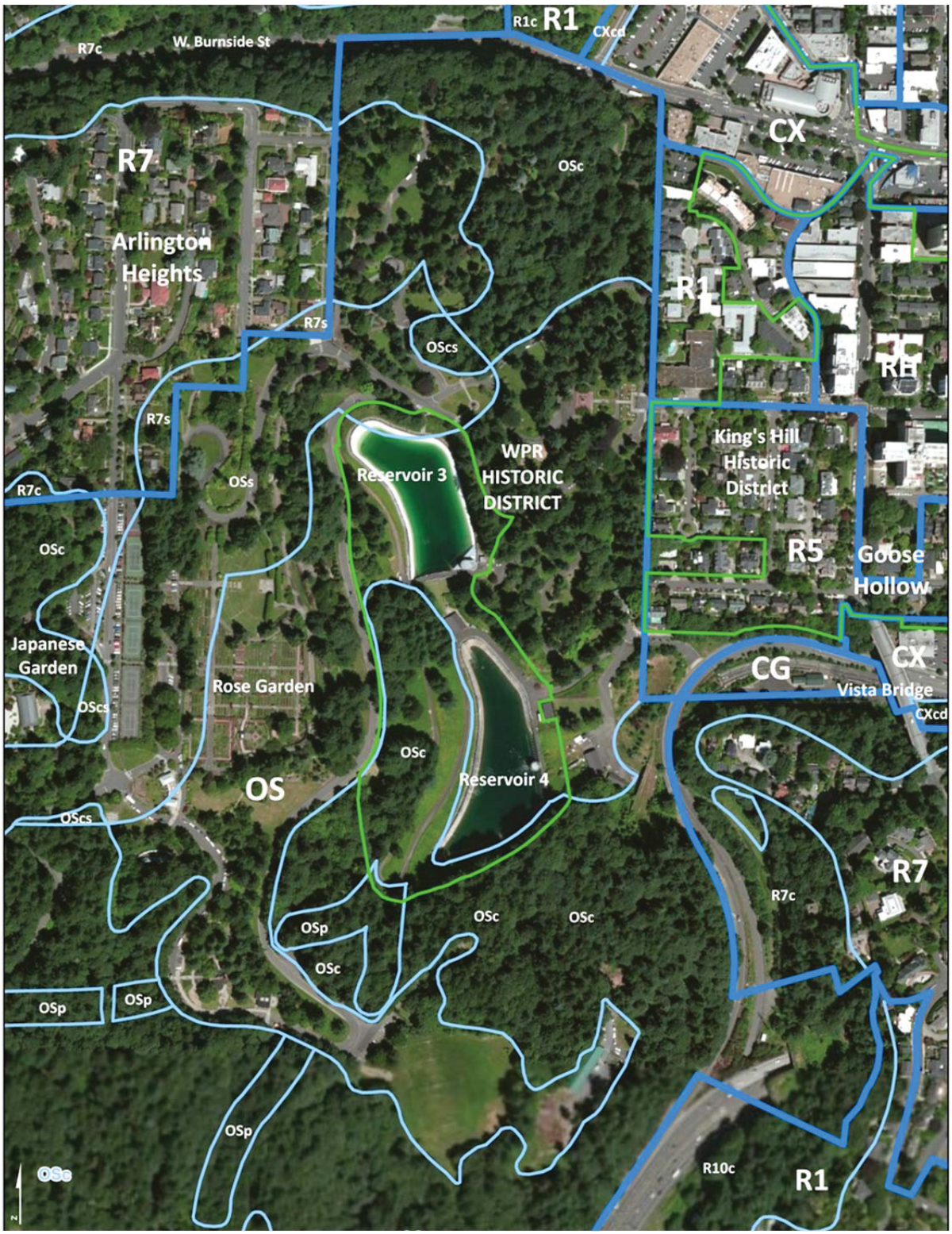


Figure 31. Potentially Affected Area Zoning Map

The Historic District (site), Washington Park and the potentially affected area all have environmental protection (p), environmental conservation (c) and scenic resource (s) zones.

As noted in PZC 33.430.010-017:

> *"Environmental zones protect resources and functional values that have been identified by the City as providing benefits to the public. The environmental regulations encourage flexibility and innovation in site planning and provide for development that is carefully designed to be sensitive to the site's protected resources. These regulations also help meet other City goals, along with other regional, state, and federal goals and regulations. The environmental regulations also carry out Comprehensive Plan policies and objectives.*
> - *The **Environmental Protection** zone provides the highest level of protection to the most important resources and functional values. These resources and functional values are identified and assigned value in the inventory and economic, social, environmental, and energy (ESEE) analysis for each specific study area. Development will be approved in the environmental protection zone only in rare and unusual circumstances.*
> - *The **Environmental Conservation** zone conserves important resources and functional values in areas where the resources and functional values can be protected while allowing environmentally sensitive urban development."*

As noted in PZC 33.480.010:

> *"The Scenic Resource zone is intended to: Protect Portland's significant scenic resources as identified in the Scenic Resources Protection Plan; Enhance the appearance of Portland to make it a better place to live and work; Create attractive entrance ways to Portland and its districts; Improve Portland's economic vitality by enhancing the City's attractiveness to its citizens and to visitors; [and] Implement the scenic resource policies and objectives of Portland's Comprehensive Plan. The purposes of the Scenic Resource zone are achieved by establishing height limits within view corridors to protect significant views and by establishing additional landscaping and screening standards to preserve and enhance identified scenic resources."*

As shown on Figure 32, Environmental Conservation (c) and Environmental Protection (p) overlay zones also apply to this site. The proposed demolition of the three historic resources will not occur in these overlay zones. The Scenic (s) overlay zone applies to this site and the north edge of Reservoir 3 is shown within it. This zone was applied to the "Washington Park and Hoyt Arboretum Loop," a scenic corridor that applies to a section of Sacajawea Boulevard at the north edge of the site. The Scenic Resources Protection Plan amended Comprehensive Plan Policy 8.14 Natural Resources to include references to scenic resources. This policy and applicable objectives are reviewed in Section 2-3.2. Planned redevelopment of the site may include limited disturbance in the scenic and environmental overlay zones. The limited potential impacts from redevelopment of the site will be fully reviewed and mitigated through

a separate Type III conditional use/environmental review process that requires a public hearing before a Portland Hearings Officer.

The "site" itself (the Washington Park Reservoirs Historic District), has a Historic Resource overlay zone. The purpose of this overlay is set forth in PZC 33.445.010 as follows:

> *This chapter protects certain historic resources in the region and preserves significant parts of the region's heritage. The regulations implement Portland's Comprehensive Plan policies that address historic preservation. These policies recognize the role historic resources have in promoting the education and enjoyment of those living in and visiting the region. The regulations foster pride among the region's citizens in their city and its heritage. Historic preservation beautifies the city, promotes the city's economic health, and helps to preserve and enhance the value of historic properties.*

The character of the area is clearly defined in the Historic District Nomination (Section 8, page 2) as combining water system functionality with the classical design and the accessible beauty of open water:

> *"In 1871 Portland purchased 40 acres of land in the hills at the western edge of the city from Amos and Melinda King for $32,984. Thus began the process of building City Park, one of Portland's first parks, that was renamed Washington Park in 1912. The Water Committee sited these reservoirs within the already defined boundaries of City Park by compensating the Parks Bureau and acquiring additional property to complete the complex.*
>
> *Using a natural steep-sided ravine with dramatic scenic virtues,* ***the designers married utility with accessible beauty and recreation with their construction design****. From above Reservoir 3, the site included a view of Mount Hood and the vicinity of the Bull Run watershed, connecting citizens not only with the water itself, but the region from where the water flowed.* ***The elegance of the built environment illustrated sensitivity to aesthetics and embodied the notion of "beautility" by adapting classical architectural styles to utilitarian structures that featured innovative technology.***
>
> *The reservoirs elevated the storage and distribution of water by enhancing water's highly prized characteristics in a landscape. They served as a recreational amenity as well, enriching the landscape of two of Portland's largest and oldest parks with vistas of deep open water and period historic structures, and fountains to create a destination for inspiration and rejuvenation for park users.*
>
> *The dams had finished decorative faces and concrete carriageways spanned the dams and walkways encircled the basins. The use of lamps, powered by the generation of electricity from the fall between the two reservoirs, even ensured evening use of the park. The walkways surrounding the basins and dams were illuminated and the light reflecting in the deep water created a romantic feeling. Reservoirs 3 and 4 were a monument to the*

importance of water as a life-giving substance and as a beautiful visual resource for the benefit of the community."

Outside of Washington Park itself, most of the remaining potentially affected area is zoned Single Dwelling with small pockets of Multi-Dwelling Residential. As noted in PZC 33.110.010 and 33.120.010, the purposes of these residential zones are:

- *The single-dwelling zones are intended to preserve land for housing and to provide housing opportunities for individual households. The zones implement the Comprehensive Plan policies and designations for single-dwelling housing.*
- *The multi-dwelling zones are intended to preserve land for urban housing and to provide opportunities for multi-dwelling housing.*

Finally, as shown on Figure 32, there are two pockets of commercial land at the edges of the potentially affected area.

- The first is zoned Central Commercial (CX) and is located at West Burnside and 23rd Avenue in the northeast portion of the potentially affected area.
- The second is zoned CG (General Commercial) and is located along SW Canyon Road in southeast portion of the potentially affected area.

As noted in PZC 33.130.010, the commercial zones implement Comprehensive Plan provisions that allow for varying intensity of commercial uses.

Thus, the potentially affected area is comprised primarily of open space – which provides opportunities for outdoor recreation in a tranquil and peaceful setting, and for bicycle and pedestrian recreational travel. The OS zone in particular provides a contrast to nearby urban development while offering scenic views of Vista Bridge, Downtown Portland and Mount Hood. The OS zone, in concert with applicable scenic and environmental overlays, is designed to protect urban forests, water quality, stream corridors and ravines, wildlife habitat and scenic views.

- The Historic Resource overlay is designed to protect the Historic District – notably the engineering functionality and economy of the gravity water and storage distribution system, the classical beauty of the waterworks themselves, and the accessible, open water that provides a respite from urban living in the "City Beautiful" tradition.
- The character of the area is also defined by high quality residential neighborhoods to the northwest and northeast of the Historic District, and relatively intense commercial development in the northeast and southeast corners of the potentially affected area. Both positive and negative effects of the proposed demolition, redevelopment and rehabilitation of contributing historic structures should be considered.

2-2.5 Demolition Evaluation Criteria in Relation to Applicable Comprehensive Plan Goals and Policies and Related

Table 2.1 below shows how the six demolition evaluation criteria relate to the evaluation of applicable comprehensive plan goals and policies. Some of the demolition evaluation factors overlap in terms of how they relate to applicable goals and policies. For evaluation purposes:

- **Section 2-3.1 considers Demolition Evaluation Factors "a" and "b."** This section explains why demolishing Reservoirs 3 and 4 and the Weir Building – when considered in the context of the Design Concept that incorporates historical community planning and engineering values recognized in the District Nomination – is supportive of Goal 7 Energy, Goal 8 Environment, Goal 11 Public Facilities and Goal 11E Water Service.
- **Section 2-3.2 considers Demolition Evaluation Factors "b", "d" and "f."** This section explains why historically-sensitive redevelopment of Reservoirs 3 and 4 – combined with the proposed preservation or rehabilitation of the remaining eight historic resources and other mitigation measures – will have a positive effect on the desired character of the area. This section specifically considers architectural, entertainment and recreational values recognized in the District Nomination and explains why the proposed redevelopment and preservation plan is supportive of Goal 3 Neighborhoods, Goal 6 Transportation, Goal 8 Environment, Goal 9 Citizen Involvement, Goal 11F Parks and Recreation (including the Washington Park Master Plan) and Goal 12 Urban Design.
- **Section 2-3.3 considers Demolition Evaluation Factors "c" and "e."** This section evaluates the effect of preserving Reservoirs 3 and 4 and the Weir Building – if it were practicable to do so – on the desired character of the area and the purpose of PZC 33.846.080(A) Demolition Review. This section also explains how replacement of demolished historic resources as shown on the Design Concept is supportive of certain Goal 3 Neighborhoods and Goal 12 Urban Design historic preservation policies of objectives.

Three comprehensive plan goals are <u>not applicable</u>:

- **Goal 1 – Metropolitan Coordination** commits the city to coordinating with Metro and other regional partners in a wide range of planning efforts. The goal and its implementing policies are not intended to be used as review criteria in the local quasi-judicial decision-making process.
- **Goal 4 – Housing and Goal 5 – Economic Development** apply to residential and employment planning and development, respectively. Since the demolition request does not include residential or employment land or development, these goals and implementing policies do not apply.

Related Plans

Comprehensive Plan Policy 11.38 Master Development Plans commits the city to "maintain master development plans for city parks that address [among other things] "development priorities." The Washington Park Master Plan includes specific policy direction regarding the covering of Washington Park's two reservoirs. This plan is addressed in the following findings.

The Historic District Nomination describes each contributing structure in some detail and explains *why* the district and its contributing structures are historically significant. The Nomination also identifies structural problems and inappropriate modifications that have occurred over the years for each contributing structure. However, the "Nomination" does not include specific goals or policies that can be "balanced" through this process.

Table 2.1: Demolition Evaluation Criteria in Relation to Applicable Goals and Policies

Goal & Policy Evaluation Factor "a" and "b": Merits of demolition with reservoir redevelopment that preserves historic community planning and engineering values identified in the District Nomination (See Section 2-3.1)	
Goal 7 - Energy**: Promote a sustainable energy future by increasing energy efficiency in all sectors of the city by ten percent by the year 2000.* • ***Policy 8.5 Interagency Cooperation – Water Quality • ***Policy 7.2 Energy Efficiency in City Owned Facilities*** • ***Policy 11.37 Energy Conservation.***	Supportive
Goal 8 Environment**: Maintain and improve the quality of Portland's air, water and land resources and protect neighborhoods and business centers from detrimental noise pollution.* • ***Policy 8.5 Interagency Cooperation – Water Quality • ***Policy 8.13 Natural Hazards***	
Goal 11 Public Facilities**: Provide a timely, orderly and efficient arrangement of public facilities and services that support existing and planned land use patterns and densities.* • ***Policy 11.1 Service Responsibility: • ***Policy 11.6 Water Supply***	
Goal 11 E Water Service**: Insure that reliable and adequate water supply and delivery systems are available to provide sufficient quantities of high quality water at adequate pressures to meet the existing and future needs of the community, on an equitable, efficient and self- sustaining basis.* • ***Policy 11.26 Quality • ***Policy 11.28 Maintenance.*** • ***Policy 11.29 Storage.*** • ***Policy 11.31 Design and Community Impact*** • ***Policy 11.36 Water Pressure***	

Goal and Policy Evaluation Factors "b", "d" and "f": Merits of historically-sensitive replacement of Reservoirs 3 and 4, combined with proposed rehabilitation of remaining historic resources and mitigation measures; and their effects on the historic architectural, recreational and entertainment values identified in the District Nomination and the area's desired character (See Section 2-3.2)	
Goal 3 Neighborhoods*: Preserve and reinforce the stability and diversity of the City's neighborhoods while allowing for increased density in order to attract and retain long-term residents and businesses and insure the City's residential quality and economic vitality.* • ***Policy 3.1 Physical Conditions*** • ***Policy 3.5 Neighborhood Involvement***	Supportive
Goal 9 Citizen Involvement*: Improve the method for citizen involvement in the on-going land use decision-making process and provide opportunities for citizen participation in the implementation, review and amendment of the adopted Comprehensive Plan.* • ***Policy* 9.1 Citizen Involvement Coordination**	
Goal 6 Transportation: *Develop a balanced, equitable, and efficient transportation system that provides a range of transportation choices; reinforces the livability of neighborhoods; supports a strong and diverse economy; reduces air, noise, and water pollution; and lessens reliance on the automobile while maintaining accessibility.* • ***Policy 6.22 Pedestrian Transportation*** • ***Policy 6.23 Bicycle Transportation*** • ***Urban Design Policy 12.4 Provide for Pedestrians*** • ***Urban Design Policy 12.5 Pathways.***	
Goal 8 Environment*: Maintain and improve the quality of Portland's air, water and land resources and protect neighborhoods and business centers from detrimental noise pollution.* • ***Policy 8.5 Interagency Cooperation – Water Quality*** • ***Policy 8.14 Natural Resources*** • ***Policy 8.16 Uplands Protection*** • ***Policy 8.17 Wildlife Habitat.***	
Goal 11 F Parks and Recreation*: Maximize the quality, safety and usability of parklands and facilities through the efficient maintenance and operation of park improvements, preservation of parks and open space, and equitable allocation of active and passive recreation opportunities for the citizens of Portland.* • ***Policy 11.38 Master Development Plans*** • ***Policy 11.39 Maintenance***	
Washington Park Master Plan (1981) • ***Policy 3: Reservoirs***	
Goal 12 Urban Design*: Enhance Portland as a livable city, attractive in its setting and dynamic in its urban character by preserving its history and building a substantial legacy of quality private developments and public improvements for future generations.* • ***Policy 12.1 Portland's Character*** *(See also Objectives C, H and I)* • ***Policy 12.2 Enhancing Variety*** • ***Policy 12.7 Design Quality***	

Goal and Policy Evaluation Factors "c" and "e": Merits of preserving the three resources proposed for demolition (if such were practicable) considering the purpose of demolition review and the effect of demolition (with replacement redevelopment) on the area's desired character (See Section 2-3.3)	
Goal 3 Neighborhoods: • ***Policy 3.4 Historic Preservation***	Mixed
Goal 12 Urban Design • ***Policy 12.3 Historic Preservation*** *(see also Objectives A, B, C, E and F)*	

In summary, the proposed demolition requests with proposed replacement development shown on the Design Concept, are supportive of the following comprehensive plan goals and policies:

- **Goal 3 Neighborhoods** as implemented by Policies 3.1 Physical Conditions and 3.5 Neighborhood Involvement
- **Goal 6 Transportation** as implemented by Policies 6.22 Pedestrian Transportation and 6.23 Bicycle Transportation
- **Goal 7 Energy** as implemented by Policy 7.2 Energy Efficiency and Policy 11.37 Energy Conservation
- **Goal 8 Environment** as implemented by Policies 8.5 Interagency Coordination – Water Quality, 8.13 Natural Hazards, 8.14 Natural Resources, 8.16 Uplands Protection and 8.17 Wildlife Habitat
- **Goal 9 Citizen Involvement** as implemented by Policy 9.1 Citizen Involvement Coordination
- **Goal 11 Public Facilities** as implemented by Policy 11.1 Service Responsibility and 11.6 Water Supply
- **Goal 11E Water Service** as implemented by Policies 11.26 Quality, 11.28 Maintenance, 11.31 Design and Community Impact, 11.36 Water Pressure and 11.37 Energy Conservation (with relatively little weight given to outdated Policy 11.29 Storage)
- **Goal 11 F Parks and Recreation** as implemented by Policy 11.38 Master Development Plans and 11.39 Maintenance
- **Goal 12 Urban Design** as implemented by Policies 12.1 Portland's Character, 12.2 Enhancing Variety, 12.4 Provide for Pedestrians, 12.5 Pathways and 12.7 Design Quality

The proposed demolitions are *mixed* with respect to their support of the following policies (even if it were practicable to preserve Reservoirs 3 and 4 and the Weir Building):

- **Goal 3 Neighborhoods** as implemented by Policy 3.4 Historic Preservation
- **Goal 12 Urban Design** as implemented by Policy 12.3 Historic Preservation

Section 2-3: Comprehensive Plan Goal and Policy Evaluation

This section provides an evaluation of applicable comprehensive plan goals and policies in relation to the demolition evaluation factors found in PZC 33.846.080(A)(2):

2. *Demolition of the resource has been evaluated against and, on balance, has been found supportive of the goals and policies of the Comprehensive Plan, and any relevant area plans. The evaluation may consider factors such as:*
   a. *The merits of demolition;*
   b. *The merits of development that could replace the demolished resource, either as specifically proposed for the site or as allowed under the existing zoning;*
   c. *The effect demolition of the resources would have on the area's desired character;*
   d. *The effect that redevelopment on the site would have on the area's desired character;*
   e. *The merits of preserving the resource, taking into consideration the purposes described in Subsection A; and*
   f. *Any proposed mitigation for the demolition.*

2-3.1 Goal & Policy Evaluation Factor "a" and "b": Merits of demolition with proposed reservoir redevelopment

Proposed Findings:
As noted in Table 2.1: demolition of Reservoirs 3 and 4 and the Weir Building, with proposed redevelopment of Reservoirs 3 and 4 that incorporates historic community planning and engineering values identified in the District Nomination, is supportive of the following comprehensive plan goals:

- Goal 7 Energy
- Goal 8 Environment
- Goal 11 Public Facilities
- Goal 11E Water Service

Section 1-2.1 summarizes the four areas of significance described in the Nomination, two of which are relevant to Demolition Evaluation Factors "a" and "b" as they relate to Goals 7, 8, 11 and 11E:

1. **Community Planning and Development** (economic, political and engineering history of Portland's water system and the importance of the Washington Park Reservoirs in that system);
2. **Engineering** (storage and piping of exceptionally clear water from the Bull Run watershed 30 miles to the east, gravity-fed storage and distribution system, patented reinforced concrete structural design);

Goal 7 Energy

Goal 7 Energy: *Promote a sustainable energy future by increasing energy efficiency in all sectors of the city by ten percent by the year 2000.*

- ***Policy 7.2 Energy Efficiency*** *in City Owned Facilities. The City shall promote cost-effective energy savings (simple paybacks of ten years or less) in municipally-owned buildings and facilities and take advantage of utility, state, and federal technical and financial assistance programs.*
- **Policy 11.37 Energy Conservation** *Pursue system improvements, efficiencies in operation and maintenance of facilities to reduce and conserve energy.*

Proposed Findings: The energy conservation goal, though outdated in terms of its target date, clearly states the city's policy to increase energy efficiency – which includes efficiencies in operation and maintenance of public facilities to conserve energy. Goal 7 and Policies 7.2 and 11.37 look to the future in terms of *increasing* energy conservation. In this case, Portland's water system was designed historically to be extremely energy-efficient because it is powered by gravity rather than electricity and/or fossil fuels. In this case, to be supportive of Goal 7 and Policies 7.2 and 11.37 means not doing anything to diminish the effectiveness of the existing, historic energy-efficient water storage and delivery system.

As documented in Section 1-1.1 Brief History of Portland's Water System, Portland's water supply system has depended on gravity to move water from Bull Run to Washington Park (rather than electric pumps as had been the case when the water facility was privately-owned) for 120 years.[9] If the facility were to revert back to electrical pumps to move water to higher elevation storage levels, the system would use more energy and costs would increase substantially, which would not be supportive of Goal 7 or Policies 7.2 and 11.37. Energy efficiency would decrease rather than increase.

For the layout of the west side system, the Water Committee engineers explained the selection of the location of the Washington Park reservoir site as follows:

> *On account of the elevation of the headworks on Bull Run, the fall required to overcome the friction of the water in the pipe and the allowable pressure on the city mains and the submerged pipe under the Willamette River, the reservoir must be placed at an elevation of about 300 ft. above the base of city grades. By survey made from the southern to the northern boundary of the city, it was ascertained that all the lands at this elevation were on a steep hillside; that the reservoir could only be constructed in ravines in which the required capacity could be obtained by dams of moderate height, and the depression in the City Park was best suited for the purpose of a reservoir, and was the only one into which the water could be discharged without encountering great and almost insuperable difficulties in the extension of the supply main from the crossing of the Willamette River westward. (Water Committee, quoted in D.D. Clarke, 1904)*

[9] Though there has been uphill development necessitating some limited pumping of water uphill, PWB has also placed new tanks wherever possible to serve new development by gravity.

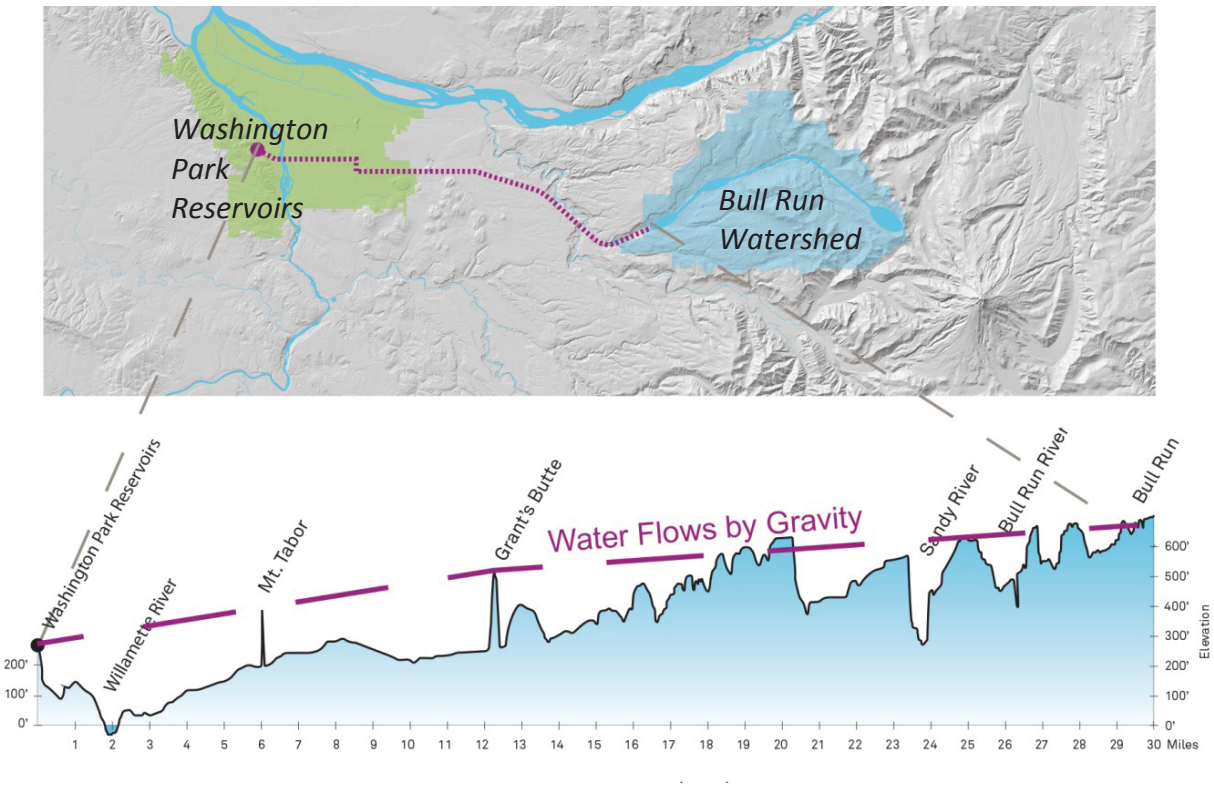


Figure 32. Portland's Gravity Flow Water System

The existing Reservoir 3 location and elevation is extremely cost-effective because electrical energy consumption (and associated costs) is much less when water is delivered by gravity, than when water is delivered using electrical pumps. This is noted in the District Nomination (p. 8-5) which considers the community planning and engineering context of the reservoirs:

> *"The Water Committee hired Colonel Isaac Smith as staff engineer to investigate possible sources. The Committee directed Smith that the Willamette River needed to be replaced as the source and that pumping was prohibitively expensive. With that direction, Smith focused on possible gravity supplies. As Smith explored options that included Oswego Lake, Eagle Creek and Clackamas River, he increasingly was attracted to the Bull Run Lake, River, and its tributaries in the forested mountains east of the city and west of Mount Hood."*

As documented in Section 1-1, the location and elevation of the Washington Reservoir sites were carefully selected to rely on gravity – rather than electric pumps – to provide sufficient storage and pressure to meet westside water demands. In fact, an important reason why the Washington Park Reservoirs are considered to be historically significant is *because* they represented state-of-the art engineering, depended upon a coordinated community planning effort, and resulted in huge energy savings for city and eventually regional water consumers.

As documented in the discussion of Goals 8 and 11 below, Reservoir 3 must be demolished to address landslide and seismic hazards and to maintain a reliable supply of clean water

consistent with EPA rules. In 2002, PWB actively reviewed other potential reservoir sites to determine if it was feasible to leave the existing reservoirs in place and construct a buried reservoir at a different location. This review determined that it was not practicable to relocate the reservoirs to another location and confirmed the original engineering decisions that led to siting Reservoirs 3 and 4 in their current locations.[10]

The contemporary design of the new below-ground reservoir carries on the tradition of state-of-the-art engineering and community planning that led to the construction of a gravity-fed reservoir system in 1894. As documented in Sections 2-3.2 and 2.2.4, Reservoir 4 is no longer needed to store water to serve west-side residents and businesses. Demolishing this reservoir will make room for a large bio-swale and lowland wildlife habitat complex that is necessary to meet existing stormwater management requirements. This storm water detention and water quality facility will reduce energy consumption by relying on natural systems to store and filter stormwater rather than more energy-consumptive systems that rely on concrete and metal stormwater collection, storage and filtering structures. The Weir Building is no longer needed to screen detritus from uncovered reservoirs; removing this building will reduce lighting and heating costs and therefore will reduce energy consumption.

Energy Conservation Conclusion (Policies 7.2 and 11.37)

Reservoir 3 will be reconstructed at its current location and elevation to maintain a gravity-fed system that conserves energy while providing sufficient storage and pressure to westside users. This is consistent with historic community planning and engineering decisions. Maintaining the existing gravity system will *avoid* increased energy consumption and costs, which is supportive of Goal 7 or Policies 7.2 and 11.37. Demolishing Reservoir 4, which is no longer needed to store drinking water, will conserve energy because the drainage basin will be converted to bio-swale that relies on natural systems to store and clean stormwater (rather than energy-consumptive piping and storage). Demolishing the Weir Building, which is no longer needed to screen objects from water, will reduce energy costs for space heating and lighting. Therefore, demolition of Reservoirs 3 and 4 and the Weir Building are supportive of Goal 7 and Policies 7.2 and 11.37.

[10] Moreover, as documented in Section 1-3, retaining the open water reservoirs in their current location would do nothing to address three of the four drivers for this project – the landslide, their age and state of deterioration, and seismic susceptibility. If these basins were retained and filled with water, they would be extremely expensive to maintain under the pressure of the moving hillside, and they would remain inaccessible, because fencing would be required for liability reasons. They would also remain a threat to the safety of downstream residents and businesses in the event of a major earthquake. Finally, if the reservoirs were retained but their storage function was not, the unused and deteriorating reservoirs and associated buildings and structures could not be considered "critical infrastructure." The cost of maintaining these reservoirs and associated water facilities solely as a historical and visual amenity would be high and difficult to justify in terms of PWB's mission as an efficient and fiscally-responsible water service provider.

Goal 8 Environment

Goal 8 Environment: *Maintain and improve the quality of Portland's air, water and land resources and protect neighborhoods and business centers from detrimental noise pollution.*

- ***Policy 8.5 Interagency Cooperation – Water Quality*** *Continue cooperation with federal, state and regional agencies involved with the management and quality of Portland's water resources.*
- ***Policy 8.13 Natural Hazards*** *Control the density of development in areas of natural hazards consistent with the provisions of the City's Building Code, Chapter 70, the Floodplain Ordinance and the Subdivision Ordinance.*

Proposed Findings: **Policy 8.5 Interagency Cooperation – Water Quality** commits the City to cooperating with state and regional agencies involved with the management and quality of Portland's water resources. As documented in the District Nomination, the design and construction of the reservoir system occurred in the context intergovernmental cooperation among President Harrison (who designated the Bull Run Watershed as a national forest reserve), the Oregon Legislature (which adopted special legislation authorizing the city to float local bonds to fund and construct the water system) and the City of Portland (which conceived and executed the water system funding and construction plan).

Today, the Bull Run Watershed remains in pristine condition as a result of federal protection. The US Environmental Protection Agency (EPA) and the Oregon Health Authority (OHA) are responsible for water quality regulations. As documented in Section 1-3, Project Drivers and Locational Considerations, the City must meet EPA and OHA rules, which effectively require covering of open drinking water reservoirs throughout the City. Despite repeated efforts by the City to seek alternatives to the mandates of the LT2 rule, EPA and OHA require that reservoirs be covered by 2020. Therefore, demolition of Reservoir 3 and replacement with a below-ground reservoir is supportive of Policy 8.5.

As documented in Section 1-3, Project Drivers and Locational Considerations, hillside excavation required for the construction of Reservoirs 3 and 4 activated an ancient landslide during reservoir construction and soon after severely damaged both reservoirs. Despite efforts deactivate the landslide by dewatering the hillside, the landslide continues to move slowly into both reservoirs.

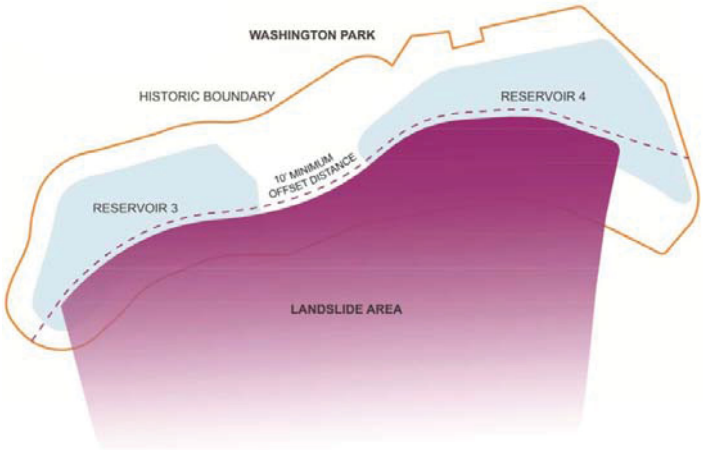


Figure 33 Reservoir Landslide Stability Strategy

Policy 8.13 requires that the City control the density of development in areas with natural hazards consistent with the City's Building Code. Despite repeated

measures to control the persistent landslide, it continues to cause serious problems for reservoir functionality and maintenance in their existing locations at the base of the slide.

Figure 34 shows that both reservoirs must be moved at least 10 feet away from the base of the slide. The City's strategy is to increase the stability of the landslide above Reservoirs 3 and 4 by restoring, with new backfill, the mass of soil removed by the original reservoir excavation. The restored fill on the toe of the slide at the Reservoir 4 site will help slow the overall slide movement above both Reservoirs 3 and 4.

Proposed Reservoir 3 would be shifted east, at least 10 feet away from base of the historic landslide. Reservoir 3 would be backfilled and a buttress fill would be placed on the slope between the reservoir and the upper leg of SW Murray Street. A "compressible inclusion" consisting of expanded polystyrene or air pocket will be placed between the landslide mass and the new Reservoir 3's west wall to isolate the reservoir structure from the active slide. Future landslide movements would be absorbed by the compressible inclusion or air pocket.

As noted in Section 1-3.1, landslides have caused damage to Reservoirs 3 and 4 since they were constructed in the 1890s. Even if Portland was not required to cover its reservoirs, the persistent landslide problem would still need to be addressed.

- If Reservoir 4 were not demolished, the slope could not be stabilized by filling in the toe of the excavated slope that extends into the old Reservoir 4 basin. If Reservoir 4 remained in place, the existing landslide conditions would remain and the aging basin structure would continue to deteriorate and incur damage from predictable earth movement.
- If Reservoir 3 were not demolished, it would remain vulnerable to earth movement and there would be no room to construct the intervening "compressible inclusion" or air pocket described above. By replacing Reservoir 3 with a new, buried reservoir located away from the toe of slide, and creating room for the compressible inclusion or air pocket, landslide hazards can be effectively mitigated.
- As documented in Part 1, the Weir Building must be removed to allow large-scale excavation and shoring needed to replace Reservoir 3 and to preserve Gatehouse 3. The screening function of the Weir Building is no longer needed because water will be stored below ground.

As documented in Section 1-3, the proposed buried Reservoir 3 is designed to withstand a major earthquake. The aging and deteriorating reservoirs are not. If there were a major earthquake, the existing reservoirs would likely fail and cataclysmic downstream flooding could occur. Portland's Westside water supply would be disrupted for an extended period.

Environmental Policy Conclusion (Goal 8)

The proposed demolition of Reservoir 3 and replacement with a below-ground reservoir is supportive of **Policy 8.5** because the City is obligated to cooperate with EPA and OHA in the implementation of the LT2 rule. The proposed demolition of Reservoirs 3 and 4, and the Weir Building, is supportive of **Policy 8.13 Natural Hazards** because the existing reservoirs are highly

vulnerable to ongoing landslide activity and the potential for a major earthquake, whereas replacement facilities will be designed to withstand both types of hazards with much less risk to the public or interruption of water service.

Goal 11 Public Facilities / Goal 11 E Water Service

Goal 11 Public Facilities*: Provide a timely, orderly and efficient arrangement of public facilities and services that support existing and planned land use patterns and densities.*

- ***Policy 11.1 Service Responsibility****: Within its boundaries of incorporation, the City of Portland will provide, where feasible and as sufficient funds are available from public or private sources, the following facilities and services at levels appropriate for all land use types: * * * 6 – Water Supply*

Goal 11 E Water Service*: Insure that reliable and adequate water supply and delivery systems are available to provide sufficient quantities of high quality water at adequate pressures to meet the existing and future needs of the community, on an equitable, efficient and self- sustaining basis.*

- ***Policy 11.26 Quality*** *Maintain the quality of the water supply at its current level, which exceeds all state and federal water quality standards and satisfies the needs of both domestic and industrial consumers.*
- ***Policy 11.28 Maintenance*** *Maintain storage and distribution facilities in order to protect water quality, insure a reliable supply, assure adequate flow for all user needs, and minimize water loss.*
- ***Policy 11.29 Storage*** *Maintain city storage capacity of at least three times the average daily use of city users. Additional storage capacity contracted by outside-city water users will also be maintained.*
- **Policy 11.31 Design and Community Impact** Design water facilities to be compatible with the area in which they are located.
- ***Policy 11.36 Water Pressure*** *Provide water at standard pressures (40 to 110 lbs. per square inch) to all users whenever possible.*

Proposed Findings: Portland has a broad commitment to providing public facilities in general, and water facilities in particular, at levels adequate to serve "all land use types" to support planned development within its boundaries. PWB's mission (quoted below) effectively *is* to carry out **Goal 11E Water Service** by equitably and efficiently providing a reliable, adequate and high quality water supply and delivery system at adequate pressures to meet future community needs.

"The Portland Water Bureau provides the highest quality water, customer service and stewardship of the critical infrastructure, fiscal, and natural resources entrusted to our care. We enhance public health and safety and contribute to the economic viability and livability of the Portland metropolitan region. We are a recognized leader among water service agencies across the country."

Policy 11.1 Service Responsibility commits the city to funding appropriate levels of water infrastructure. The city has allocated sufficient funds for redevelopment of the reservoirs as

called for in the Design Concept plan. However, it would be an inefficient use of public funds to continue to repair the 120-year old reservoir basins in the face of ongoing landslide activity and under the threat of potential catastrophic earthquakes.

Policy 11.26 Water Quality commits the City to exceed state and federal water quality standards. The clarity and purity of water in the Bull Run Watershed provided the original impetus for the design of Portland's water reservoir and distribution system. For PWB to continue to "exceed all state and federal water quality standards," the EPA and the OHA have required that the uncovered finished drinking water reservoirs be covered.[11] As documented in Section 1-3.2, a critical driver of this project is the federal mandate to cover open water reservoirs.

Policy 11.28 Maintenance commits PWB to maintaining water storage and distribution facilities to protect water quality, insure a reliable supply, assure adequate flow for all user needs, and minimize water loss. PWB interprets this policy as applying broadly to the overall system recognizing that aging infrastructure must be replaced as it approaches the end of its useful life. As documented in Section 1-3, PWB assessed the condition of Washington Park reservoir structures in 1997 and again in 2001. The assessments concluded that the more than 100 year old reservoirs and structures were nearing the end of their useful service lives and had been substantially altered over the years. In order for the existing reservoirs to continue in service, they would require significant and costly maintenance and retrofitting to address deterioration of materials due to age and ongoing landslide damage. The assessments concluded that the reservoirs eventually would need to be completely replaced to continue to perform their function efficiently.

Policy 11.29 Storage commits the city to maintaining "at least three times the average daily use of city users." This policy is outdated because the city now has additional storage capacity in its underground wells. Reservoir 4 has not been needed to store water to serve the westside for several years. Loss of Reservoir 4 capacity will not jeopardize the city's ability to provide city or regional water needs because this lower elevation reservoir served the industrial areas along the Willamette River in Northwest Portland. As the industries changed and their water use declined, the water storage capacity required at Reservoir 4 also declined. The reduced demand and additional storage provided at other sites allow the total capacity at the Washington Park site to be reduced to the proposed Reservoir 3 capacity. As a result, Reservoir 4 is no longer needed to store drinking water, and will be disconnected from the public water system. Reservoir 4 already is little-used and often holds no drinking water. For these reasons, this policy should be given relatively little weight in determining whether to demolish Reservoirs 3 and 4.

[11] As documented in Part 1, it is impracticable to treat water at reservoir outlets. Moreover, construction of new, industrial facilities within Washington Park would inconsistent with the purpose of the Washington Parks Historic District and incompatible with the open space character of Washington Park.

Policy 11.31 Design and Community Impact commits PWB to designing facilities that are compatible with the area – in this case the potentially affected area shown on Figure 31. As explained in Section 1-4, the preferred Design Concept resulted from an extensive public and neighborhood involvement process that considered several design alternatives and their effects on the area. The results of this process was considered by the HLC in three design advice work sessions and incorporated into the preferred Design Concept. The Design Concept (Figure 25) recognizes the importance of incorporating accessible open water features into the park design, as called for in the original Olmsted report. The Design Concept shows the design of accessible surface water features that will replace the existing reservoirs, which will help ensure ongoing neighborhood compatibility.

Rehabilitating the highly-visible dams and gatehouses was extremely important to ensuring compatibility with the area, and was strongly supported by participants in the public involvement process. As described further in Section 2-3.2 and as shown on the Design Concept, Dams 3 and 4 and Gatehouses 3 and 4 are prominent examples of Ransome's patented concrete engineering and rusticated, Romanesque style. The engineering importance of these structures is recognized throughout the District Nomination. All four of these highly-visible historic resources will be rehabilitated and restored in the Design Concept.

Even *if* Reservoirs 3 and 4 could be retained in place with a tarp-like cover that could satisfy the EPA, they would not serve the critical historical and aesthetic open water functions originally envisioned in the Olmsted Plan and called for in the Washington Park Master Plan. Moreover, the result would be entirely inconsistent with the consensus from the community outreach process. As documented in Section 1-4 (Public Involvement Process), the CSB, the HLC, the American Institute of Architects all agreed that covering the existing reservoirs without providing for large expanses of accessible, open water was unacceptable from a design and area compatibility standpoint. Moreover, the **Washington Park Master Plan Policy 3** specifically calls for providing shallow open water in the event that covering the reservoirs becomes necessary.

Both the Washington Park Reservoirs Historic District Nomination and the Washington Park Master Plan include a quote from Frederick Law Olmsted, Jr. that recognizes the critical benefits provided by *open and accessible water* in an urban park setting:

> *"All reservoirs, have, in addition to their essential quality of storing water, an element of landscape effect; namely, that of an expanse of clear, sparkling water. This same element forms the chief feature of many landscapes in public parks, where it is created at large cost, and it is clearly a thing of great value to the public when it can be made available. In itself, regardless of its outline or setting, a body of water is beautiful and refreshing, and its value to the public is so well recognized that provision is very often made for giving the public access to the enclosure about a reservoir, whence its surface may be seen."*
>
> Frederick Law Olmsted, Jr. *The Relation of Reservoirs to Parks*. (Boston: Rockwell and Churchill Press, 1899.)

As documented in Section 1-3, simply covering the reservoirs without regard for the deteriorating state of the reservoir basins and their vulnerability to landslides and earthquakes would be a temporary expedient at best. Such a short-term approach would not address these underlying issues and would be fiscally irresponsible in the long run. Importantly, covering the reservoirs without providing accessible, open water would be inconsistent with Policy 11.31, which directs the City to design water facilities to be compatible with the area in which they are located.

Policy 11.36 Water Pressure commits PWB to maintaining adequate water pressure to users wherever possible. Reservoir 4 is no longer in service. Both the existing Reservoir 3 and its proposed replacement are designed to maintain adequate water pressure for the westside service area. For reasons discussed under Goal 7 Energy below, maintaining adequate water pressure for the west-side service area depends upon reconstructing Reservoir 3 at its current location and elevation. However, the new Reservoir 3 will provide much more reliable service over time, and will not be as vulnerable to natural hazards, vandalism or pollution as the existing reservoir.

Public Facility Conclusion (Goals 11 and 11E)

Demolition of Reservoirs 3 and 4 is necessary to carry out the policy directives found in Goal 11 Public Facilities and Goal 11E Water Service by insuring that reliable and adequate water supply and delivery systems are available to provide sufficient quantities of high quality water at adequate pressures to meet the existing and future needs of the community. To meet this goal, the City must comply with EPA and the OHA rules related to water quality; the most effective way to do this is to cover existing open water reservoirs. The preferred Design Concept is based on extensive community input and HLC advice, and ensures that EPA and OHA requirements can be met while maintaining the aesthetic and accessible open water function that was originally envisioned in the Olmsted Plan and called for in the Washington Park Master Plan.

Overall Conclusion with Respect to Demolition Evaluation Factors "a" and "b" and Related Policies

Demolition of Reservoirs 3 and 4, and redevelopment with facilities shown on the Design Concept, is supportive of comprehensive plan goals and policies related to natural hazards, provision of an abundant supply of high-quality drinking water that complies with EPA rules, and maintaining/increasing energy efficiency associated with gravity powered water storage and distribution system. The demolition and replacement facilities as shown on the Design Concept maintain the historical gravity-fed engineering concept and honor the community planning tradition that led to the funding and design of the exceptional Portland's water supply and distribution system.

- **Natural Hazard Mitigation**: The proposed demolition of Reservoirs 3 and 4 and the Weir Building is supportive of Policy 8.13 Natural Hazards because the existing reservoirs are highly vulnerable to ongoing landslide activity and the potential for a major earthquake, whereas the redeveloped facilities will be designed to withstand both types of hazards with much less risk to the public or interruption of water service. Proposed demolition

of Reservoir 3 and replacement with a below-ground reservoir is supportive of Policy 8.5 Interagency Coordination because the City is cooperating with EPA and OHA to meet applicable agency rules.

- **Reliable Water Service**: Demolition of Reservoirs 3 and 4 is necessary to carry out the policy directives found in Goals 11 Public Facilities and 11E Water Service by insuring that reliable and adequate water supply and delivery systems are available to provide sufficient quantities of high quality water at adequate pressures to meet the existing and future needs of the community. Because providing drinking water infrastructure is an essential city service, support of 11E Water Service should be given substantial weight in this review process, when compared with other applicable goals and policies.
- **Energy Conservation**: Demolition and reconstruction of Reservoir 3 at its current location and elevation is necessary to maintain a gravity-powered system that conserves energy while providing sufficient storage and pressure to westside water users. Maintaining the existing gravity system will *avoid* increased energy consumption and costs. Demolishing Reservoir 4 will allow this facility to be converted to a bio-swale that relies on natural systems to store and clean stormwater (rather than energy-consumptive piping and storage). Demolishing the Weir Building, which is no longer needed to screen objects from water, will reduce energy costs for space heating and lighting. Therefore, demolition of Reservoirs 3 and 4 and the Weir Building are supportive of Goal 7 and Policies 7.2 and 11.37.

2-3.2 Goal and Policy Evaluation Factors "b", "d" and "f": Merits of replacement development with proposed mitigation and effects of both on area's desired character

Proposed Findings: As noted in Table 2.1: proposed replacement of demolished historic resources, rehabilitation of existing historic resources, and mitigation shown on the Design Concept (a) incorporates key historic architectural, recreational and entertainment values identified in the District Nomination, (b) will have a positive effect on the area's desire historic and open space character, and (c) is supportive of:

- Goal 3 Neighborhoods,
- Goal 6 Transportation,
- Goal 8 Environment,
- Goal 9 Citizen Involvement,
- Goal 11F Parks and Recreation (including the Washington Park Master Plan), and
- Goal 12 Urban Design.

Section 1-2.1 summarizes the four areas of significance described in the Nomination, two of which are relevant to Demolition Evaluation Factors "b", "d" and "f" as they relate to Goals 3, 5, 8, 9, 11F and 12:

1. **Architecture** (classical Romanesque style, naturalistic setting in a ravine above the city, careful attention to viewpoints, carriageways and pathways to provide access to open water amenities, and beautifully designed lamp-posts, wrought iron fencing and gates);

2. **Entertainment and Recreation** (open and accessible water to provide a scenic respite from urban living, reservoirs incorporated as scenic and recreational amenities in an urban but naturalistic park).

The Design Concept shows that replacement development with mitigation measures recognizes and incorporates historic architectural, entertainment and recreation values and will have a positive effect on the desired character of the area. Section 1-3.4 describes the specific redevelopment proposal (the Design Concept shown on Figure 35 below) that resulted from an extensive public involvement process and three HLC design advice work sessions.

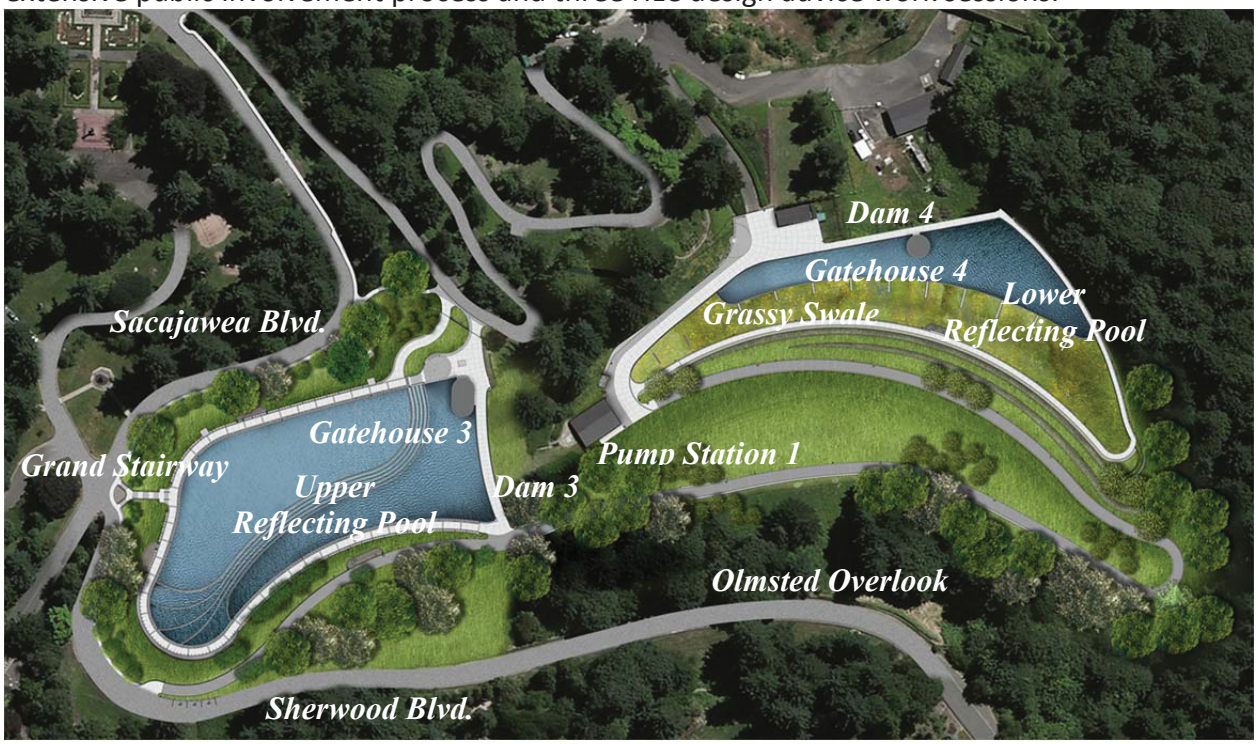


Figure 34. Proposed Design Concept

The uses envisioned in the Design Concept are allowable in the OS zone. In summary, the Design Concept:

- Addresses the project drivers (i.e., historic landslide, safe drinking water rules, aging infrastructure and seismic susceptibility);
- Provides accessible, open water with views of the Vista Bridge to complement other recreational and open space uses in Washington Park; and
- Respects and preserves as much as possible of the historic character of the site.

Goal 3 Neighborhoods / Goal 9 Citizen Involvement

Goal 3 Neighborhoods*: Preserve and reinforce the stability and diversity of the City's neighborhoods while allowing for increased density in order to attract and retain long-term residents and businesses and insure the City's residential quality and economic vitality.*

- ***Policy 3.1Physical Condition*** *Provide and coordinate programs to prevent the deterioration of existing structures and public facilities.*

- ***Policy 3.5 Neighborhood Involvement*** *Provide for the active involvement of neighborhood residents and businesses in decisions affecting their neighborhood through the promotion of neighborhood and business associations. Provide information to neighborhood and business associations, which allows them to monitor the impact of the Comprehensive Plan and to report their findings annually to the Planning and Sustainability Commission.*
- ***Goal 9 Citizen Involvement****: Improve the method for citizen involvement in the on-going land use decision-making process and provide opportunities for citizen participation in the implementation, review and amendment of the adopted Comprehensive Plan.*
- ***Policy 9.1 Citizen Involvement Coordination*** *Encourage citizen involvement in land use planning projects by actively coordinating the planning process with relevant community organizations, through the reasonable availability of planning reports to city residents and businesses, and notice of official public hearings to neighborhood associations, business groups, affected individuals and the general public.*

Proposed Findings: Section 1-3.1 documents the extensive damage caused by landslides soon after reservoir construction. Table 1.1 documents the existing condition of historic resources and proposes specific rehabilitation measures. Section 1-4.4 describes the Design Concept and shows the proposed redevelopment plan for Reservoirs 3 and 4, proposed preservation or rehabilitation of the eight remaining historic resources, and proposed mitigation measures. Figures 20-24 show the changes that have occurred to historic resources within the District from 1894 through today and provide a graphic and written summary of proposed redevelopment, rehabilitation and mitigation plans.

In support of **Policy 3.1**, PWB has repeatedly repaired Reservoir 3 and 4 basins and parapet walls in response to persistent landslide activity. The City made extensive efforts to improve hillside drainage above the reservoirs in 1905 – which was moderately successful in reducing, but not eliminating landslide damage. The doors and windows of the 1946 Weir Building have been replaced. Other historic resources have been repaired over the years to prevent further deterioration. Nevertheless, the reservoirs in the Historic District are now 120 years old and at the end of their useful lives. Given persistent landslide activity and the threat of a major earthquake, there is little the City can do to prevent further deterioration of the two existing reservoirs in their current location. However, as shown on the Design Concept, Table 1.1 and Figures 20-24, PWB proposes systematic rehabilitation and/or preservation of the eight remaining historic resources on the site, which is supportive of Policy 3.1 and consistent with the preservation of classical Romanesque structures of historical architectural values in the District. Moreover, the new facilities that replace Reservoirs 3 and 4, require less maintenance because of landslide and earthquake resistant design. The Weir Building is no longer needed to screen surface water from Reservoir 3 and will require no maintenance. The screening function of the Weir Building is no longer required because drinking water in Reservoir 3 will be covered and, therefore, will be less susceptible to foreign materials accumulating in the reservoir – which will also reduce maintenance requirements.

Policies 3.5, Goal 9 and Policy 9.1 all require coordination with neighborhood groups and citizens in the planning process and effective programs to ensure meaningful public involvement. Section 1-4.1 describes the active and extensive public involvement process that led to a consensus recommendation to redevelop the reservoirs generally as shown on Figure 35. Since June 2013, the Washington Park Reservoir Improvements Project team has conducted stakeholder interviews, met nine times with the CSB, briefed seven Neighborhood Associations/Coalitions, met with a historic advocacy group and presented the project to the HLC four times (one briefing and three Design Advice requests). The Design Concept is based on advice from the HLC to preserve historic architectural, recreational and entertainment values of the District – as discussed in Part 1 and in the text related to Goal 12 Urban Design. Outreach has included sending mailers to neighboring addresses, media and press releases, outreach in Washington Park, open tours of the site, and three rounds of public open houses (both in-person and online open houses).

In addition to presentations at neighborhood association meetings, this public involvement process included area neighborhood association representation on the Community Sounding Board from the following associations:

- Arlington Heights NA
- Goose Hollow NA
- Northwest Heights NA
- Sylvan-Highlands NA
- Northwest District Association
- Neighbors West Northwest

Public Involvement Conclusion (Goals 3 Neighborhoods and 9 Citizen Involvement)

The proposed Design Concept resulted from an extensive community and neighborhood involvement program. The primary vehicle for public outreach was the Community Sounding Board, which included representatives from area neighborhood and district associations. Therefore, the process leading to broad agreement regarding the Design Concept is supportive of Goal 3 as implemented by Policy 3.5 Neighborhood Involvement, and Goal 9, as implemented by Policy 9.1 Citizen Involvement Coordination.

Policy 3.1 Physical Condition requires the City to provide and coordinate programs to maintain public facilities such as the reservoirs. Despite extensive repair and maintenance efforts over the last 120 years, the reservoirs have reached the end of their useful life and cannot withstand continued damage from landslides or potential damage from a major earthquake. The original functions of Reservoir 4 and the Weir Building are now obsolete. The proposed demolition is supportive of Policy 3.1 because these structures cannot practicably be maintained and their replacement facilities will require much lower maintenance costs in the future. The Design Concept shows that eight of the 11 remaining historic resources will be systematically rehabilitated and restored, which is supportive of Policy 3.1.

Goal 6 Transportation / Urban Design Policies 12.4 & 12.5

Goal 6 Transportation: *Develop a balanced, equitable, and efficient transportation system that provides a range of transportation choices; reinforces the livability of neighborhoods; supports a strong and diverse economy; reduces air, noise, and water pollution; and lessens reliance on the automobile while maintaining accessibility.*

- ***Policy 6.22 Pedestrian Transportation*** *Plan and complete a pedestrian network that increases the opportunities for walking to shopping and services, schools and parks, employment, and transit.*
- ***Policy 6.23 Bicycle Transportation*** *Make the bicycle an integral part of daily life in Portland, particularly for trips of less than five miles, by implementing a bikeway network, providing end-of-trip facilities, improving bicycle/transit integration, encouraging bicycle use, and making bicycling safer.*
- ***Urban Design Policy 12.4 Provide for Pedestrians*** *Portland is experienced most intimately by pedestrians. Recognize that auto, transit and bicycle users are pedestrians at either end of every trip and that Portland's citizens and visitors experience the City as pedestrians. Provide for a pleasant, rich and diverse experience for pedestrians. Ensure that those traveling on foot have comfortable, safe and attractive pathways that connect Portland's neighborhoods, parks, water features, transit facilities, commercial districts, employment centers and attractions.*
- ***Urban Design Policy 12.5 Pathways:*** *Develop clearly designated pedestrian and bicycle pathways as means of reducing reliance on energy-consuming modes of travel within the park.*

Proposed Findings: The following discussion considers four transportation-related policies from Goal 6 Transportation and Goal 12 Urban Design. The Washington Park Reservoirs National Register Nomination discusses the importance of *accessible* open water to Olmsted's original park design (pp. 8-1 and 8-2):

> *"The carriageways and walkways provided accessibility making the reservoir site a recreational destination…From above Reservoir 3, the site included a view of Mount Hood and the vicinity of the Bull Run watershed, connecting citizens not only with the water itself, but the region from where the water flowed. The elegance of the built environment illustrated sensitivity to aesthetics and embodied the notion of 'beautility' by adapting classical architectural styles to utilitarian structures that featured innovative technology. The reservoirs elevated the storage and distribution of water by enhancing water's highly prized characteristics in a landscape. They served as a recreational amenity as well, enriching the landscape of two of Portland's largest and oldest parks with vistas of deep open water and period historic structures, and fountains to create a destination for inspiration and rejuvenation for park users."*

For safety, liability and water quality reasons, PWB enclosed the reservoirs with a chain link fence, which limits access to the vulnerable water supply. The unused Grand Stairway became overgrown with vegetation. The old carriageway and walkway remain in place but inaccessible to the general public. As documented in the National Register Nomination (7-3)

"In the 1970s, the Water Bureau encircled the basin with freestanding aluminum fixtures with conical shades and ceased to use the historic arc lamps. The parapet wall has some cracking, spalling and efflorescence. The wrought iron fence is sound but the finish shows distress…A concrete walkway surrounds the parapet wall and was intended to serve as a promenade, while draining storm water away from the reservoir. At the north end of the basin a wide flight of concrete steps, flanked by concrete jardinieres, connects the walkway to one of the principal drives through Washington Park. The chain link fence now enclosing the reservoirs blocks the stairs at the top and the stairway and jardinieres are overgrown with ivy. Along the walkway east of the basin is a poured-in-place, reinforced concrete wall cast and finished to look like stone. The walkway shows the effects of the landslide with cracking, buckling and some spalling especially on the west side. Overall, it is in good condition."

As shown on Figure 36, the trail system that serves the reservoir site is part of larger system of Washington Park roads and trails, which is supportive of transportation policies that promote multi-modal transportation options. The Washington Park Master Plan describes the park's prominent link to the 40-Mile Loop Trail, part of a regional park and trail system that would one day link up with state and national trail systems and provide ready access to a wide variety of recreational opportunities for city residents. Washington Park's section of the Wildwood Trail is part of the 40-Mile Loop system, and the park is connected by the Wildwood Trail to other parks north and south, including Pittock Acres and Forest Park. The Washington Park Master Plan calls for expanded pathway systems to improve pedestrian and bicycle options, provide greater safety and connectivity, and increase opportunities for outdoor recreational use of the park and regional trail system.

To mitigate the loss of the reservoir basins and as shown on the proposed Concept Plan, PWB proposes several measures that improve access to the reservoirs and park trail system, and improve the pedestrian experience:

1. Re-open public access to the redeveloped water features that will replace the two demolished reservoirs.
2. Re-construct portions of the parapet walls around the reservoirs, rehabilitate a portion of the ornamental fencing and lamp posts, and incorporate these historic elements into the project design. Re-construct existing walkways around both reservoirs and restore historic access points and walkways at or near their original location.
3. Re-construct and widen the grand staircase that provides access to the site and a significant view over Reservoir 3.

As indicated on Figure 36, PWB also proposes to re-open public access to and through the site, improving connectivity with other parts of the park, including the Wildwood Trail (40-mile Loop). The original Olmsted plan emphasized the view over the city from the hill above Reservoir 4. The view is now partially obscured by a fence and vegetation and goes unnoticed by the casual passer-by. PWB proposes to open up the Olmsted viewpoint by lowering the fence on the slope and trimming back overgrown vegetation.

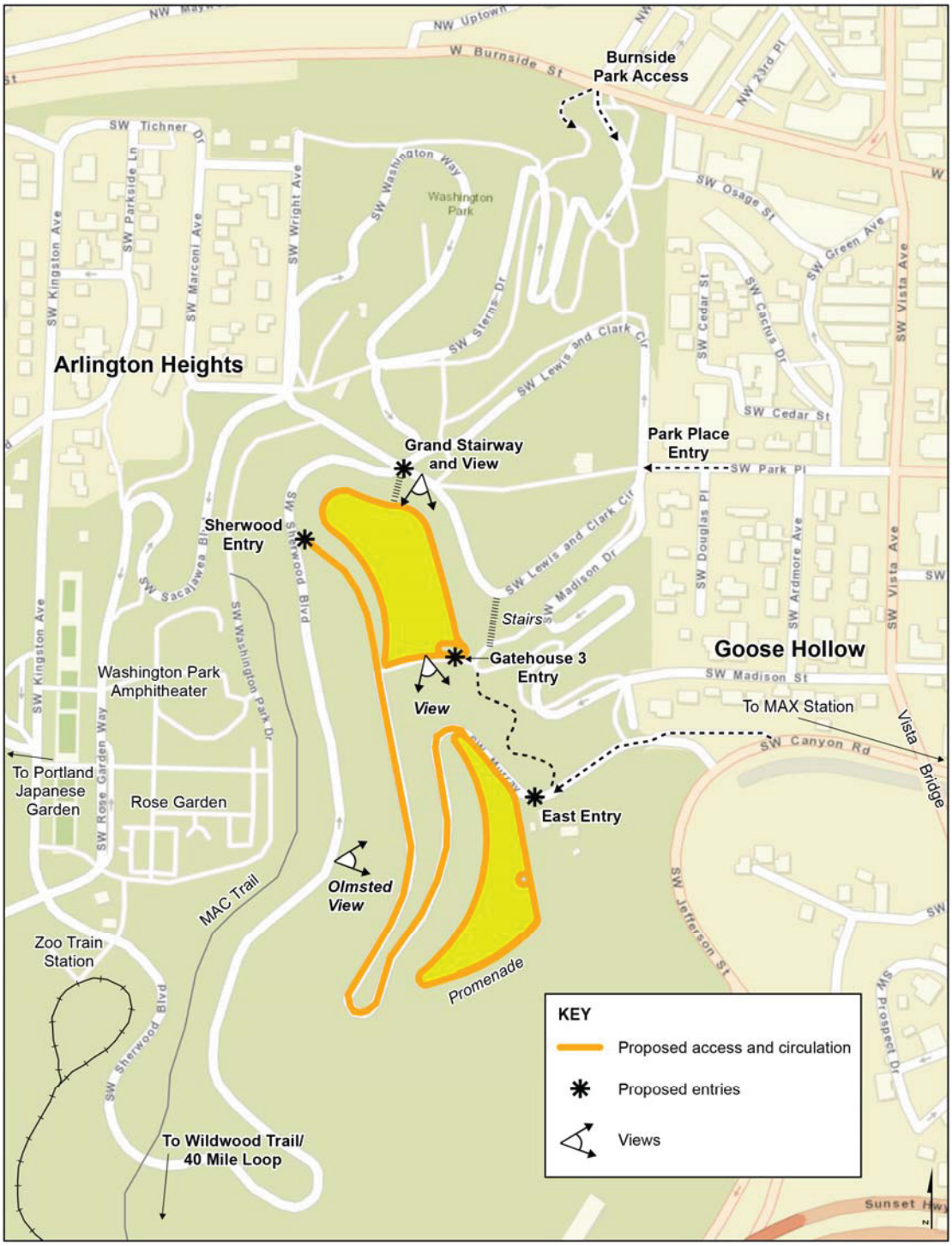


Figure 35. Proposed Access and Circulation

Transportation Conclusion (Goal 6 Transportation / Urban Design Policies 12.4 & 12.5)

Figure 36 shows access and circulation improvements that are proposed as part of the Design Concept. These improvements will restore access to the redeveloped reservoirs and to open water associated with them. Proposed improvements will also enhance the pedestrian experience within the Historic District and enhance bicycle and pedestrian connectivity throughout Washington Park. Transportation improvements proposed as part of the Design Concept are, therefore, supportive of Goal 6 Transportation and transportation-related policies of Goal 12 Urban Design.

Goal 8 Environment

Goal 8 Environment*: Maintain and improve the quality of Portland's air, water and land resources and protect neighborhoods and business centers from detrimental noise pollution.*

- **Policy 8.14 Natural Resources** Conserve significant natural and scenic resource sites and values through a combination of programs which involve zoning and other land use controls, purchase, preservation, intergovernmental coordination, conservation, and mitigation. Balance the conservation of significant natural resources with the need for other urban uses and activities through evaluation of economic, social, environmental, and energy consequences of such actions.
- **Policy 8.16 Uplands Protection** Conserve significant upland areas and values related to wildlife, aesthetics and visual appearance, views and sites, slope protection, and groundwater recharge. Encourage increased vegetation, additional wildlife habitat areas, and expansion and enhancement of undeveloped spaces in a manner beneficial to the city and compatible with the character of surrounding urban development.
- **Policy 8.17 Wildlife Habitat** Conserve significant areas and encourage the creation of new areas, which increase the variety and quantity of fish and wildlife throughout the urban area in a manner compatible with other urban development and activities.

Proposed Findings: The proposed Design Concept is supportive of Goal 8 Environment and the implementing policies listed above. The Design Concept plan minimizes impacts to significant natural resources with an Environmental Protection (P) or Environmental Conservation (C) overlay. The proposal also provides upland protection by stabilizing the slope above the two reservoirs. The native vegetation and associated wildlife habitat would be lost if there were a major slope failure.

Policy 8.14 Natural Resources is implemented through the City's adoption of environmental and scenic overlay zones to portions of the project site in the early 1990s. The City completed an Economic, Social, Environmental, and Energy (ESEE) consequence analysis as directed by the policy. Thus, the policy has been implemented by the City and its implementing overlay zones will be fully addressed through a separate Type III land use review. **Objective C. Impact Avoidance** is supported because redevelopment of the site is proposed to occur in previously disturbed areas with minimal incursion into natural and scenic resource areas. Scenic views from the Sacajawea scenic corridor will be enhanced by the lowering of the perimeter fence and the restored access to views from the top of the Grand Stairway. When the redevelopment

plan is completed, any unavoidable impacts to natural and scenic resources will be minimized and mitigated following the requirements of the scenic and environmental overlay zones. Any such potential impacts will be reviewed as part of the Type III review with a public hearing before a Portland Hearings Officer. **Objective K. Enhancing View Corridors** is supported because views from the Sacajawea scenic corridor, and the Grand Stairway in particular, will be reopened to the public. In addition, unsightly electrical and other utility conduits, light posts and other modern additions to the historic district will be removed or placed underground.

Policies 8.16 Uplands Protection and 8.17 Wildlife Habitat are supported by the redevelopment of a portion of Reservoir 4 from a concrete reservoir to a lowland habitat complex, and by extensive native plantings on upland slopes throughout the area. Reservoir 4 was constructed as a drinking water storage basin. It primarily served the industrial areas along the Willamette River in Northwest Portland. As the industries changed and their water use declined, the water storage capacity required at Reservoir 4 also declined. As a result, Reservoir 4 is no longer needed to store drinking water, and will be disconnected from the public water system. Reservoir 4 already is little-used and often holds no drinking water.

Operationally, the new buried Reservoir 3 and all associated development must meet requirements that did not exist when the open reservoirs were originally built. These requirements include the following:

1. Manage stormwater runoff volumes, rates, and quality;
2. Manage the flow rate and water quality of discharges from cleaning the buried reservoir and water features; and
3. Detain and manage overflow from the covered reservoir, if one should occur.

Figure 36. Reservoir 4 Current View vs Design Concept

Meeting these stormwater management standards requires space on the site, below the elevation of the new Reservoir 3. Creation of above-ground, stormwater management

facilities with native plantings is supportive of Policy 8.17 Wildlife Habitat. The landslide severely limits the on-site area available for these important functions, but there is enough room at the Reservoir 4 site. The physical area needed to serve the stormwater, overflow, and de-chlorination functions is smaller than the current Reservoir 4 footprint, even after moving outside the path of the landslide.

The proposed new water quality and stormwater facility at Reservoir 4 allows materials used to infill the basin to serve the dual purposes of water quality treatment and water detention. Water soaks into the basin topsoil and is taken up by planted vegetation within the treatment area, with any excess water discharging into the stormwater system. The proposed vegetation will be native, lowland habitat plantings.

The proposal to re-establish the hillside's contours and redevelop the Reservoir 4 basin in part for stormwater functions allows Reservoir 4 to continue to serve the City's water system. This approach will also preserve the Gatehouse 4, Dam 4, and some of the historic wrought iron fencing and walkways, which helps to preserve historic architectural, recreational and entertainment values identified in the District Nomination. As shown on the Design Concept, a large and accessible open water pool will be re-created at the Reservoir 4 site, thus maintaining the historic relationship of open water, the prominent historic dam and gatehouse – which in turn retains important historic views, experiences, and character-defining features.

Environment Conclusion (Goal 8)

The Design Concept is supportive of **Goal 8 Environment** because the quality of Portland's water resources will improve by redeveloping Reservoir 4 to serve as a stormwater detention and water quality facility. The Design Concept is supportive of **Policy 8.14 Natural Resources** because it avoids natural and scenic areas of the site. Scenic views from the Sacajawea scenic corridor will be enhanced by the lowering of the perimeter fence and the restored access to views from the top of the Grand Stairway. The Design Concept is supportive of **Policy 8.16 Uplands Protection** because it minimizes impacts to significant natural resources with an Environmental Protection (P) or Environmental Conservation (C) overlay. The proposal also provides upland protection by stabilizing the slope above the two reservoirs. The native vegetation and associated wildlife habitat would be lost if there were a major slope failure. The Design Concept is supportive of **Policy 8.17 Wildlife Habitat** due to planned redevelopment of a portion of Reservoir 4 from a concrete reservoir to a lowland habitat complex, and planned use of native plants in landscape areas throughout the Historic District. By retaining open water, historic architectural, recreational, scenic and entertainment values described in the District Nomination are maintained.

Goal 11 F Parks and Recreation

> ***Goal 11 F Parks and Recreation****: Maximize the quality, safety and usability of parklands and facilities through the efficient maintenance and operation of park improvements, preservation of parks and open space, and equitable allocation of active and passive recreation opportunities for the citizens of Portland.*

- ***Policy 11.38 Master Development Plans*** *Maintain master development plans for city parks that address user group needs, development priorities, development and maintenance costs, program opportunities, financing strategies and citizen involvement.*
- ***Policy 11.39 Maintenance*** *Provide programmed preventive maintenance to all city park and recreational facilities in a manner, which reduces unplanned reactive maintenance and emphasizes the use of scheduled service delivery.*

Washington Park Master Plan (1981)

Policy 3: Reservoirs

A. *Move the chain-link fence around the reservoirs to less unsightly position lower on the slope.*
B. *If the reservoirs are covered, flood the covered area with shallow water to preserve their traditional attractive appearance.*

Proposed Findings: PP&R participated in the Community Sounding Board process to ensure consistency with the Washington Parks Master Plan and with **Goal 11F Parks and Recreation**. The Design Concept supports **Goal 11F Parks and Recreation** and **Policy 11.39 Maintenance** by maximizing the quality and usability of park improvements managed by PWB within the Historic District and reducing future maintenance costs by demolishing deteriorating reservoirs, through historically-sensitive and landslide-resistant redevelopment of Reservoirs 3 and 4, and by preserving or rehabilitating the eight remaining historic resources in the District. The safety and usability of Washington Park will be increased by reconstructing the Grand Stairway and reconstructing Reservoir 3 to reduce potential earthquake damage. The usability of Washington Park will be improved by providing pedestrian access to the two open water features for the first time in many years, and reconstructing existing paths, parapet walls, lighting and fencing to improve the pedestrian experience and improve access for disabled people. The Design Concept does not change the balance between passive and active recreational experiences in Washington Park or the amount of open space in the park. The Design Concept simply improves passive recreational opportunities within the Historic District portion of the park and makes existing open space more accessible.

The Design Concept supports **Policy 11.39 Master Development Plans** by explicitly recognizing policy direction provided in the Washington Park Master Plan that addresses user group needs, development priorities, development and maintenance costs, program opportunities, financing strategies and citizen involvement. The Design Concept supports **Policy 3 of the Washington Park Master Plan** because (a) portions of the chain link fence will be moved and the reservoirs will generally be accessible for viewing and strolling during daylight hours when the park is open; and (b) the below-ground Reservoir 3 will have an attractive, visible surface water feature above it.

Park and Recreation Conclusion (Goal 11F)

The Design Concept supports **Goal 11F Park and Recreation** and related policies because it maintains the existing balance between passive and active recreational uses in Washington Park, while reducing future maintenance costs and improving the quality of passive recreational opportunities in the Historic District. The Design Concept supports the explicit policy direction

in the Washington Park Master Plan by moving sections of the existing chain-link fence to a less conspicuous location and providing attractive, accessible open water above Reservoir 3, which must be covered.

Goal 12 Urban Design

Goal 12 Urban Design*: Enhance Portland as a livable city, attractive in its setting and dynamic in its urban character by preserving its history and building a substantial legacy of quality private developments and public improvements for future generations.*

- ***Policy 12.1 Portland's Character*** *Enhance and extend Portland's attractive identity. Build on design elements, features and themes identified with the City. Recognize and extend the use of City themes that establish a basis of a shared identity reinforcing the individual's sense of participation in a larger community.*
  Relevant Objectives:
  - *C.* ***Enhance the sense Portlanders have that they are living close to nature****. Improve access to the City's rivers, lakes, creeks and sloughs. Establish a system of trails that connect Portland's urbanized areas with nearby woods, forests, meadows, wetlands and riparian areas. Increase the degree to which natural areas and public open spaces penetrate the City. Extend forest and water corridors and join them to provide a network of fish and wildlife habitat areas that mesh with the City's parks, open spaces and circulation system for pedestrians. Design new development to enhance the natural environment that is so much a part of Portland's character.*
  - *H.* ***Preserve and enhance existing public viewpoints, scenic sites and scenic corridors****. As new development occurs, take advantage of opportunities to create new views of Portland's rivers, bridges, the surrounding mountains and hills, and the Central City skyline.*
  - *I. Encourage the use of materials and a quality of finish work, which reinforce the sense of this City as one that is built for beauty and to last. Reflect this desire in both public and private development projects.*
- ***Policy 12.2 Enhancing Variety*** *Promote the development of areas of special identity and urban character.*
- ***Policy 12.7 Design Quality*** *Enhance Portland's appearance and character through development of public and private projects that are models of innovation and leadership in the design of the built environment. Encourage the design of the built environment to meet standards of excellence while fostering the creativity of architects and designers.*

Proposed Findings: **Goal 12 Urban Design** focuses on preserving Portland's history by rehabilitating most historic resources in the Historic District and building a substantial legacy of quality through exceptional design of reservoir redevelopment. Figures 19-23 show the changes that have occurred in the Historic District since its original construction in 1894 to current conditions. These figures summarize – both graphically and in narrative form – how (a) the two reservoirs will be redeveloped using modern materials, but in a historically-sensitive manner; and (b) the eight remaining resources will be preserved, rehabilitated and/or restored to their original condition.

The Design Concept strikes a balance between modern park design and the City Beautiful movement that inspired the design of the Washington Park Reservoirs. The Design Concept is supportive of **Goal 12 Urban Design, Policy 12.1 Portland's Character**, **Policy 12.2 Enhancing Variety** and **Policy 12.7 Design Quality** because the Design Concept builds on Historic District design themes (engineering excellence, accessible open water, classical Romanesque architecture, incorporating viewpoints along pathways through natural areas) in an area of special identify (the Historic District and Washington Park) while introducing design variety and quality that will enhance Portland's livability for future generations. Notably, representatives from the HLC and American Institute of Architects were actively involved in the review of alternative designs and support the Design Concept.

The Design Concept also supports **Policy 12.1 Portland's Character** by preserving/rehabilitating eight of the 11 contributing historic resources in the Historic District, and removing incompatible structures that are not supportive of **Policy 12.7 Design Quality**. One of the key design themes associated with the Historic District and the City are related to the use Ransome's rusticated reinforced concrete technique in classical Romanesque architecture. The two dams and their gatehouses are Portland's earliest examples of Ransome reinforced concrete and are the most visually prominent of the resources on the site. However, the reservoir basins have been substantially reconstructed over the years and the Weir Building does not have the classical Romanesque styling that characterizes the gatehouses and dams.

Figure 37. Reservoir 3 Reconstruction (1976)

As described in Part 1, Gatehouse 3 cannot be preserved without the removal of the Weir Building. The location of the Weir Building, built in 1946 and now functionally obsolete, was strictly utilitarian, with none of the "City Beautiful" concepts of harmony between structures and the landscape. It was placed in a highly unfortunate spot close to the oval Gatehouse 3 building (see Figure 43). The low, square, unabashedly concrete building creates a jarring dissonance between the curving, graceful forms of the Dam, Reservoir, and Gatehouse. Removal of the Weir Building restores space around the Gatehouse and recaptures some of the original views of the other contributing structures.

Dam 3 and 4 and Gatehouse 3 and 4 are the most visible historic resources in the Historic District and will be rehabilitated – as will other less prominent historic resources. Thus, eight of the 11 contributing Romanesque resources will be preserved, rehabilitated, and/or restored to

varying degrees. The Design Concept calls for increased pedestrian access to rehabilitated resources, so they can better serve as a basis of a shared identity reinforcing the individual's sense of participation in a larger community.

The Design Concept also proposes the removal of incompatible structures in the Historic District – such as the 1970s-era light poles and some chain-link fencing which visually detract from the historical value of the Historic District and the quality of design in Washington Park as a whole. As shown on Figure 38, the reservoir basins themselves have required extensive reconstruction over the last 120 years. As such, the Reservoir 3 and 4 basins are the least preserved resources in the Historic District.

The Design Concept supports **Goal 12 Urban Design** and **Policy 12.1** (including Objective H) by bringing public accessibility and a new level of interpretation and interest to an existing historic site, especially one that is tied in so many ways to Portlanders' shared pride in our excellent municipal water system. The redevelopment plan for the two reservoir basins incorporates high-quality, durable materials and details that specifically reference the historic structures on the site, while acknowledging the modern period of design and construction. With the proposed changes, the public enjoyment and understanding of the site can extend another century into the future. In support of Objective H, existing public viewpoints will be preserved and enhanced – especially the classic view of Reservoir 3 from the Grand Stairway and of the Vista Bridge from a clearing above Reservoir 4. (See Figures 3 and 21.) Ironically, this clearing was created by a localized landslide above Reservoir 4.

Policy 12.1 (including Objectives C and I) is also supported by rectifying existing design issues that detract from the Historic District as a model of innovation and leadership in the design of the built environment. Due to incremental changes, historic resources in the Historic District currently suffer from a lack of visibility, limited access, and a commensurate loss of public familiarity and connection with its features and its history. The proposal aims to achieve a renewed appreciation of the Historic District. The Washington Park facility will undergo a restorative transformation that will promote this area's special open water identity. The themes that will carry through the design and details of the site design will include:

- The importance of the federally protected Bull Run system providing us with some of the best drinking water in the world;
- The impressive engineering of Portland's original gravity-fed water supply and distribution system;
- The egalitarian ideals of the City Beautiful movement, a value which still drives much of our public decision-making;
- The geologic underpinnings of our local topography threatening landslides, found throughout the West Hills and Forest Park, which even now threaten the stability of various areas of Portland;
- The sophistication and beauty of the patented architectural engineering techniques of E.L. Ransome, who was a pioneer in reinforced concrete work; and
- The value we place on restoration of habitat areas for native species.

Many of these City themes can be divided further into sub-themes, but it is clear there are many fascinating topics that can be explored within the Historic District. Part of the story will be presented in a series of interpretive elements to be included in the final site design. This will occur once the State Historic Preservation Office (SHPO) agrees to include these interpretive elements as a component of the project's mitigation for the loss of contributing historic structures. SHPO has been in consultation of the preliminary interpretive design and has provided positive feedback.

Interpretive components will expose features of the site's history through interactive, experiential elements that are woven into the site. This occurs via text and images placed adjacent to views into or across the site; and placement of objects and artifacts preserved on-site thus merging functional features with storytelling. The site's various stories will be exposed by themes of capturing, marking, and merging the past with the present. For example, the edge of the original Reservoir 4 will be marked with posts that sit in the landscape and indicate an edge that no longer exists as shown in Figures 39 and 40. These new interpretive components on the site are subject to review and approval by the SHPO prior to being reviewed by the HLC.

Figure 38. Marking existing Reservoir 4 Edge

Goal 12 Urban Design is also supported by preservation activities currently under review by the SHPO. In recognition of the importance of the Historic District to Portland's legacy, PWB is committed to providing information to the public documenting how coordinated community planning and historic engineering combined to make Portland's gravity-fed water system, including the Washington Park reservoir system, possible. This helps ensure that the site's story will be preserved and passed on to future generations. PWB plans to develop and install on-site interpretive elements that transmit information in artful and integrated forms. This further mitigates demolition impacts by preserving an understanding and appreciation of what once was there. The demolished reservoirs will be redeveloped as open-water features, while maintaining the original water storage and distribution function of the site. Significantly, the other key function of the site, as a publicly-accessible recreational destination, will be restored.

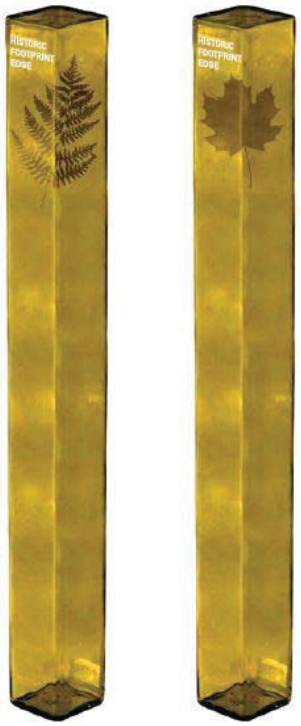


Figure 39. Edge Marker Concept

The project is truly civic and should reflect the interest of every citizen of Portland. It is impossible to meet every citizen's desires for the site, but the project sets a high bar. For the above reasons, the project design enhances Portland's appearance and character through the development of a public project that represents a model of innovation and leadership in the design of the built environment while preserving its connection with its historic past.

Urban Design Conclusion (Goal 12)

In summary, the Design Concept melds modern but historically-sensitive design of the reconstructed reservoirs with preservation of the remaining historic resources on the site, and rehabilitation or even reconstruction of some of the components that contribute strongly to the character of the site. Notably, the four most visually-prominent historic resources that are emblematic of Ransome's engineering and classical Romanesque design (the dams and their gatehouses) will be rehabilitated. Pedestrian access to open water features and classic viewpoints will be restored. New features will respect the existing ones by incorporating materials, alignments, textures, and design details found in the original resources. The proposed overall design will link the past and present, providing Portlanders with many reasons to appreciate the Historic District and our shared history evident in this unique and beautiful site. Thus, the Design Concept, when fully implemented, will provide a substantial legacy of quality public improvements for future generations.

Overall Conclusion with Respect to Demolition Evaluation Factors "b", "d" and "f" and Related Policies

Thus, for reasons stated in Section 2-3.2 and summarized immediately following, the Design Concept is supportive of the following comprehensive planning goals and related policies and objectives:

- Goal 3 Neighborhoods
- Goal 6 Transportation,
- Goal 8 Environment,
- Goal 9 Citizen Involvement,
- Goal 11F Parks and Recreation (including the Washington Park Master Plan), and
- Goal 12 Urban Design.

The proposed historically-sensitive reconstruction of Reservoirs 3 and 4, combined with the preservation or rehabilitation of eight remaining historic resources and mitigation shown on the Design Concept, incorporate key historic architectural, recreational and entertainment values identified in the District Nomination.

The Design Concept calls for rehabilitating the prominent dams and gatehouses with their classical Romanesque styling of rusticated reinforced concrete, maintaining the naturalistic setting in a ravine above the City, restoring and enhancing historic viewpoints, enhancing the Grand Stairway, restoring and extending pathways to provide access to open water amenities, partially restoring/rehabilitating parapet walls, original lamp-posts, wrought iron fencing and gates adjacent to the accessible open water.

The Design Concept also considers and incorporates historic values identified in the District Nomination. Historic values associated with open and accessible water provides will continue to provide a scenic respite from urban living, and will be incorporated as scenic and recreational amenities in an urban but naturalistic park. Construction of proposed improvements shown on the Design Concept will have a positive effect on the area's desired historic and open space character by improving upon the passive recreational experiences in the Historic District and Washington Park, restoring and enhancing pedestrian access to the reservoir system, incorporating wildlife habitat into the reconstruction of Reservoir 4, incorporating the results of an extensive public and professional outreach effort and advice from the HLC, complying with the policy direction set forth in the Washington Park Master Plan, protecting/rehabilitating eight of the 11 historic resources in the Historic District, and incorporating modern design and engineering principles in the historically-sensitive redevelopment of Reservoirs 3 and 4.

2-3.3 Goal and Policy Evaluation Factors "c" and "e": Merits of preserving the resources taking into consideration of the purpose of demolition review, and the effect of demolition on the area's desired character

As noted in Table 2.1, preservation of the three historic resources would be supportive of Goal 3 – Neighborhoods (Policy 3.4 Historic Preservation), and Goal 12 – Urban Design (Policy 12.3 Historic Preservation) and the purpose of demolition review *if* it were practicable to do so. However, the proposal to demolish the Reservoirs 3 and 4 and the Weir Building provides the opportunity to implement the Design Concept, which is supportive of many of Policy 12.3 Historic Preservation objectives. The following discussion explains why the proposed demolitions, with replacement development, are mixed in terms of their support for the historic preservation policies of Goals 3 and 4.

Figure 40. Reservoir 3, Dam 3 and Gatehouse 3 soon after construction

PZC 33.846.080(A) Purpose. *Demolition review protects resources * * * that have been classified as contributing in the analysis done in support of a Historic District's creation. * * * Demolition review recognizes that historic resources are irreplaceable assets that preserve our heritage, beautify the city, enhance civic identity, and promote economic vitality.*

Goal 3 Neighborhoods*: Preserve and reinforce the stability and diversity of the City's neighborhoods while allowing for increased density in order to attract and retain long-term residents and businesses and insure the City's residential quality and economic vitality.*

- ***Policy 3.4 Historic Preservation*** *Preserve and retain historic structures and areas throughout the city.*

Figure 41 Fountain to be preserved and rehabilitated

Goal 12 Urban Design*: Enhance Portland as a livable city, attractive in its setting and dynamic in its urban character by preserving its history and building a substantial legacy of quality private developments and public improvements for future generations.*

- ***Policy 12.3 Historic Preservation*** *Enhance the City's identity through the protection of Portland's significant historic resources. Preserve and reuse historic artifacts as part of Portland's fabric. Encourage development to sensitively incorporate preservation of historic structures and artifacts.*

Policy 12.3 Objectives

A. Preserve and accentuate historic resources as part of an urban environment that is being reshaped by new development projects.

B. Support the preservation of Portland's historic resources through public information, advocacy and leadership within the community as well as through the use of regulatory tools.

C. Maintain a process that creates opportunities for those interested in the preservation of Portland's significant historic resources to participate in the review of development projects that propose to alter or remove historic resources.

E. Protect potentially significant historic structures from demolition until the City can determine the significance of the structure and explore alternatives to demolition.

F. Preserve artifacts from structures and sites that are historically, architecturally and/or culturally significant and seek to reintroduce these artifacts into the City's streetscape and building interiors.

Proposed Findings: The purpose of demolition is to protect contributing historic resources in Historic Districts. This purpose would be supported by preservation of all contributing resources in the Historic District – including the three resources proposed for demolition – if it were practicable to do so. This application narrative recognizes that all 11 contributing resources in the Washington Park Reservoirs Historic District are "irreplaceable assets that preserve our heritage, beautify the city, enhance civic identity, and promote economic vitality." Section 1-2 Project Drivers and Locational Considerations describes the historic and ongoing effects of landslide activity, the potentially catastrophic effects of a major earthquake, the requirements of EPA's rules related to covering open reservoirs, and the deteriorating condition of both reservoir basins to explain why it is not practicable to protect the reservoirs and maintain their historic function in providing high quality drinking water while maintaining the energy and cost benefits of a gravity-fed system.

Goals 3 Neighborhoods and **12 Urban Design**, as implemented by **Policies 3.4 Historic Preservation** and **12.3 Historic Preservation**, also support the retention and historic restoration of Reservoirs 3 and 4, including appurtenant walkways, concrete parapet walls, wrought iron fencing and historic lampposts. To a lesser extent, these policies support retention and adaptive re-use of the 1946 Weir Building which, though lacking a current function and visibly unlike the Romanesque structures designed in the previous century, was constructed during the period of significance from 1894 – 1953.

Figures 38 and 41 show Reservoir 3 soon after it was constructed in 1896 and again in the 1970s when major maintenance and reconstruction were required. Figure 43 shows the Romanesque Gatehouse 3 in relation to the utilitarian Weir Building. As documented in Part 1, Gatehouse 3 will be rehabilitated along with seven other historic resources.

The Weir Building, which was unfortunately sited next to the Gatehouse and as a result, negatively impacts some of the most significant views of Gatehouse 3 and upper reservoir, is proposed for demolition. The existing Reservoir 3 basin must be taken out, which entails a large-scale removal of earth and concrete. The earthwork needed for this removal and the shoring needed to protect and support Gatehouse 3 while the site is being excavated will require the removal of the Weir Building.

Figure 42. Utilitarian Weir Building next to Gatehouse 3

The Weir Building was designed in 1945 and completed in 1946. In style the structure is Modern/Utilitarian, but it has lost some integrity with its windows and doors no longer original. It is also functionally obsolete. As noted previously, the location of the structure was strictly utilitarian, with none of the "City Beautiful" concepts of harmony between structures and the landscape. Removal of the Weir Building restores space around Gatehouse 3 and re-opens the original views of the other contributing structures. The Weir Building would not survive relocation, as it is a poured concrete structure.

Section 1-2 summarizes and the District Nomination that provides a detailed description of four over-lapping areas of historic significance: Community Planning and Development, Engineering, Architecture, and Entertainment/Recreation. The reservoir basins are important engineering and architectural features; their open water contributes substantially to Washington Park's aesthetic and recreational value. These four "areas of significance" are considered and incorporated into the findings in Sections 2-3.1 and 2-3.2. Overall, all four areas of significance are considered and incorporated into the preferred Design Concept.

PWB, the Community Sounding Board, and the Historic Landmarks Commission all recognize that these historic structures, especially the open water of Reservoirs 3 and 4, enhance Portland's livability in multiple ways. They have historically contributed to Portland's urban and recreational fabric and epitomize Portland's legacy of visionary government, intergovernmental cooperation and the exceptional engineering – characteristics that make Portland a truly great city. The preferred Design Concept continues these traditions and represents the results of an inclusive and open community, professional and agency outreach program.

PWB recognizes that the reservoir basins are extremely important to the Washington Park Reservoirs Historic District. Absent the four drivers for this project as described in Section 1-3, PWB would not have proposed demolition of these historically significant structures in the first place. However, the landslides will continue to damage the aging basins and structures, the seismic threat is certain and destructive, and the state and federal rules require that the

reservoirs be covered. Recognizing that these critical drivers exist (as documented in Section 1-2 (Table 1.2) and Section 1-4), PWB has taken extraordinary measures to recreate bodies of open water within an accessible, tranquil setting that is so critical to the original vision of Washington Park.

Notably, the proposed demolitions are supportive of applicable Policy 12.3 Historic Preservation objectives as follows:

- **Objective 12.3.A**: The Design Concept preserves and rehabilitates eight of the 11 contributing resources in the Historic District and, through proposed mitigation measures, will make these resources more attractive, accessible and interesting to Washington Park users.
- **Objective 12.3.B**: PWB has sponsored and supported an extensive public involvement process that has created opportunities for interested parties to participate in its proposal to remove certain historic resources and construct new elements with a historic character in the Historic District.
- **Objective 12.3.C**: PWB incorporated the design advice of the HLC into the preferred Design Concept.
- **Objective 12.3.E**: As documented in Part 1, PWB has explored a variety of alternatives to demolition of these significant historic resources.
- **Objective 12.3.F**: As shown on the Design Concept, PWB will preserve artifacts from the demolished reservoirs, including wrought iron fences, lamp-posts and fountains. At Dam 3 and the eastern border of Reservoir 4 (including Dam 4), the walkways, parapet walls, fencing and lighting will be reconstructed in a historically accurate manner, and placed at or near their original location in relation to the new surface water features.

As documented in Section 1-4, the reservoirs originally had two primary functions: first, to provide clean drinking water to Portland residents and businesses, and second, to provide a destination where Portlanders could leave their urban setting and experience the restorative powers of nature. Thus, the reservoirs provided clear and accessible open water to complete the pastoral experience. Their open water features were critical to the original Olmsted plan and are cherished by Portland's citizens.

The effect of preservation of Reservoirs 3 and 4 on the surrounding area would be extremely positive if these reservoirs could remain open and accessible to the public and if these aging structures were not extremely vulnerable to landslides and seismic events. However, the reservoirs have been fenced since the 1970s for security, liability and water quality reasons. They remain extremely vulnerable to landslides and seismic events, they are aging and need to be replaced, and they must be covered to meet state and federal water quality regulations. As documented in Section 1-4.4, the reservoirs no longer function as recreational destinations due to limited access; any residual aesthetic value would be severely compromised if the existing reservoirs were covered by some sort of plastic or tarp-like material.

Overall Conclusion with Respect to Demolition Evaluation Factors "c" and "e" and Policies 3.4 and 12.3

Preservation in the abstract would benefit nearby residents and park visitors and would be supportive of the historic preservation policies of Goals 3 Neighborhoods and 12 Urban Design; however, preservation of covered and inaccessible basins would have little or no practical recreational or aesthetic benefit for park users. Demolition of the reservoir basins, in this case, makes it possible to carry out the proposed redevelopment plan (Design Concept). The Design Concept calls for open, accessible water features which, combined with rehabilitation of remaining contributing historic resources and proposed mitigation measures, would have a positive impact on neighboring residents, park users, and water customers.

2-3.4 Balancing the Results of Comprehensive Plan Goal and Policy Evaluation

As noted in the City Council's March 3, 2010, decision to authorize demolition of the Kieran Building (LU 09-171258 DM),[12] the Council has broad discretion in deciding how to balance applicable comprehensive plan goals and policies:

> *The Council has broad discretion in establishing how to balance the relevant goals given a particular proposal and that property's location in a particular historic district. No code provision or city policy requires the Council to give equal weight in the balancing process to every Comprehensive Plan goal, nor does anything mandate that equal weight be given to every goal and policy found in other relevant area plans. The Council has the authority to give certain relevant goals and policies more weight and other relevant goals and policies less weight in reaching its final decision as to whether the proposal, on balance, supports the Comprehensive Plan and other relevant area plans.*

Thus, not all comprehensive plan goals and policies need to or should be given equal weight. As documented in Section 2-3.3 above, most of the relevant Comprehensive Plan Goals and implementing policies support the proposed demolition requests when considered with the Design Concept, including proposed mitigation measures.

Supportive Goals and Policies include:

- **Goal 3 Neighborhoods** as implemented by Policy 3.5 Neighborhood Involvement
- **Goal 6 Transportation** as implemented by Policies 6.22 Pedestrian Transportation and 6.23 Bicycle Transportation
- **Goal 7 Energy** as implemented by Policy 7.2 Energy Efficiency
- **Goal 8 Environment** as implemented by Policies 8.5 Interagency Cooperation – Water Quality, 8.13 Natural Hazards, 8.14 Natural Resources, 8.16 Uplands Protection and 8.17 Wildlife Habitat
- **Goal 9 Citizen Involvement** as implemented by Policy 9.1 Citizen Involvement Coordination

[12] This is the only other Type IV demolition review approved by the City Council and establishes Council precedent for the review of historic resource demolition requests.

- Goal 11 Public Facilities
- **Goal 11E Water Service** as implemented by Policies 11.26 Quality, 11.28 Maintenance, 11.31 Design and Community Impact, 11.36 Water Pressure and 11.37 Energy Conservation (with relatively little weight given to outdated Policy 11.29 Storage)
- **Goal 11 F Parks and Recreation** as implemented by Policy 11.38 Master Development Plans and 11.39 Maintenance
- **Goal 12 Urban Design** as implemented by Policies 12.1 Portland's Character, 12.2 Enhancing Variety, 12.4 Provide for Pedestrians and 12.7 Design Quality

The proposed demolitions and Design Concept are also supportive of the Washington Park Master Plan, Policy 3 Reservoirs, which specifically calls for "flood[ing] the covered reservoirs with shallow water to preserve their traditional attractive appearance."

The proposed demolitions are *not* fully supportive of the two historic preservation policies in the Portland Comprehensive Plan: Neighborhoods Policy 3.4 Historic Preservation and Urban Design Policy 12.3 Historic Preservation. However, the goal of preserving the reservoirs was to preserve two essential characteristics: (1) the storage and distribution of high quality water using a gravity-fed system; and (2) open and accessible water that provides aesthetic, spiritual and recreational value to park visitors seeking solace and respite from urban living. In fact, the covering of Reservoir 3 at its current location is necessary to maintain the first characteristic (water quality), at least to the satisfaction of federal and state regulators; and the second characteristic (open and accessible water) is impossible to achieve if the existing reservoirs are closed to the public.

In the final analysis, the number of supportive goals and policies is one measure of balancing applicable Comprehensive goals and policies. But this is more than a counting exercise. Goals 11 Public Facilities and 11E Water Service relate directly to the provision of essential public facilities – which is the principal role of local government. Policy 8.13 requires that Portland protect its citizens from foreseeable natural disasters.

On balance, the provision of key public facilities and services is a public necessity and should be given great weight in the review process. Based on the analysis of "project drivers," PWB has no reasonable choice but to demolish Reservoirs 3, Reservoir 4, and the Weir Building. The alternative is to maintain aging infrastructure that has been and will continue to be damaged by an active landslide, put the public at risk of losing vital water supplies and downstream flooding as a result of a major seismic event, continue to age and deteriorate, and violating state and federal rules which require that these reservoirs be covered.

Of course, the design to replace the aging reservoirs must provide the open and accessible water features, maximize the value of remaining historic resources, respect the environment, conserve energy and be exceptionally well-designed. Because Portland has adopted strong protections for our shared resources and an open process for decision-making, the Design Concept plan must also be consistent with the character of the surrounding area and based on an effective and inclusive public involvement process. Taken together, the proposed site

improvements – including the restoration of public access and connectivity, preservation and rehabilitation of historic features, and the inclusion of interpretive features – are necessary to satisfy the demolition approval criteria and gain land use approval. These improvements are also necessary to obtain historic resource, conditional use and environmental land use approvals, which must be completed before any development permits can be issued. As demonstrated in these proposed findings, and as illustrated by Figure 44, all of these objectives (as set forth in the goals and policies of the Portland Comprehensive Plan) are met by the proposed demolition and redevelopment plan as expressed in the Design Concept.

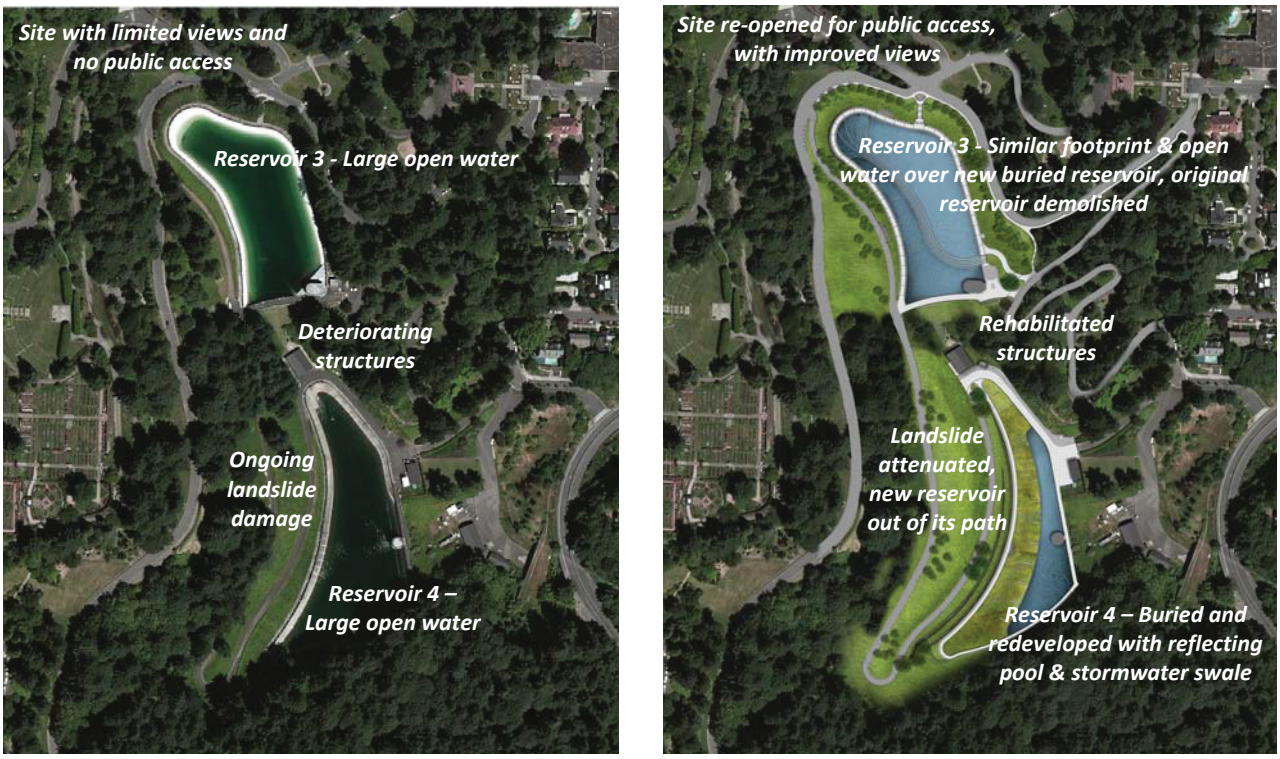


Figure 43. Existing Reservoir Site Plan versus New Design Concept Site Plan

City of Portland, Oregon
Bureau of Development Services
Land Use Services
FROM CONCEPT TO CONSTRUCTION

Amanda Fritz, Commissioner
Paul L. Scarlett, Director
Phone: (503) 823-7300
Fax: (503) 823-5630
TTY: (503) 823-6868
www.portlandoregon.gov/bds

BDS – Conference Facilitator Summary Memo

Pre-Application Conference

Date: June 9, 2014

To: Tim Brooks, Winterbrook Planning tim@winterbrookplanning.com and Teresa Elliott, Portland Water Bureau teresa.elliott@portlandoregon.gov

From: Sheila Frugoli, Conference Facilitator
Sheila.Frugoli@portlandoregon.gov, 503-823-7817

Case File: EA 14-139549

Location: 2403 SW JEFFERSON ST

Property ID: R316752, R485200, R485207, R485390, R485392, R485394

Proposal: Pre-Application Conference to discuss Conditional Use, Environmental and Historic Resource Reviews for the Washington Park Reservoir project. The project will include replacing a reservoir with a below-ground storage facility. New reflective pools will be created along with other site improvements.

Conference date: May 13, 2014
Expiration of Conference: May 13, 2015

You must submit your Land Use Review application within one-year of the Conference.

This transmittal memo includes a copy of all the written responses from bureau representatives and identifies the current fees for the required land use reviews. Please note that fees will change on July 1, 2014. The new fee schedule is not available. Please contact me or other assigned Planning staff for updated information.

The information provided at the conference and included in this summary is based on the information you provided prior to and at the conference and reflects regulations in effect at the time of the conference. It is neither a land use decision nor a final decision regarding this project.

A. Written Responses from Service Bureaus

Attached are the responses provided by the land use planner and service bureaus.

Response attached	Bureau	Responsibilities	Contact
Yes	BDS Land Use Services	Information regarding Historic Resource Review/Demolition Review, Conditional Use Review and Environmental Review	Hillary Adam 503-823-3581 Mark Walhood 503-823-7806 Stacey Castleberry 503-823-7586

Yes	PBOT	Public Streets	Robert Haley 503-823-5171
Yes	BES	Public sewer and stormwater connections to the public right-of-way	Stephen Himes 503-823-7875
Yes	BDS Site Development	On-site stormwater disposal, septic systems, private rights-of-way, geotechnical requirements, erosion control	Jason Butler-Brown 503-823-4936
Yes	Water Bureau	Connections to public water	Mari Moore 503-823-7364
Yes	Fire Bureau	Access grades, fire hydrants, turnarounds	FIRE

B. Fees

Below is an estimate of land use fees that may apply to your proposal. Fees charged will be those in effect when the Land Use Review application is submitted. When more than one Land Use Review is requested, full fees are charged for each additional review. You may view the current Land Use Review fees online.

Land Use Review Type	Estimated Fee	
Historic Resource –Demolition Review (Type IV)	$ 8,500 + $329 = $8,829	(PBOT fee)
Conditional Use Review (Existing – Type III)	$ 9,356	
Environmental Review (Type II)	$4,573	
Type III Historic Resource Review	.032 of project valuation +$ 3,452 +$ 945 + $2,541	(min. fee $5,250 /max fee $27,000) (combined service bureau fee) (for each Design Modification) (for each Adjustment Review)

During the building permit process, Permit Fees will be charged for review of your permits and Systems Development Charges (SDCs) may be assessed for new development. An online fee estimator is available on the BDS website at the following link: http://www.portlandonline.com/bds/index.cfm?c=59194.

C. Other Information

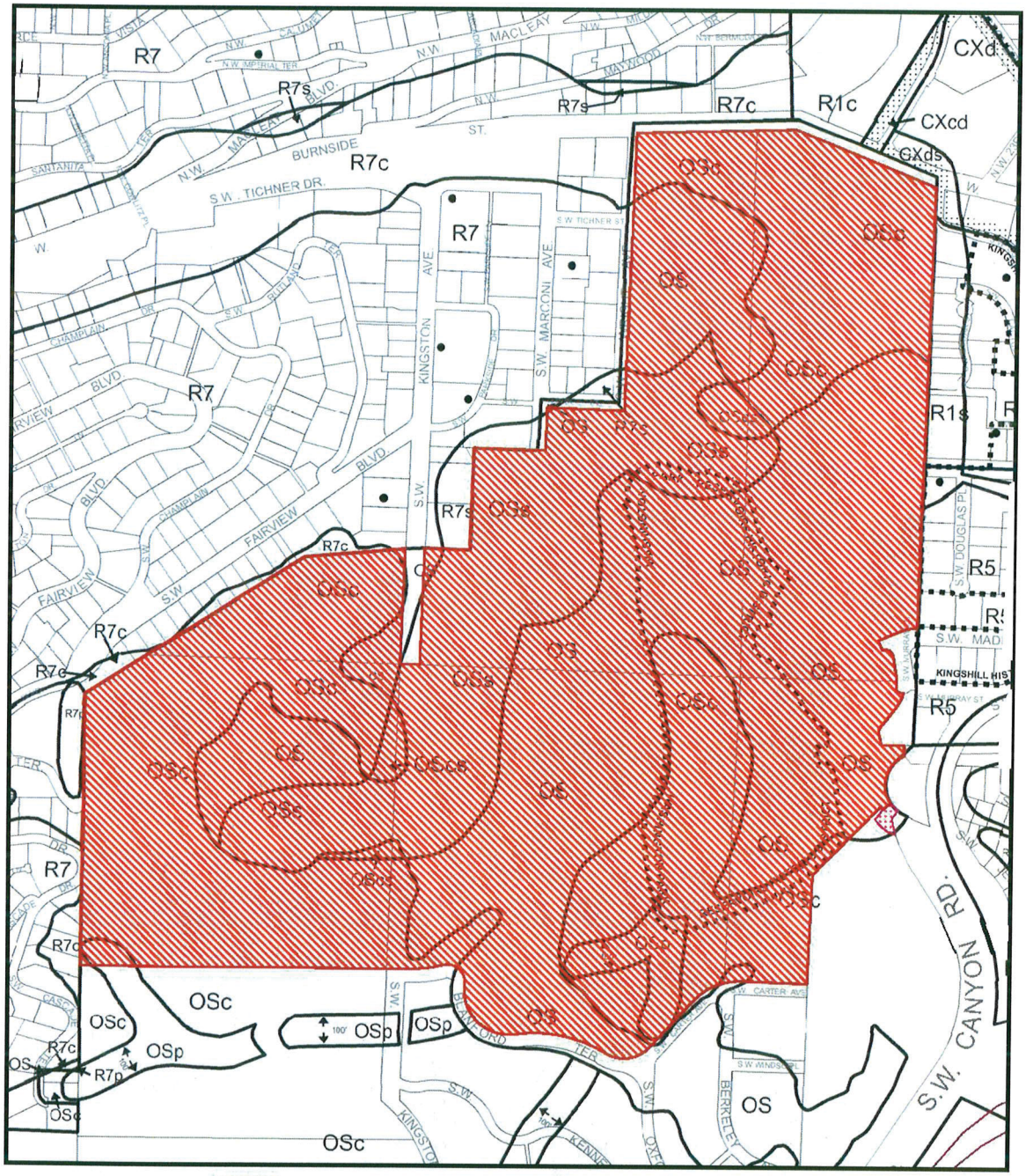
1. Pending Tree Regulations. New tree regulations will take effect on January 1, 2015. Land use review applications filed on or after January 1, 2015 will be subject to new Zoning Code and Tree Code requirements. These changes will effect some land use review application requirements and approval criteria in regards to tree planting and tree preservation. A summary of the new tree regulations and adopted Tree Code can be viewed at the following link: *http://www.portlandonline.com/bds/index.cfm?c=61467*.
2. Electric Service Requirements. Information on electric service requirements for properties served by PGE can be found at the following link: http://www.portlandgeneral.com/business/builders_developers/electrical_service_requirements.aspx; and information on electric service requirements for properties served by Pacific Power

can be found at the following links: https://www.pacificpower.net/content/dam/pacific_power/doc/Contractors_Suppliers/PP_Developer_and_New_Service_Checklist.pdf; and http://www.pacificpower.net/con/esr.html.

Please note that the service requirements included in these links may not cover all requirements associated with your project. Applicants should contact the PGE Service Coordinator at 503-736-5450 or the Pacific Power Business Center at 888-221-7070 to identify issues that are specific to your project and to coordinate electric service requirements.

3. PGE requires minimum clearances from electric wires, conductors and cables. Before building, please be aware of these clearances by calling PGE at 503-736-5450. For more information, go to the following link: PGE Minimum Clearance Requirements.

Attachments:
Zoning Map
Site Plan
Building Elevations
BDS Land Use Services Responses from Hillary Adams – Historic Resource Reviews
BDS Land Use Services Responses from Mark Walhood and Stacey Castleberry – CU and EN Reviews
PBOT Response
BES Response
BDS Site Development Response
Water Bureau Response
Fire Bureau Response
Sign-in Sheet



ZONING

Site

Also Owned

Historic Landmark

A portion of this site is located within the:
Washington Park Reservoirs Historic District

NORTH

File No. EA 14-139549 PC

1/4 Section 3026,3027,3126,3127

Scale 1 inch = 400 feet

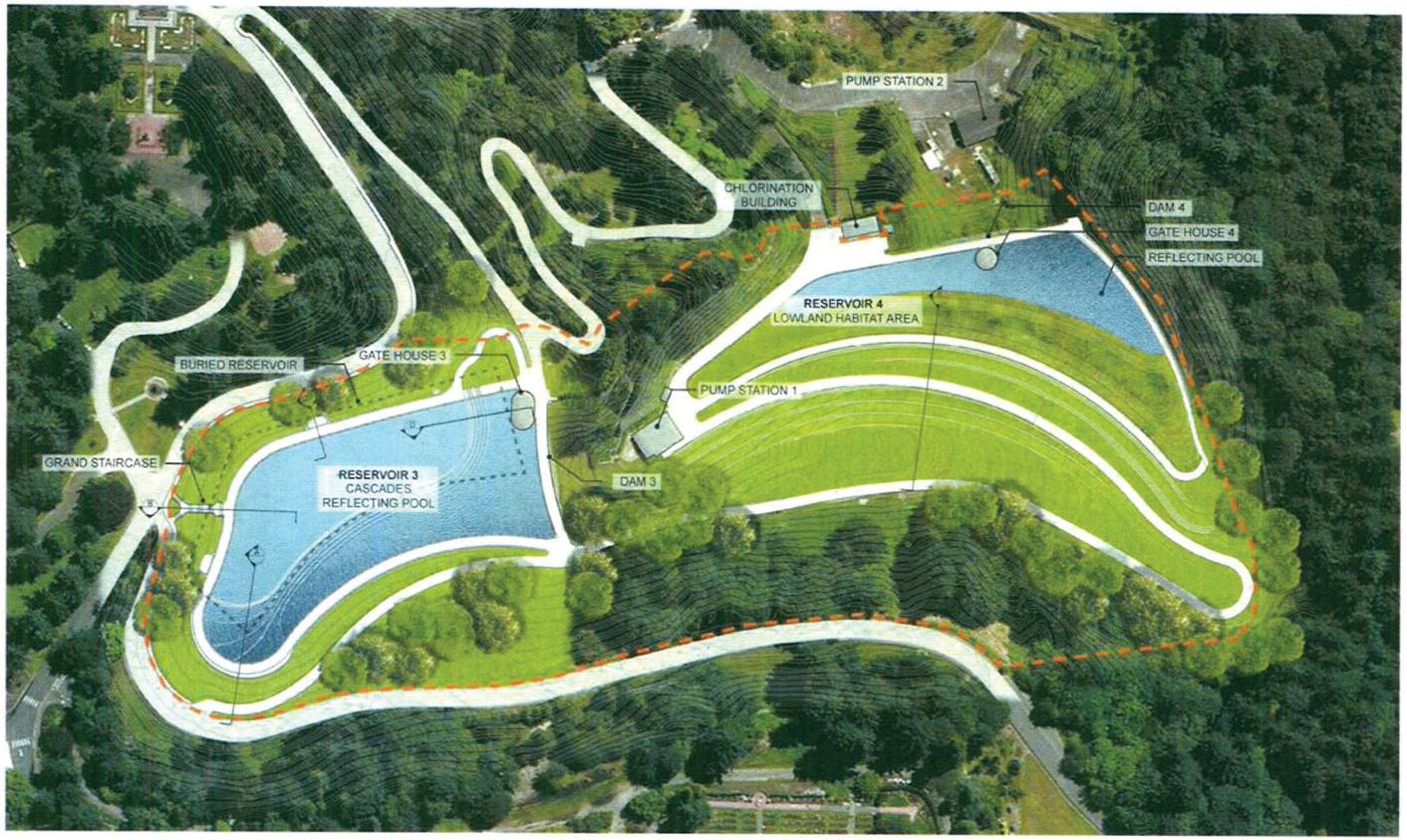
State_Id 1N1E32 200

(Apr 15,2014)

APPENDIX A


WASHINGTON PARK
SW MARKET ST
SW MADISON ST
SW WASHINGTON WAY
SW SHERWOOD BLVD
PUMP STATION 3
PUMP STATION 2
CHLORINATION BUILDING
GATE HOUSE 4 AND DAM
RESERVOIR 4
ROCK OUTCROPPING
HISTORICAL BOUNDARY
WEIR BUILDING
GATE HOUSE 3
CONSTRUCTION ACCESS, SLOPE/BENCHING CONSTRAINT
RESERVOIR 3
DAM
PIPING CORRIDOR CONSTRAINTS
PUMP STATION 1
PARAPET WALLS AND FENCING
PARAPET WALLS AND FENCING
APPROXIMATE LIMIT OF LANDSLIDE
Proposal and design as approved in case file No. LU 11-XXXXX. No field changes allowed.
Confidential
Verify Scale:
Bar measures one inch at full size. If not one inch, then adjust scales accordingly.
AECOM
MSA Murray, Smith & Associates, Inc. Engineers/Planners
RPS
RLF
30% SUBMITTAL
PORTLAND WATER BUREAU
PRELIMINARY
Washington Park Reservoir Improvements
Figure 7-1
Site Topography and Constraints - Draft
W01402

APPENDIX A



0 60 120
1" = 60'

Proposal and design as approved in case file No. LU 11-XXXXX. No field changes allowed.

Confidential

Verify Scale: Bar measures one inch at full size. If not one inch then adjust scales accordingly.

AECOM
333 South West 5th Avenue Suite 325
Portland, OR 97204
(503) 227-1042 tel (503) 227-1048 fax

30% SUBMITTAL

CDD-DATE

PORTLAND WATER BUREAU
FROM FOREST TO FAUCET

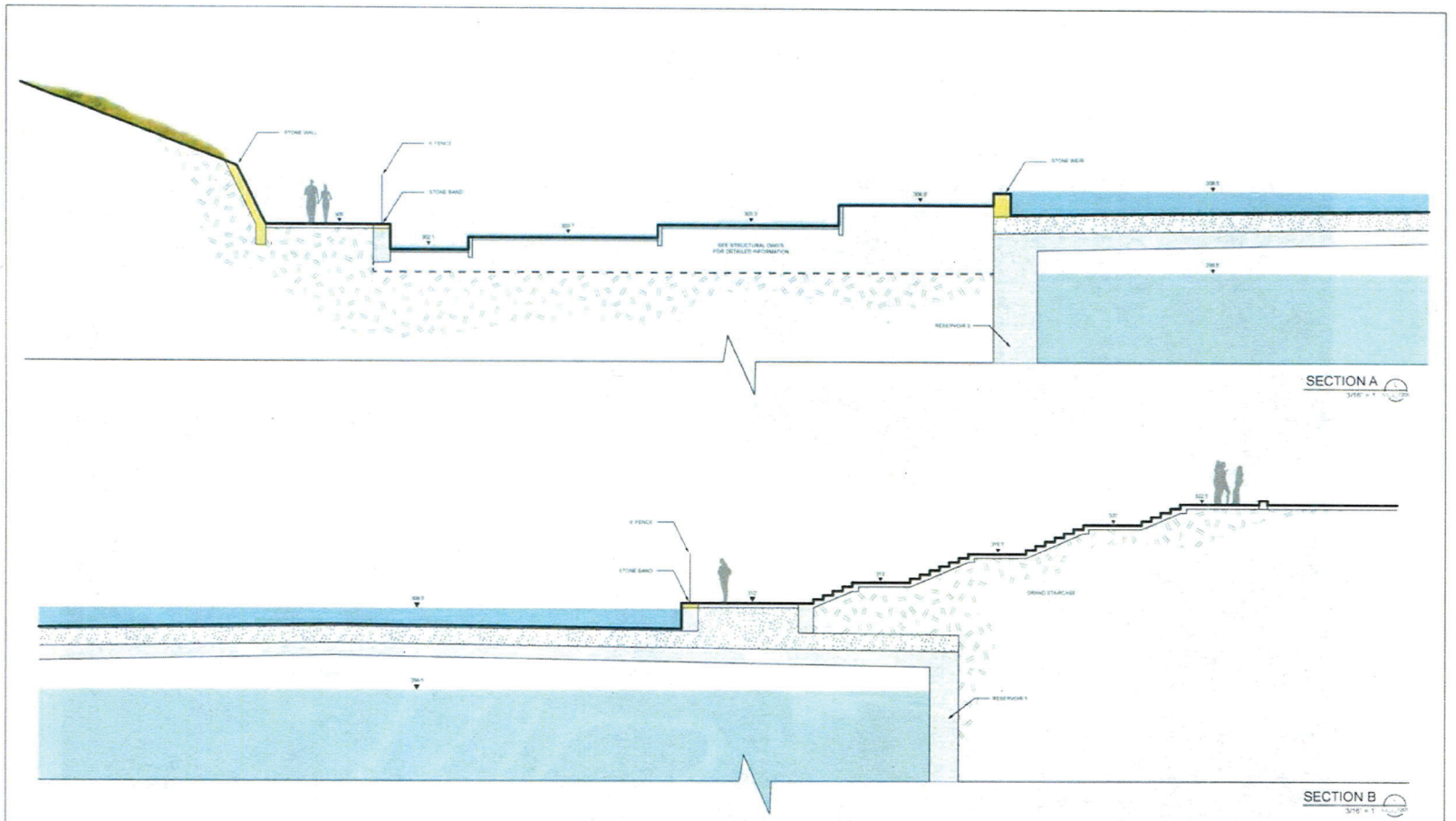
PRELIMINARY

Washington Park Reservoir Improvements
RESERVOIR 3 & 4
LANDSCAPE
ILLUSTRATIVE SITE PLAN

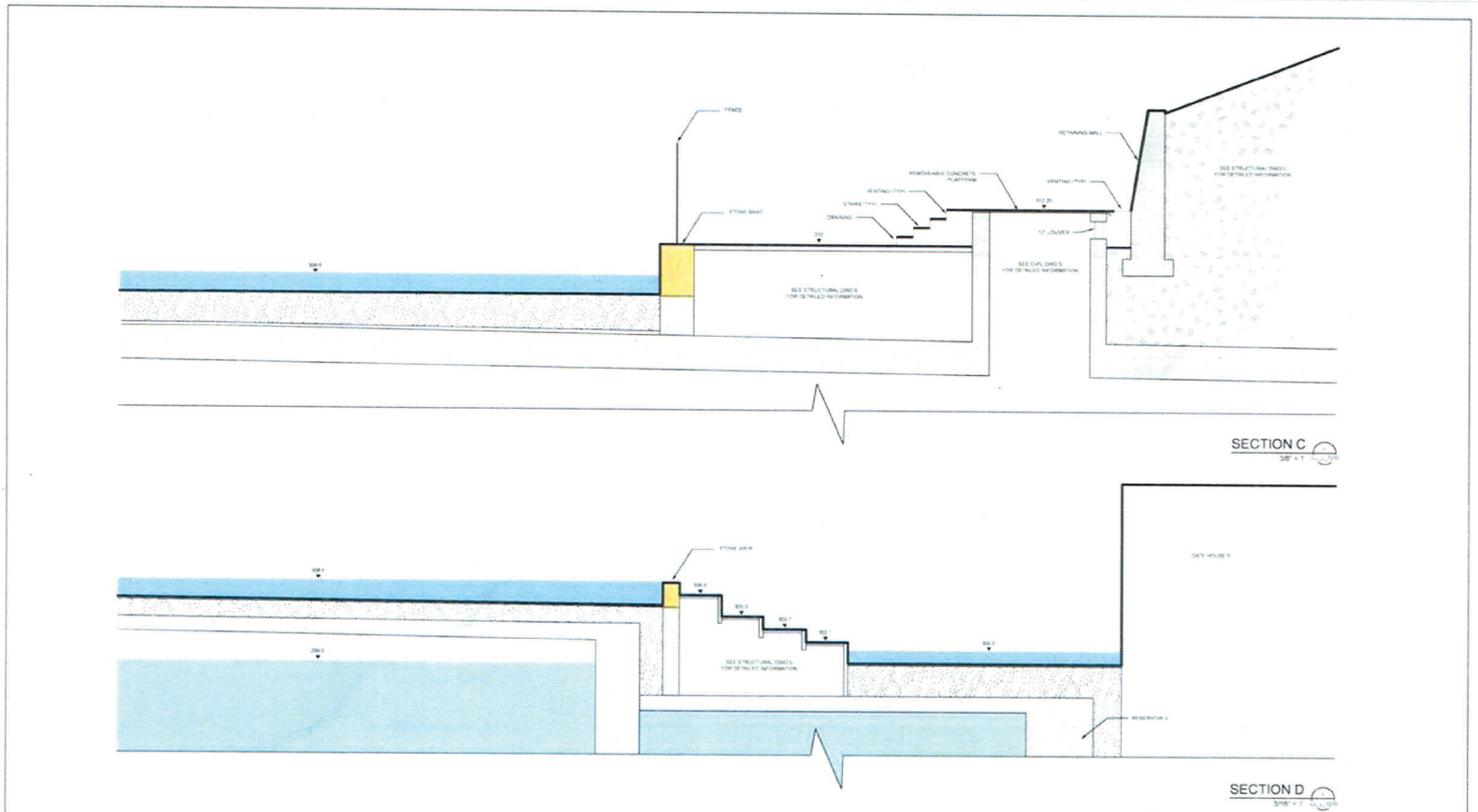
W01402

ILL_L_7105

APPENDIX A


STONE WALL
4' FENCE
STONE BAND
STONE WEIR
SEE STRUCTURAL DWGS FOR DETAILED INFORMATION
RESERVOIR 3
SECTION A
4' FENCE
STONE BAND
GRAND STAIRCASE
RESERVOIR 1
SECTION B
Proposal and design as approved in case file No. LU 11-XXXXX. No field changes allowed.
Confidential
Verify Scale:
AECOM
333 South West 5th Avenue Suite 225
Portland, OR 97204
(503) 227-1048 tel (503) 227-1048 fax
30% SUBMITTAL
CDD-DATE
PORTLAND WATER BUREAU
FROM FOREST TO FAUCET
PRELIMINARY
Washington Park Reservoir Improvements
W01402
ILLUSTRATIVE
RESERVOIR 3 SECTIONS
I_L_L_7205

APPENDIX A



Proposal and design as approved in case file No. LU 11-XXXXX. No field changes allowed.

Confidential

Verify Scale: Bar measures one inch at full size. If not one inch then adjust scales accordingly.

AECOM
333 South West 5th Avenue Suite 335
Portland, OR 97204
(503) 227-1042 tel (503) 227-1048 fax

30% SUBMITTAL

CDD-DATE

PORTLAND WATER BUREAU
FROM FOREST TO FAUCET

PRELIMINARY

Washington Park Reservoir Improvements

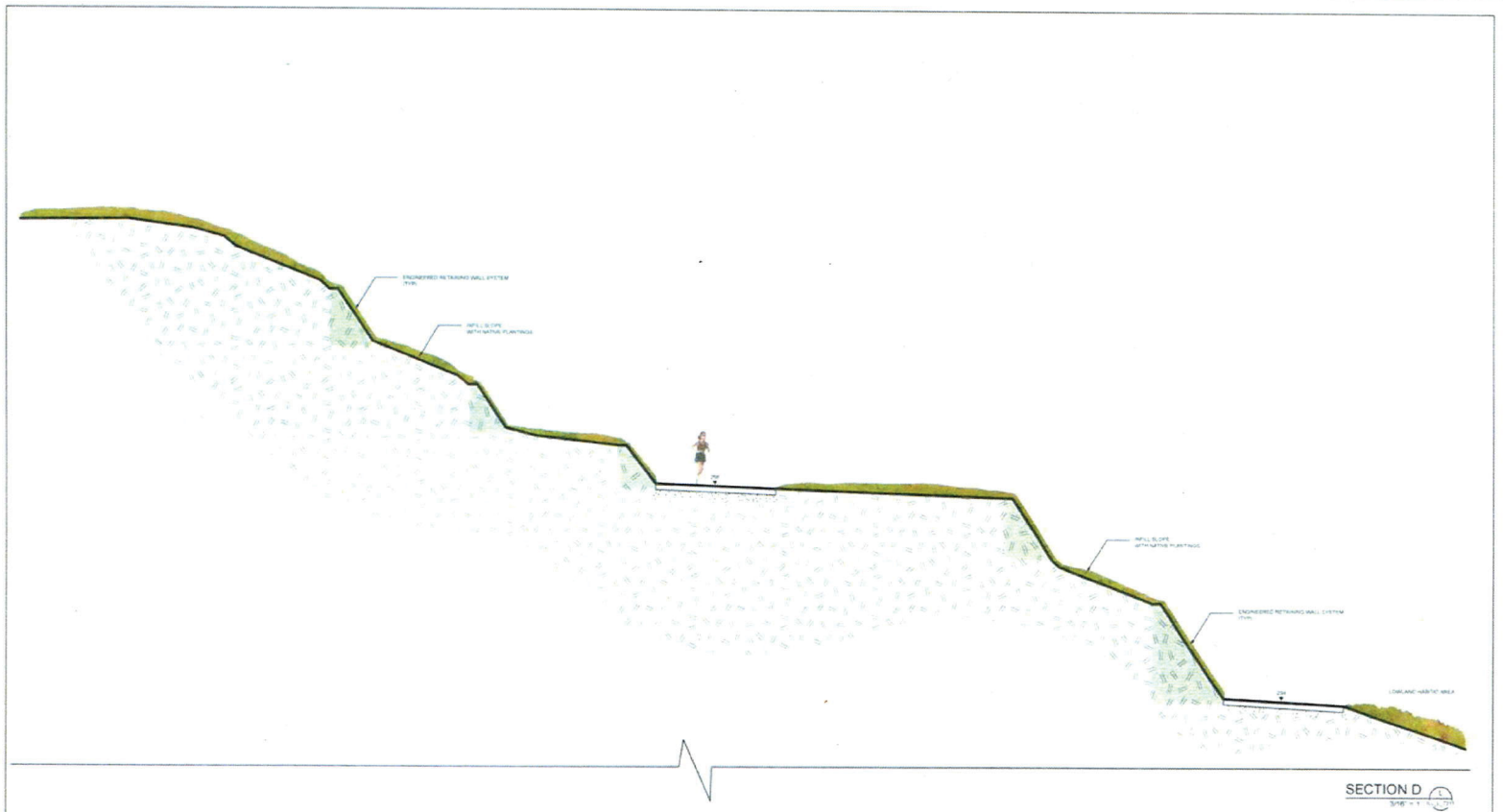
W01402

ILLUSTRATIVE

RESERVOIR 3 SECTIONS

ILL_L_7210

APPENDIX A



Proposal and design as approved in case file No. LU 11-XXXXX. No field changes allowed.

Confidential

Verify Scale: Bar measures one inch at full size. If not one inch then adjust scales accordingly

AECOM

30% SUBMITTAL

PORTLAND WATER BUREAU

PRELIMINARY

Washington Park Reservoir Improvements

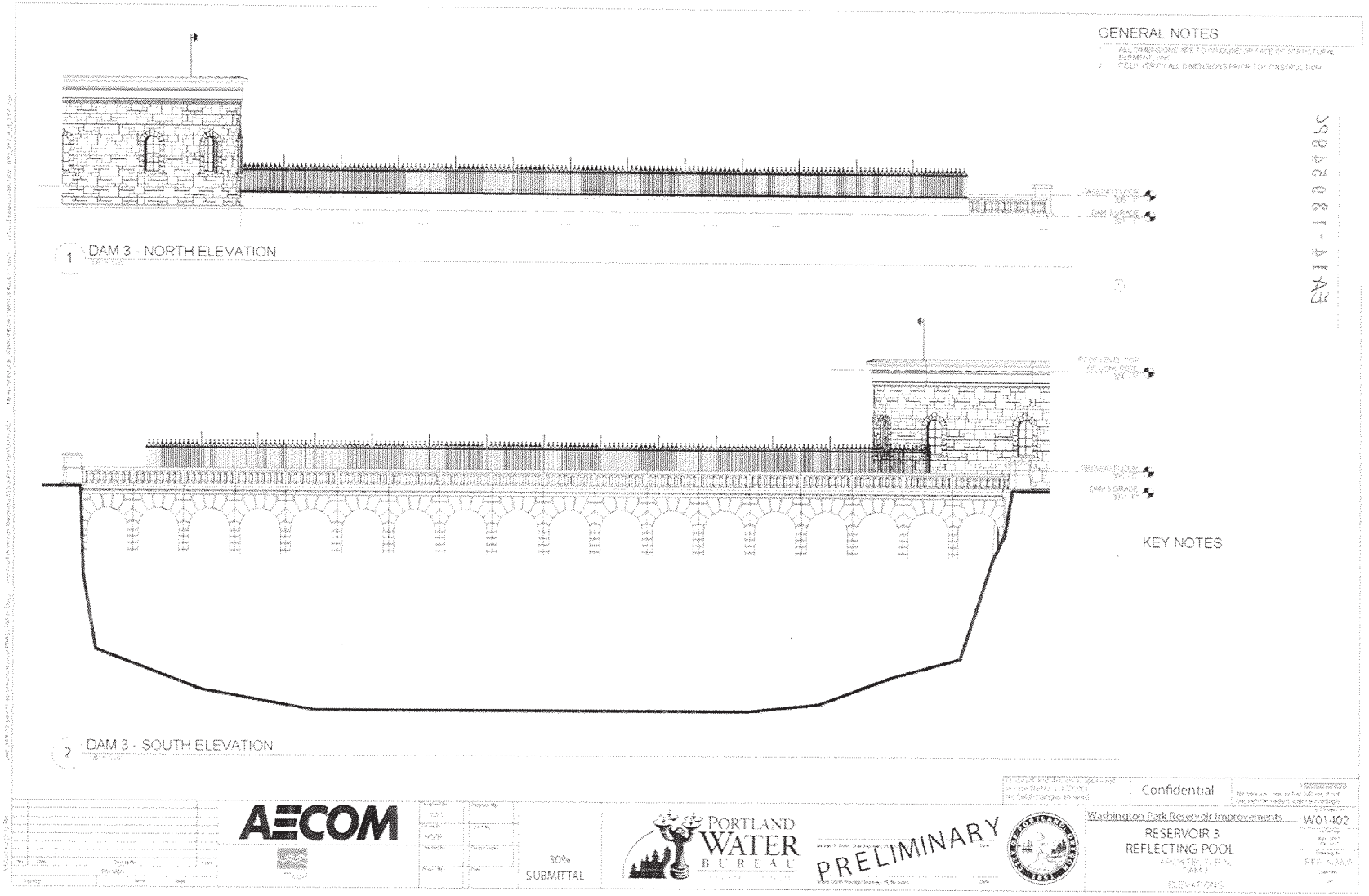
W01402

RESERVOIR 4

LANDSCAPE ILLUSTRATIVE SECTIONS

ILL_L_7215

APPENDIX A


GENERAL NOTES
1 DAM 3 - NORTH ELEVATION
KEY NOTES
2 DAM 3 - SOUTH ELEVATION
Confidential
AECOM
30%
SUBMITTAL
PORTLAND WATER BUREAU
PRELIMINARY
Washington Park Reservoir Improvements
W01402
RESERVOIR 3
REFLECTING POOL
ELEVATIONS

City of Portland, Oregon
Bureau of Development Services
Land Use Services
FROM CONCEPT TO CONSTRUCTION

Amanda Fritz, Commissioner
Paul L. Scarlett, Director
Phone: (503) 823-7300
Fax: (503) 823-5630
TTY: (503) 823-6868
www.portlandoregon.gov/bds

BDS – Land Use Planner Response

Pre-Application Conference

Date: May 13, 2014

To: Sheila Frugoli, Conference Facilitator
503-823-7817, sheila.frugoli@portlandoregon.gov

From: Hillary Adam
503-823-3581, Hillary.Adam@portlandoregon.gov

File No.: 14-139549

Location: 2403 SW JEFFERSON ST – Washington Park Reservoirs

Tax Account: R316752, R485200, R485207, R485390, R485392, R485394

State ID Number: 1N1E33C 00300, 1N1E32 00100, 1N1E32 00200, 1S1E05 00100, 1S1E05 00200, 1S1E04 00100

Proposal: Pre-App for Washington Park Reservoir project for the following possible land use reviews: Environmental Review, Historic Resource Review, Demolition Review, and Conditional Use Review.

The information provided at the conference and included in this response is based on the information you provided prior to and at the conference and reflects regulations in effect at the time of the conference. This response provides information and guidance only. It is preliminary in nature and based on the information the applicant provided to BDS staff. It is neither a land use review nor a final decision regarding this project. References are to the Portland Zoning Code available online at www.portlandonline.com/zoningcode.

A. Key Issues and Requirements

The following issues and requirements have been summarized for the applicant to pay special attention to as they may impact the proposed project.

1. The applicant has met with the Historic Landmarks Commission on four occasions, including one briefing and three Design Advice Requests. The Commission has provided guidance and the applicant's design has evolved per these discussions.

2. In anticipation of potential appeals, staff suggests that the timing of all (HR, CU, EN) reviews be coordinated so that appeals to City Council may be heard at the same time. Staff strongly suggests that full extensions to the 120-Day review period be granted, with signed forms submitted at the time of application, in order to secure evidentiary hearings, as well as to allow for coordination of these reviews. The Type IV application can be submitted prior to submittal of the Type III application.

3. The Type III Historic Resource Review (HR) and Type IV Demolition Review (DR) shall have separate case numbers but will run semi-concurrently. A response to the approval criteria for each review should be provided with each application. The approval criteria for the Type III HR is 33.846.060.G (1-10) *Other approval criteria*. The approval criteria for the Type IV DR is 33.846.080.C *Approval criteria*.

4. Type IV plans should clearly show which portions are to be removed, which are to remain in place, and which are to be restored.

5. Plans, Elevations, and Sections should be provided with a high level of detail. Enlarged sections should be provided for new windows and doors at the pumphouse. Section details should be provided through walkways, the grand stair, parapet walls, fences, and barriers between land and water. Design drawings should be provided for new lighting and interpretive signage. Materials should be called out on elevation and section drawings, with samples and/or a materials board provided.

B. Questions Raised at the Conference

1. The posting boundaries will be confirmed prior to Type IV submittal.
2. Staff does not see any conflicts between the current proposal and the recommendations noted in the Washington Park Master Plan.

C. Land Use Reviews Required

The following table identifies land use reviews required for your project. Please refer to the identified code citations for additional information. Information and handouts on land use reviews are available on our website. For information on review procedures and timelines, see the Summary of Procedure Types.

Review Procedure	Land Use Review	Approval Criteria
Type III	Historic Resource Review	33.846.060.G
Type IV	Demolition Review	33;.846.080.C

D. Development Standards

- **Base Zone Development Standards**
  Proposed development must meet development standards of the OS (Open Space) base zone. Existing development may not go further out of conformance with standards.
  - Refer to Zoning Code Chapter 33.100 *Open Space Zone* for standards applicable in this zone.

- **Overlay Zone Standards**
  This site is also located in the "c" (Environmental Concern) overlay zone and "p" (Environmental Protection) overlay zone.
  - Refer to Zoning Code Chapter 33.430 *Environmental Zones* for regulations applicable in these overlay zones.

  This site is also located in the the "s" (Scenic Resource)overlay zone.

- Refer to Zoning Code Chapter 33.480 *Scenic Resource Zone* for regulations applicable in this overlay zone.

- **Nonconforming Upgrades**
  Whenever a property owner or tenant makes interior or exterior improvements to a site totaling more than $145,200, up to 10% of the project cost must be spent toward bringing the site into conformance with identified zoning code standards. Refer to Zoning Code Chapter 33.258.070.D.2 for details.

- **New Tree Regulations**
  The new Portland City Tree Code (Title 11) and related amendments to the Zoning Code (Title 33) will go into effect **January 1, 2015**. A summary of the tree regulations, and the adopted Tree Code, can be viewed at the following link: http://www.portlandonline.com/bds/index.cfm?c=61467.

E. Previous Land Use Reviews.
As part of your application, address relevant conditions of approval from previous land use reviews on the site and discuss the current status of compliance. Below are the relevant land use case reviews that the City of Portland has on record for the subject site:

1. LU 05-138520 HDZ – Historic Design Review approval for Phase 1 of security and deferred maintenance projects;
2. PC 06-173417 – Pre-Application Conference for security and deferred maintenance projects;
3. LU 07-137990 HDZ – Historic Design Review approval for Phase 2 of security and deferred maintenance projects
4. EA 13-162228 APPT – Early Assistance Appointment related to current proposal; and
5. EA 13-200312 DAR – Design Advice Request with the Historic Landmarks Commission for the current proposal.

F. Neighborhood Notification
When you apply for a III Land Use Review, all property owners within 400 feet, and all neighborhood associations and recognized organizations within 1,000 feet of your site will receive notification of your proposal.

- The site is located within the neighborhood association of Arlington Heights, contact Shawn Wood at 503-329-2497.
- The site is located within 1,000 feet of the following neighborhoods: Goose Hollow, contact Greg Wimmer at 503-222-7173, Northwest District, contact John Bradley at 503-313-7574, Hillside, contact Peter Stark at 503-274-4331, and Southwest Hills Residential League, contact Nancy Seton at 503-224-3840. neighborhood association.
- The site is located within the district neighborhood coalition of Neighbors West/Northwest, contact Mark Sieber at 503-823-4212, and within 1,000 feet of Southwest Neighborhoods, Inc., contact Sylvia Bogert at 503-823-4592.
- The site is located within the business association of None
- Contact information for neighborhood associations, neighborhood district coalitions, and business associations is available at www.portlandonline.com/oni/search/.

G. Submittal Requirements for Land Use
This list identifies the materials you must submit for your application to be considered complete. For additional details, see Zoning Code Section 33.730.060.

General Information – Historic Review

	Item to submit	# of copies (8½ x 11)	Details
1.	**Application Form**	1	Complete application form.
2.	**Fee**		Land Use Review fees
3.	**Optional: Request for an Evidentiary Hearing and Waiver of Right to a Decision within 120 Days**	1	Allows new facts and evidence (an "evidentiary hearing") if your project is ultimately appealed. You must submit this form within 21 days of submitting your land use review application.
4.	**Requirements for written narrative, maps, plans, etc.**	1	General Submittal Requirements (Zoning Code Chapter 33.730.060)

Written Narrative

	Item to submit	# of copies (8 ½ x 11)	Details
5.	**Written Statement**	2	Provide a written statement that describes the project and includes the following items: ▪ A complete list of all land use reviews requested; ▪ A complete description of the proposal including existing and proposed use(s) and/or change(s) to the site or building(s); ▪ Additional information needed to understand the proposal. ▪ Written response to issues raised at prior Pre-Application and/or Design Advice
6.	**Historic Nomination**	2	Description of resource from Historic District Nomination or individual National Register Nomination of resource
7.	**LEED Narrative**	2	Describe sustainable features, green technology, etc.
8.	**Historic Resource Review Narrative**	2	Address, in written form, the approval criteria in Section 33.846.060 and the applicable design guidelines (noted above).
9.	**Modifications Narrative**	2	Address, in written form, the approval criteria in Section 33.846.070.
10.	**Adjustment Narrative**	2	Address, in written for, the approval criteria in Section 33.805.040.
11.	**Previous Conditions of Approval**	2	Address, in writing, conditions of approval from previous land use reviews on the site and discuss the current status of compliance.

Materials and Photos

	Item to submit	# to submit	Details

	Item to submit	# to submit	Details
12.	**Manufacturer's Cutsheets**	2	Show proposed exterior building skin, windows, doors, light fixtures, rooftop equipment, exterior vents, etc.
13.	**Site Photos**	2	Provide photos of site, immediate context and neighborhood.

Plans and Elevations

	Item to submit	# of copies (1/2 size, scalable)	# of copies (11 x 17)	# of copies (8 ½ x 11)	Details
14.	**Site Utility Feasibility Plan**	2	2	1	Show proposed and existing sewer service connections, water service connections, septic drainfields, stormwater disposal methods, PGE/PPL electrical vault locations, etc.
15.	**Vicinity Plan**	2	2	1	Submit plan that shows buildings, streets and open space in a 3-block context.
16.	**Site Plan**	2	2	1	Submit plan that shows adjacent street frontages, relationship of existing curb-cuts and building entrances, base points for height and FAR measurements.
17.	**Landscape Plan**	2	2	1	Provide details, including plant species.
18.	**Floor Plan Diagrams**	2	2	1	Show floor areas and FAR calculations at each floor.
19.	**Floor Plans and Roof Plan**	2	2	1	
20.	**Building Elevations**	2	2	1	
21.	**Enlarged Elevations**	2	2	1	At the street level, windows, balconies, garage/loading doors, railings, vents, parapets and rooftop mechanical enclosures, etc.
22.	**Building Sections**	2	2	1	Showing building height and base point height, showing key areas of the building, etc.
23.	**Enlarged Typical Sections and Details**	2	2	1	Show walls, windows, balconies, railings, canopies, garage/loading doors, exterior vents, rooftop mechanical enclosure, material joints, etc.
24.	**Perspectives**	2	2	1	Show context, distinct sightlines.
25.	**Colored**	2	2	1	Include nighttime renderings.

	Item to submit	# of copies (1/2 size, scalable)	# of copies (11 x 17)	# of copies (8 ½ x 11)	Details
	Renderings				
26.	**Sign Plans**	2	2	1	Provide elevations, details, sections and mounting details.

You may submit your application in the Development Services Center, 1900 SW Fourth Avenue, First Floor, from 8:00 am to 3:00 pm, Tuesday through Friday.

City of Portland, Oregon
Bureau of Development Services
Land Use Services
FROM CONCEPT TO CONSTRUCTION

Amanda Fritz, Commissioner
Paul L. Scarlett, Director
Phone: (503) 823-7300
Fax: (503) 823-5630
TTY: (503) 823-6868
www.portlandoregon.gov/bds

BDS – Land Use Planner Response

Pre-Application Conference

Date: June 3, 2014

To: Sheila Frugoli, Conference Facilitator
503-823-7817, sheila.frugoli@portlandoregon.gov

From: Stacey Castleberry, BDS LUS Planner (Environmental Review)
503-823-7586, Stacey.Castleberry@portlandoregon.gov

Mark Walhood, BDS LUS Planner (Conditonal Use Review)
503-823-7806, mark.walhood@portlandoregon.gov

File No.: EA 14-139549 PC

Location: 2403 SW JEFFERSON ST

Tax Account: R316752, R485200, R485207, R485390, R485392, R485394

State ID Number: 1N1E33C 00300, 1N1E32 00100, 1N1E32 00200, 1S1E05 00100, 1S1E05 00200, 1S1E04 00100

Proposal: Pre-App for Washington Park Reservoir project for the following possible land use reviews: Environmental Review, Historic Resource Review, Demolition Review, and Conditional Use Review.

The information provided at the conference and included in this response is based on the information you provided prior to and at the conference and reflects regulations in effect at the time of the conference. This response provides information and guidance only. It is preliminary in nature and based on the information the applicant provided to BDS staff. It is neither a land use review nor a final decision regarding this project. References are to the Portland Zoning Code available online at www.portlandonline.com/zoningcode.

A. Key Issues and Requirements

The following issues and requirements have been summarized for the applicant to pay special attention to as they may impact the proposed project.

1. **Historic Notes Separate & Phasing/Concurrency** -- See the separate notes from Hillary Adam for issues and requirements for the Historic Resource and Demolition Reviews. We recommend that you run the Type III applications concurrently, but that the Historic Review and Demolition Review be separate application(s) from the combined Conditional Use and Environmental Reviews.
2. **Zoning** — Washington Park is within the Open Space (OS) base zone,and within the Environmental Conservation (c) overlay zone. Areas with the "c" designation are in the Environmental Conservation overlay zone.

Washington Park & Washington Park Reservoirs Historic District are listed in the National Register of Historic Places, and are therefore subject to the regulations of the Historic Resource overlay zone.

Please see the attached Zoning Map. Be sure to copy these zoning lines and designations onto your site plans.

3. **Conditional Use Review** -- Water reservoirs and water pump stations are Basic Utility uses, a conditional use in the OS zone if the development is not primarily serving just the site itself. Due to the large area of exterior improvements involved in the project at the reservoirs, a Type III Conditional Use Review is required. Please carefully review the approval criteria at 33.815.100.A-D and respond with specifics in your application. For this project you can think of the conditional use as following on the heels of the Environmental and Historic Resource Reviews, since those issues are included in the language of the conditional use criteria at 33.816.100.A.3. Other preliminary thoughts:

   a. Please carefully describe the functions, depth and nature of the new reflecting pools, including public access routes and hours of operation, any likely programming or park activities in these spaces beyond passive uses, etc.

   b. The timing of opening up the space to public access should also be discussed (historical timeline of access, recent access restrictions, benchmarks to re-open if any/federal rules, etc.);

   c. Lighting and litter are issues in the approval criteria, so please include a lighting plan with fixture details for the entire project area, as well as information on the location and servicing of trash cans in the project area; and

   d. A plan showing existing and proposed public access to the site, documenting the significant new open space amenity provided near reservoir 4, in your application – this is the big gesture that is entirely consistent with the CU criteria for OS-zoned sites and you should take advantage of this in your application.

4. **Environmental Review --** Based on our discussion of the proposal at the pre-application conference, staff understands that grading and retaining walls for grassy terraces, removal of trees, improvements to pathways, trails, and driveways, underground pipelines, vaults, stormwater facilities, and a separate construction staging and stockpiling area may be developed in the environmental zone, to the west and east of Reservoir #4.

   Locations of each of the above-listed project elements relative to environmental zone lines, including resource areas and transition areas is not specified on site plans. It is possible that some of the listed project elements meet environmental zoning exemptions listed in 33.430.080. The applicant is advised to review the exemptions carefully to determine if this is the case. Similarly, It is possible that some of the listed project elements meet environmental development standards listed in 33.430.140 through .190. The applicant is advised to review the standards carefully to determine if this is the case.

   For each of the above-listed project elements in the environmental zone that do not meet exemptions or development standards, Type II Environmental Review is required, and narrative and graphic information-- *specific to each respective project element* –as listed on the Environmental Review Submittal Checklist, is required.

   The applicable approval criteria for Environmental Review for driveways, walkways, outfalls, and utilities, are found in Section 33.430.250.A. The applicable approval criteria for Environmental Review for grading and retaining walls for grassy terraces, removal of trees, and separate construction staging and stockpiling area are found in Section 33.430.250.E. Application materials and procedural information can be found online at BDS's link to Environmental Reviews. An application for environmental review must include an alternatives analysis, for each project being reviewed. This analysis should consider alternative locations on the site, alternative designs of the

respective project element, and alternative construction techniques. Narrative and graphic construction management plans, and mitigation plans are also required for each element.

Please also include a tree protection plan for work within the environmental resource area, as described in Zoning Code section 33.248.065 and .068. Provide graphic depiction of tree preservation in the environmental zones, along with informative notes on the construction management plan, or a separate tree protection plan.

a. **Natural Resource Inventory Site** —Natural resources which have been identified by the City for protection in the environmental zones are listed in the Southwest Hills Resource Protection Plan within Resource Site # 112 Canyon Road East. You should include this information in your application for Environmental Review, in the description of resources which might be impacted by the proposed development. Note that the resource description places emphasis on the significance of contiguous forest habitat. This information should be used to assess alternatives, as well as the unavoidable impacts to identified resources, and to develop your Mitigation Plan, to offset unavoidable impacts.

b. **Construction Management** — Your Construction Management plan must depict the separate construction staging and stockpiling area, as well as all clearing and grading for trails, walkways, retaining walls, and stormwater facilities. It must depict construction access for all projects within environmental zones. And it must identify tree removal and tree protection.

   The graphic and narrative Construction Management plan must identify measures that will be taken during construction to protect the remaining resources and functional values at and near the construction site and must describe how undisturbed areas will be protected. For example, describe how surrounding native vegetation will be protected, erosion controlled, construction equipment controlled, and the timing of construction.

c. **Mitigation** —A narrative and graphic mitigation plan is required to demonstrate replacement of lost resources proportional to impacts, including replacement of trees cut according to Table 430-3. A graphic mitigation planting plan showing standard landscape graphics is required. Examples of mitigation might include tree replacement, invasive species removal, restoration of degraded resource areas with native plantings, and planting dense buffers between public areas and resource areas to remain undisturbed. Mitigation must occur within the protected resource area of the environmental zone, to ensure its ongoing success and preservation.

B. Land Use Reviews Required

The following table identifies land use reviews required for your project. Please refer to the identified code citations for additional information. Information and handouts on land use reviews are available on our website. For information on review procedures and timelines, see the Summary of Procedure Types.

Review Procedure	Land Use Review	Approval Criteria
Type III	Historic Resource Review	33.846.060
Type II	Environmental Review	33.430.250 A
Type III	Conditional Use Review	33.815.100.A-D

C. Development Standards

- **Base Zone Development Standards**

  Proposed development must meet development standards of the Open Space (OS) base zone. Existing development may not go further out of conformance with standards.
  - Refer to Zoning Code Chapter 33.100 for standards applicable in this zone.

- Note that Conditional Uses in the OS zone face a different set of development standards. These include minimum and maximum building setbacks (SW Sherwood and SW Sacajawea are Community Transit Streets), parking minimums and maximums are per the CG zone for that use, and the single-dwelling institutional standards at Table 110-5 will apply (33.100.200.B).

- **Overlay Zone Standards**
  This site is also located in the Environmental Conservation overlay zone.
  - Refer to Zoning Code Chapter 33.430 for regulations applicable in the Environmental Conservation overlay zone. These regulations are highlighted above in the "Key Issues" information on pages 1 through 3.

  This site is also located in the Historic Resource Protection overlay zone.
  - Refer to Zoning Code Chapter 33.445 for regulations applicable in this overlay zone, as Mount Tabor Park Reservoirs Historic District and Mount Tabor Park were listed in the National Register of Historic Places on January 15, 2004 and September 22, 2004, respectively. The approval criteria is listed under Section 33.846.060.G *Other approval criteria* (*see separate notes from Hillary Adam on Historic Resource & Demolition Reviews*).

- **Parking and Loading**
  Proposed development must comply with the requirements of Zoning Code Chapter 33.266, Parking and Loading.

- **Landscaping and Screening/ Tree Protection**
  Development must comply with tree protection requirements in Chapter 33.248, Landscaping and Screening.

- **Nonconforming Upgrades**
  Whenever a property owner or tenant makes interior or exterior improvements to a site totaling more than $145,200, up to 10% of the project cost must be spent toward bringing the site into conformance with identified zoning code standards. Refer to Zoning Code Chapter 33.258.070.D.2 for details.

- **New Tree Regulations**
  The new Portland City Tree Code (Title 11) and related amendments to the Zoning Code (Title 33) will go into effect **January 1, 2015**. A summary of the tree regulations, and the adopted Tree Code, can be viewed at the following link: http://www.portlandonline.com/bds/index.cfm?c=61467.

D. Neighborhood Notification

When you apply for a Type I/II/IIx/III Land Use Review, all property owners within 100/150/400 feet, and all neighborhood associations and recognized organizations within 400/1,000 feet of your site will receive notification of your proposal.

- The site is located within the neighborhood association of Arlington Heights, contact Shawn Wood at 503-329-2497.
- The site is located within 400/1,000 feet of Goose Hollow, contact Greg Wimmer at 503-222-7173.Northwest District, contact John Bradley at 503-313-7574./Hillside, contact Peter Stark at 503-274-4331.Southwest Hills Residential League, contact Nancy Seton at 503-224-3840. neighborhood association.
- The site is located within the district neighborhood coalition of Neighbors West/Northwest, contact Mark Sieber at 503-823-4212.
- There is no business association for the site.
- Contact information for neighborhood associations, neighborhood district coalitions, and business associations is available at www.portlandonline.com/oni/search/.

E. Submittal Requirements for Land Use

The list below identifies the materials you must submit for your application to be considered complete. For additional details, see Zoning Code Section 33.730.060.

	Item to submit	Details
1.	**Application Form**	Complete application form
2.	**Fee**	Land Use Review fees **NOTE: fees typically change each year on July 1st.*
3.	**Requirements for written narrative, maps, plans, etc.**	General Submittal Requirements (Zoning Code Chapter 33.730.060) Note that six copies of the written narrative addressing the applicable approval criteria will be required. Please provide six copies of the plans, including four large/scalable plan sets, and two sets at 8.5" x 11".
		Conditional Use Review: A **narrative** should be provided addressing the conditional use criteria at 33.815.100.A-D. Please provide as many fact-based statements in your narrative as possible, including details on the character of the spaces being created, their size, public access to the site, hours of access, etc. Note that there are no relevant adopted plans for the 'area plans' criterion D. **Drawings** (plans, elevations, details) should be provided showing all the proposed alterations to the reservoir. Landscape plans, trash cans/trash locations, lighting, and other physical details germane to the issues in the conditional use criteria should be shown on the plans.
		Environmental Review: **A project specific narrative** is required, that describes each project element and its impacts, and responds individually to each applicable approval criterion. Please use the Environmental Review Submittal Checklist as a guide in preparing the narrative. Include a Microsoft Word electronic version of narrative information. Please provide findings for each of the criteria in Zoning Code Section 33.430.250 A and E as described above. **Required Site Plans** include an Existing Conditions Plan, a Proposed Development Plan, a Construction Management Plan and a Mitigation Plan for Environmental Review applications. These plans can be combined with the site plans required for other land use reviews. Please use the City's Environmental Review Submittal Checklist as a guide in preparing site plans for your application. Please provide pdf versions of your graphic site plans.
4.	**Optional: Request for an Evidentiary Hearing and Waiver of Right to a Decision within 120 Days**	Allows new facts and evidence (an "evidentiary hearing") to be presented if your project is appealed to City Council. You must submit the request form within 21 days of submitting your land use review application.

You may submit your application in the Development Services Center, 1900 SW Fourth Avenue, First Floor, from 8:00 am to 3:00 pm, Tuesday through Friday.

CITY OF PORTLAND OFFICE OF TRANSPORTATION

PBOT – Development Review

Pre-Application Conference Response

Date: October 30, 2014
To: Sheila Frugoli, Conference Facilitator
503-823-7817, Sheila.Frugoli@portlandoregon.gov]
From: Robert Haley, PBOT Development Review
503-823-5171, Robert.Haley@portlandoregon.gov
Case File: EA 14-139549
Location: 2403 SW JEFFERSON ST
R#: R316752, R485200, R485207, R485390, R485392, R485394
Proposal: Pre-App for Washington Park Reservoir project for the following possible land use reviews: Environmental Review, Historic Resource Review, Demolition Review, and Conditional Use Review.

Portland Bureau of Transportation/Development Review (PBOT) staff has reviewed the pre-application conference materials to identify potential issues and requirements.

A. Key Issues and Requirements

Following is a brief summary of issues and requirements that may impact your proposed project or are submittal requirements that will require time to prepare prior to submittal of the application.

- The only land use review identified that has transportation related approval criteria is the Conditional Use Review.
- The applicant's narrative must individually address each of the evaluation factors in the transportation related approval criteria.
- The site does not appear to have any frontages on City right-of-way. The roads in the vicinity of the project are Park Roads and not under the jurisdiction of PBOT.
- At this time, PBOT does not anticipate any required street improvements on City rights-of-way.
- The applicant is advised to contract with an Oregon licensed traffic engineer to adequately address the transportation approval criteria for the Conditional Use review.

B. Approval Criteria

The applicant shall submit a written narrative adequately addressing the applicable zoning code approval criteria listed below for the required reviews:

Topic	Code and Comments	Code Citation & Link
Conditional Use Review– Uses in the Open Space Zone	Public services. 1. The proposed use is in conformance with the street designations of the Transportation Element of the Comprehensive Plan; 2. The transportation system is capable of supporting the proposed use in addition to the existing uses in the area. Evaluation factors include street capacity, level of service, and other performance measures; access to arterials; connectivity; transit availability; on-street parking impacts; access restrictions; neighborhood impacts; impacts on pedestrian, bicycle, and transit circulation; safety for all modes; and adequate transportation demand management strategies;	33.815.100.B

C. Permit Information

At the time of permit review (following the land use review) you should be aware of the following:

1. System Development Charges (SDCs) may be assessed for this development. The applicant can receive an estimate of the SDC amount prior to submission of building permits by contacting Rich Eisenhauer at (503) 823-6108.
2. Curb cuts and driveway construction must meet the requirements in Title 17. The Title 17 driveway requirements will be enforced during the review of building permits.
3. The r.o.w. improvements will need to be designed by an Oregon licensed civil engineer and constructed under a Public Works Permit, which is separate from the Building Permit that will be necessary for construction of the proposed attached homes. The applicant is therefore encouraged to contact Public Works at publicworkspermit@portlandoregon.gov or at (503) 823-1987 to familiarize himself with the process and initiate the appropriate meetings/process. Additional information on the City's Public Works Permitting process can be found at the following link: http://www.portlandonline.com/index.cfm?c=53147.
4. Plans, fees, a contract (called the application for permit) and a performance guarantee for the estimated value of the improvement must be submitted prior to (Final Plat approval). The performance guarantee may be in the form of a surety bond, irrevocable letter of credit, set-aside account, or cash deposit. Applicant should contact Mark Fischer at (503) 823-7072 for appropriate forms and additional information.
5. The applicant has the opportunity to propose an alternative frontage improvement solution. The applicant may enter into the City's adopted Public Works Alternative Review process. Additional information on this process can be found at the following link: http://www.portlandoregon.gov/article/481371.

D. Submittal Requirements for Land Use

This list identifies PBOT submittal requirements. Please see the Conference Summary Memo for all of the materials you must submit for your application to be considered complete.

1. Written narrative adequately addressing all transportation related approval criteria.

All submittal requirements should be submitted with the application.

CITY OF PORTLAND
ENVIRONMENTAL SERVICES

1120 SW Fifth Avenue, Room 1000, Portland, Oregon 97204 ▪ Nick Fish, Commissioner ▪ Dean Marriott, Director

Pre-Application Conference Response

Date: May 29, 2014
To: Sheila Frugoli, Conference Facilitator, Sheila.Frugoli@portlandoregon.gov
From: Stephen Himes, BES Systems Development, Stephen.Himes@portlandoregon.gov
Kevin Kilduff, BES Pollution Prevention & Plan Review
Colleen Mitchell, BES Watershed Services
Case File: EA 14-139549
Location: 2403 SW JEFFERSON ST
R#: R316752, R485200, R485207, R485390, R485392, R485394
Proposal: Pre-App for Washington Park Reservoir project for the following possible land use reviews: Environmental Review, Historic Resource Review, Demolition Review, and Conditional Use Review.

The Bureau of Environmental Services (BES) has reviewed the Pre-Application Conference materials to identify potential issues and requirements. Links to BES web pages included herein may be found at www.portlandonline.com/bes.

A. Previous BES & PWB Coordination

The Bureau of Environmental Services has been working in cooperation with the Washington Park Design Team to address a variety of issues related to reservoir operations and discharges to the storm and sanitary sewer systems. A number of issues have been discussed and enumerated in the *Technical Memorandum* dated October 25, 2013 (Original) with MSA Responses of December 27, 2013, which is included by reference and summarized below. BES will continue to work with the Water Bureau to resolve any remaining issues, particularly those related to the proposed long-term discharge of groundwater. To continue coordination with BES staff, contact Joe Blanco in BES Development Review (503-823-2059) about stormwater management or Sebrina Nelson-Deal (503-823-5843) in BES Pollution Prevention Services about source control. Some key discussion points are highlighted below:

1. The Tanner Creek storm-only sewer has capacity to convey reservoir overflow volumes during unanticipated, infrequent overflow events without detention being required. BES must confirm if this capacity is weather dependent limited.
2. Dechlorination of chlorinated drinking water entering the storm-only system is not required because the distance from the entry point into the Tanner Creek sewer to its Willamette River outlet exceeds DEQ guidelines.
3. Drainage water resulting from reservoir cleaning operations must be treated to remove sediment to meet BES and DEQ requirements. Sediment concentration and flow rate limits are a function of the receiving sewer system (e.g. sanitary/combined versus storm only) and must follow BES and DEQ requirements. Chlorinated reservoir cleaning water could be discharged into a sanitary/combined or storm-only sewer without dechlorination.
4. Direct release of reflecting pool drainage water containing sediment is not allowed without sediment removal treatment. Dechlorination of this water is not required. Super-chlorinated water could be discharged into a sanitary/combined sewer but volume and rates of discharge must meet BES and DEQ requirements.
5. All stormwater runoff from new and redeveloped site impervious surfaces must receive treatment before its release, per the standards of the Stormwater Management Manual (SWMM) that is current at the time of permit submittal. Infiltration facilities will not be used because of the landslide potential of the site.
6. This project does not qualify for a categorical exemption from detention noted in the SWMM.

7. Portland Water Bureau will test and estimate the volume of groundwater from the site that enters the Tanner Creek storm-only sewer. Coordinate with Sebrina Nelson-Deal (503-823-5843).

In addition, staff wishes to correct and augment the information provided in *Technical Memorandum* section 3.1.m, as outlined below:

8. Stormwater discharges from this site will enter the storm system and discharge from the Tanner Creek outfall to the Willamette River, which is federally designated "Critical Habitat" for salmonid species listed as threatened under the Endangered Species Act.

   Lower Columbia River steelhead trout, Chinook and coho salmon, as well as upper Willamette River steelhead trout and Chinook salmon, and the Columbia River eulachon are federally protected, threatened species that are present in and use the lower Willamette.

9. Tanner Creek provides cold water critical to the above described endangered salmonids. Temperature monitoring by the City of Portland found creek temperatures at the outfall to be 6°C cooler than the surface water temperature of the Willamette River (BES, 2011). BES recommends the applicant manage draining operations for temperature by discharging at the appropriate time of day (i.e. early morning as opposed to late afternoon when water temperature is highest).

B. Sanitary Service & Stormwater Management

1. *Existing Sanitary Infrastructure*: BES maintains a public 48-54" RCP combined sewer below manhole # AMT072 in SW Jefferson St (BES as-built #4956), and a public 18-24" RCP combined sewer just to the northwest of Reservoir 3 within park property (BES as-built # E10103).

2. *Sanitary Requirements*: Generally speaking, requirements related to sanitary discharges are covered in Section A, above, and in the *Technical Memorandum*.

3. *Existing Stormwater Infrastructure*: There is a public 36-inch HDPE storm-only sewer in SW Canyon (BES as-built # 4956). After 59LF, this line connects to a larger 54-inch RCP.

4. *Stormwater Management Requirements*: All development and redevelopment proposals are subject to the requirements of the City of Portland Stormwater Management Manual (SWMM). The SWMM is periodically updated; projects must comply with the version that is adopted when permit applications are submitted. The current SWMM can be viewed at www.portlandoregon.gov/bes/swmm.

5. *On-Site Stormwater Management Comments*: BES reviews stormwater management facilities on private property for the feasibility of infiltration, pollution reduction, flow control, and off-site discharges. The Site Development Section of BDS determines if stormwater infiltration on private property is feasible when slopes on or near the site present landside or erosion related concerns, or where proximity to buildings might cause structural problems.

   a. See Section A, above, for general comments related to stormwater management from this project. The applicant should continue working with Joe Blanco (503-823-2059) to coordinate with regard to project stormwater management.

   b. New Connections to the City of Portland's Municipal Separate Stormwater Sewer System (MS4) from known or suspected contaminated properties must meet the BES New Connections Policy. The City requires the use of existing or new private outfalls for stormwater discharges. Stormwater analytical data must be submitted to show compliance with this policy when a new MS4 connection is proposed. Please see Section 4.11 of the SWMM for details, and contact Sebrina Nelson-Deal in BES Pollution Prevention (503-823-5843) with policy questions.

   c. The project site is located in the Willamette River Watershed. Total Maximum Daily Load (TMDL) water quality requirements apply in the Willamette River Watershed, as required by Oregon DEQ. The SWMM requires that applicants use pollution reduction

facilities that are capable of reducing TMDL pollutants. Vegetated facilities sized according to the Simplified or Presumptive Approaches meet these requirements.

C. Development Engineering (Public Improvements)

Contact Bret Winkler (bret.winkler@portlandoregon.gov, 503-823-6170) with questions.

1. A combination sewer is available, and it is anticipated that an extension is not required.
2. A storm-only sewer is available, and it is anticipated that a storm extension is not required.
3. City GIS indicates that roadways in the project area are not public rights-of-way and therefore public stormwater improvements would not be required. See Pre-Application Conference comments from Bureau of Transportation (PBOT) staff for more information about streets in the project vicinity.

D. Site Considerations

The following information relates to specific site conditions or features that may impact the proposed project.

1. *Mitigation Plantings*: Portland's Zoning Code (33.248) includes specific requirements for mitigation and restoration plantings, including that the plant materials must be native and selected from the Portland Plant List. BES supports this requirement for any mitigation or restoration plantings in Environmental overlay zones, and encourages native plants from the Portland Plant List for all other plantings.
2. *Mature Trees*: The site contains mature trees which are beneficial because they intercept at least 30% of precipitation that falls on the canopy, filter stormwater, help prevent erosion, and provide shade which cools the air and stormwater runoff. Trees also increase property values and help support Portland's adaptation to climate change. It is difficult to mitigate for the removal of mature trees as it can take decades for new trees to provide equivalent benefits. BES recommends as many of the site's existing trees as possible be preserved.
3. *Nature in Neighborhoods Inventory Information:* Pursuant to the Zones chapter of PCC 33.430.250, the applicant must show the proposed development will not have significant detrimental environmental impact on resources and/or functional values. The natural resources at this site were identified in Metro's Nature in Neighborhoods inventory of regionally significant riparian corridors and wildlife habitat. Specified resources and functions include the following:

   Regionally Significant Wildlife Habitat: This site is part of the Westside Wildlife Corridor, an area that has been identified by City and Metro inventories as an important forested corridor connecting Forest Park to the north to Tryon Creek State Natural Area to the south. BES supports the proposed habitat enhancement at Reservoir 4. The forest and woodlands in this area provide food and shelter for a variety of birds, mammals, and other species.

   With all construction, BES recommends that the applicant minimize site disturbance and replant disturbed areas with native vegetation. Doing so will help minimize erosion, protect slope stability, and restore lost functions.
4. *Slope Information*: Portions of this site is steeply sloped; therefore, BES recommends that slope stability be carefully considered in all aspects of site development. This may include strategies such as replanting disturbed areas with native plants to help stabilize soils and minimize erosion, and placing stormwater facilities in areas that will protect slope stability.
5. *Soil Information*: Generally, Cascade silt loam soils predominate in this area. Cascade soils have a surface layer and subsoil of silt loam and a substratum of silt loam fragipan that can restrict water flow. The depth of the fragipan layer varies from 2-4 feet, or more. This type of soil is moderately- to poorly-drained and can become saturated during the rainy season,

resulting in surface runoff, erosion, and landslides. Therefore, to minimize these effects and to protect slope stability, BES recommends that native plants be planted on disturbed areas.

E. Submittal Requirements for Land Use

1. Full-size land use plan set.
2. A Presumptive or Performance Approach stormwater report and any other supporting documentation as deemed necessary by Joe Blanco.
3. An environmental site assessment phase II or comprehensive sampling and site characterization is required to further assess feasibility for long-term groundwater discharge to the combined sewer system. This information must be provided to BES Pollution Prevention at the time of land use review.
4. Analytical data showing compliance with water quality criteria per Oregon Administrative Rules, OAR 340 41 Table 20 should be submitted at land use review to ensure the proposal will have an approvable groundwater discharge location.

F. Permit Information

At the time of permit review the applicant should be aware of the following:

1. *Connection Fees*: Sewage system connection fees and system development charges are assessed at the time of building plan review and change every fiscal year on July 1st. For additional information on these fees, visit the BES website or call the BES Development Review Team at 503-823-7761.
2. *Connection Requirements*: Connection to public sewers must meet the standards of the City of Portland's Sewer and Drainage Facilities Design Manual.
3. *1200-C NPDES Permit*: If the disturbance area for the proposed development equals or exceeds one acre (including street improvements), or dewatering is proposed, then a National Pollutant Discharge Elimination System (NPDES) 1200 Construction (1200-C) permit is required. Application materials are available on DEQ's website. The DEQ contact is Dennis Jurries (503-229-5937).
4. *SWMM Chapter 4 Requirements*: Design requirements from Chapter 4 of the SWMM (Source Controls) that may pertain to this project are briefly described below with the corresponding Chapter 4 section noted. BES recommends the applicant review Chapter 4 to help recognize other requirements that may apply to this project at the building permit review stage. BES recommends that requirements related to site contamination be addressed prior to submitting for building permit review so that the project schedule can remain viable.
    a. *Long-Term Discharges (Section 4.4 & Title 17 Chapters 34, 36, 39)*: The proposed long-term discharge triggers section 4.4 of the SWMM. The groundwater discharge must be mitigated. If groundwater must be discharged to the sewer system then analytical data must be submitted. The water bureau may need to enter into a discharge authorization or permitting agreement with BES for long term discharges into the sewer system.
    b. *Remote fueling for generators (Section 4.7)*: The generator fuel supply tank must be double walled and the fueling port must have secondary containment in order to meet the intent of Section 4.7.
    c. *Liquid Material Storage (Section 4.8)*: Outdoor areas where certain liquid materials are stored in 50 gallon quantities or more must include the following: secondary containment, a structural cover (other than tanks), a paved surface, and a drain to the appropriate sewer system. Shut-off valves and signage are also required.

Portland Water Bureau
Washington Park Reservoir Improvements Project AECOM Project No. 60285503

Technical Memorandum

To:	John Houle, P.E. (BES)
CC:	Jerry Moore, P.E. (PWB) Dan Hogan, P.E. (PWB) Tom Carter (PWB) Alan Peck, P.E. (AECOM) Carmen Nale, P.E. (AECOM)
From:	Matt Hickey, P.E. (Murray, Smith & Associates (MSA)) Randy Stark, P.E. (Murray, Smith & Associates (MSA))
Date:	October 25, 2013 (original) December 27, 2013 (MSA responses)
Subject:	Confirmation of Design Criteria with BES – MSA Responses to BES Responses

1.0 INTRODUCTION AND PURPOSE

The goal of the Washington Park Reservoir Improvements Project is to provide increased reliability of stored drinking water and to protect the stored drinking water from potential external contamination. The project drivers also address issues associated with the reservoirs and location including aging infrastructure, seismic susceptibility, and landslide impacts.

The project involves the replacement of Washington Park Reservoir No. 3 with 15 million gallons (MG) of buried on-site storage, and disconnection of Washington Park Reservoir No. 4 from the public water supply system. To partially maintain the historic appearance of the site, a reflecting pool will be constructed above the new buried reservoir within the footprint of existing Reservoir No 3. A second reflecting pool may be constructed on top of filled, decommissioned Reservoir No. 4.

The following provides a summary of questions developed with Bureau of Environmental Services (BES) personnel during the October 21, 2013 meeting at the Water Bureau. A plan showing the vicinity of the Washington Park Reservoirs and associated facilities is provided in Figure 1, attached.

2.0 RESERVOIR OVERFLOW

A reservoir overflow is an unanticipated event when the reservoir inflow exceeds the reservoir capacity & outflow, and the inflow is not automatically stopped. The historical frequency of overflow events is very low. The reservoir overflow assumptions are as follows:

- Overflow rate = 26,800 gpm = 59.7 cfs
- Overflow duration = 30 minutes
- Overflow total volume = 804,000 gallons = 107,500 cubic feet

2.1 Overflow questions to BES

a) Will BES approve release to the 54-inch diameter Tanner Creek sewer located at the site, with no detention required?

BES Response: BES determined the design capacity of the Tanner Creek sewer and found that it is able to accept this overflow rate and volume without detention.

MSA Response: Given that the Tanner Creek storm sewer has adequate capacity to convey overflows, and overflow events are uncommon occurrences, the project will not propose to detain overflow water. The project will propose to direct overflow water to the Tanner Creek Sewer.

It is assumed that the downstream capacity is based on peak reservoir overflow and average daily flow, combined. It is understood that BES will conduct additional flow modeling of the Tanner Creek system as necessary to verify the capacity of existing line.

Resolution: No further questions of BES in regard to this item; this question appears to be resolved.

b) Is the existing 54-inch diameter Tanner Creek sewer east of Reservoir No. 4 to which the project will discharge a storm-only sewer or combined sewer?

BES Response: The Tanner Creek sewer is a storm-only sewer that outfalls to the Willamette River. Its outlet (OF11-BES Asset ABG369) is approximately 350 feet northeast of the intersection of NW 9th Avenue and NW Naito Parkway.

MSA Response: The project proposes to discharge stormwater, reservoir drain water, and reflecting pool drain water to the Tanner Creek sewer.

Resolution: No further questions of BES in regard to this item; this question appears to be resolved.

c) Does the City know the flow capacity of the Tanner Creek storm sewer? Does the storm sewer have the capacity to convey the anticipated 59.7 cfs reservoir overflow downstream from the project site?

BES Response: BES has established the following weather dependent capacities for the Tanner Creek storm sewer.

- Dry weather-The Tanner sewer has capacity to receive and convey the anticipated reservoir overflow rate/volume. Refer to attached email (date)

- Wet weather-The Tanner sewer has capacity to receive X percent of the dry-weather capacity. BES defines wet weather for the Tanner Creek basin as a preceding precipitation event that totals X inches or more over an X day period.

MSA Response: Based on the BES response to Question 2.1 (a) the Tanner sewer has adequate capacity to convey water from reservoir overflows. The project will propose to direct overflow water to the Tanner Creek Sewer. It is assumed that BES will provide system modeling results to define the X's.

Resolution: No further questions of BES in regard to this item; this question appears to be resolved.

d) Does the flow capacity of the Tanner Creek storm sewer need to be verified by the project engineers to ensure that it can convey the anticipated 59.7 cfs overflow?

BES Response: BES is confident of the sewer's available flow capacity to convey the anticipated overflow rate and volume within the limits described in response 2.1(c).

MSA Response: Given that BES is confident of the Tanner Creek sewer flow capacity, project engineers will not propose to perform capacity analysis.

Resolution: No further questions of BES in regard to this item; this question appears to be resolved.

e) Should any capacity analysis of the Tanner Creek storm sewer assume "dry" conditions prior to introduction of overflow, or should the analysis include base flow (and how much)?

BES Response: BES will conduct analysis and provide guidance if the conclusions are different from the response 2.1 (c).

MSA Response: Given that BES is confident of the Tanner Creek storm sewer flow capacity, project engineers will not propose to perform capacity analysis. As necessary, BES will provide results of available/additional system modeling.

Resolution: No further questions of BES in regard to this item; this question appears to be resolved.

f) If detention of reservoir overflow water is required, what is the permitted release rate?

BES Response: See responses 2.1 (a) and (c).

MSA Response: Per BES responses, detention of reservoir overflow water is not required. The project will not propose to detain overflow water.

Resolution: No further questions of BES in regard to this item; this question appears to be resolved.

g) It is assumed that dechlorination of overflow water is not required prior to release to the storm sewer. Chlorination levels will likely be approximately 1.0 ppm. Does BES concur?

BES Response: In 1996, DEQ issued guidance on "Management Practices for Disposal of Chlorinated Water". A copy of the rule is attached. There are different management options for super-chlorinated versus chlorinated water.

Super-chlorinated cannot be discharged to surface waters or storm only sewers. The City accepts discharge of super-chlorinated water to the sanitary/combined sewer system. Discharge to a sanitary/combine sewer must be reviewed and approved by BES Maintenance Engineering and System Analysis modeling staffs (Refer to Batch Discharge Permit procedures).

Chlorinated water can be managed and disposed of following the DEQ guidance document. A decision matrix in the DEQ document outlines the exemption limits, non-discharge options and travel time/dilution criteria for managing chlorinated water.

Based on the anticipated overflow volume of chlorinated discharge water this may not qualify for an outright disposal exemption under this guideline. Downstream impacts to fishery resources in the lower Willamette River also could influence the management of reservoir overflow. Refer to response 3.1 (m).

The distance from the Water Bureau's reservoir discharge point into the Tanner Creek Storm Sewer (BES asset AMT072) to the outfall (OF11) at the Willamette River exceeds 11,000 feet. Based on this distance and the approximated chlorine residual level (i.e. 1.0 ppm) dechlorination would not be required of the discharged water.

MSA Response: Given that residual chlorine levels are anticipated to be below the DEQ threshold, the project will not propose to dechlorinate overflow water prior to discharge to the storm drainage system.

Resolution: No further questions of BES in regard to this item; this question appears to be resolved.

3.0 RESERVOIR DRAINAGE FOR CLEANING

During draining operations, water in the two reservoir cells will be lowered (released to distribution system) to a minimum level that will not disturb accumulated sediment on reservoir floor. Reservoir drainage assumptions are as follows:

- Cell No. 1 drainage volume = 1.0 MG (plus water needed for flushing)
- Cell No. 2 drainage volume = 1.9 MG (plus water needed for flushing)
- Drainage for cleaning to occur approximately every 5-7 years

3.1 Reservoir drainage questions to BES

h) Can reservoir drainage water, including sediment, be released to the storm sewer system?

BES Response: No, sediments should be limited from entering the storm sewer system per BES and DEQ permits and regulations.

MSA Response: The project will propose to limit the sediment level of discharge water as required per BES and DEQ regulations.

Resolution: No further questions of BES in regard to this item; this question appears to be resolved.

i) Can reservoir drainage water, including sediment, be released to the sanitary sewer system?

BES Response: No, pre-treatment is required to remove/reduce sediment concentrations before drainage water enters a sanitary/combined sewer. Discharge limits are found in BES and DEQ permits and regulations.

If allowed, drainage water discharge to a sanitary/combined sewer is limited only during dry weather conditions and the discharge rate must be less than a 50 gpm flow rate. Approval of higher discharge flow rates would depend upon the specific discharge location in the sanitary/combined sewer system. A BES Batch Discharge Permit is required for each discharge.

MSA Response: The project will propose to limit the sediment level of discharge water as required per BES and DEQ regulations, and obtain Batch Discharge Permits as necessary. The project will not propose to discharge reservoir drain water to the sanitary sewer system.

Resolution: No further questions of BES in regard to this item; this question appears to be resolved.

j) If sediment is removed to achieve lower turbidity levels in the drainage water, can the water be released to the storm sewer system? The release rate will be in the range of 500 gpm (1.11 cfs).

BES Response: If turbidity levels were reduced to allowable levels, the Tanner Creek storm sewer has capacity to accept this flow rate. Turbidity levels are established either in the BES Batch Discharge Permit or by BES and DEQ permit and regulatory requirements.

MSA Response: The project will propose to control turbidity levels of discharge water as required per BES and DEQ regulations. This will be accomplished by allowing the sediments to settle out prior to discharge. Discharge water will be monitored as necessary to ensure that maximum allowable TSS is not exceeded.

Resolution: No further questions of BES in regard to this item; this question appears to be resolved.

k) What turbidity standards would the released drainage water need to comply with, if any?

BES Response: There are different thresholds for the sanitary/combined and storm only sewer systems.

Sanitary/combined Sewer

Total Suspended Solids (TSS): There are limits and a surcharge is applied when TSS levels exceed 350 mg/l

Storm Discharge to Surface Water
Total Suspended Solids (TSS): 50 mg/l

MSA Response: The project will propose to control turbidity levels of discharge water as required per BES and DEQ regulations. This will be accomplished by allowing the sediments to settle out prior to discharge. Discharge water will be monitored as necessary to ensure that maximum allowable TSS is not exceeded.

Resolution: No further questions of BES in regard to this item; this question appears to be resolved.

l) If drainage water were released to the storm sewer system, the flow rate would be less than the flow rates of reservoir overflow (see Section 1.0 above). Would direct release be permitted or is detention required, and if detained what is the permitted release rate?

BES Response: Yes, direct release of the rates/volumes cited would be permitted without detention. See Section 2.1 (c) response above. However, pre-treatment of sediment laden water would be required. See responses 3.1 (h) & (k)above.

MSA Response: The project will propose to provide pre-treatment of drainage water as necessary prior to release to the storm sewer system.

Resolution: No further questions of BES in regard to this item; this question appears to be resolved.

m) Does the Willamette River have any "listings" by public agencies that may affect discharges to the river?

BES Response: Salmonid sub-yearlings have been found using the nearshore areas in the lower Willamette River as rearing habitat during November through June. No listings have been identified for these juvenile fish.

Rearing temperatures should not exceed 18° C (64 ° F).

Due to the nearshore use of sub-yearling salmonids in the Willamette River, when possible, outlet flows should be metered and not occur in one, large continuous pulse.

MSA Response: The project will propose to meter outlet flows when possible during the salmonid rearing period. Discharges, with the exception of emergency overflows, will be controlled during all times of the year.

Resolution: No further questions of BES in regard to this item; this question appears to be resolved.

n) It is assumed that dechlorination is not required prior to release to either sanitary or storm sewer systems. Chlorination levels will likely be approximately 1.0 ppm. Does BES concur?

BES Response: Yes, see previous response 2.1 (g). Refer to DEQ Chlorinated Water Discharge guidelines.

MSA Response: Given that residual chlorine levels are anticipated to be below the DEQ threshold, the project will not propose to dechlorinate overflow water prior to discharge to the storm drainage system.

Resolution: No further questions of BES in regard to this item; this question appears to be resolved.

4.0 REFLECTING POOL DRAINAGE FOR CLEANING

There will be one or two reflecting pools constructed for the project. Reflecting pool assumptions are as follows:

- Reflecting pool water will be filtered and recirculated during normal conditions. Sediment and debris buildup is anticipated to be minimal.
- Reflecting pool draining to occur on an as-needed basis
- As chlorine levels naturally fall, additional chlorination will occur to maintain a chlorine residual level of approximately 3 ppm.
- Preliminary Pool No. 1 drainage volume = 0.33 MG (plus water needed for flushing)
- Preliminary Pool No. 2 drainage volume = 0.50 MG (plus water needed for flushing)

4.1 Reflecting pool drainage questions to BES

o) Can reflecting pool drainage water, including any sediment, be released to the sanitary sewer system?

BES Response: No, see previous responses 3.1 (i) & (k).

MSA Response: The project will propose to limit the sediment level of discharge water as required per BES and DEQ regulations, and obtain Batch Discharge Permits as necessary. Reflecting pool drainage will be discharged to the storm drainage system.

Resolution: No further questions of BES in regard to this item; this question appears to be resolved.

p) Can pool drainage water, including sediment, be released to the storm sewer system?

BES Response: No, see previous responses 3.1 (h) & (j).

MSA Response: The project will propose to limit the sediment level of discharge water as required per BES and DEQ regulations.

Resolution: No further questions of BES in regard to this item; this question appears to be resolved.

q) If accumulated sediment is removed, can drainage water be released to the storm sewer system?

BES Response: Yes, if sediment concentrations were within acceptable limits defined in BES or DEQ permits and regulations.

MSA Response: The project will propose to limit the sediment level of discharge water as required per BES and DEQ regulations.

Resolution: No further questions of BES in regard to this item; this question appears to be resolved.

r) Would direct release be permitted or is detention required, and what is the permitted release rate?

BES Response: No, see previous response to Section 3.1 (h). Direct release without removing sediment would not be allowed.

MSA Response: The project will propose to limit the sediment level of discharge water as required per BES and DEQ regulations. Reflecting pool drainage water will be detained and released at an allowable rate.

Resolution: No further questions of BES in regard to this item; this question appears to be resolved.

s) Can pool filter backwash water be discharged to the storm drainage system or will there be other requirements?

BES Response: No, see previous response 3.1 (h). Direct release without removing sediment would not be allowed.

MSA Response: The project will propose to limit sediment level of discharge water as necessary per BES and DEQ regulations. Pool filter backwash will be screened and treated prior to discharge.

Resolution: No further questions of BES in regard to this item; this question appears to be resolved.

t) It is assumed that dechlorination is not required prior to release to either sanitary or storm sewer systems. Does BES concur?

BES Response: There are different thresholds for sanitary/combined and storm only sewer systems.

Sanitary/combined Sewer

Yes, there is no limit on the chlorine concentration that can be discharged to this system. Discharge flow rates must be reviewed and approved and follow batch Discharge permit limits.

MSA Response: The project will not likely propose discharge of reflecting pool water to the sanitary sewer system. In the event that it becomes desirable to do so the project will obtain Batch Discharge Permits as necessary.

Storm Sewer

Yes, only when the discharge water volume, rate and chlorine residual character is as described in Section 4.0. Refer to response 2.1 (g).

MSA Response: Given that residual chlorine levels are anticipated to be below the DEQ threshold, the project will not propose to dechlorinate reflecting pool water prior to discharge to the storm sewer system.

Resolution: No further questions of BES in regard to this item; this question appears to be resolved.

5.0 STORM DRAINAGE

The majority of the reservoir facility site will be redeveloped as part of the project. Storm drainage will be collected and managed per the requirements of the current version of the City of Portland Stormwater Management Manual. Storm drainage assumptions are as follows:

- Quality treatment of stormwater runoff from new and redeveloped impervious surfaces will occur onsite in Pollution Reduction facilities.

  BES Response: This is a correct assumption.

  MSA Response: The project will propose to treat stormwater runoff from new and redeveloped impervious surfaces through the use of approved Pollution Reduction facilities.

  Resolution: No further questions of BES in regard to this item; this question appears to be resolved.

- Pollution Reduction facilities to consist of biofiltration swales, vegetated planters, or other systems acceptable to PWB and BES.

  BES Response: These are appropriate methods to manage stormwater runoff from developed areas.

  MSA Response: The project will propose to treat stormwater runoff from new and redeveloped impervious surfaces through the use of approved Pollution Reduction facilities.

  Resolution: No further questions of BES in regard to this item; this question appears to be resolved.

- Detention of stormwater runoff is not required due to categorical exemption listed in City's Stormwater Management Manual, as listed in Chapter 1, Page 1-18. The exemption stipulates that detention is not required if the project discharges to the Willamette River through a separated public storm sewer. Through review of the Tanner Creek storm sewer, this project's discharge system, on the City's Online sewer mapping database (Portland Maps), it appears that the Tanner Creek sewer is storm-only between the project site and the sewer outfall at the Willamette River. It appears that the project may qualify for the exemption.

  BES Response: This project does not qualify for the exemption cited.

  MSA Response: As noted above, the project appeared to qualify for the exemption based on the interpretation of language contained in the Stormwater Management Manual. However, BES staff stated at a meeting held at AECOM to discuss BES responses, that while not stated in the Manual the intent of the exemption is to only allow the exemption for developments located immediately adjacent to the water

bodies listed in the Manual. Based on this explanation, the project will not propose to utilize the exemption.

Resolution: No further questions of BES in regard to this item; this question appears to be resolved.

5.1 Storm drainage questions to BES

u) Since this is a multi-year project, should we be aware of any upcoming changes to the City stormwater management standards that may affect the proposed facilities prior to final approval?

BES Response: There are no planned changes to Stormwater Management standards that would affect this project.

MSA Response: The project will assume that the current Stormwater Management standards will be in effect throughout the proposed project design and construction period.

Resolution: No further questions of BES in regard to this item; this question appears to be resolved.

v) Does the project qualify for the categorical exemption from stormwater detention as mentioned in Section 5.0 above?

BES Response: No

MSA Response: As noted above, the project appeared to qualify for the exemption based on the interpretation of language contained in the Stormwater Management Manual. However, BES staff stated at a meeting held at AECOM to discuss BES responses, that while not stated in the Manual the intent of the exemption is to only allow the exemption for developments located immediately adjacent to the water bodies listed in the Manual. Based on this explanation, the project will not propose to utilize the exemption.

Resolution: No further questions of BES in regard to this item; this question appears to be resolved.

w) If the reflecting pools overtop during rainfall events, can this water be discharged directly to the offsite storm drainage system?

BES Response: No not without treatment since it is stored surface water.

MSA Response: The project will propose that rainwater that overflows the reflecting pool be directed to pollution reduction facilities for treatment.

Resolution: No further questions of BES in regard to this item; this question appears to be resolved.

x) Is BES aware of any storm drainage systems in the project vicinity that have capacity limitations or other functional problems?

BES Response: No

MSA Response: Unless otherwise discovered, the project will assume that existing storm drainage systems affected by the project do not have capacity or other functional problems.

Resolution: No further questions of BES in regard to this item; this question appears to be resolved.

y) It is assumed that dechlorination of rainwater that mixes with reflection pool water is not required prior to release to either sanitary or storm sewer systems. Does BES concur?

BES Response: Yes, see previous response to Section 2.1 (g). However, rainfall generated overflow would require treatment. Refer to response 5.1(w).

MSA Response: Given that residual chlorine levels are anticipated to be below the DEQ threshold, the project will not propose to dechlorinate overflow water prior to discharge to the storm drainage system. The project will propose that rainwater overflowing the reflecting pool will be directed to pollution reduction facilities for treatment.

Resolution: No further questions of BES in regard to this item; this question appears to be resolved.

6.0 GROUND WATER DRAINAGE

Underdrain systems beneath existing Reservoirs Nos. 3 and 4 collect and convey ground water from the underlying soils. Based on available mapping, the underdrain systems appear to discharge to the existing drainage system that also collects surface runoff. Some of the existing tunnel systems that drain ground water from the hillsides above the reservoirs apparently connect to this underdrain system as well. These tunnels help reduce the quantity of ground

water in the hillside, which slows the movement of the landslide that exists on the uphill (westerly) side of the site. Ground water drainage assumptions are as follows:

- Existing ground water drainage must be maintained and integrated into the project design.
- New reservoir underdrain systems must be constructed and connected to the storm drainage system.

6.1 Ground water drainage questions to BES

z) What testing, if any, of ground water drainage does BES require of the project (heavy metals, etc.)?

BES Response: Source control?

MSA Response: The PWB intends to conduct testing of ground water drainage in an effort to characterize the chemical content.

Resolution: When test results are available they will be distributed as appropriate. Additional follow-up (testing, discussion) may be required depending on test results.

aa) What other ground water concerns does BES have?

BES Response: BES would like the BWW to quantify the average annual volume and character of this groundwater that enters the Tanner Creek storm sewer.

MSA Response: The PWB will provide estimates of ground water flow volumes.

Resolution: When flow volume estimates are available they will be distributed as appropriate.

7.0 SUBMITTAL REQUIREMENTS FOR EARLY ASSISTANCE MEETING WITH CITY/BES

Please provide a list of submittal requirements for an Early Assistance Meeting that are related to the project elements contained in this memorandum.

BES Follow-up Questions to the Water Bureau concerning this project

Is the attached BWW NPDES Permit the most current permit that applies to BWW reservoirs and facilities?

MSA Response: Since the BES responses are Draft, the PWB NPDES Permit was not attached.

Resolution: When provided, the attachment will be reviewed for its current applicability.

Does the BWW plan to amend their current NPDES permit to include the operation and maintenance of the Washington Park reservoirs?

MSA Response: This question will be presented to the PWB.

Resolution: The response from the PWB will be provided when available.

The responses BES has provided apply to post-reservoir construction operation and maintenance practices and procedures. During reservoir construction, erosion control measures must be utilized to meet these and other regulatory conditions.

MSA Response: The project will propose to employ appropriate erosion control measures and permitting during construction per BES and other regulatory requirements.

Resolution: This BES concern appears to be resolved.

The following BES staff was integral to provide information needed to prepare the responses to BWW questions. We would be happy to coordinate and attend a design team meeting to answer your specific questions and to provide clarification to any response provide in this memorandum.

Source Control & Batch Discharge permits

- Michael Pronold
- Anne Orork
- System Analysis
  - Virgil Adderley
  - Arnel Mandilag
- Maintenance Engineering
  - Rob Cozzi
  - Bret Davison
- NPDES Permit

Patrice Mango

Matthew Criblez

Develop permits and Early Assistance

Elizabeth Reese-Cadigan

Sebrina Nelson-Deal

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City of Portland, Oregon
Bureau of Development Services
Site Development
FROM CONCEPT TO CONSTRUCTION

Charlie Hales, Mayor
Paul L. Scarlett, Director
Phone: (503) 823-6892
Fax: (503) 823-5433
TTY: (503) 823-6868
www.portlandoregon.gov/bds

Site Development

Pre-Application Conference Response

Date:	May 28, 2014
To:	Sheila Frugoli, Conference Facilitator
	503-823-7817, Sheila.Frugoli@portlandoregon.gov
From:	Jason Butler-Brown, 503-823-4936
	Jason.Butler-Brown@portlandoregon.gov
Case File:	EA 14-139549
Location:	2403 SW JEFFERSON ST
R#:	R316752, R485200, R485207, R485390, R485392, R485394
Proposal:	Pre-App for Washington Park Reservoir project for the following possible land use reviews: Environmental Review, Historic Resource Review, Demolition Review, and Conditional Use Review.

The Site Development Section of the Bureau of Development Services (BDS) has reviewed the pre-application conference materials to identify potential issues and requirements.

A. Key Issues and Requirements

Following is a brief summary of issues and requirements that may impact your proposed project or are submittal requirements that will require time to prepare prior to submittal of the application.

1. Geotechnical engineering is a key issue due to the cost and time involved in obtaining required reports.
2. Erosion prevention and sediment control is a key issue because the project area meets Special Site criteria and thus is subject to additional requirements for erosion, sediment and pollution control.

B. Geotechnical Engineering Requirements

A geotechnical report prepared in accordance with the Oregon Structural Specialty Code will be required for this development. The report will need to include a site specific seismic hazard study as the structure qualifies as an essential facility under ORS 455.447(1)(a)(C).

The site is located on an *active and/or historic* landslide and a *prehistoric or ancient* landslide according to *IMS-33, Landslide Inventory Map of the Southwest Quarter of the Portland Quadrangle, Multnomah and Washington Counties, Oregon, 2010.* Therefore

the report must provide analyses that demonstrate the proposed development does not adversely impact the global stability of the landslides. In addition, the report will need to demonstrate adequate factors of safety for localized slopes. The report should include recommendations for stormwater disposal and temporary excavation support.

At the time of land use review, the geotechnical engineering report will need to be submitted. The report will help establish the limits of disturbance that will be defined for the project.

Summary of geotechnical engineering information that must be submitted to Site Development at the time of land use review: none. Questions regarding this requirement may be directed to Jason Butler-Brown, 503-823-4936.

C. Stormwater Disposal and Treatment

The Bureau of Environmental Services will review the project for conformance to the City of Portland Stormwater Management Manual. Site Development will review proposed on-site infiltration facilities for conformance with slope and/or building setbacks. A preliminary utility plan will need to be provided at the time of land use review that shows the proposed stormwater disposal facilities.

D. Demolition

Removal of any structure that exceeds 200 square feet in area requires a **demolition permit**.

E. Erosion Control

Erosion prevention and sediment control requirements found in **Title 10** apply to both site preparation work and development. Full compliance with the erosion control requirements of Title 10, as well as maintenance of the erosion control elements, such as silt fences on private property, storm drain inlet protection and bio bags in the public right-of-way, is the responsibility of the property owner, the developer, and the builders.

The project area meets the criteria specified in City Code 10.30.030 as a Special Site with additional requirements for erosion, sediment and pollution control. An erosion control plan prepared by a Certified Professional in Erosion and Sediment Control (CPESC) or State of Oregon registered professional engineer (P.E.), will be required at the time of building permit. Special inspections by the CPESC or P.E. may be required during construction.

Please refer to the City of Portland **Erosion and Sediment Control Manual** for additional information regarding erosion and sediment control requirements.

DEQ permit required: The applicant is advised that a 1200-C permit from the Oregon Department of Environmental Quality is required for construction activities including clearing, grading, excavation, and stockpiling that will disturb one or more acres and may discharge to surface waters or conveyance systems leading to surface waters of the state, in addition to City requirements.

Summary of erosion control information that must be submitted to Site Development at the time of land use review: none. Questions regarding this requirement may be directed to Jason Butler-Brown, 503-823-4936.

F. Construction Management Plan

If an environmental review is required, then Site Development will participate in the review of construction management plans required to comply with Section 33.430.240.A.3. Tree protection areas, required limits of disturbance, preliminary erosion control measures, and mitigation areas should be shown on the construction management plan.

Coordination with the project arborist and CPESC or P.E. should occur as needed at the time of land-use review to ensure that the limits of disturbance are adequate to accommodate required tree protection and erosion control measures. The arborist should confirm proper installation of tree protection fencing prior to required City inspections before any ground-disturbing work commences (including demolition).

Please direct questions regarding construction management plans to the Environmental Review team.

G. Permit Requirements

1. Demolition permits.
2. Commercial building permits.

H. Submittal Requirements for Land Use

1. Preliminary utility plan.
2. Site grading plan.
3. Geotechnical Report

PORTLAND WATER BUREAU
FROM FOREST TO FAUCET

Nick Fish, Commissioner
David G. Shaff, Administrator
1120 SW 5th Avenue, Room 600
Portland, Oregon 97204-1926
Information: 503-823-7404
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Water Bureau

Early Assistance Appointment Response

Date: May 8, 2014

To: Sheila Frugoli, 503-823-7817

From: Mari Moore, 503-823-7364, Mari.Moore@portlandoregon.gov

Case File: EA 14-139549

Location: 2403 SW JEFFERSON ST

Property ID: R316752, R485200, R485207, R485390, R485392, R485394

Proposal: Pre-App for Washington Park Reservoir project for the following possible land use reviews: Environmental Review, Historic Resource Review, Demolition Review, and Conditional Use Review.

The Water Bureau has reviewed the pre-application conference materials to identify potential issues and requirements.

A. Key Issues and Requirements

Following is a brief summary of issues and requirements that may impact your proposed project or are submittal requirements that will require time to prepare prior to submittal of the application.

1. Tax lot consolidation required.

B. Water Availability

1. Adequate water is available to this site from various water mains throughout the project site.

C. Other Category

1. Per Title 21 water lines may not cross property lines. Each building may be contained within one tax lot and be served separately for domestic, irrigation and fire water or all the lots may be consolidated into one large tax account lot and water services may be installed as desired within that block. See "Water Code Requirements" below for more information.

D. Water Code Requirements

Topic	Code and Comments	Code Citation & Link
Title 21	City Water Code	Title 21 Water

Topic	Code and Comments	Code Citation & Link
Lot Consolidation	Prior to purchasing new services the project lots must be consolidated into one tax lot. Tax account consolidation is a simple process and can be done at Multnomah County Records Management Division. For more information, please call 503-988-3326 or visit the below website http://web.multco.us/node/2667/#consolidations	21.12.070 Separate Service.

E. Permit Information

At the time of permit review (following the land use review) you should be aware of the following:

1. None.

F. Submittal Requirements for Land Use

1. Tax lot consolidation required.

CITY OF
PORTLAND, OREGON
FIRE PREVENTION DIVISION

Charlie Hales, Mayor, City of Portland
Steve Novick, Commissioner
Erin Janssens, Division Chief
Prevention Division
1300 SE Gideon Street
Portland, OR 97202
(503) 823-3700
Fax (503) 823-3969

Fire Bureau

Pre-Application Conference Response

Date: May 14, 2014

To: Sheila Frugoli, Conference Facilitator

503-823-7817, Sheila.Frugoli@portlandoregon.gov

From: FIRE , NONE

NONE

Case File: EA 14-139549

Location: 2403 SW JEFFERSON ST

Property ID: R316752, R485200, R485207, R485390, R485392, R485394

Proposal: Pre-App for Washington Park Reservoir project for the following possible land use reviews: Environmental Review, Historic Resource Review, Demolition Review, and Conditional Use Review.

The Fire Bureau has reviewed the pre-application conference materials to identify potential issues and requirements.

A. Key Issues and Requirements

Following is a brief summary of issues and requirements that may impact your proposed project or are submittal requirements that will require time to prepare prior to submittal of the application.

1.

a.

b.

B. Follow Up to Questions Raised at the Conference

1.

C. Water Availability

1.

2.

3.

D. FIRE CODE REQUIREMENTS

Topic	Code and Comments	Code Citation & Link
Fire Apparatus Access	The fire apparatus access road shall extend to within 150 feet of all portions of the facility and all portions of the exterior walls of the first story of the building as measured by an approved route around the exterior of the building.	Fire Code Applications Guide
Fire Access Road	Fire Apparatus access roads shall have an unobstructed driving surface width of not less than 30 feet (26 feet adjacent to fire hydrants) and an unobstructed vertical clearance of not less than 13 feet 6 inches.	Fire Code Applications Guide
Fire Access – 26 feet with hydrant	Where a fire hydrant is located on a fire apparatus access road, the minimum road width shall be 26 feet within 20 feet of the hydrant to provide a staging area for apparatus on the access road.	Fire Code Applications Guide
Fire Access Roads – 20-26 feet	Fire apparatus access roads 20 to 26 feet wide (6096 to 7925 mm) shall be posted on both sides as a fire lane.	Fire Code Applications Guide
Fire Access Roads – more than 26-32 feet	Fire apparatus access roads more than 26 feet wide (7925 mm) to 32 feet wide (9754 mm) shall be posted on one side of the road as a fire lane.	Fire Code Applications Guide
Fire Access Roads – Dead End	Dead-end fire apparatus access roads in excess of 300 feet in length shall be provided with an approved area for turning around fire apparatus. See Fire Code Appendix D for approved turnaround dimensions.	Fire Code Applications Guide, Fire Code Appendix D.
Fire Hydrant Spacing – Residential One and Two Family	Fire hydrant systems shall comply with the Fire Code. Where a portion of a structure is more than 600 feet from a hydrant on a fire apparatus access road, as measured by an approved route around the exterior of the facility or building, on-site fire hydrants and mains shall be provided where required by the fire marshal.	Fire Code Applications Guide
Fire Hydrant Spacing - Commercial	Fire hydrant systems shall comply with the Fire Code. Where a portion of the building is more than 400 feet from a hydrant on a fire apparatus access road, as measured by an approved route around the exterior of the building, on-site fire hydrants and mains shall be provided *NOTE: This distance may be increased to 600 feet for buildings equipped throughout with an approved automatic sprinkler system.*	Fire Code Applications Guide
Turning Radius	The inside turning radius and outside turning radius shall be not less than 28 feet and 45 with the permission of the fire code. Within the boundaries of Portland Fire and Rescue, radii dimensions may	Fire Code Applications Guide

Topic	Code and Comments	Code Citation & Link
	be reduced to 25 feet and 5 feet with the permission of the fire code official.	
Surface and Load Capacities	Fire apparatus access roads shall be of an all-weather surface that is easily distinguishable from the surrounding area and is capable of supporting not less than 12,5000 pounds point load (wheel load) and 75,000 pounds live load (gross vehicle weight). Documentation from a registered engineer that the finished construction is in accordance with the approved plans or the requirements of the Fire Code may be requested. (OFC D102.1). Generally sidewalks cannot be considered part of a fire access road. Where they are appropriately designed to carry apparatus loads, no obstructions are allowed, mountable curbs are used and the design has been approved by the Fire Marshal sidewalks may be considered a part of the access road.	Fire Code Applications Guide
Fire Access for Commercial/Industrial Buildings – greater than 30 feet or 3 stories in height	Building or facilities exceeding 30 feet or three stories in height shall have at least two means of fire apparatus access for each structure. Where two roads are required, they shall be placed a distance apart equal to not less than one half of the length of the maximum overall diagonal dimension of the property or area to be served, measured in a straight line between accesses.	2007 Oregon Fire Code Appendix D
Access for buildings exceeding 62,200 square feet	Buildings or facilities exceeding having a gross building area of more than 62,000 square feet shall be provided with two separate and approved fire apparatus access roads. *EXCEPTION: Projects having a gross building area of up to 124,000 square feet that have a single approved fire apparatus access road when all buildings are equipped throughout with approved automatic sprinkler systems.*	2007 Oregon Fire Code Appendix D
Aerial Fire Department Access Roads	Buildings or portions of buildings exceeding 30 feet in height above the lowest level of fire department vehicle access shall be provided with approved fire apparatus access roads capable of accommodating fire department aerial apparatus. Overhead utility and power lines shall not be located within the aerial fire apparatus access roadway. Width: Aerial fire apparatus access roads shall have a minimum unobstructed width of 26 feet in	2007 Oregon Fire Code Appendix D And Fire Code Applications Guide

Topic	Code and Comments	Code Citation & Link
	the immediate vicinity of any building or portion of building more than 30 feet in height. Aerial fire apparatus road width may be reduced to not less than 20 feet (no parking allowed) when the building being served is fully sprinklered and access to the building face is from at least 2 directions. The sprinkler system shall be of a greater design than the minimum specified by the OSSC. Proximity: At least one of the required access routes meeting this condition shall be located within a minimum of 15 feet and a maximum of 30 feet from the building and shall be positioned parallel to one entire side of the building.	

E. OTHER CATEGORY

Text here

1.

    a.

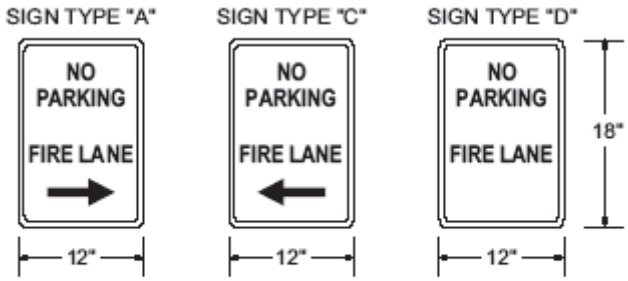
2.

F. PERMIT INFORMATION

At the time of permit review (following the land use review) you should be aware of the following:

1.

2.

Topic	Code and Comments	Code Citation & Link
Addressing of Structures	All addresses shall be permanently displayed as directed by the Fire Marshal's Office (mounted on a building, fence, post, etc.). Numbers/letters shall be contrasting in color to the background and of sufficient size to be plainly visible from the street or road fronting the property. Numbers/letters shall be a minimum 3" high by 2 ¼" wide with at least a 5/16" wide stroke. This office may specify larger numbers/letters. *Flag lots shall have their address(es) permanently displayed within 5 feet of the flag pole connection to the public way. The address(es) shall be clearly visible from all vehicle approach points.*	Chapter 5, Portland Fire Code
Access and Water Supply during construction	Approved fire apparatus access roadways and fire fighting water supplies shall be installed and operational prior to any combustible construction or storage of combustible materials on the site.	Fire Code Applications Guide
"No Parking" Signs	Where fire apparatus roadways are not of sufficient width to accommodate parked vehicles and 20 feet of unobstructed driving surface, "No Parking" signs shall be installed on one or both sides of the roadway and in turnarounds as needed. Roads 26 feet wide or less shall be posted on both sides as a fire lane. Roads more than 26 feet wide to 32 feet wide shall be posted on one side as a fire lane.  FIGURE D103.6 FIRE LANE SIGNS	Fire Code Applications Guide

G. Submittal Requirements for Land Use

1. Site Plan – on the site plan show: ***for all reviews except land divisions
   a. Easements and on-site utilities
   b. Existing and proposed development with all dimensions

c. Fire hydrant location.

d. Turning radius for turns in roadways to include public and private

2. Proposed Land Division plan

a. Location of utilities and services

b. Proposed location, dimensions, and purpose of all easements

c. Fire hydrant location

3.

Attachments:

WASHINGTON PARK
RESERVOIR IMPROVEMENTS PROJECT

AECOM

Washington Park Reservoirs No.3 and No.4
Portland, OR
Exterior Building Assessment

PETER MEIJER ARCHITECT, PC

December 13, 2013

Prepared for:
Portland Water Bureau

In consultation with:
AECOM
Portland, OR

Laser Scanning:
i-Ten Associates
Portland, OR

Revit Base Model:
MWA Architects
Portland, OR

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TABLE OF CONTENTS

Introduction

At the request of the Portland Water Bureau (PWB), Peter Meijer Architect, PC, as a sub-consultant to AECOM, was retained to conduct a general exterior condition assessment of the historic Washington Park Reservoirs and surrounding features, including site fences and walls, Dam features, Gatehouse 3 and Gatehouse 4, the Pump House 1, the Generator Building, and the 36 Weir Building. The purpose of the assessment was to provide the PWB with an understanding of general deficiencies of the exterior building materials, potential mitigation solutions, and preliminary scope of work for cost estimating and construction repair purposes.

Condition assessments were conducted during the period from July 1st, 2013 thru July 31st, 2013 and included the reservoir's parapet walls, retaining walls, historic buildings, and iron work fence. PMA conducted a review of PWB's supplied documents including original design documents, structural engineering reports, historic photos, and various documents related to PMA's exterior assessment. These documents, drawings, and historic photographs were used to augment the on-site assessment. Temperature and weather condition during the assessment were sunny with temperatures ranging from 70 to 90 degrees Fahrenheit.

Site Documentation

PMA's assessment of the site included visual documentation with aid from laser scanning technology. i-Ten Associates scanned the site the first week in July, providing point cloud data to PMA for on-site documentation. Raw point clouds were compiled into files that could be viewed using SCENE Web-Share 2Go, providing a virtual representation of the site. PMA was able to document field observations using this software on laptops on-site.

Notes documented on WebShare 2Go and site photos were combined to assess the Washington Park Reservoirs. Digital models of the site and buildings were contributed by MWA Architects and PMA used the point cloud information to refine the as-built accuracy of the models. Autodesk Revit provides the ability to overlay point cloud data in a 3 dimensional model space, and PMA was able to add documentation of deficiencies.

A digital copy of the point clouds has been saved on external storage devices for future work with the existing site. The point cloud and digital information will be a used as historical reference for the Portland Water Bureau and the City of Portland as 3D documentation of this historic infrastructure project. See Appendix H for images of point cloud and 3D model overlays and assessment drawings.

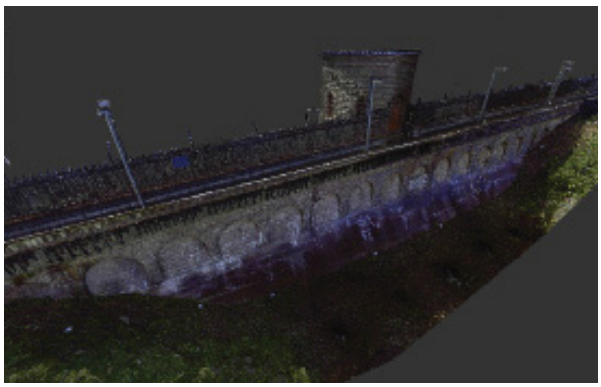


Figure 1: Point Cloud data

Figure 2: Point Cloud data

Figure 3: WebShare 2Go on-site documentation

General History

Land for Washington Park, previously known as City Park until 1909, was initially purchased by the City of Portland in 1871. The expense of the park was seen as an investment in Portland's future, but the financial decision was originally not valued by all Portland citizens.[1] Landscape architect Frederick Olmsted saw great potential in Portland and created the Olmsted Brothers' system of parkways plan that defined Portland's urban vision. *The Report of the Park Board in 1903* outlined the Olmsted Plan and concluded that, *"no city could be considered properly equipped without an adequate park system."*[2] According to Olmsted, the development of an extensive park network would theoretically lead Portland to develop in *"healthfulness, morality, intelligence, and business prosperity."*[2] The City of Portland believed that as its population grew, Washington Park would become a valuable recreational addition.

Figure 4: Portland map 1879 with City Park in the foreground

In 1871, Portland supported 8,000 citizens and was growing leading to an increase in demand for clean water. Pollution concerns and the expense of pumping water from the Willamette River led Portland's Water Committee (PWC) to look for new viable water sources resulting in the selection of the Bull Run River to server as the future water source. The PWC constructed a gravity fed system to supply Portland with clean water. Demand for clean water storage led to the construction of the Washington Park and Mount Tabor Reservoir systems. Before the construction of the Reservoirs, Portland had very little fire protection or clean water to support population growth. Constructing the initial four reservoirs was an investment in the growth and well-being of Portland's population and provided a combined 66 million gallons of water, equalling a four to five day supply for Portland.[1]

Washington Park began to be developed and grow around the newly constructed Reservoirs. The small Portland Zoo was founded in Washington Park in 1888 and would eventually evolve into the Oregon Zoo. In 1893 the Zoo moved from the upper ravine to make space for Reservoir 3 and was relocated to the park entrance on West Burnside. A cable car was built in 1890 to connect Washington Park to the Portland train station. Jefferson Street and the tramway formed an entrance at Reservoir 4. The tramway was to continue through Washington Park to the west neighborhoods but was damaged during landslides. In 1912, Olmsted recommended Park Avenue become the main entrance into Washington Park. As a result of the change, Jefferson Street and West Burnside entrances became secondary. Arlington Heights and West End neighborhoods surrounded the park in the late 1890s. The Hillside Farm, or Country Poor Farm, located southwest of Washington Park relocated in 1911 and the vacated property was bought by West Hills Golf Course. Part of the golf course land became the beginning of the Hoyt Arboretum in 1922. Washington Park expanded west in 1925 and the Zoo relocated to current site of the Japanese Gardens. In 1954, the park expanded again when the Zoo purchased and relocated to the West Hills Golf Course. Neighborhoods in the west hills continued to grow as did access and attraction to the park and its natural settings.

Figure 5: Zoo ca. 1900 above Reservoir 3

Figure 6: ca. 1900 Looking east down on reservoirs and Portland

INTRODUCTION

Today Washington Park has expanded from its original 40 acres to 159 acres. Hoyt Arboretum and the Zoo sit adjacent to the park and combined the three facilities total 410 acres of park. (See Appendix A for maps depicting the evolution of Washington Park over the past century).

Washington Park and its structures represent a time of great economic and industrial growth and city investment in the public good. Portland retains one of few operating historic open reservoirs within an urban setting. Utilizing a clean local water source and the advantage of elevation to create a low-power gravity-feed system, the Reservoirs and water system have continued to provide the city of Portland with clean water service and beauty for over a hundred years.

Figure 7: ca. 1885 Looking south down on reservoirs

Initial construction and additions involved monumental civic undertakings, including early progressive concrete engineering construction. Washington Park Reservoirs provide a recreational destination, a connection for the population of Portland to its natural environment, and a unique visible potable water system at a location within the city.

Washington Park Reservoirs were nominated to the National Register of Historic Places as a historic district in 2004. The 9.5 acre historic district contains several contributing historic resources including Reservoir 3 and Reservoir 4, Gatehouse 3 and Gatehouse 4, Pump House 1, 36 Weir Building, Generator Building, surrounding walkways, entry stairs, and other site features. (See Appendix B showing changes to the historic site and buildings over time as a result of repair or rebuilding.)

Reservoir 3 & Reservoir 4

Constructed in 1894, Washington Park's Reservoirs portray the original design intent of reinforcing nature's beauty and creating a sense of order and harmony between structure and environment, ideals exemplified during the City Beautiful Movement. Romanesque Revival architectural components of the reservoirs convey the strength and durability of new engineering structures popular during early 20th century. Each Reservoirs' architectural aesthetic accompanied with deep water vistas provide a monument of water and recreational freedom at the edge of the city.[1]

Figure 8: Reservoir 4, ca. 1904

Isaac Smith and Charles Oliver designed the reservoirs including five buildings, four structures, and two fountains. Each reservoir was constructed with attention to detail and craft within a Romantic architectural style. Engineered and constructed with new progressive methods, the use of high quality Ransome patented reinforced-concrete demonstrated one of the earliest applications of reinforced concrete in the United States. The Reservoirs contributed to the viability of concrete as a practical and structural building material with an ability to be aesthetically attractive.

Ernest Ransome was described as the "father of reinforced concrete" by architectural critic Ada Louise Huxtable. Ransome concrete used patented "twisted iron" rod reinforcement, and claimed their twist strengthened concrete adhesion to the reinforcement. Both reservoirs exhibit Ransome's patented siliceous stone, hand tooled pre-cast concrete that mimicked stone. Siliceous stones, also known as "artificial stones," were considered to be extremely durable, economical, and aesthetically pleasing. As a building material, siliceous stone had been popularized since the Great 1851 Exhibition in London, England .[5]

Combining detailed, crafted construction with a utilitarian function, the reservoirs exhibit innovative engineering technology in its application to civil projects. Design of the fences and lampposts is attributed to

the architectural firm Whidden and Lewis. Attention to detail was emphasized in the wrought iron work, crafted by the Munich trained, locally celebrated, and award winning craftsman Johan Tuerck.[1]

Landslide and Rebuilding

Figure 9: Reservoir 4, Landslide, ca. 1904

Underground land movement caused the basin lining of the reservoirs to break apart as early as 1897. Historic photographs have documented continued damage to the reservoir basins, roads, parapet walls, and decorative fence, necessitating reconstruction of damaged areas within each reservoir. In 1904, Reservoir 4 was affected by a landslide on the northwest side of the basin resulting in repairs to the parapet wall and basin lining. Period photographs depict Reservoir 3 being relined in 1904 and a damaged bulkhead being removed from the basin. The west segment of the parapet wall appeared to be removed during the reconstruction. Rebuilding and repair of the lining and parapet walls are documented in photographs from 1958 and from the 1970s. Included is the demolition and relining of the northwest portion of Reservoir 4 and the re-construction of a section of the parapet wall in 1976.

Figure 10: Landslide zone

[1] Information in this section was brought forward from the January 15th, 2004 National Register of Historic Places nomination.
[2] *Report of the Park Board, Portland, Oregon. 1903.* With the report of Messrs. Olmsted Bros., Outlining a System of Parkways.
[3] *"Portland's Reservoirs Gain National Prominence with Listing on NRHP."* Friends of the Reservoirs. News January 23, 2004.
[4] Prudon, Theodore H. M.. *"Simulating Stone, 1860-1940."* APT Bulletin, Vol, 21, No. ¾ (1989), pp. 79-91. {www.jstor.org/stable/1504299}
[5] Ansted, D.T. *"On Artificial Stone."* The Journal of the Society of Arts, Vol. 10, No. 516 (Oct 10, 1862), pp. 695-706. {www.jstor.org/stable/41334593}

General Appearance

Washington Park Reservoir structures have maintained their original functions since construction in 1894. Several alterations have been made to the character defining historic features primarily due to rehabilitation or replacement resulting from slide failure. Reservoir 3 and Reservoir 4 are largely similar, however the modifications, replacements, and deficiencies are unique to each structure. Primarily deficiencies are a result of landslide movement, early concrete construction means and methods, and weathering.

Figure 11: Historic photo of Reservoir 4, ca. 1897

A rehabilitation project from 1988-1989 involved most structures of the Reservoirs and the repairs are readily visible due to differences in workmanship, material, and detail. Gatehouse 3 and Gatehouse 4 have been previously repaired by patching breaks and exterior cracks, and applying a cementitious coating at window sills, the cornice, and below the waterline. On both structures the coping and roof deck have been coated with an elastomeric deck coating. Pump House 1 and the Generator Building were repaired with high flow crack injections and patches on exterior walls.

Peter Meijer Architect, PC, field observations show that the exterior condition of the architectural materials range from poor to good condition. Good condition typically refers to historic features that show typical wear but that aren't damaged in a way that would affect the integrity of the building envelope or the original structural system. Elements that are in fair condition may have some damage that limits their functionality but damage that can be easily repaired. Poor condition features have significant damage that may be effecting the integrity of the building envelope and the structural system. Repairs to restore functionality to elements in poor condition would need to be extensive. Both replaced material and original unaltered segments of the parapet on the west side of each basin exhibit the poorest condition. Overall, most buildings, with the exception of Pump House 1 are in good condition. Portions of the parapet walls at both Reservoirs are in very bad condition, making repairs unlikely. The ironwork fence appears to be in good condition apart from minor corrosion due to weather and missing decorative components.

Basin and Features

Concrete - History

Ernest Ransome's patented concrete was cutting edge technology when Reservoir 3 and Reservoir 4 were constructed. Ransome was known as the father of reinforced concrete because his method of construction was faster, stronger, and more economical than other concrete construction methods used at the time. The concrete structures in the Washington Park Reservoirs were constructed with Ransome's patented twisted iron-rod reinforcement and guaranteed the strength of up 16,000 pounds per square foot (lbs/ft2). Reinforcement bars were anchored at ten-foot intervals within the reservoir basin, and driven within the slopes to a depth of 3 to 20 feet and then embedded into the concrete. [1] In addition to patenting the reinforcement, Ransome patented the concrete finish, concrete mixer, and the "illuminating panels in concrete floors." (see Appendix). [1]

Both reservoirs additionally exhibited Ransome's patented siliceous stone, or Patent Concrete Stone, which had gained popularity during the London 1851 Exhibi-

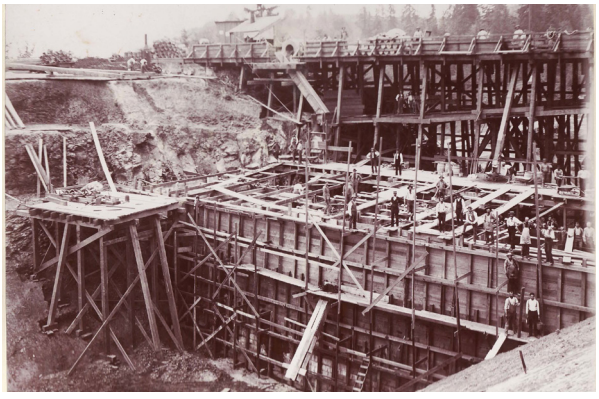


Figure 12: Reservoir 3 1894 under construction

tion. Ransome's patent was to hand tool pre-cast concrete to mimic stone. Concrete stone was considered to be extremely durable, economical, and aesthetically pleasing with a uniform texture and attention to craft and detail. Historically, Ransome's concrete stone was chosen for its resistance to weathering but had disadvantages of white efflorescence and green staining from dampness. [5] Concrete was said to have almost an entire absence of contraction during the construction and fabrication process. The texture seen in Reservoir 3 and Reservoir 4 was achieved after the concrete was cast-in-place and was hand-chipped with a patented hammer. [5]

The Ransome process included sand, chalk, or other minerals mixed together with silicate of soda, in the proportion of a bushel of sand to a gallon of soda, and then rammed into a mold. [4] Typically cast blocks were immersed and saturated in silicate of soda before a hot solution of calcium chloride was applied. A water wash then removed the sodium chloride that formed during the immersion process. According to historic descriptions, the silicate of soda combined with the calcium to form an insoluble silicate of lime that enveloped and cemented together the partials of the stone. [6] There are patent numbers embossed in the face of Reservoir 3's dam, Ransome Patent Construction and Finish : 305229. The southwest retaining wall at Reservoir 4 has two patent numbers: Patent Construction 305229 and Patent Finish 105800. Gatehouse 4 has two embossed numbers inside: Patent Construction 305229 and Patent Light 448993. A copy of the drawings and description for the Ransome lights are included in Appendix C.

(Note: Laboratory testing to confirm chemical and material composition is recommended and will be performed at a later date. The results, when completed, will be added to this report)

[4] Prudon, Theodore H. M.. *"Simulating Stone, 1860-1940."* APT Bulletin, Vol, 21, No. ¾ (1989), pp. 79-91. {www.jstor.org/stable/1504299}
[5] Ansted, D.T. *"On Artificial Stone."* The Journal of the Society of Arts, Vol. 10, No. 516 (Oct 10, 1862), pp. 695-706. {www.jstor.org/stable/41334593}
[6] Ransome, Frederick. Patent Concrete Stone for Building Purposes. Lucas & Son, Rinters, Baltimore:1866.

Reservoir Parapet Investigation - General

Parapet walls wrap around each reservoir basin to create an aesthetically appealing battered barrier to the water. Along the promenade walk, the parapet wall cap provides a three-foot wide ledge to secure the ornamental wrought-iron fence. Original iron lamp-posts are secured to projecting crown and chamfered corbelled caps that terminate about half way down the parapet wall's face and interrupt the length of the wall in rhythmic intervals. Reservoir 4 has different corbelled caps with larger profiles and concrete bases that project beyond the parapet profile.

Figure 13: Reservoir 3, inside parapet wall

Each reservoir's parapet wall has been repaired and/or replaced over time as a result of land movement and material failures. Portions of the northwest and small sections in the southwest wall of Reservoir 3 and the north and northwest walls of Reservoir 4 were reconstructed with similar character as the original. Original walls are capped with a concrete wash added after original construction to create a sloped water shedding surface. Existing parapet walls, both replaced and original, have continuous horizontal cracks extending around most of the reservoir's perimeter contributing to each wall's disrepair. (See drawings within Appendix D)

Reservoir 3's south parapet wall and an east portion of Reservoir 4 parapet wall have a unique profile that is a continuation of the inside vertical dam wall. The exterior of the wall is more decorative, perhaps a result of its historic adjacency to a higher-traffic carriage way across Dam 3 and Dam 4. The profile is distinguished by a raised diamond pattern set within recessed panels. The boarder around the pattern is also raised and has a combed texture, a similar style to the details in Gatehouse 3. Within the combed boarders, the

texture has a brush hammered finish creating a fine rough texture. At Reservoir 3, the dam parapet wall terminates at the West end in a crown and chamfered capped element after which the profile returns to the typical parapet profile.

Reservoir 3: Parapet Wall Deficiencies

The east portion of the parapet is original and in relatively fair condition. Horizontal hairline cracks span discrete portions becoming more substantial in certain areas. The horizontal cracks meet the wrought iron fence attachment at the inside of the parapet wall. The cause of the horizontal cracking is most likely resulting from corrosion of the reinforcement due to inadequate depth of concrete cover. Vertical cracking on the inside and exterior faces is common and typically emanates from the iron fence posts embedded within the parapet coping.

Figure 14: Reservoir 3, parapet wall deficiencies

The southwest portion of parapet wall appears to be an original section and is in poor condition. Large portions of the parapet coping has been previously repaired and the repairs are delaminating and failing. Efflorescence is usually present where the wall is delaminating. The hillside face of the wall has begun to spall at the sidewalk level and in some areas a very large, deep horizontal crack has formed. The decorative iron fence in this portion is tilting outwards.

A large portion of the northwest parapet wall has been replaced and is in good condition. The deficiencies are mostly vertical cracks that extend down the hillside face emanating from the iron fence posts embedded within the parapet coping. The vertical cracks occasionally extend down the inside face. At the parapet's intersection with the sidewalk, a continuous large crack has been patched and the previous repair is failing by continuing to break away from the concrete.

Corbelled columns with crown and chamfered caps provide the base for mounting the fence lamp posts and interrupt the parapet wall on both faces. The original concrete is in poor condition and the top crown has delaminated in large areas and parts are broken or missing. The corners of the chamfered detail have multiple cracks and are breaking off. The horizontal cracks from the parapet wall continue across these bases and efflorescence is heavy along these cracks. Rebuilt columns are in good condition with predominately horizontal cracks.

Figure 15: Reservoir 3, concrete delamination at the parapet wall column

Reservoir 4: Parapet Wall Deficiencies

Cracks stem from the iron fence posts and run vertically down the outside face of the parapet wall. In most locations, these cracks extend around to the inside face of the parapet cap. Large portions of the wash along the vertical cracks have delaminated from the concrete, typically towards the outside base of the wall and the top coping of the parapet

Consistent horizontal cracks along the parapet coping are usually observed in areas where the concrete wash is delaminating. Large portions of the wash have failed and broken.

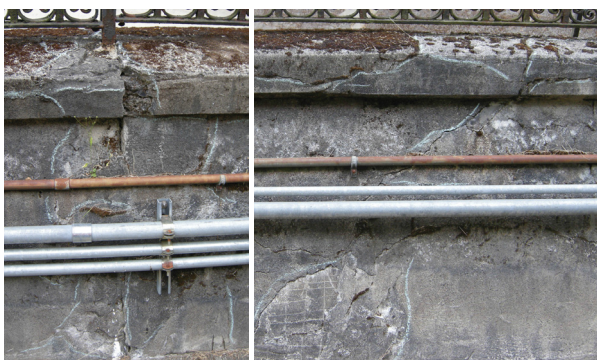


Figure 16: Reservoir 4, delamination of the parapet wall

Consistent horizontal cracks stretch across the outside face of the parapet wall and branch into multiple parallel cracks that spider across the surface. At the southwest corner of Reservoir 4, horizontal cracks extend through the entire depth of the parapet and large areas of the wall are broken. High biological growth in shaded areas has increased the wear to the original concrete and accelerated the cracking in the parapet coping.

Figure 17: Large horizontal cracks at the southwest corner of Reservoir 4

The original lamppost corbelled columns frame the walkway of Reservoir 4 and interrupt the parapet wall at measured intervals. Most of the columns are in poor condition. Two on the south wall have large horizontal cracks through them and the chamfered corners are missing. Mortar wash on top of the crown and chamfered column caps has failed and delaminated from the original concrete. Horizontal cracks continue through these elements where heavy efflorescence has formed. The corner edges of the top coping have begun to break off. The corbelled column in the southwest corner is in disrepair. Replaced corbelled columns that border the gate to the basin have minor deficiencies.

The northwest portion of Reservoir 4 has been rebuilt, evident in the change in sidewalk width, gutter shape, and reattachment of the wrought-iron fence. Overall conditions of the wall are in good repair and common deficiencies are vertical cracks and efflorescence. The cracks commonly originate from the iron fence posts embedded in the concrete and range from small hairline cracks to cracks extending to the ground level on both sides of the wall. Cracks have begun to form along cold joints. Efflorescence appears mostly along lower cracks in the parapet wall.

Reservoir 3: Dam Parapet Wall Deficiencies

The parapet wall along the Reservoir 3 dam no longer has its original finish. A rough concrete wash with a brush finish has been troweled onto the original concrete surface creating a different finish and texture than the original parapet walls. In addition, the wash has begun to discolor with a marbled black biological growth. The wash has begun to delaminate and spall to reveal the underlying concrete, noticeably common under the coping and within the recessed pattern on the exterior parapet face. Efflorescence is present under the coping and next to the electrical conduit.

Figure 18: Broken coping on the dam parapet at Reservoir 3 :2013

The parapet coping is delaminating from the underlying concrete structure and large segments are broken. Biological growth is present in most cracks and under the coping ledge. Some cracks around electrical conduit attachments are likely a result of their installation. Large cracks appear to the southwest corner of the parapet wall, directly before the wall curves to the north and changes in parapet style.

Figure 19: L- Finish and discoloration ; R - Large cracks around southwest corner

Reservoir 4: Dam Parapet Wall Deficiencies

Vertical hairline cracks are persistent in the coping throughout this portion of the wall and efflorescence is present underneath the coping ledge at these small cracks. Concrete wash on the coping is weathered through this area. Heavy biological growth is present underneath the top coping, especially where the cracks and faux joints are present.

Figure 20: Reservoir 4, dam parapet coping delaminated

Large segments of the lower coping are missing and the top wash is starting to delaminate, including the culminating crown and chamfered capped columns that boarder the wall. Large broken pieces of coping are missing where the wall curves to meet Gatehouse 4. Diagonal cracks are present where the wall curves to meet the south ending crown and chamfered capped columns.

Figure 21: Reservoir 4, dam parapet coping delaminated

Dam 3

Dam 3 is a Ransome-patent concrete structure and its design is influenced by the other Romanesque Revival buildings on the site. The dam spans about 175 feet and is about 20 feet thick along the top and 30 feet at its base. The top section of the dam is composed of seventeen arches using the design of a blind arcade to give the appearance of a classic viaduct. Capping this arcade is an ionic dentil, also seen in Gatehouse 3. The edge of the walkway and balustrade are above and separated by a 12" band detailed with a combed boarder and brush hammered finish. The dam extends down into the valley between Reservoir 3 and Reservoir 4 and continues to get wider at its base. The coursing detail of the concrete alternates between small and large blocks and is defined by a faux mortar joint. The blocks within the arches are at a smaller scale. All the concrete blocks have been hand chiseled to have a quarry-face appearance.

Dam 3: Face Deficiencies

Multiple hairline cracks span the entire length of the structure and two larger cracks towards the bottom of the dam have heavy efflorescence. Water is seeping out of these cracks and has stained the concrete. Crack monitoring devices are visible and present at the two large cracks. Efflorescence can be seen in historic photographs as early as 1917, implying that cracking in the dam face was an early issue which has been repaired over time. Efflorescence is heavy along a crack that spans the length of the dam underneath the dentil element. Drains from the adjacent walkway wash water down the dam surface and have caused black biological growth and water stains to continue down the wall. Most of the wall is discolored with orange and black biological growth, water stains, and efflorescence. Efflorescence stalactites extend from the underside of some arches.

Figure 22: Reservoir 3, dam face water leaking from crack with efflorescence

Dam 3: Dam Baluster

Opposite the reservoir parapet wall on the dam side is a Ransome concrete balustrade. Colonnades of seven recessed balusters set within eighteen and a half bays compose the length of the wall. In between each column, the bottom of the bay is moulded to a central peak and the inside base slopes down to the walkway.

Borders on each bay of the colonnade are six inches on each side with a brush hammered finish including two inches of a slightly raised, combed border. The coping protrudes two inches over the bay and is capped with a wash creating a sloped water shedding surface. The detailing on the exterior dam side of the baluster differs somewhat from the interior face. The bays appear to have a smooth texture on the exterior side and rest above the dam's detailed entablature.

Large columns sit at both the west and east ends of Dam 3 and are classically proportioned with a base, shaft, and simple cap. The shaft of the column is divided at mid-height with a belt band corresponding to the baluster cap rail. Each section of the shaft is detailed by recessed panels with combed textured chamfered borders and bush-hammer textured interior panels. Historic photographs show ornate iron decorative site lamps mounted to these concrete columns. The decorative iron lamp posts exist but are missing the original lanterns.

Dam 3: Baluster Deficiencies

Coping wash on interior walkway side appears to be a later addition and has rougher appearance than other original site finishes. Portions of the coping have completely detached from the original concrete and are hollow due to delamination between the concrete and the coping wash. Large segments of the coping along the inside and outside faces have broken and are missing. Where segments of coping are missing the twisted iron reinforcement is visible and set at an inconsistent depth. This is likely a sign of previous repair. Larger cracks have been repaired with white caulk, which stands out from the original appearance of the concrete. Small vertical cracks are common on corners of the columns and efflorescence has surfaced along these cracks. In some cases, corner segments of the columns have broken and are missing. Detailed original hand finishing around each bay has been obscured by the wash in several areas. A diagonal crack on west side resulting from ground movement has completely separated sections of concrete. The reinforcing bar and daylight are visible through the resultant gap.

Figure 23: Reservoir 3, broken segment of the baluster coping

Figure 24: Reservoir 3, Large broken segment of the baluster rail

The lamppost base on the east end is in good condition. There are several continuous hairline cracks where efflorescence is present. Vertical cracks extend from the top down through the cap and into the upper segment of the shaft. The horizontal cracks run through the center of the upper and lower segments of the shaft.

The lamp base on the west side is in fair condition. There are many hairline cracks across most of the faces. Heavy efflorescence is present at most of these cracks. One corner has broken off. A large crack runs along where the base meets the dam face wall. The detail is still visible.

Dam 4

Built in a Romanesque style, Dam 4 is a Ransome-patent concrete structure. Spanning 230 feet and stand-

Figure 25: Reservoir 4, 1894 icon, cracks, biological growth, efflorescence

ing at a height of approximately 20 feet, the upper 12 feet of the dam are vertical on both sides while the exterior of the lower portion is battered at a slope approximating 1.5: 1. The top section of the dam is composed of seventeen arches using the design of a blind arcade to give the appearance of a classic viaduct. Capping this arcade is an ionic dentil, similar in style to Gatehouse 3. The edge of the walkway and baluster are separated by a 12 inch band detailed with a combed boarder and brush hammered finish. The dam extends down only a couple of course below the arcade and continues to get wider at its base. The coursing detail of the concrete alternates between small and large blocks and is defined by a faux mortar joint. The blocks within the arches are smaller in scale. All the concrete blocks have been hand chiseled to have a quarry-face appearance. The original concrete "1894" construction date is intact.

Figure 26: Reservoir 4, efflorescence, continuous crack, and staining on dam face

Common to Ransome concrete, the dam face has multiple hairline cracks spanning the entire length of the structure. The efflorescence can be seen in historic photographs as early as 1917, therefore cracking in the dam face was an early issue. Heavy efflorescence exists along the crack below the dentil capping. Along the top ledge, drains from the adjacent walkway wash water down the dam surface causing black biological growth and water stains down the face of the wall. Multiple areas of spider cracks exist in the areas with excess moisture and biological growth and in some cases the concrete has spalled. Most of the wall is discolored with biological growth, water stains, and efflorescence. Efflorescence stalactites extend from underside of every arch and efflorescence is prolific at faux joints and cracks. There are holes with material resembling cut tension cables protruding from the concrete.

Dam 4: Baluster

The Ransome concrete baluster is composed of 22 bays with seven recessed columns per bay and two half bays on each end. In between each column, the bottom of the bay is moulded to a central peak and the base slopes down to the walkway. The bays border the colonnades by six inches on each side with a bush hammered finish along the top two inches. The top boarder is slightly raised with an additional combed border. The coping protrudes two inches from the bay and is capped with a bow shaped mortar wash.

Cracks in the top of the coping and delamination show the failure of previous repairs. Large horizontal portions have completely detached from the concrete and sound hollow. Small vertical cracks are common on the inside face of the baluster coping. In some cases segments of the columns have broken off. The original lamppost bases frame the baluster and

Figure 27: Reservoir 4, baluster delaminated and broken coping

are missing their original iron lamps. Multiple hairline cracks run across the face of these and efflorescence is weeping from the cracks.

Reservoir 3: Basin

Reservoir 3 covers 2.02 acres measuring approximately 200 feet east to west and 500 feet north to south.

The capacity is approximately 16.4 million gallons at a maximum depth of 49 feet, making it one of the deepest reservoirs in Portland. When first constructed, the original basin lining used asphalt for waterproofing and subsequently has been repaired several times with other waterproofing materials. Photos from 1904 depict the concrete lining failing and show a removed buttress along the west wall that was a previous repair resulting from a landslide. Photo documentation shows that the northwest corner of the basin lining has been replaced as a result of repair from landslide damage. The reservoir now contains a watertight synthetic geo-membrane lining laid over the concrete to waterproof the basin because the existing concrete lining was leaking. .

Reservoir 4: Basin

Reservoir 4 encompasses 2.28 acres and is approximately 70 feet below Reservoir 3 at elevation of 229.5 feet. It is the second deepest reservoir in Portland with a maximum depth of 40 feet. Dimensionally the reservoir is approximately 200 feet east to west, 700 feet north to south and has a capacity of approximately 17.6 million gallons. The basin lining on Reservoir 4 was constructed in a similar method to Reservoir 3 and exhibited similar deficiencies due to landslide movement. The lining began cracking and failing as early as 1900 and was relined in 1904, 1958, and 1976.

Figure 28: Reservoir 4 basin

The northwest section and northeast section of the lining were demolished and rebuilt in 1976. It is evident that rebuilding took place where the concrete changes in color and texture and the consistent cracking becomes almost absent Prolific cracking of the basin has been repaired with white caulking.

Reservoir 3 & Reservoir 4: Retaining Walls

The northwest and southeast retaining walls at Reservoir 3 and southwest retaining wall at Reservoir 4 are cast-concrete with battered profiles and a smooth finish cap similar to the parapet wall. The concrete walls have a distinctive hand-chiseled, quarried-face appearance with false mortar joints between each course, similar to the earlier described Ransome Siliceous Stone. Reservoir 3's northwest wall has been affected by land movement, which contributed to many of its deficiencies. The southeast wall has extensive biological growth and also exhibits long horizontal cracks. Southwest Reservoir 4 wall has two embossed Ransome Patent numbers.

Reservoir 3: Retaining Wall Deficiencies

Common to the Ransome concrete structures on site, the northwest retaining wall on Reservoir 3 has several hairline cracks running horizontally across most of the structure. These are parallel and spaced at intervals between one and two feet. Cracks likely correspond to oxidizing twisted iron reinforcing bars located within the concrete. Efflorescence is heavy in some areas, especially along the horizontal hairline cracks and may result from increased water migration under applied force stemming from soil pressure on the back side of the wall and no alternative drain path.. Three of the concrete stone faces have spalled off completely. A crack continues under the parapet cap and along the top of the retaining wall. Large vertical cracks show where the wall has been pushed forward from landslides. Part of the vertical crack has been repaired and patched, however the north side of the wall is pulling out of plane with the south side causing the repair to fail. Large cracks and separation in the wall have further degraded the retaining wall and moved the wall beyond the plane of the parapet

Figure 29: Reservoir 3, spalled faces of Ransome concrete at the northwest wall

cap on the south side. The movement of the retaining wall has caused cracking in the gutter and walkway.

The southeast retaining wall is similar to the northwest and also exhibits several horizontal hairline cracks across most of the structure. The cracks likely correspond to the location of the reinforcing bars within the concrete. Efflorescence is heavy in some areas, especially along the horizontal hairline cracks. A crack continues under the parapet cap and along the top of the retaining wall. Additional horizontal cracks run across sections of the top cap and have contributed to sections breaking off. Patching is sporadic and failing. There are continuous cracks where the wall meets the gutter and these have also been previous patch, however the repair is failing. The faux mortar joints have started breaking off in small segments sporadically

Figure 30: Reservoir 3, retaining wall

across the wall. A jogged crack cuts diagonally across the wall and continues vertically to break through the top copping.

Reservoir 4: Retaining Wall Deficiencies

This retaining wall is located in the shade of the surrounding park, resulting in an overgrowth of plants and moss that mask most of the concrete. The hill behind drains into the back of the wall and soil pressure

Figure 31: Reservoir 4, retaining wall, water saturated and biological growth

pushes water through the retaining wall contributing to biological growth. The saturation of the concrete and plant growth on the wall increase water migration resulting in degradation of the concrete mix resulting in large spalls. The top coping appears intact, but it is cracking along the joint where it meets the wall. As the coping descends towards the West gutter, the coping becomes cracked and large pieces are missing exposing the ground behind.

Reservoir 3: Walkways & Gutters

Walkways surrounding the reservoir are approximately five-feet in width and poured in 30 inch square sections with a light broom finish. At the northwest side approximately 200 linear feet of walkway and accompanying gutter have been replaced.

Several historical cast iron lids and historic cast iron bar grates are set within the sidewalk on the south gutter corners. Along the dam face, new roadway asphalt overlays portions of the original four-foot sidewalk, but part of the original walkway is visible at the east end near Gatehouse 3.

Reservoir 3: Walkways & Gutters Concrete Deficiencies

East of Reservoir 3, the original gutter and sidewalk remain and are in fair condition. Cracks in the gutter along the lower section have been patched in places. Patches do not match the original concrete. Where the concrete walkway intersects the gutter it is com-

Figure 32: Reservoir 3, walkway and gutter

mon to see cracks and breaks. A continuous horizontal crack runs along the gutter's low height retaining wall on east hillside. Parts of the concrete have broken off along this crack and moss is commonly pres-

ent. A large segment of concrete is broken and deeply cracked forming a hole in the east gutter where it meets the west retaining wall.

Figure 33: Reservoir 3, walkways & gutters

The gutter changes to a U-shape adjacent to the northwest retaining wall and has few deficiencies except for a large crack resulting from the movement of the retaining wall. South of the retaining wall the gutter has been rebuilt and changes to a V shape. Here another low height retaining wall rises from the gutter and has continuous horizontal cracks. Small areas have spalled or broken but most have been repaired.

Figure 34: Southwest planter tilting

Reservoir 3: Planters (Jardinières) Deficiencies

The gutter terminates to the southwest at a large planter in poor condition. Hairline cracks are visible on every surface and efflorescence is presence along the cracks. Corners of the planter have chipped off and the planter no longer stands straight.

Reservoir 4: Walkways & Gutters

The walkway alternates from new to old but remains in good condition. Original walkways surround Reservoir 4 on the south and west sides and are approximately five-feet wide and scored every 30-inches. The south walkway has been intermittently repaired and visibly patched. Along the dam to the east, the walkway is four-feet wide and was repaved in 1987 with asphalt. To the north of the reservoir the walkway and the gutters have been replaced over time and narrow to three-feet. The pavement tooling pattern at this section does not match the original and the gutter has a "V" shaped profile instead of the broad "U" shape. Historic drains are located at the gutter ends.

Reservoir 4: Walkways & Gutters Deficiencies

Although it does not match the historic original in material or design, the walkway adjacent to the dam face is in good condition. Repairs done to the north portion of Reservoir 4 have left both the sidewalk and gutter in good condition apart from minor cracks.

The southwest gutter is in disrepair. Horizontal cracks have caused large portions of the gutter's parapet to completely break. The patented twisted reinforcing iron from Ramsome's construction is visible in areas. Biological growth is heavy and the earth is visible where concrete is missing. Original segments of the walkway in this area have been replaced and multiple patches are failing.

The south portion of the gutter is in better condition but exhibits similar cracking as the southwest gutter. A continuous crack runs along the bottom of the gutter and at the intersection of the gutter and the gutter parapet. Parts of the gutter wall have begun to spall and break off along this crack. Moss and plants are growing out of cracks along a majority of the gutter parapet. Some previous repair and patching has been done to the cracks in the gutter and walkway, however cracking still extends around these repairs.

Figure 35: Gutter damage and exposed reinforcing

Reservoir 3: Stairway

Built during the original reservoir construction, the stairs to the north of Reservoir 3 were the original grand entry stairs leading into the site. The original urns frame the entrance at the top of the stairs and the stairs end in a chamfered bases similar to those of the parapet wall.

Figure 36: Reservoir 3 entry stairway

Extensive repairs to the stairs in 2008 replaced the majority of original material and added new painted metal railings Vertical cracks repeat along the stair's parapet and commonly run through the coping. A mid-level continuous hairline crack runs the length of the parapet. The parapet wall and the end chamfered bases have been brushed with a rough wash. Both urns/planters are in good condition, however the top west planter is broken at a corner. Previous repairs and patching are visible on the stairs and are otherwise in good condition.

Figure 37: Reservoir 4 staiway handrails

Reservoir 4: Stairway

Concrete stairs exist north of Pump House 1 leading to pathways above the north end of Reservoir 4. Although the location and direction are historic, the materials have had ongoing alterations and no longer retain the original material integrity. Treads and the handrails have been replaced.

Wrought Iron Work

(Note: The nomenclature in this section of the report refers to the metal of the decorative fence and iron work as wrought iron. Lab analysis of the various iron components was not conducted during this initial phase. Wrought iron was generally the material used for decorative fencing but bars, decoration, and other metal components could also be cast iron. It is common to find a mix of iron components comprising a decorative iron feature. Wrought iron and cast iron require different repair techniques. Proper repair and preservation of the components will require more precise knowledge of the material.)

Figure 38: 1912 condition of fence and lamppost

Attention to detail was emphasized in all the wrought iron fences and lampposts, crafted by an award-winning local ironsmith Johan Tuerck and design by the architectural firm Whidden and Lewis.[1] Six feet in height, the fence is decorated with double-sided curls at the lower and upper rails. The ¾-inch vertical bars alternate in height and are topped with spears, in addition there are ornamental hammered metal leaves on each of the taller bars. Each bay of fencing, defined as the length bounded by taller vertical components, is anchored by a iron bar embedded fourteen

Figure 39: Corrosion of ironwork and peeling paint

inches into the parapet wall at four-foot increments. Every three bays, a larger $1^1/_2$-inch seven foot vertical bar is topped with a decorative ball bellow the spear. A ¾ inch curved brace extend from these supports and is embedded in the inside, water-side face of the parapet wall. Access gates are incorporated intermittently along the length of the fence.

Fence Deficiencies

At both reservoirs, the original fence is in relatively good condition except for minor surface corrosion. Welded seams at the base of some vertical bars indicate where sections of fence have been modified or removed to reconstruct parts of the parapet wall. Originally, the vertical bars were embedded in the concrete parapet. When the fence was modified, the

Figure 40: Fence connection with concrete parapet wall, welded connections

bars were reset within circular embeds. Some welded connections have failed. In several locations the fence is tilting out away from the basin.

Lampposts Deficiencies

Ornamental lampposts within the fence encircling the reservoirs are created from four wrought iron bars. Reservoir 3 has five lampposts and Reservoir 4 has seven lampposts set within the fence. Two free-standing lampposts decorate the dam baluster at

Figure 41: Free-standing lamppost at the baluster of Dam 3 and lamppost at Reservoir 3

Reservoir 3. The freestanding lampposts at Reservoir 4 are missing. Based on a review of the original drawings, all the components comprising the lantern portion of the lamps are missing.

Ransome Concrete

Gatehouse 3: Investigation

This Romanesque Revival concrete structure references gatehouse fortresses of Europe with an exterior of rusticated Ransome patented concrete "stone". Ransome's concrete was hand-chipped to create pitched, quarried-faced stone with heavy rock finish. The concrete facade is cast in a broken range with false mortar joints to define the coursing. Wrapping around the lower edge of the gatehouse is a moulded water table base, with a smooth and cement plaster exterior facing inside the basin.

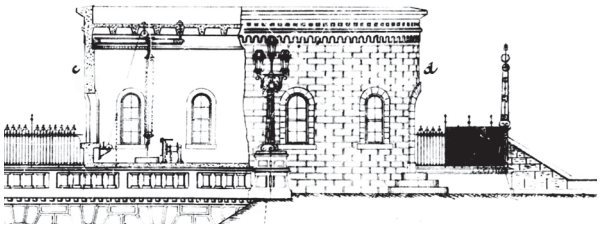


Figure 42: Portland Water Works 1894 Reservoir 3 Plans and Details

Arched window and door surrounds are pitched with a four cut rustication with a prominent sill projection. Each block has a hand-chiseled dressing with a combed texture and the center faces have been brush hammered to create a fine rough texture.

Atop the rusticated concrete stone is a Romanesque entablature with a paneled frieze, including a corbelled patterned band with combed borders and a brush hammered face. The cornice is composed of repetitive recessed chamfered blocks topped by a projecting cornice with an ionic dentil course. Above this is the low-slope concrete slab roof with low projecting parapet.

Gatehouse 3 was rehabilitated from 1988-89. Part of the cornice was repaired and replaced along with other patching repairs. Historic Romanesque style stairs were rebuilt to match the original except for the stair nosing. An original twenty inch square tooling pattern radiating from building's stairs has been paved over. During the rehabilitation, the coping and roof deck were coated with an elastomeric deck coating.

Gatehouse 3: Deficiencies

Five hairline cracks wrap horizontally around the lower perimeter of the building and are spaced approximately one to two feet apart vertically. Visible cracking is most likely caused by the corrosion of the underlying reinforcing bars resulting from insufficient concrete cover. Some cracks run horizontally through the window and door surrounds or vertically through the top stone. Horizontal hairline cracks are visible on the window sills, stairs, and along the frieze. Along the frieze, a horizontal crack closely correlates to the intersection of the roof slab with the parapet wall. Previous repair work is failing as evidenced by eroded or broken patched material. City records attribute previous repairs were conducted to address damage to the roof from water intrusion from leaking internal roof drains. Vertical cracking, water staining, and surface efflorescence on the façade correspond with the internal downspouts locations. Holes previously drilled into the concrete in order to attach piping and electrical conduit have caused hairline cracking.

Deficiencies on the west elevation consist of continuous horizontal hairline cracks along the bottom of the structure and along the top cornice. There are pipes embedded in the concrete towards the north side. Most of the wall is yellowed and stained from biological growth except directly under the windows.

Figure 43: Biological growth; Repetitive horizontal cracks

A small segment of cornice on the east face has original brush hammered texture while the remaining cornice has been repaired with non-textured patching material. Distinct staining on the frieze suggests some previous or current water damage emanating from the roof. Previous repairs on the stairs and patches to

cracks are failing. Internal roof drains on the east elevation have caused larger and more prominent vertical cracks. The cracks have been previously patched and the area is stained from possible water damage.

The north elevation has distinct staining and efflorescence on the frieze suggestion some recent water damage from the roof. Heavier biological growth is concentrated around the bottom of the protruding water-table molding.

Figure 44: Crack along the frieze with staining and efflorescence

Hairline cracks run horizontally along the bottom section of the south elevation. A large vertical crack extends up the wall likely resulting from the corrosion of the internal iron downspout. Parts of the projecting water table base have spalled or cracked and biological growth is present.

Figure 45: Crack along internal downspout

Gatehouse 4

Gatehouse 4 is a circular building approximately twenty-five feet in diameter. The original 1894 rusticated block pattern is intact and is composed of a repetitive block course that references the architecture of Europe. Window and door surrounds have the characteristic rusticated and quarried face concrete stones with projecting keystones. Gatehouse 4 has less detailed concrete surrounds than Gatehouse 3 with low profile rustication and faux joints. A Romanesque entablature tops the rusticated concrete stone with a frieze pattern that has a combed texture boarder and brush hammered face. Repetitive recessed chamfered blocks compose the cornice which is topped with a low-slope concrete slab roof and a low projecting parapet. Metal coping was added to the roof parapet during the exterior rehabilitation in 1988-89. A molded water table base, with a smooth cement plaster coated exterior boarders the bottom of the façade inside the basin.

Figure 46: Gatehouse 4 deficiencies

Gatehouse 4 Deficiencies

Continuous horizontal cracks run around the lower perimeter of the building, located at approximately one course and six courses up from the water-table base. Biological growth is present over most of the exterior, however, directly underneath the top of the roof parapet there is significantly less.

On the east elevation, a crack runs above the door and is surrounded by stains from water and/or biological growth. Stains and biological growth are heavy

Figure 47: Staining and previous repairs above east door; Staining and continuous crack

where the dam's parapet wall meets the Gatehouse wall. Multiple horizontal cracks run across the stairs and some stair nosings are-broken.

On the west elevation there is evidence of previous repairs as well as patches around the southwest window, several locations in the cornice, and along several horizontal cracks. Stains and biological growth are mostly along the water-table base and around the back door. Part of the metal coping along the roof parapet has become displaced above the door. Segments of the wall under the water-table base has begun to spall and some areas have been patched.

Concrete under the northwest window has been carved out and significantly less biological growth is present under the window sills.

Large pieces of the lower water table base have broken off along the south elevation. A horizontal crack runs parallel with the water table base corresponding to reinforcing bar locations within the concrete. Where concrete pieces have broken off, reinforcing bar can been seen. Rust and corrosion are clearly visible within the concrete. The southeast window's

Figure 48: Exposed reinforcing at southeast window surround; Broken water-table base

surround has exposed reinforcing and a section of the concrete above the window has heavy staining. Underneath the southwest window's surround, the header has broken off and efflorescence is visible.

Pump House 1

The Pump House was built in 1894 adjacent to Reservoir 4. It is a reinforced concrete building with a wide doorway facing south. The current heavy exterior stucco finish of textured cement plaster was a later alteration. Four of the original windows have been removed and the rough openings have been filled with concrete blocks and coated with plaster. Previous repairs to cracks are visible and the articulated door and window surrounds have been patched with a cementitious and epoxy material from the 1980s. The original parapet has a simple raised entablature of repetitive recessed chamfered blocks topped with a projecting cornice of an ionic dentil course. A low-slope metal gable roof was added to prevent leaks through the original roof system. The original roof deck, beneath the new roof, features Ransome glass skylights divided into eighteen sections of coffered concrete panels

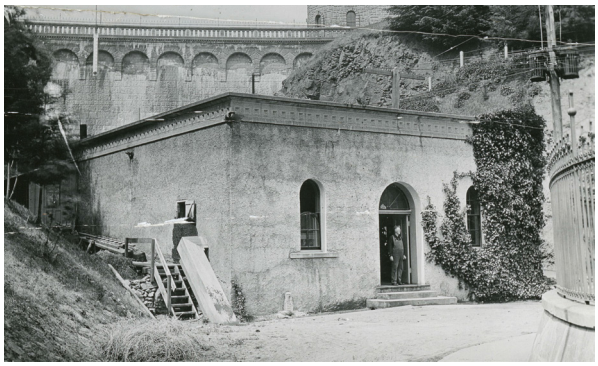


Figure 49: Pump House 1916

Two post tension cables with nutted ends, spaced approximately 6 inches apart, are present at mid-point along the west and east elevations slightly below the decorative cornice. It is unknown if these post tension cables are still functional It appears that the post tension concrete beam has been replaced with steel framing for the roof.

Figure 50: West elevation; previous repairs to multiple horizontal cracks

Pump House 1 Deficiencies

Major deficiencies include large diagonal cracks resulting from building movement, previous repairs to some of these cracks, and newer stucco repair textures that do not match the original stucco finish. Four of the original six windows have been removed and the openings have been filled with concrete blocked finished with mismatched stucco. Sections of the stucco plaster have delaminated. Diagonal cracks indicate that the building's foundation has been subject to ground movement. Most cracks have been previous repaired and only a few open cracks remain.

A repaired horizontal crack below the entablature encircles the entire building. Two squares of plaster patching on the south side of the west elevation do not match the wall color. Part of the cornice has broken off at the north corner. Previous photos show a shed attached to the northwest corner of the building. There are obvious repairs and patches that mark the location of the shed. The entablature does not exist in this recessed area and each corner has thick plaster applied as a repair.

Figure 51: North elevation; Stuccoed window openings, horizontal cracks

The Pump House is depressed below grade on the north elevation and two window openings are half above grade and half below grade. Similar to the south elevation, the two window openings have been covered with a plaster stucco of a lighter coloration and rougher texture than the rest of the wall. A repaired horizontal crack runs at the same height as the other elevations. A large portion of the western corner has been repaired where the shed likely attached to the exterior. The original rain scupper to the east has broken and been unsympathetically repaired by adding a drainage pipe section.

Figure 52: Previously repaired cracks on the south elevation

Repaired cracks run through the east elevation in similar areas as on the west elevation. A diagonal crack shows foundation movement from previous ground movement. The door's stucco border has been previously patched and the edges are chipped. Metal coping around the door has been bent out of alignment by movement of the concrete underneath. Existing windows are in good conditions except for peeling paint.

Figure 53: Stucco delaminating

At the south elevation, a crack runs vertically from the roof to the door, alongside a protruding I-beam. The lower west side of the wall has been repaired and part of the corner appears to be missing or intentionally carved away. The lower east side of the building has heavy biological growth and parts of the stucco have delaminated. Both windows have been removed and in-filled. The stairs leading to the east of the building appear to be a new addition.

Miscellaneous

1920s Generator Building

The Generator building was built in 1920 to power the light fixtures of the park. It is a concrete structure with a stucco finish. The low roof parapet is ornamented to match the entablature of Pump House 1. The window surrounds are a smooth raised border of six inches. It was rehabilitated in 1988 at which time the roof was repaired. The interior no longer contains original equipment.

Several cracks across the northwest façade have been previously repaired with a material that doesn't match the original stucco. The retaining wall west of the door has a large area of biological growth and the stucco finish is delaminating. Additional previous repairs appear on the northwest elevation and to the left of the door a large patch of new stucco doesn't match the original texture or color.

Figure 54: Stucco delamination; horizontal crack along cornice

An original replica of the rain scupper designed to match those on Pump house 1 has been repaired and is failing. Under the scupper the corner of the building has become stained and deteriorated from water draining down the face of the building.

Figure 55: Delamination of stucco; biological growth; previous repair along door

36 Weir Building

A 1945 addition to Reservoir 3, the Weir building, or screen room, has a very utilitarian appearance. Unlike the other buildings on site, the Weir building has reinforced concrete walls that were textured by the plywood form work. A more recently constructed raised concrete water vault protrudes from the south elevation. A rebuilt entry stair with the original handrail provides access from the east.

Generally in good condition, the Weir building's main

Figure 56: Crack and efflorescence

deficiencies are cracking along the interface between the wall and the floor slab. Efflorescence is visible along some of these cracks. There is biological growth along the edges of the protruding water vault. Two spots on the wall appear to have been ground down, exposing the aggregate.

Figure 57: Continuous crack along slab edge

Interiors

Gatehouse 3 has existing intact floor mounted glass relights installed with Ransome's patent method. Some of the original mechanical equipment and lifting hoistways are intact; however original lifting cranes have been removed. Gatehouse 4 has an exist-

Figure 58: Gatehouse 3, original overhead trolley

ing interior original overhead trolley and the original iron stairs.

Multiple Ransome floor lights exist in both gatehouses and Pump House 1. Patent marks in Gatehouse 4 display Ransome's Patent Construction 305229 and Ransome's Patent Light 448993 (see appendix for additional patent information).

The original Pump House 1 roof with Ransome Patent Lights exists beneath the new, low-slope gable roof.

Equipment

Preserved historic equipment in Gatehouse 3 and Gatehouse 4 includes existing original wheeled valves, water level measurement, and mechanical equipment. Preserved historic equipment is no longer used.

Figure 59: Gatehouse 4, original Ransome Patent Lights

Figure 60: Pump House 1, original Ransome Patent Lights

The Weir Building contains the historic screen lid, water gauge, and a hoisting I-beam inside.

Equipment in Pump House 1 includes the historical and operational 1894 Pelton pump 'Thumper
Fountains

One drinking fountain is located at the northeast side of Reservoir 4 by the historic entrance and the historic cable car turn-around. A thick faceted 18 inch concrete bowl sits on top of a two foot decorative pedestal. The pedestal sits atop a concrete block. Water flowed from an internal pipe with a metal fitted spout for drinking. The fountain is no longer functioning but in good condition.

Figure 61: Pumphouse, original pump 'Thumper'

Another concrete drinking fountain stood on a 3-feet high pedestal on a concrete riser in front of the north facing door of the Generator Building. A water spout for drinking was the middle of the 1-inch diameter bowl a top the pedestal. This fountain is in poorer condition and wasn't located on site during the assessment.

Figure 62: Drinking Fountain - on Site

Figure 63: Drinking Fountain - Storage

Windows and Doors

Gatehouse 3

Gatehouse 3 contains nine double hung, 4 over 4, wooden barrel arched windows with a rusticated concrete sill and surround. The four-over-four panes no longer contain original glass. A flush, hollow steel frame door replaced the original wood unit in the 1980s. Interior expanded galvanized metal security grilles replaced similar original protective devices.

Gatehouse 3 Deficiencies

The window sashes are in good condition. The sealant has been replaced and appears in good condition. Some of the wood sills have begun deteriorating and paint is peeling on most of the windows.

Figure 64: North and south windows

Gatehouse 4

The entry doors to Gatehouse 4 are 1987 steel replacements and the window glass has been replaced over time. Security grills over the sash have been added on the interior. The reservoir-side door is not the original wooden door, but it is set within the original wood frame. The original wood entry door jambs are cut off at the transom line and the original arched transom, fan light, and cast iron sill are existing.

Gatehouse 4 has five double hung, wood-framed windows. The southeast window is deteriorating along the bottom frame and the window stops have deteriorated with running sections missing. The southwest window stops are detaching from the upper sash. The side jamb is deteriorating on the lower west side of the window. The northwest window paint coating is deteriorated on the upper sash and the meeting rail is deteriorating. The northeast window stops are deteriorated and some of the wood frame has deteriorated. The paint coating is deteriorating and peeling.

Figure 65: Gatehouse 4 door corrosion, window sealant deterioration, and peeling paint

Pump House 1

On the Pump House, only two existing historic windows remain and the other four historic windows have been removed and the openings in-filled with concrete block and finished with sprayed on synthetic coating. It appears that the original projecting sills remain under the new spay applied coating at all windows.

The south window on the east elevation has a thick coating of paint. Some of the window stops have been replaced and are different in color and have a slightly different texture. Paint is peeling from the surface possibly due to water damage. The sides of the frame are smooth but the sill has a combed texture.

Figure 66: Peeling paint on south east window of Pumphouse 1

The east window to the north has a similar thick coat of paint chipped in areas. The wood underneath appears to be in fairly good condition. A piece of wood molding is missing from the very top of the window.

The front south door is not original and is in good condition finished with several coats of paint. The east door is not original. The frame and surrounding area is finished with a spray applied coating and has a different texture than the original stucco. The frame and door appear in good condition. On the left side frame, the concrete and frame jog out slightly above the fire extinguisher; evidence of the effect of the ground movement on the pump house.

Figure 67: L- South door, original cast iron sill; R- East door, jog in frame

36 Weir Building

A simple unadorned building, 36 Weir building was constructed with board forms and poured concrete. The form work outlines are visible on the exterior. No additional exterior finishes were applied to the walls. The door is not original and the windows were replaced in the late 1990s.

Figure 68: 36 Weir Building entrance and door jamb

1920s Generator Building

The generator building's windows are non-historic. The metal door and windows were installed in 2003 and replaced the original doors/windows.

Figure 69: Generator Building new windows and doors

CONCLUSION

PMA's detailed assessment was limited to above grade observations and did not include invasive or destructive testing during this initial phase of design and project development. It is highly recommended that historic material be removed for laboratory testing and evaluation. Data will be used to correlate visual observation with test results and to inform new material specifications in order to match historic composition/appearance.

Figure 70: Reservoir 3 from the Main Entrance

As noted in the report, significant cracking and deterioration of the reservoir basin parapet walls and significant cracking due to ground movement of Pump House 1 impact the conservation approach of each of these historic resources.

Given the degree and type of damage to the parapet basin walls, combined with the amount of previous repairs as a result of landslide damage, the basin walls cannot be effectively repaired. It is PMA's recommendation that further laboratory testing be performed to determine petrographic and chemical composition of the existing historic concrete including surface aggregate and surface texture. The results of lab testing should inform the specifications for new basin walls as incorporated within the final design solutions.

Pump House 1 poses significant preservation issues as a result of the existing wall deficiencies, critical operational functions housed in the structure, and importance to the historic fabric of the reservoirs. Should it be determined that Pump House 1 remain on site, it may be necessary to insert concrete shear walls on the interior effectively retaining the exterior walls for restoration repairs. Such an approach would also allow the removal of window in-fill and facilitate the installation of replacement windows to match the original design.

Figure 71: Reservoir 4 facing South

Cracking in the gatehouses, damn walls, and decorative concrete elements, are likely primarily due to corrosion of reinforcing bar resulting from a combination of insufficient protective concrete cover, carbonization of the concrete, and water intrusion. Whereas repairs can be implemented, it would be PMA's recommendation that further laboratory testing be performed on the decorative Ransome concrete and monitoring of the cracks for further determination of the failure mechanisms prior to proposing and implementing repair techniques.

It is recommended that the decorative iron work, as a minimum repair measure, be stabilized. Such work entails removing all corroded areas down to base metal, applying a zinc-rich primer, and re-painting the surfaces. Further restoration work including recreation of lost decorative items is an optional choice. Should lighting be required as part of the project, PMA recommends existing historic iron light columns be reused and any new locations replicate the rhythm, scale, and design intent of the historic features..

Non-functional decorative features (e.g. urns, drinking fountains, site walls) may be preserved in place with no repairs or repaired with new finishes after stabilization has occurred.

Figure 72: Reservoir 3 facing North East

Figure 73: Pumphouse and Reservoir 4 from Dam 3

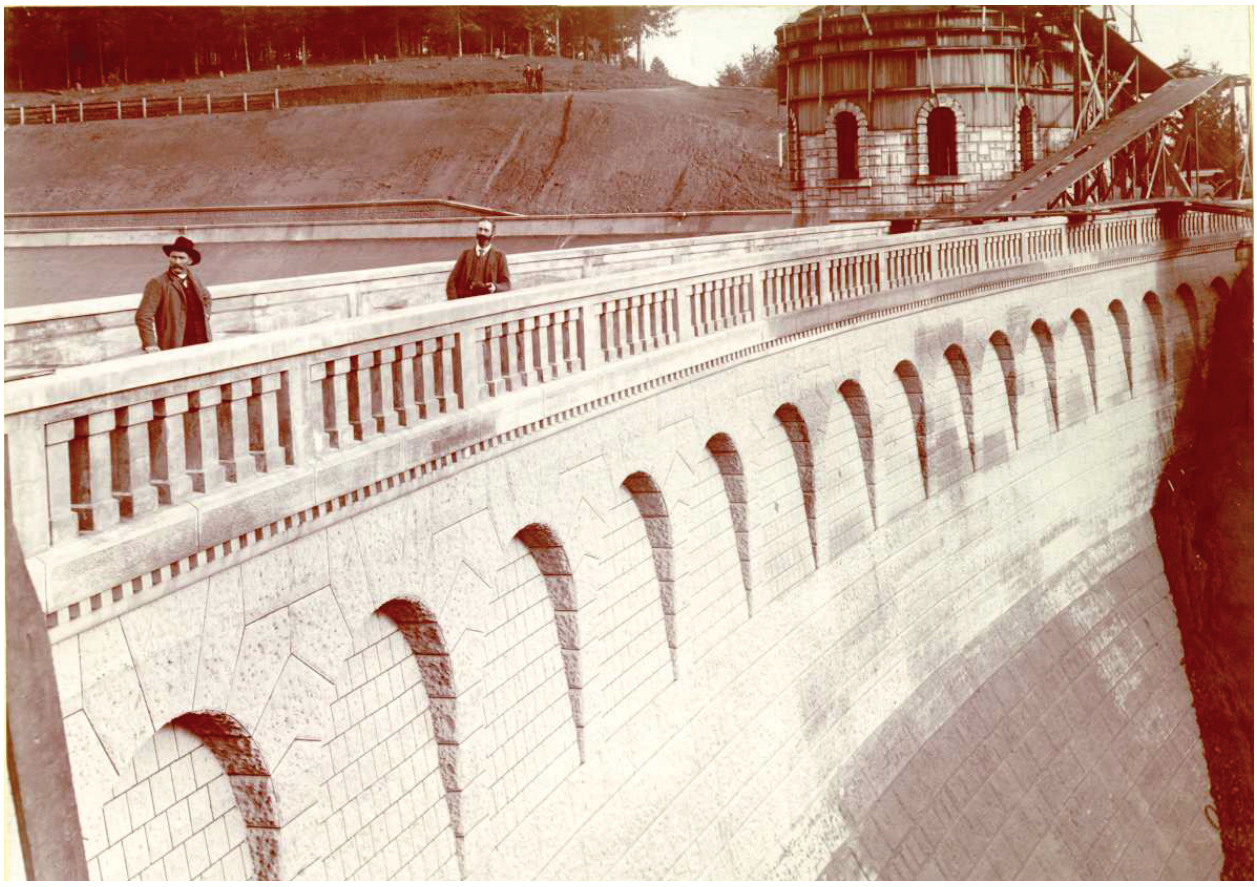
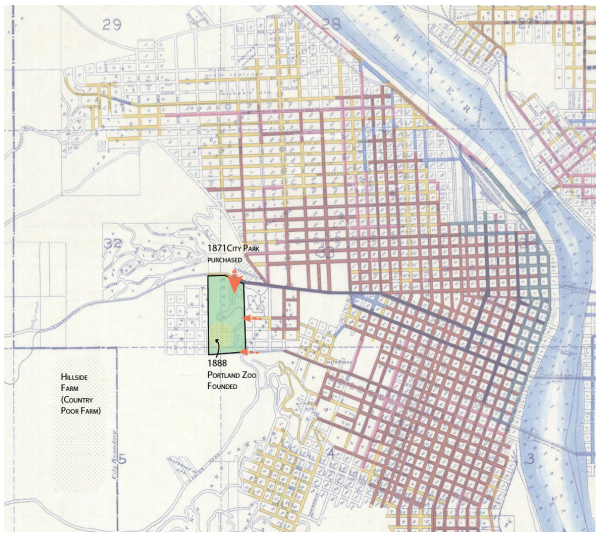


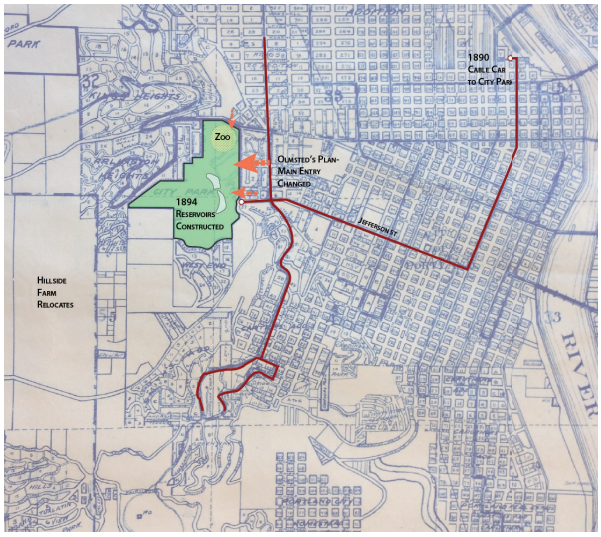
Figure 74: Dame 3 and Gatehouse 3 under construction

Appendix A - Washington Park Growth Since 1871



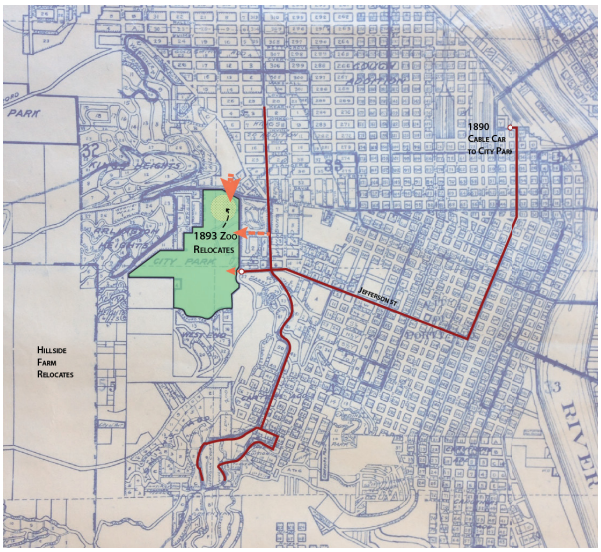
1890s

From 1871 to 1893, City Park (Washington Park) was a small undeveloped parcel of land. The Portland Zoo was founded in 1888 and included a small bear cage, and a handful of deer and other local animals.



1911

Reservoirs 3 and 4 were constructed in 1894 and in 1911 City Park became Washington Park. In accordance with Olmsted's Plan, the main entrance changed to the Park Ave entrance.

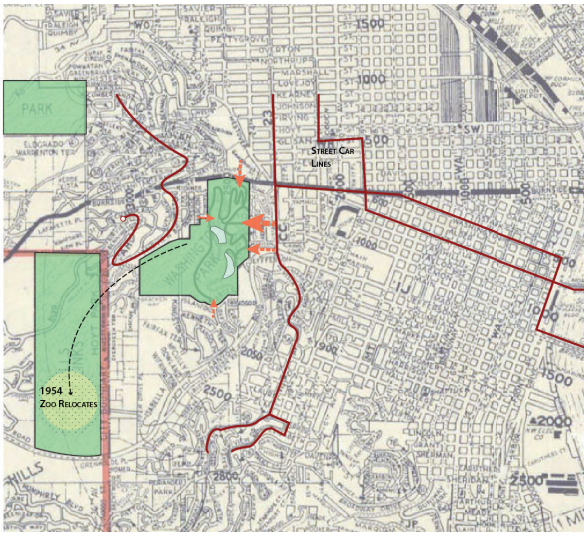


1890

The City of Portland decided to locate Reservoirs 3 and 4 in City Park. In 1890, a cable car line was constructed to connect City Park with the city.

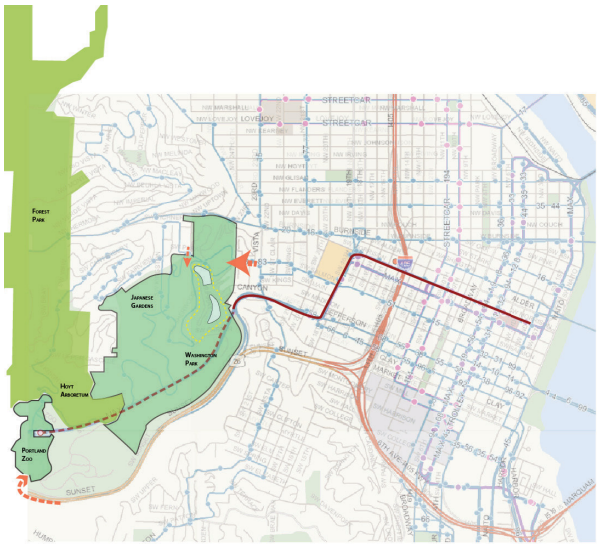
1925

The Portland Zoo relocated to the current location of the Japanese Gardens in 1925. Previously in 1922, the Hoyt Arboretum was found to the west of Washington Park.



1946

Washington Park continued to grow. Accessibility of the park grew with additional cable car lines and road access. In 1954, the Zoo relocated for the last time to its current location.



2013

Today, Washington Park includes the Portland Zoo, the Hoyt Arboretum, and the Japanese Gardens. Reservoirs 3 and 4 are a historic landmark within the city.

Figure 75: Original West Burnside entrance to City Park

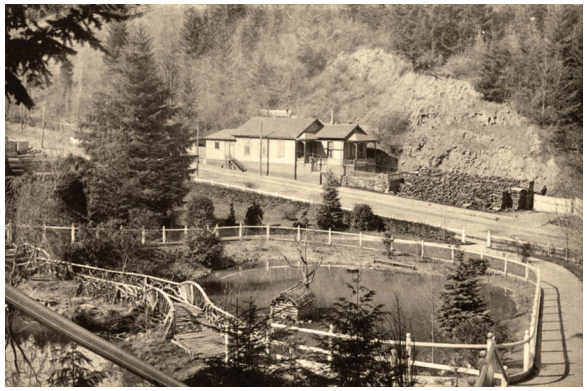


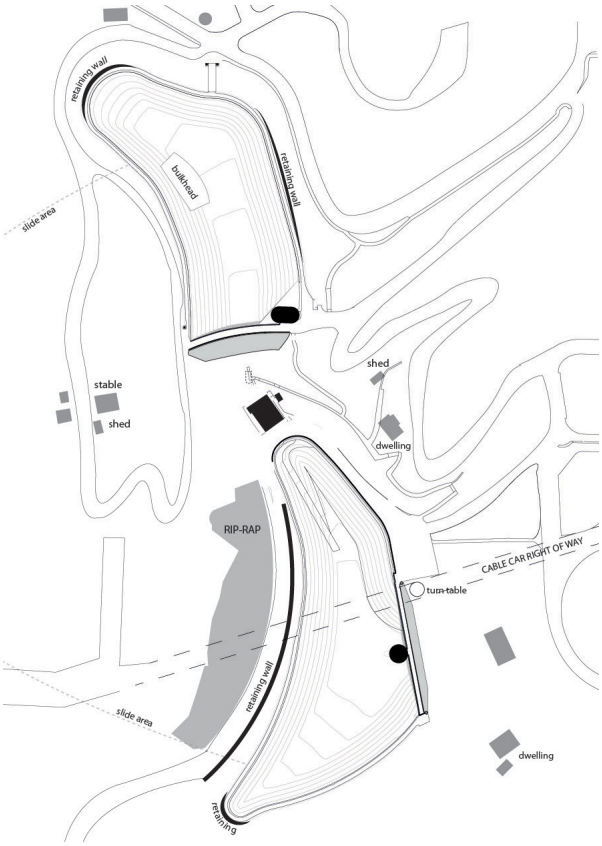
Figure 76: Original West Burnside entrance to City Park with Zoo in foreground

Figure 77: Reservoir 3, Zoo in foreground

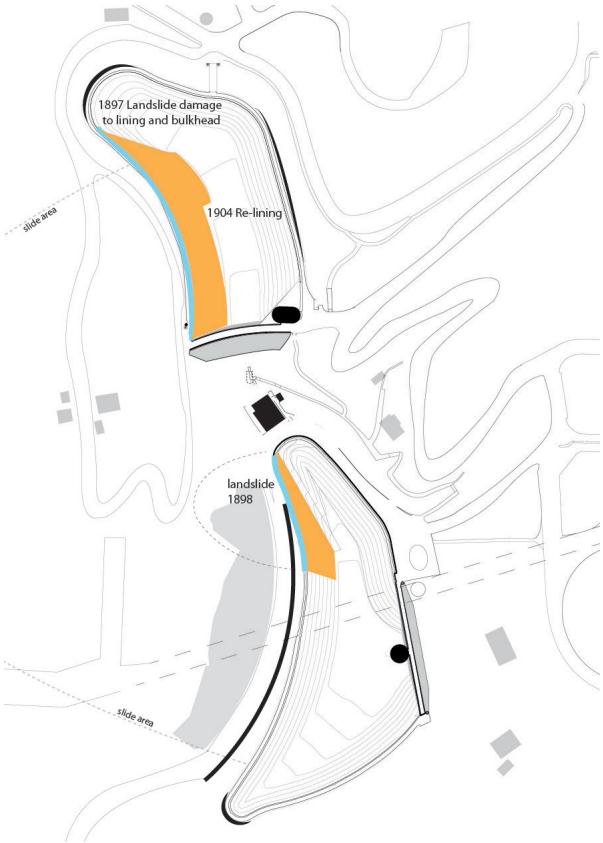
Figure 78: 1896 Canyon Rd (Hwy 26) bordering the east and south of Washington Park

Appendix B - Reservoir 3 and 4 Changes Since 1894 Construction

1894



1904

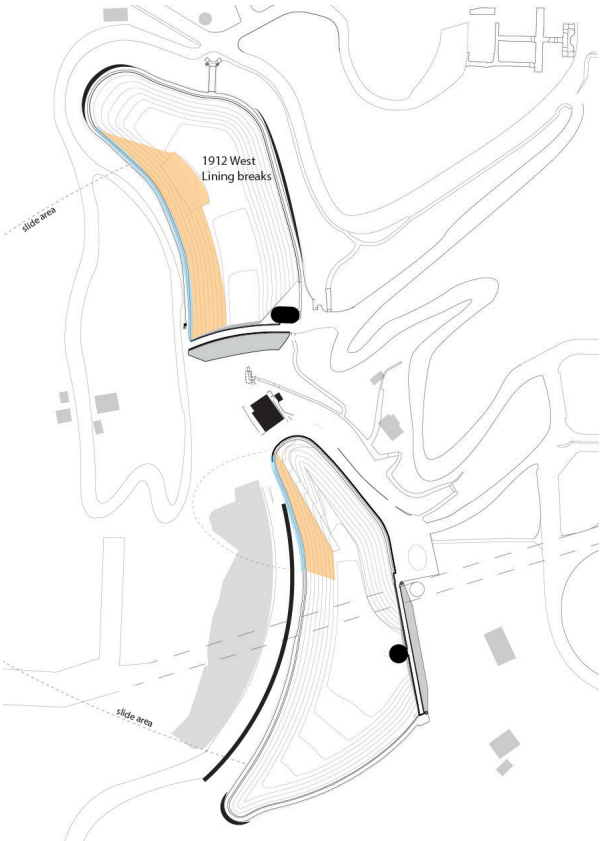


APPENDIX B

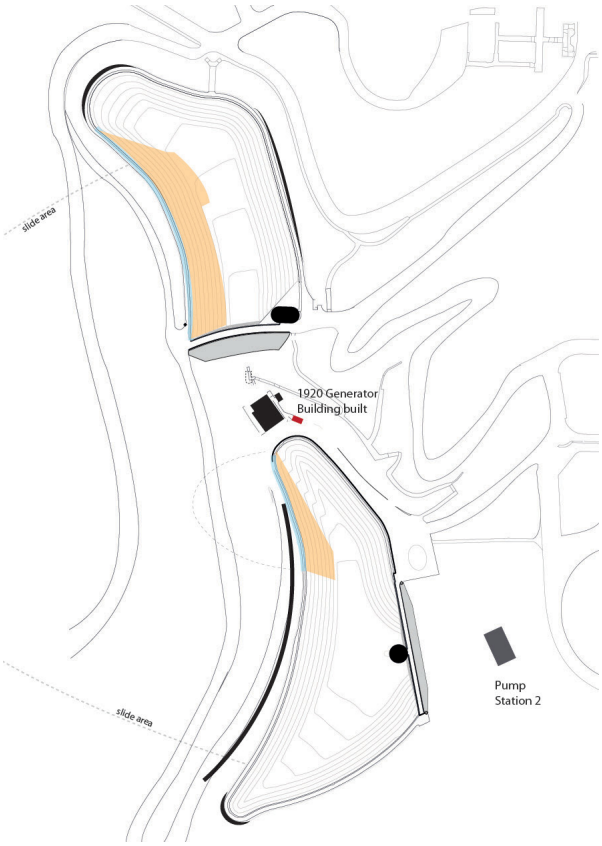
LEGEND

- NEW CONSTRUCTION
- NEW DOORS/WINDOWS
- NEW SITE LIGHTING
- REBUILT PARAPET WALLS
- REBUILT BASIN LINING
- NEW RETAINING WALL
- ORIGINAL/ EXISTING STRUCTURES

1912

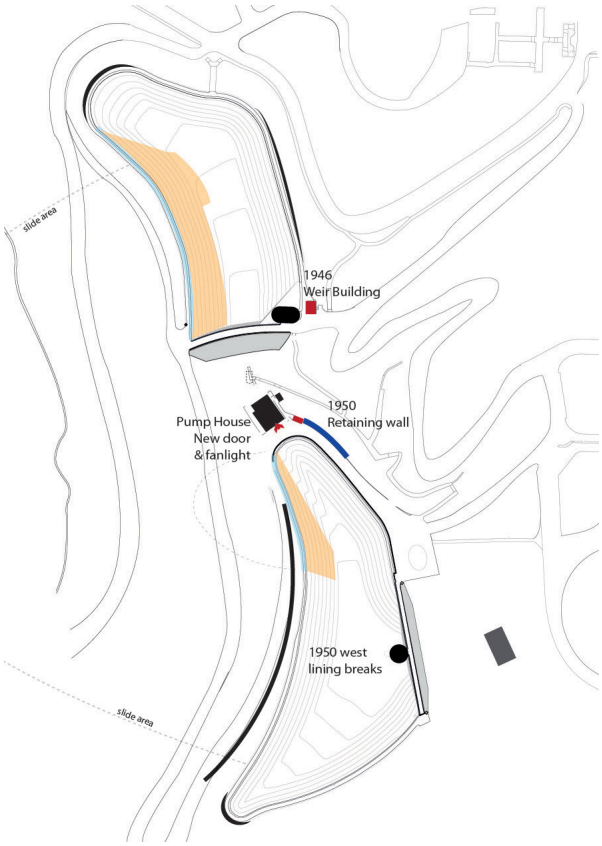


1920

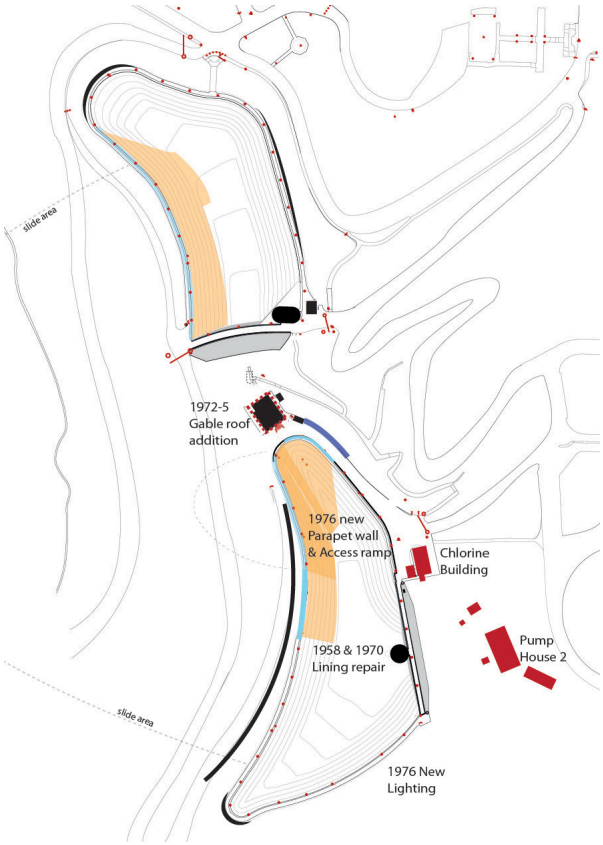


APPENDIX B

1946



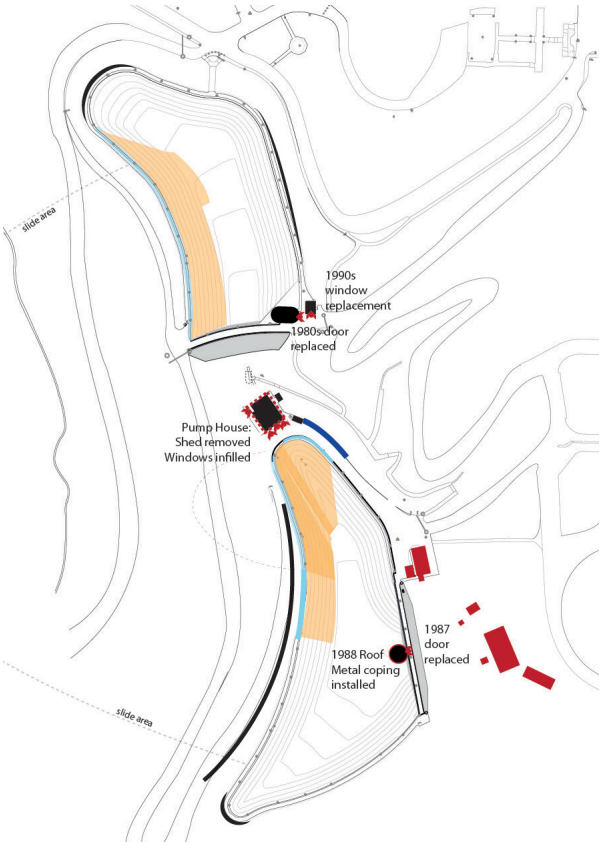
1970s



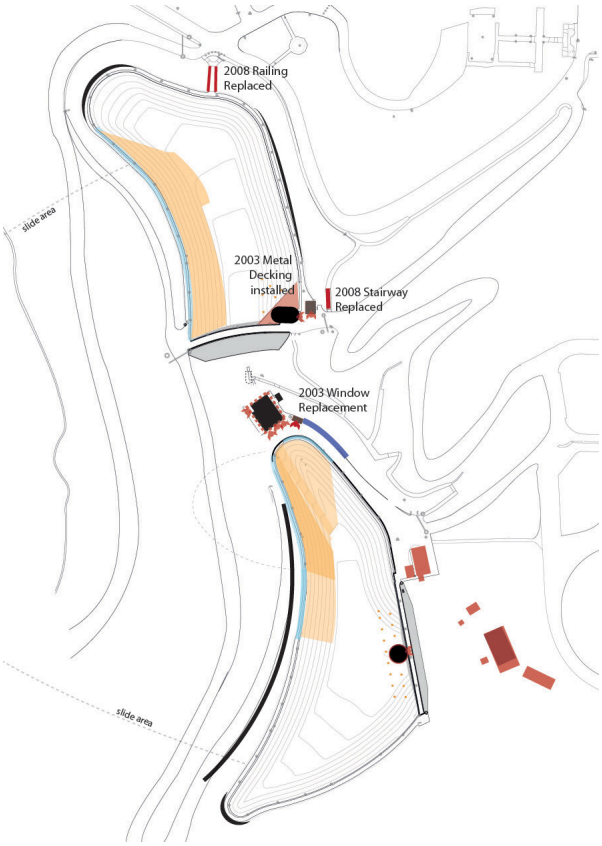
LEGEND

- NEW CONSTRUCTION
- NEW DOORS/WINDOWS
- NEW SITE LIGHTING
- REBUILT PARAPET WALLS
- REBUILT BASIN LINING
- NEW RETAINING WALL
- ORIGINAL/ EXISTING STRUCTURES

1980s



2000s



ILLUMINATING-PANEL IN CONCRETE FLOORS.

SPECIFICATION forming part of Letters Patent No. 448,993, dated March 24, 1891.

Application filed February 12, 1890. Serial No. 340,192. (No model.)

To all whom it may concern:

Be it known that I, ERNEST LESLIE RANSOME, a citizen of the United States, residing in the city and county of San Francisco, State of California, have invented an improvement in Illuminating Spaces Beneath Concrete Floors; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to improvements in illuminating basements and chambers beneath concrete flooring; and it consists especially in setting the glass directly into the concrete.

Referring to the accompanying drawings for a more complete explanation of my invention, Figure 1 is a vertical section taken through one of my lighting-spaces, showing the concrete flooring and the molds employed in setting the glass. Fig. 2 is a view showing a means for supporting and strengthening the concrete filling intermediate the glass.

In placing lights in concrete flooring for the illumination of basements or for dark chambers beneath such flooring it has been customary to fix the lights in iron or cement plates or frames perforated to receive and support them in position, and these frames have afterward been set into the flooring either before or after it was built, so that a joint would exist between the lights and the floor itself, and these joints are very difficult to make tight.

In my improved method I reduce the cost of manufacture and do away with any joints between the glass or illuminating tile and the main floor by fixing the illuminating glass or tiles directly into the concrete when the floor is in the process of manufacture and in a plastic condition, thus dispensing with all metal frames or supports and preventing any difficulty with joints by molding the glass directly into the floor itself when it is being built. In order to do this I build a false work or temporary frame or floor A, upon which the concrete flooring C is to be built, of any desired thickness. At the point where the lights are to be introduced I place a mold B, which is preferably made with sides which diverge from the top downward, so as to allow the light which passes through the glazed portion to diverge within the chamber to be lighted after the mold is removed.

The depth of this mold will depend upon the thickness of the concrete, but it should extend upward from the bottom of the concrete floor to within a suitable distance of the top of the floor, which distance may be about two inches. The other dimensions of the mold may be made to suit any suitable or usual size of light-opening, as three or four feet square. Upon the top of this mold I fix a series of smaller molds or cores D, which are tapered or in the form of frustums of cones. These small cores are fixed to the mold at regular intervals and in such position that the glass lenses may rest upon and be supported by these cores. As these glass lenses are usually in the shape of short cylinders having the lower surface convex, the cores may be correspondingly concaved or recessed, so as to receive and support the convex lower side of the glass disks.

The depth of these cores will be such that when the glasses rest upon them the top surfaces of the glass disks will be level with the top of the flooring, or as near thereto as may be desired. These molds being all placed and the glasses in the proper position, the concrete flooring is built in the usual way, the plastic concrete flowing in between and around the molds and the glass disks, so as to fill up all the intervening spaces. When the cement is set, the molds and false work are all withdrawn, leaving a floor with the diverging or flaring recess in the space beneath the glass which was previously occupied by the mold B, while the shallow portion of the flooring which forms the top of this recess is composed of the cement, with the glass disks or tiles set in at regular intervals, so as to form a complete illuminating-tile, which is in an integral portion of the floor.

It will be seen that the upper ends of the cores D are of less diameter than the glass disks, and shoulders or ledges are thus formed around these cores, which serve to support the glass disks which are set in from above. In order to strengthen this thinner portion of the concrete which forms the illuminating-tile, small bars E of twisted iron may be inserted transversely between the rows of glass disks, as shown in Fig. 2, this being done before the cement is flowed around the disks, so that the bars will be embedded in the cement and the latter strengthened in the same manner that I strengthen main floors.

It will be manifest that any shape of glass lens or tile may be employed, and that these illuminating-disks may have flanges or projections to support them properly in the concrete.

If desired, the molds and cores may be made hollow, and the upper ends of the cores being open, the glass disks will rest upon these upper open ends of the cores. A vacuum may then be produced within the molds and cores which will cause a sufficient pressure upon the surfaces of the glass disks to hold them firmly in their seats while the plastic material or concrete is being filled in around them, the molds being afterward removed, as before described.

The great advantage which I claim for my method of manufacture is that the illuminating disks or tiles are molded into their places, so as to form a part of the flooring itself without any joints or cracks to be afterward kept tight.

The principal part of the flooring may be made of any required thickness for strength, and at the points where light is required the chambers are made from beneath, leaving only such a thickness of flooring at these points as will be necessary to properly support and hold the glass.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is--

The monolithic concrete floor having illuminating-panels provided with lenses, said panels being thinner than the body of the floor and strengthened by a net-work of metallic rods embedded therein, substantially as set forth.

In witness whereof I have hereunto set my hand.

ERNEST LESLIE RANSOME.

Witnesses:
S. H. NOURSE,
H. C. LEE.

(No Model.)

E. L. RANSOME.

ILLUMINATING PANEL IN CONCRETE FLOORS.

No. 448,993. Patented Mar. 24, 1891.

Fig. 1.

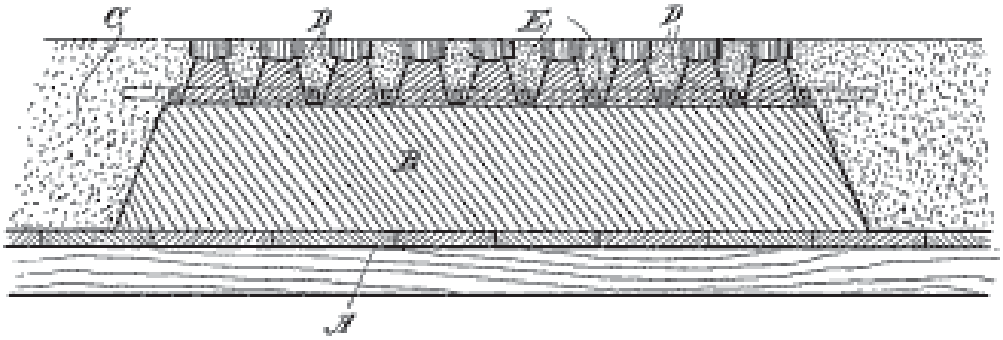
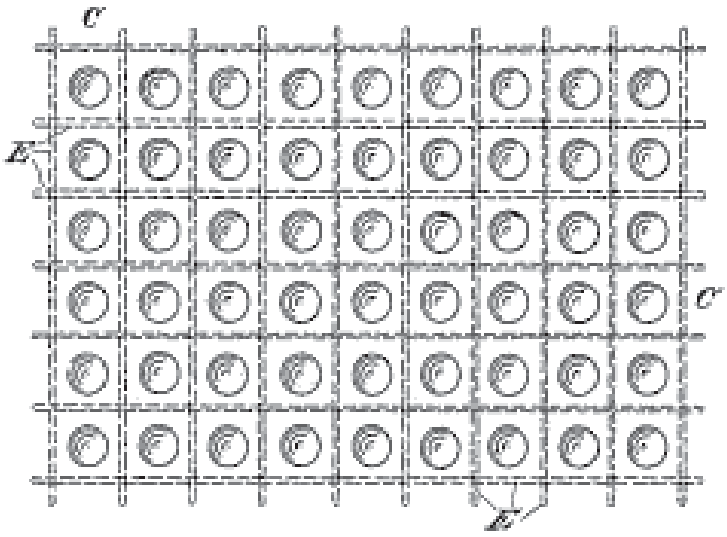
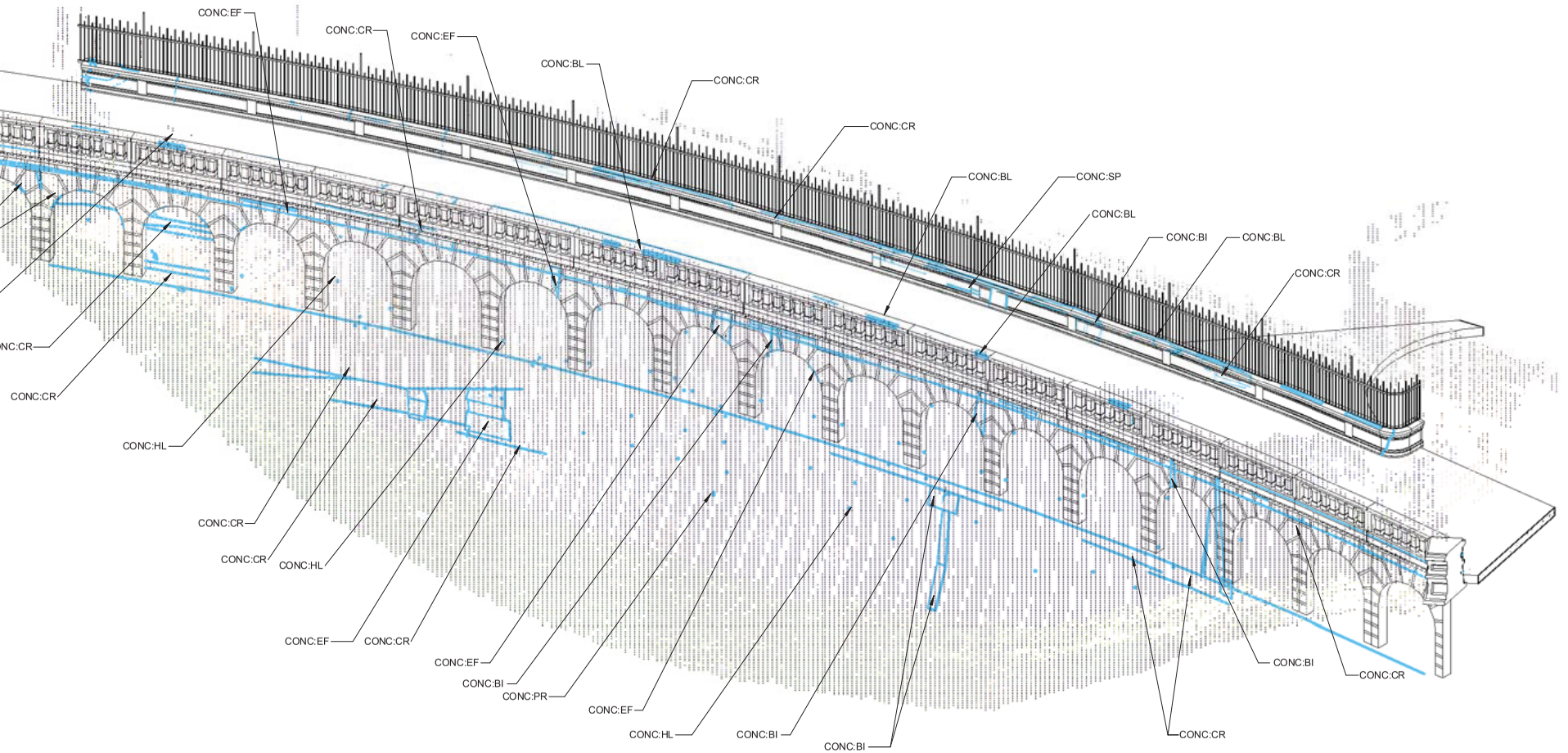


Fig. 2.



Witnesses,
[illegible]
H. C. Lee.

Inventor,
Ernest L. Ransome
By Dewey & Co.
Attys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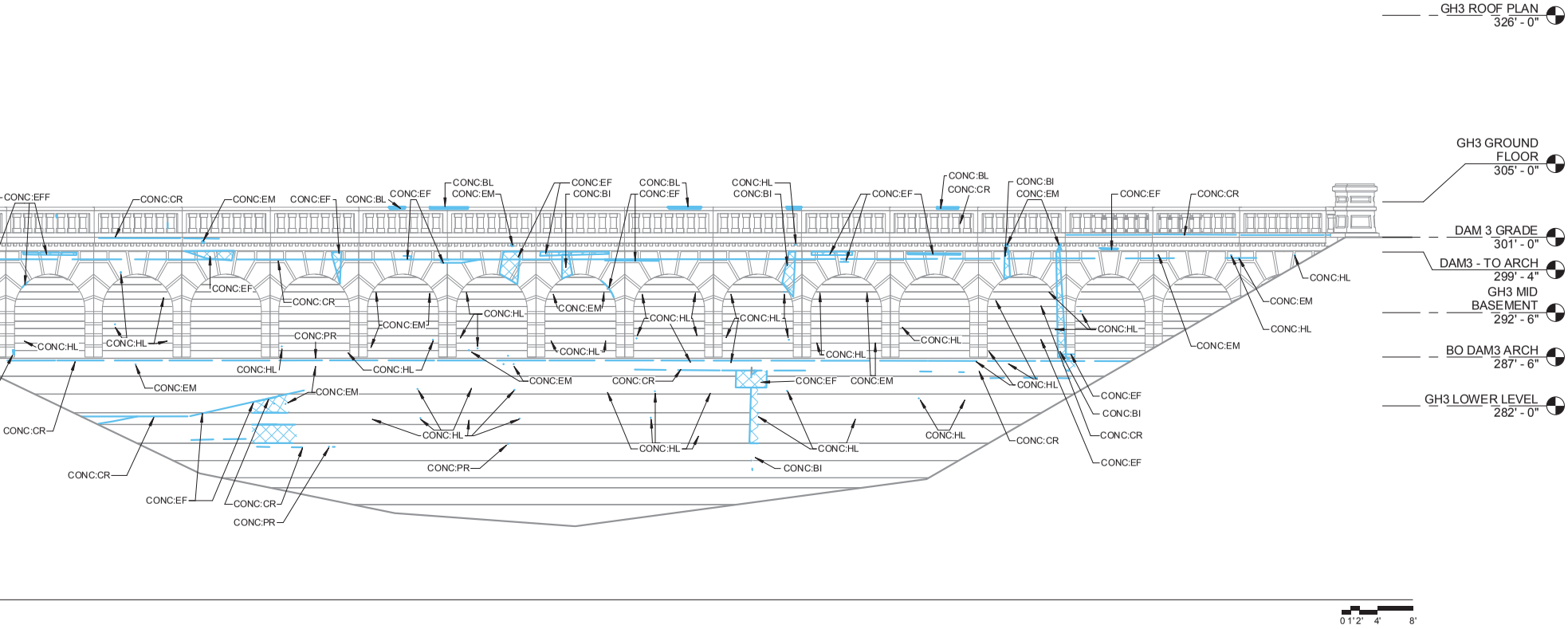

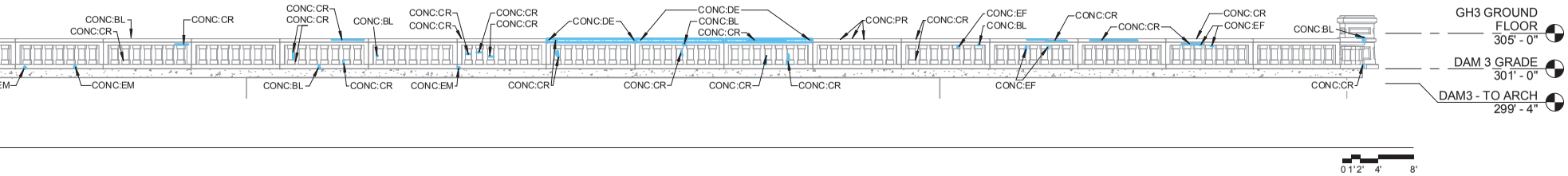

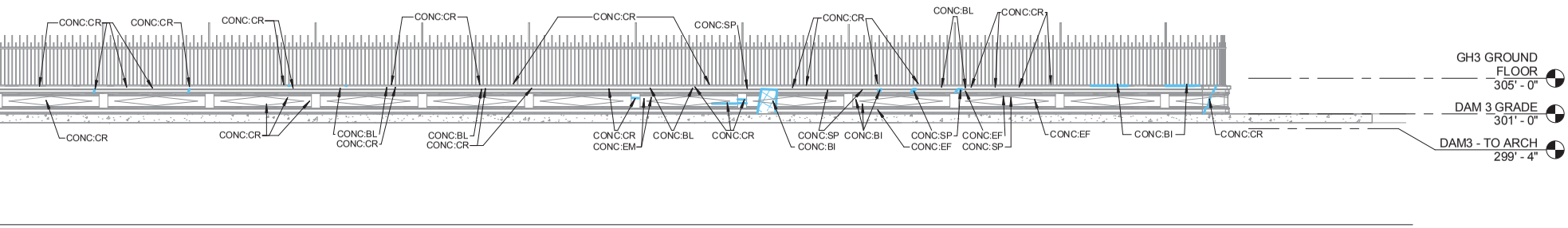

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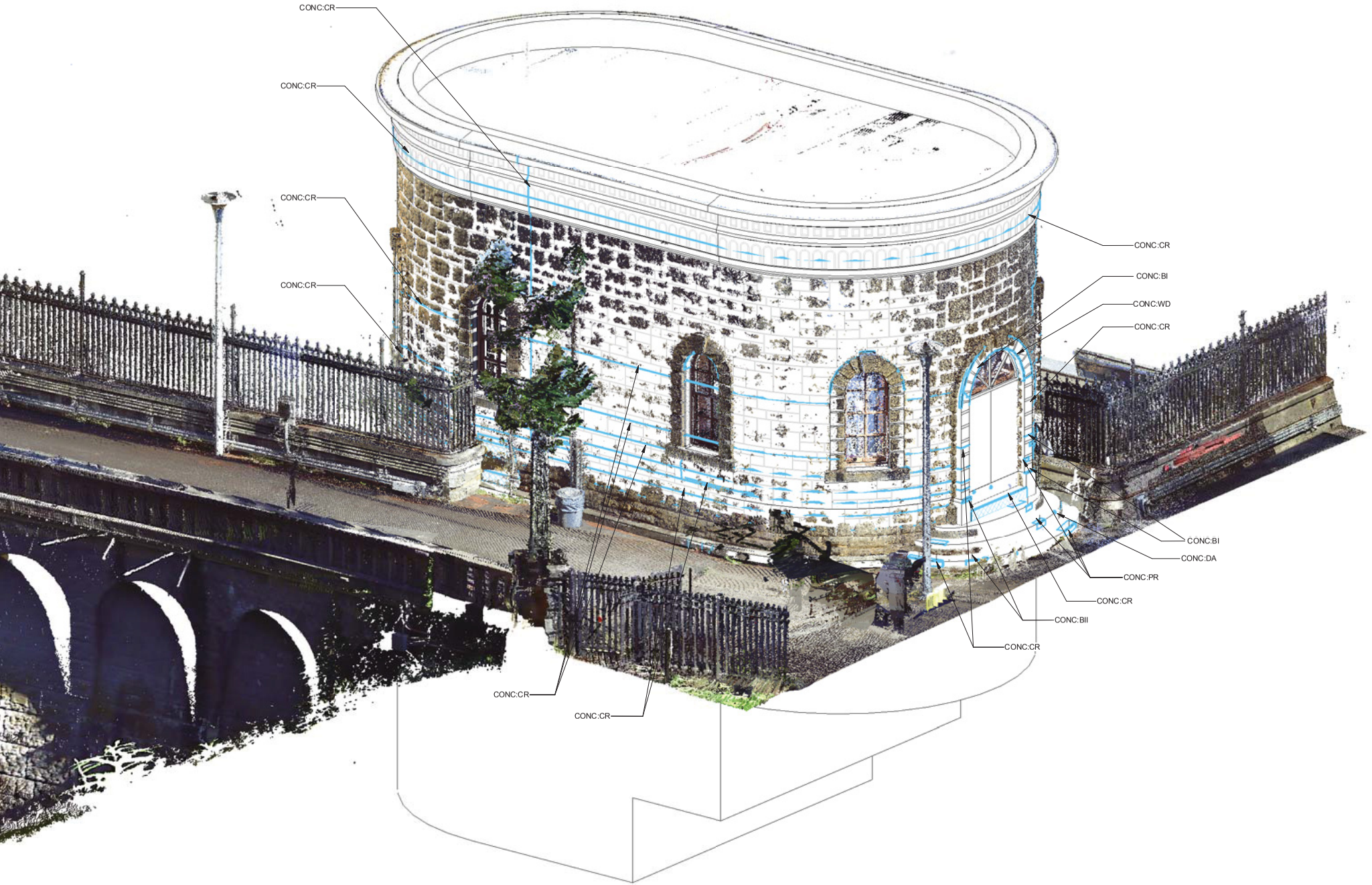

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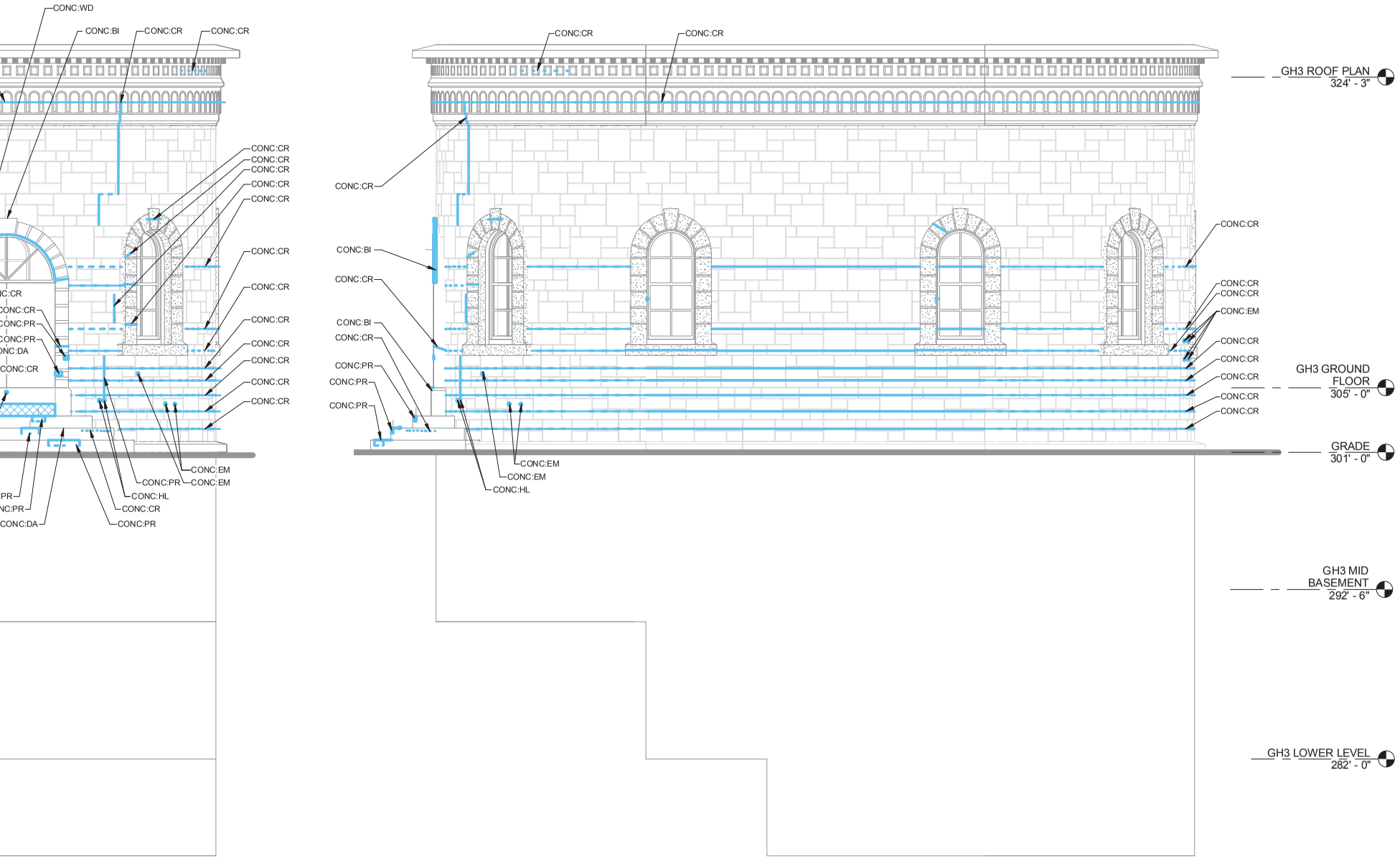

encies

1 Gatehouse 3 - North Elevation - Deficiencies

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PMA

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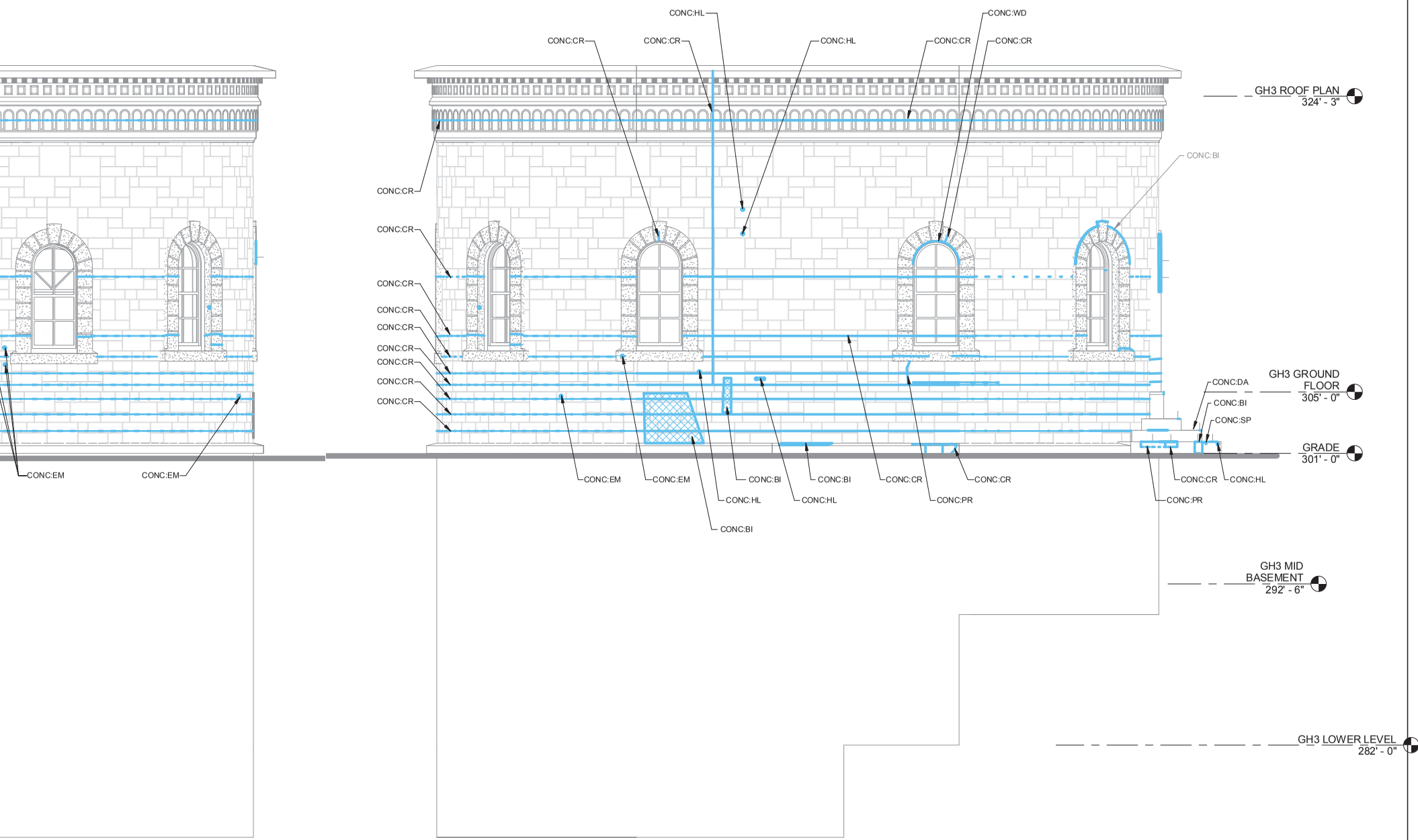
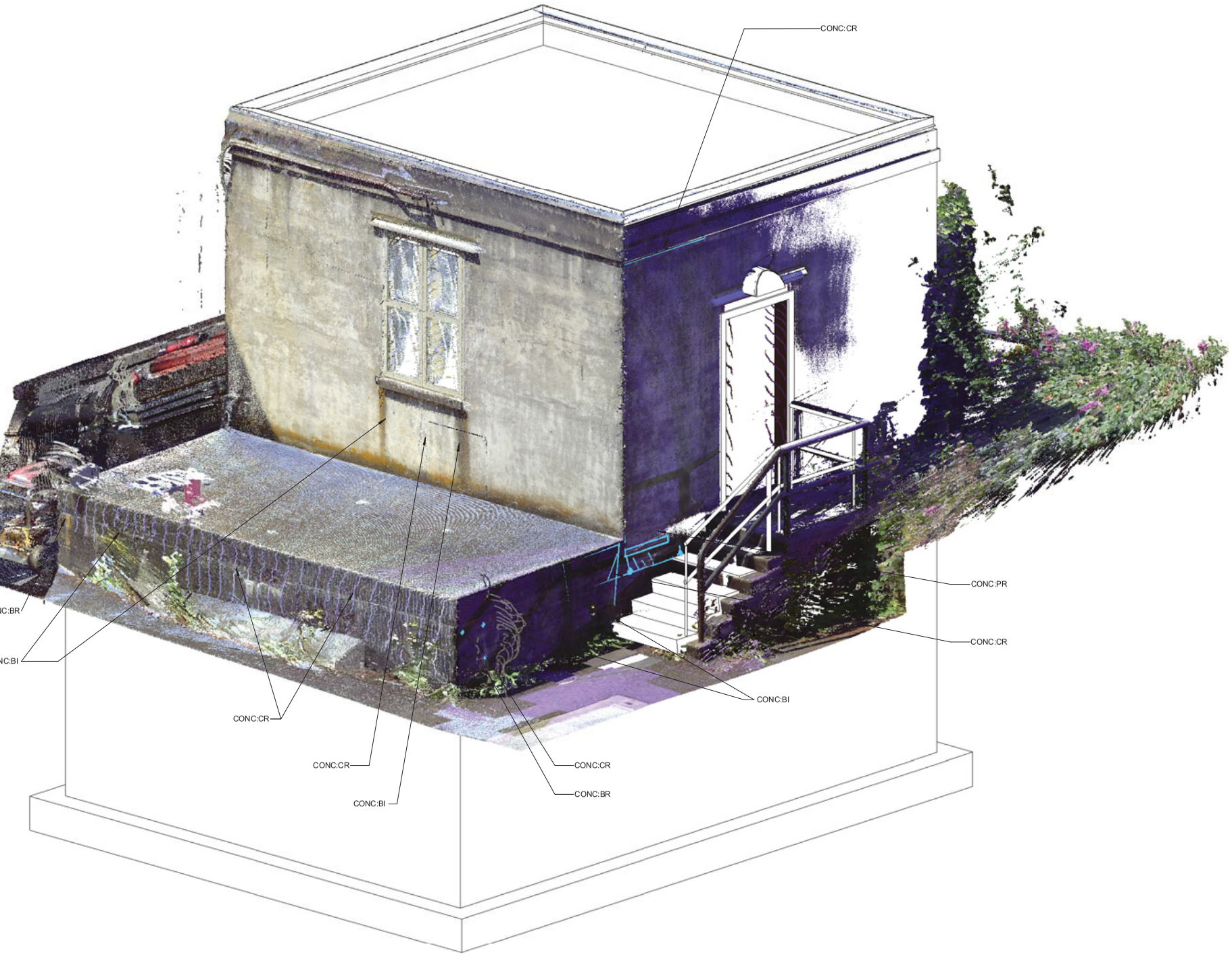


n - Deficiencies

0 6" 1' 2' 4'

1 Gatehouse 3 - South Elevation - Deficiencies

0 6" 1' 2' 4'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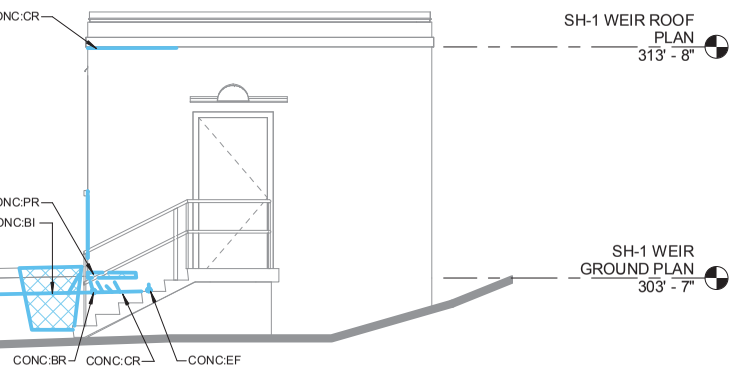

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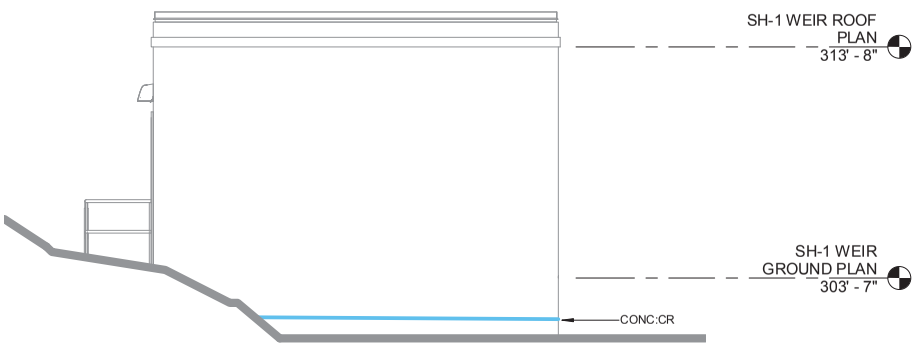
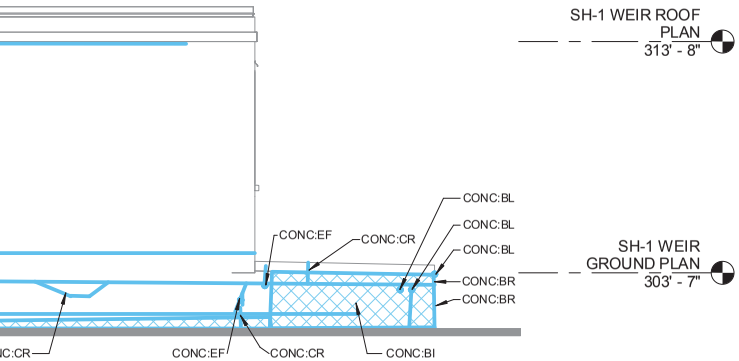
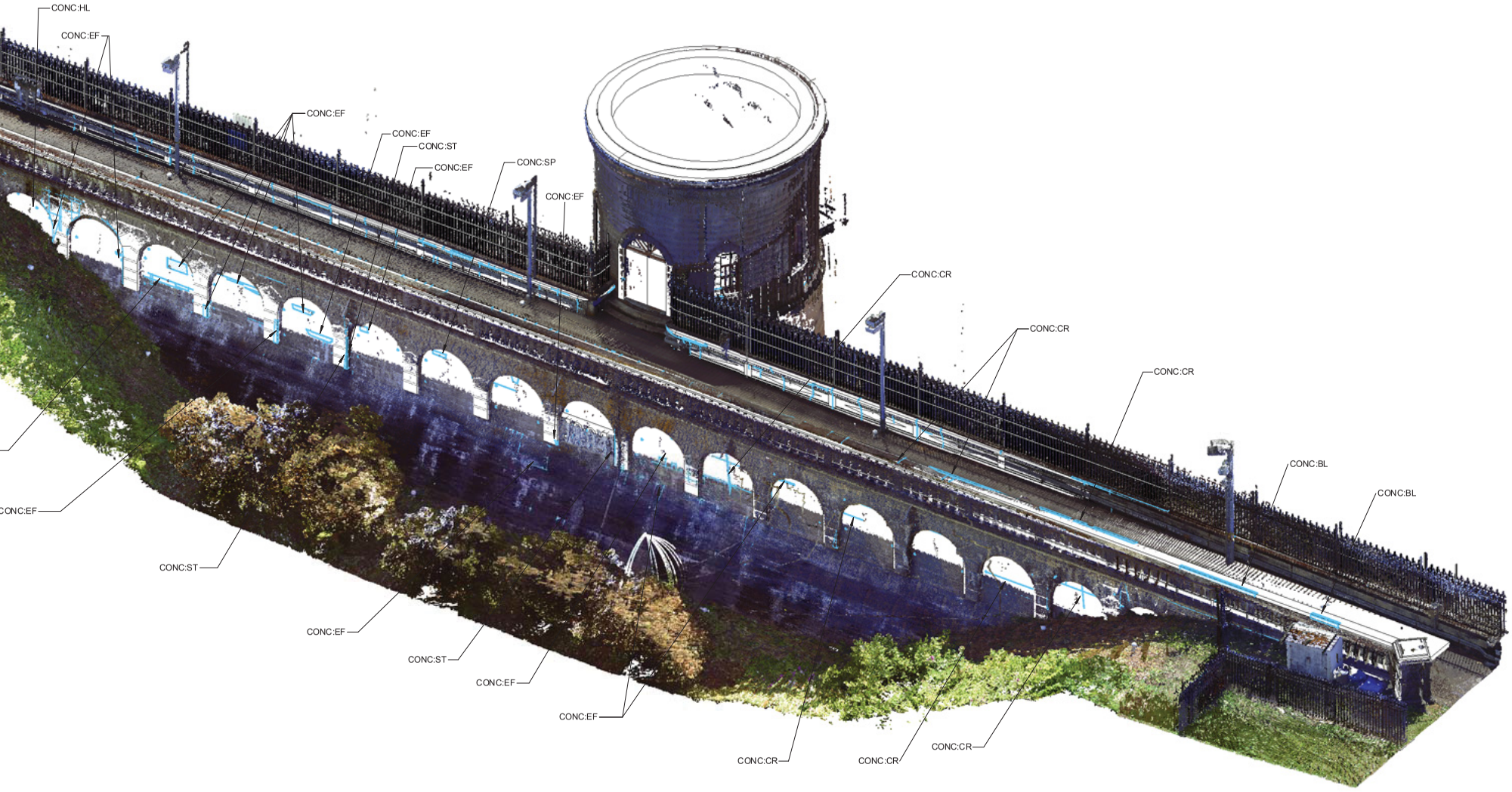


1 36 Weir - North Elevation - Deficiencies



on - Deficiencies

2 36 Weir - South Elevation - Deficiencies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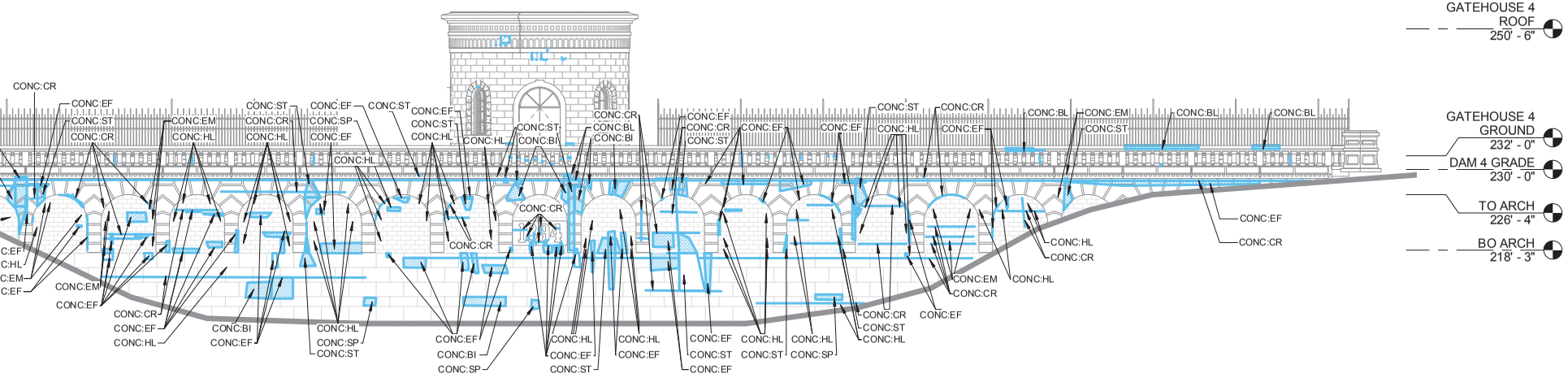
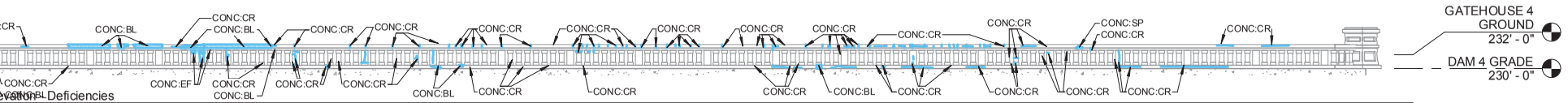


ciencies

0 2' 4' 8'



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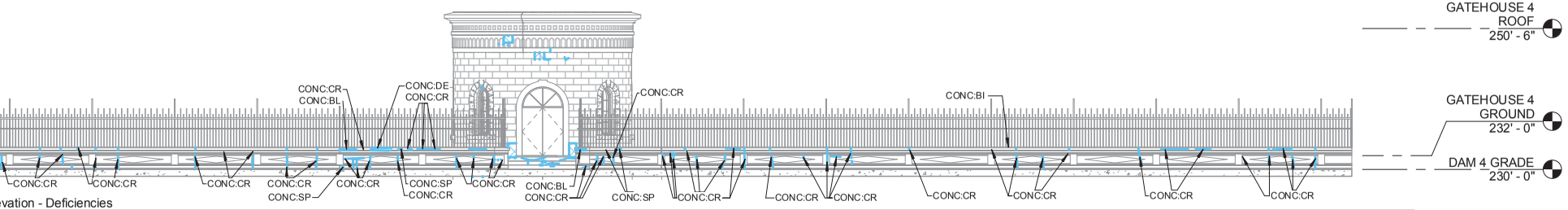
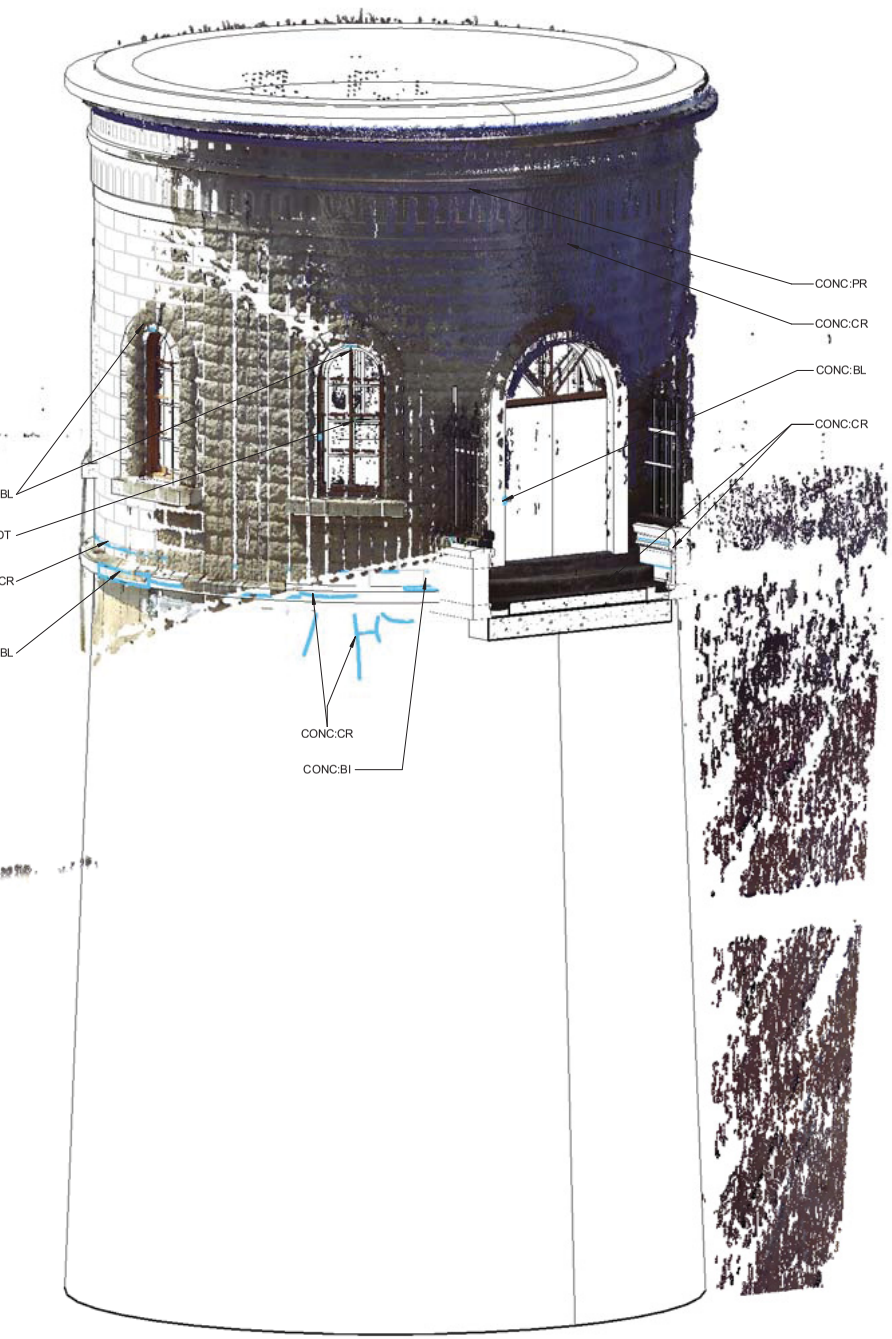
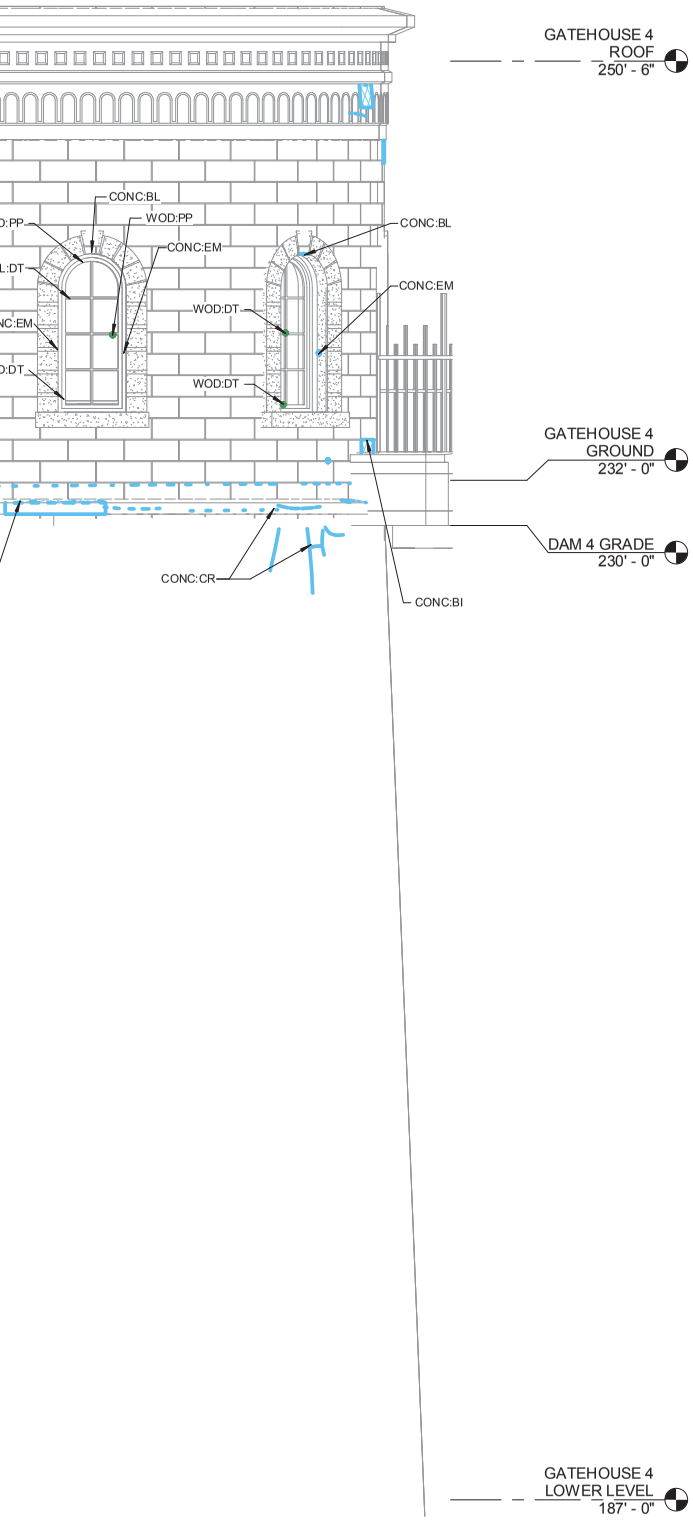


evation - Deficiencies

0 2' 4' 8'



house 4 with Point-Cloud


GATEHOUSE 4
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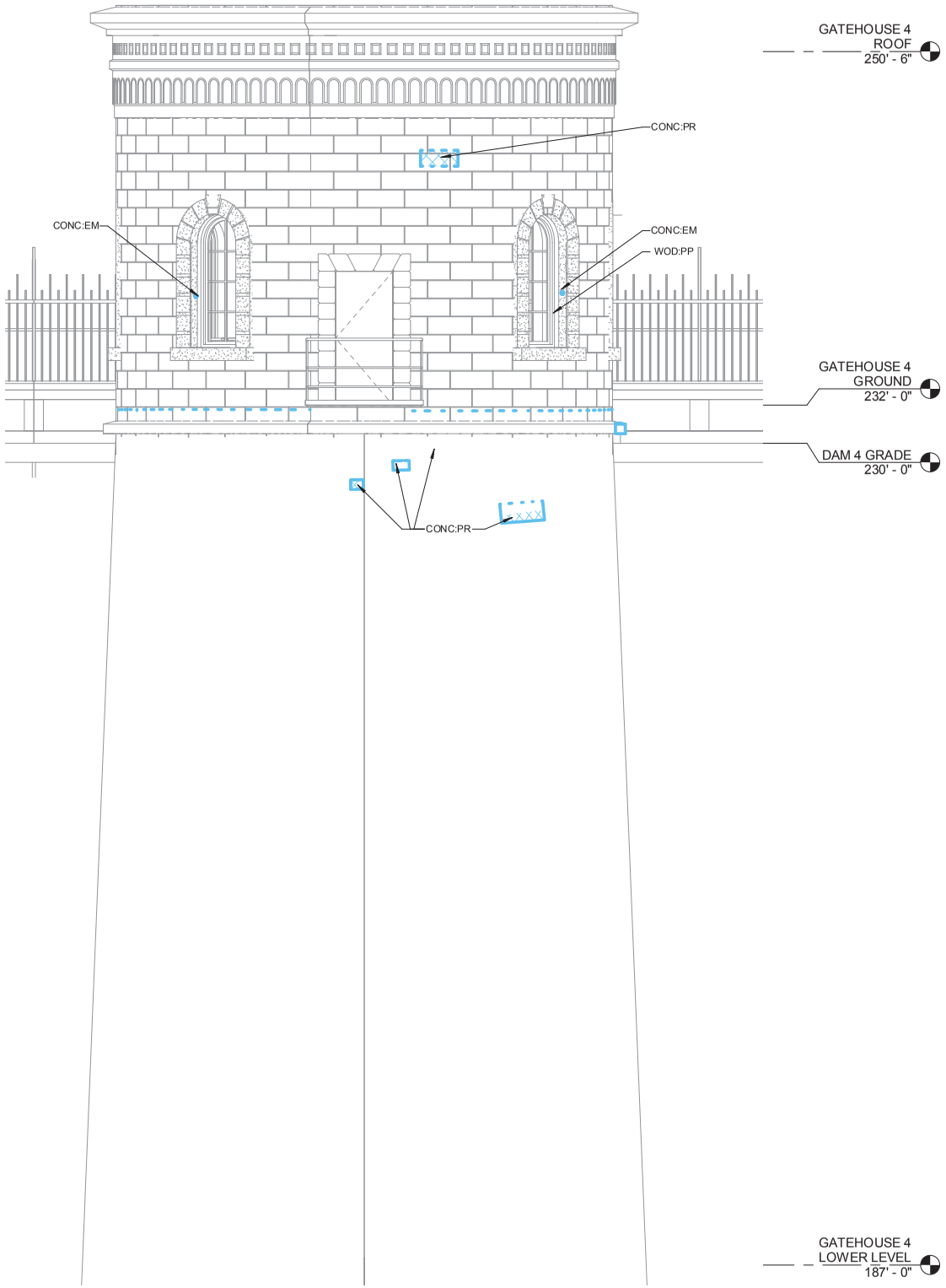
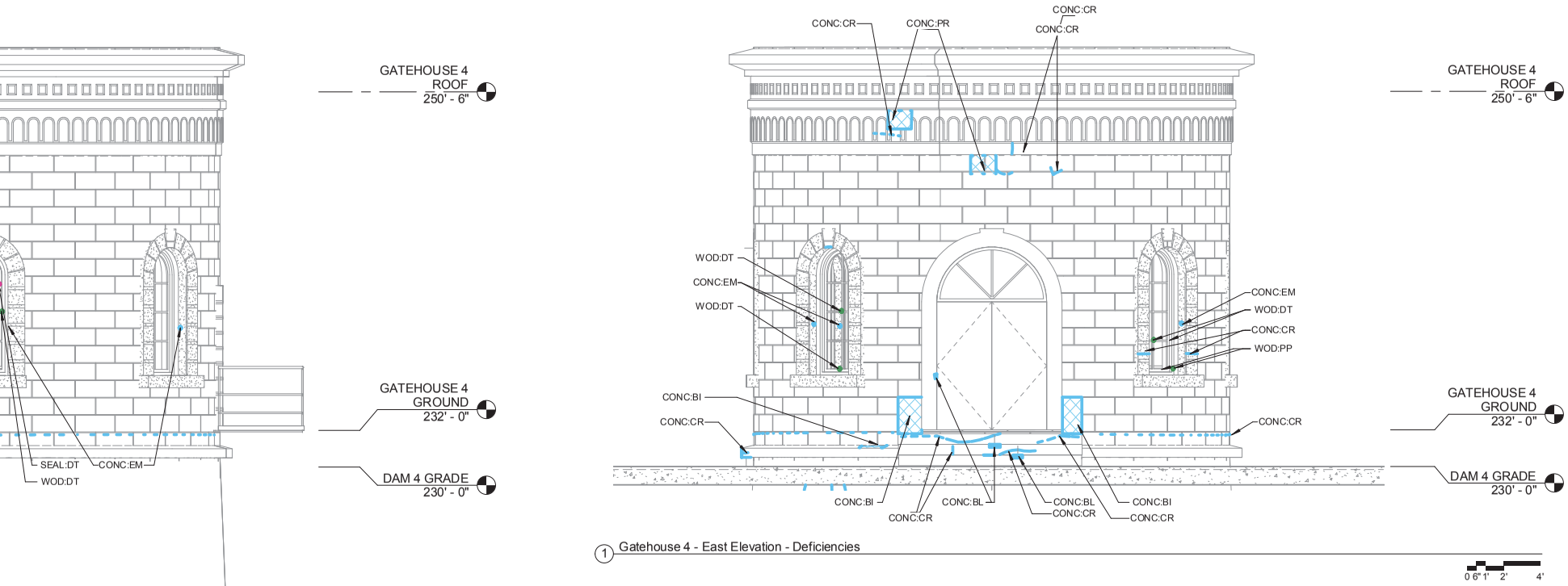
CONC:EM
WOD:DT
WOD:DT
GATEHOUSE 4
GROUND
232' - 0"
DAM 4 GRADE
230' - 0"
CONC:CR
CONC:BI
GATEHOUSE 4
LOWER LEVEL
187' - 0"

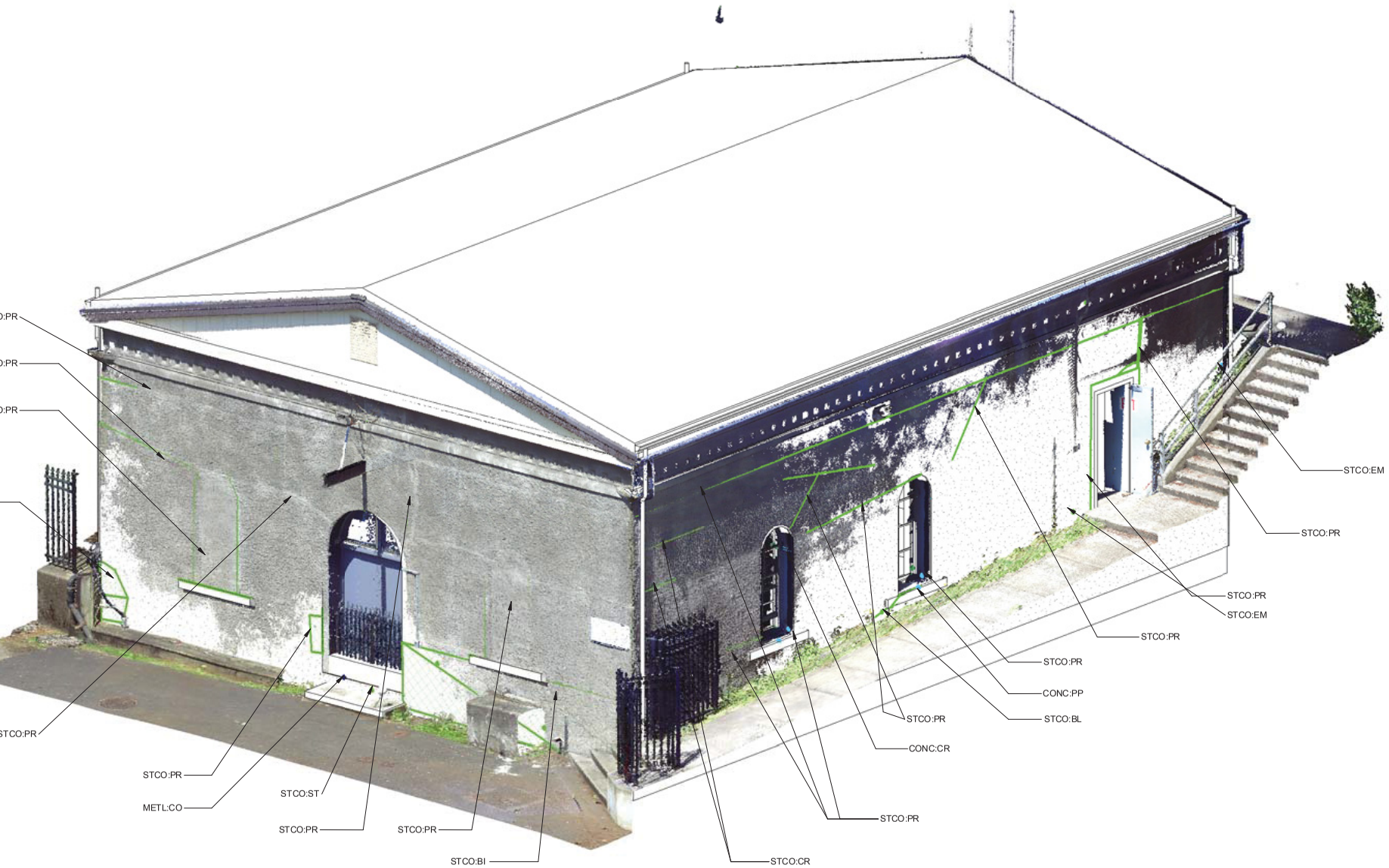

GATEHOUSE 4
ROOF
250' - 6"
CONC:PR
CONC:EM
CONC:EM
WOD:PP
GATEHOUSE 4
GROUND
232' - 0"
DAM 4 GRADE
230' - 0"
CONC:PR
GATEHOUSE 4
LOWER LEVEL
187' - 0"



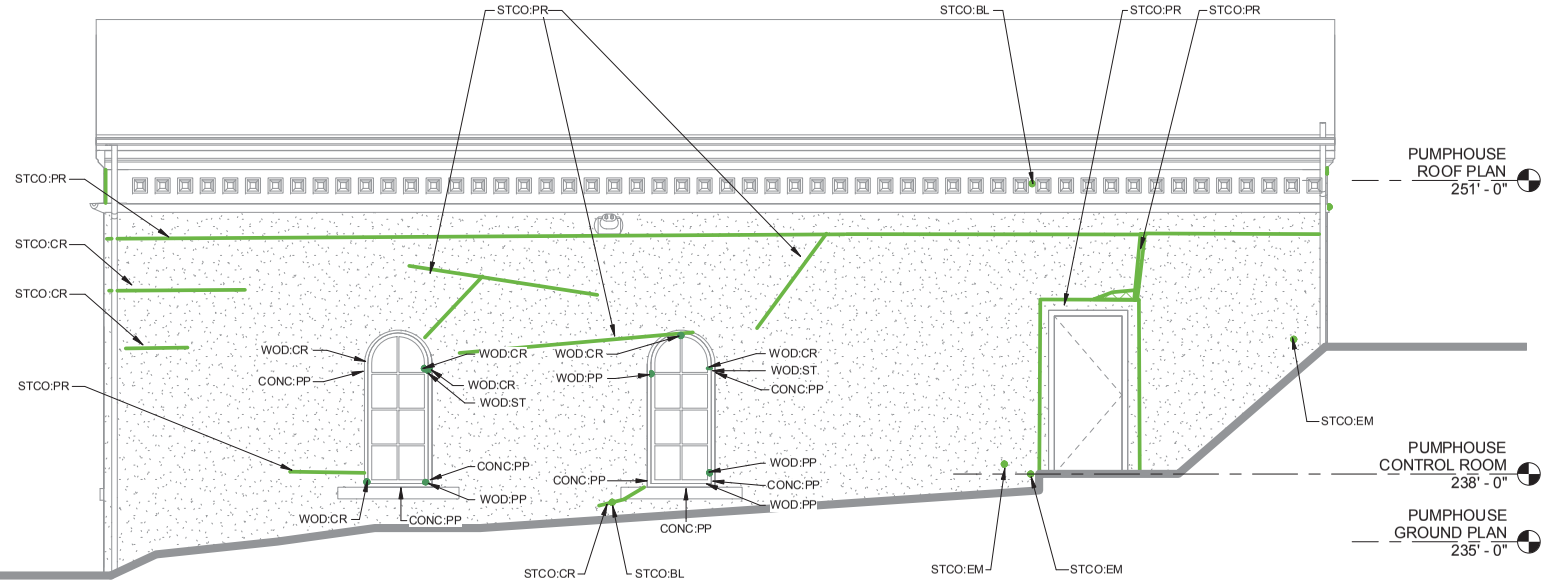
1 Gatehouse 4 - East Elevation - Deficiencies

0 6" 1' 2' 4'

GATEHOUSE 4
LOWER LEVEL
187' - 0"

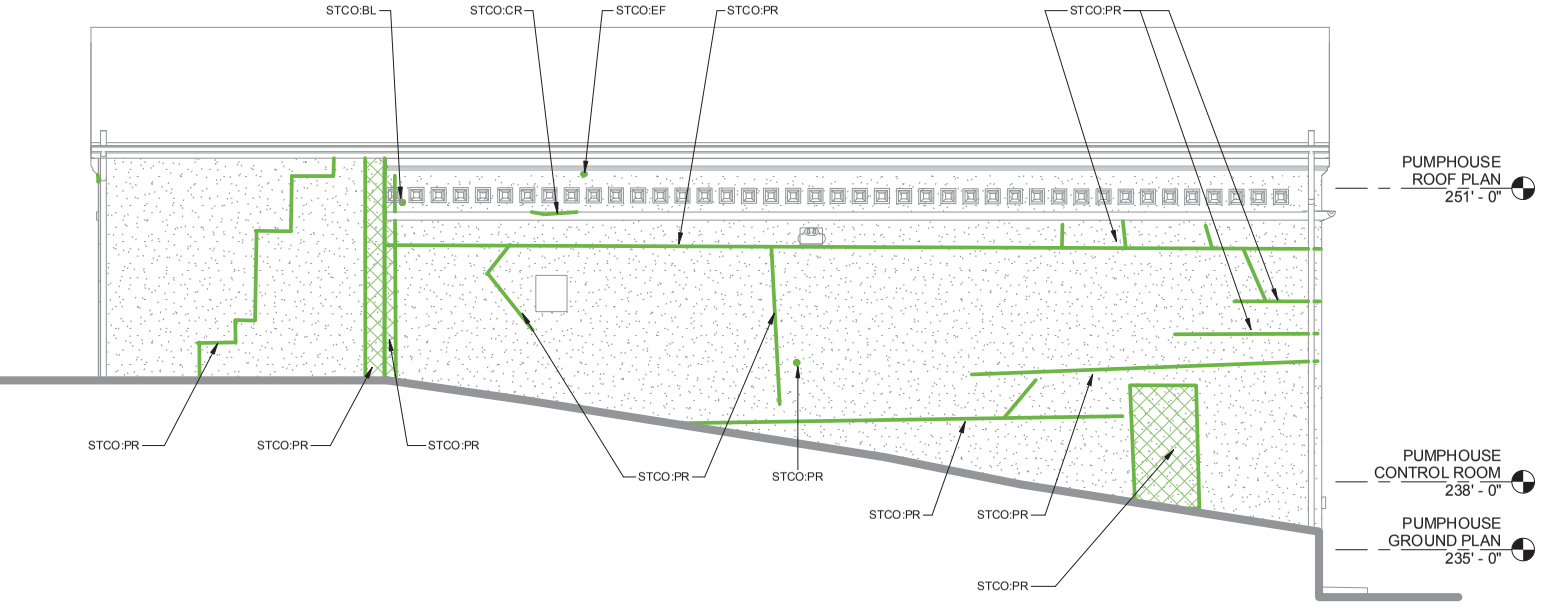


ciencies with Point-Cloud



1 Pumphouse - East Elevation - Deficiencies

0 6" 1' 2' 4'



Key Value

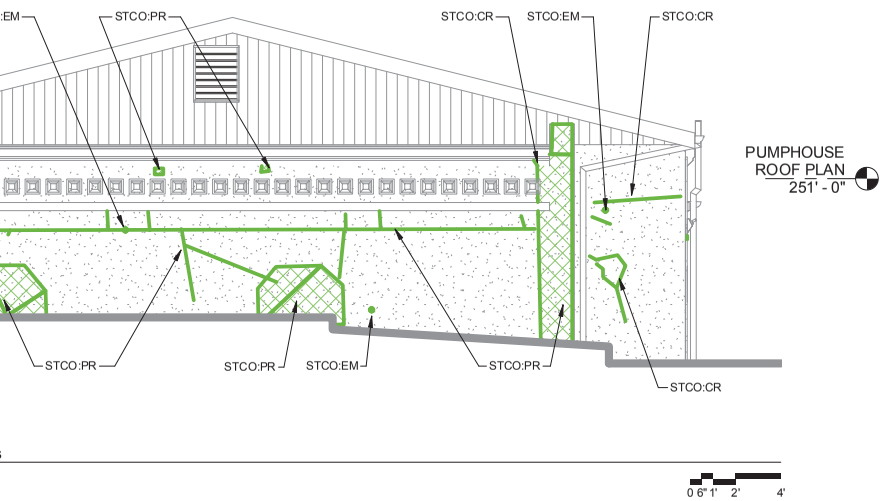
CONC:CR
CONC:PP
METL:CO
STCO:BI
STCO:BL
STCO:CR
STCO:DE
STCO:EF
STCO:EM
STCO:PR
STCO:ST
WOD:CR
WOD:PP
WOD:ST

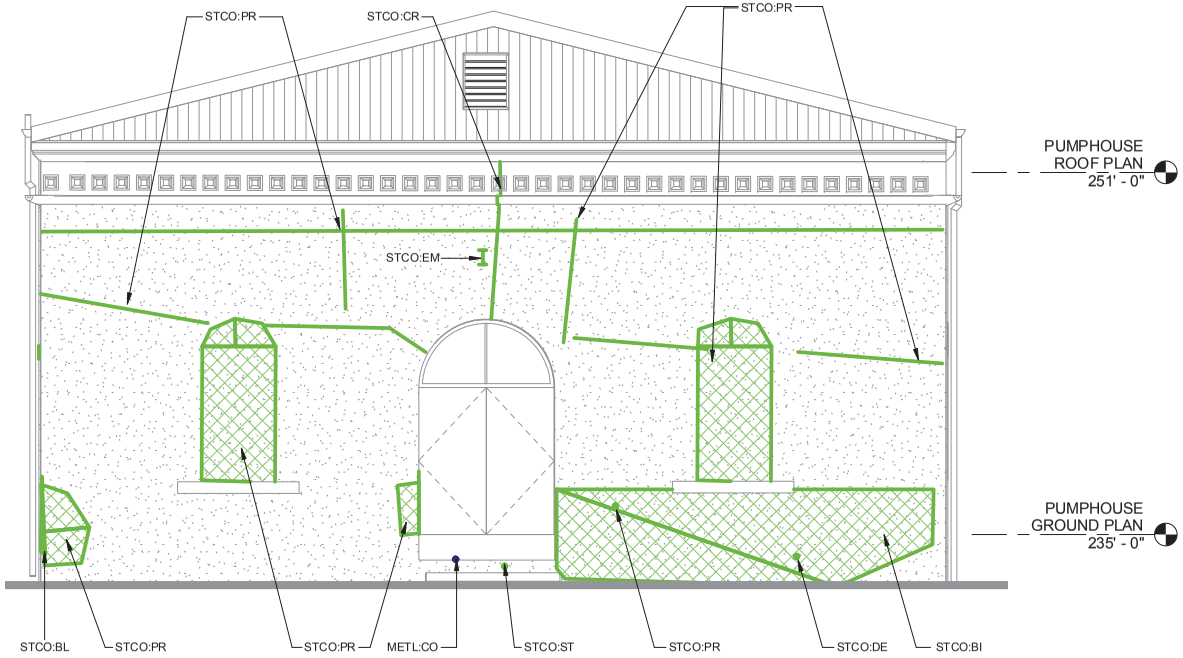
PM

Material

Concrete
Stucco
Stucco
Stucco
Stucco

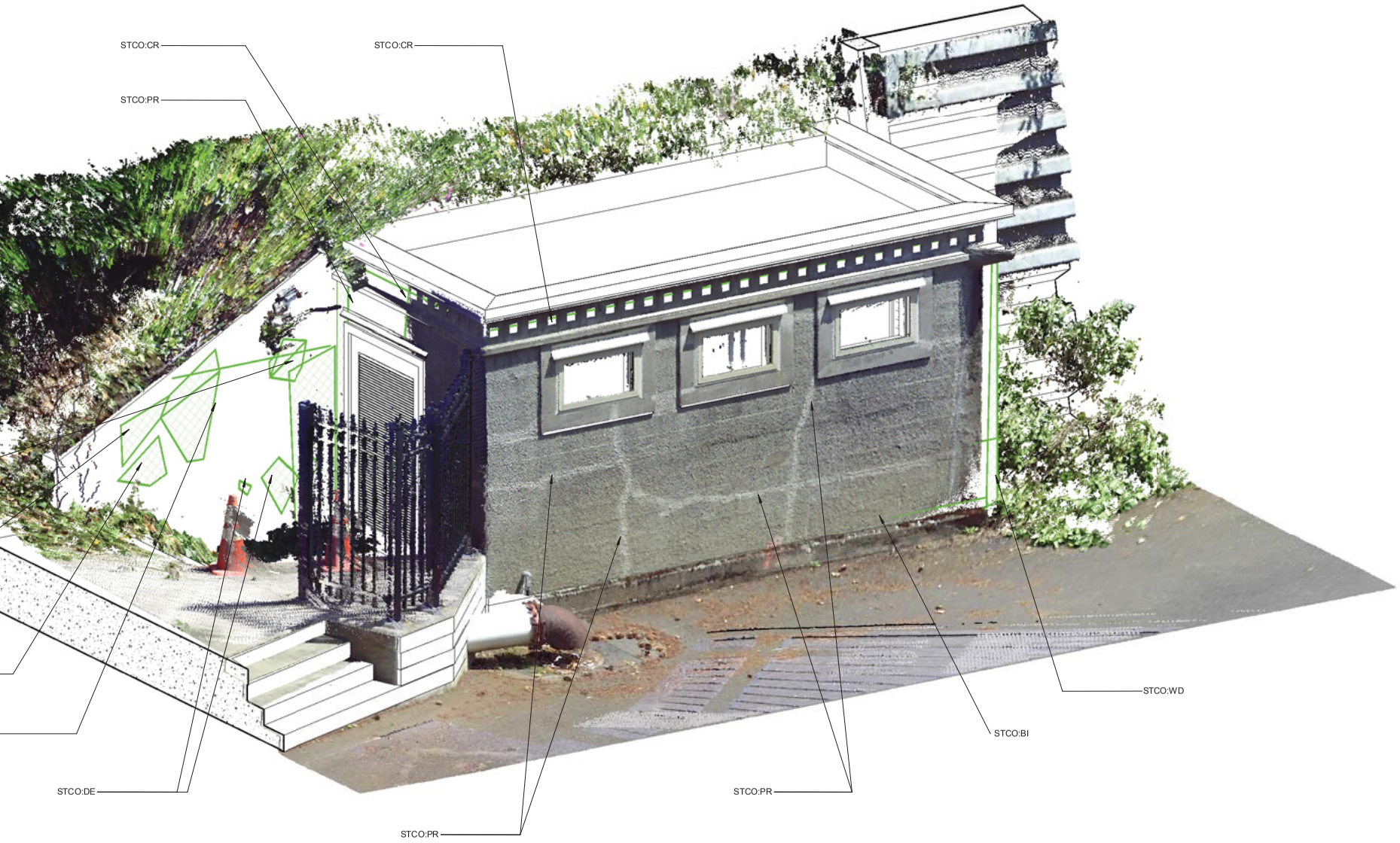
Stucco
Stucco





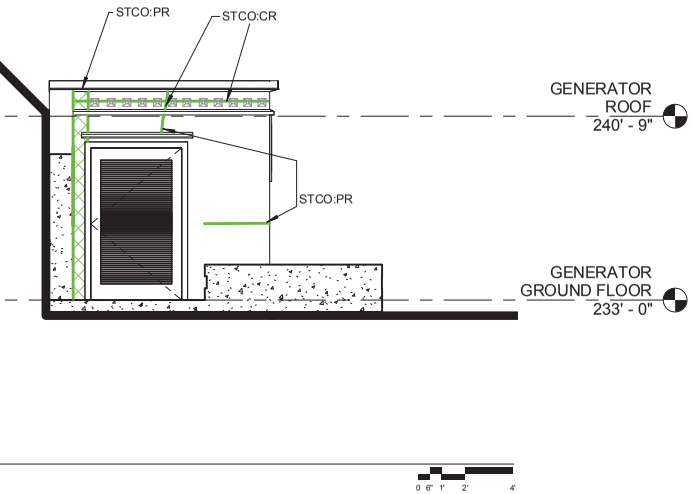
2 Pumphouse - South Elevations - Deficiencies

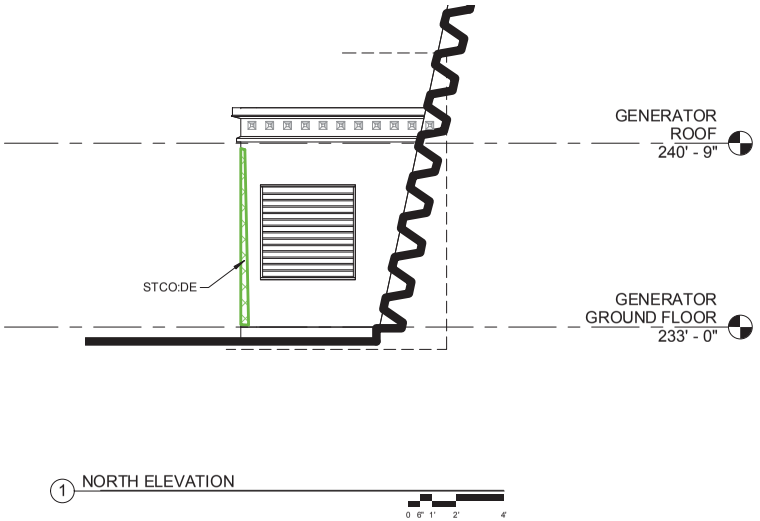
0 6" 1' 2' 4'



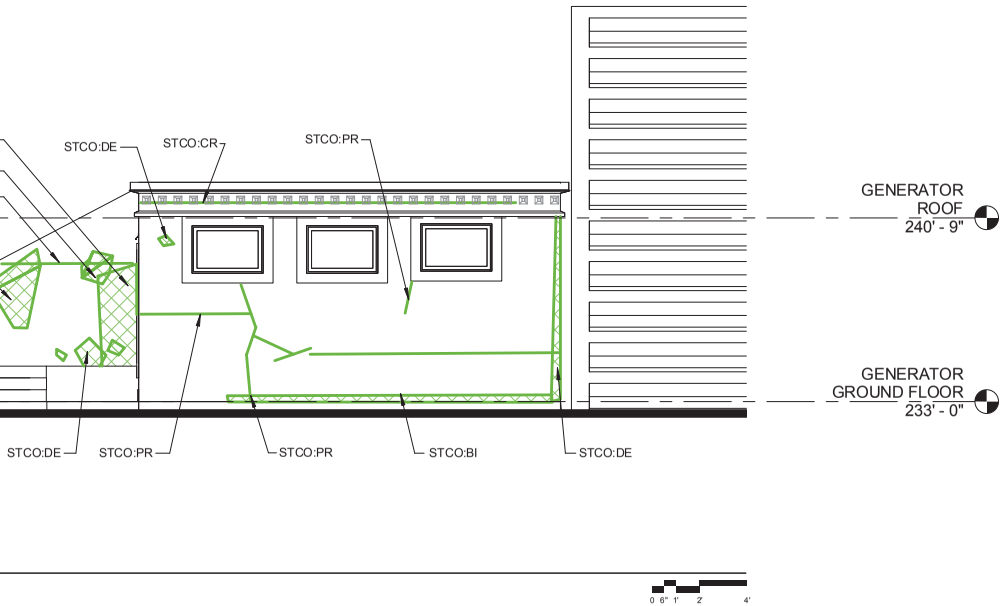
Gen

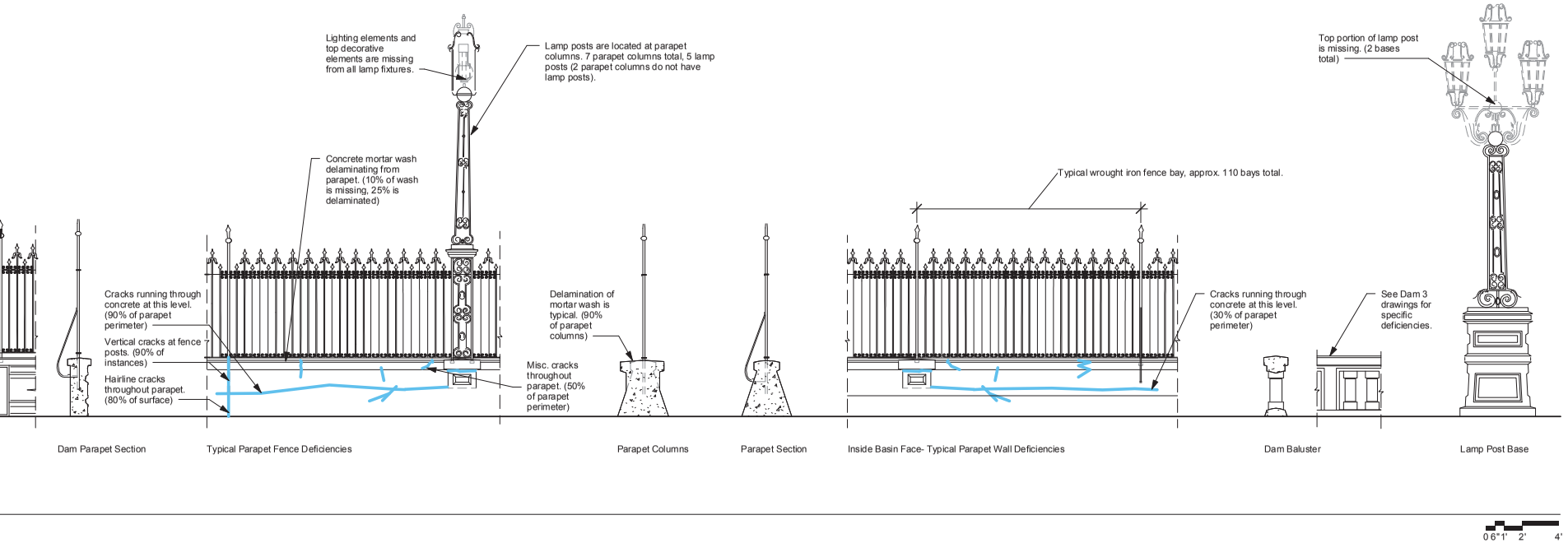
int-Cloud

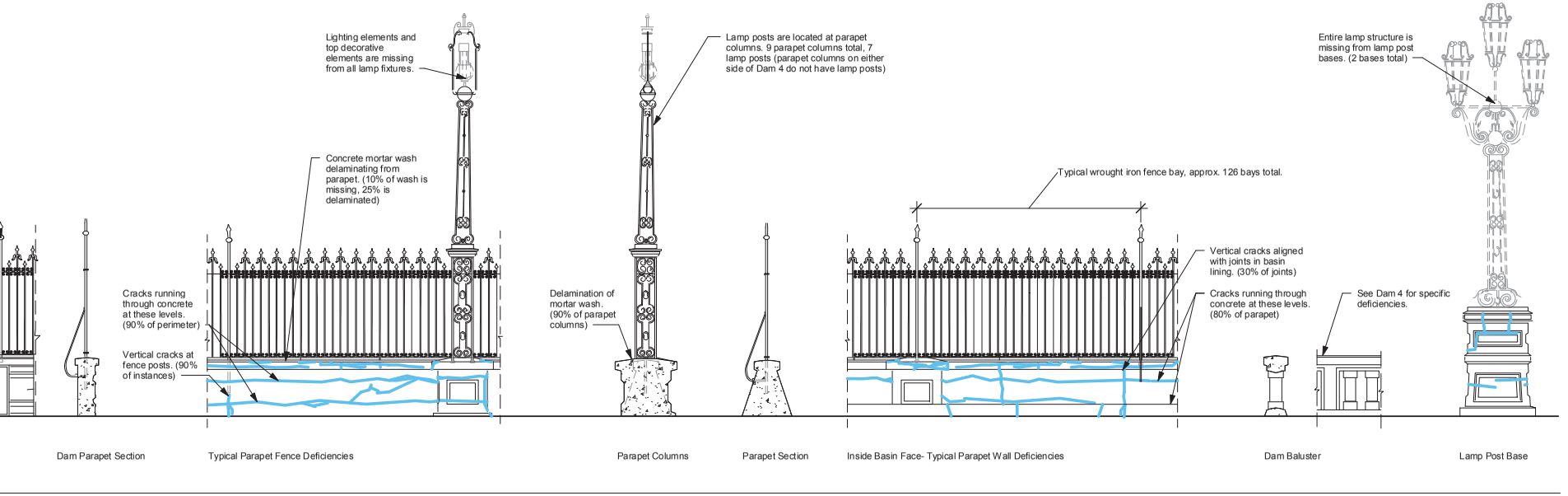


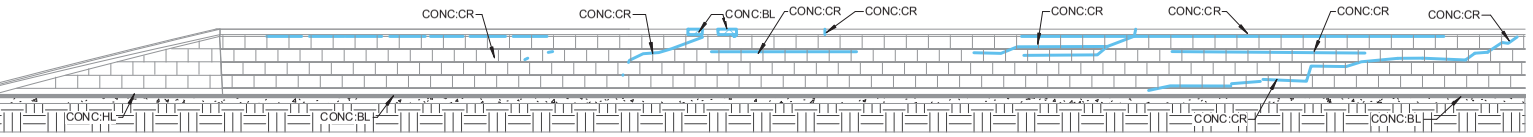


1 NORTH ELEVATION



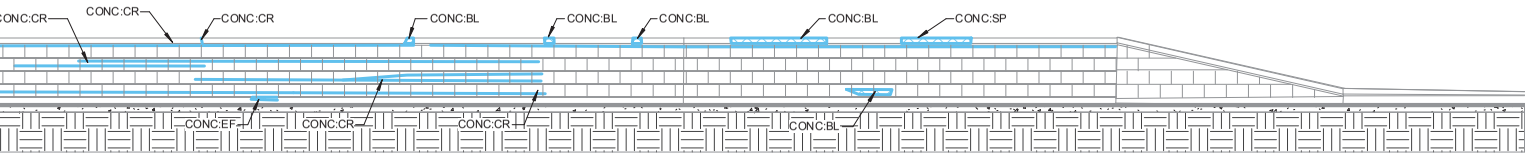

Lighting elements and top decorative elements are missing from all lamp fixtures.
Lamp posts are located at parapet columns. 7 parapet columns total, 5 lamp posts (2 parapet columns do not have lamp posts).
Concrete mortar wash delaminating from parapet. (10% of wash is missing, 25% is delaminated)
Typical wrought iron fence bay, approx. 110 bays total.
Top portion of lamp post is missing. (2 bases total)
Cracks running through concrete at this level. (90% of parapet perimeter)
Vertical cracks at fence posts. (90% of instances)
Hairline cracks throughout parapet. (80% of surface)
Delamination of mortar wash is typical. (90% of parapet columns)
Misc. cracks throughout parapet. (50% of parapet perimeter)
Cracks running through concrete at this level. (30% of parapet perimeter)
See Dam 3 drawings for specific deficiencies.
Dam Parapet Section
Typical Parapet Fence Deficiencies
Parapet Columns
Parapet Section
Inside Basin Face- Typical Parapet Wall Deficiencies
Dam Baluster
Lamp Post Base
0 6" 1' 2' 4'


Lighting elements and top decorative elements are missing from all lamp fixtures.
Lamp posts are located at parapet columns. 9 parapet columns total, 7 lamp posts (parapet columns on either side of Dam 4 do not have lamp posts)
Concrete mortar wash delaminating from parapet. (10% of wash is missing, 25% is delaminated)
Typical wrought iron fence bay, approx. 126 bays total.
Entire lamp structure is missing from lamp post bases. (2 bases total)
Cracks running through concrete at these levels. (90% of perimeter)
Vertical cracks at fence posts. (90% of instances)
Delamination of mortar wash. (90% of parapet columns)
Vertical cracks aligned with joints in basin lining. (30% of joints)
Cracks running through concrete at these levels. (80% of parapet)
See Dam 4 for specific deficiencies.
Dam Parapet Section
Typical Parapet Fence Deficiencies
Parapet Columns
Parapet Section
Inside Basin Face- Typical Parapet Wall Deficiencies
Dam Baluster
Lamp Post Base
0 6" 1' 2' 4'



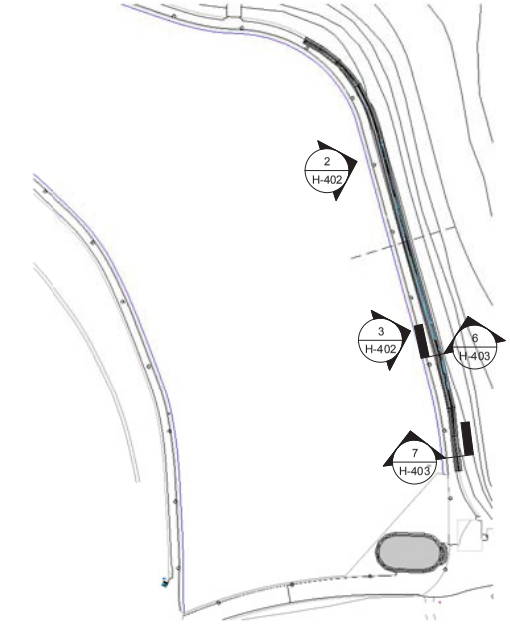
orth

0 1' 2' 4' 8'



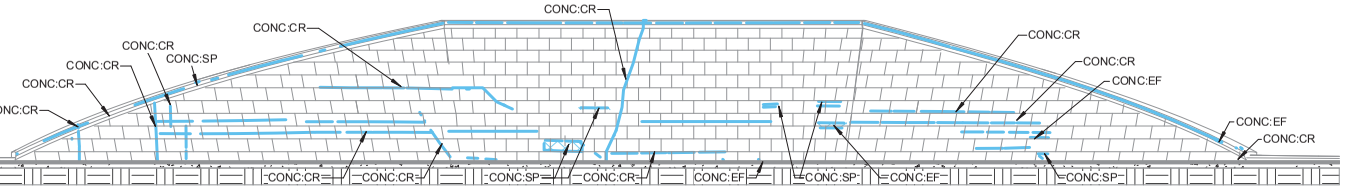
outh

0 1' 2' 4' 8'



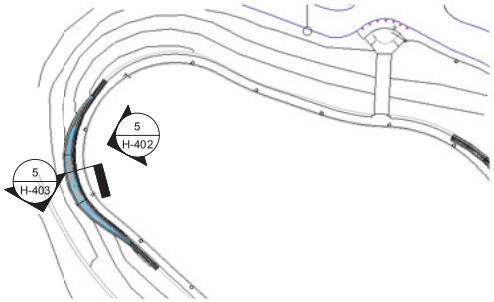
1 Reservoir 3 - East Retaining Wall

0 8'16' 32' 64'



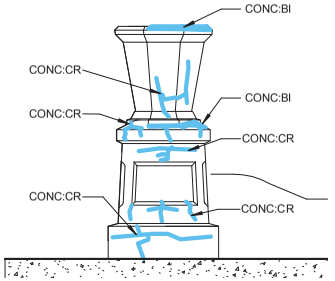
all

0 1' 2' 4' 8'



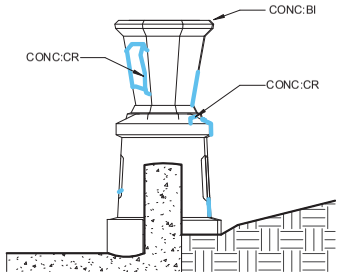
4 Reservoir 3 - Northwest Retaining Wall

0 8'16' 32' 64'



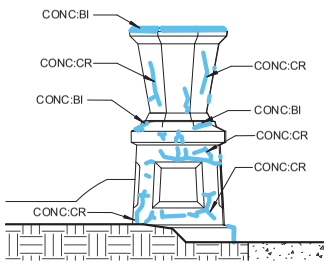
9 Planter - East Elevation

0 6" 1' 2'



8 Planter - North Elevation

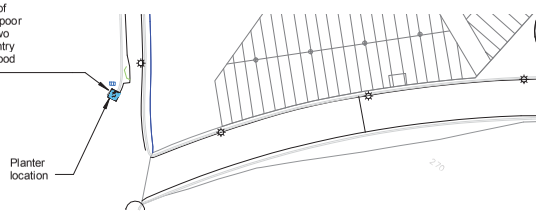
0 6" 1' 2'



7 Planter West Elevation

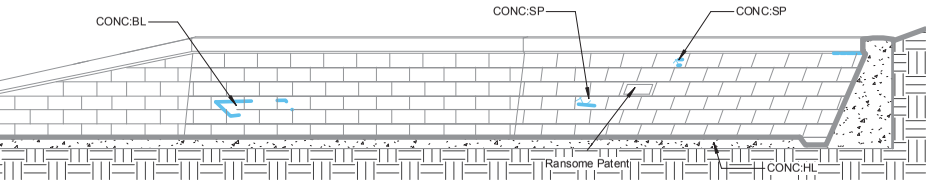
0 6" 1' 2'

The planter at the southwest edge of Reservoir 3 is in poor condition. The two planters at the entry stairway are in good condition.

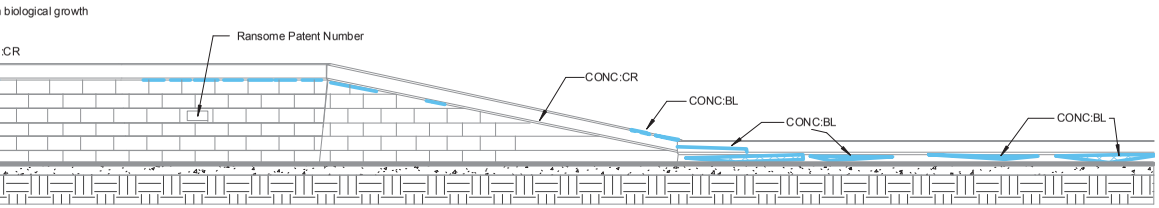


6 Reservoir 3 - Planter Location

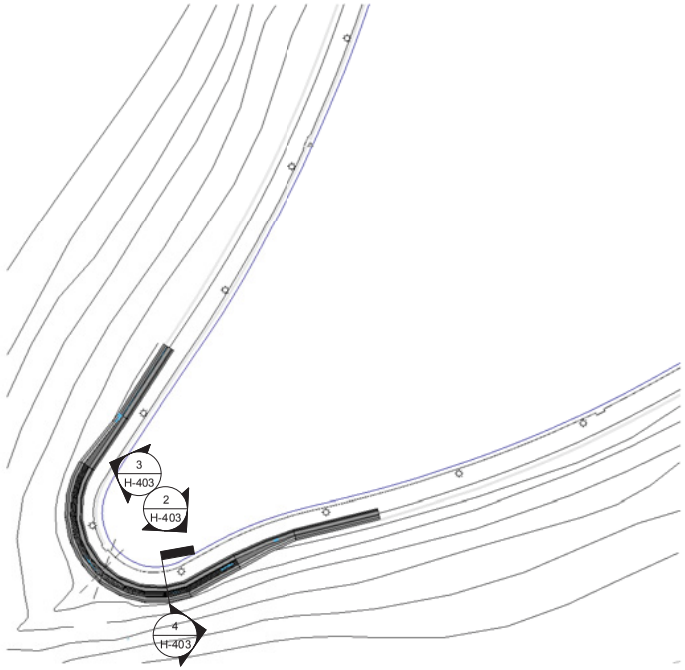
0 4' 8' 16' 32'



0 1' 2' 4'

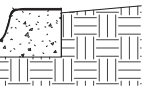


0 1' 2' 4'

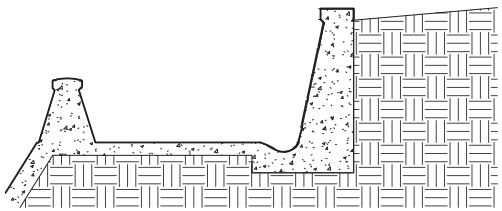


1 Reservoir 4 - South Retaining Wall

0 4' 8' 16' 32'

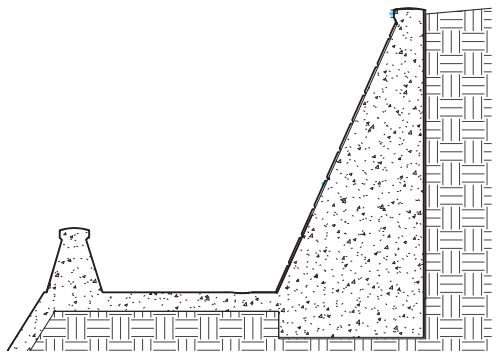


0 6" 1' 2' 4'



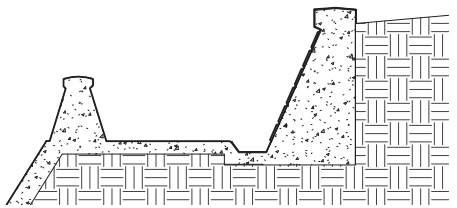
6 Reservoir 3 -East Retaining Wall Section

0 6" 1' 2' 4'



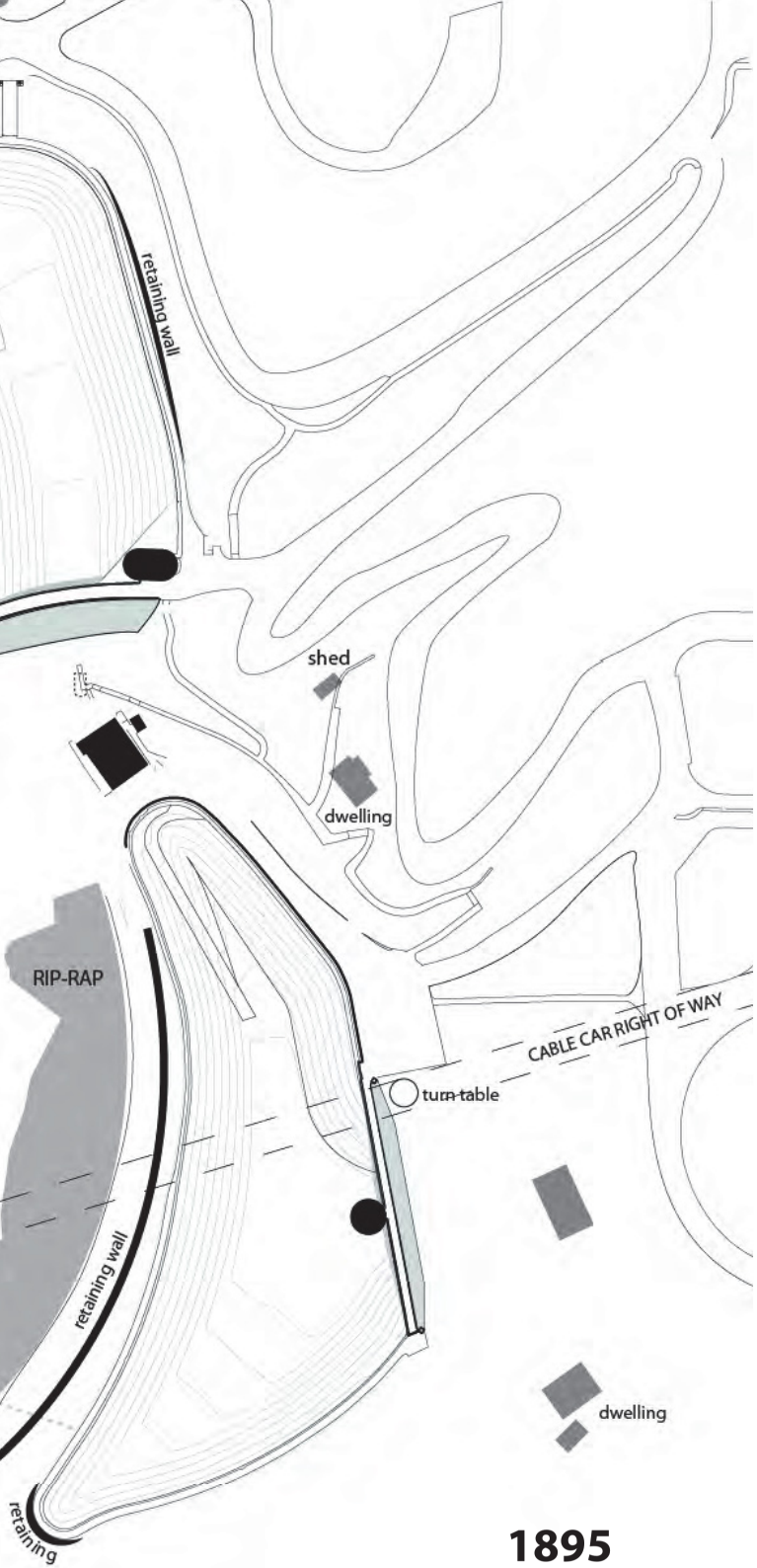
5 Reservoir 3 - Northwest Retaining Wall Section

0 6" 1' 2' 4'

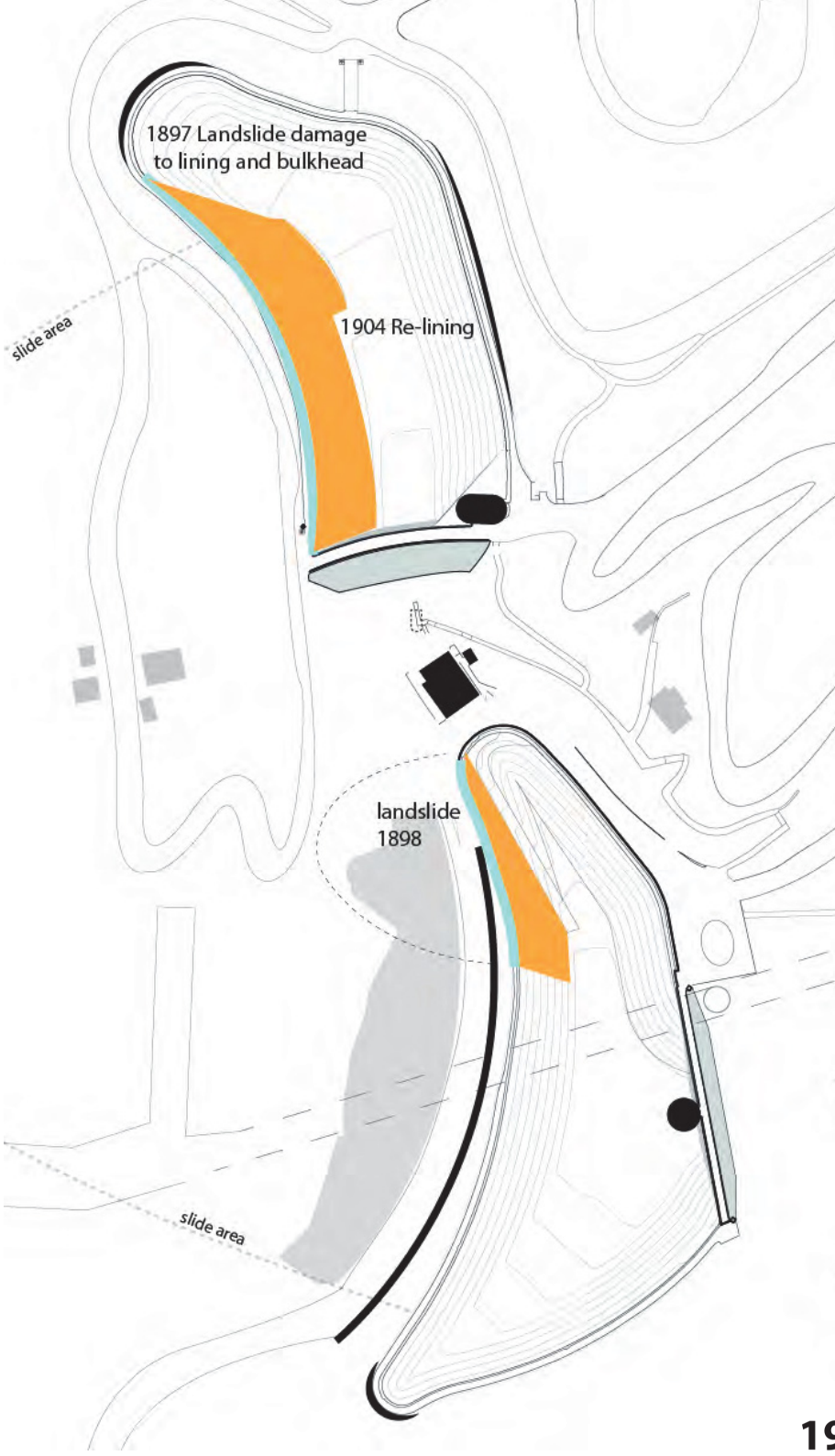


4 Reservoir 4 -South Retaining Wall

0 6" 1' 2' 4'


retaining wall
shed
dwelling
RIP-RAP
CABLE CAR RIGHT OF WAY
turn table
retaining wall
dwelling
retaining

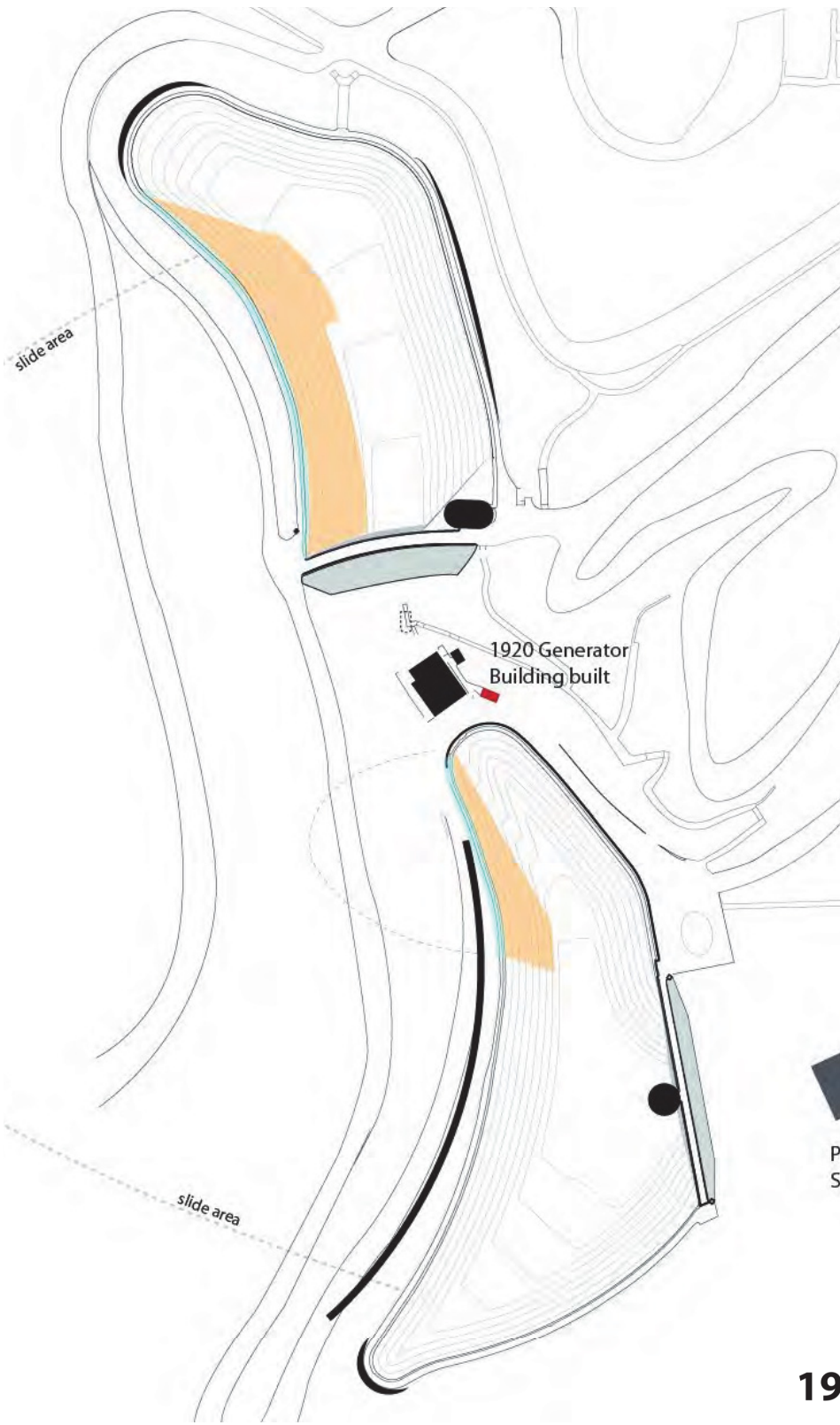
1895


1897 Landslide damage
to lining and bulkhead
1904 Re-lining
slide area
landslide
1898
slide area

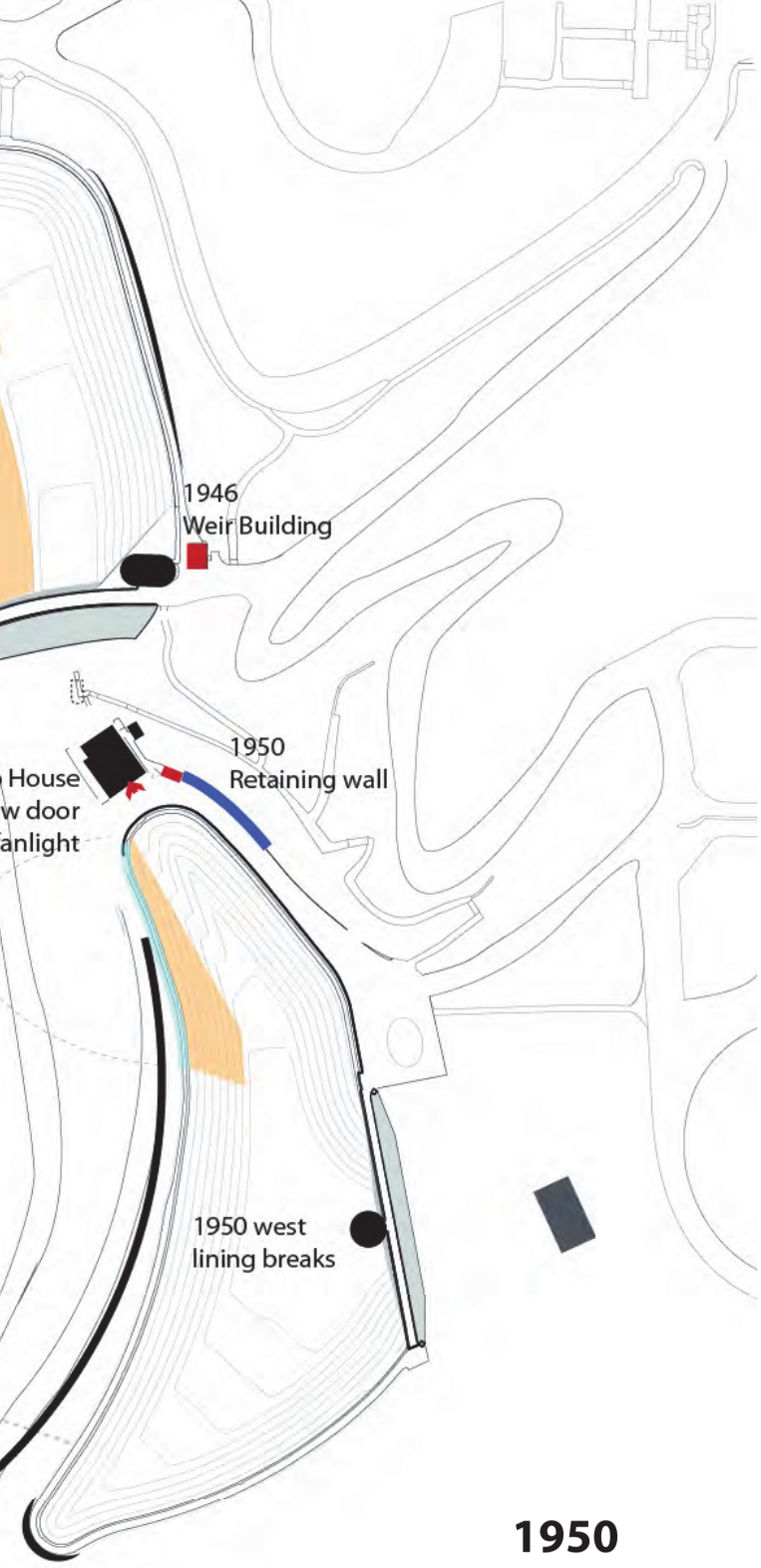
19


2 West
ng breaks

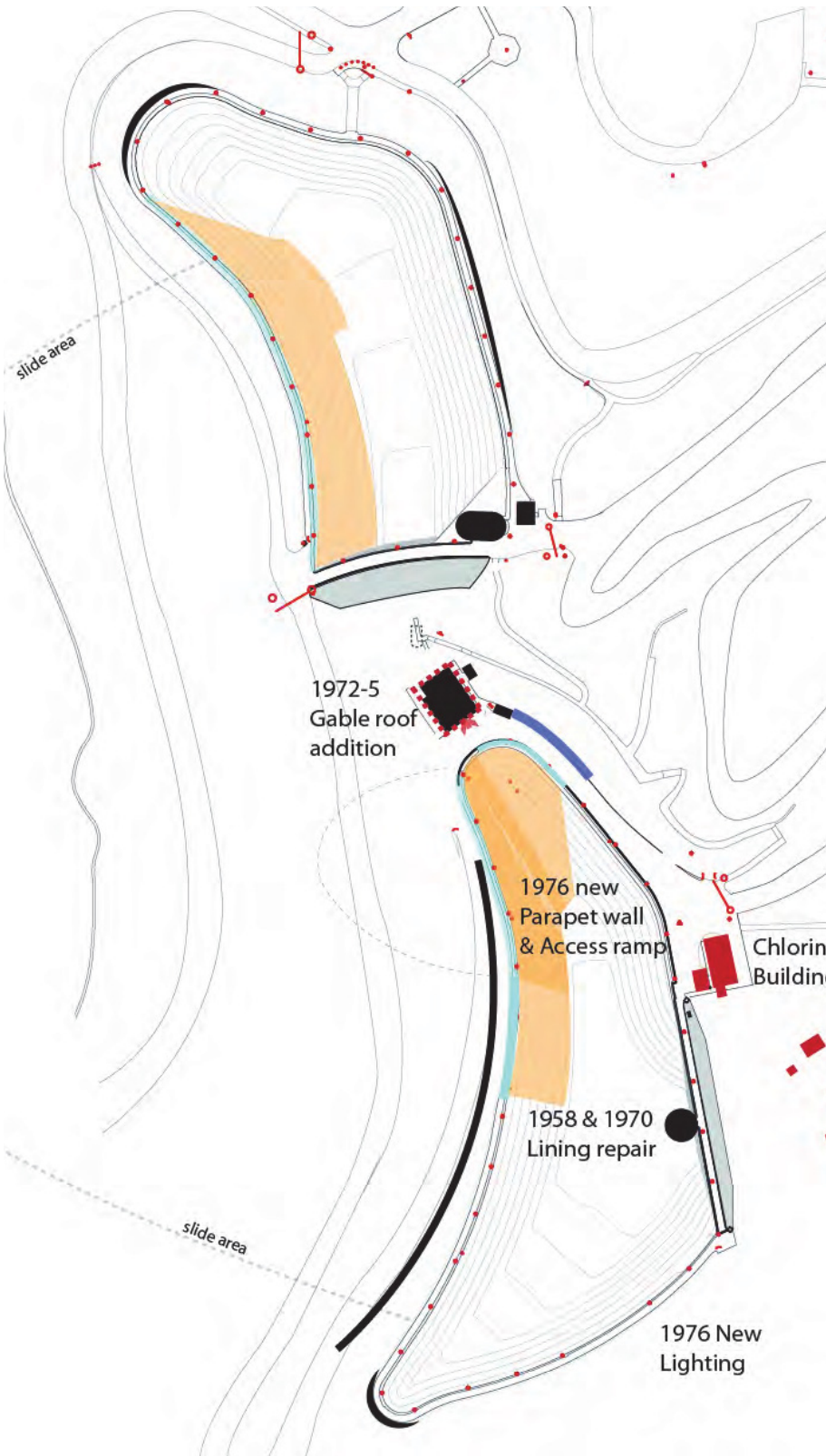
1912

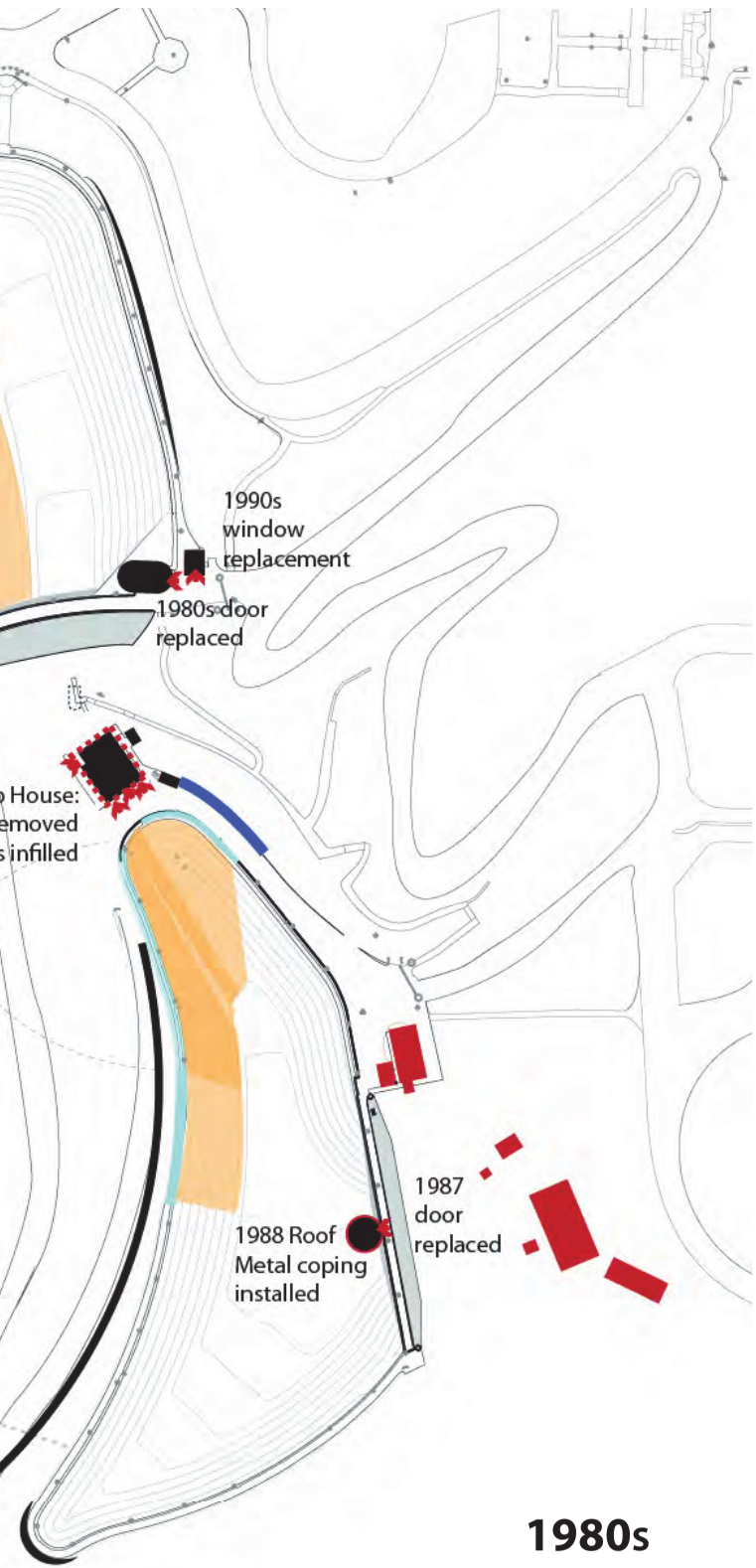

slide area
1920 Generator
Building built
slide area

19

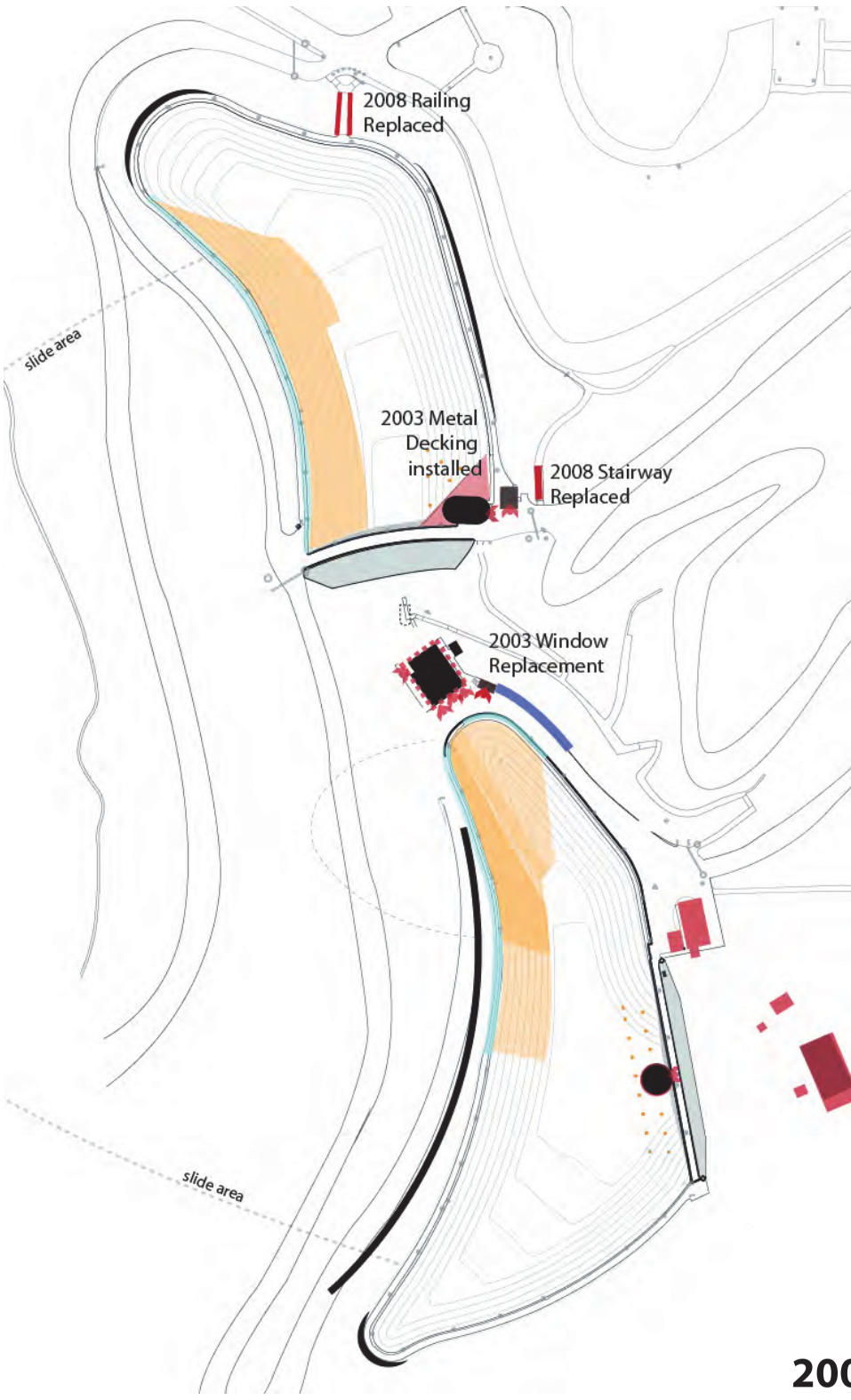

1946
Weir Building
1950
Retaining wall
House
w door
anlight
1950 west
lining breaks

1950


slide area
1972-5
Gable roof
addition
1976 new
Parapet wall
& Access ramp
Chlorin
Buildin
1958 & 1970
Lining repair
slide area
1976 New
Lighting


1990s
window
replacement
1980s door
replaced
House:
emoved
infilled
1988 Roof
Metal coping
installed
1987
door
replaced

1980s


2008 Railing
Replaced
slide area
2003 Metal
Decking
installed
2008 Stairway
Replaced
2003 Window
Replacement
slide area

200

NPS Form 10-900
(Oct.1990)

OMB No. 10024-0018

United States Department of the Interior
National Park Service

National Register of Historic Places Registration Form

This form is for use in nominating or requesting determinations for individual properties and districts. See instruction in How to Complete the National Register of Historic Places Registration Form (National Register Bulletin 16A). Complete each item by marking "x" in the appropriate box or by entering the information requested. If an item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, architectural classifications, materials and areas of significance, enter only categories and subcategories from the instructions. Place additional entries and narrative items on continuation sheets (NPS Form 10-900a). Use a typewriter, word processor, or computer, to complete all items.

1. Name of Property

historic name Washington Park Reservoirs Historic District

other names/site number Washington Park (City Park) Reservoirs 3 and 4

2. Location

street & number 2403 S.W. Jefferson Street ☐ not for publication

city or town Portland ☐ vicinity

state Oregon code OR county Multnomah code 051 zip code 97201

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act, as amended, I hereby certify that this X nomination ____ request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60. In my opinion, the property X meets ____ does not meet the National Register criteria. I recommend that this property be considered significant ____ nationally ____ statewide X locally.

Signature of certifying official/Title - Deputy SHPO Date

Oregon State Historic Preservation Office
State or Federal agency and bureau

4. National Park Service Certification

I hereby certify that the property is: Signature of the Keeper Date of Action

____ entered in the National Register
___ See continuation sheet.

____ determined eligible for the National Register
___ See continuation sheet.

____ determined not eligible for the National Register

____ removed from the National Register

X other (explain): AD Accepted Edson H. Beall 1.26.06

Washington Park Reservoirs Historic District
Name of Property

Multnomah, Oregon
County and State

5. Classification

Ownership of Property
(check as many as apply)

___ private
_X_ public - local
___ public - state
___ public – Federal

Category of Property
(check only one box)

____ building(s)
_X_ district
___ site
____ structure
___ object

Number of Resources within Property
(Do not include previously listed resources in the count)

Contributing	Noncontributing	
5		buildings
		sites
4		structures
2		objects
11		Total

Name of related multiple property listing
(enter "N/A" if property is not part of a multiple property listing)

N/A

Number of contributing resources previously listed in the National Register

0

6. Function or Use

Historic Functions
(enter categories from instructions)

GOVERNMENT: public works
RECREATION: outdoor recreation
INDUSTRY/PROCESSING: waterworks

Current Functions
(Enter categories from instructions)

GOVERNMENT: public works
RECREATION: outdoor recreation
INDUSTRY/PROCESSING: waterworks

7. Description

Architectural Classification
(Enter categories from instructions)

LATE VICTORIAN: Romanesque

Materials
(Enter categories from instructions)

foundation: CONCRETE
walls: ASPHALT
CONCRETE
roof:
Other: METAL: iron, EARTH

Narrative Description
(Describe the historic and current condition of the property on one or more continuation sheets)

See continuation sheets.

Washington Park Reservoirs Historic District
Name of Property

Multnomah, Oregon
County and State

8. Statement of Significance

Applicable National Register Criteria
(Mark "x" in one or more boxes for the criteria qualifying the property for National Register listing).

__X__ A Property is associated with events that have made a significant contribution to the broad patterns of our history.

_____ B Property is associated with the lives of persons significant in our past.

__X__ C Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.

_____ D Property has yielded, or is likely to yield, information important in prehistory or history.

Areas of Significance
(Enter categories from instructions)

Community Planning and Development
Engineering
Architecture
Entertainment/Recreation

Period of Significance

1894-1953

Significant Dates

1894, 1920, 1945

Criteria Considerations
(Mark "x" in all the boxes that apply)

Property is:

_____ A owned by a religious institution or used for religious purposes

_____ B removed from its original location

_____ C a birthplace or grave

_____ D a cemetery

_____ E a reconstructed building, object, or structure

_____ F a commemorative property

_____ G less than 50 years of age or achieved significance Within the past 50 years

Significant Person
(Complete if Criterion B is marked above)

Cultural Affiliation

Architect/Builder

Smith, Isaac, W.
Oliver, Charles

Narrative Statement of Significance
(Explain the significance of the property on one or more continuation sheets)

9. Major Bibliographical References

Bibliography (Cite books, articles, and other sources used in preparing the form on one or more continuation sheets) See continuation sheets

Previous documentation on file (NPS):
- ___ preliminary determination of individual listing (36CFR67) has been requested
- ___ previously listed in the National Register
- ___ previously determined eligible by the National Register
- ___ designated a National Historic Landmark
- ___ recorded by Historic American Buildings Survey
- ___ recorded by Historic American Engineering Record

Primary location of additional data:
- ___ State Historic Preservation Office
- ___ Other State agency
- ___ Federal agency
- _x_ Local government
- ___ University
- _x_ Other

Name of repository: Multnomah Co. Library

Washington Park Reservoirs Historic District
Name of Property

Multnomah, Oregon
County and State

10. Geographical Data

Acreage of Property 9.5

UTM References
(Place additional UTM references on a continuation sheet)

	Zone	Easting	Northing
1	10	523310	5040700
2	10	523440	5040330
3	10	523305	5040225
4	10	523170	5040290
5	10	523180	5040735

Verbal Boundary Description
(Describe the boundaries of the property on a continuation sheet)

Boundary Justification
(Explain why the boundaries were selected on a continuation sheet)

11. Form Prepared By

name/title Cascade Anderson Geller

organization Friends of the Reservoirs date February 2003

street & number 1934 S.E. 56th Avenue telephone 503-232-0473

city or town Portland state Oregon zip code 97215

Additional Documentation

Submit the following items with the completed form:

Continuation sheets

Maps: A USGS map (7.5 or 15 minute series) indicating the property's location.
A sketch map for historic districts and properties having large acreage or numerous resources.

Photographs: Representative black and white photographs of the property.

Additional items (check with the SHPO or FPO for any additional items)

Property Owner

name City of Portland

street & number 1221 S.W. Fourth Avenue telephone 503-823-4151

city or town Portland state Oregon zip code 97204

NPS Form 10-900a
(8-86)

OMB No. 1024-0018

United States Department of the Interior
National Park Service

NATIONAL REGISTER OF HISTORIC PLACES CONTINUATION SHEET

Section _____ Page ___

SUPPLEMENTARY LISTING RECORD

NRIS Reference Number: 03001447 Date Listed: 1/15/2004

Washington Park Reservoirs Historic District	Multnomah	OR
Property Name	County	State

N/A
Multiple Name

This property is listed in the National Register of Historic Places in accordance with the attached nomination documentation subject to the following exceptions, exclusions, or amendments, notwithstanding the National Park Service certification included in the nomination documentation.

Signature of the Keeper	Date of Action
	1/15/04

Amended Items in Nomination:

Functions:

The Historic and Current Functions are amended to add: *Industry/Processing-Waterworks*

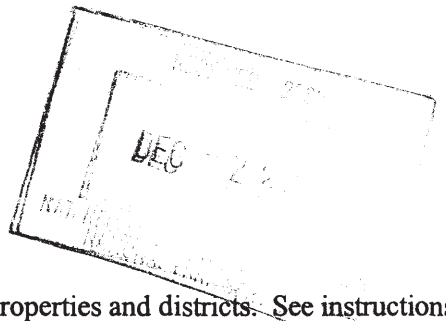
These clarifications were confirmed with the OR SHPO office.

DISTRIBUTION:
National Register property file
Nominating Authority (without nomination attachment)

NPS Form 10-900 (Rev. 10-90) OMB No. 1024-0018

United States Department of the Interior
National Park Service

NATIONAL REGISTER OF HISTORIC PLACES
REGISTRATION FORM



This form is for use in nominating or requesting determinations for individual properties and districts. See instructions in How to Complete the National Register of Historic Places Registration Form (National Register Bulletin 16A). Complete each item by marking "x" in the appropriate box or by entering the information requested. If any item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, architectural classification, materials, and areas of significance, enter only categories and subcategories from the instructions. Place additional entries and narrative items on continuation sheets (NPS Form 10-900a). Use a typewriter, word processor, or computer, to complete all items.

1. Name of Property

historic name Washington Park Reservoirs Historic District
other names/site number Washington Park (City Park) Reservoirs 3 and 4

2. Location

street & number Res. 3 2549 S.W. Murray Ave. not for publication
Res. 4 2521 S.W. Murray Ave.
(previous street addresses have varied ie,2403/2404 SW Madison St)
city or town Portland vicinity
state Oregon code OR county Multnomah code 051
zip code 97201

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act of 1986, as amended, I hereby certify that this x nomination ____ request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60. In my opinion, the property x meets ____ does not meet the National Register Criteria. I recommend that this property be considered significant ___ nationally ___ statewide x locally. (___ See continuation sheet for additional comments.)

James Hamrick 19 November, 2003
Signature of certifying official / Deputy SHPO Date November 19, 2003

Oregon State Historic Preservation Office
State or Federal agency and bureau

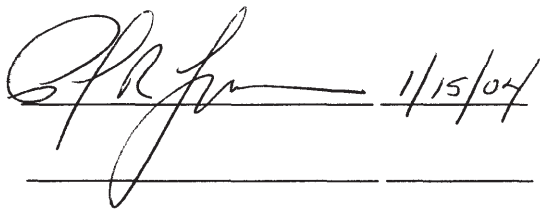
In my opinion, the property ____ meets ____ does not meet the National Register criteria. (___ See continuation sheet for additional comments.)

Signature of commenting or other official Date

State or Federal agency and bureau

4. National Park Service Certification

I, hereby certify that this property is:



_V_ entered in the National Register 1/15/04
___ See continuation sheet.
____ determined eligible for the _____ _____
National Register
___ See continuation sheet.
____ determined not eligible for the _____ _____
National Register
____ removed from the National Register _____ _____

____ other (explain): _____

_____ _____ _____
Signature of Keeper Date of Action

5. Classification

Ownership of Property (Check as many boxes as apply)
___ private
_X_ public-local
___ public-State
___ public-Federal

Category of Property (Check only one box)
___ building(s)
_X_ district
___ site
__ structure
___ object

Number of Resources within Property

Contributing	Noncontributing	
_5_	____	buildings
___	____	sites
_4_	____	structures
_2_	____	objects
11	____	Total

Number of contributing resources previously listed in the National Register _-0-__

Name of related multiple property listing (Enter "N/A" if property is not part of a multiple property listing.)

_____

6. Function or Use

Historic Functions (Enter categories from instructions)
Cat: Government Sub: public works
Recreation outdoor recreation

Current Functions
Cat: Government Sub: public works
Recreation outdoor recreation
(Enter categories from instructions)

7. Description

Architectural Classification (Enter categories from instructions)
LATE VICTORIAN: Romanesque

Materials (Enter categories from instructions)
foundation Concrete
basin Asphalt
walls Concrete
other Iron, Earth, Water

Narrative Description (Describe the historic and current condition of the property on one or more continuation sheets.)

See Continuation Sheet-

8. Statement of Significance

Applicable National Register Criteria (Mark "x" in one or more boxes for the criteria qualifying the property for National Register listing)

X A Property is associated with events that have made a significant contribution to the broad patterns of our history.

___ B Property is associated with the lives of persons significant in our past.

X C Property embodies the distinctive characteristics of a type, period, or method of construction represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.

____ D Property has yielded, or is likely to yield information important in prehistory or history.

Criteria Considerations (Mark "X" in all the boxes that apply.)

____ A owned by a religious institution or used for religious purposes.

____ B removed from its original location.

____ C a birthplace or a grave.

____ D a cemetery.

____ E a reconstructed building, object or structure.

____ F a commemorative property.

____ G less than 50 years of age or achieved significance within the past 50 years.

Areas of Significance (Enter categories from instructions)
Community Planning and Development
Engineering
Architecture
Entertainment/Recreation

Period of Significance 1894-1953

Significant Dates 1894, 1920, 1945

Significant Person (Complete if Criterion B is marked above)

Cultural Affiliation

Architect/Builder Isaac W. Smith
Charles Oliver

Narrative Statement of Significance (Explain the significance of the property on one or more continuation sheets.)

See Continuation Sheet-

9. Major Bibliographical References

(Cite the books, articles, and other sources used in preparing this form on one or more continuation sheets.)

Previous documentation on file (NPS)
___ preliminary determination of individual listing (36 CFR 67) has been requested.
___ previously listed in the National Register
___ previously determined eligible by the National Register
___ designated a National Historic Landmark
___ recorded by Historic American Buildings Survey #

Washington Park Reservoirs Historic District Multnomah County, Oregon
Name of Property County, State

___ recorded by Historic American Engineering Record # _____

Primary Location of Additional Data
___ State Historic Preservation Office
___ Other State agency
___ Federal agency
_X_ Local government
___ University
_X_ Other
Name of repository: _Multnomah County Library_____

10. Geographical Data

Acreage of Property __9.5_____

UTM References (Place additional UTM references on a continuation sheet)

	Zone	Easting	Northing		Zone	Easting	Northing
1	10	523310	5040700	3	10	523305	5040225
2	10	523440	5040330	4	10	523170	5040290

5 10 523180 5040735

___ See continuation sheet.

Verbal Boundary Description (Describe the boundaries of the property on a continuation sheet.)

Boundary Justification (Explain why the boundaries were selected on a continuation sheet.)

11. Form Prepared By

name/title___ Friends of the Reservoirs_____

organization___ %Cascade Anderson Geller_____ date_ February 28, 2003__
street & number 1934 SE 56th Avenue_____ telephone 503-232-0473
city or town__ Portland_____ state OR zip code __97215

Additional Documentation

Submit the following items with the completed form:

Continuation Sheets
Maps
A USGS map (7.5 or 15 minute series) indicating the property's location.
A sketch map for historic districts and properties having large acreage or numerous resources.

Photographs
Representative black and white photographs of the property.

Washington Park Reservoirs Historic District | Multnomah County, Oregon
Name of Property | County, State

Additional items (Check with the SHPO or FPO for any additional items)

Property Owner

(Complete this item at the request of the SHPO or FPO.)
name City of Portland

street & number 1221 SW Fourth Avenue telephone 503-823-4151

city or town Portland state OR zip code 97204

Paperwork Reduction Act Statement: This information is being collected for applications to the National Register of Historic Places to nominate properties for listing or determine eligibility for listing, to list properties, and to amend existing listings. Response to this request is required to obtain a benefit in accordance with the National Historic Preservation Act, as amended (16 U.S.C. 470 et seq.).
Estimated Burden Statement: Public reporting burden for this form is estimated to average 18.1 hours per response including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding this burden estimate or any aspect of this form to the Chief, Administrative Services Division, National Park Service, P.0. Box 37127, Washington, DC 20013-7127; and the Office of Management and Budget, Paperwork Reductions Project (1024-0018), Washington, DC 20503.

Narrative Description

Reservoirs 3 and 4 are located in the eastern portion of Washington Park (originally City Park) in southwest Portland. City Park predates the reservoirs by 23 years. Today, Washington Park is 129.51 acres, bounded roughly by King's Hill neighborhood to the east, Burnside on the north, Jefferson Street to the south, and the Oregon Zoo on the west. The park is an active destination with softball and soccer fields, basketball court, six lighted tennis courts, playground, covered picnic area, children's playground, hiking trails, and public gardens including the International Rose Test Garden, the Japanese Garden, and Hoyt Arboretum and the Oregon Zoo. The reservoir site, with the deep, open water and romantic architecture is peaceful, offering a retreat from the more active recreation areas of the park. The area surrounding the reservoirs is defined by a perimeter chain link fence installed in 1970 by the Portland Water Bureau. The nomination consists of five contributing buildings (Gate Houses 3 and 4, Weir Building, Pump House 1, and the Generator House), four structures (Basins 3 and 4 with their parapet walls, fences, lampposts, walkways and carriageways and Dams 3 and 4), and two objects (water fountains at the Reservoir 4 site.)

Reservoirs 3 and 4, along with Mount Tabor Park Reservoirs 1, 2, 5, and 6, were constructed as part of the Bull Run water system, a gravity-fed mountain watershed system built during the late nineteenth and early twentieth centuries to provide the city of Portland with drinking water. Reservoirs 1, 3, 4, 5, and 6 continue to function as the city's primary water distribution sources. They serve as a recreational amenity as well, enriching the landscape of two of Portland's largest and oldest parks with vistas of deep open water, period historic structures, and water sounds from small gravity fed inlet waterfalls. Also, due to their location on hills on the east and west sides of the city, scenic views are afforded across the reservoir water. Reservoir 2, located at the southwest foot of Mount Tabor Park was taken off line and sold in 1990. Reservoir 2 Gatehouse is listed in the National Register of Historic Places. The reservoirs were part of a Thematic National Register Nomination (never submitted) and are considered Rank 1 properties in the Portland Historic Resource Inventory of 1984.

Washington Park's Reservoir 3 is located east of the main east vehicle entry at Park Avenue that continues as a circular drive surrounding a grassy picnic knoll where a variety of views of this reservoir are provided. Reservoir 3 is a well-known and loved landmark of Washington Park. From the high point of the drive is a primary view of the water and historic features. Recent postcards tout this view as a Park Site on the Washington Park Shuttle. At the opposite point, the drive splits offering vehicle access upslope and west leading to the garden, arboretum and zoo, and to the north and west leading to the Arlington Heights neighborhood. Reservoir 3 is located to the west of this junction. The two reservoirs are separated by the straight dam face of Reservoir 3 that drops approximately 70 feet down to Reservoir 4.

South and down slope of Reservoir 3 is Reservoir 4 with its curved decorative dam facing S.W. Jefferson Street. Reservoir 4 is due west of the Kings Hill Historic District. The two reservoirs are connected by a series of buried piping. At the south end of Reservoir 4 the terrain is steep and the natural vegetation is thick outside of the perimeter chain link fence. Inside the fence, the area is more manicured around the reservoir basin. On the west a steep, forested slope defines the site. Grand vistas of the reservoirs, water, historic features, the city

skyline, Mount Hood and the Bull Run reserve from points on the west side of the district. The main east-side entrance road to the reservoir complex is closed to vehicle access near the junction of Southwest Park Avenue and Southwest Cedar Street. The perimeter fence encompasses the site with a footpath following the fence line north and south on the east side of the reservoir providing views of this reservoir and its features in its entirety. This walk also provides a striking view of the dam face and Pump House of Reservoir 3. Mass transit light rail tracks pass to the south end of the reservoir. The south dam face of Reservoir 4, with its large, raised "1894" numerals that are highly visible for auto and pedestrian traffic from Southwest Jefferson Street, are a primary Portland landmark.

RESERVOIR 3

The northern reservoir is Reservoir 3 at an approximate elevation of 299.5 feet above the low water mark of the Willamette River. The water in this reservoir supplies "high service" for the higher west hill population of the City. Reservoir 3 covers 2.02 acres. It is irregularly shaped, approximately 200 feet east and west, and 500 feet north and south with a capacity of 16.4 million gallons. It is the deepest of all of Portland's reservoirs with a depth of 49 feet. A gatehouse, built in 1894, and a later Weir Building (Screen House) are located at the southeast end. Reservoir 3 and its companion Reservoir 4 to the south are both located in a natural ravine. A concrete dam forms the south wall of Reservoir 3. The other faces were constructed to conform, with some modification, to the existing slopes at an approximate slope of 1:1. The dam, basin lining, parapet wall, gatehouse and weir building are all constructed of poured-in-place, reinforced concrete.

Contributing buildings, structures, and objects

Basin and Accompanying Features

The basin's concrete lining was reportedly reinforced with Ernest Leslie Ransome's patented "twisted iron" square bars placed ten feet on center in each direction and anchored at ten-foot intervals by iron bars driven a depth of 3 to 20 feet into the slopes and embedded in concrete. Early photographs show a buttress along the west wall of the basin, likely installed as part of the landslide repair. Adjacent to the Gatehouse (and under water) is a flight of approximately 50 steps to the basin floor. The basin was originally lined with asphalt for waterproofing. Various other waterproofing materials have been applied since that time. For the past twenty years, it has been covered with a geomembrane liner. According to an 1895 newspaper account, water "jets" were installed along the perimeter of the basin to provide aeration. They were set at an angle so that columns of water were thrown toward the center of the basin. No other documentation for these "fountains" was found. The basin shows signs of distress with some cracking, especially on the south wall. The west wall shows effects of the Washington Park landslide, including some bulging of the concrete panels now covered by the liner. The basin is good condition overall.

Encircling the basin is a 3-foot high concrete parapet wall topped by an ornamental wrought iron fence. Designs for the wall and fence were identical for Reservoirs 1, 3 and 4. The wall has a raised diamond motif set in recessed panels. The fence is made up of 1-inch square uprights between, 5 and 6 feet high, with tops

hammered into spear shapes. Double-scrolls are screwed on to secure the uprights to cross bars. Every other bar is approximately 4 inches taller and on these bars are two 3-inch hammered leaves. These are forged opposite of each other from two sides of the metal bar. At approximately twelve-foot intervals are taller bars. These have ball decorations below spear-shaped tops and are braced with curved bars on the water side of the wall. Incorporated into the fence are wrought iron lampposts of two designs; single and triple gas lamp fixtures. Their bases, shafts and tops are made up of various forms of scrolled bars and the hammered leaf motif is repeated from the fence. In the1970s, the Water Bureau encircled the basin with freestanding aluminum fixtures with conical shades and ceased to use the historic arc lamps. The parapet wall has some cracking, spalling and efflorescence. The wrought iron fence is sound but the finish shows distress. It is in good condition but refinishing is advisable.

A concrete walkway surrounds the parapet wall and was intended to serve as a promenade, while draining storm water away from the reservoir. At the north end of the basin a wide flight of concrete steps, flanked by concrete jardinières, connects the walkway to one of the principal drives through Washington Park. The chain link fence now enclosing the reservoirs blocks the stairs at the top and the stairway and jardinières are overgrown with ivy. Along the walkway east of the basin is a poured-in-place, reinforced concrete wall cast and finished to look like stone. The walkway shows the effects of the landslide with cracking, buckling and some spalling especially on the west side. Overall, it is in good condition.

Dam

At the south end where the upper ravine narrows, the curved V-shaped dam with a 400-foot radius forms the south wall of Reservoir 3. It is approximately 175 feet long, 30 feet thick at the base and 20 feet thick at the top. The exposed southern face of the concrete and earth dam is decorated with a Romanesque-style blind arcade and the concrete is finished to look like stone. On top of the dam sits a massive concrete balustrade and a approximate ten-foot wide carriageway with walkways on either side. Originally, this carriageway continued south to Reservoir 4. The large 3-light ornamental wrought iron gas lanterns at each end of the carriageway are still mostly intact. Set into the dam is a concrete block with the patent numbers for the concrete construction: "Ransome's Patent Construction 305229 and Ransome's Patent Concrete Finish" (number illegible). Though some cracking is apparent, the dam appears to be in good condition.

Gatehouse

At the southeast end of the reservoir is the Gatehouse. Romanesque in style, the oval shaped building is constructed of rusticated reinforced concrete with a flat slightly projecting roof. Although concrete, the wall was cast in the form of coursed, stone-like blocks. The wall surface was then bush-hammered and tooled to give the appearance of natural stone. It has a pronounced water table and double hung wood-sash round arched windows, four over four, with rusticated concrete sill and surround. The building has a double door on the east. This door is similar in design to the windows with a wood sash fanlight and rusticated concrete surround; the original wood paneled doors themselves however were replaced with plain metal doors in the 1980s. Below its slightly projecting roof slab is a paneled frieze, and below that a corbelled band. The Gatehouse contains inlet

and outlet piping, sluice gates, overflow piping, a weir and a steel holding tank. Some cracks appear in the walls, floor, and roof, but the structure is in good condition.

Water is delivered to Reservoir 3 from Mount Tabor Reservoir 1 (and Reservoir 5 after its construction in 1911). Both lines pass through sluice gates. Water leaves through the Gatehouse and is routed through two pipelines one of which passes through Pump Station Number 1 to Reservoir 4. A steel pipe extends around the perimeter of the reservoir and is tied to the irrigation system as well as washdown. Washdown water is drained through the outlet at the dam wall and a subsequent drain line. Site drainage is routed to catch basins and concrete ditches along the sidewalk.

36 Weir Building
Adjacent to the east is a smaller utilitarian concrete "36 Weir Building" (Screen House). Construction of this building is thought to date back to the building of the Westside Supply Line in 1945. It has a metal door facing east and two over two fixed pane wood windows on each of the other facades. Concrete steps lead up to this building. It is in good condition.

RESERVOIR 4

Reservoir 4 is, to the south of and 70 feet below Reservoir 3 approximately at an elevation of 229.5 feet above the low water level of the Willamette River. The reservoir water supplies "low service" to Portland's west side. The reservoir is irregularly shaped, 40 feet deep (second deepest of Portland's reservoirs), approximately 200 feet east and west, and 700 feet north and south with a capacity of 17.6 million gallons and covers 2.28 acres. A Gatehouse is located at the east end. A dam forms the east wall of the Reservoir. The other faces were built to conform, more or less, to the natural slopes at an approximate 1:1 slope. The exposed face of the reinforced concrete dam was formed in stone-like blocks, which were then bush-hammered and tooled as if they were natural stone. At the base are large coursed blocks. Above this base is a blind arcade and above this a dentil course. The whole is toped by a massive balustrade. A ten-foot wide walk runs across the top of the dam. At each end there were originally three-globe iron lanterns. Only the concrete pedestals remain.

Contributing buildings, structures, and objects

Basin and Accompanying Features
There is a ramp along the west slope of the basin. The lining was originally waterproofed with an asphalt coating. Various other waterproofing materials have been applied since that time.

Like Reservoir 3, the basin's concrete lining was reportedly reinforced with Ernest Leslie Ransome's patented "twisted iron" square bars placed ten feet on center in each direction and anchored at ten-foot intervals by iron bars driven a depth of 3 to 20 feet into the slopes and embedded in concrete. The basin was originally lined with asphalt for waterproofing. The reservoir basin is in relatively good condition with typical distress conditions primarily in the concrete panel joints. According to an 1895 newspaper account, nozzles or

fountains were originally installed at 50-foot intervals around the periphery of the basin. They were set at an angle so that columns of water were thrown toward the center of the basin. No other documentation for these fountains was found. Some cracking exists in the floor of the basin and some concrete panels were replaced in the 1980's. The basin is in good condition overall.

Encircling the basin is a 3-foot high concrete parapet wall topped by an ornamental wrought iron fence. Like Reservoir 4, the wall has a raised diamond motif set in recessed panels. The fence is made up of 1-inch square uprights between, 5 and 6 feet high, with tops hammered into spear shapes. Hammered double-scrolls are screwed on to secure the uprights to cross bars. Every other bar is approximately 4 inches taller and on these bars are two 3-inch hammered leaves. These are forged opposite of each other from two sides of the metal bar. At approximately twelve-foot intervals are taller bars. These have ball decorations below spear-shaped tops and are braced with curved bars on the water side of the wall. Incorporated into the fence are wrought iron gas lampposts of two styles, a single lamp and a triple lamp. Their bases, shafts and tops are highly ornate made up of various forms of scrolled bars with the hammered leaf motif repeated from the fence. In the1970s the Water Bureau encircled the basin with freestanding aluminum fixtures with conical shades and ceased to use the historic arc lamps. The parapet wall has cracking and spalling but is sound and in overall good condition. The cast iron fence needs to be refinished, otherwise the ironwork on the fence and lampposts are in good condition. The lamps need to be refurbished and put back into service.

A concrete walkway surrounds the parapet wall and was intended to serve as a promenade, while draining storm water away from the reservoir. At the north end of the basin a wide flight of concrete steps, flanked by concrete jardinières, connects the walkway to one of the principal drives through Washington Park. The chain link fence now enclosing the reservoirs blocks the stairs at the top and the stairway and jardinières are overgrown with ivy. Along the walkway east of the basin is a poured-in-place, reinforced concrete wall cast and finished to look like stone. Along the southwest curve is a poured-in-place, reinforced concrete retaining wall, cast in the form of stone-like blocks that were then bush-hammered. Set into this wall are two blocks giving patent numbers for the concrete construction: Ransome's Patent Construction 30522 (last digit illegible) and Ransome's Patent Concrete Finish 105800. The walkways have some cracking and spalling, but are in generally good condition.

Dam

The straight dam is approximately 250 feet long, 50 feet thick at its base and 13 feet thick at its top. The exposed southern face of the concrete and earth dam is decorated with a Romanesque style blind arcade and the concrete is finished to look like stone. Large individual numerals reading "1894" are applied to the south wall of the dam. The exact date of the installation of the numerals is unknown but they are apparent in a photograph taken in 1900. On top of the dam sits a massive concrete balustrade and an approximately ten-foot wide walkway. The dam and its features appear to be in good condition with some cracking apparent.

Gatehouse

The Gatehouse located inside Reservoir 4 at the center east of the dam and was built in the form of a round tower. Below its slightly projecting roof slab is a paneled frieze and below that a corbelled band. The

remainder of the wall was cast in the form of coursed, stone like block. The wall was then bush-hammered and tooled to give the appearance of natural stone. Windows are wood round-arched with four over four, double-hung sash. Metal screens have been added. A steel platform with valves is located on the west elevation. Cast into the floor slab are circular sidewalk type lights and this patent information: Ransome's Patent Construction 305229 and Ransome's Patent Light 448993. The Gatehouse contains inlet and outlet piping, a sluice gate, valves, overflow piping, and a steel holding tank. Alterations to the Gatehouse include replacement of the roof in 1987, replacement of original wood doors with metal doors. Water leaves the reservoir via the Gatehouse through a distribution line and a drain line. Cracks in various places in the gatehouse are the main sign of aging. The Gatehouse is generally in good condition.

Slopes to the east, south and west of the reservoir are planted with ivy. A basalt retaining wall runs along the east side of the drive west of the reservoir.

Pump House 1

Between Reservoirs 3 and 4, at the foot of the steep ravine below the Dam at Reservoir 3, is Pump House 1 (also referred to as Pump Station 1.) Built in 1894 at the same grade level as Reservoir 4, the pump house is a one-story reinforced concrete building. The wide doorway facing south is arched, originally with wooden window panels above the door in the arch. The arch windows appear to have been covered over with a type of patterned plexiglass. The two arched front windows have been covered and stuccoed. Other windows are wood, round-arched with four over four, double-hung sash covered with screens. Originally flat, a metal gabled roof was added at an unknown time. Pump House 1 contains the historic "Thumper," an 1894 Pelton wheel driven water pump that is still functioning. It was installed to regulate the water flow from Reservoir 3 to 4 and to discharge water to the west side distribution system. Originally, the pump also generated enough power to illuminate the park. Another supply line from the Pump House leads to the Reservoir 4 Gatehouse but is not in use. Cracks in the Pump House may have originated when modifications were made for the installation of 3 pumps in recent years. Some repairs have been made. The building is in good condition.

Generator House

Immediately east of Pump House 1 is the Generator House. Built in 1920, it is a small one-story rectangular flat-roofed concrete building with a dentilated cornice built into the side of the hill. It has three small horizontally pivoted wood framed windows just below the cornice. A metal door opens on the north elevation. It appears to be in good condition.

Water Fountains

Located at what was probably the historic entrance to the reservoir district, now defined by the chain link gates to the northeast of the basin of Reservoir 4, is a concrete fountain. It is approximately two and a half feet tall. A six faceted thick 18-inch bowl is seated on top of a short, decorative pedestal. The pedestal sits on top of a 3-inch high 18-inch wide concrete square. Water was evidently delivered to the bowl from a spout emerging from a 6-inch diameter concrete pipe with a flat-topped overhanging top piece. From this pipe, above the bowl a

smaller pipe emerges with a metal fitting that probably served as a spout. Although currently not serving its original purpose, the fountain is in good condition.

Another concrete drinking fountain stands on a 3-feet high pedestal on a concrete riser in front of the north-facing door of the Generator Building. A water spout for drinking is the middle of the 1-inch diameter bowl atop the pedestal. It appears to be in good condition.

Associated Landscaping at Washington Park Reservoirs Historic District

The most defining landscape principle of Reservoirs 3 and 4 is the open expanse of water, 49 feet deep and 40 feet deep, respectively. Because of the great depth and the due to the reflection of the towering fir trees that surround them, the water is a rich, deep hue. Situated in a natural deep ravine, their irregular shape, rusticated concrete structures and ornate wrought iron detailing of fences and lampposts, the reservoirs are a striking and elegant addition to the serene forest that makes up this end of Washington Park. From the high point on Southwest Murray at the nouthwest end of Reservoir 3, a striking view is provided of the water and all of the features of the reservoir. Reservoir 4 offers a grand vista from a point south along southwest Murray above the southwest side of the reservoir, of the City skyline, Mount Hood, and the watershed area, 50 miles to the east. A chain link fence encircles most of the site and a foot path traces the boundary of the fence. On the east side, the pathway follows a series of historic steps. In place for more than three decades, the fence is softened by the English ivy *Hedera helix* that makes for the primary ground cover surrounding the embankments. Other introduced ground covers include St. Johnswort *Hypericum calicynum* and periwinkle *Vinca major.* All trailing ground covers have been kept trimmed off the sidewalks and other structures, making a neat appearance, though the ivy has been allowed to cover original concrete planters and steps at Reservoir 3. The surrounding forest, not within the nominated boundaries, is composed primarily of Douglas fir *Pseudotsuga Menzesiii,* western red cedar *Thuja plicata,* and big leaf maple *Acer macrophyllum* all predominating native tree species of the Pacific Northwest. Under story shrubs include other natives, evergreen Oregon grape *Mahonia aquifolium / nervosa,* rhododendrons *Rhododendron species,* and a variety of deciduous shrubs such as snowberry *Symphoricarpos albus.*

Summary Statement of Integrity

The Washington Park Reservoirs remain today largely intact and in as-built condition. While the basins have been relined numerous times, the character-defining elements such as deep open water, parapet walls, iron fences, lampposts, gatehouses and features exist today with minor modifications. These modern modifications have not been sensitive to the original architecture; full hollow-core metal doors replaced original wood doors in 1987, a gable roof (originally flat) now covers the Pump House and much of the original landscape elements are over grown. The 1980s era aluminum light fixtures surrounding the basins do not match the period, yet their illumination and reflection in the water after dark provides a connection with the original design that included light fixtures. The period lampposts should be refurbished and used to provide lighting. Newer buildings and structures are situated primarily in one area, limiting their visual impact on the historic resource.

The perimeter fencing allows viewing of the resource from the path that follows the fence line. General maintenance of the concrete and metal is needed on many of the resources. Some concrete repair is needed on various resources and the fence could be refinished. The historic interiors of the gatehouses are also intact including much of the mechanical equipment.

Though the Washington Park Reservoirs 3 and 4 are 109 years old, they remain today largely intact and in as-built condition. They also continue to function as the primary water source for Portland's west side. Protection of the watershed coupled with a well designed distribution system has given Portland high grade water since 1895 when it first flowed to the City's faucets. The following remarks are taken from recent reports on the district and offer a good overview of the resource:

No waterborne disease outbreak or water quality incident of public significance has ever been recorded in connection with Portland's open reservoirs...[1] *All features in good condition. ...a detailed maintenance program could extend the useful life of the open reservoirs to the year 2050.*[2]

[1] Montgomery Watson Harza. Open Reservoir Study: Phase I Summary Report. City of Portland, January, 2002.

[2] Montgomery Watson Harza. Open Reservoir Study, Draft TM 5.7 Facilities Evaluation, City of Portland. August, 2001.

STATEMENT OF SIGNIFICANCE
Overview

The Washington Park Reservoirs Historic District is located in the southeastern portion of Washington Park (formerly City Park) approximately three-quarters of a mile west of downtown Portland, Multnomah County, Oregon. Built in 1894, the district includes Reservoirs 3 and 4. The district meets Criterion A for its association with significant historic events, in the areas of community planning and development, engineering, architecture/landscape architecture, and recreation. Along with Mount Tabor's Reservoirs 1, 5, and 6, which are located due east of Washington Park, Reservoirs 3 and 4 serve as the main storage and distribution system for Portland's water supply, which originates from a pristine reserve in the Cascade Mountains. The reservoirs are located in an urban forest reserve, and one of Portland's first parks originally known as City Park. The layout of the reservoirs, on the east and west side of the Willamette River, was one of the early connections to the two sides of Portland divided by the river. The result of a government-business paradigm for public works, funding the creation of Portland's Bull Run water system, of which the reservoirs are an integral part serving as the water storage and delivery system, was a landmark process for Oregon's legislature that illustrated a commitment to public health and an adequate supply of high quality water using a cost effective delivery design. Consequently, subsequent and similar public-private investments ensued, such as the funding and construction of Portland City Hall in 1895, the development of park planning, and the installation of public drinking fountains, the Benson Bubblers in 1912, in downtown Portland. The reservoir construction embodied innovative engineering utilizing patented reinforced concrete techniques that had not yet become widely accepted. The engineering involved the active channeling of water in a gravity-fed system to provide power for pumps and lighting making the system fiscally responsible. The irregular shape and great depth of the water basins and the views afforded of the reservoirs and the surrounding landscape, harmonized with the site chosen for their construction. The Romanesque architectural style chosen for the gatehouses, weir buildings, dam faces, parapet walls, balustrades, and other features exhibited the quality of "beautility"[1] encompassing both highly attractive design with exceptional attention to detail and utilitarian function. The carriageways and walkways provided accessibility making the reservoir site a recreational destination. The 1890s was a period of intense interest in improving growing urban areas, a reaction to the oppressive conditions found in American cities in the wake of the Industrial Revolution. Constructed as the City Beautiful movement was rising throughout the country, the reservoirs' design reflects the mood of the period in which they were built.

The district also meets Criterion C, as the embodiment of distinctive characteristics of a type, period, or method of construction using masterful techniques, and as an early example of concrete construction and romantic eclectic architectural design. Designed and constructed during the Progressive Era, the reservoirs, with their careful attention to aesthetics and innovative engineering technology, serve as intact physical representation of this period in Portland's history. The concrete techniques were innovative, utilizing patented methods of Ernest Ransome, one of the earliest American pioneers in various aspects of concrete construction. The historic structures and buildings are built of reinforced concrete, using the patented "Ransome System" and may be categorized as Late Victorian – Romanesque Revival style of architecture. Collectively, the reservoir complex represents the largest, earliest application of the Ransome construction type in Portland, and one of the earliest

in the country. The decorative wrought iron fence and lampposts were designed by prominent local architects Whidden and Lewis who went on to design Portland City Hall, now on the National Historic Register. The wrought iron work was manufactured by Old World trained and locally celebrated craftsman Johan Tuerck. The engineering showed creative solutions to water delivery using natural elevation differences with minimum reliance on other sources of power. Because of the care in planning and construction, Reservoirs 3 and 4 are important pieces of living history providing service and beauty as they first did 109 years ago.

In 1871 Portland purchased 40 acres of land in the hills at the western edge of the city from Amos and Melinda King for $32,984. Thus began the process of building City Park, one of Portland's first parks, that was renamed Washington Park in 1912. The Water Committee sited these reservoirs within the already defined boundaries of City Park by compensating the Parks Bureau and acquiring additional property to complete the complex. Using a natural steep-sided ravine with dramatic scenic virtues, the designers married utility with accessible beauty and recreation with their construction design. From above Reservoir 3, the site included a view of Mount Hood and the vicinity of the Bull Run watershed, connecting citizens not only with the water itself, but the region from where the water flowed. The elegance of the built environment illustrated sensitivity to aesthetics and embodied the notion of "beautility" by adapting classical architectural styles to utilitarian structures that featured innovative technology. The reservoirs elevated the storage and distribution of water by enhancing water's highly prized characteristics in a landscape. They served as a recreational amenity as well, enriching the landscape of two of Portland's largest and oldest parks with vistas of deep open water and period historic structures, and fountains to create a destination for inspiration and rejuvenation for park users. The dams had finished decorative faces and concrete carriageways spanned the dams and walkways encircled the basins. The use of lamps, powered by the generation of electricity from the fall between the two reservoirs, even ensured evening use of the park. The walkways surrounding the basins and dams were illuminated and the light reflecting in the deep water created a romantic feeling. Reservoirs 3 and 4 were a monument to the importance of water as a life-giving substance and as a beautiful visual resource for the benefit of the community.

The period of significance for Reservoirs 3 and 4 has been determined as 1894 – 1953. Constructed in 1894, they have continued to operate as water storage and distribution facilities as well as park amenities until the present. The closing date, 1953, marks the fifty-year cut-off date for periods of significance where activities begun historically continued to have importance as they have at these reservoirs.

The History and Development of Portland's Water System

Early Water: In the earliest days of settlement, Portland residents drew their water from wells located on or near their property. That pattern continued until the mid-1850s, when drainage from the growing population began to seep into the wells.

In 1856, Steven Coffin, Finice Caruthers and Jacob Cline founded the Portland Water Works and petitioned City Council to lay pipe. City Ordinance #54 granted the company a franchise for conducting water into the

city. Their water supply was a creek on Caruther's Donation Land Claim in Marquam Gulch. It fed through a series of wood pipes to provide service from Southwest Fourth Street east to the river.

In 1859, Portland Water Works was sold to Robert Pentland. Pentland installed a steam pump at the foot of Southwest Mill Street to draw water from the Willamette River to supplement the Caruther Creek supply. He also hoped to pump water to supply water to the higher elevations from a reservoir at Southwest Fourth and Market Streets.

Three years later, faced with personal financial challenges, Pentland sold the water system to Herman C. Leonard and John Green for $5,400 (equivalent of $103,000 in 2001 dollars.)[2] Leonard and Green had already established themselves as utility entrepreneurs, starting the Portland Gas Light Company in 1859. The new enterprise was called the Portland Water Company. With a city population nearing 3,000, Leonard and Green began to upgrade the system immediately with cast iron pipes imported from the east coast and erecting a 300,000-gallon per day pumping station at the foot of Southwest Market Street. Leonard and Green also augmented the supply with water from Balch Creek northwest of town, piped to a reservoir at what are now Southwest 15th Avenue and Alder Street and providing gravity service to the higher elevations west of Fourth Street.

As Portland's population grew to 8,000 by 1870, so did the Portland Water Company's efforts to expand capacity. In 1868, it built an 800,000-gallon per day pumping station at the foot of Southwest Lincoln Street. Three years later, it installed a new steam powered pump to increase daily capacity from that location to 1.8 million gallons per day. The Portland Water Company also built a new reservoir at Southwest Sixth and Lincoln Street, and expanded the one at Fourth and Market Street.

Complaints of cost and quality prompted Mayor Philip Wasserman in 1871 to explore options for a new water service. He appointed a 5-member committee to consider the possibilities. The committee's report, issued in 1872, recommended municipally owned water service and identified the Willamette River or Stephens' Springs as possible sources. The projected cost for such a system was $1 million. Portland's Common Council approved the report, but the city's charter did not empower the city to finance such an enterprise. That power was reserved to the state legislature. For its part, the legislature was fearful of taking on such a large debt on behalf of Portland. (Such fear was not unfounded; as late as 1909, when Portland was four times larger, surrounding Multnomah county still only had a total capital investment of $22 million.)

At the same time, the privately owned Portland Water Company continued to expand. New pumps were installed in a new "Round-House Station" at the Southwest Lincoln Street pumping station, increasing capacity there to 4 million gallons per day. Ten years later, demand continued to surge as Portland continued to grow. By 1880, the city's population was 18,000 and would grow to 46,000 by the end of the decade. This growth prompted the Portland Water Company to build the Palatine Hill Pumping Station four miles upstream from the city, with new capacity of 10 million gallons per day. At this time, the Portland Water Company abandoned the

Caruthers Creek source as it fell victim to development. Completed in 1884, Palatine Hill was inadequate within 8 years as Portland's population continued to nearly double.

Relying on the Willamette River as the water source, the Portland Water Company also faced increasing challenges in water quality. Waste matter from upstream mills posed problems. Sewer disposals posed problems. And occasional tidal shifts affected the flow of the Willamette also posing problems. As Portland headed into the 20th Century, a new water source would need to be found.

The Portland Water Committee: As the Portland Water Company struggled to keep up with demand and its degrading water source, the city government once again picked up the question of a city-owned water works. Of the 3,000 public water systems built in the United States between 1860 and 1896, half were municipally owned.[3] In the 1885 state legislature's special session, Republican Joseph Simon orchestrated legislation to create the Portland Water Committee, passed on November 25, 1885. Simon's bill appointed fifteen of the city's most prominent business and civic leaders to serve as members: John Gates, C. H. Lewis, Henry Failing, Frank Dekum, L. Fleischner, H. W. Corbett, F. C. Smith, W. K. Smith, J. Loewenberg, S. G. Reed, R. B. Knapp, L. Therkelson, Thomas M. Richardson, A. H. Johnson, W. S. Ladd. The Committee was charged with the responsibility "to construct or purchase, keep, conduct and maintain water works . . . with an abundance of good, pure and wholesome water." The Committee was also authorized to issue up to $700,000 in tax-free bonds (equivalent to $13 million in 2001 dollars). Upon establishing a new water works, the Committee was to disband in favor of a permanent five-member Water Commission.[4]

The bonding authority in the legislation was significant in its size and in its structure – representing a sizable risk. Bonds were (and are) a common financial mechanism to fund government operations but particularly capital projects. They would be issued for a set period of time (typically 15-25 years) and paid back with interest from a city's general fund. At this time in Oregon, before a city could go into debt, it had to receive authorization from the state legislature. Typically, the legislature set a debt limit and authorized the governmental jurisdiction to issue bonds up to that limit. Portland's debt was limited to $100,000.[5] In this one piece of legislation creating the Water Committee, the state legislature established a debt limit seven times that of the state's largest city – and gave the authority not to the elected officials of the city required to pay back the bonds but to the fifteen member Water Committee created by the legislation.

This act was challenged almost immediately. The owners of private water works sued the Water Committee, challenging the constitutionality of the charter amendment. The decision was finally rendered by the Oregon Supreme Court. Justice William Thayer ruled, "It would be difficult we think, to find any class of cases in which the right of eminent domain is more justly or wisely exercised than in the provision to supply our crowded towns and cities with pure water . . ."[6]

At their first meeting on December 8, 1885, the Committee elected Henry Failing as President, a post he remained in for twelve years. Equally important was the influence of William S. Ladd until his death in 1893. The first step was the acquisition of the existing Portland Water Company. Following Thayer's decision, that

sale was completed by the end of 1886 for $464,551. It subsequently also acquired the Crystal Springs Water Company for $150,000.

The second step was to locate a water source for the long-term. The committee initiated action in January, 1886, when it advertised to acquire water rights. One offer came from Charles Talbot and A. G. Cunningham who contacted the Water Committee regarding Bull Run. As early as 1883, Talbot, an engineer for the Northern Pacific Railroad, had conceived of supplying water from Bull Run Lake to Portland. He convinced Cunningham to join with him in acquiring land and riparian rights from the Oregon & California Railroad. Talbot and Cunningham offered the land and rights to the Water Committee for $130,000 ($2.5 million in 2001 dollars).

The Water Committee hired Colonel Isaac Smith as staff engineer to investigate possible sources. The Committee directed Smith that the Willamette River needed to be replaced as the source and that pumping was prohibitively expensive. With that direction, Smith focused on possible gravity supplies. As Smith explored options that included Oswego Lake, Eagle Creek and Clackamas River, he increasingly was attracted to the Bull Run Lake, River, and its tributaries in the forested mountains east of the city and west of Mount Hood.

The investigation of the Bull Run vicinity in 1886 was challenging. The watershed was "a rugged wilderness impassible for a horse and difficult for a man to penetrate."[7] The steep hillsides were obstructed with standing and fallen timber, interlaced with vines and briars. Upon reaching Bull Run Lake, at an elevation of 3174 feet above sea level and approximately 50 miles from Portland, Smith deemed the water as pure and clear as any they had ever seen. Delivering this water to the city of Portland, however, posed a formidable task. Smith faced several false starts in attempting to define a specific course, however, after five months in the wilderness, Smith and his party reported to the Committee on Bull Run that a pipeline could and should be built.

The Water Committee then set about securing riparian rights and rights-of-way for the pipeline. They sent Smith back towards Bull Run to secure pipeline rights-of-way and riparian rights from individual settlers. Typically, given the imposing landscape, owners were selling their water rights for $1-5 ($18-$90 in 2001 dollars). The Committee also began negotiations with Talbot and Cunningham regarding their claims to water rights, eventually securing those rights for one sixth of Talbot and Cunningham's original asking price, or $21,000.

As much of watershed remained unsettled and subject to the Donation Land Act, the Water Committee also set about courting the federal government. Early in 1892, the state's congressional delegation urged President Benjamin Harrison to exclude Bull Run lands from future settlement or sale. The President had received authority for such set-asides the year earlier with the "Act to Repeal Timber Culture Laws". On June 17, Harrison signed a proclamation declaring Bull Run as the nation's fifth national forest reserve.

The Committee also continued to grapple with the existing supply. Demand was increasing by an average of 25% per year. Even though a new source had been located, the Committee realized that capacity from the old

Portland Water Company would need to be expanded until Bull Run could be brought online. The pumps were running 24 hours a day and yet the reservoir levels continued to drop, forcing the Water Committee to shut off the water flow during some peak periods.

With $600,000 of the initial $700,000 in bond revenues already spent as early as 1887, the Committee sought legislative authority to issue another $500,000 in tax-free bonds. Though passed by the legislature, Democratic and populist governor Sylvester Pennoyer vetoed the authorization, objecting to the bond's tax-free provisions benefiting the wealthy and banking interests. In the following legislative session in 1889, the Water Committee sought $1.5 million in tax-free bonding capacity to pay for expanding existing capacity and for the Bull Run system. Again, it passed the legislature but was vetoed by Governor Pennoyer – ostensibly now because the water originated from Mt Hood glacier run-off and "would cause goiter to the fair sex of Portland."[8]

Given the challenges of getting authority through the Governor and Portland's population growth, the Water Committee reassessed their vision for the Bull Run system. The proposed system was projected to provide 15 million gallons per day at a construction cost of $1.4 million. The committee reassessed demand projections and re-engineered the Bull Run system to produce 24 million gallons per day. This enlarged system would cost $2 million. The Committee then went to the 1891 state legislature for bonding authority of $2.5 million. To undermine Pennoyer's possible veto, they demonstrated that the water source was not from glacier run-off and stipulated that the bonds would not be tax-free. The legislature passed the authority and Pennoyer approved the bill. An inadvertent discrepancy in the legislation's bonding authority and limits however yet delayed the project another two years. In 1893, the discrepancy was corrected and the Bull Run challenge now transformed from money and politics to engineering.

The Bull Run System: While the Water Committee worked on securing the money, Isaac Smith worked on the engineering and eventually would oversee its construction. Smith was born in Fredericksburg, Virginia. A graduate of Virginia Military Institute, he devoted his entire career to civil engineering. He was a captain in the Engineer Corps of the Confederate Army, afterwards engaging in public land surveys in the state of Washington. Settling in the Pacific Northwest, he built lighthouses at Shoalwater Bay and platted the gas and water works in Tacoma, Washington. As engineer for the Northern Pacific Railroad, he located the line from Portland to Kalama, Washington and from Kalama to Tacoma, Washington, as well as the line across the Cascade Mountains from Tacoma to the Yakima and Columbia Rivers. Smith also built the system of steamboat locks around Willamette Falls in Oregon City, Oregon.

Smith had been appointed Chief Engineer by the Water Committee on December 22, 1885. In 1886, after surveying a line from Bull Run, Smith presented to the Water Committee "Specifications of Works for the Water Supply of the City of Portland." In that document, he outlined the requirements for headworks, pipelines and reservoirs. He refined his design and in 1891, Smith presented another report to the Committee in which he stated: "A high and low service reservoir are needed for the economical operation of the works, and to compensate for the varying consumption of water at different portions of the day."[9] The high service reservoir was at a higher elevation and served customers whose home or business were at a greater elevation than those

served by the low service basin. As design work progressed, he solicited bids for materials and construction costs, including the construction of roads along the pipeline. All this preliminary work would result in speedy construction.

Smith's overall gravity based design was both simple and sophisticated. He established a headworks 710 feet above the Willamette River on the Bull Run River and ran pipeline west 24 miles to Mount. Tabor. With a daily capacity of 24 million gallons, the 33-42" riveted steel pipes ran initially parallel to the Bull Run River to avoid rockslide areas. From roughly the confluence of the Sandy and Bull Run Rivers, the pipeline then ran in a westerly direction through Gresham. With standpipes at Lusted and Grant's Butte, the end point was Mt. Tabor Reservoir Number 1 at 402 feet above the Willamette.[10]

Once at Reservoir 1, the system began to distribute the water. From Mount Tabor, 1 million gallons per day would flow directly to East Portland for "high" service; four million gallons per day would flow nearby to southeast to Reservoir 2 at 220 feet above the Willamette with distribution to East Portland; and nineteen million gallons per day cross under the Willamette and would flow west 6 miles to Reservoir 3 at City Park (now Washington Park) 290 feet above the Willamette River. At Reservoir 3, four million gallons per day would go to "high" service in West Portland and fifteen million gallons would go to nearby Reservoir 4, 70 feet below Reservoir 3 and 220 feet above the Willamette River. Thirteen point five million gallons of this would provide low service to Portland and 1.5 million gallons would be pumped hydraulically west to "extra high" service (this original hydraulic pump, known as Thumper, is housed in Pump House 1 and still operates.)[11]

Building the first pipeline from Bull Run in the pre-automobile steam and muscle era of the 1890s was a difficult and heroic physical feat. In 1891, Smith convinced Multnomah County to construct four miles of roads and bridges west from the Sandy River through a landscape "covered with dense growth of brush and small timbers."[12] The road six miles east from the Sandy River to the Bull Run headwaters was to be the work of the Water Committee, completed largely by Italian immigrants in 1893-94. The land was cleared by hand because the forest was too thick for horses. Specifications called for all trees, logs and brush to be cleared along 33' right of way with trees being cut to a maximum height of twelve feet. The entire conduit required the excavation and refilling of 270,000 cubic yards of dirt, moving 10,000 cubic yards of loose rock, and cutting through 2,000 cubic yards of solid rock. The pipeline itself was the work of Hoffman & Bates Construction Co., which used six-horse wagon teams to haul 17' five-ton pipe sections along dirt roads to be riveted in place; of particular challenge was laying 2,000 feet of pipe along the bed of the Willamette River.

Construction on the Reservoirs 1, 2, 3 and 4 and ancillary buildings occurred simultaneously with the pipeline. The goal was to complete the reservoirs by January, 1895 when the first Bull Run Water was to flow to Portland. Excavation began in 1893 and was completed in 1894. Laborers were readily available due to the "depression," and with good planning, the work moved along at a rapid pace.

The engineering team of Charles Oliver and James Dix Schuyler worked under Chief Engineer Isaac W. Smith in the construction of the reservoirs. Oliver was born in Iowa in 1856 and came to Oregon in 1864. He was

educated in Portland primary and secondary schools, but apparently acquired his engineering skills on the job rather than in the classroom. Prior to his employment by Smith, Oliver had worked in the City Engineer's office as chainman and roadman. Following 1895 he continued to work for the Water Department, primarily at the Bull Run headworks. James Dix Schuyler of Los Angeles, California was hired as a consulting engineer. His brother Phillip, was the first secretary of the Portland Water Committee. Schuyler designed and constructed the Sweetwater Dam near San Diego and engineered the Hemst Dam in Riverside County, California.

Of the construction, Oliver observed: "I was superintendent of construction on Reservoirs Nos. 1, 2, 3 and 4 during the great depression of 1893 and 1894. They did not call it a depression then, but used the more expressive term, 'hard times'. The Water Committee built all of the reservoirs by day labor, except the excavation that was let by contract. Lawyers, doctors, dentists, accountants, and all classes of men were employed on the work as day laborers at $1.50 per day for common labor, and they were glad to get it. Men with families were employed almost exclusively. At times we had as many as 1500 men on the payrolls for the four reservoirs."[13] In total, the reservoir system had 66 million gallons combined capacity, enough to supply the city for 4-5 days.

Completion: The conduit and distribution system took nearly two years and $2.4 million to build. As the project neared completion, the Water Committee issued a report on its operations in October, 1894:

Millions of dollars have been spent, a great public work carried to completion; no scandal exists; no charges of mal-administration are made; not even a hint of speculation is suggestion . . . The work of the Committee is practically done. It must be judged by its works. The City of Portland will have a supply of water which for purity is probably unexcelled anywhere in the world.[14]

Upon completion, an Oregonian article of January 1, 1895 stated, *When this work is completed the brilliantly lighted walks surrounding the reservoirs will be the most popular promenades in the city during the evenings of the warmer months of the year ...These walks afford a delightful promenade for visitors who are separated from the basin itself by a concrete wall surmounted by a neat fence. All the reservoirs have been constructed in the most substantial manner and the effect of harmony it was possible to obtain by a little attention to the adornment of the finished work has not been overlooked by the engineers in charge."*[15]

Meeting their construction deadline, on January 2, 1895, Bull Run water flowed into the city for the first time. In an ironic twist, it was Governor Pennoyer, perhaps accustomed to the fuller flavor of Willamette River water, who took the ceremonial first drink and announced its inferior quality: "No Body!"[16]

Washington Park Reservoirs: Situated in a natural ravine, the site for Reservoirs 3 and 4 was determined by geography and availability of land. All of Reservoir 3 and most of 4 is located in the original 40.78-acre portion of Washington Park, originally called City Park. In 1871, the city had purchased the land from Amos King for $32,000. The area bounded by Lovejoy on the north, Jefferson on the south, 18th on the east and into Washington Park to the point at which 33rd Avenue would have connected was originally part of King's

Donation Land Claim. The remainder of the land for Reservoir 4 to the south was purchased by the Water Committee for the complex.

These reservoirs and ancillary buildings are both creatively engineered and aesthetically attractive. The method of reinforced concrete construction adopted for the water system was quite innovative at the time. Although unreinforced concrete was nothing new at the time, reinforcing methods were in the early experimental stages. The method of concrete construction used for the reservoirs had a patent, known as the "concrete and twisted iron patent." The concrete finish on the buildings was also patented, as were the circular lights cast in the concrete of the gatehouse floors and pump house roof, and even the concrete mixer itself. All these patents were held by Ernest Leslie Ransome, considered by historians as the leader in early reinforced concrete technology in the United States.[17]

The concrete work for the reservoir buildings is notable, not only because it was technically innovative, but also because of its aesthetic qualities. Wooden formwork was constructed to give the poured concrete the general outlines of stone blocks. Elaborate scaffolding allowed workers to climb up the outside of the structures after each pour of concrete. When the beveled formwork was removed, the concrete was tooled and bush hammered to simulate rusticated stone. This construction technique differs from the more common "cast stone" block construction that was often used in residential construction at the time. The concrete itself was notable. Josson brand, imported through Antwerp, Belgium, was used until shipments were delayed in the middle of the project. Instead of holding up the project, North brand cement, available locally, was substituted.

All of the reservoir basins, with the exception of Reservoir 2, now demolished, were "lined with concrete strengthened with twisted iron placed at intervals of 10 feet in each direction, and anchored at intervals of 10 feet by means of anchors driven to a depth of from 3 to 20 feet into the slopes forming the sides of the reservoirs and imbedded in concrete."[18] The concrete basins were lined with asphalt, imported from a California firm, Alcatraz Asphalt refinery. "The asphalt used in the reservoirs is pure natural bitumen...."[19]

Contracts for the design of the ornamental wrought iron fences and lampposts around the 1894 reservoirs were awarded to Whidden and Lewis, who also designed Portland City Hall in 1895. On September 20, 1894, the Water Committee contracted with Johann H. Tuerck to manufacture the fences and lampposts from wrought iron. Tuerck, born in Germany in 1863, was trained in Bayreuth, Munich and Nuremberg before he came to America in 1888. Eighteen months after arriving in Portland in 1890 he established Portland Art Metal Works. The Oregon Chapter of the American Institute of Architects presented Tuerck with their premier award in June, 1928, in honor of his "exceptional ability."[20] He is credited with the work for major banks, clubhouses, churches and residences built in Portland from the 1890s. Some of his projects included the main entrance door of the Julius Meier home, the conservatory entrance of the Harry A. Green home, as well as work for the Congress Hotel and the Temple Beth Israel. The ornamental wrought iron fences and lampposts on the Reservoirs are prime examples of his work.

Washington Park Reservoir Repairs, 1894-1905: As Reservoir 3 in City Park was being filled on December 14, 1894, cracks were observed in the bottom. It was emptied on December 20th. Reservoir 4 was partially filled from December, 1894 to the following September, when cracking forced engineers to empty it also. Trouble with the new, expensive reservoirs caused embarrassment and "charges of maladministration were made" concerning who was at fault. Just two days before New Years Day, 1895, the Oregonian ran the flattering spread on the Bull Run system and the reservoirs, another article highlighted the problems with Reservoirs 3 and 4. The article entitled, "Cracks in the Reservoir," ran on December 30, 1894: "Members of the water committee are passing sleepless nights over this trouble," it read. Blame was primarily laid on James D. Schulyer, the highly paid Los Angeles-based consulting engineer. Schuyler. had conveniently left the Portland area to be back home for the holidays when the cracking became apparent. Debate followed on whether to complete the last $500 payment owed to him.

Eventually repairs were made and the basins partially filled. During 1896, as the cracks increased in number and size, the basins were only partially filled or kept empty. It soon became obvious that the hillside above the two reservoirs was sliding. The slide was quite extensive: 29.27 acres in area, 3,400,000 tons of soil. To solve the drainage problem, believed by the engineers to be the cause of the slide, the Water Department constructed a system of drainage tunnels. Elevators lowered workmen 115 feet below grade, where they excavated and shored up the six-foot high tunnels. The tunnel system was finally completed in 1905. The tunnels are still in place, though filled with gravel.

With the hillside stabilized, the reservoirs could also be repaired and put back into service. By 1904 Reservoir 4 had evidently been completely empty for sometime, as the Oregonian of July 31, 1904 reported that there were "...shrubs growing luxuriantly in the bottom...subsisting on soil which has washed through the broken walls. Squirrels live in the bushes..." Repairs were completed and the reservoirs were back in service in 1905. The work was done under the supervision of engineer D. D. Clark, who replaced Schuyler. Clark was also responsible for the design of the 1911 Reservoirs 5 and 6 in Mount Tabor Park.

Remarkably, the water system had been designed so that Bull Run water flowing to the reservoirs could bypass the reservoir basins and be routed through the gatehouses directly to consumers. It was, therefore, possible to maintain uninterrupted service to Portland's west side during the years 1895 to 1905 when Reservoirs 3 and 4 were in and out of service.

Contracts for all the basins seem to indicate that they were originally to be lined with brick and then coated for water proofing instead of being constructed with concrete panels. As the bricks were not available when construction began, concrete was utilized. Had brick lining been used, the cracking of the basins of Reservoirs 3 and 4 might have been avoided.

Completing the Bull Run System: In 1903, the city of Portland reorganized its government and the 15-member Water Committee was replaced by a 5-member Water Board. The shift in oversight did not appreciably change the operations or policies. One of the first actions of the Water Board was to endeavor to restrict public access

to the approximately 120 square mile Bull Run watershed. In December, 1903, the Water Board officially requested limited entry, placing the site off limits to the public. President Theodore Roosevelt agreed that with the unique character of the land and on April 28, 1904 signed Public Law #206, popularly known as the Bull Run Trespass Act. Currently this watershed is still jointly managed by the city of Portland and the U.S. Forest Service. Public access is restricted.

While the Water Committee aggressively sought to create a long-term water system with capacity for 24,000,000 gallons per day, Portland's population continued to grow exponentially. Following the 1905 Lewis & Clark Exposition, Portland boasted 172,000 residents; nearly three times the number when construction on the Bull Run system began in 1893.

Shortly after the Exposition, the Water Board decided to build a second conduit, a $3 million project that included two additional reservoirs and additional capacity of 50 million gallons per day and storage capacity of 125 gallons. While this project too would be funded by bonds, the process was considerably less rigorous. In 1902, Oregon voters had approved the Initiative and Referendum Amendment to the state constitution. This change allowed voters to create laws by direct ballot. In 1906, the voters approved an initiative that gave Oregon cities the right to amend their own charters. This change eliminated the need to go to the state legislature to raise debt. The City Council then referred the Water Board's request to the city voters, who narrowly approved the measure.

After some public debate, it was decided to build two additional reservoirs on Mount Tabor and, at the same time that land was being acquired for the reservoirs, to purchase additional land for creation of a public park. Early in 1909 sites for the reservoirs were secured and in October of that same year contracts were awarded to Robert Wakefield & Company for construction of Reservoirs 5 and 6. Both reservoirs were completed in 1911. Since that time no new open reservoirs have been constructed in Portland and the original reservoirs continue to supply water to Portland. By 1911, the physical structure of the Bull Run system was in place with headquarters, two conduits and six reservoirs.

In 1913, the city charter was revised and the Water Board transformed into a city bureau under the supervision of a City Commissioner. With the Bull Run system in place, the Bureau continued to concentrate on expanding capacity and distribution to meet the growth of the city. Though changes were made to the delivery system and the headwaters, the Water Bureau made no significant modifications to the aesthetic design of the reservoir system. In 1952, the Bureau completed a fourth conduit, with capacity of 100 million gallons per day. In 1981, an underground reservoir was added at Powell Butte with capacity of 50 million gallons. In addition, the system has 69 smaller tanks and standpipes with a capacity of 68.2 million gallons located throughout the city.

Community Planning and Development in the Progressive Era

The Progressive Era was characterized by reform movement in all aspects of American life – labor, politics, engineering, recreation, and public health. The National Municipal League was formed in 1894 to review

municipal works in a direct response to water-borne illnesses, epidemics, and other health concerns. The trend toward public ownership of utilities expanded. In 1896 less than half of U.S. cities owned their water works but by 1915 two thirds did.

The legislation to create Portland's Water Committee designated fifteen prominent businessmen to develop a municipal water system. While the bonds to build the system were guaranteed and paid for by Portland's general fund, it was not until 1913 that the Bull Run Water system came under the direct control of the city government. Prior to that time, the Water Committee was solely responsible for providing water to the citizens of Portland. The undertaking was not only remarkable for its architecture and engineering but as a relatively early example of private-public partnership.

The development of the Bull Run Water System is best understood from the perspective of public works historian Martin Melosi. As he states in The Sanitary City: Urban Infrastructure in America from Colonial Times to the Present, "By the late 19th century there was a strong feeling among municipal leaders that any respectable community needed a citywide waterworks." Melosi continues that the investment in a municipal waterworks was the first municipal system "that demonstrated a city's commitment to growth:"

A healthy community was an essential ingredient in the process of growth. Many city leaders concluded that control of the sanitary quality of its water service would be difficult if the supply remained in private hands. The push for municipal ownership, therefore, had as much to do with the desire to influence the growth of the cities as to settle disputes with private companies over specific deficiencies.[21]

Governor Pennoyer considered the Willamette a sufficient source of drinking water, as did business leader Simeon Reed. The Willamette River flows north, dividing the city into an East and West side. It was a readily accessible water source. It would have been much less expensive to develop a water source right in the city rather than to seek one over 50 miles to the East. Public health trends, at the time, did not seem to focus on drinking water, but rather sewers and refuse collection. Technology existed to filter impurities from water but no move was made by the Water Committee to institute filtration for the Willametter River water in the nine years it took to create the Bull Run system. The emphasis on a quality water source and the desire to find an alternative to the Willamette River, already of questionable quality due to industrial and sewage dumping, was remarkably forward looking and Portlanders and wholesale community customers continue to benefit from Bull Run's quality and cheap delivery system even today.

Despite the enormous expense, the Water Committee was determined to provide quality water and plenty of it. The first investment was $700,000 in bonds, seven times the city's debt limit and an approximate investment of $15 per capita. By the end, the Water Committee spent $5,400,000 in bond revenue (the equivalent of $100 million today) costing approximately $31 per capita. At the time, water rates were roughly $12 per household. The bond obligation of property tax revenues to pay for the water system far exceeded anything the city contemplated before. The city itself was limited to $100,000 in indebtedness. As late as 1907, the city had only

seven outstanding bonds totaling just less than $9 million. Of these, the water system made up two-thirds. The next closest bond was bridges at $1.1 million.[22]

In an era of laissez faire capitalism, municipal ownership of utilities was unusual especially one created by the business leaders. Although the same arguments made in 1913 regarding public ownership of the water supply held true for other utilities, such as trolley, gas, electricity, telegraph or telephone systems, water remained the sole municipally owned utility in the city until mass transit was acquired in the mid-20th century.

The dedication of the Water Committee represents a business-led initiative to build Portland into a major city. From this early successful initiative, these and other business leaders led a series of efforts that are highlighted by Whidden & Lewis's City Hall in 1895, the Portland Park Association of 1898, the 1905 Lewis & Clark Exposition, and the Greater Portland Plan of Edward H. Bennett in 1912 (Bennett was the associate of Daniel Burnham of the "White City" fame.). The sum total of these city-building activities served as the catalyst that launched Portland's great growth spurts in the 1910s and 1920s and have contributed to the ongoing "livability" of the city of Portland.[23]

Architecture, Landscape and Engineering in the Progressive Era

"... beauty has always paid better than any other commodity and always will." Daniel Burnham, Designer of Chicago's "White City."[24]

The City Beautiful movement arose out of the Progressive Era. Some contend that the City Beautiful ideals were launched at the 1893 World's Columbian Exposition in Chicago. Designers such as architect Daniel Burnham and landscape architect Frederick Law Olmsted, of New York's Central Park fame, created the "White City" to illustrate how beautiful the built environment could be in a well-planned city. European styled-classical beauty coexisted with the most modern technological inventions. Moving sidewalks and modern lighting paired with buildings designed in a neoclassical style. Carefully implemented street plans included landscapes, outdoor sculpture, and grand water features.

The Exposition brought city planning to the forefront. Many architects and landscape designers were influenced by this Exposition and they brought their excitement back to their respective communities. Professional publications and promotional literature reached across the country. Completed in 1894, the reservoirs were designed and constructed at the start of the excitement about the Exposition. H.W. Corbett, business leader on the original Portland Water Committee when the reservoirs were designed and built, went on to chair the 1905 Lewis and Clark Exposition commission in Portland.

The Columbian Exposition of 1893 show-cased water as a primary aesthetic feature in city planning. The exploitation of the waterfront as a space for beauty and public recreation was a major innovation. Before 1893 water frontage was primarily commercially exploited. Though the Olmsted firm preferred naturalistic water features, they appreciated the aesthetic character that open water brought to a landscape, even with the sterile

banks and contrived shapes that water storage reservoirs usually exhibited. In The Relation of Reservoirs to Parks, written in 1899, Frederick Law Olmsted, Jr. discusses the virtues of reservoirs in parks and sums up his views as follows:

All reservoirs, have, in addition to their essential quality of storing water, an element of landscape effect; namely, that of an expanse of clear, sparkling water. This same element forms the chief feature of many landscapes in public parks, where it is created at large cost, and it is clearly a thing of great value to the public when it can be made available. In itself, regardless of its outline or setting, a body of water is beautiful and refreshing, and its value to the public is so well recognized that provision is very often made for giving the public access to the enclosure about a reservoir, whence it surface may be seen.[25]

Reservoirs 3 and 4 clearly benefited from thoughtful planning, both in the design of the gravity fed water system, still integral to water delivery in the city today, and in the architecture that graced the landscape. Although formal, the oval and round shapes of the gatehouses enhance the romantic character of the setting, conjuring images of "Old Europe." This romanticism was typical of the period.

Concrete was only beginning to be considered a serious building material when the reservoirs were constructed. Collectively, the Bull Run system as built in 1894 is perhaps the earliest large application of reinforced concrete in the state and one of the earliest major reinforced concrete projects in the country. The headwaters, now demolished, and reservoirs with associated buildings were all constructed using a reinforced concrete system call "the Ransome System," created in a series of patents by Ernest L. Ransome. The method of concrete construction used for the reservoirs had a patent, known as the "concrete and twisted iron patent." The concrete finish was also patented, as were the circular lights cast in the concrete of the gatehouse floors and pump house roof, and even the concrete mixer itself.

Reinforced concrete first developed as a construction technique in the 1850s. The earliest accepted use of reinforcing in concrete was by Frenchman Jean-Louis Lambot in the early 1850s. He reinforced his concrete boats with iron bars and wire mesh. He also had some plans for using this material in building construction because he applied for patents in France and Belgium in 1856. About the same time, in 1854, William Wilkinson of Newcastle-on-Tyne erected a small two-story servant's cottage reinforcing the concrete floor and roof with iron bars and wire rope. Wilkinson took out a patent on his technique and is generally credited with constructing the first reinforced concrete building. In the United States, the first building in reinforced concrete was by American mechanical engineer, William E. Ward, in Port Chester, New York, completed in 1875. Over the next quarter century, Ernest L. Ransome pioneered the development of reinforced concrete in the United States, while Europeans G. A. Wayss of Germany and Francois Hennebique of France paralleled Ransome's innovations on the continent. Architectural critic Ada Louise Huxtable has described Ransome as the "Father of reinforced concrete" "As engineering and design, Ernest Ransome's work deserves a prominent place in the story of American architectural advance."[26]

Ernest Leslie Ransome (1844-1917) was born in Epswich, England. His family had engaged in the manufacture of agricultural machinery since the late eighteenth century and some of Ransome's ancestors had been inventors as well. Between 1844 and 1867 his father, Frederick Ransome, developed and manufactured a patented concrete stone. Following an apprenticeship in the family business, Ernest came to the United States to exploit his father's patent. He settled in San Francisco where he established a business to manufacture concrete blocks. His first notable innovation came in 1884 when he used twisted square bars as reinforcement, employing the technique in building the Arctic Oil Works completed that year. The round bars previously used had not established a good connection with the surrounding concrete. These twisted square bars, which came to be known as "Ransome bars," were used as reinforcement for Portland's reservoirs.

"Up to about 1888 my work in reinforced concrete was largely confined to what we now term small and unimportant structures," wrote Ernest Ransome in a contribution to the history of Reinforced Concrete.[27] His first major work was the 3-story Bourn & Wise wine cellar at St. Helena, California and the Academy of Sciences Building in San Francisco, both in 1888. The following year saw construction of the Alvord Lake Bridge in Golden Gate Park, the first reinforced concrete bridge in the United States. Besides the 1894 Portland Reservoirs, major works known using the Ransome system included the 1894 Stanford Museum in California and industrial buildings such as the 1897 Pacific Coast Borax Building in Bayonne, New Jersey, the 1903-04 Kelly and Jones Machine Shop in Greensburg, Pennsylvania. One of the largest projects using the Ransome system was the United Shoe Machinery complex in Beverly, Massachusetts, begun in 1902; that site was 74 acres and 3,340 linear feet. The same year, using the Ransome system, the 16-story Ingalls Building (Cincinnati, Ohio) was the first reinforced concrete skyscraper. It remained the tallest reinforced concrete building until 1923 when the Medical Arts Building was constructed in Dallas, Texas. Other concrete achievements utilizing the Ransome system in the era include construction of the first concrete street in Bellefontaine, Ohio in 1891, and the construction of the reinforced concrete Harvard Stadium in Cambridge, Massachusetts in 1904.

Summary of Significance

Of the more than 5,000 properties included in the last Portland Historic Resource Inventory only 52 were considered Rank 1 and of the 52, the reservoirs of Mount Tabor and Washington Park accounted for 6 of them. Quotes from the city's recent evaluation of the reservoirs offer a good summary of this resource:

...Reservoirs 3 and 4 are situated in the jewel of the Portland Parks System, Washington Park...The great amount of historical documentation available on these properties indicates their historical importance to the City. The reservoirs are historically significant as examples of early engineering, and serve as monuments to the social history of the City's growth and development. They provide an early example of a planned landscape, including the views and vistas into and out of the landscape."[28]

Footnotes

[1] Lutino, Cielo. Merker, B., Green, R. "The City Beautiful Movement and Civic Planning in Portland, Oregon 1897 – 1921 National Register of Historic Places Multiple Property Nomination." 2001.
[2] Consumer Price Index, 2001 (All inflation estimates based on this reference.)
[3] Melois, Martin V. The Sanitary City: Urban Infrastructure in America from Colonial Times to the Present. (Baltimore: Johns Hopkins University Press, 2000.)
[4] "Waterworks for the City of Portland, Oregon" (Portland, OR: R. H. Schwab & Bro, 1886.)
[5] Ibid
[6] John B. David, David P. Thompson and Jacob Kamm v. The City of Portland, et al, October 28, 1886.
[7] City of Portland, Oregon. Water: Portland's Precious Heritage. (Portland, OR: City of Portland, 1983.)
[8] Ibid.
[9] Ibid.
[10] Ibid.
[11] Montgomery Watson Harza. Open Reservoir Study, Draft TM 5.7 Facilities Evaluation, City of Portland. August, 2001.
[12] Oregonian, January 1, 1895, p. 16-17.
[13] Quoted in City of Portland, Water: Portland's Precious Heritage (Portland, OR: City of Portland, 1983) p. 32.
[14] Ibid.
[15] Oregonian, January 1, 1895, p 16-17.
[16] Ferriday, Virginia Guest. Portland Reservoirs Nos. 1, 2, 3, 4, 5, and 6 (Thematic National Register Nomination), 1984.
[17] Oregonian, January 1, 1895, p. 16-17.
[18] Ibid.
[19] Ibid.
[20] Newspaper, unnamed. "Honor Paid Craftsman," June, 1928.
[21] Melois, Martin V. The Sanitary City: Urban Infrastructure in America from Colonial Times to the Present. (Baltimore: Johns Hopkins University Press, 2000.)
[22] Proposed Amendment to Section 227 of the Charter of the City of Portland, November 19, 1908, p. liv-lv.
[23] Abbott, Carl. The Great Extravaganza: Portland and the Lewis and Clark Exposition (Portland, OR: Oregon Historical Society 1981); City of Portland, Proposed City Beautiful Multiple Property Submission, 2000.
[24] Kallus, Melvin. Frederick Law Olmsted: The Passion of a Public Artist. (NY: NY University Press: 1990.)
[25] Olmsted, Jr., Frederick Law. The Relation of Reservoirs to Parks. (Boston: Rockwell and Churchill Press, 1899.)
[26] Quoted in www.cummings.com/arc.html.
[27] Ransome, Ernest L. "Reinforced Concrete Buildings." From A Selection of Historic American Papers on Concrete 1876 – 1926.. American Concrete Institute: Detroit, Michigan, 1976.
[28] Montgomery Watson Harza. Open Reservoir Study, Draft TM 5.7 Facilities Evaluation, City of Portland. August, 2001.

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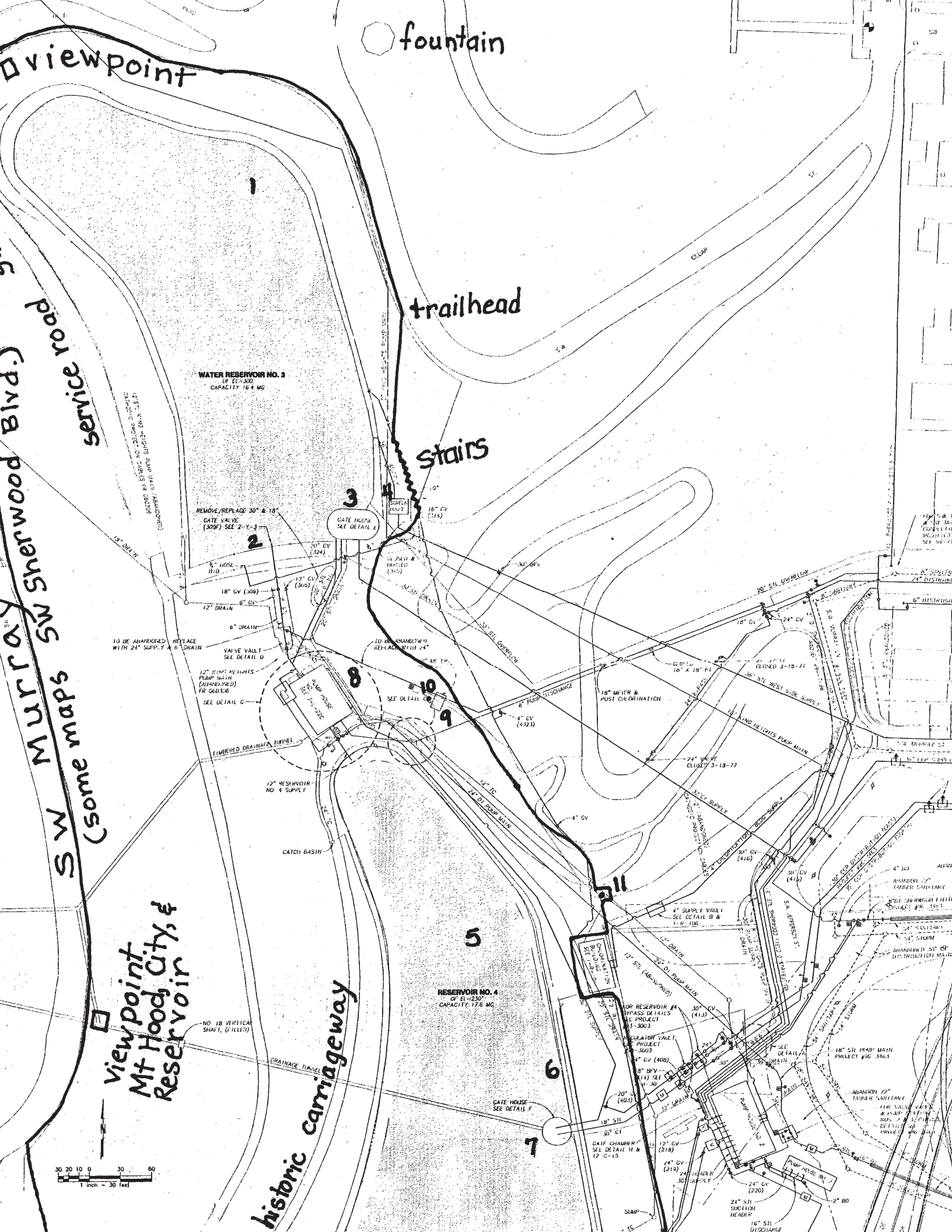
VERBAL BOUNDARY DESCRIPTION

Washington Park Reservoirs Historic District is located in the eastern section of Washington Park in southwest Portland, Multnomah County, Oregon. The boundaries proposed for the National Register nomination include: beginning on the southwest and continuing north on the curb line of SW Murray where it is adjacent to the southwest finger of Reservoir 4 at the perimeter chain link fence line to the curve above Reservoir 3 continuing on the curb line east and then south to the intersection with SW Cedar Street where the boundary continues south on the curb line of SW Cedar Street to the location where SW Cedar Street makes a curve to the east continuing south at the trail head following the trail down the east side of Reservoir 3 down the 48 stairs and continuing on the fence line down the steep slope to the historic fountain which sits just outside the fence line where the boundary juts out to two feet around the fountain and then back to the fence line to the northeast corner of the chlorination building where the boundary turns west to the northwest corner of the building where the boundary turns south to the southwest corner of the building where the boundary turns east to the southeast corner of the building and the boundary continues south along the base of the earthen dam in a straight line south to the perimeter chain link fence turning southwest the length of the south side of Reservoir 4 and continuing north along the chain link fence through the steep and rugged ravine to the point of origin at the curb line of SW Murray following the natural perimeter of the steep ravine that holds the resource as depicted by the heavy solid line drawn on the accompanying map.

BOUNDARY JUSTIFICATION

The boundary follows the natural ravine terrain of the reservoir district and includes the basins and their features including the walkways, fences, and lampposts, the dams, carriageways, gatehouses, other buildings, objects, and the primary viewpoints on the west side of Reservoir 4 and at the northwest tip of Reservoir 3 significant to Washington Park Reservoirs Historic District. The perimeter fence, in place since 1970, follows the natural ravine site and generally marks the boundary, except for the area on the northeast side of Reservoir 4 where the boundary departs from the fence line to include a historic fountain.

WASHINGTON PARK RESERVOIRS
HISTORIC DISTRICT
MULTNOMAH COUNTY OREGON


viewpoint
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trailhead
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viewpoint Mt Hood City & Reservoir
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RESERVOIR NO. 4
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CAPACITY 17.6 MG
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GATE HOUSE SEE DETAIL F
VALVE VAULT SEE DETAIL D
PUMP HOUSE SEE DETAIL C
SEE DETAIL G
SEE DETAIL B
CHLORINATION BUILDING SEE DETAIL A
GATE CHAMBER SEE DETAIL H & 12-C-15
TIMBERED DRAINAGE TUNNEL
DRAINAGE TUNNEL
CATCH BASIN
NO. 18 VERTICAL SHAFT, (FILLED)
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TO BE ABANDONED REPLACE WITH 24"
12" RESERVOIR NO. 4 SUPPLY
12" KING HEIGHTS PUMP MAIN (ABANDONED) FR 060336
12" KING HEIGHTS PUMP MAIN
24" DI PUMP MAIN
18" METER & POST CHLORINATION
4" SUPPLY VAULT SEE DETAIL B & 1-R-116
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1 inch = 30 feet

Photo List for:
Washington Park Reservoirs
Historic District
City of Portland
Multnomah County,Oregon

The following information applies to all photographs:
Photographer: Stu Levy
Photo date: February, 2003
Negative location: 1934 SE 56th Avenue, Portland, Oregon 97215

View: Reservoir 3, looking southeast
Photo Number: **1**

View: Reservoir 3, looking west
Photo Number: **2**

View: Reservoir 3, Gatehouse & Carriageway, looking east
Photo Number: **3**

View: Reservoir 3, Gatehouse, looking south at north elevation
Photo Number: **4**

View: Reservoir 3, Gatehouse, looking northwest at southeast elevation
Photo Number: **5**

View: Reservoir 3, looking west at Gatehouse &Weir Building (Screen House)
Photo Number: **6**

View: Reservoir 3, Fence & Lamppost detail
Photo Number: **7**

View: Reservoir 3, Dam, Balustrade, Blind Arcade, and Pier
Photo Number: **8**

View: Reservoir 4, looking south
Photo Number: **9**

View: Reservoir 4, Gatehouse & view, looking east
Photo Number: **10**

View: Reservoir 4, Gatehouse, looking southwest at north elevation
Photo Number: **11**

View: Reservoir 4, Gatehouse and Dam looking west
Photo Number: **12**

View: Reservoir 4, Pump House 1, looking northwest at south and east elevations
Photo Number: **13**

View: Reservoir 4, Pump House 1 and Generator Building, looking northwest at south elevations
Photo Number: **14**

View: Reservoir 4, Water Fountain
Photo Number: **15**

NPS Form 10-900-a

OMB Approval No. 1024-0018

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number 1 Page Amendment

Washington Park Reservoirs Historic District
2403 S.W. Jefferson Street
Portland, Multnomah County, Oregon

NRIS #03001447
List Date: January 15, 2004

Address Amendment

The purpose of this continuation sheet is to provide a new address for the Washington Park Reservoirs Historic District. The owner of the property, the city of Portland, supplied the correct address after the date of listing. The correct address for the nominated parcel is 2403 S.W. Jefferson Street, Portland, Oregon, 97201.

James Hamrick
Deputy State Historic Preservation Officer

12/15/05
Date

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number 6 Page Amendment

Washington Park Reservoirs Historic District
2403 S.W. Jefferson Street
Portland, Multnomah County, Oregon

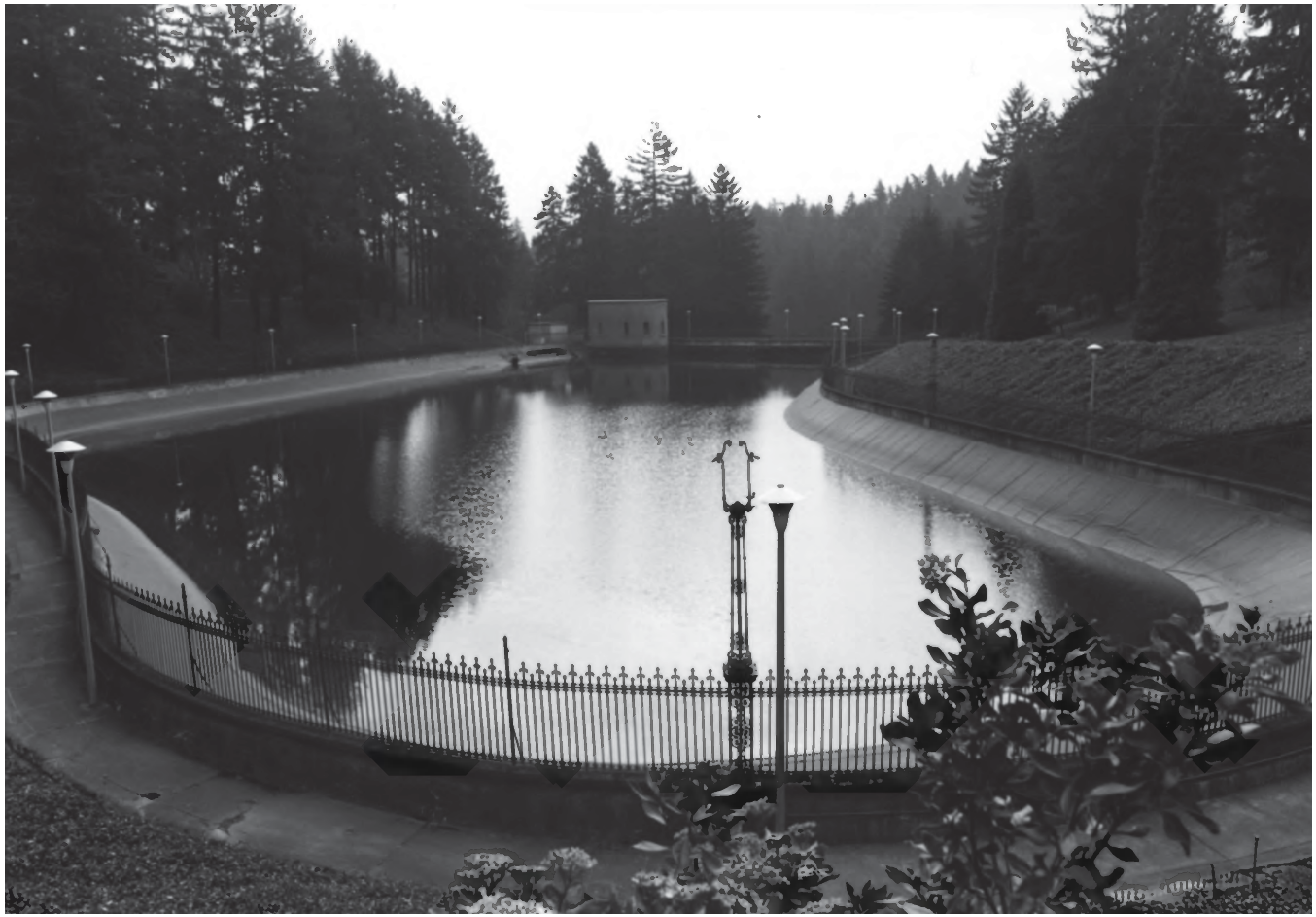
NRIS #03001447
List Date: January 15, 2004

Function Amendment

The purpose of this continuation sheet is to amend the Historic and Current Functions to add: INDUSTRY/PROCESSING: waterworks.

James Hamrick
Deputy State Historic Preservation Officer

12/15/05
Date



Washington Park Reservoirs
Historic District

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Washington Park
Reservoirs Historic District

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Washington Park Reservoirs
Historic District

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Historic District

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Historic District

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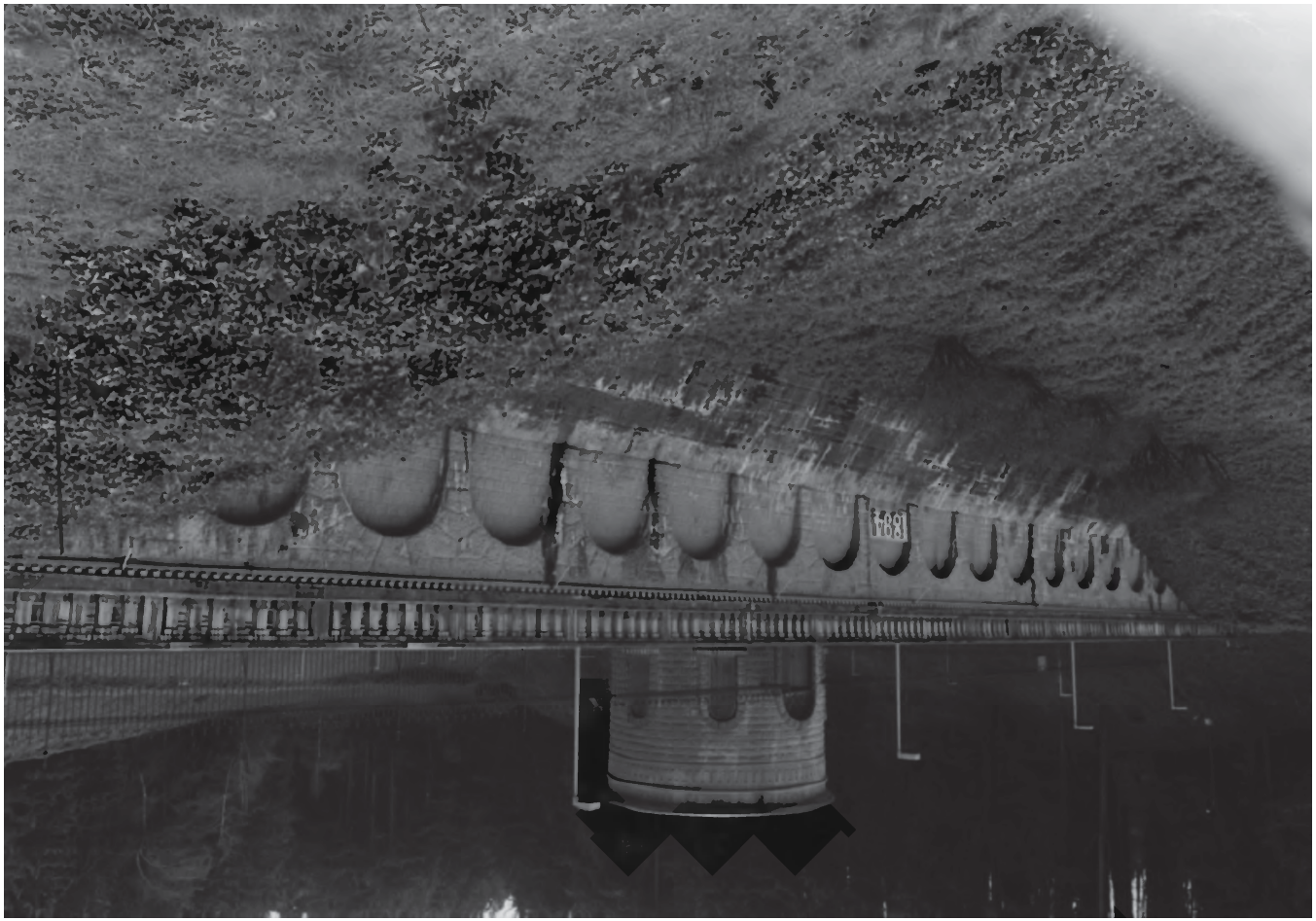
1881

Washington Park Reservoirs
Historic District

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Washington Park Reservoirs
Historic District

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Washington Park Reservoirs
Historic District

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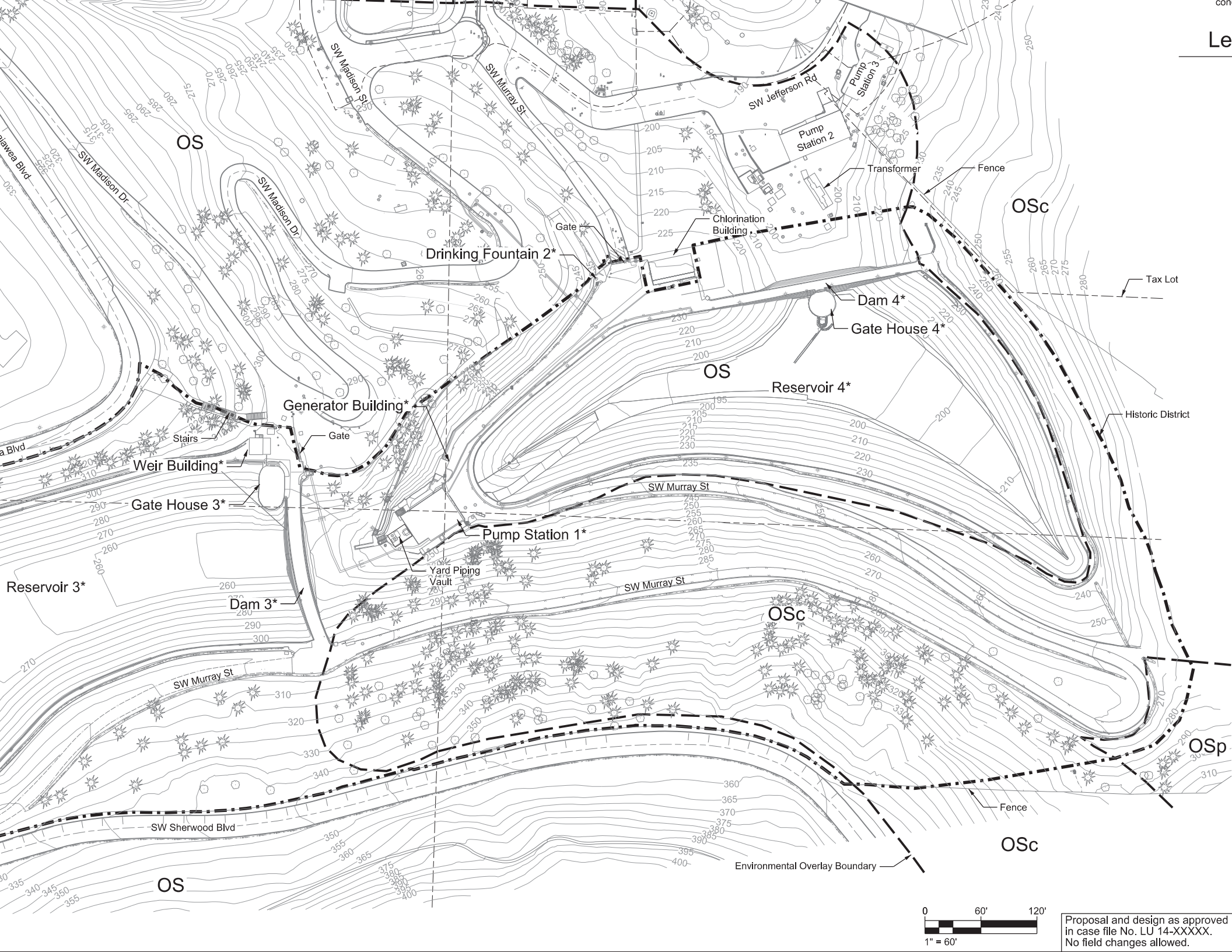
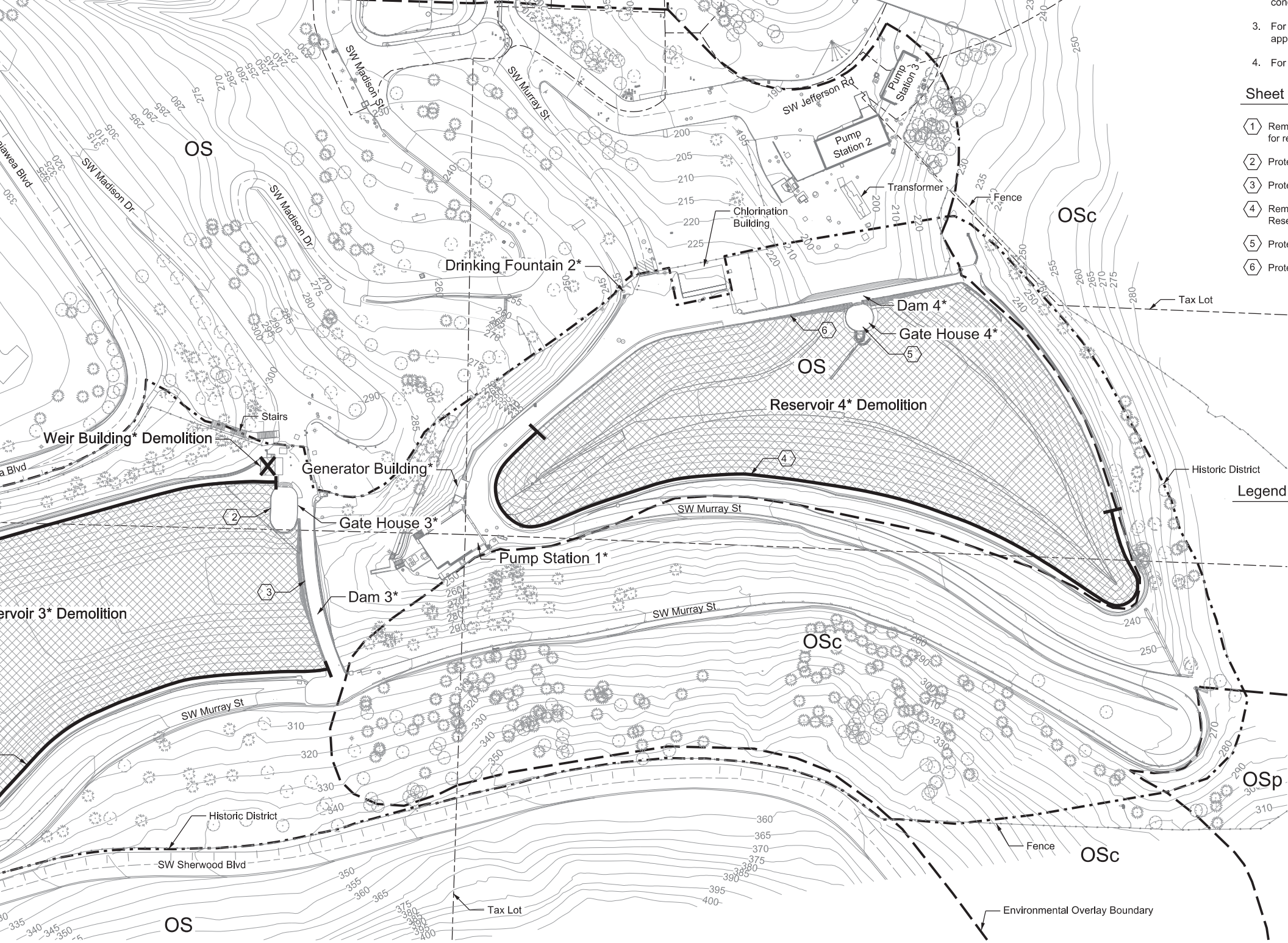
NOTICE
ANYONE THROWING OBJECTS OF
ANY KIND INTO THIS RESERVOIR
SHALL BE SUBJECT TO ARREST
UNDER PROVISIONS OF SECTION 14.1353
CITY OF PORTLAND POLICE CODE.
THIS IS YOUR DRINKING WATER ! ! !

Washington Park Reservoirs
Historic District

15


SW Madison St
SW Murray St
SW Jefferson Rd
Pump Station 3
Pump Station 2
Transformer
Fence
OS
OSc
SW Madison Dr
Chlorination Building
Gate
Drinking Fountain 2*
Tax Lot
Dam 4*
Gate House 4*
Reservoir 4*
Historic District
Generator Building*
Stairs
Gate
Weir Building*
Gate House 3*
Pump Station 1*
Yard Piping Vault
Reservoir 3*
Dam 3*
SW Murray St
OSp
SW Sherwood Blvd
Environmental Overlay Boundary
0
60'
120'
1" = 60'
Proposal and design as approved in case file No. LU 14-XXXXX. No field changes allowed.



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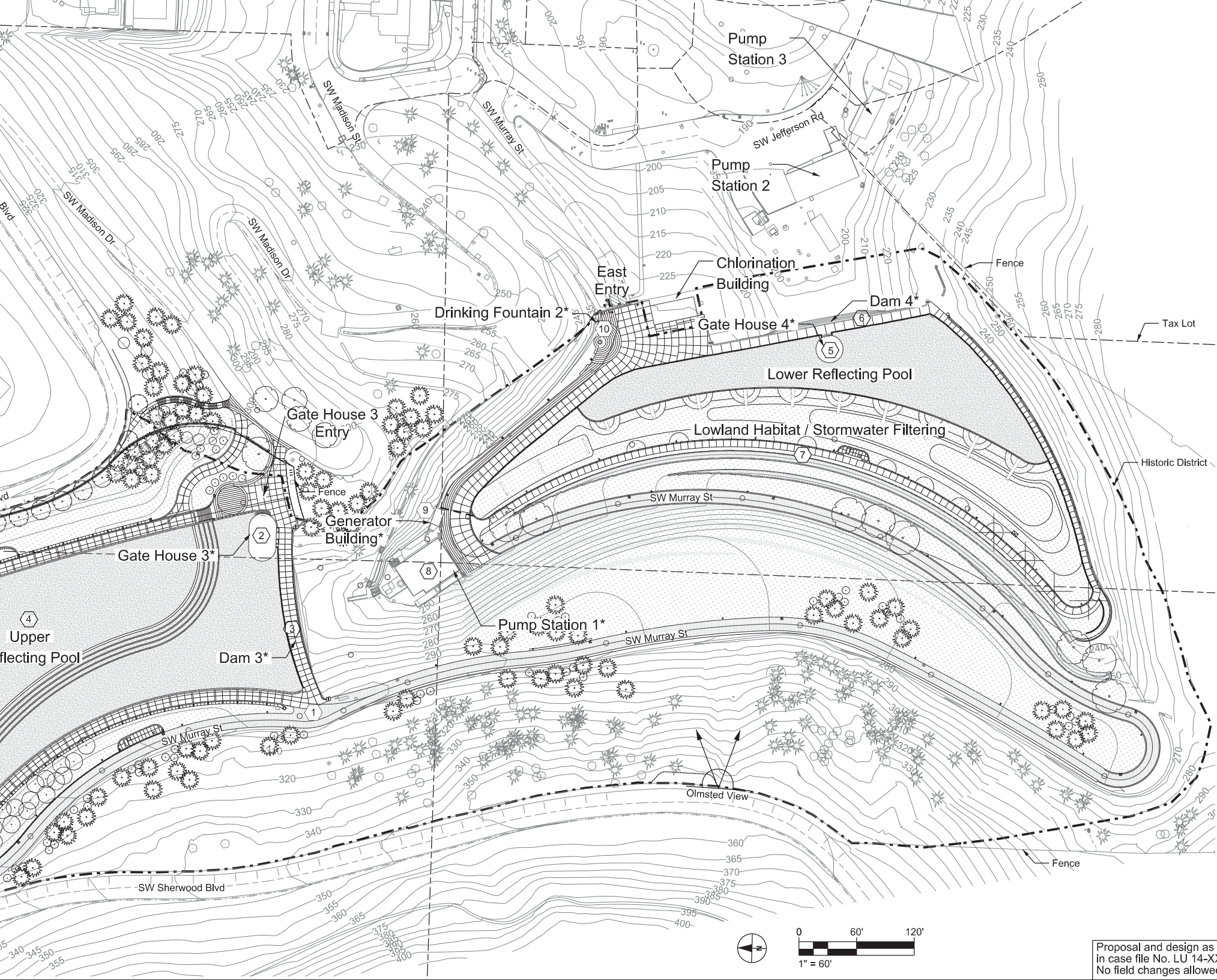
Proposal and design as approved in case file No. LU 14-XXXXX. No field changes allowed.



Proposal and design as approved in case file No. LU 14-XXXXX. No field changes allowed.