



# **Tabor Reservoir Adjustments Land Use Review Application**

**September 2014**



# **Tabor Reservoir Adjustments**

## **Land Use Review Application**

### **PROPERTY INFORMATION**

Address: 6325 SE Division Street

State ID#: T1S, R2E, Section 5, TL 100

Tax ID#: R 332503

Zoning: OS and OSc, Open Space with environmental conservation (Ec) overlay zoning

Other: Mount Tabor Park National Historic Landmark (Mount Tabor Park Historic District), Mount Tabor Reservoirs National Historic District

Owner: City of Portland  
Owner's Representative:  
Portland Water Bureau  
1120 SW 5<sup>th</sup> Avenue, Room 600  
Portland, OR 97204

Program Manager: Teresa Elliott, PE, Principal Engineer  
Design Project Manager: Patrick Easley, PE, Senior Engineer  
Senior City Planner: Tom Carter

## **ACRONYMS AND ABBREVIATIONS**

BDS	Bureau of Development Services
CAC	Community Advisory Committee
EN	Environmental Review
EPA	US Environmental Protection Agency
FERC	Federal Energy Regulatory Commission
HD	Historic District
HLC	Historic Landmarks Commission
HR	Historic Resource Review
LT2	Long Term 2 Enhanced Surface Water Treatment Rule
LUR	Land Use Review
MTNA	Mount Tabor Neighborhood Association
PP&R	Portland Parks & Recreation
PWB	Portland Water Bureau
SHPO	State Historic Preservation Office

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## EXECUTIVE SUMMARY

The City of Portland is required to disconnect three uncovered reservoirs at Mount Tabor from the City's drinking-water distribution system by December 2015 in order to comply with the U.S. Environmental Protection Agency's (EPA) Long Term 2 Enhanced Surface Water Treatment Rule (LT2) [71 Federal Register 654 (Jan 5, 2006), amending 40 CFR Parts 141 and 142; also see, Oregon Administrative Rules Chapter 333, Division 61]. They must be physically disconnected in a way that prevents water in them from being released—even accidentally—into the drinking water distribution system. The deadline for compliance to stop delivering finished drinking water from the uncovered reservoirs at Mount Tabor is December 31, 2015.

This application for Land Use Review Type III Historic Resource Review (HR) and Environmental Review (EN) is submitted for work to be constructed under the Tabor Reservoir Adjustments, Phase 2 project (informally identified during public involvement as the Tabor Disconnection project). This project includes the changes required to disconnect the reservoirs from the drinking water system and to continue to operate the City's water system without them. Other minor work associated with drinking water operations is also included.

As a part of the disconnection process, some underground pipes that convey water from the reservoirs into the drinking water system will be cut and their ends plugged, and a new bypass pipe will be installed. The work to be done will avoid damaging the reservoirs or other historic structures. The changes can be reversed if, in the future, the federal rule is reversed. The proposed work will take place at 11 discrete work areas in the park and includes only the changes required to disconnect the reservoirs from the drinking water system and to continue to operate the City's water system without the Mount Tabor uncovered reservoirs.

When the project is completed, the reservoirs will be filled using the existing inlet pipes, drained into the City's storm sewer system, cleaned and periodically refreshed. This will continue until a future project to determine the future use of Mount Tabor Reservoirs is completed.

The Portland City Council has approved and funded a public process to plan the future use of the reservoirs and is scheduled to begin planning in fall 2014. That project has not yet started. The proposal presented in this document does not include anything about the reservoirs' future uses because those uses have not been determined and are outside the scope of the disconnection project. Under the current proposal, the reservoirs will be available to be filled for decorative purposes.

The proposed work will have no significant effect on the historic structures, minimal effects on the environmental zone and minor impacts to trees outside of the environmental zone. Effects on park users and park operations will be temporary in nature during construction. When the project is complete the project work areas will be

restored to match the existing conditions and will look and feel about the same as it does now, except in the dog park where trees will be removed and in places where new trees and other vegetation are planted.

## SECTION 1 - INTRODUCTION

The City of Portland is required to disconnect three uncovered reservoirs at Mount Tabor from the City's drinking-water distribution system by December 2015 in order to comply with the US Environmental Protection Agency's (EPA) Long Term 2 Enhanced Surface Water Treatment Rule (LT2). They must be physically disconnected in a way that prevents water in them from being released—even accidentally—into the drinking water distribution system. The deadline for compliance to stop delivering finished drinking water from the uncovered reservoirs at Mount Tabor is December 31, 2015.

To disconnect the reservoirs, it is necessary to cut and plug in 15 places the outlets that deliver water from the reservoirs into the drinking water system. The outlets will also be blocked at the reservoirs. The inlets and drains will be screened to prevent intrusion of insects, animals, humans, or waste into the pipes.

Then in order to continue to deliver the necessary volume of water to the drinking water distribution system, a bypass pipe and two connecting pipes must be constructed to carry it. In order to operate the water system successfully, PWB must also install two backflow preventers, two above-ground air vents, two sub-grade vaults, and covers of different sizes and shapes over manholes, sampling ports, and vaults.

PWB seeks to gain approval for several improvements that will help operate the water system. First, PWB proposes to install an emergency generator and fuel tank in Gatehouse 6 East. This generator will provide emergency power when needed to operate the buried Tabor Pump Station, which supplies water to Reservoir 7, a small covered storage reservoir near the crest of Mount Tabor. PWB proposes to install a cathodic protection system by the pump station. This system protects metal pipes and appurtenances from corroding. It requires an above-ground equipment cabinet. And finally, PWB proposes to install a SCADA (Supervisory Control and Data Acquisition) equipment cabinet above ground along SE 60<sup>th</sup> Ave behind the sidewalk.

Prior to submitting this Type III application, PWB conducted a public outreach program including ten walking tours, two community meetings, and project website outreach. The bureau also worked closely with a group of interested neighbors (the Community Advisory Committee, CAC) to identify and address public concerns about the project. This application includes many of the recommendations made by the CAC as well as input from the other sources.

The description of the work has been organized into 11 discrete work areas, each with differing characteristics. These are the same work areas identified and discussed in the public outreach.

The application is in two parts: the narrative (the main body of the application) and the appendices that supplement the narrative. Section 1 of this LUR application narrative covers background information, a summary of public outreach and an overview of

Mount Tabor. Section 2 describes the proposed work and the proposed land-use actions required. Section 3 covers the historic resource review and Section 4 covers the environmental review. Section 5 addresses the proposed tree, environmental, historical and dog park mitigations.

Appendix A summarizes changes in project approach made during the public involvement. Appendix B includes the technical land use drawings showing existing conditions, proposed work, construction management, landscaping and mitigation. Appendix C covers the construction management plan narrative and supplements the construction management plan sheets in Appendix B. Appendix D contains highlights from the Mount Tabor Master Plan. Appendix E includes before and after renderings of some of the work areas. Appendix F covers PP&R's Tree Protection Plan which addresses tree removals, protection and mitigation requirements. Appendix G summarizes the previous land use history of the site.

## **Project Outcomes**

Upon completion of the project, park users and neighbors can expect the following:

- PWB will continue to fill the reservoirs and periodically refresh the water in them until the future use planning is completed or until City Council directs otherwise.
- The reservoirs will retain existing inlet pipes or weirs maintaining the ability to fill the reservoirs in a manner comparable to the existing conditions.
- The reservoirs will continue to have the ability to be drained to the sewer system and the existing wash-down piping system used to for cleaning the reservoirs will remain in place.
- The historic structures will have been protected from damage and kept in their current condition with no significant impacts or changes.
- Roads, trails and grassy areas that were disturbed by construction work will have been repaired and restored.
- All excavations will have been filled to restore and blend in with the original contours and all disturbed ground will be planted to blend with the surrounding vegetation.
- PWB will restore the west dog park entrance<sup>1</sup>.

## **Public Outreach and Involvement**

As part of the public outreach process, PWB conducted 10 walking tours for the general public to look at the proposed work, and for PWB to explain what the project entailed

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<sup>1</sup> The west entrance to the dog park (off leash area) in Mt. Tabor Park has two gates – a pedestrian gate and a vehicle gate – in Work Area 2. The pedestrian gate will be temporarily moved. The vehicle gate will be removed temporarily during construction. Both gates will be replaced when the pipe installation work at this location is complete.

and look for solutions to minimize impacts on the park and historical features. In all, over 70 citizens attended these tours. PWB posted the same information about the project on the website and provided materials for self-guided tours.

Concurrently, Commissioner Amanda Fritz, who oversees Portland Parks and Recreation (PP&R), reached out to the Mount Tabor Park neighbors to develop an expanded public outreach and involvement effort to make sure that neighbors and appropriate City staff were fully informed and involved in the new proposal.

The purpose of this expanded public effort was to fully inform citizens about the project proposal, gather their comments and suggestions, and refine the proposal based on community priorities. In particular, Commissioner Fish described his charge to PWB in an email to David Shaff (May 14, 2014) in this way:

“to review all the proposed options with a number of important considerations in mind, including the following: cost, environmental impacts, historic resource impacts, project schedule, federal compliance deadline, traffic impacts, and other impacts to park users and park neighbors.”

PWB, working with both Commissioner Fish and Fritz’s staff, convened a CAC and engaged a professional facilitator. The CAC consisted of people living in the Mount Tabor Neighborhood Association (MTNA) area. Citizens from other neighborhoods were invited, but none volunteered to participate in the short time that was available.

The CAC worked together and with other interested citizens to develop a list of priorities, recommendations, and requests to be considered by PWB and decision makers at the City. PWB staff met with the CAC five times (May 1, 12, 19, 28, and June 4, 2014) to review the project elements, consider alternatives to minimize impacts and develop agreement about as many issues as possible, and plan for the community meetings (see below) which were co-hosted by PWB and the MTNA. PWB staff also met three times with a subcommittee (May 15, 21, and June 2, 2014) of the CAC to share and clarify information and discuss some issues in greater detail. Table 1 below is a list of the CAC members, CAC subcommittee and their affiliations.

<b>Table 1. Tabor Reservoir Disconnect Project Community Advisory Committee Members</b>	
<b>Name</b>	<b>Affiliation</b>
Stephanie Stewart	MTNA Land Use, CAC Subcommittee
Paul Leistner	MTNA Board, CAC Subcommittee
John Laursen	MTNA Board, CAC Subcommittee
Dawn Smallman	MTNA Land Use consultant, CAC Subcommittee
Nancy Norby	MTNA Board, steward of off-leash area
Bing Wong	Friends of Mount Tabor Park Board, MTNA Board
Kim Lakin	MTNA Land Use consultant, provides historic preservation knowledge

Mark Bartlett	MTNA Land Use consultant
<b>City Staff</b>	
Eileen Argentina	PP&R
Tom Carter	PWB
Teresa Elliott	PWB
<b>Facilitators</b>	
Jeanne Lawson	JLA
Sam Beresky	JLA
Mary Forst	Confluence Center for Mediation and Training

The City and CAC jointly held a public meeting on May 6, 2014 to present the proposal and some alternatives and to get public feedback. It was attended by approximately 200 people. A second joint meeting was held on June 11, 2014 to describe the proposal as it will be submitted to Bureau of Development Services (BDS) for the LUR process. The later meeting focused on the changes from the CAC and how to participate in the upcoming land use review process.

The citizens who participated in the CAC as well as the public meetings and tours raised many issues that are not part of the current development proposal and are outside the LUR process. In particular, people have asked what will happen to the reservoirs in the future. City Council has committed funds and authorized Commissioners Amanda Fritz and Nick Fish to develop those future plans. This process is expected to begin in fall 2014 and ideally will lead to a proposed plan in early 2015 that can be added to the proposed Fiscal Year 2015-16 budget.

PWB incorporated many suggestions made by citizens that improved the project, especially by reducing adverse impacts to large, mature trees in the park, though the changes are more expensive than the options originally proposed by PWB. This is important in part because large trees contribute much to the sense of “nature in the city” that is a fundamental aspect of the historic park design.

Feedback from the walking tours was comparable to what PWB heard on the project website, CAC and community meetings. Though some of the neighbors disagree with complying with LT2, once they understood what was occurring in each work area and why, many of them were agreeable to the project and favored the alternatives identified. A summary of the changes made to the project as a result of the public involvement is listed in Appendix B.

## **Federal LT2 Rule**

During the Tabor Reservoir Adjustments project Pre-application Conference, the Bureau of Development Services staff requested an explanation of the federal rule driving the project and why the City has chosen to disconnect rather than cover the reservoirs or

add a treatment plant at the outlets. Federal and state law<sup>2</sup> require that no public water system serve water from uncovered finished drinking water reservoirs unless the water is treated at the outlet for bacteria, viruses, and cryptosporidium. The City investigated the option of treating water at the outlet of the Mount Tabor reservoirs and determined that such an approach was probably infeasible and raised difficult land use issues because it would require the placement of sizeable industrial facilities in a residential zone. The City Council determined years ago that it would not cover the reservoirs at Mt. Tabor, reflecting vocal opposition for the community. The City also several times tried unsuccessfully to persuade the Oregon Health Authority (OHA) to grant a delay in the effective date of the City's obligations. In June, 2013, City Council announced that it would seek no further delays and directed that the Water Bureau comply with the existing regulatory schedule, under which the City must disconnect its Mt. Tabor uncovered finished drinking water reservoirs by December 31, 2015<sup>3</sup>.

## **Mount Tabor Overview**

Approximately 75 percent of PWB's customers, including many wholesale customers, could potentially receive water that has passed through one or more of the three uncovered finished drinking water reservoirs at Mount Tabor.<sup>4</sup> The purpose of the Project is to disconnect Reservoirs 1, 5, and 6 from the drinking water system and allow the reservoirs to continue to be used as water features that hold non-potable water.

The project occurs within Mount Tabor Park, in southeast Portland. The entire site is owned by the City of Portland and managed by the Portland Water Bureau and Portland Parks and Recreation. Figure 1 is a map of the Mount Tabor Park with the PWB and PP&R management authority boundaries. Mount Tabor was first established as a distribution site for Portland's water in 1894, when two reservoirs were constructed. The reservoirs at Mount Tabor and, separately, Mount Tabor Park itself were listed in the National Register of Historic Places in 2004.

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<sup>2</sup> [71 Federal Register 654 (Jan 5, 2006), amending 40 CFR Parts 141 and 142; also see, Oregon Administrative Rules Chapter 333, Division 61

<sup>3</sup> For more information about LT2 and the City's efforts, see PWB website: <https://www.portlandoregon.gov/water/article/330807>

<sup>4</sup> Reservoirs 1, 5, and 6 are uncovered finished drinking water reservoirs. Reservoir 7 is a small circular partially buried distribution tank near the summit of Mount Tabor that is not a part of this project but is mentioned in this application.





Figure 1. 2008 Map of Mt. Tabor Park property with PWB and PP&R management boundaries



## **Site Description**

The project site is within Mount Tabor Park, which is one tax lot and has an official address of 6325 SE Division Street. The park is roughly bounded by SE Division Street on the south, SE 64<sup>th</sup> Avenue and SE 60<sup>th</sup> Avenue on the west, SE Yamhill on the north, and SE 71<sup>st</sup> Avenue or SE Mountain View Dr. on the east. For the areas under PP&R authority, PWB will obtain a non-park use permit for its work activities.

The park lies completely within the Mount Tabor Neighborhood Association's area. The South Tabor Neighborhood Association is adjacent to the south. The Montavilla, North Tabor, Sunnyside, and Richmond Neighborhood Associations border on the Mount Tabor Neighborhood Association, and maintain an active interest in the park.

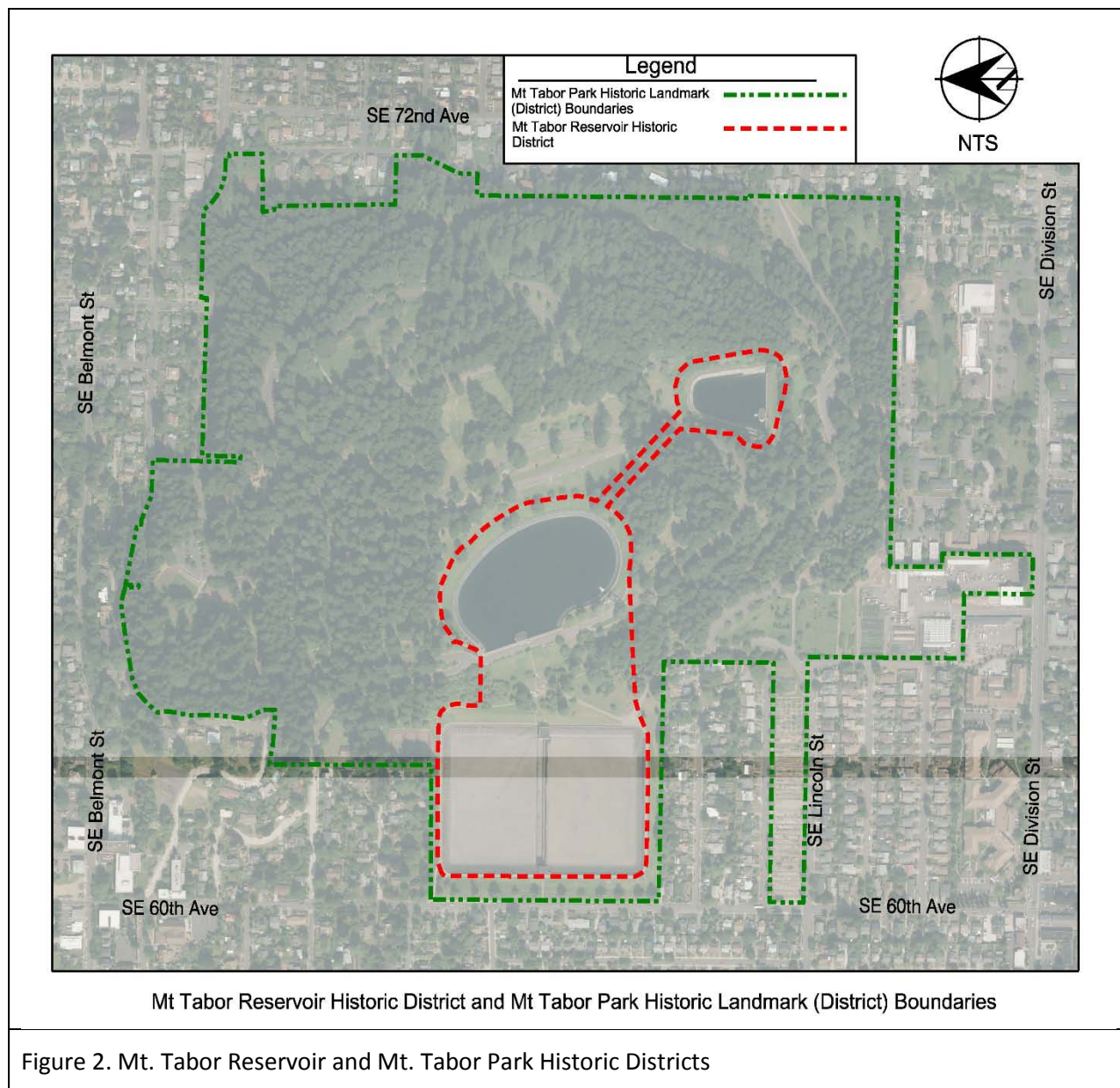
Mount Tabor Park is a 196-acre public park located in a residential area of southeast Portland. The park encompasses most of a volcanic butte with four peaks. The tallest summit rises to an elevation of 643 feet, making it a landmark visible from points all around the City. The park became a distribution site for Portland's gravity-fed, mountain-source drinking water in 1894 with the construction of two uncovered reservoirs (Reservoirs 1 and 2). Two additional reservoirs were constructed in 1911 (Reservoirs 5 and 6). Reservoir 2, located outside of the park boundary, was retired in the 1970's and sold as surplus City property. The other three uncovered finished drinking water reservoirs remain in service at Mount Tabor today.

The water consumption demands for Reservoir 6 have dwindled over the years because there is less water use in the industrial areas along the south east side of the Willamette River that the reservoir serves. When the Mount Tabor reservoirs were first constructed, virtually all water delivered in Portland went through them. Today, with the many changes to the water system over the years, they deliver water to approximately three quarters of Portland's customers.

The proposed project requires modifying the City's water transmission and distribution systems on site in 11 discrete work areas. Reservoir 7, a relatively small partially buried closed reservoir near the crest of Mount Tabor, will continue to be used to store and deliver finished drinking water and is not being changed with this project.

## **Listings in the National Register of Historic Places**

Mount Tabor Reservoirs were listed in the National Register of Historic Places in January 2004. Mount Tabor Park was listed in the National Register in September 2004. Both properties are carried under the "Property Category" of "District." The City's Zoning Maps show only the Mount Tabor Reservoirs District, but actually the rest of the park is a historic district as well. To make the distinction simpler to follow, the Mount Tabor Reservoirs Historic District will be called the "Reservoirs Historic District" and the Mount Tabor Park Historic Landmark (also known as a District) will be called the "Park Historic District." Figure 2 shows the two historic district boundaries.



A summary description of the two historic districts follows. Historic elements are described in more detail in the sections that describe the proposed work in each work area, below. Descriptions of the historic resources are taken from the “listing documents,” which are the National Register of Historic Places Registration Form for each district.

### Mount Tabor Reservoirs Historic District

Reservoirs 1, 5 and 6 are within the Reservoirs Historic District, which encompasses 40.5 acres. Reservoir 1 and its dam and gatehouse were built in 1894; and Reservoirs 5 and 6 and the respective dams and gatehouses were built in 1911, with ancillary

structures completed later. Reservoir 1 holds approximately 12 million gallons (MG) of water when full and Reservoir 5 holds approximately 49 MG. Reservoir 6 has a maximum capacity of 75 MG with two cells if it is filled over the divider wall. When operated as two separate cells, the capacity is 32 MG per cell. These reservoirs maintain water pressure and flow over large areas of Portland east of the Willamette River and provide water to Washington Park on the west side.

The reservoirs and associated structures are considered to be examples of intact “City Beautiful” era public works in the United States, although they have deteriorated with time. The reservoirs themselves as well as many of their appurtenances – i.e., their operational and decorative structures and elements – are listed as “contributing resources” in the Reservoirs Historic District, which was established in 2004. The period of significance for this district is 1894-1953.

The listed contributing elements to the Reservoirs Historic District are as follows:

- Reservoir 1, Gatehouse 1, and Weir Building 1.
- Reservoir 5, Gatehouse, 5, and Weir Building 2, a.k.a. the Chlorine Building.
- Reservoir 6, Gatehouse 6 East (Inlet Gatehouse), and Gatehouse 6 West (Outlet Gatehouse).
- Reservoir 1 Drinking Fountain.
- Covered Storage Tank (a.k.a. Reservoir 7, not shown on maps).
- Covered Storage Tank Building (at Reservoir 7).

The proposed work will not affect the Covered Storage Tank or Covered Storage Tank Building at Reservoir 7, which are located near the top of Mount Tabor, and are not part of the proposed project. It also will not affect the Reservoir 1 Drinking Fountain.

The listing documents for the Reservoirs Historic District describe the historic resources as follows:

*“The Romanesque tower-styled Gatehouses, associated buildings, basins, and parapet walls of all of the reservoirs are of reinforced concrete. The Gatehouses and Weir Buildings were constructed of poured form concrete with the appearance of stone blocks made possible by wooden forms. The parapet walls are topped with decorative wrought iron fencing. Though harmonious, differences in style details exist between the 1894 and 1911 gatehouses and fences. All of the resources are in good to excellent condition with the primary alterations consisting of electrical conduits attached to the parapet walls and buildings and modern lighting that encircles the basins.”*

The listing documents describe the immediate setting of the Reservoirs Historic District this way;

*“Reservoirs 1, 5 and 6 are located on the south, higher west and lower west sides of the hill, respectively. Predominantly forested, the area around the basins of the reservoirs has been kept clear of trees with the use of grass and other*

*groundcovers, so that the reservoirs and the deep water they hold afford vistas of areas of the city framed with the surrounding towering evergreen and deciduous forest.”*

And:

*”Since the 1970s, the Reservoir Loop Drive has been closed to public vehicular traffic making Mount Tabor Park a prime location for pedestrian and wheeled recreation, especially the walkways around the reservoirs, which are favorite areas for pedestrians, providing lighted access in early mornings and evenings. Grassy areas around the reservoirs provide informal picnic and lounging opportunities with good views to the north, south, and west. Each reservoir, with its deep, open water and individual design and location, provides a different feeling.”*

#### Mount Tabor Park National Historic Landmark (or District)

As noted above, Mount Tabor Park’s listing documents categorize it as a “district,” but the local zoning map has shown it as a “landmark.”

The Mount Tabor Park Historic District (Park Historic District) encompasses the entire city park and is focused on the overall landscape design as well as the historic structures within the park but outside the Reservoirs Historic District. The period of significance for the Park Historic District is 1888-1939.

The contributing historic resources of the Reservoirs Historic District are identified as contributing resources of the Park Historic Districts as well. The practical result is that the Reservoir Historic District is a part of the park that is devoted to water infrastructure and which has a different period of significance than the rest of the Park Historic District.

The park vegetation is described in the Park Historic District’s listing documents this way:

*“The towering Douglas fir forest is punctuated with big deciduous trees and some glades. Large areas of the forest floor are kept mowed while steeper areas tend to have a predominance of native understory plants. Ornamental non-native shrubs and trees are found throughout the park, especially at buildings, entrances or other features. Non-native invasive species are also present.”*

The variety of different ground covers, trees, and shrubs provide a variety of aesthetic and scenic experiences for visitors. Some areas are “natural,” and provide habitat values, while others are designed for picnicking, recreational play, walking, or simply enjoying the view. The park also includes graveled or paved walkways and roads integrated into the landscape design.

The site itself is listed as one of the contributing resources of the park, and the listing documents say this about how the site contributes to the historic character of the park overall:

*“A majority of the reservoirs’ features have been kept intact and contribute greatly to the integrity of Mt. Tabor Park. The surface of the water held in the reservoir basins represents approximately twenty acres, about one tenth of the entire park acreage. The deep, open water provides a chiaroscuro effect to the landscape and is an integral part of the experience of Mount Tabor Park. The lighted walkways around the perimeter of each parapet wall and wrought iron fence, the cleared, grassy areas associated with the reservoir basins and the outstanding views provide important park amenities.*

*Mount Tabor Park is a scenic reservation. The height of the various peaks allow for grand vistas in all directions from viewpoints attainable by auto, foot or bicycle. Two views on Mount Tabor have been rated by the City of Portland’s Scenic Resource Inventory as among the top seven in the city and have been incorporated into the Scenic Resources Protection Plan.*

*The design principle of subordination is a key element of Mount Tabor Park. The historic drive and pathway system respects the topography, allowing accessibility without overwhelming the picturesque and pastoral landscape. The more than three miles of drives are popular destinations for local and out-of-town visitors to take in the views of the park, reservoirs, city skyline and surrounding mountains. Autos can still encircle the butte on the historic drives, arriving at one entrance and leaving at another. Since vehicular access has been restricted to certain areas in the park’s interior since the 1970s, some of the paved drives provide popular routes for bicycles, skateboards, roller blades and baby carriages. Walking, jogging and bicycling are the primary activities noted in the park. Many visitors arrive from the surrounding neighborhoods on foot or bicycle. These drives are conducive to the park being a popular site for various types of races including foot, bicycle and adult soap box derby tournaments. The wide, well-graded unpaved paths were in the original design and, like the drives, were added over a period of years when funds became available. The path system travels over the entire park. In recent years, more unofficial paths have been made by mountain bikes (sic) and hikers.*

(...)

*A variety of amenities have been added to the park over the years. These include picnic areas, playgrounds, an amphitheater, tennis courts, a soapbox derby track, and comfort stations (only one in service.) Most of these amenities can be accounted for during the period of significance and are described in the descriptions of the quadrants of the park. The varied topography and forest cover of the park has allowed the amenities to be tucked in here and there so that they do not dominate the general feel of the park as a forest retreat. As was the*

*Olmsted counsel, the park's styles allow respite from urban life and a connection to the rural roots and historic and natural resources of the area.”*

In summary, the park provides a mostly forested environment with glades and open cultivated areas that offer scenic views of the city and beyond. The road and trail networks give easy access to all parts of the park without impairing the feeling of being in a nature reserve. In this setting, the reservoirs enhance the views with their water and create a sense of history with their Romanesque architecture.

### **Mount Tabor Park Master Plan and 2008 Amendment**

PP&R completed a master plan for Mount Tabor Park in January 2000. It was expanded and updated in 2008 to include the Mount Tabor Yard where PP&R bases its nursery and other park maintenance and management operations.

The 2000 Mount Tabor Park Master Plan set goals for

- Circulation
- Interpretive Opportunities
- Structures
- Amphitheater, Overlooks, and Entry Gates
- Off-Leash Area
- Play Areas
- Parking
- Erosion and Drainage

In addition, it identified views that should be protected. In general, these views were also identified in the National Register Historic Listing documents.

The 2008 Mount Tabor Yard amendment to the master plan laid out development plans for the area south of the proposed work. The only element of this master plan that extends into the proposed work area of the project is a proposed “Park Shelter” structure. From the master plan drawings, it appears that this proposed structure would need to be moved up to ten feet northward to avoid the new 48-inch pipeline’s clearance area (Work Area 2). The proposed work would have no other effect on existing or future elements of the Tabor Yard master plan.

### **Zoning**

The site’s zoning is illustrated on Sheet 1 in Appendix A.

The Open Space (OS) zone is intended to preserve public and private open and natural areas to provide opportunities for outdoor recreation and contrast the built environment, as well as preserve scenic qualities, system capacity, water quality of the stormwater drainage system, and to protect sensitive or fragile environmental areas.

The Environmental Conservation (c) overlay zone is intended to conserve important environmental features and resources while still allowing compatible development. New development and exterior modifications to existing development must meet environmental standards or are subject to environmental review.

The Historic Resource Protection overlay zone (which has no map symbol) applies to historic landmarks and historic districts in Portland, and its regulations are intended to protect certain historic resources in the region and preserve significant parts of the region's heritage. As described in more detail below, the entire park is designated the Mount Tabor Park Historic District, and the three main reservoirs and their appurtenances lie within the Mount Tabor Reservoirs Historic District.

Section 33.445.030 of the Zoning Code describes the different types of historic resource designations:

**A. Historic Landmark.** This type of resource may be an individual structure, site, tree, landscape, or other object that is of historic or cultural significance. A Historic Landmark generally derives its significance from at least two of the following:

- The importance of its designer, previous owners, or builder in local, state, or national history;
- The quality of its architecture or landscaping;
- The fact that it is one of a few remaining examples of a building type that is of significance in local, state, or national history;
- Association with a significant cultural or ethnic group; or
- The role it has played in shaping local, state, or national history.

Information supporting a specific resource's designation is found in the City's Historic Resource Inventory, its National Register nomination, or the local evaluation done in support of the resource's designation.

**C. Historic District.** This type of resource is a collection of individual resources that is of historical or cultural significance at the local, state, or national level. Information supporting a specific district's designation is found in the City's Historic Resource Inventory, its National Register nomination, or the local evaluation done in support of the district's designation.

## SECTION 2 – DESCRIPTION OF PROPOSED WORK

### Overview

The work being considered in this proposal is part of the Tabor Reservoir Adjustments Project. Some work elements are not evaluated against LUR approval criteria. For example, the project includes work in the public rights-of-way outside the park that are not subject to land use review (See Section 33.10.030, When the Zoning Code Applies).

In general, the work at Mount Tabor can be divided into four categories: 1) disconnecting pipes leading from the reservoirs to the drinking water distribution system; 2) constructing a large-diameter pipe and two new large-diameter pipe connections; 3) securing inlets, outlets and drains in the reservoirs while continuing to allow water to enter and drain from the reservoirs; and 4) installing new equipment for the ongoing operation of the water system.

This project has been divided into 11 distinct work areas. Figure 3 is an overview map of Mount Tabor Park with the proposed work areas identified. Work Area 1 is located on SE Lincoln Street west of the park boundary in the public right-of-way and is not part of the land use review but is included for clarity. Work Areas 2 through 11 are included in the park boundary and are included in the land use application for review. Planting Work Areas 12 A through 12D are also identified – only tree and shrub plantings will occur in these areas, no construction.

The work areas are shown on annotated aerial photos in this section and on the plan sheets in Appendix A. Sheet 2 in Appendix A provides a Sheet Index. Sheets 3 through 13 cover existing conditions. Sheets 14 through 30 covers

#### **Special Terms**

**Cut and Plug:** This is a method of disconnecting pipe by cutting out a length of pipe and capping or filling the pipe ends. Some cut and plugs will be done in existing vaults or structures, while others will be done in excavations.

**Drain:** Pipe where water flows out of a reservoir and into the storm sewer. Drains are located at or near the bottom of the reservoir basins.

**Inlet:** Pipe or opening where water flows into a reservoir. Inlet pipes are round; weirs are rectangular openings.

**Outlet:** Pipe where water flows out of a reservoir into the drinking water distribution system. Outlet pipes are located at or near the bottom of the reservoir basins.

**Weir:** A wall or vertical surface in a rectangular-shaped opening in the reservoir over which water flows to enter the reservoir.

**Conduit:** A junction box on an electrical conduit.

**Cathodic Protection:** Electrical protection of underground pipes from corrosion.



the proposed work. Sheets 31 through 42 address construction management. Sheets 43 through 53 cover landscaping and tree mitigation work.

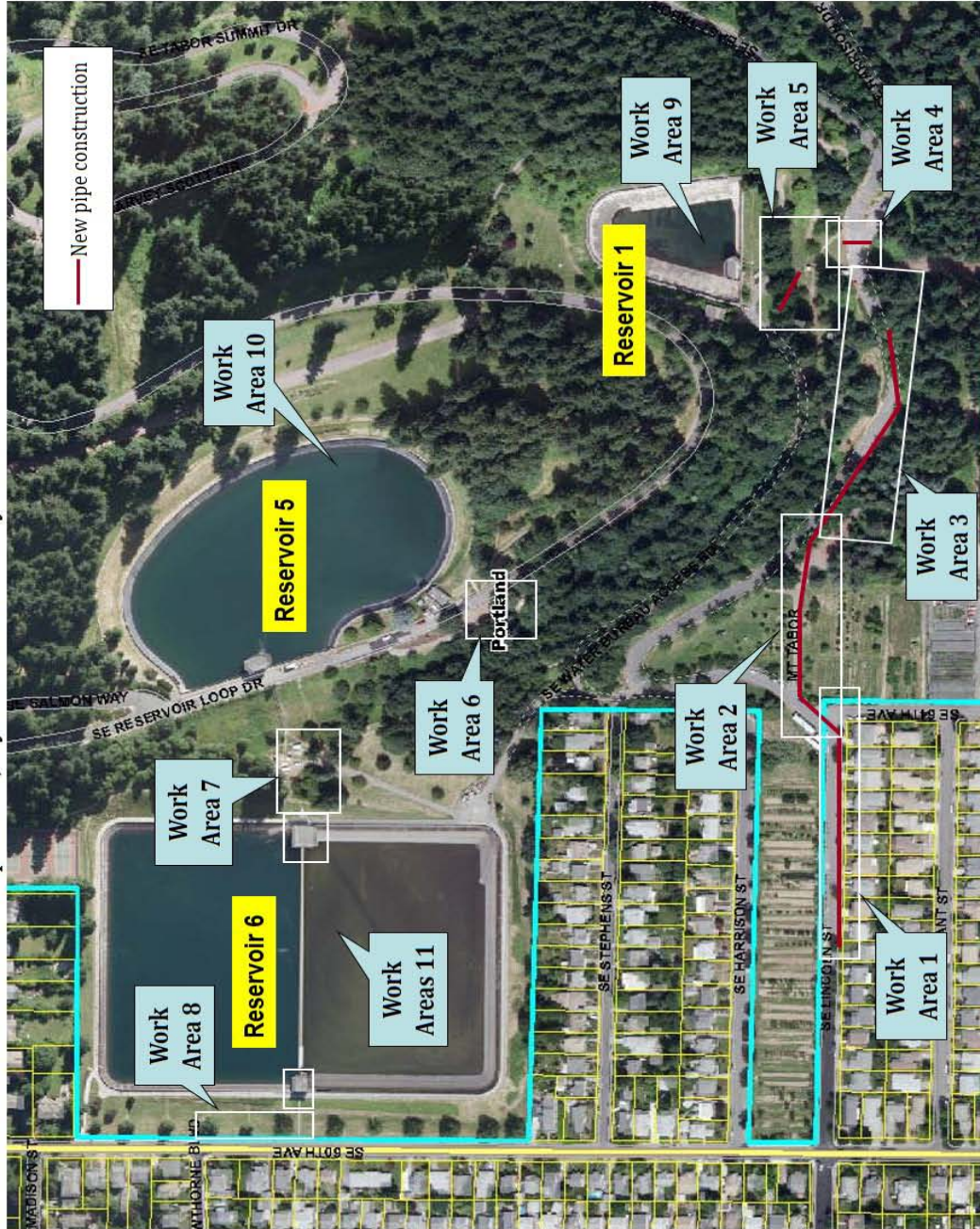
Work will be done under three subprojects – either by PWB staff, a contractor, other city staff, or a combination of the above. Those three subprojects are:

- 1) Tabor Reservoir Adjustments Phase 2 (All Work Areas).
- 2) Tabor Pump Station Back-up Electrical Generator.
  - a. Some exterior site work may be done under the Tabor Reservoir Adjustments Phase 2 construction contract. (Work Areas 7 and 11)
  - b. Most of this will be completed under a separate construction project.
- 3) Historic Repair Work at Reservoir 1. The repair work on the Reservoir 1 parapet wall and possibly on the sidewalk and drinking fountain will likely be a separate contract using a contractor with experience in historic structures repair and maintenance. (Work Area 9).



# PROPOSED TABOR RESERVOIR ADJUSTMENTS PROJECT

Updated July 2014 - Summary of Work Areas



## WORK AREAS

- Area 1:** Connect pipe in Lincoln Street to 42-inch diameter pipe outside the park (not part of the Land Use Review).
- Area 2:** Construct a 48-inch diameter pipe entering the park at SE Lincoln Street, crossing the field and NE corner of the dog park, and re-entering street at SE Lincoln Drive.
- Area 3:** Construct a 48-inch diameter pipe in SE Lincoln Drive along with a vault with two (2) manholes in the roadway, and install two (2) small electrical conduits.
- Area 4:** Five (5) cut and plugs, make a 30-inch diameter pipe connection, and install two (2) small electrical conduits. All work to be done in the roadway.
- Area 5:** Three (3) cut and plugs, install a 48-inch diameter pipe connection, remove an existing vault, and construct a new underground vault.
- Area 6:** Two (2) cut and plugs, install an air vent, and potentially install a backflow prevention device.
- Area 7:** Three (3) cut and plugs, install a cathodic protection system with aboveground cabinet, several small underground utility vaults, electrical conduit and wiring. Potentially install a backflow prevention device.
- Area 8:** Two (2) cut and plugs on Reservoir 6 outlet pipes, install an electrical cabinet. All work will occur adjacent to the SE 60th Avenue.
- Area 9:** Cap outlet pipes, screen drains, weir and inlets pipes in Reservoir 1.
- Area 10:** Cap outlet pipes, screen drains, weir and inlets pipes in Reservoir 5.
- Area 11:** Install an emergency generator in the east side gatehouse, conduits, condulets, wires, and exhaust vents. Cap pipes, screen pipe ends that will remain in use in Reservoir 6.

For additional project information, visit [www.portlandoregon.gov/water/mttabor](http://www.portlandoregon.gov/water/mttabor)

Figure 3. Tabor Reservoir Adjustments overview map (excluding “Work Area 12—Tree and Shrub Planting”)

## **Description of the Work Areas**

Annotated aerial photos of the work areas were developed for the public walking tours and community meetings and are included in the application following each work area description. They are intended to help interested parties visualize the work in the setting of the park. All staging areas are included in each work area. The overview map is in Figure 3.

### **Work Area 1 - Pipe in Lincoln Street**

This work area is shown on the drawing index and in many of the plans because it is part of the overall project. However, all work in Work Area 1 will take place in the public right-of-way (ROW) in SE Lincoln Street outside of Mount Tabor Park. In addition, the SE Lincoln Street ROW is not included in the boundaries of the Park Historic District, and is thus outside of the Historic Resources overlay zone. As a result, work in this work area is not part of the Land Use Review process (see Section 33.030.B of the Zoning Code). The work in this area consists of installation of a 48-inch diameter pipe that connects to 42-inch diameter pipe already existing in the ROW. This work is adjacent to the long (former) nursery block and community garden that are not affected by the project (Figure 4).

The public will continue to have pedestrian access into the community garden during construction. Parking along SE Lincoln St. will be restricted when the pipe is being installed in Work Area 1.

#### ***Special Terms***

***SE Lincoln Street:*** This refers to portion of Lincoln Street outside the park, which is a public Right-of-Way.

***SE Lincoln Drive:*** This is the portion of Lincoln inside the park. It is not classified as a dedicated public Right-of-Way.

***Right-of-Way (or ROW):*** This is a portion of land dedicated to public passage and infrastructure, typically during a land division process.

***Driveway or Vehicle Area:*** A roadway on land that is not part of the public ROW is considered a "driveway" or "vehicle area" under the Zoning Code. Zoning Code regulations for ROWs and driveways differ.

***Why the distinction?*** PWB is using the name "SE Lincoln Drive" to help keep straight which regulations apply in different areas. In Work Area 1, Lincoln is a ROW, but in Work Areas 2, 3, and 4, it's classified as a driveway.



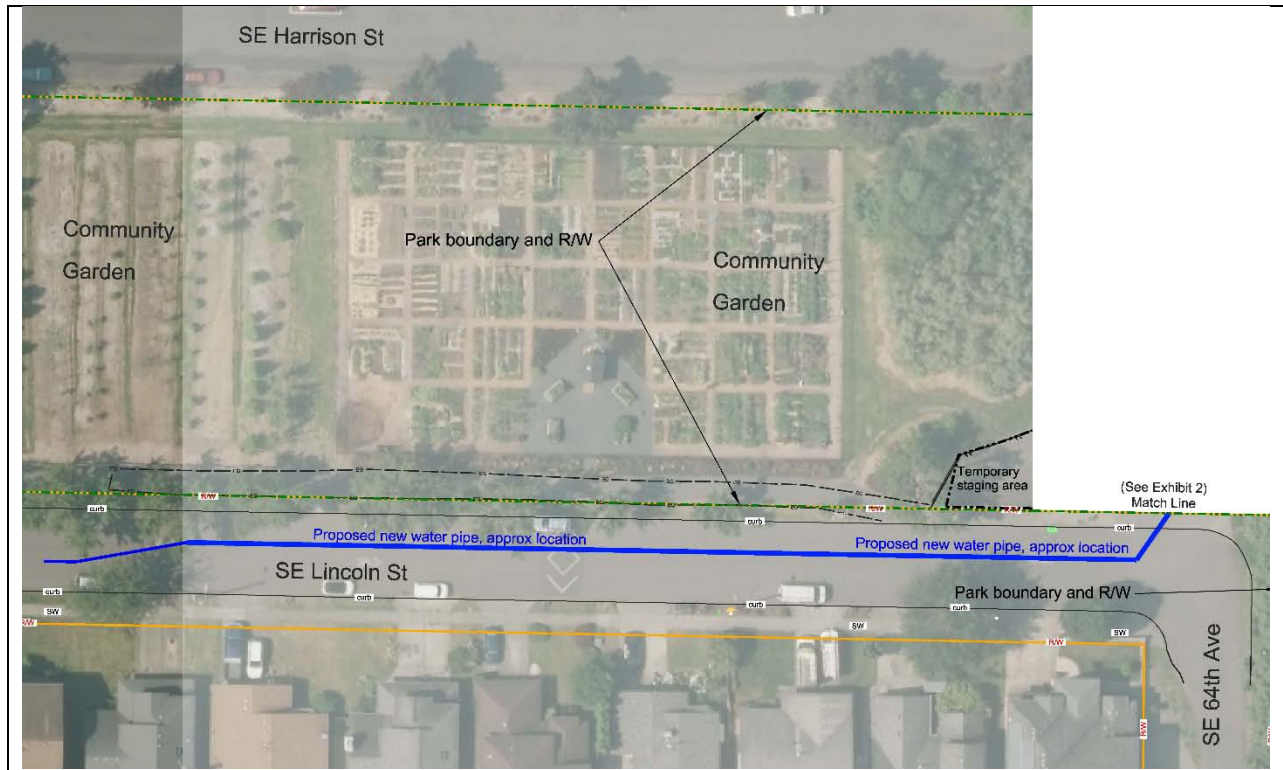


Figure 4. Work Area 1 - Pipe in Lincoln Street

### **Work Area 2 - Pipe Across the Gravel Road and a Corner of the Dog Park**

This work area starts at the park entrance on SE Lincoln Street (Figures 5, 6, and 7; Sheets 4, 14, 31 and 43). The pipe diameter is 42 inches from the entrance to a point adjacent to the gravel path leading toward the dog park. At this point, PWB will install a pipe tee (like an intersection) that joins this pipe to a 36-inch pipe already existing under the roadway to the north, and to the new proposed 48-inch diameter pipe that leads east toward the dog park.

For the purposes of this project, the part of SE Lincoln inside the park is designated SE Lincoln Drive because it is regulated by the Zoning Code as a private driveway, even though it is publicly owned. The pipe alignment crosses the northwest corner of the fenced dog park, crossing an existing paved pad and through a small grove of trees ranging in size from 2- to 12-inches in diameter, and then exits the dog park and connects with the pipe in Work Area 3.

Installation of the pipeline will require excavation of the roadway from the entrance to the “tee” pipe junction, and from there to the roadway’s edge, Figure 5. At this point, the excavation follows the existing gravel service road (which is also



Figure 5. Work Area 2 at Lincoln Street Park Entrance

used as a path, Figure 6) eastward through the dog park entrance, then to where it rejoins SE Lincoln Drive. The existing vehicle gates at the west and east ends of the service road will be removed, and replaced after construction of the pipeline.

A construction staging and storage area is designated on the triangular piece of park property northwest of the SE Lincoln Street entrance. The designated construction area leads approximately east from this, following the existing gravel path across the grassy area. The proposed pipeline route passes between two large trees, across the northwest corner of the dog park (see Figure 7), through a small stand of trees, and into SE Lincoln Drive. Sheet 14 shows the proposed work in Work Area 2, Sheet 31 shows the construction management plans, and Sheet 43 shows the proposed landscaping plans (Appendix A).

Construction of the 48-inch diameter pipe requires a construction area 35 feet wide in order to allow enough room for safe and efficient work. The pipe itself is 4 feet wide and 3 feet of work space is required on either side, resulting in a minimum trench width of 10 feet. Two 12-foot wide access ways are required for equipment. When trench shoring (stabilization) and fences are added, this equals 35 feet. (See Appendix C for illustration of the disturbance area). Narrower construction areas can be used for short distances, but narrower construction areas result in higher costs or slower work and more potential safety concerns for workers.



Five CIV's (Cast Iron Valve covers) will be installed in this work area. They provide access to certain buried utility equipment, such as sampling ports, valves, or measuring devices. The visible covers are approximately nine inches in diameter and fit into a metal ring. The entire visible feature is installed flush with the pavement or ground surface, and is approximately one foot in diameter. The CIV locations are not shown on the drawing set for two reasons. First, their exact location will not be known until the pipe and utility equipment are laid into the ground. Second, because they must be above the pipe, locating them on the map would reveal the approximate pipe location, which is confidential information. All CIVs, though, will be installed within the excavated areas, which are shown on the drawings. Therefore, the locations of the CIVs are known approximately.

CIVs are not prominent in the roadway or in the landscape because they are flush with the ground. In addition, they are very common and made of the steel used for manhole covers throughout Portland. As a result, they are not significant visual features.

Several alignments through this work area were explored with the CAC. The alignment proposed has the least impact on the park, park users, the environment, and the historic resources.

Nine trees (12-inches in diameter and smaller) will be removed in Work Area 2 (see Sheet 31). Four other trees (12- and 14-inches in diameter) will be retained, but because construction will come closer than allowed in City guidelines, PWB plans to mitigate for them as if they were removed. (See discussion of Planting Work Area 12 for proposed tree planting plans).

PWB standards prohibit trees from being planted within 10 feet of the outside edge of large buried water pipelines such as this, so the pipeline route shown in Figure 7 will be replanted with ground cover plants and shrubs for a width of 24 feet (except in the area of gravel road and lawn). A total of four trees will be planted in the one- to six-foot wide strips of disturbed land on either side of the 24-foot wide pipeline corridor (Sheet 43). These will be a mix of cascara and bitter cherries, native trees that will grow shorter than the neighboring Douglas firs and Western red cedars. When they reach full maturity, they will provide a visual transition in vegetation height from the shrubs near the pipeline to the taller trees on either side.

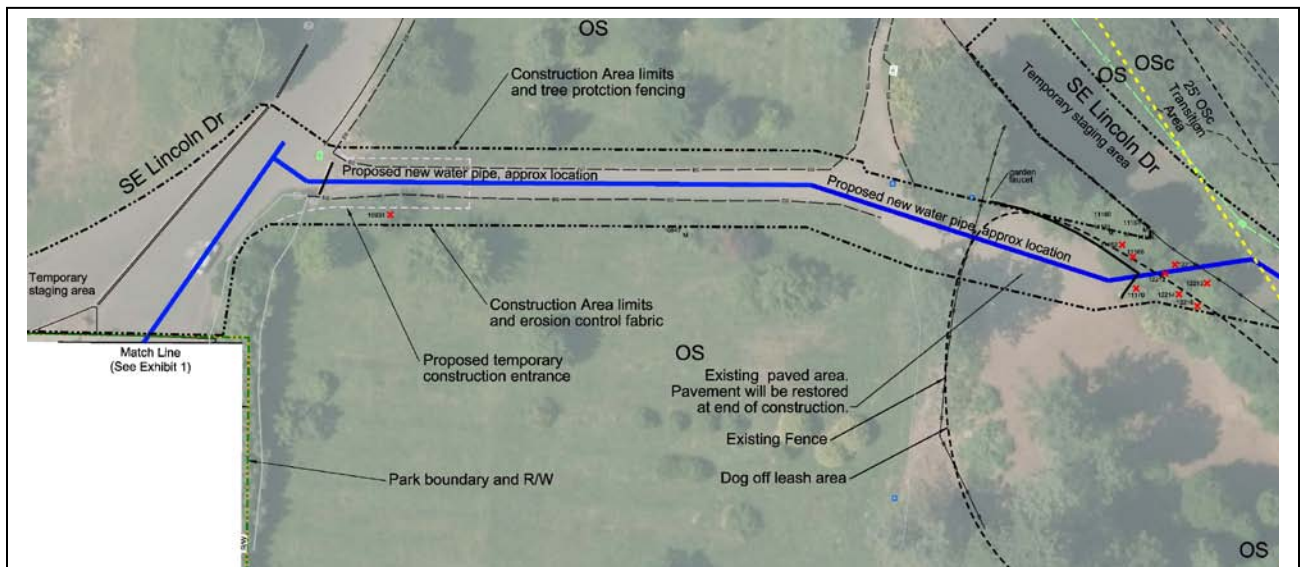


Figure 7. Work Area 2



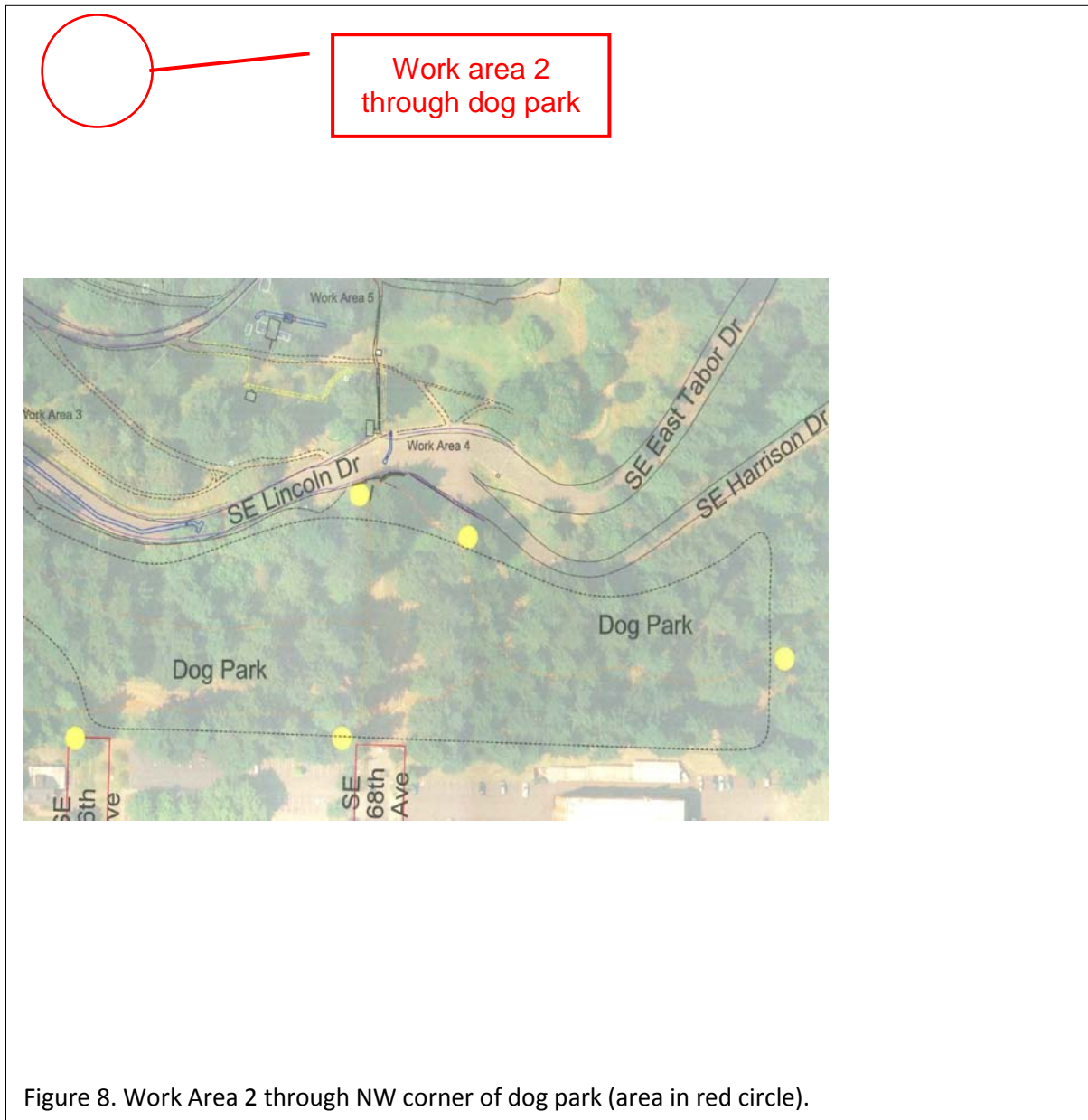


Figure 8. Work Area 2 through NW corner of dog park (area in red circle).

As work in this area is finished, the excavation will be backfilled with clean imported fill, the gravel service road will be re-constructed, and the concrete pad and modern concrete block retaining wall will be replaced. All other disturbed ground will be restored to the approximate original contours using topsoil and will be planted with vegetation to match its surroundings. In the grassy area, PWB will plant a grass seed mix to match the existing turf grass.

The existing gate to the dog off-leash area will be removed along with nearby dog park fence, and the trench will be cut through the paved pad underlying the entrance area. The block retaining wall will be removed at the base of the hill leading up to SE Lincoln Drive. At the end of the project, the pad and retaining wall will be repaired and restored and the fence and gate will be replaced with a new double gate that improves the ease of controlling dogs entering and leaving the off-leash area.



*Historic resources and historic character of Work Area 2:*

Work Area 2 is outside of the Reservoir Historic District and within the Park Historic District.

The only contributing resource identified in Work Area 2 is the “site,” which includes SE Lincoln Drive. Aspects of the historic character of this area are described in the “Lincoln Street Entrance” section of the narrative of the “Regions and Features of Mount Tabor Park” in the listing documents, as quoted below.

SE Lincoln Drive enters the park at the Lincoln Street entrance. As it begins its climb into the park, on its west side is “a mixture of well-established tall shrubs and trees, some deciduous such as lilacs and hawthorns and others evergreen conifers and laurels.” It makes a hairpin curve at the Water Bureau road gate, and inside the curve along the road is “a row of mature fuchsia-colored double flowering cherries that create a dramatic display in mid-spring.” (Park District listing documents, Section 7, p. 5)

At the entrance itself are several shrubs that create interest: “a large fragrant viburnum, Thunberg’s barberry, a large strawberry madrone and other ornamental shrubs” to the east of the entrance. Northwest of the entrance are plantings of red osier dogwood, oriental maple, cotoneaster, and other shrubs.” (Park listing documents, Section 7, p. 5). This is said to reflect a bit of Emanuel Mische’s original plans for a grand entrance at this location, although those plans were never constructed.

The proposed work will not remove or affect the vegetation described in the listing documents.

The historic nursery, a contributing feature of the park, is several hundred feet south of Work Area 2, and will not be affected by the proposed work.

The service road gate, dog park gate and fencing, retaining wall, and pad that will be removed and repaired or replaced are non-contributing elements of the park.



Alterations subject to Historic Resource Review (HR):

- Installation of new buried 48-inch pipeline;
- Excavation of trench and restoration of ground surface, including gravel path and vegetation;
- Removal of trees and replanting with native trees, shrubs, and ground cover plants selected from the *Portland Plant List*;
- Excavation and replacement of existing paved pad and concrete blocks;
- Removal of dog off-leash area gate and replacement.
- Excavation and restoration of the roadway to its approximate original condition.

Environmental zone resources in Work Area 2:

The work in this area is outside the environmental overlay zone.

Work subject to Environmental Review (EN) in Work Area 2:

None. No Environmental Review required.

### **Work Area 3 - Pipe in Lincoln Drive**

This work area is shown primarily on Figure 12 and Sheets 5, 15 and 32, and a short segment of the pipeline route are shown on Sheets 14 and 31 (along with Work Area 2).

From the point where the pipeline enters SE Lincoln Drive and leaves Work Area 2 (Figure 10), it follows the roadway eastward to where the pipe will join Conduit 3 west of the stairs that lead to Reservoir 1 (Figure 12; Sheet 15). Total length of pipe in Work Area 3 is approximately 500 feet, of which nearly 350 feet lie in the environmental conservation zone. A vault with two manhole covers will be installed in the roadway near the junction of this pipe with Conduit 3. Construction includes two small electrical conduits with wires that will lead from the new vault to an existing building in Work Area 4 along the north side of the roadway (see Figures 11 and 16 and Sheet 16). They will be buried and not visible when completed.



Figure 10. New 48-inch Pipe alignment at junction between Work Areas 2 and 3 in Lincoln Drive

This will require cutting a trench much smaller than that for the pipe, then backfilling it and repairing the roadway to bring it to its approximate existing appearance.



Figure 11. Electrical conduits in Work Areas 3 and 4 will connect to existing electrical system in the 44-inch meter house.

When most of SE Lincoln Dr. is closed for pipe work in the street, PWB proposes to use a portion of SE Lincoln Dr. northwest of where the pipe joins Lincoln Dr. at the east end of Work Area 2 and the west end of Work Area 3 – see Sheet 14. This staging area is downhill from the rest of Work Area 3, and will allow for vehicles, equipment, and materials to be staged for construction as well as for erosion control measures to be established (See Sheets 31 and 32 and Appendix C for construction management details). Another construction staging area is within Work Area 3, and is located on the south side of the roadway on the gravel shoulder where it widens (Sheet 32). An additional staging area will be available in the paved portion of the roadway just west of the intersection of SE Lincoln Drive with SE East Tabor Drive and SE Harrison Drive. All erosion control and construction management measures, fences, signage, and other materials will be removed from these areas by the end of the project, and any damage or disturbance will be repaired or restored to its approximate original condition.

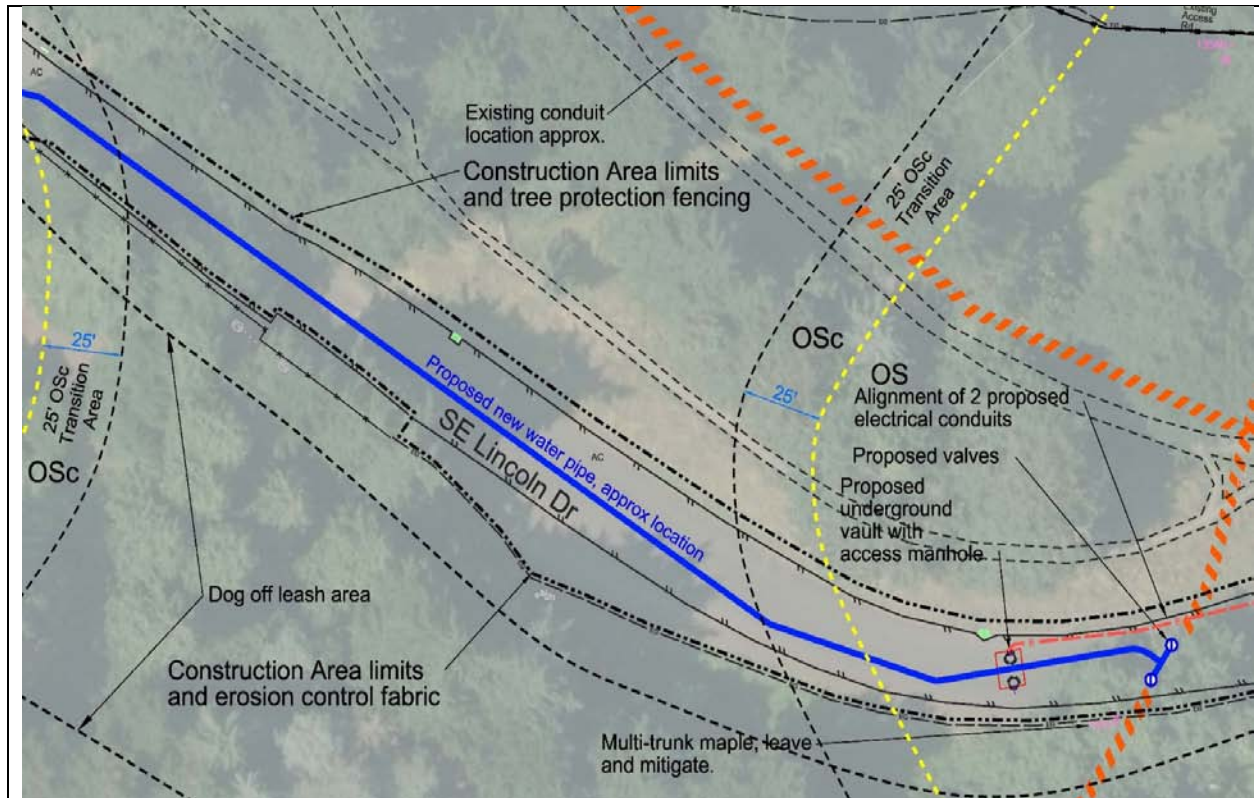


Figure 12. Tabor Work Area 3 – Pipe in Lincoln Drive through OSC Zone

In order to construct the pipeline, a trench ten feet wide and approximately nine feet deep will be excavated. A larger excavation will be made for installation of the vault.

When the pipe is placed, the vault is constructed, and all necessary equipment and connections are installed, the trench will be backfilled with imported clean fill, which will be compacted. The roadway surface will be re-constructed and paved according to Portland standard specifications. Any damaged road surfaces will also be repaired, and the roadway will be returned to its approximate existing appearance.

The underground vault in Work Area 3 will be located approximately 30 feet west of the new connection with Conduit 3 in SE Lincoln Drive (Sheet 15). It will have rough dimensions of 11 feet by 8 feet and contain a flow meter. It will have two standard 30-inch diameter manhole covers set flush with the roadway surface. The top surface of the vault will be covered with asphalt pavement, leaving the manhole covers as the principal visible elements of the vault.

Ten CIVs will also be installed in this area. These structures are not prominent in the landscape because they are flush with the ground surface. See the discussion in the section on Work Area 2.



Figure 13. Manhole and CIV in road on Lincoln Drive

All manhole covers and CIVs will be standard, made of the same steel used throughout the city. They will weather and develop the same appearance as other manhole and utility covers in the park and elsewhere in Portland. See Figure 13 for typical view of manhole and CIV in the paved road in the road.

All of the excavation work in this area will take place within the paved roadway. Construction methods will be modified to stay within the paved road and gravel shoulder where it is less than 35 feet wide. Both sides of the road will be fenced to keep construction activities within the designated work limits. The south side of the road will use the existing chain-link fence as the construction fence where it is in the correct location. Three Big-leaf maple trees along the south side of the road are close enough to the work that PWB will mitigate for them, although measures will be taken to protect them. They are just east of the underground vault. All other trees on both sides of the road will be protected as described in the Construction Management Plan in Appendix C.

This alignment was selected because it is the shortest practical connection, which minimizes costs, and simultaneously minimizes disturbance to the environmental zone as required by Chapter 33.430 of the Zoning Code. Section 4 of this application presents a discussion of the alternatives and other analysis that is required by the EN review.

#### Historic Resources and Historic Character of Work Area 3:

Work Area 3 is outside of the Reservoirs Historic District and within the Park Historic District. It is described as part of the nomination listing of the “Lincoln Street Entrance” quadrant of the park. None of the features of Work Area 3 are specifically described in the listing documents, but this work area occupies part of the southerly-facing slope of one of the buttes that form Mount Tabor. The forest on this slope contributes to the character of the park as a “forest refuge in an urban environment,” as the Park listing documents describe it (Section 7, p. 2).

The listed contributing resources in Work Area 3 are:

- The “site,” including SE Lincoln Drive, SE Harrison Drive, and SE East Tabor Drive.

#### Alterations subject to Historic Resource Review in Work Area 3:

- Excavation of the roadway and restoration of it to its approximate original condition.
- Installation of 48-inch diameter pipe and its connection to existing Conduit.
- Installation of new underground vault and equipment with two manhole covers.
- Installation of up to three new valves with visible CIV covers.
- Installation of two new buried electrical conduits adjacent to roadway.

#### Environmental zone resources in Work Area 3:

Uphill from Work Area 3 is a steep forested slope, and most of the trees within 50 feet of the road are Douglas fir and big leaf maples. There is a relatively sparse undergrowth of

shrubs and lower-growing plants, which appear to be mostly native species. There are scattered occurrences of English ivy.

Downhill from Work Area 3 is also a steep forested slope with most nearby trees consisting of Douglas fir and big leaf maples. However, this area is heavily impacted by non-native invasive plants, including in particular dense thickets of Himalayan blackberry along with some patches of English ivy. The dog off-leash area occupies this part of the park, and the more open parts of the slope are frequently visited by dogs and sometimes by their owners. Where the slope becomes flatter, there are large areas of compacted bare soil under mature trees and scattered areas with grasses with or without an understory of shrubs.

Mount Tabor Park is part of Resource Site 133 of the *East Buttes, Terraces, and Wetlands Conservation Plan*. In Work Area 3, the resources and functional values are primarily those associated with the forested slope, such as wildlife habitat, slope stabilization, sediment and erosion control; microclimate amelioration; and air and water quality protection.

Work subject to Environmental Review in Work Area 3:

- Excavation of the roadway and its restoration within the environmental conservation overlay.
- Installation of the 48-inch diameter pipe within the environmental conservation overlay.
- Installation of new valves and CIVs within the environmental conservation overlay.
- Construction management and tree protection within the environmental conservation overlay.

**Work Area 4 - Connections in Lincoln Drive South of Reservoir 1**

Work Area 4 is at the intersection of SE Lincoln Drive, SE Harrison Drive, and East Tabor Drive, south of Reservoir 1 (Figure 16; Sheets 6, 16, 33 and 44). The construction area limits will be marked and fenced to protect the historic retaining wall on the south side of the roadway as well as the historic “Southside Stairs” coming down the face of the slope from Reservoir 1.

Tree protection fences will be installed on the north side of the road as specified in the tree protection plan (Appendix C). The construction area will be managed to allow cars to pass between SE Harrison Drive and East Tabor Drive at most times. Pedestrian and bicycle passage around the work area will also be arranged.



In the eastern portion of this work area, a short segment of 30-inch diameter pipe will be constructed to connect two existing water conduits. The excavation for this pipe will extend from the base of the hill north of the road and east of the stairway to the southern half of the roadway. Three existing water mains will be cut-and-plugged. The trenches will be approximately ten feet wide. The depth will be determined by the depth of the pipes to be connected.

One cut-and-plug will take place in the roadway just south of the existing building by the stairway (shown in Figure 15). The other two cut-and-plugs will take place in the base of the slope on the north side of the road further to the west of the first cut-and-plug. In addition, the two electrical conduits described in Work Area 3 will follow the north edge of the roadway to the existing building.



Figure 15. Existing building (identified as the 44-inch Meter House in the Park District nomination) by Southside Stairs

The new 30-inch diameter pipe and one cut-and-plug will required cutting through the roadway and excavating the ground. The other two cut-and-plugs will require excavating adjacent to the roadway.

To cut and plug a water main, the pipe must be exposed by excavating the soils around it leaving at least three feet of work space on each side and one foot underneath. The existing water main is cut and a section of pipe approximately ten-foot in length is removed. In order to remove ten feet of pipe, the cut-and-plug excavation must be approximately 15 feet long. The open pipe ends are either capped with a metal cover welded in place or plugged with concrete-based material and the excavation is backfilled with clean imported fill material that is then compacted.

Afterward, the surface is restored to its approximate original condition. If it was paved, the pavement and subgrade will be reconstructed. If it was vegetated or soil-covered, topsoil will be placed and planted with vegetation to blend with the surrounding vegetation. In this area, the vegetation is predominantly grass, so soil will be seeded with native grass seed mix.

Four CIV covers will also be installed in this area. These structures are not prominent in the landscape because they are flush with the ground surface. See the discussion in the section on Work Area 2.

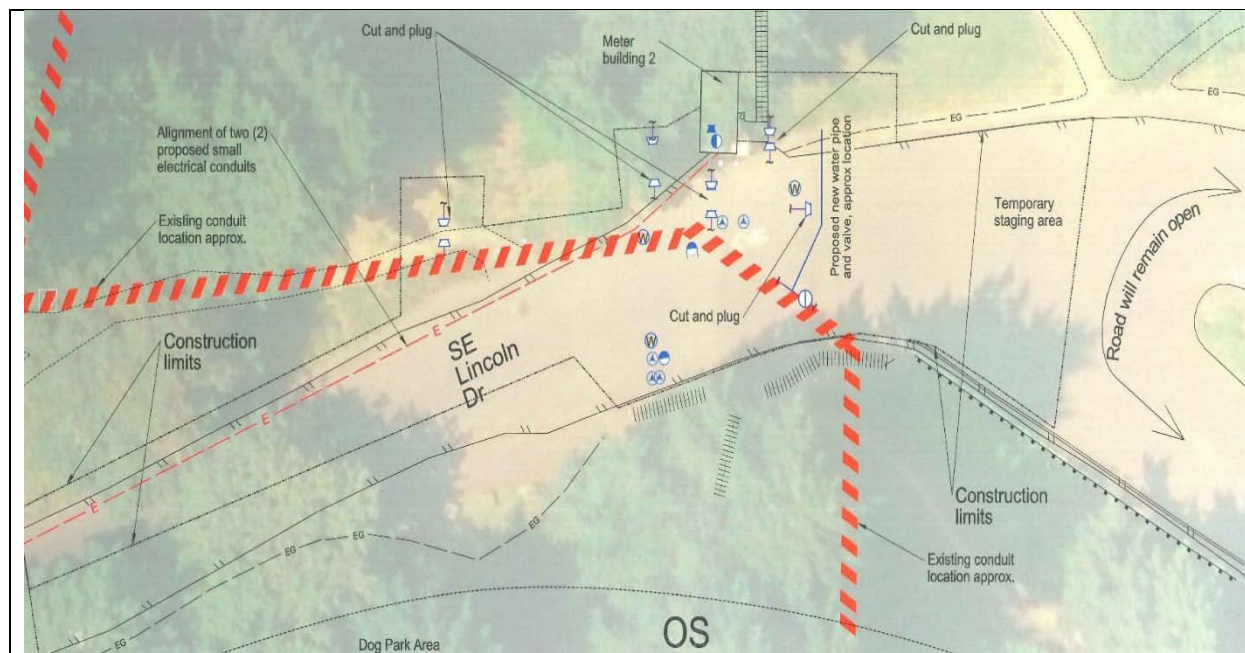


Figure 16. Tabor Work Area 4 – Disconnections in Lincoln Drive South of Reservoir 1

The work will not affect the historic Southside Stairs and historic retaining walls, and no trees will be removed. As the work is completed, all the excavations will be filled, the slope will be returned to its approximate original contour and revegetated, and the roadway will be restored to its approximate original condition.

*Historic Resources and Historic Character in Work Area 4:*

Work Area 4 is within the Park Historic District and outside the Reservoirs Historic District. The listing documents say little about the character of Work Area 4, noting only that “the Southside Stairs climb north from the roadway up to the reservoir basin” (of Reservoir 1). The Southside Stairs are the only part of a stairway designed by Emanuel Mische that appears to have been constructed. The stairs have a historic metal railing alongside them, as described and pictured in Work Area 5.

Adjacent to the Southside Stairs and abutting the roadway is a non-contributing PWB building described this way (Park listing documents, Section 7, p. 9):

“Below and to the south of Reservoir 1 are four small buildings associated with the Water Bureau and piping from the reservoirs. (...) At the foot of the concrete steps up to Reservoir 1 is the 44" Meter House. The south elevation of this building abuts Harrison Drive. The metal door faces east and is accessed by concrete steps. The shed-roofed concrete building is the largest of the meter houses with screened windows on all four sides.”

The roadway itself is part of the contributing resource of the site because it is part of the landscape design of the park. Aerial views of Mount Tabor Park (such as those available on Google Maps) show that the asphalt paving in and near Work Area 4 has distinctly different colors, indicating that it has been repaired or replaced at times in the past. This indicates that the roadway materials are unlikely to be historically significant. Rather, it is the location of the roadway, its design, and the aesthetic experiences that it offers that are historically significant.



Fig. 17. Work Areas 4 and 5 showing road surface repair. Also shows area of “Terrace Garden” (discussed in WA 5 section, below).

The roadway is supported by historic stone retaining walls along its south edge that contribute to the historic character of the park. The stone retaining walls are outside of the designated construction work area and will be protected by fences and, where needed, signage. The retaining walls, stairway, and other features of the park will be protected by the construction management measures described in Appendix C.

The historic resources identified in Work Area 4 are:

- The site, including SE Lincoln Drive, East Tabor Drive, SE Harrison Drive, and the landscape.
- Retaining walls along south side of roadway.
- Stairway on north side of roadway (“Southside Stairs”).

Alterations subject to Historic Resource Review in Work Area 4:

- Excavation of road and its restoration to approximate original conditions.
- Excavation of hillside for cut-and-plugs and its restoration and revegetation.
- Installation of 30-inch diameter pipe under roadway.
- Removal of pipe at three cut-and-plugs.
- Installation of two electrical conduits along north side of roadway.

Environmental zone resources in Work Area 4:

No environmental zoning in Work Area 4.

Work subject to Environmental Review in Work Area 4:

None.



## **Work Area 5 - Pipe in the Lawn Below Reservoir 1**

This work area is the site of a 48-inch diameter pipe connection between two water conduits, 50 inches and 54 inches in diameter and is depicted on Figure 19 and Sheets 7, 17, 34 and 45. The connecting pipe will also connect with a 36-inch diameter water pipe in the same area. In order to make the connections, short sections of these pipes must be removed (ranging from ten to 40 feet), and the ends of the portions that will no longer be used will be plugged.

This construction will require excavation of approximately 180 linear feet of trench ten to 12 feet wide. The depth of the trenches depends on the depth of the existing pipes, and will reach an expected maximum of about 15 feet below the current ground surface.

The new connection on the east side will become the high point in this section of pipe, so it is necessary to install a combination air/vacuum release valve here. This valve will be in an underground vault. During operation of the water system, changes in flow and consumer demands can cause a vacuum to form, which can seriously damage the pipes. Air can also get into the piping system and accumulate at high points and can restrict flow if not released. The air/vacuum release valve automatically allows vacuums or air to be released. Because of the elevation of the pipe at this point, the top surface of the vault will rise slightly above the currently-existing grade. During construction, the grade at this location will be adjusted so that the top of the vault is at ground level.

A vent pipe will be installed on top of the vault to allow air to vent freely to the atmosphere when the air/vacuum release valve operates. A sample of this vent is shown in Figure 18. This vent pipe will be similar in construction to other vents used in the city.

Five CIV covers will also be installed in this area. These structures are not prominent in the landscape because they are flush with the ground surface. See the discussion in the section on Work Area 2.



Figure 18. Proposed vent type for the vault in Work Area 5

This work area was selected for these pipe connections primarily because this is near where two of the existing pipes cross. However, the very shortest possible connection between the two conduits would have resulted in the loss of six large trees. The proposed alignment avoids these six large trees, at the expense of a longer connection between the pipes. Other alignments would have resulted in even longer connecting pipes, and therefore more excavation and disturbance. The proposed alignment will help preserve the character of this part of the park and these majestic trees.

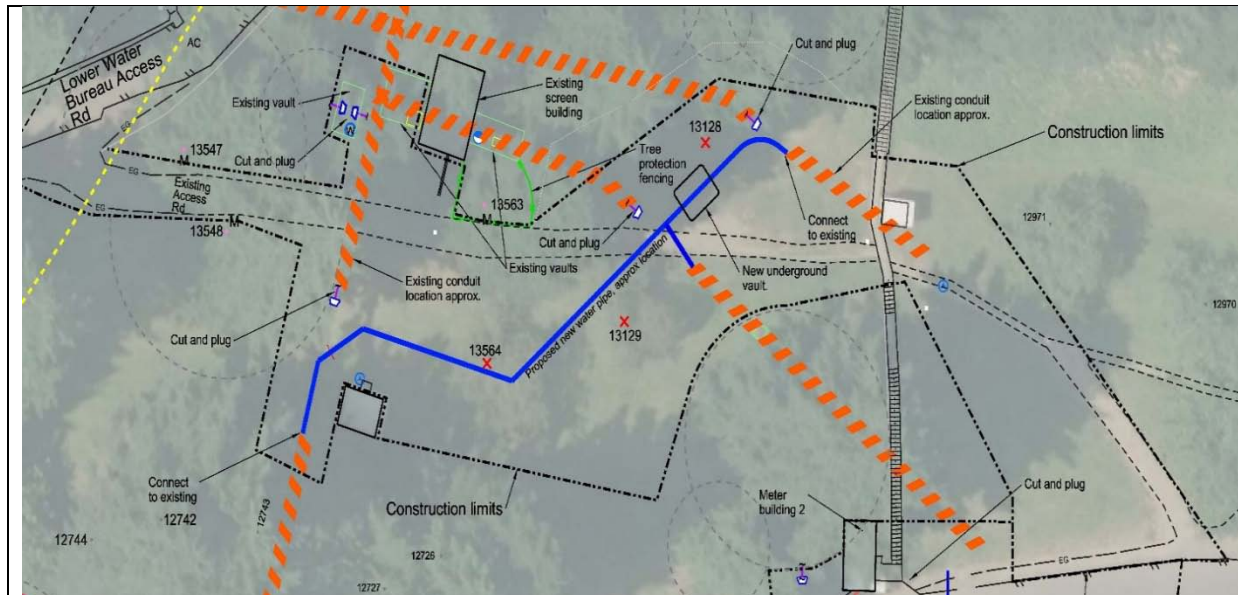


Figure 19. Tabor Work Area 5

Three trees must be removed, all of them comparatively small ornamental fruit trees, and five flowering native trees will be planted in this area to replace them. Tree planting is prohibited on the top or face of the dam of Reservoir 1, which includes the open areas to the north and east of the new pipe. Trees must also be at least 10 feet from the outside edge of large-diameter pipes. As a result, the new trees will be located to the south or west of the newly-installed pipe. Exact locations will be determined in the field in consultation with PP&R staff, who manage vegetation in the park (see Sheet 45).

Three large trees will be retained and protected, but because the construction area comes closer than the city's standards allow, PWB will still mitigate for them as if they had been removed. They are the three Douglas fir trees along the "Site Access Road." One of them is 34 inches in diameter, one is 36 inches, and one is 50 inches. The "Site Access Road" is an existing gravel road currently used by City staff and equipment (Figure 20). PWB proposes to protect these trees using construction methods acceptable to the City Forester, such as covering the existing gravel road with four to six inches of new gravel and placing steel plates on top of that to minimize disturbance to the near-surface roots of these trees.



Figure 20. Two large fir trees next to

PWB has delineated the construction area for Work Area 5 (see Sheet 34). The plan provides



Figure 21. East access to Work Area 5 by stairs, hand rail and building.

two access routes for the construction contractor. This flexibility will allow the eventual contractor flexibility to select the most appropriate equipment and methods to ensure meeting PWB's goals for tree protection and construction management. (See Appendix C for the construction management plan and Appendix F for the tree protection plan, including extra tree protection measures for more details). The western access was described above. This will be the main access because of the terrain.

The eastern route follows a route up the hill from SE East Tabor Drive to the concrete walkway between two segments of the Southside Stairs. This route starts west of the stairs as an existing gravel road, but it narrows to a path, and then widens back out as a rough dirt and gravel cat road. Where the access route crosses the historic concrete walkway (part of the Southside Stairs), there is a small unnamed PWB building. This path can be seen to the right in Figure 21.

Access to the work area from the east is constricted at concrete walkway and building. Construction vehicles need a route at least 12 feet wide to ensure safe passage. In order to achieve this on the south side of the unnamed building, it will be necessary to remove a portion of the historic metal handrail shown in Figures 22 and 23. Note the bend in the top rail to the right of the left post. The top rail has previously been cut and welded back together. The upright section at the top end of the railing is set loose into a pipe in the ground. If the railing is cut, it can simply be lifted out of the ground and taken away for safekeeping.



PWB proposes to cut this handrail again to allow the contractor to access the work area from this direction. At the end of the project, the handrail would be re-installed and welded together once again, giving it approximately the same appearance that it has today.

The concrete walkway and the Southside Stairs will be protected by spreading the weight of equipment moving across the walkway. This will be done using an approved method of distributing the weight that will be developed by the contractor and PWB during construction, when the type of equipment used will be known. This method could include placing four to six inches of coarse gravel on each side of the walk way and on top of the concrete and placing a steel plate on the gravel.

As noted above, PWB proposes to plant five small to medium-sized trees, at least three of them flowering, to replace the fruit trees that must be removed. This will replace the loss of the fruit trees' spring blossom in this area. Work Area 5 is non-irrigated and most of it is mowed infrequently or not at all. Grasses grow sparsely near the existing trees.



The entire construction work area will be fenced and erosion control measures will be carried out as described in the Construction Management Plan in Appendix C and shown on Sheet 34 in Appendix A.

Historic Resources and Historic Character of Work Area 5:

Work Area 5 is within the Park Historic District and outside of the Reservoirs Historic District. The only identified contributing feature in this work area is the “site.” It is adjacent to the Southside Stairs and just below the flat ground where those stairs end. The slope that the stairs climb is, in part, the dam for Reservoir 1 and also contains several large pipes carrying water to and from Mount Tabor.



Figure 23. Historic Railing at Work Area 5 East Construction Access. Side view.

Mische’s published preliminary plan for Mount Tabor Park shows a “Terrace Garden” on the flat ground immediately south of Reservoir 1 (Park listing documents, attachment). It also shows a formal garden arrangement on the slope leading down to the roadway. Work Area 5 can be seen from the viewpoint at the top of the stairs. The view from the top of the stairs is described this way (Park listing documents, Section 7, p. 8):

*“The top of the stairs yields an impressive front-on view to the north of the 1894 Reservoir 1 and its associated gatehouse and weir building. To the south, the view is of southeast Portland, distant hills and the grounds of Warner Pacific College.”*

This description lacks any reference to the importance of Work Area 5 as a scenic resource. This, and the fact that Work Area 5 contains primarily non-contributing structures that post-date the period of significance, indicate that the immediate area of Work Area 5 has limited value in contributing to the historic character of the park. The surrounding trees and grass provide a pleasant setting for Work Area 5 itself, but the immediate work area is not noted in the listing documents for its historic or scenic character.

On the other hand, the tall fir trees growing in Work Area 5 form part of the scenic backdrop to the view across the reservoir from a grassy slope farther north. The setting is described this way (Reservoirs listing documents, Section 7, p. 3):

*“Plantings around Reservoir 1 include ivy and blackberries on the surrounding embankments, fir, cedar, and deciduous trees and some ornamental shrubbery on the dam in front of the Gatehouse, referred to as the Terrace Garden in the preliminary plan for the park published in 1911, and along the walkway to the*

*Weir Building. (...) North of the basin is a mowed, grassy area with mature big leaf maples flanked by one of the main trails up to the top of the butte. This area provides a grand view of Reservoir 1 including the Gatehouse and Weir Building.”*

This accentuates the value of preserving the tall trees in Work Area 5 to keep this view substantially unimpaired. The proposed work plan avoids the line of tall Douglas firs growing along the edge of the flat ground south of the reservoir, and preserves the view.

In addition, PWB will employ extra tree protection measures to help ensure the survival of three other large Douglas firs growing along the gravel road used to access Work Area 5. These three trees stand behind the front line of preserved trees that form the primary backdrop to the view across Reservoir 1, and are of secondary scenic importance.

*Alterations subject to Historic Resource Review in Work Area 5:*

- Excavation of ground, restoration of the ground to its approximate original contours, and revegetation of the disturbed ground to blend with its surroundings.
- Removal of sections of existing pipe and plugging of unused pipe ends.
- Installation of new connecting pipe, valves, air/vacuum release valves, and other appurtenances.
- Construction of new underground vault, re-grading of the ground surface around it to blend in with surrounding contours, and installation of new air vent on top of it.
- Removal of three existing fruit trees.
- Planting of five new flowering trees.
- Cutting and temporary removal of historic iron-pipe handrail and its subsequent re-installment and welding into place to approximately match its existing condition.

*Environmental zone resources in Work Area 5:*

The Environmental Conservation zone abuts the westernmost portion of this work area, but no part of Work Area 5 is within the environmental zone. There are no identified environmental zone resources in Work Area 5.

*Work subject to Environmental Review in Work Area 5:*

None.

## **Work Area 6 - Vault Work in Gravel Access Road**

The work at this site will involve cutting and plugging two pipes (see Figure 26 and Sheets 8, 18, and 35). A combination air/vacuum release valve will be installed inside an existing vault, and a vent pipe will be installed on top of the vault to allow air to freely flow in and out of it (see Figure 24). This vent is standard equipment for PWB, and typically has a galvanized or brushed metal finish. However, in order to reduce the visibility of the vent in this forested location; PWB proposes to install a vent that has been painted brown.



Figure 24. Example of air vent pipe.

All of the work in this Work Area will be conducted within the existing roadway, in the existing vaults or near the vault adjacent to the roadway (Figure 25). The road is graveled and is used regularly by PWB service vehicles.



Figure 25. Existing vaults at Work Area 6 showing forest beyond.

Existing water mains will be cut and plugged in two places near the existing vaults.

The work area will be protected by the measures described in the Construction Management Plan (Appendix C), including tree protection fences and erosion-control measures. No trees or other vegetation will be removed or adversely affected.

### **Historic Resources and Historic Character of Work Area 6:**

Work Area 6 is within the Park Historic District and outside of the Reservoirs Historic District. The vaults and their appurtenances (guard rail, hatch covers) do not date from the period of significance, and do not contribute to the historic character of the park or of this work area.

The only identified contributing resource in Work Area 6 is the “site,” including the landscape. The gravel access road is called the “Upper Water Bureau Access Road.” Its date of construction is unknown, and it is not mentioned in the listing documents. It provides access to parts of two water mains, one of which was constructed in the 1960s and 1970s.

This work area is not visible from any of the viewpoints in the park, nor does it offer a scenic view in any direction. This is the western-facing slope of one of the four buttes that make up Mount Tabor, and it is forested, primarily with Douglas fir and big-leaf

maples. It contributes to the character of the park as a “forest refuge in an urban environment,” as the Park listing documents describe it (Section 7, p. 2).

Alterations subject to Historic Resource Review in Work Area 6:

- Cutting and plugging two existing pipes; and adding a combination air-vacuum valve inside an existing vault.
- Installation of an above-ground air vent pipe connected to an existing vault.
- Excavating portions of the graveled roadway if necessary to cut and plug pipes or make connections.
- Backfilling any excavations and repairing any damage to the ground or road surface, including reconstructing or repairing damaged sections of road.

Environmental zone resources in Work Area 6:

This work site is entirely within the resource area of the Environmental Conservation zone. The graveled road crosses a slope that faces roughly westward. The slope is forested and has dense leaf litter and sparse low-growing undergrowth that appears to consist primarily of native plant species. The trees within 50 feet of the work area are predominantly big leaf maples. There are few shrubs near the work area. The work will avoid disturbing any vegetation, including trees, in this Work Area.

Details of the environmental resources in this area are presented in the discussion of the Environmental Review, along with other information and analysis required by that review.

Work subject to Environmental Review in Work Area 6:

All ground-disturbing work in this work area is subject to Environmental Review.

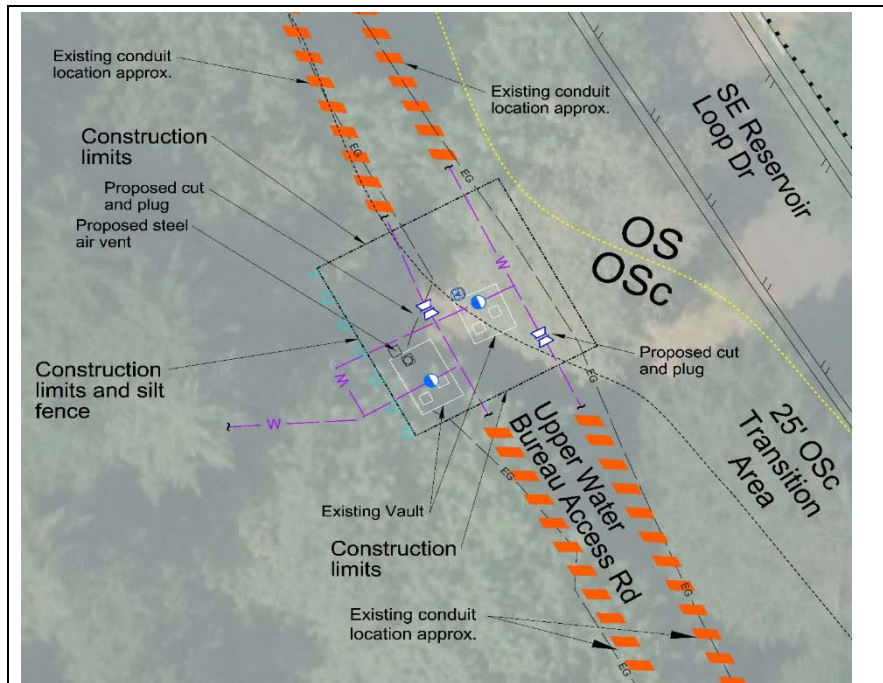


Figure 26. Tabor Work Area 6



## **Work Area 7 - Vault Work by Tabor Pump Station**

Area 7 is located within a grassy open area at the base of the stairs on the Reservoir 5 dam slope. This area houses an underground pump station that serves Reservoir 7, which is located near the summit of Mount Tabor. It also is the site of a pipe tunnel, a number of existing pipes, electrical conduits and vaults (Figure 27).

Several tasks will be carried out in this area (Figure 28 and Sheets 9, 19, 36 and 46):

- An impressed current cathodic corrosion prevention system will be installed. It will require subsurface installation of anodes (metal rods), and wiring and construction of an above-ground electrical equipment cabinet about 2 feet wide, 1 foot deep and 3 feet tall, and smaller junction boxes, standing on 5-foot tall posts on a concrete pad.
- Screening shrubs will be planted around the new equipment cabinet.
- Three water mains will be cut and plugged, with concrete thrust blocks added for restraint (all underground). The “cut and plug” work is reversible; if desired, it can be re-excavated and a pipe segment installed to restore the connection.
- Three underground concrete vaults that are no longer needed will be removed and the ground surface restored and revegetated.
- Electrical wiring will be installed between the existing electrical structure and Gatehouse 6 East. This will require installation of electrical conduit in a small trench across the road around Reservoir 6.
- Three CIV covers will also be installed in this area. These structures are not prominent in the landscape because they are flush with the ground surface. See the discussion of them in the subsection on Work Area 2.



Figure 27. Existing vaults, cabinets and vents in Work Area 7.

The locations of most of these tasks are determined by the locations of existing underground pipes and equipment. The work was carefully designed to avoid disturbing the nearby Heritage Tree, a 97-inch diameter at breast height (dbh) sequoia, as well as smaller trees growing in the vicinity. Construction traffic will access the area from an existing access road east of Reservoir 6 that comes off SE Lincoln Drive. This access road is used regularly by PWB maintenance and operations vehicles.

The access road will be fenced to prevent construction vehicles from leaving the road in the area of the nearby trees' root protection zones, and it will be reinforced with four to six inches of coarse gravel topped with steel plates to prevent disturbance of any roots

that may extend under the roadway, or some other method approved by the City Forester to bridge the roots and distribute the weight of the construction vehicles.

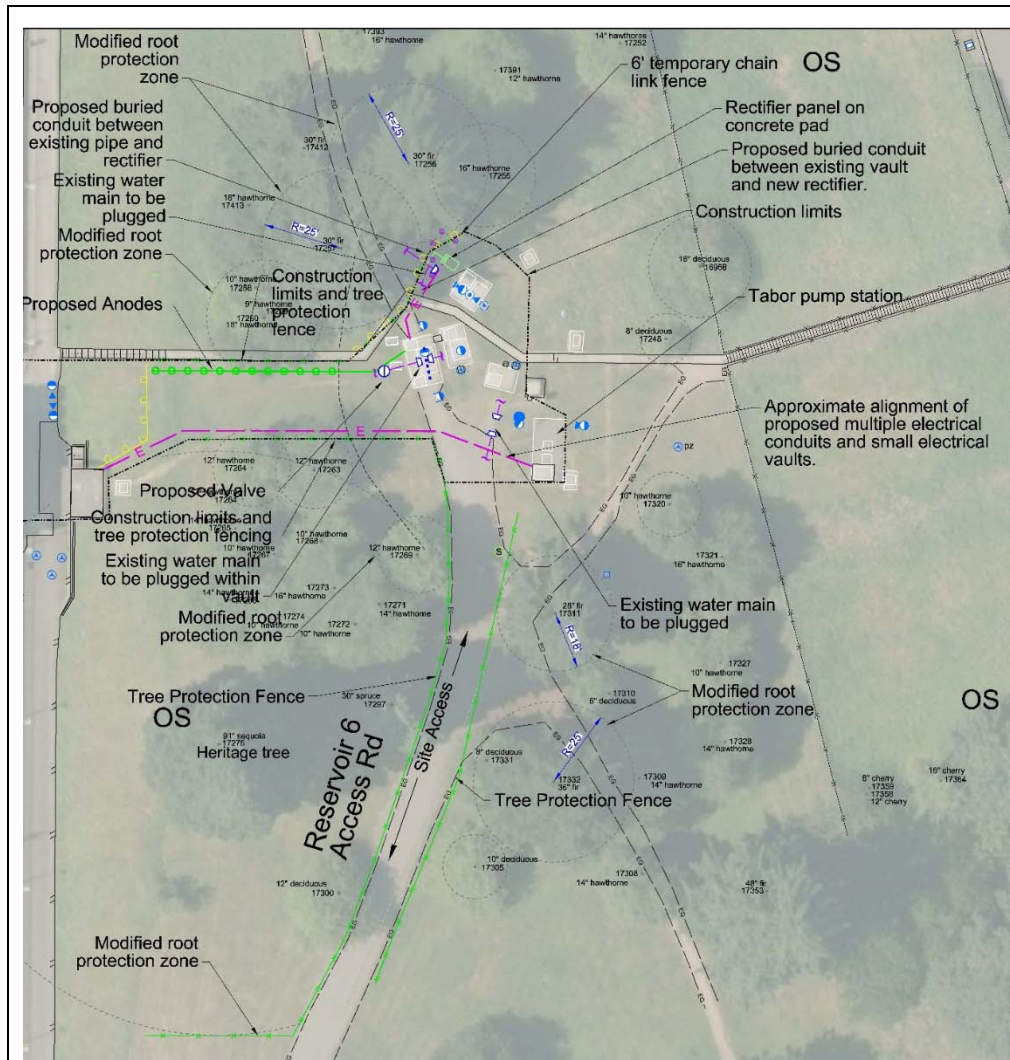


Figure 28. Tabor Work Area 7 by Tabor Pump Station

The work will require excavation of the pipes to be cut and plugged, removal of approximately ten feet of pipe from each location, and capping or plugging of the unused pipe ends. Installation of thrust blocks (which absorb forces created by the water moving in the pipes) will require additional excavation to make room for the concrete blocks to be poured in place. To make room for the thrust blocks, three existing vaults that are no longer used will be removed.

The construction of the cathodic protection system requires drilling or augering holes and excavating narrow trenches in between them. The metal anodes are installed in the holes and connected by the wires laid in the trenches to each other and to the above-ground electrical equipment cabinet, which operates the system.

In order to install an electrical wire from Gatehouse 6 East to the electrical shed across the sidewalk, a narrow trench must be cut in the concrete sidewalk (also used as a PWB access route) that surrounds the reservoir.

Two vaults are proposed to be installed beneath the sidewalk near where the wiring exits the gatehouse. They will serve as “pull boxes,” where wiring can be pulled through underground electrical conduit and connected. These pull boxes will be concrete, approximately four feet square, and will have brushed-steel hatch lids about three feet square. They are standard utility vaults with concrete tops, like others in use within the park, such as those shown in Sheet 9 or Figure 29. Because these will be in the concrete, the access doors will have a non-skid brushed metal surface and will blend into the sidewalk. After installation, the trench will be backfilled and the concrete path repaired.



Figure 29. Typical handhole access lids.

*Historic Resources and Historic Character of Work Area 7:*

Work Area 7 is within both the Reservoirs Historic District and the Park Historic District. The pump station (known as both the “Tabor Pump Station” and “Pump Station 7”) is identified as a non-contributing structure. Here is its description (Reservoirs listing documents, Section 7, p. 9):

“Located between Reservoirs 5 and 6 along the route of the hundred steps that climb between Reservoir 5 and 6 is the Mount Tabor Pump Station, a small metal unit on a concrete slab. Water from Reservoir 5 arrives at the pump station via gravity and the electric pump delivers water to a variety of locations in the system, including the covered storage tank on the north side of Mount Tabor.”

It should be noted that this description is not truly of the Mount Tabor Pump Station, which is in fact inside one of the at-grade concrete vaults. The above-ground “metal unit” most likely refers to the electrical cabinets adjacent to the pump station vault.

Work Area 7 is not further described in the Reservoirs listing documents. The listing documents fail to note that there are multiple concrete vaults visible here, and more than one above-ground equipment cabinet in this area. Unlike much of Mount Tabor Park, the character of Work Area 7 is more defined by the PWB utility equipment and structures than by naturalistic landscape or scenic views. Neither the vaults nor other features of this area are mentioned as contributing historic resources or as contributing to the historic character of the site.

Work Area 7 is easily visible from the sidewalk on the west side of the Reservoir 5 dam and from the stairway coming down the face of the dam (it sits at the bottom of that stairway). However, because it occupies a low spot between Dam 5 and Reservoir 6, it is not a conspicuous feature in the scenic views in and around the park, and in fact is not visible from the top of Mount Tabor.

The only listed contributing feature at Work Area 7 is the “site,” including the landscape. The topography and landscape of Work Area 7 was designed as part of Reservoirs 5 and 6 and to accommodate Tabor Pump Station. It is not noted as a significant part of any scenic view, and as a result, it has relatively little value with respect to the historic park landscape. And because the pump station and other utility features are non-contributing and have been repaired or replaced many times over the years, it also has relatively little value with respect to the historic character of the Reservoirs Historic District or the Park Historic District.

Part of the pathway around Reservoir 6 is in Work Area 7. This path is described in the listing documents as associated with Reservoir 6, which is a contributing feature of the district. Here is how it is described (Reservoirs listing documents, Section 7, p. 2):

“The six tenths of a mile walkway around the reservoir is one of the most noted areas for jogging, walking, and stroller pushing and is used by a number of schools for athletic training.”

The walkway is not otherwise described except to say, in the narrative focusing on Reservoir 6 (pp. 8 and 9, Section 7) that the walkway is popular, well-lit, and in good condition. It apparently does not itself possess much historic interest, although it offers access to the reservoir, its parapet walls, and its ornamental fence, which are of interest.

The vegetation in Work Area 7 is predominantly grass. Immediately to the north is a grove of English hawthorn (*Crataegus monogyna*) trees that is mentioned in the listing documents. Unfortunately, this species of hawthorn is now classified as a nuisance plant in Portland (see the *Portland Plant List*) because of its invasive qualities and tendency to hybridize with the local native hawthorn (*Crataegus suksdorfii*). Other

nuisance species grow under these hawthorns, notably Himalayan blackberry. Otherwise, the vegetation nearest to Work Area 7 is predominantly trees growing amidst grass—most of which is turf grass.

Alterations subject to Historic Resource Review in Work Area 7:

- Cutting and plugging three existing water mains.
- Demolishing, removing and backfilling three existing underground concrete vaults.
- Adding thrust blocks.
- Installing the cathodic protection system.
- Constructing the above-ground electrical cabinet.
- Planting shrubs.
- Excavating soils, backfilling, and restoring and revegetating all disturbed ground surface.
- Trenching through the Reservoir 6 walkway, burying electrical conduit and wires, backfilling the trench, and repairing the walkway to blend with its surroundings.
- Constructing two small concrete vaults under the walkway to accommodate the new wiring. The vaults will have standard concrete lids and brushed-metal hatch covers like those used elsewhere in the park.

Environmental zone resources in Work Area 7:

No environmental zone is present at Work Area 7.

Work subject to Environmental Review in Work Area 7:

None.



## **Work Area 8 – Disconnections and Cabinet Along SE 60<sup>th</sup> Ave**

In this area (Figures 30, 31, and 32, and Sheets 10, 20, 37, and 47), PWB plans to cut and plug the two outlet pipes leading from Reservoir 6 into the drinking water distribution system. This will occur west of Gatehouse 6 West and adjacent to the SE 60<sup>th</sup> Avenue right-of-way. The two pipes are parallel to the walkway coming down the slope from Gatehouse 6 West, one on either side. This work will require excavating trenches approximately ten feet wide and 15 feet long to the depth of the pipes. The excavation will avoid the historic walkway and stairs, as well as the nearby trees (Figure 30).

PWB also plans to install an equipment cabinet adjacent to the SE 60<sup>th</sup> Avenue right-of-way just south of SE Hawthorne Boulevard (Figure 31). There are two existing air vent pipes and a bus stop already in this location.

The cabinet will stand on a concrete pad between the two vent pipes and approximately five feet from the southern vent. The new concrete pad will contact the existing three-foot-wide concrete pad holding the vent pipe. Shrubs will be planted around the new equipment cabinet, although not between it and the right-of-way. To minimize the visual intrusion, the cabinet will be placed as close to the right-of-way as possible so it appears similar to street furnishings.

Several factors constrain the location of the electrical cabinet:

- Technicians working at it need to have line-of-sight communication with technicians working in a vault in the street.
- The equipment in the cabinet must be above ground to provide that line-of-sight, and to protect electrical components from water damage.
- Location of existing pipes in the right-of-way, including the sidewalk, leave no room for a cabinet to be placed in the right-of-way.
- The slope immediately east of the cabinet is part of the dam supporting Reservoir 6, and significant excavation or re-grading of the slope is prohibited according to the FERC permit for the site.



Figure 30. Location of cut-and-plugs next to stairs to Res 6.

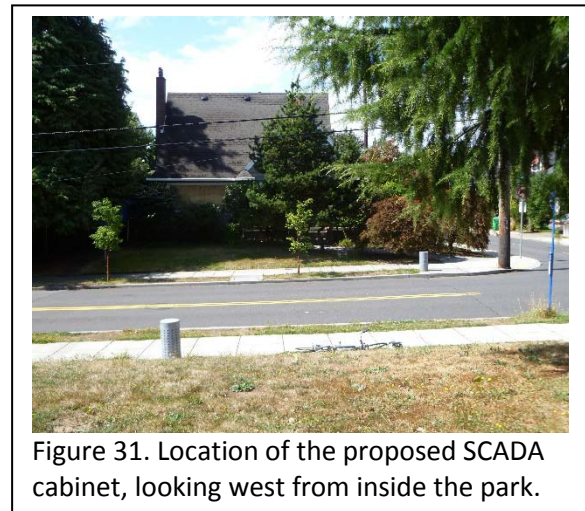


Figure 31. Location of the proposed SCADA cabinet, looking west from inside the park.

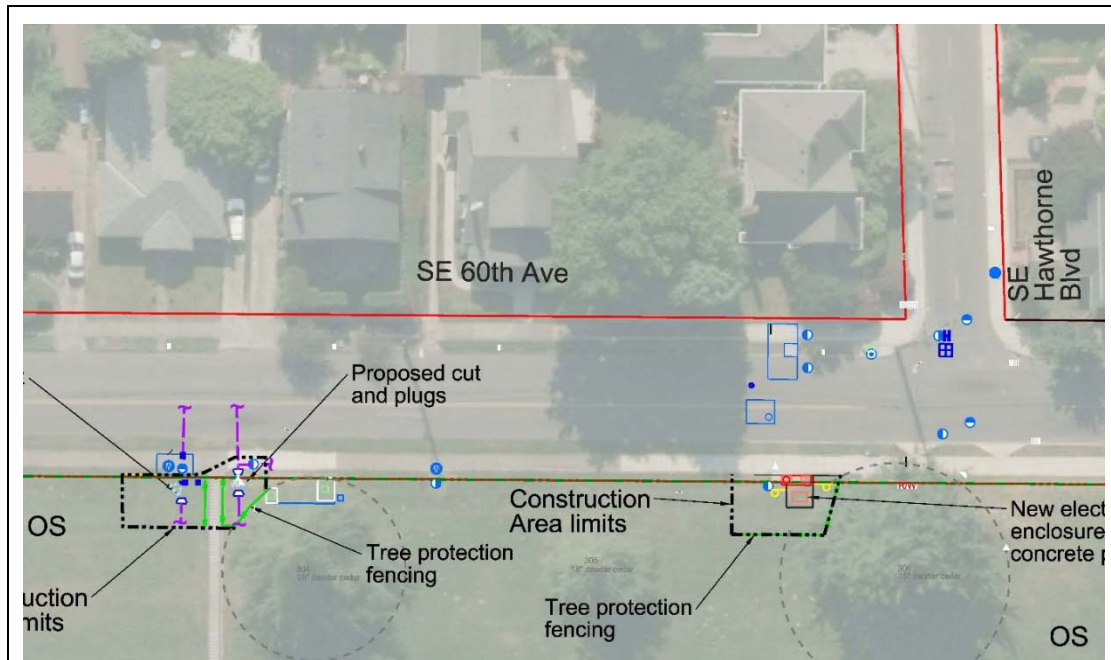


Figure 32. Tabor Work Area 8 – Disconnections and Cabinets along SE 60<sup>th</sup> Ave (north is to the right)

Historic Resources and Historic Character of Work Area 8:

Work Area 8 is in both the Reservoirs Historic District and the Park Historic District. It is described in this way (Reservoirs listing documents, Section 7, p. 8):

“Because of the large expansive view of open water and the attractive Gatehouses, Reservoir 6 provides magnificent scenic vistas into and out of the park. (...) Its site originally sloped fairly evenly from east to west. Earth excavated from the eastern portion and basin was used to create berms along the western side. The outer slopes were to be of a "moderate angle" so that they could be properly treated as part of the park landscape. The grassy slopes of the dam drop down to the sidewalk along Southeast 60th Avenue.”

Work Area 8 is at the base of the grassy slope dropping down to SE 60<sup>th</sup> Avenue. Gatehouse 6 West is readily visible from the work area, as is the parapet wall and ornamental fence. It is not possible to see to the east beyond the parapet wall from this location.

Alterations subject to Historic Resource Review in Work Area 8:

- Excavation and backfill of trenches, re-grading and revegetation of the disturbed ground.
- Removal of sections of pipe and capping or plugging the pipe ends.
- Installation of a concrete pad and above-ground electrical equipment cabinet.
- Planting of shrubs.

Environmental zone resources in Work Area 8:

There is no environmental zoning in Work Area 8.

Work subject to Environmental Review in Work Area 8:

None.



## **Work Area 9 - Reservoir 1**

This work area encompasses all the work in and at Reservoir 1 (Figures 33 and 34, and Sheets 11, 21, 22, 23, and 38). This work involves protecting the existing inlet pipes and weir openings, capping the outlets, protecting the reservoir drain and removing two non-historic items. This work is described in more detail below. In Reservoir 1, there are three outlet pipe openings, one inlet pipe opening in the gate house on the north side, and one drain opening (see elevation drawing, Sheet 22). There is a weir opening on the west side and the openings for two pipes that connect Reservoir 1 to Reservoir 5 (locations shown on Sheet 21, details on Sheet 23).

The inlet pipe opening on the north face of the gatehouse wall will be sealed inside the gatehouse by welding the sluice gate shut. This approach will not make any exterior alterations to the gatehouse and will not damage historic materials around this pipe. This work is reversible by cutting or grinding off the weld.

At all the reservoirs, PWB proposes to cover all weir openings (rectangular openings downstream of a weir) with dark-colored screen material and all drain openings with grating or bars. This is necessary to prevent the entrance of debris, animals, or people into these openings. Debris could damage the pipes or other materials, and animals or humans could be injured. There will be more opportunities for this to occur when the reservoirs are used as aesthetic features.

Reservoir 1's inlet weir will be screened to prevent intrusions (Figure 33). The screen will be given a dark, dull finish, and will be recessed approximately two feet behind the vertical opening (see Sheet 23 for details). The screen will be attached to brackets, and the brackets will be attached to the concrete surfaces inside the weir opening. Attachments will be made by drilling small holes into the concrete and epoxying anchors into the holes. The brackets can then be bolted into the anchors. This work is reversible: the screens can be removed by unbolting them. The anchors can be drilled out and the holes repaired with material suitable for patching historic concrete.



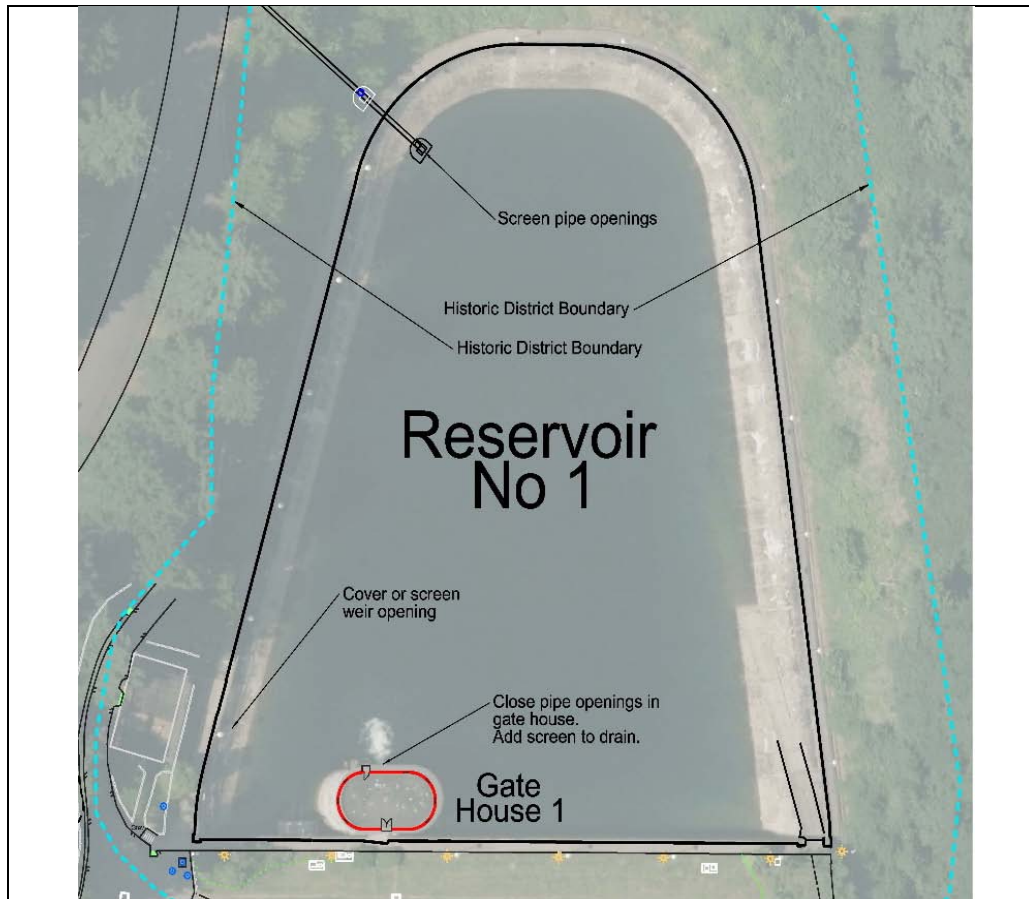


Figure 34. Tabor Work Area 9 – Reservoir 1

A non-historic sheet metal guard will be removed from the historic fence above the weir opening (Figure 35). This sheet was installed to prevent introduction of contaminants at this location, and will not be needed when the reservoirs contain non-potable water.

Originally there was a tunnel connecting Reservoirs 1 and 5 that could be used to fill either reservoir. In 1986, the tunnel was replaced with 2 pipes in the same alignment as the tunnel. The only remaining evidence of the tunnel is 2 pipes and where they terminate in each reservoir (Figure 36).

These pipes will have grates made of metal bars welded to a frame to cover the openings. The frame will be attached to the interior of these pipes by means of brackets



Figure 35. Sheet metal attached to the Reservoir 1 fence. It is to be removed.

bolted into holes drilled into the metal of the pipe interiors. They will normally be underwater and therefore not visible. These grates will be removable if desired.

All of the installed caps, screens, grates, or bars can be removed in the future if desired.

One of the requirements from Oregon Health Authority (OHA) is that the reservoirs be physically disconnected from the distribution system and that PWB create an air gap or a physical barrier so that no cross-connection can occur between the non-potable water in the reservoirs and the drinking (potable) water system.

In all of the reservoirs (as in Reservoir 1), the outlet pipes that lead to the drinking water distribution system are located somewhere near the bottom of the reservoir so that most of the water in the reservoir can flow into them. The outlet pipes will be capped at the reservoir and cut-and-plugged in one or more of the other work areas as previously described. When the outlet pipe is cut or physically disconnected, the any uncapped segment between the reservoir and the disconnection point could fill with non-potable water. This is because the reservoirs will be filled for aesthetic purposes, filling these outlet pipes in turn, and the outlet pipes will not be able to be drained and could potentially contaminate the drinking water.

Constant presence of water in these pipes will create extra moisture and opportunity for deterioration and eventual leakage or other damage. Therefore, PWB proposes to cap these pipes with a steel cover. Those installed in reservoirs will have dull metallic finish similar to existing pipes. The type of cover will be what is called a “blind flange” (Figure 37) or a simple disk. Some pipes already have a flange that can be used, while others may require a flange to be welded to them. Then the cover will be bolted or welded to the flange.

The covers or caps will be made of unpainted steel similar to the steel used in the pipes, manhole covers, and other large metal pieces. It will soon weather to appear similar to other steel in the reservoirs. Because the reservoirs will be filled at the end of the project, the outlet pipes and their caps will generally be underwater and unseen.



Figure 36. Openings in Reservoir 1 for the pipes connecting to Reservoir 5.

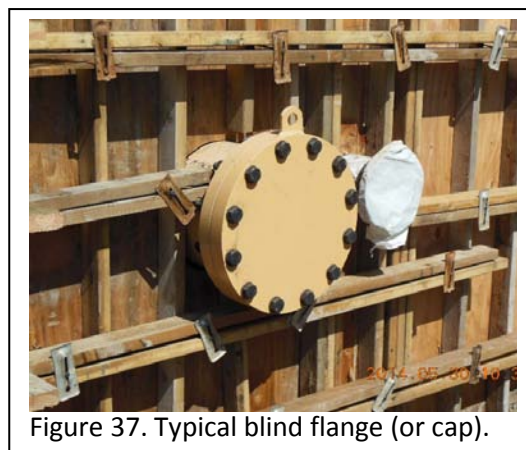


Figure 37. Typical blind flange (or cap).



This work is reversible. The flanges and caps can be unbolted or removed by grinder or cutting torch and the underlying metal surfaces refinished.

Two of the three outlets for reservoir 1 are shown in Figure 38. One of the outlet pipes has a non-historic plastic extension that will be removed. The orange components visible on these two pipes are valve casings (or housings for the valves) that operate the outlets. These are non-historic valves that will be unbolted from the flange and removed, and a blind flange cover will be bolted in their place. This process will not damage any materials and is reversible.



Figure 38. Two outlet pipes in south end of Reservoir 1 showing plastic

The other outlet pipe (the third) is at the base of the gatehouse and is operated by a historic sluice gate, which is a plate that slides up and down over the end of the pipe (Figure 39). The sluice gate will be welded shut to prevent it being opened. This work is also reversible by grinding or cutting the weld to remove it.



Figure 39. Third outlet pipe in Reservoir 1 next to the gatehouse on the north side.

The drain pipe in the bottom of the reservoir will have bars welded to the flange around the pipe opening.

Another feature in Work Area 9 is the flat area adjacent to the reservoir – originally this was proposed to be the “Terrace Garden,” envisioned by Mische. There is no evidence confirming whether this was ever built or not. Today the area is a mowed lawn with little or no evidence of more extensive landscape plantings. The row of tall Douglas firs (which are casting their shadows toward the dam) is being preserved. The three large trees along the west entry to Work Area 5 are not part of the row of trees that creates a sense of closure at the reservoir; they are south of that row. Aerial photo in Figure 40 shows the south end of Reservoir 1, the gatehouse and dam, walkway, and Work Areas 4 and 5 below the line of fir trees.

Repair work to the south side of the reservoir parapet wall, and potentially the sidewalk around the reservoir, is discussed in more detail in Section 5.

#### Historic Resources and Historic Character of Work Area 9:

Work Area 9 is within the Reservoirs Historic District as well as the Park Historic District. Reservoir 1 is described this way (Reservoirs historic listing documents, Section 7, p. 2):

“Reservoir 1, is smallest and tucked into a ravine, provides an intimate experience with the deeply-hued water, forest, and romantic Gatehouse and Weir Building. (...)The reservoir is comprised (sic) of a basin, dam, parapet wall with wrought iron fence, a concrete walkway, Gatehouse, Weir Building, inlet waterfall, spring fed fountain, and several small outbuildings. (...) A defining feature of the natural amphitheater that the Reservoir sits in is the water sounds that are afforded by the waterfall entering the southwest side of the basin adjacent to the Weir Building.”

The “waterfall” is the weir structure, where water flows over the lip of the weir and then down the wall of the reservoir. In the future, non-potable water will enter this reservoir through the pipes connecting Reservoirs 1 and 5. The sounds created by water flowing in from the inlet weir (and from the high inlet pipe in Gatehouse 1) will no longer be created.

The Reservoir listing documents describe the gatehouse thus (Section 7, p. 5):

“The interior of the Gatehouse is in original condition. Original equipment includes; tanks, gauges, piping, cranks, valves, sluice gates, etc. Though not all of it is still functional, all of the equipment is original. Repair is needed in some places where bits of the reinforcing metal bars have been exposed. Some cracking on the outside of the building is visible but the Gatehouse is sound and in good condition.”

No alterations are proposed inside Gatehouse 1, but PWB disagrees that all of the equipment is original. In fact, many pieces of equipment were replaced over the years as they wore out.

Once upon a time, PWB would send an operator to a site to manually turn a wheel or crank that opened or closed a valve. PWB no longer operates its system manually, except in an emergency, and new equipment has been installed as needed over the years in all the Gatehouses and other interior spaces to operate the system remotely.

The same is true for exterior features. The orange components shown in Figure 38 are non-historic valves, and they are operated from a recently-installed platform using modern electric motors and actuators.

Even though the reservoirs are functioning utilities and have been repaired and upgraded many times, such alterations have not impaired the historic character of the



Figure 40. Aerial photo of south end of Reservoir 1 showing the gatehouse and dam, walkway, and Work Areas 4 and 5.

contributing features or the historic district itself. As the listing documents note (Reservoirs listing documents, Section 7, p. 12):

“The Mount Tabor 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, and gatehouses exist today without modification or inappropriate adjacent development.”

Alterations proposed to Work Area 9 will not modify any of the character-defining elements of the district.

Alterations subject to Historic Resource Review in Work Area 9:

- Capping or covering outlet pipe openings.
- Screening weir opening.
- Welding shut the inlet opening inside the gatehouse.
- Placing bars as a grate across the drain pipe opening.
- Screening the openings of the two pipes that connect Reservoirs 1 and 5.
- Removing the sheet metal barrier from the ornamental fence above the weir opening.

Environmental zone resources in Work Area 9:

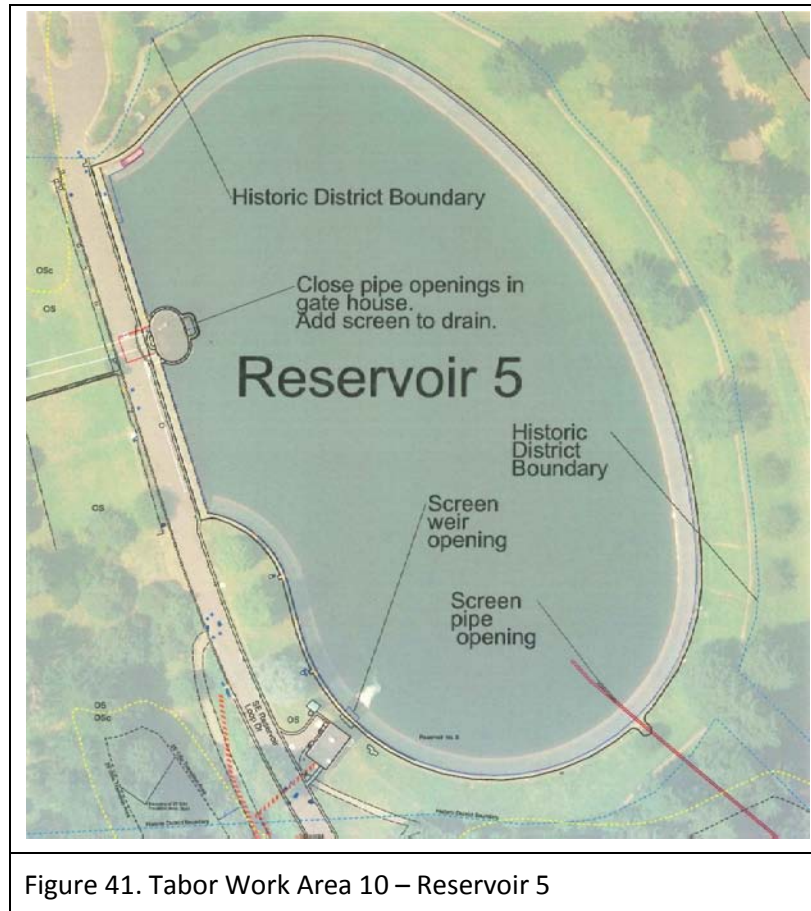
None, no environmental zoning.

Work subject to Environmental Review in Work Area 9:

None.

## **Work Area 10 - Reservoir 5**

This work area encompasses all the work in Reservoir 5 (Figure 41 and Sheets 12, 24, 25, 26, and 41). The reasons for the work in this reservoir are the same as for Reservoir 1. Refer to Work Area 9 for discussion of the work methods and reasons.



In Reservoir 5, there are five pipe openings: one inlet pipe, one outlet pipe, one drain pipe, and the two non-historic pipes that connect to Reservoir 1. In addition, there is one inlet weir in the Chlorination Building (originally known as the weir house).

The inlet pipe in the east wall of Gatehouse 5 will be sealed inside the gate house by welding shut the valve, like in Work Area 9. These welds are removable and can be reversed by removing the weld. No other alterations are proposed to the interior of Gatehouse 5.

The two pipes connecting to Reservoir 1 (installed in 1986) (Figure 42) will receive gratings just like the ones installed in Reservoir 1 (see Sheet 23 for details).



The inlet weir will be screened just like the weir in Reservoir 1 (Sheet 23).

An approved air gap or backflow prevention device is required to prevent any water traveling from the reservoirs, once they are disconnected from the drinking water system, back into the inlet pipes and entering the drinking water system (Oregon Administrative Rule 333-061-0020(6)). When the reservoirs are full there is a potential for water flowing from the reservoir back into the weir and coming in contact with the inlet pipe at the connection with the drinking water system.

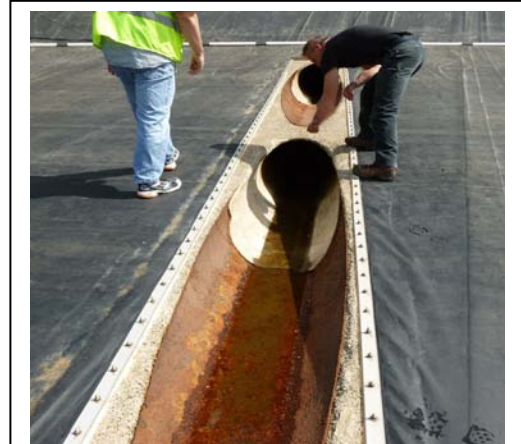


Figure 42. Pipe Ends in Reservoir 5 that connect with Reservoir 1

To prevent this potential contact, there are two ways the weir can be used as an air gap. The first method requires no changes to the weir and uses it in its current condition to create that air gap. This approach may require some additional electronic alarms or interlocks (high water level triggers inlet valve closure, for example) to be implemented to monitor and alert PWB if reservoir water levels are nearing the base of the weir. The second method would require building an air gap by connecting to the existing pipe outside of the Weir House (aka Chlorination Building, Figure 43) and installing a 24-inch pipe through the existing opening in the underground wall. The end of the pipe would be elevated above a rectangular basin within the building, and discharge vertically into the basin, with an air gap.

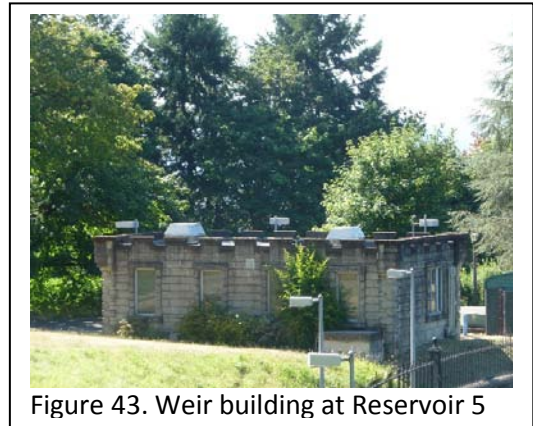


Figure 43. Weir building at Reservoir 5

This would require excavation, backfill and restoration of ground outside of the building, removal of about 10-feet of existing large-diameter pipe, installation of about 20 feet of new large-diameter pipe in the building and ground near the building, and filling the existing annular space in the underground wall, around the new, smaller pipe (Figure 43). Neither of these methods will change what park users see outside of the building. When water is flowing from the weir to the reservoir it will look the same as it does today.

The placement and configuration of the air gap must be approved by the OHA when design is 100% complete, and this review will not be completed before this land use application must be processed and reviewed. As a result, PWB is seeking approval for both air gap methods so that whichever method is required by OHA can be constructed, without triggering a new land use review.

The outlet opening has an existing flange so it can be sealed by attaching a blind flange like was described in Work Area 9. The drain pipe will have a screen attached. They will normally be under water and not visible.

*Historic Resources and Historic Character of Work Area 10:*

Work Area 10 is within the Reservoirs Historic District as well as the Park Historic District. The contributing resources in Work Area 10 are listed as (Reservoirs listing documents, Section 7, p. 1):

- Gatehouse 5,
- Weir Building 5 (also known as the Chlorination Building)
- The reservoir basin with its parapet walls, fences, lampposts, and walkways.



Figure 43. Weir building from the road facing the wall where the pipe enters the building. Photo from Google Street View (©2014 Google).

An outbuilding at Reservoir 5 is listed as a non-contributing resource.

Reservoir 5 is highly valued for its scenic qualities. As noted in Section 7, p. 5, “The Reservoir Loop Drive was constructed to highlight vistas afforded across the deep water of the reservoirs.” The documents also note that the weir contributes the sounds of cascading water to the general atmosphere. The weir will continue to be used.

The Weir Building’s historic significance is primarily for its exterior appearance. The Reservoirs listing documents describe it this way (Section 7, p. 7):

“To the south of the Gatehouse on the southwest edge of the basin is the 1951 Weir Building (Hypochlorite Building.) It is sympathetic in design and materials, and similar if less elegant than the original Gatehouse. The rectangular building is constructed of poured concrete shaped to appear as stone with simulated stone quoins. The crenellated parapet contributes to the overall Romanesque style and it is nearly identical to the rectangular Gatehouses at Reservoir 6. Windows are four over four double-hung wood sash. Metal screens were added to the windows in the 1970s. Various kinds of mechanical equipment protrude from the roof parapet and the north elevation. In 1994, hypochlorite equipment for secondary disinfection was installed. (...) The interior of the building holds no known historic equipment. A generator is located in this building. The Weir Building is in good to excellent condition.”

In short, although the Weir Building retains its historic architecture, it has been subject to a variety of minor exterior alterations.

The reservoir basin itself is covered by a Hypalon™ liner that was installed in the later 1990's to control severe leakage from the deteriorated concrete basin. When this reservoir is empty (e.g., for cleaning), the view is of this black plastic liner.

Alterations subject to Historic Resource Review in Work Area 10:

- Capping the outlet pipe opening.
- Screening inlet weir opening.
- Placing bars as a grate across the drain pipe opening.
- Screening the openings of the two pipes that connect Reservoirs 1 and 5.
- Sealing the inlet pipe inside the gatehouse by welding it shut (not an exterior alteration).
- Excavation, backfill, restoration and landscaping area disturbed outside of the weir house (Chlorination Building).
- Removal of approximately 10-feet of large diameter pipe and installation of approximately 20 feet of 24-inch diameter pipe, mostly in the weir/chlorination building, and some underground.
- Installation of alarms in the weir and reservoir to alert when water levels in the reservoir approaches the weir, encroaching on the air gap.

Environmental zone resources in Work Area 10:

None.

Work subject to Environmental Review in Work Area 10:

None.

## **Work Area 11 - Reservoir 6**

This work area encompasses the work in Reservoir 6 and Gatehouses 6 East and 6 West (Figure 45 and Sheets 13, 27, 28, 29 and 40). There are four outlet openings, two drains and two inlet openings for Reservoir 6, one set in each cell (Reservoir 6 is divided into a north cell and a south cell). In Work Area 11, the inlet pipes are near the base of Gatehouse 6 East and the outlet pipes and drain pipes are near the base of Gatehouse 6 West. All of pipes have flanges that will allow caps (blind flanges) to be bolted in place. The pipe ends will be removed by unbolting them from their flanges and caps will be bolted in place.

As in Work Areas 9 and 10, the outlet pipes (Figure 44) will be capped by installing blind flanges on the outlet side in the reservoir basin and cut-and-plugging the outlet pipes on the west side of Gatehouse 6 West in Work Area 8 by SE 60<sup>th</sup> Ave. The reservoir drains will have screens or grates installed. The work methods and the reasons for doing the work are discussed thoroughly in the sections describing the work in Work Areas 9 and 10.

The weir in Reservoir 6 is located in the basement of the East gatehouse. This weir will need an air gap to allow the reservoir to be filled once it is disconnected from the public water system. Unlike Reservoir 5, there is enough room inside the gatehouse to install the piping to create the air gap if OHA does not accept the weir itself as an air gap. Installation of new piping would require alteration of the existing pipe involving the removal of a modest amount of original pipe material.

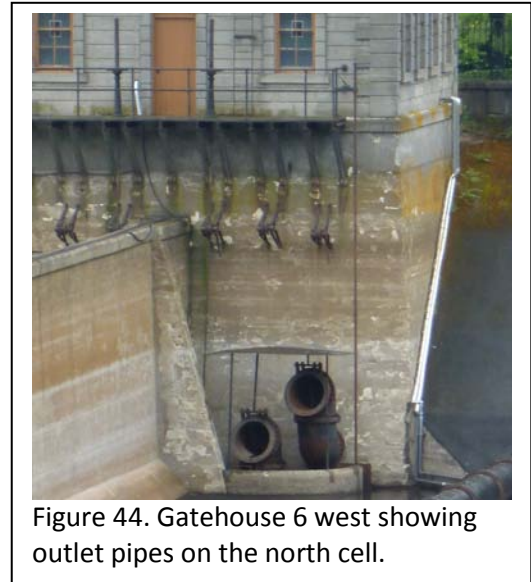


Figure 44. Gatehouse 6 west showing outlet pipes on the north cell.

In addition to this work, an emergency generator will be installed in Gatehouse 6 East in Work Area 11. This generator is needed in order to operate Tabor Pump Station in an emergency when power has failed. Tabor Pump Station supplies water to customers living on the higher slopes of Mount Tabor, mainly on its north side.

At about the same time as the new diesel generator is installed, an existing hydroelectric generator may be removed. The existing generator was installed in 1985, so it is not a historic resource. It can be unbolted from the floor and carried away by a crane without any alterations to the building's doors or exterior.

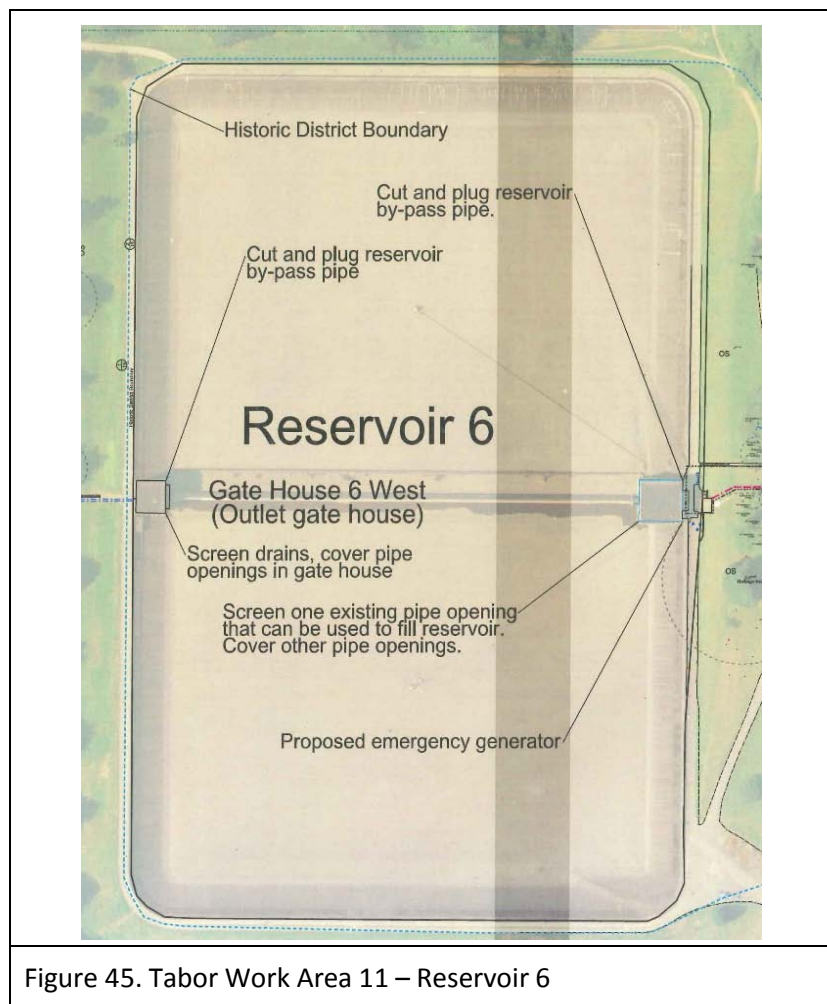


Figure 45. Tabor Work Area 11 – Reservoir 6

The exhaust vent for the generator will be constructed within approximately a foot of the west wall of the gatehouse. This is because a crane inside the building is mounted on a beam that moves east and west across the building interior. As a result, there is only a fairly narrow area along the west wall for a vent pipe to be placed. A new roof penetration will be created, and the vent pipe will extend about six inches above the top of the parapet, which is two and a half feet tall.

Three vent pipes are required for the fuel storage tank. These vent pipes will require new roof penetrations and will extend less than two feet above the roof, below the top of the parapet. They must also avoid the crane and its support beam inside the building. The roof of the building is made of poured concrete, like the rest of the building, and currently has only one vent penetration. The roof is visible from Tabor Pump Station and from the west walkway on the Reservoir Loop Drive on Dam 5. The vents are small relative to the gatehouse and reservoir, and do not project far above the roof or parapet. As a result, they will not be highly visible nor prominent (Figure 46). See the renderings in Appendix E indicating the likely visual appearance of the new vents.



Two electrical condulets and conduits two to three inches in diameter apiece are required in order to protect the electric wiring that will connect the emergency generator to an electrical structure to the east. Existing condulets penetrating the Gate House wall have received an initial evaluation, and they appear to be either already in use or inadequate for the new wiring. However, PWB and its contractor will conduct a thorough evaluation during construction, and will use existing wall penetrations and conduits if any are available to reduce the number of penetrations required (Figures 47 and 48).

If new conduits and condulets are required, they will be the same general size and appearance as the other conduits attached to this portion of the wall. Like the existing conduits and condulets, these will be painted to approximate the color of the concrete wall of the gatehouse, which will help them blend in with the existing development.

Renderings comparing the proposed work to the current appearance of Gatehouse 6 East are presented in Appendix E.

*Historic Resources and Historic Character of Work Area 11:*

Work Area 11 is within the Reservoirs Historic District as well as the Park Historic District. The non-contributing “chlorination house” (former name and use, now called the “electrical building” by PWB) will receive internal wiring as part of the new emergency generator installation, but will not receive any exterior alterations.

The listed contributing resources in Work Area 11 are:

- Inlet and Outlet Gatehouses (East and West, respectively)
- Basin and accompanying features (parapet wall, fence, lampposts, walkway)

Both gatehouses contain original equipment as well as newer, non-historic equipment that has been added as the system has been maintained and upgraded. The hydroelectric plant in Gatehouse 6 East is non-historic and not currently used to generate electricity.



Figure 46. Gatehouse 6 East roof. Existing vent barely visible from Work Area 7.



Figure 47. Gatehouse 6 East showing existing penetrations with condulets and conduits. Side view.



Figure 48. Gatehouse 6 East showing existing wall penetrations and conduits. Front view.



As noted in the discussion of Work Areas 7 and 8, the area around Work Area 11 is very popular with people using the walkway around the reservoir. The listing documents do not mention the condulets penetrating the wall of Gatehouse 6, but do mention that there is some spalling and cracking of the concrete walls, and that some metal features need repair.

Alterations subject to Historic Resource Review in Work Area 11:

- Roof and wall penetrations of Gatehouse 6 East.
- Adding condulet and electrical conduit to east wall of Gatehouse 6 East.
- Removing pipe ends and installing caps on the flanges on the outlet pipes (Gatehouse 6 East).
- Installing bars to serve as a grate on the drain pipes (Gatehouse 6 West).
- Installing approximately 20 feet of 24-inch diameter pipe inside the gatehouse.
- Installing alarms in the weir and reservoir to alert when water levels in the reservoir approach an elevation that compromises backflow prevention.

Environmental zone resources in Work Area 11:

None.

Work subject to Environmental Review in Work Area 11:

None.

## **Planting Work Area 12—Additional Tree and Shrub Planting**

Planting Work Area 12 comprises several locations in Mount Tabor Park where PWB proposes to plant trees and shrubs (but no other work) outside of the eleven areas where water infrastructure is being altered.

As discussed in previous sections, trees and other vegetation will be removed or disturbed in some work areas in order to construct the proposed infrastructure. In each case, the disturbed ground will be restored to its approximate original contours and will be revegetated to blend with its surroundings. Trees will be planted in several of the work areas in order to help, over time, to replace the trees lost to construction.

With respect to vegetation, each work area will appear similar to its pre-construction state, and over time as the new vegetation grows, each area will become more and more as it was prior to this project.

Section 20.40 of the Portland City Code requires mitigation for trees removed under certain circumstances, including removals on city-owned property. Typically, trees must be planted to replace trees that are removed. The City Forester's procedures attempt to provide mitigation plantings that will lead to improvement in the city's overall tree canopy. In situations where tree planting is impractical or inadvisable, the applicant can pay into the City Tree Fund. Money in the Tree Fund may only be used to plant trees in Portland, and is administered by the City Forester.

Sections 33.248.065 and 068 of the Zoning Code state the requirements for tree protection measures and tree protection plans. An arborist may propose modified tree protection measures for individual trees, but when doing so, must certify that the plan provides the same level of protection to the tree as the standard in 33.248.068.

The City Forester's office prepared the Tree Protection Plan (Appendix F) that identifies the root protection zones for trees that may be affected by the work. That plan is one basis for the Construction Management measures shown on Sheets 31 through 40 in Appendix A.

In some instances, the work proposed in this project approaches too close to a tree for the City Forester to state that the proposed measures will protect the tree as well as the standard measures. In order to minimize the number of trees removed by this project, PWB proposes in some cases to employ extra protective measures to help ensure the trees' survival. These measures are described in the Construction Management Plan (Appendix C).

Nevertheless, the City Forester's procedures dictate that trees must be counted as though they have been removed if they cannot be certified as fully protected. In Table 2, below, PWB shows trees that are left in place, but not certified by the City Forester, as "Leave and Mitigate" trees. For the purposes of developing tree mitigation plans, both

“leave and mitigate” trees and removed trees are counted as removed. The measure of tree removal is “inches of diameter at breast height” (abbreviated “inches dbh”).

<b>Table 2. Trees Affected by Construction</b>			
Tree ID#	Size (inches dbh)	Type	Remove ( R) or Leave and Mitigate (M)
<b>Work Area 2</b>			
10931	6	Deciduous	R
10947	6	Pear	M
11161	12	Incense cedar	M
11162	12	Incense cedar	R
11163	14	Incense cedar	M
11164	14	Incense cedar	M
11166	6	Fir	R
11170	6	Ornamental cedar	R
12212	10	California bay	R
12213	10	Grand fir	R
12214	10	Big leaf maple	R
12215	10	California bay	R
12216	10	Incense cedar	R
<i>Subtotal, WA2</i>	<i>126</i>		<i>9 R, 4 M 13 total</i>
<b>Work Area 3</b>			
12576	18	Big leaf maple	M
12577	8	Big leaf maple	M
12578	24	Big leaf maple	M
<i>Subtotal, WA3</i>	<i>50</i>		<i>3 M</i>
<b>Work Area 5</b>			
13128	9	Plum	R
13129	10	Plum	R
13547	36	Douglas fir	M
13548	34	Douglas fir	M
13563	50	Douglas fir	M
13564	9	Plum	R
<i>Subtotal, WA 5</i>	<i>148</i>		<i>3 R, 3 M 6 total</i>
<b>Total</b>	<b>324</b>		<b>12 R, 10 M 22 total</b>

In summary, PWB has designed the project to avoid removing the largest trees near the construction work. Altogether, 12 trees will be removed. These range in size from six inches dbh to 12 inches dbh. Another 10 trees will be protected and left in place and

mitigated for, and these range in size from six inches dbh to 50 inches dbh. Thus, the total measure of tree removal for purposes of developing a Tree Mitigation Plan is 324 inches dbh.

Tree plantings in each of the other work areas were described in the sections discussing those areas. They will be planted as two- to three-inch “caliper” size trees. (Trees to be planted are measured near the base of the stem. This is called the “caliper” size.) Four trees will be planted in Work Area 2 and five in Work Area 5, a total of nine trees representing between 18 and 27 caliper inches. These plantings will help replace trees removed from these two work areas.

In order to more quickly replace the lost tree canopy, additional trees are proposed for planting in Mount Tabor Park outside of the Work Areas 1 to 11. PWB solicited input from the public and from PP&R staff as to where additional trees could be planted in the park. Although several potential planting areas were identified, most of them were not suitable for one or more reasons, including:

- The park is already well-stocked with mature trees.
- Many open areas provide scenic or recreational benefits that would be lost if they were planted with trees.
- Most of the natural habitat areas in the park are already undergoing tree planting programs for habitat enhancement, and aren’t available for additional plantings.
- Trees may not be planted on any of the dam faces or within 10 feet of any large-diameter pipes.
- Trees may not be planted in a few other “no planting” zones near the reservoirs that exist to protect the integrity of water infrastructure.
- New plantings must be in accordance with the park’s historic listing documents.
- New plantings should be in accordance with the park’s master plans.

Ultimately, PWB was able to identify three areas where additional trees can be planted that will preserve the historic character of the site and its landscaping, preserve scenic resources, and avoid places where tree planting is prohibited or could create problems. A fourth area was identified as suitable for shrubs to be planted, which will contribute to the habitat and vegetative landscape quality of the park.

These areas are identified on Sheets 48 and 49 in Appendix A as Planting Work Areas 12A, 12B, 12C, and 12D. Area 12D is the shrub-planting area. Area 12C includes both shrubs and trees.

#### Tree Planting Area 12A

This area is immediately north of the SE Lincoln Street entrance and west of SE Lincoln Drive, near the western part of Work Area 2. PWB proposes to plant three 4 to 5-inch (depending on availability) caliper trees in this area (Sheet 48). PWB has tentatively identified these as one each of the following types: Canyon live oak, Sassafras, and Tulip tree.

During the public outreach phase, members of the public asked that, where possible, “big” trees be planted as part of the tree mitigation in order to provide a more immediate canopy replacement. A “big” tree is defined for the purposes of this project as a four- or five-inch caliper tree. Planting such trees presents several difficulties, so it is not commonly done, but PWB will plant “big” trees in this location if 1) suitable species can be found for this space in the right size; 2) PP&R staff concur that the setting (i.e., the soils, the solar aspect, the availability of water, etc.) will support the survival of the “big” tree(s) selected.

The exact planting locations will be determined in the field in consultation with PP&R staff who manage the park, and will be selected to allow each tree to reach its full development. These trees will improve the visual separation between the community gardens to the west and the park to the east. They will also create a stronger sense at the park entrance of the forested character of the park as a whole. And finally, these young trees will grow to replace canopy that will be lost as the older trees in this area age and eventually die or are removed.

#### Historic resources and historic character of Tree Area 12A:

This area is outside of the Reservoirs Historic District and within the Park Historic District. The only contributing resource identified in this area is the “site.”

The Park listing documents describe in this area “a mixture of well-established tall shrubs and trees, some deciduous such as lilacs and hawthorns and others evergreen conifers and laurels.” Across the roadway is “a row of mature fuchsia-colored double flowering cherries...” (Section 7, p. 5).

The proposed work will not remove or affect the vegetation described in the listing documents.

#### Tree Planting Area 12B

This area is approximately 150 feet east of the southeast end of Reservoir 6 and occupies an open area about 100 feet west of the edge of the Environmental Conservation overlay in this area. It is immediately south of Work Area 7.

PWB proposes to plant three 2 to 3-inch caliper big-leaf maples in this area. These native trees provide valuable habitat and will help improve the forest quality in this part of the park. This area is far enough south to avoid impinging on Reservoir 5’s dam.

The Mount Tabor Park Master Plan of January, 2000, considered environmental values in developing goals for the park. The environmental goals included the following (p. 22):

- Protect and enhance the environmental aspects of the park.
- Improve the quality of wildlife habitat, especially for birds, within the park.
- Focus efforts in areas that best support wildlife with additional native vegetation.

The vegetation health study for the Master Plan (Appendix I.B of the Master Plan) reported that big-leaf maples in many areas of the park were showing serious signs of



stress causing them to decline in health. Planting young and vigorous big-leaf maples in this relatively little-visited part of the park will improve the forest habitat and strengthen the park's stock of this native tree.

#### Historic Resources and Character of Tree Planting Area 12B

This planting area is south of Work Area 7 and there is only one mention of it in the historic listing documents (Reservoirs listing documents, Section 7, p. 11):

“Above Reservoir 6, below the fence line, a footpath dissects the hillside from north to south through a mature hawthorn *Crataegus spp.* grove interspersed with other species such as native wild cherries *Prunus emarginata*. South of the hawthorn grove, is a grove of mature lombardy (sic) poplars *Populus nigra Italica* that give a striking golden display in autumn.”

The grove of Lombardy poplars is still there, just uphill from Tree Planting Area 12B. The proposed work will not affect these trees. Over the years, the big-leaf maples may grow to partly obscure the yellow of the poplars in fall from some angles. At the same time, the autumn yellow of the big-leaf maples is equally likely to augment the poplars' display.

#### Tree Planting Area 12C

This area comprises the land on both sides of SE Harrison Drive for approximately 350 feet from where it enters Mount Tabor Park on the east. On the north side of the road, there is a grassy area with nine or ten mature fruit trees that covers approximately 24,000 square feet (0.53 acres). The ground along the roadway on the south side drops steeply to a gentle open lawn area with scattered mature specimen trees of different oak species (including a few native Garry oaks). There are approximately 18,000 square feet (0.42 acres) of open area that could potentially receive trees.

The fruit trees north of the road are non-native *Prunus* species, which can create problems in the natural habitat areas. They are also relatively old and becoming suitable for removal and replacement. The edge of the Environmental Conservation overlay zone crosses the north and west edges of this area. The 0.53 acres mentioned above includes only land outside of the resource area of the Environmental Conservation overlay zone. PWB proposes to plant three two- to three-inch caliper Madrone trees and three ½-inch caliper Oregon oaks in this area. PWB will also plant nine shrubs for each tree in an open cluster around each tree. This will keep the open feeling of the area while strengthening and diversifying its habitat value.

The south margin of the roadway must currently be maintained by mowing, which is difficult because it is steeply sloped. PP&R has expressed interest in having it planted with trees so that it need not be mowed. The gently-sloped ground farther south of the roadside adjoins a forested area to the west, and there is space for several additional specimen trees while keeping the open feel of a meadow dotted with large trees. Trees in this area would also enhance the habitat value of this forest-edge area.

PWB proposes to plant five two- to three-inch caliper Ponderosa pine trees along the south side of SE Harrison Dr. from near the entrance to near where the forest canopy begins. These trees will eventually grow to be quite tall and will form a line of trees spreading shade and canopy cover over the road. The trees will be planted sufficiently far from the pavement to help ensure success—perhaps ten to fifteen feet from it. The trees will not be planted near existing trees on the south side of the road. As in other planting areas, the precise locations of the trees will be determined in consultation with PP&R staff who manage the park and its vegetation.

On the more gently-sloped ground to the south, there is space for four more trees that will grow to large size. PWB proposes to plant three two- or three-inch Madrone trees near the edge of the forest on the west and one ½-inch Garry oak tree north of the Harrison Street playground. These native trees will enhance the habitat value of this area while also maintaining the open feel around the Harrison Street Playground. The three Madrones adjacent to the existing edge of the forest canopy will strengthen the habitat value of forest edge, as recommended in the vegetation quality report of the master plan (Mount Tabor Park Master Plan, January 2000, Appendix I.B). In addition, Madrones are colorful, both winter and summer, and grow to present a striking appearance.

#### *Historic Resources and Character of Tree Planting Area 12C*

This entrance was not part of the original design for the park by Emanuel Mische. Although it was developed during the period of significance, it is essentially a simple entrance with a straight stretch of roadway and parking along the south side. The vegetation to the north is pleasant, but not distinctive.

To the south of the entrance road is the Harrison Street Playground, which is a contributing resource mentioned as part of the “site.” The surrounding landscape is fairly distinctive, consisting of large, widely-spaced native and non-native trees. Although the listing documents, as quoted below, do not mention native trees, PWB and PP&R staff identified two mature Oregon white oaks (aka Garry oaks) in the stand of black oaks and other trees.

Here is what the listing documents say about this area (Park listing documents, Section 7, p. 20):

*“The Harrison Street Entrance is flanked by ornamental tree plantings, predominantly flowering plums, on the north slope and the Harrison Playground, distinguished by the variety of lovely non-native shade trees, on the south side slope. The history of the planting of the mature grove of predominating black walnut, black oaks, linden, and other deciduous trees is unknown. They are well suited for this south-facing aspect and well-drained environment. The Mount Tabor Nursery is just to the west of this area, and along the paths in that direction, several other non-native or uncommon tree species are growing and so the area may have received the extra attention of nursery workers. The predominance of large, non-native nut-bearing trees makes this a distinguished*

*site in the park and a favorite hunting ground for the plentiful fox squirrels and various birds. The deciduous trees make the area pleasantly shaded in the summer but well lit after the trees drop their leaves in the winter. The Harrison playground is old-style with several metal structures. The play structures are positioned with great distances between them in the sloped grove. The well-spaced great shade trees lend an airy, playful feel to this pastoral area, even without the play structures. The recent widening of the path that accesses this area from the east and west adds an unaesthetic element. The exact date of the construction of the playground is unknown.*

*A pathway leaves the playground going west through the primarily Douglas fir, partially groomed forest. It soon divides into a lower path and an upper path. These paths bisect what used to be the lower section of the Southside Stairs, from the southern boundary of the park up to the planned terrace garden of Reservoir 1. This portion of the stairs has been replaced by a rough trail that climbs steeply up to cross Lincoln Drive accessing the remaining upper section of the Southside Stairs. The lower path, bordering Warner Pacific College grounds, passes by two large native madrone trees, uncommon in the park and the neighborhood.”*

The Mount Tabor Park Master Plan document shows the proposed future conditions for this part of the park. Figure 7 (in Appendix D) shows that Area C is not within any of the identified scenic views.

The views in this part of the park are from East Tabor Drive, which is higher on the east slope of Mount Tabor. They are all described as views of distant features, rather than of lower elevations within the park. Section 7, p. 19 of the listing documents states:

*“The Woodland Drive of Mische's plan was developed higher up the butte in the 1930s and is called East Tabor Drive today. Photographs depict construction on this drive in 1937 by a WPA crew (Project # 869C). This is one of the most scenic drives in the park. It is open to vehicle traffic six days a week and provides some of the grandest views to the east of Mount Hood, Larch Mountain, and the Washington State mountains north of the Columbia Gorge.”*

Figure 8 from the Master Plan shows the north side of Harrison Drive more wooded than it is today, and Figure 9, the Preliminary Master Plan, shows the parking along the road moved to the north side of the road and improvements to the playground. The proposed additional trees in these areas are in conformance with these plans.

#### Shrub Planting Area 12D

Area 12D occupies the narrow tongue of land between SE Harrison Drive and SE East Tabor Drive where they meet with SE Lincoln Drive (Sheet 49). This is a sloping plot of land approximately 1,600 square feet in area where the landscaping has not been renovated for some years.

PWB proposes to remove any invasive non-native plants in this area and plant approximately 60 tall native shrubs and 200 short or spreading native shrubs with ground cover plants seeded in the remaining open ground.

These plantings are intended to restore this plot of land, which is highly visible, to an attractive addition to this intersection. These native plants will also strengthen the habitat in the immediate area by providing food and cover for wildlife in the park.

#### *Historic Resources and Character of Shrub Planting Area 12D*

The listing documents for the Park Historic District describe this junction in several places, but never in much detail. From Section 7, p. 5:

*“Where Harrison Drive meets Lincoln Drive at the south base of the dam face of Reservoir 1, the Southside Stairs climbs north from the roadway up to the reservoir basin.”*

Section 7, p. 20:

*“The drive associated with this entrance is called Harrison Drive because it is an extension of S.E. Harrison Street. It ties into the Lincoln Drive arriving from the west and the East Tabor Drive that curves down the eastern slope of the park. The junction of these drives is below and to the south of Reservoir 1, just east of the Southside Stairs.”*

This plot of land at the intersection is apparently of little historic significance by itself. It is, though, integral to the park’s roadway system, which is an element of the site and landscape, a contributing resource. The proposed alterations will beautify it while addressing the park’s historic vision of being a forested refuge in the city.

### **Landscaping**

In general, all non-road or trail areas disturbed by construction will be restored by grading them to their approximate original grade and then re-planting them to blend with their surroundings. Detailed drawings for landscaping are presented in Appendix A. All road and trail surfaces will be restored to their original conditions, with the exception of a needed minor re-alignment in Work Area 5.

Landscaping requirements in the environmental zones are governed by Chapter 33.430 of the Zoning Code. The Zoning Code contains standards and approval criteria for plantings in the environmental zones, whether they are for restoration of disturbed areas or for mitigation of environmental impacts. Work is occurring in the environmental zones in portions of Work Areas 3, and 6.

Plantings in the environmental zones must be exclusively native species on the Portland Plant List (<https://www.portlandonline.com/auditor/index.cfm?&a=52481&c=34460>). In

addition, Chapter 33.430 of the Zoning Code lays out standards for plantings required in order to mitigate for environmental impacts. The standards are described in more detail in the discussion of the EN.

The plantings in Mount Tabor Park will maintain the historic character of the park, regardless of whether they are located in or out of the environmental zones. Original plans for the park emphasized native plants, but many non-native plants also grow here and contribute to the look and feel of different areas. Outside the environmental zones, in more cultivated parts of the park, PWB proposes to use plants that are on the list of plants in the park as presented in the historic listing documents. In more “natural” areas that are outside the environmental zones, PWB proposes to use native plants from the Portland Plant List.

### **Construction Management**

Many details of construction management will be developed by the City and the contractor during construction. Under the contracting system that governs City of Portland construction contracts, PWB designs the project—what is to be accomplished—and contractors bidding on the project develop their bids based on the “means and methods” that they will use to accomplish it. This includes developing a detailed schedule for the work that influences traffic management, erosion control, and many other work elements. The Construction Management Plan is presented in Appendix C.

Below is a brief summary of highlights from the Construction Management Plan:

- All construction zones, where practical, will be fenced to clearly indicate the approved limits of construction activity.
- Where there are sensitive features, such as historic walls or fences, tree protection fencing, etc., additional caution markings will be placed to guide construction workers and maximize protection.
- The contractor will be limited to having a 100-foot long open excavation at any one time in the roadway.
- The contractor will be limited to working in no more than three work areas at a time.
- PWB will require the contractor to prepare a detailed Erosion and Sediment Control Plan that addresses the site-specific conditions at Mount Tabor Park.
- The erosion and sediment control will be updated during construction to address changes in working conditions and weather.
- The construction fence will also serve as “tree protection fencing” as specified in Zoning Code Chapter 33.248.
- Tree protection fences are placed at the boundaries of trees’ root protection zones (RPZs) or modified RPZs if applicable.
- The contractor will develop a traffic management plan for the work, based on PWB guidance, to minimize disruptions.
- There will be intermittent closures of SE Lincoln St., SE Lincoln Drive and trails that cut across work areas.



## Land Use Reviews Required

### Historic Resource Review (HR)

As described in this application in the section on Zoning, both Mount Tabor Park and the Tabor Reservoirs Historic District are described in the National Register listing documents as “districts” (in the Supplemental Listing Record for the park). In addition, the contributing historic resources of the Reservoirs Historic District were listed in the Supplemental Listing Record as contributing resources in the Mount Tabor Park district.

The result is that all of the historic structures within the project area—whether described in the Reservoirs listing documents or the Park listing documents—are considered contributing resources to one or both historic districts. In addition, because the “site” is a contributing resource to Mount Tabor Park and the Reservoirs Historic District is within the park, the site in its entirety is considered a contributing resource.

For Historic Districts, the applicable code is found in Section 33.445.320.A, which states when review is required and 33.445.320.B, which states the exemptions.

#### **Required Historic Resource Reviews in Historic Districts**

##### **33.445.320.A. When historic resource review is required in a Historic District.**

Unless exempted by Subsection B, below, the following proposals in a Historic District are subject to historic resource review:

1. Exterior alterations;
2. Building a new structure;
3. Installation or alteration of exterior signs;
4. Nonstandard improvements in the public right-of-way, such as street lights, street furniture, planters, public art, sidewalk and street paving materials, and landscaping. Nonstandard improvements in the public right-of-way must receive approval from the City Engineer prior to applying for historic resource review;
5. and 6. (Not applicable.)

## Historic Resource Review Exemptions in Historic Districts

### **33.445.320.B. Exempt from historic resource review.**

1. Construction of a detached accessory structure with 200 square feet or less of floor area when the accessory structure is at least 40 feet from a front property line and, if on a corner lot, at least 25 feet from a side street lot line;
2. Alterations that do not require a building, site, zoning, or sign permit from the City, and that will not alter the exterior features of a resource having such features specifically listed in the Historic Resource Inventory, Landmark nomination, or National Register nomination as an attribute that contributes to the resource's historic value;
3. Alterations to noncontributing resources where the alterations:
  - a. Affect only non-street-facing facades; and
  - b. The total area altered on all facades is up to 150 square feet. Calculation of the area of the façades affected includes the sum of the area of each alteration.
4. Alterations to existing basement windows, (not applicable);
5. Parking lot landscaping (same as for Landmarks);
6. Repair;
7. Maintenance;
8. Improvements in the public right-of-way, such as street lights, street furniture, planters, public art, sidewalk and street paving materials, and landscaping, that meet the City Engineer's standards;
9. Rooftop mechanical equipment, other than radio frequency transmission facilities, added an existing building if the following are met. For vents, the applicant may choose to meet either the standards of this paragraph or those of paragraph B.10, Vents. (lists standards for rooftop equipment):
10. Vents. On all residential structures in the RF through R1 zones... (lists standards for vents);
- 11 through 20. (Not applicable.)
21. Fences, retaining walls, and decks that meet the standards of this Title; and
22. (Not applicable.)

**33.910. Definitions.**

**Exterior Alteration.** A physical change to a site that is outside of any buildings. Exterior alteration does not include normal maintenance and repair or total demolition. Exterior alteration does include the following:

- Changes to the facade of a building;
- Increases or decreases in floor area that result in changes to the exterior of a building;
- Changes to other structures on the site or the development of new structures;
- Changes to exterior improvements;
- Changes to landscaping; and
- Changes in the topography of the site.

Therefore, alterations to the landscape require historic resource review, both by virtue of being a variety of exterior alteration and by being described in the listing documentation as an attribute that contributes to the historic value of the resource.

This proposal is assigned to the Type III review procedure because the project value exceeds the threshold for Type III review, which is \$407,700 (Section 33.846.B.4 and Table 846-3 for historic districts).

**Environmental Review**

Environmental Review considers alterations and disturbance in the environmental zones. It is required for two of the project's work elements because part or all of the work will take place in the resource area of the environmental conservation overlay zone.

First, the construction of about 1,000 feet of 48-inch diameter steel pipe will include about 350 linear feet of construction in the environmental conservation zone (Work Area 3). This work involves digging a trench approximately ten feet wide and burying a 48-inch diameter water transmission main. This pipe will connect the existing Conduit 3 on the east side of the environmental zone, to the new pipe in Work Area 2 outside the environmental overlay. Inside the environmental zone, all work will be in the existing paved road. This pipe will route water from Conduit 3 to the water distribution system west of Mount Tabor. The roadway will be restored its original contours after construction.

Second, the terminations of Conduits 2 and Conduit 4, installation of backflow prevention features, and installation of a combination air/vacuum release valve and air vent will take place in the resource area of the environmental conservation zone south of the Chlorine Building and Reservoir 5 (Work Area 6). This work involves excavation

of the pipes, plugging and capping them, removing a section of pipe and installing a backflow prevention device on it, then burying it, installing an air valve in an existing vault, installing an above-ground vent pipe on the vault, and restoring the ground surface. The work will take place in an existing gravel road. This work will provide a route for potable water flow to bypass Reservoir 5, a means to periodically fill Reservoir 5 with non-potable water, and the equipment needed to satisfy regulations governing disconnection and separation of potable and non-potable water.

The proposed work in the environmental zone does not meet any of the exemptions in Section 33.430.080 of the Zoning Code or the standards for utility lines in Section 33.430.150. Because the proposed work is in the Environmental Conservation zone, section 33.430.230.B.4 indicates that it is to be processed through a Type II Environmental Review procedure.

The proposed work in the Environmental Zone and the specific analyses required by Environmental Review are fully described in Section 4.

### **Conditional Uses in the Open Space (OS) Base Zone**

Within the OS zone, uses in the “Basic Utilities” category that are accessory to a park use are allowed (Section 33.100.110). Other “basic utilities” uses are allowed to be a primary use only as a conditional use (Section 33.100.100 and Table 100-1). The PWB facilities at Mount Tabor are part of the City’s water supply system and are not accessory to the park uses. In fact, the earliest water facilities on site predate the creation of Mount Tabor Park and the park was built around the reservoirs.

Because the reservoirs and other water system facilities were constructed prior to the adoption of the zoning code, they have status as an automatic existing conditional use (Section 33.815.030). Subsequent changes or alterations to the facilities have the potential to trigger a conditional use review.

The Conditional Uses Chapter, Section 33.815.040.B, outlines the circumstances under which alterations to an existing conditional use trigger a new conditional use review.

The proposed improvements do not trigger a new review because:

- 1) They will not increase existing floor area by more than 1,500 square feet,
- 2) They will not increase exterior improvement area by more than 1,500 square feet,
- 3) They do not increase the site area, and
- 4) They will not affect permanent parking. Conditional uses apply generally to permanent changes. Temporary changes are treated differently in LURs.

Therefore, a Conditional Use Review is not required.

## **Land Use Review Procedure**

Two land use reviews are required: Historic Resource and Environmental. The Historic Resource Review will be subject to the Type III review procedure. The Environmental Review, if heard by itself, would be subject to a Type II review procedure.

Section 33.730.042, Concurrent Reviews, governs the procedure used when there is an application for more than one land use review on a site. Paragraph B of that section states that “when more than one review is requested and the reviews have different procedures, the overall application is processed using the highest procedure type.” It also states that the Type III procedure is the highest.

Section 33.720.020, governs the assignment of review bodies for quasi-judicial land use reviews, such as these. Paragraph G of this section says that concurrent reviews may be consolidated into a single application package (as these two reviews have been), and lists the hearing body assignments for different situations. Subparagraph G.1 states “when more than one review is requested and the reviews have different procedures, the overall application is reviewed by the review body assigned to the highest procedure.” In this case, the highest procedure is the Type III Historic Review, and subparagraph 33.720.020.D.2 assigns Historic Resource review of structures in Historic or Conservation Districts” to the Portland Historic Landmarks Commission.

Therefore, this consolidated application for Historic Resource and Environmental Review will be heard by the Historic Landmarks Commission.

## **Other Regulations**

The proposed work is subject to other regulations that impose requirements on the project. Although the other regulations are not directly part of this land use review, they may require external alterations that are considered by this review.

PCC Sections 20.40, Street Tree and Other Public Tree Regulations, and 20.42, Tree Cutting, regulate tree removal and tree mitigation on city-owned property and in rights-of-way. Because PWB proposes to remove a number of trees and will be working in close proximity to several others, these sections of city code require mitigation plantings, mitigation payments, or a combination of the two. This code is administered by the City Forester.

PWB proposes to plant trees in Mount Tabor Park as partial satisfaction of the mitigation requirement. These tree mitigation plantings are described in Section 2 and are processed as part of the land use review.



PCC Title 10, Erosion and Sediment Control, regulates construction sites to prevent the escape of sediment or other contaminants, whether by water or air. The measures required by Title 10 are temporary and will be removed at the end of the project when the work areas are restored to their approximate original condition with permanent vegetation and repairs to any paths, roadways, or structures that were disturbed.

In addition to meeting Portland's Title 10, PWB must acquire a National Pollutant Discharge Elimination System (NPDES) 1200-C permit. This permit requires best management practices to be employed for erosion and sediment control and to protect the quality of stormwater runoff from the site. The best management practices are generally the same as those required by Title 10, and are temporary in nature.

The temporary measures required by Title 10 and the NPDES 1200-C permit are shown in the Construction Management series of drawings, Sheets 31 through 42 in the plan set.

## **Summary of Work**

Table 3 provides a brief summary of all work. The task names used in table will be the standardized task names referred to in the document. The table includes cross-references and links to the longer descriptions of the work on the preceding pages.

<b>Work Area</b>	<b>Task Name</b>	<b>Land Use Reviews</b>			<b>More Information on Page</b>
		<b>No Review Required</b>	<b>Historic Resource</b>	<b>Environmental</b>	
1	Pipe in Lincoln Street	<ul style="list-style-type: none"> <li>Install a 42-inch diameter pipe in road.</li> </ul>	NA	NA	27
2	Pipe Across the Gravel Road and a Corner of the Dog Park	NA	<ul style="list-style-type: none"> <li>Excavate, backfill and restore ground surface.</li> <li>Install new pipe.</li> <li>Temporary relocation of northwest dog park entrance gate.</li> <li>Restore fences and gates when construction is complete.</li> <li>Replace single pedestrian gate entry with double gate entry.</li> <li>Install landscaping.</li> <li>Remove, protect and mitigate trees.</li> </ul>	NA	28
3	Pipe in Lincoln Drive	NA	<ul style="list-style-type: none"> <li>Excavate, backfill and restore ground surface.</li> <li>Install new pipe in SE Lincoln Drive to connection with Conduit 3 west of the stairs.</li> <li>Install two small electrical conduits with wires.</li> </ul>	<ul style="list-style-type: none"> <li>Install 350 feet of 48-inch diameter pipe in the OSc in SE Lincoln Drive.</li> </ul>	34

<b>Work Area</b>	<b>Task Name</b>	<b>Land Use Reviews</b>			<b>More Information on Page</b>
		<b>No Review Required</b>	<b>Historic Resource</b>	<b>Environmental</b>	
3	Pipe in Lincoln Drive (continued)	NA	<ul style="list-style-type: none"> <li>• Install two valves with CIV's at the ground surface.</li> <li>• Install an underground vault with manhole access at ground surface.</li> <li>• All work will be located in the roadway.</li> <li>• Protect and mitigate trees.</li> </ul>		34
4	Disconnections in Lincoln Drive South of Reservoir 1	NA	<ul style="list-style-type: none"> <li>• Excavate, backfill and restore ground surface.</li> <li>• Cut and plug 5 pipes – 3 in the road, 2 in the grass bank on the north side of the road.</li> <li>• Install a 30-inch connection in the road.</li> <li>• Install two small electrical conduits with wires along the road.</li> <li>• Connect electrical to existing system at meter house.</li> <li>• All work is underground.</li> </ul>	NA	37
5	Pipe in Lawn Below Reservoir 1	NA	<ul style="list-style-type: none"> <li>• Install an underground vault with a combination air/vacuum release valve.</li> </ul>	NA	41

**Table 3. Summary of Proposed Work**

Work Area	Task Name	Land Use Reviews			More Information on Page
		No Review Required	Historic Resource	Environmental	
5	Pipe in Lawn Below Reservoir 1 (continued)	NA	<ul style="list-style-type: none"> <li>• Re-grade around the new vault to blend back in with the surrounding contours.</li> <li>• Install a vault access hatch and air vent at the ground surface</li> <li>• Install landscaping.</li> <li>• Remove, protect and mitigate trees.</li> <li>• Cut and remove portion of the pipe railing (constructed with metal pipe) at walkway.</li> <li>• Re-install pipe railing when construction is complete.</li> </ul>	NA	41
6	Vault Work in Gravel Access Road by Reservoir 5	NA	<ul style="list-style-type: none"> <li>• Excavate, backfill and restore ground surface.</li> <li>• Cut and plug 2 pipes in the gravel road.</li> <li>• Install a combination air/vacuum release valve in existing vault.</li> <li>• Install a vent.</li> <li>• Install landscaping.</li> </ul>	<ul style="list-style-type: none"> <li>• Excavate, backfill and restore ground surface.</li> <li>• Cut and plug 2 pipes in the gravel road.</li> <li>• Install a combination air/vacuum release valve in existing vault.</li> <li>• Install a vent.</li> <li>• Install landscaping</li> </ul>	46

**Table 3. Summary of Proposed Work**

Work Area	Task Name	Land Use Reviews			More Information on Page
		No Review Required	Historic Resource	Environmental	
7	Vault Work by Tabor Pump Station	NA	<ul style="list-style-type: none"> <li>• Excavate, backfill and restore ground surface.</li> <li>• Cut and plug 3 pipe locations</li> <li>• Install cathodic protection system with electric wires and above-ground cabinet.</li> <li>• Install concrete thrust blocks</li> <li>• Remove three underground vaults and hatch covers</li> <li>• Install electrical conduits and wiring from Gatehouse 6 to the electrical building</li> <li>• Install landscaping and screening shrubs.</li> </ul>	NA	49
8	Disconnections and Cabinet by SE 60 <sup>th</sup> Ave	NA	<ul style="list-style-type: none"> <li>• Excavate, backfill and restore ground surface.</li> <li>• Cut and plug 2 pipes by the sidewalk and stairs</li> <li>• Install an aboveground equipment cabinet</li> <li>• Install screening shrubs around the cabinet.</li> </ul>	NA	54



<b>Work Area</b>	<b>Task Name</b>	<b>Land Use Reviews</b>			<b>More Information on Page</b>
		<b>No Review Required</b>	<b>Historic Resource</b>	<b>Environmental</b>	
9	Reservoir 1	<ul style="list-style-type: none"> <li>• Repair the south parapet wall at Reservoir 1 between the gatehouse and the ramp.</li> <li>• Potentially repair the sidewalk around the reservoir.</li> </ul>	<ul style="list-style-type: none"> <li>• Install screens on the two pipes in the reservoir basin that connect to Reservoir 5.</li> <li>• Install metal caps on the outlet pipes.</li> <li>• Install grates on the drains.</li> </ul>	NA	57
10	Reservoir 5	NA	<ul style="list-style-type: none"> <li>• Excavate, backfill and restore ground surface.</li> <li>• Install pipe at weir/chlorination house in trench outside of the building, through existing opening in foundation and in building to create air gap.</li> <li>• Install recessed screen in the rectangular weir opening</li> <li>• Weld shut the inlet pipe valve in the gatehouse.</li> <li>• Install screen or grates on the two pipes in the reservoir that connect with Reservoir 1.</li> <li>• Install metal cap on the outlet pipe.</li> <li>• Install grates on the drain.</li> </ul>	NA	63

**Table 3. Summary of Proposed Work**

Work Area	Task Name	Land Use Reviews			More Information on Page
		No Review Required	Historic Resource	Environmental	
11	Reservoir 6	<u>Interior work at Gatehouse 6 East:</u> Remove hydro generator	<u>Exterior Work at Gatehouse 6 East:</u> <ul style="list-style-type: none"> <li>• Install exhaust vents in the roof</li> <li>• Install a small pipe penetration in the gatehouse wall</li> <li>• Install electrical conduits, condulets, and wiring</li> </ul> <u>Other Exterior Work in the Reservoir:</u> <ul style="list-style-type: none"> <li>• Install recessed screens or grates in the rectangular weir.</li> <li>• Install metal caps on the outlet pipes.</li> <li>• Install grates on the drains.</li> </ul> <u>Interior work at Gatehouse 6 East:</u> <ul style="list-style-type: none"> <li>• Install an emergency generator</li> <li>• Install electrical conduits, condulets, and wiring.</li> <li>• Air gap piping in weir building</li> </ul>	NA	67

<b>Work Area</b>	<b>Task Name</b>	<b>Land Use Reviews</b>			<b>More Information on Page</b>
		<b>No Review Required</b>	<b>Historic Resource</b>	<b>Environmental</b>	
12A to 12D	Landscaping, Tree Mitigation Plantings (no construction)	NA	<ul style="list-style-type: none"> <li>• All non-road or trail areas disturbed by construction will be restored by grading them to their approximate original grade and then re-planting them to blend with their surroundings.</li> <li>• Plantings in the environmental zones must be exclusively native species on the Portland Plant List.</li> <li>• The plantings in Mount Tabor Park will maintain the historic character of the park.</li> </ul>	NA	71

## SECTION 3 – HISTORIC RESOURCE REVIEW

### Boundaries of the Historic Districts

The Mount Tabor Reservoirs was listed in the National Register of Historic Places first, in January 2004. In September 2004, the Mount Tabor Park National Historic Site was listed. These listings created the Mount Tabor Reservoirs and the Mount Tabor Park Historic Districts. The contributing resources of the Reservoirs Historic District were added to the Park Historic District through a Supplementary Listing Record that is part of the park's listing documentation.

As a result, both historic resources are districts, the Reservoirs Historic District is contained within the Park Historic District, and the Reservoirs District's contributing resources are also contributing resources for the Park Historic District. The principal difference is that the periods of significance differ, although they overlap considerably.

As a practical matter for the city's land use review, the proposed work can be reviewed under the same approval criteria. Also for the purposes of this review, the precise boundaries of the Reservoirs Historic District do not make any practical difference.

The boundaries of the Park Historic District are the same as those of Mount Tabor Park today. Here is the boundary description from the park historic listing documents: (Section 10, p. 1):

#### *“VERBAL BOUNDARY DESCRIPTION*

*The nominated property is bounded beginning at S.E. 60th Ave. on the west at S.E. Lincoln St. north to S.E. Harrison St. east to the approximate location of S.E. 64th Ave. north to S.E. Stephens St. west to S.E. 60th Ave. north to approximately S.E. Madison St. east to approximately S.E. 62th Ave. north to S.E. Yamhill St. east along the south boundary of S.E. Yamhill St. to approximately S.E. 65th Ave. south to S.E. Taylor St. east along the south boundary of S.E. Taylor St. to S.E. 71st Ave. south roughly along S.E. 71st Ave. to Mountain View Dr. south following the east property boundaries of the west side private residences to approximately S.E. Grant St. west along the south property boundary of Warner Pacific College to approximately S.E. 65th Ave south to S.E. Division St west to approximately S.E. 64th Ave. north along roughly S.E. 64th Ave. to S.E. Lincoln St. west along the north boundary of the street to S.E. 60th Ave. The boundary has some irregularities as shown by the heavy black line on the accompanying map entitled, Mount Tabor Park Boundary Map.*

#### *BOUNDARY JUSTIFICATION*

*The boundary represents the present boundary of Mount Tabor Park. It is roughly the same boundary as the original park plan of 1911\*presented to the Portland Park Board and corresponds to the original park properties purchased between*

*the years of 1888 and 1922, with the exception of the southwest corner of the property bounded roughly by S.E. 64<sup>th</sup> Ave. at S.E. Division St. north to roughly S.E. Caruthers west to S.E. 60<sup>th</sup> Ave. south to S.E. Division St. east to roughly S.E. 64<sup>th</sup> Ave. that was occupied by Reservoir 2 and was sold to a private individual in the 1990's. \*(Excluding the proposed eastern boundary section. See the Original Plan by Mische 1911)"*

## **Zoning Code Approval Criteria**

### **Approval Criteria**

This section of the application reviews the proposed development identified in Section 2 against the approval criteria for HR.

The proposal is located outside the Central City Plan District. In addition, the Mount Tabor Reservoirs Historic District and the Tabor Park Historic District (also referred to as the Tabor Park Historic Landmark) have no guidelines specific to the Districts. The approval criteria to be used are identified in Section 33.846.060.E.

Section 33.846.060.E.1.b states:

“Where there are no guidelines specific to the Historic District, the criteria in section 33.846.060.G. are the approval criteria;”

Section 33.846.060.E.3 states:

“When historic design review of a Historic Landmark...located outside of a Historic District...is required, the criteria in section 33.846.060.G. are the approval criteria”.

Therefore, the approval criteria in 33.846.060.G apply to all the project elements requiring historic resource review, whether in the Park Historic District or within the Reservoirs Historic District.

### **Work Subject to Historical Review**

Historic Review is generally required for exterior alterations or additions to historic resources in a historic district. The most significant exemptions are for repair, maintenance, and construction of small accessory structures or mechanical equipment in certain limited circumstances.

Most of the work proposed for this project falls into the category of “exterior alterations” to historic resources, partly because the site itself is one of the contributing resources in the Park Historic District.



The following list summarizes the proposed work that can be regarded as “exterior alterations” and therefore subject to Historic Resource Review (not an exhaustive list, see Section 2 for complete descriptions of all work elements):

- Capping, screening, or covering with grates the pipe and weir openings in the reservoirs.
- Constructing new water mains, including all appurtenances.
- Removing vegetation and planting new vegetation.
- Removing, protecting, and planting trees.
- Demolishing and removing vaults.
- Cutting and plugging water mains.
- Creating new penetrations in the roof and one wall of Gatehouse 6 East.
- Installing new pipe at the Reservoir 5 weir house and at Reservoir 6 East gatehouse to create air gaps.
- Installing new water-level alarm systems in Reservoirs 5 and 6.
- Excavating, filling, and restoring the ground surface.
- Excavating, filling, and reconstructing or repairing paved or graveled surfaces.

The work proposed in each Work Area is described in detail in Section 2. The discussion below will focus on how the work addresses the various approval criteria. For more information about how the work will be done, please refer to the discussion of the work area(s) of interest in Section 2. Here are the approval criteria for this review:

**33.846.060 Historic Resource Review**

Historic resource review ensures the conservation and enhancement of the special characteristics of historic resources.

**G. Other Approval Criteria.** Requests for historic resource review will be approved if the review body finds that the applicant has shown that all of the applicable approval criteria have been met. The approval criteria are:

- 1. Historic character.** The historic character of the property will be retained and preserved. Removal of historic materials or alteration of features and spaces that contribute to the property's historic significance will be avoided.
- 2. Record of its time.** The historic resource will remain a physical record of its time, place, and use. Changes that create a false sense of historic development, such as adding conjectural features or architectural elements from other buildings will be avoided.
- 3. Historic changes.** Most properties change over time. Those changes that have acquired historic significance will be preserved.

**G. Other Approval Criteria continued.**

**4. Historic features.** Generally, deteriorated historic features will be repaired rather than replaced. Where the severity of deterioration requires replacement, the new feature will match the old in design, color, texture, and other visual qualities and, where practical, in materials. Replacement of missing features must be substantiated by documentary, physical, or pictorial evidence.

**5. Historic materials.** Historic materials will be protected. Chemical or physical treatments, such as sandblasting, that cause damage to historic materials will not be used.

**6. Archaeological resources.** Significant archaeological resources affected by a proposal will be protected and preserved to the extent practical. When such resources are disturbed, mitigation measures will be undertaken.

**7. Differentiate new from old.** New additions, exterior alterations, or related new construction will not destroy historic materials that characterize a property. New work will be differentiated from the old.

**8. Architectural compatibility.** New additions, exterior alterations, or related new construction will be compatible with the resource's massing, size, scale, and architectural features. When retrofitting buildings or sites to improve accessibility for persons with disabilities, design solutions will not compromise the architectural integrity of the historic resource.

**9. Preserve the form and integrity of historic resources.** New additions and adjacent or related new construction will be undertaken in such a manner that if removed in the future, the essential form and integrity of the historic resource and its environment would be unimpaired.

**10. Hierarchy of compatibility.** Exterior alterations and additions will be designed to be compatible primarily with the original resource, secondarily with adjacent properties, and finally, if located within a Historic or Conservation District, with the rest of the District. Where practical, compatibility will be pursued on all three levels.

## Responses to Approval Criteria

In the analysis below, language from the Zoning Code is *italicized*.

1. **Historic character**

*The historic character of the property will be retained and preserved. Removal of historic materials or alteration of features and spaces that contribute to the property's historic significance will be avoided.*

**Response (to each of the identified elements subject to review):**

The historic character of Mount Tabor Park—both the Park Historic District and the Reservoirs Historic District—arises both from the historic materials, features, and spaces and from the historic function or use of the property as identified in the listing documents.

**Historic Functions or Uses**

The Park Historic District, which encompasses the reservoirs and the land around them, lists the historic and current functions as the same: “Recreation and Culture: outdoor recreation; Landscape: park; Agriculture/Subsistence: horticultural facility; and Industry/Processing/Extraction: waterworks.” To this list, the Reservoirs Historic District adds “Government: public works.”

The current proposal will change the way that the reservoirs themselves are used. They will no longer store finished drinking water for distribution to the city’s water customers. Instead, water that they store will be intended to maintain the character of the landscape and park.

And yet the property itself will continue to serve as a waterworks / public works site. Mount Tabor remains the site of an underground water reservoir (Reservoir 7), a pump station (the Tabor Pump Station), approximately 30 water mains, and multiple valves, flowmeters, air/vacuum release valves, sensors, and other infrastructure crucial for the successful operation of the city’s water system.

The park will continue its use as a park after this project is completed, so this historic use is unimpaired and unchanged. No work is proposed for the part of the park that is currently used as a horticultural facility or to the active recreational facilities that are listed in the historic documentation, so neither of these historic uses will be impaired or changed. There will be temporary closure of the northwest corner of the dog off-leash area, but that is a recent addition to the park and not part of the historic character or development. This temporary closure has no effect on the recreational or use of the park.

**Review of Work Areas**

**Work Area 2 -- Pipe Across the Gravel Road and a Corner of the Dog Park**

- Installing new buried 48-inch pipeline;
- Excavating trench and restoring ground surface, including gravel path and vegetation;

- Removing trees and replanting with native trees, shrubs, and ground cover plants selected from the *Portland Plant List*;
- Excavating and replacing existing concrete pad and concrete blocks;
- Removing dog off-leash area (aka the dog park) pedestrian gate and replacing it with a different double-gated pedestrian gate.
- Removing and replacing existing vehicle gate at the dog off-leash area.
- Excavating and restoring the roadway to its approximate original condition.

In Work Area 2, the historic features were listed as trees and shrubs planted at the Lincoln Street entrance and near the junction with the Water Bureau Access Road, a row of flowering cherry trees along SE Lincoln Drive as it winds from the entrance at SE Lincoln St and SE 64<sup>th</sup> Ave uphill, and SE Lincoln Drive itself. This area is not noted for scenic viewpoints, nor for being a constituent of scenic views.

The construction route was selected to avoid the various trees and shrubs mentioned in the listing documents. The gate and other structures in the dog park are not historic, and the route through the corner of the dog park was selected to avoid damage to the large trees in the area that contribute to the feeling of the edge of the forest.

After construction of the pipeline, all the ground surface will be restored to its approximate original condition. SE Lincoln Drive will be re-paved to blend with the surrounding roadway, the gravel path will be reconstructed, the concrete pad in the dog park will be reconstructed, and all disturbed ground will be replanted.

The work described above will leave no visible changes in this area, and therefore will have no effect on the historic character or create alterations to the historic features and spaces of the property. Although soils will be removed, they are not listed historic materials.

There will be two visible changes in this area:

1. The replacement pedestrian gate to the dog park will have two gates instead of only one, but it will be constructed of materials similar to those currently used (i.e., metal poles and a wire fence). It will look similar to the non-historic gate in use today.
2. Nine small trees will be removed from the slope above the dog park (see Section 5). When this slope is restored to its approximate original contours, PWB construction standards prohibit planting trees within 10 feet of the outside edges of a large-diameter pipe such as this one. As a result, the new trees must be planted only near the outer edges of the disturbed area. The remainder of the disturbed area and the ground between the trees will be planted with shrubs and ground cover plants. When the vegetation matures, it will create a “stepped” appearance of tall trees outside the pipe corridor, smaller trees blending with the taller trees along the edges, and shrubs growing in the remaining space.

In summary, then, the pipe alignment was selected to avoid removing or altering historic materials or spaces. In addition, the methods and materials to be used in construction will blend with the existing materials or else be invisible in order to preserve the historic character of the property and its features.

### **Work Area 3 -- Pipe in Lincoln Drive**

- Excavating the roadway and restoring it to its approximate original condition.
- Installing 48-inch diameter pipe and connecting it to existing Conduit.
- Installing new underground vault and equipment with two manhole covers.
- Installing ten visible CIV covers.
- Installing two new buried electrical conduits adjacent to roadway.

The listed historic resource in this work area is SE Lincoln Drive.

The alignment following the roadway preserves the historic character of the “forest in an urban setting” by avoiding damage to the trees and vegetation. All disturbance to SE Lincoln Drive will be repaired to blend with the surrounding roadway. The buried pipeline and two electrical conduits will not be visible. This work will not affect the appearance or character of the roadway or its surroundings.

The only visible features that will be added to Work Area 3 are the two manhole covers and ten CIV covers. These will be flush with the roadway and appear similar to other such covers in use elsewhere in the park and throughout the city. The manhole and CIV covers do not have the appearance of any particular period of development. They frequently go unnoticed because they are so common and so similar to each other. They will not change the historic appearance or character of the roadway.

In summary, this work will avoid removing historic materials, will not alter historic features or spaces, and will preserve the historic character of Work Area 3.

### **Work Area 4 -- Disconnections in Lincoln Drive South of Reservoir 1**

- Excavating road and its restoration to approximate original conditions.
- Excavating hillside for cut-and-plugs and restoring and revegetating it.
- Installing 30-inch diameter pipe under roadway.
- Removing pipe at three cut-and-plugs. (This work is reversible.)
- Installing two electrical conduits along north side of roadway.
- Installing 4 CIV covers over buried valves.

The only listed contributing historic feature within the construction area limits is the roadway. The “Southside Stairs” and a historic stone retaining wall, which are mentioned as historic elements, are adjacent, but outside the construction limits.

These cut-and-plugs and the connection between large pipes in the roadway were located in the roadway in order to avoid damage to the Southside Stairs, the retaining wall, and to trees and vegetation surrounding the work area as well as to minimize construction costs.



The “cuts-and-plugs” involve removal of historic pipe material, but the pipes are generally below-grade and not visually contributing to the historic character of the site. The working water system pipe and conduit components have been modified, added to, and altered over time, and are not mentioned in either nomination. Therefore, these elements cannot be considered to characterize the property. If they are ever reversed, the newly-installed materials will be easily distinguished from the original materials.

All of the disturbed ground will be restored to its original contours and re-vegetated to blend with its surroundings. All of the excavations in the roadway will be backfilled and re-paved to blend with the surrounding roadway. The new pipeline and electrical conduits will be buried and will not be visible.

As a result, this work preserves the historic character of this part of the property. It avoids removing visible historic materials or altering the historic space created by the landscape design of the three roadways that come together here.

#### **Work Area 5 -- Pipe in Lawn Below Reservoir 1**

- Excavating ground and restoring it to its approximate original contours, and revegetating the disturbed ground to blend with its surroundings.
- Removing sections of existing pipe and plugging unused pipe ends. (This work is reversible.)
- Installing new connecting pipe, valves, air/vacuum release valves, and other appurtenances.
- Constructing new underground vault, re-grading the ground surface around it, and installing new air vent on top of it.
- Cutting and plugging a pipe in a subgrade vault and demolishing the vault, including restoration of the ground surface above it. The cutting and plugging of this pipe is reversible.
- Removing three existing fruit trees.
- Planting five new flowering trees and a variety of native shrubs.
- Cutting and temporarily removing historic iron-pipe handrail and subsequently replacing it and welding it into place to approximately match its existing condition.

The only listed contributing historic resource in this work area is the park’s “site,” including the Southside Stairs, which cross the work area on the east. However, the trees along the north edge of the work area contribute to the scenic views across Reservoir 1. A walkway and historic pipe railing that are part of the Southside Stairs lie partly within the eastern access route into the work area.

The proposed pipe route was selected in order to avoid removing six of the large Douglas firs along the north edge of this work area. Their removal would have changed the feeling of enclosure by tall trees that is part of Reservoir 1’s historic character. Instead, the pipeline will be constructed on a route that will result in removal of three fruit trees that are much less prominent. To replace the experience of spring blossoms in this area, five flowering trees will be planted. They will be selected from the list of

native trees in the *Portland Plant List*. Emanuel Mische advocated for the use of native plants in Mount Tabor Park when he designed it (Park Historic District listing documents, Section 8, p. 22), and this will support that original vision. The more recent Mount Tabor Master Plan continues to embrace the use of native plants, as well.

As part of the work, the historic pipe handrail will be cut in order to create room for passage of equipment and vehicles. The pipe handrail has been cut and re-welded before as shown in the pictures in the description of this work area (Section 2). It will be re-welded and replaced, and will appear the same as it does today. The walkway will be fully protected as described in the Section 2 (Work Area 5).

The only other visible change to this work area will be that the new underground vault will require re-grading of the ground surface to fully cover it and it will have an air vent pipe on top of it. The ground surface will be vegetated with grasses to blend with the other vegetation in the immediate area.

Portions of historic pipe material will be removed in places as part of this work. However, these pipes are underground or in buried vaults and are not visible. The working water system pipe and conduit components have been modified, added to, and altered over time, and are not mentioned in either nomination. Therefore, these elements cannot be considered to characterize the property. Newly-installed materials will be easily distinguished from the original materials

Both the pipe alignment and construction methods have been selected to minimize removal or damage to the large trees in this work area. These trees contribute significantly to the historic character of the view across Reservoir 1. The new alignment requires a minor alteration to the space south of these trees (*viz.*, the new vent pipe and the re-grading around the vault). The proposed construction method (the second access route) requires an alteration to the handrail that will remove a small amount of the historic metal when it is cut and the addition of a small amount of metal when it is re-welded.

The re-grading, once the vegetation has established itself, will be a relatively minor change in the appearance of this area. This work area is itself not prominent, and does not contribute to any identified scenic views. Likewise, the new vent pipe will simply be another element of the utility infrastructure in an area that has a number of visible utility buildings, vaults, and pipes. The cutting and re-welding of the handrail will not change the appearance of this feature, which has already been cut and re-welded—perhaps more than once, judging from its irregular shape and appearance.

In summary, the Southside Stairs and its associated walkway will be protected. Its iron handrail will be cut and repaired to appear the same as it does today. The methods and materials being used will minimize the removal or alteration of historic features and spaces and preserve as much as possible the elements that most prominently contribute to the historic character of the property as a whole.

### **Work Area 6 -- Vault Work in Gravel Access Road by Reservoir 5**

- Cutting and plugging two existing pipes; installing two valves, and modifying the pipe connections in two existing sub-grade vaults. (This work is reversible.)
- Installing an above-ground air vent pipe on an existing vault.
- Excavating portions of the graveled roadway if necessary to cut and plug pipes or make connections.
- Backfilling any excavations and repairing any damage to the ground or road surface, including reconstructing or repairing damaged sections of road.

There are no listed contributing features in this work area other than the “site.” The trees surrounding the work area contribute to the forested character of this part of the park.

All work will be confined to the gravel road, in or on the existing vaults. The road will be repaired and restored to its approximate original condition. The only visible changes will be the installation of an air vent pipe. No trees will be removed or damaged.

This work area does not have any features or spaces that are identified as contributing to the historic character of the site. The work will not remove any historic materials or alter any historic features or spaces, and will not be visible from any identified scenic viewpoints in the park. The existing development in this area consists of standard utility vaults, hatch covers, and guard rail. The addition of a vent pipe is consistent with the character that these utility features create. The historic character of the property will not be affected in any way, and thus will be retained and preserved.

### **Work Area 7 -- Vault Work by Tabor Pump Station**

- Cutting and plugging three existing water mains. (This work is reversible.)
- Demolishing and backfilling three existing underground concrete vaults.
- Adding thrust blocks.
- Installing the cathodic protection system.
- Constructing the above-ground electrical cabinet.
- Planting shrubs to screen the northwest side of the cabinet.
- Excavating soils, backfilling, and restoring and revegetating all disturbed ground surface.
- Trenching through the Reservoir 6 walkway, burying electrical conduit and wires, backfilling the trench, and repairing the walkway to blend with its surroundings.
- Constructing two small concrete vaults under the walkway to accommodate the new wiring. The vaults will have standard concrete lids and brushed-metal hatch covers like those used elsewhere in the park.

There are two listed contributing historic features in Work Area 7: the park “site” and the portion of the walkway adjacent to Reservoir 6 where the electrical conduit must cross. The walkway from Dam 5 to Reservoir 6 is part of the “site,” It will be protected from damage by the construction.

There will be no damage to any trees. Native species of shrub will be planted on the northwest side of the equipment cabinet (to ensure adequate screening from the nearby residential-zoned properties), and the species will be consistent with vegetation growing nearby in the park.

The “cut and plugged” pipe, the thrust blocks, and all underground wiring and conduits will not be visible. All disturbed ground will be returned to its approximate original contours and re-vegetated. The trench through the walkway will be repaired to blend with its surroundings.

Historic pipe material will be removed at the “cut-and-plugs,” though the pipes are below-grade and not visually contributing to the historic character of the site. The working water system pipe and conduit components have been modified, added to, and altered over time, and are not mentioned in either nomination. Therefore, these elements cannot be considered to characterize the property. In addition, newly-installed materials will be easily distinguished from the original materials

Removal of three existing vaults will be noticeable but will be an improvement to the overall view of the work area by making it look less cluttered. These vaults are not historic and do not contribute to the historic character.

The new concrete vaults in the walkway will be flush with the walkway surface. The hatch covers will have a brushed metal finish and appear the same as those pictured in the discussion of the work in Work Area 6. Because they are small relative to the size and scale of the historic elements of the park and because they are standard utility equipment that does not portray any particular age or sense of history, they will not affect the historical character of this part of the property.

In summary, alteration of the few visible historic features in this work area has been avoided to the extent possible. The principal exception is where conduit must unavoidably cross the walkway around Reservoir 6 and where two small concrete vaults must be installed in the walk.

Removal of three other vaults will slightly alter the area around the pump station, but for the better. This space is not listed as contributing to the historic character of either historic district in any case. In addition, the methods and materials to be used to complete all work (whether with vegetation or concrete) will blend the finished work with its surroundings.

#### **Work Area 8-- Disconnections and Cabinet by SE 60<sup>th</sup> Ave**

- Excavating and backfilling trenches, re-grading and revegetating the disturbed ground.
- Removing sections of pipe and capping or plugging the pipe ends.
- Installing a concrete pad and above-ground electrical equipment cabinet.
- Planting shrubs.

The only listed contributing resource in this work area is the site, including the walkway leading from Gatehouse 6 West to SE 60<sup>th</sup> Avenue. The walkway will be protected by construction-area limit fencing.

Historic pipe material will be removed, but the pipes are below-grade and not visually contributing to the historic character of the site. The working water system pipe and conduit components have been modified, added to, and altered over time, and are not mentioned in either nomination. Therefore, these elements cannot be considered to characterize the property.

All excavations will be backfilled and revegetated to blend with their surroundings. The new concrete pad and equipment cabinet will be placed adjacent to another concrete pad with an existing perforated air vent pipe and a few feet from a second such vent pipe. Native shrubs will be planted in a naturalistic pattern near the cabinet to reduce its visibility.

The cabinet is consistent with other utility equipment installed in the park and throughout the city. Utility equipment is already in place in this location. No historic materials will be removed to install this cabinet, and no historic features altered. The historic character of the property will be preserved.

#### **Work Area 9-- Reservoir 1**

- Capping outlet pipe openings. (This is reversible.)
- Screening inlet pipe and weir openings. (This is reversible.)
- Placing bars as a grate across the drain pipe opening. (This is reversible.)
- Screening the openings of the two pipes that connect Reservoirs 1 and 5. (This is reversible, but these are not historic.)
- Removing the brushed-metal barrier from the ornamental fence above the weir opening. (This is reversible.)

In Work Area 9, the reservoir itself, its parapet walls, ornamental fence, gatehouse, and weir building are the contributing resources. The pipe openings are not mentioned, but the weir opening and its cascading water are described as contributing to the character of the reservoir and its surroundings.

The only visible material to be removed is the brushed-metal barrier attached to the ornamental fence above the weir opening. It is not historic, and its removal will actually improve the historic feeling of the site. Small amounts of historic concrete or metal may be removed by drilling holes for attaching screens or grates. These holes will not be visible and can easily be repaired if the work is reversed. This does not alter the historic features or spaces of Reservoir 1.

The screens will be made of dark material recessed into the openings in order to limit their visibility. In addition, the drain pipe and the outlet pipes will typically be underwater, so the grate on the drain pipe, the screens on the pipes connecting Reservoirs 1 and 5, and the caps on the outlets will rarely be visible.

The proposed work minimizes the visibility of the changes that are necessary to achieve the project purposes. It avoids any unnecessary removal of historic materials and limits physical alterations to elements that are small and relatively unnoticeable as part of a much larger contributing historic element and its appurtenances.

The work will therefore retain and preserve the historic character of the property.

### **Work Area 10 -- Reservoir 5**

- Excavating and backfilling trenches, re-grading and revegetating the disturbed ground.
- Capping the outlet pipe opening. (This is reversible.)
- Screening inlet weir opening. (This is reversible.)
- Placing bars as a grate across the drain pipe opening. (This is reversible.)
- Screening the openings of the two pipes that connect Reservoirs 1 and 5. (This is reversible.)
- Sealing the inlet pipe inside the gatehouse by welding the valve shut (not an exterior alteration). (This is reversible.)
- Removing a 10-foot section of pipe buried outside of the Weir Building (Chlorination Building), and installing a smaller pipe through an existing opening in the weir house foundation and in the weir to create an air gap. (This is reversible.)
- Installing control alarms to alert PWB when and if the water level in the reservoir is approaching the elevation of the air gap. (This is reversible.)

Except for the work described in the last two bullet points, the discussion of Work Area 9 immediately above applies to Work Area 10.

The last two items will require excavation on the southwest side of the Weir Building similar to that of a cut and plug. Some concrete flatwork will be removed for the excavation. Historic pipe material will be removed, but the pipes are below-grade and not visually contributing to the historic character of the site. The working water system pipe and conduit components have been modified, added to, and altered over time, and are not mentioned in either nomination. Therefore, these elements cannot be considered to characterize the property.

The concrete flatwork is not mentioned in the listing documents, and cannot be said to be contributing to the historic character of Reservoir 5 or the Weir Building. The Weir Building has received many minor alterations mentioned in the listing documents, and as a result, the age of this concrete is unknown. After the new pipe is installed and the excavation backfilled, the concrete will be repaired to an appearance similar to the concrete around it.

When the new pipe has been installed, the ground will be restored and revegetated and the new pipe will not be visible. The appearance of the Weir Building will be unchanged, so the historic character of the site will be preserved.



### **Work Area 11 -- Reservoir 6**

- Removing hydroelectric generator from Gatehouse 6 East.
- Installing new emergency generator in Gatehouse 6 East.
- Roof and wall penetrations of Gatehouse 6 East.
- Adding vent pipes to roof of Gatehouse 6 East.
- Adding conduit and electrical conduit to east wall of Gatehouse 6 East.
- Removing pipe ends and installing caps on the flanges on the outlet pipes (Gatehouse 6 West. This is reversible.)
- Installing bars to serve as a grate on the drain pipes (Gatehouse 6 West. This is reversible.).
- Installing pipe in the east gatehouse to create an air gap. (This is reversible).
- Installing additional control alarms to alert PWB if the water level in the reservoir approaches the elevation of the air gap. (This is reversible).

The discussion of Work Area 9 and 10 also applies to Work Area 11. The difference, removing the pipe ends and installing caps on the existing flanges, is minor. These pipes will normally be under water and not visible. The pipe ends are not mentioned in the listing documents and are not defining features of Reservoir 6 and its appurtenances.

The hydroelectric generator is non-historic, and the installation of the emergency generator will avoid alterations to any historic features inside the gatehouse.

The roof and wall penetrations of Gatehouse 6 East will result in the loss of small amounts of historic concrete. This removal will not affect the historic character of the gatehouse or its contribution to the historic character of the property. It will still obviously be a historic poured-concrete gatehouse structure substantially unimpaired by alterations.

Likewise, the vent and exhaust pipes in the roof will be standard pipes appearing similar to other such vents. They are the shortest and smallest that will serve the purpose, and do not change the overall appearance or historic character of the gatehouse.

As noted in previous sections of this document, PWB will first analyze the condition of the existing condulets. If they can be used to house the new wiring, the existing condulets will be used and the new penetrations will be avoided. If new condulets and conduits are necessary, they will join a group of existing condulets on the east wall of the gatehouse. They will not change the historic character of this structure.

In order to create the required air gap, a length of historic pipe must be removed from Gatehouse 6 East and a smaller-diameter pipe installed. A water-level alarm system must also be implemented to warn of water levels that could lead to backflow. The pipe removal and installation work will be inside the gatehouse and not visible from the exterior. Some historic pipe will be removed, but this pipe is within a building and does not visually contribute to the historic character of the site. The working water system

pipe and conduit components have been modified, added to, and altered over time, and are not mentioned in either nomination. Therefore, these elements cannot be considered to characterize the property. Newly-installed materials will also not be visible from the exterior of the building, but from inside will be easily distinguished from the original materials.

The alterations and material removals are being kept to the minimum practical, which will protect the historic character of the gatehouse and its contribution to the historic district. Because the overall character and integrity of the gatehouse will be preserved, the historic character of the property will be retained and preserved.

### **Planting Work Area 12 -- Additional Tree and Shrub Planting**

There are four tree and shrub planting sub-areas, 12A, 12B, 12C, and 12D, each in different parts of the park (Sheets 48 and 49).

**Sub-area 12A** is adjacent to the Lincoln Street entrance. Three new trees will be planted in locations that will allow them to reach full size and spread at maturity. No historic materials will be removed. Emanuel Mische's original plan for the park showed this area as planted with large trees in a naturalistic arrangement that provided contrast with the straight-line plantings of the roads leading into the park and meeting where today's entrance now is.

These new plantings will augment the feeling of "nature in the city" that is part of the historic character of the park.

**Sub-area 12B** between the south ends of Reservoirs 5 and 6, is already the edge of a forested area. Three new big-leaf maple trees will be planted here. These trees will blend with the surrounding trees and augment the wildlife habitat value of the area. No historic materials will be removed, and the historic character of the space (as "nature in the city") will be preserved.

**Sub-area 12C** lies on both sides of SE Harrison Drive as it enters the park. Fifteen trees will be planted here at a spacing that allows them to reach full growth. No historic materials will be removed in order to accomplish this.

There is no historic design for the landscape at this entrance, it was the last main entrance constructed, and it is not as well-developed as the other main entrances. On the north side of the road, six new trees will begin to fulfill the vision of the park's master plan for forest vegetation on this side of the road. The plantings will not affect any of the scenic viewpoints inside the park and will improve the appearance of the park for visitors entering at this point.

Five trees will be planted along the south side of the road to allow them to grow into a row of trees that shade the entrance road. South of this, in the more open and gently-sloping area, three more trees will be added next to the edge of the existing forest canopy to the west. One more tree will be added near the playground as well. These

four trees will maintain the open feeling of this area, which is characterized by shady lawn under widely-spaced large trees.

These plantings will improve these areas and bring them more in line with the vision for this park as a nature refuge in the city with a variety of environments set within an urban forest. In this way, the historic character of the park's spaces will be preserved.

### ***Sub-area 12D***

Shrubs will be planted in Su-area 12D. There is little information about how this narrow finger of land between two roads fits into the historic design of the park or specifically contributes to the historic character of the site. It is currently nearly bare of shrubs, and has only scattered grasses and forbs growing in it.

The proposal calls for a fairly dense planting of native shrubs, both tall-growing and short, with seeded ground cover vegetation. This will grow into an attractive vegetated feature. The selection of native plants is consistent with Emanuel Mische's vision for the park. The edge of the Environmental Conservation zone is approximately 75 feet to the east along this same finger of land, so these plantings will help extend the habitat and the aesthetic experience of the habitat area into this intersection area. This supports the forest refuge in an urban environment vision of the historic park design.

## **2. Record of its time.**

*The historic resource will remain a physical record of its time, place, and use. Changes that create a false sense of historic development, such as adding conjectural features or architectural elements from other buildings will be avoided.*

### **Response:**

**Work Area 2-- Pipe Across the Gravel Road and a Corner of the Dog Park**

**Work Area 3-- Pipe in Lincoln Drive**

**Work Area 4-- Disconnections in Lincoln Drive South of Reservoir 1**

**Work Area 5-- Pipe in Lawn Below Reservoir 1**

No listed contributing resources or identified historic resources are being removed in work areas 2-5.

The work in Work Areas 4 and 5 includes minor and repairable alterations to historic pipe material, though the pipes themselves are generally below-grade and do not visually contribute to the historic character of the site. The working water system pipe and conduit components have been modified, added to, and altered over time, and are not mentioned in either nomination. Therefore, these elements cannot be considered to characterize the property's time, place, or use.

All alterations will be small and unobtrusive relative to the nearby resources. The visible alterations or additions within the Historic District or Districts will use materials of

modern construction such as concrete and metal, which will be proven by their physical makeup and their lack of weathering. These materials were also used on-site during the period of significance, but can be differentiated by a closer comparison. There are no architectural elements or decorative features added; the new work is all utilitarian in nature and will clearly reflect its function. The historic resources, meaning the Park and its features as well as the Reservoirs and associated features, will remain to illustrate the original development and historic period of significance.

**Work Area 6 -- Vault Work in Gravel Access Road by Reservoir 5**  
**Work Area 7 -- Vault Work by Tabor Pump Station**

Work Areas 6 and 7 have no contributing historic features and do not contribute to any identified scenic views. As discussed in the response for Work Areas 2 through 5, the visible alterations or additions will use modern materials which will be distinguished from similar historic materials by their physical makeup and lack of weathering. These alterations will be entirely utilitarian in nature and will reflect its function without architectural elements or decorative features. The addition of shrubs at Work Area 7 will also not affect the physical development of the site or its record of time, place, and use. The historic resources of both districts will remain to illustrate the original development historic period of significance.

**Work Area 8 -- Disconnections and Cabinet by SE 60<sup>th</sup> Ave**

The new cabinet in Work Area 8 will clearly be contemporary, not historic, and will not create a false sense of historic development. No listed contributing resources or identified historic resources are being removed. As in Work Areas 4 and 5 (discussed above), some historic pipe material will be removed, but the pipes themselves are below-grade and do not visually contribute to the historic character of the site. The working water system pipe and conduit components have been modified, added to, and altered over time, and are not mentioned in either nomination. Therefore, these elements cannot be considered to characterize the property. The resources of both districts will remain intact as a record of their time, place, and use.

**Work Area 9 -- Reservoir 1**  
**Work Area 10 -- Reservoir 5**  
**Work Area 11 -- Reservoir 6**

All work in these areas is intended to be unobtrusive and blend with the existing materials or objects around it. The caps and screens will have a generic appearance, not characteristic of any historic era. The roof vents and wall condulets and conduits are small-scale and also generic and will not create false sense of historic development. The new air gap pipes in Weir Building 5 will be underground and not visible, and the air gap pipes in Gatehouse 6 East will be in the lower level of the building and also not visible.

None of the work proposed will have the possibility of being mistaken for work that occurred in the period of significance for either Historic District (1894-1953). The visible alterations or additions within the Historic District or Districts will use materials of modern construction such as concrete and metal, as proven by their physical makeup and their lack of weathering. These materials were also used on site during the period of significance, but can be differentiated by a closer comparison. There are no architectural elements or decorative features added; the new work is all utilitarian in nature and will clearly reflect its function. The historic resources, meaning the Park and its features as well as the Reservoirs and associated features, will remain to illustrate the original development and historic period of significance.

### **Work Area 12 -- Additional Tree and Shrub Planting**

Vegetative landscape materials are dynamic; they naturally germinate, grow, and die over time. As a result, vegetative materials do not in general preserve a record of a historic resource's time, place, and use. The new trees and shrubs are intended to augment, and eventually replace, the mature plants that are growing in the Park today, while remaining consistent with the Park's vision of being a forest refuge in an urban environment. The existing historic resources in the Park and Reservoirs Historic Districts will remain to illustrate the original development and its time, place, and use.

### **3. Historic changes.**

*Most properties change over time. Those changes that have acquired historic significance will be preserved.*

#### **Response:**

**Work Area 2 -- Pipe Across the Gravel Road and a Corner of the Dog Park**

**Work Area 3 -- Pipe in Lincoln Drive**

**Work Area 4 -- Disconnections in Lincoln Drive South of Reservoir 1**

**Work Area 5 -- Pipe in Lawn Below Reservoir 1**

**Work Area 6 -- Vault Work in Gravel Access Road by Reservoir 5**

**Work Area 7 -- Vault Work by Tabor Pump Station**

**Work Area 8 -- Disconnections and Cabinet by SE 60<sup>th</sup> Ave**

**Work Area 9 -- Reservoir 1**

**Work Area 10 -- Reservoir 5**

**Work Area 11 -- Reservoir 6**

**Work Area 12 -- Additional Tree and Shrub Planting**

None of the proposed work involves alterations to elements of the Historic Districts that are themselves changes that have acquired historic significance. This criterion does not apply.

### **4. Historic features.**

*Generally, deteriorated historic features will be repaired rather than replaced. Where the severity of deterioration requires replacement, the new feature will match the old in design, color, texture, and other visual qualities and, where practical, in materials. Replacement of missing features must be substantiated by documentary, physical, or pictorial evidence.*

**Response:**

**Work Area 2 -- Pipe Across the Gravel Road and a Corner of the Dog Park**

**Work Area 3 -- Pipe in Lincoln Drive**

**Work Area 4 -- Disconnections in Lincoln Drive South of Reservoir 1**

**Work Area 5 -- Pipe in Lawn Below Reservoir 1**

**Work Area 6 -- Vault Work in Gravel Access Road by Reservoir 5**

**Work Area 7 -- Vault Work by Tabor Pump Station**

**Work Area 8 -- Disconnections and Cabinet by SE 60<sup>th</sup> Ave**

**Work Area 9 -- Reservoir 1**

**Work Area 10 -- Reservoir 5**

**Work Area 11 -- Reservoir 6**

**Work Area 12 -- Additional Tree and Shrub Planting**

None of the proposed work elements involves replacement or repair of deteriorated historic features. This criterion does not apply.

**5. Historic materials.**

*Historic materials will be protected. Chemical or physical treatments, such as sandblasting, that cause damage to historic materials will not be used.*

**Response:**

**Work Area 2 -- Pipe Across the Gravel Road and a Corner of the Dog Park**

**Work Area 3 -- Pipe in Lincoln Drive**

**Work Area 4 -- Disconnections in Lincoln Drive South of Reservoir 1**

**Work Area 5 -- Pipe in Lawn Below Reservoir 1**

**Work Area 6 -- Vault Work in Gravel Access Road by Reservoir 5**

**Work Area 7 -- Vault Work by Tabor Pump Station**

**Work Area 8 -- Disconnections and Cabinet by SE 60<sup>th</sup> Ave**

Work in each of these work areas involves removal of pipe or other buried materials. In work areas 2, 3, and 4, portions of SE Lincoln Drive will be excavated, which may also result in removal of some historic roadbed materials. In both cases, the construction methods were selected to minimize overall disruption to the park and reservoirs and to the visible historic resources and materials. The removal of pipe is also the minimum necessary to achieve the project's purpose.

Some of the pipes may consist of historic material, but they are generally below-grade and do not contribute visually to the historic character of the site. The working water system pipe and conduit components have been modified, added to, and altered over



time, and are not mentioned in either nomination. Likewise, the roads in the park have been repaired and repaved over time so that the visible portions of the roadways do not consist of historic material. Therefore, these elements cannot be considered to characterize the property.

Near Work Area 4, the stone retaining wall south of the roadway in Work Area 4 consists of historic materials. It will be protected by construction fencing, signage, and similar work-area controls. These measures will keep construction vehicles and activities away from the historic retaining wall.

The historic Southside Stairs lead from Work Area 4 through Work Area 5, and up to Reservoir 1. The stairs themselves lie outside of both work areas and will be protected by construction fencing. The concrete walkway that crosses Work Area 5 will be protected by gravel and metal plates as described in Section 2 and the Construction Management Plan (Appendix C). The metal handrail will be cut and re-welded in the same section where it was previous cut and re-welded. No additional measures, such as sandblasting or chemical application, will be used. The metal handrail will retain its approximate current appearance.

**Work Area 9 -- Reservoir 1**  
**Work Area 10 -- Reservoir 5**  
**Work Area 11 -- Reservoir 6**

Minimal amounts of historic concrete and metal must be removed to attach the necessary caps, screens, and grates to the reservoirs and their appurtenances. As described elsewhere, the outlet pipes, drain pipes, and pipes connecting Reservoirs 1 and 5 will be underwater when the reservoirs are filled, and the screens in the Weir Buildings will be recessed. When the screens, grates, or caps are installed, the Spots where materials have been removed by drilling, grinding, or welding will be hidden.

These material removals are the minimum necessary to fulfill the project goals. The working water system pipe and its components have been modified, added to, and altered over time, and they are not mentioned in either nomination. Therefore, they cannot be considered to characterize the property. Any future repairs of the removed materials will be easily distinguished from the original materials, although they will blend with the old and will weather similarly.

No sandblasting, chemical application, or other potentially damaging surface treatments will be used.

Inside and adjacent to Weir Building 5 and inside Gatehouse 6 East, the pipe to be removed (to create air gaps) is either buried or inside the structure, and in both cases does not contribute to the historic character of the site. As mentioned above, the pipe and its components are not mentioned in either listing, and the system has been altered many times over the years. It is not certain whether the pipe to be removed actually dates from the periods of significance of either district. In any case, these material

removals have been designed to take place in the least visible locations possible and to remove as little material as possible. The work is reversible, and these removals can be replaced.

As a result, historic materials are being protected to the maximum degree practical.

## **Work Area 12 -- Additional Tree and Shrub Planting**

In all additional tree and shrub planting areas, no historic materials will be removed because the work involves only excavating holes sufficient to plant trees or shrubs and carrying out other ground preparation necessary to support the new vegetation. This criterion does not apply to these plantings.

### **6. Archaeological resources.**

*Significant archaeological resources affected by a proposal will be protected and preserved to the extent practical. When such resources are disturbed, mitigation measures will be undertaken.*

#### **Response:**

**Work Area 2 -- Pipe Across the Gravel Road and a Corner of the Dog Park**

**Work Area 3 -- Pipe in Lincoln Drive**

**Work Area 4 -- Disconnections in Lincoln Drive South of Reservoir 1**

**Work Area 5 -- Pipe in Lawn Below Reservoir 1**

**Work Area 6 -- Vault Work in Gravel Access Road by Reservoir 5**

**Work Area 7 -- Vault Work by Tabor Pump Station**

**Work Area 8 -- Disconnections and Cabinet by SE 60<sup>th</sup> Ave**

**Work Area 10 -- Reservoir 5**

Work in each of these work areas will require excavation, which has the potential to uncover archeological resources. Archeological resources are generally regarded to be material remains of past human life that are used to gain understanding of the people or cultures who have left them.

The only reported archeological discovery in the Mount Tabor area was on the north flank of the butte, outside of the park boundaries near NE 66<sup>th</sup> Avenue and NE Davis Street (*East Buttes, Terraces, and Wetlands Conservation Plan*, City of Portland, 1993, p. 63). There are unconfirmed reports of obsidian flakes on top of Mount Tabor, as well (*ibid.*, p. 63).

All of the areas where this work will occur have been extensively excavated, re-graded, and otherwise disturbed over many years. This work is taking place within the former construction zones of the reservoirs, the roadways, and two gravel roads, so it is very unlikely that any archeological resources will be discovered. Nevertheless, the applicant will have in place a plan that will stop work if significant archeological resources are

discovered, and a qualified archeologist will be engaged to assess the situation and guide the applicant in the appropriate procedures to preserve the resources or mitigate their disturbance.

**Work Area 9 -- Reservoir 1**  
**Work Area 11 -- Reservoir 6**

Work in these areas does not involve excavation and so will not encounter archeological resources.

**Work Area 12 -- Additional Tree and Shrub Planting**

The tree and shrub planting areas are in parts of the park that have not been as extensively excavated or re-graded as most of the work areas. Nevertheless, many of these areas were farmed or held orchards before they were purchased for the park. All of them have also been cultivated for grasses or other ground cover vegetation. As a result, it is unlikely that archeological resources will be encountered. As noted above, the applicant will have in place a plan to stop work if significant archeological resources are discovered, and bring a qualified archeologist to the site to provide guidance about the appropriate procedures to preserve the resources or mitigate their disturbance.

**7. Differentiate new from old.**

*New additions, exterior alterations, or related new construction will not destroy historic materials that characterize a property. New work will be differentiated from the old.*

**Response:**

**Work Area 2 -- Pipe Across the Gravel Road and a Corner of the Dog Park**

**Work Area 3 -- Pipe in Lincoln Drive**

**Work Area 4 -- Disconnections in Lincoln Drive South of Reservoir 1**

**Work Area 5 -- Pipe in Lawn Below Reservoir 1**

**Work Area 6 -- Vault Work in Gravel Access Road by Reservoir 5**

**Work Area 7 -- Vault Work by Tabor Pump Station**

**Work Area 8 -- Disconnections and Cabinet by SE 60<sup>th</sup> Ave**

**Work Area 9 -- Reservoir 1**

**Work Area 10 -- Reservoir 5**

**Work Area 11 -- Reservoir 6**

**Work Area 12 -- Additional Tree and Shrub Planting**

In both the Park Historic District and the Reservoirs Historic District, the historic materials are primarily wrought iron, stone, and concrete. The historic water mains, valves, and other utility equipment are not mentioned as characterizing the resource.

As noted under approval criterion #5, the removal or damage to historic concrete or steel will be the minimum necessary to achieve the project purpose. Although small amounts of concrete will be destroyed (for example, by drilling wall penetrations at

Gatehouse 6 East), this will not change the way that concrete characterizes this property.

Portions of the pipe system will be removed as well. Much of this is likely to be historic pipe material, though the pipes themselves and their associated valves and other equipment are generally below-grade and not visually contributing to the historic character of the site. The working water system pipe and conduit components have been modified, added to, and altered over time, and are not mentioned in either nomination. Therefore, these elements cannot be considered to characterize the property.

The visible alterations or additions within the Historic District or Districts will use materials of modern construction such as concrete and metal, as proven by their physical makeup and their lack of weathering. These materials were also used on site during the period of significance, but can be differentiated by a closer comparison. Therefore, the newly-installed materials will be easily distinguished from the original materials, though where visible the new elements will visually blend with the old and will weather similarly to historic material.

Significant portions of SE Lincoln Drive will be excavated and repaired with new materials. Although the roadway is part of the site contributing resource, the surface of the roads have been repaired or replaced over the years, so the road materials are no longer historic. As noted in the discussion of Work Area 3, the significance of the roadways is that they provide access, scenic views, and the experience of the “forest in an urban environment.” The stone retaining wall supporting part of the roadway is historic and will be protected. Therefore, the work in SE Lincoln and the repair or repaving of the roadway will not destroy any historic materials that characterize the property. As with other new materials used in construction in the Historic District, the new roadway materials will blend with and weather similarly to historic roadway materials, but will easily be distinguishable by closer examination.

**8. Architectural compatibility.**

*New additions, exterior alterations, or related new construction will be compatible with the resource's massing, size, scale, and architectural features. When retrofitting buildings or sites to improve accessibility for persons with disabilities, design solutions will not compromise the architectural integrity of the historic resource.*

**Response:**

None of the proposed work involves retrofitting buildings or sites to improve accessibility for persons with disabilities. This aspect of the approval criterion does not apply.

**Work Area 2 -- Pipe Across the Gravel Road and a Corner of the Dog Park**

The new dog park fence and pedestrian double gate will replace non-historic features, and yet will be of similar size, scale, and features to the existing fence and gate.

Work involving the gravel path, roadway, concrete pad, retaining wall, vegetation, and other site characteristics is not architectural, and so this criterion does not apply to it.

**Work Area 3 -- Pipe in Lincoln Drive**

**Work Area 4 -- Disconnections in Lincoln Drive South of Reservoir 1**

**Work Area 5 -- Pipe in Lawn Below Reservoir 1**

**Work Area 6 -- Vault Work in Gravel Access Road by Reservoir 5**

**Work Area 7 -- Vault Work by Tabor Pump Station**

**Work Area 8 -- Disconnections and Cabinet by SE 60<sup>th</sup> Ave**

None of the excavation, fill, landscaping, or similar site work is architectural and so this criterion does not apply to those work elements.

The new vault to be installed at grade in Work Area 5 is utilitarian in purpose and design. Only the top of the vault and an air vent will be visible. No decorative architectural features will be created and the vault will therefore blend with the other utilitarian structures in this work area. The completed vault will also be of a size, scale, and massing that is consistent with other structures in the Work Area. Therefore, the vault will be compatible with other nearby structures with respect to its size, scale, and massing.

The new utility equipment at Work Areas 7 and is small relative to the two historic districts and relative to the size of the reservoirs, gatehouses, and landscape. At the same time, it is a size and scale appropriate to the humans who will operate and maintain it—generally less than six feet tall and three feet wide or deep. This size is harmonious with the other visible utility equipment, such as vaults, vent pipes, and equipment cabinets. The size, scale, and massing of this new work will be compatible with the existing features of the site.

**Work Area 9 -- Reservoir 1**

**Work Area 10 -- Reservoir 5**

**Work Area 11 -- Reservoir 6**

All of the alterations to these work areas are very small in comparison to the size and massing of the historic structures. The largest features to be altered are the rectangular weir openings, approximately three feet tall and nine feet wide. In comparison with the reservoir basins, which cover an acre or more, and the gatehouses, which are several stories tall, these features are small and relatively unobtrusive.

None of the altered features—pipes, weirs, gatehouse roof or wall—will be changed in size or style from its current design. None of the additions affect the architectural character of any of these historic resources.

## **Work Area 12 -- Additional Tree and Shrub Planting**

This work does not involve additions, alterations, or related new construction involving architectural aspects of the historic resources. No structures are affected by this work. As a result, this criterion does not apply.

**9. Preserve the form and integrity of historic resources.**

*New additions and adjacent or related new construction will be undertaken in such a manner that if removed in the future, the essential form and integrity of the historic resource and its environment would be unimpaired.*

**Response:**

**Work Area 2 -- Pipe Across the Gravel Road and a Corner of the Dog Park**

**Work Area 3 -- Pipe in Lincoln Drive**

**Work Area 4 -- Disconnections in Lincoln Drive South of Reservoir 1**

**Work Area 5 -- Pipe in Lawn Below Reservoir 1**

**Work Area 6 -- Vault Work in Gravel Access Road by Reservoir 5**

**Work Area 7 -- Vault Work by Tabor Pump Station**

**Work Area 8 -- Disconnections and Cabinet by SE 60<sup>th</sup> Ave**

**Work Area 9 -- Reservoir 1**

**Work Area 10 -- Reservoir 5**

**Work Area 11 -- Reservoir 6**

**Work Area 12 -- Additional Tree and Shrub Planting**

All of the work proposed in these work areas that involves structures will preserve the essential form and integrity of the historic resources in the two historic districts, as described in Section 2 and demonstrated through the discussion of the previous approval criteria.

Alterations to structures are small and relatively unobtrusive and do not destroy historic materials (beyond the small amounts necessary). The new items installed or constructed that will be visible are standard utility equipment and are small relative to the size and scale of the historic structures and made of materials that will blend with the historic materials.

In addition to this, all of the work that alters the historic structures can be removed without impairing the essential form or integrity of the historic resources or their environment. Specifically:

- Screens can be unbolted and bolt holes patched. The bolt holes are inside the pipes and openings and not highly visible.
- Caps and covers or welded plates can be removed with a grinder or cutting torch removing the welding materials. This will cause minor blemishes to the underlying metal surfaces that can be repaired. The materials will then weather to look similar to the surrounding materials.
- Plates attached to blind flanges can be unbolted and removed.

- Roof and wall penetrations can be patched and finished to blend with surrounding materials.

Alterations made to non-historic structures could be left in place without impairing the form and integrity of the historic resources.

The landscape work that is proposed also preserves the essential form and integrity of the site, which is listed as one of the contributing resources. None of the constructed landscape features (e.g., the roadways) will be altered in their appearance; each will be repaired or reconstructed to its approximate original condition. Vegetation removal is limited to that necessary to achieve the work, and other vegetation will be planted to restore disturbed ground to its approximate original condition, as well.

The newly-planted vegetation (including trees) will not impair any of the identified scenic viewpoints and will preserve the historic vision of the park (and its landscape) as a forested refuge in the city. Many of the plantings will strengthen the park's habitat values.

In Work Sub-area 12C, by planting what will become a stately row of trees along the entrance drive, the project will bring the SE Harrison Street entrance more closely in line with the City Beautiful movement's ideals on which the park design is based. In addition, the plantings in this work sub-area will bring the forest closer to the north side of the drive, yet maintain open ground under the canopy where visitors may enjoy the shade-dappled lawn as they do south of SE Harrison Drive. South of the drive, trees planted near the existing forest canopy will help strengthen the habitat of this forest edge, while one additional Oregon oak will help create a younger generation of trees that will eventually replace the mature trees in this area as they age and die.

These measures will thus preserve the form and integrity of the historic resources of Mount Tabor Park and both historic districts in the park.

**10. Hierarchy of compatibility.**

*Exterior alterations and additions will be designed to be compatible primarily with the original resource, secondarily with adjacent properties, and finally, if located within a Historic or Conservation District, with the rest of the District. Where practical, compatibility will be pursued on all three levels.*

**Response:**

**Work Area 2 -- Pipe Across the Gravel Road and a Corner of the Dog Park**

**Work Area 3 -- Pipe in Lincoln Drive**

**Work Area 4 -- Disconnections in Lincoln Drive South of Reservoir 1**

**Work Area 5 -- Pipe in Lawn Below Reservoir 1**

**Work Area 6 -- Vault Work in Gravel Access Road by Reservoir 5**

**Work Area 7 -- Vault Work by Tabor Pump Station**

**Work Area 8 -- Disconnections and Cabinet by SE 60<sup>th</sup> Ave**



**Work Area 9 -- Reservoir 1**  
**Work Area 10 -- Reservoir 5**  
**Work Area 11 -- Reservoir 6**  
**Work Area 12 -- Additional Tree and Shrub Planting**

All of the exterior alterations or additions have been designed to be compatible with the primary resources – in both the Park Historic District and the Reservoirs Historic District.

The applicant has avoided using modern designs that would be inconsistent with the historic character of the Districts to the extent practical. Likewise, materials were selected to harmonize and blend with the historic materials without camouflaging their newness. For example, materials used on pipe caps will be of the same type as the existing pipes where possible, but will not be artificially aged. Manhole covers and other standard utility fixtures will consist of standard materials that will age to look like other standard fixtures already in the park and surrounding areas.

In other locations (such as Work Areas 5, 6, and 7), vault covers and air vents will be brushed metal, which has been used elsewhere in the park and is very common throughout the city. These are standard utility materials.

Where new plants are required, they will be selected primarily from among the native plants on the Portland Plant List, which supports Emanuel Mische's original vision for nature in the city. They are also selected to achieve healthy growth in their environmental setting and to harmonize with the existing surrounding vegetation.

In some places in the park, non-native vegetation provides valuable aesthetic interest that is mentioned in the listing documents. An example is the SE Lincoln Street entrance, which is lined with flowering cherries and framed with other non-native trees and shrubs.

As a result of the design effort, then, each individual alteration to a historic structure uses methods and materials intended to minimize the appearance of the alteration and use materials compatible with (but not necessarily identical to) the historic materials. Likewise, each planting area is designed to use plant materials that will harmonize with the park's historic landscape design and the historic vision upon which it is based.

In several instances, the work consists of either new development or exterior alterations to non-contributing elements within one or both historic districts. In each case, the work element is at a much smaller scale than the primary resources (the reservoirs, the gatehouses, and the park layout). The design seeks to make each of these elements look like the new installation that it is, not a faux-historic item. At the same time, the elements are either located in low-visibility areas or receive plantings that are intended to soften their appearance in the landscape. In these ways, each of these work elements is made compatible with the historic districts and the resources in them.

Most of the proposed work will not be visible from adjacent properties, and thus may be considered compatible with them. The equipment cabinet and vent pipes along SE 60<sup>th</sup> Avenue will be visible from adjacent properties, and they are standard pieces of utility equipment. Other examples are visible within approximately one-quarter mile, so even though they are modern items, they are normal and usual in neighborhoods such as this.

Other than the instances described above, the only exterior alterations that will be visible from adjacent properties are changes to the vegetation. Most vegetation will be chosen from the Portland Plant List, and will blend with the native plants already growing throughout the park. The park was designed to emphasize the use of native plants, so this is historically appropriate. At the SE Lincoln Street entrance, three non-native trees will be planted to blend with the other non-native ornamental trees in this area. The species selected will grow large and provide a mixture of spring blooms, food for wildlife, and autumn color. As a result of these plant selections, neighboring properties will continue to see historically appropriate landscaping, which is generally compatible with the neighboring properties in this older neighborhood.

All of the proposed work is within one or both of the two historic districts at the site, either the Mount Tabor Reservoirs Historic District or the Mount Tabor Park Historic District. The exterior alterations to historic structures have all been designed to be compatible with the historic resources of each district, or else to be compatible with existing views identified for each districts.

Compatibility with the historic districts has been achieved in several ways: by selecting materials that will blend with existing historic materials; by making the alterations small relative to the scale of the historic structures; by placing alterations so that they can only be seen from a distance or an angle that reduces their visual impact; and by putting modern-appearing equipment only in settings with other non-historic equipment or features.

## SECTION 4 - ENVIRONMENTAL REVIEW

### Environmental Resources

The natural, open space, and scenic resources (also called “Goal 5 resources”) at Mount Tabor Park are inventoried in the *East Buttes, Terraces, and Wetlands Conservation Plan*. Mount Tabor Park is identified as part of Resource Site 133. The environmental overlay zones are applied to portions of Mount Tabor Park in order to conserve and protect the identified functional values and resources while allowing for environmentally-sensitive development. Resource Site 133 extends beyond the park boundaries, particularly to the north, and includes identified resources and functional outside the park boundaries.

At Resource Site 133, the following types of Goal 5 resources are identified: “Open space, forest, habitat, intermittent drainage, wetland, groundwater; City reservoirs; volcanic vent; archaeological site.”

The following functional values are described for Resource Site 133: “Domestic water supply; food, water, cover, and territory for wildlife; groundwater recharge and discharge; slope stabilization, sediment and erosion control; microclimate amelioration; air and water quality protection; scenic, recreational, geologic, and heritage values.”

The *East Buttes, Terraces, and Wetlands Conservation Plan* (the “*East Buttes Plan*”) provides additional description of the resource quality. It states that the vegetation on site is predominantly cultivated for urban park use, although the parts of the environmental zones where the proposed work will take place is less cultivated and provides slightly higher habitat value than the more cultivated areas of the park. The *East Buttes Plan* describes the habitat quality this way (pp. 60-62):

*“This site's vegetation is cultivated extensively for urban park use, though some non-cultivated areas on the steeper slopes are present. The dominant species is Douglas fir, between 30 and 70 years in age, and thinned to a regular spacing. Trees are limbed (lower branches removed) and sub-canopy is open. Occasional deciduous trees include choke cherry, vine maple, bigleaf maple, red alder, dogwood, oak, birch and hawthorn. Shrubs include western hazel, red huckleberry, willow, rhododendron, juniper, forsythia, azalea, cedar and spiraea.*

*The herb layer is comprised of about 80 percent mowed lawn, yet in the less cultivated areas, sword fern, bracken fern, orchard grass, Oregon grape, salal, twisted stalk, fringecup and poison ivy are common. The non-cultivated areas include a native shrub layer absent in other parts of the park; shrubs include wild rose, snowberry, oceanspray, serviceberry and thimbleberry. Certain areas of the park are threatened by the invasion of Himalayan blackberry, English ivy, Scot's broom and English holly.*

*The vegetative cover within the park provides limited habitat for wildlife. The trees provide some roosting and perching habitat for avians. In the cultivated areas, cover is limited and food production is low. In the non-cultivated areas, covering about 40 acres, the greater diversity of native understory vegetation provides more food and cover for wildlife. Wildlife observed in the park include hairy woodpecker, red-tailed hawk, owls, juncos, wrens, chickadees, pheasants, crows and squirrels.”*

The *East Buttes Plan* states that the existing level of disturbance in both cultivated and non-cultivated areas is “high” (p. 62):

**“Habitat Rating (Cultivated areas):**

<i>Wildlife Habitat Score:</i>	<i>20</i>	<i>Range for All Sites: 5 - 65</i>
<i>Water :</i>	<i>Low</i>	
<i>Food :</i>	<i>Moderately Low</i>	
<i>Cover :</i>	<i>Moderately Low</i>	
<i>Interspersion :</i>	<i>Low</i>	
<i>Uniqueness</i>	<i>Low</i>	
<i>Disturbance :</i>	<i>High</i>	

**Habitat Rating (Non-cultivated areas):**

<i>Wildlife Habitat Score:</i>	<i>32</i>	<i>Range for All Sites: 5 - 65</i>
<i>Water:</i>	<i>Moderately Low</i>	
<i>Food:</i>	<i>Medium</i>	
<i>Cover:</i>	<i>Moderately Low</i>	
<i>Interspersion:</i>	<i>Low</i>	
<i>Uniqueness:</i>	<i>Low</i>	
<i>Disturbance:</i>	<i>High”</i>	

In the areas around the proposed work sites, there are native shrubs and ground covers as well as some nuisance species, such as Himalayan blackberry, English ivy, and English holly.

There are panoramic views identified at Mount Tabor, but Work Areas 3 and 6 cannot be seen from the viewpoints. Native American artifacts were discovered on the north side of the butte, outside the park itself, in prior years. There are no known archeological sites in the proposed work areas, which both have been previously excavated for reservoir water conduit installation, road building and reservoir construction.

**Project Elements Subject to Environmental Review:**

Part of the work in Work Area 3 and all the work in Work Area 6 is subject to Environmental Review because it takes place within the Environmental Conservation

overlay zone and does not meet either the exemptions (33.430.080) or the standards for utilities (33.430.150).

The two work elements under review are separated from each other by several hundred feet of distance. The conditions that pertain to each of the two separate work areas will be described separately.

### **Work Area 3 - Pipe in Lincoln Drive**

The work involves the following elements:

- Construct new 48-inch pipe in SE Lincoln Drive (Work Area 3). About 350 feet of the pipe is within the environmental conservation overlay zone.<sup>5</sup>
- Install a flow meter, appurtenances and vault with two manholes in the paved road.
- Install two small electrical conduits and wiring in the paved road.
- Install five CIV covers in locations to be determined (see Section 2 for discussion and explanation).

A 48-inch-diameter pipe will be installed in SE Lincoln Drive. About 350-feet of the pipe falls within the environmental zone (Figure 49). The pipe extends from east end of Work Area 2 in SE Lincoln Drive east through Work Area 3 to connect to Conduit 3 south of Reservoir 1 and west of the junction with SE Harrison Drive (Sheet 15). A vault containing a flow meter and appurtenances will be installed in the roadway about 50 feet west of Conduit 3. Two electrical conduits and wiring will be installed from the flow meter vault in Work area 3 to the existing building in Work Area 4 next to the stairs.



All of the excavation or other ground disturbance within the environmental zone will take place within the boundaries of the developed portion of the paved roadway, which is classified by the zoning code as a driveway. The environmental review only applies to that portion of this work element that takes place within the environmental conservation overlay zone boundaries.

The pipe itself is 48-inches in diameter, and requires a trench that provides three feet of clearance on each side. The resulting excavation will be a trench approximately ten feet wide.

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<sup>5</sup> There is other pipe being installed in Work Areas 1, 2 and 3 but this is outside of the environmental zone and not subject to the EN review.

To dig such a trench and work safely alongside and within it, a disturbance area approximately 35 feet wide is needed at the ground surface. This width is needed because the pipe is four feet wide, two feet of working space on either side is required, and about one foot for shoring on either side is required, giving a total excavation of 10 feet wide. In order to do the work, there must be about 25 feet of space for trench setbacks, equipment, vehicles, and materials on either one side or split between both sides of the trench. For selected short zones, the disturbance width can be narrowed slightly via careful planning and work by the contractor. See Appendix C for an illustration.

It is possible to do the work with short stretches of a narrower disturbance area to allow for site constraints. In fact, a portion of the disturbance area on Sheet 34 is only about 26 feet wide to avoid damaging trees adjacent to the roadway. This narrower disturbance area is short enough to allow workers and equipment to work safely and approach the narrow portion from either end.

### **Work Area 6 - Vault Work in Gravel Access Road**

All construction in Work Area 6 falls within the environmental conservation overlay zone. Work includes:

- Cut and plug both Conduit 2 and a portion of Conduit 4 near existing connections to an existing distribution pipe.
- Install valves to direct water from Conduit 2 into the distribution system.
- Install a new above-ground air vent on an existing vault or within the developed portion of the roadway adjacent to it.

Two existing large pipelines (Conduits 2 and 4) follow a gravel roadway in this area and cross an existing 30-inch diameter distribution pipe in the vicinity of existing vaults in the roadway (shown in Figure 50). The roadway is a Water Bureau access road for trucks and equipment needed to work on the utility.

The first pipe is 56-inches in diameter (Conduit 4). Conduit 4 will be disconnected from the distribution system at this location by cutting and plugging the pipe on the south side of the vault. The remaining portion of Conduit 4 will continue to service Reservoir 5.

The second pipe is 44-inches in diameter (Conduit 2). It also follows this gravel road, and connects a branch of the 30-inch diameter pipe at a second existing vault. The 44-inch diameter main will be cut and plugged just past the vault, after it connects with the 30-inch diameter pipe. This cut and plug disconnects Conduit 2 from Reservoir 5 and allows the conduit to be used solely for feeding the distribution system. Valves will be installed on the conduits and the distribution pipe to control the direction of flow.



Figure 50. Existing Vaults in Work Area 6.

After construction, water flowing in Conduit 2 will turn westward into the 30-inch pipe, and then flow downhill to the distribution system. When Reservoir 5 is being filled, a valve will divert this water from Conduit 2 into the remnant of Conduit 4 that leads to the reservoir weir.

This junction will create a local high point on Conduit 2 and the 30-inch pipe heading downhill to the west. It is necessary to install a combination air/vacuum release valve at this location to allow the release of entrapped air, high pressures, or relative vacuums and avoid damage to the pipes. The combination air/vacuum release valve will be installed inside an existing vault. A vent pipe will be installed on top of the same vault to allow air to freely flow in and out of it.

All of the excavation and ground disturbance required to complete this work will take place within the boundaries of the gravel roadway and existing vault disturbance areas.

## **Construction Management**

The Construction Management Plan for the entire project is covered in Appendix C. The EN review requires construction management through the environmental conservation overlay zone to be specifically addressed as part of the approval process. Work Areas 3 and 6<sup>6</sup> are the only work areas in environmental zones. Because the two work sites are separated by several hundred feet, the construction management methods are described separately, though there are similarities.

Both of the selected alternatives discussed under approval criterion 33.430.250.A.1.a result in confining all work to the developed portions of existing roadways. The construction management methods that are proposed reflect these selections.

1. Work Area 3 – Pipe in Lincoln Drive
2. Work Area 6 – Vault Work in Gravel Access Road

## **Mitigation Plan**

The construction work will avoid removing any trees or other vegetation in either of these work areas. In both locations work will occur in existing roadways and developed areas around existing vaults.

As a result, there is no requirement for an environmental mitigation plan under Chapter 33.430 of the Zoning Code.

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<sup>6</sup> Work Area 5 touches the conservation zone but there are no ground disturbance activities occurring in the conservation overlay zone. The only activity in Work Area 5 in the zone is the construction traffic use of the existing gravel access road.



PWB intends to carry out tree, shrub, and ground cover plantings to restore disturbed areas in the park, but these are all outside the environmental zones.

PWB also proposes to conduct invasive plant removal and control along with tree planting and other revegetation activities as part of its Urban Forestry mitigation for tree removal. Some of this work is proposed in the environmental zones in Mount Tabor Park. It is not environmental mitigation under Chapter 33.430, though. Instead, this work constitutes environmental enhancement.

The environmental enhancement work will be done using hand-operated equipment. Only invasive and other non-native species will be removed, and only native species on the Portland Plant List planted.

Because the environmental enhancement work is not required and need not be reviewed in this LUR, it is not further discussed in this section of the LUR application. The environmental enhancement plans are shown on Sheets 48 to 53.

## **Zoning Code Approval Criteria**

The purpose and approval criteria for EN are found in Chapter 33.430 of the Portland Zoning Code. As noted in Section 1 of this application narrative, the EN is being considered together with the Type III HR.

The two work elements described in the preceding sections are in the resource area of the Environmental Conservation zone.

### **33.430.250 Approval Criteria**

An environmental review application will be approved if the review body finds that the applicant has shown that all of the applicable approval criteria are met. When environmental review is required because a proposal does not meet one or more of the development standards of Section 33.430.140 through .190, then the approval criteria will only be applied to the aspect of the proposal that does not meet the development standard or standards.

A. Public safety facilities, rights-of-way, driveways, walkways, outfalls, utilities, land divisions, Property Line Adjustments, Planned Developments, and Planned Unit Developments.

Within the resource areas of environmental zones, the applicant's impact evaluation must demonstrate that all of the general criteria in Paragraph A.1 and the applicable specific criteria of Paragraphs A.2, 3, or 4, below, have been met:

1. General criteria for public safety facilities, rights-of-way, driveways, walkways, outfalls, utilities, land divisions, Property Line Adjustments, Planned Developments, and Planned Unit Developments;

a. Proposed development locations, designs, and construction methods have the least significant detrimental impact to identified resources and functional values of other practicable and significantly different alternatives including alternatives outside the resource area of the environmental zone;

b. There will be no significant detrimental impact on resources and functional values in areas designated to be left undisturbed;

c. The mitigation plan demonstrates that all significant detrimental impacts on resources and functional values will be compensated for;

d. Mitigation will occur within the same watershed as the proposed use or development and within the Portland City limits except when the purpose of the mitigation could be better provided elsewhere; and

e. The applicant owns the mitigation site; possesses a legal instrument that is approved by the City (such as an easement or deed restriction) sufficient to carry out and ensure the success of the mitigation program; or can demonstrate legal authority to acquire property through eminent domain.

**33.430.250 Approval Criteria** (continued)

3. Rights-of-way, driveways, walkways, outfalls, and utilities;

a. The location, design, and construction method of any outfall or utility proposed within the resource area of an environmental protection zone has the least significant detrimental impact to the identified resources and functional values of other practicable alternatives including alternatives outside the resource area of the environmental protection zone;

b. There will be no significant detrimental impact on water bodies for the migration, rearing, feeding, or spawning of fish; and

c. Water bodies are crossed only when there are no practicable alternatives with fewer significant detrimental impacts.

## **Response to Approval Criteria**

Following are the applicant's responses to the applicable approval criteria. Language from the Zoning Code is *italicized*; the work elements are underlined.

*33.430.250.A.1. General criteria for public safety facilities, rights-of-way, driveways, walkways, outfalls, utilities, land divisions, Property Line Adjustments, Planned Developments, and Planned Unit Developments;*

### **Resources and functional values**

*a. Proposed development locations, designs, and construction methods have the least significant detrimental impact to identified resources and functional values of other practicable and significantly different alternatives including alternatives outside the resource area of the environmental zone;*

### **Response:**

The project was initiated in response to an EPA-mandate to stop delivering finished water through the open reservoirs at Mount Tabor. All elements of the City's drinking water infrastructure system are stationary, and the proper functioning of the system dictates their elevation, size, and other physical characteristics. As a result, the location of the necessary work is relatively fixed, and significantly different alternative approaches are somewhat limited.

The federal law known as LT2 requires reservoirs to be covered or treatment added at the outlets. Covering the reservoirs was considered and rejected in 2004. A treatment plant is an industrial-scale application and is either prohibited or very difficult to site in

residential and open space zones, and this approach was also rejected. To comply with the federal law, the City chose to build alternate storage elsewhere in the City and disconnect the Tabor reservoirs from the drinking water system. This decision was a “least impact” choice for the historical and environmental resources at Mount Tabor.

The proposed work in this project is a result of that decision. “Doing nothing” was not an option because PWB is required to comply with all federal, state and local regulations.

Two work elements are presented in this Environmental Review and are considered separately.

#### 1. Work Area 3 - Pipe in Lincoln Drive

##### Environmental Resources in Work Area 3:

Work Area 3 and its immediate surroundings contain the following resources among those identified for Resource Site 133 (in the *East Buttes Plan*): open space, forest, habitat, intermittent drainage, and groundwater. Work Area 3 and its immediate surroundings provide the following functional values among those identified for the site as a whole: food, water, cover, and territory for wildlife; groundwater recharge, slope stabilization, sediment and erosion control, microclimate amelioration, air and water quality protection; and recreational and heritage values. There are no identified scenic or geologic values in Work Area 3.

Work Area 3 itself is within the roadway and its graveled shoulders and also includes the stormwater ditch and inlets along the north side of the road.

This area is on the steeply sloping southwest side of Mount Tabor. SE Lincoln Drive, the paved roadway (Figure 49), climbs gently from west to east across the slope. North of the road, this slope is heavily wooded with a mix of Douglas firs, western red cedars, and big-leaf maples. The understory contains many sword ferns along with smaller native plants. There are some non-native trees in the area, and the understory contains some invasive species, in particular English ivy. Because of the woods, there are no places in this work area that afford views of other parts of the park or of the surrounding neighborhoods.

South and southwest of the road, the slope is heavily wooded also, but the understory is heavily infested with Himalayan blackberry and English ivy. This is part of the dog off-leash area, and where the slope flattens below the roadway the area is heavily used by dogs and their owners. There are large areas where the ground is bare of plants and the soil is compacted.

Although the areas on either side of the roadway here are non-cultivated, the *East Buttes Plan* noted that the existing level of habitat disturbance is “high.” The highest rating for habitat values in the non-cultivated areas of the park is “medium,” which applies only to the availability of food.

*Description of Methods:*

The current proposal (Alternative 1.B, below) is to construct this section of pipe underneath the already-developed portion of the roadway. All excavation, vehicle and worker access, material storage or staging, and other construction disturbance will be confined to the paved roadway and, in places, its existing graveled shoulder. Refer to the descriptions of work on page 130, above, and in Section 2 for more details of the proposed alternative.

Under this approach, work will be carried out within a work area defined by tree protection fencing and perimeter erosion control measures (see Appendix C- Construction Management Plan for more details). There will be no ground disturbance outside of the developed portion of the roadway.

Whichever alternative alignment is considered, the trench will be approximately 10 feet wide and nine feet deep. The trench will have shoring on both sides. An excavator will open as much as 100 linear feet of trench at one time, and will load trucks with the excavated material. The material will be removed from the site.

In all alternative alignments, the pipe is four feet in diameter. When a length of trench is ready, one or two lengths of pipe will be placed, welded together, and covered with clean fill material meeting PWB's specifications. When the newly-covered trench is filled and the pavement or ground surface repaired, the excavator will move to the next location.

No more than two truckloads of spoils or clean fill may be stored on-site at any time, nor may fuels or other hazardous substances be stored on-site. All requirements of Portland's Title 10 – Erosion and Sediment Control must be met. An NPDES 1200-C Construction permit is also required, and all conditions must be met.

The portion of this work element as proposed within the environmental conservation overlay zone is on Sheet 32 of the LUR Figures in Appendix A. This part of the project will require temporary closure of SE Lincoln Drive in the construction area. Other trails are available for use in the park, and park visitors will still be able to access all areas of the park that are outside the construction zone. The tree protection plan (Appendix F) for this area reflects the requirements and recommendations of the City Forester, and is shown on Sheet 32.

Whichever alternative alignment is considered, the entire disturbance area within the e-zone will be delineated by a tree protection fence (6-foot tall chain link) which also serves as the construction disturbance limit.

In the case of the alternatives 1.B and 1.D, on the uphill side (generally the north side of the road), the fence will be located just beyond the roadside ditch so that the ditch is inside the disturbance area. On the downhill side, the fence will connect to an existing

fence just off the edge of the road– with one exception. The exception is that approximately 240 feet west of Conduit 3, the tree protection fence will move to the edge of pavement for a distance of about 50 feet. This will protect the roots of three large Douglas firs adjacent to the roadway. Where practical, the existing chain-link fence at the top of the road's shoulder will be used as the tree-protection fence. Elsewhere, a separate fence will be installed.

For alternatives 1.B and 1.D, which follow the road, there will be one staging area located within the environmental zone. This includes the paved roadway and a wide graveled shoulder on the south side of the roadway that extends from about 100 feet west to about 240 feet west of Conduit 3 and is located inside Work Area 3. The principal staging areas for this work will be outside the environmental zone in the rest of Work Area 3. This area will also allow for loading trucks with materials to be removed and unloading construction materials for use on the site. Other contractor staging areas are located within the work areas.

Silt fence will be installed just inside the tree protection fence on the project side of the fence to help prevent off-site migration of sediment. All stormwater inlets along SE Lincoln Drive will be protected. Erosion and sediment control measures will meet the requirements of Portland's Title 10 and the City's Erosion Control Manual.

After the pipeline is placed and the trench is backfilled, the roadway will be repaved and all disturbed ground will be restored to its approximate original contour. Native vegetation will be seeded or planted in accordance with the planting plans. Temporary erosion control will be left in place until the permanent seeded vegetation has germinated and established itself.

#### Alternatives Analysis for Work Area 3:

This pipe connection must be made to allow water from Conduit 3 to reach the City's distribution system directly and bypass the reservoirs.<sup>7</sup> Three alternatives were considered for alignments through the environmental zone:

*Alternative 1.A. No action - do not construct this connection.*

A crucial project objective is to continue to operate the City's water distribution system at the desired level of supply and reliability once the Mount Tabor uncovered reservoirs are disconnected from the drinking water system. In order to achieve this objective, there must be a connection between the existing Conduit 3 near Reservoir 1 and the City's distribution system in SE Lincoln Street that will allow water to bypass the reservoirs.

This alternative was rejected because it does not meet this crucial project objective and does not meet the LT2 compliance requirements.

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<sup>7</sup> Note that the pipeline will exit the park boundary where SE Lincoln Drive (a private drive within the park) meets SE Lincoln Street (a public right-of-way).

*Alternative 1.B. Alignment follows the gravel road to the northwest corner of the dog park, then cuts diagonally from the entrance to SE Lincoln Drive where it follows the paved road to Conduit 3 through the environmental conservation zone.*

This is the selected alternative. Using this approach, the proposed pipeline runs through the conservation overlay zone for approximately 350 feet. The pipe will be constructed within the paved portion of the roadway, which ranges from 24 to 30 feet wide along this stretch. This width allows all of the construction activities and disturbance to be confined within the pavement and the gravel shoulders on either side of the road.

By following this alignment, the excavating equipment can operate on the pavement and load material into trucks that are also operating on the pavement. Pipe and other materials to be placed into the excavation can be brought to the trench by equipment traveling exclusively on the pavement as well.

Limiting construction activities to the existing pavement and the adjacent gravel shoulders will minimize the production of sediment that would be subject to erosion. It will also eliminate the need for tree or vegetation removal in the environmental zone. And even though the trees and vegetation will not be disturbed, PWB will either avoid working in this area during nesting season or will conduct a survey to ensure that nesting birds are not present before allowing work in this area to begin (see Appendix C for the Construction Management Plan).

This alignment has other advantages, as well. Stormwater drainage from the roadway currently is captured by an existing storm water system with inlets along the road. That will not be affected by the work. Also, groundwater recharge is virtually nil beneath pavement, and this project will replace the pavement when it is done, which will keep the existing conditions intact. As a result, there will be no change to the groundwater regime in the area.

This alternative was selected because:

- the alignment itself avoids all adverse effects on the land on either side of the roadway;
- it restores the road to its approximate original condition; and
- the construction management methods that are required will minimize the risks that are created by removing trees and shrubs from steep ground, operating large equipment on steep ground (or else constructing flat areas to work from), and disturbing large areas of bare soils. .

By keeping all construction disturbance within the roadway and restoring the road to its original conditions, all identified resources in this area will be protected. It will not be necessary to operate heavy equipment over bare soils or on steep slopes, which eliminates the need for extra excavation and extra erosion control measures.



Because no new above-ground structures and no new paved or graveled areas will be constructed, the open space resource will be preserved. Because in addition to this, no vegetation or open soils will be disturbed, the forest, habitat, and groundwater resources will remain as they are today. And because the current drainage system will be preserved, the intermittent drainage resource in this area will remain as it is today.

This, in turn, avoids adverse impacts to the functional values provided by these resources. Preservation of the soil and vegetation preserves the availability of food, water, cover, and territory for wildlife; slope stabilization; microclimate amelioration; sediment and erosion control; and air and water quality protection.

Alternative 1.B has no adverse impacts to the resources or functional values of the site.

*Alternative 1.C. Make the shortest connection possible between the existing pipe in SE Lincoln Street near the park entrance and Conduit 3.*

This alternative would result in making a relatively straight-line pipe alignment from the SE Lincoln Street entrance east-southeastward through the dog park to join Conduit 3. This alignment would cross approximately 375 feet of the Environmental Conservation zone.

As with all of the options, the project requires a trench approximately 10 feet wide the length of the pipe, and a disturbance area for construction activities of 35 feet wide (with some short stretches being narrower).

This part of the Environmental Conservation zone is steeply sloping and vegetated with many native trees (as well as many non-native invasive plants in the understory). Many of these trees are large and mature and provide significant habitat, slope stabilization, sediment and erosion control, microclimate amelioration, and air and water quality protection. There is continuous canopy in most of this area.

Because much of this route would be constructed on a relatively steep hillside, it would be very important to ensure that the full width (approximately 35 feet) of the construction area was available. All trees with root protection zones extending into the disturbance area would be removed unless a modified root protection zone is approved by the City Forester.

This route would require much more extensive construction management and erosion control methods. Additional excavation would be required in order to provide flat enough spaces for the excavator and trucks to operate safely. Large areas of bare soil would be exposed to the weather, creating the need for additional perimeter control and soil stabilization measures. An additional wheel wash facility would be necessary to provide sufficient control of sediment tracking if the work must be done in the rain.

Although the disturbance would be considered “temporary,” it is necessary to prevent trees from growing within about ten feet of the new buried pipeline. As a result, a permanent treeless swath would be created through the conservation zone in this area, disrupting the existing tree canopy. In addition, work on this steep slope would pose challenges for managing the construction equipment and controlling erosion. It is possible that these challenges could require additional disturbance area for equipment maneuvering, stockpiling, or erosion control measures.

There are a few advantages to this approach. First, SE Lincoln Drive, which is used by park visitors for walking, cycling, and vehicle access, would be undisturbed through this area, and would remain open to provide heritage and recreational values for most of the project. On the other hand, a portion of the dog park would have to be closed for a relatively long period. In addition, because the total length of pipe would be shorter than other alternatives, and because pipe and fittings are the most expensive part of the project, this approach would reduce the cost of materials for the project.

But it might not result in a reduced cost for the project as a whole. It would increase the cost of construction because of the need to work on steep slopes for about half the distance. The amount of this increase is difficult to predict, but it would likely offset any savings resulting from the need to use less material.

More significant, though, is that it would greatly increase the area disturbed in the environmental zone, increase the number and size of trees removed, create a significant permanent treeless swath that disrupts the continuous tree canopy in this area, and present difficulties in ensuring that construction-related stormwater runoff and eroded sediment are effectively controlled on this steep slope. The removal of tree canopy, in particular, would adversely affect the habitat value of this area, which is already somewhat impaired.

There are other possible adverse impacts from trenching through this section of forest. The trench will be filled with material different from the native soils. The fill material will have different permeability characteristics, and may change the groundwater recharge and discharge in the area. Changes to the groundwater regime can lead to increased surface erosion and changes to the stormwater runoff as well.

Altogether, these adverse potential environmental impacts are the greatest of any of the alternatives considered. Trenching through the forest and the construction methods that this would require would create adverse impacts to the following identified resources in this area: forest, habitat, intermittent drainage, and groundwater. These impacts would, in turn, impair the following functional values of Work Area 3: food, water, cover, and territory for wildlife; groundwater recharge, slope stabilization, sediment and erosion control, microclimate amelioration, air and water quality protection

This alternative was rejected because this alignment and the construction methods it entails result in substantially greater detriment to the site's environmental resources than the other practicable alternatives.

*Alternative 1.D. Bury the entire length of the 48-inch pipe beneath the paved portion of SE Lincoln Drive from SE Lincoln Street to Conduit 3.*

This alternative stays within the paved roadway all the way from the entrance to Conduit 3.

This approach provides no benefits to the environmental zone beyond those provided by Alternative 1.B because once the pipeline leaves the environmental zone; there are no further impacts to the zone to be considered. At the same time, it would substantially increase the cost of the project because the overall length of new pipe to be installed would increase by more than 50 percent, with comparable increases in the amount of excavation.

This alternative was rejected because it offers no additional environmental protection, and costs significantly more than Alternative 1.B.

*Alternative 1.E. Route the connecting pipe completely outside of the resource area of the environmental zone.*

The Environmental Conservation zone comes within nine feet of the southern boundary of Mount Tabor Park. Although a pipe could theoretically be constructed outside the resource area of the environmental zone in this narrow band, the construction area would extend into the resource area because it is 35 feet wide. In addition, to go through this area would result in permanent removal of many trees along the southern edge of the park.

A further limitation is that no structures may be constructed with 10 feet of the large-diameter pipeline. The most direct route would have to cross through the PP&R Maintenance Yard, and would create a 34-foot wide unbuildable swath through it. This would not meet with the adopted Master Plan for this area and is not deemed practicable.

The next shortest route would require going through SE Division Street, and there may be no space for a new pipeline there. If space is available, it would result in constructing a pipeline nearly twice the length of the proposed pipeline (from the current 950 linear feet to approximately 1,800 linear feet). The large-diameter pipe and its fittings are the most expensive element of this project, so this would approximately double the project cost. This approach is not practicable due to the lack of available pipe right-of-way and the additional cost.

### *Summary of Alternatives Analysis*

Alternative 1.B was selected because it is practicable and has no detrimental impact to identified resources and functional values.

## 2. Work Area 6 - Vault Work in Gravel Access Road

### *Methods:*

The work in Work Area 6 involves two “cut and plugs” and installation of two new valves inside existing vaults. Specifically, Conduit 2 will be connected to a segment of Conduit 4 that will remain to fill Reservoir 5 through the existing weir at the Chlorination Building. Conduit 2 is already connected to a 30-inch pipeline in this location that carries water to the distribution system. Conduit 4 will be cut and plugged “upstream” from the segment that continues on to Reservoir 5. These changes will allow water from Conduit 2 to be directed either to the drinking-water distribution system or to Reservoir 5 through the “downstream” portion of Conduit 4.

After these modifications are made, this will be a local high point on Conduit 2, so a combination air/vacuum release valve must be installed to relieve excessive pressures and vacuums. The above-ground air vent is needed in order to allow air to move in and out of the pipe.

Depending on the conditions discovered in the field, it may be necessary to excavate limited areas within the existing roadway adjacent to the existing vaults. If this is performed, the roadway will be repaired to its approximate original condition.

This portion of the work is shown on Sheet 35 of the LUR plan set. The site will be accessed by the gravel road that traverses it, and all equipment and material will travel to this site on the existing gravel road. All of the work will take place within the roadway, which will be temporarily closed to public access. The necessary equipment and materials will be staged on the roadway. The contractor will secure the work area using a tree-protection fence / temporary construction limit fence. On the uphill (northeast) side of the road, the fence will be on the far side of the roadside swale. On the downhill (southwest) side, it will be at or just below the top of the road’s shoulder and include the flat area adjacent to the existing vault where the vent will be located.

All excavation will take place within the roadway. Sediment control fences will be installed on the inside (project side) of the tree protection/construction area fences. The contractor will take any additional measures required to prevent sediment from leaving the site. Depending on the weather, these measures might include placement of woven mats, wattles, or fiber rolls. However, because the work will take place on relatively level ground, it is expected to generate little sediment. Any temporarily stockpiled materials will be covered in accordance with the City’s Erosion Control requirements. Immediately after completion of work, the ground surface will be restored and the gravel road repaired where it has been disturbed.

The work here will be timed to avoid disturbing nesting birds, or PWB will conduct a survey to ensure that no nesting birds are present before work begins.

Environmental Resources in Work Area 6:

Work Area 6 is entirely within the resource area of the Environmental Conservation zone. As noted in the description of the work site in Section 2, the graveled road crosses a slope that faces roughly westward. The slope is forested and has dense leaf litter and sparse low-growing undergrowth that appears to consist primarily of native plant species. There are several trees, but very few shrubs near the work area. The work will avoid disturbing any vegetation, including trees, in this Work Area.

Work Area 6 and its immediate surroundings contain the following resources among those identified for Resource Site 133 (in the *East Buttes Plan*): open space, forest, habitat, intermittent drainage, and groundwater. Work Area 6 and its immediate surroundings provide the following functional values among those identified for the site as a whole: domestic water supply, food, water, cover, and territory for wildlife; groundwater recharge, slope stabilization, sediment and erosion control, microclimate amelioration, air and water quality protection; and recreational values. There are no identified scenic, heritage, or geologic values in Work Area 6.

East of the road (uphill), there is a large big leaf maple and several native shrubs. They grow on top of a steep bank cut out of the slope to create this road. Beyond them is the Reservoir Loop Drive, which cannot be seen from this roadway. West of the road (downhill), the slope is heavily forested with complete canopy cover. Most of the trees nearby are big leaf maples. There is very little understory vegetation; low shrubs and ground cover plants are quite sparse.

Alternatives Analysis for Work Area 6:

In all alternatives, the new high point in Conduit 2 will be in one of the buried vaults and will require a perforated vent pipe above it at that point. It is not mentioned in the analyses because it is always the same. In addition, because of the need to avoid long stretches of dead-end pipe, the connections must be made where the pipes are close to each other. All such locations are in the resource area of the environmental zone, where the existing vaults are. As a result, none of the alternatives considered is entirely outside the resource area of the environmental zone.

In addition, in all of the alternatives, there is no significant detrimental impact on the “domestic water supply” functional value. Work Area 6 contains water pipelines that will be altered as a result of this project, but the delivery of domestic water to the City of Portland will still be provided through the pipelines and other infrastructure on Mount Tabor, even though it will no longer be stored in the open reservoirs. There will be no reduction in service resulting from this project.

*Alternative 2.A. No Action – do not make these changes to the pipes.*

This alternative is rejected because it does not meet the objective of disconnecting Reservoirs 5 and 6 from the drinking-water distribution system.

*Alternative 2.B. Cut and plug the 30-inch distribution pipe leading downhill from Conduit 4 in the below-grade vault adjacent to Conduit 4 and also downhill from the roadway where it joins with another 30-inch pipe leading downhill from Conduit 2.*

The advantage to this approach is that it avoids work in existing vaults, which are often tight work spaces, and is the easiest way to minimize the length of unused pipe adjacent to disconnections (called “dead” pipe space). Dead pipe space is undesirable because if water sits in a dead pipe for a long time, it can stagnate and pick up contaminants. When there is too much dead pipe space that sits without disturbance for a long time, it can cause water quality problems.

The disadvantages of this approach arise from the fact that it requires excavation on the steep slope below the existing vaults in the roadway. In order to achieve this, a bulldozer or equipment must grade a short access road from the gravel road down to the point of excavation.

After this, an excavator will dig a hole approximately nine feet square and ten feet deep to expose the pipes and pull the cut sections out for removal. After the work is done, the excavation will be backfilled, the access road will be re-graded to approximate the original contours, and the area will be planted with native seed mix and other native plant materials to stabilize the slope.

This alternative would require more equipment and materials and would be more expensive than the selected alternative. It also would create additional hazards for workers because of the need to work on a slope.

Because of the damage to the adjacent trees and potentially other vegetation, this alternative would create negative impacts to the following identified resources in Work Area 6: forest and habitat. These impacts would, in turn, tend to impair the following functional values in Work Area 6: food, water, cover, and territory for wildlife; slope stabilization, sediment and erosion control, microclimate amelioration, and air and water quality protection (which are provided by the vegetation—particularly the large trees).

*Alternative 2.C. Cut and plug the 30-inch distribution pipe and Conduit 4 in the below-grade vault (or use part of the adjacent roadway if necessary), and add the two valves in the below-grade vaults.*

This is the selected alternative. The advantage to this approach is that all excavation would take place in the roadway, in existing vaults, or on top of existing vaults, avoiding disturbance to the steeply sloping forested ground adjacent. There would be no impacts to the vegetation in the area as a result. In addition, it minimizes the amount of equipment that must be brought to the site and avoids using tracked

vehicles, such as a bulldozer, which can damage a gravel road. The work area would be enclosed by construction-area and erosion-control fences to keep the surrounding areas from being inadvertently affected by the work.

The principal disadvantage to this approach is that work inside existing vaults can be cramped, causing difficulties for the workers and increasing costs.

The only visible change will be the addition of a new air vent pipe to the top of an existing vault. This will not impair the open space resource, particularly because the vault is existing development, and the new vent pipe will not increase the area of development in the park. It will also not affect the use of this roadway for recreation or the appearance of the forest from the trails below. Thus the recreational functional value will be preserved.

All of the proposed work will take place inside the existing vaults (and, only if necessary, in a portion of the roadway immediately adjacent to a vault). No vegetation or open soils will be disturbed by the work. This approach will preserve the identified resources of forest, habitat, intermittent drainage, and groundwater. Preservation of the resources of forest and habitat will preserve the identified functional values of food, water, cover, and territory for wildlife; slope stabilization, sediment and erosion control, microclimate amelioration, and air and water quality protection. Avoiding impacts to open soils and restoring the roadway to its approximate original condition will preserve the existing functional values of groundwater recharge, sediment and erosion control, and water quality protection.

As a result, this alternative would have no adverse effects on any of the functional values that Work Area 6 provides.

This alternative is selected because by following the identified construction management approaches, it is practicable and there will be no adverse impacts to the identified resources (or functional values).

*Alternative 2.D. Cut and plug Conduit 2 elsewhere and construct a new pipeline from that termination to the distribution system.*

The available and practical locations for such a pipeline all cross through the environmental zone at Mount Tabor. Any such new connection would cost far more than any of the other alternatives because it would involve longer length of pipe. In addition, laying new pipeline through the environmentally-zoned land would create significant new adverse impacts on resources and functional values in this part of the park. To the extent such a connection was unable to follow the roadway, it would result in the removal of existing trees and the inability to replant them within 10 feet of the new pipe.

This alternative was rejected because it would be the most expensive and destructive of environmental resources of any of the alternatives considered.



Alternative 1.B and 2.C are the selected alternatives. For each work area, PWB has described significantly different alternatives that are practicable as well as a “no action” alternative, which is not.

Alternatives 1.B and 2.C have no detrimental impact to identified resources and functional values.

**Undisturbed areas**

*b. There will be no significant detrimental impact on resources and functional values in areas designated to be left undisturbed;*

**Response:**

1. Work Area 3 - Pipe in Lincoln Drive

**Environmental Resources in Work Area 3:**

Work Area 3 and its immediate surroundings contain the following resources among those identified for Resource Site 133 (in the *East Buttes Plan*): open space, forest, habitat, intermittent drainage, and groundwater. Work Area 3 and its immediate surroundings provide the following functional values among those identified for the site as a whole: food, water, cover, and territory for wildlife; groundwater recharge, slope stabilization, sediment and erosion control, microclimate amelioration, air and water quality protection; and recreational and heritage values. There are no identified scenic or geologic values in Work Area 3.

Work Area 3 itself is within the roadway and its graveled shoulders and also includes the stormwater ditch and inlets along the north side of the road.

This area is on the steeply sloping southwest side of Mount Tabor. SE Lincoln Drive, the paved roadway (Figure 48), climbs gently from west to east across the slope. North of the road, this slope is heavily wooded with a mix of Douglas firs, western red cedars, and big-leaf maples. The understory contains many sword ferns along with smaller native plants. There are some non-native trees in the area, and the understory contains some invasive species, in particular English ivy. Because of the woods, there are no places in this work area that afford views of other parts of the park or of the surrounding neighborhoods.

South and southwest of the road, the slope is heavily wooded also, but the understory is heavily infested with Himalayan blackberry and English ivy. This is part of the dog off-leash area, and where the slope flattens below the roadway the area is heavily used by dogs and their owners. There are large areas where the ground is bare of plants and the soil is compacted.

Although the areas on either side of the roadway here are non-cultivated, the *East Buttes Plan* noted that the existing level of habitat disturbance is “high.” The highest

rating for habitat values in the non-cultivated areas of the park is “medium,” which applies only to the availability of food.

*Description of Methods:*

The current proposal (Alternative 1.B, below) is to construct this section of pipe underneath the already-developed portion of the roadway. All excavation, vehicle and worker access, material storage or staging, and other construction disturbance will be confined to the paved roadway and, in places, its existing graveled shoulder. Refer to the descriptions of work on page 130, above, and in Section 2 for more details of the proposed alternative.

Under this approach, work will be carried out within a work area defined by tree protection fencing and perimeter erosion control measures (see Appendix C- Construction Management Plan for more details). There will be no ground disturbance outside of the developed portion of the roadway.

Whichever alternative alignment is considered, the trench will be approximately 10 feet wide and nine feet deep. The trench will have shoring on both sides. An excavator will open as much as 100 linear feet of trench at one time, and will load trucks with the excavated material. The material will be removed from the site.

In all alternative alignments, the pipe is four feet in diameter. When a length of trench is ready, one or two lengths of pipe will be placed, welded together, and covered with clean fill material meeting PWB's specifications. When the newly-covered trench is filled and the pavement or ground surface repaired, the excavator will move to the next location.

No more than two truckloads of spoils or clean fill may be stored on-site at any time, nor may fuels or other hazardous substances be stored on-site. All requirements of Portland's Title 10 – Erosion and Sediment Control must be met. An NPDES 1200-C Construction permit is also required, and all conditions must be met.

The portion of this work element as proposed within the environmental conservation overlay zone is on Sheet 32 of the LUR Figures in Appendix A. This part of the project will require temporary closure of SE Lincoln Drive in the construction area. Other trails are available for use in the park, and park visitors will still be able to access all areas of the park that are outside the construction zone. The tree protection plan (Appendix F) for this area reflects the requirements and recommendations of the City Forester, and is shown on Sheet 32.

Whichever alternative alignment is considered, the entire disturbance area within the e-zone will be delineated by a tree protection fence (6-foot tall chain link) which also serves as the construction disturbance limit.

In the case of the alternatives 1.B and 1.D, on the uphill side (generally the north side of the road), the fence will be located just beyond the roadside ditch so that the ditch is inside the disturbance area. On the downhill side, the fence will connect to an existing fence just off the edge of the road— with one exception. The exception is that approximately 240 feet west of Conduit 3, the tree protection fence will move to the edge of pavement for a distance of about 50 feet. This will protect the roots of three large Douglas firs adjacent to the roadway. Where practical, the existing chain-link fence at the top of the road's shoulder will be used as the tree-protection fence. Elsewhere, a separate fence will be installed.

For alternatives 1.B and 1.D, which follow the road, there will be one staging area located within the environmental zone. This includes the paved roadway and a wide graveled shoulder on the south side of the roadway that extends from about 100 feet west to about 240 feet west of Conduit 3 and is located inside Work Area 3. The principal staging areas for this work will be outside the environmental zone in the rest of Work Area 3. This area will also allow for loading trucks with materials to be removed and unloading construction materials for use on the site. Other contractor staging areas are located within the work areas.

Silt fence will be installed just inside the tree protection fence on the project side of the fence to help prevent off-site migration of sediment. All stormwater inlets along SE Lincoln Drive will be protected. Erosion and sediment control measures will meet the requirements of Portland's Title 10 and the City's Erosion Control Manual.

After the pipeline is placed and the trench is backfilled, the roadway will be repaved and all disturbed ground will be restored to its approximate original contour. Native vegetation will be seeded or planted in accordance with the planting plans. Temporary erosion control will be left in place until the permanent seeded vegetation has germinated and established itself.

#### Alternatives Analysis for Work Area 3:

This pipe connection must be made to allow water from Conduit 3 to reach the City's distribution system directly and bypass the reservoirs.<sup>8</sup> Three alternatives were considered for alignments through the environmental zone:

*Alternative 1.A. No action - do not construct this connection.*

A crucial project objective is to continue to operate the City's water distribution system at the desired level of supply and reliability once the Mount Tabor uncovered reservoirs are disconnected from the drinking water system. In order to achieve this objective, there must be a connection between the existing Conduit 3 near Reservoir 1 and the City's distribution system in SE Lincoln Street that will allow water to bypass the reservoirs.

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<sup>8</sup> Note that the pipeline will exit the park boundary where SE Lincoln Drive (a private drive within the park) meets SE Lincoln Street (a public right-of-way).

This alternative was rejected because it does not meet this crucial project objective and does not meet the LT2 compliance requirements.

*Alternative 1.B. Alignment follows the gravel road to the northwest corner of the dog park, then cuts diagonally from the entrance to SE Lincoln Drive where it follows the paved road to Conduit 3 through the environmental conservation zone.*

This is the selected alternative. Using this approach, the proposed pipeline runs through the conservation overlay zone for approximately 350 feet. The pipe will be constructed within the paved portion of the roadway, which ranges from 24 to 30 feet wide along this stretch. This width allows all of the construction activities and disturbance to be confined within the pavement and the gravel shoulders on either side of the road.

By following this alignment, the excavating equipment can operate on the pavement and load material into trucks that are also operating on the pavement. Pipe and other materials to be placed into the excavation can be brought to the trench by equipment traveling exclusively on the pavement as well.

Limiting construction activities to the existing pavement and the adjacent gravel shoulders will minimize the production of sediment that would be subject to erosion. It will also eliminate the need for tree or vegetation removal in the environmental zone. And even though the trees and vegetation will not be disturbed, PWB will either avoid working in this area during nesting season or will conduct a survey to ensure that nesting birds are not present before allowing work in this area to begin (see Appendix C for the Construction Management Plan).

This alignment has other advantages, as well. Stormwater drainage from the roadway currently is captured by an existing storm water system with inlets along the road. That will not be affected by the work. Also, groundwater recharge is virtually nil beneath pavement, and this project will replace the pavement when it is done, which will keep the existing conditions intact. As a result, there will be no change to the groundwater regime in the area.

This alternative was selected because:

- the alignment itself avoids all adverse effects on the land on either side of the roadway;
- it restores the road to its approximate original condition; and
- the construction management methods that are required will minimize the risks that are created by removing trees and shrubs from steep ground, operating large equipment on steep ground (or else constructing flat areas to work from), and disturbing large areas of bare soils. .

By keeping all construction disturbance within the roadway and restoring the road to its original conditions, all identified resources in this area will be protected. It will not be necessary to operate heavy equipment over bare soils or on steep slopes, which eliminates the need for extra excavation and extra erosion control measures. Because no new above-ground structures and no new paved or graveled areas will be constructed, the open space resource will be preserved. Because in addition to this, no vegetation or open soils will be disturbed, the forest, habitat, and groundwater resources will remain as they are today. And because the current drainage system will be preserved, the intermittent drainage resource in this area will remain as it is today.

This, in turn, avoids adverse impacts to the functional values provided by these resources. Preservation of the soil and vegetation preserves the availability of food, water, cover, and territory for wildlife; slope stabilization; microclimate amelioration; sediment and erosion control; and air and water quality protection.

Alternative 1.B has no adverse impacts to the resources or functional values of the site.

*Alternative 1.C.      Make the shortest connection possible between the existing pipe in SE Lincoln Street near the park entrance and Conduit 3.*

This alternative would result in making a relatively straight-line pipe alignment from the SE Lincoln Street entrance east-southeastward through the dog park to join Conduit 3. This alignment would cross approximately 375 feet of the Environmental Conservation zone.

As with all of the options, the project requires a trench approximately 10 feet wide the length of the pipe, and a disturbance area for construction activities of 35 feet wide (with some short stretches being narrower).

This part of the Environmental Conservation zone is steeply sloping and vegetated with many native trees (as well as many non-native invasive plants in the understory). Many of these trees are large and mature and provide significant habitat, slope stabilization, sediment and erosion control, microclimate amelioration, and air and water quality protection. There is continuous canopy in most of this area.

Because much of this route would be constructed on a relatively steep hillside, it would be very important to ensure that the full width (approximately 35 feet) of the construction area was available. All trees with root protection zones extending into the disturbance area would be removed unless a modified root protection zone is approved by the City Forester.

This route would require much more extensive construction management and erosion control methods. Additional excavation would be required in order to provide flat enough spaces for the excavator and trucks to operate safely. Large areas of

bare soil would be exposed to the weather, creating the need for additional perimeter control and soil stabilization measures. An additional wheel wash facility would be necessary to provide sufficient control of sediment tracking if the work must be done in the rain.

Although the disturbance would be considered “temporary,” it is necessary to prevent trees from growing within about ten feet of the new buried pipeline. As a result, a permanent treeless swath would be created through the conservation zone in this area, disrupting the existing tree canopy. In addition, work on this steep slope would pose challenges for managing the construction equipment and controlling erosion. It is possible that these challenges could require additional disturbance area for equipment maneuvering, stockpiling, or erosion control measures.

There are a few advantages to this approach. First, SE Lincoln Drive, which is used by park visitors for walking, cycling, and vehicle access, would be undisturbed through this area, and would remain open to provide heritage and recreational values for most of the project. On the other hand, a portion of the dog park would have to be closed for a relatively long period. In addition, because the total length of pipe would be shorter than other alternatives, and because pipe and fittings are the most expensive part of the project, this approach would reduce the cost of materials for the project.

But it might not result in a reduced cost for the project as a whole. It would increase the cost of construction because of the need to work on steep slopes for about half the distance. The amount of this increase is difficult to predict, but it would likely offset any savings resulting from the need to use less material.

More significant, though, is that it would greatly increase the area disturbed in the environmental zone, increase the number and size of trees removed, create a significant permanent treeless swath that disrupts the continuous tree canopy in this area, and present difficulties in ensuring that construction-related stormwater runoff and eroded sediment are effectively controlled on this steep slope. The removal of tree canopy, in particular, would adversely affect the habitat value of this area, which is already somewhat impaired.

There are other possible adverse impacts from trenching through this section of forest. The trench will be filled with material different from the native soils. The fill material will have different permeability characteristics, and may change the groundwater recharge and discharge in the area. Changes to the groundwater regime can lead to increased surface erosion and changes to the stormwater runoff as well.

Altogether, these adverse potential environmental impacts are the greatest of any of the alternatives considered. Trenching through the forest and the construction methods that this would require would create adverse impacts to the following identified resources in this area: forest, habitat, intermittent drainage, and

groundwater. These impacts would, in turn, impair the following functional values of Work Area 3: food, water, cover, and territory for wildlife; groundwater recharge, slope stabilization, sediment and erosion control, microclimate amelioration, air and water quality protection

This alternative was rejected because this alignment and the construction methods it entails result in substantially greater detriment to the site's environmental resources than the other practicable alternatives.

*Alternative 1.D. Bury the entire length of the 48-inch pipe beneath the paved portion of SE Lincoln Drive from SE Lincoln Street to Conduit 3.*

This alternative stays within the paved roadway all the way from the entrance to Conduit 3.

This approach provides no benefits to the environmental zone beyond those provided by Alternative 1.B because once the pipeline leaves the environmental zone; there are no further impacts to the zone to be considered. At the same time, it would substantially increase the cost of the project because the overall length of new pipe to be installed would increase by more than 50 percent, with comparable increases in the amount of excavation.

This alternative was rejected because it offers no additional environmental protection, and costs significantly more than Alternative 1.B.

*Alternative 1.E. Route the connecting pipe completely outside of the resource area of the environmental zone.*

The Environmental Conservation zone comes within nine feet of the southern boundary of Mount Tabor Park. Although a pipe could theoretically be constructed outside the resource area of the environmental zone in this narrow band, the construction area would extend into the resource area because it is 35 feet wide. In addition, to go through this area would result in permanent removal of many trees along the southern edge of the park.

A further limitation is that no structures may be constructed with 10 feet of the large-diameter pipeline. The most direct route would have to cross through the PP&R Maintenance Yard, and would create a 34-foot wide unbuildable swath through it. This would not meet with the adopted Master Plan for this area and is not deemed practicable.

The next shortest route would require going through SE Division Street, and there may be no space for a new pipeline there. If space is available, it would result in constructing a pipeline nearly twice the length of the proposed pipeline (from the current 950 linear feet to approximately 1,800 linear feet). The large-diameter pipe



and its fittings are the most expensive element of this project, so this would approximately double the project cost. This approach is not practicable due to the lack of available pipe right-of-way and the additional cost.

#### *Summary of Alternatives Analysis*

Alternative 1.B was selected because it is practicable and has no detrimental impact to identified resources and functional values.

The resources and functional values in Work Area 3 are described in detail in the previous approval criterion.

Work Area 3 is within the roadway and its graveled shoulders and also includes the stormwater ditch and inlets along the north side of the road.

Work Area 3 and its immediate surroundings contain the following resources among those identified for Resource Site 133 (in the *East Buttes Plan*): open space, forest, habitat, intermittent drainage, and groundwater. Work Area 3 and its immediate surroundings provide the following functional values among those identified for the site as a whole: food, water, cover, and territory for wildlife; groundwater recharge, slope stabilization, sediment and erosion control, microclimate amelioration, air and water quality protection; and recreational and heritage values. There are no identified scenic or geologic values in Work Area 3.

As described in the previous approval criteria, all work in Work Area 3 will take place on or under the paved or graveled surfaces of SE Lincoln Drive as it passes through the environmental zone. Sediment will be kept from leaving the site, and all vegetation on either side of the road will be protected from damage. After construction, the road will be repaved. The paved and graveled areas will not be expanded or reduced as a result of the project. Adjacent construction areas outside the environmental zone, will be restored to their approximate original contour and revegetated.

Because the amount of pavement or gravel will not change, and the vegetation and nearby topography will not change, the work will have no effect on the open space, forest, habitat, intermittent drainage, or groundwater resources in the environmentally-zoned areas to remain undisturbed around Work Area 3.

The functional values of food, water, cover and territory available for wildlife, microclimate amelioration, and protection of air and water quality will remain unchanged because the work will not affect the vegetation or soils that are the key to these values. The roadway will be restored and the resulting runoff rates and amounts will remain unchanged.

As a result, there will be no significant detrimental impact on any of the identified resources and functional values in areas designated to be left undisturbed in or around Work Area 3 as a result of this project.

2. Work Area 6 - Vault Work in Gravel Access Road.

Work Area 6 and its immediate surroundings contain the following resources among those identified for Resource Site 133 (in the *East Buttes Plan*): open space, forest, habitat, intermittent drainage, and groundwater. Work Area 6 and its immediate surroundings provide the following functional values among those identified for the site as a whole: food, water, cover, and territory for wildlife; groundwater recharge, slope stabilization, sediment and erosion control, microclimate amelioration, air and water quality protection; and recreational values. There are no identified scenic, heritage, or geologic values in Work Area 6. The resources and functional values of Work Area 6 are described in more detail in the previous approval criterion.

The construction management measures will prevent sediment from leaving the site, and fencing will keep all construction activities within the roadway and out of any root protection zones or vegetated areas. After construction, the ground surface will be restored. No trees or other vegetation will be damaged. The surface area of the at-grade vaults will not change, and the area of gravel surface will not be expanded or reduced.

The only visible change will be the addition of a new air vent pipe to the top of an existing vault. This will not impair the open space resource, particularly because the vault is existing development, and the new vent pipe will not increase the area of development in the park. It will also not affect the use of this roadway for recreation or the appearance of the forest from the trails below. Thus the recreational functional value will be preserved.

At the end of work, the road will be in the same approximate condition as it is today, no open soils will have been disturbed and no vegetation adversely affected. Therefore, the identified resources that depend on these elements (namely forest, habitat, intermittent drainage, and groundwater) will be preserved. Because none of the identified resources will be impaired, all of the functional values that they produce at this work area (namely food, water, cover, and territory for wildlife; groundwater recharge, slope stabilization, sediment and erosion control, microclimate amelioration, air and water quality protection; and recreational values), will also be preserved.

As a result, there will be no significant detrimental impacts to Work Area 6 or any of the areas around it that are designated to be left undisturbed.

**Resources and functional values**

*c. The mitigation plan demonstrates that all significant detrimental impacts on resources and functional values will be compensated for;*

**Response:**

1. Work Area 3 - Pipe in Lincoln Drive

2. Work Area 6 - Vault Work in Gravel Access Road

The discussion of approval criteria 33.430.250.A.1.a and A.1.b. showed that the selected alternatives 1) produce no significant detrimental impacts to identified resources and functional values of the portions of the site within the environmental zones; and 2) that the proposal will produce no significant detrimental impact on resources and functional values in areas designated to be left undisturbed.

Therefore, no mitigation plan is required.

**Mitigation will occur within the same watershed**

*d. Mitigation will occur within the same watershed as the proposed use or development and within the Portland City limits except when the purpose of the mitigation could be better provided elsewhere; and*

**Response:**

1. Work Area 3 - Pipe in Lincoln Drive
2. Work Area 6 - Vault Work in Gravel Access Road

No environmental mitigation is required, as noted under approval criterion A.1.d.

**Application owns the mitigation site**

*e. The applicant owns the mitigation site; possesses a legal instrument that is approved by the City (such as an easement or deed restriction) sufficient to carry out and ensure the success of the mitigation program; or can demonstrate legal authority to acquire property through eminent domain.*

**Response:**

1. Work Area 3 - Pipe in Lincoln Drive
2. Work Area 6 - Vault Work in Gravel Access Road

No mitigation is required, as noted under approval criterion A.1.d.<sup>9</sup>

**Environmental Protection Zone**

*3. Rights-of-way, driveways, walkways, outfalls, and utilities;*

*a. The location, design, and construction method of any outfall or utility proposed within the resource area of an environmental protection zone has the least significant detrimental impact to the identified resources and functional values of other practicable alternatives including alternatives outside the resource area of the environmental protection zone;*

**Response:**

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<sup>9</sup> It should be noted that the City of Portland, a municipal corporation, owns Mount Tabor Park. Parts of the park are managed by PWB and other parts by PP&R.

1. Work Area 3 - Pipe in Lincoln Drive
2. Work Area 6 - Vault Work in Gravel Access Road.

There is no environmental protection zone in the project area, so this criterion does not apply.

### **Water bodies**

*b. There will be no significant detrimental impact on water bodies for the migration, rearing, feeding, or spawning of fish; and*

#### **Response:**

1. Work Area 3 - Pipe in Lincoln Drive
2. Work Area 6 - Vault Work in Gravel Access Road.

The project area does not contain water bodies that are used for migration, rearing, feeding or spawning of fish. The nearest water body is the Willamette River, about three miles to the west. Due to its distance from the Willamette River, the project will have no direct impact on water bodies for the migration, rearing, feeding or spawning of fish.

To ensure that stormwater runoff from the project and site does not have a detrimental impact on the Willamette River, (or the city's storm sewer system) during construction, the applicant will follow an Erosion and Sediment Control Plan (ESCP) that meets or exceeds Title 10 and the City's Erosion Control Manual. The ESCP will include the use of erosion control best management practices.

When the work is completed, all disturbed areas will be revegetated with ground cover plants that will stabilize the soils, as well as with woody plants that will provide longer-term stabilization. All paved or graveled areas will be restored to their approximate original condition. Therefore, the project will not change the amount of impervious surface contributing to the existing stormwater management system at Mount Tabor Park. That stormwater system will continue to operate as it does today.

Therefore, no impacts to water bodies will occur as a result of this project. Because of this, there will be no significant detrimental impact on water bodies for the migration, rearing, feeding, or spawning of fish.

### **Water body crossings**

*c. Water bodies are crossed only when there are no practicable alternatives with fewer significant detrimental impacts.*

#### **Response:**

1. Work Area 3 - Pipe in Lincoln Drive
2. Work Area 6 - Vault Work in Gravel Access Road.

This project does not cross any water bodies. This criterion does not apply.

**Conclusion**

The proposed work satisfies all applicable approval criteria in Chapter 33.430 of the Zoning Code.

# APPENDICES

## APPENDIX A - LAND USE DRAWINGS



## APPENDIX B – CHANGES BASED ON PUBLIC INVOLVEMENT INPUT

Table B-1 summarizes ways in which PWB responded to public comment prior to applying for the Type III Historic Resource Review and Type II Environmental Review. In some instances, PWB modified its project plans, while in others, PWB's initial proposal has been retained.

<b>Table B-1. Changes in Project Approach as a Result of Public Comments</b>	
<b>Original Approach</b>	<b>Modified Approach</b>
The pipe alignment in Work Area 2 follows the shortest route from Lincoln St across the gravel access road, across the northwest corner of the dog park and tying into the pipe in the paved road of Lincoln Drive. Alignment would cause the removal of 14 trees and one Douglas-fir tree being identified as "Leave and Mitigate"	The pipe alignment in Work Area 2 received scrutiny from the public and the CAC because of the number of trees potentially removed. Five alternative pipe alignments were considered. Universally the original alignment was selected with one minor adjustment proposed by PWB and the CAC subcommittee. By shifting the alignment to the east a few feet through the trees one of the firs (farthest west) can be protected and three other firs can be shifted to "Leave and Mitigate" status instead of being removed.
Pipe alignment at Work Area 5 would be along the base of the slope along the line of existing trees resulting in the removal of six large Douglas firs ranging from 20-inches in diameter to 32-inches in diameter. The construction access roadway will be reinforced to protect the roots of three other large fir trees. Three small ornamental trees would also be removed.	Pipe alignment at Work Area 5 was redesigned to save the six large Douglas firs ranging from 20-inches in diameter to 32-inches in diameter. The construction access roadway will be reinforced to protect the roots of three other large fir trees. Three small ornamental trees will be removed.
No original approach	An alternate access / staging area has been added to reduce construction traffic near the three fir trees. This additional staging area is located east of the main area and connects to SE Lincoln Drive to the south. The existing building, stairs and walkway will be protected during construction (Work Area 5).

**Table B-1. Changes in Project Approach as a Result of Public Comments**

<b>Original Approach</b>	<b>Modified Approach</b>
Pipe connections in Work Area 6 would take place on the slope west of the gravel road and in the existing vaults. Excavation would be next to a 24-inch diameter big leaf maple.	Pipe connections in Work Area 6 have been redesigned to avoid excavation next to a 24-inch diameter big leaf maple. All the excavation in this area will take place in the existing gravel roadway and developed vault area, avoiding disturbance to the environmental zone.
Rectangular weir openings would be plugged using materials that would blend with the existing concrete. (Work Areas 9 and 10).	Rectangular weir openings will be fitted with screens or grates. These will be recessed, where possible, to minimize their visibility and will provide security while allowing for passage of water
Inlet pipe openings would be capped or plugged. (Work Areas 9-11)	Inlet pipe openings will be fitted with grates or screens. Where possible, these inlet pipes will be recessed.
Pipes in the tunnel between Reservoirs 1 and 5 were to be cut and the pipe ends plugged using materials that would blend with the existing concrete. (Work Areas 9 and 10).	Pipes in the tunnel will remain in service to fill Reservoir 1 from Reservoir 5. These pipes will be screened to secure them while preserving their appearance and function.
Drain pipes would receive grates or screens. (Work Areas 9-11)	Drain pipes – no change in approach – they will receive grates or screens.
Outlet Pipes would have a metal plate attached preventing intentional and accidental contamination of the drinking water system from the non-potable pipes and reservoirs (Work Areas 9-11)	Outlet pipes – no change in approach – they will have a metal plate attached.
Plant 65 mitigation trees onsite between Work Areas 5 and 6. Plant about 1200 bare root trees ½-inch-in-diameter elsewhere in the City	Working with PP&R, PWB will plant as many trees as practical within Mount Tabor Park to mitigate for the loss (or potential loss) of existing trees. Some trees will be planted in cultivated landscape areas, while others will be planted in natural areas. Where possible, 2-inch or 3-inch diameter trees will be planted on Tabor. Remaining tree mitigation will be accomplished in accordance with PP&R’s Tree Mitigation Plan.

# **APPENDIX C – CONSTRUCTION MANAGEMENT PLAN**

## **For the TABOR RESERVOIR ADJUSTMENTS PROJECT**

### **INTRODUCTION**

The Construction Management Plan (CMP) for the Tabor Reservoir Adjustments (also known informally as the Mount Tabor Disconnection Project) identifies measures that will be taken during construction to protect natural resources and functional values, historic resources, and park users and neighbors at and near the construction sites. It also describes how undisturbed areas of the site will be protected and assist park users and the public around construction areas.

The CMP includes a general construction schedule, general management practices and provisions for erosion control, tree protection, and site management. The drawings submitted for the project's LUR show numbered work areas, construction staging and storage areas. This CMP also refers to those drawings in describing the practices to be followed.

Work Area 1 is in the SE Lincoln Street public right-of-way, and all others are within Mount Tabor Park. Although Work Area 1 is not considered in the LUR, this CMP applies to work in Work Area 1 as well as the work areas in the park.

Provisions of the CMP will be applied to each work area as appropriate for that area. General provisions will apply to the entire project. Note that the construction contractor(s) are required to describe their "means and methods" of satisfying the terms of the contract. Therefore, the contractor(s) will be required as part of the contract(s) to develop some aspects of the CMP in detail—such as the Erosion and Sediment Control Plan.

### **Construction Schedule**

Prior to beginning construction, the following activities will be completed as described in later sections of this plan:

- Pre-construction meeting with contractor;
- Installation of erosion control devices (for the area where work is to begin); and
- Establishment of construction disturbance limit and installation of tree protection fencing in the areas where construction is to begin; as required in the LU approval and contract.

After construction, the following activities will be completed:

- Site restoration and revegetation;
- Construction waste management and removal; and

- Removal of erosion control devices.

For the construction work, the erosion control measures and construction area fencing will be installed in phases as the work proceeds, rather than surrounding all of the work areas for the entire duration of the project. As the work is completed in each area, the sites will be stabilized and the fences removed. Erosion control measures will be removed after the permanent erosion control is in place, which usually consists of permanent vegetation.

The City of Portland's compliance agreement with the Oregon Health Authority (OHA) and the U.S. Environmental Protection Agency (EPA) require disconnection of the reservoirs to be completed by December 31, 2015. The sequencing of the different work elements is not known at this time, and depends on choices and decisions of the construction contractor, who has not yet been selected, and when their materials come in as well as scheduling constraints the City may impose on the contract. PWB expects to finish selecting a contractor and start construction in 2015. Landscaping and tree mitigation plantings are expected to extend another year, as late as December 31, 2016.

This is a tentative schedule, and some elements may change due to unforeseen circumstances. Some work elements may be performed by PWB crews, the primary contractor, a second contractor that will be doing the historic restoration work at Reservoir 1, or other City staff.

All the work is expected to be done in approximately 18 months.

## Site Management

### **Work Limits**

To ensure that the impacts of the construction are confined to the approved construction areas (and the disturbance areas in environmental zones), a temporary construction fence will be installed around the construction site, including stockpile and staging areas. This construction fence is a chain link fence that also serves as tree protection fencing and will be installed per City of Portland standards. Additional temporary fencing may be installed by the contractor to ensure worker safety and to provide construction site security and individual tree protection fencing where needed. All trees to be protected are outside of the disturbance limits. All tree protection zones except those specifically noted as "modified" meet the City Foresters requirements and are addressed in Appendix F. Trees labeled as modified have been reviewed with the City Forester.

During construction, the delineated construction limits will be closed to public access, and this will cause intermittent closures of some areas in the park. In particular, SE Lincoln Street and SE Lincoln Drive will be closed when construction is taking place within Work Areas 1, 2, 3 and 4. Construction staging areas are located in the work areas and will be fenced off intermittently. Construction in other work areas may block

access to some trails or paths in the park. PWB and its contractor will work closely with PBOT, PP&R staff, a CAC subcommittee and neighborhood associations to coordinate and publicize closures and provide alternate access and routes.

Restoration of all temporary disturbance areas will include amendments of soil and landscaping. Landscaping will include seeding and planting of disturbed areas with a native seed mix developed in coordination with PWB's ecologist. Trees, shrubs and groundcover will be planted as shown in the Landscaping Plans (Appendix A Drawings 43 through 53) or as described in the Tree Mitigation Plan (Appendix F). Landscaping work will be completed at the conclusion of the project, and tree mitigation will be completed about a year later. Once all construction and restoration work is completed in a work area, erosion control facilities, construction fencing and other temporary construction management measures will be removed.

### **Erosion Control**

All ground-disturbing activity will require erosion and sediment control measures to be installed before construction commences.

Prior to construction, temporary erosion control will be installed around the areas to be disturbed and construction staging and stockpiling areas using best management practices from the City's Erosion and Sediment Control Manual and in compliance with the City's Erosion and Sediment Control Regulations (Title 10). Erosion control will also comply with all local and state permits and the construction documents. The erosion control plan represents best management practices that will be maintained and modified as necessary during construction. Erosion control measures will be implemented and monitored by City staff through a daily inspection and maintenance program.

Erosion control measures may include, but are not limited to: rock construction entrances; silt fencing; dust control and abatement; inlet protections; and installation of temporary and permanent stormwater management.

PWB construction management and inspection staff with expertise in environmental overlay zone and erosion control requirements will be on site daily. They will be responsible for daily monitoring and ensuring that the erosion control devices are properly installed, monitored, and maintained by the contractor. Damaged, missing or improperly functioning erosion facilities will be replaced immediately by the contractor. Sediment accumulated behind erosion control devices (e.g., silt fences) will be removed regularly to keep them functioning properly.

### **Protection of Vegetation**

All construction work, including staging, storage, and equipment maneuvering will be confined within the construction disturbance limits, which will be fenced. Contractors will be shown the work limits, the designated root protection zones, and instructed to avoid damage to the canopy of any trees overhanging the work limits. Selective pruning of such trees may occur prior to construction as directed by the City Forester.

Trees to be protected adjacent to work areas are identified in Exhibits Sheets 31 to 40 in Appendix A. These trees will be clearly marked in the field by PWB prior to construction. Trees to be protected that border or are within the work area will be fenced at the edge of the root protection zone or as otherwise directed by the City Forester and noted in Appendix F, Alternative Tree Protection Plan.

Tree protection fencing will be six-foot tall chain link fencing secured to the ground with 8-foot metal posts driven into the ground except in the roadway, which will be a movable fence. Fencing will be installed before any site preparation or construction work begins in a given work area and will remain in place until all construction work is complete in a work area.

The PWB contractor will be responsible for ensuring that all tree protection fences are properly installed and maintained throughout the construction period. Damaged or improperly functioning fencing and other tree protection devices will be replaced immediately by the contractor upon discovery.

### **Other Fencing**

In addition to the tree protection, disturbance limit and safety fencing, the contractor will install protective fencing around historic features, where practical, to be protected such as walls, stairs and buildings, though no fence will be put around the reservoirs or gatehouses.

### **Work Area Restrictions**

In order to minimize impacts on public access and use of the park and to keep the construction activities as compact as practical, the contractor will be limited to using only three work areas at a time. Work in these areas must be completed and re-opened to the public before moving to another work. If work is stalled for any reason in a work area, the contractor will make the area safe for the public (for example by plating or back filling trenches, temporary paving) and re-opening the work area to the public until the work is ready to resume, then the contractor will re-secure the work area and proceed.

### **Limits on Open Trench Length**

In order to minimize impacts on public access and use of the park, the maximum length of open trench is limited to 100 feet at any one time along the 48-inch pipeline route. The fenced-off area will move as the contractor completes each work area.

### **Parking**

Employee vehicles will be limited to parking on the paved or gravel roads inside the approved work areas in Mount Tabor Park or on the public streets. All on-street rated vehicles must be marked as contractor or subcontractor vehicles and removed at the end of the work shift and not parked onsite overnight.

Contractor equipment and work vehicles (that are considered off street and are hauled in by truck) may be parked onsite during non-work hours, but must be kept within the fenced construction work areas.

### **Coordination**

During construction, PWB staff will be in communication with the neighbors to keep them informed of work schedules and times when access will be interrupted. In addition, PWB staff will be available to respond to questions, concerns, and complaints, and to resolve them promptly. PWB will provide a phone contact number for resident and neighbor contact. Also PWB will meet monthly with a subcommittee of the CAC to talk about status of work, upcoming activities and any concerns the neighbors have about the construction.

### **Access and Traffic Management**

SE Lincoln Street outside the park will be closed to through traffic during periods of construction activity between SE 60<sup>th</sup> and SE 64<sup>th</sup>, and the work area will be closed to the public. Residents of SE Lincoln Street will be provided local access to able to drive to and from their houses, but on-street parking will be unavailable when the contractor is installing the pipe. PWB will notify residents when access interruptions are expected.

During construction in the park, PWB staff will coordinate with PP&R staff to identify access restrictions, select and publicize alternate routes and access points, and notify park users two weeks in advance.

During construction of the 48-inch diameter pipeline, SE Lincoln Drive inside the park will be closed at times. When construction reaches the roadway above the dog park, SE Lincoln will be closed for the entire time that is required to complete the pipe installation. Alternate routes will be identified, publicized, and marked with temporary signage.

Work in the other work areas will cause temporary access disruptions as well when these areas are fenced off for safety as well as for protection of trees, other vegetation, and historic resources. The other work areas are smaller and their effects on access will be more localized. Where trails or paths are temporarily blocked, alternate routes will be publicized and marked with signage.

Both inside and outside the park, the contractor will provide traffic control measures to ensure public and worker safety.

### **Construction Staging and Stockpiling**

All onsite staging and stockpiling will be limited to the approved work areas (Appendix A). Designated construction staging and stockpiling will be fenced off as needed by the contractor, and both equipment and materials may be stored in them during the project.

Several types of stockpiles are expected: general excavation material, approved backfill, and topsoil. Portions of the stockpiled materials will be used in day-to-day operations. Topsoil material will be used to restore the project site at the end of

construction and applied to disturbed surfaces to support plant growth. Storage of stockpiled materials on site will reduce the project's carbon footprint by slightly reducing the number of truck trips required on and off site.

The total amount of material stockpiled onsite at any one time is limited to not more than 20 cubic yards (or equivalent to 2 truck loads) in order to reduce negative visual impacts on the nearby residential areas as well as park users. Instead of storing large volumes onsite, the contractor will be required to haul away or deliver materials on something close to an "as-needed" basis. It is important to allow storage of modest amounts onsite in order to avoid creating additional truck trips with partial loads or to respond quickly to unexpected needs.

In addition, the contractor will be allowed to store up to 100 feet of pipe onsite at any one time. Otherwise, the pipe hauler would be required to drive on and off the site every day during pipeline construction. It reduces fuel consumption and reduces traffic impacts to allow the pipe to remain onsite in the construction work area.

### **Construction Waste Management**

The contractor will be required to develop and submit a plan documenting how construction waste management will be done to meet the City and County's goal of recycling at least 85 percent of waste. These materials may include dirt, rocks, concrete, asphalt, wood, and other materials excavated or removed from the site. The contractor will be responsible for separating these materials from trash and recycling them. The contractor will include information regarding the Management Plan on the "Pre-Construction Recycling Plan Form" submitted to the Bureau of Planning and Sustainability and posted at the jobsite.

### **Hazardous Material**

No hazardous materials will be permitted on site except for materials required for the construction of site improvements and operation of construction equipment such as diesel fuel, hydraulic fluids, and paint, in consumer quantities allowed by City code. Use, transport and storage of any such materials will be minimized and quantities will not exceed consumer levels (intended for retail sale). On-site fuel transfer will be limited to designated construction work areas and construction equipment will be stored in these staging areas overnight. The contractor will not store large amounts of fuel, oil, or other hazardous materials on site, but rather will bring fuel to the site via maintenance vehicles as needed.

### **Human Waste and Litter**

The contractor will be responsible for providing portable sanitation facilities for construction personnel for the duration of the construction project. The contractor will also furnish and utilize suitable receptacles for waste and recyclables and ensure that all garbage is removed from the site on a regular (i.e., minimum weekly) basis and at the end of construction.



### **Construction Work Hours**

The contractor will establish normal work hours, generally an eight-hour shift Monday through Friday, between 7 a.m. to 6 p.m. Intermittent night and weekend shifts are possible. Any lights needed during these times will be directed to shine down and into the work area only, not into the surrounding habitat areas or neighborhoods. Lights will remain off when no work is being done except for security and safety lighting determined necessary by the contractor or the City. Construction activities during nighttime work periods will only occur with an approved noise variance where applicable.

Work hours and any deviation in work hours require approval from PWB. If the contractor plans to perform work outside of normal work hours (i.e. between 6 PM and 7 AM Monday through Saturday), the hours must be approved by PWB in advance and appropriate notice given to the public. Night and weekend hours may occur intermittently. However, if weekend or nights are necessary, PWB will provide the park users and effected neighbors as much advance notice as possible.

### **Traffic**

The proposed work is estimated to generate approximately 800-900 truckloads of soil or fill material over the 9-month-long heavy construction period, or about 5 to 6 loads per workday.

### **Noise**

If the contractor plans to perform work after 6 PM or before 7 AM Monday through Saturday, or anytime Sunday), the contractor must acquire a noise variance from the City of Portland Noise Control Office and approval from PWB. Sunday hours are discouraged except in an emergency.

### **Wildlife**

Care during construction will be taken to minimize impacts on wildlife by limiting night construction, fencing or covering trenches when not off shift, and not disturbing nesting birds. As part of the City's nesting bird guidelines, trees will not be removed if there is an active bird nest in it until the birds have fledged.

In accordance with the US Migratory Bird Act, nests will be identified and construction activities will remain 75 feet away from an active nest (i.e. one with young birds or eggs in it) until the birds have fledged.

### **Clean Fuel**

PWB's Clean Diesel programs include components addressing fuel, equipment usage, and emission controls for Diesel Particulate Emissions. Outlined below are the basics of what will be the Bureau's Clean Diesel Program for construction. PWB will work with the contractor to devise specific actions based on the status of construction fleets nearer to the time of construction.

1. Fuel: The Water Bureau can and will require Ultra Low Sulfur Diesel (ULSD) at the Mt. Tabor site. ULSD is available and accessible in the market. The bureau will also require biodiesel in some form. Typically, manufacturers fall within a range of B5 to B20 (5% to 20% biodiesel, respectively) depending on their equipment. As older equipment ages out, newer equipment is phased in. This newer equipment can handle higher percentages of biodiesel without engine damage and without voiding warranties. Bureau staff will work with the contractor to determine the best mix for this project. This website gives a sense of the variation among manufacturers and some of the potential impacts to contractors:  
<http://www.biodiesel.org/using-biodiesel/oem-information/oem-statement-summary-chart>.
2. Equipment: The Water Bureau uses the City Idle Reduction Policy, passed by Council Ordinance 1982871 on June 3, 2009, to manage equipment. The policy (1) limits idle time of diesel-powered vehicles to no more than 5 minutes during warm-up, gasoline-powered vehicles to no more than 5 minutes during warm-up, and at times when the vehicle is being restarted after a prolonged period of shut down; (2) requires that operators not unnecessarily idle diesel vehicles more than 5 minutes or gasoline vehicles more than 1 minute when vehicle is stopped for a foreseeable period of time; (3) allows appropriate time for cool-down of diesel vehicles prior to shutting them off, not to exceed 5 minutes; and (4) restricts idle time to less than 3 minutes for gasoline vehicles making frequent and multiple stops.
3. Emission Controls: The bureau will include an emission controls segment on the Tabor Reservoir Adjustments project. That segment may include voluntary controls; a mix of voluntary and mandatory controls; or mandatory controls that reflect the equipment situation in Oregon so that the Water Bureau does not unfairly disadvantage small Oregon contractors. The bureau will watch the market to see how equipment inventories change; as time passes, more and more equipment will be Tier 4 compliant. Requiring Tier 4 equipment of large contractors is most likely not a problem because they turn their equipment over every 5 years and may already have compliant equipment. However, this component could adversely affect smaller and MWESB (Minority-Owned, Women-Owned, and Emerging Small Business) contractors. Many small contractors do not have Tier 4 equipment at this point, and after-market retrofits are expensive (\$3,000 to \$20,000 depending on the equipment), required increased maintenance, and may void warranties. Mandating this requirement could disadvantage smaller contractors and local contractors compared with Washington or California firms. A possible mitigating factor for smaller contractors would be the availability of State and Federal grants to retrofit equipment, although the bureau cannot guarantee that grants would be available.

### **Pre-construction Meeting**

A preconstruction conference with the contractor will address contract requirements such as constraints in permits and the land use regarding construction work area limits,

staging areas, environmental, tree and historical protection, park and neighbor concerns, and fencing requirements.

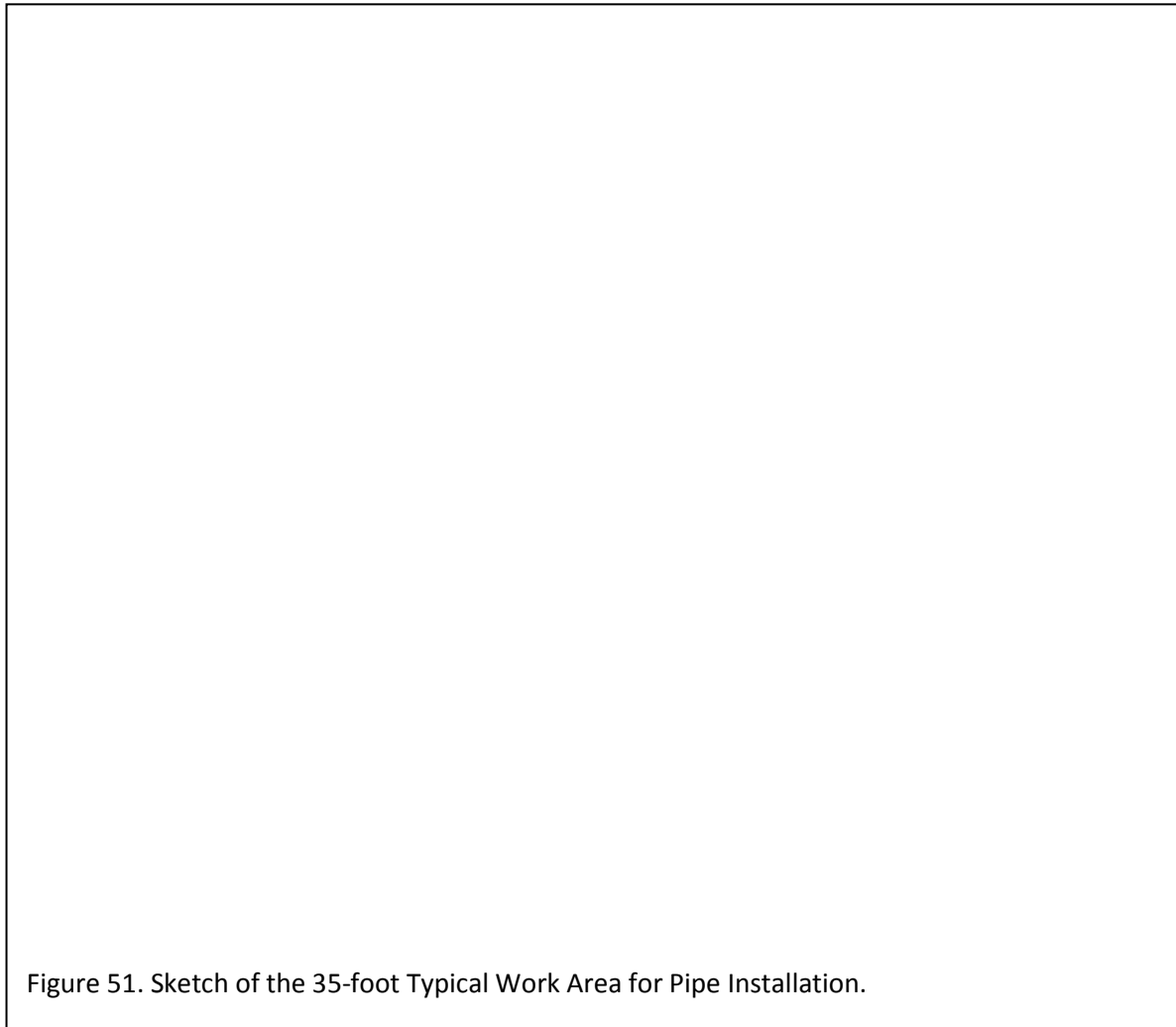


Figure 51. Sketch of the 35-foot Typical Work Area for Pipe Installation.

## APPENDIX D – MOUNT TABOR PARK MASTER PLAN

The work proposed as part of this project has the following relationships to park elements and goals identified in the Master Plan. This is summarized in Table D-1.

<b>Table D-1. Proposed work relationship to the Mount Tabor Park Master Plan</b>		
<b>Goal</b>	<b>Effect</b>	<b>Comment</b>
Circulation	No effect	There are no permanent alterations to roads, paths, or trails, though there will be temporary intermittent closures during construction.
Interpretive Opportunities	No effect	<p>The proposed work will take place in two areas identified in the master plan. The work will not damage or alter the structures or features in these two areas.</p> <p>a. Reservoir 1. The “waterfall” (the inlet weir) is identified as a suitable location for an interpretive station on the mechanics of reservoirs. The inlet weir will still be visible, but not in use.</p> <p>b. Roadway on top of Dam 5. This is identified as a location for a promenade with educational stations about history of the Willamette Valley, Portland, and the City’s water system.</p>
Structures	No effect	The master plan concerns park structures, not the water system structures. There are no park structures in the construction work areas.
Amphitheaters, Overlooks, Entry Gates	No effect	The work proposed will not affect any of these elements, though there will be some temporary closures to portions of SE Lincoln Street and SE Lincoln Drive during construction.
Off-Leash Area	No effect	The dog park (off leash area) is located along the south portion of the park below SE Lincoln Drive. The project will only touch the northwest corner of the dog park. The proposed work will temporarily close off a small portion of the dog park in this corner. The pedestrian gate at this location will be temporarily moved south so that park users can access the dog park from the west side during construction. The disturbed portion of the dog park will be restored to its original condition, except that the pedestrian entrance will be improved by making it a double-gated entrance.
Play Areas	No effect	There are no play areas in or near the work areas.

<b>Table D-1. Proposed work relationship to the Mount Tabor Park Master Plan</b>		
<b>Goal</b>	<b>Effect</b>	<b>Comment</b>
Parking	No permanent effect	Parking within the construction limits in Work Areas 1-4 will have temporary closures when construction is occurring in these areas.
Erosion and Drainage	No permanent effect	PWB will restore all disturbed areas with new vegetation, except in the roads and trails, and in addition will be planting trees in several areas of the park. This work is not specifically intended to improve drainage or erosion control in the park. The net result of the plantings may be a small incremental improvement in these elements. During construction temporary erosion and sediment controls will be in place.

## APPENDIX E – BEFORE AND AFTER RENDERINGS

## APPENDIX F – TREE PROTECTION PLAN



**PORTLAND PARKS & RECREATION**

Healthy Parks, Healthy Portland



August 15, 2014

Tom Carter

The scope of your request was to provide a root protection plan for trees that might be impacted from the proposed construction disturbance for the Mt. Tabor project. I was tasked only with determining sufficient tree protection zones that adequately protect subject trees but do not meet the Title 33 standard of one-foot radius distance per one-inch stem diameter for Root Protection Zones (RPZ). I have also provided more detail regarding allowed activity, construction techniques and level of protection to satisfy only PCC 33.148.065.B.1 and PCC 33.248.065.B.2.

The scope of your request expressly excluded the site plan, tree survey, and location of trees to have a Root Protection Plan in place. The provided site plan and survey data appear to be consistent with field conditions. Effectiveness of my recommendations depends on the accuracy of the information you have provided.

Due to existing conditions, slope, and current use and site history, root protection zones may be reduced as described below for each area and will provide equal tree protection that is required under PCC 33.248.068 and fully satisfies the intent and purpose of the code to ensure existing trees are properly preserved.

Tree protection fencing must be erected as required under 33.248.068.B at least at the prescribed distance from tree stems to denote the Root Protection Zone (RPZ). Fencing must be installed at the edge of the RPZ before any construction activities begin and must remain erected, in good condition, throughout the entire construction period. Fence post may need to be adjusted if any large roots are encountered while digging the post holes as not to unnecessarily damage any large roots.

Unless otherwise noted below, no disturbance or soil compaction may occur within the

**City Nature - Urban Forestry Program**

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Portland, OR 97217  
Tel: (503) 823-4489 Fax: (503) 823-4493

**Administration**

1120 S.W. 5th Ave., Suite 1302  
Portland, OR 97204  
Tel: (503) 823-7529 Fax: (503) 823-6007

*Sustaining a healthy park and recreation system to make Portland a great place to live, work and play.*  
www.PortlandParks.org • Amanda Fritz, Commissioner • Mike Abbaté, Director



RPZ including new buildings, grade changes, new impervious surface, new utility or drainage fields, staging or storage of material and equipment and access by or maneuvering of vehicles.

The disturbance area does not impinge on the root protection zones of all the trees to remain unless the tree is given a modified root protection zone. Where the disturbance area impacts the full root protection zone of a tree, the tree is shown on the Figures with either a modified root protection zone or else is marked as “to be removed” or “to remain and be mitigated”.

Roots that are 2 inches or larger in diameter that are damaged or may need to be removed shall be called to Urban Forestry for a root inspection prior to cutting. Roots that are less than 2 inches in diameter shall be cut cleanly at edge of excavation.

### **Construction Management Plan Work Area 2 sheet 31**

#10931) 6” deciduous tree appears to be in good and vigorous condition is to be left in place and mitigated.

#10946) 2” deciduous tree appears to be in good and vigorous condition is to be left in place and mitigated.

#10947) 6” pear tree appears to be in good and vigorous condition is to be left in place and mitigated.

#11008) 20” pine tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 26 feet on the North side of tree.

#11108) 36” Douglas fir tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 17 feet on the South/Southwest side of tree (edge of pavement) and a minimum of 26 feet on the Northeast side of tree (to existing fence).

#11109) 30” Douglas fir tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 14 feet on the Northeast side of tree (to existing fence).

#11154) 12” cedar tree appears to be in fair condition has had the RPZ modified to a minimum of 8 feet on the Northeast side of tree (to existing fence).

#11155) 6” maple tree appears to be in good and vigorous condition is to be left in place and mitigated.

#11159) 8” bay tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 6 feet on South side of the tree and a minimum of 7 feet on the Northeast side of tree (to existing fence).

#11160) 12” cedar tree appears to be in fair condition has had the RPZ modified to a minimum of 5 feet on the Northeast side of tree (to existing fence) and a minimum of 7 feet on the Southwest side of tree. Tree to be retained and mitigated.

#11161) 12” cedar tree appears to be in fair condition has had the RPZ modified to a minimum of 3 feet on the Southwest side of tree. Tree to be retained and mitigated.

#11163) 14” cedar tree appears to be in fair condition has had the RPZ modified to a minimum of 5 feet on the Southwest side of tree. Tree to be retained and mitigated.

#11164) 14” cedar tree appears to be in fair condition has had the RPZ modified to a minimum of 5 feet on the South side of tree. Tree to be retained and mitigated.



#11173) 6" cedar tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 5 feet on the North side of the tree.  
#12315) 28" big leaf maple tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 10 feet on the Southwest side of the tree.  
#12317) 28" Douglas fir tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 17 feet on the Southwest side of the tree.  
#12318) 16" Douglas fir tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 9 feet on the Southwest side of the tree.  
#12319) 48" Douglas fir tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 8 feet on the Southwest side of the tree.  
#12325) 20" Big leaf maple tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 6 feet on the Southwest side of tree.  
#12327) 24" Douglas fir tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 20 feet on the Southwest side of tree.

### **Construction Management Plan Work Area 3 sheet 32**

#12191) 30" Douglas fir tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 13 feet on the North side of tree (edge of pavement).  
#12192) 26" Douglas fir tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 17 feet on the Northwest quadrant of the tree and a minimum of 12 feet on the North/Northwest side of tree (edge of pavement).  
#12193) 26" Douglas fir tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 15 feet on the North side of tree (edge of pavement).  
#12219) 10" maple tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 9 feet on the North side of the tree.  
#12221) 16" deciduous tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 13 feet on North side of tree.  
#12223) 7" locust tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 3 feet on the North side of tree (to existing fence).  
#12224) 20" conifer appears to be in good and vigorous condition has had the RPZ modified to a minimum of 10 feet on the North side of tree (to existing fence).  
#12225) 6" locust tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 2 feet on the North side of tree (to existing fence).  
#12226) 18" deciduous tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 13 feet on the North side of tree (to existing fence).  
#12227) 12" deciduous tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 2 feet on the North side of tree (to existing fence).  
#12300) 38" Douglas fir tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 10 on the Southwest side of the tree.  
#12302) 26" Douglas fir tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 10 feet on the Southwest side of the tree.  
#12455) 48" big leaf maple tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 26 feet on the Southwest side of the tree.  
#12491) 48" Douglas fir tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 18 feet on the Southwest side of the tree.

#12578) 24" maple tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 7 feet on the North side of tree (edge of pavement).

### **Construction Management Plan Work Area 4 sheet 33**

#12586) 20" big leaf maple tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 15 feet on the North side of the tree.

#12587) 18" big leaf maple tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 15 feet on the North side of the tree.

#12652) 36" big leaf maple tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 20 feet on the South side of the tree.

#12832) 24" Douglas fir tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 14 feet on the North side of the tree (edge of pavement).

#12834) 40" Douglas fir tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 21 feet on the North side of the tree (edge of pavement).

### **Construction Management Plan Work Area 5 Sheet 34**

#12726) 36" Douglas fir tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 23 feet on the North side of tree.

#12728) 18" pear tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 15 feet on the South side of tree.

#12742) 36" Douglas fir tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 30 feet on the Northeast quadrant.

#12743) 22" big leaf maple tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 16 feet on the North side of tree.

#12906) 40" Douglas fir tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 30 feet on the South side of tree and a minimum of 30 feet on the Northwest side of tree.

#12972) 24" cherry tree appears to be in fair to good condition has had the RPZ modified to a minimum of 22 feet on the Southwest side of tree.

#13149) 24" Douglas fir tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 23 feet on the Southeast side of tree.

#13150) 24" Douglas fir tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 12 feet on the South side of tree.

#13154) 22" Douglas fir tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 17 feet on the Southeast side of tree.

#13155) 14" Douglas fir tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 10 feet on the South side of tree.

#13156) 48" Douglas fir tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 17 feet on the Southeast side of tree.

#13547) 36" Douglas fir tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 4 feet on the South side of tree (edge of gravel road). Tree is to be left in place and mitigated.

#13548) 34" Douglas fir tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 2 feet on the North side of tree (edge of gravel road). Tree is to be left in place and mitigated.

#13550) 16" Douglas fir tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 11 feet on the South side of tree.

#13552) 16" Douglas fir tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 4 feet on the East side of tree (edge of existing vault).

#13554) 32" Douglas fir tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 17 feet on the South side of tree.

#13555) 22" Douglas fir tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 7 feet on the South side of tree.

#13558) 12" Douglas fir tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 5 feet on the South side of tree.

#13560) 16" Douglas fir tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 13 feet on the South side of tree.

#13563) 50" Douglas fir tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 12 foot radius on the North and East side of tree. RPZ has been modified to a minimum of 8 feet on the West side of tree. RPZ has been modified to a minimum of 2 feet on the South side of tree (edge of gravel road). Tree is to be left in place and mitigated.

### **Construction Management Plan Work Area 6 Sheet 35**

#11823) 30" maple tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 22 feet on the Southeast side of tree. RPZ has been modified to a minimum of 7 feet on the Northeast side of tree (edge of gravel road).

#16228) 36" maple tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 18 feet on the West side of tree (edge of gravel road).

#11841) 24" maple tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 12 feet on the Northeast side of tree (edge of concrete vault).

### **Construction Management Plan Work Area 7 Sheet 36**

#17256) 30" Douglas fir tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 25 feet on the South side of tree.

#17257) 30" Douglas fir tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 25 feet on the East/Southeast side of tree.

#17260) 18" hawthorn tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 13 feet on the South side of tree.

#17261) 12' hawthorn appears to be in good and vigorous condition has had the RPZ modified to a minimum of 10 feet on the East side of tree (edge of gravel road).

#17262) 12" hawthorn tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 8 feet on the North side of tree.

#17263) 12" hawthorn tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 10 feet on the North side of tree.

#17269) 12" hawthorn tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 9 feet on East side of tree (edge of gravel road).

#17276) 91" Heritage sequoia tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 56 feet on the East side of tree (edge of gravel road).

#17297) 30" spruce tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 12 feet on the East side of tree (edge of gravel road).

#17300) 12" crabapple tree appears to be in fair condition has had the RPZ modified to a minimum of 5 feet on the East side of tree (edge of gravel road).

#17311) 28" Douglas fir tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 18 feet on the West side of tree.

#17331) 8" deciduous tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 7 feet on the West side of tree (edge of gravel road).

#17332) 36" Douglas fir tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 25 feet on the West side of tree.

**Construction Management Plan Work Area 8 Sheet 37**

#306) 35" deodar cedar tree appears to be in good and vigorous condition has had the RPZ modified to a minimum of 28 feet on the Southwest quadrant of tree to install electrical enclosure.

If you have any questions, concerns or need additional information please feel free to contact me.

Thank you,

Jim Field  
Tree Inspector/Certified Arborist  
City Nature Urban Forestry  
10910 N. Denver Ave  
Portland, OR 97217  
(503) 823-4011

## APPENDIX G – PREVIOUS LAND USE HISTORY

### Mount Tabor Park Land Use History Summary

**Land Use History:** City records indicate that prior land use reviews include (by TRACS reference number): 61-001380, 64-002651, 65-002285, 74-002392, 89-003906, 89-006401, 89-006407, 89-021552, 90-024202, and 92-009881.

Since 1997, the following land use reviews have been approved:

#### **LUR 06-178213 HDZ**, Historic Design Review

Approval of historic design review to construct an ADA accessible path connecting from SE 60<sup>th</sup> Avenue to the sidewalk that encircles Reservoir #6. An 8'-wide concrete path is proposed. Minor grading of the existing lawn area will be required to establish a running slope of the path that does not exceed 5%. The project work will be located at the north side of Reservoir #6, which is within the historic Mt. Tabor Park. The project area is bounded by SE 60<sup>th</sup> Avenue on the west, Reservoir #6 to the south, private residences to the north, and the park proper to the east. The total project area, including the regraded lawn area, is approximately 1,500 SF. Approval per the approved plan, Exhibit C-1, signed and dated January 2, 2007, subject to the following condition:

- A. As part of the building permit application submittal, each of the 4 required site plans and any additional drawings must reflect the information and design approved by this land use review as indicated in Exhibit C.1. The sheets on which this information appears must be labeled, "Proposal and design as approved in Case File # LU 06-178213 HDZ. No field changes allowed."

#### **LUR 07-139942 HDZ**, Historic Design Review

##### **Proposal:**

Mt. Tabor Park Interim Security and Deferred Maintenance Project. Certain project work, impacting the exterior of the structures and the site, will occur within the designated Mt. Tabor Park Reservoirs Historic District and within the designated landmark, Mt. Tabor Park.

The proposed interim security work elements requiring Historic Design Review within the Reservoirs Historic District include:

- Upgrades to building security (includes card readers, diamond mesh, glass break sensors, motion sensors, various electrical conduit)
- Microphone sensors on the parapet fences
- New access gates
- Replace non-historic pipe gates on internal park access roads with tubular steel gates.

- Replace panes of glass with polycarbonate glass at the Gatehouse 6 Inlet and Gatehouse 6 outlet
- Penetrations of conduit into buildings for electricity and signals
- Water level sensor window frame changes
- Replace and upgrade cameras and poles
- New vents and metal handrails [painted black] on roof of Gatehouse 5
- Move camera pole from Historic Landmark location by Reservoir 1 closer to the road within the Historic Reservoir District
- Install portable generator plug-ins outside of gatehouses

The proposed deferred maintenance project elements requiring Historic Design Review within the Reservoirs Historic District include:

- Replace existing isolation valves with new valves and actuators inside existing buried vaults.
- Replace existing vault lids.
- Vault tops are being replaced and a new above ground vent installed between Reservoirs 5 and 6.
- Construct two new buried vaults each housing a new isolation valve and actuator.
- Replace an existing platform and actuator at Reservoir 1.
- Install underground electrical and telemetry conduits.
- Painting all windows of all contributing structures.

The proposed security work requiring Historic Design Review within the designated Mt. Tabor Park landmark include:

- Automated gate at Lincoln Street
- Move camera pole from Landmark District location by Reservoir 1, closer to road in Historic Reservoir District

The proposed deferred maintenance work requiring Historic Design Review within the designated Mt. Tabor Park landmark include:

- Replacing vault tops on gravel path below Gatehouse 5.
- Removing and replacing 1 tree to build one of the vaults below Reservoir 5.
- Painting all windows of all contributing structures.

Because the proposal includes exterior work in a designated historic resource, Historic Design Review is required for that work [Title 33, Chapter 33.445].

This approval is subject to the following condition:

- A.** As part of the building permit application submittal, each of the 4 required site plans and any additional drawings must reflect the information and design approved by this land use review as indicated in Exhibits A.2 and A.3. The sheets on which this information appears must be labeled, "Proposal and design as approved in Case File # LU 07-139442 HDZ. No field changes allowed."