NPS Form 10-900
(Oct.1990)

OMB No. 10024-0018

United States Department of the Interior
National Park Service

National Register of Historic Places Registration Form

This form is for use in nominating or requesting determinations for individual properties and districts. See instruction in How to Complete the National Register of Historic Places Registration Form (National Register Bulletin 16A). Complete each item by marking "x" in the appropriate box or by entering the information requested. If an item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, architectural classifications, materials and areas of significance, enter only categories and subcategories from the instructions. Place additional entries and narrative items on continuation sheets (NPS Form 10-900a). Use a typewriter, word processor, or computer, to complete all items.

1. Name of Property

historic name Washington Park Reservoirs Historic District

other names/site number Washington Park (City Park) Reservoirs 3 and 4

2. Location

street & number 2403 S.W. Jefferson Street ☐ not for publication

city or town Portland ☐ vicinity

state Oregon code OR county Multnomah code 051 zip code 97201

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act, as amended, I hereby certify that this X nomination ____ request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60. In my opinion, the property X meets ____ does not meet the National Register criteria. I recommend that this property be considered significant ____ nationally ____ statewide X locally.

Signature of certifying official/Title - Deputy SHPO Date

Oregon State Historic Preservation Office
State or Federal agency and bureau

4. National Park Service Certification

I hereby certify that the property is: Signature of the Keeper Date of Action

____ entered in the National Register
___ See continuation sheet.

____ determined eligible for the National Register
___ See continuation sheet.

____ determined not eligible for the National Register

____ removed from the National Register

X other (explain): AD Accepted Edson H. Beall 1.26.06

Washington Park Reservoirs Historic District
Name of Property

Multnomah, Oregon
County and State

5. Classification

Ownership of Property
(check as many as apply)

___ private
_X_ public - local
___ public - state
___ public – Federal

Category of Property
(check only one box)

____ building(s)
_X_ district
___ site
____ structure
___ object

Number of Resources within Property
(Do not include previously listed resources in the count)

Contributing	Noncontributing	
5		buildings
		sites
4		structures
2		objects
11		Total

Name of related multiple property listing
(enter "N/A" if property is not part of a multiple property listing)

N/A

Number of contributing resources previously listed in the National Register

0

6. Function or Use

Historic Functions
(enter categories from instructions)

GOVERNMENT: public works
RECREATION: outdoor recreation
INDUSTRY/PROCESSING: waterworks

Current Functions
(Enter categories from instructions)

GOVERNMENT: public works
RECREATION: outdoor recreation
INDUSTRY/PROCESSING: waterworks

7. Description

Architectural Classification
(Enter categories from instructions)

LATE VICTORIAN: Romanesque

Materials
(Enter categories from instructions)

foundation: CONCRETE
walls: ASPHALT
CONCRETE
roof:
Other: METAL: iron, EARTH

Narrative Description
(Describe the historic and current condition of the property on one or more continuation sheets)

See continuation sheets.

8. Statement of Significance

Applicable National Register Criteria
(Mark "x" in one or more boxes for the criteria qualifying the property for National Register listing).

_X_ A Property is associated with events that have made a significant contribution to the broad patterns of our history.

_____ B Property is associated with the lives of persons significant in our past.

_X_ C Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.

_____ D Property has yielded, or is likely to yield, information important in prehistory or history.

Areas of Significance
(Enter categories from instructions)

Community Planning and Development
Engineering
Architecture
Entertainment/Recreation

Period of Significance

1894-1953

Significant Dates

1894, 1920, 1945

Criteria Considerations
(Mark "x" in all the boxes that apply)

Property is:

_____ A owned by a religious institution or used for religious purposes

_____ B removed from its original location

_____ C a birthplace or grave

_____ D a cemetery

_____ E a reconstructed building, object, or structure

_____ F a commemorative property

_____ G less than 50 years of age or achieved significance Within the past 50 years

Significant Person
(Complete if Criterion B is marked above)

Cultural Affiliation

Architect/Builder

Smith, Isaac, W.
Oliver, Charles

Narrative Statement of Significance
(Explain the significance of the property on one or more continuation sheets)

9. Major Bibliographical References

Bibliography (Cite books, articles, and other sources used in preparing the form on one or more continuation sheets) See continuation sheets

Previous documentation on file (NPS):
- ___ preliminary determination of individual listing (36CFR67) has been requested
- ___ previously listed in the National Register
- ___ previously determined eligible by the National Register
- ___ designated a National Historic Landmark
- ___ recorded by Historic American Buildings Survey
- ___ recorded by Historic American Engineering Record

Primary location of additional data:
- ___ State Historic Preservation Office
- ___ Other State agency
- ___ Federal agency
- _x_ Local government
- ___ University
- _x_ Other

Name of repository: Multnomah Co. Library

Washington Park Reservoirs Historic District
Name of Property

Multnomah, Oregon
County and State

10. Geographical Data

Acreage of Property 9.5

UTM References
(Place additional UTM references on a continuation sheet)

	Zone	Easting	Northing
1	10	523310	5040700
2	10	523440	5040330
3	10	523305	5040225
4	10	523170	5040290
5	10	523180	5040735

Verbal Boundary Description
(Describe the boundaries of the property on a continuation sheet)

Boundary Justification
(Explain why the boundaries were selected on a continuation sheet)

11. Form Prepared By

name/title Cascade Anderson Geller

organization Friends of the Reservoirs date February 2003

street & number 1934 S.E. 56th Avenue telephone 503-232-0473

city or town Portland state Oregon zip code 97215

Additional Documentation

Submit the following items with the completed form:

Continuation sheets

Maps: A USGS map (7.5 or 15 minute series) indicating the property's location.
A sketch map for historic districts and properties having large acreage or numerous resources.

Photographs: Representative black and white photographs of the property.

Additional items (check with the SHPO or FPO for any additional items)

Property Owner

name City of Portland

street & number 1221 S.W. Fourth Avenue telephone 503-823-4151

city or town Portland state Oregon zip code 97204

NPS Form 10-900a
(8-86)

OMB No. 1024-0018

United States Department of the Interior
National Park Service

NATIONAL REGISTER OF HISTORIC PLACES CONTINUATION SHEET

Section _____ Page ___

SUPPLEMENTARY LISTING RECORD

NRIS Reference Number: 03001447 Date Listed: 1/15/2004

Washington Park Reservoirs Historic District	Multnomah	OR
Property Name	County	State

N/A
Multiple Name

This property is listed in the National Register of Historic Places in accordance with the attached nomination documentation subject to the following exceptions, exclusions, or amendments, notwithstanding the National Park Service certification included in the nomination documentation.

Signature of the Keeper Date of Action

Amended Items in Nomination:

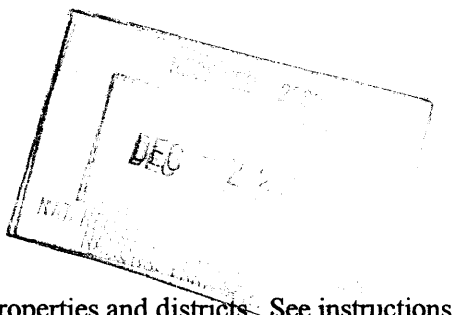
Functions:

The Historic and Current Functions are amended to add: *Industry/Processing-Waterworks*

These clarifications were confirmed with the OR SHPO office.

DISTRIBUTION:
National Register property file
Nominating Authority (without nomination attachment)

NPS Form 10-900 (Rev. 10-90) OMB No. 1024-0018



United States Department of the Interior
National Park Service

NATIONAL REGISTER OF HISTORIC PLACES
REGISTRATION FORM

This form is for use in nominating or requesting determinations for individual properties and districts. See instructions in How to Complete the National Register of Historic Places Registration Form (National Register Bulletin 16A). Complete each item by marking "x" in the appropriate box or by entering the information requested. If any item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, architectural classification, materials, and areas of significance, enter only categories and subcategories from the instructions. Place additional entries and narrative items on continuation sheets (NPS Form 10-900a). Use a typewriter, word processor, or computer, to complete all items.

1. Name of Property

historic name Washington Park Reservoirs Historic District
other names/site number Washington Park (City Park) Reservoirs 3 and 4

2. Location

street & number Res. 3 2549 S.W. Murray Ave. not for publication
Res. 4 2521 S.W. Murray Ave.
(previous street addresses have varied ie,2403/2404 SW Madison St)
city or town Portland vicinity
state Oregon code OR county Multnomah code 051
zip code 97201

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act of 1986, as amended, I hereby certify that this x nomination ___ request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60. In my opinion, the property x meets ___ does not meet the National Register Criteria. I recommend that this property be considered significant ___ nationally ___ statewide x locally. (___ See continuation sheet for additional comments.)

Signature of certifying official / Deputy SHPO — Date November 19, 2003

Oregon State Historic Preservation Office
State or Federal agency and bureau

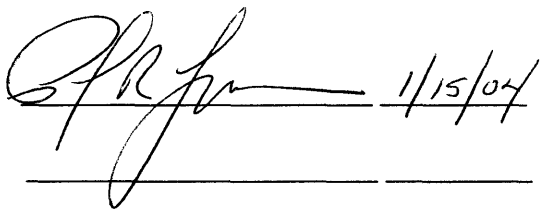
In my opinion, the property ___ meets ___ does not meet the National Register criteria. (___ See continuation sheet for additional comments.)

Signature of commenting or other official — Date

State or Federal agency and bureau

4. National Park Service Certification

I, hereby certify that this property is:



_V_ entered in the National Register 1/15/04
___ See continuation sheet.
____ determined eligible for the _____ _____
National Register
___ See continuation sheet.
____ determined not eligible for the _____ _____
National Register
____ removed from the National Register _____ _____

____ other (explain): _____

_____ _____ _____
Signature of Keeper Date of Action

5. Classification

Ownership of Property (Check as many boxes as apply)
___ private
_X_ public-local
___ public-State
___ public-Federal

Category of Property (Check only one box)
___ building(s)
_X_ district
___ site
__ structure
___ object

Number of Resources within Property

Contributing	Noncontributing	
_5_	____	buildings
___	____	sites
_4_	____	structures
_2_	____	objects
11	____	Total

Number of contributing resources previously listed in the National Register __-0-__

Name of related multiple property listing (Enter "N/A" if property is not part of a multiple property listing.)

_____

6. Function or Use

Historic Functions (Enter categories from instructions)
Cat: Government Sub: public works
Recreation outdoor recreation

Current Functions
Cat: Government Sub: public works
Recreation outdoor recreation
(Enter categories from instructions)

7. Description

Architectural Classification (Enter categories from instructions)
LATE VICTORIAN: Romanesque

Materials (Enter categories from instructions)
foundation Concrete
basin Asphalt
walls Concrete
other Iron, Earth, Water

Narrative Description (Describe the historic and current condition of the property on one or more continuation sheets.)

See Continuation Sheet-

8. Statement of Significance

Applicable National Register Criteria (Mark "x" in one or more boxes for the criteria qualifying the property for National Register listing)

X A Property is associated with events that have made a significant contribution to the broad patterns of our history.

___ B Property is associated with the lives of persons significant in our past.

X C Property embodies the distinctive characteristics of a type, period, or method of construction represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.

____ D Property has yielded, or is likely to yield information important in prehistory or history.

Criteria Considerations (Mark "X" in all the boxes that apply.)

____ A owned by a religious institution or used for religious purposes.

____ B removed from its original location.

____ C a birthplace or a grave.

____ D a cemetery.

____ E a reconstructed building, object or structure.

____ F a commemorative property.

____ G less than 50 years of age or achieved significance within the past 50 years.

Areas of Significance (Enter categories from instructions)
Community Planning and Development
Engineering
Architecture
Entertainment/Recreation

Period of Significance 1894-1953

Significant Dates 1894, 1920, 1945

Significant Person (Complete if Criterion B is marked above)

_____

Cultural Affiliation _____

Architect/Builder Isaac W. Smith
Charles Oliver

Narrative Statement of Significance (Explain the significance of the property on one or more continuation sheets.)

See Continuation Sheet-

9. Major Bibliographical References

(Cite the books, articles, and other sources used in preparing this form on one or more continuation sheets.)

Previous documentation on file (NPS)
___ preliminary determination of individual listing (36 CFR 67) has been requested.
___ previously listed in the National Register
___ previously determined eligible by the National Register
___ designated a National Historic Landmark
___ recorded by Historic American Buildings Survey # _____

Washington Park Reservoirs Historic District Multnomah County, Oregon
Name of Property County, State

___ recorded by Historic American Engineering Record # _____

Primary Location of Additional Data
___ State Historic Preservation Office
___ Other State agency
___ Federal agency
_X_ Local government
___ University
_X_ Other
Name of repository: _Multnomah County Library_____

10. Geographical Data

Acreage of Property __9.5_____

UTM References (Place additional UTM references on a continuation sheet)

	Zone	Easting	Northing		Zone	Easting	Northing
1	10	523310	5040700	3	10	523305	5040225
2	10	523440	5040330	4	10	523170	5040290

5 10 523180 5040735

___ See continuation sheet.

Verbal Boundary Description (Describe the boundaries of the property on a continuation sheet.)

Boundary Justification (Explain why the boundaries were selected on a continuation sheet.)

11. Form Prepared By

name/title___ Friends of the Reservoirs _____

organization___ %Cascade Anderson Geller _____ date_ February 28, 2003__
street & number 1934 SE 56th Avenue _____ telephone 503-232-0473
city or town__ Portland _____ state OR zip code __97215

Additional Documentation

Submit the following items with the completed form:

Continuation Sheets
Maps
A USGS map (7.5 or 15 minute series) indicating the property's location.
A sketch map for historic districts and properties having large acreage or numerous resources.

Photographs
Representative black and white photographs of the property.

Washington Park Reservoirs Historic District | Multnomah County, Oregon
Name of Property | County, State

Additional items (Check with the SHPO or FPO for any additional items)

Property Owner

(Complete this item at the request of the SHPO or FPO.)
name City of Portland

street & number 1221 SW Fourth Avenue telephone 503-823-4151

city or town Portland state OR zip code 97204

Paperwork Reduction Act Statement: This information is being collected for applications to the National Register of Historic Places to nominate properties for listing or determine eligibility for listing, to list properties, and to amend existing listings. Response to this request is required to obtain a benefit in accordance with the National Historic Preservation Act, as amended (16 U.S.C. 470 et seq.).
Estimated Burden Statement: Public reporting burden for this form is estimated to average 18.1 hours per response including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding this burden estimate or any aspect of this form to the Chief, Administrative Services Division, National Park Service, P.0. Box 37127, Washington, DC 20013-7127; and the Office of Management and Budget, Paperwork Reductions Project (1024-0018), Washington, DC 20503.

Narrative Description

Reservoirs 3 and 4 are located in the eastern portion of Washington Park (originally City Park) in southwest Portland. City Park predates the reservoirs by 23 years. Today, Washington Park is 129.51 acres, bounded roughly by King's Hill neighborhood to the east, Burnside on the north, Jefferson Street to the south, and the Oregon Zoo on the west. The park is an active destination with softball and soccer fields, basketball court, six lighted tennis courts, playground, covered picnic area, children's playground, hiking trails, and public gardens including the International Rose Test Garden, the Japanese Garden, and Hoyt Arboretum and the Oregon Zoo. The reservoir site, with the deep, open water and romantic architecture is peaceful, offering a retreat from the more active recreation areas of the park. The area surrounding the reservoirs is defined by a perimeter chain link fence installed in 1970 by the Portland Water Bureau. The nomination consists of five contributing buildings (Gate Houses 3 and 4, Weir Building, Pump House 1, and the Generator House), four structures (Basins 3 and 4 with their parapet walls, fences, lampposts, walkways and carriageways and Dams 3 and 4), and two objects (water fountains at the Reservoir 4 site.)

Reservoirs 3 and 4, along with Mount Tabor Park Reservoirs 1, 2, 5, and 6, were constructed as part of the Bull Run water system, a gravity-fed mountain watershed system built during the late nineteenth and early twentieth centuries to provide the city of Portland with drinking water. Reservoirs 1, 3, 4, 5, and 6 continue to function as the city's primary water distribution sources. They serve as a recreational amenity as well, enriching the landscape of two of Portland's largest and oldest parks with vistas of deep open water, period historic structures, and water sounds from small gravity fed inlet waterfalls. Also, due to their location on hills on the east and west sides of the city, scenic views are afforded across the reservoir water. Reservoir 2, located at the southwest foot of Mount Tabor Park was taken off line and sold in 1990. Reservoir 2 Gatehouse is listed in the National Register of Historic Places. The reservoirs were part of a Thematic National Register Nomination (never submitted) and are considered Rank 1 properties in the Portland Historic Resource Inventory of 1984.

Washington Park's Reservoir 3 is located east of the main east vehicle entry at Park Avenue that continues as a circular drive surrounding a grassy picnic knoll where a variety of views of this reservoir are provided. Reservoir 3 is a well-known and loved landmark of Washington Park. From the high point of the drive is a primary view of the water and historic features. Recent postcards tout this view as a Park Site on the Washington Park Shuttle. At the opposite point, the drive splits offering vehicle access upslope and west leading to the garden, arboretum and zoo, and to the north and west leading to the Arlington Heights neighborhood. Reservoir 3 is located to the west of this junction. The two reservoirs are separated by the straight dam face of Reservoir 3 that drops approximately 70 feet down to Reservoir 4.

South and down slope of Reservoir 3 is Reservoir 4 with its curved decorative dam facing S.W. Jefferson Street. Reservoir 4 is due west of the Kings Hill Historic District. The two reservoirs are connected by a series of buried piping. At the south end of Reservoir 4 the terrain is steep and the natural vegetation is thick outside of the perimeter chain link fence. Inside the fence, the area is more manicured around the reservoir basin. On the west a steep, forested slope defines the site. Grand vistas of the reservoirs, water, historic features, the city

skyline, Mount Hood and the Bull Run reserve from points on the west side of the district. The main east-side entrance road to the reservoir complex is closed to vehicle access near the junction of Southwest Park Avenue and Southwest Cedar Street. The perimeter fence encompasses the site with a footpath following the fence line north and south on the east side of the reservoir providing views of this reservoir and its features in its entirety. This walk also provides a striking view of the dam face and Pump House of Reservoir 3. Mass transit light rail tracks pass to the south end of the reservoir. The south dam face of Reservoir 4, with its large, raised "1894" numerals that are highly visible for auto and pedestrian traffic from Southwest Jefferson Street, are a primary Portland landmark.

RESERVOIR 3

The northern reservoir is Reservoir 3 at an approximate elevation of 299.5 feet above the low water mark of the Willamette River. The water in this reservoir supplies "high service" for the higher west hill population of the City. Reservoir 3 covers 2.02 acres. It is irregularly shaped, approximately 200 feet east and west, and 500 feet north and south with a capacity of 16.4 million gallons. It is the deepest of all of Portland's reservoirs with a depth of 49 feet. A gatehouse, built in 1894, and a later Weir Building (Screen House) are located at the southeast end. Reservoir 3 and its companion Reservoir 4 to the south are both located in a natural ravine. A concrete dam forms the south wall of Reservoir 3. The other faces were constructed to conform, with some modification, to the existing slopes at an approximate slope of 1:1. The dam, basin lining, parapet wall, gatehouse and weir building are all constructed of poured-in-place, reinforced concrete.

Contributing buildings, structures, and objects

Basin and Accompanying Features

The basin's concrete lining was reportedly reinforced with Ernest Leslie Ransome's patented "twisted iron" square bars placed ten feet on center in each direction and anchored at ten-foot intervals by iron bars driven a depth of 3 to 20 feet into the slopes and embedded in concrete. Early photographs show a buttress along the west wall of the basin, likely installed as part of the landslide repair. Adjacent to the Gatehouse (and under water) is a flight of approximately 50 steps to the basin floor. The basin was originally lined with asphalt for waterproofing. Various other waterproofing materials have been applied since that time. For the past twenty years, it has been covered with a geomembrane liner. According to an 1895 newspaper account, water "jets" were installed along the perimeter of the basin to provide aeration. They were set at an angle so that columns of water were thrown toward the center of the basin. No other documentation for these "fountains" was found. The basin shows signs of distress with some cracking, especially on the south wall. The west wall shows effects of the Washington Park landslide, including some bulging of the concrete panels now covered by the liner. The basin is good condition overall.

Encircling the basin is a 3-foot high concrete parapet wall topped by an ornamental wrought iron fence. Designs for the wall and fence were identical for Reservoirs 1, 3 and 4. The wall has a raised diamond motif set in recessed panels. The fence is made up of 1-inch square uprights between, 5 and 6 feet high, with tops

hammered into spear shapes. Double-scrolls are screwed on to secure the uprights to cross bars. Every other bar is approximately 4 inches taller and on these bars are two 3-inch hammered leaves. These are forged opposite of each other from two sides of the metal bar. At approximately twelve-foot intervals are taller bars. These have ball decorations below spear-shaped tops and are braced with curved bars on the water side of the wall. Incorporated into the fence are wrought iron lampposts of two designs; single and triple gas lamp fixtures. Their bases, shafts and tops are made up of various forms of scrolled bars and the hammered leaf motif is repeated from the fence. In the1970s, the Water Bureau encircled the basin with freestanding aluminum fixtures with conical shades and ceased to use the historic arc lamps. The parapet wall has some cracking, spalling and efflorescence. The wrought iron fence is sound but the finish shows distress. It is in good condition but refinishing is advisable.

A concrete walkway surrounds the parapet wall and was intended to serve as a promenade, while draining storm water away from the reservoir. At the north end of the basin a wide flight of concrete steps, flanked by concrete jardinières, connects the walkway to one of the principal drives through Washington Park. The chain link fence now enclosing the reservoirs blocks the stairs at the top and the stairway and jardinières are overgrown with ivy. Along the walkway east of the basin is a poured-in-place, reinforced concrete wall cast and finished to look like stone. The walkway shows the effects of the landslide with cracking, buckling and some spalling especially on the west side. Overall, it is in good condition.

Dam

At the south end where the upper ravine narrows, the curved V-shaped dam with a 400-foot radius forms the south wall of Reservoir 3. It is approximately 175 feet long, 30 feet thick at the base and 20 feet thick at the top. The exposed southern face of the concrete and earth dam is decorated with a Romanesque-style blind arcade and the concrete is finished to look like stone. On top of the dam sits a massive concrete balustrade and a approximate ten-foot wide carriageway with walkways on either side. Originally, this carriageway continued south to Reservoir 4. The large 3-light ornamental wrought iron gas lanterns at each end of the carriageway are still mostly intact. Set into the dam is a concrete block with the patent numbers for the concrete construction: "Ransome's Patent Construction 305229 and Ransome's Patent Concrete Finish" (number illegible). Though some cracking is apparent, the dam appears to be in good condition.

Gatehouse

At the southeast end of the reservoir is the Gatehouse. Romanesque in style, the oval shaped building is constructed of rusticated reinforced concrete with a flat slightly projecting roof. Although concrete, the wall was cast in the form of coursed, stone-like blocks. The wall surface was then bush-hammered and tooled to give the appearance of natural stone. It has a pronounced water table and double hung wood-sash round arched windows, four over four, with rusticated concrete sill and surround. The building has a double door on the east. This door is similar in design to the windows with a wood sash fanlight and rusticated concrete surround; the original wood paneled doors themselves however were replaced with plain metal doors in the 1980s. Below its slightly projecting roof slab is a paneled frieze, and below that a corbelled band. The Gatehouse contains inlet

and outlet piping, sluice gates, overflow piping, a weir and a steel holding tank. Some cracks appear in the walls, floor, and roof, but the structure is in good condition.

Water is delivered to Reservoir 3 from Mount Tabor Reservoir 1 (and Reservoir 5 after its construction in 1911). Both lines pass through sluice gates. Water leaves through the Gatehouse and is routed through two pipelines one of which passes through Pump Station Number 1 to Reservoir 4. A steel pipe extends around the perimeter of the reservoir and is tied to the irrigation system as well as washdown. Washdown water is drained through the outlet at the dam wall and a subsequent drain line. Site drainage is routed to catch basins and concrete ditches along the sidewalk.

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

RESERVOIR 4

Reservoir 4 is, to the south of and 70 feet below Reservoir 3 approximately at an elevation of 229.5 feet above the low water level of the Willamette River. The reservoir water supplies "low service" to Portland's west side. The reservoir is irregularly shaped, 40 feet deep (second deepest of Portland's reservoirs), approximately 200 feet east and west, and 700 feet north and south with a capacity of 17.6 million gallons and covers 2.28 acres. A Gatehouse is located at the east end. A dam forms the east wall of the Reservoir. The other faces were built to conform, more or less, to the natural slopes at an approximate 1:1 slope. The exposed face of the reinforced concrete dam was formed in stone-like blocks, which were then bush-hammered and tooled as if they were natural stone. At the base are large coursed blocks. Above this base is a blind arcade and above this a dentil course. The whole is toped by a massive balustrade. A ten-foot wide walk runs across the top of the dam. At each end there were originally three-globe iron lanterns. Only the concrete pedestals remain.

Contributing buildings, structures, and objects

Basin and Accompanying Features
There is a ramp along the west slope of the basin. The lining was originally waterproofed with an asphalt coating. Various other waterproofing materials have been applied since that time.

Like Reservoir 3, the basin's concrete lining was reportedly reinforced with Ernest Leslie Ransome's patented "twisted iron" square bars placed ten feet on center in each direction and anchored at ten-foot intervals by iron bars driven a depth of 3 to 20 feet into the slopes and embedded in concrete. The basin was originally lined with asphalt for waterproofing. The reservoir basin is in relatively good condition with typical distress conditions primarily in the concrete panel joints. According to an 1895 newspaper account, nozzles or

fountains were originally installed at 50-foot intervals around the periphery of the basin. They were set at an angle so that columns of water were thrown toward the center of the basin. No other documentation for these fountains was found. Some cracking exists in the floor of the basin and some concrete panels were replaced in the 1980's. The basin is in good condition overall.

Encircling the basin is a 3-foot high concrete parapet wall topped by an ornamental wrought iron fence. Like Reservoir 4, the wall has a raised diamond motif set in recessed panels. The fence is made up of 1-inch square uprights between, 5 and 6 feet high, with tops hammered into spear shapes. Hammered double-scrolls are screwed on to secure the uprights to cross bars. Every other bar is approximately 4 inches taller and on these bars are two 3-inch hammered leaves. These are forged opposite of each other from two sides of the metal bar. At approximately twelve-foot intervals are taller bars. These have ball decorations below spear-shaped tops and are braced with curved bars on the water side of the wall. Incorporated into the fence are wrought iron gas lampposts of two styles, a single lamp and a triple lamp. Their bases, shafts and tops are highly ornate made up of various forms of scrolled bars with the hammered leaf motif repeated from the fence. In the1970s the Water Bureau encircled the basin with freestanding aluminum fixtures with conical shades and ceased to use the historic arc lamps. The parapet wall has cracking and spalling but is sound and in overall good condition. The cast iron fence needs to be refinished, otherwise the ironwork on the fence and lampposts are in good condition. The lamps need to be refurbished and put back into service.

A concrete walkway surrounds the parapet wall and was intended to serve as a promenade, while draining storm water away from the reservoir. At the north end of the basin a wide flight of concrete steps, flanked by concrete jardinières, connects the walkway to one of the principal drives through Washington Park. The chain link fence now enclosing the reservoirs blocks the stairs at the top and the stairway and jardinières are overgrown with ivy. Along the walkway east of the basin is a poured-in-place, reinforced concrete wall cast and finished to look like stone. Along the southwest curve is a poured-in-place, reinforced concrete retaining wall, cast in the form of stone-like blocks that were then bush-hammered. Set into this wall are two blocks giving patent numbers for the concrete construction: Ransome's Patent Construction 30522 (last digit illegible) and Ransome's Patent Concrete Finish 105800. The walkways have some cracking and spalling, but are in generally good condition.

Dam

The straight dam is approximately 250 feet long, 50 feet thick at its base and 13 feet thick at its top. The exposed southern face of the concrete and earth dam is decorated with a Romanesque style blind arcade and the concrete is finished to look like stone. Large individual numerals reading "1894" are applied to the south wall of the dam. The exact date of the installation of the numerals is unknown but they are apparent in a photograph taken in 1900. On top of the dam sits a massive concrete balustrade and an approximately ten-foot wide walkway. The dam and its features appear to be in good condition with some cracking apparent.

Gatehouse

The Gatehouse located inside Reservoir 4 at the center east of the dam and was built in the form of a round tower. Below its slightly projecting roof slab is a paneled frieze and below that a corbelled band. The

remainder of the wall was cast in the form of coursed, stone like block. The wall was then bush-hammered and tooled to give the appearance of natural stone. Windows are wood round-arched with four over four, double-hung sash. Metal screens have been added. A steel platform with valves is located on the west elevation. Cast into the floor slab are circular sidewalk type lights and this patent information: Ransome's Patent Construction 305229 and Ransome's Patent Light 448993. The Gatehouse contains inlet and outlet piping, a sluice gate, valves, overflow piping, and a steel holding tank. Alterations to the Gatehouse include replacement of the roof in 1987, replacement of original wood doors with metal doors. Water leaves the reservoir via the Gatehouse through a distribution line and a drain line. Cracks in various places in the gatehouse are the main sign of aging. The Gatehouse is generally in good condition.

Slopes to the east, south and west of the reservoir are planted with ivy. A basalt retaining wall runs along the east side of the drive west of the reservoir.

Pump House 1

Between Reservoirs 3 and 4, at the foot of the steep ravine below the Dam at Reservoir 3, is Pump House 1 (also referred to as Pump Station 1.) Built in 1894 at the same grade level as Reservoir 4, the pump house is a one-story reinforced concrete building. The wide doorway facing south is arched, originally with wooden window panels above the door in the arch. The arch windows appear to have been covered over with a type of patterned plexiglass. The two arched front windows have been covered and stuccoed. Other windows are wood, round-arched with four over four, double-hung sash covered with screens. Originally flat, a metal gabled roof was added at an unknown time. Pump House 1 contains the historic "Thumper," an 1894 Pelton wheel driven water pump that is still functioning. It was installed to regulate the water flow from Reservoir 3 to 4 and to discharge water to the west side distribution system. Originally, the pump also generated enough power to illuminate the park. Another supply line from the Pump House leads to the Reservoir 4 Gatehouse but is not in use. Cracks in the Pump House may have originated when modifications were made for the installation of 3 pumps in recent years. Some repairs have been made. The building is in good condition.

Generator House

Immediately east of Pump House 1 is the Generator House. Built in 1920, it is a small one-story rectangular flat-roofed concrete building with a dentilated cornice built into the side of the hill. It has three small horizontally pivoted wood framed windows just below the cornice. A metal door opens on the north elevation. It appears to be in good condition.

Water Fountains

Located at what was probably the historic entrance to the reservoir district, now defined by the chain link gates to the northeast of the basin of Reservoir 4, is a concrete fountain. It is approximately two and a half feet tall. A six faceted thick 18-inch bowl is seated on top of a short, decorative pedestal. The pedestal sits on top of a 3-inch high 18-inch wide concrete square. Water was evidently delivered to the bowl from a spout emerging from a 6-inch diameter concrete pipe with a flat-topped overhanging top piece. From this pipe, above the bowl a

smaller pipe emerges with a metal fitting that probably served as a spout. Although currently not serving its original purpose, the fountain is in good condition.

Another concrete drinking fountain stands on a 3-feet high pedestal on a concrete riser in front of the north-facing door of the Generator Building. A water spout for drinking is the middle of the 1-inch diameter bowl atop the pedestal. It appears to be in good condition.

Associated Landscaping at Washington Park Reservoirs Historic District

The most defining landscape principle of Reservoirs 3 and 4 is the open expanse of water, 49 feet deep and 40 feet deep, respectively. Because of the great depth and the due to the reflection of the towering fir trees that surround them, the water is a rich, deep hue. Situated in a natural deep ravine, their irregular shape, rusticated concrete structures and ornate wrought iron detailing of fences and lampposts, the reservoirs are a striking and elegant addition to the serene forest that makes up this end of Washington Park. From the high point on Southwest Murray at the nouthwest end of Reservoir 3, a striking view is provided of the water and all of the features of the reservoir. Reservoir 4 offers a grand vista from a point south along southwest Murray above the southwest side of the reservoir, of the City skyline, Mount Hood, and the watershed area, 50 miles to the east. A chain link fence encircles most of the site and a foot path traces the boundary of the fence. On the east side, the pathway follows a series of historic steps. In place for more than three decades, the fence is softened by the English ivy *Hedera helix* that makes for the primary ground cover surrounding the embankments. Other introduced ground covers include St. Johnswort *Hypericum calicynum* and periwinkle *Vinca major.* All trailing ground covers have been kept trimmed off the sidewalks and other structures, making a neat appearance, though the ivy has been allowed to cover original concrete planters and steps at Reservoir 3. The surrounding forest, not within the nominated boundaries, is composed primarily of Douglas fir *Pseudotsuga Menzesiii,* western red cedar *Thuja plicata,* and big leaf maple *Acer macrophyllum* all predominating native tree species of the Pacific Northwest. Under story shrubs include other natives, evergreen Oregon grape *Mahonia aquifolium / nervosa,* rhododendrons *Rhododendron species,* and a variety of deciduous shrubs such as snowberry *Symphoricarpos albus.*

Summary Statement of Integrity

The Washington Park Reservoirs remain today largely intact and in as-built condition. While the basins have been relined numerous times, the character-defining elements such as deep open water, parapet walls, iron fences, lampposts, gatehouses and features exist today with minor modifications. These modern modifications have not been sensitive to the original architecture; full hollow-core metal doors replaced original wood doors in 1987, a gable roof (originally flat) now covers the Pump House and much of the original landscape elements are over grown. The 1980s era aluminum light fixtures surrounding the basins do not match the period, yet their illumination and reflection in the water after dark provides a connection with the original design that included light fixtures. The period lampposts should be refurbished and used to provide lighting. Newer buildings and structures are situated primarily in one area, limiting their visual impact on the historic resource.

The perimeter fencing allows viewing of the resource from the path that follows the fence line. General maintenance of the concrete and metal is needed on many of the resources. Some concrete repair is needed on various resources and the fence could be refinished. The historic interiors of the gatehouses are also intact including much of the mechanical equipment.

Though the Washington Park Reservoirs 3 and 4 are 109 years old, they remain today largely intact and in as-built condition. They also continue to function as the primary water source for Portland's west side. Protection of the watershed coupled with a well designed distribution system has given Portland high grade water since 1895 when it first flowed to the City's faucets. The following remarks are taken from recent reports on the district and offer a good overview of the resource:

No waterborne disease outbreak or water quality incident of public significance has ever been recorded in connection with Portland's open reservoirs...[1] *All features in good condition. ...a detailed maintenance program could extend the useful life of the open reservoirs to the year 2050.*[2]

[1] Montgomery Watson Harza. Open Reservoir Study: Phase I Summary Report. City of Portland, January, 2002.

[2] Montgomery Watson Harza. Open Reservoir Study, Draft TM 5.7 Facilities Evaluation, City of Portland. August, 2001.

STATEMENT OF SIGNIFICANCE

Overview

The Washington Park Reservoirs Historic District is located in the southeastern portion of Washington Park (formerly City Park) approximately three-quarters of a mile west of downtown Portland, Multnomah County, Oregon. Built in 1894, the district includes Reservoirs 3 and 4. The district meets Criterion A for its association with significant historic events, in the areas of community planning and development, engineering, architecture/landscape architecture, and recreation. Along with Mount Tabor's Reservoirs 1, 5, and 6, which are located due east of Washington Park, Reservoirs 3 and 4 serve as the main storage and distribution system for Portland's water supply, which originates from a pristine reserve in the Cascade Mountains. The reservoirs are located in an urban forest reserve, and one of Portland's first parks originally known as City Park. The layout of the reservoirs, on the east and west side of the Willamette River, was one of the early connections to the two sides of Portland divided by the river. The result of a government-business paradigm for public works, funding the creation of Portland's Bull Run water system, of which the reservoirs are an integral part serving as the water storage and delivery system, was a landmark process for Oregon's legislature that illustrated a commitment to public health and an adequate supply of high quality water using a cost effective delivery design. Consequently, subsequent and similar public-private investments ensued, such as the funding and construction of Portland City Hall in 1895, the development of park planning, and the installation of public drinking fountains, the Benson Bubblers in 1912, in downtown Portland. The reservoir construction embodied innovative engineering utilizing patented reinforced concrete techniques that had not yet become widely accepted. The engineering involved the active channeling of water in a gravity-fed system to provide power for pumps and lighting making the system fiscally responsible. The irregular shape and great depth of the water basins and the views afforded of the reservoirs and the surrounding landscape, harmonized with the site chosen for their construction. The Romanesque architectural style chosen for the gatehouses, weir buildings, dam faces, parapet walls, balustrades, and other features exhibited the quality of "beautility"[1] encompassing both highly attractive design with exceptional attention to detail and utilitarian function. The carriageways and walkways provided accessibility making the reservoir site a recreational destination. The 1890s was a period of intense interest in improving growing urban areas, a reaction to the oppressive conditions found in American cities in the wake of the Industrial Revolution. Constructed as the City Beautiful movement was rising throughout the country, the reservoirs' design reflects the mood of the period in which they were built.

The district also meets Criterion C, as the embodiment of distinctive characteristics of a type, period, or method of construction using masterful techniques, and as an early example of concrete construction and romantic eclectic architectural design. Designed and constructed during the Progressive Era, the reservoirs, with their careful attention to aesthetics and innovative engineering technology, serve as intact physical representation of this period in Portland's history. The concrete techniques were innovative, utilizing patented methods of Ernest Ransome, one of the earliest American pioneers in various aspects of concrete construction. The historic structures and buildings are built of reinforced concrete, using the patented "Ransome System" and may be categorized as Late Victorian – Romanesque Revival style of architecture. Collectively, the reservoir complex represents the largest, earliest application of the Ransome construction type in Portland, and one of the earliest

in the country. The decorative wrought iron fence and lampposts were designed by prominent local architects Whidden and Lewis who went on to design Portland City Hall, now on the National Historic Register. The wrought iron work was manufactured by Old World trained and locally celebrated craftsman Johan Tuerck. The engineering showed creative solutions to water delivery using natural elevation differences with minimum reliance on other sources of power. Because of the care in planning and construction, Reservoirs 3 and 4 are important pieces of living history providing service and beauty as they first did 109 years ago.

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

The period of significance for Reservoirs 3 and 4 has been determined as 1894 – 1953. Constructed in 1894, they have continued to operate as water storage and distribution facilities as well as park amenities until the present. The closing date, 1953, marks the fifty-year cut-off date for periods of significance where activities begun historically continued to have importance as they have at these reservoirs.

The History and Development of Portland's Water System

Early Water: In the earliest days of settlement, Portland residents drew their water from wells located on or near their property. That pattern continued until the mid-1850s, when drainage from the growing population began to seep into the wells.

In 1856, Steven Coffin, Finice Caruthers and Jacob Cline founded the Portland Water Works and petitioned City Council to lay pipe. City Ordinance #54 granted the company a franchise for conducting water into the

city. Their water supply was a creek on Caruther's Donation Land Claim in Marquam Gulch. It fed through a series of wood pipes to provide service from Southwest Fourth Street east to the river.

In 1859, Portland Water Works was sold to Robert Pentland. Pentland installed a steam pump at the foot of Southwest Mill Street to draw water from the Willamette River to supplement the Caruther Creek supply. He also hoped to pump water to supply water to the higher elevations from a reservoir at Southwest Fourth and Market Streets.

Three years later, faced with personal financial challenges, Pentland sold the water system to Herman C. Leonard and John Green for $5,400 (equivalent of $103,000 in 2001 dollars.)[2] Leonard and Green had already established themselves as utility entrepreneurs, starting the Portland Gas Light Company in 1859. The new enterprise was called the Portland Water Company. With a city population nearing 3,000, Leonard and Green began to upgrade the system immediately with cast iron pipes imported from the east coast and erecting a 300,000-gallon per day pumping station at the foot of Southwest Market Street. Leonard and Green also augmented the supply with water from Balch Creek northwest of town, piped to a reservoir at what are now Southwest 15th Avenue and Alder Street and providing gravity service to the higher elevations west of Fourth Street.

As Portland's population grew to 8,000 by 1870, so did the Portland Water Company's efforts to expand capacity. In 1868, it built an 800,000-gallon per day pumping station at the foot of Southwest Lincoln Street. Three years later, it installed a new steam powered pump to increase daily capacity from that location to 1.8 million gallons per day. The Portland Water Company also built a new reservoir at Southwest Sixth and Lincoln Street, and expanded the one at Fourth and Market Street.

Complaints of cost and quality prompted Mayor Philip Wasserman in 1871 to explore options for a new water service. He appointed a 5-member committee to consider the possibilities. The committee's report, issued in 1872, recommended municipally owned water service and identified the Willamette River or Stephens' Springs as possible sources. The projected cost for such a system was $1 million. Portland's Common Council approved the report, but the city's charter did not empower the city to finance such an enterprise. That power was reserved to the state legislature. For its part, the legislature was fearful of taking on such a large debt on behalf of Portland. (Such fear was not unfounded; as late as 1909, when Portland was four times larger, surrounding Multnomah county still only had a total capital investment of $22 million.)

At the same time, the privately owned Portland Water Company continued to expand. New pumps were installed in a new "Round-House Station" at the Southwest Lincoln Street pumping station, increasing capacity there to 4 million gallons per day. Ten years later, demand continued to surge as Portland continued to grow. By 1880, the city's population was 18,000 and would grow to 46,000 by the end of the decade. This growth prompted the Portland Water Company to build the Palatine Hill Pumping Station four miles upstream from the city, with new capacity of 10 million gallons per day. At this time, the Portland Water Company abandoned the

Caruthers Creek source as it fell victim to development. Completed in 1884, Palatine Hill was inadequate within 8 years as Portland's population continued to nearly double.

Relying on the Willamette River as the water source, the Portland Water Company also faced increasing challenges in water quality. Waste matter from upstream mills posed problems. Sewer disposals posed problems. And occasional tidal shifts affected the flow of the Willamette also posing problems. As Portland headed into the 20th Century, a new water source would need to be found.

The Portland Water Committee: As the Portland Water Company struggled to keep up with demand and its degrading water source, the city government once again picked up the question of a city-owned water works. Of the 3,000 public water systems built in the United States between 1860 and 1896, half were municipally owned.[3] In the 1885 state legislature's special session, Republican Joseph Simon orchestrated legislation to create the Portland Water Committee, passed on November 25, 1885. Simon's bill appointed fifteen of the city's most prominent business and civic leaders to serve as members: John Gates, C. H. Lewis, Henry Failing, Frank Dekum, L. Fleischner, H. W. Corbett, F. C. Smith, W. K. Smith, J. Loewenberg, S. G. Reed, R. B. Knapp, L. Therkelson, Thomas M. Richardson, A. H. Johnson, W. S. Ladd. The Committee was charged with the responsibility "to construct or purchase, keep, conduct and maintain water works . . . with an abundance of good, pure and wholesome water." The Committee was also authorized to issue up to $700,000 in tax-free bonds (equivalent to $13 million in 2001 dollars). Upon establishing a new water works, the Committee was to disband in favor of a permanent five-member Water Commission.[4]

The bonding authority in the legislation was significant in its size and in its structure – representing a sizable risk. Bonds were (and are) a common financial mechanism to fund government operations but particularly capital projects. They would be issued for a set period of time (typically 15-25 years) and paid back with interest from a city's general fund. At this time in Oregon, before a city could go into debt, it had to receive authorization from the state legislature. Typically, the legislature set a debt limit and authorized the governmental jurisdiction to issue bonds up to that limit. Portland's debt was limited to $100,000.[5] In this one piece of legislation creating the Water Committee, the state legislature established a debt limit seven times that of the state's largest city – and gave the authority not to the elected officials of the city required to pay back the bonds but to the fifteen member Water Committee created by the legislation.

This act was challenged almost immediately. The owners of private water works sued the Water Committee, challenging the constitutionality of the charter amendment. The decision was finally rendered by the Oregon Supreme Court. Justice William Thayer ruled, "It would be difficult we think, to find any class of cases in which the right of eminent domain is more justly or wisely exercised than in the provision to supply our crowded towns and cities with pure water . . ."[6]

At their first meeting on December 8, 1885, the Committee elected Henry Failing as President, a post he remained in for twelve years. Equally important was the influence of William S. Ladd until his death in 1893. The first step was the acquisition of the existing Portland Water Company. Following Thayer's decision, that

sale was completed by the end of 1886 for $464,551. It subsequently also acquired the Crystal Springs Water Company for $150,000.

The second step was to locate a water source for the long-term. The committee initiated action in January, 1886, when it advertised to acquire water rights. One offer came from Charles Talbot and A. G. Cunningham who contacted the Water Committee regarding Bull Run. As early as 1883, Talbot, an engineer for the Northern Pacific Railroad, had conceived of supplying water from Bull Run Lake to Portland. He convinced Cunningham to join with him in acquiring land and riparian rights from the Oregon & California Railroad. Talbot and Cunningham offered the land and rights to the Water Committee for $130,000 ($2.5 million in 2001 dollars).

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

The investigation of the Bull Run vicinity in 1886 was challenging. The watershed was "a rugged wilderness impassible for a horse and difficult for a man to penetrate."[7] The steep hillsides were obstructed with standing and fallen timber, interlaced with vines and briars. Upon reaching Bull Run Lake, at an elevation of 3174 feet above sea level and approximately 50 miles from Portland, Smith deemed the water as pure and clear as any they had ever seen. Delivering this water to the city of Portland, however, posed a formidable task. Smith faced several false starts in attempting to define a specific course, however, after five months in the wilderness, Smith and his party reported to the Committee on Bull Run that a pipeline could and should be built.

The Water Committee then set about securing riparian rights and rights-of-way for the pipeline. They sent Smith back towards Bull Run to secure pipeline rights-of-way and riparian rights from individual settlers. Typically, given the imposing landscape, owners were selling their water rights for $1-5 ($18-$90 in 2001 dollars). The Committee also began negotiations with Talbot and Cunningham regarding their claims to water rights, eventually securing those rights for one sixth of Talbot and Cunningham's original asking price, or $21,000.

As much of watershed remained unsettled and subject to the Donation Land Act, the Water Committee also set about courting the federal government. Early in 1892, the state's congressional delegation urged President Benjamin Harrison to exclude Bull Run lands from future settlement or sale. The President had received authority for such set-asides the year earlier with the "Act to Repeal Timber Culture Laws". On June 17, Harrison signed a proclamation declaring Bull Run as the nation's fifth national forest reserve.

The Committee also continued to grapple with the existing supply. Demand was increasing by an average of 25% per year. Even though a new source had been located, the Committee realized that capacity from the old

Portland Water Company would need to be expanded until Bull Run could be brought online. The pumps were running 24 hours a day and yet the reservoir levels continued to drop, forcing the Water Committee to shut off the water flow during some peak periods.

With $600,000 of the initial $700,000 in bond revenues already spent as early as 1887, the Committee sought legislative authority to issue another $500,000 in tax-free bonds. Though passed by the legislature, Democratic and populist governor Sylvester Pennoyer vetoed the authorization, objecting to the bond's tax-free provisions benefiting the wealthy and banking interests. In the following legislative session in 1889, the Water Committee sought $1.5 million in tax-free bonding capacity to pay for expanding existing capacity and for the Bull Run system. Again, it passed the legislature but was vetoed by Governor Pennoyer – ostensibly now because the water originated from Mt Hood glacier run-off and "would cause goiter to the fair sex of Portland."[8]

Given the challenges of getting authority through the Governor and Portland's population growth, the Water Committee reassessed their vision for the Bull Run system. The proposed system was projected to provide 15 million gallons per day at a construction cost of $1.4 million. The committee reassessed demand projections and re-engineered the Bull Run system to produce 24 million gallons per day. This enlarged system would cost $2 million. The Committee then went to the 1891 state legislature for bonding authority of $2.5 million. To undermine Pennoyer's possible veto, they demonstrated that the water source was not from glacier run-off and stipulated that the bonds would not be tax-free. The legislature passed the authority and Pennoyer approved the bill. An inadvertent discrepancy in the legislation's bonding authority and limits however yet delayed the project another two years. In 1893, the discrepancy was corrected and the Bull Run challenge now transformed from money and politics to engineering.

The Bull Run System: While the Water Committee worked on securing the money, Isaac Smith worked on the engineering and eventually would oversee its construction. Smith was born in Fredericksburg, Virginia. A graduate of Virginia Military Institute, he devoted his entire career to civil engineering. He was a captain in the Engineer Corps of the Confederate Army, afterwards engaging in public land surveys in the state of Washington. Settling in the Pacific Northwest, he built lighthouses at Shoalwater Bay and platted the gas and water works in Tacoma, Washington. As engineer for the Northern Pacific Railroad, he located the line from Portland to Kalama, Washington and from Kalama to Tacoma, Washington, as well as the line across the Cascade Mountains from Tacoma to the Yakima and Columbia Rivers. Smith also built the system of steamboat locks around Willamette Falls in Oregon City, Oregon.

Smith had been appointed Chief Engineer by the Water Committee on December 22, 1885. In 1886, after surveying a line from Bull Run, Smith presented to the Water Committee "Specifications of Works for the Water Supply of the City of Portland." In that document, he outlined the requirements for headworks, pipelines and reservoirs. He refined his design and in 1891, Smith presented another report to the Committee in which he stated: "A high and low service reservoir are needed for the economical operation of the works, and to compensate for the varying consumption of water at different portions of the day."[9] The high service reservoir was at a higher elevation and served customers whose home or business were at a greater elevation than those

served by the low service basin. As design work progressed, he solicited bids for materials and construction costs, including the construction of roads along the pipeline. All this preliminary work would result in speedy construction.

Smith's overall gravity based design was both simple and sophisticated. He established a headworks 710 feet above the Willamette River on the Bull Run River and ran pipeline west 24 miles to Mount. Tabor. With a daily capacity of 24 million gallons, the 33-42" riveted steel pipes ran initially parallel to the Bull Run River to avoid rockslide areas. From roughly the confluence of the Sandy and Bull Run Rivers, the pipeline then ran in a westerly direction through Gresham. With standpipes at Lusted and Grant's Butte, the end point was Mt. Tabor Reservoir Number 1 at 402 feet above the Willamette.[10]

Once at Reservoir 1, the system began to distribute the water. From Mount Tabor, 1 million gallons per day would flow directly to East Portland for "high" service; four million gallons per day would flow nearby to southeast to Reservoir 2 at 220 feet above the Willamette with distribution to East Portland; and nineteen million gallons per day cross under the Willamette and would flow west 6 miles to Reservoir 3 at City Park (now Washington Park) 290 feet above the Willamette River. At Reservoir 3, four million gallons per day would go to "high" service in West Portland and fifteen million gallons would go to nearby Reservoir 4, 70 feet below Reservoir 3 and 220 feet above the Willamette River. Thirteen point five million gallons of this would provide low service to Portland and 1.5 million gallons would be pumped hydraulically west to "extra high" service (this original hydraulic pump, known as Thumper, is housed in Pump House 1 and still operates.)[11]

Building the first pipeline from Bull Run in the pre-automobile steam and muscle era of the 1890s was a difficult and heroic physical feat. In 1891, Smith convinced Multnomah County to construct four miles of roads and bridges west from the Sandy River through a landscape "covered with dense growth of brush and small timbers."[12] The road six miles east from the Sandy River to the Bull Run headwaters was to be the work of the Water Committee, completed largely by Italian immigrants in 1893-94. The land was cleared by hand because the forest was too thick for horses. Specifications called for all trees, logs and brush to be cleared along 33' right of way with trees being cut to a maximum height of twelve feet. The entire conduit required the excavation and refilling of 270,000 cubic yards of dirt, moving 10,000 cubic yards of loose rock, and cutting through 2,000 cubic yards of solid rock. The pipeline itself was the work of Hoffman & Bates Construction Co., which used six-horse wagon teams to haul 17' five-ton pipe sections along dirt roads to be riveted in place; of particular challenge was laying 2,000 feet of pipe along the bed of the Willamette River.

Construction on the Reservoirs 1, 2, 3 and 4 and ancillary buildings occurred simultaneously with the pipeline. The goal was to complete the reservoirs by January, 1895 when the first Bull Run Water was to flow to Portland. Excavation began in 1893 and was completed in 1894. Laborers were readily available due to the "depression," and with good planning, the work moved along at a rapid pace.

The engineering team of Charles Oliver and James Dix Schuyler worked under Chief Engineer Isaac W. Smith in the construction of the reservoirs. Oliver was born in Iowa in 1856 and came to Oregon in 1864. He was

educated in Portland primary and secondary schools, but apparently acquired his engineering skills on the job rather than in the classroom. Prior to his employment by Smith, Oliver had worked in the City Engineer's office as chainman and roadman. Following 1895 he continued to work for the Water Department, primarily at the Bull Run headworks. James Dix Schuyler of Los Angeles, California was hired as a consulting engineer. His brother Phillip, was the first secretary of the Portland Water Committee. Schuyler designed and constructed the Sweetwater Dam near San Diego and engineered the Hemst Dam in Riverside County, California.

Of the construction, Oliver observed: "I was superintendent of construction on Reservoirs Nos. 1, 2, 3 and 4 during the great depression of 1893 and 1894. They did not call it a depression then, but used the more expressive term, 'hard times'. The Water Committee built all of the reservoirs by day labor, except the excavation that was let by contract. Lawyers, doctors, dentists, accountants, and all classes of men were employed on the work as day laborers at $1.50 per day for common labor, and they were glad to get it. Men with families were employed almost exclusively. At times we had as many as 1500 men on the payrolls for the four reservoirs."[13] In total, the reservoir system had 66 million gallons combined capacity, enough to supply the city for 4-5 days.

Completion: The conduit and distribution system took nearly two years and $2.4 million to build. As the project neared completion, the Water Committee issued a report on its operations in October, 1894:

Millions of dollars have been spent, a great public work carried to completion; no scandal exists; no charges of mal-administration are made; not even a hint of speculation is suggestion . . . The work of the Committee is practically done. It must be judged by its works. The City of Portland will have a supply of water which for purity is probably unexcelled anywhere in the world.[14]

Upon completion, an Oregonian article of January 1, 1895 stated, *When this work is completed the brilliantly lighted walks surrounding the reservoirs will be the most popular promenades in the city during the evenings of the warmer months of the year ...These walks afford a delightful promenade for visitors who are separated from the basin itself by a concrete wall surmounted by a neat fence. All the reservoirs have been constructed in the most substantial manner and the effect of harmony it was possible to obtain by a little attention to the adornment of the finished work has not been overlooked by the engineers in charge."*[15]

Meeting their construction deadline, on January 2, 1895, Bull Run water flowed into the city for the first time. In an ironic twist, it was Governor Pennoyer, perhaps accustomed to the fuller flavor of Willamette River water, who took the ceremonial first drink and announced its inferior quality: "No Body!"[16]

Washington Park Reservoirs: Situated in a natural ravine, the site for Reservoirs 3 and 4 was determined by geography and availability of land. All of Reservoir 3 and most of 4 is located in the original 40.78-acre portion of Washington Park, originally called City Park. In 1871, the city had purchased the land from Amos King for $32,000. The area bounded by Lovejoy on the north, Jefferson on the south, 18th on the east and into Washington Park to the point at which 33rd Avenue would have connected was originally part of King's

Donation Land Claim. The remainder of the land for Reservoir 4 to the south was purchased by the Water Committee for the complex.

These reservoirs and ancillary buildings are both creatively engineered and aesthetically attractive. The method of reinforced concrete construction adopted for the water system was quite innovative at the time. Although unreinforced concrete was nothing new at the time, reinforcing methods were in the early experimental stages. The method of concrete construction used for the reservoirs had a patent, known as the "concrete and twisted iron patent." The concrete finish on the buildings was also patented, as were the circular lights cast in the concrete of the gatehouse floors and pump house roof, and even the concrete mixer itself. All these patents were held by Ernest Leslie Ransome, considered by historians as the leader in early reinforced concrete technology in the United States.[17]

The concrete work for the reservoir buildings is notable, not only because it was technically innovative, but also because of its aesthetic qualities. Wooden formwork was constructed to give the poured concrete the general outlines of stone blocks. Elaborate scaffolding allowed workers to climb up the outside of the structures after each pour of concrete. When the beveled formwork was removed, the concrete was tooled and bush hammered to simulate rusticated stone. This construction technique differs from the more common "cast stone" block construction that was often used in residential construction at the time. The concrete itself was notable. Josson brand, imported through Antwerp, Belgium, was used until shipments were delayed in the middle of the project. Instead of holding up the project, North brand cement, available locally, was substituted.

All of the reservoir basins, with the exception of Reservoir 2, now demolished, were "lined with concrete strengthened with twisted iron placed at intervals of 10 feet in each direction, and anchored at intervals of 10 feet by means of anchors driven to a depth of from 3 to 20 feet into the slopes forming the sides of the reservoirs and imbedded in concrete."[18] The concrete basins were lined with asphalt, imported from a California firm, Alcatraz Asphalt refinery. "The asphalt used in the reservoirs is pure natural bitumen...."[19]

Contracts for the design of the ornamental wrought iron fences and lampposts around the 1894 reservoirs were awarded to Whidden and Lewis, who also designed Portland City Hall in 1895. On September 20, 1894, the Water Committee contracted with Johann H. Tuerck to manufacture the fences and lampposts from wrought iron. Tuerck, born in Germany in 1863, was trained in Bayreuth, Munich and Nuremberg before he came to America in 1888. Eighteen months after arriving in Portland in 1890 he established Portland Art Metal Works. The Oregon Chapter of the American Institute of Architects presented Tuerck with their premier award in June, 1928, in honor of his "exceptional ability."[20] He is credited with the work for major banks, clubhouses, churches and residences built in Portland from the 1890s. Some of his projects included the main entrance door of the Julius Meier home, the conservatory entrance of the Harry A. Green home, as well as work for the Congress Hotel and the Temple Beth Israel. The ornamental wrought iron fences and lampposts on the Reservoirs are prime examples of his work.

Washington Park Reservoir Repairs, 1894-1905: As Reservoir 3 in City Park was being filled on December 14, 1894, cracks were observed in the bottom. It was emptied on December 20th. Reservoir 4 was partially filled from December, 1894 to the following September, when cracking forced engineers to empty it also. Trouble with the new, expensive reservoirs caused embarrassment and "charges of maladministration were made" concerning who was at fault. Just two days before New Years Day, 1895, the Oregonian ran the flattering spread on the Bull Run system and the reservoirs, another article highlighted the problems with Reservoirs 3 and 4. The article entitled, "Cracks in the Reservoir," ran on December 30, 1894: "Members of the water committee are passing sleepless nights over this trouble," it read. Blame was primarily laid on James D. Schulyer, the highly paid Los Angeles-based consulting engineer. Schuyler. had conveniently left the Portland area to be back home for the holidays when the cracking became apparent. Debate followed on whether to complete the last $500 payment owed to him.

Eventually repairs were made and the basins partially filled. During 1896, as the cracks increased in number and size, the basins were only partially filled or kept empty. It soon became obvious that the hillside above the two reservoirs was sliding. The slide was quite extensive: 29.27 acres in area, 3,400,000 tons of soil. To solve the drainage problem, believed by the engineers to be the cause of the slide, the Water Department constructed a system of drainage tunnels. Elevators lowered workmen 115 feet below grade, where they excavated and shored up the six-foot high tunnels. The tunnel system was finally completed in 1905. The tunnels are still in place, though filled with gravel.

With the hillside stabilized, the reservoirs could also be repaired and put back into service. By 1904 Reservoir 4 had evidently been completely empty for sometime, as the Oregonian of July 31, 1904 reported that there were "...shrubs growing luxuriantly in the bottom...subsisting on soil which has washed through the broken walls. Squirrels live in the bushes..." Repairs were completed and the reservoirs were back in service in 1905. The work was done under the supervision of engineer D. D. Clark, who replaced Schuyler. Clark was also responsible for the design of the 1911 Reservoirs 5 and 6 in Mount Tabor Park.

Remarkably, the water system had been designed so that Bull Run water flowing to the reservoirs could bypass the reservoir basins and be routed through the gatehouses directly to consumers. It was, therefore, possible to maintain uninterrupted service to Portland's west side during the years 1895 to 1905 when Reservoirs 3 and 4 were in and out of service.

Contracts for all the basins seem to indicate that they were originally to be lined with brick and then coated for water proofing instead of being constructed with concrete panels. As the bricks were not available when construction began, concrete was utilized. Had brick lining been used, the cracking of the basins of Reservoirs 3 and 4 might have been avoided.

Completing the Bull Run System: In 1903, the city of Portland reorganized its government and the 15-member Water Committee was replaced by a 5-member Water Board. The shift in oversight did not appreciably change the operations or policies. One of the first actions of the Water Board was to endeavor to restrict public access

to the approximately 120 square mile Bull Run watershed. In December, 1903, the Water Board officially requested limited entry, placing the site off limits to the public. President Theodore Roosevelt agreed that with the unique character of the land and on April 28, 1904 signed Public Law #206, popularly known as the Bull Run Trespass Act. Currently this watershed is still jointly managed by the city of Portland and the U.S. Forest Service. Public access is restricted.

While the Water Committee aggressively sought to create a long-term water system with capacity for 24,000,000 gallons per day, Portland's population continued to grow exponentially. Following the 1905 Lewis & Clark Exposition, Portland boasted 172,000 residents; nearly three times the number when construction on the Bull Run system began in 1893.

Shortly after the Exposition, the Water Board decided to build a second conduit, a $3 million project that included two additional reservoirs and additional capacity of 50 million gallons per day and storage capacity of 125 gallons. While this project too would be funded by bonds, the process was considerably less rigorous. In 1902, Oregon voters had approved the Initiative and Referendum Amendment to the state constitution. This change allowed voters to create laws by direct ballot. In 1906, the voters approved an initiative that gave Oregon cities the right to amend their own charters. This change eliminated the need to go to the state legislature to raise debt. The City Council then referred the Water Board's request to the city voters, who narrowly approved the measure.

After some public debate, it was decided to build two additional reservoirs on Mount Tabor and, at the same time that land was being acquired for the reservoirs, to purchase additional land for creation of a public park. Early in 1909 sites for the reservoirs were secured and in October of that same year contracts were awarded to Robert Wakefield & Company for construction of Reservoirs 5 and 6. Both reservoirs were completed in 1911. Since that time no new open reservoirs have been constructed in Portland and the original reservoirs continue to supply water to Portland. By 1911, the physical structure of the Bull Run system was in place with headquarters, two conduits and six reservoirs.

In 1913, the city charter was revised and the Water Board transformed into a city bureau under the supervision of a City Commissioner. With the Bull Run system in place, the Bureau continued to concentrate on expanding capacity and distribution to meet the growth of the city. Though changes were made to the delivery system and the headwaters, the Water Bureau made no significant modifications to the aesthetic design of the reservoir system. In 1952, the Bureau completed a fourth conduit, with capacity of 100 million gallons per day. In 1981, an underground reservoir was added at Powell Butte with capacity of 50 million gallons. In addition, the system has 69 smaller tanks and standpipes with a capacity of 68.2 million gallons located throughout the city.

Community Planning and Development in the Progressive Era

The Progressive Era was characterized by reform movement in all aspects of American life – labor, politics, engineering, recreation, and public health. The National Municipal League was formed in 1894 to review

municipal works in a direct response to water-borne illnesses, epidemics, and other health concerns. The trend toward public ownership of utilities expanded. In 1896 less than half of U.S. cities owned their water works but by 1915 two thirds did.

The legislation to create Portland's Water Committee designated fifteen prominent businessmen to develop a municipal water system. While the bonds to build the system were guaranteed and paid for by Portland's general fund, it was not until 1913 that the Bull Run Water system came under the direct control of the city government. Prior to that time, the Water Committee was solely responsible for providing water to the citizens of Portland. The undertaking was not only remarkable for its architecture and engineering but as a relatively early example of private-public partnership.

The development of the Bull Run Water System is best understood from the perspective of public works historian Martin Melosi. As he states in The Sanitary City: Urban Infrastructure in America from Colonial Times to the Present, "By the late 19th century there was a strong feeling among municipal leaders that any respectable community needed a citywide waterworks." Melosi continues that the investment in a municipal waterworks was the first municipal system "that demonstrated a city's commitment to growth:"

A healthy community was an essential ingredient in the process of growth. Many city leaders concluded that control of the sanitary quality of its water service would be difficult if the supply remained in private hands. The push for municipal ownership, therefore, had as much to do with the desire to influence the growth of the cities as to settle disputes with private companies over specific deficiencies.[21]

Governor Pennoyer considered the Willamette a sufficient source of drinking water, as did business leader Simeon Reed. The Willamette River flows north, dividing the city into an East and West side. It was a readily accessible water source. It would have been much less expensive to develop a water source right in the city rather than to seek one over 50 miles to the East. Public health trends, at the time, did not seem to focus on drinking water, but rather sewers and refuse collection. Technology existed to filter impurities from water but no move was made by the Water Committee to institute filtration for the Willametter River water in the nine years it took to create the Bull Run system. The emphasis on a quality water source and the desire to find an alternative to the Willamette River, already of questionable quality due to industrial and sewage dumping, was remarkably forward looking and Portlanders and wholesale community customers continue to benefit from Bull Run's quality and cheap delivery system even today.

Despite the enormous expense, the Water Committee was determined to provide quality water and plenty of it. The first investment was $700,000 in bonds, seven times the city's debt limit and an approximate investment of $15 per capita. By the end, the Water Committee spent $5,400,000 in bond revenue (the equivalent of $100 million today) costing approximately $31 per capita. At the time, water rates were roughly $12 per household. The bond obligation of property tax revenues to pay for the water system far exceeded anything the city contemplated before. The city itself was limited to $100,000 in indebtedness. As late as 1907, the city had only

seven outstanding bonds totaling just less than $9 million. Of these, the water system made up two-thirds. The next closest bond was bridges at $1.1 million.[22]

In an era of laissez faire capitalism, municipal ownership of utilities was unusual especially one created by the business leaders. Although the same arguments made in 1913 regarding public ownership of the water supply held true for other utilities, such as trolley, gas, electricity, telegraph or telephone systems, water remained the sole municipally owned utility in the city until mass transit was acquired in the mid-20th century.

The dedication of the Water Committee represents a business-led initiative to build Portland into a major city. From this early successful initiative, these and other business leaders led a series of efforts that are highlighted by Whidden & Lewis's City Hall in 1895, the Portland Park Association of 1898, the 1905 Lewis & Clark Exposition, and the Greater Portland Plan of Edward H. Bennett in 1912 (Bennett was the associate of Daniel Burnham of the "White City" fame.). The sum total of these city-building activities served as the catalyst that launched Portland's great growth spurts in the 1910s and 1920s and have contributed to the ongoing "livability" of the city of Portland.[23]

Architecture, Landscape and Engineering in the Progressive Era

"... beauty has always paid better than any other commodity and always will." Daniel Burnham, Designer of Chicago's "White City."[24]

The City Beautiful movement arose out of the Progressive Era. Some contend that the City Beautiful ideals were launched at the 1893 World's Columbian Exposition in Chicago. Designers such as architect Daniel Burnham and landscape architect Frederick Law Olmsted, of New York's Central Park fame, created the "White City" to illustrate how beautiful the built environment could be in a well-planned city. European styled-classical beauty coexisted with the most modern technological inventions. Moving sidewalks and modern lighting paired with buildings designed in a neoclassical style. Carefully implemented street plans included landscapes, outdoor sculpture, and grand water features.

The Exposition brought city planning to the forefront. Many architects and landscape designers were influenced by this Exposition and they brought their excitement back to their respective communities. Professional publications and promotional literature reached across the country. Completed in 1894, the reservoirs were designed and constructed at the start of the excitement about the Exposition. H.W. Corbett, business leader on the original Portland Water Committee when the reservoirs were designed and built, went on to chair the 1905 Lewis and Clark Exposition commission in Portland.

The Columbian Exposition of 1893 show-cased water as a primary aesthetic feature in city planning. The exploitation of the waterfront as a space for beauty and public recreation was a major innovation. Before 1893 water frontage was primarily commercially exploited. Though the Olmsted firm preferred naturalistic water features, they appreciated the aesthetic character that open water brought to a landscape, even with the sterile

banks and contrived shapes that water storage reservoirs usually exhibited. In The Relation of Reservoirs to Parks, written in 1899, Frederick Law Olmsted, Jr. discusses the virtues of reservoirs in parks and sums up his views as follows:

All reservoirs, have, in addition to their essential quality of storing water, an element of landscape effect; namely, that of an expanse of clear, sparkling water. This same element forms the chief feature of many landscapes in public parks, where it is created at large cost, and it is clearly a thing of great value to the public when it can be made available. In itself, regardless of its outline or setting, a body of water is beautiful and refreshing, and its value to the public is so well recognized that provision is very often made for giving the public access to the enclosure about a reservoir, whence it surface may be seen.[25]

Reservoirs 3 and 4 clearly benefited from thoughtful planning, both in the design of the gravity fed water system, still integral to water delivery in the city today, and in the architecture that graced the landscape. Although formal, the oval and round shapes of the gatehouses enhance the romantic character of the setting, conjuring images of "Old Europe." This romanticism was typical of the period.

Concrete was only beginning to be considered a serious building material when the reservoirs were constructed. Collectively, the Bull Run system as built in 1894 is perhaps the earliest large application of reinforced concrete in the state and one of the earliest major reinforced concrete projects in the country. The headwaters, now demolished, and reservoirs with associated buildings were all constructed using a reinforced concrete system call "the Ransome System," created in a series of patents by Ernest L. Ransome. The method of concrete construction used for the reservoirs had a patent, known as the "concrete and twisted iron patent." The concrete finish was also patented, as were the circular lights cast in the concrete of the gatehouse floors and pump house roof, and even the concrete mixer itself.

Reinforced concrete first developed as a construction technique in the 1850s. The earliest accepted use of reinforcing in concrete was by Frenchman Jean-Louis Lambot in the early 1850s. He reinforced his concrete boats with iron bars and wire mesh. He also had some plans for using this material in building construction because he applied for patents in France and Belgium in 1856. About the same time, in 1854, William Wilkinson of Newcastle-on-Tyne erected a small two-story servant's cottage reinforcing the concrete floor and roof with iron bars and wire rope. Wilkinson took out a patent on his technique and is generally credited with constructing the first reinforced concrete building. In the United States, the first building in reinforced concrete was by American mechanical engineer, William E. Ward, in Port Chester, New York, completed in 1875. Over the next quarter century, Ernest L. Ransome pioneered the development of reinforced concrete in the United States, while Europeans G. A. Wayss of Germany and Francois Hennebique of France paralleled Ransome's innovations on the continent. Architectural critic Ada Louise Huxtable has described Ransome as the "Father of reinforced concrete" "As engineering and design, Ernest Ransome's work deserves a prominent place in the story of American architectural advance."[26]

Ernest Leslie Ransome (1844-1917) was born in Epswich, England. His family had engaged in the manufacture of agricultural machinery since the late eighteenth century and some of Ransome's ancestors had been inventors as well. Between 1844 and 1867 his father, Frederick Ransome, developed and manufactured a patented concrete stone. Following an apprenticeship in the family business, Ernest came to the United States to exploit his father's patent. He settled in San Francisco where he established a business to manufacture concrete blocks. His first notable innovation came in 1884 when he used twisted square bars as reinforcement, employing the technique in building the Arctic Oil Works completed that year. The round bars previously used had not established a good connection with the surrounding concrete. These twisted square bars, which came to be known as "Ransome bars," were used as reinforcement for Portland's reservoirs.

"Up to about 1888 my work in reinforced concrete was largely confined to what we now term small and unimportant structures," wrote Ernest Ransome in a contribution to the history of Reinforced Concrete.[27] His first major work was the 3-story Bourn & Wise wine cellar at St. Helena, California and the Academy of Sciences Building in San Francisco, both in 1888. The following year saw construction of the Alvord Lake Bridge in Golden Gate Park, the first reinforced concrete bridge in the United States. Besides the 1894 Portland Reservoirs, major works known using the Ransome system included the 1894 Stanford Museum in California and industrial buildings such as the 1897 Pacific Coast Borax Building in Bayonne, New Jersey, the 1903-04 Kelly and Jones Machine Shop in Greensburg, Pennsylvania. One of the largest projects using the Ransome system was the United Shoe Machinery complex in Beverly, Massachusetts, begun in 1902; that site was 74 acres and 3,340 linear feet. The same year, using the Ransome system, the 16-story Ingalls Building (Cincinnati, Ohio) was the first reinforced concrete skyscraper. It remained the tallest reinforced concrete building until 1923 when the Medical Arts Building was constructed in Dallas, Texas. Other concrete achievements utilizing the Ransome system in the era include construction of the first concrete street in Bellefontaine, Ohio in 1891, and the construction of the reinforced concrete Harvard Stadium in Cambridge, Massachusetts in 1904.

Summary of Significance

Of the more than 5,000 properties included in the last Portland Historic Resource Inventory only 52 were considered Rank 1 and of the 52, the reservoirs of Mount Tabor and Washington Park accounted for 6 of them. Quotes from the city's recent evaluation of the reservoirs offer a good summary of this resource:

...Reservoirs 3 and 4 are situated in the jewel of the Portland Parks System, Washington Park...The great amount of historical documentation available on these properties indicates their historical importance to the City. The reservoirs are historically significant as examples of early engineering, and serve as monuments to the social history of the City's growth and development. They provide an early example of a planned landscape, including the views and vistas into and out of the landscape."[28]

Footnotes

[1] Lutino, Cielo. Merker, B., Green, R. "The City Beautiful Movement and Civic Planning in Portland, Oregon 1897 – 1921 National Register of Historic Places Multiple Property Nomination." 2001.
[2] Consumer Price Index, 2001 (All inflation estimates based on this reference.)
[3] Melois, Martin V. The Sanitary City: Urban Infrastructure in America from Colonial Times to the Present. (Baltimore: Johns Hopkins University Press, 2000.)
[4] "Waterworks for the City of Portland, Oregon" (Portland, OR: R. H. Schwab & Bro, 1886.)
[5] Ibid
[6] John B. David, David P. Thompson and Jacob Kamm v. The City of Portland, et al, October 28, 1886.
[7] City of Portland, Oregon. Water: Portland's Precious Heritage. (Portland, OR: City of Portland, 1983.)
[8] Ibid.
[9] Ibid.
[10] Ibid.
[11] Montgomery Watson Harza. Open Reservoir Study, Draft TM 5.7 Facilities Evaluation, City of Portland. August, 2001.
[12] Oregonian, January 1, 1895, p. 16-17.
[13] Quoted in City of Portland, Water: Portland's Precious Heritage (Portland, OR: City of Portland, 1983) p. 32.
[14] Ibid.
[15] Oregonian, January 1, 1895, p 16-17.
[16] Ferriday, Virginia Guest. Portland Reservoirs Nos. 1, 2, 3, 4, 5, and 6 (Thematic National Register Nomination), 1984.
[17] Oregonian, January 1, 1895, p. 16-17.
[18] Ibid.
[19] Ibid.
[20] Newspaper, unnamed. "Honor Paid Craftsman," June, 1928.
[21] Melois, Martin V. The Sanitary City: Urban Infrastructure in America from Colonial Times to the Present. (Baltimore: Johns Hopkins University Press, 2000.)
[22] Proposed Amendment to Section 227 of the Charter of the City of Portland, November 19, 1908, p. liv-lv.
[23] Abbott, Carl. The Great Extravaganza: Portland and the Lewis and Clark Exposition (Portland, OR: Oregon Historical Society 1981); City of Portland, Proposed City Beautiful Multiple Property Submission, 2000.
[24] Kallus, Melvin. Frederick Law Olmsted: The Passion of a Public Artist. (NY: NY University Press: 1990.)
[25] Olmsted, Jr., Frederick Law. The Relation of Reservoirs to Parks. (Boston: Rockwell and Churchill Press, 1899.)
[26] Quoted in www.cummings.com/arc.html.
[27] Ransome, Ernest L. "Reinforced Concrete Buildings." From A Selection of Historic American Papers on Concrete 1876 – 1926.. American Concrete Institute: Detroit, Michigan, 1976.
[28] Montgomery Watson Harza. Open Reservoir Study, Draft TM 5.7 Facilities Evaluation, City of Portland. August, 2001.

BIBLIOGRAPHY

Published

Abbott, Carl. Portland. Planning, Politics and Growth in a Twentieth Century City. (Lincoln: University of Nebraska, 1983).

Abbott, Carl. The Great Extravaganza: Portland and the Lewis and Clark Exposition (Portland, OR: Oregon Historical Society 1981).

Bluemenson, John J. G. Identifying American Architecture. (Nashville, TN: American Association for State and Local History, 1977).

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

Corning, Howard McKinley, Dictionary of Oregon History (Portland, OR: Binford & Morts, 1956).

Cowan, Henry J., Design of Reinforced Concrete Structures (Englewood, Cliffs, NJ: Prentice Hall, Inc., 1982)

Davis New Commercial Encyclopedia: Washington, Oregon and Idaho (Seattle, WA: Ellis A. Davis, 1909)

Gayle, M., Waite, J., Look, D. Metals in America's Historic Building: Uses and Preservation Treatments. Wash. D.C.: Preservation Press, National Trust for Historic Preservation, 1976.

Kallus, Melvin. Frederick Law Olmsted: The Passion of a Public Artist. (NY: NY University Press: 1990.)

MacColl, E. Kimbark. Merchants, Money, & Power: The Portland Establishment 1843-1913. (Portland: The Georgian Press, 1988).

MacColl, E. Kimbark. The Growth of a City: Power and Politics in Portland, Oregon 1915-1950. (Portland: The Georgian Press, 1979).

MacColl, E. Kimbark. The Shaping of the City: Business and Politics in Portland, Oregon 1885 to 1915 (Portland: The Georgian Press, 1976).

Melosi, Martin V. The Sanitary City: Urban Infrastructure in America from Colonial Times to the Present. (Baltimore: Johns Hopkins University Press, 2000).

Oliver, Charles E., "The Portland Water Supply," Pacific Engineer, (April, 1930).

Olmsted, Frederick Law Jr., The Relation of Reservoirs to Parks. (Boston: Rockwell and Churchill Press, 1899).

Ransome, Ernest L. "Reinforced Concrete Buildings." From A Selection of Historic American Papers on Concrete 1876 – 1926.. American Concrete Institute: Detroit, Michigan, 1976.

Roth, Leland M. A Concise History of American Architecture. (NY: Harper & Row, 1979.)

Roth, Leland M. McKim, Mead & White Architects. (NY: Harper & Row, 1983.)

Tishler, William H. American Landscape Architecture: Designers and Places. (Wash. DC: The Preservation Press, 1989.)

Turneaure, F. E. and Russell, H. L., Public Water Supplies (New York: John Wiley & Sons, 1901)

Vaughn, Thomas and Ferriday, Virginia Guest. Space, Style and Structure: Building in Northwest America. (Portland: Oregon Historical Society, 1974.)

Other Sources

Auburn University web site (**www.auburn.edu**)

Bennet, Edward H. "The Greater Portland Plan." Portland, OR 1912.

City of Portland Web Site (www.ci.portland.or.us).

City of Portland Archives

City of Portland Water Bureau files.

Columbia University web site (http://caho.columbia.edu/main/topics/APUSH-22-B-2/index.html).

Curran, Christine. "Laurelhurst Park National Register of Historic Places". 1999.

Ferriday, Virginia Guest, et. al. Historic Resources Inventory of Portland. (Portland, OR: City of Portland, 1984).

Ferriday, Virginia Guest, "Portland Reservoirs Nos. 1, 2, 3, 4, 5, and 6, Thematic National Register Nomination". (not formally submitted)

Guzowski, Kenneth James, "Portland's Olmsted Vision (1897-1915): A Study of the Public Landscapes Designed by Emanuel T. Mische in Portland, Oregon." Thesis, University of Oregon, June, 1990.

Heritage Consulting Group historic Portland research files.

Heritage Investment Corporation, "Portland Reservoir No. 2: Courtyard Plaza: Historic American Engineering Record". 1990.

Howe, Kathleen. "Jerome Park Reservoir National Register Nomination". 2000.

Jenkins, Candace. "Water Supply System of Metropolitan Boston Thematic Multiple Properties Submission". 1989.

Lutino, Cielo. Merker, B., Green, R. "The City Beautiful Movement and Civic Planning in Portland, Oregon 1897 – 1921 National Register of Historic Places Multiple Property Nomination." 2001.

Montgomery Watson Harza, *City of Portland Water Bureau Open Reservoir Study, Facilities Evaluation*, August 2001.

Montgomery Watson Harza, *City of Portland Water Bureau Open Reservoir Study, Phase I Summary Report*, January 2002.

Multnomah County Tax Assessor Records

Newspaper, unnamed. "Honor Paid Craftsman," June, 1928.

The Oregonian (May 10, 1890, p. 6; September 20, 1894, p. 10; September 25, 1894, p. 12; January 1, 1895, p. 16-19; July 31, 1904, p. 12; March 18, 1906, p. 15; July 13, 1906, p. 11; July 22, 1906, p. 10; October 8, 1906, p. 12; November 5, 1908, p. 14; March 30, 1909, p. 16; January 1, 1912).

Pitts, Carolyn. "Fairmount Water Works, National Register Nomination" 1976.

Preparer unknown. "Reservoir, Houston Heights Waterworks." National Register Nomination. 1980.

Radford University website (http://www.radford.edu/~wkovarik/hist1/timeline.text.html).

Sanborn Fire Insurance Maps for Portland, Oregon (1889, 1901, 1909, 1951).

University of Memphis website (www.ce.memphis.edu)

University of Mississippi website (www.olemiss.edu)

VERBAL BOUNDARY DESCRIPTION

Washington Park Reservoirs Historic District is located in the eastern section of Washington Park in southwest Portland, Multnomah County, Oregon. The boundaries proposed for the National Register nomination include: beginning on the southwest and continuing north on the curb line of SW Murray where it is adjacent to the southwest finger of Reservoir 4 at the perimeter chain link fence line to the curve above Reservoir 3 continuing on the curb line east and then south to the intersection with SW Cedar Street where the boundary continues south on the curb line of SW Cedar Street to the location where SW Cedar Street makes a curve to the east continuing south at the trail head following the trail down the east side of Reservoir 3 down the 48 stairs and continuing on the fence line down the steep slope to the historic fountain which sits just outside the fence line where the boundary juts out to two feet around the fountain and then back to the fence line to the northeast corner of the chlorination building where the boundary turns west to the northwest corner of the building where the boundary turns south to the southwest corner of the building where the boundary turns east to the southeast corner of the building and the boundary continues south along the base of the earthen dam in a straight line south to the perimeter chain link fence turning southwest the length of the south side of Reservoir 4 and continuing north along the chain link fence through the steep and rugged ravine to the point of origin at the curb line of SW Murray following the natural perimeter of the steep ravine that holds the resource as depicted by the heavy solid line drawn on the accompanying map.

BOUNDARY JUSTIFICATION

The boundary follows the natural ravine terrain of the reservoir district and includes the basins and their features including the walkways, fences, and lampposts, the dams, carriageways, gatehouses, other buildings, objects, and the primary viewpoints on the west side of Reservoir 4 and at the northwest tip of Reservoir 3 significant to Washington Park Reservoirs Historic District. The perimeter fence, in place since 1970, follows the natural ravine site and generally marks the boundary, except for the area on the northeast side of Reservoir 4 where the boundary departs from the fence line to include a historic fountain.

N

WASHINGTON PARK RESERVOIRS
HISTORIC DISTRICT
MULTNOMAH COUNTY OREGON

0 250 500 1,000 Feet

steep ravine
chain link fence

SW Murray
(some maps SW Sherwood Blvd.)

service road gate

Viewpoint

Viewpoint
Mt Hood, City, &
Reservoir

historic carriageway

chain link fence

Maintenance

Nomination
Boundary

stairs

trailhead

fountain

Washington Park
Reservoirs Historic
District
Multnomah County
Oregon

Key to
Buildings,
Structures,
Objects

Reservoir 3
1 Basin & Features
2 Dam
3 Gatehouse
4 36" Weir Buildir

Reservoir 4
5 Basin & Features
6 Dam
7 Gatehouse
8 Pump House 1
9 Generator House
10 Fountain
11 Fountain

Figure 6
JANUARY 1996

WASHINGTON PARK RESERVOIRS NO. 3 & 4
PIPING PLAN
CITY OF PORTLAND BUREAU OF WATER WORKS
OPEN RESERVOIR STUDY

96-0139.102

MONTGOMERY WATSON
MSA Murray, Smith & Associates, Inc.

Photo List for:
Washington Park Reservoirs
Historic District
City of Portland
Multnomah County,Oregon

The following information applies to all photographs:
Photographer: Stu Levy
Photo date: February, 2003
Negative location: 1934 SE 56th Avenue, Portland, Oregon 97215

View: Reservoir 3, looking southeast
Photo Number: **1**

View: Reservoir 3, looking west
Photo Number: **2**

View: Reservoir 3, Gatehouse & Carriageway, looking east
Photo Number: **3**

View: Reservoir 3, Gatehouse, looking south at north elevation
Photo Number: **4**

View: Reservoir 3, Gatehouse, looking northwest at southeast elevation
Photo Number: **5**

View: Reservoir 3, looking west at Gatehouse &Weir Building (Screen House)
Photo Number: **6**

View: Reservoir 3, Fence & Lamppost detail
Photo Number: **7**

View: Reservoir 3, Dam, Balustrade, Blind Arcade, and Pier
Photo Number: **8**

View: Reservoir 4, looking south
Photo Number: **9**

View: Reservoir 4, Gatehouse & view, looking east
Photo Number: **10**

View: Reservoir 4, Gatehouse, looking southwest at north elevation
Photo Number: **11**

View: Reservoir 4, Gatehouse and Dam looking west
Photo Number: **12**

View: Reservoir 4, Pump House 1, looking northwest at south and east elevations
Photo Number: **13**

View: Reservoir 4, Pump House 1 and Generator Building, looking northwest at south elevations
Photo Number: **14**

View: Reservoir 4, Water Fountain
Photo Number: **15**

NPS Form 10-900-a

OMB Approval No. 1024-0018

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number 1 Page Amendment

Washington Park Reservoirs Historic District
2403 S.W. Jefferson Street
Portland, Multnomah County, Oregon

NRIS #03001447
List Date: January 15, 2004

Address Amendment

The purpose of this continuation sheet is to provide a new address for the Washington Park Reservoirs Historic District. The owner of the property, the city of Portland, supplied the correct address after the date of listing. The correct address for the nominated parcel is 2403 S.W. Jefferson Street, Portland, Oregon, 97201.

James Hamrick
Deputy State Historic Preservation Officer

12/15/05
Date

NPS Form 10-900-a

OMB Approval No. 1024-0018

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number 6 Page Amendment

Washington Park Reservoirs Historic District
2403 S.W. Jefferson Street
Portland, Multnomah County, Oregon

NRIS #03001447
List Date: January 15, 2004

Function Amendment

The purpose of this continuation sheet is to amend the Historic and Current Functions to add: INDUSTRY/PROCESSING: waterworks.

James Hamrick
Deputy State Historic Preservation Officer

12/15/05
Date

Washington Park Reservoirs Historic District

1

Washington Park
Reservoirs Historic District

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Washington Park Reservoirs Historic District

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Washington Park Reservoirs Historic District

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Washington Park Reservoirs Historic District

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Washington Park Reservoirs Historic District

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1894

Washington Park Reservoirs
Historic District

12

Washington Park Reservoirs
Historic District

13

Washington Park Reservoirs
Historic District

14


NOTICE
ANYONE THROWING OBJECTS OF ANY KIND INTO THIS RESERVOIR SHALL BE SUBJECT TO ARREST UNDER PROVISIONS OF SECTION 16 1353 CITY OF PORTLAND POLICE CODE.
THIS IS YOUR DRINKING WATER ! ! !

Washington Park Reservoirs
Historic District

15