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United States Department of the Interior
National Park Service

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National Register of Historic Places Inventory—Nomination Form

See instructions in *How to Complete National Register Forms*
Type all entries—complete applicable sections

1. Name

historic Bonneville Dam Historic District

and or common Bonneville Project

2. Location

street & number T2N, R7E, Section 21 ___ not for publication

city, town Bonneville 41 ___ vicinity of

state Cascade Island, WA code 53 county Multnomah Co., Oregon 051 / Skamania Co., Washington code 059

3. Classification

Category	Ownership	Status	Present Use	
X district	X public	X occupied	___ agriculture	___ museum
___ building(s)	___ private	___ unoccupied	___ commercial	___ park
___ structure	___ both	___ work in progress	X educational	___ private residence
___ site	**Public Acquisition**	**Accessible**	___ entertainment	___ religious
___ object	N/A in process	X yes: restricted	X government	___ scientific
	N/A being considered	___ yes: unrestricted	X industrial	X transportation
		___ no	X military	___ other:

4. Owner of Property

name U.S. Army Corps of Engineers, Portland District

street & number 319 SW Pine Street, P.O. Box 2946

city, town Portland ___ vicinity of state Oregon 97208-2946

5. Location of Legal Description

courthouse, registry of deeds, etc. Multnomah County Courthouse / Skamania County Courthouse

street & number 1021 SW 4th Street / P.O. Box 437

city, town Portland, Oregon 97204 state Stevenson, Washington 98648

6. Representation in Existing Surveys

title The Bonneville Hatchery: A Historic Assessment for the Bonneville Navigation Lock Project has this property been determined eligible? X yes ___ no

date July 1986 X federal ___ state ___ county ___ local

depository for survey records U.S. Army Corps of Engineers, Portland District

city, town Portland state Oregon

7. Description

Condition
X excellent
X good
___ fair
___ deteriorated
___ ruins
___ unexposed

Check one
___ unaltered
X altered

Check one
X original site
___ moved date ___

Describe the present and original (if known) physical appearance

The Bonneville Dam, Power House, Navigation Lock, administrative area, and fish hatchery (hereinafter referred to as the Bonneville Project), constitute a historic district located in Oregon and Washington. The prinicpal elements in the nomination include:

(1) Bonneville Dam
(2) Bonneville Powerhouse #1
(3) Navigation Lock #1
(4) Administration Building
(5) Auditorium Building
(6) Landscape at entrance to project area and surrounding Administration and Auditorium buildings
(7) Bonneville Hatchery

All of these features were constructed or reconstructed in the years 1934-37 and are the key surviving elements of the Army Corps projects at Bonneville in that period.

(1) Bonneville Dam

The dam spans the Columbia River between Bradford and Cascade island. At the time of its construction in the 1930's the dam reached across the north channel of the Columbia River to the Washington shore. The massive excavation of a new channel for the routing of the river through Powerhouse #2 in the 1970's, however, has meant that the northern abutment of the dam is now on Cascade Island.

Bonneville Dam is a gravity-type, concrete spillway, ogee crest dam reaching 1,230 feet across the present center channel of the Columbia River. The dam is 180 feet wide at its base. Its face consists of twelve 50 by 50-foot and six 50 by 60-foot, movable-crest, steel gates between concrete piers. The overflow of the dam is fixed at a crest of 24 feet above mean sea level. The 18 vertical-lift gates are set between piers, each ten feet wide, which extend to 99 feet above sea level. At that elevation a service roadway extends across the dam. Two 350-ton gantry cranes for regulating the gates operate at that level. The dam has reinforced concrete cut-off walls set into the adjoining banks of Cascade and Bradford island and a concrete counterfort wall to protect the upstream bank at each abutment.

The dam spillway is designed to handle a flood of 1,600 second-feet of water, approximately 37 per cent greater than that which passed this site in the great flood of 1894. To secure the dam from the flow of water is a double row of reinforced concrete baffles as well as a wide, concrete apron at the toe of the dam. The piers were designed to withstand both direct and side pressure resulting from alternate open and closed gates. The piers are framed with structural steel

8. Significance

Period	Areas of National Significance—Check and justify below			
___ prehistoric	___ archeology-prehistoric	___ community planning	___ landscape architecture	___ religion
___ 1400–1499	___ archeology-historic	___ conservation	___ law	___ science
___ 1500–1599	___ agriculture	___ economics	___ literature	___ sculpture
___ 1600–1699	___ architecture	___ education	___ military	___ social/ humanitarian
___ 1700–1799	___ art	X engineering	___ music	___ theater
___ 1800–1899	___ commerce	___ exploration/settlement	___ philosophy	___ transportation
X 1900–	___ communications	X industry	X politics/government	___ other (specify)
		___ invention		

Specific dates 1909-1938 **Builder/Architect** U.S. Army Corps of Engineers

Statement of Significance (in one paragraph)

The Bonneville Dam Historic District is located across the lower reaches of the Columbia River, the second largest river in the continental United States. It consists of several features, each of which is integral to the complex as a whole:

1) The Bonneville Dam, which is used to raise and divert the Columbia River in order to allow generation of hydroelectric power;

2) The Bonneville #1 Powerhouse, which contains the turbines and electrical generating equipment used for power production;

3) The Bonneville Navigation Lock, which was built to allow river boats to travel around the Bonneville Dam and continue the river-borne commerce that began in the 19th century;

4) The Bonneville Fishways, which are designed to allow anadromous fish (e.g. salmon and steelhead trout) to swim upstream past the Bonneville Dam to spawning grounds in the upper reaches of the Columbia River and its tributaries.

5) The Bonneville Fish Hatchery, which was rebuilt in conjunction with construction of the Bonneville Dam in order to supplement the natural production of anadromous fish in the Columbia River watershed.

6) The Bonneville Administration Building and the associated Auditorium Building, which were built to house offices critical to the operation of the entire Bonneville Dam complex and to provide a meeting place for employees and their families. These facilities are also surrounded by landscaping that is an integral part of the district.

The key structures in the district are the Bonneville Dam and #1 Powerhouse. When built in the 1930s there was no other water impoundment or diversion structure comparable to it in the United States. Located near the mouth of the second largest river in the United States, it was designed to withstand floods exceeding a flow of more than 1,000,000 cubic feet per second (cfs). No other dam in the United States was required to withstand a potential overflow of such magnitude. It is significant that no facility comparable to the Bonneville Dam has ever been built along the lower reaches of the Mississippi River (the largest river in the United States). [#2 Powerhouse was recently completed on the north shore of the site and is not included within the historic district boundary.]

9. Major Bibliographical References

SEE CONTINUATION SHEET

10. Geographical Data

Acreage of nominated property 97

Quadrangle name Bonneville Dam, Wash.-Oreg. **Quadrangle scale** 15'

UTM References

	Zone	Easting	Northing
A	10	582413	5055160
B	10	582876	5055171
C	10	582846	5054567
D	10	581515	5053596
E	10	581520	5053720
F			
G			
H			

Verbal boundary description and justification

SEE CONTINUATION SHEET

List all states and counties for properties overlapping state or county boundaries

state	code	county	code
Oregon	41	Multnomah	051
Washington	53	Skamania	059

11. Form Prepared By

name/title Stephen Dow Beckham Donald C. Jackson

organization Heritage Research Associates **date**

street & number 2008 Onyx Street / 2900 Connecticut Ave., NW #339 **telephone** (503) 485-0454 (Beckham) / (202) 234-4835 (Jackson)

city or town Eugene / Washington **state** Oregon 97403 / DC 20008

12. State Historic Preservation Officer Certification

The evaluated significance of this property within the state is:

___ national ___ state ___ local

As the designated State Historic Preservation Officer for the National Historic Preservation Act of 1966 (Public Law 89–665), I hereby nominate this property for inclusion in the National Register and certify that it has been evaluated according to the criteria and procedures set forth by the National Park Service.

State Historic Preservation Officer signature

title **date**

For NPS use only

I hereby certify that this property is included in the National Register

date

Keeper of the National Register

Attest: **date**

Chief of Registration

to support the gate guides. Each gate is constructed of riveted structural steel with roller bearing wheels and consists of two sections. The special lifting and latching mechanisms enable the dam tenders to move either the upper half or the whole gate at one time.

The dam has fishladders at both the Cascade Island and Bradford Island abutments. The Bradford Island fishway is a dual system with ladders rising from Bradford Slough adjacent to the powerhouse as well as from the central channel of the Columbia. This dual system unites near the center of Bradford Island and passes along the Visitors' Center into the Bonneville Reservoir above the powerhouse. Each of the three fishways is an inclined plane of water, 40 feet wide. Cross partitions are set at 16 foot intervals, each six feet high, creating a crest one foot higher than the one below. Water flows down the fishladder to form a series of pools. While some fish pass over the crest of each partition, others can pass through submerged openings, two feet square, in each concrete partition.

At the ends of the dam are fish-locks, embedded into the structure. Each lock has a vertical hydraulic chamber 20 feet by 30 feet. At the bottom of the chamber is a gate-controlled opening, ten feet square, opening into the water below the dam. The operation of the fish-locks is premised upon conduit filling and draining. The fish-locks were designed and installed in pairs so that one would always be open for the entry of fish.

(2) Powerhouse #1

The Bonneville Powerhouse reaches across Bradford Slough between the Oregon shore and Bradford Island. The powerhouse was excavated to 58 feet below sea level and is of poured concrete construction set in andesite bedrock. The powerhouse is 1,027 feet long and rises 190 feet above bedrock; the structure is also 190 feet wide. It consists of a massive, rectangular generator room extending the length of the structure, and multiple levels of service facilities, including machine shops, offices, lunchroom, and storage areas. The powerhouse has a 300 ton crane in the generator room, two intake gantry cranes on tracks on its upstream face, and a tailrace gantry crane which operates on its tailrace deck. A two lane road traverses the powerhouse at the tailrace or downstream side of the powerhouse. A series of service galleries extend the length of the powerhouse at various levels on the upstream side of the building. A fishladder passes along the northern end of the tailrace face of the powerhouse and joins the one from the dam to climb through the center section of Bradford Island to the reservoir.

The generator room contains ten units of Kaplan, adjustable blade type turbines. This design was selected as best suited to operating conditions at Bonneville in the 1930's. Because the market for power from the dam was uncertain at the time of its construction, only two turbines were installed initially. The space efficiency of the Kaplan type of turbine was a prime factor when the number of eventual units was uncertain.

Each turbine is driven by a five-blade propeller-type runner. The blades are spaced and proportioned so that two adjacent blades form a nozzle which limits the flow through the runner. Each runner is 23 feet 4 inches in diameter; the turbine shafts are 39 1/2 inches in diameter at the turbine bearing. The blade pitch adjusts automatically and simultaneously by a governor control. The wicket gate openings permit more water to enter through the speed ring, moving the blades to a steeper angle. When the gates close the blades move to a flatter angle.

Each turbine weighs approximately 900 tons, not counting the generator unit. Each of the two original turbines has a capacity of 60,000 horsepower at 75 r.p.m. under a 50-foot head of water. Each requires approximately 12,000 cubic feet of water per second to operate a full load. The next four turbines, manufactured in 1939, were designed to produce 74,000 horsepower; the generators for these turbines each produced 54,000 kilowatts. The first breakdown of a turbine blade did not occur until the spring of 1984, almost 50 years after initial installation.

The main generators are of vertical shaft design and possess direct connected exciters and pilot exciters. The generators possess a capacity of 43,200 kilowatts at .9 power phase and generate 3 phase 60 cycle current at 13,800 volts. The main transformers stand on the upper deck of the powerhouse and step up the voltage from 13,800 to 66,000 or 110,000 volts for transmission. The switching equipment is located on the roof of the powerhouse.

(3) Navigation Lock

The Navigation Lock is located on the Oregon shore of the Columbia River and is adjacent to the south side of Bonneville Powerhouse #1. The lock is 500 feet long, 76 feet wide, and has a depth of 26 feet over the lower sill at low water. At extreme high water the lock has a lift of 59 feet, while at extreme high water it is about 30 feet. The lock is cut through andesite rock. The exposed rock has been faced with concrete. The sections of the lock above the rock cut are of poured concrete construction of both gravity and counterfort type walls.

The function of lockage has been described as follows:

> The chambers is filled through an intake at the upstream end of the north wall containing two 7 x 11.5-foot tainter valves leading to a 14-foot diameter longitudinal culvert beneath the floor of the lock with branches leading to 41 floor ports, each 4 feet in diameter. Emptying is accomplished through the same culvert system leading to a 7 x 11.5 foot tainter valve under each wall near the lower end of the lock which discharge the water through five 6 x 7-foot square floor ports downstream from the lower gates. The normal time for filling or emptying the lock is about 15 minutes.

The locks have structural steel, miter gates constructed with horizontal girders 44 feet long. Each gate is framed with verticals and intercostals, faced with plates. The lower gate consists of two sections, each weighing 523 tons and standing 102 feet high. Air chambers in the lower half of each gate component reduce its weight during use. The upper gate is 45 feet high. The gates are operated by machinery located in the lock wall. The floating mooring bits with vertical guides are mounted in recesses in the lock walls and hold vessels and barges during raising or lowering through the lock.

At the lower end of the lock is a steel, swing bridge which serves the two lane highway crossing the powerhouse to Bradford Island. Four service cranes are located along the lock; each has an enclosed housing for year-round use. Lockmaster's quarters are located on the north side of the lock for use during locking. The Tanner Creek bypass canal is located on the south side of the lock and provides Columbia River water for the State Fish Hatchery at Bonneville, Oregon.

(4) Administration Building

The Administration Building is located at the south side of the main entrance to Bonneville, Oregon. This one story, wood frame building was constructed in 1934 and 1937 and was built under the same contract specifications as the nearby Auditorium. Hollis Johnston, the architect for the 1934 construction phase, designed a building of nine rooms: central hall, flanking men's and women's lavatories to the left and right of the main entrance, a conference room (north side), police office, information center, staff lavatory, and two offices (south side). The original building measured 70' by 30'.

The construction materials for these rooms were as follows:

Room	Floor	Wall	Trim
Hall	Rubber Tile	Plywood	Fir base & trim
Conference Room	Maple	"	"
Police Office	"	"	"
Information	"	"	"
Offices	"	"	"
Vestibule	Rubber Tile	Fir	"
Lavatory	Asphalt Tile	Cement	Rubber tile base, fir trim
Women's Lavatory	"	"	"
Men's Lavatory	"	"	"

The three lavatories had plaster ceilings, while the remaining rooms were constructed with insulation board ceilings.

This building has a brick, veneer exterior laid in plain bond (all stretchers) with split-brick liners, every seventh course. The brick quoins project 3/4 inch at the corners. The brick veneer is laid in course of 2 7/8 inches and is secured to wall sheathing by crimped galvanized iron. A brick dentil course (all headers) is set at the eaves in which are set recessed gutters.

The gable roof was originally covered with shingles; presently it is composition. The roof is surmounted in the center above the hall with a louvered decorative cupola. The fenestration is regular but consists of a variety of window types: fixed octagon sash (9 lights); single inswing sash (4 lights); double window, mullion and transom (28 lights); triple window, mullion and transom (42 lights); single windows and transom (5 lights); and double sash and transom (12 lights).

All gutters on this building are of 24 gauge galvanized iron; the downspouts are 26 gauge galvanized iron. All heads, jambs, and sills of all exterior doors and windows are flashed with 28 gauge galvanized iron. All exterior doors have metal pans of 28 gauge galvanized iron installed beneath them as do all exterior window sills; this iron was soldered for weatherization. The studding in the walls and partitions consists of 2" x 4" or 2" x 6" lumber spaced not more than 16" on centers.

During the continuing construction at Bonneville, this building was expanded in 1937 in three directions under plans drawn by P. A. Spice, Associate Engineer, and approved by J. H. Kenneth, Principal Engineer. The new construction involved an architecturally-compatible ell on the rear elevation, measuring 38' by 30'. This new wing involved the elimination of the information center and the reduction of the police office to a supply room. At this same time flanking wings were added on the north and south elevations to create additional office space. Each of these new units measured 38' by 26'. In the south elevation expansion one of the existing offices was eliminated. This was done by moving a partition to create a hallway to the new wing and at the same time permit a significant enlargement of the remaining office space. The Administration Building assumed its present interior and exterior dimensions and appearance by the spring of 1937. The only subsequent alteration to this building occurred during World War II when the exterior was painted green to camouflage the structure in case of aerial attack.

(5) Auditorium

The Auditorium stands at the northern end of the main entry road to Bonneville, Oregon. It is a major visual anchor in the center of this former government townsite and retains its original appearance. The structure is a one story, wood frame building with brick veneer exterior. The building is set over a concrete basement. The gable roof, once shingled, is now covered with composition shingles.

The auditorium measures 160' by 41'. Attached as a central ell on the north (rear) elevation is an auditorium-gymnasium measuring 62' 6" by 42' in width. Attached to that is a stage-dressing and property room area measuring 32' 6" long by 64' wide. The ell thus gives the auditorium building a total depth of 123' from the main building entrance to the rear wall of the stage. The building has the following rooms and floor, wall, and trim finishes:

Room	Floor	Wall	Trim
Club Room	Maple	Plywood	Fir base, cornice
Hall	"	"	"
Vestibule	Tile	Fir	"
Library	Maple	Plywood	"
Store Room	Fir	T & G	"
Stair	Maple Floor Oak Treads	Plywood	Fir door, trim
Men's Coat Room	Maple	"	Fir base, trim
Janitor's Closet	Asphalt Tile	Plaster	Fir trim & shelf
Men's Toilet	"	"	Fir trim
Men's Locker Room	"	"	"
Men's Shower Room	Ceramic Tile	"	None
Passage	Maple	Plywood	Fir base, trim
Women's Locker Room	Asphalt Tile	Plaster	Firm trim
Women's Shower Room	Ceramic Tile	"	None
Women's Toilet	Asphalt Tile	"	Fir trim
Women's Coat Room	Maple Floor	Plywood	Fir base, trim
Kitchen	Rubber Tile	Plaster	Fir base, trim
Auditorium	Maple	Plywood	Fir base, trim
Property Room	Fir	1" x 6" T & G	
Stage	"	"	
Dressing Room	"	Plywood	Fir base, trim
Sound Room	"	1" x 6" T & G	
Telephone Booth	Maple	Plywood	Fir base, trim

Projection Room	1" x 6" Shiplap	Metal lath & plaster	Fir, sheet metal
Motor, Generator Room	1" x 6" Shiplap	Plaster	

This building is symmetrical and balanced by several design features. These include matching fireplaces in the Club Room and Library in each of the wings of the front unit of the building and a rigidly symmetrical entry. The terrace at the entrance is constructed of bricks laid flatwise in a basketweave pattern. Each pierced, brick balustrade terminates in a truncated, cast iron urn. The pilasters flanking the main entrance are each surmounted by cast iron, pineapple ornaments. The split, brick arch above the four doors in the entry bay is enclosed by a cast iron grille of simple, strap iron scrolls with cast iron inserts riveted together. Header bricks laid in a projecting diamond pattern decorate the gable end of the entry wall.

The brick veneer of this building is laid the same as that in the nearby Administrative Building; plain bond (all stretchers) with split-brick liners every seventh course. The dentil course (all headers) is under the coping at the eaves. Quoins projecting 3/4 inch are located at all corners and are repeated in the stucco exterior which faces the exterior of the auditorium ell. The fenestration is regular but complex and includes octagon, casement and sash windows, many with transoms.

The materials for the auditorium and administration building were of the highest grade. Oregon Fir #2 Common was used for all rough work; Oregon Fir #1 Common was used for the rafters; the floor joists were laid with #1 Common S1S2E, kiln-dried lumber. All roof valleys were constructed with 2" x 8" boards. All doors and windows have oak sills; all exterior doors are fir. The auditorium floor is laid with first grade maple. As with the administration building all gutters, downspouts, and flashings were made of galvanized iron. The contract specifications for these structures insisted on quality workmanship:

> All surfaces of outside finish shall be left free of tool marks, clean and sandpapered smooth, and all nails shall be sunk 1/8" below the surface, ready for putty and the painters' finishes.

This same quality control extended, for example, to the kitchen:

> Interior trim and assembling. All interior trim shall be in accordance with plans and full size details and stock molding pattern as shown and shall be solidly put together in a workmanlike manner, and shall be glued wherever possible. All casings and mouldings shall be mitred. All work

shall be built as far as possible in the shop before being delivered to the building and shall be of the highest standard in workmanship and material.

(6) Landscape

The landscape at Bonneville, Oregon, was originally a design which included approximately 20 acres of planned, formal and informal plantings. One segment of the landscape design--approximately 11 acres--was significantly altered in 1982 with the removal of 22 Colonial Revival homes and associated buildings in the residential area. Although the plantings of exotic and ornamental, deciduous trees and conifers remain, all the smaller shrubs and bulbs have been removed. This nomination is addressed to the remaining landscape design of the administrative area of Bonneville, Oregon.

The landscape was conceived as a dramatic setting for Oregon's largest, permanent federal government town. While the Civilian Conservation Corps constructed numerous ranger station complexes for the U.S. Forest Service in the 1930's, none had the population of Bonneville, Oregon. Camp White, a World War II military installation, and Camp Adair, a military base in the 1940's and the 1950's, had limited periods of use and did not possess the same quality of permanence as the buildings at Bonneville. The administrative area landscape was planned as a grand entry to the largest hydroelectric power project and navigation lock on the lower Columbia River. Surviving original plans confirm that a project employee named Gerke prepared the landscape design in December, 1934.

The landscape includes a long, formal entry with a two lane road, enclosed with concrete curbs, reaching from the Union Pacific viaduct at Tanner Creek to the main entrance of the Auditorium. This concourse left the old Columbia Gorge Highway at the east side of Tanner Creek and passed through one of the portals in the 900 foot long railroad viaduct [constructed of poured concrete on a design based upon a Roman aquaduct]. The road bends along the northern edge of the fish display ponds at the Bonneville Hatchery and lines up for a straight course of 600 feet to the entry of the Auditorium. Flanking the entrance drive are low, rubble stone walls, plantings of rhododendrons and azaleas, and tall stands of native conifers. The beauty of this design is enhanced by the broad expanses of manicured lawn and the dominating Auditorium whose front elevation spans the entire northern horizon.

The landscape plan in the administrative area is flowing. It is based upon a curvilinear rather than a geometric feeling and, while balanced, provides a pleasing contrast with the rigid symmetry of the principal buildings. The design is based upon careful plantings of shrubs and bulbs to provide a variety of colors and foilage throughout the year.

Around the Auditorium and Administration buildings are plantings of yew (Taxus bacoata), juiper (Juniperus pfitzerianna) and Choisya ternata. The building corners are surrounded with plantings of Rhododendron Album elegans. Of special note are two sunken garden areas flanking both the east and west elevations of the auditorium-gymnasium ell of the Auditorium Building. These areas exhibit rigid symmetry and are the clearest link in the landscape design to the formal gardens associated with the eighteenth century architecture of colonial America which was the inspiration for the Bonneville townsite. The geometric plantings of the two sunken gardens included four magnolia trees in each rectangular area, joined by trimmed plantings of Buxus sempervirens. The Buxus either was not planted or has been removed. The sunken gardens, however, remain special features associated with the Auditorium Building.

The plant list for the landscaping of the Auditorium and Administration building is as follows:

Quantity	Name
4	Abelia grandiflora
3	Ampelopsis tricuspidata
6	Acer circinatum
2	Aucupa japonica
196	Buxus sempervirens
3	Cotoneaster franchetti
35	Cotoneaster horizontalis
2	Cotoneaster pannosa
50	Calluna vulgaris alba
10	Chaisya ternata
23	Euonymous japonica
2	Hedra helix variegata
43	Hypericum moserianum
10	Juniperus pfitzeriana
12	Juniperus pracumbens
9	Juniperus sabina
4	Laburnum vulgare
4	Ligustrum lucidum
14	Lonicera plicata
1	Liriodendron tulipifera
6	Mahonia aquilfolium
8	Magnolia saviangeana
14	Osmanthus illicifolia (dwarf type)
9	Pyracantha coccinea
4	Taxus paccata (spreading type)

14	Teucrium chamaedrys
6	Rhododendron album elegans
6	Viburnum opulus
8	Viburum tormentosum

The landscape includes the hillside behind the Administration Building to the margin of the Union Pacific tracks and extends north to the bypass canal which runs from the Navigation Lock between the administrative and residential areas at Bonneville, Oregon. To the north of the Auditorium the landscape continues to the Security Building (erected in 1950). In this area are large rose beds. While this landscape is part of the original plan, it has played the role of a fourth component in the general plan at Bonneville. The primary area is that of the administration buildings; the second component was that of the residential community; this third component was a transition landscape of concrete curb roadways and rosebeds serving as an understated and visually "flat" approach to the Powerhouse and Navigation Lock. The area is bisected by service roads, railroad tracks, and the Tanner Creek bypass canal. All of the landscape behind the Auditorium is within the proposed, new Navigation Lock Project and is not associated with the primary structures of the Bonneville Project. For this reason it has been excluded from the nomination.

The landscape development also included by 1935 a "Planting Plan of Spring Flowering Bulbs for Permanent Quarters and Auditorium Areas." This plan was also the work of the Corps employee, Gerke. The principal emphasis in this plan was to provide spring color in the forepart of the shrub beds surrounding the buildings. Gerke designated a variety of tulips and narcissus-daffodils for these flower beds. The recent landscape design has included plantings of orange marigolds and lobellia in beds along the principal walkways to the Auditorium and fuschias in the cast iron urns on the balustrade at the entry terrace.

Virtually all of the features of the dam, powerhouse, navigation lock, administration building, and auditorium are as originally constructed in 1934-37. The most dramatic changes were securred in the expansion of the Administration Building in 1937. That work, however, was done with the same materials and design as the original and was completed during the original project at Bonneville. The most significant modification has been the construction of Bonneville Second Powerhouse Project to the north of the dam within a new channel of the Columbia River which now cuts through the townsite of former North Bonneville. The new powerhouse, however, is of low profile and is beyond Cascade Island. It is barely visible from the area covered by this nomination. The residential area at Bonneville, Oregon, removed in 1982, was effectively screened by mature landscape and was divided from the administrative area by the bypass canal bringing water to the hatchery. Its removal does not substantially affect the integrity of the buildings and landscape proposed in this nomination.

(7) Bonneville Hatchery

In 1986 the "original hatchery facilities" at Bonneville contain structures, objects, and a landscape which date to the reconstruction of this site in 1935-36. The project area is a triangular tract of land constituting 9.2 acres in the eastern portion of the hatchery grounds, extending from the Union Pacific right-of-way on the south to the main entry corridor into the Bonneville administrative site and on the west is demarcated by the principal service road between the old facilities and the new complex of structures and rearing ponds (Batteries C and D) erected in 1974-75.

A. Contributing Features

The two structures which contribute to the historic significance of the Bonneville Dam Historic District include (1) the incubation building (hatchery) and (2) the former office (now the gardener's building).

1. Incubation Building [Hatchery], Built 1936

This one and one-half story, rectangular, wood frame building measures 50 by 150 feet and is constructed in the Colonial Revival Style. This is also the architectural style of the auditorium and the administration building which are presently included in the Bonneville Dam Historic District. The incubation building is covered with beveled, cedar siding, ten-inch boards lapped for weather protection over shiplap walls. The building's north and south elevations are mirror images as are the east and west elevations. The building is rigidly symmetrical and has centered, double entry doors flanked by small closet lights. The wood doors are 2 1/2 inches thick and are set in semi-elliptical openings. In the two principal incubation rooms (to the left and right of the entrances) are six large window bays. These bays contain twelve panes: the center four panes, mounted in a metal casement window, open on a swivel while the top and bottom tiers of panes remain fixed. This building once possessed recessed, copper-lined gutters. The reroofing of the steep, gable roof in recent years has covered these gutters. It is anticipated that the gutters will remain beneath the roof; the no-longer-functional downspouts are also in place. In the gable ends are pairs of six-pane, casement windows flanked by decorative wood shutters with cutouts in the shape of fish. The roof is broken in the center of the building by a prominent cross gable. In its upper half story, a view area into the incubation rooms, are six pairs of six-pane casement windows in both the north and south elevations. The attic is ventilated by a decorative louver in four gable ends. The shingle roof is surmounted by an octagonal cupola with decorative copper top surmounted by a fish weathervane and the capital letters of the cardinal directions. The eaves are boxed.

The interior of this building is finished in sheets of plywood. The structure has concrete floors and houses extensive incubation trays for hatching fish eggs. The large attic areas in this building are unfinished. The structure has a single brick flue which serves the furnace.

This structure, a handsome statement of the Colonial Revival Style, has had minor alterations. The viewing platform in the center of the building is currently enclosed in plywood, blocking a view into the incubation rooms. The east elevation of the building has dry rot in the main joists and wall materials at the concrete foundation. The weathervane is twisted and nonfunctional for indicating wind direction. The recessed gutters are covered, creating a situation where all the rain falling on the roof washes to the eaves and then pours down the exterior walls of the building, perhaps contributing to dry rot conditions at the base of those walls.

2. Office [Gardener's Building], Built 1936

This rectangular, one-story, wood frame building measures 14 x 32 feet. It faces south and has a short, projecting porch with supporting posts above its centered, main entry. The building has regular fenestration, primarily six-over-six, double hung, sash windows. It has two windows with three fixed upper panes and a lower, lifting sash containing six panes. These windows are located in the northeast corner of the building. The structure has a concrete foundation, ten-inch, lapped cedar siding over shiplap, and a steep gable roof covered with composition shingles. While this building may have once had recessed gutters, it presently has gutters on its north and south elevations. Its eaves are boxed and undecorated.

This former office is in good condition. The pairs of porch posts, however, are replacements not visually compatible with the style of the building.

B. Non-contributing Features

The following features are within the old hatchery area but are either altered, resited, or of more recent construction. The two buildings are noncontributing, secondary features, lacking both (1) an integral function in the overall hatchery and (2) the Colonial Revival Style and wood finishes of the primary buildings in the old hatchery site.

1. Rest Room

This 25 by 25 feet concrete block building is situated between the former office and Battery B. The building has a low, gable roof covered with composition shingles. The building has a small, wood louver in its gable ends and has single pane windows. The building is painted white and is effectively concealed by landscaping materials. This rest room probably dates from the 1950s.

2. Shop-Garage Building

This one-story, concrete block building measures 60 x 25 feet. It has a gable roof covered with composition shingles and has three garage bays on its west (front) elevation. These bays are flanked on the north and the south by shop and storage rooms. The building has two-over-one casement windows. The building has a single brick chimney with terra cotta liner. An interior stairway leads to the attic. The garage bays are closed with metal doors. The building probably postdates 1950.

This building is in good condition and, though not compatible in style or exterior finishes with the Incubation Building and former Office, it is situated to the south of the main site complex and is screened from general view by vegetation in the public area of the hatchery grounds.

3. Display Ponds

Three display ponds and an associated Settling Pond are located along the eastern margin of the old hatchery area. The display ponds were reconfigured out of part of the original rearing ponds and may date, largely in their shape and landscape, to the earliest years of the rearing program in the 1910s. The ponds are surrounded with rocks and plants indigenous to the Columbia Gorge. Two new kiosks which supply fish food for sale to visitors are situated in this area.

Sturgeon, trout, and salmon are among the species displayed. Tourist traffic is very high in this part of the hatchery grounds. The paths surrounding the ponds are covered with blacktop.

4. Battery A [Rearing Ponds], Built 1954-55

This extensive set of concrete rearing ponds measures 460 by 100 feet and contains 22 units. It is located north of the Incubation Building. Excepting for superstructure (including such features as galvanized grates over water channels), providing access to the ponds for feeding, this unit remains very much as initially constructed in the 1930s. This battery is in good condition. Battery A is presently used for holding Chinook and Coho from January until releases in May when the fry have attained a size of approximately three inches. Each of the 22 ponds has a capacity of 300,000 fingerlings. The coho are held in these ponds from June until January and are usually 6 inches at release.

5. Battery B [Rearing Ponds], Built 1954-55

This set of concrete rearing ponds measures 165 x 80 feet and is located south of the Incubation Building. Historic photographs document that slight changes have occurred in the method of moving water through the sequence of ponds in this battery and in the pedestrian access across the top of the ponds for feeding. This battery is in good condition. Battery B is presently used from January until May for rearing Chinook. In November and December the ponds hold adult Chinook until spawning.

C. Former Associated Features

Scattered in the old hatchery grounds but outside the present project area are objects which date to earlier developments at this site. Because they have been removed from their original settings, they have technically lost their historic context. These features primarily serve a public relations purpose as they remain aesthetically pleasing and are of interest to the many visitors who view the hatchery site.

The most prominent of these objects are a handsome pair of rubblestone gateposts, each decorated with an inlaid bas relief of a carved salmon, which are now at the entrance to the hatchery parking lot. The Rotary Fountain, constructed of rubblestone, has been removed. The handsome sundial has been moved adjacent to the parking lot in the new hatchery area to the west. The original flagpole base was destroyed, and a short truncated one was reconstructed of the rubblestone in a rosebed adjacent to the Gardener's Cottage. Several other plaques and bas reliefs, commemorating the visit of Lewis and Clark and the establishment of the hatchery as well as bas reliefs in stone of a seine net fishing scene and the seal of the State of Oregon have been removed from the old hatchery area and are mounted in a new rubblestone wall near the railroad viaduct in the new hatchery area.

One other historic feature from the early 1910s remains in the old hatchery area. This is a set of wood crossbars and insulators in a tall fir tree to the east of the Garage. This feature was part of the distribution system from the original, water-powered electrical plant.

Because of the alteration, destruction, or resiting of these miscellaneous features, none still contribute to the feeling of the original landscape within the old hatchery area. While prominent, these features are, in a sense, isolated survivors of what was once a series of rubblestone landscape objects.

The Colorado River, which is often mistakenly thought to be the West's largest river, caries only one-tenth the flow of the Columbia River. This stream's relatively small size (at least in comparison to the Columbia) helped facilitate construction of the Laguna Dam on the lower reaches of the river prior to World War I. In terms of location and basic design the earthen and rockfill Laguna Dam bears some relation to the concrete Bonneville Dam. However, the Laguna Dam is used only to divert water for irrigation; it is not part of a multiple-purpose project specifically geared toward the generation of electric power. The Laguna Dam does not feature any movable gates such as those on the top of the Bonneville Dam. These gates are used to maximize the hydraulic "head" available to power the turbines while also providing for additional release of water over the spillway during periods of heavy flooding.

In comparing the Bonneville Dam with other major 20th century water impounding structures that are prominent in the public mind, such as the Roosevelt Dam (AZ), the Hoover Dam (AZ-NV), the Grand Coulee Dam (WA), the Buffalo Bill Dam (WY) or the Croton Dam (NY), it is difficult to consider them within the same technical context. This is because the Bonneville Dam is a diversion/overflow structure while all of the others named above are storage dams. Although all of these structures impound water, the Bonneville Dam required a different type of design in order withstand a constant overflow of huge quantities of water. None of the other dams listed above have ever been overtopped; in fact, their overtopping would probably precipitate a major disaster. In contrast, the Bonneville Dam is specifically intended to be overtopped.

There are a few major overflow dams on Eastern rivers, such as the Keokuk Dam on the Mississippi River between Illinois and Iowa and the Wilson Dam on the Tennessee Valley Authority, that share technical attributes with the Bonneville Dam. But these all pale in comparison with the amount of waterflow that the Bonneville Dam is designed to withstand. The Bonneville Dam was the first major structure built to raise the level of the Columbia River and create a "hydraulic drop" capable of developing over 500,000 KW of electric power. The engineering problems associated with building such a large scale structure were unprecedented and required great skill in designing and erecting the dam. Despite considerable experience in the construction of hydraulic works, the Army Corps of Engineers was faced with a project unlike any that had been previously undertaken. Certainly the design of the Bonneville Dam could draw upon technology developed for earlier overflow dams. However, it represented a unique engineering challenge that expanded significantly upon earlier work in the field.

The powerhouse built in conjunction with the dam also comprised an integral part of the Bonneville Project. From its inception the project was viewed as a means of tapping into the huge hydropower potential of the Columbia River. By the early 1930s the Federal Government (acting through the Corps of Engineers and the Bureau of Reclamation) envisaged construction of at least ten hydro-electric power dams along the river. The first of these (and the lowest in elevation) was the Bonneville Dam east of Portland. The Bonneville #1 Powerhouse was designed for a generating capacity comparable to only a few installations in the United States such as the Wilson Dam, the Hoover Dam and Grand Coulee Dam (the latter two were being built concurrently with the Bonneville Dam). However, these other plants operated under a fairly regular "head" (i.e. the height of the hydraulic drop that powers the turbines). In contrast, at Bonneville there was considerable variation in the "head" depending upon the flow in the river and this led to one of the earliest major American uses of Kaplan turbines. Kaplan turbines utilized adjustable blades that could be set for the most efficient development of power depending upon the "head" available at any given time.

The construction of the Bonneville Dam brought the Federal Government directly into the business of producing electric power for public and private consumers throughout the Pacific Northwest. The importance of the Bonneville Dam's role in this development is evident in the name of the Federal power authority that regulates the generation of all electric power in the region: the Bonneville Power Administration. This agency, which is now part of the U.S. Dept. of Energy, was first conceived in order to market the power produced at Bonneville. As other federal hydroelectric power facilities (such as the Grand Coulee Dam) came on line in subsequent years, their power came under the control of the same administrative structure developed to manage the power generated at Bonneville.

The Bonneville Project constituted a major part of Roosevelt's New Deal and was featured as part of his 1932 campaign initiatives. Started shortly after Roosevelt gained the Presidency, the Bonneville Project represented a major public investment in the economic and industrial development of the Pacific Northwest that was beyond the scope or interest of private power utilities in the region. Although initially derided by critics as providing an excessive amount of electricity for the local economy, the Federal power presence in the Pacific Northwest came to play a major role in the development of World War II defense industries in the region. In addition, it facilitated the growth of the atomic energy installation at Hanford, WA that played a prominent role in the success of the Manhattan Project.

The Bonneville Dam and Powerhouse represented the flagship of Federal power development in the Pacific Northwest and this development has played a critical role in the economic growth of the region since the 1930s. The Bonneville Power Administration was not a unique creation of Roosevelt's New Deal. The Tennessee Valley Authority played a comparable (though not identical) role in developing the hydroelectric power resources of the Tennessee River Valley and Hoover Dam provided a major source of electric power for Los Angeles and other parts of the Southwest. But without denigrating the accomplishments of these other federal initiatives, the generating capacity of the Bonneville Power Administration in the Pacific Northwest far exceeds that of any other Federal power authority.

The Hoover Dam and TVA installations often receive more historical attention then developments at Bonneville and elsewhere on the Columbia (for example, see Carl Condit's American Building Art: the 20th Century). But this is more a reflection of the active public relations offices of the TVA and the Bureau of Reclamation than it is of the relative historical significance of facilities such as the Bonneville Dam and #1 Powerhouse. Although at times overshadowed by some of its Federal brethren, the hydroelectric power generation capacity in the Pacific Northwest that was developed by the Federal Government (and is best exemplified by the Bonneville Project) is equalled by few and exceeded by no other systems in the United States.

The Bonneville Dam and #1 Powerhouse are the critical components of the facility and comprise the heart of National Historic Landmark District. The other structures and features included in the nomination are significant because of their role in the larger system defined by the dam and powerhouse.

The Navigation Lock is no small engineering facility in its own right and is worthy of historical interest because of its role in helping to open the upper Columbia River to larger ships and barges then was ever previously possible. However, the lock was built because construction of the Bonneville Dam required such a facility in order to accommodate the river commerce that had existed since the mid-19th century. At the time of its construction, the lock was the largest single-lift lock ever built. The Bonneville Project had to be adapted to a previously existing economic system that was already making use of the Columbia River. Although not required to develop the Bonneville Project's hydroelectric power system, the lock was an integral part of the project that related to the region's existing socio-economic structure.

Similarly, the construction of the fishways and the refurbishment and reconstruction of the fish hatchery at Bonneville represented recognition of how the dam was to impact upon the fishing industry (presently valued at $200 million annually) that depends upon the spawning grounds of the Columbia River for its long-term vitality. The fishways were built to provide a means of allowing fish to circumnavigate the barrier posed by the Bonneville Dam in their journey upstream. By swimming up the gradually ascending "ladder," fish could bypass the dam and continue their migration. As a supplement to this relatively passive system the Corps also built fish lifts that could literally lift the fish up out of the lower river and carry them over the pool above the dam.

The hatchery at the site was originally built by the Oregon Fish Commission in the early 20th century as a means of supplementing the natural supply of anadromous fish spawned along the river's headwaters. This facility remained active through the early 1930s and constituted Oregon's "Central Hatchery." However, with construction of the Bonneville Dam and the necessity of rerouting rail lines through the area the hatchery required substantial redesign and rebuilding. This work was carried out by the Oregon Fish Commission with an eye toward relating the hatchery to developments associated with the Bonneville Project.

By the late 1940s it was recognized that the Bonneville Dam, along with others built across the Columbia River, was having a substantial impact on the mortality rate of fish descending the river. In recognition of this, the Corps of Engineers took over official control of the hatchery in order to further Federal involvement in efforts to maintain the economic vitality of the region's fishing industry. Because the reconstruction of the hatchery in the late 1930s had been implemented in order to orient it toward the Bonneville Project as a whole, integration of the hatchery into the Corps' facilities at the site was easily accomplished. Today, some of the hatchery has been altered in order to increase production. However, the main structures still retain historical integrity and they contribute to the NHL district as a whole. Without the dam they would have never been built in their present configuration and they would not have achieved the economic significance they now hold within the context of the Pacific Northwest's fishing industry.

The Administration Building and the Auditorium Building were built as part of the original Bonneville Project. They were designed to house offices for personnel charged with the operation of the dam and powerhouse and to supply social facilities for the community associated with the project. They still retain design integrity and are an integral part of the district. The Bonneville complex has become a major regional tourist attraction and the pleasing architecture of these structures has become an important part of the public's image of the project as a whole. Similarly, the landscaping that covers much of the district is prominently associated with the project in the public's mind and for that reason is included as an integral part of the NHL district. Throughout the history of the Bonneville Project the Corps of Engineers has made clear that this is a public project and they have made it a point to make the site available to the public so they can see how their tax dollars are being spent. Viewed in this context, the architecture and landscaping associated with the project are unquestionably worthy of inclusion in the nomination.

HISTORICAL BACKGROUND

The Bonneville Project is one of the most massive construction efforts mounted in North America. The project involved harnessing the energy of the ninth longest river on the continent, putting to work more than 3,000 laborers, and developing unique engineering designs and construction approaches. The Bonneville Project was one of the foremost efforts of the New Deal Administration of President Franklin Delano Roosevelt to combat the Great Depression. In that regard the construction at Bonneville possessed national significance because it created jobs, expanded navigation potentials, checked floodwaters, and produced hydroelectric power for the development of industry and a higher standard of living in the Pacific Northwest.

The potentials of the Columbia River had long been recognized. The stream had major salmon runs and passed through thousands of square miles of fertile but arid lands on the Columbia Plateau. During its course of 1,210 miles the river drained 259,000 square miles. The Columbia possesses a flow ten times that of the Colorado River and by 1930 was considered America's greatest power stream. The river also produced disastrous annual floods in May and June when the snows in the interior of the Pacific Northwest melted in a short period to create tremendous freshets which scoured the margins of the river and spread out over adjacent lands.

The Bonneville Project emerged from the development of the "308 Report" under the River and Harbor Act of 1925. This measure directed the Corps of Engineers and the Federal Power Commission (established in 1920) jointly to develop estimates for Congress on navigable streams where hydroelectric power development appeared feasible. The 1925 act prescribed that considerations of this study were to include navigation, irrigation, flood control, and generation of electrical power. The Corps of Engineers submitted its report in April, 1926. The study became House of Representatives Document 308.

In the River and Harbor Act of 1927 Congress directed the Corps of Engineers to mount the surveys of streams in the "308 Report." The Portland District of the Corps drew the assignment for the survey of the Columbia below the mouth of the Snake. The Corps moved steadily to compile data. The project involved field work to examine foundation potentials for dams and locks, stream flow analysis, topographic and hydrographic surveys, and identification of irrigable and flood-prone areas. The study was coordinated with work by the Geological Survey, the Bureau of Reclamation, and special consultants. The final report on the Columbia below the Snake contained 1,845 pages.

Col. Gustave Lukesh, Chief of the North Pacific Division and Portland District Engineer, noted that the chief outcome of dam construction on the lower Columbia would be in the generation of hyrdoelectric power, not in navigation improvements. The latter had been the nineteenth century justification for federal expenditures on river improvements. "While navigation possibilities sanction the report," noted Lukesh, "the power possibilities of the stream may be considered the basis of this report." The "308 Report" anticipated ten dams initially in the Columbia drainage: Grand Coulee was the key dam in the upriver project, while Bonneville Dam was the key to the downriver development.

In the midst of the studies of America's rivers mounted by the Corps of Engineers, the country slipped into the Great Depression. With more than 13,000,000 unemployed, Franklin Roosevelt campaigned for new directions in the nation's responses to this economic calamity. Speaking in Portland, Oregon, in September, 1932, Roosevelt referred to the "vast possibilities of power development on the Columbia River." In spite of a hectic campaign, Roosevelt insisted upon a tour of the Gorge so that he might see the site of the future Bonneville Dam.

The advent of the Bonneville Project has been described by historian William Willingham:

> The great public benefits from government investment in the hydropower potential of the Columbia River, the need for relief work to overcome massive unemployment, and the election of Roosevelt provided a climate favorable to funding the Bonneville Dam. However, other public works projects also competed for the limited dollars available. Only strenuous lobbying by Senator Charles L. McNary and Representative Charles H. Martin secured the funds initiating work on Bonneville Dam in 1933.

The Bonneville Project was funded by Title II of the National Industrial Recovery Act. The project was a continuation of the Federal Emergency Administration of Public Works and that agency was the branch of the government for funding Project Number 28--the Bonneville Project. Not until August, 1935, did Congress formally approve the construction, removing it from the presidentially-designed emergency funding system.

Bonneville Dam was to be constructed 42 miles east of Portland and 144 miles upstream from the mouth of the Columbia. Work commenced in October, 1933, with refined engineering studies, exploratory drilling, construction of roads and labor camps, and a temporary new alignment of the tracks of the Oregon-Washington Railroad & Navigation Company. By June, 1934, the construction, carried out under the oversight of the Portland District, Corps of Engineers, had included excavation for the powerhouse foundation, relocation of the Spokane, Portland & Seattle Railway Company's main line (on the Washington shore), and commencement of construction on 20 permanent residences at Bonneville, Oregon. All of these projects were carried out under contract for an expenditure of $1.8 million.

Over the next year, until June, 1935, several new projects were undertaken. These included completion of the excavation for the powerhouse and lock and the pouring of 113,000 cubic yards of concrete for the substructure of the powerhouse and 66,000 cubic yards for the lock. In the spring of 1935 the carpenters finished the residences at Bonneville, Oregon, while other crews completed the relocation of the railroad on the Washington shore. Working in exceedingly difficult conditions, laborers constructed cofferdams for the south half of the dam in the main river channel and, in February, 1935, began excavations in the riverbed for the foundations of the dam. Also in the spring of 1935 contracts were let for rerouting the Union Pacific Railroad [Oregon-Washington Railroad & Navigation Co. tracks], and construction of two turbines, two generators, service-station units, main dam gates, cranes, hoists as well as the gates, and cranes and hoists for the powerhouse and lock. Expenditures in 1934-35 were $12.3 million.

In September, 1935, the pouring of concrete commenced on the dam and related structures within the south cofferdam. A total of 276,000 cubic yards of concrete were needed to complete the south half of the dam to high water level. The next step was the construction of the north cofferdam cribs. In November, 1935, crews began work on the superstructure of the powerhouse and poured 18,000 cubic yards of concrete. While this work progressed laborers began clearing vegetation from 820 of approximately 2,500 acres of land within the projected reservoir. Anticipating navigation needs, other crews removed rocks and fishwheels at Boat Rock and at the mouth of Ruckel Creek. In the fall of 1935 the government let contracts for the gantry cranes, lock-operating equipment, miter gates, and machinery. Also during this year concrete work was completed on the Bradford Island fishways and fish locks. Work was commenced on the Washington shore fish ladder and the Tanner Creek bypass canal. The Auditorium and Administration Buildings and the landscaping were also completed in 1936. Expenditures in 1935-36 were $11.6 million.

In August, 1936, crews completed the north cofferdam and began excavations prior to pouring of concrete in September. By March, 1936, it was possible to remove the north cofferdam. During 1936-37 a total of 295,000 yards of concrete were poured for the dam and its associated structures. At the powerhouse, work commenced on the installation of equipment: gates, overhead traveling cranes, pumps, compressors, and machine shop equipment. In February and March, 1937, crews began installing the first two turbines and generators, switching equipment, transformers, distribution centers, and other projects related to manufacture and transmission of electricity. By June, 1937, a total of 1,649 acres had been cleared in the reservoir area. Expenditures in 1936-37 were $6.6 million.

In 1937-38 several projects were completed at Bonneville. The locks opened in January , 1938. By June, 1938, all clearing was finished in the reservoir and the fishways were in operation. Total expenditures in 1937-38 were $16.5 million.

Oversight of the Bonneville Project was carried out by the Portland District Office of the Corps of Engineers. Key figures included several career specialists with the Corps. Col. Thomas M. Robins who, in 1929, became Division Engineer, was a graduate of West Point in 1904. Maj. Charles F. Williams, a West Point graduate of 1913, was District Engineer in Portland. Capt. Joseph S. Gorlinski served as the Resident Engineer at Bonneville. Born in San Diego, California, Gorlinski was a West Point graduate in 1918 who came to the Portland District in 1932. Maj. H. A. Skerry served as the Executive Officer; he was a graduate of the University of Colorado in 1912. The Executive Officer at Bonneville was 1st Lt. C. M. Myers. A West Point graduate in 1925, Myers was assigned to the project in 1934.

Because of the massive nature of the Bonneville Project, the Chief of Engineers split the Portland District, setting up a Resident Engineer's Office at the dam site. In May, 1935, the Portland District split into two units, the Second Portland District securing responsibility for the dam and river projects from the mouth of the Snake to Vancouver, Washington. In 1937 this unit became the Bonneville District; it was consoldiated back into the Portland District in 1941.

Charles F. Williams was succeeded as District Engineer of th Bonneville District by Maj. Theron D. Weaver. C. E. Grimm, Chief of the Engineering Branch, had direct responsibility for the Bonneville Project.

Much of the engineering mounted for the project was done by graduates of Oregon State University. H. L. Cooper designed the powerhouse equipment; A. A. Osipovich designed gates and machinery for the navigation lock; Raymond Archibald designed the navigation locks; A. P. Ding worked on the designs for the electrical equipment to operate the locks; Mark Nelson helped design the powerhouse; Lamond Henshaw carried out hydraulic studies; Arthur Soring and John Reiff worked on the lock design. Several others, most of them graduates of the state university's School of Engineering between 1925 and 1930, were associated with this project.

The Corps contracted out the building of the dam first to Columbia Construction Company and subsequently to Guy F. Atkinson, Inc. The powerhouse was built by Columbia Construction Company and J. F. Shea Company. The challenges facing the more than 3,000 workers at this site have been discussed by William Willingham in his history Army Engineers and the Development of Oregon (1983):

> The Construction of the dam itself posed severe problems. The depth of water, current velocity, and harsh weather conditions that limited working time led to the adoption of massive cofferdams to divert the river. First, a horseshoe-shaped timber crib cofferdam enclosed the south half of the spillway section site. After the south spillway's partial construction, the cofferday was removed and the river diverted through it while another cofferdam was put in place for work on the north section. Following completion of the entire north section, the contractors placed a pre-fabricated structural steel cofferday over the crest section so that these units could be brought to final elevation.

The engineering employed in the Bonneville Project involved several new departures in construction. Among the special techniques was the development of cribs to fit the irregular bottom of the river. This cribbing avoided the costly and time-consuming levelling of the bottom of the stream. The six floating, morring bits which move up and down in the lock walls for use by small vessels were designed by Brig. Gen. John Kingman of the Corps. These techniques and designs were among many which were pioneered in the projects at Bonneville in the 1930's.

President Roosevelt took a strong interest in the Bonneville Project. In addition to his campaign visit in 1932, he returned to Bonneville on August 3, 1934. At that point, when there was still question about the feasibility of navigation locks, he announced his unequivocal support for the facility, even if it shoved up the project costs another $1.2 million. Roosevelt and his wife returned to

Bonneville a third time on September 28, 1937, to dedicate the project. Speaking that day, the President said:

> Truly, in the construction of this dam, we have had our eyes on the future of the nation. Its cost will be returned to the people of the United States many times over in the improvement of navigation and transportation, the cheapening of electric power, and the distribution of the power to hundreds of small communities within a great radius.

An estimated 20,000 people gathered at Bonneville for the dedication ceremonies and, later that day, another 10,000 greeted the Roosevelts when he arrived at Timberline Lodge to dedicate that great public works project on the south slope of Mount Hood.

The first power generated at the Bonneville Powerhouse was produced in March, 1938. The formal opening of the dam occurred on July 9, 1938, when Secretary of the Interior, Harold Ickes, tripped the switch for the first transmission of electricity to the City of Cascade Locks. Congress created the Bonneville Power Administration in August, 1937, to market the electricity manufactured by this dam. Eventually the Corps of Engineers, managers of the dam site, installed eight additional turbines and generators and, in the 1970's, constructed a massive second powerhouse in a new channel cut through the shore on the Washington side of the river. The original Bonneville Project cost $82,239,395.

The Administration Building, Auditorium, and landscaped area at the entry to Bonneville, Oregon, have played an integral role in the Bonneville Project. These buildings and the landscape were part of the total design and construction project of 1934-37. The Auditorium has served several generations of government workers residing at Bonneville. It quickly became a place for meetings of the Bonneville Community Church where, in 1937, Samuel Lancaster, the designer of the Columbia Gorge Highway and the one-time operator of a resort at Bonneville, served as a Sunday School teacher. The building has hosted plays, dance classes, sports events, civic celebrations, and the Parent-Teachers' Association. For many years the Bonneville Post Office was housed in south wing of the Administration Building.

During World War II, Bonneville was the focus of concern as a target for attack or sabotage. During the war the Corps employees painted all of the buildings green, including the roofs. Even the gravel and blacktopped roadways were painted with camouflage. The Corps mounted concrete "pill boxes" to flank the main entry road mid-way between the Auditorium and the railroad viaduct. Other concrete guard stations, with gun ports, were set up near the dam and powerhouse on Bradford Island. Additionally in 1942 the Corps experimented with smoke screening, filling the gorge with dense clouds of partially burned diesel fuel ejected from nozzles and from an open ditch on Bradford Island. None of these precautions was tested. The Bonneville Project emerged unmolested from the war. The green camouflage paint, however, is yet visible on the lower walls of the Auditorium and Administration Buildings.

The Bonneville Project was one of a series of massive federally-funded ventures in the early twentieth century which sought to develop the natural and human resources of the country. Preceded by reclamation projects and the construction of Boulder Dam, the Bonneville Project and its companion--the Grand Coulee Project--were major commitments of the nation to the future development of the Pacific Northwest. While the Bonneville Project served as an immediate economic stimulus through creating employment and payrolls, its long-term impacts were the ones which helped shape the future direction of the region. The improvements to navigation and the generation of vast quantities of relatively cheap electricity contributed to the emergence of new industries along the Columbia River. The manufacture of aluminum and the related aircraft manufacturing and shipbuilding in the region became possible in the 1940's because of the dam, powerhouse, and lock at Bonneville. In a very real sense, this project helped the nation mount its defenses during World War II and the latter part of the twentieth century.

The Bonneville Project was a unique application of newly developing skills in engineering, construction, and technology. Bonneville Dam, resting primarily upon a landslide, had to be designed to "float" atop a geological formation yet hold back the tremendous floods of the Columbia River. The Navigation Lock, reportedly the largest of its kind in the world in the 1930's, brought forth new designs for gates, regulation of water flow, and maintenance. The massive Kaplan turbines and their self-adjusting blades had to be constructed to withstand the driving power of one of the continent's major rivers. The cofferdams had to hold back the flow of the river while workmen labored in a difficult setting to fix reinforcing rods and pour concrete for the dam and powerhouse. The Bonneville Project was a major experiment in design and construction skill. It met the tests. In a very real sense the Bonneville Project is the epitome of "Hamiltonianism-in-action." Alexander Hamilton had envisioned an active federal government which stimulated economic development. To the extent that the New Deal embraced that philosophy, the Bonneville Project stands as a monument to it. In perhaps a more concrete way, this project, its engineering, labor, and contributions serve as a metaphor for American life in the twentieth century.

Public interest in the Bonneville Project mounted during construction in the 1930's. Thousands of visitors came to the gorge to watch the workmen building the dam and its associated features. Many hiked to Wauna Point, a prominent overlook in the Eagle Creek watershed that gave vistas of the new dam and powerhouse. The public interest in Bonneville had persisted. To meet this need the Corps of Engineers has produced publications, erected the Visitors' Center on Bradford Island, and provided for tours of the facilities. Between 1973 and 1983 tourist visits ranged from a low of 381,470 to a high of 1,257,954 in a single year. In the years 1977-79 approximately 638,000 visitors came to the Bonneville facility each year. These figures suggest that the Bonneville Project is one of the most popularly visited sites in Oregon.

The Bonneville Project possesses a dynamic. The structures and machinery at Bonneville require regular maintenance and upgrading. Rather than being a static feature, the Bonneville Project continues to evolve as the region's needs for power and navigation alter. This has been mirrored in the installation of increasing numbers of turbines, the construction of the Bonneville Second Powerhouse, and in the proposed new Navigation Lock on the Oregon shore. In many ways the Bonneville Project is like the Columbia River which powers its turbines, spills through the dam, and floods the locks. Woodie Guthrie, the ballad-singer of the 1930's, composed the music and wrote the lyrics of "Roll On, Columbia Roll On" for the musical sound track for the movie "Columbia: Ameria's Greatest Power Stream." The dynamics of that rolling river persist at Bonneville and in the new elements developed at that site to serve the needs of the region's population.

In 1909 the Oregon legislature appropriated $12,000, available on May 24, for the construction of a Central Hatchery on the Columbia River. "The matter of a location was thoroughly discussed by the Board," wrote the Master Fish Warden, "and I was instructed to investigate all streams tributary to the Columbia for the purpose." The Fish Warden, R. E. Clanton, accompanied by Henry O'Malley of the U.S. Bureau of Fisheries, examined Hood River, Eagle Creek, Tanner Creek, Plymton Creek, Big Creek, and Young's River in this reconnaissance. "After carefully considering the advantages of each stream" noted Clanton, "I decided to locate on Tanner Creek, at Bonneville due to its superior water and its close proximity to the Columbia River, which reduces the work of liberating the fry to a minimum" (Oregon Department of Fisheries 1911:22).

By 1910 the Central Hatchery had settled into its key role in the fisheries enhancement program in Oregon. During the fall and winter of 1909 this facility received 16,059,450 chinook eggs. In spite of losses of eggs and fry in excess of 850,000, the hatchery staff was able to incubate and release an estimated 15.2 million fry into Tanner Creek or at nearby points along the Columbia. In the fall of 1910 the Central Hatchery began receiving new supplies of eggs: 2.1 million from the McKenzie River; 1.8 million from the Wallowa River; 232,000 from the Salmon River in Idaho; 2.5 million from the Umpqua; 600,000 early chinook and 3.4 million late chinook eggs from the U.S. Bureau of Fisheries. These combined sources meant that the hatchery employees had 10.7 million eggs to care for as well as 1.5 million sockeye salmon eggs from Yes Bay Hatchery in Alaska. To cope with these rearing responsibilities, the staff worked hard to construct rearing ponds where they could feed the fry until their release into the Columbia (Oregon Department of Fisheries 1911:16-17).

Pond rearing of salmon fry was first proposed in 1904 when, in spite of the release of millions of incubated fish, the returns did not increase. "When fish have been held (for short periods only) at some of the State hatcheries in years past," wrote Clanton, "it has only been upon a very limited scale--the number of fish held and fed being very small in proportion to the number hatched...."

H. C. McAllister was a proponent of a pond program but lacked funds to try this type of rearing. In 1910, however, Warden Clanton went to the cannerymen and packers along the Columbia to solicit their assistance and secured contributions of $1,500. Using these funds, Clanton had the crews at the Central Hatchery construct three ponds, each 100 feet by 20 feet and three feet deep. "Upon completion of these ponds a substantial start was made toward the establishment of a practical system of propagation work at this station," concluded Clanton (Oregon Department of Fisheries 1913:13-14).

The ponds at Bonneville functioned so successfully that the Fish Warden proposed in 1911 that all hatcheries in Oregon construct rearing ponds. The pond system at the Central Hatchery was expanded steadily so that by the end of the year fifteen large ponds held the fry. The crews constructed a new flume to carry water from Tanner Creek to flush these rearing facilities. The Fish Warden contracted with the Warren Packing Company to purchase 10.5 tons of smelt from the Cowlitz River for the bargain sum of $8.75 a ton. The smelt, processed in a meat grinder at Bonneville, became the primary food for the fry, except when eels could be secured from fishermen at the Willamette Falls in Oregon City (Oregon Department of Fisheries 1913:16-17). Four years later the steamer Tahoma delivered 30-35 boxes of smelt a week on Tuesday, Thursday, and Saturday to feed the fry (Wilson 1915b; Clanton 1915a, 1915b).

The Oregon hatcheries released in 1921 a total of 50,828,232 fry. The Central Hatchery incubated and reared more than 20% of all the fish artificially produced in the State (Table II-4; Figure II-5) and may have supplied stock for the releases at Herman Creek located to the east. The Herman Creek releases were in excess of five million fry (Oregon Fish Commission 1923:14-15).

By 1933 the Fish Commission realized that major changes were needed at the Bonneville Central Hatchery. Over the preceding 24 years, small appropriations had contributed to a slowly evolving hatchery facility. The main buildings--hatchery and residences--were in deteriorating condition. The constant flow of water through the facilities, as well as the rugged winter conditions in the gorge, had taken their toll.

More importantly, the Army Corps of Engineers was moving ahead on the anticipated construction of Bonneville Dam, a project which raised questions of rights-of-way, access, fish passage, and the impacts of the work on the hatchery site. In addition, a group of Clatsop County fisheries men, primarily cannery owners and shippers, known as the "Bonneville Dam Committee," wanted to work with the Fish Commission on advising the Corps on the fishways or screens for inclusion in the new dam (Oregon Fish Commission 1928-38:121).

Corps investigations of the Cascades area had commenced with charting the river and drilling for geological information in the 1870s and the 1880s in conjunction with work on the Cascades Canal and Locks. The Bonneville project began, however, to take shape with field investigations in 1930 (Army Corps of Engineers 1937:3). Although the Corps examined sites between the mouth of the Sandy River and the upper Cascades, its principal focus was a the Lower Cascades near the head of the tidewater on the Columbia. By 1933 Bonny Rock, a portion of bedrock, and the lower end of Bradford Island, beckoned as one of the prime sites. "The rock forms a low mass extending along the shore of the channel on the south side of Bradford Island southward, and passes under the valley wall," noted Edwin T. Hodge. "It forms an excellent abutment for a dam," he concluded (Hodge 1932:38).

The location of the Central Hatchery, commonly known in the 1930s as the State Fish Hatchery or the Bonneville Hatchery, posed special challenges in the midst of the massive construction project which emerged at Bonneville in 1933. Congress authorized the Bonneville Project that year and appropriated $31,000,000 for the Corps of Engineers to administer in the building of the dam, powerhouse, and related facilities.

Of critical concern to the State of Oregon was the Columbia River fishery. Never before had a major dam spanned a key salmon producing stream at tidewater. "It was at once related, and frankly admitted," noted the Oregon Fish Commission, "that the great Columbia River salmon runs, and indirectly the industry itself, would be seriously menaced unless proper and adequate provisions were made for the passage of adult salmon upstream to their spawning areas and for passing seaward migrants downstream over this barrier" (Oregon Fish Commission 1934:12-13).

In November, 1933, fishermen, packers, Oregon, Washington, and Idaho fish commissioners, and the U.S. Bureau of Fisheries joined to establish an eleven member committee to work with and advise the Corps of Engineers on the fisheries issues at Bonneville. The principal concern of this committee was to find the best options for assisting the fish in passing over, through, or around the dam (Oregon Fish Commission 1934:12-13). At this time, efforts focused on assisting the natural fish populations to cope with the hydroelectric dam, rather than emphasizing artificial propagation and stocking. In 1937, the Commissioner of Fisheries had observed that "at best [artificial propagation] is only a supplement for natural spawning" (Commissioner of Fisheries 1937:60). As a result, although a hatchery program was an element in the fish conservation program for Bonneville Dam at the time of its construction, it did not play as large a role as it would in later years.

The construction of the dam interferred with the continued operation of the Bonneville Hatchery by the State of Oregon, leading to its eventual acquisition by the federal government. The hatchery lay immediately adjacent to the construction workers' camp on the east, while to the south the projected new route for the railroad was to pass along Tanner Creek and over ponds and other facilities. The Oregon Fish Commission, which in March, 1934, suspended all licenses for set nets in the Bonneville area because of the construction, confronted the rapidly developing problems in its May meeting. Chairman John C. Veatch reported that the Corps needed part of the hatchery site and that he had asked Hugh C. Mitchell, the Director of the Department of Fish Culture, to prepare estimates "for the replacement of all properties at Bonneville." Veatch also proposed that the State of Oregon transfer its hatchery lands to the federal government "for a sufficient consideration to cover the costs of the replacements and new buildings." C.A. Leineweber, and R.S. Farrell, also commissioners, joined Veatch in endorsing this proposal (Oregon Fish Commission 1928-38:129, 135).

On October 11, 1934, the Fish Commission received Mitchell's report on the Bonneville Hatchery. Mitchell recommended that the state dispose of its lands between Tyrrell's Tavern on the Columbia River Highway (lots 1, 2, 3) and "a certain parcel of land which due to the relocation of the Union Pacific Railroad by the U.S. Engineers as a result of the Bonneville project, was of no further value." The commissioners approved of the condemnation and disposal of these tracts, offering them for sale to the highest bidder on October 31 (Oregon Fish Commission 1928-38:143). These four acres, a strip 150' by 480' along the east boundary of the hatchery property near Tyrrell's Tavern, passed to the Corps for the new access road from the Columbia River Highway into the administrative headquarters at Bonneville. Within a short time the commissioners conveyed an additional 2.5 acres along the northern boundary of the hatchery site as well (Oregon Fish Commission 1934:14).

Even though the Commission disposed of part of its lands, the presence of the hatchery and its ongoing functions shaped the railroad relocation. Where the simplest and least expensive solution to the right-of-way realignment would have been a fill, the hatchery buildings and ponds stood in the way. Engineers estimated the fill would require at least a corridor 250 feet wide, whereas a viaduct needed but 75 feet. Thus the Corps of Engineers projected a 900-foot-long, double track, earth-filled, spandrel arch viaduct. The Fish Commission agreed to dispose of this land and work commenced on the viaduct by Birkemeier and Saremal, subcontractors, in early October, 1934 (Anonymous n.d.: Tanner Creek Viaduct).

The impact of this event--the taking of nearly 10 acres of land--was keenly sensed by the Oregon Fish Commission. "It is not possible, without complete and detailed knowledge of the Commission's facilities at that point," wrote the commissioners, "to accurately visualize and fully comprehend to what degree the whole scheme has confined hatchery operations and necessitated rearranging and adjusting facilities not permanently abandoned." The various Corps projects and the moving of the railroad required the removal of the feed room (where fish food was processed), cold storage plant, ponds 14 and 17, three residences, and the replacement of the flume and two major pipe lines (12" and 24") from Tanner Creek. Because the viaduct would block the hatchery entrance, the Corps proposed that the hatchery be reoriented 180 degrees and open for access via the Bonneville administrative grounds from the north; the former entrance was projected as the "rear or back-door to the hatchery" (Oregon Fish Commission 1934:15).

To come to terms with these alterations, the Fish Commission secured the architectural firm of Claussen & Claussen of Portland, Oregon, to draw plans for a new cold storage facility, utility building housing the feed room, garage, shop, and store room, a cottage, and a modern hatchery building "to be located in a more scenic and commanding setting in the grove facing the residential district of the Bonneville Dam project." The Commission envisioned razing the original incubation building and constructing new rearing ponds. The overall goal was to make maximum use of the reduced land base, maintain or increase the propagation of fish--all the more critical an enterprise because of the nearby dam--and build a new hatchery complex which would be "favorably looked upon as a neighboring institution by those responsible for the Bonneville project." The Oregon Fish Commission was determined to create a salmon hatchery, the "efficiency, capacity and beauty of which is unsurpassed in th United States, and of which the Fish Commission and the State of Oregon may well feel proud" (Oregon Fish Commission 1934:15-16).

The Battery C complex, the last built, consisted of six ponds, 8 feet by 80 feet, each 3 feet deep. Battery C occupied the site of the former incubation building erected in 1909. The improvements also included a new 18-inch, stave wood pipe running for 2,250 feet from th diversion dam on Tanner Creek to a distributing pond constructed with cement walls and screens. A fifty-four feet deep well and pump, with both electrical and backup gas power, was prepared for emergency use. Additionally, crews in 1936, cleared the grounds, installed electrical service, cribbed the waterline along Tanner Creek, blasted and removed obstacles in the creek, razed the old power house, removed debris, reroofed remaining buildings, painted all structures, and worked on the landscaping (Oregon Fish Commission 1936:25).

The routine at the new Bonneville hatchery was very much like that in the former facilities. The crews collected eggs, including those shipped to the hatchery from other locations, incubated the fish, transferred the fry to the rearing ponds, fed the fry, and eventually released the fish or shipped them to other release points. As in the past, the station was subjected to winter storms of wind, ice, and snow, and to periodic flooding. The worst of these floods was the 1948 freshet which destroyed Vanport near th confluence of the Willamette and Columbia Rivers miles downstream. This flood poured into the cold storage plant, overflowed the ponds, and carried off the silver salmon fingerlings. This species, making its first appreciable return in 1946, was in a delayed holding cycle of 14 months. The flood required repair of equipment and cleaning of the ponds. This was also the occasion for laying the concrete floor in the garage and shop. In 1948 the Bonneville hatchery maintained two tanker trucks for hauling fry to release points or to distant rearing ponds (Oregon Fish Commission 1947:8; 1948:8).

Steadily in the 1940s and 1950s, the Corps of Engineers and the Bureau of Reclamation planned and built a number of dams in the Columbia watershed. The projects were of multiple purposes: flood control, manufacture of hydroelectric power, improvement of navigation, irrigation, and public works. Despite the conservation programs initiated with the construction of Bonneville dam, these facilities took a heavy toll of the fisheries resources as they converted the Columbia from a free-flowing stream into a series of massive lakes or reservoirs.

Before the construction of Bonneville Dam, the plight of the salmon runs had been seriously considered by the federal government as well as by the State of Oregon and private industry. The Commissioner of Fisheries had stressed the need to mitigate the effects of dam construction on the fish runs in its 1937 report to Congress.

Claussen & Claussen (sometime listed as Clausen & Clausen) were Portland architects working between 1912 and 1935, primarily in urban designs. A dozen of their buildings were inventoried by the Planning Department of the City of Portland in the 1980's. Their work was, at best, ordinary. They specialized in "streetcar era" style apartments, though at least two were rendered in the California mission style and the English cottage style. The most noteworthy of this firm's designs was for the Guardian Building (presently the Buyer's building), a 12-story structure erected in the Chicago School Style (Bureau of Planning, City of Portland 1984; Clark 1983:108-9).

In 1935, construction commenced on the new hatchery facilities at Bonneville. The project was ambitious and involved a totally new configuration of the site. The original rearing ponds, situated at the base of the hillside immediately east of Tanner Creek and due north of the new railroad viaduct, were targeted for filling. The plan was to abandon several of these ponds. The three farthest to the northeast were retained and rebuilt as new display ponds. The old display ponds, situated in what by 1986 was the visitor's parking lot, were also slated for filling.

Phase I of the project commenced on February 19, 1935, with the awarding of bids for the new residential compound and the plumbing contract at Bonneville. The firm of Johnson & Pederson gained the construction award with a bid of $5,827. The plumbing contract, $777.00, went to J. M. Harder (Oregon Fish Commission 1928-38:153). The construction involved building a dwelling, a cottage and a two bay garage with similar stylistic finishes (Corps of Engineers 1974:Sheet 6; Oregon Fish Commission 1936:24). On September 17, 1935, the Commission contracted with the Parelius Construction Company, Inc., for $14,484.00 to build the new hatchery facilities at Bonneville.

The new construction was finished by 1936. In its annual report for that year the Fish Commission noted that the dwelling and cottage were completed and in use for nearly a year. The utility building, cold storage plant, and new hatchery, described as "of distinct and pleasing architectural design" were also in service. The hatchery building was first used in the fall of 1936 with the installation of 120 cedar troughs, connected to the new filtered water supply. The final phase of the project was the building of an office with laboratory and storeroom for records. This project was nearly completed in 1936 (Oregon Fish Commission 1936:25).

The reconstruction of the Bonneville hatchery increased its capacity by an estimated 3,000,000 fingerlings. This was accomplished through the construction of ponds later identified as Batteries B and C.

A major effort to protect the fish runs focused on providing fish passage facilities for Bonneville Dam. It was headed in 1933 by a committee of private industry and state representatives working with the U.S. Bureau of Fisheries and the Corps of Engineers to resolve the fisheries issues at Bonneville. The principal concern of this committee was to find the best option for fishways--gravity or lift-type--to assist the fish in gaining passage over the dam (Oregon Fish Commission 1934:12-13). The resulting solution included fish ladders, hydraulic fish lifts, and a novel collection system (Willingham 1983:195-196).

Fish biologists also tried to address the problem of the downstream migration of fingerlings in advance. Before construction of the dam, most researchers believed that a majority of the fingerlings could pass through the turbines or the spillway gates. Bypasses were also provided in the dam to allow fish to drop in stages from the dam pool to the river below. Time proved, however, that the upstream fish passage was more successful than the downstream passage. At least 15% of the migrating fish were killed at Bonneville Dam by various injuries. As more dams were built along the Columbia River, opposition by fishery interests and fish biologists grew to the existing fish passage programs at Bonneville and other dams. It soon became clear that fish passage structures alone could not mitigate the problems caused by the hydroelectric dams (Willingham 1983:197, 199ff).

In response to the inadequacies of the fish passage program, the Corps accelerated its hatchery program in 1949. The hatchery program at Bonneville Dam, acquired by federal government during dam construction, had been posed as a partial solution to the possibility of damage to the salmon fisheries in 1937 (Commissioner of Fisheries 1937:65), but the hatchery was not viewed as a major solution to the fish decline until after 1949. Even at that time, the benefits of a hatchery effort were still not fully proven (Smith 1979:79). From 1949 on, however, the Corps of Engineers assumed a major role in developing the hatchery mitigation program (Willingham 1983:199).

As a result of the increased efforts of the hatchery mitigation program, research has solved many problems of salmon propagation and management. One of the research milestones was the development of the Oregon moist pellet which innoculates juvenile salmon against disease using feed. Before the introduction of the Oregon Pellet in 1959, tuberculosis had been an increasing problem in the Columbia hatcheries, steadily increasing mortality rates (Smith 1979:79). Other researchers worked to increase the survival and return rate of the hatchery fish and to implant new runs on previously non-supporting drainages (Netboy 1980:106-114; Willingham 1983:199). Today, the tasks accomplished by hatcheries are many and varied, including fish tagging and population studies, control of parasites and disease, incubation and growth studies, water pollution, and rearing operations (Bell 1986:133ff).

Part of the new and continued emphasis on the Corps hatchery program included a major construction phase of new facilities at the Bonneville Hatchery, constructed to the west of the old complex and west of Tanner Creek. Funded as part of the John Day Lock and Dam project, the new facilities at Bonneville were planned in 1974 and constructed in 1974-75. The mid-1970s construction project preserved the 1935 incubation building, office building, and batteries A and B (redesigned and constructed anew in 1954-55). It also preserved two concrete block buildings, a public restroom and a three-bay service garage, both constructed in the early 1950s (but not architecturally compatible with the earlier major buildings). It razed, however, Battery C, Garage No. 1, House No. 2, Garage No. 2, House No. 3, Garage No. 3, the Freezer Building, and the Shop Building. The Upper Holding Pond, the old rearing ponds, and the old display ponds were all slated for filling and covering with landscaping, parking lots, or new facilities.

This project involved relocating several landscape features constructed in the 1930s. Workmen removed the plaques from the flagpole base and the Lewis and Clark monument and relocated them in a new wall. They moved the sundial across the site to a location adjacent to the public parking lot.

The new hatchery facilities included new Batteries C and D, a Spawning Building, offices, Mechanical Building, Upper and Lower Holding ponds, new residences, enlarged parking facilities, and alterations in the access and service roads. The new hatchery buildings, unlike those constructed of wood in the Colonial Revival Style in the 1930s, were largely concrete, flat-roofed, functional structures calculated to endure the weather conditions and the rigors of constant exposure to water in a hatchery setting (Corps of Engineers 1974:Sheet 8). This project cost an estimated $8,000,000 and brought the hatchery to a new capacity of handling 34,000,000 eggs each year with rearing facilities for 19,000,000 chinook and 2,000,000 cohoe salmon.

The old hatchery area at Bonneville remains intact and is eligible for incorporation into the Bonneville Dam Historic District which was recently placed on the National Register of Historic Places. The site has two primary contributing features:

1. Incubation Building
2. Office (Gardener's) Building

It has two marginally compatible structures, less than 50 years old, not meriting inclusion even as secondary buildings. These non-contributing structures are the rest room and the shop-garage buildings, and Batteries A and B. The display ponds, while utilizing parts of the original rearing ponds, are of uncertain historical quality. Several original landscape features from the 1930s have been removed from their original context and moved outside and function. While the grounds possess several tall firs, the configuration of walks, paved access roads, and plantings of shrubbery and flower beds has changed so frequently since the 1930s that the landscaping is not a significant feature.

The four features in the old hatchery area which contribute to the eligibility of the nomination meet the following criteria:

1. Architecture. The Incubation Building and the Office (Gardener's) Building are good examples of the Colonial Revival Style, reflecting an ideal common in federal and state government projects in the 1930's. These buildings were architecturally compatible with the nearby residential complex in the government town, Bonneville, Oregon, including the auditorium and administration building which are still standing. Although slightly altered, they are buildings which their original designers and builders could readily recognize.

2. Conservation. These buildings are physical remains from the most ambitious fish propagation program in Oregon and on the world's foremost salmon-producing stream, the Columbia. These buildings are the second of what is now a three-generation construction effort to build the most modern physical structures and technology for the artificial propagation of anadramous fish.

3. Education. Since its establishment as a hatchery in 1909, the facilities at Bonneville have played the leading role in fisheries education in Oregon for the general public. To the present, this site has interpretive signing and encourages visitation of school groups and the general public. Nearby Bonneville Dam is the most frequently visited site in Oregon, with the Bonneville Hatchery attracting many of the visitors. In 1974 there were about 300,000 visitors at the hatchery alone; it is estimated that the minimum annual cost-benefit to these visitors was $125,000 (Cleaver 1977:90).

4. Government. This site, although it began as a State of Oregon endeavor, has had nearly constant impact by the federal government since 1933. The Bonneville Hatchery is now owned and managed by the Corps of Engineers, and, as such, the

hatchery receives a substantial financial subsidy from the federal government. The hatchery at Bonneville represents a merger of state and federal efforts to maintain the runs of anadramous fish in the Pacific Northwest. At the same time, governing units have authorized and exercised the oveseeing of projects such as dams which have had a major impact on the fisheries of the Columbia River and its tributaries.

Since 1910 the Bonneville Hatchery has played a key role in the propagation of salmon in the Pacific Northwest. Heralded as the largest hatchery in the world at the time of its construction (Oregon Department of Fisheries 1911:22), this facility has retained that reputation as it has evolved over the decades. This setting was the location of the successful experiments in pond rearing of fry prior to release. It has continued throughout its existence to be a major tourist mecca and singular location for the education of the general public about the value of the fishing industry to the state and the labor in artificial fish propagation. The Bonneville Hatchery, in its older section, retains structures which are in excess of 50 years old and which meet the criteria for nomination of that segment of the project site to the National Register.

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United States Department of the Interior
National Park Service

National Register of Historic Places Inventory—Nomination Form

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Verbal Boundary

Beginning at a point just to the west of the project entryway, the district boundary parallels the roadway and runs north along the fenceline which separates the hatchery operation from the project grounds. After 450 feet, the boundary turns slightly to a north-northwesterly direction and continues for another 450 feet. At this point the boundary heads in a general northeasterly direction as it crosses the hatchery access road and continues for 1,350 feet while making two very slight angular changes. The boundary lies just south of and parallel to Mitchell's Ditch which once served as a fish-passage facility. At this point the boundary proceeds due north for 2,100 feet across the navigation lock's downstream approach and by the regulating outlet of the powerhouse. The line continues across Bradford island in a northeasterly direction for 1,500 feet towards the dam. The boundary then continues northward for 700 feet across the front of the dam spillway. After turning at a right angle, proceed westerly within the Columbia River for 300 feet, then northerly for 370 feet onto Cascade Island. The boundary runs easterly for 1,200 feet just north of the fish ladder facility, then south for 700 feet into the Columbia River. Proceed for 300 feet within the river towards the west, then south for 1,350 feet onto Bradford Island just west of the visitor center. The boundary continues westward for 1,350 feet south of the dam. Near the northeast corner of the powerhouse, the boundary procees for 1,200 feet to the south across the Columbia River. At a right angle, the line turns to the east for 1,300 feet paralleling the Oregon shoreline and upstream approach to the navigation lock. Turn again at a right angle to the south and proceed for 370 feet onto the Oregon shoreline. Once again turn at a right angle to the west and continue for 1,650 feet on a line parallel to and south of the navigation lock. Proceed in a south-westerly direction for 750 feet, then southeasterly for 250 feet until meeting the base of the railroad embankment. Continue in a south-southwesterly direction on a slightly curved line for 1,800 feet along the base of the railroad embankment (which coincides with the project boundary) until finally reaching the original starting point.

The fish hatchery acreage abuts the rest of the historic district along the western edge of the administrative area. It is a triangular tract of land bordered on the north by the Mitchell Creek Bypass, on the south by the Union Pacific right-of-way, on the west by the principal service road at the hatchery, and on the east by the administrative area of the historic district.

The boundary encloses the contributing elements of the historic district, forming an irregular parcel which includes the administrative area (i.e. auditorium and administration buildings), the surrounding landscape design, navigation lock, dam (including fish ladders), powerhouse, and fish hatchery (historic elements only). See attached maps.