NPS Form 10-900
(Oct. 1990)

OMB No. 10024-0018

United States Department of the Interior
National Park Service

National Register of Historic Places Registration Form

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

1. Name of Property

historic name Raleigh Water Works and E.B. Bain Water Treatment Plant

other names/site number _____

2. Location

street & number 1810 Fayetteville Road N/A ☐ not for publication

city or town Raleigh N/A ☐ vicinity

state North Carolina code NC county Wake code 183 zip code 27602

3. State/Federal Agency Certification

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

Jeffrey J. Crow SHPO 10/21/99

Signature of certifying official/Title Date

State of Federal agency and bureau

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

Signature of certifying official/Title Date

State or Federal agency and bureau

4. National Park Service Certification

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

☐ entered in the National Register.
☐ See continuation sheet.

☐ determined eligible for the National Register
☐ See continuation sheet.

☐ determined not eligible for the National Register.

☐ removed from the National Register.

☐ other, (explain:) _____

5. Classification

Ownership of Property
(Check as many boxes as apply)

- ☐ private
- ☒ public-local
- ☐ public-State
- ☐ public-Federal

Category of Property
(Check only one box)

- ☒ building(s)
- ☐ district
- ☐ site
- ☐ structure
- ☐ object

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

Contributing	Noncontributing	
3	2	buildings
		sites
2	1	structures
		objects
5	3	Total

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

N/A

Number of contributing resources previously listed in the National Register

0

6. Function or Use

Historic Functions
(Enter categories from instructions)

INDUSTRY/Waterworks

Current Functions
(Enter categories from instructions)

VACANT/Not in use

7. Description

Architectural Classification
(Enter categories from instructions)

Late 19th Century American
Modern Movement/ Art Deco

Materials
(Enter categories from instructions)

foundation Brick
walls Brick
roof Slate
other Metal
Concrete

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

Raleigh Water Works and E.B. Bain Plant
Name of Property

Wake Co., NC
County and State

8. Statement of Significance

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

- [x] A Property is associated with events that have made a significant contribution to the broad patterns of our history.
- [ ] B Property is associated with the lives of persons significant in our past.
- [x] C Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.
- [ ] D Property has yielded, or is likely to yield, information important in prehistory or history.

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

Property is:

- [ ] A owned by a religious institution or used for religious purposes.
- [ ] B removed from its original location.
- [ ] C a birthplace or grave.
- [ ] D a cemetery.
- [ ] E a reconstructed building, object, or structure.
- [ ] F a commemorative property.
- [ ] G less than 50 years of age or achieved significance within the past 50 years.

Areas of Significance
(Enter categories from instructions)

Architecture
Engineering
Community Development

Period of Significance

1887-1948

Significant Dates

1887
1923
1939-1940

Significant Person
(Complete if Criterion B is marked above)

n/a

Cultural Affiliation

n/a

Architect/Builder

Winslow, Arthur (Engineer)
Olsen, William C. (Engineer)
Guion, A.H. (Contractor)

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

9. Major Bibliographical References

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

Previous documentation on file (NPS):

- [ ] preliminary determination of individual listing (36 CFR 67) has been requested
- [ ] previously listed in the National Register
- [ ] previously determined eligible by the National Register
- [ ] designated a National Historic Landmark
- [ ] recorded by Historic American Buildings Survey # _____
- [ ] recorded by Historic American Engineering Record # _____

Primary location of additional data:

- [ ] State Historic Preservation Office
- [ ] Other State agency
- [ ] Federal agency
- [x] Local government
- [ ] University
- [ ] Other

Name of repository:

_____

Raleigh Water Works and E.B. Bain Plant
Name of Property

Wake Co., NC
County and State

10. Geographical Data

Acreage of Property approx. 8

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

	Zone	Easting	Northing
1	17	713150	3959440
2			
3			
4			

☐ See continuation sheet

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

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

11. Form Prepared By

name/title David R. Black/Consultant Beth P. Thomas/Consultant

organization _____ date 5/30/98

street & number 3628 Lubbock Drive telephone 919-881-0362

city or town Raleigh state NC zip code 27612

Additional Documentation
Submit the following items with the completed form:

Continuation Sheets

Maps

A **USGS map** (7.5 or 15 minute series) indicating the property's location.

A **Sketch map** for historic districts and properties having large acreage or numerous resources.

Photographs

Representative **black and white photographs** of the property.

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

Property Owner
(Complete this item at the request of SHPO or FPO.)

name City of Raleigh, NC

street & number P.O. Box 590 telephone 919-881-0362

city or town Raleigh state NC zip code 27612

Note: The spelling of "water works" as two words in this nomination reflects its historical spelling, as opposed to its current usage as "waterworks."

7. Narrative Description

The Raleigh Water Works and E.B. Bain Water Treatment Plant stand on an approximately eight-acre grassy lot at 1810 Fayetteville Road, south of downtown Raleigh, North Carolina. The complex includes the shell of the original 1887 pump house (with 1923 alterations), facing east, and the 1887 filter house, which stand at the southeast corner of the property. North of these, with its front elevation facing north, is the handsome 1939-1940 Art Deco/Art Moderne treatment plant with adjacent settling basins. Three storage reservoirs for treated water, dating from 1887, 1940 and the 1950s, are located to the west of the treatment plant. (The 1950s tank is noncontributing because of age.) Two noncontributing buildings, both small, brick, utilitarian structures, are located on the property. The entire complex is surrounded by a barbed wire fence. Even though the general area in which the properties stand is industrial, the immediate surroundings are vacant and overgrown lots. Wilmington Street, a busy thoroughfare, lies to the east and Walnut Creek marks the south boundary of the property.

The Raleigh Water Works and E. B. Bain Treatment Plant were included in the 1991 comprehensive inventory of resources in Raleigh, conducted by Helen Ross.

1. Raleigh Water Works Pump House; 1887, 1923 additions; Contributing Building
Standing at the southeast corner of the nominated property, and largely covered with vines, the pump house is an irregularly-configured, one-story, brick building with elaborate brick detailing on its older sections. The original rectangular section was altered in 1923 with gable-roofed additions to its north and west elevations.

In its earliest form, the Raleigh Water Works pump house was a rectangular, gable-roofed brick structure oriented parallel to the line of the Fayetteville Road. Its five-bay facade had a gable over the central entrance and an irregular pattern of fenestration. Because the building sat on the edge of the sloping bed of Walnut Creek, its south end was two stories, the north end one story. The building's current one-story configuration is the result of the work done in 1923 to enlarge the facility and remove the original dam and pond. Behind the building was a tall brick chimney stack for the pump house's steam engines.

The earliest portion of the existing building is the south approximately two-thirds. Built of dark red common bond brick, it is ornamented with a wealth of masonry detail. The south gable end elevation is the most intact. Four bays wide, it has narrow, four-over-four windows whose segmentally-arched heads interrupt a deep, double-corbelled belt course of brick dentils. Above this belt course is a wide brick frieze surmounted by a mouse-toothed string course, above which is another projecting brick frieze. The gable end is pedimented, the raking edges of the gable being framed by the same frieze, mouse-tooth course and frieze treatment. Exposed outriggers support the deep eaves of the roof. The same masonry detailing continues half way along the east elevation, which contains a small and a large four-over-four window.

A slate roof covers this wing and most of the building. Two cylindrical metal roof vents (ca. 1923) are set on the ridge line of the older section. A square-section interior chimney was also added to the south end of the building in the 1920s.

Projecting from the east side of the original building is a deep, three-bay, gable-roofed addition dating from ca. 1923. Also built of common bond red brick, it copies the detailing of the original masonry, except that the lower belt course and frieze are omitted and the windows are larger and have flat, header brick lintels. In addition, the corners of the east elevation have shallow brick pilasters. Centered in the pedimented gable end is a round window, now filled in with brick. Below the window is a 1920s vintage rectangular metal sign panel with the painted message "City Water Department Pumping Station."

The broad, central entrance to this elevation has also been filled in with modern brick, leaving a small single door. Plywood covers the large windows, one on either side of the doorway, which have multi-pane steel industrial sash with tilt-in sections. The south elevation of this addition has three more of these windows. On the north side of the addition is a plain, exterior chimney. Like the south gable end, the east gable has exposed outriggers and verge boards.

At the north end of the 1887 portion of the building, and separated from it by a stepped fire wall, is a two bay, common bond brick addition, also apparently dating from ca. 1923. It has the same masonry detailing as the east addition. There are two multi-paneled, roll-up garage doors in the elevation. The original slate roof has been replaced with corrugated steel roofing on this section of the building. The north end of the wing continues the same detailing, except that the gable end is unpedimented, plain common bond brickwork. This elevation contains a doorway and one of the multi-pane steel windows.

The west elevation of the building is largely blank, except for two shed extensions which date to ca. 1923. The larger of these, behind the north addition to the building, has a standing seam tin roof. The smaller extension is at the rear of the 1887 wing. It incorporates a multi-paneled roll-up door (walled up on the exterior with concrete block) and a pair of half-glazed wooden doors.

The interior partitions and finishes of the pump house appear to date from the early 1920s and later. The floors are of concrete and the brick exterior walls are exposed or painted. Ceilings in the interior are mostly of tongue and groove boards. The earliest partitions are also of tongue and groove boards. No equipment remains in the building.

2. Raleigh Water Works Filter House; 1887, Contributing Building
Just to the west of the pump house is a one-story, rectangular, common bond brick building with corbelled brick cornices, dating from the same period as the pump house and originally used as a filter house. The gable roof, now covered with modern agricultural tin roofing, is oriented east/west and has shallow, boxed eaves. The east gable end is filled with board and batten wood sheathing.

The east elevation of the filter house has much more coarse masonry than the other three elevations, possibly indicating that much of the elevation was taken down to remove the large iron filters that the building contained and then was rebuilt. Off-center in the elevation is a large door opening, originally Tudor-arched or segmentally-arched with a peak, which has been filled in with brick, converting the opening to a brick-linteled doorway with sliding board and batten door. On the north side, the filter house still shows the ghost marks of a recently-removed shed addition. The original, deep-jack-arched central doorway on this elevation has been bricked closed. The jack-arched windows on either side of the doorway have been bricked up at the bottom to reduce their length. probably to accommodate a rise in the grade level.

The west end of the filter house also has the ghost mark of a shed addition. There are two square window openings in the upper wall of this elevation, now filled with concrete block, and a central gable vent of pierced brickwork. Centered in the south elevation of the filter house is a single, jack-arched window. Running along the lower area of this elevation is a concrete retaining wall.

The interior of the filter house is essentially one room, with exposed brick walls and board ceilings. A corner stair leads to an attic. None of the original equipment remains.

3. Odor Control Facility; 1992; noncontributing
One-story, brick utilitarian building lying immediately south of the filter house.

4. Pumping Facility; 1997; noncontributing
One-story, brick utilitarian building located west of the filter house.

5. E.B. Bain Water Treatment Plant; 1939-1940; Contributing Building

The dominant element of the water treatment complex is the main treatment building consisting of the three-story (plus basement) head house and, extending from the south end, the thirteen-bay, two-and-a-half-story wing housing the operating floor and pipe gallery. Along the entire west side of the rear wing is the two-story filter gallery with its attached exterior sedimentation basins, while on the east side of the rear wing is the seven-bay, two-story pump house. Overall, the building has a concrete frame that is clad on the outside with Flemish bond brickwork. The exposed concrete foundation walls form a water table and light-colored ornamental cast stone units (some painted white) serve as pilaster bases and caps, copings, and cornice friezes. Windows throughout are multi-paned steel industrial units, usually with pivoting panels. Most of the roofs are flat, built-up roofing with gravel ballast.

The exterior of the head house is made up of interlocking rectangular masses. The central, three-bay wide, three-story mass is topped by a hipped, battened metal roof. Flanking this central portion are one-bay, slightly shorter sections stepped back on the front (north) elevation. To the outside are wider, one-bay, two-story sections stepped still further back. These flanking sections are ornamented on their north faces with vertical fluted panels of mouse-toothed brick. The central pavilion and the first set of flanking sections have cornices composed of a fluted frieze with coping, while the outer sections have a plain frieze with coping. Centered in the front elevation of the head house is the main entrance, marked by a three-bay, one-and-a-half-story cast stone frontispiece. Vaguely Art Deco in appearance, the frontispiece has a recessed doorway that steps back on the sides and is corbelled at the top. On either side of the doorway are long, fluted panels with small ornamental panels above them, and Art Deco style metal and glass lanterns. At the top of the frontispiece is a stepped cornice containing a fluted frieze. The double doors themselves are modem aluminum replacement doors with a blank transom. Above the doorway is a cast aluminum plaque that reads "Ernest B. Bain Water Plant."

The side elevations of the main block of the head house are five bays deep, with paired windows with cast stone sills. At the southeast corner of the head house is a double doorway framed in cast stone, in front of which is a loading dock. The outer section side elevations are three bays wide, with paired windows. On the west side of the head house is a one-story pavilion added in the 1950s as a loading area for bulk chemicals. Atop the head house are the cubical masses of the elevator and stair tower and chimney.

Extending from the rear of the head house, the two-and-a-half-story south wing is divided into thirteen bays by brick pilasters with stepped, cast-stone capitals. Where they are completely exposed, the bays each have two-story, triple window strips topped by three square windows that form a horizontal clerestory. Superimposed on the east elevation of the rear wing is the two-story, seven-bay pump room, which has pilasters and triple windows in the same rhythm as the main rear wing. The south elevation of the pump room contains a large roll-up door and a single square window. The south elevation of the main wing is defined by heavy corner pilasters and has a fully-exposed basement level. At the first-floor level is a single door within a cast stone surround, reached by a gracefully curving concrete stair with wrought iron railings. Above the doorway is a vertical strip of window.

Attached to the west elevation of the main wing are the filter gallery and its adjacent sedimentation basins. When the plant was in operation, the first step in treatment involved bringing water into the basins, which are deep concrete tanks overlaid by a concrete grid. The greater portion of the basins are below grade, but at the south end the sides of the basins rise above the ground. This exposed elevation is finished with a blind arcade of concrete arches. The front row of tanks at the north end, the mixing tanks, are equipped with rocking mechanical flocculators which combined the raw water with chemicals added to bring about the flocculation of foreign materials in the water. In front of the mixing tanks is the steel framework of a horizontal beam crane used to transport the heavy containers of dry chemicals formerly originally used in water treatment.

The northern two thirds of the sedimentation basins were incorporated from the previous treatment plant, their sides raised to increase their capacity. The southernmost basins were built after the former filter building was cleared away.

The filter gallery runs the entire length of the rear wing on its west elevation. While it is two stories tall, only the upper story rises above the sedimentation basins. The side elevation of the

filter gallery is also divided into bays by pilasters, each bay containing three short windows. Above the filter gallery is a clerestory of square windows on the west elevation of the rear wing.

Entering the head house, one encounters a generously-dimensioned, two-story lobby with a mezzanine running around the upper level. Directly opposed to the front entrance is a monumental stair that rises to a landing and then carries on to the mezzanine in opposing, quarter-turned flights. The stair has ornamental wrought and cast iron railings with oak handrails. The same railings are used on the mezzanine. A row of deep pilaster beams crosses the lobby ceiling from front to rear, the sides of the beams ornamented with patterns of fluting. Tall, narrow columns with fluted capitals engage the mezzanine at either end and support a central beam perpendicular to the others. Four handsome, original pendant light fixtures are suspended in the ceiling grid. Overall, the plaster walls in the lobby are incised to look like ashlar and have plaster crown moldings. There is a tan glazed-tile wainscoting around the lower walls and the floors are of red quarry tile. At the rear of the lobby on the mezzanine level is a segmentally-arched doorway with double French doors, sidelights and transoms. Other openings from the offices that surround the lobby are more utilitarian, with half-glazed wooden doors and wood or metal window sash. The head house originally contained the superintendent's office, laboratories, the operator control room, washrooms, and other technical facilities, all with unornamented finishes. In the basement was a coal-powered boiler. Remaining on the third floor are the large wooden vats originally used to store bulk dry chemicals.

Extending from the head house at the second level is the operating floor, a platform the entire length of the rear wing. This extraordinary space is an extended arcade of plaster-molded segmental arches with pilasters marking the bays. Above the arcade on both sides is a clerestory of square window and segmental arches span the high ceiling from pilaster to pilaster. Like the lobby, the operating floor has a glazed tile wainscot, above which the plaster is incised to look like ashlar stone, and the floors are of quarry tile. The railings that fill the opening of the arcade are the same ornamental iron and oak used in the lobby.

The operating floor on the west side looks into the filter gallery on the same level. The continuous space of the filter gallery has a two-way joisted concrete ceiling, glazed tile walls and a floor of red-colored concrete punctured by the rectangular openings of the filters. Two-story concrete tanks remain in the filter gallery.

On the east side, the first seven bays of the operating floor look down into the two-story pump room, which also has a two-way joisted concrete ceiling, glazed tile wainscot and quarry tile

floors. The large electric and gasoline-powered pumps are still in place, as is a large beam crane that runs the length of the pump room above the first level. Adjacent to the pump room, under the operating floor, is the pipe gallery, which has the same finishes.

6, 7, & 8 Storage Reservoirs; 1887; 1940; 1950s. 2 contributing (1887 and 1940); 1 noncontributing (1950s)

Lying west of the main treatment plant, these three storage reservoirs are covered tanks used to store treated water as a backup to the system. The tanks are constructed of stone and concrete. The semi-elliptical tank closest to the treatment plant was part of the 1887 waterworks and was reused when the Bain plant was constructed. Its odd shape is the result of the treatment plant being built atop the tank. Southwest of this tank is a rectangular tank built in 1940; to the northeast is the 1950s round tank.

8. Statement of Significance

Narrative Summary

The Raleigh Water Works and the 1940 E.B. Bain Water Treatment Plant complex is an important physical record of Raleigh's continuing efforts to provide an urban water supply to its citizens from the late-nineteenth through the mid-twentieth centuries. The complex is eligible for the National Register under Criterion A for its association with the growth and development of Raleigh from a small town in the late nineteenth century to a small city by the mid-twentieth century. The complex contains the remains of the city's first water treatment facilities, constructed in 1887, which served the water treatment needs of the city for over fifty years. The original facilities were replaced in 1940 with the E.B. Bain Water Treatment Plant at the same site. The latter facility was Raleigh's first modern treatment system and the sole source of treated water during the city's post-War development boom between 1940 and 1967. As an embodiment of technological advances critical to Raleigh's development, the complex is also eligible for the National Register under Criterion C in the areas of engineering and architecture. In particular, the Art Moderne E.B. Bain Water Treatment Plant is an outstanding example of the high level of design for utilitarian structures produced under the sponsorship of the Public Works Administration. Its exterior is a carefully-detailed composition of well-balanced masses that combine economically to give rhythm, grace, and a sense of majesty to the structure. The interior finishes of the lobby and operating floor are on par with the better public buildings constructed in North Carolina during this period. The operating floor, with the adjacent volumes of the pump room and filter gallery, constitutes one of the finest interior spaces in Raleigh.

Historical Background and Related Contexts

From its founding in 1792 until 1887, Raleigh's municipal water system was rudimentary at best. Public and private wells, large underground cisterns on street corners, and private cisterns in some residences supplied the water to Raleigh's citizenry. Concerns about water quality led the city to pass an ordinance in 1870 allowing the levying of a $5 fine for "throwing filth or rubbish into a public well, cistern, or in any manner injuring a public pump" (Wray, p. 48). This growing awareness of the importance of clean drinking water, and the beginnings of sustained periods of municipal growth, necessitated that the city investigate establishing a modern water system. During the 1880s there were several efforts by members of Raleigh's Board of Aldermen to establish a system of waterworks for the city. An offer from a private contractor to provide water led to the appointment of an investigative committee by the board. This committee, when it

submitted its report on the offer, asked to be allowed to continue operating in order to consider other potential sources of water. In May of 1886, the committee was authorized to appoint a subcommittee to visit other cities to examine various types of water plants in operation. As a result of the subcommittee's report, the committee employed civil engineer Arthur Winslow to make surveys of the various sources of water supply near the city and of their feasibility. After some deliberation, Walnut Creek was selected as the most promising water source ("Filtration Plant is City Saga," The Raleigh Times, 18 June 1940. p. 8).

On November 11, 1886, the Board of Aldermen passed an ordinance granting a twenty-year franchise to the National Waterworks Construction Company of Ohio for the building and operation of a water supply system. The ordinance detailed the physical requirements for the system and provided flat rates for over fifty different classifications of water service. Each fixture carried its own special rate. The estimated water use for the city's 13,000 inhabitants was 50 gallons per day per capita, a figure reflecting the city's lack of a sanitary sewer system. Immediately following the granting of the franchise, a new corporation was formed under the name of "The Raleigh Water Company," including as its stockholders both the National Water-Works Company and local investors ("Filtration Plant." p. 8 and "Board of Aldermen," The News and Observer, 12 November 1886, p. 4).

Simply stated, the water works would be a multi-element system that would take water from Walnut Creek, filter it, and deliver it to the subscribers in a pure, plentiful and reliable supply. As designed by Arthur Winslow, the system began with a dam across Walnut Creek to create an impoundment. Water would be drawn upstream from the dam and conveyed by pipes to a pump house adjacent to the dam. Steam pumps would force the water through large sand filters and then into a 1.5 million gallon reservoir located on an elevation adjacent to the dam, or through pipes to a standpipe downtown, where the elevated storage would assure constant water pressure to subscribers. The cost of the system, which would have an aggregate capacity to provide two million gallons of water a day, was estimated to be $155,000 ("Filtration Plant." p. 8).

In January of 1887, the Raleigh Water Company purchased from Jesse A. Jones and his wife Mary an approximately 30-acre tract of land on Walnut Creek, just west of the Fayetteville Road, that included an existing mill dam and pond (Wake County Deeds, Book 94, p. 436). It was on this land that the first water pumping and treatment facility for the city was built.

Work began on the project almost immediately. In mid-February, the News and Observer noted that "the water works company is pushing work both night and day. They hope to have the

works completed by the first of June" ("Observations." The News and Observer. 16 February 1887, p. 4). In place of the standpipe originally specified in the franchise ordinance, it was decided to construct a water tower for elevated storage on West Morgan Street, now the AIA Tower (NR 1971). Preparations for the tower's foundations commenced in early March, as did the laying of distribution pipe, beginning on Fayetteville Street ("Observations." The News and Observer. 9 March 1887, p. 4 and "Amendment to City Ordinance." The News and Observer. 16 March 1887, p. 4). Stone masonry contractors Goodwin and Hiss, who had the contract for all of the stonework on the waterworks, had nearly seventy masons, cutters and laborers at work in March laying up the base of the tower, constructing the dam, and building the walls of the reservoir ("Observations," The News and Observer. 30 March 1887. p. 4).

An April 1 article entitled "Water Works Notes" detailed the status of the project at that point and indicates the difficult construction and engineering problems involved. The laying of a fourteen inch intake pipe from Walnut Creek 1,000 yards above the dam had begun. In order to secure the proper grade the pipe in some places had to be laid to a depth of twenty feet, and on account of bends in the stream the pipe had to be laid under the creek bed in one area, and to cross the creek under water at the dam. The reservoir, an elliptical structure 165 feet on one axis and 130 feet on the other and thirteen feet deep, was being constructed partly out of the natural stone of the site and partly with granite quarried nearby and hauled in by tramways laid throughout the area. Large blocks of local granite were also being used for the dam across Walnut Creek. The engine house (pump house), described as being "of pretty design and neatly constructed," was nearing completion, and the boilers for the steam engines to drive the plant's five pumps were being placed in position ("Water Works Notes," The News and Observer. I April 1887, p. 4).

A mid-April pay strike by workers at the dam and reservoir slowed progress momentarily, but by mid-June, water was flowing into the intake pipe and two feet of water had been put into the reservoir. By the end of June the filters had been placed in position behind the pump house and a brick building was being built around them. Each of the filters was a huge iron cylinder 18 feet tall and 10 feet in diameter ("Strike," The News and Observer, 19 April 1887, p. 4 and "Observations." The News and Observer, 16 June 1887, 24 June 1887, p. 4).

In early July, recognizing that the water works were operational though not complete, the city aldermen voted to pay the water company for an emergency supply of water until the works were formally accepted. By the end of the month, more than ninety houses in the city were connected to the company's mains and were being served ("Observations." The News and Observer. 8 July 1887. 22 July 1887. 2 August 1887, p. 4). As an ample supply of water became a reality, there

was increased interest around town in making use of the commodity. The Board of Aldermen contracted with the water company to furnish and install six drinking fountains "for man and beast" in the downtown, as well as drinking fountains and an ornamental jet fountain in Moore Square. The newspaper promoted the idea of additional ornamental fountains for the city's finer residences ("Observations." The News and Observer. 4 June 1887. p. 4). Work was begun on a pleasure park at the lake formed behind the dam ("Observations." The News and Observer. 5 June 1887. p. 5).

Early in September, the tank on Morgan Street had reached its final height of 113 feet and was nearly complete. It was estimated to have cost $14,000. Heavy rains had damaged the dam across Walnut Creek, but a force of fifty hands was put to work to repair the damages and to finally close the dam ("Observations." The News and Observer, 8 September 1887 . p- 4).

The water works was ready for its final test on September 29. Water works General Manager M. M. Moore and the system's designer, engineer Arthur Winslow, met with Mayor Thompson and members of the water works committee late in the afternoon to witness the event, together with a large number of citizens. The News and Observer reported that "From the number of people assembled on the street, some occupying balconies and windows, a casual observer would have thought that a grand circus parade was coming on" ("Water Works Tested," The News and Observer. 29 September 1887. p. 4). As called for in the franchise ordinance, six streams of water were conducted through fifty feet of 2 1/2- inch rubber hose with one inch ring nozzles and projected to a height of 400 feet. Simultaneously, hydrants were opened at each corner of the city limits. The system more than met all of the requirements.

For fourteen years the Raleigh Water Company provided water to the city, gradually accumulating debt and with relatively few subscribers. At the end of ten years the company had fewer than 700 customers. Ernest B. Bain began working for the Raleigh Water Company in 1897, and in 1899 was appointed manager of the plant ("Filtration Plant." p. 8).

In 1901 the Raleigh Water Company transferred its debts and assets to a new, completely locally-held company called the Wake Water Company (Wake County Deeds. Book 170, p. 179). E. B. Bain was reappointed superintendent of the water works ("Wake Water Company." Raleigh Illustrated. p. 18). The Wake Water Company was in turn forced into receivership in 1912 and in 1913 the City of Raleigh acquired the company in arbitration for $250,000, the amount of the company's bonded indebtedness (Wake County Deeds. Book 276, p. 282).

Early on, the original filtering system had demonstrated its inadequacy. The New York Filter Company prepared plans in May 1892 for a water filter for Raleigh. The twenty-foot long, eight-foot diameter, horizontal filter was far in advance of the times for a small southern city. Although municipal water systems had been in existence since ancient times, filters did not come into general use until after 1829 (in England, where they were first developed). The first large water filter in the United States was not built until 1871 (Wray, p. 48). By 1903 a new, larger filter house had been constructed adjacent to the reservoir at Raleigh's water works and the 1887 filter house was converted to storage (1903 Sanborn Insurance Map of Raleigh).

By the early 1900s the water system was serving the entire city of Raleigh. Between 1900 and 1920 Raleigh's population grew from 13,643 to 24,418, an increase of 68%. Rapid residential growth was occurring in the new suburbs of Glenwood, Boylan Heights, and Cameron Park, and the development of industrial, manufacturing, and storage facilities was quickly expanding the central business district as well. Regular efforts were made over the first decades of the twentieth century to increase the water supply provided to a growing and ever-thirstier Raleigh. Studies were conducted in 1909 by engineer W. C. Riddick and E. B. Bain to determine the best location for an impounding reservoir on Walnut Creek. Lake Raleigh was completed on the Dorothea Dix Hospital land in 1914 with a capacity of about 140 million gallons (Wray, John D., Wake County Water Use Study. p. 48). A second impounding reservoir, first called Lake Mattamuskeet and then Lake Johnson, was built in southwest Raleigh on Walnut Creek in 1923 to the design of W. C. Olsen, consulting engineer (Wray. p. 48). Olsen also designed changes to the pump house and improvements to the filter plant on Fayetteville Road in 1923 to increase the filtering capacity of the Walnut Creek plant to five million gallons a day. In 1926, the spillway at Lake Johnson was raised two feet and in 1927 an additional reservoir was constructed south of Raleigh at Rands Mill on Swift Creek.

As part of the work planned by W. C. Olsen in 1923, the pumping plant was expanded with new wings. The 1887 dam was removed and the pond filled in, changing the south end of the pumping plant from two stories to one as the lower level was covered up (Vickers, James. Raleigh, City of Oaks. p. 74). The water tower on Morgan Street was also abandoned and a new tower built behind St. Mary's School.

The 1920s were years of nearly unabated residential and commercial growth in Raleigh. An expansion of the city limits in 1920 and again in 1929 opened up the north, west, and northwest to residential development while commercial growth continued in the urban core (Ross, p. 23). By the 1930s, though there appeared to be an adequate supply of raw water, demand was

outstripping the ability of the existing plant to treat it, or to provide a sufficient flow during hot weather or emergencies. The city's residential area was continuing to expand steadily, and in the city's business district there was an increase in the use of air-conditioning equipment, which at that time required large amounts of water. During hot weather in May of 1938, daily demand on the system reached the entire five million gallon capacity. Clearly, something had to be done. Three options presented themselves to city officials: postpone building until more water was absolutely necessary; reduce demand by cutting off the water supply to areas not incorporated into the city; or build a new plant with federal Public Works Administration funding. The latter course was decided upon and plans for a new plant were quickly pushed to completion.

The Public Works Administration provided a grant for forty five percent of the approximately $700,000 cost of the new plant and improvements to the water supply system, including additional supply lines and a new water tank on Chamberlain Street, the only existing tank being a 600,000 gallon structure behind St. Mary's School. City voters approved a bond issue for the remainder ("New Water System Looks to Future Development of Raleigh," The News and Observer, 18 June 1940, p. 13).

The construction trades and related industries were particularly hard-hit by the Great Depression. To aid them, Congress in 1933 created a Public Works Administration (PWA) to fund federal and nonfederal construction projects of public benefit. State and local applicants could seek grants of up to 45 percent and loans of up to 70 percent of the project cost. Between 1933 and 1939, the PWA helped in the construction of about 70 percent of the nation's new educational facilities, 65 percent of its sewage disposal plants; 35 percent of its hospital and public health facilities; and 10 percent of all roads, bridges, subways and similar engineering structures. Historian Arthur Schlesinger, Jr., has written that the PWA left behind "a splendidly-improved national estate" (Craig, Lois, The Federal Presence, pp. 346-347).

Contracts for the new plant were let on July 5, 1939. Work actually began on July 10, but the removal of numerous pipe line valves delayed construction until September of 1939 ("Contractor Praises City Project," The Raleigh Times, 18 June 1940, p. 9). The plans and specifications were drawn up by Raleigh engineer William C. Olsen (1888 - 1962), one of the foremost designers of municipal water plants in the state during the twentieth century (Butchko, p. 5). He began his firm, William C. Olsen, Consulting Engineers, in 1920 and was responsible for designing water treatment plants in towns and cities across North Carolina, including those in Kinston, Rocky Mount, Fayetteville, and Elizabeth City. L. E. Wooten and J. R. Cook were the resident

engineers who supervised construction. The general contractor for the treatment plant was A. H. Guion of Charlotte.

The architectural quality of the newly-finished plant was remarked upon by a number of observers. As W.W. Chaffin, the engineer inspector for the PWA noted, usually water plants were plain brick buildings, but this one would "compare favorably with any in the country." The News and Observer remarked that "A stranger entering the new building may be expected to ask the way to the vaults, although he may wonder how Fort Knox and the government's gold got from Kentucky to the old Fayetteville Road." Commissioner of Public Works Roy L. Williamson remarked that the city had built "permanently" and expected the plant to serve the needs of the city for the next thirty years. ("Architecturally Impressive Building Scheduled for Completion in May," the News and Observer, 31 March 1940, p. 10).

The plant was dedicated by Raleigh mayor Graham Andrews on June 18, 1940, in the name of Ernest Battle Bain ("City's Water Plant is Engineering Feat," The Raleigh Times 18 June 1940, p. 9). E.B. Bain's forty-year association with the city's water supply began when he came to work for the Raleigh Water Company in 1897, becoming the manager of the Walnut Creek plant in 1899 and the general superintendent of the system in 1900 ("New Water Works Given Name of Ernest B. Bain," The News and Observer, 19 June 1940, p. 16).

The new water treatment plant utilized the latest treatment technology, incorporating both water filtration and pumping in one structure Four electric pumps originally provided the power to force water through the city's 134 miles of mains, with an additional, gasoline-powered auxiliary pump in reserve. While the plant was rated at eight million gallons a day, it could actually filter and pump nearly ten million gallons and was designed to be expanded in units of a million gallons up to twenty million gallons a day ("City's Water Plant is Engineering Feat," The Raleigh Times, 18 June 1940, p. 9). Remarkably, although the new plant was built on the same site as, and incorporated parts of, the existing water treatment plant, there was no interruption in service, either during construction or at the changeover.

The design of the E.B. Bain plant building reflected standards of the 1930s for water treatment plants, particularly those constructed under Public Works Administration sponsorship. These typically had a head house which included administrative and laboratory functions and an extended wing behind the head house in which the operating floor or corridor formed a spine flanked by filter tanks and pumping equipment. There is a remarkable similarity in design for many of these operating floors, which often assume the form of a long arcade with clerestory

windows and a high degree of architectural finish. These are unusually fine spaces created for the appreciation of at most a handful of people involved in working the plant. While the interior arrangements of the buildings are fairly consistent, the exteriors are done in a variety of architectural styles, the preferred modes being the Colonial Revival or a stripped-down, geometricised classicism with overtones of the Art Deco/Art Moderne like the E.B. Bain Plant. In North Carolina, a water treatment plant that is stylistically very similar to the Raleigh plant, though much smaller, was built in Rocky Mount in 1935. This plant, also designed by W.C. Olsen, even has the blind arcading around the base of the sedimentation basins that is found in Raleigh. (Short and Stanley-Brown, Public Buildings, p. 484.) Other surviving PWA-funded treatment plants in the state include those in Tarboro, built 1934-1935 after a design by William C. Olsen and featuring Neoclassical details on a monumental red brick building. Olsen also designed a fine Spanish/Colonial Revival treatment plant in 1926 for Elizabeth City (National Register, 1994), which features a brick and stucco central pavilion, arched windows, and clay tile roof.

During the late 1940s and early 1950s, water was again in short supply and ordinances were passed by the City Council that limited the use of water. As provided for in the original design of the E. B. Bain plant, it was expanded in 1951 to increase its water treatment capacity to 13 million gallons a day. In 1952 the size of Lake Johnson was increased and plans were made to create Lake Benson upstream from the Old Rands Mill Dam. Plans for Lake Wheeler (southwest Raleigh) were completed in 1956 (Wray, p. 48).

Despite these efforts, Raleigh had again outgrown its water supply by the early 1960s. The treatment capacity of the E. B. Bain plant was unable to meet demand during peak usage periods. Plans and specifications were prepared for a new water treatment plant on the Neuse River, the E. M. Johnson Plant, which was put into operation in the summer of 1967 (Wray, p. 49). North of the city, Falls of the Neuse Reservoir was created in the mid-1970s. The E. B. Bain and E. M. Johnson plants worked in tandem until July of 1987, when the E. B. Bain plant was taken out of service. Until recently, the clear storage tanks at the E. B. Bain plant have continued to be used for backup storage of water treated at the E. M. Johnson Plant. In 1992 and 1997, a small, odor control facility and a small pumping facility were constructed on the grounds. The entire complex is currently abandoned, though the site and buildings are maintained by the City of Raleigh and are being marketed for redevelopment.

9. Bibliography

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10. Verbal Boundary

The boundaries of the approximately eight acres being nominated are delineated by the broken line on the accompanying Wake County tax map entitled "Property Map for Raleigh Water Works and E.B. Bain Water Treatment Plant."

Boundary Justification

The nominated property comprises the residual acreage associated with the Raleigh Water Works and the E.B. Bain Water Treatment Plant.

11. The majority of the information in Sections 7 and 8 of this nomination is taken verbatim from the Wake County Historic Property Designation Application prepared by David R. Black in 1994, with the exception of discussion of contexts.

PHOTOGRAPHS

All photographs were taken in 1994 by David R. Black. Photos were field checked on June 10, 1998 and verified as representing the property as it currently appears.

The following information applies to all photographs:
Raleigh Water Works and E.B. Bain Treatment Plant
1810 Fayetteville Road
Raleigh, N.C./Wake County
DRB 1994
Negatives on file at the North Carolina Division of Archives and History

Photo A - Raleigh Water Works - Pump House, from the east

Photo B - Raleigh Water Works - Interior of Pump House

Photo C - Raleigh Water Works - Filter House, from the northeast

Photo D - Raleigh Water Works - Modern pumping facility, from the west

Photo E - E.B. Bain Treatment Plant - North elevation, from the north

Photo F - E.B. Bain Treatment Plant - South elevation, looking north

Photo G - E.B. Bain Treatment Plant - Main Lobby

Photo H - E.B. Bain Treatment Plant - Operating Floor

Photo I - E.B. Bain Treatment Plant - Interior Detail

Photo J - E.B. Bain Treatment Plant - Clear Wells, from the north

PROPERTY MAP

Raleigh Water Works & E.B. Bain W
Treatment Plant
1801 Fayetteville Rd.
Raleigh, Wake County
Wake County Map 1703.19
1"=126"

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