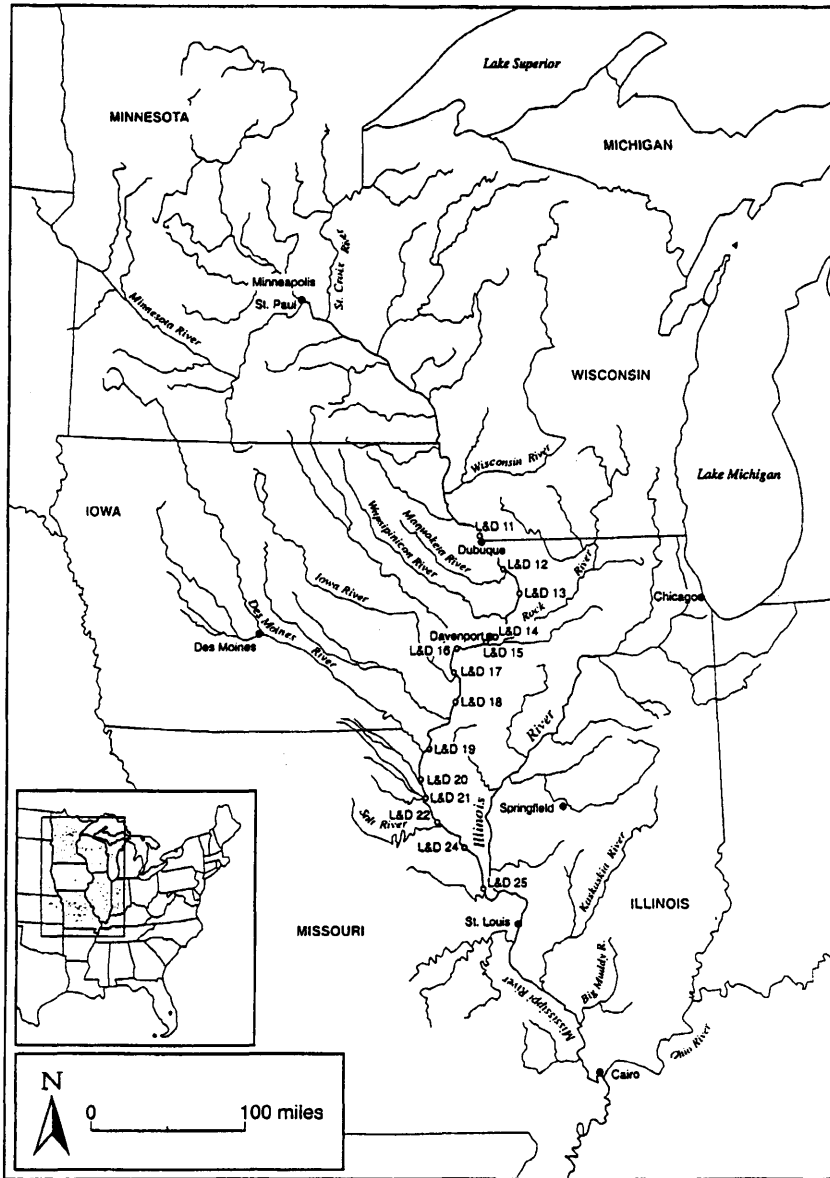


RECEIVED
APR 14 2003
WI SHP
DIV HIST PRES

LOCK AND DAM NO. 16 HISTORIC DISTRICT



General Project Location.

11/9

United States Department of the Interior
National Park Service

NATIONAL REGISTER OF HISTORIC PLACES
REGISTRATION FORM

1. Name of Property

historic name Lock and Dam No. 16 Historic District

other names/site number _____ N/A

2. Location

street & number 33109 102nd Avenue West not for publication _____ N/A

city or town Muscatine vicinity _____ N/A

state Iowa code IA county Muscatine code 139

zip code 52761-9204

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act of 1966, 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.)

Paul D. Rubenstein Deputy FPO, USACE
Signature of Certifying Official

3 Jan 2003
Date

William L. Wheeler ISHPO
Illinois State Agency or Society Official

4-8-03
Date

Donnell J. Sorko
Iowa State Agency or Society Official

June 12, 2003
Date

4. National Park Service Certification

I hereby certify that this property is:

- 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) _____

for Edson Beall
Signature of the Keeper

MAR 10 2004
Date

Lock and Dam No. 16 Historic District
name of property
Muscatine County, IA
county and state
Upper Mississippi River 9-Foot Navigation Project, 1931-1948
name of multiple property listing

=====
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

Contributing	Noncontributing	
<u> 1 </u>	<u> 13 </u>	buildings
<u> 0 </u>	<u> 0 </u>	sites
<u> 5 </u>	<u> 2 </u>	structures
<u> 2 </u>	<u> 18 </u>	objects
<u> 8 </u>	<u> 33 </u>	Total

Number of contributing resources previously listed in the National Register 0

Name of related multiple property listing (Enter "N/A" if property is not part of a multiple property listing.) **Upper Mississippi River 9-Foot Navigation Project, 1931-1948**

=====
6. Function or Use
=====

Historic Functions (Enter categories from instructions)

Cat: **TRANSPORTATION** Sub: **water-related**

Current Functions (Enter categories from instructions)

Cat: **TRANSPORTATION** Sub: **water-related**

=====
7. Description
=====

Architectural Classification (Enter categories from instructions)

OTHER: **lock and dam**
NO STYLE: **control station**
OTHER: **machinery**

Materials (Enter categories from instructions)

foundation OTHER: **timber pile**
roof **ASPHALT**
walls **CONCRETE**
BRICK
other gates **STEEL**
machinery **STEEL**

Narrative Description (Complete text printed on the following six continuation sheets.)

United States Department of the Interior
National Park Service

NATIONAL REGISTER OF HISTORIC PLACES
CONTINUATION SHEET

Lock and Dam No. 16 Historic District

name of property

Muscatine County, IA

county and state

Section 7 Page 1

Upper Mississippi River 9-Foot Navigation Project, 1931-1948

name of multiple property listing

Description

The 102.04-acre Lock and Dam No. 16 Historic District is made up of a navigation lift lock, a nonnavigable dam, and 39 associated resources. A general contractor and numerous subcontractors, all employing the maximum number of people possible for a relief work project, built most of the main features of this district between 1933 and 1937. In 1942 and 1951, other contractors built the district's two other main features as part of an effort to control outdraft problems—making entrance and exit from the upstream end of the lock difficult. Once these elements were in place the district arrived at its mature configuration. Since July 10, 1937, the district has been in continuous use as a part of the Upper Mississippi River 9-Foot Navigation Project. Although significant features associated with the operation of the navigation system have, by necessity, been subjected to continuing maintenance, upkeep, or replacement throughout these 60 years, the district looked the same for 9 years (1951-1960). After the visitors center was completed in 1960, the district entered another 10-year period (1960-1970) of little or no change. The changes made between 1970 and 1985 were relatively discrete and mainly centered on the esplanade. In 1993, this lock and dam complex underwent its 50-year major rehabilitation in which both the lock and dam were resurfaced and almost all the machinery and small buildings associated with the lock were replaced in-kind. As a result of this work, all of the components of the complex are in excellent condition except that all original architectural details are not intact.¹ However, the lock and dam no longer have integrity of workmanship. Although they have been resurfaced, they have not been structurally altered. The concrete wall surface is a sacrificial finish, much like paint on the wall of a building. Moreover, even though the district's street address is in Muscatine, Iowa, the lock, esplanade, and public access points are on the Illinois shore about a mile upstream from Muscatine, and the width of the river at this spot have all conspired to keep the district's overall setting the same as it was in 1948. Therefore, the district retains integrity of location, design, setting, materials, feeling, and association.

General Description

The Lock and Dam No. 16 Historic District extends across the Upper Mississippi River about a mile upstream from Muscatine, Iowa. The valley is wide at this point and the river flows east to west; the bluffs on the Illinois side are a mile south of the lock. The dam straddles Hog Island in the main channel and extends to a narrow floodplain on the Iowa side. The Muscatine Highway Bridge and the silhouette of downtown Muscatine is visible from the district, that has always been the case, and these vistas are so far distant from the district that post-1948 changes are not discernable. There is no development on the Illinois shore visible from the district. The trees and brush growing on the overflow dike between the north edge of the ogee spillway and the Chicago, Rock Island, St. Paul, and Pacific Railroad tracks block the view from within the district of any development on the Iowa shore. Therefore, Lock and Dam No. 16 retains integrity of setting and feeling.

The esplanade adjoins the Illinois shore, interrupting the Drury Drainage District levee protecting the Illinois shore. It extends from the full length of the main lock and its original guide walls are about 700 feet past the downstream end of

United States Department of the Interior
National Park Service

NATIONAL REGISTER OF HISTORIC PLACES
CONTINUATION SHEET

Lock and Dam No. 16 Historic District
name of property
Muscatine County, IA
county and state
Upper Mississippi River 9-Foot Navigation Project, 1931-1948
name of multiple property listing

Section 7 Page 2

the downstream guide wall to the government property line where the Illinois shoreline levee begins again. That means the esplanade is shaped like a meat cleaver with the blade facing Illinois and the handle pointing downstream. An approximate 15-acre lawn level with the top of the main lock walls, it is about 400 feet wide at the 1,100 feet closest to the lock and only 200 feet wide at the 1,000 feet farthest downstream. Except for its somewhat unusual shape, the esplanade is a standard park/service area and access road lock and dam complex component (see Section F, Multiple Property Documentation Form).

The main lock adjoins the north side of the esplanade. A standard Upper Mississippi River style lock (as defined in Section F, Multiple Property Documentation Form), it has a 9-foot lift. The Style 1b central control station (as defined in Section F, Multiple Property Documentation Form) is the most prominent building in the complex and the only one contributing to its historical character. The central control station sits on the land wall of the main lock. The riverward wall of the main lock is also the landward wall of an incomplete auxiliary lock. This incomplete lock is also a standard feature of the Upper Mississippi River 9-Foot Project lock and dam complexes (see Section F, Multiple Property Documentation Form).

The moveable portion of the dam consists of five 40-foot-wide by 20-foot-tall Type 1b Tainter gates (see Section E, Multiple Property Documentation Form), four 80-foot-wide by 20-foot-long, original German-style, nonsubmersible roller gates (see Sections E and F, Multiple Property Documentation Form), and 10, 40-foot-wide by 20-foot-tall Type 1a Tainter gates. This moveable portion of the dam extends 1,315 feet northwest in a straight line from the riverward wall of the auxiliary lock. This pier dam ends in an approximate 200-foot-long storage yard on Hog Island. A 415-foot-long, 3 to 1 slope, earth- and sand-filled transition dike with riprap revetment extends from the northern end of the storage yard to a 1,700-foot-long, linear, concrete capped, ogee spillway (see Section F, Multiple Property Documentation Form). Another 3 to 1 slope transition dike extends from the northern end of the ogee spillway to the remaining approximate 350 feet of the dam which is an earth- and sand-filled, linear, submersible dike (see Section F, Multiple Property Documentation Form). It extends from the transition dike to the Chicago, Rock Island, St. Paul, and Pacific Railroad track bed. At about the point where the transition dike meets this submersible dike, an approximate 1,000-foot-long earth- and sand-filled protection levee extends upstream at right angles to both dikes. This levee protects the railroad tracks immediately upstream from the dam, where the water in the upper pool is deepest both at low water times and during floods. The submersible dike and its associated protection levee slow the flow of flood water overtopping them so much that it drops its silt immediately downstream from them. That is why today there is such a large, low floodplain just downstream of this section of the dam. That was not a natural feature of the site, but grew over the years. The rail line west of the dam follows what was the natural shoreline.

The district includes both individually undistinguished features and individual distinctive features that serve as focal points. The distinctive focal points are the lock, dam, central control station, and esplanade. All four, plus the auxiliary lock, the protection levee, the guard wall addition to the auxiliary lock(see below), and two stage recorders (see Section F, Multiple Property Documentation Form

United States Department of the Interior
National Park Service

NATIONAL REGISTER OF HISTORIC PLACES
CONTINUATION SHEET

Lock and Dam No. 16 Historic District

name of property

Muscataine County, IA

county and state

Upper Mississippi River 9-Foot Navigation Project, 1931-1948

name of multiple property listing

Section 7 Page 3

=====
for descriptions of all these features except the protection levee, which is identical to an approach flow deflecting dike as described there) contribute to the historic character of the district.

The relationships among all of these features is unaltered and all possess integrity. Although this complex has received its 50-year major rehabilitation (see Section E, Multiple Property Documentation Form), the lock and dam still retain integrity of location, design, setting, materials, feeling, and association. None of the other contributing resources in the district were impacted by the rehabilitation. The central control station also underwent a major rehabilitation in 1985. This work, done in keeping with the Rock Island District-wide lockhouse rehabilitation project (see Section E, Multiple Property Documentation Form), left the building with integrity of location, setting, feeling, and association.

Although the district contains 33 intrusions, none are focal points for the district. Some, such as the new moveable crane on the dam, are simply replacements in-kind. Most are very small compared to the focal points. Even the visitors center and the workshop (the two largest new buildings) are unobtrusive because the focal points so dominate this district. Even with noncontributing resources outnumbering contributing, the district still conveys the sense of the historic environment.

The general physical relationship of the largest-scale resources to each other and to the environment is shown on the accompanying map entitled "Lock and Dam No. 16 Historic District Based on June 30, 1961, Map by Rock Island District: Sheet 22, Mississippi River, River and Harbor Project, Lock & Dam No. 16." and in accompanying Photo Number 1 entitled "Aerial Photo of Lock and Dam No. 16." The physical relationship of the smaller resources (including the buildings) to each other and to the environment, the road plan, and open spaces is shown on the accompanying map entitled "Detail of the Illinois End of the Lock and Dam No. 16 Historic District Based on June 30, 1961, Map by Rock Island District: Sheet 22, Mississippi River, River and Harbor Project, Lock & Dam No. 16."

Relocation Consequences

The Special Board of Engineers which, between May 29, 1929, and February 15, 1930, designed the overall 9-foot channel slackwater navigation system (see Section E, Multiple Property Documentation Form), placed Lock and Dam No. 16 in the second group of projects slated for construction. The few locks and dams in the first priority group (Nos. 4, 5, 15, and 20) were necessary to facilitate existing commerce. The ones in the second group were necessary to secure a 6-foot channel. Lock and Dam No. 16 was in this category because there were narrow, tortuous, rock-bedded reaches in the channel between Lock and Dam No. 15 and Buffalo, Iowa. During low water the channel became more restricted and more hazardous.

Hence, work began on aspects of Lock and Dam No. 16 as soon as the repetitive sections of Lock and Dam Nos. 15 and 20 were complete. Thus, problems with its proposed siting were discovered early, in 1931 and 1932. The Special Board of Engineers had located Lock and Dam No. 16 near the downstream end of Musactine, about 2,300 feet below the Muscatine vehicular bridge. The Upper Mississippi River

United States Department of the Interior
National Park Service

NATIONAL REGISTER OF HISTORIC PLACES
CONTINUATION SHEET

Lock and Dam No. 16 Historic District

name of property

Muscataine County, IA

county and state

Upper Mississippi River 9-Foot Navigation Project, 1931-1948

name of multiple property listing

Section 7 Page 4

=====
Division (UMVD) design team, which began taking over detailed design of the project in October 1929, still intended for it to be located there as late as December 1931. However, construction of the lock and dam at this site would 1) have placed the Muscatine vehicular bridge in the upper pool thus limiting vessel height, 2) have an adverse effect on drainage and sewers in the city of Muscatine, 3) flood existing industrial complexes in low land along Mad Creek in the upper limits of the city, and 4) place at least 17 feet of the complex on a shale formation which would be an unsatisfactory foundation. Because Lock and Dam No. 15 and the Keokuk Lock and Power Dam (which became Lock and Dam No. 19 in the 9-Foot Project sequence) had already fixed the ends of the reach of the river that was to contain Lock and Dam Nos. 16, 17, and 18, the UMVD had to study in 1932 not only the location of Lock and Dam No. 16, but also complexes 17 and 18 of priority group three to determine if and where they could be moved.²

In 1933, the Corps relocated Lock and Dam No. 16, 2 miles upstream at the foot of Geneva Island (the remaining unsubmerged portion of which is now known as Hog Island, is part of the Lock and Dam No. 16 Historic District). They redesigned the dam, incorporating innovations that made this dam significant as a representation of a specific set on design innovations (see below, Section 8).

Outdraft Problems

As soon as the complex opened for navigation on July 10, 1937, the Corps learned that strong outdrafts made navigation into and out of the upstream end of the lock difficult. This turned out to be a common problem at the locks in this system (see Section E, Multiple Property Documentation Form). In 1942, as part of a system-wide solution, the Corps added a 500-foot cell-foundation guard wall (see Section F, Multiple Property Documentation Form) to the riverward wall of the auxiliary lock at Lock and Dam No. 16.³

However, the problem was still not solved. In 1951, the Corps decided to try applying knowledge gained from experience at Lock Nos. 13, 15, 11, 22, and 24 at this complex. They built an approximate 400-foot-long extension to the upstream guide walls of the lock. Here, where the whole structure is founded on sand, the Corps built this guide wall extension on timber cribbing partially filled with riprap. The concrete of the wall is supported by battered timber pilings driven to refusal. This design eliminated the necessity of building an expensive cofferdam for this addition. The fact that this feature is an addition to the complex is more visually apparent at this site than at most others in the system which have it. Here the esplanade does not border the landward side of this wall. The Illinois shore levee, unlike any at other parts of the complex, adjoins the part of the guide wall which was added in 1951.⁴

The Mature Complex

Once this guide wall extension was completed, the complex arrived at its mature configuration, although it didn't stay that way long. Nine years later, in 1960, the Corps added a brick and steel visitors center (see Section F, Multiple Property Documentation Form) along the land wall of the lock, just downstream from the central

United States Department of the Interior
National Park Service

NATIONAL REGISTER OF HISTORIC PLACES
CONTINUATION SHEET

Lock and Dam No. 16 Historic District
name of property

Muscatine County, IA
county and state

Section 7 Page 5

Upper Mississippi River 9-Foot Navigation Project, 1931-1948
name of multiple property listing

control station. The observation deck of this visitors center has wooden walls on its landward facade and on the landward portion of each side. A railing lines the riverward facade and the riverward halves of each side of the deck.⁵

However, once this visitors center was completed, the complex maintained that appearance for another 10 years. In 1970, site staff built a frame air-lock vestibule on the upstream end door of the central control station (see Section E, Multiple Property Documentation Form), while contractors added boat launches on the lock walls. In 1972, site staff built four control stand shelters (see Sections E and F, Multiple Property Documentation Form). In 1993, as part of the 50-year major rehabilitation, contractors replaced two of these crude structures—the two on the land wall—with larger brick and glass shelters which serve the same purpose (see Section E, Multiple Property Documentation Form). The site staff then relocated the two old shelters to the extreme upstream and downstream ends of the guide walls of the main lock where locktenders need shelter while awaiting traffic which will need to be attached to the traveling mooring keel to keep it in line with the lock gates and while awaiting a tow boat's lockage so they can release the first cut of barges when they have been reattached to the second cut and the tow boat. They are continuing to use the other two old control stand shelters around the control stands on the intermediate wall of the lock.⁶

In about 1975, the Corps had contractors remove the stand-by generator which dominated the machinery room of the central control station, build an emergency generator building (as defined in Section F, Multiple Property Documentation Form), and install a new generator in this building. The construction of this new building, along with the simultaneous removal of the lockmaster's and assistant lockmaster's residences from the esplanade, dramatically altered that area. These removals were part of another system-wide initiative (see Section E, Multiple Property Documentation Form).

In 1979, Lock No. 16 got both upstream and downstream traveling mooring keels (see Sections E and F, Multiple Property Documentation Form) installed at the same time. In a more visibly dramatic change the next year, the Corps erected a Style 2 workshop (as defined in Section F, Multiple Property Documentation Form) where the shared garage for the two houses had been located.

In 1983-4, in another system-wide initiative, the Corps replaced the 30-ton vertical lift electric crane boom on the top of Dam No. 16. Similarly, in 1984, the Corps had contractors install new light posts and light fixtures around Lock No. 16 (see Section E, Multiple Property Documentation Form for information on both of these changes common to a number of the historic districts eligible under the context detailed in that form).

Then in 1993, as part of the 50-year major rehabilitation, two new haulage engines (see Section F, Multiple Property Documentation Form) were installed on the lock walls, and the site staff built shelters (see Haulage Unit Shelters in Section F, Multiple Property Documentation Form) over each of them. The lock also got three new jib cranes, four sets of new lock gate operating machinery, and four sets of new valve operating machinery (see Section F, Multiple Property Documentation Form for

United States Department of the Interior
National Park Service

NATIONAL REGISTER OF HISTORIC PLACES
CONTINUATION SHEET

Lock and Dam No. 16 Historic District

name of property

Muscatine County, IA

county and state

Section 7 Page 6

Upper Mississippi River 9-Foot Navigation Project, 1931-1948

name of multiple property listing

all) mounted on the tops of the lock walls. The old operating machinery had been in pits in the lock walls. At the same time, a new generator, compressor and incoming power transformer were installed on the esplanade downstream (southwest) from the new workshop. Simultaneously, the emergency generator was removed from the emergency generator building and that building was demolished. The compressor, provides the air needed for the bubbler system (see Section F, Multiple Property Documentation Form) which was installed in the lock chamber during the rehabilitation. Also as part of this rehabilitation, a new scooter building was constructed. Locktenders use electric-powered scooters to travel the long distances up and down the lock walls. This building is where they are kept and recharged.⁷

In 1995, a small, square plan, metal shed with a very low gable roof was built between the high concrete pads where both the new generator and compressor are mounted and the workshop. At the same time a standardized smoking shelter (see Section F, Multiple Property Documentation Form) was erected on the other side of the workshop.

Contributing Resources with date completed or placed in operation and keyed to photographs

Building

Central Control Station	1935	PHOTOS 4 and 5 in Multiple Property Documentation Form
-------------------------	------	--

Structures

Lock	1935	PHOTO 2 in this form
Auxiliary Lock	1935	PHOTO 1 in this form and Photo 12 in Multiple Property Documentation Form
Dam	1937	PHOTOS 3 and 4 in this form

Protection Levee on Overflow Section of Dam along the Iowa Shore	1937	PHOTO 1 in this form
Guard Wall	1942	PHOTOS 13 and 14 in Multiple Property Documentation Form

Objects

2 Stage Recorders	1937	PHOTO 19 in Multiple Property Documentation Form
-------------------	------	--

Noncontributing Resources with date completed or placed in operation and keyed to photographs

Buildings

Visitors Center	c.1960	PHOTO 7 in this form
2 Intermediate Wall Control Stand Shelters	c.1972	PHOTO 5 in this form
2 Lockman's Shelters	c.1972	not pictured
Workshop	c.1980	PHOTO 29 in Multiple Property Documentation Form

United States Department of the Interior
National Park Service

NATIONAL REGISTER OF HISTORIC PLACES
CONTINUATION SHEET

Lock and Dam No. 16 Historic District

name of property

Muscatine County, IA

county and state

Section 7 Page 7

Upper Mississippi River 9-Foot Navigation Project, 1931-1948

name of multiple property listing

=====

2 Land Wall Control Stand Shelters	1993	PHOTO 33 in Multiple Property Documentation Form
2 Haulage Unit Shelters	1993	PHOTO 21 in Multiple Property Documentation Form
Scooter Shed	1993	not pictured
Utility Shed	c.1995	PHOTO 7 in this form
Smoking Shelter	c.1995	PHOTO 30 in Multiple Property Documentation Form
<u>Structures</u>		
Upstream Guide Wall Extension	1951	PHOTO 15 in Multiple Property Documentation Form
Moveable Crane on Dam	1984	PHOTO 24 in Multiple Property Documentation Form
<u>Objects</u>		
2 Traveling Mooring Kevels	1979	PHOTO 22 in Multiple Property Documentation Form
2 Haulage Units	1993	PHOTO 20 in Multiple Property Documentation Form
3 Jib Cranes	1993	PHOTO 23 in Multiple Property Documentation Form
4 Sets of Lock Gate Operating Machinery	1993	PHOTO 16 in Multiple Property Documentation Form
4 Sets of Lock Valve Operating Machinery	1993	PHOTO 17 in Multiple Property Documentation Form
Generator	1993	PHOTO 7 in this form and PHOTO 32 in Multiple Property Documentation Form
Compressor	1993	PHOTO 7 in this form and PHOTO 32 in Multiple Property Documentation Form
Incoming Power Transformer	1993	PHOTO 8 in this form

SECTION 7 NOTES

1. Current condition ratings are in accord with definitions supplied by Ann Swallow, Illinois Historic Preservation Agency National Register Coordinator, on Aug. 19, 1992. By these definitions excellent means all original architectural details are apparently intact and major elements (foundations, walls, windows, and roof) are in repair.

2. "U.S. Army Corps of Engineers, Rock Island District, "Mississippi River Lock and Dam No. 16, Final Report-Construction," Vol. I: "Introduction, Lock and Channel Excavation at Horse Island" (Rock Island: U.S. Engineer Office, May 1937) (hereinafter cited as "Final Report-Lock 16), pp.2-5, Record group 77 (hereinafter cited as

United States Department of the Interior
National Park Service

NATIONAL REGISTER OF HISTORIC PLACES
CONTINUATION SHEET

Lock and Dam No. 16 Historic District

name of property

Muscatine County, IA

county and state

Section 7 Page 8

Upper Mississippi River 9-Foot Navigation Project, 1931-1948

name of multiple property listing

=====
RG77), Entry 81, Box 666, National Archives and Records Administration-Great Lakes
Region (Chicago), Chicago, IL (hereinafter cited as NACB).

3. U.S. Army Corps of Engineers, *Annual Report of the Chief of Engineers United States Army, to the Secretary of War for the Year 1940* (Washington, D.C. Government Printing Office, 1940) (The government has printed the *Annual Report of the Chief of Engineers* and bound it as a separate volume every year since 1867. Published at the end of the fiscal year, the exact title and format have varied slightly from time to time. Hereinafter all reports from this series will be referred to as *Annual Report* followed by the fiscal year which the report covers.), p. 1160; and *Annual Report 1942*, p. 1028.

4. Annual Report 1951, p. 1237; and Rathbun Associates, "Upper Mississippi River 9-Foot Channel Project Locks and Dams 11-22, An Inventory for the U.S. Army Corps of Engineers, Rock Island District" (Historic American Engineering Record Documentation, Lakewood, CO: Rocky Mountain Regional Office, National Park Service, 1988) (hereinafter cited as HAER), p. 74.

5. Unless otherwise noted, the information in this and subsequent paragraphs is drawn for Verl L. Holtz, Lockmaster of Lock and Dam No. 16, and Harvey Vance, Locktender, Lock and Dam No. 16, interviewed by Mary Rathbun, July 9, 1984. Tape and notes on file with Environmental Impact Section, Planning Division, U.S. Army Corps of Engineers, Rock Island, IL.

6. *Ibid* and James Headley, Lockmaster of Lock and Dam No. 16, interviewed by Mary Rathbun Feb. 19, 1998. Notes archived at American Resources Group, Ltd., Carbondale, IL.

7. Headley interview.

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)

- Property is associated with events that have made a significant contribution to the broad patterns of our history.
Property is associated with the lives of persons significant in our past.
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.
Property has yielded, or is likely to yield information important in prehistory or history.

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

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

Areas of Significance (Enter categories from instructions)

- Transportation
Engineering
Maritime History
Commerce
Economics
Military
Social History
Politics/Government
Conservation

Period of Significance 1933-1948

Significant Dates 1937
1933-1937

Significant Person (Complete if Criterion B is marked above)
N/A

Cultural Affiliation N/A

Architect/Builder U.S. Army Corps of Eng., R. I. Dist.
Abbott, Edwin E.

Narrative Statement of Significance (Complete text printed on the following two continuation sheets.)

United States Department of the Interior
National Park Service

NATIONAL REGISTER OF HISTORIC PLACES
CONTINUATION SHEET

Lock and Dam No. 16 Historic District

name of property

Muscatine County, IA

county and state

Upper Mississippi River 9-Foot Navigation Project, 1931-1948

name of multiple property listing

Section 8 Page 9

Architect/Builder

McCormick, Herbert G.
Reeves, James
Franzen, Edwin
Ashton, Frank W.
Ramser, O.R.
Central Engineering Co., Davenport
Kelso Burnett Electric Co., Chicago
Fred M. Luth, St. Louis MO
E.A. Whitney & Sons, Inc., K.C. MO
R.C. Mahon Co., Detroit MI
Kale-McKay Inc., Rock Island IL
Tri-City Electric Co., Davenport
C. Holmquist & Co., Moline IL
Northwestern Marble Corp., MN
Peter Tiedeman, Muscatine IA
N.S. Dexter, Moline IL

Statement of Significance

The Lock and Dam No. 16 Historic District is nationally significant under Criterion A in the areas of transportation, maritime history, commerce, conservation, military, economics, politics, and social history because it is part of the Upper Mississippi River 9-foot navigation system. It is also nationally significant under Criterion C in the area of engineering because it includes features significant in the evolution of both roller and Tainter gates and locks which took place during the Upper Mississippi River 9-Foot Channel Project.

For a detailed discussion of the Upper Mississippi River 9-foot navigation system's significance in transportation, maritime, engineering, commerce, conservation, military, economics, politics, and social history see Section E, Multiple Property Documentation Form. Because one of the major purposes of a Multiple Property Submission is to avoid needless repetition of information and keep the individual registration forms for related significant properties briefer than they would be if the resources were being nominated individually, only those aspects of these stories which are entirely specific to this historic district are included here.

The Period of Significance for the Lock and Dam No. 16 Historic District begins on November 11, 1933, when Central Engineering Company of Davenport, Iowa, signed a contract with the Rock Island District of the Corps of Engineers for the construction of the lock and central control station. Central Engineering did not begin actual work on the lock until after Ahrenholz and Beeler of Davenport, Iowa, finished construction of the temporary buildings at the work site on February 16, 1934. Central Engineering completed the lock on March 22, 1935, a mere 13 months later.¹ The Period of Significance ends in 1948, because 50 years ago is the recommended closing date for Periods of Significance where activities began historically continued to have importance and no more specific date can be defined to end the historic period. The

United States Department of the Interior
National Park Service

NATIONAL REGISTER OF HISTORIC PLACES
CONTINUATION SHEET

Lock and Dam No. 16 Historic District

name of property

Muscatine County, IA

county and state

Upper Mississippi River 9-Foot Navigation Project, 1931-1948

name of multiple property listing

Section 8 Page 10

=====
post-1948 commerce and transportation activities of the Lock and Dam No. 16 Historic District do not meet Criterion Consideration G. The district's significance in conservation, military, politics/government, economics, maritime, social history and engineering falls within the 1934-1948 Period of Significance.

Significance in Transportation, Maritime History, Commerce, Conservation, Military, Economics, Politics, and Social History

The Rock Island District of the U.S. Army Corps of Engineers placed this complex in operation as a unit of the Upper Mississippi River 9-foot navigation system on July 10, 1937 (hence Significant Date No. 1). It was the tenth of the 1931-1940 Upper Mississippi River 9-Foot Navigation Project complexes and the third in the Rock Island District to go on line.²

Significance in Engineering

Dam No. 16 was the last dam in the Rock Island District to employ German-designed, nonsubmersible roller gates and the first in which all the Tainter gates were operated by line shafts and motors housed in installations above each gate, rather than from locomotive hoist cars running on the dam's service bridge. Dam No. 16 was also the last project dam to include both sumersible and nonsubmersible Tainer gates which had steel sheathing only on one side.

Although the basic miter gate used on the Upper Mississippi 9-Foot Channel Project locks had been developed by 1913 and used on the Upper Mississippi since the Hastings Lock-completed in 1930 and after 1940 known as Lock and Dam No. 2 in the 9-Foot Project sequence-the Corps did make a few minor improvements on them. The most important of these, the rubber vertical water seal at the quoin ends of the gates, was first used successfully here in 1936. It was designed by Rock Island District engineer Herbert G. McCormick in 1931 and 1932.³

McCormick, who had worked on the Ohio River canalization with many of the engineers on the UMVD design team for many years, had transferred to the Rock Island District in April 1930. Although he had not transferred with the UMVD team members between October 1929 and April 1930, he was well known to them and apparently was allowed design responsibility even before the project was shifted to the district level (see Section E, Multiple Property Documentation Form).⁴

The lock gate operating machinery at this lock was also the first to develop 5 hp at the new low speed winding of 300 rpms for a closing time of 4 minutes. This change was made because the operation of the gates at the high speed initially planned and implemented at Lock No. 20 had proved too great for safe operation.⁵

United States Department of the Interior
National Park Service

NATIONAL REGISTER OF HISTORIC PLACES
CONTINUATION SHEET

Lock and Dam No. 16 Historic District
name of property
Muscatine County, IA
county and state
Upper Mississippi River 9-Foot Navigation Project, 1931-1948
name of multiple property listing

Section 8 Page 11

SECTION 8 NOTES

1. "Final Report-Lock 16, pp. 18 and 34; R. A. Wheeler to Chief of Engineers, 14 Nov. 1933, RG77, Entry 111, Box 986, File 3524-part 1, Washington National Records Center (hereinafter cited as WNRC); E. L. Daley to Chief of Engineers, Dec. 28, 1933 and R. A. Wheeler to Chief of Engineers, Feb. 16, 1934, RG77, Entry 111, Box 986, File 3344, WNRC; J. M. Silkman to Chief of Engineers, June 9, 1934, RG77, Entry 111, Box 986, File 3408, WNRC; and R. A. Wheeler to Division Engineer, Dec. 7, 1934, RG7, Entry 111, Box 986, File 35243-part 1, WNRC.
2. "Lock & Dam No. 16, HAER No. IA-26," in HAER, p.17; and *Annual Report*, 1938, p. 1050.
3. U.S. Army Corps of Engineers, Rock Island District, "Mississippi River Lock and Dam No. 20: Final Report-Construction," Vol. I: "Introduction and Lock (Rock Island: U.S. Engineer Office, March 1935), pp. 41-42, RG77, entry 81, Box 666, NACB.
4. Road Tweet, *A History of the Rock Island District U.S. Army Corps of Engineers 1866-1983* (Rock Island: U.S. Army Corps of Engineers Rock Island District, 1984), p. 401.
5. Rathbun Associates, "Upper Mississippi River 9-Foot Channel Project Locks and Dams 11-22, An Inventory for the U.S. Army Corps of Engineers, Rock Island District" (Historic American Engineering Record Documentation, Lakewood, CO: Rocky Mountain Regional Office, National Park Service, 1988) (hereinafter cited as HAER), pp. 77-78.

Lock and Dam No. 16 Historic District
name of property
Muscatine County, IA
county and state
Upper Mississippi River 9-Foot Navigation Project, 1931-1948
name of multiple property listing

9. Major Bibliographical References

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

Previous documentation on file (NPS)

- preliminary determination of individual listing (36 CFR 67) has been requested.
- previously listed in the National Register
- previously determined eligible by the National Register
- designated a National Historic Landmark
- recorded by Historic American Buildings Survey # _____
- recorded by Historic American Engineering Record # IA-26

Primary Location of Additional Data

- State Historic Preservation Office
- Other State agency
- Federal agency
- Local government
- University
- Other

Name of repository: USACE, Rock Island District

10. Geographical Data

Acreage of Property _____

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

	Zone	Easting	Northing	Zone	Easting	Northing
1	___	_____	_____	3	___	_____
2	___	_____	_____	4	___	_____
	___ See continuation sheet.					

Verbal Boundary Description and Boundary Justification printed on the same continuation sheet.

11. Form Prepared By

name/title Mary Yeater Rathbun, Principal Historian
organization Rathbun Associates date June 1998
street & number 1792 Sandy Rock Road telephone 608-967-2144
city or town Hollandale state WI zip code 53544

Additional Documentation

3 maps and 8 black and white photographs all rprinted on the following ___ continuation sheets.

Property Owner

name U.S. Government-Rock Island District, Army Corps of Engineers
street & number Clock Tower Building telephone 309-794-5185
city or town Rock Island state IL zip code 61204-2004

United States Department of the Interior
National Park Service

NATIONAL REGISTER OF HISTORIC PLACES
CONTINUATION SHEET

Lock and Dam No. 16 Historic District
name of property
Muscatine County, IA
county and state
Upper Mississippi River 9-Foot Navigation Project, 1931-1948
name of multiple property listing

Section 9 Page 12

=====

Selected Bibliography

Because one of the purposes of a Multiple Property Submission is to reduce the amount of documentation on each property, only those sources which are entirely specific to this historic district are included here. If a listing seems incomplete or there is no reference here for a source cited in the endnotes in this form, please check Section I: Major Bibliographic References of the Multiple Property Documentation Form for a complete reference.

Interviews

Holtz, Verl L. Lockmaster of Lock and Dam No. 16, interviewed by Mary Rathbun, July 9, 1984. Tape and notes on file with Environmental Impact Section, Planning Division, U.S. Army Corps of Engineers, Rock Island, IL.

Vance, Harvey. Lockman, Lock and Dam No. 16, interviewed by Mary Rathbun, July 9, 1984. Tape and notes on file with Environmental Impact Section, Planning Division, U.S. Army Corps of Engineers, Rock Island, IL.

Headley, James. Lockmaster of Lock and Dam No. 16, interviewed by Mary Rathbun, February 5, 1998. Notes archived at American Resources Group, Ltd., Carbondale IL.

Drawings

The alpha-numeric designation appearing on the drawings related to Lock and Dam No. 16 is M-L 16, followed by a drawing specific number.

Photographs

U.S. Army Corps of Engineers. Rock Island District, Lock and Dam No. 16, Muscatine, IA. Photographic Collection.

Reports

Rathbun Associates. "Lock and Dam Complex 16" in "Historical-Architectural and Engineering Study: Locks and Dams 11-22, 9-Foot Navigation Project, Mississippi River," Vol. 1, pp. III-22 to III-25 and figures III-71 to III-81 (1985). Environmental Impact Section, Planning Division, U.S. Army Corps of Engineers, Rock Island, IL.

—. "Lock & Dam No. 16, HAER No. IA-26" in "Upper Mississippi River 9-Foot Channel Project Locks and Dams 11-22, An Inventory for the U.S. Army Corps of Engineers, Rock Island District," 23 data pages, seven exterior photos, one photographic copy of aerial photograph, two photographic copies of photographs (1931-1939), and nine photographic copies of original construction drawings. Historic American Engineering Record Documentation (HAER). Lakewood, CO: Rocky Mountain Regional Office, National Park Service, 1988.

United States Department of the Interior
National Park Service

NATIONAL REGISTER OF HISTORIC PLACES
CONTINUATION SHEET

Lock and Dam No. 16 Historic District
name of property

Muscatine County, IA
county and state

Section 9 Page 13

Upper Mississippi River 9-Foot Navigation Project, 1931-1948
name of multiple property listing

=====
U.S. Army Corps of Engineers, Rock Island District. "Mississippi River Lock and Dam No. 16, Final Report--Construction." Vol. I: "Introduction, Lock, and Channel Excavation at Horse Island." Rock Island: U.S. Army Corps of Engineers, Rock Island District, May 1937.

Articles

"Work Moves Swiftly on Lock 16, Jobs Increase," *Muscatine Journal*, March 25, 1934.

United States Department of the Interior
National Park Service

NATIONAL REGISTER OF HISTORIC PLACES
CONTINUATION SHEET

Lock and Dam No. 16 Historic District
name of property
Muscatine County, IA
county and state
Upper Mississippi River 9-Foot Navigation Project, 1931-1948
name of multiple property listing

Section 10 Page 14

=====
Verbal Boundary Description

The boundary of the Lock and Dam No. 16 Historic District is shown as the solid gray line on the accompanying map entitled "Lock and Dam No. 16 Historic District Based on June 30, 1961, Map by Rock Island District: Sheet 22, Mississippi River, River and Harbor Project, Lock & Dam No. 16." Lock and Dam No. 16 Historic District consists of approximately 102.4 acres.

Vertex points noted on Map 1 correspond to the following UTM coordinate information from Zone 15. 1- N4588920 E665720, 2- N4589060 E666110, 3- N4588810 E666220, 4- N4588720 E666020, 5- N4588180 E666280, 6- N4587830 E666360, 7- N4587940 E666580, 8- N4587740 E666680, 9- N4587530 E666040, 10- N4587600 E665960, 11- N4587640 E666070, 12- N4587680 E666110, 13- N4587710 E666230, 14- N4588100 E666100.

Boundary Justification

The district's boundaries encompasses all extant resources from its Period of Significance. The boundaries do not, however, coincide with Corps property line on either its north or south ends. On the north, there is no need to include in the district the drainage ditch extending from the final overflow dike in the stationary section of the dam to U.S. Highway 61. This ditch does not contribute to the historical significance of the district. Similarly, on the south, there is no need to include within the district anything south of the north side of the public road traversing the Corps property. The road makes a good visual barrier between the district and development on the Illinois side of the river.

The district is wider (east-west) on its northern and southern ends than in the reach that stretches between them. This is because it must include resources paralleling both shorelines. Both wider portions have a maximum depth (north-south) of 600 feet. However, the northern boundary of the portion of the district along the Illinois shore is more irregular than the southern boundary of the portion along the Iowa shore. This was done so that the boundary can follow the shape of the manmade resources as closely as possible, so as to avoid including any more of the river than is absolutely necessary in the district. The river is ineligible for listing because it is not manmade.

The district is clearly distinguished from development on the Illinois shore by the road. The flood plain and the Chicago, Rock Island, St. Paul and Pacific Railroad tracks on the Iowa shore separate the district from development on that shore.

United States Department of the Interior
National Park Service

NATIONAL REGISTER OF HISTORIC PLACES
CONTINUATION SHEET

Lock and Dam No. 16 Historic District

name of property

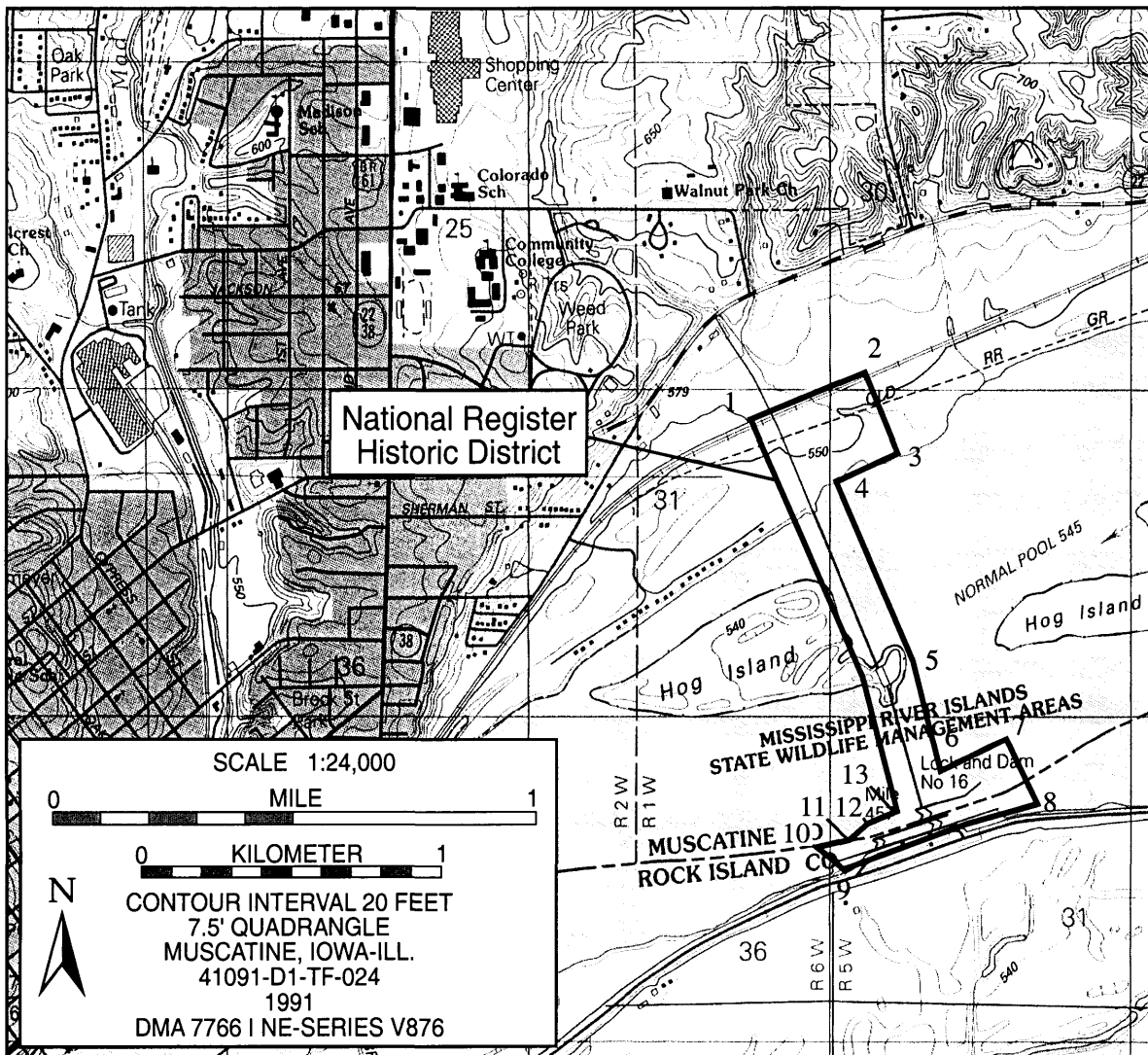
Muscatine County, IA

county and state

Upper Mississippi River 9-Foot Navigation Project, 1931-1948

name of multiple property listing

Section MAPS Page 15



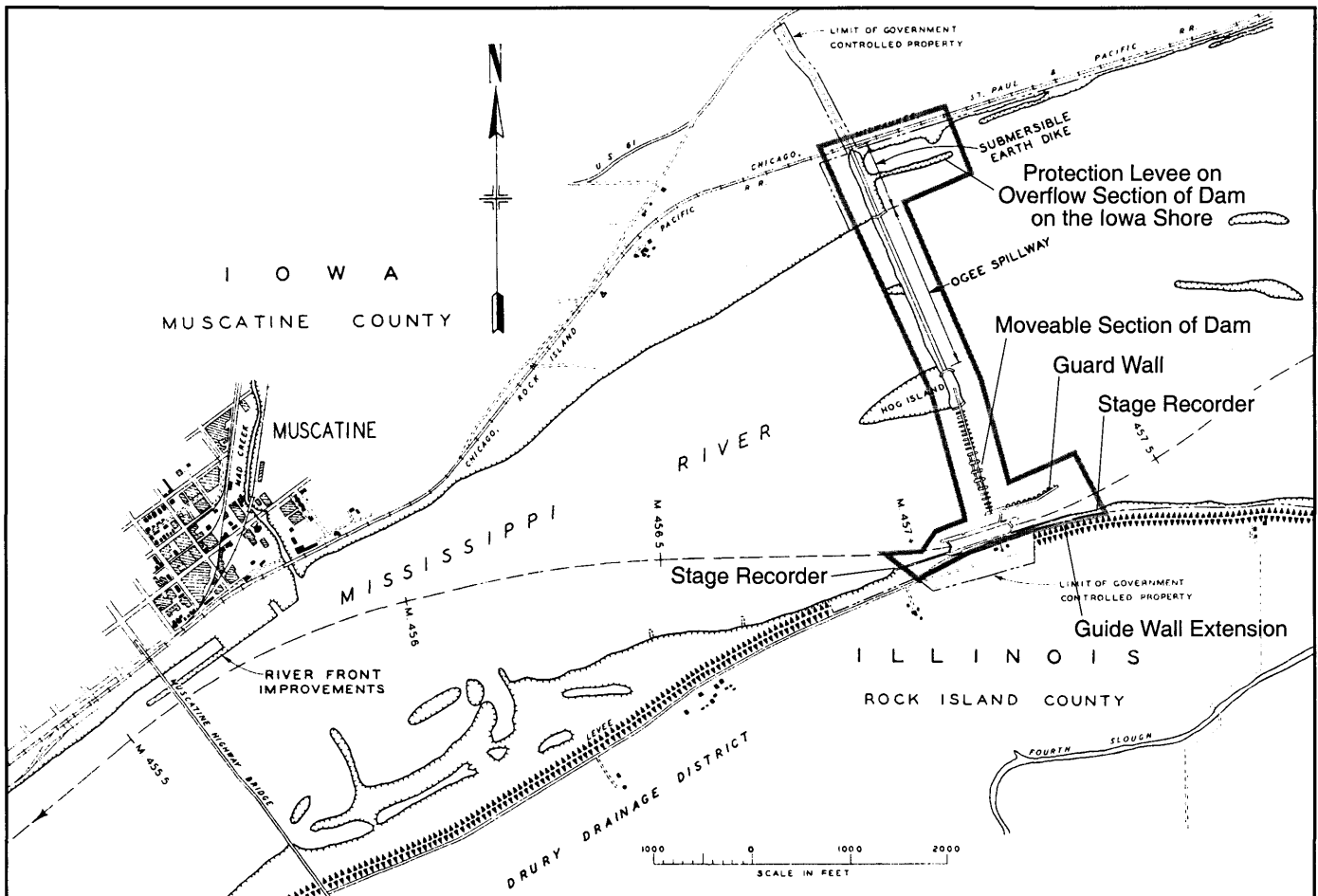
MAP 1. Lock and Dam No. 16 Historic District Boundaries Superimposed on Muscatine, Iowa/Illinois 7.5' USGS Quadrangle Map.

United States Department of the Interior
National Park Service

NATIONAL REGISTER OF HISTORIC PLACES
CONTINUATION SHEET

Lock and Dam No. 16 Historic District
name of property
Muscatine County, IA
county and state
Upper Mississippi River 9-Foot Navigation Project, 1931-1948
name of multiple property listing

Section MAPS Page 16



MAP 2. Lock and Dam No. 16 Historic District Based on June 30, 1961, Map by Rock Island District: Sheet 22, Mississippi River, River and Harbor Project, Lock & Dam No. 16.

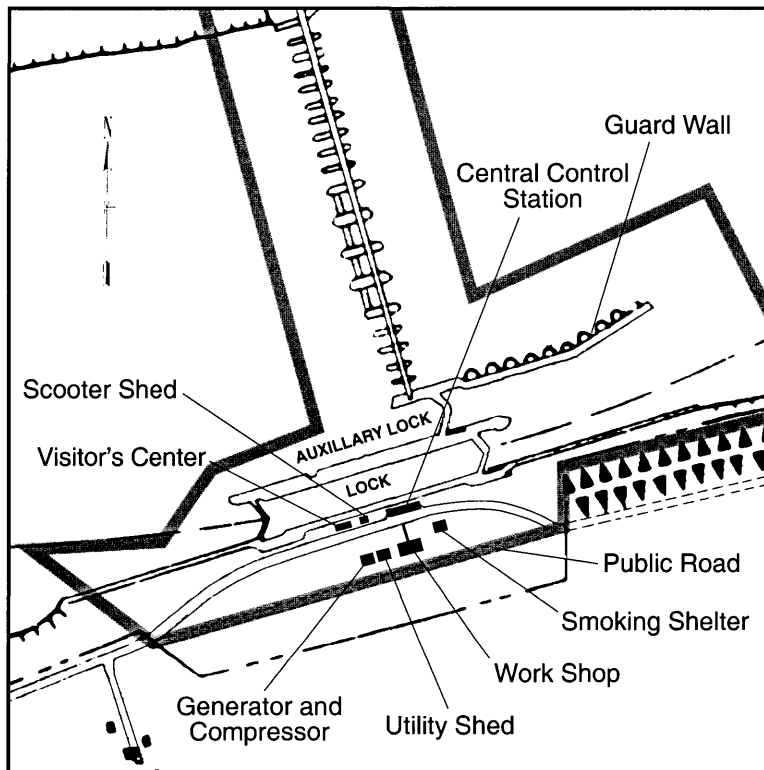
United States Department of the Interior
National Park Service

NATIONAL REGISTER OF HISTORIC PLACES
CONTINUATION SHEET

Lock and Dam No. 16 Historic District
name of property
Muscataine County, IA
county and state
Upper Mississippi River 9-Foot Navigation Project, 1931-1948
name of multiple property listing

=====

Section MAPS Page 17



MAP 3. Detail of the Illinois End of the Lock and Dam No. 16 Historic District Based on June 30, 1961, Map by Rock Island District: Sheet 22, Mississippi River, River and Harbor Project, Lock & Dam No. 16.

United States Department of the Interior
National Park Service

NATIONAL REGISTER OF HISTORIC PLACES
CONTINUATION SHEET

Lock and Dam No. 16 Historic District
name of property
Muscatine County, IA
county and state
Upper Mississippi River 9-Foot Navigation Project, 1931-1948
name of multiple property listing

Section PHOTOS Page 18

Lock and Dam No. 16 Historic District
33109 102nd Ave. W
MUSCATINE, Muscatine County, IA

The above information is identical for each photo listed below.

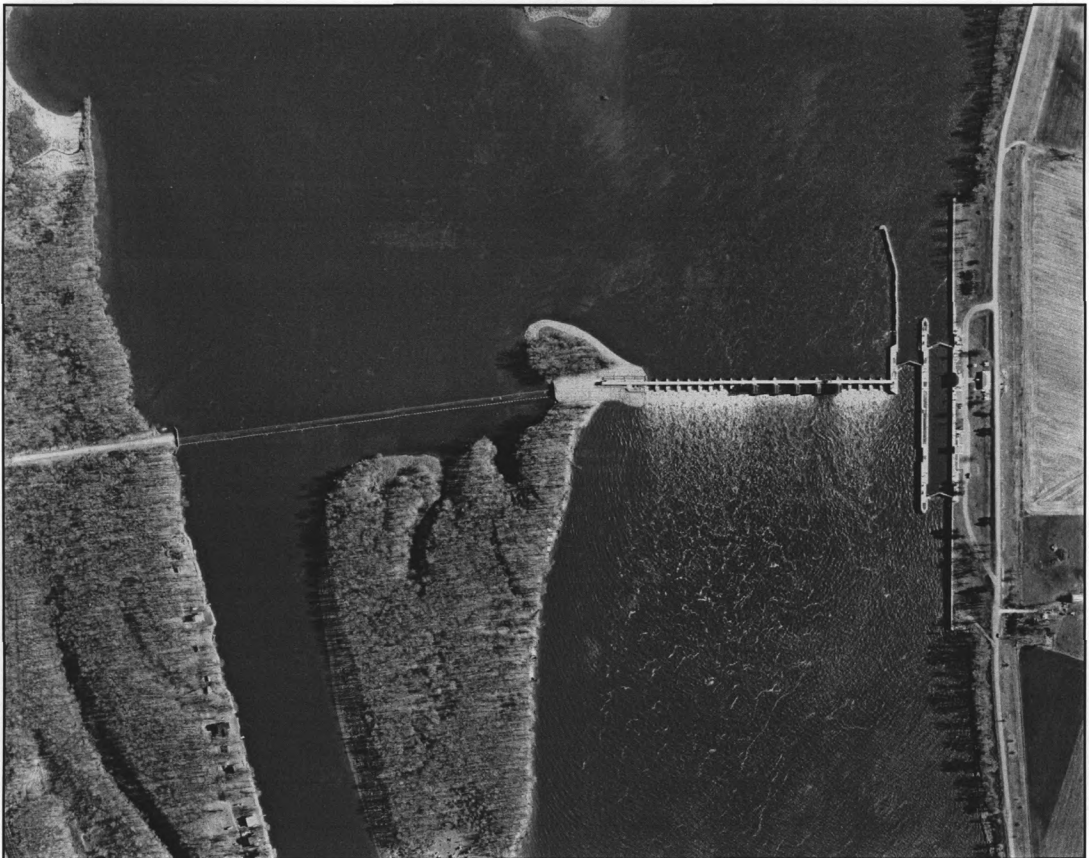


PHOTO 1. Aerial Photo.
Photographer: ?
Date of Photograph: ?
Location of Original Negative: Survey Branch, Rock Island District, U.S. Army Corps of Engineers, Rock Island, IL.

View:

United States Department of the Interior
National Park Service

NATIONAL REGISTER OF HISTORIC PLACES
CONTINUATION SHEET

Section PHOTOS Page 19

Lock and Dam No. 16 Historic District
name of property
Muscatine County, IA
county and state
Upper Mississippi River 9-Foot Navigation Project, 1931-1948
name of multiple property listing

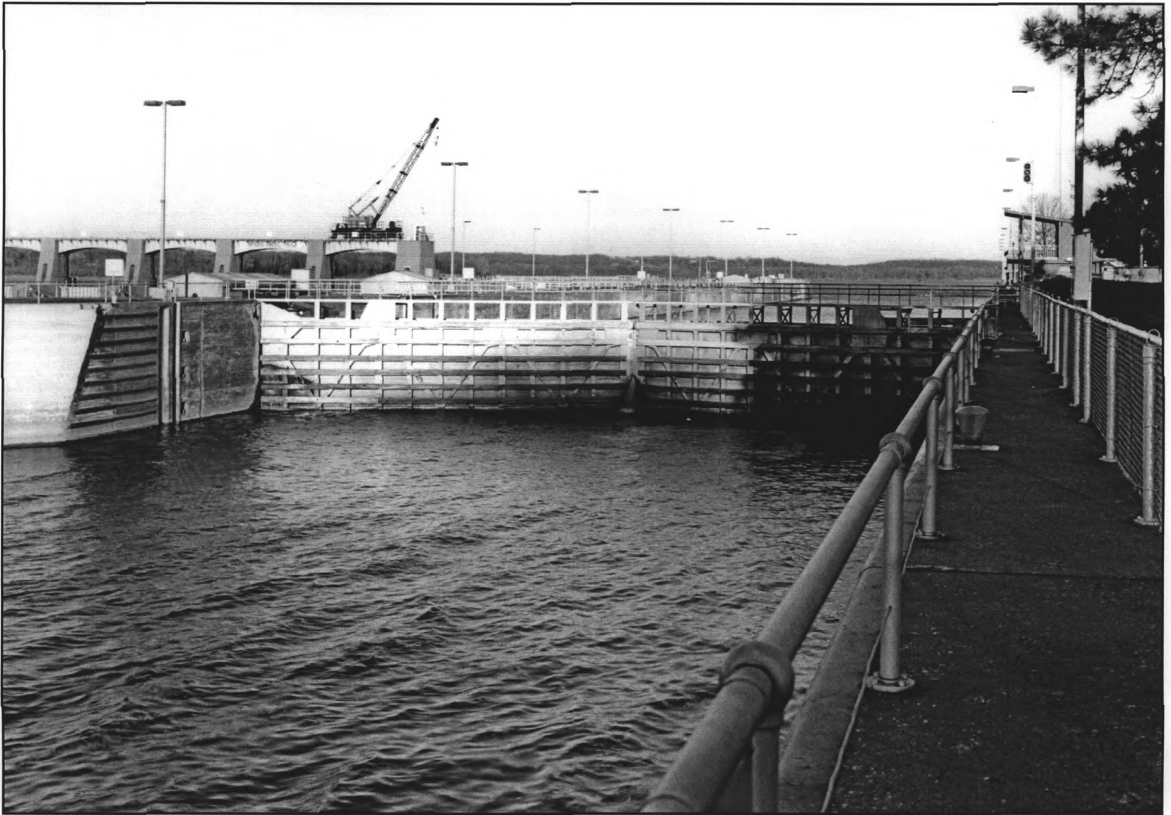


PHOTO 2. General View of Lock, Downstream Side.
Photographer:
Date of Photograph:
Location of Original Negative:

Peter A. Rathbun
September 1987
IA-26-3, HAER, IOWA, 70-MUSCA.B.1-
HAER Collection, Prints and
Photographs Division, Library of
Congress, Washington, D.C.
From downstream guide wall of lock,
looking northeast. Note: moveable
crane on dam.

View:

United States Department of the Interior
National Park Service

NATIONAL REGISTER OF HISTORIC PLACES
CONTINUATION SHEET

Lock and Dam No. 16 Historic District
name of property
Muscatine County, IA
county and state
Upper Mississippi River 9-Foot Navigation Project, 1931-1948
name of multiple property listing

=====

Section PHOTOS Page 20



PHOTO 3. General View of Moveable Section of Dam, Downstream Side.
Photographer: Peter A. Rathbun
Date of Photograph: September 1987
Location of Original Negative: IA-26-1, HAER, IOWA, 70-MUSCA.B,1-HAER Collection, Prints and Photographs Division, Library of Congress, Washington, D.C.
View: From west end of Hog Island, looking southeast

United States Department of the Interior
National Park Service

NATIONAL REGISTER OF HISTORIC PLACES
CONTINUATION SHEET

Lock and Dam No. 16 Historic District
name of property
Muscatine County, IA
county and state
Upper Mississippi River 9-Foot Navigation Project, 1931-1948
name of multiple property listing

Section PHOTOS Page 21



PHOTO 4. Detail of Stationary Section of Dam, Concrete-Covered Ogee Spillway Submersible Earth- and Sand-filled Dike, Which is the Middle of the Three Dikes Which Make Up the Stationary Portion of the Dam.

Photographer: Peter A. Rathbun
Date of Photograph: September 1987
Location of Original Negative: IA-26-5, HAER, IOWA, 70-MUSCA.B,1-HAER Collection, Prints and Photographs Division, Library of Congress, Washington, D.C.
View: From north end of storage yard on Hog Island, looking northwest

United States Department of the Interior
National Park Service

NATIONAL REGISTER OF HISTORIC PLACES
CONTINUATION SHEET

Section PHOTOS Page 22

Lock and Dam No. 16 Historic District
name of property
Muscatine County, IA
county and state
Upper Mississippi River 9-Foot Navigation Project, 1931-1948
name of multiple property listing

=====



PHOTO 5. Upstream Intermediate Wall Control Stand Shelter. The downstream intermediate wall control stand shelter is identical and its placement mirrors this one at the downstream end. Both were originally constructed for use on the land wall, but were moved to the intermediate wall when new brick and glass land wall control stand shelters were constructed in 1993.

Photographer:
Date of Photograph:
Location of Original Negative:

Mary Yeater Rathbun
February 1998
UMR-NATIONAL REGISTER, roll #3
frame 14, Environmental Impact
Section, Planning Division, Rock
Island District, U.S. Army Corps
of Engineers, Rock Island, IL.
From land wall of lock, looking
northeast. Note: new jib crane
holding lifeboat.

View:

United States Department of the Interior
National Park Service

NATIONAL REGISTER OF HISTORIC PLACES
CONTINUATION SHEET

Lock and Dam No. 16 Historic District
name of property
Muscatine County, IA
county and state
Upper Mississippi River 9-Foot Navigation Project, 1931-1948
name of multiple property listing

Section PHOTOS Page 23



PHOTO 6. Visitors Center.
Photographer:
Date of Photograph:
Location of Original Negative:

Peter A. Rathbun
September 1987
IA-26-7, HAER, IOWA, 70-MUSCA.B,1-
HAER Collection, Prints and
Photographs Division, Library of
Congress, Washington, D.C.
East and south sides, from
driveway, looking northwest.

View:

United States Department of the Interior
National Park Service

NATIONAL REGISTER OF HISTORIC PLACES
CONTINUATION SHEET

Lock and Dam No. 16 Historic District
name of property
Muscatine County, IA
county and state
Upper Mississippi River 9-Foot Navigation Project, 1931-1948
name of multiple property listing

=====

Section PHOTOS Page 24



PHOTO 7. Utility Shed, Generator and Compressor.

Photographer:

Mary Yeater Rathbun

Date of Photograph:

February 1998

Location of Original Negative:

UMR-NATIONAL REGISTER, roll #3,
frame 11, Environmental Impact
Section, Planning Division, Rock
Island District, U.S. Army Corps
of Engineers, Rock Island, IL.

View:

From driveway, looking south

United States Department of the Interior
National Park Service

NATIONAL REGISTER OF HISTORIC PLACES
CONTINUATION SHEET

Section PHOTOS Page 25

Lock and Dam No. 16 Historic District
name of property
Muscatine County, IA
county and state
Upper Mississippi River 9-Foot Navigation Project, 1931-1948
name of multiple property listing

=====



PHOTO 8. Incoming Power Transformer.
Photographer:
Date of Photograph:
Location of Original Negative:

Mary Yeater Rathbun
February 1998
UMR-NATIONAL REGISTER, roll #3,
frame 15, Environmental Impact
Section, Planning Division, Rock
Island District, U.S. Army Corps
of Engineers, Rock Island, IL.
From driveway, looking southeast

View: