1. NAME OF PROPERTY

Historic Name: William M. Black

Other Name/Site Number: Dredge William M. Black

2. LOCATION

Street & Number: Third Street at the Ice Harbor Not for publication:____

City/Town: Dubuque Vicinity:____

State: IA County: Dubuque Code: 061 Zip Code: 52004-0305

3. CLASSIFICATION

Ownership of Property
Private: X
Public-local:___
Public-State:___
Public-Federal:___

Category of Property
Building(s):___
District:___
Site:___
Structure: X
Object:___

Number of Resources within Property

Contributing	Noncontributing	
___	___	buildings
___	___	sites
4	___	structures
___	___	objects
4	___	Total

Number of Contributing Resources Previously Listed in the National Register: 1

Name of related multiple property listing: N/A

4. STATE/FEDERAL AGENCY CERTIFICATION

As the designated authority under the National Historic Preservation Act of 1986, 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.

______________________________ ______________

Signature of Certifying Official Date

____

State or Federal Agency and Bureau

In my opinion, the property ____ meets ____ does not meet the National Register criteria.

______________________________ ______________

Signature of Commenting or Other Official Date

____

State or Federal Agency and Bureau

5. NATIONAL PARK SERVICE CERTIFICATION

I, hereby certify that this property is:

____ Entered in the National Register ______________

____ Determined eligible for the National Register ______________

____ Determined not eligible for the National Register ______________

____ Removed from the National Register ______________

____ Other (explain): ______________

______________________________ ______________

Signature of Keeper Date of Action

6. FUNCTION OR USE

Historic: Transportation — Sub: Water-related

Current: Recreation and Culture — Sub: Museum

7. DESCRIPTION

Architectural Classification:
N/A

Materials:
Foundation: Steel Hull
Walls: Wood over steel framework
Roof: Tarred canvas over wood
Other Description: Sidewheel propelled, steam-powered dustpan type hydraulic dredge.

Describe Present and Historic Physical Appearance.

William M. Black is a steam-powered, sidewheel-propelled, dustpan type hydraulic dredge built for the United States Army Corps of Engineers in 1934. William M. Black (Black) is now a museum vessel at the Woodward RIver Museum at Dubuque, Iowa. The museum and dredge interpret the history of the Western Rivers and the role of the Corps of Engineers in their development. Black has been maintained in nearly original condition; the only additions have been interpretive signs, and the only significant change is that one paddlewheel has been placed ashore for better educational use.

The hull is built of riveted steel and the superstructure is built of wood with a steel framework. Each of Black's large sidewheels was propelled by a high-pressure, in-line compound, reciprocating steam engine. An inverted, direct-acting, triple-expansion, reciprocating steam engine powered the main dredge pump.

Black was built in 1934 by the Marietta Manufacturing Company of Point Pleasant, West Virginia. She was one of a pair of 34-inch pipeline dredges built at the same time for service on the Missouri River. The other dredge, William S. Mitchell, is laid up outside Kansas City, Missouri, awaiting adaption for use as a museum. Black remains almost unchanged from her appearance and condition when built.[1]

Dredges are designed to improve navigation or move large amounts of material using water. They consist of a hull supporting some sort of excavating equipment. Many are self-propelled for easier movement. Suction dredges are the most common type today. They move large amounts of sediment using streams of water and an enormous suction pump. The sediment is removed to deepen rivers, remove shoals, or to cut new channels. They can also be used to improve levees or close dangerous breaches in them.[2]

Hydraulic suction dredges are essentially huge moveable pumps for dissolved sediments. On Black and her sisters, a derrick on the bow raises and lowers the suction head assembly, called the ladder, of the dredge to the river bottom. Water is pumped to the suction head and sprays from nozzles along the front edge of the dustpan, loosening river sediment. The loose sediment, along with a large volume of water, is then sucked up the 34-inch pipe, through the pump and boat, and is deposited at the channel edge by a long floating pipeline.[3] The wide, dustpan-type suction head on Black could be replaced with a smaller sand sucker head for removing consolidated or heavy sediment if necessary.

Hull

Black was built of heavy steel plates, double-riveted to steel angle frames. She measures 277 feet long, without the pipeline "stinger." She is 85 feet wide across her paddleguards, and her depth of hold is 8 1/2 feet.[4] The hull was fitted with a full scow-form bow, a flat bottom with no external keel, and a tucked-up run to the stern with rounded indentations to clear the balance rudders. Internally, Black is divided into several watertight compartments by longitudinal and athwartships bulkheads.

Black utilized a modern structural design for her hull. The hull was built to be strong enough to support the weight of heavy machinery evenly over her length. Two rows of vertical I-beams rise from the main and side keelsons to support the deck, parallel to the center keelson. The keelsons support the superstructure, and reinforce the weight of heavy fittings, such as the engines, sidewheels, pump, and inboard pipeline.

Superstructure

The superstructure of Black consists of three decks: the main, on which the propelling and dredging machinery is located, the upper deck above the boilers, and the pilothouse above the upper deck roof. Stanchions and framing for the superstructure are built of wood with lightweight steel reinforcement.

Main Deck

The main deck forms the top of the hull. It is open in front of the superstructure. The hull extends forward at each side to support the lifting apparatus for the dustpan. A Lidgerwood steam winch on the centerline of the foredeck raises and lowers the ladder. Two Clyde Iron Works steam hauling winches are mounted forward. Cables from these winches are attached to pilings or anchors upstream to hold the dredge in place against the river current. By varying the length of the cables, Black could dredge to each side of the channel.

The paddleboxes over the sidewheels are located about two-thirds of the length of the boat back from the bow. The starboard sidewheel has been removed and mounted ashore to show the construction of the wheels which are usually hidden in the paddleboxes. The hull sides are flat sided and parallel for most of the length and the main deck extends over the water at the paddleguards, which extend from the bow and stern at an angle to meet the outside corners of the paddlebox.

Engine Room

The engine room aboard Black, as on most sidewheel dredges, extends from the front of the superstructure to slightly aft of the middle of the boat. It contains the volute centrifugal dredge pump housing on the centerline. The pump is powered by a triple-expansion steam engine just aft of the pump. The propulsion engines are mounted to port and starboard in the engine room on massive steel structural members called cylinder timbers. The cylinder timbers support the cylinders and crossheads at their inboard end and the paddlewheel shaft at the after end. The propulsion engines are in-line compound engines that each powered a single sidewheel. Each piston pushed a heavy crosshead along a slide attached atop the cylinder timbers. The crosshead pushed and pulled the pitman (a large connecting rod) turning the crank and thus the paddlewheel. The cylinders are 20 and 40 inches in diameter, have a stroke of 84 inches, and worked on pressure of 250 pounds per square inch.

The paddlewheels are massive constructions of wood and steel that propelled the boat. Each paddlewheel is 20 feet in diameter, and 8 feet long. Three hub flanges, each holding 18 wooden arms, are evenly spaced along the paddleshaft. The arms are held rigid by steel circles. Each arm and flange assembly forms one segment of the paddlewheel. The ends of the arms on each segment are attached to the 18 paddle bucket planks that push the boat.

Various auxiliary machinery is located throughout the engine room. An overhead crane system aided maintenance on major machinery. The machinery includes: two 20 KW Westinghouse steam-turbine generating sets, a water distilling plant built by Davis Engineering Corporation, and a waste water filtration system by Hygeia Filter.

The passageways on deck outboard of the boilers are quite wide. The engine room is entered by way of two doors in the forward face of the superstructure, on deck to port and starboard; and in the rear bulkhead of the engine room to port and starboard.

Independent operation of the propulsion engines made Black very maneuverable. Engine room controls are located just in front of, and between, the engines. A system of bells, connected to the pilothouse, guided the engineer on duty as to what speed and direction (forward or reverse) was desired.

Boilers

The boilers are aft of the engine room. They are oil-fired, sectional water-tube, single cross-drum marine boilers built by the Foster Wheeler Corporation. These are the boilers that powered the boat when she was built. They were state of the art at that time. Heat passed around water-filled tubes in the boiler, heating it and assuring circulation. Steam gathered in a drum at the top of the boiler and was extracted and passed through the main steam line overhead to the engine room. Exhaust gasses passed through uptakes above the fire box, and exited the boat through two smokestacks on the centerline. Each boiler is covered by a shell of sheet steel over a coat of refractory material. The boilers produced steam at a pressure of 250 lbs. per square inch.

Second Deck

The second deck holds 12 staterooms for the officers. These cabins were of the lightest possible construction. The second deck holds the officers' mess, six cabins, a galley, pantry, crews mess and crews bunkroom. The officers were housed in single cabins, with doors opening both to an inside hallway, and to the deck outside. The cabins were cooled by opening small ventilating windows in the raised clerestory in the roof and heated by several large coal stoves and the heat radiated by the boilers and engine room. Later the Corps added air-conditioning that was removed when Black became a museum ship. A covered walkway runs around the second deck from the pilothouse to an open deck area aft.

Cabins for ranking crew are located amidships between the boiler and the engine room. Four crew members were housed in each of six cabins. Each crewman had his own bunk and locker. Each cabin had a door onto the deck outside and another opening onto a central passageway. A larger bunkroom at the after end of the second deck held 17 upper and lower bunks and lockers for the rest of the crew. The crews' head is located aft of the cabin area.

Pilothouse

The pilothouse is built of steel, with large sliding windows all around. It is raised above the level of the second deck house to allow the steersman 360 degree visibility. Bridge wings on each side of the pilothouse gave visibility over the edge of the hurricane deck. Stairways are mounted forward and aft of each bridge wing to give access from the second, or hurricane deck. The roof is flat with a very slight crown. A pair of carbon-arc searchlights are mounted to each side atop the gantry for lifting the dredge ladder. Controls for the derrick are mounted to starboard in the pilothouse and engine telegraphs and some of the steering controls are on the centerline forward.

Steering was controlled from the pilothouse, but much of the multiple rudder system is located in the engine room. Two systems were used. One used a steam steèring engine, controlled from the pilothouse, to move the central tiller arm and turn the four yoked rudders. The second system, added later, used cables from the pilothouse to move auxiliary or monkey rudders aft of the paddlewheel for additional control in maneuvering.

Rig

Black had two smokestacks rising from the second deck roof, both on the centerline. They were designed to pivot to the side about halfway up so that the stacks could be lowered for passing under low bridges. A new steam whistle was made for Black in 1949 by Assistant Engineer Paul Thompson. It was designed to "chord, with the tones coming and blending just right." The whistle must have lived up to the design, being known as "Bing Crosby."[5] The apparatus on the bow for raising the ladder consists of a steel truss girder tripod over the ladder well and a pair of truss-girder, A-frames over each bow. A small steel davit is mounted amidships at the stern for handling the discharge pipeline connection. The pipeline connected to a large swivel joint at the stern of Black. The only other spar is a flagstaff mounted at the after end of the second deck.

Floating Plant--Pipeline
(contributing element)

Black dredged with the discharge pipeline, called the dredge string or "stinger," trailing downstream. The pipeline was mounted on small pontoon barges and could be swung from side to side of the river to allow passage of other boats or shifting of the discharge area. The movement of the pipeline was controlled from the doghouse, a small hut built atop the last pontoon in the stinger. The museum exhibits one pipeline pontoon.

Floating Plant--Dredge Tender Tavern
(contributing element)

The dredge tender Tavern, which was used to assist Black, is retained by the Museum and is in excellent condition. Tenders are essentially small towboats. Tavern is 43'3" long 12'6" in length, and drew 2'8" of water when loaded. Her hull and superstructure are built of welded steel. The single screw propeller is powered by a 336 horsepower diesel engine. The bow and stern are square and the sides are parallel and flat. She was built in 1944 at Gasconade, Missouri, by the Corps of Engineers.[6]

Endnotes

1. Norman J. Brouwer, International Register of Historic Ships (Annapolis, Maryland: Naval Institute Press, 1985) p. 287.

2. H. Ronald Kreh, "Dredging in the United States," A Better Way of Doing Business...Dredging: the Challenge, the Technology, the Opportunity (St. Paul, Minnesota: Upper Mississippi River Basin Commission, 1979) pp. 2-6.

3. Ibid., p. 3.

4. "The Dredge Black" from interpreters handbook, Dubuque County Historical Society, Dubuque, Iowa; and David H. Grover, U.S. Army Ships and Watercraft of World War II (Annapolis, Maryland: Naval Institute Press, 1987).

5. "The Engineer Steamer Suter," The Waterways Journal, July 30, 1949, p. 11.

6. "Individual Small Craft - Dredge Tender Tavern" (typescript information form filled out by Dubuque County Historical Society).

8. STATEMENT OF SIGNIFICANCE

Certifying official has considered the significance of this property in relation to other properties: Nationally: X Statewide: ___ Locally: ___

Applicable National Register Criteria: A X B ___ C X D ___

Criteria Considerations (Exceptions): A ___ B ___ C ___ D ___ E ___ F ___ G ___

NHL Criteria: NHL 1, 4

NHL Theme(s): XII-L: Business
Shipping and Transportation

VIII-B: Technology (Engineering and Invention)
Transportation

Areas of Significance:	Period(s) of Significance	Significant Dates
Maritime History	1934-1941	1934
Architecture (Naval)	1934	1934
Engineering	1934	1934

Significant Person(s)s: N/A

Cultural Affiliation: N/A

Architect/Builder: Specifications by the U.S. Army Corps of Engineers. Designed and built by the Marietta Manufacturing Company, Point Pleasant, West Virginia.

State Significance of Property, and Justify Criteria, Criteria Considerations, and Areas and Periods of Significance Noted Above.

The dustpan dredge William M. Black is one of a handful of steam-powered sidewheelers in the United States, and one of only four preserved historic U.S. Army Corps of Engineers river dredges.[7] William S. Mitchell, sister ship to Black, is the subject of a separate study; Captain Meriwether Lewis, also a dustpan dredge, is already a national historic landmark; and Ste. Genevieve, a cutterhead dredge, will be the subject of a future NHL study.

Dredges deepened and redirected the Western rivers, fought levee failures to prevent floods, and allowed the spread of navigation to regions previously inaccessible. Black played a major part in the improvement of the Missouri River. While her career was tied to a single region, Black is significant to the entire nation because of the role the Missouri River system played in the control of flooding and in national trade and commerce.

The preceding statement of significance is based on the more detailed statements that follow.

The Development of Western Rivers Watercraft

The Western Rivers system, composed of the Mississippi, Ohio, Missouri and other tributary rivers, carried most of the immigrants and freight that settled the Midwest. Starting in the late 1700s, most settlers travelled from the East Coast overland to Pittsburgh or Redstone, Pennsylvania, or Wheeling, West Virginia, and then down the Ohio River to points west.[8] Only a small number traveled north from New Orleans and southern regions using the Mississippi and other rivers running from the North.

To reach the new lands of the West, Europeans adapted boat types already in use by Native Americans and on the East Coast. Explorers used birch bark canoes and settlers used larger dugouts to open the west to settlement. As more people moved west, boats with greater capacity were needed, which called for new boat types. A form of enlarged dugout, called a pirogue, was developed first. Pirogues were more capacious than dugouts and were themselves adapted into more useful forms. The first adaptation changed the method of construction, by taking the well-formed hull shape of the pirogue and replacing the hewn multiple-log construction of pirogues with European plank-on-frame construction.[9]

Plank-on-frame construction was also used for another boat type, the bateau. Bateaus had been adapted for frontier use on the eastern seaboard in the early 1700s and were built for use on the Western Rivers later. When more traditional European construction practice was followed with these vessels, they resembled ship's boats but with more substantial timbers. When the best features of pirogues and bateaus were combined, they were given a hull shape that provided little resistance to the water, an external keel to help in steering, and sufficient cargo capacity to pay their way. This new type was called a keelboat.[10]

Keelboats were the most developed form of watercraft on the river and were used for rapid transportation of passengers and high value freight. Keelboats were usually 40 to 80 feet long and 7 to 10 feet broad. They possessed a well-modelled form, and could be propelled about 15 miles a day, either by oars at the bow or by poles pushed by crew members walking along a footway at each side. A single steersman stood atop a block at the stern to guide the keelboat using a long steering oar. Some keelboats which sailed an advertised route on a regular schedule came to be known as packets, the deep water term for vessels in such service.[11]

Cheaper transportation was afforded by the use of barges and flatboats. Flatboats were box-shaped variants of the scow hull form used for ferries on shallow Eastern rivers. Flatboats were the cheapest form of transportation on the rivers. Intended to travel only one way and then be broken up for lumber, flatboats could be built, loaded with household goods, and sailed by the settlers themselves.[12]

Barges occupied the middle range of watercraft between keelboats and flatboats. Though similar in construction to keelboats, early barges were built wider, more robust, and drew more water. Barges, with their deeper draft, transported heavy freight on the deeper rivers.[13]

Development of the Western Rivers Steamboat

Robert Fulton built the steamboat New Orleans at Pittsburgh, Pennsylvania, in 1811, and started a revolution that changed the pattern of commerce on the rivers. New Orleans proceeded down the Ohio and Mississippi rivers to her namesake city, attracting publicity and attention along the way. The advent of steam propulsion on the Western Rivers revolutionized river transportation. Steamboats provided convenient, inexpensive transportation and greatly facilitated the opening of the continent to settlement. New Orleans and the boats that were built on her pattern, were powered versions of canal boats. Their long, narrow, deep hulls were better suited to deep eastern rivers than the shallow Mississippi, but were needed to support heavy steam machinery. Another sort of boat was required, but several design problems had to be overcome before steamboats could be a success on the Western Rivers.[14]

To navigate on the shallow rivers of the West, steamboat hulls and machinery had to be made as light as possible. Machinery weight problems were solved first. A light weight, high-pressure engine was employed to propel the small boat Comet in 1813. The powerplant was further refined in 1816 by Henry Shreve, who put the boilers on deck and designed a new type of engine to distribute machinery weights out over a large area of hull. Shreve's new engine design used a direct-acting, horizontal, high-pressure engine to drive the paddlewheel propeller. The second design problem was overcome over time. Lightweight hull construction gradually replaced earlier robust "canal boat" construction and a broad, shallow-draft, hull form, using a truss rod system rather than heavy wooden beams, developed.

All of the essential elements of the Western Rivers steamboat were present by 1825. Broad, shallow-draft vessels with boilers and engines on deck, side or sternwheels for propulsion, and cabins built on lightweight decks above the freight and machinery-laden main deck soon appeared on every tributary of the Mississippi. The ease and economy of this service caused the value of goods reaching New Orleans to double every ten years from 1820 to 1860.[15]

More mundane sisters to the packets operated carrying passengers and cargo, wherever it could be found. Such non-scheduled steamboats often pushed one or more barges to increase cargo capacity or to decrease draft in periods of low water. Coal was carried from the 1850s and later salt, hay, iron ore, and grain were carried. By 1860, a system of towing barges lashed alongside and ahead of the towboat was developed that allowed greater control than towing on a hawser. This type of service favored sternwheel propelled boats over sidewheelers and promoted other improvements as well. Towboats had become a distinct type by 1870 and were moving barges carrying more than 19,000,000 tons of products a year by 1889.[16]

The Development of Dredges

Like other varieties of river craft, there are many types of dredges used for different types of work. All dredges consist of excavation equipment supported by a hull. They were principally used to create, deepen, and widen navigable waterways until the middle of the 19th century. Engineers of the Victorian era then used dredges in major projects to redirect and "improve" waterways.

Dredges developed along two principal lines--mechanical and hydraulic. Mechanical dredges were developed first, operating by raising sediments in shovels, scoops, and baskets (in ancient Mesopotamia, Egypt, and Persia). The two major subdivisions of mechanical dredges used either dippers or dragline grabs to remove material scoop by scoop. Dipper dredges used an endless chain of dippers to remove the river bottom sediment. Grab and dragline dredges used clamshells to remove heavier sediment.[17]

Hydraulic dredges used flowing water to suspend and remove sediment from channel bottoms. Hydraulic dredges show great diversity in their construction. There were three means of removing the dredge spoils from the excavation and a number of different types of suctionhead on the intake pipe. Dredge spoils could be emptied into barges alongside the dredge and emptied elsewhere, allowing the dredge to remain in place; spoils could be emptied into a large hopper in the dredge hull itself, requiring the dredge to move and empty itself elsewhere; or spoils could be directed through a pipeline to carry suspended sediment to areas nearby for dumping.[18]

Hydraulic dredge suctionheads ranged in complexity from simple open pipe ends dragged over the bottom to revolving blades that cut through the bottom. The simplest form, called a suctionhead, or sometimes a "sandsucker," was an open pipe or a pipe with a wide end to pull in sediment from a wider area. The Corps of Engineers invented the ultimate form of suctionhead dredge for use on the unconsolidated sediment of the Mississippi and Missouri Rivers. Called "dustpan dredges" for the shape of the suctionhead, they used a wide suction head to pick up sediment from a broad swath of bottom. The Corps of Engineers built the first dustpan type dredge, Alpha, in 1893. Twenty-five Corps of Engineers dustpan dredges followed that first example; three currently survive, Black, Mitchell, and Lewis. Others have been built for private owners and for operation in Russia and Latin America.[19]

A variation on the ordinary suctionhead dredge, called cutterheads, used a mechanically-powered revolving blade at the suction intake end of the pipeline. Cutterhead dredges used the revolving head to cut through compacted sediment and hydraulic suction to carry away the excavated material.

The Corps of Engineers on the Western Rivers

The U.S. Army Corps of Engineers dates to an Act of March 16, 1802. The Corps is an engineering and construction organization with both military and civil functions. The civil functions have included most of the major navigation and flood control improvements made on the waterways of the United States. Congress recognized the importance of the Western Rivers as early as the 1820s when the Corps of Engineers was made responsible for planning and executing improvements on the Ohio and Mississippi rivers. The various regions on the shores of these rivers cried for help to control floods, assure water for irrigation, and to improve the transportation link between America's agricultural heartland and the Gulf and inter-coastal waterways. Congress responded by funding a variety of projects and supporting the U.S. Army Corps of Engineers in their grand projects to provide water where it was wanted and exclude water from where it was not wanted.[20]

The Western Rivers naturally meander about their floodplains, changing their beds constantly; silt fills in areas of slower water, such as the insides of bends and river currents excavate areas of fast water, such as the outsides of bends. Occasionally bends meet, flowing through and cutting off an area of riverbed, thereafter known as an obow lake. This dynamic process creates an ever-changing river path across the floodplain and results in periodic flooding. Deepening the main channel of the river is intended to create a channel deep and fast enough to keep itself from silting-up. Cutting off meanders has the same affect and makes navigation safer and faster.

The Corps of Engineers was involved in river improvement efforts from early in the 19th century and gradually was made responsible for most river improvement work. At first, Corps engineers were only in charge of survey and some mapmaking. Later, the Corps planned improvements, and still later, performed the necessary work directly. Congress appropriated $75,000 to support dredging six bars on the Ohio River and start snag removal in 1824. A large fleet of Corps vessels was built using the most modern designs available. Flood control was added to Corps responsibilities starting in the 1870s, and the canalization of the Western Rivers was begun around 1900. These new duties not only made navigation safer but also remade the face of America.[21]

Several important vessel types were developed by the Corps of Engineers to carry out the enormous projects that the Corps undertook. These included snagboats, inspection steamers, towboats, quarter boats, maneuver boats, needle boats, specialized barges, and several varieties of dredges. A few prominent examples of Corps of Engineers Western Rivers watercraft have been preserved around the country. These include several vessels designated as National Historic Landmarks: the snagboats Montgomery and W. T. Preston, and the inspection steamer Sergeant Floyd.

The Engineers Tame the Missouri

The Missouri River is more than 2,400 miles long and travels through seven states. It originates within Yellowstone National Park and southwestern Montana and joins the upper Mississippi River upstream from St. Louis, Missouri. Work to keep the Missouri River navigation channel clear of snags and dredging the shallowest areas began in 1832, when the first national efforts took shape. This haphazard approach changed after a flood of Kansas City in 1903 which created a clamor for flood control. In 1907 the Corps of Engineers created the Kansas City District to attempt to control the river.

Initially these efforts sought to stabilize the river banks and learn enough about sandy river bottom mechanics to undertake more ambitious projects. In the late 1920s a number of separate sources called for a nine-foot deep navigation channel in the Missouri. Railroads had become slow in delivering bulk cargo and were charging rates considered detrimental to agriculture. Competition from river carriers was sought to bring freight rates down. This pressure led to the most ambitious project ever performed on the Missouri River. Supporters of hydroelectric power and others interested in increased shipping trade, agricultural irrigation, and flood control all argued for a nine-foot channel to match the depth of the Upper Mississippi River. The deeper channel would allow barges from the rest of the Western Rivers System to reach Kansas City without expensive transshipment. It would also permit hydroelectric power generation and increased irrigation, while helping to control dangerous floods. A survey of American rivers investigating all of these factors was authorized by Congress in 1925. Called the "308" report, this survey consolidated many disparate factors to produce a strong argument for river improvement.[22]

During the 1930s the Corps began an ambitious project to control the mighty Missouri River by lengthening and improving the navigable water route to the Mississippi. By creating a nine-foot deep main channel the Engineers intended to prevent destructive flooding, make navigation safer, and stabilize riverbanks all in one. Flood control on the Missouri would also protect the earlier Mississippi River flood control projects downstream from being carried away.

Applying the recommendations of the "308" report called for implementing a nine-foot channel in the navigable portion of the Missouri and controlling the river. Maj. Gordon R. Young, District Engineer, described the problem of applying this control:

> It is quite impossible here to state how wide the river is, or in fact to talk about a "river" at all, in any coherent hydraulic sense. Where the stream should be perhaps a quarter of a mile wide, more or less, for the best navigation results, there are sections where the high banks are from two to three miles apart. At low stages there may be two, or three, or half a dozen threads of water between the high banks, each separated by shifting sandbars; as to those hydraulic characteristics, about all that can be said is that they flow down hill.[23]

The Corps of Engineers recognized that a very efficient sand and silt sucking dredge was needed to complete the nine-foot channel work on the Missouri. They turned to the dustpan type hydraulic dredge as the most efficient design to control the river. Four "super dredges" were needed to complete the work. The Corps of Engineers had the four "super dredges" built in the early 1930s. All four vessels were large, shallow draft, self-propelled dustpan hydraulic dredges. The sisters Captain Meriwether Lewis and Captain William Clark were built first followed by the sisters William M. Black and William S. Mitchell. Lewis is a national historic landmark and Clark no longer survives. The second pair incorporated improvements based on experience gained from Lewis and Clark. Black and Mitchell were the epitome of shallow river dredge design.

Construction and Career of William M. Black

William M. Black was built in 1934 by the Marietta Manufacturing Company of Point Pleasant, West Virginia. The vessel contracts were awarded in pairs, with William S. Mitchell following William M. Black by a month. Bids were opened on February 2, 1934, and both vessels' contracts were awarded to the Marietta Manufacturing Company.[24]

The Marietta Manufacturing Company dates to the formation of a partnership, W. F. Robertson and Company at Beverly, Ohio, in 1852. The company moved to Marietta, Ohio, in 1892, and took its present name. In 1917 the company moved to Point Pleasant, West Virginia and incorporated under the laws of the state.[25] The Marietta company built a number of large dredges for the Corps of Engineers as well as coal mining machinery, gasoline absorption plants, floating drydocks, barges, towboats, tugboats, and other river steamers.[26] Government contracts were a large part of the company's business; in 1934 it built four dredges and a towboat for the Corps of Engineers and three 165-foot patrol boats for the Coast Guard.[27]

William M. Black was launched on Saturday, September 1, 1934. Black was the largest vessel launched to that date by the yard. She was named for Maj. Gen. William Murray Black, Chief of Engineers during the First World War. General Black had been Chief Engineer under General Leonard Wood in Cuba and later Cuban Director of Public Works. He was Division Engineer of the

Northeastern Division, and later was chairman of the board that raised the wreck of Maine from La Habana harbor. He was awarded the Distinguished Service Medal for his service in World War I, and retired October 31, 1919, and died September 24, 1933.[28]

William M. Black performed valuable service even before she was delivered to the Corps of Engineers. Early in the second week of November 1934, Black fought a conflagration at the Point Pleasant Transportation Company. The boat was moved to the riverbank and a hose line was run from Black on the river to the fire. The boat was credited with "great assistance in keeping the flames under control."[29]

Sediment was sucked up by a vacuum-cleaner-like "dust pan" head on the end of a 34-inch intake pipe that was lowered to the river bottom. The sediment, suspended in river water, flowed through the dredge and out into a 500-foot long line of piping supported on small barges. The sediment and water emptied out on the river bank at the end of the piping string. A huge centrifugal pump in the center of the hull provided the suction to make the system work. The pump was powered by a vertical inverted, direct-acting, triple-expansion steam engine. The entire dredge and piping string was propelled by paddlewheels driven by a separate set of horizontal, in-line compound steam engines. Both the dredge pump engine and propelling engines were provided with steam by Foster Wheeler boilers.

A crew of 60 operated the vessel and lived aboard. Twelve persons were responsible for navigation and the remaining 48 maintained the dredge and worked in the steward's and other departments. The navigating crew included a licensed master and First Class Pilot, a licensed Chief Engineer, a Licensed Inland Mate, a fireman, a striker engineer, an oiler, five deckhands, and a watchman.[30]

The "super dredges" soon proved themselves; Black set a "world record" for material dredged in 1935, when 2,812,270 yards of material were dredged in 29 days.[31] With the four "super dredges" and the cutterhead dredge Ste. Genevieve, the Corps of Engineers had been given the tools to channel the Missouri. The project to control the river took more than 15 years. Black cut new channel cutoffs at Willhoite, upstream of Glasgow, Missouri; Malta Bend upstream of Miami, Missouri; and at French Bottoms in 1952. Floods and the annual changes of flow required maintenance of already completed sections of the river. Emergency work performed by Black included completion of the French Bottoms Canal project near St. Joseph, Missouri, in 1952. Black also filled a breach in the levee near Glasgow, Missouri, during the 1947 flood. This break was at least 1600 feet long and took 552 hours to fill. In spite of such setbacks, however, the Corps of Engineers could claim by the 1950s that the Missouri River had been tamed. By the mid-sixties the Corps of Engineers had completed most of the needed construction work on the river. Maintenance work was still needed, but was performed by contractors. The Corps dredges were gradually laid up or shifted to new areas of operation.[32]

Black was responsible for sinking at least one other vessel. On October 18, 1937, the dredge passed through Bakers Bend, a narrow turn in the river near mile 291 (1932 mileage). The wake from Black sank a rowboat tied to the bank belonging to Mr. Lowell L. Standley. The seats and floor boards floated away causing a loss to Mr. Standley of $5.00. The next day he wrote to the Corps of Engineers District office and made a claim for the loss caused by Black. Six months later Mr. Standley wrote the U.S. War Department in Washington: "Dear Sirs, It has been six months since this boat was sunk & damaged. Can you tell me what the Dept. is going to do about it." On April 15, 1938, Standley's claim was denied because "the Government was in no way responsible" due to the boat obstructing "the free passage of vessels."[33]

Like most Western Rivers vessels William M. Black met with a number of accidents in her career; unlike many, she survived them. On June 10, 1939, Black was damaged by a high wind during a severe thunderstorm. The after part of the hurricane deck roof was torn off, the cabin bulkheads were damaged, and the after smokestack was twisted out of alignment. Personal property of the crew was lost or damaged as well. In September 1940 Black struck a bridge with her funnels due to an "obvious error in judgement" of the master pilot. On October 6, 1941, Black was struck by a tornado which tore off the hurricane deck and damaged the pilothouse and cabin bulkheads. Four members of the crew were injured; damage was estimated at $20,000.[34] Ice damaged the port sidewheel when the ice broke up on the Gasconade River in 1962. Runaway barges struck the dredge three times between October 1965 and June 12, 1967.[35]

Black underwent one major rebuilding. In August 1960 Black was repaired and extensively replated. Her badly corroded rivetted hull plates were covered with new welded steel plates to allow her to continue in service.[36]

William M. Black was decommissioned in 1973, after 38 years in operation. The logbook for November 21, 1973, records when "last boiler cooled down." After a political battle with Kansas City, Missouri, Dubuque, Iowa, won Black for its historical society.[37] In September 1979 the General Services Administration deeded the dredge to the Dubuque County Historical Society for use as a museum ship at the Woodward Riverboat Museum and National Rivers Hall of Fame. The Historical Society paid for the move from the Kansas City District boat yard at Gasconade, Missouri. The historical society opened the museum to the public on June 1, 1980.

Endnotes

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10. Ibid., pp. 42-44, 50-51.

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21. Floyd M. Clay, History of Navigation on the Lower Mississippi ([Fort Belvoir, Virginia:] U.S. Army Water Resources Support Center, 1983) passim; and Roald D. Tweet, History of Transportation on the Upper Mississippi & Illinois Rivers ([Fort Belvoir, Virginia:] U.S. Army Water Resources Support Center, 1983) passim.

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24. "Bids Wanted For Two Huge Side-Wheel Dredges," The Waterways Journal, January 13, 1934, p. 14.

25. "Gas and Boats," The Waterways Journal, December 26, 1931, p. 13.

26. Anna Belle Weissenburger, "Marietta Mfg. Co. Craft Used in Many Lands," The Waterways Journal, April 14, 1934, pp. 8-9.

27. "1934 A Banner Year In the Production of Marietta-Built Vessels," The Waterways Journal, November 24, 1934, p. 8.

28. "Major General William Murray Black, Chief of Engineers," unidentified clipping in files of the Dubuque County Historical Society, Dubuque, Iowa.

29. "New Dredge W. M. Black On Way To Missouri River," The Waterways Journal, November 17, 1934, p. 8.

30. Certificate of Inspection, Dredge William M. Black, February 27, 1941, Records of the United States Bureau of Marine Inspection and Navigation, Record Group 26, National Archives, Washington, D.C.

31. "Dredging," The Waterways Journal, December 28, 1935.

32. Branyan, op. cit., pp. 22-34.

33. Lowell L. Standley to U.S. Eng. Office of Navig., Kansas City, Mo., Oct. 19, 1937; memorandum from P. A. Hodson to the Chief of Engineers through the Division Engineer, Missouri River Division, Kansas City, Missouri, February 16, 1938; endorsement to February 16 memo by C. L. Sturdevant, Division Engineer; decision by F. K. Newcomer, Chief Finance Division, April 11, 1938; letter from Lowell L. Standley to U.S. War Department, April 9, 1938; reply from D. A. Ogden, Assistant Chief, Finance Division to Lowell L. Standley, April 15, 1938.

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35. "Black, Accidents" p. 1, typescript draft of museum docent training materials of the Dubuque County Historical Society, Dubuque, Iowa.

36. Title block to drawing of rebuilding plan, on file at the Dubuque County Historical Society, Western Rivers Hall of Fame, Dubuque, Iowa.

37. Thomas G. Rhodes and Harley E. Scott, "William M. Black," Steamboats Today: A Pictorial Directory of North American Vessels, (N.P.: Cayuga Creek Historical Press) p. 45.

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Previous documentation on file (NPS):

___ Preliminary Determination of Individual Listing (36 CFR 67) has been requested.
_X_ Previously Listed in the National Register. (Ref. #82002618)
___ 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
___ Local Government
___ University
_X_ Other: Specify Repository:

National Archives, Washington, D.C.

Woodward Riverboat Museum and National Rivers Hall of Fame, Dubuque County Historical Society, Dubuque, Iowa.

The Mercantile Library, St. Louis, Missouri.

Inland Rivers Library, Public Library of Cincinnati and Hamilton County, Cincinnati, Ohio.

10. GEOGRAPHICAL DATA

Acreage of Property: Less than one (1) acre

UTM References: Zone Easting Northing Zone Easting Northing

A 15/692150/4707300

Verbal Boundary Description:

All that area enclosed within the extreme length and breadth of the vessel.

Boundary Justification:

The boundary includes the entire area of the vessel as she floats at her berth

11. FORM PREPARED BY

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