



MORRIS CANAL

FACT SHEET

In 1824 the Morris Canal & Banking Company (MC&BC) was chartered to build a canal that would carry coal, mined in Pennsylvania, to developing markets along the eastern seaboard. The canal would pass through the heart of New Jersey's iron district and provide the long-needed transportation system that would create new commercial activity and enable rustic settlements like Dover and Rockaway to grow into thriving industrial towns. The canal opened for business in 1831 and then, in 1836, was extended from Newark to New York Harbor at Jersey City.

When completed, the canal extended 102 miles across the rugged highlands of New Jersey, from Phillipsburg on the Delaware River, uphill to its summit level near Lake Hopatcong, and then down to Jersey City. To accomplish this, a system of 23 lift locks and 23 inclined planes were built to overcome the impressive elevation change of 1,674 feet. The canal's famous water-powered inclined planes were an engineering marvel that enabled canal boats to be raised or lowered up to 100 feet at a time.

Mule-drawn canal boats transported up to 70 tons of cargo and took five days to cross the state. In the heyday of the canal, hundreds of boats carried everything from coal and iron ore to agricultural products. As New Jersey's first industrial transportation system, the canal promoted commerce and shaped the economic development of the northern part of the state.



CANAL SOCIETY OF NEW JERSEY

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Mule-drawn Morris Canal section boat heading west toward Dover in the early 1900s.



By the early 1900s the canal had become obsolete. However, it took until 1924 to adopt a plan to close and dismantle the canal. The ownership of the canal's vast water resources, including Lake Hopatcong, Lake Musconetcong, and Greenwood Lake, passed to the state of New Jersey. Today, the Morris Canal Greenway, a partnership between local communities and the Canal Society of New Jersey, seeks to preserve the surviving historic remains of the canal, interpret canal sites, and offer recreational opportunities to the public.

General Information

Length of main canal:

- Phillipsburg to Jersey City 102.15 miles

Length of Pompton Feeder:

- Feeder Lock to Mt. View (Mead's Basin) 4.05 miles
- River Towpath, Feeder Lock to Pompton 1.75 miles

Elevation changes:

- Mean tide at Jersey City to summit near Lake Hopatcong: 914 feet
- Summit to low water at Phillipsburg 760 feet
- Total change in elevation 1,674 feet

Costs: Original – \$2,104,413 Enlargement – \$1,700,000

Number of inclined planes: 23

Number of locks: 23 lift locks & 11 guard locks

Canal dimensions:

Original canal: Surface, 32 feet wide; bottom, 20 feet wide; depth, 4 feet
 Enlarged canal: Surface, 40 feet wide; bottom, 25 feet wide; depth, 5 feet

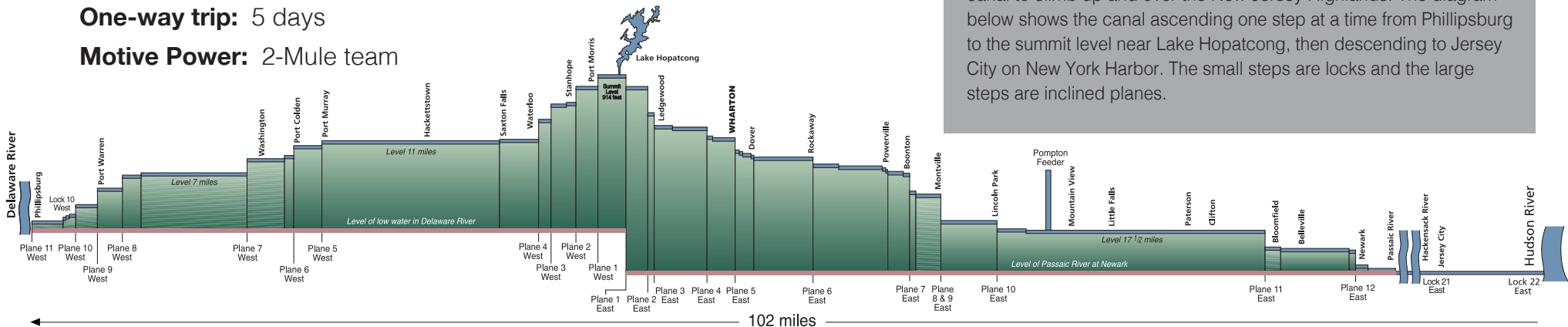
One-way trip: 5 days

Motive Power: 2-Mule team



Map and Cross Section

The locks and inclined planes formed a staircase that enabled the canal to climb up and over the New Jersey Highlands. The diagram below shows the canal ascending one step at a time from Phillipsburg to the summit level near Lake Hopatcong, then descending to Jersey City on New York Harbor. The small steps are locks and the large steps are inclined planes.



Planes, Locks and Boats

Inclined Planes

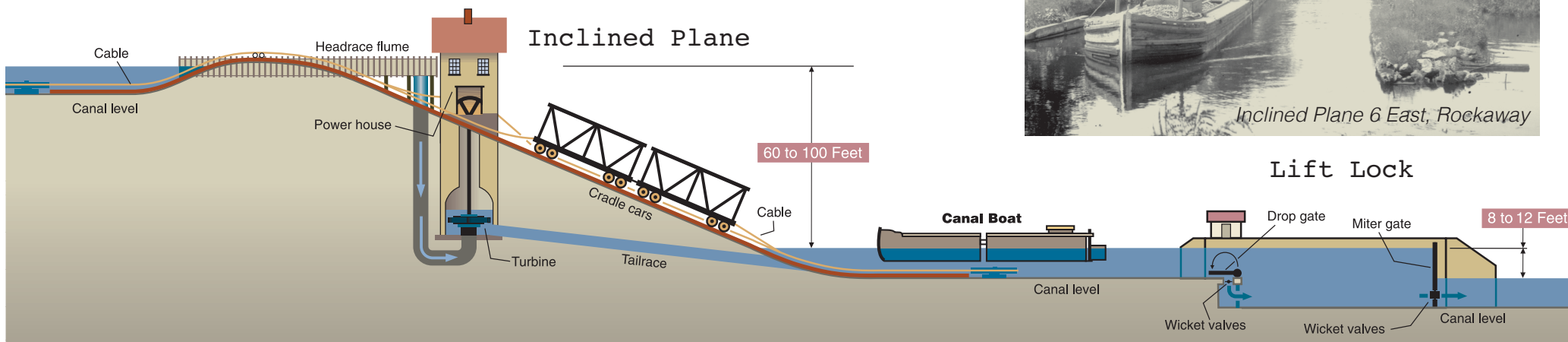
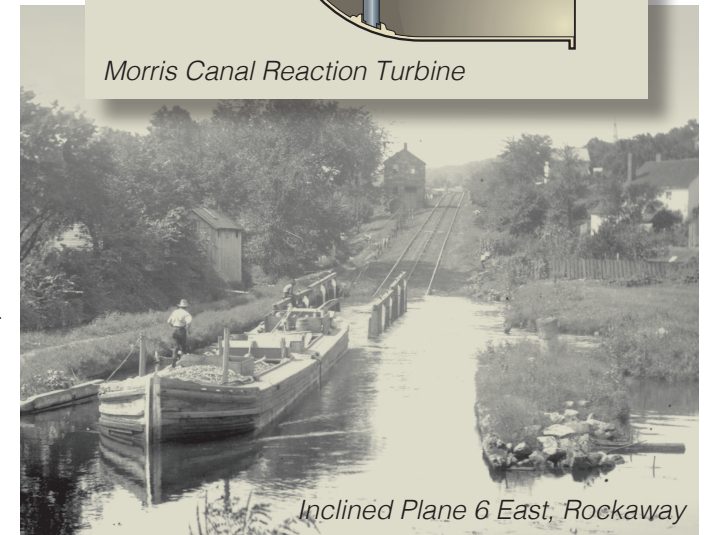
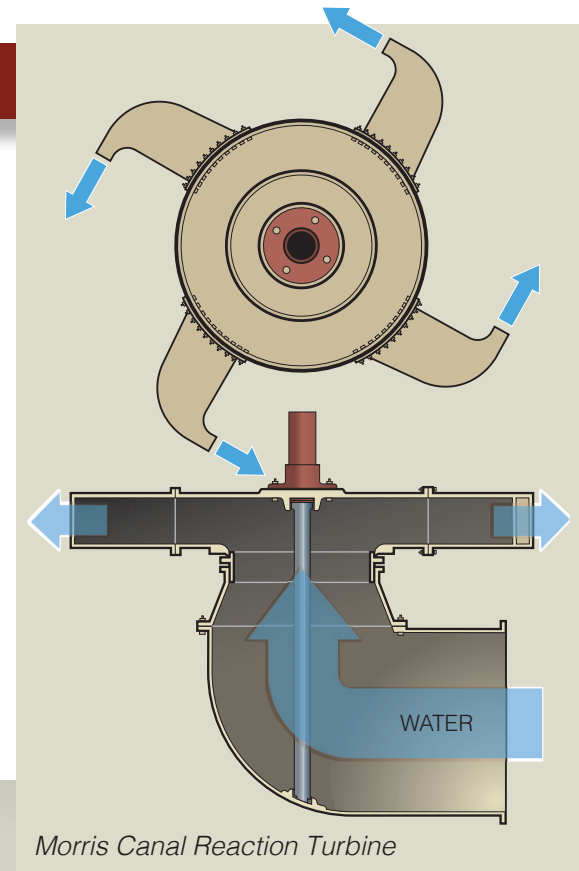
Inclined planes used water power to raise or lower canal boats as much as 100 feet at a time. Water from the upper canal level was used to create the motive power to raise and lower the boats. The water then flowed back into the next lower level and was used over and over farther down the canal. The original inclined planes, built in the 1820s, used a counter balance system powered by an overshot water wheel. Although these planes worked, they were not powerful enough to be economically successful. When canal engineer William Talcott redesigned the planes in the 1850s, he used more powerful cast-iron reaction turbines. The new planes could raise and lower boats carrying 70 tons of cargo.

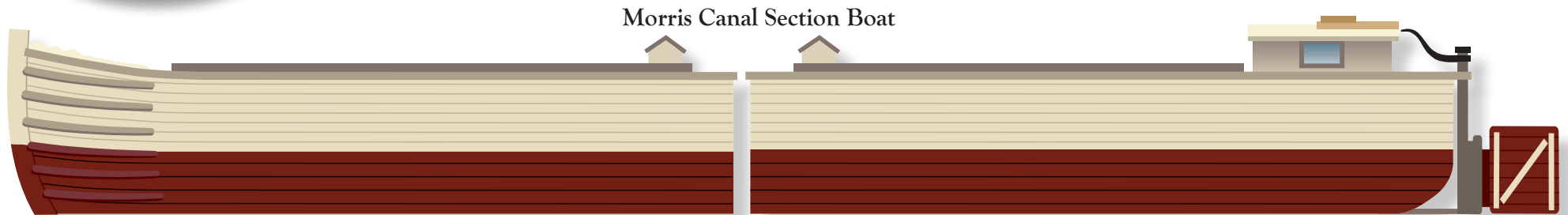
- Prior to the use of wire cables, iron chains were used.
- The grade of the inclined planes varied from a ratio of 1:11 to one of 1:20.
- Plane 9 West, Port Warren near Phillipsburg:
 - Largest plane on the canal; formerly owned by author James Lee
 - Vertical lift: 100 feet
 - Length: 1,510 feet to the summit; 1,788 feet end to end
 - Approximate time for transit: 12 minutes

Locks

Lock dimensions:

- Original locks, 9 feet wide x 75 feet long in the chamber
- Most enlarged in 1840-41, 11 feet wide x 95 feet long in the chamber
- Most enlarged again after 1860 to a clear length 100 feet in the chamber





Boats

Capacities: Early boats: 18 tons of cargo
1845 Section boats: 44 tons of cargo
1860 Section boats: 70 tons of cargo
Section boats were built in two sections and hinged together so that they could be disconnected when traversing the canal's inclined planes.

Dimensions of 1860 boats:
Length: 91 feet
Width: 10.5 feet
Depth: 6.5 feet draft when loaded

Total weight of boat, cargo and cradle: 110 to 125 tons



Morris Canal section boat

Water

Canal Reservoirs:

Lake Hopatcong: A dam, built by the MC&BC, raising the level of Great Pond a total 12 feet to create the primary water source that would fill both the east and west divisions of the Morris Canal.

Greenwood Lake and the Pompton Feeder: In 1836 the MC&BC acquired the right to dam Long Pond to create a canal reservoir now called Greenwood Lake. Water passed down the Wanaque River to a 4.05-mile-long feeder that joined the main line of the canal at Mead's Basin, now Mt. View.

Lake Musconetcong: In 1845 the canal company increased its water supply once again by damming the Musconetcong River at Stanhope to create a new reservoir that we now know as Lake Musconetcong.



Lake Hopatcong Feeder



Aqueducts:

Little Falls Aqueduct across the Passaic River: Supported by a stone arch spanning 80 feet

Pompton Aqueduct between Mountain View and Lincoln Park:

1830 aqueduct: 236-foot span on 9 stone piers

c1850 aqueduct: 275-foot span on 7 stone piers

Long levels:

Bloomfield to Lincoln Park: 17.5 miles

Saxton Falls to Port Murray: 11 miles

Washington to Lock 7 West 7 miles

Coal and Iron

Tonnage Shipped on the Canal

Year	Total	Coal	Ore	Other Cargos	Net Income
1845	58,259	12,567	5,802	39,890	\$18,997
1850	239,682	98,100	60,055	81,527	\$94,224
1855	533,204	290,730	113,294	149,180	\$272,125
1860	707,631	404,464	186,064	117,103	\$350,710
1866	889,220	459,175	290,165	139,880	\$616,350
1871	629,044	329,584	185,482	113,987	\$283,725
1875	451,045	250,047	99,607	101,390	\$270,216
1880	503,486	427,606	44,897	30,987	\$215,667
1885	364,554	301,654	21,803	41,095	\$101,487
1890	394,432	297,417	54,889	42,125	\$120,283
1895	270,778	259,778	0	11,153	\$208,557
1900	125,829	119,479	0	6,350	\$111,072
1902	27,392	20,411	0	6,981	\$52,076

The peak year for tonnage and profits was 1866.



Inclined Plane 12 East in Newark.

Inclined Plane 11 West at the western end of the canal at Phillipsburg.



Inclined Plane 8 West in Stewartville.



Iron Mine Railroads

Numerous tramways and railroads were built to bring ore from mines to the docks on the canal. Most eventually became through railroads.

- Dell Mine Tramway
- Hibernia Mine Railroad
- Mt. Hope Mineral Railroad
- Mt. Hope Tramway
- Ogden Mine Railroad brought iron ore from the mine to Nolan's Point on Lake Hopatcong; here it was loaded into canal boats. In 1880, 108,000 tons of ore were moved in 1,500 boatloads.
- Sussex Branch Tramway and Railroad

Important Dates

Nov 15, 1822	Act to investigate the feasibility of the canal passed
Dec 31, 1824	Morris Canal & Banking Company chartered by the State of New Jersey
Jul 12, 1825	Construction starts near the present town of Ledgewood
Nov 4, 1831	First trip from Newark to Phillipsburg
1832	First full boating season
1836	Jersey City extension completed -- 11.75 miles
1844	Company is reorganized without banking privileges
1841 & 1845	Canal enlargements
1847-1860	Inclined planes rebuilt to accommodate boats with 70-ton cargos
1856-1870	DL&W Railroad transports coal from northern fields to the canal docks at Washington
1871	Canal leased by the Lehigh Valley Railroad for 99 years
Nov 29, 1922	State of New Jersey takes over the canal
Spring, 1924	Canal drained
Dec 31, 1974	MC&BC charter was due to expire in 1974. However, the company still exists as part of the State of New Jersey DEP.

Ore Docks at Nolan's Point



Canal boats loading from Ogden Mine Railroad ore cars at Nolan's Point.

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The Canal Society of New Jersey is a statewide organization dedicated to preserving and interpreting New Jersey's towpath canals. We offer a wide range of membership services and activities. To join us, please contact us at the e-mail address above for membership information.



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