

Preface

The Corps of Engineers played a major part in the planning, design, and construction of the St. Lawrence Seaway, an international power and navigation project. Improvements for navigation required building two American and four Canadian locks, constructing ship channels in the International Rapids and the Lachine (Montreal) sections of the river, and extensive dredging in the St. Lawrence. The power works, a joint effort of New York State and Ontario, called for a powerhouse across the north channel of the St. Lawrence River and the construction of a powerhouse spillway dam, the Long Sault Dam. A control dam crossed the river in the vicinity of Iroquois Point to regulate the outflow of Lake Ontario. These navigation and power improvements required an extensive system of dikes and the relocation of towns, roads, railroads, bridges, and power lines.

By the time the Seaway officially opened on 26 June 1959, the United States had spent \$131 million, Canada \$340 million, and New York and Ontario each \$300 million. In one sense, the St. Lawrence Seaway's most striking aspect is its formidable engineering achievement, requiring the coordinated design and building of numerous features: locks, canals, bridges, channels, and the like. Yet, as important as the engineering were the managerial achievements of coordinating such a complex project. The Corps was the construction agent for the St. Lawrence Seaway Development Corporation, a public entity created by Congress in 1954 to oversee the American part of the improvements in navigation. Canadian navigation improvements were the responsibility of the St. Lawrence Seaway Authority, which worked closely with the Corporation. Creating the hydroelectric works was the joint responsibility of the power authorities of the State of New York and the Province of Ontario.

Completing the St. Lawrence Seaway fulfilled the dreams of many residents and businessmen in the Great Lakes area. It vindicated the work of many others who had actively supported the project from the 1920s. Nevertheless, the Seaway had been controversial. Many had seen it as a threat to their particular interests and had opposed it vigorously for decades. Railroads serving the Great Lakes area had feared a loss of traffic to a waterway that would directly connect Lakes ports to the Atlantic. For similar reasons, businessmen engaged in the business of New Orleans and East Coast ports opposed the Seaway project. They too feared the Seaway's competition. Also in opposition were private power companies who objected to public sponsorship of projects for the generation of power.

Support for the joint power-navigation project coalesced formally into the Great Lakes-St. Lawrence Association in the 1920s. This group led the political battle throughout the 1930s and 1940s. Continued delays in gaining congressional approval led New York to apply to the Federal Power Commission in 1949 for separate approval of a joint New York-Ontario power works. Approval finally came in 1953. Nevertheless opponents continued to oppose federal legislation authorizing improvements in navigation. Congress

finally authorized the project in May 1954, but only after Parliament had created the St. Lawrence Seaway Authority to construct the navigation project entirely within Canadian territory. Railroads and East Coast port interests continued to object to what they saw as an unfair subsidy to Great Lakes port interests. To placate opponents Congress mandated that the Seaway pay for itself through tolls. These fees were to be used to retire a bonded debt to the United States Treasury.

The Seaway's troubled political history profoundly affected the nature of the Corps of Engineers' involvement in the project. From the 1920s, the Corps thought it would have responsibility for the project. As it turned out, the Engineers' role was unlike its assignment in most other civil works projects. The differences resulted from the international nature of the project, the divided federal-state responsibility for the power and navigation works, the heated political opposition that continued even after congressional approval of the Seaway, and the need to work as the agent of a public corporation, the St. Lawrence Seaway Development Corporation. The Corps also had to work closely with the Power Authority of the State of New York, which with the Hydro-Electric Power Commission of Ontario had responsibility for building the power project. Constructing the Seaway, therefore, posed unique organizational problems for the Corps. Introduced into the Corps' routine determination of costs, drawing of plans, and consideration of engineering issues was the need to satisfy the state and federal organizational interests, as well as the Canadian agencies building their part of the project.

Throughout the project tension was created by differences between the Engineers' traditional procedures and the need to accommodate the interests and responsibilities of these other agencies. As the agent of the Development Corporation, that body's needs had the greatest impact on the Corps. Congress mandated to the Corporation three major areas of responsibility. First, it had the primary duty of coordinating the Seaway project with its counterpart, the St. Lawrence Seaway Authority. Second, it had the financial responsibility of setting tolls at a level that would raise the revenue needed to retire the Treasury bonds used to finance the project. Third, it had to coordinate the American role in the navigation project with the power authorities of New York and Ontario.

Further complicating the project for the Engineers was the continued intrusion of partisan politics and public opinion. Approval of the Seaway in 1954 did little to reduce the fervor of the project's congressional adversaries, and the Corps occasionally found itself the target of opponents who criticized every reestimate of costs or request for increased budgets.

Supporters of the project also proved troublesome at times. In the Great Lakes area, the project received constant press and television coverage. Delays and disputes among those building the Seaway received quick public attention. On such a visible but complex undertaking it was easy to receive unfavorable publicity, even from those who in the normal course of events favored the project and approved of the Corps' role in it.

While the project was of great importance to the Great Lakes area, it was also significant to the Corps at the time the project received congressional approval. The Engineers had been involved in technical discussions of the

Seaway since the 1920s. Corps studies, especially the detailed plans drawn up in the 1940s, formed the basis for the project that was ultimately completed in 1959. Many Corps officials were fully committed to the project, and some had literally been involved with the St. Lawrence Seaway for all of their careers.

But the Seaway was important to the Engineers for other reasons. Congress approved the project at a time of troubling change and uncertainty over the Corps' future. In the late 1940s the United States military services had been consolidated. One result of this unification had been an Air Force challenge to the Corps' responsibility for military construction. While the Engineers, as it turned out, kept many of its traditional responsibilities for military construction, Corps officials had worried about an erosion of the Engineers' mission in military construction. With regard to civil works projects, the advent of a new Republican administration for the first time in 20 years had clouded the Engineers' future role on such projects too. President Eisenhower had committed himself in the 1952 election campaign to reduce government spending. Civil works projects comprised only one of many categories that came under close review by the new administration and its budget officials. In this context, the Seaway took on great importance. Congress' creation of a public corporation with overall responsibility for the Seaway seemed, for a time, to presage the shape of future civil works projects. Certainly, the Eisenhower administration viewed the joint state-federal project as a way to save federal dollars, with New York State taking on the responsibility with Ontario for the construction of the power works. Chief of Engineers Samuel D. Sturgis thought that the Corps had to do an exemplary job to ensure that it would be given future assignments with public corporations. As it turned out, these public self-financing agencies were not the route later taken for civil works projects.

In any event, the Seaway project was perhaps the first important example of the more complicated political and bureaucratic environment in which the Corps was to work in the future. Indeed, the Corps found itself in a "negotiated" environment. That is, the Corps had to develop the bureaucratic means of dealing with a number of agencies, while keeping as intact as possible traditional procedures of design, contracting, and inspection. The project was the first of many which would require the Engineers to collaborate fully with multiple federal and state agencies, a mode of operation that was to become more common with the growing federal interest in environmental issues.

The scope of the Corps' role in the project was determined in part by its long involvement in the development of the St. Lawrence; in part by events and political relationships and controversies in the United States and Canada; and in part by the engineering issues involved in and the organizational structure devised for the successful completion of the project. Based on extensive research in the published and archival sources of the Corps, Congress, and the Bureau of the Budget, this study covers each of these determinants, then provides an assessment of the effectiveness of the Seaway. Unfortunately, a fire at the Corporation's Massena office prevented use of that organization's records. To be sure, the circumstances surrounding the Seaway project will not repeat

themselves. But a careful analysis of the complex interaction between the Corps and the other agencies it had to deal with provides some important lessons.

The Corps' work in the project was to be in the so-called International Rapids section of the St. Lawrence River, with dredging and channel enlargement in the Thousand Islands section. The International Rapids section is approximately the 46 miles between Chimney Point and St. Regis. The section below St. Regis was commonly referred to as the "Canadian Section." The United States project was made up of work in three major areas: Long Sault Canal; the channel south of Cornwall Island; and the Thousand Islands section.

The most complicated part of the project for the Corps was the Long Sault canal section, later called the Wiley-Dondero Ship Channel. Work in this area required close collaboration with the American and Canadian power companies because the resultant power pool would affect Corps navigation improvements. Within the Long Sault canal section, the Corps was to construct the Robinson Bay Lock, later renamed Eisenhower Lock, and the Grass River Lock, later renamed the Bertrand H. Snell Lock, and the intermediate pool between the locks and their dikes. The Corps was also to be responsible for dredging the channel south of Cornwall Island, the entrance to the canal below Grass River Lock. This dredging proved to be involved. Extensive model tests were required to determine the extent of work necessary to ensure conditions of suitable flow. The dredging also depended on railroad and highway relocations which were part of the work on the Long Sault Canal. It also had to await the removal of a railroad bridge, the Roosevelt Bridge, connecting the mainland to Cornwall Island, a project that turned out to be organizationally and politically difficult, to say nothing of the engineering problems involved.

Dredging the Thousand Islands section, compared to these other projects, was a minor task. Work included channel enlargement in two reaches and sweeping to 27 feet a 21-mile reach from Tibbetts Point (Lake Ontario) to Clayton, New York. The first stage of the channel enlargement was in a 12-mile reach stretching from Clayton to one mile below Alexandria Bay. This involved removing ledge rock and overburden located in 33 shoals. The second-stage channel enlargement was in a 12-mile reach from about one mile below Alexandria Bay to Oak Point. It involved the removal of rock in 20 shoals. Below this reach to Chimney Point, primarily in Canadian waters, the Corps conducted a hydrographic survey. The drawings based on these survey findings were furnished to the Canadian Seaway Authority, which took responsibility for these improvements.

Essentially, the navigation improvements circumvented the rapids that had been the bane of earlier ship pilots. In addition, the improvements circumvented the 80-foot drop that was to be created in the power pool for the generation of power.

North of Massena, New York, several large islands (Croil, Long Sault, and Barnhart) divide the river into two main channels. Currents in these narrow channels were swift. Indeed on either side of Long Sault Island were the

infamous Long Sault Rapids. At the downstream end of Barnhart Island, the Power Authority of the State of New York and the Hydro-Electric Power Commission of Ontario were to build a dam and powerhouse between the island and the Canadian shoreline. At the other end of the island, a dam was to connect the United States mainland to the island. This dam would be just below Long Sault Island. Thus, these dams and powerhouses, along with Barnhart Island itself, were to stretch across the entire width of the river. Behind this barrier was to be the power pool that eventually was to provide for the generation of electricity. The Long Sault Canal was designed to move ships around the dams and powerhouse, while raising them from the pools below the dams to the power pool above. This passage was to be through a ten-mile canal in which the two major American-made locks were to be located. The ship channel was to begin south of Croil Island, northwest of Massena, and end near the mouth of Grass River.

The Canadian St. Lawrence Seaway Authority took responsibility for a short canal which bypassed the Iroquois Control Dam; within this canal the Canadians constructed the Iroquois lock. In addition the Canadians were to add two locks, Upper and Lower Beauharnois, to the Beauharnois Canal. This 16-mile canal had been built in 1928 by the Beauharnois Light, Heat and Power Company. One of the most demanding tasks for the Canadians was the construction of a 20-mile canal which included the Cote Ste. Catherine and St. Lambert Locks to bypass the Lachine Rapids near Montreal. The Canadian part of the project also included extensive dredging in Lakes St. Francis and St. Louis and deepening the Welland Ship Canal between Lakes Ontario and Erie to 27 feet.

The United States originally planned to build a canal and lock at Point Rockway to provide shipping around Iroquois Dam. In view of Canada's plans to construct the Iroquois Canal and Lock on their side, the St. Lawrence Seaway Development Corporation cancelled this plan since the project would have duplicated the Canadian effort.

All in all, the Seaway completed in 1959 represented the culmination of almost 50 years of active lobbying. The project had provoked intense political debate in both the United States and Canada. Yet, the interest in the twentieth century had been matched by sustained efforts in the century before to improve navigation on the St. Lawrence. It is to this background that we turn in the first chapter, for the completed project was very much the product of the aspirations of earlier American and Canadian shippers and traders who first envisioned the magnificent possibilities of the St. Lawrence.

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