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Report prepared by: Herbert H. Smith, Chief, Planning Section

"THE QUESTION OF OPENING THE DELAWARE RIVER TO TRENTON, SO AS TO ADMIT OF THE PASSAGE OF LARGE VESSELS TO THE HEAD OF TIDE WATER, IS NOW AGITATED, AND WILL, NO DOUBT, BE ACCOMPLISHED WHEN THE FUTURE OF MORRISVILLE, WITH ITS SPLENDID WATER ADVANTAGE, WILL ONLY BEGIN TO BE KNOWN AND APPRECIATED."

-from a Bucks County directory
of 80 years ago
-quoted in Bucks County Traveler
May 1952, page 55 (v. 3, no. 10)
published at 312-314 W. Broad St.
Quakertown, Pa. (Henry L. Freking, ed.)

PREFACE

Presented herewith is a summary of the evidence submitted to the State Resources Committee of the New Jersey Department of Conservation and Economic Development on the problem of the deepening of the Delaware River. Included is a brief statement of the findings of the Committee and its general recommendations.

This summary is presented in an attempt to make as much information as possible available to all who are interested. The State Resources Committee feels that the Delaware River is certainly one of New Jersey's most valuable resources and that its future utilization is of utmost importance to the economic development of the State. Because of this the Committee felt that it should study the proposed deepening of the River and acquaint itself with the ramifications.

All of the information gathered is the result of presentations made by qualified and informed individuals at a meeting of the Committee held in Trenton on February 25, 1953. This meeting was solely for the purpose of assisting the Committee and in no way is it to be construed as being an official public hearing. The Committee is extremely grateful to all of those that took part in the meeting and wishes to publicly express its appreciation to the following contributors:

Colonel F. F. Frech
Engineering Consultant
Bureau of Navigation
N.J. State Dept. of Cons. & Econ. Dev.

Mr. Arthur Dover
Representative of Mayor Donal Connolly
City of Trenton

Mr. Edward K. Bryant
Consulting Engineer
Knappen, Tippetts and Abbett

Mr. Henry Peterson
Secretary
South Jersey Port Commission

Mr. Norman Heine
Assistant City Counsel
City of Camden

Hon. George T. Becton
Mayor
Borough of Riverton

Mr. L. T. Haugen
Chief Engineer
U.S. Pipe and Foundry Company

Dr. Thurlow Nelson
Chairman
New Jersey State Water Policy Commission

SUMMARY

The summary of the presentations is presented in as concise terms as possible in the order of appearance before the Committee. Because of limitations on space it is impossible to include all of the details and the more extensive documents submitted as evidence by some of the contributors. Where factual data has been submitted in writing a note has been included to this effect. These documents are on file in the office of the Planning Section and can be seen by any interested person. The summary of the individual presentations follows:

Colonel Frech:

1. Discussed the major points of the revised report of the Corps of Engineers which has now been submitted to the Governors of the States of Pennsylvania and New Jersey. Major differences between original report and this one are:

   a. First report proposed a 40' channel to Newbold Island only. Second proposes 40' to Newbold Island and 35' to Trenton Marine Terminal.

   b. Original report proposed that bank protection be a local responsibility. Second makes this a Federal responsibility.

   In both reports it would be a State responsibility to take care of any damage claims as a result of the work. This is usual practice in projects undertaken by Corps of Engineers. The Delaire Bridge would be improved while there would be no change in either the Burlington or the Palmyra Bridge. United States Steel Corporation would be required to install a turning basin at its Fairless Works if such were needed by that company.

2. Project would take approximately three years to complete and cost $92,385,000. Other figures given were:

a.	Cost of local easements and disposal areas for both States	$ 47,000
b.	Changes for utility lines	600,000
c.	Annual charge (50 years)	4,370,000
d.	Annual benefits (estimated)	8,450,000
	(This is a benefit ratio of 1.93)	

   Largest portion of cost would be for rock removal with deepest rock cut being 5 or 6 feet. Important in problem of rock removal to go all the way down at one time. 43 million yards of soft material and 2½ million yards of rock to be removed.

3. Engineers claim that salinity and pollution problems would not damage State. Salinity intrusion subject of detailed study through a model developed at Vicksburg, Mississippi. Conclusion reached that salinity would not be substantially increased by dredging. Other factors do more to increase salt water intrusion

such as:

a. Rising level of the ocean (6" in last 30 years)

b. Increase in the tidal range (head of salinity is seven to eight miles different between high and low tides).

c. Sediment deposition.

d. Ship movements, temperature, dock construction, etc.

Portions of a report prepared by a Dr. Cleaves of Washington University, St. Louis, Missouri were read that stated that deepening would not increase salt water or pollution intrusion. The important item is to maintain an adequate minimum water flow in the River.

Mr. Dover:

1. Engineering firm of Knappen, Tippetts and Abbett hired by Trenton and Mercer County to survey the need for extending deeper channel to Trenton. Draft of this report has been submitted. A sixty mile preferential area around Trenton surveyed for shipping potential. Major products would be iron and steel, lumber, and petroleum. Estimated that 1½ million tons per year would ship through Trenton, including finished products generated from Fairless Works. Benefits accruing would approximate $700,000 which would equal the cost of maintenance of the channel from Newbold Island to Trenton.

2. City of Trenton and its experts do not feel that salinity and pollution would do serious damage.

3. Trenton Marine Terminal would be center of shipping from Trenton. Now leased to private syndicate for $20,000 per year on a 20 year lease. It is tax exempt property. Now used mainly for storage. Located on approximately 15 acres of land and would have to be expanded and improved in order to handle increased shipping expected with deeper channel. Improvements proposed are estimated at 12 or 13 million dollars.

Mr. Bryant:

1. Statistics were obtained by firm of Knappen, Tippetts and Abbett on the necessity for a 40' channel from Newbold Island to Trenton. Information was secured from persons that testified at Trenton hearing conducted by Corps of Engineers and industrial firms within the 60 mile area established. Analogy was drawn between Trenton and other steel centers as well as Trenton and other ports. Investigation also made on potential by using Harvard theory of "Input - Output" as it applies to basic industry. Feels that full demand for port facilities will be some time in coming.

2. The firm suggested that the South Jersey Port Commission be authorized to operate the Trenton Marine Terminal. Prior to this authorization, it was suggested that a Harbor Commission be appointed by the City. Mr. Bryant then went into some details contained in the report (See report "The Port of Trenton" since published and filed with Planning Section).

Mr. Bryant stated that a new bulkhead with deeper piles would be necessary if 35' depth is provided. He felt that Port of Trenton ought to be self-sustaining within eight or ten years. The importance of expert management was emphasized.

Mr. Peterson:

1. Commented on report in general. Recommended the elimination of the item of $840,000 for damages. Read from prepared statement of February 7, 1952 submitted by the South Jersey Port Commission. This statement approves project with certain reservations (See statement attached).

2. Stated that present report ups damages to $1,000,000 mainly at Florence and Bristol. Army Engineers are now convinced that only Florence and Bristol will be affected by dredging. (does not include individual private wells). Woodbury's wells have not been affected by Delaware Channel.

Mr. Heine:

1. Presented the position of the City of Camden. City operates its own municipal water system. Primarily an industrial area in which good water supply is important. City is gravely concerned with the threat to its supply presented by proposed deepening. Delaware is a source of recharge of the sands from which Camden and others draw water.

   Geologists contend that any deepening of the channel will lead to greater infiltration of polluted river water to these sands. Camden does not now treat its water taken from wells. Camden still feels that major questions concerning the water supply have not been satisfactorily answered. Expressed a definite concern about the salt water intrusion and the salt "tongue". Referred to reports submitted to Engineers by Dr. Thurlow Nelson and by Henry C. Barksdale and Jack B. Graham.

2. As to what would be satisfactory to Camden, Mr. Heine stated that he was not prepared to say. Suggestions that have been made include:

   a. Dredge a mile at a time and watch the results.

   b. Protection of water supply by a guarantee or by compensation as is proposed in the case of river bank damage.

   Concluded by requesting that it be suggested to the Governor that public hearings should be held on present Engineers' report.

Mayor Becton:

1. Presented a written statement (see statement attached) from the Borough of Riverton. 250 to 300 people attended a public hearing in Borough at which statement was adopted. Riverton is opposed to the project. Feels that many problems must be solved including the following:

   a. Disposal areas - almost entire river bank in Riverton is used for recreation. These areas must be protected from spoilage.

b. Present stone river wall - could be weakened. Would cost Borough $84,000 to strengthen it.

c. Protection of sewage treatment collection line.

d. Guarantee of indemnification.

e. Protection of water supply.

Mr. Becton urged the State to require evidence that more industries than U.S. Steel would benefit from deepened channel and to see that shore plans are submitted to local communities for approval.

. Haugen:

Submitted detailed written letter from U.S. Pipe and Foundry Company opposing project under present conditions. Stated that high water now interferes with that company's operation and that deeper channel would add to this problem. Presented six points upon which questions were raised. (See copy of letter attached) Concluded by stating that deeper channel would not be of material benefit to business already in the area.

r. Nelson:

. Presented written statement (see copy attached). Referred to opposition to deeper channel raised by Senator Hendrickson, Mr. Heine, engineers for Campbell Soup Company, and himself. State Division of Water Policy and Supply had asked for 90 day extension beyond the time requested for report from New Jersey. Believes that a maintenance of a minimum low flow would alleviate problems to some degree. Supported idea of comprehensive plan for development of the entire Delaware.

Statement of the State Resources Committee

After hearing the many facts presented it is the opinion of the State Resources mittee that definite action should be taken by the State of New Jersey to insure prehensive development of the entire Delaware River. It appears that the deep- ng of the Delaware is important to the economic development of the State of New sey as a whole and that proper planning can see its effectuation. It is there- e recommended that a detailed analysis of the further development of all phases the Delaware River Valley be immediately undertaken.

Respectfully submitted

STATE RESOURCES COMMITTEE

Dr. Gerald Breese, Chairman
Clayton S. Cronkright
J. Alex Crothers
George B. Robeson
Ross E. Rowland
John B. Taylor
Edward B. Wilkens

STATEMENT OF HENRY PETERSON

February 7, 1952

The Board of Engineers for
Rivers and Harbors,
119 D Street, N.E.,
Washington 25, D. C.

RE: Review of Reports - Delaware River, Trenton, N. J., to the sea.

Gentlemen:

The South Jersey Port Commission, whose offices are located at the Camden Marine Terminals, at the Foot of Beckett Street in Camden, New Jersey, is a State agency created and established by the Legislature of New Jersey by virtue of Chapter 336, Laws of 1926 and subsequent amendments thereto. The Commission exercises the authority and powers of the South Jersey Port District, a public corporation and body politic. Among its defined powers are the survey, development, control and operation of port facilities in such Port District, and the furtherance of commerce and industry in the District. The South Jersey Port District includes the counties of Mercer, Burlington, Camden, Gloucester, Cumberland, Salem and Cape May, the seven tidewater counties of New Jersey bordering on the Delaware River and Bay.

In keeping with the mandate issued by the Legislature, the Port Commission has consistently advocated and supported projects on the Delaware River and its tributary streams which would promote increased commerce as well as industrial growth.

The South Jersey Port Commission owns and operates the Beckett Street Terminal, and acts as agent for the City of Camden in the operation of the Spruce Street Pier. There is a substantial investment in these two units comprising the Camden Marine Terminals, which are open to all on equal terms. The commerce passing through the Camden Marine Terminals has, during the 20 years just completed, far exceeded the fondest expectations of the original proponents of the project.

The South Jersey Port Commission is in favor of, and recommends the adoption of, the project as recommended by the Division and District Engineers, with the following reservations:

1. Local co-operation.

(a) In the review report of the Division and District Engineers an estimate is made in the amount of " $850,000 for allowances for possible shore line revetment and bank stabilizations."

Because it is impossible to dredge the channel to proposed project dimensions without causing serious landslides at cer-

tain locations along the New Jersey river front, the Port Commission respectfully requests that this item be deleted from the local co-operation requirements, and added to the Federal estimate of cost for the proposed improvement.

(b) It is recommended that the provision "that the cities of Philadelphia and Camden, shall agree to dredge not less than 110,000 cubic yards annually in maintaining the channel and anchorages in Philadelphia Harbor between Allegheny Avenue and the mouth of Schuylkill River" be eliminated from this report.

This requirement first appeared in Senate Document No. 159 (75th Congress, 3d Session), containing the report of the Board of Engineers for Rivers and Harbors dated February 8, 1938 in response to a resolution adopted June 12, 1935 providing for a review of the then existing project for the Delaware River, Pennsylvania, New Jersey and Delaware. Paragraph 21, page 11, of Senate Document No. 159, is quoted as follows:

"21. The cities of Philadelphia, Pa., and Camden, N.J., are discharging daily into the Delaware River approximately 250 and 18 millions of gallons of raw sewage, which forms a part of the deposits requiring removal at Government expense. The municipal authorities concerned have agreed to cooperate in maintaining a 40-foot channel to the extent of removing annually an amount equal to the actual deposits from sewage discharge. It has been determined that these deposits amount annually to about 100,000 cubic yards for Philadelphia and 10,000 cubic yards for Camden. On this basis, the district engineer believes it equitable to require these cities to dredge 110,000 cubic yards yearly from the channel under present conditions. He estimates the cost of such removal at $27,500 per year."

Inasmuch as the cities of Philadelphia, Pa. and Camden, N.J. have under construction sewage-treatment plants in sufficient number and size to eliminate adequately the pollution of the Delaware River, the Port Commission respectfully requests that this provision be delected from the local co-operation requirements.

2. Salinity intrusion.

The protection of the potable water supply of the State of New Jersey rests in the Division of Water Policy and Supply of the Department of Conservation and Economic Development of the State of New Jersey. This Division is charged with the general supervision of all sources of potable and public water supply, to the end that the same may be economically and prudently developed for the use of the people of the State, and also with the prevention of the introsion of salt water or other causes that may render the potable water supply unfit for use.

The Port Commission is concerned with the protection of industries and commerce already established which are dependent upon freshwater, and is also interested in the preservation of the high quality of the potable water that is obtained from wells on the New Jersey side of the Delaware River and used for domestic purposes. One of the chief assets of the South Jersey Port District is the availability of great quantities of water of the finest quality to be found in any part of the world.

The Port Commission is satisfied that the protection of the domestic water supply is in good hands, and that the Department of Conservation and Economic Development will comply with its mandate to protect the potable water supply of the State of New Jersey.

3. Proposed modification of the project dimensions from the upper end of Newbold Island to the Trenton Marine Terminal.

The economists who evaluated the benefits deemed creditable to the deeper channel have concluded that the modification of the channel between the upper end of Newbold Island and the Trenton Marine Terminal would not produce commerce sufficient to warrant modification of the present project.

However, there has not been sufficient lapse of time since the release of the review report made by the Division and District Engineers to secure additional assurances of increased water-borne commerce on that section of the river which may be anticipated as a result of the improvement.

Therefore, the Port Commission respectfully requests that authorization be given for the improvement of this section of the Delaware River in order to provide a 40-foot channel to the Trenton Marine Terminal, when local interests are able to give assurances satisfactory to the Chief of Engineers that tonnage in sufficient quantities to warrant the necessary expenditure would move on the improved waterway.

Respectfully submitted.

SOUTH JERSEY PORT COMMISSION.

Henry W. Peterson, Secretary

HWP:P

Statement of L. T. Haugen

UNITED STATES PIPE AND FOUNDRY COMPANY

General Office

Burlington, New Jersey

February 24th, 1953.

State of New Jersey
Department of Conservation
and Economic Development
520 East State Street
Trenton, N.J.

Attention: Mr. Herbert H. Smith, Chief
Planning Section

DEEPENING OF THE DELAWARE RIVER
BETWEEN PHILADELPHIA AND TRENTON

Gentlemen:

Reference is made to your letter of February 16th, 1953 to this Company inviting us to appear before the State Resources Committee of The Department of Conservation and Ecomomic Development on February 25th to discuss the problem of deepening of the Delaware River.

Representatives of the United States Pipe and Foundry Company have attended public meetings covering in the offices of the District Engineer, Philadelphia and at the Board of Engineers for Rivers and Harbors, Washington, D.C. Under date of January 30th, 1952 we sent a letter to the Board of Engineers for Rivers and Harbors in which annumber of questions were asked covering the proposed 40 foot channel.

The General Office, and the Burlington Works of this Company are located on the back-channel of the Delaware River at Burlington Island. Our wharf is served by a 20 foot dredged channel taking off from the main Delaware River channel at Burlington, N.J. The wharf is used for receiving pig iron from barges towed up from Norfolk, Va. or from Philadelphia in the case of pig iron brought in from foreign ports. We do not receive other materials by water nor do we ship any of our products by water. This same back-channel serves Esso Standard Oil Company a tank bulk storage station located just above us on the river. In the manufacture of pipe we use a large quantity of river water for cooling. This water is returned to the river without contamination.

Our Company has not taken a position for or against

the project for deepening the channel. We have, however, raised a number of questions with the Engineers as to possible adverse happenings as a result of the deepening. In some instances they have taken cognizance by way of reassuring expressions of opinion. In others the Engineers have made no mention of our questions in their reports.

Our interest of course is in possible adverse affects of deepening to our property stretching about one mile along the river. We have an indirect interest in the communities along the river in New Jersey from where we draw our employees.

In our letter of January 30th we raise the following points:

1- Effect of the channel on salinity.
2- Effect of the channel on underground water supply.
3- Effect of spoil areas on flood control.
4- Effect of the new channel on the present back-channel serving this Company.
5- Effect of the channel on tides.
6- Possible effect of disturbances or dislocation of quick-sand strata.

Detailed comment on these points follows:

1- Effect ofthe channel on salinity.

The Board of Engineers for Rivers and Harbors states in their report of January 21st, 1953 that there will be no appreciable effect on salinity, either as to saline content in the water or the extent of its intrusion up stream. We do not feel qualified to question this conclusion. Intrusion of saline water can be controlled by regulating the flow of water above Trenton by means of control dams.

2- Effect of the channel on underground water supply.

The Board of Engineers for Rivers and Harbors states that after further investigation by the District Engineer, the conclusion is reached that the effect of the proposed channel enlargement would not endanger ground-water supplies in the area adjactnt to the improvement from salinity intrusion or otherwise. We are not qualified to question this conclusion

3- Effect of spoil areas on flood control.

Our letter of January 30th, 1952 stated as follows:

"It is our belief that the deepening of this channel will increase the possibility of disasterous floods. It is proposed to use as disposal areas certain marshy areas which now act as escape valves when spring freshets, extraordinarily high or hurricane tides, strong adverse or follow winds occur. It is difficult to comprehend, with the water of the river confined in smaller surface areas than at present why this should not be a contributory cause to extraordinary flood conditions."

Our main wharf is elevated 2.35 feet above mean high water. Several times each spring combinations of tide and rains cause flooding of relatively large areas of our property. Upon these occasions it is necessary for us to barricade entrances to our main shop. At times the water is as much as 2 ft. deep at one entrance. If flood water is not allowed to spread out in the extensive tide marshes along the river, it seems clear to us that the river flood level will rise more than at present.

We have found no mention in any of the reports of the Army Engineers commenting on the height of flood waters that may be expected due to filling up tidal marshes with spoils. The elevation of our property above the river is no higher than of many others, hence the hazard of flooding is more or less common to many property owners. This point we consider to be most important and as said above it has not been mentioned by the Engineers. We think the Engineers should confirm or deny our contention on this point.

4- Effect of the new channel on the present back-channel serving this Company.

We have looked over the area selected for disposal of spoils recommended by the Philadelphia District Engineer. It is proposed to close off Burlington Island back-channel at the upper end, thus connecting the island with the mainland. A considerable spoils area above the island would be created. At present the back-channel is swept with tidal currents sufficiently to maintain water depth at our main wharf at dredged depth without dredging. The tide scours the bottom. In the event the upper end of the channel is closed off as proposed, we are fearful that sediment will deposit off our wharf so as to require dredging from time to time to maintain depth. The back-channel itself of course will be maintained to its proper depth by the Engineers. However, they will not dredge within 50 ft. of private property. No mention is made in the Engineers Report as to our fears along this line although the question was asked in our letter of January 30th, 1952.

We would not object per se to closing off the back-

channel if a sluice-way were provided through the spoil area of sufficient width and depth to permit tidal flow in the back-channel in ample amount to wash the back-channel clear.

5- Effect of the channel on tides.

When the Delaware River main channel was increased in depth to 25 ft. a number of years ago there was an accompanying increase in the tide range of about .7 ft. It is logical to assume that further deepening will increase the range of tide at Burlington Island as expected by the Engineers and as reported in the Water-Ways Experiment Station, Vicksburg Report #3 dated January, 1952. Here again it must be pointed out that the tests covered normal tides only, not extraordinarily high tides occuring during storms. None of the reports of the Engineers gives any light as to what may be expected in the way of high tides during easterly storms. We believe it reasonable to assume that the same influences working to give a higher normal tide range would work under storm conditions to produce much higher tides than now experienced. This is of major concern to us. We think we are entitled to a definite confirmation or denial from the Engineers.

6- Possible effect of disturbances or dis-location of quick-sand strata.

In our letter we recommended that test borings be made along the New Jersey shore line to determine the extent of quick-sand strata as it is established that quick-sand areas exist. It is quite possible that major alterations to the river bottom may disturb the quick-sand strata. As we do not believe any of our property is located in quick-sand areas, we do not wish to press this point even though it may be one of importance to other property owners along the river.

We appreciate the interest the Department of Conservation and Economic Development is taking in this most important proposed industrial improvement in the Pennsylvania, New Jersey and Delaware River area. We also appreciate the opportunity to present our views as they may affect operations of this Company.

Yours very truly,

(signed) L. T. Haugen

L. T. Haugen
Chief Engineer

LTH-H

NOTE: Mr. Haugen also submitted pictures in evidence

STATEMENT OF DR. THURLOW NELSON

STATE OF NEW JERSEY
DEPARTMENT OF CONSERVATION
AND ECONOMIC DEVELOPMENT,
DIVISION OF WATER POLICY
AND SUPPLY

to

BOARD OF ENGINEERS
FOR RIVERS AND HARBORS
CORPS OF ENGINEERS, U. S. ARMY
WASHINGTON, D. C.

FEBRUARY 11, 1952

Statement by Dr. Thurlow C. Nelson, Chairman
of the Council of Water Policy and Supply,
in the matter of the proposed deepening of the
channel of the Delaware River.

The Council of Water Policy and Supply is a quasi-judicial body of nine members within the Division of Water Policy and Supply exercising under authority of paragraph 101, Chapter 448, Laws of 1948 of New Jersey all the powers granted to the State Water Policy Commission created by virtue of Chapter 267, Laws of 1929 including to wit:

"To conserve, protect, control and regulate the use, development and diversion of surface, subsurface, and percolating waters of the state;" and paragraph 5,

"The Commission shall continue and extend investigations of the water resources of the State, including the systematic gauging of rainfall and stream flow throughout the state, so an to complete a comprehensive study for the entire state, for the conservation, development, regulation and use of the waters in each of the principal watersheds of the state with reference to the accomplishment of the following public uses and purposes:

a. The supply of pure and wholesome water from watersheds to municipalities and the inhabitants thereof and the disposal of sewage and wastes which may affect the supply."
and by paragraph 102, Chapter 448, Laws of 1948,

"The Water Policy and Supply Council in addition to other powers and duties vested in it, shall, subject to the approval of the commissioner:

a. Formulate comprehensive policies for the preservation and improvement of the water supply facilities of the State.

b. Survey the needs of the State for additional water supply facilities and formulate plans for the development of such facilities."

Finally, viewing with concern the ever present threat of salt water intrusion along the extensive coastline of New Jersey and the possible contamination of underground waters from adjacent polluted streams, the Legislature provided in Chapter 375, Laws of 1947 that applicants for subsurface water under the provisions of this law must show:

"That the diversion in not likely to exceed the natural replenishment of such subsurface waters..... or to render them unfit for use by intrusion of salt water or from other causes."

Conscious of the responsibilities placed upon us by legislative enactment, and pursuant to the notice of 14 December 1951 from the office of the Division Engineer in New York that the reporting officers of the Corps of Engineers recommend deepening of the channel of the Delaware River from Alleghany Avenue, Philadelphia to the upstream and of Newbold Island, the engineers and the Council of the New Jersey Division of Water Policy and Supply have studied the plans proposed, the data available from tests of the model, and all other data available to us to date.

As the result of such studies and on the recommendation of our engineers, the Council of Water Policy and Supply in regular session January 21, 1952 took the following action and designated the Acting Chief Engineer and the Chairman to present this to you at this time.

It is the unanimous opinion of the Council and the engineers of the Division that the State should not agree to "save the United States free from damages, owing to changes in ground water levels, wave action and salinity intrusion" as presently required in the preliminary report of the Army Engineers. The position of the Division is that despite the reassuring nature of the Vicksburg model tests covering the salinity problem no blanket waiver should be made by the State under the present water conditions in the Delaware River. In other words, evern though salt water may not intrude upstream to a greater extent with the deeper channel than with the present channel, the removal of fifteen feet of river bottom will substantially increase the opportunity for polluted river water to enter the aquifers beneath. The present polluted condition of the river water even in the absence of salt would thereby become an even greater threat to the underground water supply of the area. The removal of the upper layers of the present bottom of the river by reducing friction would result in increased percolation of river water through the underlying layers. This danger would be greatly reduced, and possibly eliminated, by providing storage for stream flow regulation such as proposed by Incodel and by other plans to increase the volume of fresh water during times of low flow. This then is the position of the Council which I am directed by it to submit to you.

In support of the position of the Council as stated I wish to present a few of the more important facts upon which its decision rests.

1. Concerned by falling well levels and by deterioration in quality of water in some wells in the Camden area, the Council, granted authority under

Chapter 375, Laws of 1947, declared as a "protected area" December 1, 1947 that portion of the Delaware Valley in New Jersey extending from the Mercer County line to Salem County. By such prompt action the Council more than five years ago took the maximum authority granted to it by law to "conserve, protect, control, and regulate the use, development and diversion of the subsurface and percolating waters" of the Camden area.

Submitted herewith as Exhibit 1 is a table showing comparative chemical analyses of nine of the Camden wells over a period of approximately twenty years. These analyses made in the Quality of Water Laboratory of the United States Geological Survey show increases in total hardness as calcium carbonate and in sulfates in all of those wells with a maximum increase in sulfate from 60 p.p.m. in City Well No. 6 in 1932 to 137 p.p.m. in 1949.

CHANGE IN CERTAIN CHEMICAL CONSTITUENTS FOR SELECTED WELLS IN THE CAMDEN AREA OVER A PERIOD OF ABOUT 20 YEARS

Based upon analyses made in the Quality of Water Laboratory of the U. S. Geological Survey

(In parts per million)

Well	Dissolved Solids	Total Hardness as CaCo 3	SO4	Date
Morris #1		42	14	12/8/26
	102	53	32	11/7/49
Morris #2		44	8	12/8/26
	59	31	13	11/7/49
Morris #3		38	10	12/8/26
	86	63	15	11/7/49
Morris #5		38	10	11/21/32
	80	53	27	11/7/49
Morris #6	70	44	18	11/21/32
	99	73	18	11/7/49
Morris #9		37	18	12/8/26
	102	82	10	11/28/49
Puchack #1	56	16	1.6	3/27/24
	116	60	51	11/7/49
Puchack #4	47	12	1.1	5/10/24
	49	18	4.9	11/7/49
City Camden #6		138	60	11/21/32
	460	241	137	11/28/49

Referring now to Exhibit No. 1 we find in Camden Puchack Well No. 1, situated some 3500 feet from the river, an increase in total dissolved solids from 56 p.p.m. in 1924 to 116 p.p.m. in 1949, an increase of 107 percent. In Puchack Well No. 4, situated 3000 feet farther from the river than Well No. 1, during this same period the total dissolved solids rose from 47 to 49 p.p.m., an increase of but two parts per million in 25 years, as contrasted with a rise of 60 p.p.m. in Well No. 1. Camden City Well #6 in the center of the most heavily pumped area showed on November 28, 1949 total dissolved solids of 460 p.p.m.

Further evidence that percolation of river water into the Raritan formation is taking place is found in the records of temperatures in the wells. Sudden and marked fluctuations have been found in wells close to the Delaware River in contrast to non-fluctuating temperatures in other wells drawing from the same Raritan formation but farther removed from the river. Faced with such evidence our only recourse has been to restrict pumping in wells closest to the river.

2. Falling well levels are the most tangible evidence of pumping in excess of the natural recharge. If the bed of the Delaware River in the Camden area were freely and completely permeable, well levels adjacent to the river could not fall below low tide mark for the entire flow of the river would be available for recharge. That the levels are falling, however, is sure indication that the cones of influence of these wells are reaching out in ever widening circles thus favoring increased percolation from the river.

Regardless of the extent of the present seal created by the undisturbed materials now in the bed of the river, the removal of any portion of the surface layers will reduce friction to passage of river water through the remaining layers down into the aquifers beneath.

That the Council is not concerned with imaginary fears is shown by the history of the well field in the Sayreville area of the Raritan River Valley in New Jersey which formerly supplied some 11 m.g. d. to the duPont, Hercules Powder, and National Lead Companies. The removal by dredging of but two feet from the bed of the Washington Canal running from the Raritan River past the well field was followed promptly by salting up the adjacent aquifer, forcing abandonment of the well field. Submitted as exhibits 2 and 3 are special reports numbers 7 and 8 of the State Water Policy Commission by Mr. Henry C. Barksdale, Hydrologic Geologist. In these reports is given the history of the destruction of this well field.

If the removal of only two feet could produce such a rapid percolation of salt water from the river into the aquifer of the adjacent well field at Sayreville, the Council and its engineers are surely justified in their concern that removal of fifteen feet or more from the bottom of the channel of the Delaware River in the Camden area would greatly accelerate deterioration in the quality of underground water in this area. With the present draft in excess of 75 m.g.d. we are able to maintain present conditions only through exercise of rigid control of the location and of the extent of pumpage.

An extended period of drought would increase the concentration of industrial and domestic wastes in the river while at the same time reducing the natural recharge of the aquifer from the outcrop area of the stratum to the northeast in New Jersey. This would result in a still further fall in well levels thus increasing the pull of the wells on the area beneath the river.

With these facts before it the Council in discharge of its public trust must take the position herein stated.

Thurlow C. Nelson
Chairman, Water Policy and Supply Council
New Jersey Department of Conservation and
Economic Development
Professor of Zoology, Rutgers, the State
University of New Jersey

STATEMENT OF HONORABLE GEORGE T. BECTON
MAYOR, BOROUGH OF RIVERTON

February 10, 1952

Re: Report Relative to the Proposed Improvement of Delaware River Between Philadelphia, Pennsylvania and Trenton, New Jersey and Also Delaware River, Philadelphia to the Sea.

Board of Engineers for Rivers and Harbors
Washington 25, D.C.

Gentlemen:

I appear on behalf of the Borough of Riverton, Burlington County, New Jersey, to oppose the proposed deepening and widening of the channel of the Delaware River between Philadelphia, Pennsylvania and the United States Steel Corporation, Fairless Works, Morrisville, Pennsylvania.

The Borough of Riverton is situate on the easterly bank of the Delaware River, immediately north of Palmyra, New Jersey and across the river from the Tacony-Torresdale section of Philadelphia. It has a population of 2800. It is completely a residential suburban community.

As will be seen from a map of the Borough, which I would like to have introduced as an exhibit at this hearing, its Delaware River frontage is about 4200 feet. Along this frontage are erected many of the Borough's finest homes. These properties have spacious lawns which extend to a stone river wall which is situate at the mean high water line.

Our Borough has no industrial plants. The funds for the operation of our government, the education of our children and the maintenance of adequate police and fire protection, are derived from taxes levied on our residences and the few neighborhood stores which serve the needs of the people. If the value of our residential rateables is lowered appreciably the Borough will be in severe financial difficulties.

We are greatly concerned about this proposed channel project as recommended by the Division Engineer because it will work irreparable damage to our community and to its property owners.

1. Disposal Areas.

The plan recommended by the Division Engineer shows our entire riverfront area, except for 700 or 800 feet, designated as a spoils area where muck, sand and rocks taken from the deepened channel will be dumped. Such action on the part of the Army Engineers will cause property values in the whole area to depreciate greatly. Who is going to reimburse the Borough for the loss of rateables so sustained?

2. River wall problem.

As previously stated, there has been erected along our river-front a stone wall. It rises five to six feet above a heavy stone and concrete foundation. It varies in thickness from eighteen inches to three feet. At high tide the base of this wall is under water. The easterly edge of the present channel is between four hundred and five hundred feet out in the river from this wall. A deeper, wider channel will create certain problems in connection with this wall.

A channel one hundred feet wider and fifteen to seventeen feet deeper is bound to have its affect on the river bottom immediately adjacent to it. There will be the action of the strong river currents and tides, the sloughing off and sliding in of the river bottom, the steepening of the grade of the river bottom from the channel to the bank and other factors, all of which will reduce the lateral and underground support and cause the river wall and the tremendous bank of earth and sod and trees which it supports to give way and slide into the river.

On the other hand, we are greatly concerned about the affects of wave and wash action upon this river wall. A deep draught ore boat approximately seven hundred feet long and one hundred feet wide has a large displacement. It is proposed to operate such boats at a speed of approximately seven knots per hour. Moving at this speed or even slower speeds, these boats will create terrific wave action which, continually washing against our river wall and bank, will undermine it and cause it to give way.

Our Borough engineers have studied this problem and have concluded that a deeper channel would seriously affect our river wall and bank. They have recommended that the present wall be underpinned and reinforced. They estimate a cost for this work will be $84,000.00.

3. Indemnification.

The recommendation of the Division Engineer is contingent upon Appropriate State of local interests giving assurances satisfactory to the Secretary of the Army that they will (a) furnish, without cost to the United States, all lands, easements, rights-of-way and disposal areas necessary for the construction of the project and for subsequent maintenance when and as required and (b) hold and save the United States free from any claims for damages due to the construction and maintenance of the project including damage to property, river banks, bank protection docks, wharfs and all structures, and damages owing to changes in ground water levels, wave action and slinity intrusion. The Borough of Riverton will not give any such assurances. Our community wants protection against the damages which the Army Engineers have recognized will inevitably result. To whom are we to look for this protection?

4. Destruction of Recreational Area.

The State of New Jersey has issued a directive to the Borough

of Riverton to construct a sewerage treatment plant costing upwards of $350,000.00 for the purpose of maintaining the waters of the Delaware River safe for swimming, fishing, boating and general recreation. The spoil areas from the deepened channel will destroy Riverton's recreational water area and the passage of 40,000 ton ore vessels up and down the river will constantly pollute the very waters the State of New Jersey desires to make clear and clean.

5. Water Supply.

The source of our domestic water supply is an underground stream which runs under the Delaware River. This stream has its origin in the Pocono Mountains of Pennsylvania. We understand that there is considerable risk that this water supply may be interfered with if the channel is taken to a depth of forty-two feet in rock cuts. This interference will be brought about in one of two ways. Either water from the river will seep into and pollute our water supply or the water supply will bubble up in the form of springs and dissipate into the river. The affects of either the pollution or the lowering of the level of the water table will be disastrous, not only upon Riverton but upon the entire South Jersey area which relies upon the same source for its water.

6. Subsidy.

We object to the channel deepening project on the broad general ground that in reality it amounts to nothing more than a federal subsidy to the United States Steel Corporation. While the contention is made that the forty foot channel will attract future industry and convert the Delaware River Valley into a "Ruhr of America" there is not one shred of real evidence to substantiate this claim. Not one industry, other than U.S.Steel, that will ever require a 40 foot channel for its vessels is listed in the Report as even considering location here, nor is there a listing of industries that might fall into such a category.

Let us not "assume" that a $93,000,000 channel will benefit our Valley. We need the facts, which are so gravely absent from this Report, before the Taxpayer is burdened with this heavy obligation.

7. Deepened channel not required.

The source of the ore which the United States Steel Corporation proposes to bring to its Morrisville plant lies in Venezuela, South America. We are reliably informed that the ore piers in that country lie on the Orinoco River and that the U.S.Steel Corporation has undertaken at its own expense to dredge a channel up said river to the depth of twenty-six feet. If a channel twenty-six feet deep is sufficient for the operation of ore boats in Venezuela, there is surely no justification for a forty foot channel in the Delaware River. If we were supporting the deepening of the channel we would want to know why United States Steel is not paying at least some portion of the cost incurred in this Country for their main benefit.

There is another reason why this project is not required. The Pennsylvania Railroad Company is building an ore pier on the Delaware River South Philadelphia and there are adequate railroad facilities for the transportation of ore by rail from Philadelphia to the United States Steel Corporation's plant. Such an operation would not be at all different from the transportation of ore from Cleveland, on Lake Erie to the steel mills at Pittsburgh, except that the transportation from Philadelphia to Morrisville would be for a much shorter distance and could be effected much more quickly and much more economically.

8. Defense.

The Fairless Works at Morrisville, Pennsylvania is even now reported to be in partial operation with full production to come in the not too distant future. According to a news article appearing in the February 10th issue of The Philadelphia Inquirer the deepened channel cannot be completed until 1957. This completion date alone precludes this project from being viewed realistically in any way as a part of the Defense Effort.

9. Position of Riverton.

The Borough of Riverton has considered the proposed project from every angle. We are satisfied that our community will gain nothing but disadvantage and damage if the work is undertaken. We realize that there are those who will contend that the work must be done in the name of "progress". "Progress" is not measured only in terms of industrial improvement. Progress is the harmonious moving forward of the forces of good that bless all concerned - individuals, communities, business and industry, as well as government, in like manner. To destroy that which is good and right in American communities to gain advantage for one individual industrial corporation is not "progress" but "retrogression".

If the U.S.Army Engineer Corps, whose duty it is to protect America, can only propose the destruction of property values and disregard of individual rights as an accepted basis for "progress", then a new concept of "duty" and "protection" is needed before the Army can safely be called upon to help build a better America. To tear down that which it is one's duty to protect, in order to promote advantage for special interests, is contrary to the very principles of Democracy and should be stopped.

The 2800 Americans of Riverton, New Jersey, have no quarrel with U.S.Steel but we vigorously oppose the thinking that assumes the American taxpayer should pay the costs of a project for the sole benefit of private enterprise. The present twenty-six foot channel is adequate for the future expansion of industry in the Delaware River Valley and will permit great growth without this wanton waste of tax money. This concept of Federal funds as inexhaustibly available for any and all projects cannot continue if America is to be strong and lead the world. We must learn to discipline ourselves and refuse to spend money for any project that is not absolutely necessary. The conversion of one of

America's fine natural assets; namely, the Delaware River, into a Canal for the operation of a fleet of ore boats servicing the U.S.Steel Corp., to the detriment of the property owners and communities bordering the banks of the river is not necessary. We oppose this action in its entirety.

BOROUGH of RIVERTON

George T. Becton, Mayor.