

AMENDMENT TO THE

PIKE RIVER WATERSHED PLAN

**CITY OF KENOSHA/
TOWN OF SOMERS**

AS ADOPTED BY THE

SOUTHEASTERN WISCONSIN REGIONAL PLANNING COMMISSION

JUNE 1987

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SUBJECT: Certification of Amendment to the Adopted Pike River Watershed Plan (STH 32 Improvement/Carthage College Dike)

TO: The Legislative Bodies of Concerned Local Units of Government Within the Southeastern Wisconsin Region, namely: the County of Kenosha, the City of Kenosha, and the Town of Somers

This is to certify that at the annual meeting of the Southeastern Wisconsin Regional Planning Commission, held at the Washington County Courthouse, Wisconsin, on the 15th day of June 1987, the Commission did by unanimous vote by all Commissioners present, being 17 ayes and 0 nays, and by appropriate Resolution, a copy of which is made a part hereof and incorporated by reference to the same force and effect as if it had been specifically set forth herein in detail, adopt an amendment to the Pike River watershed plan, which was originally adopted by the Commission on the 16th day of June 1983 as part of the master plan for the physical development of the Region. The said amendment to the Pike River watershed plan pertains to the STH 32 improvement project and the Carthage College dike, and consists of the documents attached hereto and made a part hereof. Such action taken by the Commission is hereby recorded on, and is a part of, said plan, and the plan as amended is hereby transmitted to the constituent local units of government for consideration, adoption, and implementation.

IN TESTIMONY WHEREOF, I have hereunto set my hand and seal and cause the Seal of the Southeastern Wisconsin Regional Planning Commission to be hereto affixed. Dated at the City of Waukesha, Wisconsin, this 16th day of June 1987.



Anthony F. Balestrieri, Chairman
Southeastern Wisconsin Regional
Planning Commission

ATTEST:



Kurt W. Bauer, Deputy Secretary

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RESOLUTION 87-12

RESOLUTION OF THE SOUTHEASTERN WISCONSIN REGIONAL PLANNING COMMISSION AMENDING THE COMPREHENSIVE PLAN FOR THE PIKE RIVER WATERSHED, THE PLAN BEING A PART OF THE MASTER PLAN FOR THE PHYSICAL DEVELOPMENT OF THE REGION COMPRISED OF THE COUNTIES OF KENOSHA, MILWAUKEE, OZAUKEE, RACINE, WALWORTH, WASHINGTON, AND WAUKESHA IN THE STATE OF WISCONSIN (STH 32 IMPROVEMENT/CARTHAGE COLLEGE DIKE)

WHEREAS, pursuant to Section 66.945(10) of the Wisconsin Statutes, the Southeastern Wisconsin Regional Planning Commission, at a meeting held on the 16th day of June 1983, duly adopted a comprehensive plan for the Pike River watershed as set forth in SEWRPC Planning Report No. 35, A Comprehensive Plan for the Pike River Watershed; and

WHEREAS, the comprehensive Pike River watershed plan contains recommendations relating to land use development and regulation, environmental corridor land acquisition and preservation, park and outdoor recreation land acquisition and development, floodland regulation, water control facility construction, streamflow recordation, and pollution abatement facility construction, together constituting a desirable and workable water control and water-related community facility plan for the Pike River watershed; and

WHEREAS, on December 2, 1985, the Wisconsin Department of Transportation requested the Commission to review and comment on proposed improvements to STH 32 through the Carthage College and Alford Park areas in the City of Kenosha, such review and comment to determine the effect of proposed roadway changes on the 100-year recurrence interval flood stage profile of the Pike River under planned land use development and planned channel conditions; and

WHEREAS, since December 2, 1985, the Commission has worked with the Wisconsin Department of Transportation in response to that request, has reviewed the proposed changes to the horizontal and vertical alignment of STH 32, and has reviewed also the impacts upon the 100-year recurrence interval flood stage profile of the Pike River of a flood control dike constructed by Carthage College since adoption of the comprehensive plan for the Pike River watershed; and

WHEREAS, the analyses conducted by the Commission attendant to these interrelated matters have resulted in a decision by the Wisconsin Department of Transportation to reconstruct STH 32 in such a manner as to provide more hydraulic capacity through a bridge crossing the Pike River near the Carthage College campus while leaving the Carthage College flood control dike in place; and

WHEREAS, the analyses attendant to this matter are set forth in a memorandum entitled, "Report on Impacts of STH 32 Improvement and Carthage College Dike on the Planned 100-year Recurrence Interval Flood Profile for the Lower Pike River," dated May 15, 1987, attached hereto and made a part hereof, which memorandum notes that the Wisconsin Department of Transportation has already constructed the proposed improvements; and

WHEREAS, the aforereferenced memorandum was reviewed by the Commission's Pike River Watershed Committee at a meeting held on the 15th day of May 1987, with that Committee recommending that the Commission amend the Pike River watershed plan to reflect the impacts on the planned 100-year recurrence interval flood profile for the Lower Pike River of both the Carthage College flood control dike and the STH 32 improvements; and

WHEREAS, Section 66.945(9) of the Wisconsin Statutes authorizes and empowers the Regional Planning Commission, as the work of making the whole master plan progresses, to amend, extend, or add to the master plan or carry any part or subject thereof into greater detail.

NOW, THEREFORE, BE IT HEREBY RESOLVED:

FIRST: That the comprehensive plan for the Pike River watershed, being a part of the master plan for the physical development of the Region and comprised of SEWRPC Planning Report No. 35, which plan was adopted by the Commission as a part of the master plan on the 16th day of June 1983, be and the same hereby is amended as follows:

1. The previously recommended Lower Pike River flood control plan as set forth in SEWRPC Planning Report No. 35 is hereby revised and amended to include the following elements:
 - a. Construction of a flood control dike along the Pike River on the Carthage College campus having a crest elevation of 589.0 feet National Geodetic Vertical Datum and an alignment substantially as shown on a map included in the attached memorandum.
 - b. The reconstruction of the STH 32 bridge over the Pike River at the Carthage College campus to provide a clear span width of about 80 feet and a waterway opening of about 720 square feet.
2. The flood stage and streambed profiles for the Pike River as set forth in SEWRPC Planning Report No. 35 are hereby revised in the manner set forth in the attached memorandum to reflect the construction of the Carthage College flood control dike and the new STH 32 bridge.
3. The planned 100-year recurrence interval floodplain for the Lower Pike River watershed is hereby revised in the manner set forth in the attached memorandum to reflect the Carthage College flood control dike and the new STH 32 bridge.

SECOND: That a true, correct, and exact copy of this resolution and its attachments shall be forthwith distributed to each of the local legislative bodies of the local governmental units within the Region entitled thereto and to such other bodies, agencies, or individuals as the law may require, or as the Commission, its Executive Committee, or its Executive Director at their discretion shall determine and direct.

The foregoing resolution, upon motion duly made and seconded, was regularly adopted at the meeting of the Southeastern Wisconsin Regional Planning Commission held on the 15th day of June 1987, the vote being: Ayes 17; Nays 0.


Anthony F. Balestrieri, Chairman

ATTEST:



Kurt W. Bauer
Deputy Secretary

SEWRPC Staff Memorandum

REPORT ON IMPACTS OF STH 32 IMPROVEMENT AND CARTHAGE COLLEGE DIKE ON THE PLANNED 100-YEAR RECURRENCE INTERVAL FLOOD PROFILE FOR THE LOWER PIKE RIVER

INTRODUCTION

By letter dated December 2, 1985, the Southeastern Wisconsin Regional Planning Commission was requested by the Wisconsin Department of Transportation to review and comment on proposed improvements to STH 32 through the Carthage College and Alford Park areas in the City of Kenosha. More specifically, the proposed improvements were to begin at the southerly intersection of Sheridan Road and Alford Park Drive near the mouth of the Pike River, and extend northerly along Alford Park Drive (STH 32) to the northerly intersection of Sheridan Road and Alford Park Drive at the north end of the Carthage College campus. The Wisconsin Department of Transportation specifically asked that the Commission analyze the proposed roadway improvements, which included changing both the vertical and horizontal alignments of STH 32, and determine what effect, if any, the proposed roadway changes would have on the 100-year recurrence interval flood stage profile of the Pike River under planned land use development and planned channel conditions.

The purpose of this memorandum is to report the results of that analysis to the Pike River Watershed Committee. In addition, since the STH 32 improvements have now been carried out, and since those improvements—together with a new flood control dike at Carthage College—do have an impact on the flood stage profile of the Pike River, it is intended that this memorandum serve as the basis for an amendment to the Pike River watershed plan.

ADOPTED PIKE RIVER WATERSHED PLAN AS IT PERTAINS TO FLOOD CONTROL ALONG THE LOWER PIKE RIVER

The adopted Pike River watershed plan is set forth in SEWRPC Planning Report No. 35, A Comprehensive Plan for the Pike River Watershed. As that plan was adopted, no significant structural measures for flood control or flood damage abatement were recommended along that reach of the lower Pike River downstream of the Chicago & North Western Railway crossing of the Pike River. Rather, it was recommended that structural floodproofing measures be undertaken at two structures in the floodplain in that reach—the former Valley Restaurant and Supper Club structure located just upstream of the northerly Sheridan Road crossing of the Pike River, and the Carthage College fieldhouse located about 0.3 mile downstream of that crossing. The plan envisioned that the existing floodway and floodplain would be maintained on the grounds of the Carthage College campus, and that periodic flooding of the College athletic fields located in that floodplain would be tolerated. The plan assumed that the STH 32 roadway through the campus would continue to be overtopped by the regulatory 100-year recurrence interval flood. Accordingly, the plan recommended that the hydraulic capacities of the three bridges carrying STH 32 over the Pike River be maintained, but not be increased.

Importantly, the plan recommended that two parallel jetties be constructed to maintain channel flow capacity at the mouth of the Pike River on the Lake Michigan shoreline. Construction of the jetties was found to be essential to resolving the lower Pike River flooding and related public safety problems that were caused by periodic formation of a sandbar across the mouth of the Pike River.

As the Pike River watershed plan was adopted, then, it was envisioned that the existing regulatory floodway and floodplain of the lower Pike River—which reflects planned land use and channel conditions in the upstream watershed—would be maintained in the manner shown on Maps G-1 and G-2 on pages 638 and 640 of SEWRPC Planning Report No. 35. The regulatory flood profile for that reach of the lower Pike River that corresponds to this floodplain is set forth in Figures G-1 and G-2 on pages 639 and 641 of the planning report.

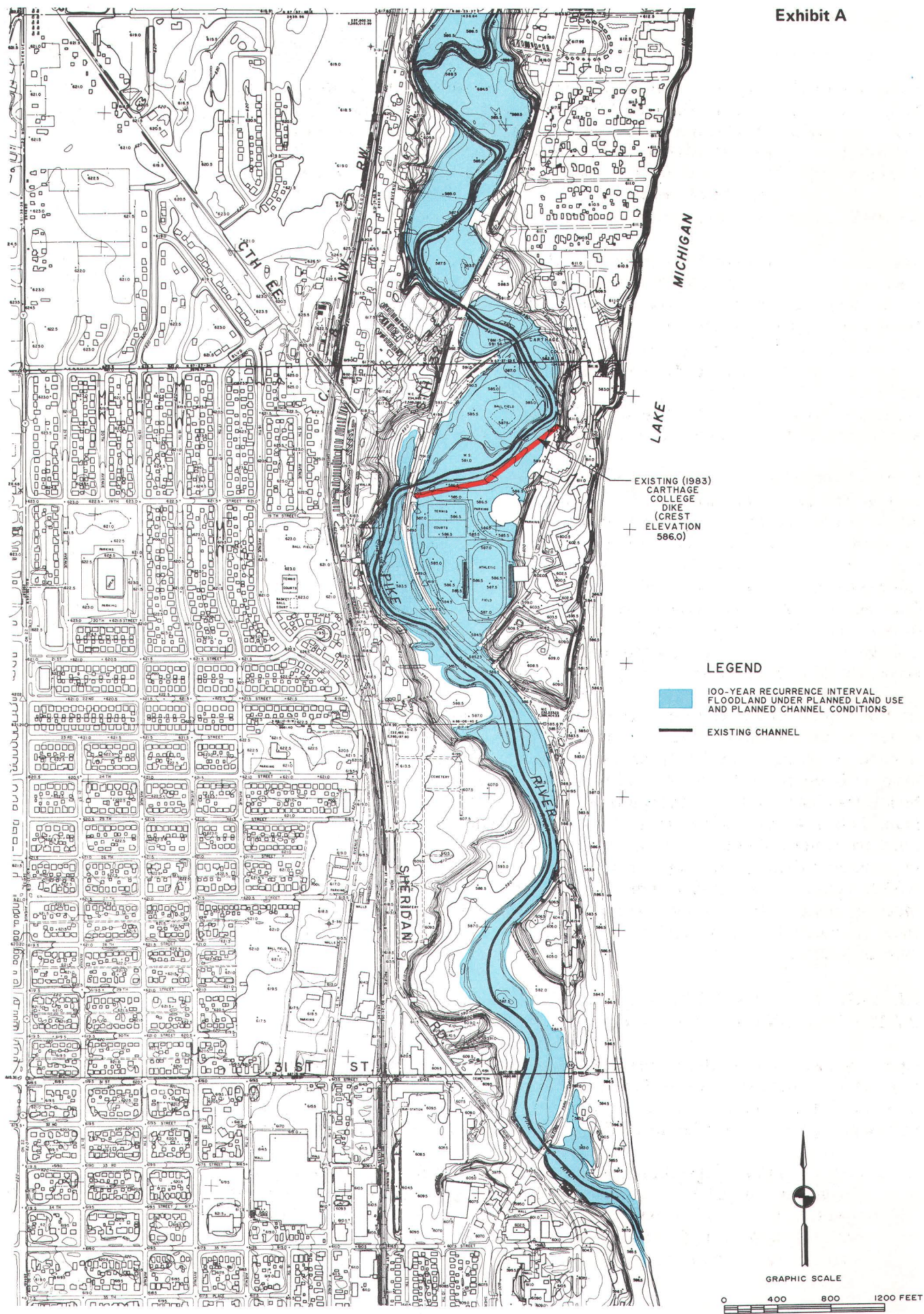
RESULTS OF ANALYSIS OF INITIALLY PROPOSED IMPROVEMENTS TO STH 32

As initially proposed by the Wisconsin Department of Transportation, STH 32 through the Alford Park and Carthage College campus areas would be improved by raising the roadway profile, widening the roadway embankment, and shifting the horizontal roadway alignment. Other than bridge re-decking, no bridge reconstruction at any of the three bridges crossing the Pike River in the study reach was envisioned. In its initial submittal, the Wisconsin Department of Transportation also provided to the Commission detailed field survey data concerning the alignment and configuration of the existing STH 32 roadway. In comparing the detailed field survey data to the cross-sections developed by the Commission under the Pike River watershed study from available large-scale topographic maps, it became apparent that it would be possible to more precisely represent the STH 32 roadway in the Pike River watershed hydraulic simulation model by substituting field survey data for the data obtained from the topographic maps. This more precise representation was particularly critical along that portion of STH 32 through the Carthage College campus, where floodwaters overtopped the roadway.

Accordingly, the first step in the Commission staff analysis of the proposed highway improvement project was to redefine existing conditions for the regulatory 100-year recurrence interval flood along the lower Pike River through the study reach. This was accomplished by conducting a revised hydraulic simulation using the detailed field survey data. This analysis resulted in a revised 100-year recurrence interval flood stage just upstream of the Alford Park Drive (STH 32) bridge near the Carthage College fieldhouse of 588.5 National Geodetic Vertical Datum (NGVD). This may be compared to an elevation of 586.9 feet NGVD established under the Pike River watershed study. This difference in the regulatory flood stage of 1.6 feet may be attributed solely to the more precise representation of the STH 32 roadway, which is superelevated at that location. The floodplain representing the revised regulatory flood profile for the lower Pike River through the study reach is shown on the map attached hereto as Exhibit A.

The foregoing hydraulic simulation was based on a Lake Michigan water surface elevation of 581.0 feet NGVD, the lake elevation assumed for analytical purposes in the preparation of the adopted plan. This lake elevation was intended to represent the 10-year recurrence interval mean annual lake elevation. A sensitivity analysis was also conducted to determine the effect on flood stages of the Pike River of a range of Lake Michigan surface water elevations. The results of this analysis indicated that use of an elevation of up to 583.0 feet NGVD for the lake would have no significant impact on the Pike River flood stages for those stream reaches upstream of River Mile 1.0. River Mile 1.0 is located approximately at the south end of the Carthage College campus. By way of comparison, the mean annual elevation of Lake Michigan was 582.5 feet NGVD in 1986, and the highest monthly average was 582.9 feet NGVD in October 1986. It should be noted, however, that the wave setup/sieche effect can cause an added temporary rise in lake levels with an attendant increase in the flood stage elevation of the lower Pike River reach. A value of 1.9 feet was used for this phenomena in the SEWRPC Milwaukee Harbor estuary study. As such, these higher lake levels, coupled with the sandbar at the mouth of the Pike River, can cause flood stages in the lower reach that exceed the predicted 100-year recurrence interval flood stage. For example, in November 1986, Wisconsin Department of Transportation field survey crews observed flood stage high-water marks downstream from the STH 32 structure at the Carthage College grounds approaching or equal to the elevation of the predicted regulatory flood stage. Also, Department of Transportation maintenance personnel have reported water on the STH 32 roadway just north of the southern Pike River structure (River Mile 0.4) at an elevation of 786.1 feet NGVD. This temporary increase in the flood stage occurred frequently in November and December of 1986, and was about 1.0 foot above the predicted 100-year recurrence interval flood stage of 785.0 feet NGVD.

Having thus redefined existing conditions based upon detailed field survey data, the next step in the analysis normally would be to determine the expected impacts of the proposed improvements in the horizontal and vertical alignments of STH 32 on the revised flood profile. Before that could be accomplished, however, it was necessary to first determine the impacts on flood stages of a higher flood control dike constructed by Carthage College—in 1985 following completion of the watershed plan—along the Pike River on the north side of its athletic field complex. A low-level flood control dike on the Carthage College campus in that location had been reflected in the original work under the Pike River watershed study. The crest of that low-level dike was about 586.0 feet NGVD. In conducting field investigations as part of the analysis work



Source: SEWRPC.

attendant to the request of the Department of Transportation, it became apparent that Carthage College had, since completion of the Pike River watershed study, substantially raised the flood control dike to a new crest elevation of about 589.0 feet NGVD. This increase in the height of the flood control dike was implemented apparently without the regulatory review prescribed in Chapter NR 116 of the Wisconsin Administrative Code. Accordingly, a second simulation was made to determine the impact on flood stages of the increase in the height of the dike. Field survey data required to properly characterize the dike in the simulation model were provided by the City of Kenosha Department of Public Works.

The results of this second "existing conditions" simulation resulted in a 100-year recurrence interval flood stage near the Carthage College fieldhouse of 589.9 feet NGVD, representing an increase of 1.4 feet over the refined watershed study stage of 588.5 feet NGVD, as determined in the first simulation noted above. Incorporating the revised field data attendant to STH 32 and the increased elevation of the Carthage College dike resulted in an increase of 3.0 feet in the planned 100-year recurrence interval flood stage established under the Pike River watershed study. This increase in flood stage could be expected to extend upstream of the Carthage College fieldhouse for a distance of about 2.0 miles. Owing to the physical configuration of the lower Pike River floodplain, however, there would be no significant increase in the areal extent of the floodplain attendant to such an increased stage.

Once a new existing conditions flood profile was established, a third model simulation was accomplished that incorporated data attendant to the proposed change in the vertical and horizontal alignments of STH 32. Under the roadway improvement proposal by the Wisconsin Department of Transportation, the existing roadway profile would be raised by as much as 2.0 feet from the southerly intersection of Campus Drive and STH 32 upstream about 400 feet. The results of this simulation indicated that the expected increase in the regulatory flood profile would be about 0.03 foot. This increase could be expected to occur near the Carthage College fieldhouse where the revised existing condition stage of 589.9 feet NGVD had been determined. The modest increase in flood stage at this location was expected, since the action by Carthage College to raise the flood control dike by about 3.0 feet effectively precluded substantial flood flows across the campus grounds and thence across STH 32.

At the request of the Wisconsin Department of Transportation, the Commission completed a fourth application of the simulation model. The purpose of this model application was to determine the potential impacts of raising the STH 32 roadway about 2.0 feet, independent of any action by Carthage College to raise its flood control dike. Accordingly, for purposes of this analysis, it was assumed that the dike would be lowered back to the crest elevation of 586.0 feet NGVD as reflected in the adopted Pike River watershed plan. This analysis resulted in a 100-year recurrence interval flood stage of 589.4 feet NGVD near the Carthage College fieldhouse, or about 0.9 foot higher than the flood stage of 588.5 feet NGVD, representing revised existing conditions, except for the Carthage College dike. A revised flood stage of 589.4 feet NGVD could be expected to impact the flood profile upstream of the Carthage College fieldhouse a distance of about 1.9 miles. However, due to the physical configuration of the lower Pike River floodplain, there would not be any significant increase in the areal extent of the floodplain attendant to such an increased stage.

ALTERNATIVE COURSES OF ACTION CONSIDERED BY THE WISCONSIN DEPARTMENT OF TRANSPORTATION

Upon reviewing the results of the analyses as summarized above, the Wisconsin Department of Transportation asked the Commission to identify alternative courses of action that could be taken to minimize any impacts on the flood stage profile under planned land use and planned channel conditions. In response to that request, the Commission identified the following potential courses of action:

1. Lower the Carthage College Dike/Do Not Alter the STH 32 Vertical Profile

Under this alternative, the crest of the Carthage College dike would be lowered from its current elevation of 589.0 feet NGVD to a new crest elevation of 587.0 feet NGVD. In addition, the roadway profile of STH 32 would remain essentially at its present elevation. This alternative would allow floods greater than the 10-year recurrent interval event to overtop the dike and the STH 32 roadway,

substantially as envisioned in the adopted Pike River watershed plan. Under this alternative, the planned regulatory flood profile would remain essentially unchanged, although that profile would have to be revised to reflect field data attendant to the dike and the STH 32 roadway.

2. Leave Carthage College Dike in Place/Construct STH 32 Improvement as Planned

Under this alternative, no change would be made to the Carthage College flood control dike, and the Wisconsin Department of Transportation would proceed to reconstruct STH 32 essentially as planned, raising the STH 32 profile by up to 2.0 feet from the southerly intersection of Campus Drive and STH 32 upstream about 400 feet. The impacts of this alternative on the regulatory flood profile are described above. This alternative would have certain regulatory implications, including the need for Carthage College to obtain flooding easements from the owners of riparian lands along the Pike River extending upstream a distance of about 2.0 miles from the Carthage College dike, or for the Wisconsin Department of Transportation to possibly make appropriate legal arrangements with these parties. Under this alternative, the Carthage College dike could be expected to be overtopped by flood events having a recurrence interval of 20 years or more. The elevated STH 32 roadway, however, would not be overtopped under even a 100-year recurrence interval event.

3. Attempt to Adjust the Carthage College Dike Crest and STH 32 Road Profile to Incur No Greater than 0.1-Foot Increase in Regulatory Flood Profile

Under this alternative, various actions could be taken to lower the Carthage College dike and/or lower the planned increase in the vertical profile of STH 32 so as to avoid any increase in the regulatory flood profile that would require obtaining flooding easements or making appropriate legal arrangements. Several alternatives were tested under this approach, including one that would lower the Carthage College dike by 2.0 feet and raise the STH 32 profile by 0.5 foot, and another that would lower the Carthage College dike by about 2.0 feet, raise the STH 32 roadway profile by 1.0 foot, and provide for the construction of three 5-foot by 8-foot box culverts through the new roadway embankment to provide for increased floodwater conveyance.

4. Leave the Carthage College Dike in Place/Alter the STH 32 Road Profile as Planned/Provide More Hydraulic Capacity at STH 32 Bridge

Under this alternative, the Carthage College dike would be left intact, the STH 32 road profile would be raised about 2.0 feet from the southerly intersection of Campus Drive and STH 32 upstream about 400 feet as proposed, and the STH 32 bridge over the Pike River near the Carthage College athletic field would be replaced with a new bridge having a large enough waterway opening to convey the regulatory 100-year recurrence interval flood discharge without increasing the upstream flood stage by more than 0.01 foot. Under this alternative, the existing STH 32 bridge, which has a clear span of about 40 feet, would be replaced with a bridge having a clear span of about 80 feet. While this alternative would limit upstream flood stage increases to less than 0.01 foot, because of the attendant increased flow downstream of the bridge the downstream stages of the regulatory flood would be increased by up to 0.40 foot along a 0.3-mile reach of the River. Accordingly, under this alternative, the Wisconsin Department of Transportation would have to make appropriate legal arrangements with the owners of riparian lands along the downstream reach.

It should be noted that under any of the foregoing four alternatives, it would still be necessary to build the jetties at the mouth of the Pike River as recommended in the adopted Pike River watershed plan. These four alternatives were reported to the Department of Transportation for that Department's consideration.

SELECTION OF ALTERNATIVE BY THE WISCONSIN DEPARTMENT OF TRANSPORTATION

After considering the foregoing alternatives, and after consulting with the Wisconsin Department of Natural Resources, pursuant to Chapter 30.12(4) of the Wisconsin Statutes and the WDNR-WDOT Interagency Cooperative Agreement for the purposes of obtaining regulatory review under Chapter NR 116 of the Wisconsin Administrative Code, the Wisconsin Department of Transportation determined to implement the fourth alternative as described above. Under that alternative, the Carthage College dike would be left in place with a crest elevation of 589.0 feet NGVD; the STH 32 roadway profile in the vicinity of Carthage

College would be raised up to 2.0 feet from the southerly intersection of Campus Drive and STH 32 upstream about 400 feet as originally planned; and the existing STH 32 bridge near Carthage College would be replaced with a new bridge having a clear span of about 80 feet. Subsequently, the Wisconsin Department of Transportation began acquiring data to fulfill its obligations under Chapter NR 116 of the Wisconsin Administrative Code, as defined in the WDNR-WDOT Interagency Cooperative Agreement.

Most of the STH 32 reconstruction project was completed in late 1986. The revised floodplain attendant to the changes as described in the implemented alternative is shown on the map attached hereto as Exhibit B. While the alternative implemented by the Wisconsin Department of Transportation allows for the retention of the Carthage College flood control dike at its current crest elevation without any increase in the upstream stage of the regulatory flood, above the upstream stage elevation that existed prior to the 3.0-foot raising of the dike, and while the dike protects the College grounds from overland floods during major flood events, the College grounds are still subject to flood inundation due to the Pike River backwater discharging through culverts under STH 32. The flood inundation from this source should be eliminated upon completion of the STH 32 reconstruction project in the summer of 1987, as flapper valves to prevent the backwater discharge onto the College grounds are installed on the culverts as part of the project plans.

CONCLUDING OBSERVATIONS

Given the decision of the Wisconsin Department of Transportation noted above, it is necessary to amend the adopted Pike River watershed plan as follows:

1. The previously recommended Lower Pike River flood control plan as set forth in SEWRPC Planning Report No. 35 is hereby amended to include the following elements:
 - a. Construction of a flood control dike along the Pike River on the Carthage College campus having a crest elevation of 589.0 feet NGVD and an alignment substantially as shown on the map attached as Exhibit B.
 - b. The reconstruction of the STH 32 bridge over the Pike River at River Mile 1.35 to provide a clear span width of about 80 feet and a waterway opening of about 720 square feet.
2. The flood stage and streambed profiles for the Pike River as set forth in Figure G-1 on page 639 of SEWRPC Planning Report No. 35 are hereby revised to reflect the Carthage College dike and the new STH 32 bridge. A copy of the revised Figure G-1 is attached hereto as Exhibit D.
3. The planned 100-year recurrence interval floodplain attendant to the recommended plan for the Lower Pike River subwatershed as originally shown on Maps 86 and G-1 on pages 516 and 638 respectively, of SEWRPC Planning Report No. 35 is hereby revised to reflect the Carthage College dike and the new STH 32 bridge. Copies of the revised Maps 86 and G-1 are attached hereto as Exhibits E and C.

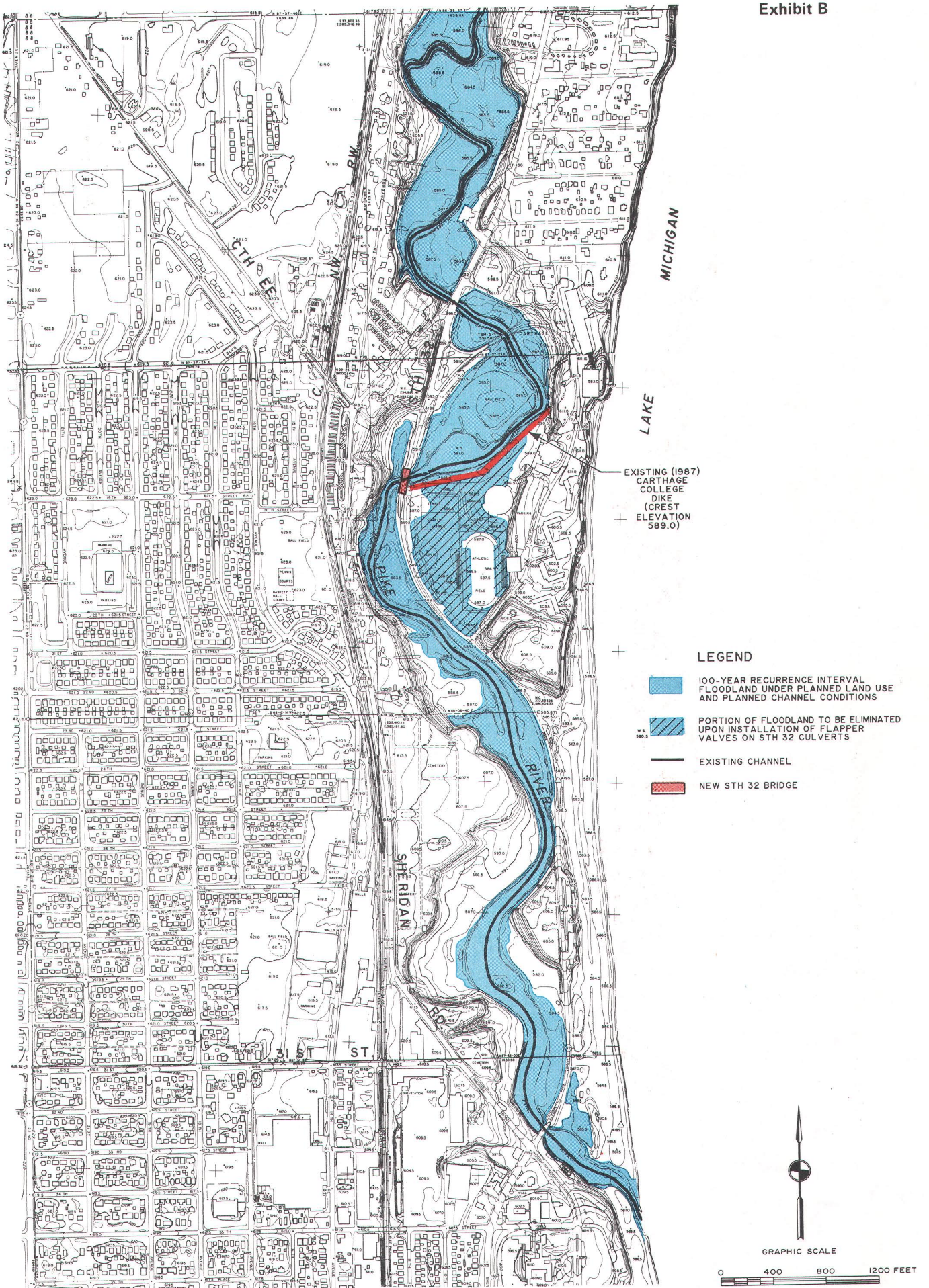


Exhibit C

AERIAL PHOTOGRAPH SHOWING AREAS SUBJECT TO FLOODING ALONG THE PIKE RIVER (RIVER MILE 0.00 TO 4.50)



LEGEND



APPROXIMATE EXISTING CHANNEL CENTERLINE
AND RIVER MILE STATIONING



100-YEAR RECURRENCE INTERVAL FLOODLANDS--
PLANNED LAND USE AND PLANNED CHANNEL CONDITIONS



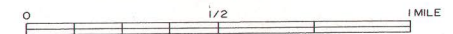
100-YEAR RECURRENCE INTERVAL FLOODLANDS UNDER
PLANNED LAND USE AND EXISTING CHANNEL CONDITIONS
THAT WOULD BE ELIMINATED UNDER PLANNED CHANNEL
CONDITIONS

NOTE: DUE TO MAP SCALE LIMITATIONS, THE DIFFERENCE BETWEEN THE 100-YEAR RECURRENCE INTERVAL FLOODLANDS UNDER PLANNED LAND USE AND EXISTING CHANNEL CONDITIONS, AND THE 100-YEAR RECURRENCE INTERVAL FLOODLANDS UNDER PLANNED LAND USE AND PLANNED CHANNEL CONDITIONS, MAY NOT APPEAR ON THIS MAP, WHERE NO DIFFERENCE APPEARS. REFERENCE SHOULD BE MADE TO THE FLOOD STAGE PROFILE SHOWN R.FLOW.

NOTE: THIS EXHIBIT REPLACES MAP G-1 ON PAGE 638 IN SEWRPC PLANNING REPORT NO. 35.



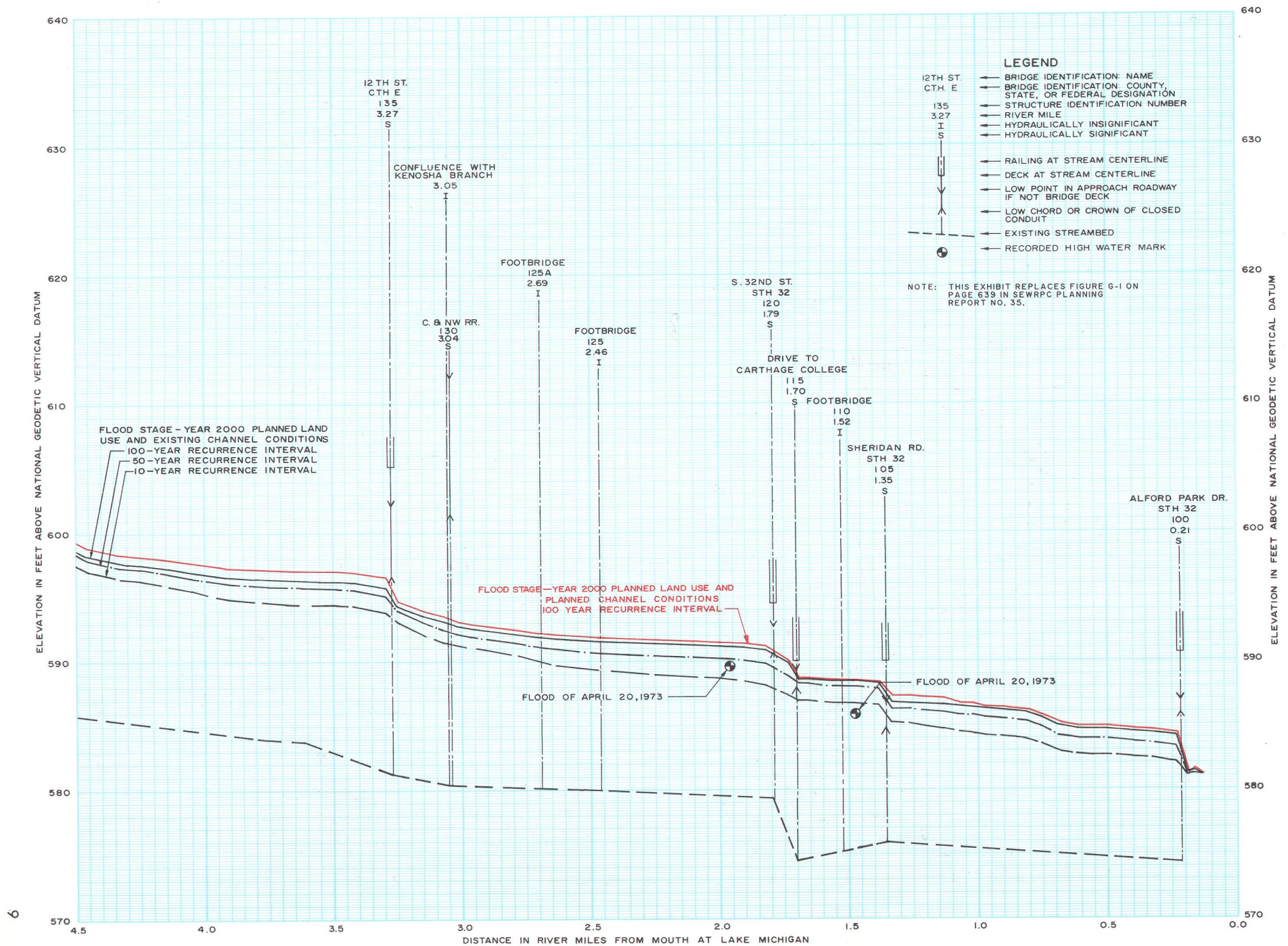
GRAPHIC SCALE



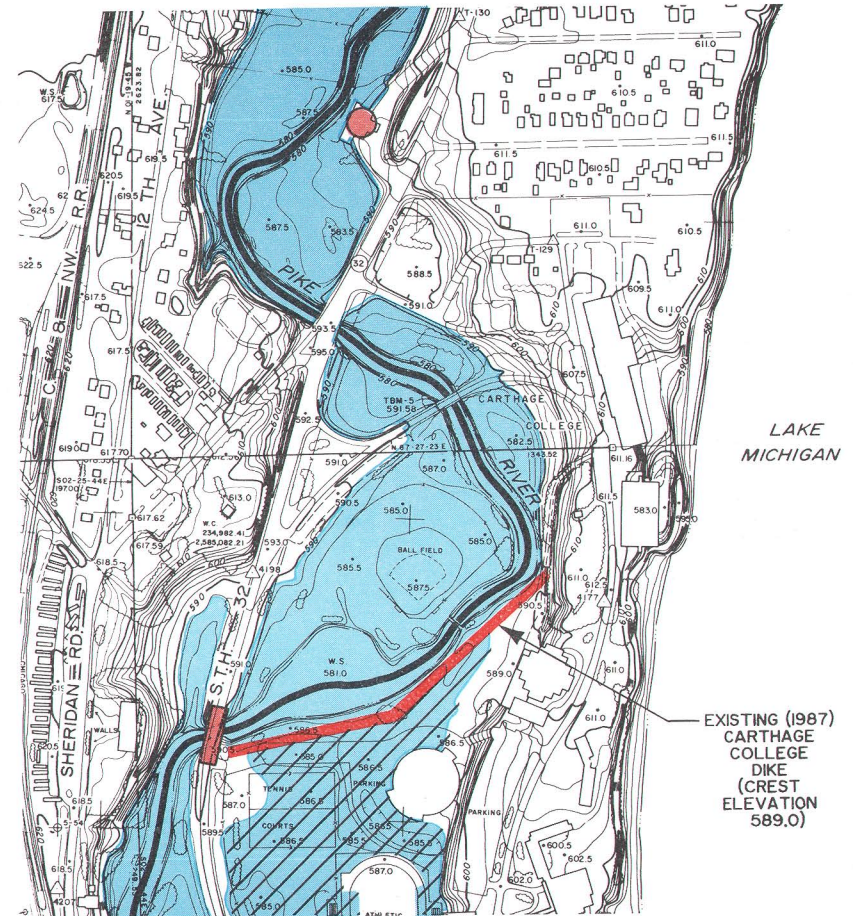
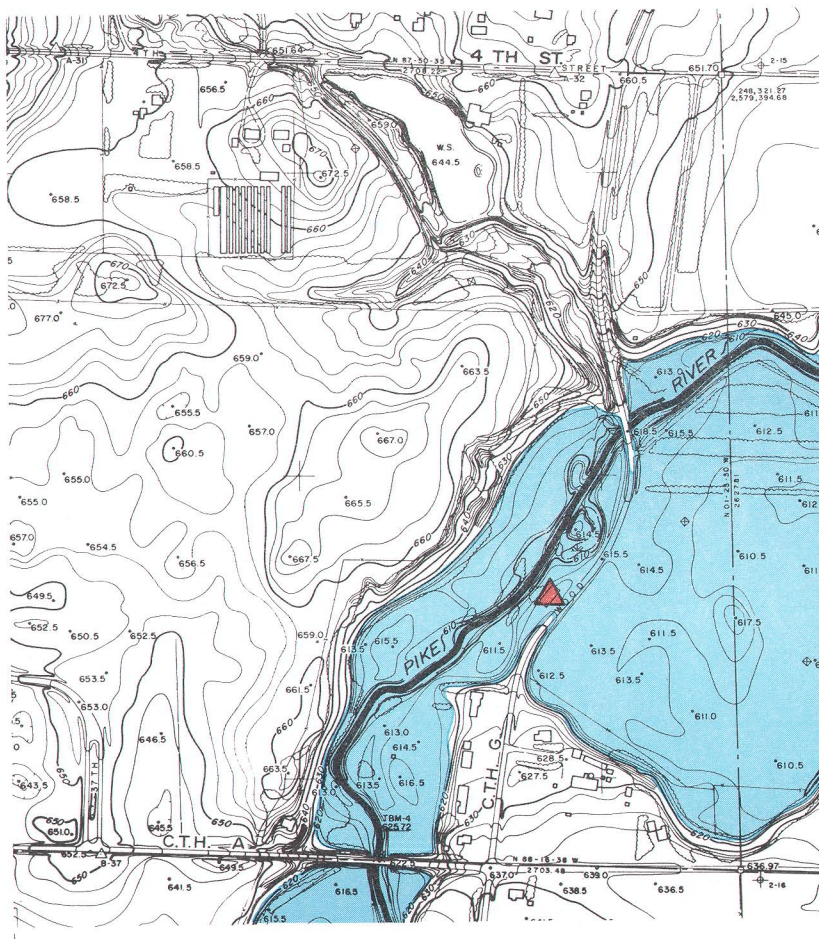
DATE OF PHOTOGRAPHY: APRIL 1986

Source: SEWRPC.







FLOOD STAGE AND STREAMBED PROFILE FOR THE PIKE RIVER (RIVER MILE 0.00 TO 4.50)



LOCATION OF STRUCTURES ALONG THE LOWER PIKE RIVER WHERE FLOODPROOFING MEASURES ARE RECOMMENDED



LEGEND

- | | | | |
|---|--|---|-------------------------------|
|  | 100-YEAR RECURRENCE INTERVAL FLOODLAND--PLANNED LAND USE AND PLANNED CHANNEL CONDITIONS |  | NEW STH 32 BRIDGE |
|  | PORTION OF FLOODLAND TO BE ELIMINATED UPON INSTALLATION OF FLAPPER VALVES ON STH 32 CULVERTS |  | STRUCTURE TO BE FLOODPROOFED. |
|  | EXISTING CHANNEL |  | STRUCTURE TO BE ELEVATED |

NOTE: THIS EXHIBIT REPLACES MAP 86 ON PAGE 516 IN SEWRPC PLANNING REPORT NO. 35.

