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## **MARGARET S. PETERSEN: A Biographical Sketch**

Margaret Petersen was born in Rock Island, Illinois in 1920. Living near the Mississippi River, she became aware of the river at an early age. Visiting the farm of her great aunt on Mississippi, she saw the river's power as the farm flooded every spring.

After graduating from high school in 1938, Petersen attended Augustana College in Rock Island for one full year and then part-time in the evening school until January 1943. She joined the Corps of Engineers in June 1942 and worked as a draftsman in the Rock Island District.

In the winter of 1942, she was selected as one of ten draftsman to go to Panama to complete contract drawings for the Three Locks Project. While in Panama, Petersen saved enough money to return to school. She attended the College of Engineering at the University of Iowa, earning a Bachelors Degree in Civil Engineering in January of 1947. She began her first job as a hydraulic engineer at the Waterways Experiment Station (WES) in Vicksburg in August of 1947 and thus became one of the pioneering women in the field of hydraulic engineering in the Corps of Engineer. At WES she worked on data for the design and operation of the Mississippi Basin Model.

Believing that she needed an advanced degree to better understand her work in hydraulics, Petersen returned to the University of Iowa in 1952 and received the Masters Degree in Mechanics and Hydraulics in 1953. After graduation, she worked as a hydraulic engineer at the Missouri River Division (MRD) in Omaha, Nebraska. She reviewed designs of spillways and other structures to insure that hydraulic functioning and operation fulfill requirements and intended uses. She also worked on various navigation and stabilization projects on the Missouri River.

Margaret Petersen wanted the experience of working at a district level, so she transferred to the Little Rock District in September 1955. There she worked in the hydraulic design section on river engineering, working on bank stabilization and channel rectification on the Arkansas River. In January 1961, she became Chief of the Channel Hydraulics Investigation Section. She was responsible for hydraulic studies related to the navigation channel on the Arkansas River, including stream reaches, the layout and design of the entrance channel on the lower White River, and the siting of navigation locks and dams on the Arkansas River to assure adequate navigation conditions.

From Little Rock, Petersen returned to WES in Vicksburg in April 1964 to work as Chief of the Wave Dynamics Section. She was responsible for projects in coastal engineering relating to navigation problems in harbors, bays, and estuaries because of hurricane wind, wind tide, and hurricane-generated short-period waves.

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In November 1964 Petersen transferred to the Sacramento District as a project engineer in the planning branch. Margaret Petersen worked on a series of projects and studies, such as the Morrison Creek Stream Group Project, the Sacramento River Shallow-draft Navigation Project, the deep-draft San Francisco Bay to Stockton Project, and the Sacramento-San Joaquin Delta project for flood control. She was Chief of the Marysville Lake Investigations Section where she was responsible for planning the Marysville Lake multiple-purpose dam and reservoir, which was never built. Petersen retired from the Corps of Engineers Sacramento District in 1977.

In the fall of 1980, Petersen was appointed a visiting associate professor in the Department of Civil Engineering and Engineering Mechanics at the University of Arizona in Tucson, Arizona. While teaching, she developed four graduate-level courses in hydraulic engineering largely based on her personal experience with the Corps of Engineers:

- Hydropower Engineering
- River Engineering
- Flow Through Hydraulic Structures
- River Basin and Project Planning

In 1987 the University of Iowa acknowledged Margaret Petersen's many accomplishments when it awarded her its Distinguished Alumni Achievement Award. In 1990 she became only the second woman to be elected to Honorary Membership in the American Society of Civil Engineers. She became Emerita Associate Professor in 1991. She has lectured in South Africa, China, and Morocco and done consulting work for many years. In 1997 she finally retired fully from her teaching responsibilities. Nonetheless, Petersen continues to be an invited lecturer around the world and to participate in the engineering profession to which she has contributed so much.

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## Career Information

### Employment Experience:

April-June 1947

Engineer (civil), Corps of Engineers Sub-Office, The University of Iowa, Iowa City

August 1947-November 1949

Hydraulic Engineer, Mississippi Basin Model Operation Section, Jackson Sub-Office, Waterways Experiment Station, Jackson, Mississippi

November 1949-June 1952

Chief, Research Sub-Section, Mississippi Basin Model Operation Section, Jackson Sub-Office, Waterways Experiment Station, Jackson, Mississippi

July 1953-September 1955

Hydraulic Engineer (Hydraulic Investigations), Hydraulics Unit, Water Utilization Section., Planning Branch, Missouri River Division, Omaha, Nebraska

September 1955-January 1961

Hydraulic Engineer (Design), Hydraulic Design Section, Hydraulics Branch, Little Rock District, Little Rock, Arkansas

January 1961 -April 1964

Chief, Channel Hydraulics Investigations Section, Hydraulics Branch, Little Rock District

April - November 1964

Chief, Wave Dynamics Section, Water Waves Branch, Hydraulics Laboratory, Waterways Experiment Station, Vicksburg, Mississippi

November 1964-August 1968

Project Engineer (Hydraulic), Investigation Section A, Project Planning Branch, Sacramento District, Sacramento, California

August 1968-June 1975

Chief, Investigations Section D and/or E, Project Planning Branch, Sacramento District

June 1975-March 1977

Chief, Marysville Lake Investigations Section, Water Resources Planning Branch, Sacramento District

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Retired from U.S. Army Corps of Engineers, March 1977

January 1981 - August 1986

Visiting Associate Professor, Department of Civil Engineering and Engineering Mechanics, College of Engineering, University of Arizona, Tucson, Arizona

August 1986 - January 1991

Associate Professor, Department of Civil Engineering and Engineering Mechanics, College of Engineering, University of Arizona

January 1991 - 1997

Emerita Associate Professor, Department of Civil Engineering and Engineering Mechanics, College of Engineering, University of Arizona

### **Professional Societies and Affiliations:**

American Society of Civil Engineers

Secretary, Jackson, Mississippi, Branch (1951-52)

President, Little Rock, Arkansas, Branch (1960)

Editor, Hydraulics Division Newsletter (1964, 1965-66)

Chairman, Hydraulics Division Publications Committee (1967-70)

Member, Hydraulics Division Publications Committee (1971-72)

Member, Hydraulics Division Executive Committee (1973-76)

Chairman, Hydraulics Division Executive Committee (1975-76)

Chairman, Hydraulics Division Session Program Committee (1977-78)

Member, Management Group D (1978-80)

Chairman, Management Group D (1980)

Member, Task Committee on Channel Stabilization Works, Waterways and Harbors Division (1965-80)

Secretary, Committee on Metrication (1978 to present)

Chairman, Task Committee on 50<sup>th</sup> Anniversary of Hydraulics Division (1987-88)

Permanent International Association of Navigation Congresses

International Association for Hydraulic Research

American Water Resources Association

International Water Resources Association

U.S. Committee of the International Commission on Large Dams

Association for Arid Lands

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Honors and Awards:

Chi Epsilon Civil Engineering Honor Society  
Sigma Xi  
University of Iowa Distinguished Achievement Award (1987)  
Honorary Member, American Society of Civil Engineers (1990)  
Nominated for Federal Woman's Award by Little Rock District and Southwestern  
Division (1963)  
Nominated for Federal Woman's Award by Sacramento District and South Pacific  
Division (1976)

Selected Professional Publications:

*Water Resource Planning and Development*. Englewood Cliffs, New Jersey: Prentice-Hall  
Inc., 1984.

*River Engineering*. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1986.

*Water Resources in Developing Counties*, D. Stephenson, and M.S. Petersen, Amsterdam:  
Elsevier Publishing Company, 1991.

"Hydraulic Aspects of Arkansas River Stabilization," *ASCE Journal of the Waterways and  
Harbors Division*, November 1963.

"Laboratory Contributions to Channel Stabilization," *ASCE Journal of the Waterways and  
Harbors Division*, February 1966.

"Case Description: Morrison Creek Stream Group Basin," Chapter 27, *Environmental  
Quality and Water Development*, edited by Goldman, McEvoy, and Richerson,  
W. H. Freeman and Co., 1973.

"Environmental Aspects - Sacramento River Bank Protection," co-authored with C. S.  
Milkovic, *AXE Journal of the Hydraulics Division*, May, 1975.

"Recommendations for use of SI Units in Hydraulics," *ASCE Journal of the Hydraulics  
Division*, December, 1980.

"Need for a National Water Policy and Master Program for Water and Related Resources,"  
*Proceedings of Conference on Drought, Water Management and Food Production*,  
Agadir, Morocco, 1985.

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- “Evaluation of Arkansas River Design Criteria for Stabilization and Rectification of the Channel,” M.S. Petersen, E.M. Laursen, *Report to the U.S. Army Corps of Engineers*, December 1986.
- “Interim Report on Hinged Pool Operation: Red River Waterway,” E.M. Laursen, M. S. Petersen, S. Chanyotha, and S.M. Cooke, *Report to U.S. Army Corps of Engineers*, April 1988.
- “Interim Report on Stabilization and Rectification Work, Pools 5 and 4, Red River Waterway,” M.S. Petersen, E.M. Laursen, S.M. Cooke, and S. Chanyotha, *Report to U.S. Army Corps of Engineers*, May, 1988.
- “Draft Report on Evaluation of the Program for Stabilization and Rectification of the Red River below Shreveport, Louisiana,” M. S. Petersen, E. M. Laursen, S.M. Cooke, S. Chanyotha, Report to U.S. Army Corps of Engineers, October, 1988.
- “Open-River Operation and Sediment Transport, Arkansas River Navigation Project,” *Proceedings of International Symposium on Hydraulics for High Dams*, Beijing, November, 1988.
- “It’s Been a Richly Rewarding Life,” in *Sons of Martha: Civil Engineering Readings in Modern Literature*, edited by A.J. Fredrich, New York: American Society of Civil Engineers, 1989.

**Registration:**

Registered Professional Engineer in the State of Iowa (194% present)



MARGARET S. PETERSEN