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Water Resources Engineering

JOURNAL (5 percentage points)

1. Create 5 profiles of people who made significant contributions to Water Resources Engineering ***(10 points)***
2. Each profile should include a short biography (Name, Date of birth, Location, Contribution to the field, Source) ***(40 points)***
3. All five profiles should show diversity (For example: gender, ethnicity, religious beliefs) ***(50 points)***

Example Profile:

Claude Louis Marie Henri Navier

Born: 10 February 1785 in Dijon, France
Died: 21 August 1836 in Paris, France

Claude-Louis Navier's father was a lawyer who was a member of the National Assembly in Paris during the time of the French Revolution. Navier scraped into to École Polytechnique in 1802. However, from almost bottom place on entry, Navier made such progress in his first year at the École Polytechnique that he was one of the top ten students at the end of the year and chosen for special field work in Boulogne in his second year. During this first year at the École Polytechnique, Navier was taught analysis by **Fourier** who had a remarkable influence on the young man. Fourier became a life-long friend of Navier as well as his teacher, and he took an active interest in Navier's career from that time on.

Navier took charge of the applied mechanics courses at the École des Ponts et Chaussées in 1819, being named as professor there in 1830. He did not just carry on the traditional teaching in the school, but rather he changed the syllabus to put much more emphasis on physics and on mathematical analysis. In addition, he replaced **Cauchy** as professor at the École Polytechnique from 1831.

A specialist in road and bridge building, he was the first to develop a theory of suspension bridges which before then had been built to empirical principles. Navier is remembered today, not as the famous builder of bridges for which he was known in his own day, but rather for the **Navier-Stokes** equations of fluid dynamics. He worked on applied mathematics topics such as engineering, elasticity and fluid mechanics and, in addition, he made contributions to Fourier series and their application to physical problems. He gave the well-known Navier-Stokes equations for an incompressible fluid in 1821 while in 1822 he gave equations for viscous fluids. Navier derived the Navier-Stokes equations despite not fully understanding the physics of the situation which he was modelling. He did not understand about shear stress in a fluid, but rather he based his work on modifying Euler's equations to take into account forces between the molecules in the fluid. He nevertheless arrived at the proper form for such equations.

Navier received many honours, perhaps the most important of which was election to the Académie des Sciences in Paris in 1824. From 1830 Navier was employed as a consultant by the government to advise on how science and technology could be used to better the country.

Source:

Cannone, Marco, and Susan Friedlander. "Navier: blow-up and collapse." *Not. AMS* 50.1 (2003): 7-13.