

**Question:**

What computer codes were used to perform the flood hazard safety analysis of Units 3, 4, 6 and 7?

**Draft Response:**

As described on page 3-4 of the FSEIS, *“The NRC evaluates the potential effects of floods on a nuclear power plant as a safety issue in a separate and distinct process, outside of the license renewal process. The NRC addresses flood hazard issues on an ongoing basis at all licensed nuclear facilities.”* Flood hazard analyses are conservative analysis that assume negative climatic conditions, including; future sea level rise, local intense precipitation, seiche, tsunami, storm surge, and combined flood-causing events and mechanisms. The flood hazard analysis is done by a licensee or applicant and is then reviewed by NRC staff.

For Units 3 and 4, several detailed site-specific calculations were used to perform the flooding analysis. I could not find a generic code referenced.

However, for Units 6 and 7, an off-the-shelf computer code was included as part of the flooding analysis. This is the HEC-RAS code. This code is used by the U.S. Army Corps of Engineers and is publicly available. It is available at:

<https://www.hec.usace.army.mil/software/hec-ras/>

**Background:**

The potential for flooding of the CCS is discussed on pages 3-42 and 3-43 of the FSEIS. As pointed out in the FSEIS, flood maps prepared by the Federal Emergency Management Agency (FEMA) show there is a 1-percent annual chance of flooding of the CCS within any single year. Figure 3-12 on page 3-46 of the FSEIS show depths of water the might be expected should such a storm occur.

Page 3-42 of the FSEIS for Turkey Point summarizes some of the relevant conclusions from the NRC oversight program.

*FPL recently completed a new flood analysis in connection with the NRC’s oversight of the current operating licenses at Turkey Point Units 3 and 4. For the current licensed period of operation, FPL submitted its analysis to the NRC in a process that was separate from subsequent license renewal. After extensive review, the NRC approved this flood analysis on June 29, 2017 (NRC 2017b).*

*The new flood analysis for Units 3 and 4 contained a maximum storm surge projection of 19.1 ft (5.8 m). In a separate and independent analysis, the maximum storm surge projection for the design of proposed Units 6 and 7 at the Turkey Point site was 24.8 ft (7.6 m). In the analysis for Units 3 and 4, FPL used a detailed model that contained more realism than the less detailed*

*deterministic model used by FPL for Units 6 and 7. To account for the less detailed evaluation, more conservative assumptions were incorporated into the analysis for the Units 6 and 7 model. For example, the assumptions in the model used for Units 6 and 7 included (1) a hypothetical hurricane with an intensity much greater than has ever been observed in the Atlantic Ocean and (2) an additional 20 percent added margin to the final computed storm surge water level. This resulted in a higher maximum storm surge projection.*