Foam, spray, and mist elements contributed largely to the final look of the look of the whitewater. These elements were generated independently of the underlying fluid simulation in a manner that allowed for a high degree of control over their look, placement, and behavior while still maintaining the physicality of the underlying simulation.

Once the fluid simulation results were finalized, (figure at left) a set of “agitators” was placed throughout the shot where whitewater was desired. (figure at right) Each agitator contained a number of settings governing the amount and behavior of foam produced by that agitator.

Once agitator placement was complete, the particles comprising the original fluid simulation were fed through them, resulting in the corresponding set of emitted foam particles. One set of resulting particles (figure at left) was rendered as a normal particle system to provide airborne, “3d foam”. Another layer, the “2d foam,” consisted of density values from agitated particles baked into the water surface mesh and realized through the water surface’s shader. (figure at right) This acted to soften and blend the 3d foam layer with the smoother, darker water surface beneath it.

An additional mist layer (figure at right) was generated by pumping a subset of the original water simulation through a set of Maya fluid boxes, imparting temperature, density, and velocity values from the motion of the particles.

The final resulting render, combining all aforementioned elements with the underlying water surface.