Alternative Mixing Zone Explanation – 3 May 2011

The material presented below supports the alternative mixing zone for Indian Point delineated in acreage, consistent with what we understand is NYSDEC Staff's ongoing efforts on a state-wide basis, as set forth in the May 2, 2011 correspondence from Entergy to NYSDEC Staff.

Surface Area Extent of Thermal Plume

The extreme environmental conditions determined from an analysis of historical conditions over the 10-year period from 2000 to 2009 and reported in Swanson et al. (2010) identified the extreme period (the Extreme Scenario). The calibrated hydrothermal model was run for this Extreme Scenario, and the model results post-processed to determine the maximum surface area coverage predicted during that period. Figure 1 shows the relationship of maximum surface area to surface temperature. The 90°F maximum surface area was found to be 35 ac, as reported in Swanson et al. (2010). An 89°F maximum surface area, representing a 1°F margin that appropriately accounts for the predictive tolerance of the hydrothermal model and the measurement capabilities of the thermal monitoring equipment, results in a 75 ac surface area.

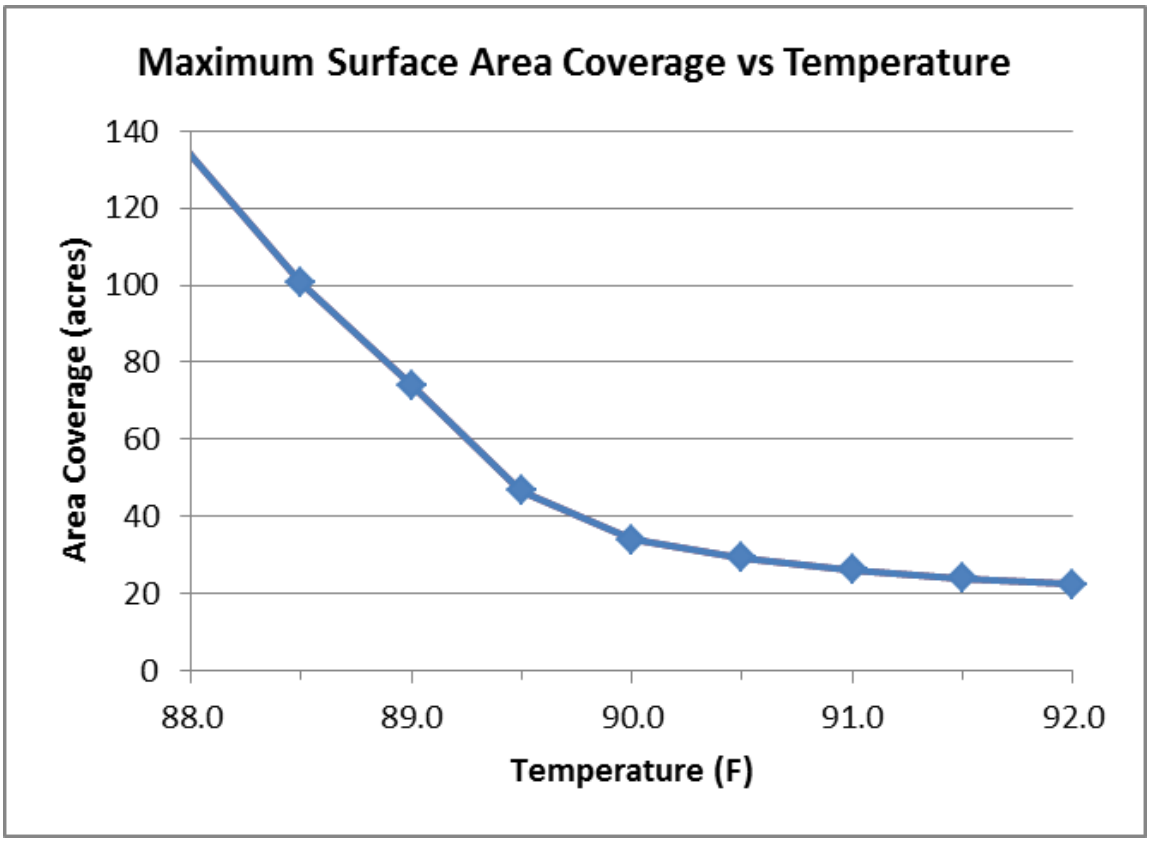

Figure 1. Maximum surface area coverage as defined by surface temperature.

Linear Extent of Thermal Plume

Potential upstream and downstream limits for surface areas enclosed by the 89°F isotherms under the Extreme Scenario, based on the same analysis as described above using the Extreme Scenario model results documented in Swanson et al. (2010), are identified below. Specifically, Figures 2a and 2b show

plan views of these surface areas (in green) for downstream and upstream Extreme Scenario conditions, respectively.

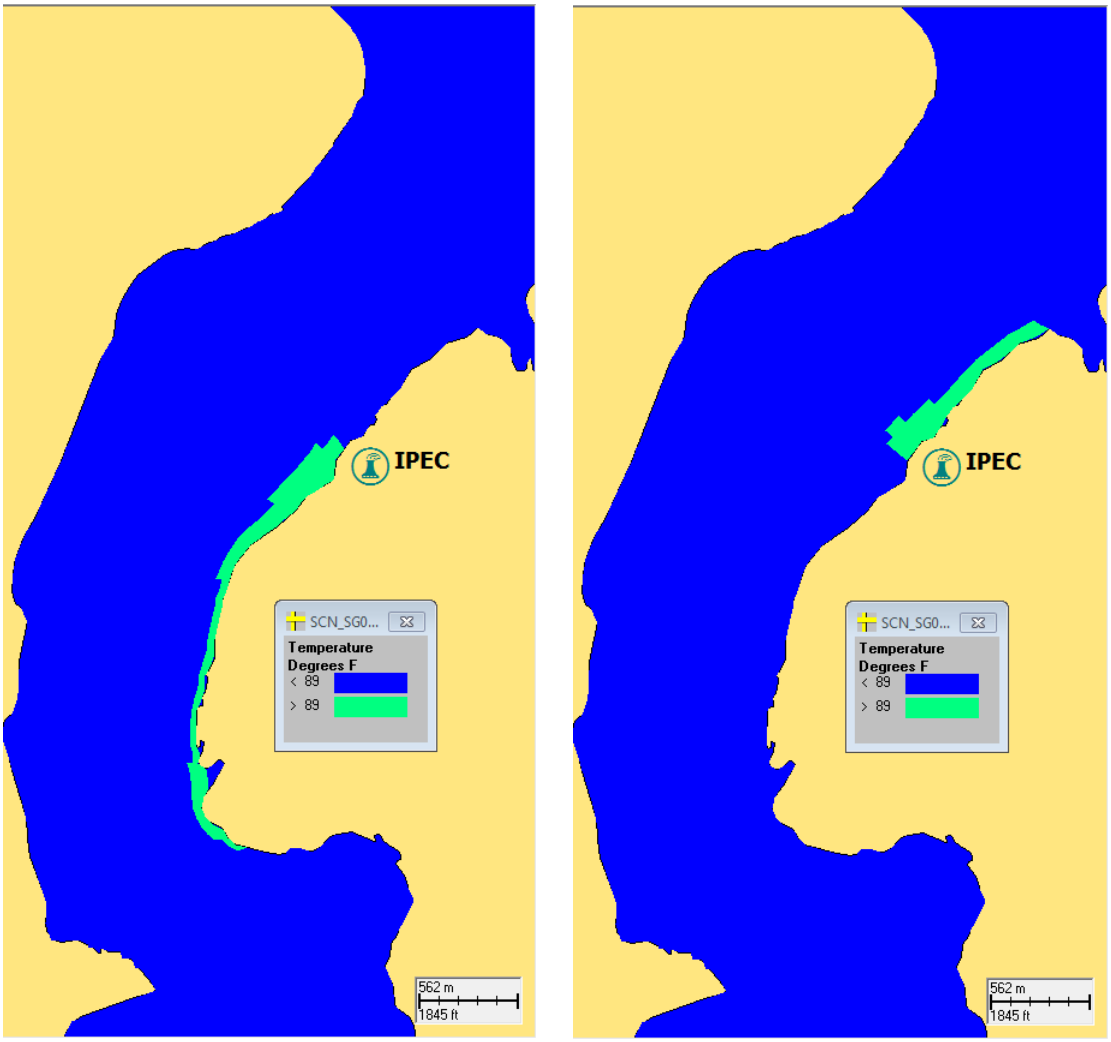

Figure 2. Maximum extent of thermal plume in downstream (a) and upstream (b) directions based on model predictions during the Extreme Scenario (1-15 August 2005).

The maximum extent defined by the 89F isotherm is summarized in Table 1.

Table 1. Maximum extent of thermal plume in downstream and upstream directions.

Maximum Extent	Distance (ft)	Distance (mi)
Downstream	8,900	1.69
Upstream	3,700	0.71

Importantly, the typical downstream and upstream extents of the 89°F isotherms during the Extreme Scenario are significantly smaller than the maximum values presented in Figure 2 and Table 1. Figures 3a and 3b shows plan views of these surface areas (again, in green) with extents for downstream and upstream conditions, respectively. These typical downstream and upstream extents are summarized in Table 2.

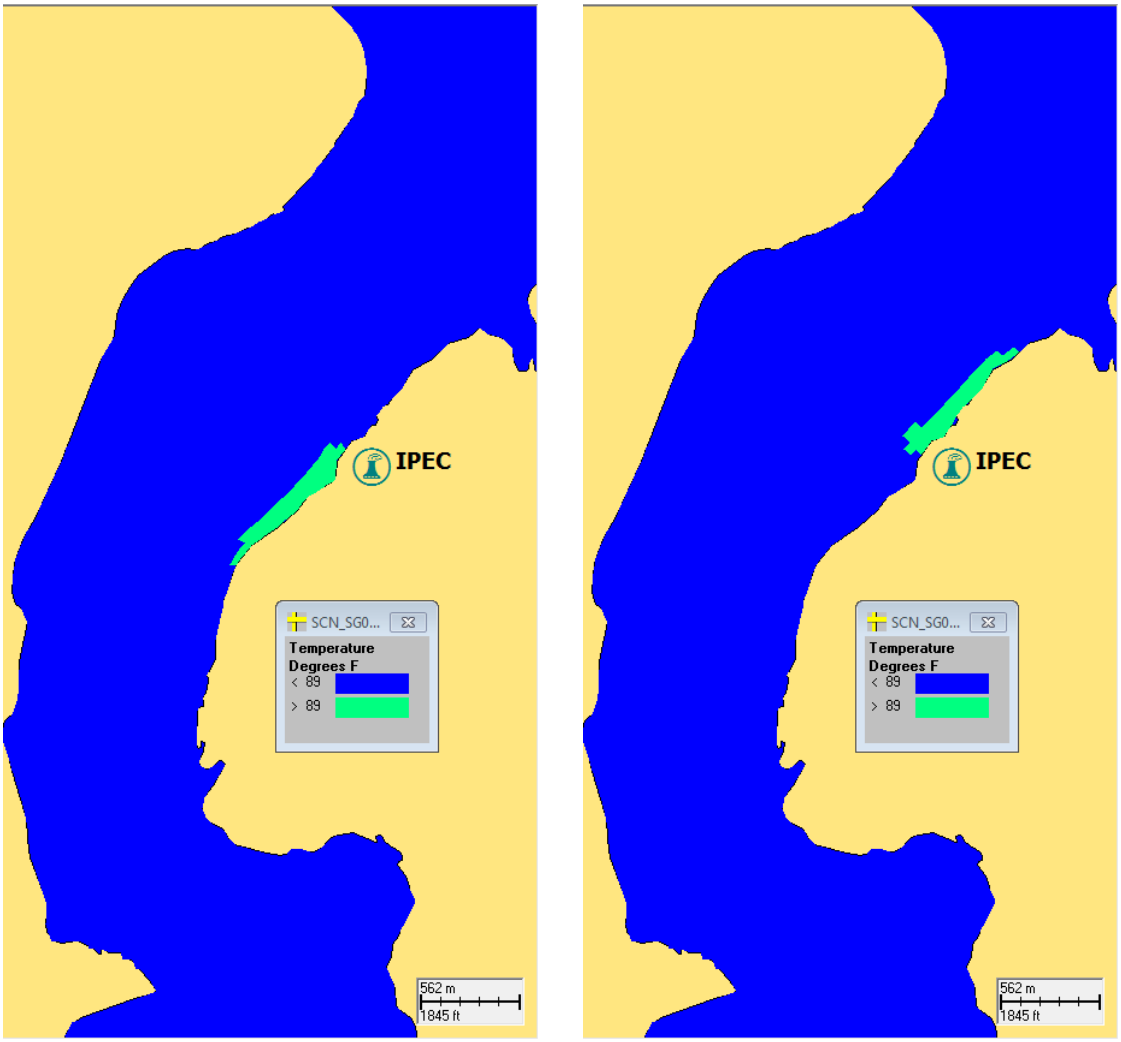

Figure 3. Typical extent of thermal plume in downstream (a) and upstream (b) directions based on model predictions during the Extreme Scenario (1-15 August 2005).

Table 2. Typical extent of thermal plume in downstream and upstream directions.

Typical Extent	Distance (ft)	Distance (mi)
Downstream	3,000	0.57
Upstream	2,800	0.53