APPLIED COASTAL

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Project: Iroquois Gas Pipeline
Construction Monitoring

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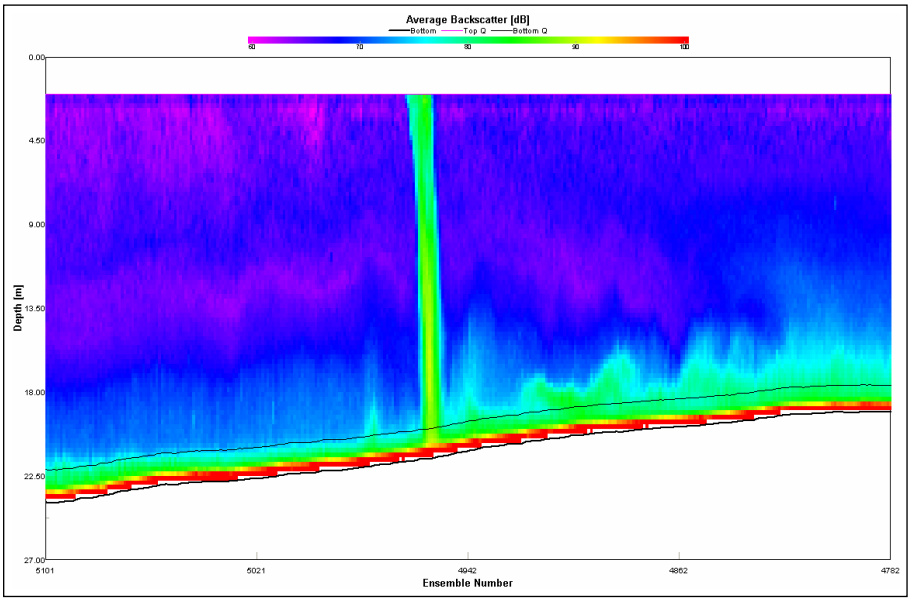
Applied Coastal is assisting with environmental monitoring during the Iroquois Gas Pipeline marine construction operations. Applied Coastal's role in the monitoring effort is to provide measurement of suspended material and water velocity (primarily due to tides) during pipeline installation. Environmental permits required that impacts to the marine environment, specifically variability of water quality, be measured and documented during the project.

Applied Coastal personnel installed an acoustic doppler current profiler (ADCP) and associated GPS/gyrocompass navigation system aboard a survey vessel to provide continuous vertical profiling of relative acoustic backscatter within the water column. The ADCP measures the intensity of returning acoustic pulses to estimate the volume of suspended material; these data were used in real time aboard the survey vessel to determine the spatial extent of the dredging plume from construction activities and to guide subsequent water sampling. The combined ADCP/navigation system provided the monitoring team with precise visual display of the transport of suspended material from construction activities and, together with bottle samples and spot optical measurements, provided regulators with a quantitative understanding of how the gas pipeline construction activities may have impacted water quality.



ADCP backscatter measurements obtained along a transect route approximately 700 feet downstream of the Norwalk Tee excavation pit are illustrated. Data collection began southeast of the dredge pit (shown to the right of the graphic) and proceeded on a northwesterly course past the excavation area. Data collection ended northwest of the pit, shown to the left of the graphic. Blue/purple colors indicate low backscatter, or lower levels of suspended sediment in the water column. The green/yellow colors indicate relatively high levels of suspended material. Red/orange colors along the seafloor represent strong acoustic reflections. The plume is obvious in the center of the graphic, stretching from the surface to the seafloor, with lower levels found along the bottom to the east and southeast of the dredge pit. The extent of the plume is relatively narrow, estimated about 40 meters wide. The narrow extent of the plume, the relatively small length scale, made proper synoptic sampling a challenge.