Mosaic Fertilizer LLC mines phosphate rock in the West-Central Florida phosphate region. Following mining, Mosaic reclaims the mined land to replace natural wetland, terrestrial, and riparian ecosystems; maintain natural hydrology; and return the land to natural wetland, terrestrial, and riparian ecosystems; mining, Mosaic reclaims the mined land to replace West-Central Florida phosphate region. Following Mosaic Fertilizer LLC mines phosphate rock in the natural hydrological behavior. The restored stream channel bed profile contains bed features similar to the reference stream (Figure 1B). The developing pool bed and riffles provide good aquatic habitat. The planform survey (Figure 2) indicates that the channel has maintained bank stability and channel width, despite dimensional adjustments. The channel dimensions have increased slightly from design. Table 1 shows increasing dimensional diversity.

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Mosaic reclaimed section SB-1 is its South Percy Mine site located in Pasco County Florida in 2010, creating emergent wetlands, forested wetlands, and 1,085 feet of first and second-order streams. The Peace River, Florida’s largest river and a major tributary of the St. Johns River, provides a water source for the region. The Peace River is one of Florida’s preserved second-order tributary of the Peace River. The Peace River is a major river’s major river system. The river flows north to south to the heart of Florida’s largest watershed. The Peace River also provides fresh drinking water to coastal communities. Natural channel design and construction approaches were used to create the unique, functional stream channels. Riverine processes and features are enhanced for improved natural hydrological behavior.

Natural channel design was based on hydraulic geometry data obtained from a morphological reference stream (Figure 1A/B).

For mine-wide application, natural channel design relies on site-specific “regional” curves (Figure 2) relating basin cross-sectional area to the stream’s average annual flow. The hydraulic geometry data are used to develop cross-sectional (Figure 3) and planform (Figure 4) designs to size restored stream channels. The hydraulic geometry data used to develop cross-sectional areas (Table 1) with increasing dimensional ratios have increased slightly from design.

Designed sectional areas, pooling depth, and scour pool areas were surveyed over a 100-meter reach to measure the planform, profile, and dimensions of the natural channel.

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