Little Survival Creek

December, 2002
South Potter Marsh Tributaries
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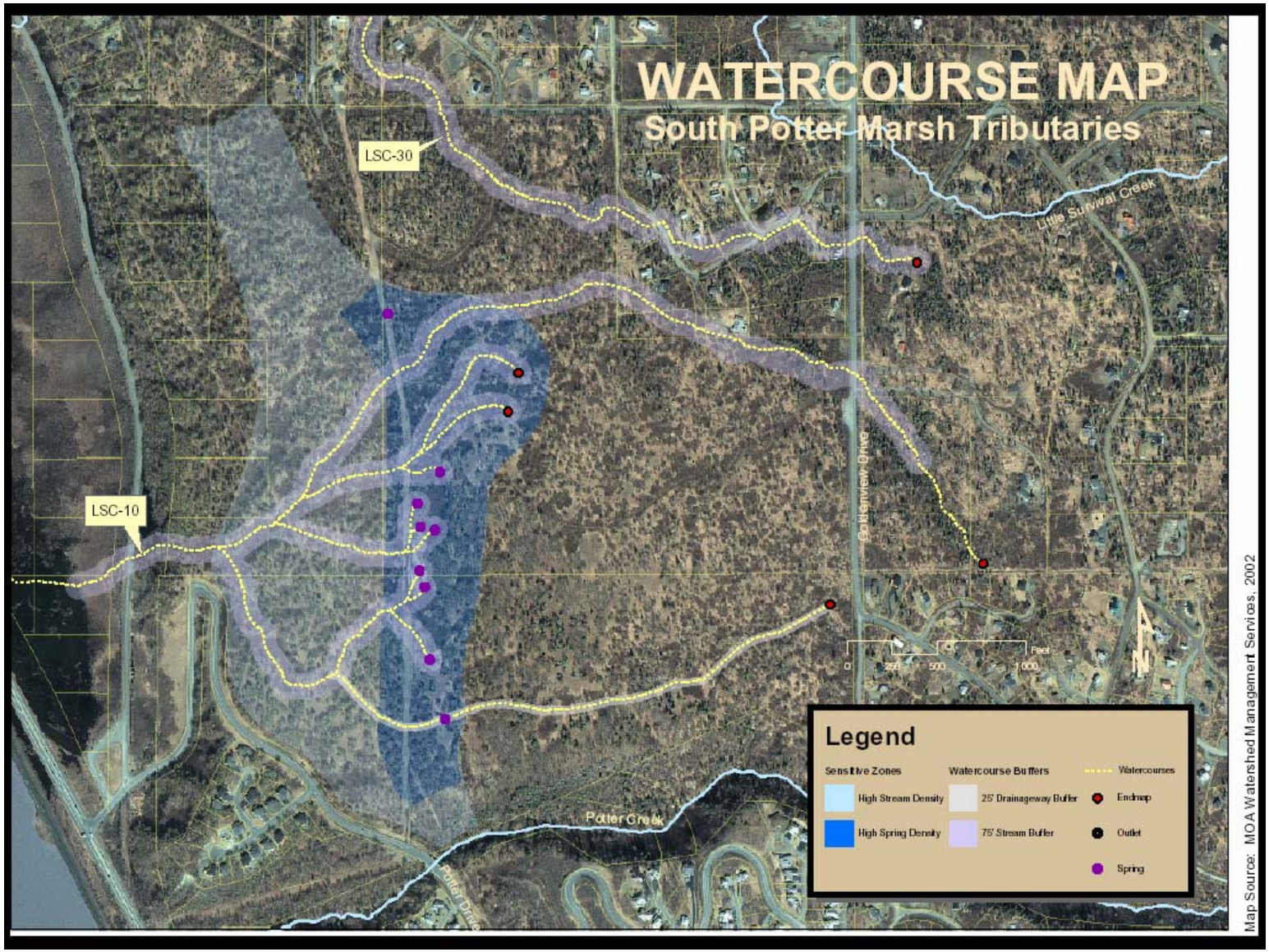
WMS performed watercourse mapping along the hillslopes east of the south end of Potter Marsh in mid-December, 2002. Scott Wheaton, WMS, and Bill Rice, Montgomery-Watson Harza performed initial field mapping, including GPS data collection at spring and stream features, on December 11th. Scott Wheaton and Kristi Bischofberger completed additional field confirmation mapping of the upstream extent of stream features identified in photo interpretive mapping and the earlier field mapping.

Investigators mapped watercourse features including streams and the higher order drainageways (see attached figure). Most of the watercourse features mapped were 1st or 2nd order streams and their defining characteristics were readily distinguishable except at the upper ends of stream headwaters. Streams fed by springs were easily identifiable, but new-fallen snow present during both field efforts often obscured the headwaters of those first order stream features fed solely by shallow ground water discharge zones (seeps). Drainageways were not readily identifiable on available photo coverage and snow conditions did not allow the extensive reconnaissance that would have been required to map these features in detail. Only the largest drainageway features were mapped and field confirmation of those features that were identified was minimal. All streams and drainageways mapped in this investigation have not been mapped before and are currently under process for inclusion in the MOA corporate map sets.

In addition to specific watercourse features, several other important hydrologic characteristics were identified during this investigation. The study area has a moderately sloping land surface generally underlain by low-permeability, glaciomarine till. Near the natural gas pipeline ROW as it traverses the western portion of the project area, a sharp break in slope occurs along an escarpment traversing the hillside from north to south. The sharp increase in slope promotes extensive shallow ground water discharge along a band about 350 feet wide and paralleling the base of the escarpment (see the area labeled 'High Spring Density' in the attached figure). Along this band springs and seeps are common and the ground is commonly saturated at or just below the surface. Any development within this band would require construction of extensive surface and subsurface drainage and significant alteration and integration of existing springs and lower order stream features. However land development in this zone would also have to be appropriately controlled to minimize potential negative impacts to downstream drainage systems and receiving waters. Because of the existence of the many springs and small streams and the high water table within this area it is likely that setback and other controls would preclude most land usages. The potential effects of construction within this zone are clearly demonstrated by stream erosion and icings present all along the natural gas pipeline alignment that crosses the western edge of this zone.

A short distance downslope from the spring zone the small streams drop off the escarpment bench and flow along the steeper hillslopes just east of Potter Marsh. Across this downslope zone (labeled 'High Stream Density' in the attached figure) the streams flow for short distances in separate channels until they can become integrated. Land development within this zone will be restricted by the presence of the many small streams, though shallow ground water will be more localized along the many small stream channels and drainageways.

The attached figure also shows one large natural drainageway running generally east to west across the southern portion of the area. This investigation was not able to map all these natural features, and several other large drainageways are thought to exist along the center of the study area. Both drainageways and stream features are typically steep across the project area and ground water will be at shallow depths over much of the area as well. Given these conditions, and the presence of the broad spring and stream integration zones, and the short distance to sensitive receiving waters (Potter Marsh and Little Survival Creek) site development should consider stream and drainageway setbacks more reflective of national norms. Minimum setbacks recommended for higher order (larger) drainageways is 25' (a 50' corridor) and for streams is 75' (a 150' corridor). Receiving waters and storm water hydraulic drainage systems controls may be attainable at smaller setbacks if the 'High Density Spring Zone' is preserved and discharges into this zone are carefully controlled.


WATERCOURSE MAP
South Potter Marsh Tributaries
LSC-30
LSC-10
Little Survival Creek
Goldenview Drive
Potter Creek
Potter Drive
Feet
0
250
500
1,000
Legend
Sensitive Zones
High Stream Density
High Spring Density
Watercourse Buffers
25' Drainageway Buffer
75' Stream Buffer
Watercourses
Endmap
Outlet
Spring
Map Source: MOA Watershed Management Services, 2002