

Sheets 15 through 21. Improvements to the site access road (Douglas Drive) and the entrance on Route 116 are shown on Sheets 22 through 29. Minimization of indirect impacts involved balancing pre- and post-development watershed conditions downslope of the landfill, infrastructure area and access road as presented in a separate Stormwater Report.

5.1 Landfill Footprint

Concept 1 – Desk Study

The siting criteria were first applied to the Dalton site during the desk study phase of work. The initial potentially viable landfill footprint is shown on Figure 19 as Concept 1. The footprint boundary shows the limits of excavation and filling associated with the lined landfill area and the perimeter berm and access road. Stormwater ponds needed to manage stormwater runoff, replenish groundwater, and treat runoff water quality are shown separately outside of the footprint limits. It was assumed during this preliminary period that the infrastructure area could be constructed, and the access road upgraded without substantial additional wetland filling or disturbance. The Concept 1 footprint would not result in filling or permanent disturbance of NWI wetlands or perennial streams and surface water. The footprint complies with all NHDES siting criteria other than separation to field-delineated wetlands.

The southern limits of Concept 1 were established to provide a 200-foot setback to an NWI designated perennial stream and associated wetlands to the south. A similar setback to NWI surface water and wetlands established the western limits of Concept 1. The northwestern corner of Concept 1 was set back 200 feet from an intermittent stream and a nearby commercial sand and gravel mining operation located beyond the stream. Steep slopes limited the landfill footprint to the north, as well as a 100-foot setback to the property line shared with the managed forest area of Forest Lake State Park. The eastern limits of the Concept 1 footprint were set back 100 feet from a ridgeline to situate the landfill within the Alder Brook watershed and outside of the Forest Lake watershed.

Using the subsequently completed field-delineated wetland survey as a base plan layer, the landfill footprint of Concept 1 filled or permanently disturbed 39.6 acres of wetland, with required stormwater ponds resulting in an additional 3.2 acres of wetland filling or disturbance. Concept 1 has a landfill footprint of 238.2 acres and a capacity of 67 million cubic yards (MCY).

Concept 2 – Initial Site Visit

During initial site reconnaissance it became apparent that the extent of perennial surface water and significant wetlands extended into the east-central portion of the Concept 1 footprint. The footprint limits were adjusted to avoid those areas resulting in a decline in area to 218.8 acres. Landfill capacity declined to 44 MCY and footprint wetland filling and disturbance declined to 31.4 acres applying the subsequently completed field delineated wetland limits. The stormwater pond wetland filling and disturbance declined to about 0.2 acres or less.

Concept 3 – Screening Level Design

Subsequent site reconnaissance confirmed the likelihood that the perennial stream and associated wetland complex in the east-central portion of the footprint extended east to the existing site road used to access the sand and gravel mining operation in the northern portion of the site. The landfill footprint was reduced to avoid filling or disturbance in this area. Observations also indicated the existence of bogs/beaver ponds along the eastern portion of the southern landfill footprint limits. The landfill footprint limits were moved to the north in this area to provide the required NHDES setbacks to surface water. The landfill footprint area declined to 181 acres, wetland filling and disturbance declined to 18.4 acres applying the subsequently completed field delineated wetland limits, the stormwater pond wetland filling and disturbance was unchanged at about 0.2 acres or less and landfill capacity declined to 32 MCY.

Concept 4 – Wetland Permit Level Design

The landfill footprint was developed to a Wetland Permit Level Design including grading of earthwork, and design of perimeter berms, swales, roadways, and storm water ponds and pond access roads as described above. This concept was further refined during development of the drawing set included in the application. The field delineated wetland survey was incorporated into existing conditions as part these design efforts. The landfill footprint was reduced from Concept 3 to limit wetland filling and disturbance and to incorporate other features favorable to direct and indirect impacts:

- The landfill footprint was moved about 100 feet downslope and west from the ridgeline parallel to the eastern landfill limits relative to Concept 3. This change had the following results:
 - Filling wetlands near the northeast corner of the landfill is avoided.
 - The limits of waste are now 350 to 375 feet from the ridgeline, an additional 100 feet of separation from Concept 3, and about 190 feet from the Forest Lake Park boundary to the north.
 - The landfill is situated in a more favorable lower setting within the Alder Brook watershed and farther from the Forest Lake watershed.
 - The landfill less visible, particularly from the eastern shore of Forest Lake.
- The southeast boundary of the landfill footprint was moved to the north to avoid a large wetland complex. This modification also reduces the landfill visibility from the southeast shore of Forest Lake.
- Stormwater ponds were added to the lowest southwest corner of the landfill to reduce indirect impacts to downslope wetlands and surface water. This change reduced the lined landfill area and extended the distance from the limits of waste to surface water and wetlands beyond what is required by NHDES regulation in this key location where landfill leachate from within the landfill will drain and be collected.
- The limits of waste, or lined area of the landfill were set back at least 200 feet upgradient and 100 feet downgradient from field-delineated wetlands to conform with NHDES siting criteria. This change reduced the lined landfill area to 137 acres from 181 acres and provided a larger buffer between the waste and the wetlands

The landfill footprint remained at 181 acres, wetland filling declined to 16.2 acres, wetland filling associated with stormwater ponds and pond access roads remained at about 0.2 acres or less and landfill capacity declined to 23 MCY.

5.2 Infrastructure Area and Landfill Access

The infrastructure area includes truck scales, queueing and staging areas; office and maintenance buildings; leachate storage, treatment and unloading facilities; a landfill gas to pipeline quality “natural gas” processing facility, and stormwater ponds. These infrastructure facilities are sited in upland areas and no wetlands are directly filled or disturbed by this portion of the project. Stormwater ponds are incorporated into the infrastructure site layout to control and treat runoff and infiltrate to groundwater to limit indirect impacts.

The existing gravel access road to the sand and gravel mining operation in the northern portion of the site crosses a perennial stream and provides access to the proposed landfill area. Our evaluation of the crossing indicates it would need to be raised and widened to be used as the primary landfill access from the infrastructure area for waste hauling trucks. The existing crossing is bordered by substantial wetlands and upgrading the crossing would result in significantly more wetland filling than an alternative downstream crossing proposed where the wetlands narrow downstream. This existing crossing will be used during landfill operations by heavy landfill equipment such as compactors and tracked vehicles that would otherwise damage the paved access road from the infrastructure area to the landfill.

A new crossing of the stream located along the southern limits of the landfill footprint is recommended for waste hauling truck access from the infrastructure area to the landfill. The narrowest portion of the stream/wetland limits was chosen for the crossing. Although NHDES guidance indicates a pipe culvert and berm is appropriate for a crossing of this type and watershed size, an open bottomed box culvert was selected for the crossing to lessen wetland and surface water impacts and provide for a more natural wildlife passage. Abutments and retaining walls will be incorporated into the crossing and approach roads to reduce wetland filling when compared to sloping the proposed grades to existing surfaces. Wetland impacts will be limited to the approximately 2,000 square foot plan area of the box culvert where spanning the stream and bordering wetlands. Details of the stream crossing are shown on Sheets 16 and 19 of the design drawings.

Wetland filling and disturbance associated with stream crossing and proposed roadways connecting the infrastructure area to the landfill total 0.2 acres.

5.3 Site Access Road (Douglas Drive)

The existing 7,000-foot long site access road is appropriate for truck traffic associated with the current soil, rock, and asphalt operations at the site. Modifications to the grade and alignment of the road are required to accommodate safe and efficient travel for the larger tractor trailer trucks delivering waste to the landfill. Modifications include widening the road to allow safe passing of trucks moving in opposite directions, widening turns to accommodate tractor trailer turning wheel motions, flattening certain