

# The New Lake County Central Permit Facility

## “Green Building Site” Design

The new facility incorporates a number of features that makes it the greenest project Lake County has created to date.

**A** Bioswales use native grasses with layers of stone and a custom soil mix to filter and infiltrate stormwater. This helps reduce pollution and the “storm surge” load on the drainage system.

**B** A green roof uses plants to absorb rainfall thereby reducing runoff and pollutants from the roof surface. It also keeps buildings cooler in the hot summer months.

**C** Rain gardens are landscape areas that soak up rainwater and infiltrate it into the ground, reducing runoff and pollution by 55-90%.

**D** Wetland detention basins absorb and filter pollutants from runoff.



## **BMP Project Summary:**

Stormwater Best Management Practices (BMPs) at the Central Permit Facility were designed and constructed to reduce stormwater runoff and pollution to provide cleaner water and to recharge the groundwater aquifer. The practices include a green roof, rain gardens, native plant swales, a bio-infiltration swale and wetland detention basins. Each of the practices individually absorbs rainfall and filters pollutants from stormwater runoff, and together they operate as a collective system reducing the volume of runoff and pollution that reaches Bull Creek and the Des Plaines River. A Section 319 Nonpoint Source Pollution Reduction grant from the IL Environmental Protection Agency and a State and Tribal Assistance Grant from the US Environmental Protection Agency partially funded the site BMP's and green roof. Cost information provided below includes the cost of grading and erosion control in addition to the construction components listed.

### ***Rain Gardens***

Total Area: 42,337 SF      Cost: \$77,567  
Components: 24,168 Plugs (2.5")  
102 Shrubs (3 Gallon)  
1.06 AC Rain Garden Seed Mix

Three rain gardens were installed to infiltrate and filter stormwater runoff from the building and surrounding sidewalks/plazas and the circle drive in the front of the building. The rain gardens are located in the front and on the east side of the building (front and back). They are excavated landscape areas seeded and planted with deep-rooted native plants that soak up rain water and runoff rather than draining off into a stormsewer system that ends up in Bull Creek or the Des Plaines. The native plants filter out stormwater pollutants while their deep roots infiltrate rainfall and runoff.

### ***Bio-infiltration Swale***

Total Area: 4,830 SF      Length: 180 LF      Cost: \$40,915  
Components: 276 CY Topsoil 18"  
54 CY Compost/Mulch  
2,248 Plugs (2.5")

Pollutants from automobiles and surrounding land areas tend to collect on roads and parking lots. When it rains these pollutants are washed into a stormsewer system and end up in our creeks and lakes. The bioswale along the south end of the visitor parking lot was constructed with layers of stone, amended soils and deep-rooted native plants to filter pollutants and to capture and infiltrate stormwater runoff from the lot.

### ***Vegetated Swales***

Total Area: 26,831 SF      Length: 1,350 LF      Cost: \$69,441  
Components: .66 AC Vegetated Swale Seed Mix

Vegetated swales are incorporated as the islands throughout the parking lots to capture and filter runoff. Curb cuts allow the runoff to enter the swales. The swales are seeded with deep-rooted native plants and are designed to collect, absorb and filter stormwater runoff and pollutants from automobiles that collect on the parking pavement. Once the swales are full during a heavy rain storm, the excess runoff is directed to the wetland detention basins.

### ***Wetland Detention Basins***

Total Area w/Buffer: 10.43 acres(445,650 SF)      Normal Water Level Area: 3.4 acres (148,104 SF)      Cost: \$115,499  
Components: 60,610 SF Deep Marsh Planting  
9,028 SF Wet-Mesic Prairie Seed Mix  
376,012 SF Mesic Prairie Seeding Mix

Two wetland design detention basins, one located in the front of the building and one on the western edge serve as the final stormwater collection points for the facility. Approximately 58% of the facility site drains to the larger western basin that is routed to Bull Creek, while the east portion of the site flows to the front basin, which is routed to the mainstem of the Des Plaines River. The wetland basins slow down, evaporate and filter the runoff before it reaches Bull Creek and the Des Plaines. The wetland design includes grids of emergent wetland plants in the bottom of the basin that capture and filter pollutants from the stormwater. The basin side slopes are seeded and planted with deep-rooted native prairie plants that infiltrate runoff and protect the slopes from erosion as the water levels rise and fall following large storm events.

### ***Green Roof***

Total Area: 8,077 SF      Planted Area: 5,959 SF      Cost: Approximately \$330,000  
Components: 1,700 plants  
Roof membrane, insulation, drainage mat, protection board and root barrier  
Roof pavers, planting media, plant material and miscellaneous accessories  
Increased steel structure to support green roof elements  
Concrete roof deck required below green roof assembly  
Plumbing for water supply

The green roof can be viewed and accessed from the second floor of the building. The plants and soil on the green roof absorb rainfall reducing the amount of rain water and pollutants that would typically run off the roof surface to the drainage system in/on the ground below. A special soil mixture that is 8 inches deep provides the growing medium for a variety of small to large plants chosen because they adjust to large swings in temperature and are drought tolerant. The green roof will also help to moderate the temperature of the building keeping it warmer in the winter and cooler in the summer.