Village of Buffalo Grove
Village-wide
Drainage Improvements

by

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Christopher B. Burke Engineering, Ltd
(CBBEL)
• August 2007 – 11.55 inches of rain
  – August 19-24\textsuperscript{th}
    • 6.38 in 5 days
  – August 23\textsuperscript{rd}
    • 2.25 inches of rain from 4pm-8pm
• Runoff \(\approx\) 25-year storm event
• Average August rainfall = 3.4 inches
September 2007
Flood Study Begins

• 138 flood questionnaires returned
• Types of flooding reported*
  – Overland flow down reverse slope driveway (26)
  – Overland flow through windows or doors (37)
  – Seepage and Sump Pump failures (48)
  – Sanitary surcharge (8)
  – Yard and street flooding (33)

*some questionnaires reported multiple flooding types
October 2008 Flood Study Report

- GIS-based categorization of flood questionnaires
- 16 study areas throughout Village
- Causes of flooding:
  - Subdivisions built in the 1960s or earlier
  - Homes and roadways built across overland flow routes
  - Low entry elevations of homes below overland flow routes
- Drainage solutions:
  - Floodproofing of residential structures
  - Drainage system improvements (sewers, swales, storage)
- 4 public meetings
- Concept-level cost estimate = $3.1M
January 2009 – Design Phase Begins

- Village makes commitment to solve flooding
- 12 study areas
  - Regional flooding problems
  - Improvements located on public and private property
- Types of projects
  - Creation of new stormwater storage
  - Upsizing existing storm sewers and culverts
  - New relief storm sewers
  - Creation of overland flow routes
  - Some locations use combination of projects
White Pine Ditch Watershed

1. Weidner Road and Beechwood Road
2. St. Mary’s Parkway
3. White Pine Road

- Arlington Hills Subdivision – 1968
- Cook County
Historic Drainage Pattern

County Boundary

DUNDEE RD

White Pine Ditch Watershed Boundary
Current Watershed Conditions
Design Implementation

- Topographic survey – resident notification
- XP-SWMM model developed calibrated to August 2007 and September 2008 events
- Existing level of flood protection ranges from 5-year to 25-year
- Size improvements to provide 50 to 100-year level of flood protection
Design Implementation

• All improvements must be permittable & cannot create downstream flooding

• Meet needs of Park District, School District and Cook County
  – New under-drain systems in expanded detention basins
  – No safety hazards created on school property

• Developed 50%, 95% and 100% design drawings and hosted resident meetings
March 17, 2010
Buffalo Grove Village-wide Drainage Improvements

Drainage Solutions

- Lake Cook Road
- Arlington Heights Road
- Buffalo Grove H.S.
- Dundee Road
- Buffalo Creek

+3 acre-ft

2'x8' RCBC
36" HDPE

30" HDPE

+10 acre-ft

42" HDPE

5'x7" RCBC

+10 acre-ft
Project Coordination

• Total of 12 drainage projects throughout Village
• Coordination in support of drainage projects
  – Buffalo Grove Park District
  – Buffalo Grove High School District 214
  – Cook County Highway Department
  – Group and individual resident meetings
  – 6 utility companies
  – Permitting authorities
    • Illinois Department of Natural Resource – Office of Water Resources
    • Metropolitan Water Reclamation District of Greater Chicago
    • U.S. Army Corps of Engineers
    • North Cook Soil and Water Conservation District
December 2009
Design Plans Complete

- All 12 study areas combined into 1 plan set
- 10 temporary easements required from residents
- Contract documents modified to require contractor to work continuously in an area until complete
- Restoration requirements
- Engineer’s Estimate of Probable Cost = $2.4M
- Village authorizes bidding December 22, 2009
January 2010
Plans Out to Bid

- 18 bids received by Village
- Bids ranged from $2.6M to $1.8M
- Construction begins March 15, 2010
- Scheduled completion = July 4, 2010