Item #13C:

Village Trustee Marshall

Three Lake Drive Storm Sewer Culvert - Update

06/08/16

David Lothspeich

From: David Lothspeich
Sent: Friday, June 03, 2016 9:14 AM
To: 'Barbara Jonas'
Cc: Sherry Shlagman; Julie Bauer
Subject: FW: Three Lakes Pumping
Attachments: Watermain Improvements 2016 - Construction Notice 05202016.pdf; 9A - Village Trustee Wachs - Three Lakes Drive Leveler Pipe and Management.PDF; ILM proposal sediment removal and pipe modificatoin Three Lakes Ponds 07252013.docx; ILM Three Lakes Subdivision Outlet Pipe (Aptakisic) Review 04012014.pdf; Three Lakes Subdivision - Declaration Of Covenants.PDF; Three Lakes Subdivision Berm Conditions 04022014.pdf

Barbara,

Good speaking with you yesterday.

As follow-up to the various topics that we discussed, please see below:

- Three Lakes Drive Culvert. The culvert under Three Lakes Drive is once again blocked. Due to the head pressure with the west lake being at a higher elevation than the east lake, the County will be assisting the Village by providing a pump to begin pumping water from the west lake to the east lake later this morning/early afternoon. This operation is expected to take a couple of days to be completed. Following the pumping, Ela Township on behalf of the Village will rod or jet the culvert to open it back up. As you know, this is an on-going problem that is occurring more frequently as the lakes continue to silt in raising the bottom of the lakes to the height of the culvert. As a result of the adjacent homeowners not dredging, the culvert is being blocked by silt and other debris. In an effort to bypass this problem, the Village will be considering installing a riser to raise the inlet for this culvert above the silt. Village Engineer GHA is working with the township and Lake County Stormwater to further evaluate this option and costs. GHA is also investigating potential grants to help offset this cost to the Village which may likely exceed $50,000.

  As a result of the level of silt in the Lakes, the culverts on eastern end of the east lake are also at risk. As of a few years ago it was determined that the lower culvert was below the silt level and was not functioning at all. The second higher culvert is subject to the same blockage that the Village's culvert under Three Lakes Drive experiences. The responsibility for the maintenance of the Lakes and these culverts lies with the homeowners that abut the lake and the Village does not know when the homeowners last inspected the culverts. As a result of the lower culvert not functioning, all the Lakes are at an artificially higher level than designed which is increasing erosion along the edges and compounding the silting in of the Lakes. While this too affects the Village's culvert under Three Lakes Drive, the bigger concern is that due to the failure of these eastern culverts, when the water level rises it has found its own way and created an overflow route stream over the dam which may ultimately compromise the integrity of the dam and its ability to hold back the lake water. The homeowners should be maintaining these culverts and having the dam inspected and repaired as necessary to avoid any potential failure. I've attached the various historical reviews for further details.

- Village Watermain Installation. The Village is installing Phase I watermain which will extend public water from the existing watermain at Robert Parker Coffin Road and IL 83 west on Robert Parker Coffin Road to Archer Road and then back South on Old McHenry Road to the intersection of IL 53 and Old McHenry. The construction notice that was hand delivered to the adjacent property owners and emailed to the HOA's and downtown is attached. The existing public water system is served by a deep well and the Village is exploring the possibility of being served by Lake Michigan Water but this decision has not yet been made. This watermain loop will serve the Village's Archer Outlots and the Harbor Chase Senior Living Facility that is under construction. The watermain is designed to be extended into the downtown and the surrounding residential properties if the property owners are interested and willing to pay the costs for connecting and any other improvements to bring

the water into the house(s), etc. The Village has established a $7,000 per RE connection fee based upon the estimated cost of approximately $10,000 per connection with the Village subsidizing the difference in an effort to establish a reasonable connection fee. I believe that most Long Grove houses may be calculated at 2 to 3 RE's which would result in a connection fee of $14,000 to $21,000. For comparison, Herons Landing property owners paid $45,000 per household for public water. This connection fee was based upon estimated costs and may need to be adjusted upward if the actual costs are much higher than estimated. The Village Board will be further evaluating the connection fees as the water system expands. The residences that are along Robert Parker Coffin Road may have the ability to make their water connections directly to this new waterline. The residences that are not along Robert Parker Coffin Road will likely need to install a new waterline (down Three Lakes Drive) to tap into. The residences that cannot connect to the new watermain directly would be responsible for the cost to extend the watermain down Three Lakes Drive plus the connection fees. The Village may assist the residents by setting up a Special Service Area to help the residents finance the cost of the project if the residents make such a request.

Please let me know if there is anything that I missed and/or if you have any questions.

Thanks,

Dave

David Lothspeich
Village Manager
Village of Long Grove, Illinois
847-634-9440

From: Geoff Perry [mailto:gperry@gha-engineers.com]
Sent: Friday, June 03, 2016 6:47 AM
To: David Lothspeich
Cc: Michael Shrake
Subject: Three Lakes Pumping

Morning Dave,

The County will be onsite late morning / early afternoon to begin pumping the "west lake" across Three Lakes Drive to the "east lake." Ramps will be installed so that residents can drive over the 6" line across the road.

Thanks,
Geoff

--
Geoffrey Perry, P.E.
Associate / Senior Engineer
Gewalt Hamilton Associates, Inc.
625 Forest Edge Drive

1. THE LAKE LOTS. As an aesthetic benefit to the entire Lakes of Long Grove Subdivision and as a recreational benefit to certain lots, Developer will construct and develop three separate lakes in the Lakes of Long Grove Subdivision. Each lake will be constructed upon and cover portions of the following lots of the Lakes of Long Grove Subdivision (hereafter sometimes collectively called the "lake lots"):

First Lake:	Lots 1, 2, 3, 4, 7,8 and 9;
Second Lake:	Lots 28, 29, 30, 31, 33, 34, 36, 37, 38, 39, 40 and 41;
Third Lake:	Lots 17, 18, 19 and 20.

When constructed, each lake will be intended for the exclusive use and enjoyment of the owners of the lots upon which the lake is partially constructed. The portions of the lake lots not covered by the waters of the lake will form a common shoreline around the lake. To provide for the orderly use and enjoyment of each lake, the following easements are hereby declared which shall be binding upon the owners of the lake lots upon which each lake is constructed:

A. The owner of each lake lot as designated above hereby grants a reciprocal easement for the use and enjoyment of that portion of a lake situated upon the Owner's lot to each of the owners of lots upon which the same lake is constructed, and their respective guests and invitees. All owners of lake lots for the same lake, their guests and invitees, shall have the right to use the entire lake for swimming, boating and fishing.

B. No motor powered boats of any type shall be used at any time upon any of the lakes of the Lakes of Long Grove Subdivision. In addition thereto either the Village of Long Grove or the Long Grove Fire Prevention District may withdraw water from any of said lakes whenever necessary for fire control.

5. MAINTENANCE: Developer agrees on its behalf and on behalf of the subsequent owners of any of the lake lots as hereinabove designated, that each lake shall be maintained by the owners of the lake lots surrounding such lake, at their expense, including without limitation in such maintenance, mosquito abatement and control, and necessary dredging.

Integrated Lakes Management, Inc.
Lake and Pond Management
Restoration • Consulting

July 24, 2013

Mr. Dave Lothspeich
Village of Long Grove
3110 RFD
Long Grove, IL. 60047

Subject: **Water Conveyance Modification/Pond Sediment Removal**

Mr. Lothspeich,

Pursuant to my evaluation of the site and our subsequent communications, I have gathered the following information relating to modifications to existing storm water BMP's in the Village that are intended to allow function as designed. It is important to note most ponds that were created as part of a planned development exist to regulate the flow of water to receiving bodies, and to act as a sedimentation basin so that the receiving waters do not become impaired. Routine maintenance of these storm water retention ponds is required for them to function properly.

There is a short-term need to remove sediment and modify conveyance piping so that water flows above NWL are transported without impediment. To achieve this, the 'leveler pipe' going under Three Lakes Drive can be extended into a newly installed 4' diameter concrete structure, with the elevation of the top of the structure being an acceptable NWL. This would keep all sediment that the pond is designed to retain from entering and settling in the pipe. The budget cost for this work (including design and permitting) is $16,400.

To accomplish this, some amount of sediment in the area of the leveler pipe and the site of the proposed concrete structure must be removed and the work area must be accessible (i.e. not below a water surface). Lowering of the pond level is required by pumping water around the work site. The cost to remove, haul, and dispose of a limited amount of wet material (less than 50 cubic yards) is $70/cubic yard. A savings of up to 50% of this cost can be realized if there is an approved suitable site within the Village for the removed sediment.

The cost for sediment removal from any of the entire Three Lakes system is a function of volume to be removed, accessibility, weather the work is done mechanically (requiring the pond to be pumped down) or hydraulically (where the pond levels and the pond function is unaffected by the sediment removal operation. In the Sediment Report dated May 2, 2013, we calculated the volume of sediment in all three ponds to be approximately 15,000 cubic yards, with approximately 12,000 cubic yards targeted for

removal. Specialized equipment can effectively remove sediment in high priority areas such as the leveler pipe area, which we feel would require the removal of approximately 50 cubic yards.

To remove and dispose of 50 cubic yards of sediment, pump down the pond level, obtain necessary permits (requiring some design work), and provide/install concrete structure and leveler pipe extension would be $20,400.

The cost to remove and dispose of sediment from the area described as the 'far east side of the lake…where it empties toward IL 82 & Aptikisic Rd.) is $110/cubic yard with the price being different as a result of accessibility.

The sediment that has accumulated in the pond is either carried in by the water from off-site, or a result of eroded/failing adjacent shorelines. In many cases, efforts to remove sediment from lakes and ponds are simultaneous with programs to stabilize or repair shorelines that are likely to contribute to future sediment accumulation.

Shoreline repair costs vary from $15/linear foot for simple seeding with native plants, matting, and two years of maintenance to upwards of $200/linear foot for frontages that require grading, armoring, planting, or geo-engineering techniques. We can refer you to several publications on this topic. The importance of engaging waterfront property owners in enlightened and responsible shoreline management is illustrated by the grants that are available for this work that ultimately leads to improved water quality.

Integrated Lakes Management, Inc. handles all aspects of lake and pond management. We are happy to meet with you, elected officials, homeowners, or others to discuss our recommendations and various options. Please let me know if you have any immediate questions.

Sincerely,

Keith Gray

cc: Sandy Kubillus

Integrated Lakes Management, Inc.
Lake and Pond Management
Restoration ▪ Consulting

April 1, 2014

Prabir Sen-Gupta
The Lakes of Long Grove
4148 Three Lakes Court
Long Grove, IL 60047

Re: The Lakes of Long Grove Outlet Structure Investigation

Dear Mr. Sen-Gupta,

Thank you for meeting with me and our partner, Biedyboys Construction and Excavating (BCE) on March 31, 2013. A brief summary of the project to date, and the findings of our site visit are described below, along with recommended next steps.

During the flooding of April, 2013, residents living along the South Basin indicated that flood waters from the lake backed up into their homes, causing property damage. Integrated Lakes Management (ILM) was asked to conduct a sediment probing study of the lakes to determine if sediment accumulation had caused the flooding. ILM presented the findings to the residents of The Lakes of Long Grove, indicating that sediment had accumulated throughout the lakes, and was potentially restricting flow in the culvert beneath Three Lakes Drive.

It was initially presented to ILM that the current water level in the lakes was the designed normal water level (NWL). Conversations with the Village of Long Grove, and property owners indicated that the culvert beneath Three Lakes Drive has been submerged below the water surface as long as all residents and Village personnel can recall.

The residents asked ILM to present cost estimates to remove sediment and clean out this culvert to improve flow through this culvert, with the goal of reducing future flooding. Cost estimates were developed and presented on July 24, 2013, September 24, 2013, and March 4, 2014 that included varying degrees of sediment removal, and installation of a concrete drop structure at the NWL at the "up-stream" end of the culvert to reduce further sedimentation within the culvert.

During a meeting with Village of Long Grove personnel and interested residents on March 17, 2014, ILM received the Record Drawings of the Lakes of Long Grove development from the Village of Long Grove. Upon review of the Record Drawings, it was observed that installation of a concrete drop structure on the west side of Three Lakes Drive would not be feasible, as the original designed NWL was at the invert (base) of the culvert beneath Three Lakes Drive, rather than above the culvert as had been indicated to ILM. The Record Drawing is attached as Exhibit A.

Discovering that the current water level in the lakes was above the designed NWL, ILM looked to the outlet of the East Basin to determine what was causing the current water level to be approximately 4.5-feet higher than NWL.

On March 31, the outlet on the north end of the East Basin was inspected. It should be noted that ILM and BCE are not Professional Engineers that can certify the integrity of structures such as levees and dams. However, we offer the following assessments based on our professional experience and understanding. Plan and profile drawings of the observed conditions are included with this letter.

Levee/Berm Condition – The levee, or berm on the north end of the East Basin is in poor to very poor condition. Seepage was evident along the entire base of the berm. Woody vegetation and trees were observed to be growing on top of and on the embankments. Numerous animal burrows were observed in the berm. Approximately halfway along the top of the berm, an eroded spillway was observed. The spillway did not appear to be a designed structure; rather, it appeared to have formed over time as a result of erosion along the top of the berm. A photo of the eroded spillway is included as Exhibit B. The water level on March 31, 2014 was very near the top of the berm. The eroded spillway was serving as the primary water control structure.

High Water Level Drainage – The Record Drawings show a concrete weir detail as the proposed high water overflow structure. During our site visit, a weir structure was not observed. Instead, an approximately 12-inch reinforced concrete pipe at the estimated high water level was identified. The inlet of the pipe was not protected with a grate, and was plugged with woody debris and leaves. A photograph of the high water level drainage inlet is included as Exhibit C. The outlet of the high water level drainage pipe did not have an outfall apron. While inspecting the outlet of the pipe it was observed that water was seeping around the outside of the pipe, and was not flowing through the inside of the pipe. When debris was manually cleared from the pipe inlet, water began draining freely through the high water level drainage pipe, indicating that this pipe is not plugged internally.

Normal Water Level Drainage – A second, approximately 12-inch reinforced concrete pipe that appeared to the primary NWL outlet structure was observed approximately 50-feet east of the high water level drainage pipe. There was no drainage present inside, or along the outside of this pipe. The spillway apron at the base of the pipe had been pulled away from the rest of the pipe by approximately 3-inches. A photograph of the outlet of the NWL pipe is included as Exhibit D. Based on the notes on the Record Drawing, the inlet of the NWL outlet pipe is approximately 4.5-feet below the current water surface.

State Route 83 Drainage - The drainage inlet beneath St. Rt. 83 was observed to be in poor to very poor condition. Woody debris from fallen trees was scattered around the inlet. A significant area of erosion, potentially caused by a broken drainage culvert was observed in the St. Rt. 83 embankment. This erosion may affect the integrity of the roadway if not addressed soon. The woody debris and poor condition of the inlet structure appeared to be backing up water at the base of the East Basin berm, and had created a wetland with standing water at the time of our visit. Wetland delineation flags were observed around the area at the base of the berm. Photographs of the St. Rt. 83 inlet pipe are included in Exhibit E.

Conclusions

The berm on the north end of the East Basin was not designed to retain water at the current water level for extended periods of time. Based on discussions with residents, it is thought that the water has been at the current level for over 10-years. The current water level is approximately 4.5-feet above the NWL.

The berm is showing signs of failure, evidenced by the seepage at the base, animal burrows, woody vegetation growth, and eroded spillway. If this berm is compromised, either during a high flow flood event, or by loss of structural integrity of the berm, all water currently in the lakes will be lost, and a costly repair will be necessary to restore the berm and lake level.

Flooding in the South Basin during April 2013 was likely due to the lack of flood retention capacity within the drainage system, and the submerged, and likely restricted flow beneath Three Lakes Drive.

Recommended Next Steps

Residents need to mobilize to address the high water level situation as soon as possible. The high water level has caused the lakes to lose their flood retention capacity, and is compromising the integrity of the retention berm. If the berm is compromised, the cost to repair and replace the berm will greatly exceed any maintenance or drainage pipe repair costs.

The first step for in addressing the drainage pipe repairs is to identify the source and location of the blockage in the NWL drainage pipe which drains toward St. Rt. 83. The source of the blockage can be determined by sending a camera up the drainage pipe. The camera will allow us to determine the condition of the pipe, the location of the lower end of the blockage in the pipe, and potentially the cause of the blockage. Having this information will allow us to determine if the blockage is located within the berm, or beyond the berm, beneath the water. The cost to send a camera up the pipe is $550.

Once the location of the NWL drain blockage is known, repair work can begin. If the blockage is determined to be beneath the water, and the pipe is in good condition, ILM proposes that an excavator be brought in to try breaking off the plugged area of the pipe in the water, allowing water to gain entry into the pipe. The excavator would work to clear debris from the pipe until the water level reaches the NWL. Once the NWL is achieved, the broken pipe would be repaired, and a grated inlet structure would be installed. The existing eroded spillway would be repaired with gravel, clay, and geotextile, to prevent further erosion.

If the camera investigation indicates that the pipe is in poor condition, or the plug is within the berm, the effort to repair the drainage outlet is significantly increased. Pumps will be necessary to drain the lake down to, or below the NWL. Once the water level is at or below the NWL, the existing drain pipe can be excavated out of the berm, and a new drain pipe, inlet, and outfall apron can be installed. The existing eroded spillway would be repaired with gravel, clay, and geotextile, to prevent further erosion. The cost of this repair work is not known at this time due to the potential permitting, design, and construction uncertainties.

All woody vegetation that is currently growing on the berm should be cut and removed, to reduce the risk of berm failure. The roots of woody vegetation create flow pathways for water to pass through the berm, causing seepage and loss of structural integrity.

The storm water inlet under St. Rt. 83 should be repaired as soon as possible. BCE has contacts with the Lake County Department of Transportation (DOT), and will notify them of the

conditions we observed. ILM encourages the Village of Long Grove to also make the Lake County DOT aware of this condition so that repair work can begin as soon as possible, so the St. Rt. 83 road embankment is not compromised, and water can flow away from the base of the berm when discharged.

The recommendations above may only reduce the risk of the berm being compromised, not eliminate the risk. If the landowners wish to engage an engineer who is certified to certify the integrity of these types of structures, ILM can reach out to our Engineering partners to expedite the project.

Once the water level is returned to the NWL, the lake is likely to look very different than it currently does, and it is likely to be smaller in surface area, and shallower. The elevated water level has caused significant erosion along the banks, as areas that were graded and designed to be above water during normal conditions have been submerged for more than 10 years. These areas and the current lake shoreline have eroded, leading to the heavy sediment deposits noted by ILM. The exposed banks should be stabilized with vegetation to reduce further erosion and sedimentation into the lake.

Based on the Record Drawings, the invert (base) of the culvert beneath Three Lakes Drive is at the NWL, as described above. When the water level returns to the NWL, The culvert should be self-cleaning when water flows through it, and should not accumulate additional sediment that would restrict flows between the South Basin and the East Basin.

The changes in the lake appearance and repair costs must be weighed against the risk of additional flooding damages, and the potential cost associated with repairing the berm should it experience a total failure, draining the entire lake system. If the berm were to fail, the landowners would be responsible for any downstream property damages, as well as repair of the structure to restore the area to approved storm water discharge volumes.

At this time, our role has changed from that of a contractor providing pricing for proposed work to serving as a technical advisor/consultant. ILM is providing the information included in this letter to the residents of the Lakes of Long Grove as a courtesy based on our prior relationship. Any future technical advisor or consultant work will need to be billed to the client on a time and materials basis at our standard hourly rate of $120.

If you have any questions, please contact me at 847-244-6662. We look forward to continuing to work with you to resolve the issues related to your lakes and their maintenance.

Sincerely,

Bill Santelik, PWS
Integrated Lakes Management

cc: Bill Biedermann, Biedyboys Construction and Excavation
David Lothspeich, Village of Long Grove

Exhibit A. (See attached large-format drawing)

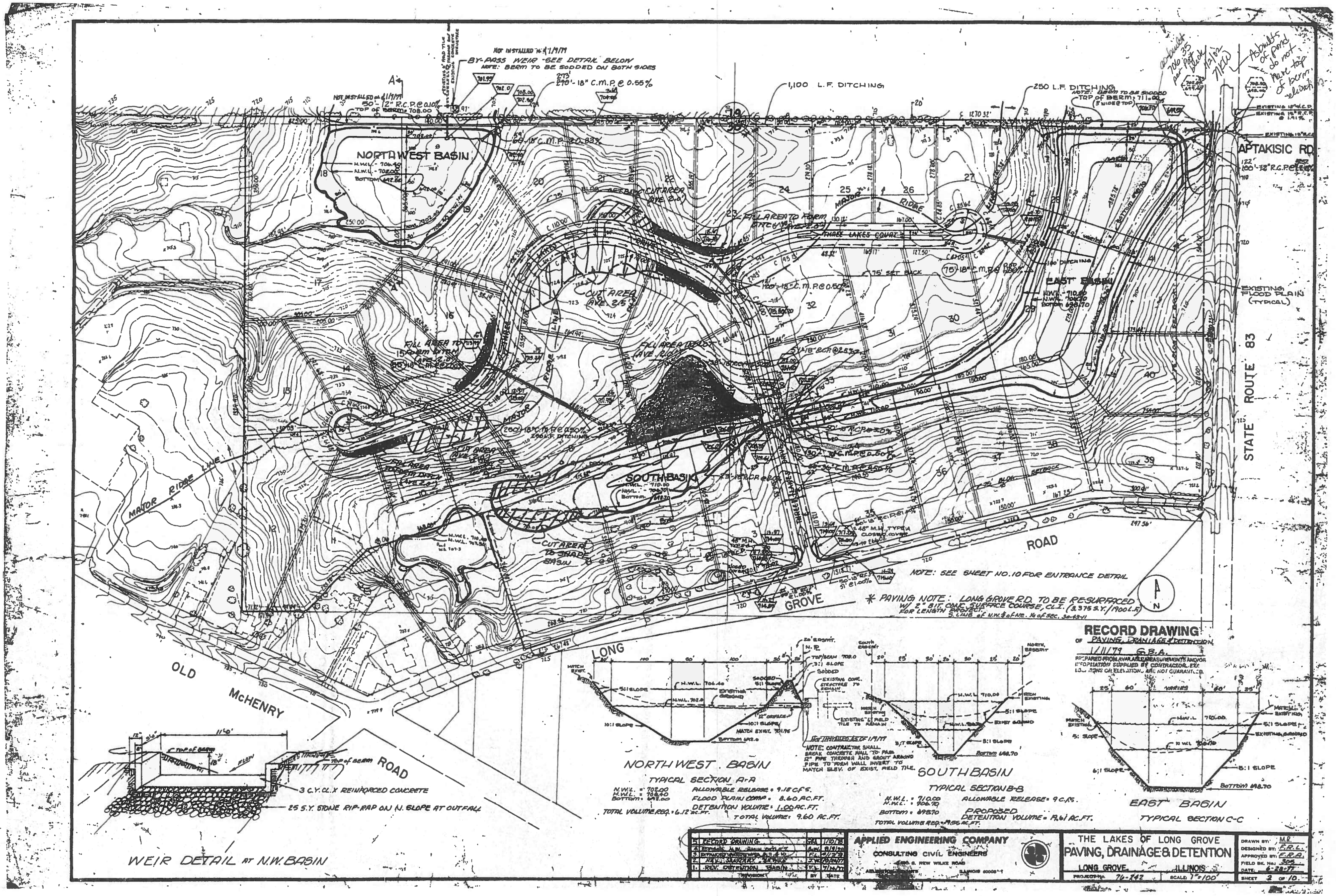

NORTHWEST BASIN
SOUTH BASIN
EAST BASIN
THREE LAKES COURT
APTAKISIC RD.
STATE ROUTE 83
LONG GROVE ROAD
OLD McHENRY ROAD
MAJOR RIDGE LINE
1,100 L.F. DITCHING
250 L.F. DITCHING
EXISTING FLOOD PLAIN (TYPICAL)
BY-PASS WEIR - SEE DETAIL BELOW
NOTE: BERM TO BE SODDED ON BOTH SIDES
NOTE: SEE SHEET NO. 10 FOR ENTRANCE DETAIL
* PAVING NOTE: LONG GROVE RD. TO BE RESURFACED W/ 2" BIT. CONC. SURFACE COURSE, CL.I. (3375 S.Y.) (1900 L.F.) FOR LENGTH PROJECT.
RECORD DRAWING
OF PAVING, DRAINAGE & DETENTION
1/11/79 G.B.A.
NORTHWEST BASIN
TYPICAL SECTION A-A
N.W.L. = 702.00
H.W.L. = 706.40
BOTTOM = 692.00
ALLOWABLE RELEASE = 9.15 C.F.S.
FLOOD PLAIN COMP. = 8.60 AC.FT.
DETENTION VOLUME = 1.00 AC.FT.
TOTAL VOLUME REQ. = 6.12 AC.FT.
TOTAL VOLUME: 9.60 AC.FT.
SOUTH BASIN
TYPICAL SECTION B-B
N.W.L. = 710.00
H.W.L. = 706.70
BOTTOM = 698.70
ALLOWABLE RELEASE = 9 C.F.S.
PROPOSED DETENTION VOLUME = 7.61 AC.FT.
EAST BASIN
TYPICAL SECTION C-C
5:1 SLOPE
6:1 SLOPE
WEIR DETAIL AT N.W. BASIN
3 C.Y. CL.X REINFORCED CONCRETE
25 S.Y. STONE RIP-RAP ON N. SLOPE AT OUTFALL
APPLIED ENGINEERING COMPANY
CONSULTING CIVIL ENGINEERS
THE LAKES OF LONG GROVE
PAVING, DRAINAGE & DETENTION
LONG GROVE, ILLINOIS
PROJECT No. 76-242
SCALE 1" = 100'
SHEET 2 OF 10

Exhibit B.

Exhibit C.

Exhibit D.

Exhibit E.

Exhibit E.

Exhibit E.

GHA GEWALT HAMILTON ASSOCIATES, INC.
CONSULTING ENGINEERS

625 Forest Edge Drive, Vernon Hills, IL 60061
TEL 847.478.9700 ■ FAX 847.478.9701
www.gha-engineers.com

May 20, 2016

Re: Construction Notice
2016 Watermain Improvement Project
Village of Long Grove

Dear Village of Long Grove Business Owners, Merchants and Residents:

On behalf of the Village of Long Grove, we would like to notify you that Glenbrook Excavating & Concrete, Inc. will soon begin work on the Village's 2016 Watermain Improvement Project.

This project will include the installation of watermain at the following locations:

- On the northerly side of Old McHenry Road from IL Route 53 to Archer Road
- On the eastern side of Archer Road from Old McHenry Road to Robert Parker Coffin Road
- On the northerly side of Robert Parker Coffin Road from Archer Road to Three Lakes Drive
- On the southerly side of Robert Parker Coffin Road from Three Lakes Drive to IL Route 83

The watermain on Old McHenry Road and Robert Parker Coffin Road will be located within the grass areas adjacent to the road, with the exception of the pavement crossing on Robert Parker Coffin Road near Three Lakes Drive. The watermain on Archer Road will be located under the pavement on the eastern (northbound) side.

We recognize there may be times of inconvenience for you while the crews are working, but we do not expect any of the roadways to be fully closed at any time during construction. However, there will be times the roadways will be limited to one-lane. Transportation and mail will continue to run regular routes.

The contracted completion date for this project is September 16, 2016.

If you should have any questions concerning this work, please contact Joe Cascella at 847-418-0653, myself at 847-478-9700 or you can contact the Village Hall at 847-634-9440.

Sincerely,
Gewalt Hamilton Associates, Inc.

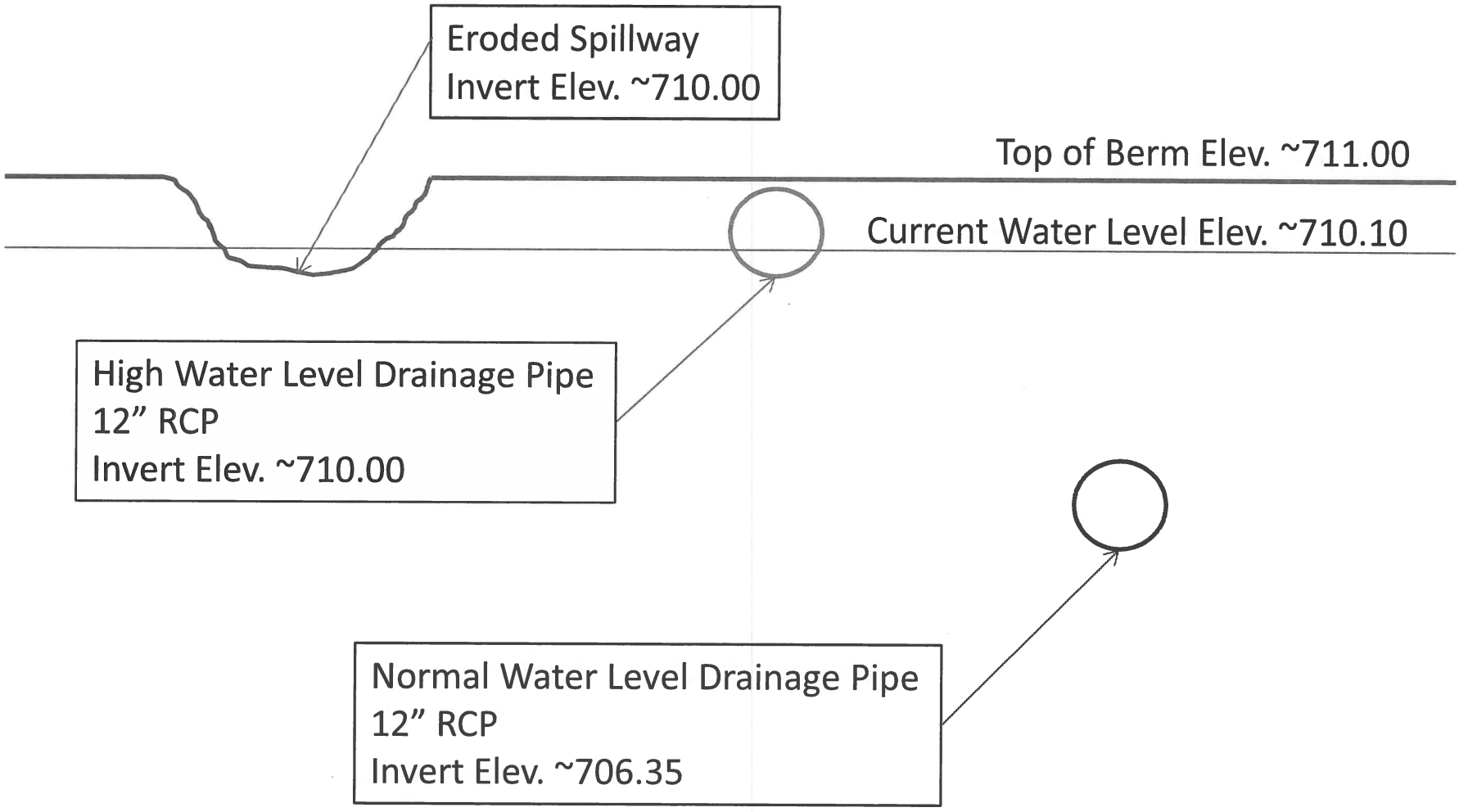
Geoffrey Perry, P.E.
Assistant Village Engineer

3600 I-70 Drive SE, Suite E, Columbia, MO 65201 ■ TEL 573.397.6900 ■ FAX 573.397.6901

2016 Watermain Improvements Project

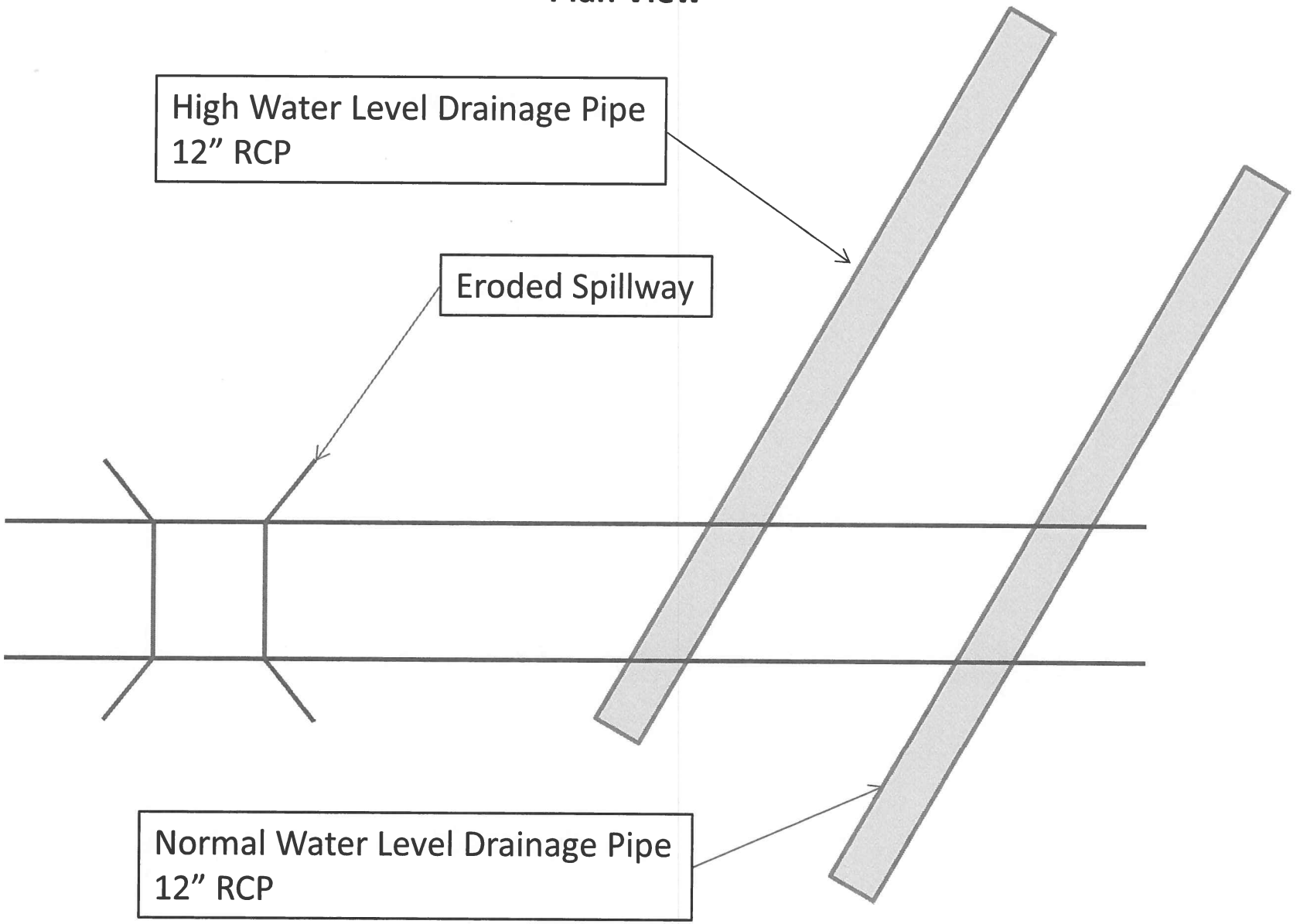
Water Service Areas
Long Grove, IL

Profile View



Integrated Lakes Management, Inc. April 1, 2014

Plan View



Integrated Lakes Management, Inc. April 1, 2014