

MEMORANDUM

To: Village President & Board of Trustees
c/o Gregory Jackson, Village Manager
Village of Long Grove

Fr: Geoffrey L. Perry, P.E., Village Engineer

Date: April 26, 2023

Re: Drainage Summary & Recommendations
7054 Osage Road / Lot 46 Fred & Russell Towner's Subdivision
Village of Long Grove

As you are aware, there are several areas of poor drainage in the Fred & Russell Towner's Subdivision ("Towner's"), located at southwest of the intersection of IL Route 60/83 and IL Route 83. These drainage concerns have been brought to the Village's attention by several residents over several years, most recently by the owner of 7054 Osage Road, Joe Tuidier. This memorandum summarizes the concerns, actions the Village has taken to date, and recommendations on future action items.

History:

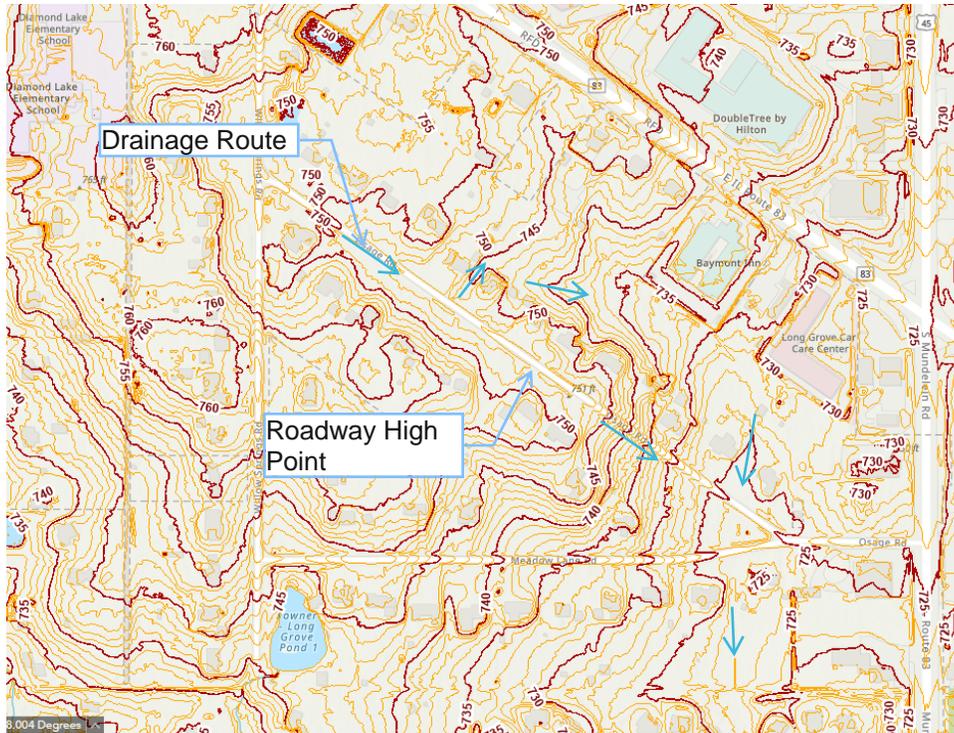
Towner's was developed in three phases, with the Plats of Subdivision recorded in 1951, 1952 and 1954, in unincorporated Lake County. As Long Grove was not incorporated until 1956, the Village was not a party to the review and approval of either the Plats of Subdivision or the engineering plans (which are not available).

Towner's was developed with a rural road cross section and open ditches to convey drainage. Based on our experience, this was common in the 1950's and subdivisions developed in this time also used existing drain tiles to assist in the management and conveyance of stormwater runoff.

Current subdivisions, specifically in regard to stormwater management systems, are developed under the Lake County Watershed Development Ordinance ("WDO") requirements, which were first adopted on October 18, 1992. The WDO does not require either curb and gutter or storm sewers; it still allows for drain tiles to be used for stormwater management and conveyance. Drain tiles are now required to be evaluated for suitability in the use of developments, however, and these requirements were not in place during the development of Towner's. As such, mapping of drain tiles in Towner's is unknown.

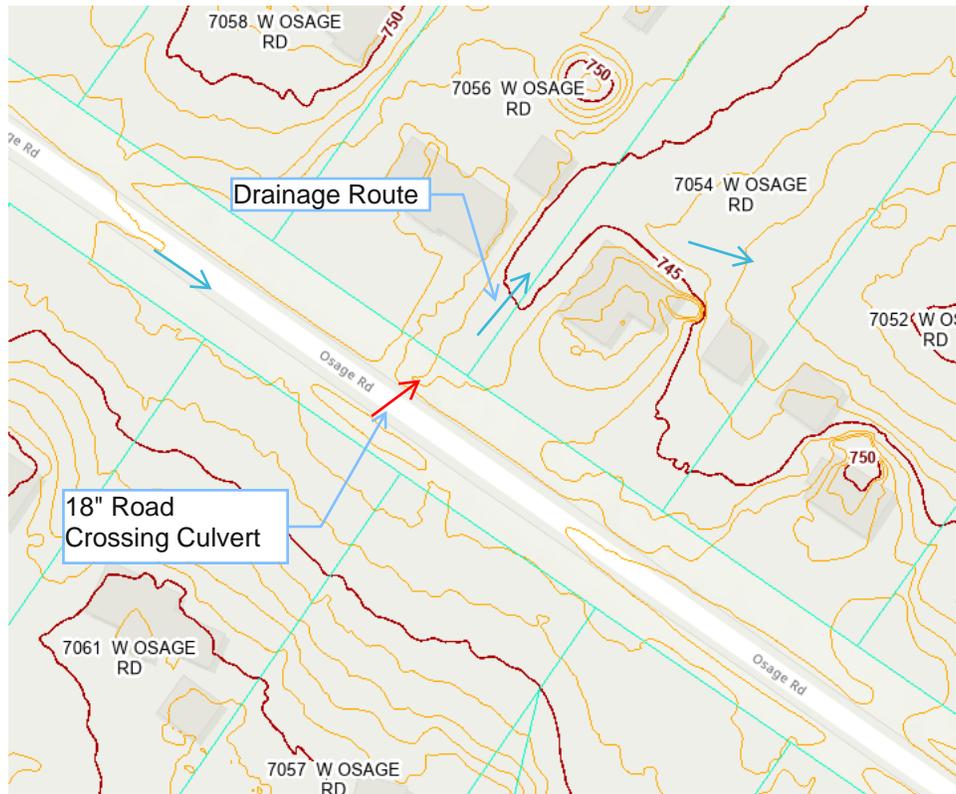
Existing Drainage Patterns:

In general, stormwater in Towner's is conveyed from west to east, and then south to the Ravenna East Subdivision. Towner's receives stormwater runoff from areas outside the boundaries of the subdivision, including properties that abut the southerly side of IL Route 83 and a small area west of the subdivision. Most of these offsite areas are within the Village of Mundelein municipal limits. The 2017 aerial topography is shown below:



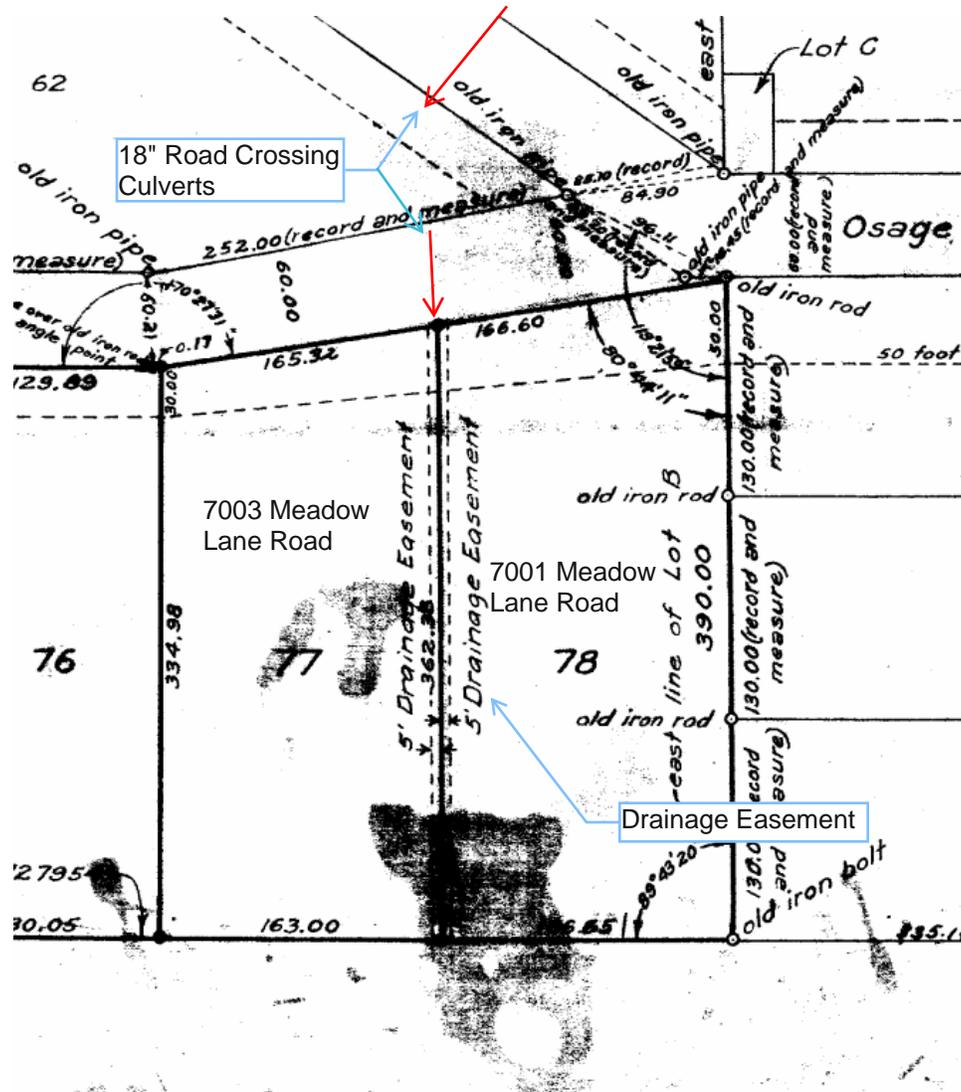
Osage Road, and the parkway, convey drainage southeasterly from Willow Springs Road, to an existing 18" diameter culvert that discharges flows into the sideyard of 7056 Osage Road and 7054 Osage Road. As shown by the aerial topography, there is a high point on Osage Road (in front of 7050 Osage Road) that prevents the roadside swale from continuing southeasterly.





From that point, runoff flows southeasterly through the rear yards and ultimately to the “Y” intersection of Osage Road and Meadow Lane. Then, runoff flows south through a swale along the common sideyard of 7001 Meadow Lane and 7003 Meadow Lane Road to Ravenna East.

In reviewing the Plats of Subdivision, there are no recorded easements northerly of Osage Road. There is a recorded easement along the common sideyard of 7001 Meadow Lane and 7003 Meadow Lane Road. This easement is a 10-foot wide “Drainage Easement.” The plat does not contain, or assign, any requirements/obligations for the maintenance of the drainage easement.



The owner of 7054 Osage Road has also stated there is abnormal flow emanating from 7067 Willow Spring Road. There is a pond in the rear yard of 7067 Willow Spring Road that was recently manicured with a plastic liner placed along the sides of the pond. The liner was not placed, or allowed to be placed, in the bottom of the pond. Stormwater runoff in the pond is still able to infiltrate into the ground. This pond receives stormwater runoff from west of Willow Spring Road and offers some attenuation of the runoff before being discharged to Osage Road. This pond was not designed to be a stormwater detention pond in the subdivision as it is not present in the 1961 aerial.

Previous Village Actions:

American Underground Investigation

In 2019, the Village contracted with American Underground to gain information regarding the drain tile that is on/around 7040 Osage Road. American Underground placed chemically inert dye in the storm structure at the northwest corner of 7044 Osage Road, which is the upstream end of a drain tile. After some time (over ½ hour), the dye percolated the ground on the western side of 7040 Osage Road, the driveway of 7040 Osage Road and the ditch on the southerly side of Osage Road. The end of the drain tile was not observed on November 22.



Baymont Hotel Drainage

517 Illinois Route 83, lots 30 and 31 of the Towner's Subdivision, are currently developed with the Baymont Inn Hotel. This property is in the Village of Mundelein. On several occasions, residents have stated that drainage from the hotel is contributing/causing the drainage issues in the eastern portion of the Towner's Subdivision.

In July 2019, our office obtained the design plans for the hotel, which were prepared by Craig S. Phillips & Associates, Inc. and last revised September 30, 1987. Based on our review of the hotel plans, the drainage pattern of the site was unchanged by the development. The drainage pattern is generally north to south, with the southeasterly corner of the site being the low point. Drainage from the hotel parking lot is collected in an oversized storm sewer, i.e., detention, system that outlets through a 2.6" diameter restrictor to the southeast corner of the site. This is also the northwest corner of 7044 Osage Road.

Lake County Stormwater Management Commission Evaluation

The owner of 7044 Osage Road contacted the Lake County Stormwater Management Commission ("LCSMC") in 2020 regarding the drainage in this area. The response is included at the end of this memorandum. In summary, the LCSMC concluded that this is a large "puzzle" with overflow routes that were designed prior to the WDO and that "no one development is responsible for the land surface contours."

Meadow Lane Culvert Cleaning and Ditching

In late spring / early summer 2018, Ela Township ensured the culvert under Meadow Lane (approximately 100-feet west of Osage Road) was clear of any blockages and accumulated sediment. As part of their work, Ela Township removed any accumulated sediment in the ditch line within the Village rights-of-way, upstream of the culvert. Their work was successful in restoring the Village right-of-way; however, the right-of-way cannot drain properly until the sideyard of 7001 / 7003 is re-graded; see above.

Drainage in 7054 Osage Road Rear Yard:

As noted above, drainage from Osage Road enters the sideyard of 7056 and 7054 Osage Road and then flows through the rear yards, southeasterly. There is not a defined drainage path in the rear yards, resulting in large, saturated areas that remain saturated for long periods of time.

The owner has stated there is a drain tile in their rear yard that services to drain the rear yard, which appears to be 4" diameter. Currently, there are pump discharge hoses that convey water from the sideyard and discharge into a shallow drainage structure, on the drain tile, located along the northeasterly property line of 7052 Osage Road.

Analysis:

The following analysis and options are based on engineering considerations affecting Towner's and does not factor in ownership or responsibility for action under applicable drainage law.

There are known drain tiles in the rear yards of the houses on the northerly side of Osage Road. Both the routing and conditions of the drain tiles are unknown. In addition, the drain tiles have limited capacity as they are approximately 4" diameter. The drain tiles could service the rear yards with limited capacity; however, as the existing culvert under Osage Road leading to the rear yards is 18" diameter, the drain tiles will not service the larger rain events.

The swales along Osage Road, between Willow Springs Road and the 18" culvert have been filled in and have minimal drainage slope. After recent rain events, these swales were filled with stormwater runoff that took multiple days to drain/dry.

In efforts to offer relief to the Osage Road rear yard saturation and drainage, both short-term and long-term improvements can be considered. In the short term, our office recommends a full mapping of the drain tile system to show the routing, depth and condition. Based on the mapping, damaged sections of the drain tile should be repaired/replaced and the drain tile may be extended to offer additional low-flow relief. An estimate for the cost of mapping the drain tile system is \$3,000.

As noted, the drain tile system is limited to low-flow conveyance. To minimize stormwater drainage into the rear yards during heavy rain events, the swale on the southerly side of Osage Road would need to be regraded to bypass the 18" road crossing culvert to convey drainage to the "Y" intersection of Osage Road and Meadow Lane. This would keep runoff in the Osage Road right-of-way. In review of the aerial topography, regrading the swale is not feasible in the right-of-way due to the high point of Osage Road identified above. As an alternative to a full regrading of the swale, a 12" pipe could be installed to convey runoff "under" the high point of the road. A schematic sketch of this improvement is attached and an estimated cost is \$100,000.

The 12" pipe improvements would offer additional flow capacity along the south side of Osage Road but that pipe will also have limited capacity. As shown on the exhibit, the 18" road crossing culvert would remain as an overflow pipe. Note, the invert of the new 12" pipe would be approximately 9" lower than the 18" road crossing culvert to direct flows to the 12" pipe in light-to-moderate rain events.

Another drainage option is to remove the 18" road crossing culvert and install large drainage pipes on both sides of Osage Road to convey drainage to the "Y" intersection. This option includes regrading the parkway to provide a 1.5% drainage slope and 24" diameter pipes on both sides of the road. This is the most costly option, with an estimated cost of \$500,000.

Another component of the drainage from 7067 Willow Spring Road is a potential dewatering of the indoor swimming pool. Dewatering of swimming pools is required to drain to sanitary sewers; however, it is not uncommon to dewater them into drainage routes.

Importantly, the limitations of the current drainage system in Towner's are unrelated to public roadways. Rather, they arise from conditions of, and the drainage features (or lack thereof) located upon private property. As a result, the Village has no current obligation to remedy what residents perceive to be the drainage problems within Towner's.

Recommendations:

As there are no recorded easements in the rear yards of the properties on the northerly side of Osage Road, the drainage in the rear yards is a private matter. Although runoff enters the pond in the rear yard of 7067 Willow Spring Road that discharges to Osage Road, this is consistent with the established drainage pattern. Stormwater runoff is allowed to travel downhill and is protected by Illinois Drainage Law and the WDO. Servient properties (those lower in elevation) must accept runoff from dominant properties (those higher in elevation).

Our office recommends the Village evaluate the policy component of this drainage issue. As there are no drainage easements in the rear yards, the Village does not have a current obligation to address the saturated water in the rear yards.

Should the Village and/or owners wish to pursue relief in the rear yards, we recommend the owner's first have the drain tile system mapped to confirm location, elevation and condition. Once mapped, the system can be assessed for any needed repairs.

Next, should the Village and/or owners wish to pursue relief in the rear yards, the Village could consider pursuing the 12" diameter pipe on the southerly side of Osage Road. This pipe is certainly not required from a topographical or drainage system perspective, but it could help retain stormwater runoff in the Osage road right-of-way during low-to-moderate rain events. Importantly, the 18" road crossing culvert, in front of 7054 Osage Road needs to remain as an overflow pipe, meaning stormwater runoff will continue to flow into the rear yards during heavy rain events.

Based on the magnitude of the drainage issue, the fact that it impacts multiple properties and jurisdictions, and that structural flooding has been documented, this project is likely a good candidate for grant funding. One possible source is through the LCSMC. Annually, the LCSMC awards grants up to \$50,000 to eligible drainage projects; this program is a 50/50 match.

There are likely additional funding sources; however, the Village should consider the policy aspect prior to pursuing these options.

Lastly, with regards to the statement regarding the swimming pool discharge from 7067 Osage Road, the Village should confirm the pool was properly permitted and being drained properly. As part of this analysis, the runoff from the property can be sampled for chlorine residual.