ASCE Illinois Section

# News

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# Projecting the Precipitation Events of the Future

*Written by Jerome F. McGovern, P.E.*

## INTRODUCTION

Water resource engineers use precipitation data to conduct flood studies and to determine the sizing of detention basins and storm sewers. The precipitation data to use is given by the authority that will review and issue a permit for the proposed improvement. Currently in Northeast Illinois the Illinois State Water Survey's Bulletin 75 is the standard for precipitation data. This article will discuss the development of Illinois State Water Survey (ISWS) Bulletin 75 and previous sources of precipitation data and the development of ISWS Bulletin 76 which provides a projection for future precipitation events.

### IDF Curves

Intensity Duration Frequency (IDF) curves are used to provide data on precipitation events in a specific geographic area. IDF curves for Northeast Illinois would not be the same as IDF curves for South Florida. Initially, IDF curves were developed for specific urban areas that had a history of precipitation data from weather recording stations. The United States Weather Bureau's (USWB) Technical Paper 25, issued in 1955, was one of the first to provide IDF curves for major cities in the United States. In 1961 the USWB issued Technical Paper 40 (TP 40) which provided IDF curves for the entire continental United States. While TP 40 provided data for the entire U. S., it was more general than specific and required interpolation and judgement in determining precipitation in geographic areas between the delineated curves.

In the 1980's the ISWS believed that TP 40 did not provide accurate data for the state of Illinois and undertook a study of precipitation events and produced Bulletin 70 that had substantially greater precipitation events than TP 40. Bulletin 70 was based upon data from 63 recording stations from 1900 until 1983. Bulletin 70 also divided the state into 10 geographic sub-areas and made projections for each sub-area. Bulletin 70 was issued in 1989 and was adopted piecemeal as

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## President's Notes

**Thomas Janicke, P.E., S.E.**

As we transition into the fall season, a new school year, and other markers that come with the end of summer, I am happy to share my final President's Notes for my 2024-2025 term as the Illinois Section ASCE President. We are excited to be hosting the IS-ASCE Annual Awards Dinner on October 30th where we will be installing the 2025-26 IS Board and celebrating our amazing lineup of individual and project awards! I would like to express my gratitude to the 2024-2024 IS-ASCE Board members, Technical Institute board members, Section committee members, ASCE Region 3 governors, Society-level staff in Reston, and all ASCE members worldwide. We would not have an organization without the efforts of so many talented people and their willingness to provide their limited time and resources to ASCE.

There are a few developments to share from the recent ASCE elections. Carol Ellinger Haddock, P.E., MPA, F.ASCE was elected by the ASCE membership to be the next Society leader. She'll be inducted as President-Elect in October 2025 and serve as Society President in 2027. Illinois Section's own Megan McDonald, P.E., LEED AP, M.ASCE was also elected to be the newest addition to the Region 3 Board of Governors. ASCE's Region 3 is comprised of US states Illinois, Michigan, Minnesota, North Dakota, Ohio and Wisconsin along with the Canadian provinces of Manitoba, Nunavut, Ontario, and Saskatchewan. Region 3 leadership is intended to serve as a conduit between the Society and the membership of the local Sections and Branches. Region 3 includes 14 local sections and 16 local branches. The constitutional amendment to simplify member grades also passed via membership vote in the recent election, receiving more than the required two thirds support to be ratified. This proposal sought to consolidate the previous distinctions among Affiliate, Associate, and Member grades into a single grade of "Member". After this modification, the remaining ASCE membership distinctions are Student, Member, Fellow, and Distinguished Member.

In addition to all the annual board and committee transitions, there is another major transition for the Illinois Section this year. IS-ASCE Executive Secretary Sarah Harbaugh, who has served as the glue holding our Section together for many years, will be retiring after the end of this term in October. The Illinois Section has counted on Sarah for so much over so many years and we are beyond grateful for all she has done for us. I think I can speak for everyone in the IS-ASCE in thanking Sarah and wishing her a long and happy retirement! Over the past few months, Sarah Harbaugh's final task for our Section has been to transition her responsibilities to our new IS-ASCE Executive Secretary, Sara Starzyk! We are very excited that Sara Starzyk has joined IS-ASCE, kicking off a new chapter of connection, innovation, engagement, and service for our members.

Once again, on behalf of the ASCE Illinois Section, I want to extend our heartfelt thanks to all our members, volunteers, sponsors, and partners for your continued dedication and support.

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ASCE Illinois Section

# News

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# Using Existing Sewer Flow and Precipitation Records as a Useful Planning Tool

*Written by Charles Herckis, BSCE, MPA, MPW, P.E., Life Member ASCE*

**Abstract**

A utility Board of Directors was concerned that a $9 million investment in a program of visual condition assessment and repair of a sanitary sewer system had not reduced total sewer flow as treatment cost increased. Consequently, the Board requested that utility Operations promptly provide economic justification for approval of additional investment in the program. The following case study discusses how use of 24-hour records of existing sewer flow and precipitation, in conjunction with elemental economic analysis, proved to be a cost-effective preliminary method to support continuing the program.

**Description Sewer Drainage Area**

The system drainage area is located along an ocean bay (Figure 1). Near to the shoreline the terrain is at elevations close to sea level, but farther from shore these elevations increase abruptly. The area has three drainage basins that discharge to a sewage treatment plant by a combination of gravity lines, pump stations and force mains. Treatment plant product is discharged through an outfall to the bay. Basin 1 is a low-density residential area with some research and industrial installations. Basin 2, is primarily a university campus. Basin 3 is a residential university campus adjoining a residential area.

**Existing Program Based on Visual Inspection**

The existing sewer rehabilitation and repair program was based only on visual inspection. There were no measurements of rates of: base flow; Inflow and Infiltration (I&I); nor precipitation to define areas of greater infiltration per inch of precipitation, nor probability of reduction in I&I per dollar invested in repairs that could guide a cost-effective rehabilitation program.

**Need for Prompt Response Using Existing Information**

With the objective of providing a timely response and constraints of limited available information and resources, operations only option was to gather whatever rainfall and flow data existed to produce an approximate analysis that could demonstrate any improvement in I&I characteristics and economic justification for continuing the program. That analysis focused on defining I&I per inch of rainfall so as to use limited future resources as effectively as practicable. Lacking the usual rain gauges, groundwater level and flow monitoring instruments in each basin, the operations department relied upon existing total daily precipitation recorded at the sewer treatment plant and total daily 24-hour flow measured at each basin discharge point into the plant (Figure 1) to enable an approximate general flow characterization.

**Analysis Plots of Existing Daily Flow Rates and Precipitation of Existing Data**

A review of plots of sets of flow rates and precipitation data during different months over the period of the rehabilitation project, not only manifested correlation between rainfall and flow, but also reflected a relatively constant base flow and varying patterns of flow reflecting the distinct occupancy activities (Figure 2). For example, residential areas had larger flow volumes during weekend and holiday periods, when it might be expected that the residents would spend

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# Seeing the Rails from Below: Early-Career Insights on Railroad Bridge Inspections

*Written by Alberto Diaz Loza, EIT.*

When I first stepped into the world of railroad engineering just over a year ago, I didn't realize how hidden this work was from the public eye. Most people notice the trains but rarely think about the structures carrying them.

Yet every bridge—whether it's a steel through-girder over a busy Chicago street or a timber trestle tucked away in rural Kentucky—is a vital part of keeping freight and passengers moving safely.

**Railroad bridge inspections require teamwork, standardized procedures, and investigative thinking.**

I assist in bridge inspections on FRA routine inspections for passenger systems like Metra and for short line freight railroads out of state. My role involves documenting conditions, taking detailed photos, measuring defects, and making sure the inspection follows AREMA guidelines. It's hands-on work, and it's where I've learned that inspections are just as much about investigation as observation.

**Looking Beyond the Obvious**

On one inspection, we noticed a girder that seemed out of alignment. At first, it looked like the problem might be in the girder itself or the deck detaching. But after measuring, reviewing support points, and checking past inspection notes, we found the real issue—settlement in the supporting column.
That experience taught me that an inspection is more than checking off boxes. It's about asking *why* a defect exists, tracing its cause, and making sure it's recorded clearly for future action.

**Patterns in the Field**

Most of my work in Illinois involves steel and concrete bridges. Common issues here include corrosion, ballast curb deterioration, and impact damage.

**AREMA guidelines ensure consistent inspection methodology across bridge types.**

Out of state, I've inspected timber bridges, which bring a completely different set of challenges, like rotten wood or steel pile corrosion. Timber inspections require a different eye, but the principles stay the same: careful documentation, adherence to standards, and clear communication with the lead inspector.

**Early-career engineers gain valuable experience from inspecting structures built from various materials and being alongside experienced engineers.**

**Lessons Learned Early**

If you've never been part of a bridge inspection, or construction inspections, you might imagine it's all about spotting defects. But as I've learned, it's also about:

- Keeping records consistent year-to-year so trends are clear.
- Taking photos from multiple angles to tell the full story.
- Using precise, standard language so reports are unambiguous.

As an assistant inspector, I contribute to this process while also learning from more experienced

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# Regulatory and Ethical Considerations in Geotechnical Practice

*Written by Clay Patterson, P.E.*

In geotechnical engineering, regulatory compliance and ethical integrity are not merely procedural—they are foundational to responsible practice. Especially in a state like Illinois, where diverse geologic conditions and urban-rural contrasts present unique challenges, engineers must navigate a complex landscape of standards and expectations to deliver safe, sustainable, and resilient infrastructure.

**Regulatory Frameworks: Foundations of Accountability**

Geotechnical engineers operate within a robust framework of federal, state, and local regulations. These standards govern everything from site characterization to foundation design and construction methodologies. In Illinois, practitioners must be knowledgeable with:

- **Building Codes**: Municipal, local and state building codes as adopted by Illinois jurisdictions provide essential guidance for designing structures to withstand geotechnical hazards such as subsidence, slope stability, and seismic activity.
- **Environmental Regulations**: Oversight from the Illinois Environmental Protection Agency (IEPA) and federal statutes like the Clean Water Act ensure that excavation, grading, and material use do not compromise soil and water quality.
- **Land Use Policies**: Zoning ordinances and development controls influence site selection and project feasibility, requiring early and informed engagement during planning phases.

**Regulations safeguard public welfare.**

Incorporating these regulations and requirements is a professional obligation that safeguards public welfare and mitigates legal and environmental risks.

**Ethical Practice: Engineering with Integrity**

Beyond regulatory adherence, ethical conduct defines the character of geotechnical engineering. Core principles—honesty, transparency, accountability, and public safety—must guide every decision.

**Commitment to Accuracy**

Engineers must conduct thorough investigations using recognized standards such as ASTM D420 (Site Characterization) and building code requirements. Data must be analyzed rigorously and communicated clearly, without bias or omission. This transparency fosters trust among clients, stakeholders, and the public.

**Prioritizing Safety**

Designs must anticipate and mitigate geotechnical risks. Whether addressing expansive soils, liquefaction potential, or slope stability, engineers must ensure that foundations and earthworks are robust and resilient.

**Environmental Stewardship**

Sustainable engineering is no longer aspirational—it is a key component of development. Geotechnical professionals must continue to evaluate and implement sustainable geotechnical practices to mitigate environmental impacts, including:

**Sustainable engineering is now a key component of development.**

- Use of recycled aggregates and low-carbon concrete.

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# COPRI Launches a New Committee in Illinois

*Written by Eric Fleet, Rose McClure, and Bill Murchison*

The ASCE Coasts, Oceans, Ports, and Rivers Institute (COPRI) recently launched a new Illinois committee to connect professionals in the region working across the maritime and water resources sectors. This exciting launch comes at a time when interest in resilient infrastructure, port modernization, and interdisciplinary collaboration is rapidly growing. In June 2025, five members of the newly formed COPRI-Illinois committee attended the PORTS ’25 conference in Providence, Rhode Island. The experience was both energizing and affirming, reinforcing the value of COPRI’s national network and its commitment to advancing best practices across the maritime industry.

**Regulations COPRI Committee members attended national PORS ’25 Conference in Providence, Rhonde Island.**

Throughout the conference, our members were struck by the recurring themes of resilience and adaptive reuse—topics especially relevant to Illinois as we address aging infrastructure along inland waterways and lakefronts. The variety of concurrent technical sessions at PORTS provided something for everyone. Sessions ranged from port planning and climate adaptation to structural innovations and sediment management, showcasing the truly multidisciplinary nature of our field.

COPRI-IL Committee members (left to right) Eric Fleet, Ethan Pennywitt, Rose McClure, Leon Cortes, and Bill Murchison attended the PORTS ’25 Conference in Providence, Rhode Island

Beyond the technical program, the conference provided ample networking opportunities. We connected with professionals from across the marine and waterfront community, including engineers, port authorities, contractors, academics, and state and federal agency staff. Young professionals especially benefitted from dedicated networking events, including a luncheon with industry leaders and a variety of team-building activities designed to foster peer-to-peer learning and connections on a national scale.

The COPRI-Illinois committee reflects much of the same diversity and collaborative spirit seen at PORTS. Our founding members represent a range of specialties, including engineering consultants in the structural, coastal, geotechnical, and environmental engineering disciplines, local city and state public agencies, environmental permitting consultants, construction management professionals and educators. This mix allows us to approach coastal and riverine infrastructure challenges from multiple angles—just as the broader COPRI community does through its national conferences and committees.

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# Applying Engineering to Assist in Economic Development in Guatemala

*Written by Eric Van Wazer*

Engineers Without Borders Chicagoland Professional Chapter (EWB-CPC) consists of volunteers from all engineering disciplines coming together to make an impact in the developing world. The chapter has adopted two projects in Guatemala since 2019, and they are both at or near the end of construction.

EWB-CPC sent a group of six engineers (Jack Worsham, Andrea Walter, Ethan Halingstad, Vanessa Willey, Rhiannon Flanagan-Rosario, and Eric Van Wazer) to Guatemala in July to monitor a completed project in the Sololá Department and observe construction activity for an ongoing project in the Chimaltenango Department. This part of the country is incredibly mountainous, which leads to numerous challenges for development. These challenges became apparent before the team arrived on site, as the 85-mile (137 km) drive from the airport took 3-½ hours. The roads had many hairpin turns as they traversed the mountains. Combine this treacherous drive with the fact that there are only two main roads leading into town from Guatemala City, it was no surprise that traffic was often at a standstill.

2025 EWB-CPC Travel Team with Patzajito Construction Crew

Furthermore, Guatemala had a civil war between 1960 and 1996, which saw up to 200,000 people die in the fighting. Between the terrain and history of Guatemala, economic development has been a slower process compared to other Central American nations. This underscores the importance of the work done by Engineers Without Borders-USA. Guatemala is one of many nations that, for a wide range of factors, lacks basic infrastructure, one of the first steps towards economic development. In addition to improving quality of life, economic development resulting from EWB projects is a direct benefit to these communities.

Inspection of Chlorination System in Tzaput

The Tzaput site in the Sololá Department was visited first. This project had been completed for about a year, and EWB-CPC spent two days interviewing community members about the project and examining the existing system.

Due to the large elevation drops, pressures near the end of the system were in excess of the 60-psi specified by EWB-CPC.

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# Projecting the Precipitation Events of the Future

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some regulatory agencies continued to use TP 40 for precipitation data.

**Statistical Modeling**

The USWB realized that TP 40 needed to be updated and under the auspices of the National Oceans and Atmosphere Administration (NOAA) prepared and issued NOAA 14 in 2004 as the replacement for TP 40. While NOAA 14 had an additional 20 years of rainfall data to work with, ISWS staff demonstrated that NOAA 14 underestimated precipitation events in Illinois and recommended that engineers conducting hydrology and hydraulic studies continue to use Bulletin 70.

One concern about Bulletin 70 was that the data used to prepare it did not include the large precipitation events that occurred in Northeast Illinois in 1986 and 1987.

**Data led to the creation of stormwater management agencies in Northeast Illinois counties.**

The resulting flooding from those events led to the passage of legislation by the state of Illinois to allow counties in Northeast Illinois (Cook, DuPage, Kane, Lake, McHenry and Will) to create stormwater management agencies with the power to create and enforce stormwater ordinances, levy taxes and make improvements to mitigate flooding in that county.

In the 1990's ISWS began revising Bulletin 70 to include additional precipitation data that was now available (up to 2017) and decided to eliminate data from before 1948. This was done on purpose. In the ISWS study for Bulletin 70, it was found that the period from 1901 to 1940 was statistically drier than the period from 1941 to 1981. By eliminating the data from the drier period, they believed that the precipitation data for the post 1947 time period was a better representation of current climatic conditions in Illinois, warmer and wetter.

Additionally, the statistical analysis considered whether it should be considered stationarity or non-stationarity. In the context of a time series analysis, stationarity refers to a time series whose statistical properties, such as mean, variance and autocorrelation, do not change over time. Non-stationarity time series means that the statistical properties of the data such as the mean and variance change over time. Stationarity of heavy rainfall events implies that future variability will be similar to past variability. Climate change (a warmer atmosphere can hold more moisture) makes the non-stationarity approach more appropriate for precipitation frequency analysis.

The study utilized daily or 24-hour total precipitation from 176

An unofficial rain gauge on the author's deck.

recording stations and hourly precipitation records from 73 recording stations. The recording stations were dispersed throughout the state. The time period analyzed was from 1948 to 2017. The revised Bulletin 70 was released in 2020 and in order to eliminate confusion it was renamed Bulletin 75.

**A Wetter Future**

As a follow up to Bulletin 75, the ISWS conducted a study of what rainfall may be in the future. This study was published in 2025 and named Bulletin 76. This study builds on the statistical analysis done in Bulletin 75 to extrapolate out what precipitation events in the state of Illinois may be like in the next 75 years. Assuming that if current climatic conditions continue, then precipitation may increase by about 3-4% per year

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# Projecting the Precipitation Events of the Future

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going forward. It should be noted that Bulletin 76 took a "middle of the road" approach, meaning that climate change would not accelerate dramatically or decrease dramatically over the next 75 years.

The table below provides a comparison of rainfall events based upon TP 40, Bulletin 70, NOAA 14, Bulletin 75 and Bulletin 76 (for the years 2050 and 2100). Generally, a 2-hour 10-year storm in Northeast Illinois is the normal design storm for a storm sewer. Similarly, a 24-hour 100-year storm in Northeast Illinois would be used as the design storm for a detention pond for a new development.

| | 2-hour 10-year Storm | 24-hour 100-year Storm |
|---|---|---|
| TP 40 (1961) | 2.40 inches (interpolated) | 5.70 inches (interpolated) |
| Bulletin 70 (1989) | 2.64 inches | 7.58 inches |
| NOAA 14 (2005) | 2.30 inches | 7.70 inches |
| Bulletin 75 (2020) | 2.99 inches | 8.57 inches |
| Bulletin 76 (2050) | 3.11 inches (projected | 8.91 inches (projected) |
| Bulletin 76 (2100) | 3,26 inches (projected) | 9.43 inches (projected) |

An analysis of the rainfall data used in the past (TP 40 and Bulletin 70) indicates that as more precipitation recording stations from a broader geographical area became available, the intensity of the storms has increased. This may be due to capture of data from storms that were not previously recorded and due to climate change.

While Bulletin 76 is not a design standard, it is putting engineers and regulatory agencies on notice that precipitation data for flood studies, detention ponds and storm sewers based upon Bulletin 75 may not be representative of precipitation events 50 years from now.

**Author Bio: Jerome F. McGovern, P.E.**
Mr. McGovern is a retired civil engineer who is active in the Illinois Section's Environmental and Water Resources Institute (EWRI).

**References**

Illinois State Water Survey Bulletin 75 can be found here: https://www.ideals.illinois.edu/items/114209
Illinois State Water Survey Bulletin 76 can be found here: https://www.ideals.illinois.edu/items/132431

# COPRI Launches a New Committee in Illinois

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COPRI-Illinois hosted a technical presentation in conjunction with the Chicago Chapter of the ASCE Geo Institute. This event focused on a marine construction company in the region and also highlighted the minimally invasive "StrataLock" system for bulkhead stabilization. Looking ahead, COPRI-Illinois is focused on building a strong foundation of engagement. We plan to host additional technical presentations, project site tours, professional networking, and student outreach events in the coming year. These initiatives will create a space for professionals in Illinois to connect, share knowledge, and inspire the next generation of engineers and scientists.

**Relatively new Illinois Section Committee is active and welcomes new members to get involved.**

We invite interested ASCE members to get involved and help shape the future of the committee. Whether you're a seasoned expert or just beginning your career, COPRI-Illinois offers a platform to contribute, collaborate, and grow.

# Using Existing Sewer Flow and Precipitation Records as a Useful Planning

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more time at their homes, while industrial and university areas showed greater flow volumes during weekdays when it might be expected that activities in those areas would generate greater flows.

### First Step to Justify Further Investment in Sewer Rehabilitation

The first step to determine any justification for further investment in the program was to develop linear regression analyses to normalize I&I per inch of precipitation for each month. One of the analyses plots is shown in Figure 3. The intercept of the regression line with the MGD Y axis would represent the approximate sum of demand and infiltration base flows at zero precipitation. The slope of the line represents the rate of increase of I&I per additional inch of rainfall. The intercept is the first term in the equation, 0.6383 MGD. The slope of the line is the constant in the second term, 0.284684.

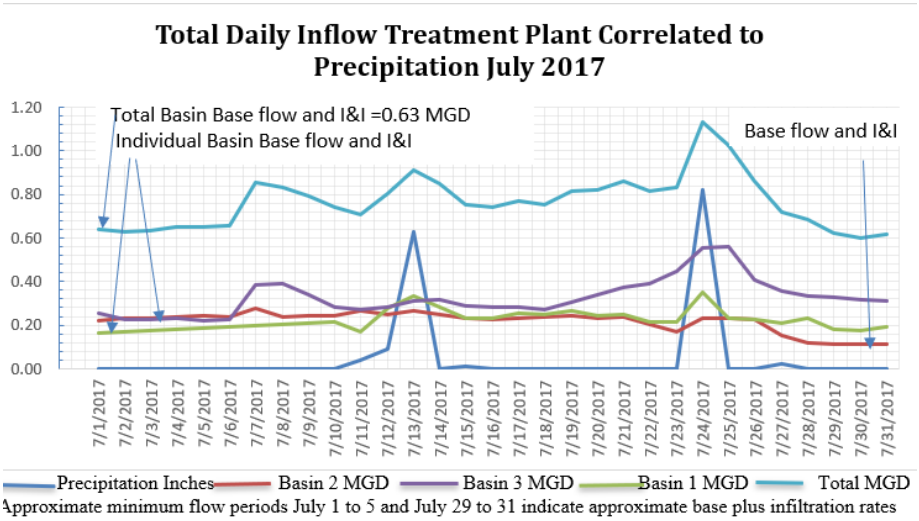


**Figure 2 Plot of Daily Flow and Precipitation for July 2017**

The results of the regression analyses and comparison of the flow and rainfall parameters corresponding to the wet weather month of November in 2012, before the start of the sewer rehabilitation program, and in 2017, after execution of the rehabilitation program, are summarized in Table 1.

Comparison of regression analysis of rainfall per day versus MGD for the months of November 2012 and November 2017 indicate that while there was a small increase of 2.55% in the total of base flow and infiltration for the area, the total rate of I&I per inch of rainfall per day decreased by 17.1%. However, each basin manifested distinct variations in I&I parameters. Basin 1 had significant reductions in per inch of rainfall and in base flow; Basin 3 had a

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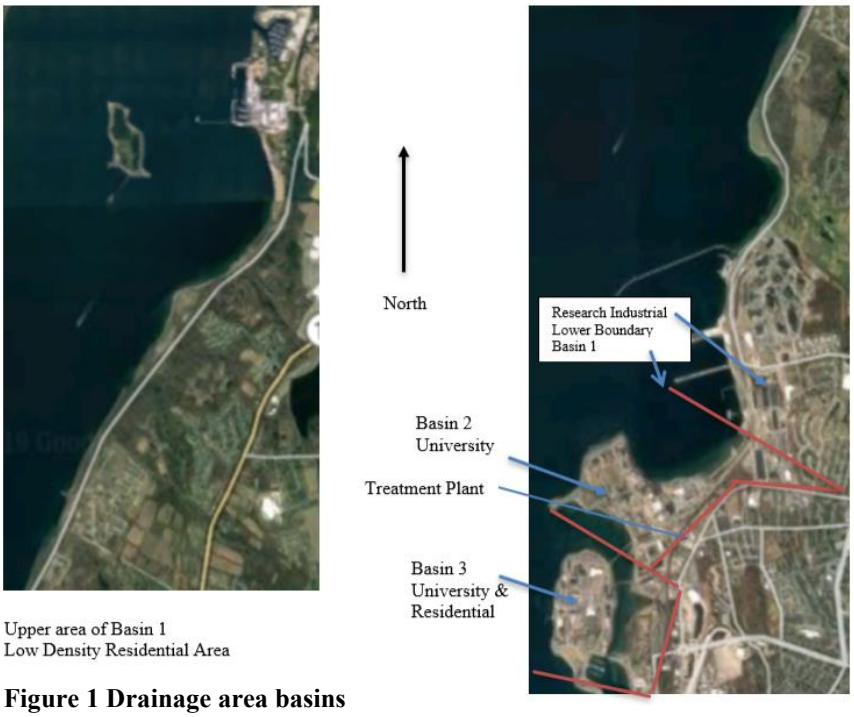


**Figure 1 Drainage area basins**

# Using Existing Sewer Flow and Precipitation Records as a Useful Planning

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reduction in infiltration per inch of rainfall accompanied by an increase in base flow; and Basin 2 had notable increases in both parameters. In view of the preceding, it would appear to be more cost effective to invest resources in reducing I&I in Basin 2 followed by Basin 3. That investment would be for: a study of precipitation, flow rates and ground water levels in order to estimate if there would be sufficient return on investment for further visual inspections and rehabilitation in these areas.

**Table 1 Summary of regression analysis parameters November 2012 and 2017**

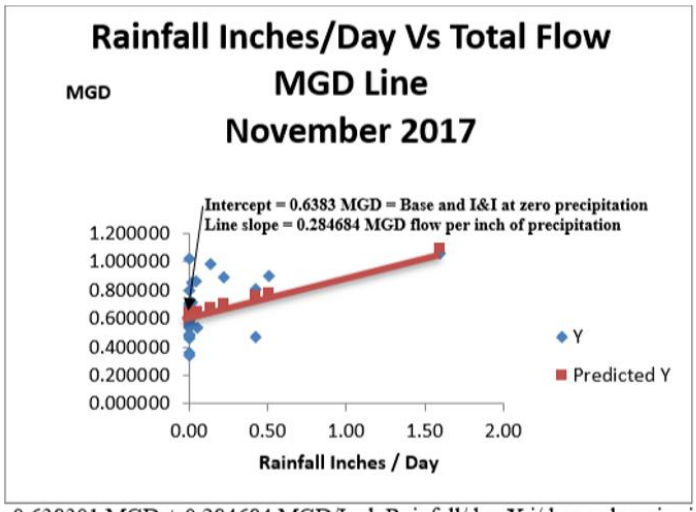
| *2017* | *Coefficients* | | | |
|---|---|---|---|---|
| | *Total* | *Basin 3* | *Basin 1* | *BASIN 2* |
| Intercept MGD | 0.638301 | 0.321624 | 0.115448 | 0.201228 |
| Slope MGD/in rain/day | 0.284684 | 0.143445 | 0.05149 | 0.089748 |
| *2012* | *Coefficients* | | | |
| | *Total* | *Basin 3* | *Basin 1* | *BASIN 2* |
| Intercept MGD | 0.62241 | 0.267017 | 0.221789 | 0.133604 |
| Slope MGD/in rain/day | 0.343181 | 0.203986 | 0.100138 | 0.039057 |
| *% difference* | *Coefficients* | | | |
| *2017-2012* | *Total* | *Basin 3* | *Basin 1* | *BASIN 2* |
| Intercept | + 2.55% | + 20.45% | -47.95% | + 50.82% |
| Slope | -17.01% | - 29.68% | - 48.58% | +129.79% |

**Justification for Further Investment in Sewer Rehabilitation**

Although the analysis of existing data demonstrated that the repair program had reduced the rate of I&I, operations had to demonstrate an acceptable level of return on further investment to proceed with a complete flow monitoring study, inspection and repair activities.

One basic method for estimating an acceptable return on investment would be a breakeven study. It would compare the reduction in treatment fees to the expenditures for such a program. However, without a detailed and complete characterization of system parameters, a range of uncertainty using an expected value approach provided a means to estimate probable minimum and maximum reductions of I&I.

The operations breakeven study (Figure. 4, next page) used current treatment fees and the mid-point of a range of the percent of total flow reduction achieved by sewer repair projects that was derived from data collected and analyzed by the Environmental Protection Administration (EPA). The study found that an expenditure of up to $5 million for the program mentioned above would probably reduce I&I by approximately 29% and have a return period of approximately 22 years.




Q = 0.638301 MGD + 0.284684 MGD/Inch Rainfall/day X i/day where i = inches of rainfall

**Figure 3 Regression analysis rainfall versus total flow November 2017**

**Conclusion**

The methodology discussed herein offers a relatively cost-free option to expeditiously develop a preliminary characterization of drainage basin I&I as a function of precipitation that can enable a rational cost-effective decision-making process if more detailed data is not available.

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# Using Existing Sewer Flow and Precipitation Records as a Useful Planning

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**Author Bio:** Charles Herckis, BSCE, MPA, MPW, P.E., Life Member ASCE Has practiced civil engineering in the US and Latin America in the design, management and construction of: irrigation, industrial, housing, public works, water and wastewater infrastructure projects; and specialized pipelines services that includes hot tapping and of plugging large diameter, high pressure pipelines.
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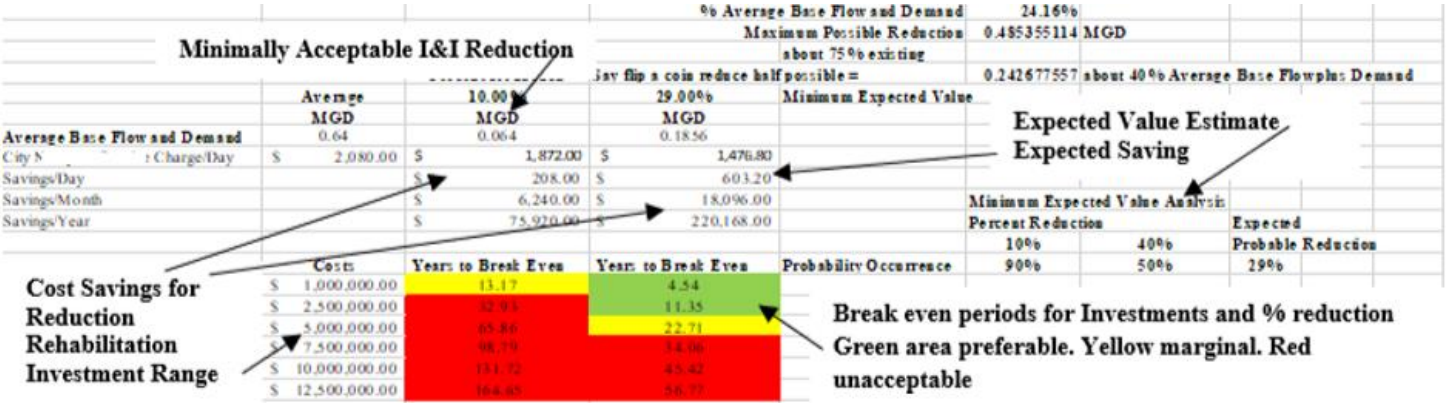


**Figure 4 Break Even Study**

# Seeing the Rails from Below: Early-Career Insights on Railroad Bridge Inspections

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team members. That mentorship is as valuable as the fieldwork itself.

### Why It Matters

Whether in the city or the countryside, whether steel, concrete, or timber, every railroad bridge has a story. Inspections are how we make sure that story continues safely—day after day, year after year.

For an early-career engineer, there's no better way to understand how infrastructure ages, how maintenance priorities are set, and how teamwork and standards keep our rail system running.

**Author Bio:** Alberto Diaz Loza, is a Designer I in the railroad division at Benesch. While his primary work focuses on bridge design and engineering tasks in the office, he also supports field efforts as an assistant bridge inspector on routine inspections for freight and passenger railroads. Based in Chicago, he works on projects both locally and out-of-state, combining design knowledge with hands-on inspection experience to help ensure safe and reliable rail infrastructure.

# Regulatory and Ethical Considerations in Geotechnical Practice

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- Implementation of erosion control systems such as silt fences, geotextiles, and vegetative buffers.

- Protection of biodiversity and water resources through thoughtful site planning and construction practices.

**Illinois-Specific Considerations**

Illinois presents a wide spectrum of geotechnical scenarios. Urban development in Chicago demands precision and strict code compliance, while rural infrastructure must address agricultural soil conservation and water management. Engineers must tailor their approaches to suit local conditions, regulatory constraints, and community needs.

**Continuous Learning and Innovation**

Professional excellence requires ongoing education and adaptation. Engineers must stay abreast of evolving standards, emerging technologies, and best practices. Innovation—driven by ethical and regulatory imperatives—can elevate geotechnical performance. Advancements in predictive modeling, use of Artificial Intelligence (AI), and advanced monitoring during construction are constantly evolving, and will continue to play a significant role in the geotechnical engineering world.

**Conclusion**

Regulatory and ethical considerations are not peripheral—they are central to geotechnical engineering. In Illinois, where complexity and consequence intersect, engineers must uphold these principles to ensure the safety, integrity, and sustainability of their work. By embracing compliance, ethical rigor, and innovation, geotechnical professionals contribute to resilient development and public trust—hallmarks of a responsible and forward-looking engineering community.

**Author Bio:** Clay Patterson, P.E. is the Midwest geotechnical practice lead for Langan Engineering, where he has practiced in different roles for over 24 years. Based in Chicago, he is involved in a diverse portfolio including urban foundation design and construction, renewable energy projects, and large scale industrial and data center developments throughout the country.

# President Report

(Continued from page 2)

Your commitment to advancing the civil engineering profession and strengthening our community makes our work possible. From planning events and sharing expertise to mentoring the next generation of engineers, each contribution—big or small—helps us achieve our mission. We look forward to building on this momentum together and continuing to make a lasting impact across Illinois. A huge thank you to everyone who makes our organization such a vibrant and inspiring community! Whether you volunteered your time, shared your knowledge, sponsored an event, or simply showed up to participate, you've played a key role in our success. It's your passion, energy, and willingness to collaborate that keep us moving forward and making a difference in our profession and our communities. We're grateful for each of you and can't wait to see what we'll accomplish together in the future!

Yours sincerely,

Thomas Janicke, P.E., S.E.
ASCE Illinois Section President 2024-2025

# Applying Engineering to Assist in Economic Development in Guatemala

(Continued from page 7)

If the community chooses to continue, working with EWB-CPC, the next phase of the project would include installation of a pressure-reduction valve.

**Tzaput women no longer had to trek for hours over rugged topography.**

In addition to providing a basic human need to the people of Tzaput, people (typically the women) no longer have to trek for hours over rugged topography, freeing their time to participate in economic activities, like sewing or farming.

The next four days of the trip were spent in Patzajito, a village in the north of the Chimaltenango Department. EWB-CPC met with the in-country engineers at the site, who helped teach the Water Committee how to maintain the system, which included everything from testing the water at the tank and operating the well pump to monitoring water usage.


Inspection of Well and Pump in Patzajito

The community provided the labor during the construction of the system, while EWB-CPC provided funding for materials. The EWB team took GPS data of the system to construct as-built drawings. Some discrepancies were observed between the plans and what was constructed. A portion of the main line had to be re-routed around a soccer field. An unexpected result of this change is that the path over a ravine is shortened. The original plans called for a suspended crossing over an 25 feet (8 m) ravine, which was designed to extend 55 meters and supported by concrete columns on either side. The new route takes a more direct path, which reduces the suspended crossing from 55 m to 30 m. This new route unexpectedly saved money on materials.

The other major change dealt with a supplementary water tank. This tank was designed to be in the middle of the main line and serve 9 households. This tank was intended to serve as a reserve for these households and keep the pressure above 10 psi at the end of the line. The operation and maintenance manual will be modified to encourage people near the proposed tank to use water at off-peak hours.


Patzajito ravine crossing, facing upstream

The tank was paid for by the municipal government to serve 4 communities, of which Patzajito is the last to have their water line completed. The project is due to be completed in the coming week, with taps expected to go into operation on September 16, 2025.

**Author Bio:** Eric Van Wazer is a civil engineer with Allegro Civil Engineers in Chicago, IL. After assisting on a project in Guatemala with the University of Wisconsin-Madison Chapter of EWB, he rejoined the chapter in Fall 2022.

# Illinois Section News & Secretary Report

**Spring 2025**

To inform Illinois Section members of the discussions at monthly board meetings, the Section Secretary contributes this article to the newsletter covering the months of June 2025 through August 2025. The Illinois Section typically offers both in-person and virtual attendance options for board meetings. Access to historical meeting minutes and governance documents, including the Constitution and Bylaws, can be found on ASCE Collaborate at https://collaborate.asce.org/home and on the Illinois Section website at https://isasce.org/about/governance-and-guiding-documents/. Any questions or comments on Section activities are welcome by contacting Secretary Thomas Borges at tborges@bloomcos.com.

■ ***Treasurer's Report & Meeting Minutes***

▲ A Treasurer's Report was presented and approved at the June 2025 and August 2025 board meetings. The May 2025 and June 2025 board meeting minutes were approved.

■ ***Highlights from Illinois Section Activities and Institute/Group Reports.***

▲ ***Incoming FY25-26 IS Board Officers –*** The following FY25-26 officer nominees were announced and approved at the June board meeting and presented to membership in the Summer Newsletter dated June 10, 2025:

**Executive Board**
President – Monica Crinion, P.E.
Past President – Thomas Janicke, P.E., S.E.
President-Elect – Kris Salvatera, P.E.
Secretary – Thomas Borges, P.E.
Treasurer – Jeana Gowin, P.E.

**Directors to 2026**
Alex Potter-Weight, P.E.
Colleen Miller
Daniel Lowery, P.E.

**Directors to 2027**
Josh Starzyk, P.E.
Jimmy Canning, P.E., CFM, ENV SP
Hugh Regan, P.E.

No valid petitions were filed for additional nominations prior to the July 15th deadline; therefore, all officers have been declared elected and will be installed at the Illinois Section Annual Dinner on October 30, 2025. For more information about the Illinois Section Board nominations process, please refer to the Bylaws Article III (https://www.isasce.org/about/governance-and-guiding-documents/)

▲ ***Construction Institute (CI)*** – CI held their board meetings on June 3rd and August 5th. On May 22nd, the institute organized a tour of the CTA's Red and Purple Modernization (RPM) project followed by a post-tour happy hour. Please contact CI Chair Katherine Au at Kat.Au@jacobs.com for any questions or information related to CI activities.

▲ ***Environmental & Water Resources Institute (EWRI)*** – EWRI held their board meeting on July 8th. On June 18th, the institute hosted a free seminar on lift stations featuring Metropolitan Industries in Romeoville. The institute also attended a White Sox game with members of YMG on July 29th, with over 30 members in attendance. On August 12th, EWRI hosted their annual summer social event in lieu of an August board meeting – the event took place at Parlor Pizza in the West Loop neighborhood of Chicago. Please contact EWRI Chair Gary Gifford at ggifford@hwlochner.com for any questions or information related to EWRI activities.

▲ ***Geo-Institute (GI)*** – GI held their board meetings on July 22nd and August 15th. The institute co-hosted a dinner event with COPRI on June 10th at Pazzo's in Chicago featuring presentations by Strata Lock USA and Thatcher Foundations on seawall preservation and marine construction in the Chicago area. Please contact GI Chair Thierno at Tkane@Geosyntec.com for any questions or information related to GI activities.

▲ ***Structural Engineering Institute (SEI)*** – SEI held their board meetings on May 21st, June 18th and August 14th. On July 10th, the institute hosted a site tour of CDOT's Canal Street project. Please contact SEI Chair Ashutosh Ranade at Ashutosh.Ranade@mbakerintl.com for any questions or information related to SEI activities.

▲ ***Transportation & Development Institute (T&DI)*** – T&DI held their board meetings on June 10th and August 12th. On May 28th, the institute hosted a luncheon and panel discussion on "Championing Future Engineers" at Maggiano's in Chicago. On June 25th, the institute (Continued on page 16)

# Secretary Report

(Continued from page 15)

hosted a luncheon at Maggiano's Oak Brook featuring IDOT Region 1 Engineer Jose Rios. In lieu of a July board meeting, the T&DI board navigated the Chicago River by boat and enjoyed fireworks at Navy Pier. Please contact T&DI Chair Josh Starzyk at jstarzyk@gfnet.com for any questions or information related to T&DI activities.

▲ ***Utility Engineering and Surveying Institute (UESI)*** – UESI held their board meetings on June 11th and July 14th. Please contact UESI Chair Bethany Turk at bturk@hbkengineering.com for any questions or information related to UESI activities.

▲ ***Younger Member Group (YMG)*** – YMG held their board meetings on June 11th and August 13th, along with their summer social meeting on July 9th. YMG also attended a White Sox game with members of EWRI on July 29th, with over 30 members in attendance. Please contact YMG Chair Ryan Cummings at ryan.cummings@nicholsonconstruction.com for any questions or information related to YMG activities.

▲ ***Coasts, Oceans, Ports and Rivers Institute (COPRI) Committee*** – The newly-formed COPRI committee held committee meetings on May 6th and June 3rd. On June 10th, the committee co-hosted a dinner event with GI at Pazzo's in Chicago featuring presentations by Strata Lock USA and Thatcher Foundations on seawall preservation and marine construction in the Chicago area. Please contact COPRI Co-Chairs Mark Wagstaff (mark.wagstaff@smithgroup.com) and Siena Van Horne (siena.vanhorne@stantec.com) if you are interested in becoming involved with this committee.

The Illinois Section Board Meetings are typically held the first Monday of the month, except for holidays. The next board meeting is scheduled for September 8, 2025 and will be in-person at Bloom Companies (150 N. Wacker Drive, Suite 1200). For any guests or board members that cannot attend in-person, a virtual option will be provided via MS Teams. If you are interested in attending these meetings, please contact President Thomas Janicke at Tom.Janicke@stantec.com.

By Thomas Borges, P.E.
ASCE Illinois Section Secretary
2024-2026
tborges@bloomcos.com

# Illinois Section Activities

**SEI Biennial Lecture Series: Session 1**
A light dinner will be served as we learn about:

- CREATE P3 Forest Hill Flyover- Joseph Abruzzo (Parsons), Brett Guarino (CSX), & Sarah Czaplicki PE, SE (Czaplicki Lopez)
- Metra Bridge A32 & Grayland Station- Tina Revzin & John Leary (Gannett Fleming TranSystems)

**Date:** Tuesday, Sep 9
**Time:** 5:00pm
**Place:** Grand Century Suite, 150 N Riverside Plaza, Chicago, IL
**Register:** Session 1 Only
All Three Sessions

More Information Here

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**CI Tour: Metra Bridge A-32/Grayland Station**
Tour of the recently completed Metra Bridge A-32 and Grayland Station. After, head to The Booze Hound (3734 N. Milwaukee, Chicago) for an informal happy hour. No PPE.

**Date:** Wednesday, Sep 17
**Time:** 4:00pm-5:00pm
**Place:** 3934 N. Kilbourn Ave, Chicago
**Register:** Here

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**Engineers Without Borders-USA Chicagoland Professional Chapter 20th Anniversary Celebration & Wine Tasting**
Celebrate 20 years of impact that engineers in the Chicagoland area have made to some of the poorest communities in the world.

**Date:** Wednesday, Sep 24
**Time:** 6:00pm
**Place:** Remington's, 20 Michigan Avenue, Chicago, IL
**Register**: Here

We are looking for companies to sponsor this event.
More Information Here

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**SEI Biennial Lecture Series: Session 2**
A light dinner will be served as we learn about:

- TR Higgins Winner: Ronnie Medlock (High Steel Structures)
- Rehabilitation of the Sherman Minton Bridge- Andrew Kimmle & John Finke (Jacobs)

**Date:** Tuesday, Sep 30
**Time:** 5:00pm
**Place:** Grand Century Suite, 150 N Riverside Plaza, Chicago, IL
**Register:** Session 2

More Information Here

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**CI Tour: Damen Green Line Tour**
Tour Damen Green Line, then after join us for an informal happy hour at Goose Island Taproom (1800 W Fulton St, Chicago). No PPE.

**Date:** Tuesday, Sep 30
**Time:** 3:30pm-4:30pm
**Place:** 154 N. Damen Ave, Chicago
**Register:** Here

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**Two-Day HEC-RAS Seminar**
Beginner HEC-RAS course will be hosted by EWRI and IAFSM. Lunch will be provided and PDH's will be offered. Email Gary Gifford at ggifford@hwlochner.com with any questions.

Course Description

**Date:** Tuesday, Sep 30-Oct 1
**Time:** 8:30am-4:30pm
**Place:** 625 W. Adams St. 7th Floor Conference Room (Christopher B. Burke's downtown Chicago office)
**Cost:** $895
**Register:** Here

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**IL-ASCE EWRI & COPRI Chicago Area Waterways Control Room Tour**
Discussion of the Chicago Area Waterway System, and a tour of the Waterways Control Room. Limit of 15 people. No PDHs for event.

**Date:** Wednesday, Oct 8
**Time:** 5:00pm-5:30pm
**Place:** Metropolitan Water Reclamation District, 100 East Erie St Chicago, IL
**Register:** jeromemcgovern@att.net

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**SEI Biennial Lecture Series: Session 3**
A light dinner will be served as we learn about:

- CTA Harlem Bus Bridge- Irsilia Colletti, PE, SE & Budzik, SE (HNTB)
- Canal Street over Union Station- Michael Haas (Collins) & Brett Sauter (Ciorba)

**Date:** Tuesday, Oct 21
**Time:** 5:00pm
**Place:** Grand Century Suite, 150 N Riverside Plaza, Chicago, IL
**Register:** Session 3

More Information Here

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**IL-ASCE Annual Awards Dinner**
Please join us for a memorable evening of networking, dining, and honoring our 2025 award recipients.

**Date:** Thursday, October 30th
**Time:** 5:00pm
**Place:** Doubletree by Hilton Chicago - Magnificent Mile (300 E. Ohio)

Registration coming soon!

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**IL ASCE EWRI Permitting Seminar**
Local and regional permitting agencies including MWRD, IDOT and Lake County SMC will be presenting overviews of their respective jurisdictional permitting processes. More details to follow.

**Date:** Wednesday, Nov. 19

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