



**ONEIDA COUNTY DEPARTMENT OF
WATER QUALITY & WATER POLLUTION CONTROL**

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Anthony J. Picente, Jr.
County Executive

Karl E. Schrantz, P.E.
Commissioner

April 29, 2021

Gregg Townsend, P.E.
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Watertown, NY 13601

FedEx

Carol Lamb-Lafay, P.E.
Director – Bureau of Water Permits
Division of Water
NYS Department of Environmental Conservation
625 Broadway, 4th Floor
Albany, NY 12233

Re: Oneida County Sewer District
Quarterly Progress Report – 1st Quarter 2021

Consent Order No. R6-20060823-67

Dear Mr. Townsend and Ms. Lamb-Lafay:

On behalf of Oneida County, I am providing for your review and comment Oneida County's Quarterly Progress Report for the 1st Quarter – 2021 as required per Section XIII – Reporting Requirements of the Consent Order. This document summarizes the status and progress of work completed between January 1, 2021 and March 31, 2021 in support of Consent Order compliance requirements.

Please feel free to contact me should you have any questions or need additional information.

Sincerely,

**THE ONEIDA COUNTY DEPARTMENT OF
WATER QUALITY & WATER POLLUTION CONTROL**

Karl E. Schrantz, P.E.
Commissioner

Enclosure: Quarterly Progress Report – 1st Quarter 2021

cc: Anthony J. Picente, Jr. – Oneida County Executive
Peter M. Rayhill, Esq. – Oneida County Attorney
Colin Lautz, P.E. – OBG, Part of Ramboll
Howard LeFever, P.E. – GHD Consulting Services Inc.
John Story, P.E. – GHD Consulting Services Inc.
Randall Young – NYSDEC
Richard Coriale, P.E. – NYSDEC
David Rarick, P.E. – NYSDEC
Michael O'Neil, P.E. – NYSEFC

**SANITARY SEWER COLLECTION SYSTEM
QUARTERLY PROGRESS REPORT
1ST QUARTER – 2021
ONEIDA COUNTY SEWER DISTRICT**

NYSDEC Consent Order R620060823-67



Prepared for

**Oneida County Department of Water Quality
& Water Pollution Control**

**Karl E. Schrantz, P.E., Commissioner
51 Leland Avenue
Utica, NY 13502**

April 29, 2021



Syracuse, NY



Syracuse, NY



Part of Ramboll

Utica, NY

**Sanitary Sewer Collection System
Quarterly Progress Report
1st Quarter - 2021
Oneida County Sewer District
NYSDEC Consent Order R620060823-67**

Prepared for:

**Oneida County Department of Water Quality &
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April 29, 2021



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1.0 INTRODUCTION

1.1 HISTORICAL BACKGROUND

The Oneida County Sewer District (District) was formed in 1965 through an act by the former Oneida County Board of Supervisors. It is administered by Oneida County through the Oneida County Department of Water Quality and Water Pollution Control (WQ&WPC), which is responsible for the operation of the District's facilities and personnel. District facilities include 45-miles of interceptor sewers, the Sauquoit Creek Pumping Station (SCPS), the Barnes Avenue Pumping Station, and the Water Pollution Control Plant (WPCP). The District services 15 municipalities, nine of which are within the SCPS Basin. These municipalities own and operate their own collection systems.

1.2 PURPOSE

The New York State Department of Environmental Conservation (NYSDEC) and Oneida County (County) entered a Consent Order (No. R620060823-67) due to sanitary sewer overflows (SSO) at the SCPS. In addition to the required mitigation of those SSOs, the Consent Order, with an effective date of December 12, 2011, requires the submission of Quarterly Progress Reports. The intent of this Quarterly Progress Report is to summarize the work that has been undertaken by the County between January 1, 2021 and March 31, 2021 (1st Quarter of 2021) in support of the Consent Order compliance requirements.

2.0 ENGINEERING INVESTIGATIONS AND EVALUATIONS

During the 1st Quarter of 2021, the County completed the following tasks related to engineering investigations and evaluations.

2.1 COLLECTION SYSTEM

2.1.1 Manhole Inspections

The manhole inspection program was completed in 2012. There were no additional formal manhole inspections completed during the 1st Quarter of 2021.

During November and December of 2020, spot inspections along the lower elevation sections of the Sauquoit Creek Interceptor, Mud Creek Interceptor and the Starch Factory Interceptor were completed. The purpose of these inspections was to re-confirm the condition of the manholes and identify sources of infiltration and inflow (I/I). Damage from the October 31, 2019 flood event (as described below) was observed. Some low-lying manholes were observed, and future desktop analysis and observations will confirm whether these manholes become submerged under moderate flood conditions. A couple manholes also showed signs of I/I. In general, the manholes and the pipe connections in the area of these spot inspections were in good condition.

2.1.2 Sanitary Sewer Televising

There are approximately 216-miles of sanitary sewer within the SCPS basin (30-miles of District interceptor sewer plus 186-miles of municipal sewer). In 2011, the County contracted with a firm (National Water Main Cleaning Co.) to perform closed circuit televising (CCTV) of these sanitary sewers. Televising data was collected electronically in the field using the nationally standardized Pipe Assessment and Certification Program (PACP) and incorporated into the County's data management software.

The 2011 initial televising contract resulted in approximately 79%, or 171-miles, of the 216-miles of sewers being televised. The remaining 21%, or 47-miles of sewers, were not inspected at that time due to: heavy debris in quantities beyond the scope of the contractual cleaning effort; small diameter pipe inhibiting effective CCTV inspections; lack of easement access to manholes and sewers; and buried manholes. These obstacles are primarily maintenance related and are being addressed through the District-wide Capacity, Management, Operations, and Maintenance (CMOM) program currently in various stages of implementation. Efforts are being made to CCTV and inspect additional sewers as a component of current and future sewer rehabilitation contracts.

During the 1st Quarter 2021, no additional televising was performed. Including the original CCTV contract, and subsequent CMOM and rehabilitation related CCTV, a total of approximately 195-miles of sewer, or 90% of the total sewers in the SCPS basin, have been televised.

2.1.3 Dye Testing

The dye testing program was completed in 2012. There was no additional dye testing performed during 1st Quarter 2021.

2.1.4 Contract 17 Sewer Rehabilitation

During the 1st Quarter of 2021, the County has been obtaining budget pricing information from a private contractor for sewer investigation methods including: smoke testing, CCTV inspection, heavy cleaning, dye testing, and manhole inspection. The first area to be investigated is within the Village of Yorkville. Additional flow metering and/or SSES investigations may also be considered in the Town of New Hartford and Village of New Hartford. These areas were selected based upon the flowmetering analysis completed in 2020.

2.2 TREATMENT FACILITIES

Investigations, evaluations, and designs have been completed. Upgrades and new construction associated with the WPCP, SCPS, and New Force Main are in various stages of construction. Table 2.1 summarizes how the work has been segregated, and the status of each of the various planned construction contracts. Note: Contract numbers identified for the work at the WPCP and the SCPS/Force Main (C-1 through C-8), do not correlate to the sanitary sewer rehabilitation contracts (Contracts 2-16).

2.2.1 October 31, 2019 Flood Event

As reported previously, on October 31, 2019, an intense rainfall event caused widespread flooding in the Mohawk Valley. The rain gauge at the WPCP recorded 3.75 inches of rain, with a peak intensity of over 3 inches per hour. An inflatable plug was installed at the new 42-inch opening to the Influent Building. The open excavation outside the Influent Building filled with stormwater, and the plug gave way. The Influent Building was flooded nearly to the first floor level. Major equipment impacted by the flood included the submersible pumps, manually operated slide gates, an overhead crane motor, magnetic flowmeters, HVAC ductwork, lighting, and electrical conduit. The Motor Control Centers and Variable Frequency Drives are installed at the first floor level and were not impacted by the flood. As the pump station had not been started up or commissioned at the time of the flood, the relevant equipment manufacturers visited the site to recommend corrective actions. The on-site engineering team worked with the contractors, equipment suppliers, and the Owner to ensure all damage was corrected prior to official start-up and commissioning activities. The electrical contractor replaced lighting, conduits, and wiring. The pumps did not require major rehabilitation as they are designed to operate under submerged conditions. A new sluice gate was installed at the 42-inch diameter opening, thereby eliminating the need for the temporary inflatable plug and providing a more permanent means of preventing flooding into the Influent Building. The identified corrective actions and repairs are now complete. All manufacturers have been onsite to inspect the repairs and have provided written certification that equipment is still under warranty. Startup of the four pumps and all three screens is complete. Additionally, the Combined Influent Building bypass is complete and the Combined Influent Building is online.

The flood event was particularly intense within the Sauquoit Creek drainage basin. As a result, there was extensive flooding along Sauquoit Creek including stream bank failures. Sections of the Sauquoit Creek Interceptor Sewer were damaged, which included stream bank failures that resulted in pipe exposures within the creek that caused debris and creek water to enter the sewer. Teams of County personnel walked the interceptor sewer route, documented the damage, and engaged a contractor to begin emergency repairs. Initially nine interceptor sewer locations were identified as damaged, and one additional location was identified at a later date. The three most critical have been repaired (Griffiths Place and Mill Street in the Town of Paris, and Oneida Street in Chadwicks/Town of New Hartford). Additional surface restoration (seeding, mulch, plantings) was done in April 2020. The remaining seven locations are in various stages of design, and the permitting process with NYSDEC and Army Corps of Engineers is ongoing. A permit was issued by NYSDEC in December 2020 for the necessary repairs on the interceptor sewer in the New Hartford/Washington Mills park adjacent to Sauquoit Creek. Preparation for bidding is underway to advance those repairs. Total cost of repairs to the interceptor sewers are expected to cost between \$750,000 and \$1,000,000. The County continues to coordinate with FEMA regarding the disaster recovery assistance program.

The SCPS was also impacted by the flood event. The flooding of the sewer system due to the damages caused by the storm event carried gravel, rocks, debris, etc., through the Interceptor Sewers to the new Screening Building. Debris either become lodged in the screening/wash-press equipment or settled out in the influent channel creating significant labor effort to clean and repair. The Pumping Station flooded upwards of 12 to 14 feet of water on the drywell side. This impacted the pump instrumentation (temperature switches, vibration switches, etc.) that were mounted at the pumps. Heating and electrical equipment in the lower level was also submerged and damaged. In-kind instrumentation parts related to pump instrumentation/controls were replaced in May/June 2020. Exterior restoration (fine grading, seeding, mulching) related to the flood debris clean-up was generally completed during April/May 2020. The County continues to explore options for further flood mitigation of pumping station equipment and the facility itself in coordination with the FEMA disaster recover

assistance program. An engineering report outlining completed repairs plus those necessary to enhance resiliency at the station is being prepared for submission to FEMA with the goal of obtaining funding for the work. Repairs to the Pumping Station (buildings and site) are estimated to cost between \$700,000 and \$1,000,000.

2.2.2 June 2, 2020 Grit Building No. 3 Submergence Event

On Friday, May 29th, 2020, both the north and south grit tanks at Grit Building No. 3 were empty. A valve on a “sparge water” line was inadvertently left open on the south tank, which eventually filled the tank. Once the south tank was filled, sparge water overflowed into the north tank. A drain valve was open on the north tank to allow rainwater to discharge to the building sump pump over the weekend. The sparge water from the north tank was conveyed through the drain valve onto the basement floor in Grit Building No. 3. During this time, the discharge gate downstream of the grit tanks was closed, leaving no path for the sparge water other than through the drain valve at the northern grit tank. The approximate flow rate of the sparge water was 20 gallons per minute (gpm). Sparge water was directed to the sump pit in the basement of Grit Building No. 3. The design intent was to drain the tanks through 3 grit pumps in lieu of through the sump pit/sump pump 1204. Sump pumps were not designed to sustain a flow of 20 gpm. The sparge water continuously ran until Monday, June 1, 2020 where the flow rate of sparge water unknowingly exceeded the sump pump performance capabilities (<20gpm). The water level continued to rise in the basement level until it reached the motor control center and shorted out electrical power to several pieces of equipment including the sump pump. Flood water crested at an elevation of 4’-7” above finished basement floor elevation, resulting in damage to the motor control center, network cabinet, control panels, grit pump motors, etc. Damaged equipment must be replaced to maintain the functionality of the plant. Repairs will generally include:

- Replacement of (3) grit pumps and motors
- Removal of existing MCC and installation of new power distribution equipment
- Replacement of heat pumps
- Installation of new sump pumps and controls
- Replacement of fiber optic panel

Contractors were requested to reach out to the appropriate manufacturers/vendors to assess resulting damage from the flood event and provide a quotation for replacement/repair as necessary to maintain the manufacturer’s warranty to be provided contractually. NEMA Guidance for Evaluating Water-Damaged Electrical Equipment was followed for assessment (attached). The table below reflects a summary of Contractor quotations that the Engineer believe to be accurate and reasonable quotations for the damage that was incurred:

Contract No.	Contractor	Quotation
6A	C.O. Falter Construction Corp.	\$29,035.20
6B	John W. Danforth Co.	\$41,645.70
6C	O’Connell Electric Co., Inc.	\$224,646.00
7C	Patricia Electric, Inc.	\$27,831.15

The total cost of the required repairs was submitted to the County’s insurance carrier with backup cost information. On November 20, 2020 a representative of the insurance carrier visited the site and observed the damage in Grit Building No. 3 with representatives of the County, Ramboll, and GHD. The County continues to pursue reimbursement through the insurance carrier.

3.0 MANAGEMENT PROGRAMS

3.1 COMPUTERIZED MANAGEMENT AND MAINTENANCE SYSTEM

The County purchased a Computerized Management and Maintenance System (CMMS) software system (Lucity) in 2009. This software is used to manage the sewer system data (mapping, inspections, etc.) obtained to date by the County. At the same time that the software was acquired, the County invested in computer hardware upgrades to support the CMMS. The County's Geographic Information System (GIS) Coordinator manages the system.

The County continues to utilize the CMMS for tracking and documenting sewer rehabilitation work, and uploading and managing new PACP data provided by the County's CCTV and sewer rehabilitation contractors on a regular basis.

The Consultant Team utilizes the CMMS in support of the sanitary sewer rehabilitation design efforts to identify defects and develop rehabilitation methodologies.

3.1.1 Asset Management

The County continues to maximize the use of its current CMMS software. At the same time, the County, with the assistance of the Consultant Team, continues to assess ways to optimize the CMMS with the long-term expanded asset management needs for the wastewater system. In accordance with Schedule C, Section B.4 of the Consent Order, the Consultant Team developed a proposed asset management program for the Department of Water Quality and Water Pollution Control. Under a previous authorization, the Engineering Team assisted the County with the process of receiving proposals for a new CMMS. Several candidate vendors provided demonstrations of their systems. Based on the proposals and demonstrations received, the "Sprocket" CMMS system by Dematic is the preferred software application for the WPCP. Barton and Loguidice, D.P.C was subcontracted by GHD (Consultant Team) and has started to customize the software for County use.

During the 4th Quarter of 2020, the engineering team confirmed the location for new servers to host the CMMS system with County IT personnel. Due to COVID restrictions, the servers were not installed during 2020.

The Asset Register for equipment being installed in Contracts C-2, C-5, C-6, C-7, and C-8 was developed in 2020. The Asset Register includes preventative maintenance tasks and frequency, and will eventually be used to automatically generate work orders once the CMMS system is online.

The new "Asset Management Building" that will be constructed south of the existing Maintenance Garage was included in the Contract C-8 Bid Package that was awarded February 2021. The Asset Management Building features a racked storage system for spare parts, an inventory control system, and an office for parts clerk. A portion of the new building has been designed to house the County's new vector truck used for interceptor maintenance.

3.2 FLOW MONITORING PROGRAM AND HYDRAULIC MODEL

The County worked closely with the Dormitory Authority of the State of New York (DASNY) to secure the \$950,000 Economic Development Assistance Program (EDAP) funding allocation to support the extensive flow monitoring program proposed by the County and approved by NYSDEC on August 24, 2012.

The EDAP funds were ultimately made available by DASNY to the County in March 2014. Procurement of the flow monitoring equipment was advertised on June 9, 2014 and a contract was awarded on September 10, 2014 to ADS Environmental Services, LLC (ADS). ADS completed installation of 63 flow meters and five rain gauges in 2015. Two of the meters were installed to monitor flow to the County's Barnes Ave Pumping Station, and three are used to monitor flow in the City of Utica's combined sewers to aid in hydraulic model calibration and confirmation. There are 44 meters located in the Sauquoit Creek Pump Station (SCPS) drainage basin, and 14 meters located outside the SCPS basin. The flow meters and rain gauges have been consistently collecting flow data since their installation. Three new flowmeters were installed within the collection system tributary to the

Starch Factory Interceptor (outside of the SCPS Basin) in December 2019. The purpose of these meters was to isolate portions of the Starch Factory Interceptor basin so that areas of excess infiltration and inflow (I/I) could be identified. The data collected by these flowmeters is currently being analyzed. That said, preliminary results provided in the report by ADS indicate that the sewershed tributary to meter “Oneida_205” located within Proctor Park, appears to be contributing the most Rain Derived I/I (RDII) in the Starch Factory Interceptor area.

Flow metering data were made available to the County and its Consultant Team by ADS to evaluate the impact sanitary sewer rehabilitation, including manhole rehabilitation completed to date, may have on the amount of I/I entering the sanitary sewer system. Raw flow monitoring data, consisting of 5-minute measurements of depth and velocity, are reviewed by ADS technicians who are able to assess the reliability of the data, and “scrub” out data that is deemed not accurate based on inconsistencies in the expected predictable relationship between depth, velocity, and rate of flow.

After the data has been verified and scrubbed, ADS technicians input the cleaned-up data into Slicer, which is ADS’ proprietary flow analyzing software. Slicer enables the flow monitoring technician to automate identification of dry and wet weather days, define “typical” rain events for both summer and winter seasons, and analyze the rain event’s effect on the flow in the sanitary sewer. This forms the basis of evaluating the quantity of RDII in large datasets.

The 2018 1st Quarter progress report presented the evaluation and findings of the hydraulic model calibrations, which were used to compare and evaluate the effectiveness of the I/I removal projects upstream of the SCPS. The 2019 1st Quarter progress report presented an update of the flow monitoring data and RDII analysis for summer 2018 and winter 2019 events. The 2020 1st Quarter progress report presented an update of the flow monitoring data and RDII analysis for summer 2019 and winter 2020 events, as well as comparison to historical flow monitoring data. Flow monitoring data and information from the County’s GIS system on the sewer rehabilitation work completed also were analyzed for each of the flow meters in the SCPS basin.

The analysis completed for 2020 1st Quarter observed a notable decrease in flows at the OKY-1B meter in the Village of Oriskany for 2019, especially considering that 2019 had a higher rainfall volume compared to 2018. While it is not known what occurred in this basin to cause this change, there was some bridge work performed upstream of this flow meter that may have impacted storm water discharges in this area, but the nature of the work is unknown. Review of recent flow monitoring data for the OKY-1B basin indicates this decreased flow trend has continued through the 1st Quarter of 2021.

A critical piece of information that is needed for the effective use of Slicer, or any other wet-weather analysis tool, is rainfall. Data collected by the rain gauge installed at the SCPS was used for this evaluation and tabular rainfall data from the SCPS rain gauge for January 2018 through December 2020 are included in Appendix A. For comparison purposes, the annual precipitation totals for 2016 to 2020 are shown in Table 3.1, which indicates that 2019 had the highest rainfall volume over the previous four years, followed by 2017, and then 2018, while 2020 had the lowest rainfall volume over the 5-year period.

Table 3.1 Annual Precipitation Summary

Year	Annual Precipitation, inches
2016	38.60
2017	53.58
2018	45.38
2019	55.71
2020	34.76

First, ADS provided an Annual Report on RDII Analysis for all County flow meter data from April 2020 through February 2021, which is included in Appendix B. This report provided information on the Christmas 2020 storm event compared to other storms, the additional flow monitoring in the Starch Factory Interceptor basin, trends in average dry day flows (ADDF) and base infiltration, and trends in RDII volume and peak flows system-wide for the larger storm events in 2020.

The most notable wet weather event throughout the 2020 flow metering data collection period was on December 24, 2020 and was called the Christmas 2020 event within the ADS report. The Christmas 2020 event consisted of approximately 1.5 inches of precipitation (system wide average). It should be noted that the two preceding days leading up to the event totaled 0.5 inches of rainfall and ADS stated that there was no snow on the ground prior to the event, indicating snowmelt was not a factor. To quantify this event further, Table 3 in the ADS Report (Appendix B) indicates the return period frequency of each rain event at all rain gauges, which shows that while several storms throughout 2020 exceeded a 1-year return period frequency, the Christmas 2020 event return period frequency was less than 6-months (at all rain gauges). The return frequency for this event was relatively low in comparison to the high RDII volume observed, indicating this event could likely be considered atypical. This event was not excluded from the winter season Q vs I comparison graphs (included in Appendix C) because snowmelt was not a factor. However, antecedent conditions caused inflow measured at all locations to be significantly higher than normal years. Therefore, this event is considered an outlier that impacted the 2020 flow monitoring analysis results.

To further evaluate the flow monitoring data and build upon the analysis included in the 2020 1st Quarter report, Slicer was used to calculate the normalized RDII in units of gallons per linear foot of sewer multiplied by inches of rainfall [gal/(LF*in)] for each major wet weather event utilizing rainfall and flow data from 2008 (before sewer rehabilitation work), 2015, 2019, and 2020. Using the units of (gal/LF*in) allows the analysis to be normalized to precipitation and minimize the variability of the result due to rainfall intensity, duration, and sewershed size. This provides a way to compare I/I volumes between different sewersheds and rain events compared to using Q vs I plots alone (Q vs I plots included in Appendix C). This analysis is then used to compare the slopes of a linear trend line for each year's RDII data against the same data for a control basin where little to no rehabilitation work has been identified. Simply put, the steeper the slope, the more I/I enters a system during a rain event. The normalized RDII data were plotted for the following flowmeters as reported on in the 2020 1st Quarter report and can be found in Appendix D: HHI1, NHD6, NHD9, NHD18, NHD20, NHD23, WHN2, PRS4, PRS5, SCI1, and YKV1A. For this analysis, flowmeter NYM1 was used as a control basin since minimal rehabilitation work has been completed in this basin since the 2008 monitoring.

The normalized RDII charts showed increased RDII in both 2019 and 2020 compared to 2008 for flowmeters NHD6, NHD9, NHD18, NHD20, NHD23, PRS5, SCI1, and YKV1A. Flowmeter HHI1 showed lower RDII in both 2019 and 2020, while flowmeters WHN2 and PRS4 showed higher in 2019 but lower in 2020. In addition to the previous areas analyzed, data for two additional flowmeters (YKV1B and YKV2) were examined as County personnel indicated that this part of the system has demonstrated operational issues during wet weather. These two flowmeters were not part of the original flow monitoring effort in 2008, but an increase was observed when comparing 2015 to 2019 and 2020 data for YKV2, while YKV1B showed an increase from 2015 to 2019 but a decrease in 2020.

In addition to the analysis above, historical rainfall and sanitary sewer overflows at the Sauquoit Creek Pump Station were examined. Figure 3.1 demonstrates the annual total rainfall and the volume of sanitary sewer overflow at the Sauquoit Creek Pump Station from 1999 to 2020. There has been a noted decrease in annual overflow volumes over the period of 2017 to 2020, which is likely attributed to a combination of sewer rehabilitation work performed in the upstream service area and upgrades to the Sauquoit Creek Pump Station resulting in improved service.

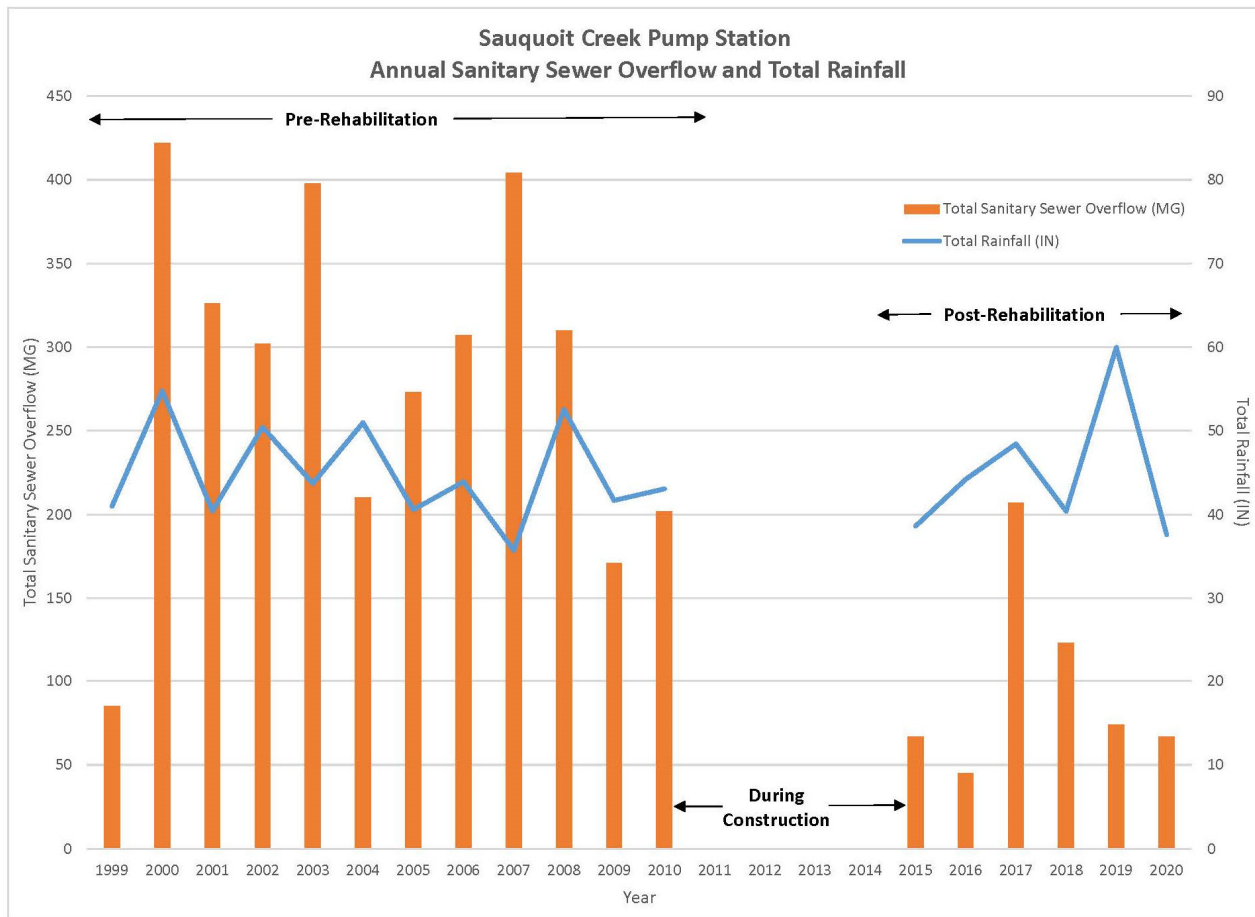


Figure 3.1: Annual Overflow Volume at Sauquoit Creek Pump Station vs. Total Rainfall

Overall, the results of these evaluations indicate that the significant amount of sewer investigation and subsequent rehabilitation work completed to date has had a positive impact on I/I abatement and reducing sanitary sewer overflow volumes at the Sauquoit Creek Pump Station. Additionally, the new 42-inch force main from the Sauquoit Creek Pump Station, scheduled to be put into service in May 2021, was designed to mitigate sanitary sewer overflow volumes since it will allow more flow to be pumped to the WPCP and treated. Although the overflow volumes at the Sauquoit Creek Pump Station have been significantly reduced, there still appears to be I/I entering the sewer system in a few select areas of the system. Rehabilitation work to date has consisted of cured-in-place-pipe (CIPP) lining, lateral joint grouting, pipe joint grouting, and manhole rehabilitation. These methods have the potential to eliminate infiltration and repair the structural integrity of the sewer main, but are limited to addressing mostly public side I/I sources. Further investigation is warranted to identify and address other sources of I/I, such as cross connections between storm and sanitary sewers and private side I/I (see Section 3.3). Based on the high I/I observed in certain areas of the collection system, additional sewer investigation is planned for areas of noted concern as indicated in Section 2.1.4. Continued sewer investigation and rehabilitation work is important to further I/I abatement, as well as help build excess capacity in the collection system for future growth. The combination of past and future sewer rehabilitation work and the new 42-inch force main from the Sauquoit Creek Pump Station are intended to mitigate the overflow at the SCPS according to the Consent Order.

3.3 PRIVATE PROPERTY INFLOW AND INFILTRATION REDUCTION PROGRAM

The document titled “Preliminary Planning Document – Private Property Inflow and Infiltration Reduction Program” was submitted to the NYSDEC on June 29, 2012 as required by Schedule A - Section B.2 of the Consent Order. The County, working through the Steering Committee, created a working group of appropriate private property inflow and infiltration (PPII)-oriented community representatives to map out a phased implementation plan.

An engineering Work Order for continuation of the PPII program was approved by the County in the 1st Quarter of 2021. Planning among the Consultant Team regarding the 2021 program elements includes legal review of potential modifications to the County’s Sewer Use Rules and Regulations and drafting policy documents relative to private property I/I. These efforts, specifically related to direct coordination/meetings with the Steering Committee, were on hold in 2020 due to the COVID-19 crisis, but will resume in 2021 with virtual meetings and electronic correspondence.

3.4 CAPACITY, MANAGEMENT, OPERATIONS AND MAINTENANCE PROGRAM

The document titled “Preliminary Planning Document – Proposed CMOM Framework – Sauquoit Creek Pumping Station Basin Communities” was submitted to the NYSDEC on June 29, 2012 as required by Schedule A – Section B.3 of the Consent Order. The County, working through the Steering Committee, created a working group of appropriate CMOM-oriented community representatives to map out a phased implementation plan.

Fats, Oils, and Grease (FOG) Program: The OCSD and Oneida County Department of Health (OCDOH) are collaborating on the implementation of the Fats, Oils, and Grease (FOG) program. In the 1st Quarter 2021, no inspections of Food Service Establishments (FSEs) were performed as the lead person at the OCDOH working on the FOG program left the County in January 2020 and a replacement has not been hired (more details provided in Section 9.1). To date, a total of 225 FSEs have been visited. The OCDOH anticipates conducting limited FOG inspections of new and existing facilities later in 2021. Initial visits are primarily for educational purposes, informing owners of the FOG program and best management practices (BMP). Inspectors also verify that proper plumbing fixtures are in place, and that FSEs follow the local and County sewer use ordinance in not releasing fat-laden wash water or cooking oils to the sanitary sewer system. Inspectors look for evidence that FSEs are utilizing BMPs, tracking grease trap maintenance, and keeping grease hauling records. Inspectors have found varying levels of FOG compliance, but most have been reportedly receptive to learning about the program and willing to allow inspection of existing facilities. In some cases, follow-up visits are made to ensure action on non-compliance. Facility characteristics, inspection details, and compliance status on each FSE is collected and tracked. In the future, the data will be entered in the County CMMS (Lucity), so that it can be linked with the growing collection system database.

4.0 SCHEDULE/MILESTONE DATES

4.1 APPROVED SCHEDULE

The following table represents the approved schedule as defined by the Consent Order (note that there were no changes to this schedule during the 1st Quarter of 2021):

Description	Consent Order, Schedule "A" Date	Status
<u>Engineering Investigations and Evaluations</u>		
Dye Testing and Storm Sewer Report	June 30, 2012	Complete, Submitted June 29, 2012
Manhole Evaluation Report – Phase II	June 30, 2012	Complete, Submitted June 29, 2012
SCPS Evaluation Report	August 31, 2012	Complete, Approved November 28, 2012
WPCP Evaluation Report	August 31, 2012	Complete, Approved November 28, 2012
Treatment System Supplement (Report)	60 days after approval of WPCP Evaluation Report	Complete, Submitted January 25, 2013
Sewer CCTV Inspection Report – Phase II	April 30, 2013	Complete, Submitted April 25, 2013
Sewer CCTV Inspection Report – Phase III	April 30, 2014	Complete, Submitted April 29, 2014
Collection System Supplement (Report)	May 31, 2014 (extension granted to July 1, 2014)	Complete, Submitted June 30, 2014 Approved December 18, 2014
<u>Management Programs</u>		
Flow Monitoring Program	March 31, 2012	Complete, Approved August 24, 2012
Private Property I/I Reduction Program	June 30, 2012	Complete, Submitted June 29, 2012
CMOM Program	June 30, 2012	Complete, Submitted June 29, 2012
PPII Reduction Program Implementation	May 31, 2013	Began implementation in 4 th Quarter 2012
CMOM Implementation	May 31, 2013	Began implementation in 4 th Quarter 2012
Asset Management Plan	December 31, 2021	In development
<u>Remedial Measures</u>		
Semi-Permanent Alternative-Construction	December 31, 2016	Modified Consent Order effective 6/28/18 removed the requirement for construction of the semi- permanent alternative.
SSO Mitigation-Consent Order Compliance	December 31, 2021	In progress
<u>Reporting</u>		
Annual Work Plan	January 31, Annually	Submitted annually
Quarterly Progress Report	Quarterly	Submitted quarterly

Note: I/I – Inflow and Infiltration

4.2 MILESTONES

During the 1st Quarter of 2021, the following milestone dates were met:

- Continuing to make progress toward compliance milestones.

4.3 MODIFIED ORDER – JUNE 28, 2018

Description	Consent Order, Schedule “A” Date	Status
Remedial Measures		
Contract 10 – Sanitary Sewer Mainline Rehabilitation Phase V – Whitesboro (V), Whitestown (T) – Completion	August 31, 2018	Certificate of Compliance submitted to NYSDEC August 30, 2018.
Contract 12 – Sanitary Sewer Mainline Rehabilitation Phase VII – Yorkville (V) – Completion	July 31, 2019	Certificate of Compliance submitted to NYSDEC June 28, 2019.
Contract 13 – Sanitary Sewer Mainline Rehabilitation Phase VIII – New Hartford (T) – Completion	August 31, 2018	Certificate of Compliance submitted to NYSDEC August 30, 2018.
Contract 14 – Sanitary Sewer Mainline Rehabilitation Phase IX – New Hartford (T) – Completion	December 31, 2018	Certificate of Compliance submitted to NYSDEC December 21, 2018.
Contract 16 – Sanitary Sewer Mainline Rehabilitation Phase X –Whitestown (T) – Completion	July 31, 2019	Certificate of Compliance submitted to NYSDEC June 28, 2019.

4.4 TEMPORARY (CONSTRUCTION PHASE) SPDES PERMIT LIMITS

During construction, the WPCP is operating under the provisions set forth in “SPDES Permit No. NY0025780, Interim Effluent Limits and Monitoring, R6-20060823-67-M1,” as issued by the NYSDEC. These construction phase permit limits require a wet weather flow of 48 mgd through the WPCP prior to a combined sewer overflow upstream of the plant. The temporary limits expire on December 31, 2021, concurrent with the Consent Order deadline. In a letter dated December 22, 2020 to the NYSDEC, the County requested extension of the temporary construction phase permit limits through the completion of Contract C-8.

Contract C-8 was awarded in February 2021. Under this contract, the secondary treatment system will be upgraded with new blowers and diffusers at the three aeration basins, and new sludge/scum collection equipment in the eight final settling tanks. The project also includes new return activated sludge pumps and other associated enhancements. This project is not required to achieve the peak flow capacity of 111 mgd and is therefore not part of the Consent Order. C-8 is more focused on replacement of equipment that has reached the end of its useful service life. However, this contract will necessitate taking process tanks offline periodically. Specifically, the Contractor will be required to take one aeration basin out of service at a time to replace diffusers, air piping and valves, gates, etc. As the aeration basins will be out of service for periods of time, treatment may be impacted during construction. There is no feasible or practicable way to complete the aeration basin improvements without periods of limited capacity.

5.0 SEWER REHABILITATION

Active sewer rehabilitation work financed under CWSRF Project No. C6-6070-08-00, C6-6070-08-10, and C6-6071-02-00 are being administratively closed out. All projects have been tracked by contract number. The rehabilitation contracts were undertaken to reduce the amount of inflow and infiltration entering the system due to defects in interceptor sewers, mainline sewers, lateral connections, and manhole structures. Work under these sewer rehabilitation contracts typically included: a mix of cured-in-place-pipe (CIPP) lining; pipe joint and lateral grouting; open cut repairs; spot repairs; manhole repairs/replacement; and supplemental CCTV inspections. Information related to these sewer rehabilitation contracts is presented in Table 5.1. Required work per the Consent Order is essentially complete, and any remaining open contracts are going through the administrative closeout process. The Engineering Team continues to review available data and looks for additional sewer rehabilitation opportunities. A new contract, Contract 17 is being developed to address sewer rehabilitation in certain target areas, as discussed in Section 2.1.4. Construction is anticipated to begin in Q3 2021.

6.0 ASSESSMENT OF REHABILITATION EFFECTIVENESS

See Section 3.2 for a discussion of the status of flow monitoring and hydraulic model update. Based on the completed work, and using estimated values of inflow and infiltration (I/I) removals provided in the Offset Plan and/or the approved Basis of Design engineering reports for the respective projects, the estimated reductions in I/I for each rehabilitation contract are shown in Table 5.1.

7.0 COMPLETED CAPITAL PROJECTS/FACILITY UPGRADES

Status of all capital projects and facility upgrades is provided in Table 2.1 and Table 5.1.

8.0 I/I OFFSET PROJECTS/NEW FLOWS

During the 1st Quarter of 2021, new additions and subtractions to the I/I Offset Credit Bank were recorded by the County. All amounts are reported in gallons per day (gpd) after the application of the 5:1 offset ratio.

Community	Starting Balance	Credits Added	Location	Credits Used	Ending Balance
Town of New Hartford	1,835,777	0	209 Florence Ct. Chadwicks 349.020-2-29	240	1,816,244
		0	104 Woods Edge Dr. (Cherrywood) 328-000-2-26 NH Permit #6061	320	
		0	120 Woods Edge Dr. (Cherrywood) 328-000-2-26 NH Permit #6062	320	
		0	122 Woods Edge Dr. (Cherrywood) 328-000-2-26 NH Permit #6063	320	
		0	1 Roberts Way (Cherrywood) 328-000-2-26 #6064 1 Cherrywood Circle	320	
		0	8536 Seneca Turnpike - Hoffman Carwash	15,453	
		0	213 Florence Court, Chadwicks (Lot 27) NH Permit #6066	320	
		0	Corner Rich/Ontario Ave NH Permit #6067	320	
		0	316 Gracie Place (Applewood) 328.000-2-1 NH Permit #6069	240	
		0	218 Jacks Way (Applewood) 328.000-2-1) NH Permit #6068	240	
		0	21 Hosta Lane (Cherrywood) 328.000-2-26 NH Permit #6070	240	
		0	30 Hosta Lane (Cherrywood) 328.000-2-26 NH Permit #6071	320	
		0	4 Roberts Way, Cherrywood 328.000-2-26, NH Permit #6072	320	
		0	6 Roberts Way, Cherrywood 328.000-2-26, NH Permit #6073	320	
		0	106 Woods Edge Dr. (Cherrywood) 328-000-2-26 NH Permit #6075	240	
Town of Paris	253,064	0		0	253,064
Town of Whitestown	1,053,954	0		0	1,053,634
Village of Clayville	59,069	0		0	59,069
Village of New Hartford	277,147	0		0	277,147
Village of New York Mills	166,523	0		0	166,523

Community	Starting Balance	Credits Added	Location	Credits Used	Ending Balance
Village of Oriskany	103,466	0		0	103,466
Village of Whitesboro	1,083,599	0		0	1,083,599
Village of Yorkville	159,082	0		0	159,082
Oneida County Business Park	43,027	0		0	43,027
Oneida County Sewer District	24,710	0		0	24,710
Totals	5,059,098	0		19,533	5,039,565

9.0 KEY PERSONNEL CHANGES

Key personnel changes, as they relate to the SSO Mitigation/Consent Order compliance project, are interpreted to be those staff members whose addition to or deletion from the project would be viewed by the County to either add resources or be a detriment to progress. Project staff includes County, satellite community, and Consultant Team personnel. The following is a summary of changes.

9.1 COUNTY STAFF

During the 4th Quarter of 2020, Steven Devan, PE, Commissioner – Department of Water Quality and Water Pollution Control, retired effective December 31, 2020. Karl Schrantz, PE, was appointed as the new Commissioner – Department of Water Quality and Water Pollution Control, which took effect January 25, 2021.

The County previously had a hiring freeze due to the COVID-19 crisis; however, they are now able to hire essential positions. That said, the Health Department has not yet been able to find a suitable replacement to fill the position that works on the FOG program.

9.2 SATELLITE COMMUNITY STAFF

During the 1st Quarter of 2021, there were no changes of key personnel to report.

9.3 CONSULTANT TEAM STAFF

During the 1st Quarter of 2021, Karl Schrantz, P.E. resigned from Ramboll and was appointed Commissioner of the Oneida County Department of Water Quality and Water Pollution Control. The “Program Manager” tasks that Karl was performing at Ramboll will be provided by John LaGorga and John Story of GHD, each of whom have been involved in the program since the planning stages and are familiar with the current construction contracts.

9.4 COVID-19 IMPACT

In March 2020, the COVID-19 crisis began affecting daily work routines for the County, Consultant Team and contractors. New York State Executive Orders (Order 202 and its amendments) for Essential Workers were followed. OCSD staff operated utilizing staggered work shifts in order to maintain social distancing and safe work conditions in efforts to minimize potential exposure to COVID-19 during Q-2 2020. Staffing returned to normal scheduling in Q-3 2020. The County had initiated a hiring freeze that remained in place throughout remainder of 2020 due to severe revenue shortfall related to the COVID-19 crisis; however, the County is now hiring essential positions.

The Consultant Team continues to work on the project as necessary and in accordance with New York State and Oneida County Executive Orders combined with their own company guidance and modified procedures to maintain social distancing and safe work conditions. On-site staff is generally limited to key Construction Management, Construction Inspection, and Start-up/Commissioning personnel. Engineering/design personnel work remotely per the Governor’s Executive Order 202. Engineering team presence onsite is allowed only with approval from the Commissioner.

As construction work also is considered essential to infrastructure, contractors continue to make progress on the various construction contracts and have implemented practices to maintain social distancing and safe work conditions. Some vendors, subcontractors, and their employees have expressed concern about working at the site during the COVID-19 pandemic, which has the potential for schedule impacts. This has created challenges related to some equipment start up and associated training.

Even with extensive safety protocols in place, three consultant staff members who work out of the on-site Engineering Field Office contracted the COVID-19 virus. Protocols were followed regarding quarantining and testing of all staff. The Field office was shut down for a period of time and a specialty contractor was brought in for a deep cleaning and sanitizing of the space. The three consultant staff members have since recovered.

10.0 ADMINISTRATIVE ITEMS

10.1 WORK AUTHORIZATIONS

There were no new work authorizations issued during the 1st Quarter of 2021.

10.2 PROJECT FINANCING

Table 10.1 below is from the Preliminary Engineering Report in Support of Project Financing, Amended March 11, 2020. The overall Consent Order compliance program is large in scope and magnitude. Phasing is required in order to implement the work in a reasonable and cost-effective manner. The following represents the project's current overall phasing plan and estimated budgets, including information in the 2020 CWSRF Intended Use Plan.

Table 10.1: Project Phasing⁽¹⁾

CWSRF PROJECT NO.	PHASE	CURRENT DESCRIPTION	CWSRF FINANCED AMOUNT
C6-6070-08-00	1	Sanitary Sewer Collection System – Sewer Rehabilitation/Replacement	\$10,078,434 <i>Long Term Debt 2015</i> \$4,000,000 <i>Principal Forgiveness</i>
C6-6070-08-01	2B & 3	Sanitary Sewer Collection System – Sewer Rehabilitation/Replacement	\$15,000,000 2020 Multi-Year List
C6-6070-08-02		Sauquoit Creek Pumping Station and Force Main – Design and Permitting	\$2,524,017 <i>Long Term Debt 2019</i>
C6-6070-08-03	4	Inflow/Infiltration Mitigation in Support of Private Property I/I Reduction	\$7,664,000 Multi-Year List
C6-6070-08-04⁽²⁾	5B & 6C	Sauquoit Creek Pumping Station and Force Main Upgrades & Water Pollution Control Plant Upgrades (Construction of Solids Handling Upgrades not covered in Phase 6B, Construction of portions of the “Physical Condition” Upgrades)	\$97,656,145.00 <i>Long Term Debt 2019</i> \$5,000,000 WIIA Grant \$1,000,000 ESD Grant \$2,000,000 NYSEDA Grant
C6-6070-08-05	6A	Construction of the remainder of the Water Pollution Control Plant Upgrades not covered in Phases 5B, 6B, and 6C.	\$55,000,000 <i>Long term financing 2020, pending</i> \$5,000,000 Interest Free loan \$20,000,000 WIIA Grant
C6-6070-08-06	6B	Water Pollution Control Plant Upgrades – Design Phase Services, Construction of Select Solids Handling Upgrades Phases)	\$34,707,000 <i>Long Term Debt 2017</i>
C6-6070-08-10	1 & 2A	Sanitary Sewer Collection System (I/I) Correction (Balance from C6-6070-08-00)	\$11,586,562 <i>Long Term Debt 2017</i>
C6-6070-08-11	2B & 3	Sanitary Sewer Collection System – Sewer Rehabilitation/Replacement (Balance from C6-6070-08-01)	\$13,923,000 Multi-Year List
C6-6070-08-14	5B & 6C	Balance from C6-6070-08-04.	\$15,000,000 – Interest Free loan <i>Long Term Debt 2019</i>

CWSRF PROJECT NO.	PHASE	CURRENT DESCRIPTION	CWSRF FINANCED AMOUNT
C6-6070-08-15 ⁽³⁾	6A	Construction of remainder of the Water Pollution Control Plant, Sauquoit Creek Pumping Station and Force Main upgrades, and Barnes Avenue Pumping Station Upgrades not financed in Phases 5B, 6B, and 6C. (Balance from C6-6070-08-05).	\$80,000,000 (2019 Annual List) \$40,000,000 (Additional Bonding Request – Amendment 3)

- (1) Includes all project related financings, including those not related to this Bond Authorization (including its amendments).
- (2) C6-6070-08-04 received an additional \$5 million Water Infrastructure Grant.
- (3) C6-6070-08-15 NYSEFC has included \$120,000,000 in the draft 2020 IUP.

Table 2.1

Oneida County Sewer District
Summary of Contracts 1Q 2021

Water Pollution Control Plant and Sauquoit Creek Pumping Station/Force Main

Contract No.	Title of Contract	Components of System Addressed	Status of Design	Status of NYSDEC Review	Status of Other Agency Reviews	Estimated Advertisement	Estimated ⁽¹⁾ Construction Start	Construction Progress	Estimated Construction Complete
1	Incinerator No. 2 Demolition	Demolition of Incinerator No. 2	Final	Approved	n/a	Bidding occurred during 1Q 2016; however, due to the outcome of bids, the demolition was added to Contract 2 by addendum on May 25, 2016.			
2	WPCP Solids Handling Upgrades	2 new egg-shaped digesters, 1 secondary digester w/gas holding cover, new waste activated sludge pumps, refurbish 4 gravity thickeners, new stand-by lime stabilization system, 2 new belt filter presses.	Final	Approved	n/a	Advertised April 4, 2016	Notice to Proceed September 27, 2016	Construction is substantially complete and all equipment is on-line.	April 2019
3A	Electrical Equipment Pre-Purchase (Digester 15kV)	Pre-purchase of major electrical components such as switch gears, transformers, and supporting power distribution equipment.	Final	n/a	n/a	April 2017	Equipment delivery October 2017	Equipment has been installed and tested. Training has been provided to the Owner.	N/A
4	Sauquoit Creek Force Main Upgrades	New 48-inch force main and rehabilitation of the existing force main, new flow metering and flow control vaults.	Final	Approved	Approved	Advertised December 15, 2017	July 2018	Approximately 18,500 ft of new force main installed (including 9,000 ft +/- on piles); SECA Underground was terminated at the end of Q-3 by Marcellus Construction due to inability to complete the micro tunnel work. An open cut alternative to micro tunneling was designed by Brown and Caldwell. Review/coordination was done with NYSDOT and CSX. MCI proceeded with open cut work in November 2020. Work completed on the 42-inch force main and commissioning scheduled for April 2021. Rehab of the existing 30-inch force main is expected to begin in Q2-2021. Change Order No. 2 issued in September 2020 converting micro tunnel work to open cut. Design Team and Owner preparing Change order to change CIPP rehab of FM from CIPP to Slip lining.	June 30, 2022
5	Sauquoit Creek Pumping Station Upgrades	Replacement of existing pump station mechanical screen contained in a new screen building, 2 screenings washer/compactors and conveyor; replacement of existing standby generator capable of operating the station to pump peak flow during a power outage; electrical/HVAC upgrades; flow distribution structure at the WPCP.	Final	Approved	n/a	November 2016	July 2017	<u>Note - Site and buildings impacted by 7/1/2017, 1/24/2019, and 10/31/2019 ice jam/flooding events;</u> <u>New Screenings Building:</u> Facility is generally operational (building access/security pending); new emergency generator fully operational; Huber replaced the WAP equipment with a new, modified system intended to improve drainage. Operational results of WAP are being monitored, although still not properly functioning per project specifications. Potential hot water system (for WAP) is being considered, design was completed for HW system. Owner is reviewing contractual remedies if the non-performance of the washer/compactor is not resolved. Most punch list items completed. <u>Existing Pumping Station Building:</u> Electrical, HVAC, and plumbing renovations complete minus minor punch list items.	Tentative agreement on Substantial Completion date of March 2021 for all 4 Prime Contractors with the exclusion of the washer compactors for C5-A.

Table 2.1

Oneida County Sewer District
Summary of Contracts 1Q 2021

Water Pollution Control Plant and Sauquoit Creek Pumping Station/Force Main

Contract No.	Title of Contract	Components of System Addressed	Status of Design	Status of NYSDEC Review	Status of Other Agency Reviews	Estimated Advertisement	Estimated ⁽¹⁾ Construction Start	Construction Progress	Estimated Construction Complete
5.1	Barnes Avenue Pumping Station Upgrades	Upgrading existing 1.5 mgd pump station to replace equipment that has reached the end of its useful service life. Installation of a new backup generator. Electrical, mechanical, and architectural upgrades to existing building. Service road improvements for better access to the station. New discharge piping configuration and interconnection to new and rehabilitated SCPS forcemains.	30%	n/a	n/a	September 2021	December 2021	Design advanced to approximately 30% complete and reviewed with the County in March 2021. Basis of Design Report to be finalized in early 2021.	December 2022
6	WPCP Headworks Upgrades	New screening facility and pump station dedicated to sanitary flows from North Utica & Starch Factory Creek Interceptors; repurpose existing raw waste building for combined flow from City of Utica; new grit removal facilities; remodeling of the administrative building including new laboratory, control room, offices, training room, etc.	Final	Approved	Approved	March 2017	September 2017	<p>Influent Building: 4 new influent pumps and 3 mechanically cleaned bar screens are installed and in operation. Station is currently offline pending repairs to Grit Building #3.</p> <p>Combined Influent Building: Refurbishment of building and equipment (4 pumps, 3 screens) is substantially complete. The wet well has been refurbished.</p> <p>Grit Removal: Grit buildings No. 2 and 3 are substantially complete. Grit Building No. 3 was impacted by a flooding event on June 1, 2020; an insurance claim to replace damaged equipment is in progress. Grit Building No. 2 is currently receiving wastewater flow from the Combined Influent Building. Grit classification equipment in Grit Building No. 1 is in operation.</p> <p>Administration Building: Significant rehabilitation of the building is complete, and the building has been officially re-occupied.</p> <p>Electrical: New receiving structure/tower for 46kV equipment is installed and energized by National Grid. New pre-fabricated Switchgear Building and Generator Buildings are installed and functional testing has been completed. Grounding grid complete. New generator fuel system and controls are installed.</p> <p>All 4 prime contractors (General, HVAC, Electrical, and Plumbing) are working on addressing punch list items.</p>	November 2021

Table 2.1

Oneida County Sewer District
Summary of Contracts 1Q 2021

Water Pollution Control Plant and Sauquoit Creek Pumping Station/Force Main

Contract No.	Title of Contract	Components of System Addressed	Status of Design	Status of NYSDEC Review	Status of Other Agency Reviews	Estimated Advertisement	Estimated ⁽¹⁾ Construction Start	Construction Progress	Estimated Construction Complete
7	WPCP Primary Treatment Upgrade/Disinfection	New rectangular primary settling tanks to replace existing circular tanks; new high rate disinfection system for wet weather combined sewer flows; new HRD outfall.	Final	Submitted December 9, 2016	n/a	Advertised November 28, 2017	May 2018	<p><u>HRD</u>: Excavation, pile driving, and concrete tank and backfill complete for HRD tank. Slide gate, flushing gates, and baffle wall installation complete. Majority of electrical conduit work and lighting complete.</p> <p><u>Primary Settling Tanks No. 1 and 2</u>: PSTs No. 1 and 2 are substantially complete and operational and all 4 prime contractors are addressing punch list items.</p> <p><u>Primary Settling Tanks No. 3 and 4</u>: Demolition of existing tanks complete. Excavation and pile driving for new tanks complete. Concrete work for new tanks ongoing.</p> <p><u>Disinfection Building</u>: Fire alarm replaced. Building roof replaced. Electrical conduit work ongoing. Yard piping from building to HRD tank complete. Construction of control room addition complete, and mechanical, HVAC, fire, and electrical equipment installation is complete. Installation of translucent wall panel is complete, FRP chemical tanks in place, chemical feed pump and piping and conduit installed and tested. Chemical tanks filled in April 2021 in advance of the disinfection season that begins May 2021. Startup and testing started.</p> <p><u>Administration and Operations Building</u>: Demolition of existing primary sludge dewatering units complete. Installation of new primary sludge and primary scum piping, grit classifiers, and scum concentrator complete. Punchlist items ongoing.</p> <p><u>Aeration Tank Distribution Structure</u>: Relocation of yard piping complete. Concrete and Instrumentation work complete.</p> <p><u>HRD Outfall Structure and Outfalls</u>: Concrete work complete. HRD outfall work with installation of new HRD outfall piping in Mohawk River near completion. Secondary outfall overflow pipe replacement ongoing, secondary outfall piping replacement yet to commence.</p>	December 2021
8	WPCP Secondary Treatment Process Upgrades	Replacement of existing blowers with more efficient units; refurbishment of the existing Blower Building including upgrades to electrical, HVAC, plumbing and structural systems; refurbishment of existing Aeration Tanks including replacement of existing diffusers and structural upgrades, refurbishment of existing Final Settling Tanks including replacement of existing clarifier mechanisms and structural upgrades; new Asset Management Building; upgrades to site wide civil infrastructure including stormwater, fencing and gates; revisions to site electrical system including demolition of existing substation.	Final	Approved	n/a	Advertised November 17, 2020	Estimated June 2021	Contracts awarded February 2021. Notice to Proceed anticipated early May 2021.	Estimated May 2023

(1) - Estimated construction start = Notice to Proceed

Table 5.1

Oneida County Sewer District Summary of Contracts 1Q 2021

Sewer Rehabilitation Contracts

Contract No.*	Title of Contract	Project Location/Description	CWSRF Project No.	Status of Design	Status of DEC/EFC/COUNTY Review	Miles of Rehabilitation ⁽²⁾	Estimated I/I Reduction (gal/day)	Current Contract Amount ⁽¹⁾	Contractor	Contract Status
2	Sanitary Sewer Manhole Rehabilitation - Phase 2	<u>District-wide</u> : Rehabilitation of approximately 1,278 sanitary sewer manholes.	C6-6070-08-00	Final	Approved	47	5,411,910	\$ 1,529,131.73	Green Mountain Pipeline Services	Complete
3	Sanitary Sewer Mainline Rehabilitation - Phase 1	<u>Villages of New York Mills, Oriskany, New Hartford, Whitesboro, and Yorkville; Towns of New Hartford and Whitestown</u>	C6-6070-08-00	Final	Approved	13	1,503,360	\$ 1,916,428.54	Insituform	Complete
4	Sewer Separation - Clinton/Henderson Street, NY Mills	<u>NY Mills</u> : Storm/Sanitary sewer separation.	C6-6070-08-00	Final	Approved	2	264,000	\$ 155,007.51	JJ Lane Construction	Complete
5	Sewer Repairs and Rehabilitation	<u>Villages of Whitesboro, New Hartford, Yorkville, New York Mills</u> : Storm/Sanitary sewer repairs and rehabilitation; manhole replacement and UV-CIPP lining.	C6-6070-08-00	Final	Approved	1	120,000	\$ 411,841.66	Central Paving	Complete
6	Sanitary Sewer Mainline Rehabilitation - Phase 2	<u>Villages of New Hartford and Clayville; Towns of New Hartford and Paris; City of Utica</u>	C6-6070-08-00	Final	Approved	15	1,130,000	\$ 2,086,525.00	Green Mountain Pipeline Services	Complete
7	Sanitary Sewer Mainline Rehabilitation - Phase 3	<u>Towns of New Hartford and Whitestown: Glenhaven area (HHI-1 and WHN-31), the area west of the Whitesboro Parkway School and south of Clinton Street area (WHN-33), and Kellogg Road area (NHD-18)</u>	C6-6070-08-00	Final	Approved	13	630,000	\$ 2,060,644.00	Green Mountain Pipeline Services	Complete
8	Sanitary Sewer Mainline Rehabilitation - Phase 4	<u>Town of New Hartford</u> : Paris Road area (NHD-23)	C6-6070-08-00	Final	Approved	14	249,000	\$ 1,143,410.78	National Water Main Cleaning Co.	Complete
10	Sanitary Sewer Mainline Rehabilitation - Phase 5	<u>Town of Whitestown and Village of Whitesboro</u> : Area west of Henderson St., north of Mud Creek, south of Clinton St. and east of Clinton Rd; and areas of V. of Whitesboro that have not been previously rehabbed.	C6-6070-08-10	Final	Approved	17	1,120,000	\$ 3,429,370.00	Green Mountain Pipeline Services	Complete

Table 5.1

Oneida County Sewer District Summary of Contracts 1Q 2021

Sewer Rehabilitation Contracts

Contract No.*	Title of Contract	Project Location/Description	CWSRF Project No.	Status of Design	Status of DEC/EFC/COUNTY Review	Miles of Rehabilitation ⁽²⁾	Estimated I/I Reduction (gal/day)	Current Contract Amount ⁽¹⁾	Contractor	Contract Status
11	Sanitary Sewer Mainline Rehabilitation - Phase 6	<u>Town of New Hartford/Hamlet of Washington Mills:</u> Chapman Rd, Higby Rd., and Mohawk St. as well as side streets in Town of New Hartford (NHD-20).	C6-6070-08-10	Final	Approved	7	260,640	\$ 632,029.26	National Water Main Cleaning Co.	Complete
12 ⁽³⁾	Sewer Rehabilitation Project	<u>Village of Yorkville:</u> Areas of the Village not previously rehabbed (YKV-1).	C6-6071-02-00	Final	Approved	11	824,832	\$ 3,420,966.19	National Water Main Cleaning Co.	Base Project Complete Unexpended balance of financing being used for supplemental I/I investigation and mitigation.
13	Sanitary Sewer Mainline Rehabilitation - Phase 8	<u>Town of New Hartford:</u> Residential subdivisions along Routes 12B and Merritt Place, situated south of Route 5B and Seneca Turnpike, and north of Sherrill Brook Park (NHD-6).	C6-6070-08-10	Final	Approved	5	280,000	\$ 802,838.50	National Water Main Cleaning Co.	Complete
14	Sanitary Sewer Mainline Rehabilitation - Phase 9	<u>Town of New Hartford:</u> Commercial district along Seneca Turnpike surrounding Sangertown Square Shopping Mall, south to a residential area situated between Seneca Turnpike and Clinton Rd., and a small residential area south of Clinton Rd. along Merritt Place (NHD-9).	C6-6070-08-10	Final	Approved	7	360,000	\$ 995,407.25	National Water Main Cleaning Co.	Complete
16	Sanitary Sewer Mainline Rehabilitation - Phase 10	<u>Town of Whitestown:</u> Residential area along Westmoreland Rd. and West St., south of the NYS Thruway, and north of Clinton Rd. (WHN-34, WHN-35, WHN-12 & WHN-36).	C6-6070-08-10	Final	Approved	3	270,000	\$ 386,042.00	National Water Main Cleaning Co.	Complete
17	Sewer Rehabilitation Project - Phase 11	<u>Location to be determined</u> Flow data and mapping currently being assessed to determine location(s) most appropriate for continued sewer system rehabilitation	C6-6070-08-10	Planning	Tentative Submission Date - July 2021	To be determined from the assessment	To be determined from the assessment	Construction estimate to be prepared	TBD	Tentative Bid Date - September 2021

* - Contract 9 - Flow Monitoring Contract

(1) - Values are subject to change upon submission of final contractor close-out documentation. Some entries are contract bid amounts and will be updated when project closes out.

(2)- In order to estimate the manhole repairs in equivalent miles, the following calculation was used:

In the April 2012, Engineering Report, Sauquoit Creek Pumping Station Basin – Phase I-Mainline Pipe Rehabilitation – Contract No. 3, the length of line to be rehabilitated was 13-miles, and the corresponding flow to be removed is 1,503,360 gal/day, which calculates to 116,000 gpd/mile. Using the same 116,000 gpd/mile figure for Contract No. 2, an estimated 5,411,910 gal/day divided by 116,000 gpd/mile, is equivalent to 47-miles of rehabilitated sewers.

(3) - Formerly Contract 12 - Sanitary Sewer Mainline Rehabilitation - Phase 7. Financed by the Village of Yorkville.

BOLD - Value represents the Engineers estimate

Appendix A

Sauquoit Creek Pumping Station Rain Gauge Summary

Sauquoit Pump Station Rain Gauge Data (inches)

Data Provided by ADS Environmental Services

Monthly Summary	
Date	Rainfall (in)
January 2018	2.04
February 2018	3.05
March 2018	3.71
April 2018	3.28
May 2018	3.08
June 2018	2.82
July 2018	2.73
August 2018	4.02
September 2018	5.04
October 2018	5.39
November 2018	6.41
December 2018	3.81
January 2019	2.37
February 2019	2.38
March 2019	1.64
April 2019	5.67
May 2019	6.65
June 2019	5.72
July 2019	4.71
August 2019	5.38
September 2019	3.23
October 2019	10.67
November 2019	3.12
December 2019	4.17
January 2020	2.09
February 2020	2.35
March 2020	2.8
April 2020	3.48
May 2020	3.12
June 2020	1.26
July 2020	7.37
August 2020	4.01
September 2020	1.96
October 2020	0
November 2020	3.32
December 2020	3

Yearly Summary	
Date	Rainfall (in)
2018	45.38
2019	55.71
2020	34.76

Daily Data	
Date	Rainfall (in)
1/1/2018	0
1/2/2018	0
1/3/2018	0.01
1/4/2018	0
1/5/2018	0
1/6/2018	0
1/7/2018	0
1/8/2018	0.03
1/9/2018	0
1/10/2018	0.06
1/11/2018	0.05
1/12/2018	0.7
1/13/2018	0
1/14/2018	0.01
1/15/2018	0
1/16/2018	0
1/17/2018	0
1/18/2018	0
1/19/2018	0.03
1/20/2018	0.59
1/21/2018	0.01
1/22/2018	0.06
1/23/2018	0.32
1/24/2018	0.01
1/25/2018	0
1/26/2018	0
1/27/2018	0.14
1/28/2018	0
1/29/2018	0
1/30/2018	0
1/31/2018	0.02
2/1/2018	0.03
2/2/2018	0
2/3/2018	0.01
2/4/2018	0.01
2/5/2018	0
2/6/2018	0
2/7/2018	0
2/8/2018	0
2/9/2018	0
2/10/2018	0.02

2/11/2018	0
2/12/2018	0
2/13/2018	0.01
2/14/2018	0
2/15/2018	0.09
2/16/2018	0.17
2/17/2018	0
2/18/2018	0.16
2/19/2018	0.94
2/20/2018	0.37
2/21/2018	0.01
2/22/2018	0.23
2/23/2018	0.33
2/24/2018	0.03
2/25/2018	0.54
2/26/2018	0
2/27/2018	0
2/28/2018	0.1
3/1/2018	0.02
3/2/2018	0.1
3/3/2018	0.44
3/4/2018	0.27
3/5/2018	0
3/6/2018	0.01
3/7/2018	0.21
3/8/2018	0.08
3/9/2018	0.13
3/10/2018	0.02
3/11/2018	0
3/12/2018	0
3/13/2018	0.42
3/14/2018	0.23
3/15/2018	0.11
3/16/2018	0
3/17/2018	0
3/18/2018	0
3/19/2018	0
3/20/2018	0
3/21/2018	0
3/22/2018	0
3/23/2018	0
3/24/2018	0
3/25/2018	0

3/26/2018	0
3/27/2018	0.23
3/28/2018	0.06
3/29/2018	1.06
3/30/2018	0.32
3/31/2018	0
4/1/2018	0.13
4/2/2018	0
4/3/2018	0.11
4/4/2018	0.6
4/5/2018	0
4/6/2018	0.07
4/7/2018	0.08
4/8/2018	0
4/9/2018	0
4/10/2018	0
4/11/2018	0.03
4/12/2018	0.44
4/13/2018	0
4/14/2018	0
4/15/2018	0.02
4/16/2018	0.76
4/17/2018	0.02
4/18/2018	0.04
4/19/2018	0.09
4/20/2018	0
4/21/2018	0
4/22/2018	0
4/23/2018	0
4/24/2018	0
4/25/2018	0.66
4/26/2018	0.05
4/27/2018	0.01
4/28/2018	0.06
4/29/2018	0.03
4/30/2018	0.08
5/1/2018	0.2
5/2/2018	0.01
5/3/2018	0.01
5/4/2018	0.41
5/5/2018	0
5/6/2018	0.07
5/7/2018	0

5/8/2018	0
5/9/2018	0
5/10/2018	0.01
5/11/2018	0
5/12/2018	0.01
5/13/2018	0
5/14/2018	0
5/15/2018	0.55
5/16/2018	0
5/17/2018	0
5/18/2018	0
5/19/2018	0.72
5/20/2018	0.24
5/21/2018	0
5/22/2018	0.55
5/23/2018	0
5/24/2018	0.01
5/25/2018	0
5/26/2018	0
5/27/2018	0.29
5/28/2018	0
5/29/2018	0
5/30/2018	0
5/31/2018	0
6/1/2018	0
6/2/2018	0
6/3/2018	0.09
6/4/2018	0.61
6/5/2018	0.01
6/6/2018	0
6/7/2018	0.01
6/8/2018	0
6/9/2018	0
6/10/2018	0
6/11/2018	0
6/12/2018	0
6/13/2018	0.48
6/14/2018	0
6/15/2018	0.02
6/16/2018	0
6/17/2018	0
6/18/2018	0.13
6/19/2018	0

6/20/2018	0
6/21/2018	0
6/22/2018	0
6/23/2018	0.16
6/24/2018	0.2
6/25/2018	0
6/26/2018	0
6/27/2018	0.98
6/28/2018	0.12
6/29/2018	0.01
6/30/2018	0
7/1/2018	0
7/2/2018	0.52
7/3/2018	0
7/4/2018	0
7/5/2018	0
7/6/2018	0.04
7/7/2018	0
7/8/2018	0
7/9/2018	0
7/10/2018	0
7/11/2018	0
7/12/2018	0
7/13/2018	0
7/14/2018	0
7/15/2018	0
7/16/2018	0.72
7/17/2018	0.41
7/18/2018	0
7/19/2018	0
7/20/2018	0
7/21/2018	0
7/22/2018	0.11
7/23/2018	0.14
7/24/2018	0.35
7/25/2018	0.41
7/26/2018	0.03
7/27/2018	0
7/28/2018	0
7/29/2018	0
7/30/2018	0
7/31/2018	0
8/1/2018	0.01

8/2/2018	0.35
8/3/2018	0.11
8/4/2018	0.01
8/5/2018	0
8/6/2018	0
8/7/2018	0
8/8/2018	0.17
8/9/2018	0.08
8/10/2018	0
8/11/2018	0.09
8/12/2018	0
8/13/2018	0.25
8/14/2018	0.79
8/15/2018	0
8/16/2018	0
8/17/2018	0.98
8/18/2018	0.06
8/19/2018	0
8/20/2018	0
8/21/2018	0.2
8/22/2018	0.14
8/23/2018	0.01
8/24/2018	0
8/25/2018	0
8/26/2018	0.02
8/27/2018	0
8/28/2018	0
8/29/2018	0.58
8/30/2018	0.08
8/31/2018	0.09
9/1/2018	0
9/2/2018	0.12
9/3/2018	0.13
9/4/2018	0
9/5/2018	0.02
9/6/2018	0.02
9/7/2018	0
9/8/2018	0
9/9/2018	0
9/10/2018	1.55
9/11/2018	0.66
9/12/2018	0
9/13/2018	0

9/14/2018	0
9/15/2018	0
9/16/2018	0
9/17/2018	0.11
9/18/2018	0.47
9/19/2018	0
9/20/2018	0
9/21/2018	0.25
9/22/2018	0.13
9/23/2018	0
9/24/2018	0
9/25/2018	0.82
9/26/2018	0.39
9/27/2018	0.02
9/28/2018	0.34
9/29/2018	0
9/30/2018	0.01
10/1/2018	0.01
10/2/2018	0.7
10/3/2018	0.01
10/4/2018	0.05
10/5/2018	0.01
10/6/2018	0.02
10/7/2018	0.04
10/8/2018	0
10/9/2018	0
10/10/2018	0
10/11/2018	1.36
10/12/2018	0.01
10/13/2018	0.23
10/14/2018	0
10/15/2018	0.28
10/16/2018	0
10/17/2018	0.21
10/18/2018	0
10/19/2018	0
10/20/2018	0
10/21/2018	0
10/22/2018	0.07
10/23/2018	0.25
10/24/2018	0.14
10/25/2018	0
10/26/2018	0

10/27/2018	1.17
10/28/2018	0.45
10/29/2018	0.28
10/30/2018	0
10/31/2018	0.1
11/1/2018	0.25
11/2/2018	0.32
11/3/2018	0.51
11/4/2018	0.02
11/5/2018	0.22
11/6/2018	0.57
11/7/2018	0
11/8/2018	0
11/9/2018	0.75
11/10/2018	0.09
11/11/2018	0.07
11/12/2018	0
11/13/2018	0.34
11/14/2018	0.06
11/15/2018	0
11/16/2018	0.82
11/17/2018	0.02
11/18/2018	0
11/19/2018	0.03
11/20/2018	0.01
11/21/2018	0.07
11/22/2018	0
11/23/2018	0
11/24/2018	0.23
11/25/2018	0.09
11/26/2018	0.54
11/27/2018	0.98
11/28/2018	0.37
11/29/2018	0.01
11/30/2018	0.04
12/1/2018	0.4
12/2/2018	0.46
12/3/2018	0.12
12/4/2018	0
12/5/2018	0
12/6/2018	0
12/7/2018	0.06
12/8/2018	0

12/9/2018	0
12/10/2018	0
12/11/2018	0
12/12/2018	0.03
12/13/2018	0
12/14/2018	0
12/15/2018	0
12/16/2018	0.19
12/17/2018	0.13
12/18/2018	0
12/19/2018	0
12/20/2018	0.14
12/21/2018	0.36
12/22/2018	0.03
12/23/2018	0
12/24/2018	0.17
12/25/2018	0.1
12/26/2018	0.01
12/27/2018	0.02
12/28/2018	0.9
12/29/2018	0.02
12/30/2018	0.03
12/31/2018	0.64
1/1/2019	0.05
1/2/2019	0
1/3/2019	0.13
1/4/2019	0.03
1/5/2019	0
1/6/2019	0.1
1/7/2019	0
1/8/2019	0.32
1/9/2019	0.71
1/10/2019	0
1/11/2019	0
1/12/2019	0
1/13/2019	0
1/14/2019	0
1/15/2019	0
1/16/2019	0
1/17/2019	0
1/18/2019	0.03
1/19/2019	0
1/20/2019	0

1/21/2019	0
1/22/2019	0.02
1/23/2019	0.01
1/24/2019	0.79
1/25/2019	0.13
1/26/2019	0
1/27/2019	0.05
1/28/2019	0
1/29/2019	0
1/30/2019	0
1/31/2019	0
2/1/2019	0.08
2/2/2019	0.01
2/3/2019	0.02
2/4/2019	0.01
2/5/2019	0.21
2/6/2019	0.37
2/7/2019	0.29
2/8/2019	0.27
2/9/2019	0.04
2/10/2019	0.01
2/11/2019	0.01
2/12/2019	0
2/13/2019	0.09
2/14/2019	0.14
2/15/2019	0.26
2/16/2019	0
2/17/2019	0
2/18/2019	0.03
2/19/2019	0
2/20/2019	0
2/21/2019	0.02
2/22/2019	0
2/23/2019	0
2/24/2019	0.34
2/25/2019	0
2/26/2019	0
2/27/2019	0
2/28/2019	0.18
3/1/2019	0
3/2/2019	0
3/3/2019	0.02
3/4/2019	0.12

3/5/2019	0
3/6/2019	0.05
3/7/2019	0.06
3/8/2019	0
3/9/2019	0
3/10/2019	0.23
3/11/2019	0
3/12/2019	0
3/13/2019	0.04
3/14/2019	0
3/15/2019	0.12
3/16/2019	0.02
3/17/2019	0.02
3/18/2019	0.01
3/19/2019	0
3/20/2019	0
3/21/2019	0.16
3/22/2019	0.56
3/23/2019	0.02
3/24/2019	0
3/25/2019	0
3/26/2019	0
3/27/2019	0
3/28/2019	0.02
3/29/2019	0.04
3/30/2019	0
3/31/2019	0.15
4/1/2019	0.03
4/2/2019	0
4/3/2019	0
4/4/2019	0
4/5/2019	0.34
4/6/2019	0.22
4/7/2019	0
4/8/2019	0.47
4/9/2019	0.24
4/10/2019	0
4/11/2019	0
4/12/2019	0.19
4/13/2019	0
4/14/2019	0.27
4/15/2019	0.9
4/16/2019	0

4/17/2019	0
4/18/2019	0.14
4/19/2019	0.77
4/20/2019	0.14
4/21/2019	0
4/22/2019	0
4/23/2019	0.38
4/24/2019	0.01
4/25/2019	0
4/26/2019	1.25
4/27/2019	0.22
4/28/2019	0.04
4/29/2019	0.01
4/30/2019	0.05
5/1/2019	0.39
5/2/2019	0.1
5/3/2019	0.28
5/4/2019	0
5/5/2019	0.11
5/6/2019	0.27
5/7/2019	0.31
5/8/2019	0.01
5/9/2019	0.03
5/10/2019	1.92
5/11/2019	0
5/12/2019	0.47
5/13/2019	0.6
5/14/2019	0.41
5/15/2019	0.08
5/16/2019	0.03
5/17/2019	0.12
5/18/2019	0
5/19/2019	0.31
5/20/2019	0.3
5/21/2019	0
5/22/2019	0
5/23/2019	0.21
5/24/2019	0
5/25/2019	0.26
5/26/2019	0.05
5/27/2019	0
5/28/2019	0.38
5/29/2019	0.01

5/30/2019	0
5/31/2019	0
6/1/2019	0.21
6/2/2019	0.19
6/3/2019	0
6/4/2019	0.14
6/5/2019	0.79
6/6/2019	0.02
6/7/2019	0
6/8/2019	0
6/9/2019	0
6/10/2019	0.3
6/11/2019	0.14
6/12/2019	0
6/13/2019	0.45
6/14/2019	0.06
6/15/2019	0.15
6/16/2019	0.54
6/17/2019	0
6/18/2019	0
6/19/2019	0
6/20/2019	1.71
6/21/2019	0.17
6/22/2019	0
6/23/2019	0
6/24/2019	0
6/25/2019	0.09
6/26/2019	0.04
6/27/2019	0
6/28/2019	0
6/29/2019	0.06
6/30/2019	0.66
7/1/2019	0
7/2/2019	0.1
7/3/2019	0
7/4/2019	0
7/5/2019	0
7/6/2019	0
7/7/2019	0
7/8/2019	0
7/9/2019	0
7/10/2019	0
7/11/2019	0.17

7/12/2019	1.41
7/13/2019	0
7/14/2019	0
7/15/2019	0
7/16/2019	0.04
7/17/2019	1.77
7/18/2019	0
7/19/2019	0
7/20/2019	0.31
7/21/2019	0
7/22/2019	0.8
7/23/2019	0.01
7/24/2019	0
7/25/2019	0.01
7/26/2019	0
7/27/2019	0
7/28/2019	0.04
7/29/2019	0.02
7/30/2019	0.03
7/31/2019	0
8/1/2019	0
8/2/2019	0.01
8/3/2019	0.39
8/4/2019	0
8/5/2019	0
8/6/2019	0.18
8/7/2019	0.74
8/8/2019	0.34
8/9/2019	0.01
8/10/2019	0.12
8/11/2019	0
8/12/2019	0.11
8/13/2019	0
8/14/2019	0
8/15/2019	0.1
8/16/2019	0.61
8/17/2019	1.04
8/18/2019	0.02
8/19/2019	0.2
8/20/2019	0
8/21/2019	0.43
8/22/2019	0
8/23/2019	0

8/24/2019	0
8/25/2019	0
8/26/2019	0
8/27/2019	0
8/28/2019	1.07
8/29/2019	0.01
8/30/2019	0
8/31/2019	0
9/1/2019	0.01
9/2/2019	1.02
9/3/2019	0
9/4/2019	0.2
9/5/2019	0
9/6/2019	0.01
9/7/2019	0.52
9/8/2019	0.01
9/9/2019	0
9/10/2019	0.03
9/11/2019	0.07
9/12/2019	0.05
9/13/2019	0
9/14/2019	0.08
9/15/2019	0.01
9/16/2019	0
9/17/2019	0.01
9/18/2019	0
9/19/2019	0.01
9/20/2019	0
9/21/2019	0.01
9/22/2019	0.01
9/23/2019	0.5
9/24/2019	0.17
9/25/2019	0
9/26/2019	0.29
9/27/2019	0.01
9/28/2019	0.21
9/29/2019	0
9/30/2019	0
10/1/2019	1.12
10/2/2019	0.52
10/3/2019	0.26
10/4/2019	0.04
10/5/2019	0

10/6/2019	0.14
10/7/2019	1.28
10/8/2019	0
10/9/2019	0
10/10/2019	0
10/11/2019	0
10/12/2019	0.02
10/13/2019	0.01
10/14/2019	0
10/15/2019	0
10/16/2019	1.57
10/17/2019	0.96
10/18/2019	0.06
10/19/2019	0
10/20/2019	0.04
10/21/2019	0
10/22/2019	1.08
10/23/2019	0.04
10/24/2019	0
10/25/2019	0.06
10/26/2019	0.02
10/27/2019	0.87
10/28/2019	0
10/29/2019	0
10/30/2019	0
10/31/2019	2.58
11/1/2019	0.45
11/2/2019	0
11/3/2019	0
11/4/2019	0
11/5/2019	0.26
11/6/2019	0
11/7/2019	0.02
11/8/2019	0.04
11/9/2019	0
11/10/2019	0.05
11/11/2019	0.2
11/12/2019	0.02
11/13/2019	0.05
11/14/2019	0.04
11/15/2019	0.07
11/16/2019	0
11/17/2019	0

11/18/2019	0.16
11/19/2019	0.47
11/20/2019	0
11/21/2019	0.1
11/22/2019	0.23
11/23/2019	0
11/24/2019	0.36
11/25/2019	0
11/26/2019	0
11/27/2019	0.48
11/28/2019	0.12
11/29/2019	0
11/30/2019	0
12/1/2019	0
12/2/2019	0.23
12/3/2019	0.1
12/4/2019	0.27
12/5/2019	0.28
12/6/2019	0
12/7/2019	0.19
12/8/2019	0
12/9/2019	0.07
12/10/2019	0.22
12/11/2019	0.01
12/12/2019	0
12/13/2019	0.04
12/14/2019	0.69
12/15/2019	0.1
12/16/2019	0
12/17/2019	0
12/18/2019	0.25
12/19/2019	0
12/20/2019	0.01
12/21/2019	0
12/22/2019	0
12/23/2019	0
12/24/2019	0
12/25/2019	0
12/26/2019	0.01
12/27/2019	0.11
12/28/2019	0.02
12/29/2019	0.61
12/30/2019	0.87

12/31/2019	0.09
1/1/2020	0.05
1/2/2020	0
1/3/2020	0
1/4/2020	0.4
1/5/2020	0
1/6/2020	0.11
1/7/2020	0.03
1/8/2020	0.08
1/9/2020	0
1/10/2020	0.33
1/11/2020	0.09
1/12/2020	0.11
1/13/2020	0
1/14/2020	0
1/15/2020	0
1/16/2020	0.32
1/17/2020	0
1/18/2020	0
1/19/2020	0.03
1/20/2020	0
1/21/2020	0.01
1/22/2020	0.01
1/23/2020	0
1/24/2020	0
1/25/2020	0.39
1/26/2020	0.06
1/27/2020	0.07
1/28/2020	0
1/29/2020	0
1/30/2020	0
1/31/2020	0
2/1/2020	0
2/2/2020	0.01
2/3/2020	0.09
2/4/2020	0
2/5/2020	0
2/6/2020	0.41
2/7/2020	0.37
2/8/2020	0.02
2/9/2020	0.18
2/10/2020	0.02
2/11/2020	0

2/12/2020	0.01
2/13/2020	0.26
2/14/2020	0
2/15/2020	0
2/16/2020	0.01
2/17/2020	0
2/18/2020	0.17
2/19/2020	0
2/20/2020	0.04
2/21/2020	0
2/22/2020	0
2/23/2020	0
2/24/2020	0
2/25/2020	0.01
2/26/2020	0.05
2/27/2020	0.7
2/28/2020	0
2/29/2020	0.05
3/1/2020	0.01
3/2/2020	0.13
3/3/2020	0.19
3/4/2020	0.09
3/5/2020	0
3/6/2020	0
3/7/2020	0
3/8/2020	0
3/9/2020	0
3/10/2020	0.35
3/11/2020	0
3/12/2020	0
3/13/2020	0.15
3/14/2020	0
3/15/2020	0
3/16/2020	0
3/17/2020	0.02
3/18/2020	0
3/19/2020	0.12
3/20/2020	0.46
3/21/2020	0
3/22/2020	0
3/23/2020	0.16
3/24/2020	0.23
3/25/2020	0

3/26/2020	0.02
3/27/2020	0
3/28/2020	0.1
3/29/2020	0.3
3/30/2020	0.39
3/31/2020	0.08
4/1/2020	0
4/2/2020	0
4/3/2020	0.21
4/4/2020	0.01
4/5/2020	0
4/6/2020	0
4/7/2020	0.08
4/8/2020	0.07
4/9/2020	0.23
4/10/2020	0.38
4/11/2020	0.02
4/12/2020	0
4/13/2020	0.28
4/14/2020	0
4/15/2020	0.01
4/16/2020	0.11
4/17/2020	0.11
4/18/2020	0.07
4/19/2020	0.34
4/20/2020	0
4/21/2020	0.08
4/22/2020	0.09
4/23/2020	0
4/24/2020	0.01
4/25/2020	0
4/26/2020	0.65
4/27/2020	0.2
4/28/2020	0
4/29/2020	0
4/30/2020	0.53
5/1/2020	0.21
5/2/2020	0.03
5/3/2020	0
5/4/2020	0
5/5/2020	0
5/6/2020	0
5/7/2020	0.13

5/8/2020	0
5/9/2020	0.1
5/10/2020	0.01
5/11/2020	0
5/12/2020	0.01
5/13/2020	0
5/14/2020	0.02
5/15/2020	1.08
5/16/2020	0
5/17/2020	0.09
5/18/2020	0.62
5/19/2020	0
5/20/2020	0
5/21/2020	0
5/22/2020	0
5/23/2020	0.05
5/24/2020	0
5/25/2020	0.02
5/26/2020	0
5/27/2020	0
5/28/2020	0
5/29/2020	0.68
5/30/2020	0.07
5/31/2020	0
6/1/2020	0
6/2/2020	0.09
6/3/2020	0
6/4/2020	0
6/5/2020	0.06
6/6/2020	0.01
6/7/2020	0
6/8/2020	0
6/9/2020	0
6/10/2020	0
6/11/2020	0.49
6/12/2020	0
6/13/2020	0
6/14/2020	0
6/15/2020	0
6/16/2020	0
6/17/2020	0
6/18/2020	0
6/19/2020	0

6/20/2020	0.17
6/21/2020	0
6/22/2020	0
6/23/2020	0
6/24/2020	0.07
6/25/2020	0
6/26/2020	0
6/27/2020	0.23
6/28/2020	0.11
6/29/2020	0
6/30/2020	0.03
7/1/2020	0.34
7/2/2020	0.01
7/3/2020	1.1
7/4/2020	0.01
7/5/2020	0
7/6/2020	0
7/7/2020	0
7/8/2020	0.22
7/9/2020	0
7/10/2020	0.08
7/11/2020	1.34
7/12/2020	0.82
7/13/2020	0.01
7/14/2020	0.53
7/15/2020	0
7/16/2020	0.85
7/17/2020	0.01
7/18/2020	0
7/19/2020	0
7/20/2020	0
7/21/2020	0
7/22/2020	0.17
7/23/2020	0.79
7/24/2020	0
7/25/2020	0
7/26/2020	0
7/27/2020	0.01
7/28/2020	0.96
7/29/2020	0.12
7/30/2020	0
7/31/2020	0
8/1/2020	0

8/2/2020	0.15
8/3/2020	0
8/4/2020	1.47
8/5/2020	0.02
8/6/2020	0
8/7/2020	0.02
8/8/2020	0
8/9/2020	0
8/10/2020	0.25
8/11/2020	0.29
8/12/2020	0
8/13/2020	0
8/14/2020	0
8/15/2020	0
8/16/2020	0
8/17/2020	0.08
8/18/2020	0.01
8/19/2020	0
8/20/2020	0
8/21/2020	0
8/22/2020	0.11
8/23/2020	0
8/24/2020	0
8/25/2020	0.57
8/26/2020	0
8/27/2020	0.92
8/28/2020	0
8/29/2020	0.12
8/30/2020	0
8/31/2020	0
9/1/2020	0.03
9/2/2020	0
9/3/2020	0
9/4/2020	0
9/5/2020	0
9/6/2020	0
9/7/2020	0
9/8/2020	0
9/9/2020	0
9/10/2020	0
9/11/2020	0
9/12/2020	0
9/13/2020	0.5

9/14/2020	0
9/15/2020	0
9/16/2020	0.01
9/17/2020	0.03
9/18/2020	0
9/19/2020	0
9/20/2020	0
9/21/2020	0
9/22/2020	0
9/23/2020	0
9/24/2020	0
9/25/2020	0
9/26/2020	0
9/27/2020	0
9/28/2020	0.14
9/29/2020	0.73
9/30/2020	0.52
10/1/2020	0
10/2/2020	0
10/3/2020	0
10/4/2020	0
10/5/2020	0
10/6/2020	0
10/7/2020	0
10/8/2020	0
10/9/2020	0
10/10/2020	0
10/11/2020	0
10/12/2020	0
10/13/2020	0
10/14/2020	0
10/15/2020	0
10/16/2020	0
10/17/2020	0
10/18/2020	0
10/19/2020	0
10/20/2020	0
10/21/2020	0
10/22/2020	0
10/23/2020	0
10/24/2020	0
10/25/2020	0
10/26/2020	0

10/27/2020	0
10/28/2020	0
10/29/2020	0
10/30/2020	0
10/31/2020	0
11/1/2020	0.08
11/2/2020	0.19
11/3/2020	0.38
11/4/2020	0
11/5/2020	0
11/6/2020	0
11/7/2020	0
11/8/2020	0
11/9/2020	0
11/10/2020	0
11/11/2020	0.74
11/12/2020	0
11/13/2020	0.03
11/14/2020	0.02
11/15/2020	0.31
11/16/2020	0.02
11/17/2020	0.12

11/18/2020	0
11/19/2020	0.06
11/20/2020	0
11/21/2020	0
11/22/2020	0.02
11/23/2020	0.31
11/24/2020	0
11/25/2020	0.34
11/26/2020	0.36
11/27/2020	0.02
11/28/2020	0.01
11/29/2020	0
11/30/2020	0.31
12/1/2020	0.11
12/2/2020	0.14
12/3/2020	0
12/4/2020	0
12/5/2020	0
12/6/2020	0
12/7/2020	0
12/8/2020	0
12/9/2020	0.17

12/10/2020	0.03
12/11/2020	0
12/12/2020	0.04
12/13/2020	0
12/14/2020	0
12/15/2020	0
12/16/2020	0
12/17/2020	0.09
12/18/2020	0.08
12/19/2020	0
12/20/2020	0
12/21/2020	0.32
12/22/2020	0.04
12/23/2020	0
12/24/2020	0.94
12/25/2020	0.56
12/26/2020	0
12/27/2020	0.03
12/28/2020	0.01
12/29/2020	0.04
12/30/2020	0.29
12/31/2020	0.11

Appendix B

Oneida County Annual Report, RDII Analysis (ADS)

Oneida County Annual Report

RDII Analysis

Draft 23 April 2021

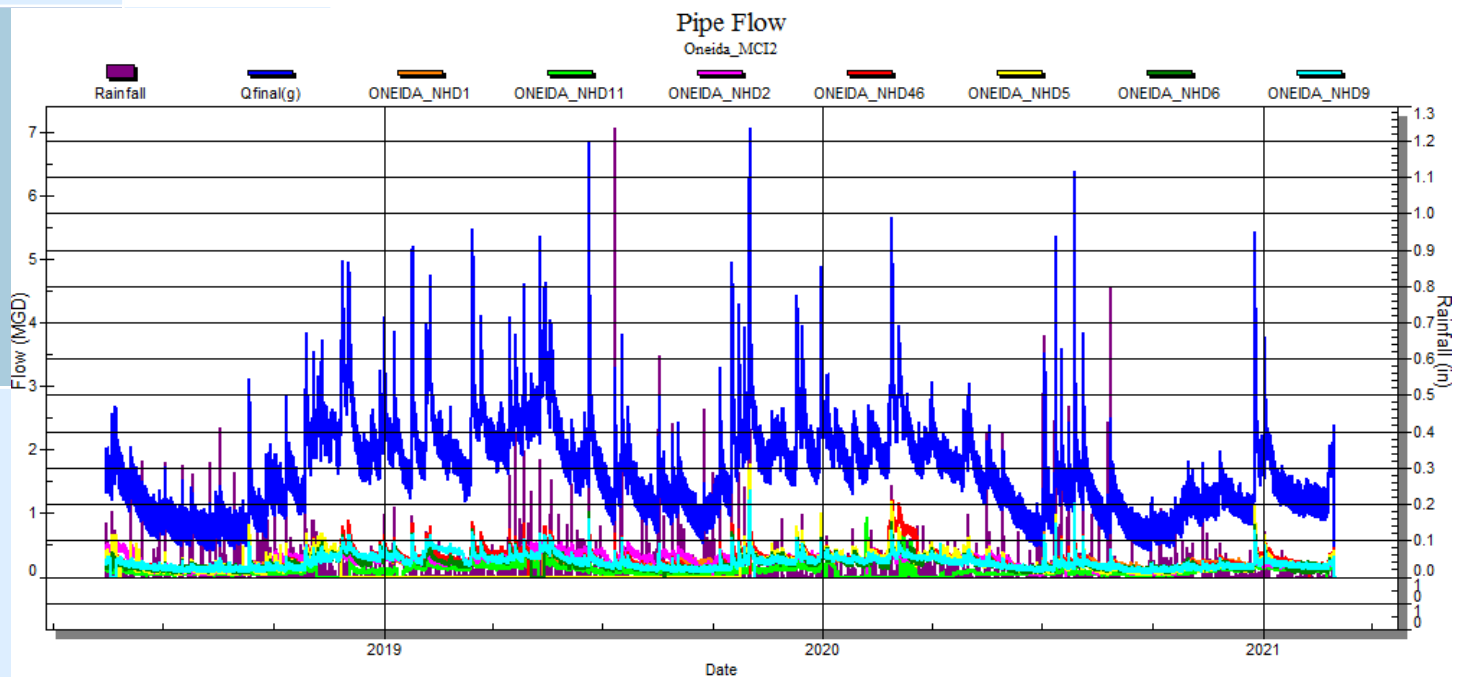


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1. – Overview

The objectives of this report are to review the historical flow data from the County's metering and rain gauge networks from April 2020 through February of 2021. Final March data was not available at this report date, so results include data through February. The report will look at:

1. The peak flow from the Christmas 2020 storm relative to four other large storms.
2. Meters in the Starch Factory Interceptor
3. Seasonal values in Average Dry Day Flow (ADDF) and Base Infiltration (BI)
4. Trends in Gross RDII Volume and Peak Flows
5. Severity of RDII in individual meter basins.

The graphics in this report are intended to provide summary level information. Appendix A includes hydrographs and Q vs i plots for all sites and Appendix B is a spreadsheet with all the values used in the graphics.

Figure 1 on the next page is a schematic layout of the metering network as it was during the last year.

Oneida County, NY 2021 Flow Monitoring Study Schematic

FIGURE 1.

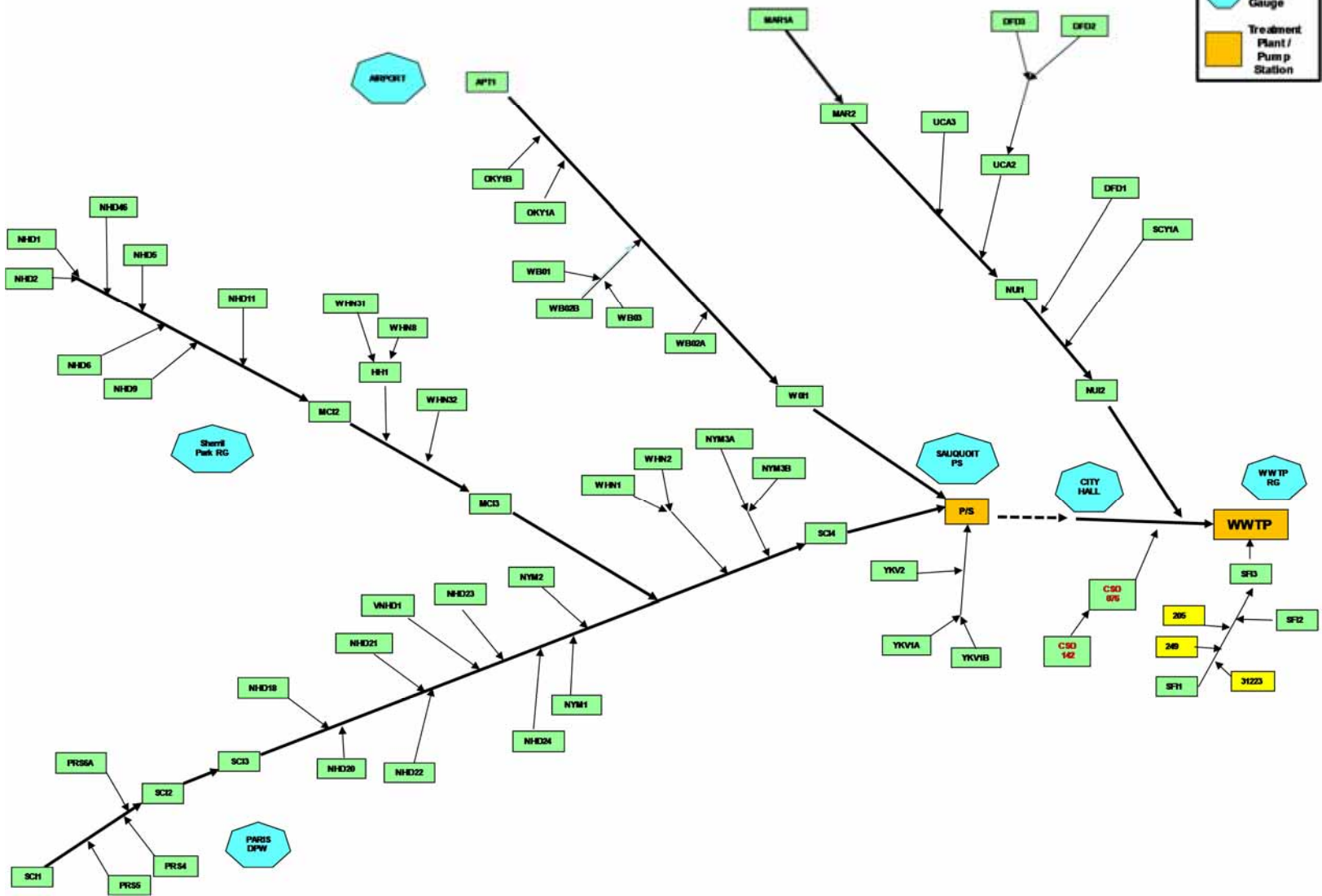


Table 1 lists the sizes of each of the metered sewersheds in Acres and linear feet of sewer. These values are used to ‘normalize’ RDII volumes to provide an apples-to-apples comparison. A series on 9’s indicates the value is unknown. These values have been provided to ADS.

Table 1 Basin sizes in Acres and Linear Feet of sewer.

Basin	Area	Length
ONEIDA_205	99	41,980
ONEIDA_249	99	2,650
ONEIDA_31223	99	33,299
Oneida_APT1	532	26,391
Oneida_DFD1	123	15,574
Oneida_DFD2	344	47,017
Oneida_DFD3	228	34,577
Oneida_HHI1	216	35,910
Oneida_MAR1A	5,082	429,838
Oneida_MAR2	232	40,894
Oneida_MCI2	244	32,223
Oneida_MCI3	90	7,090
Oneida_NHD1	225	30,579
Oneida_NHD11	106	14,198
Oneida_NHD18	344	34,903
Oneida_NHD2	61	5,250
Oneida_NHD20	426	37,856
Oneida_NHD21	394	45,742
Oneida_NHD22	532	57,479
Oneida_NHD23	701	74,255
Oneida_NHD24	330	34,200
Oneida_NHD46	254	17,714
Oneida_NHD5	294	30,229
Oneida_NHD6	237	26,097
Oneida_NHD9	241	31,169
Oneida_NUI1	24	9,011
Oneida_NUI1A	99	9,999
Oneida_NUI2	1,070	122,183
Oneida_NYM1	62	5,808
Oneida_NYM2	162	19,741
Oneida_NYM3A	212	23,789
Oneida_NYM3B	263	27,395
Oneida_OKY1A	105	12,946
Oneida_OKY1B	126	22,096
Oneida_PRS4	193	23,423

Basin	Area	Length
Oneida_PRS5	138	16,953
Oneida_PRS6A	122	13,369
Oneida_SCI1	92	19,791
Oneida_SCI2	172	39,878
Oneida_SCI3	575	75,360
Oneida_SCI4	138	53,220
Oneida_SCY1A	129	19,503
Oneida_SFI1	767	81,909
Oneida_SFI2	142	8,115
Oneida_SFI3	9,999	99,999
Oneida_UCA2	231	33,284
Oneida_UCA3	177	13,964
Oneida_VNHD1	405	46,012
Oneida_WBO1	504	64,665
Oneida_WBO2A	145	26,427
Oneida_WBO2B	176	26,529
Oneida_WBO3	32	1,978
Oneida_WHN1	116	15,156
Oneida_WHN2	117	15,592
Oneida_WHN31	148	16,758
Oneida_WHN32	360	37,125
Oneida_WHN8	53	6,724
Oneida_WOI1	147	54,242
Oneida_YKV1A	292	50,475
Oneida_YKV1B	12	2,325
Oneida_YKV2	173	23,130
Private_348G	9,999	99,999
Utica_5351	9,999	99,999

2. – Christmas Storm Response System Wide

The Christmas 2020 storm resulted in some of the greatest peak flows during the metering period at many of the sites. almost all the meter sites in the network. Figure 2 is a bar graph of the peak 1-hour flow rate for four of the largest responding storms during the metering period. It was the largest flow response at SCI4. The Christmas storm was approximately 1.5 inches system-wide, but it was preceded by approximately 0.5 inches the prior 2 days. Hydrographs for this period for all sites are included in Appendix A.

Figure 2 Peak flows for 4 largest peak flow events including Christmas 2020.

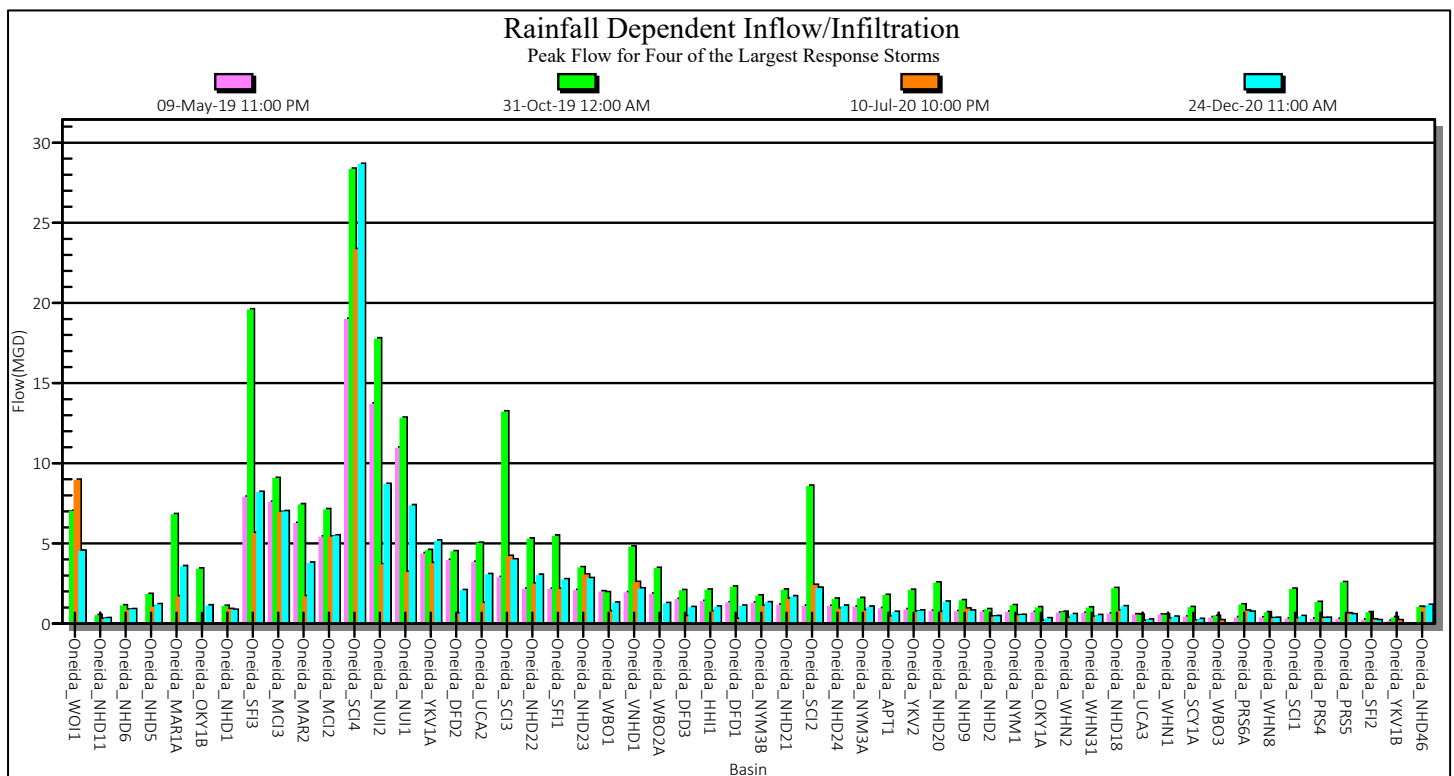
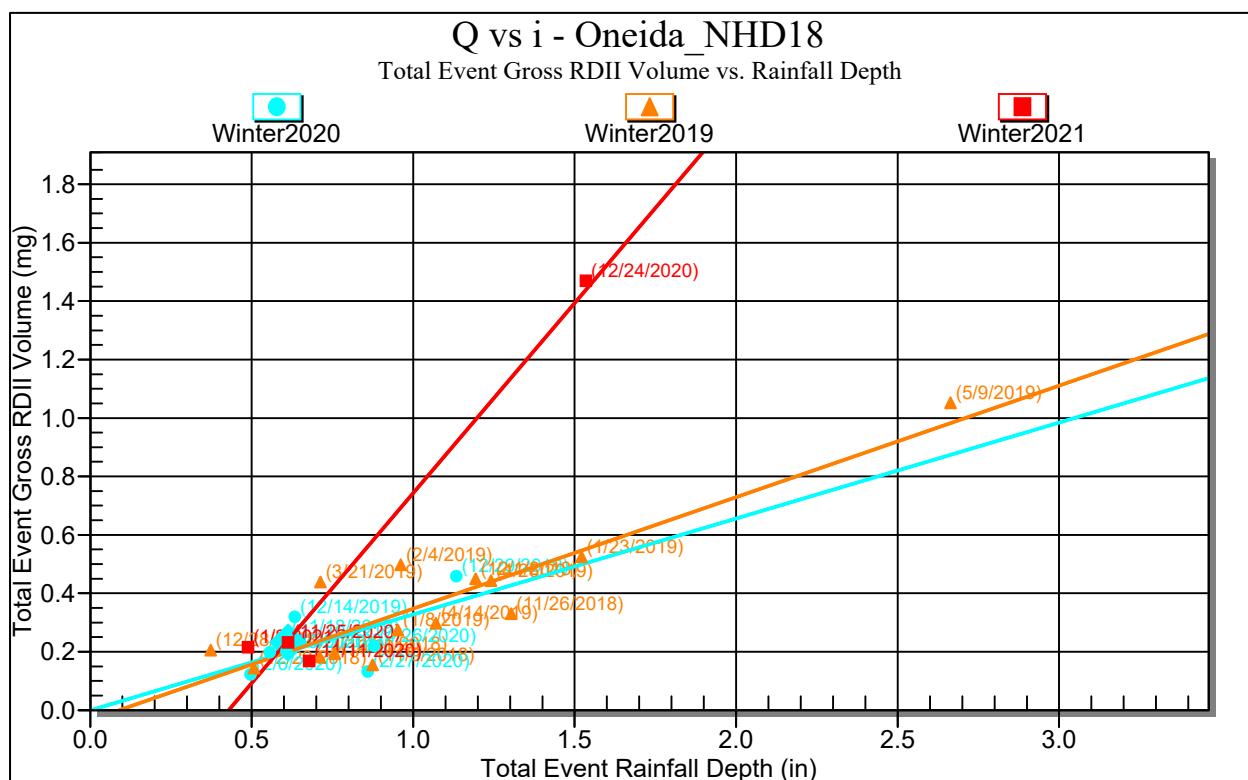


Figure 3 is a Q vs i plot for NHD18 and this behavior is typical for the entire system. The Christmas storm that began on 24 December is an outlier when compared to all other winter storms. Storms that include a snow melt appear this way on a Q vs i plot; the RDII volume is unusually high for the measured rainfall. But the weather records don't indicate that there was snow on the ground in December. If snow melt has a part to play in a winter storm, that storm normally is removed from these plots. This storm is left in for all the plots in Appendix A. There are storms through early May 2021 that will eventually be included in the winter 2021 set of storms.

Figure 3 Q vs i plot example showing Christmas storm.



3. - Rainfall

Table 2 lists the rainfall recorded at each gauge from May of 2018.

Table 2 Rainfall totals since 2018.

Storm	Airport	City Hall	Paris DPW	Sauquoit PS	Sherill Park	WWTP
5/19/2018	0	0.81	0.84	0.96	0	0.71
5/22/2018	0.54	0.46	0.48	0.56	0.55	0.48
9/10/2018	2.42	1.6	1.75	2.21	1.93	1.7
9/25/2018	1.67	1.52	2.51	1.57	1.62	1.73
10/11/2018	1.18	1.08	0.77	1.39	0.94	1
10/27/2018	1.7	1.74	1.76	1.89	1.82	1.6
11/9/2018	0.87	0.82	0.81	0.91	0.91	0.88
11/26/2018	1.11	1.73	1.29	1.89	1.17	1.77
12/1/2018	1.02	0.77	1.05	0.98	1.37	0.86
12/20/2018	0.5	0.45	0.62	0.52	0.49	0.51
12/28/2018	0.85	0.64	0.35	0.95	0.29	0.23
12/31/2018	0.95	0.79	0.54	0.77	0.81	0.87
1/8/2019	0.97	0.8	0.98	1.03	0.99	0.82
1/23/2019	1.18	1.56	0.94	0.93	1.69	1.89
2/4/2019	0.74	0.55	0.45	0.62	0.5	0.59
3/21/2019	0.82	0.8	0	0.74	0.9	0
4/14/2019	1.05	1.06	1.07	1.17	0.56	1.3
4/19/2019	0.91	0.72	0.69	0.91	0	0.65
4/26/2019	1.5	1.29	1.17	1.51	0.01	1.34
5/9/2019	4.38	2.8	2.43	3.65	0.32	2.88
6/5/2019	0.96	0.78	0.98	0.81	0.74	0.9
6/20/2019	1.38	1.82	1.22	1.88	2.36	2.29
7/11/2019	2.86	1.36	1.11	1.58	1.74	1.2
8/16/2019	1.07	0	0	1.87	2.66	3.18
8/28/2019	1.45	0.66	0.56	1.08	0.93	0.6
9/1/2019	1.18	0.94	1.33	1.23	1.29	1.22
10/6/2019	1.42	1.42	1.65	1.42	1.42	1.56
10/16/2019	2.48	2.68	3.03	2.59	2.47	2.99
10/22/2019	0	0.99	1.03	1.12	0	1.01
10/26/2019	0	0.68	0.85	0.88	0.89	0.81
10/31/2019	0	3.15	4.1	3.03	3.07	3.75
11/18/2019	0.5	0.61	0.67	0.63	0.59	0.68
12/8/2019	0.55	0.33	0.34	0.3	0.54	0.57
12/14/2019	0.71	0.48	0.66	0.77	0.67	0.65

Storm	Airport	City Hall	Paris DPW	Sauquoit PS	Sherill Park	WWTP
12/29/2019	1.7	1.04	1.07	1.61	1.17	1.18
2/6/2020	0.49	0.55	0.69	0.8	0.42	0.48
2/27/2020	0.51	0.9	0.87	0.75	0.85	0.78
3/30/2020	0.38	0.52	0.62	0.46	0.55	0.08
4/26/2020	0.83	0.78	1.25	0.85	0.8	0.8
4/30/2020	0.66	0	0.65	0.74	0.78	0.15
5/15/2020	0.82	1.02	0.61	1.01	0.58	1.09
5/17/2020	0.62	0.6	0.61	0.71	0.61	0.6
5/29/2020	0.85	0.62	0.94	0.72	0.84	0.73
7/1/2020	0.02	1.09	0.54	0.35	0.86	0.69
7/3/2020	0.68	0.76	0.89	1.11	1.55	0.38
7/10/2020	2.2	1.96	3.89	2.78	3.41	1.69
7/16/2020	0.91	1.07	1.07	0.86	1.1	1.35
7/23/2020	0.49	0.66	0.26	0.79	0.74	0.85
7/28/2020	0.68	1.79	0.53	1.08	2.53	1.85
8/4/2020	1.42	1.31	1.45	1.48	1.38	1.46
8/25/2020	0.55	0.68	0.49	0.57	0.71	0.73
8/27/2020	0.82	0.89	1.63	0.92	1.35	0.91
9/13/2020	0.73	0.45	0.33	0.5	0.29	0.46
9/29/2020	1.38	1.13	1.07	1.25	1.27	1
11/11/2020	0.9	0.71	0.69	0.79	0.66	0.88
11/25/2020	0.62	0.69	0.47	0.73	0.63	0.66
12/24/2020	1.5	1.23	1.73	1.53	1.57	1.4
1/2/2021	0.8	0.64	0	0.98	0.58	0.73

Table 3 lists the maximum return frequencies for storms since January 2020. Yellow shaded storms exceed a 1-year return frequency. Most of those storms are short duration summertime convective storms.

Table 3 Maximum Return Frequency for the 23 storms since January 2020. Storm exceeding a 1-year return are shaded in yellow.

Storm	RG_Airport	RG_Cityhall	RG_ParisDPW	RG_SauquoitPS	RG_Sherillpark	RG_WWTP
2/6/2020	0.8-mo;6-hr;0.3-in	1.0-mo;12-hr;0.5-in	1.1-mo;24-hr;0.7-in	1.2-mo;24-hr;0.8-in	0.9-mo;6-hr;0.4-in	0.8-mo;24-hr;0.5-in
2/27/2020	1.3-mo;3-hr;0.5-in	2.3-mo;1-hr;0.5-in	1.6-mo;3-hr;0.6-in	1.4-mo;6-hr;0.6-in	1.5-mo;12-hr;0.8-in	1.7-mo;6-hr;0.7-in
3/30/2020	0.6-mo;24-hr;0.4-in	0.8-mo;24-hr;0.5-in	1.0-mo;24-hr;0.6-in	0.7-mo;24-hr;0.5-in	0.9-mo;24-hr;0.5-in	0.1-mo;24-hr;0.1-in
4/26/2020	1.2-mo;48-hr;0.8-in	1.2-mo;12-hr;0.6-in	1.7-mo;48-hr;1.2-in	1.3-mo;12-hr;0.7-in	1.2-mo;24-hr;0.7-in	1.3-mo;12-hr;0.7-in
4/30/2020	1.4-mo;6-hr;0.6-in	0.0-mo;15-min;0.0-in	1.3-mo;6-hr;0.5-in	1.4-mo;6-hr;0.6-in	1.5-mo;6-hr;0.6-in	0.3-mo;2-hr;0.1-in
5/15/2020	2.9-mo;1-hr;0.5-in	10.7-mo;1-hr;0.8-in	1.9-mo;1-hr;0.4-in	7.5-mo;1-hr;0.7-in	2.0-mo;1-hr;0.4-in	1.2-yr;1-hr;0.8-in
5/17/2020	1.1-mo;12-hr;0.6-in	1.1-mo;6-hr;0.5-in	1.3-mo;6-hr;0.5-in	1.3-mo;12-hr;0.7-in	1.2-mo;6-hr;0.5-in	1.1-mo;12-hr;0.6-in
5/29/2020	4.6-mo;1-hr;0.6-in	1.9-mo;1-hr;0.4-in	5.2-mo;1-hr;0.6-in	3.3-mo;1-hr;0.5-in	2.5-mo;1-hr;0.5-in	3.0-mo;1-hr;0.5-in
7/1/2020	0.1-mo;15-min;0.0-in	1.2-yr;15-min;0.6-in	2.0-mo;15-min;0.3-in	1.4-mo;15-min;0.2-in	2.8-yr;15-min;0.8-in	2.6-mo;1-hr;0.5-in
7/3/2020	5.2-mo;1-hr;0.6-in	8.6-mo;30-min;0.6-in	1.2-yr;1-hr;0.8-in	2.6-yr;1-hr;1.1-in	7.4-yr;1-hr;1.5-in	1.3-mo;1-hr;0.3-in
7/10/2020	4.6-mo;6-hr;1.1-in	4.1-mo;6-hr;1.1-in	10.3-yr;3-hr;2.4-in	7.4-mo;24-hr;2.0-in	1.8-yr;6-hr;1.9-in	3.4-mo;48-hr;1.7-in
7/16/2020	2.9-mo;30-min;0.4-in	7.3-mo;30-min;0.6-in	3.2-mo;6-hr;1.0-in	2.7-mo;30-min;0.4-in	6.0-mo;30-min;0.6-in	1.6-yr;30-min;0.8-in
7/23/2020	1.6-mo;1-hr;0.3-in	4.9-mo;30-min;0.5-in	0.8-mo;15-min;0.1-in	9.0-mo;30-min;0.6-in	4.3-mo;15-min;0.4-in	7.5-mo;1-hr;0.7-in
7/28/2020	2.1-mo;1-hr;0.4-in	4.8-yr;1-hr;1.3-in	1.9-mo;1-hr;0.4-in	11.6-mo;1-hr;0.8-in	37.5-yr;1-hr;2.1-in	8.0-yr;1-hr;1.5-in
8/4/2020	3.5-mo;12-hr;1.3-in	2.9-mo;12-hr;1.3-in	3.9-mo;12-hr;1.4-in	4.1-mo;12-hr;1.4-in	3.4-mo;12-hr;1.3-in	3.8-mo;12-hr;1.4-in
8/25/2020	3.3-mo;15-min;0.4-in	6.0-mo;15-min;0.5-in	1.9-mo;1-hr;0.4-in	2.8-mo;15-min;0.4-in	7.7-mo;15-min;0.5-in	2.0-mo;1-hr;0.4-in
8/27/2020	1.9-mo;1-hr;0.4-in	2.1-mo;1-hr;0.5-in	5.0-yr;30-min;1.1-in	2.4-mo;2-hr;0.7-in	3.1-yr;30-min;1.0-in	2.0-mo;2-hr;0.6-in
9/13/2020	2.9-mo;1-hr;0.5-in	1.0-mo;1-hr;0.2-in	1.0-mo;1-hr;0.2-in	1.2-mo;1-hr;0.3-in	0.9-mo;1-hr;0.2-in	1.3-mo;1-hr;0.3-in
9/29/2020	2.4-mo;24-hr;1.3-in	1.8-mo;24-hr;1.1-in	1.7-mo;24-hr;1.1-in	2.0-mo;24-hr;1.2-in	2.1-mo;24-hr;1.3-in	1.6-mo;24-hr;1.0-in
11/11/2020	1.8-mo;6-hr;0.8-in	1.4-mo;6-hr;0.6-in	1.5-mo;6-hr;0.6-in	1.6-mo;6-hr;0.7-in	1.3-mo;6-hr;0.6-in	1.9-mo;1-hr;0.4-in
11/25/2020	0.9-mo;12-hr;0.5-in	1.0-mo;24-hr;0.6-in	0.7-mo;12-hr;0.4-in	1.1-mo;24-hr;0.7-in	0.9-mo;24-hr;0.6-in	1.0-mo;24-hr;0.6-in
12/24/2020	3.2-mo;24-hr;1.5-in	1.9-mo;24-hr;1.2-in	4.6-mo;24-hr;1.7-in	3.0-mo;24-hr;1.5-in	3.4-mo;24-hr;1.5-in	2.5-mo;24-hr;1.3-in
1/2/2021	1.6-mo;6-hr;0.7-in	1.2-mo;6-hr;0.5-in	0.0-mo;15-min;0.0-in	1.7-mo;12-hr;0.9-in	1.0-mo;12-hr;0.6-in	1.4-mo;6-hr;0.6-in

4. - Starch Factory Interceptor

The very large 19.5 mgd peak hourly flow at SFI3 during the Halloween storm prompted the County to add three temporary meters in the Starch Factory sewershed in January 2020. The three meters are on side branches as shown in Figure 4. The actual GIS sewer lines are missing for Oneida_249 and Oneida_31223 meters.

The sewershed above meter Oneida_205 is continues to produce the greatest RDII volumes.

Figure 4 Map of the six meters in Starch Factory sewershed.

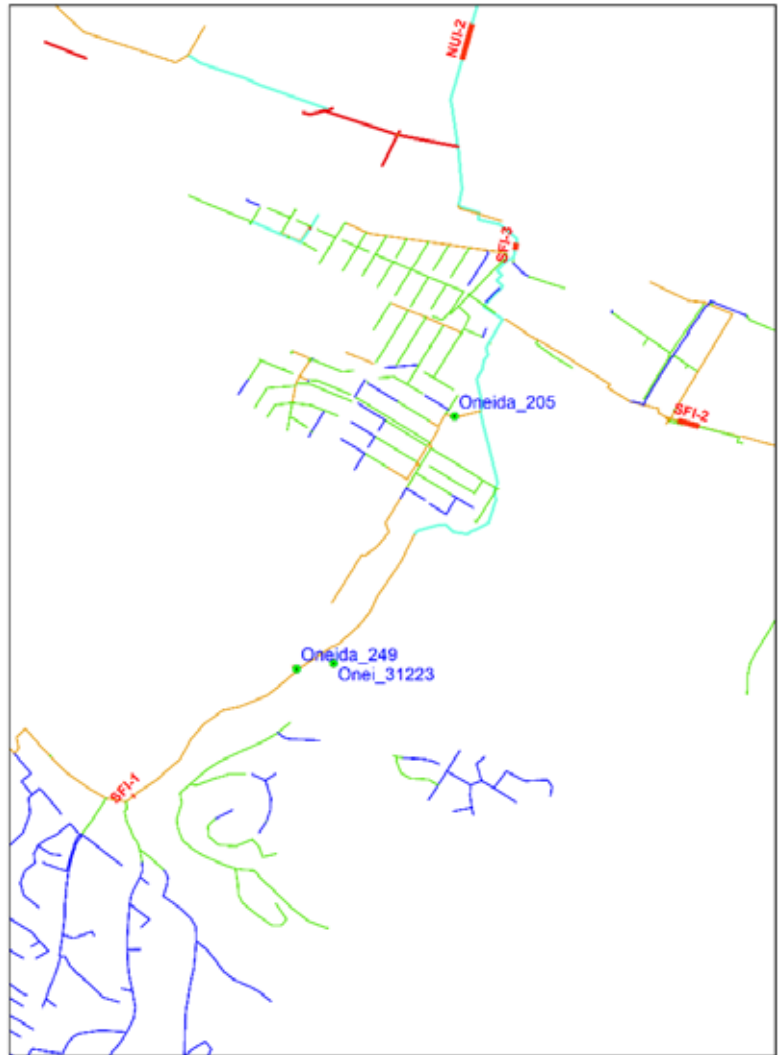
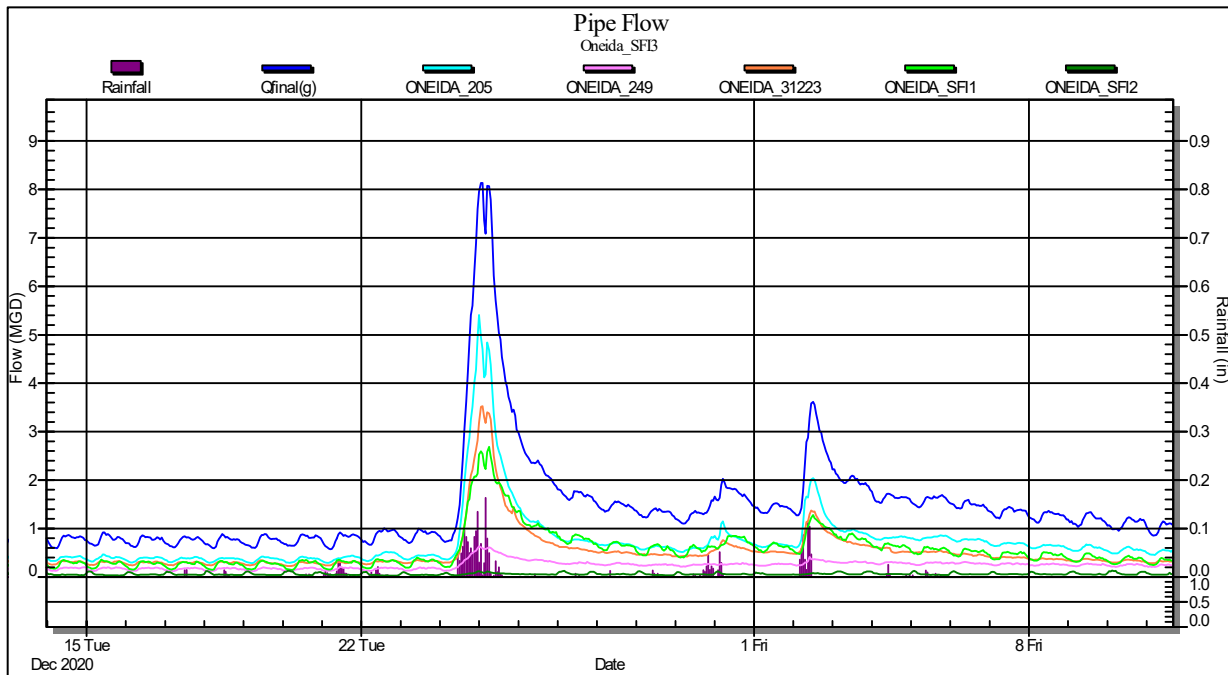


Figure 5 shows a hydrograph from the Starch Factory sewershed around the Christmas storm. Basin Oneida_205 appears to be contributing the most RDII.

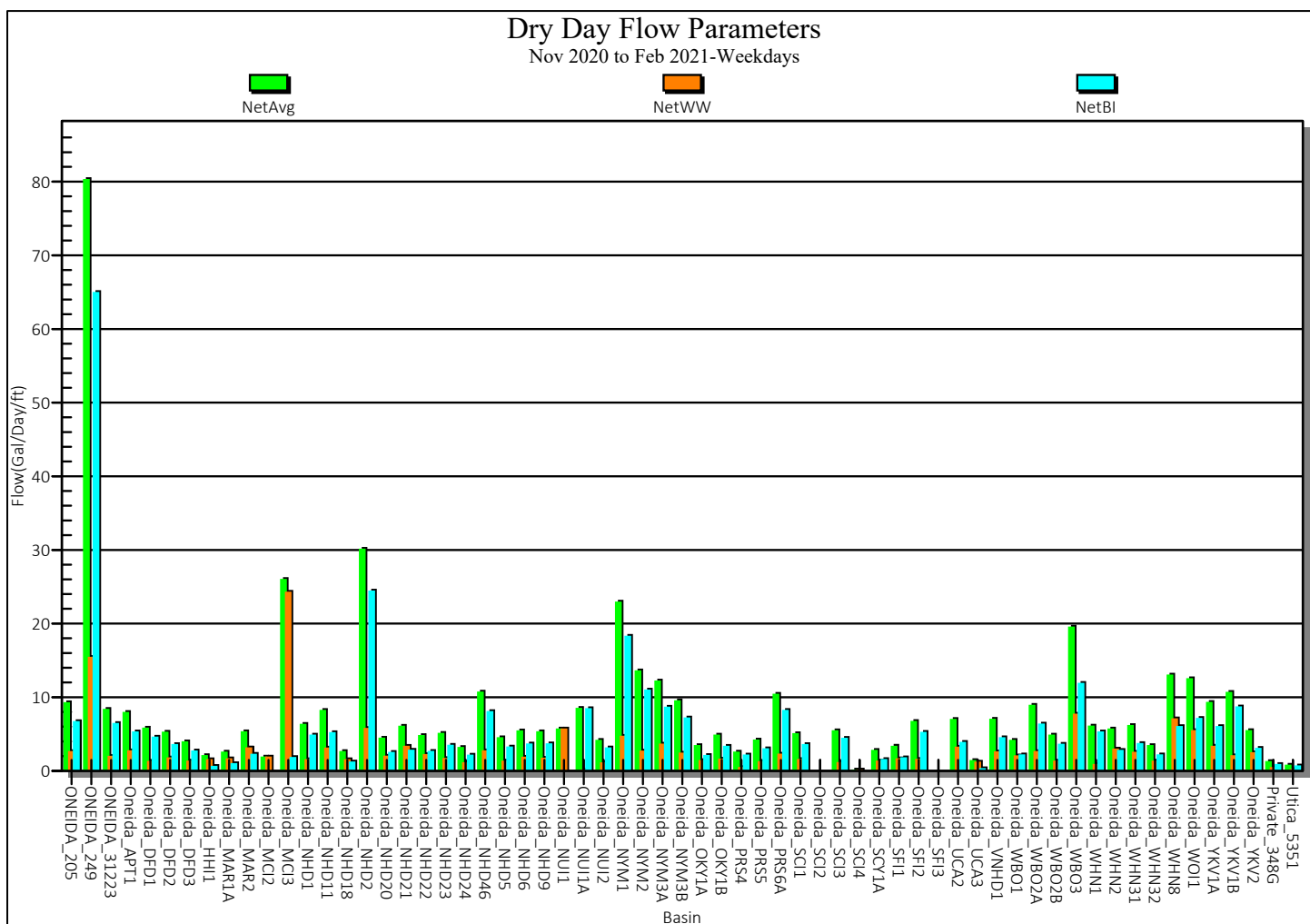
Figure 5 Hydrographs of the six Starch Factory meters for the Christmas storm.



5. - ADDF and Base Infiltration System Wide

Figure 6 shows the Average Dry Day Flow (NetAvg), Wastewater Production (NetWW) and Base Infiltration (NetBI) values for the winter of 2020, which include data from November 2020 through February 2021. These values are normalized by the length of sewer in each basin and the values are in GPD/LF. The wastewater production value of 5 GPD/LF is the upper limit of wastewater production that we would expect from residential areas. Low density housing can as low at 1 GPD/LF. Many of these sites exhibit base infiltration values higher than the wastewater. The very high value for Oneida_249 appears to be due to private sewer that are not included in the basin size tally.

Figure 6 Base Infiltration for Summer and Winter periods. Values above the red line have BI values of greater than 50% of the flow.



6. - RDII System Wide

Figure 7 shows the Gross Peak flow rate for the 6 largest storms. This is the peak flow rate recorded by each meter.

Figure 7 Peak flows recorded at each meter for the 6 largest storms during the study period.

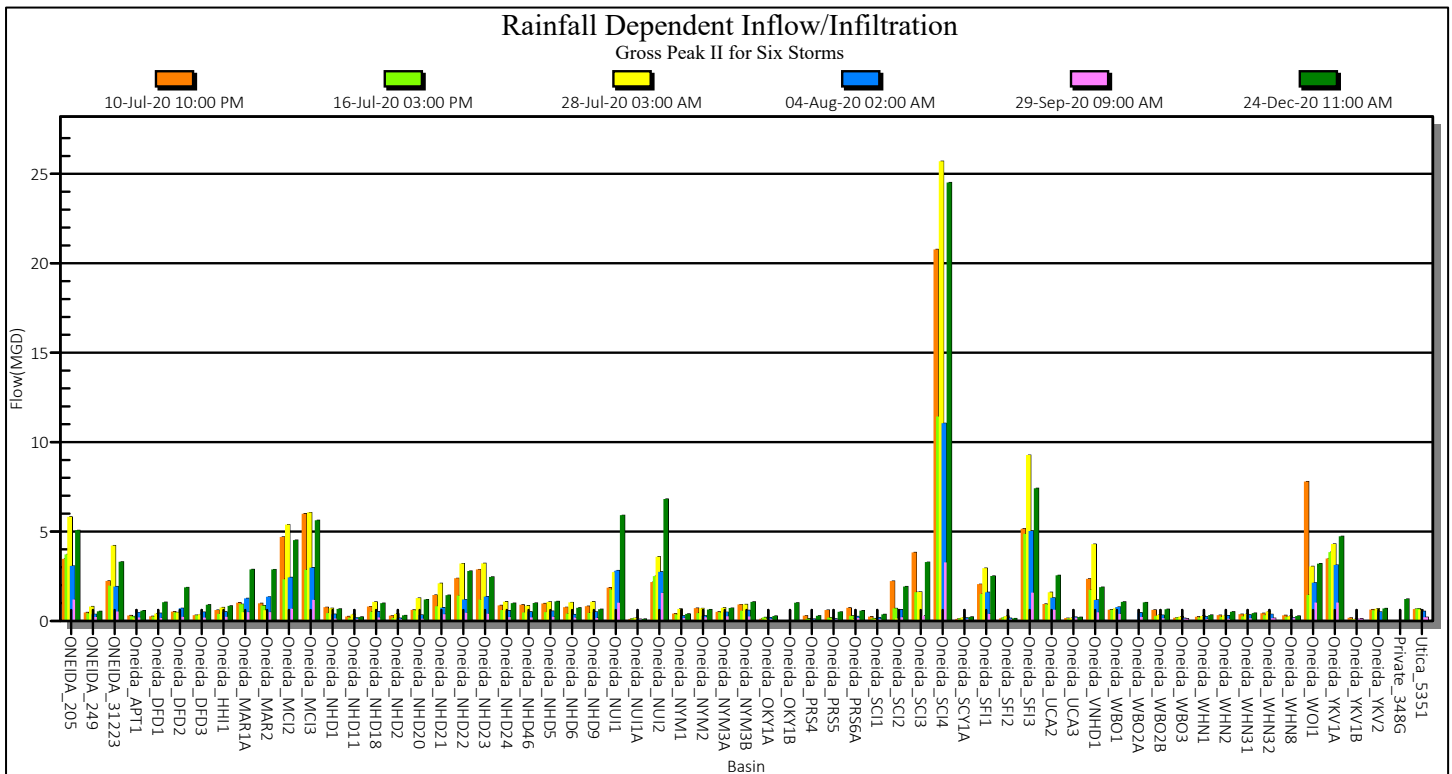


Figure 8 Net RDII expressed in Gallons/LF of sewer/Inch of rainfall. A general rule of thumb is that values greater than 15 are severe.



Figure 9 lists the Capture Coefficient or the percent of the rainfall entering the sewer as RDII for each sewershed. A general rule of thumb is that values greater than 5% fall into the marginal category and values greater that 7% to 10% fall into the severe category.

Figure 9 Capture Coefficient for 6 largest response storms.

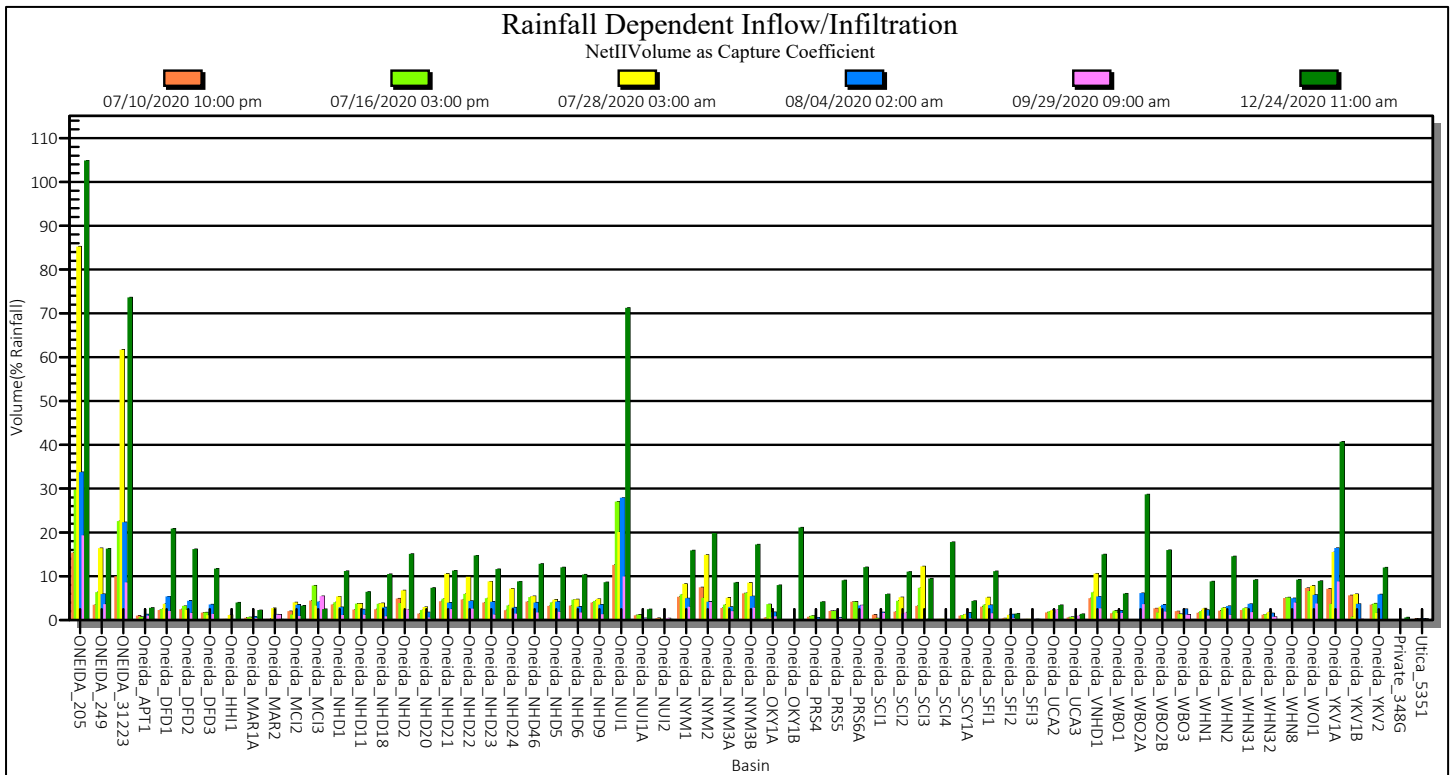
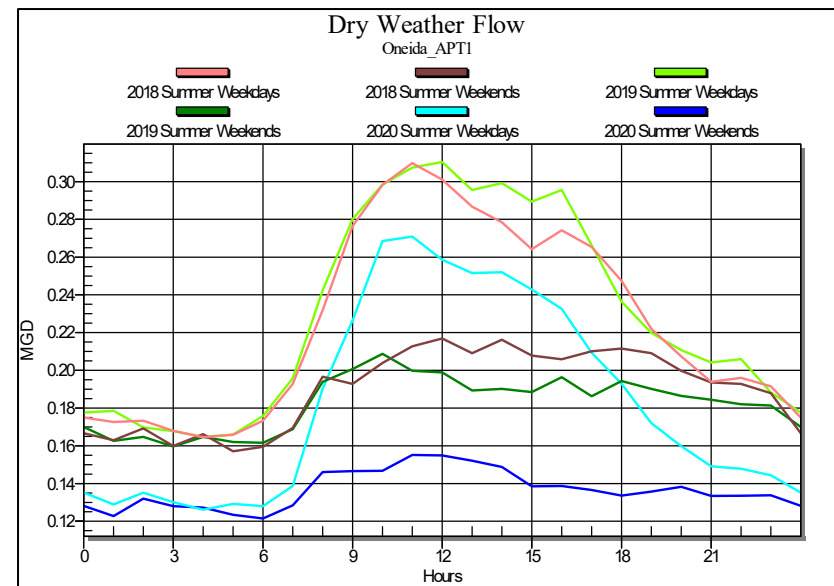
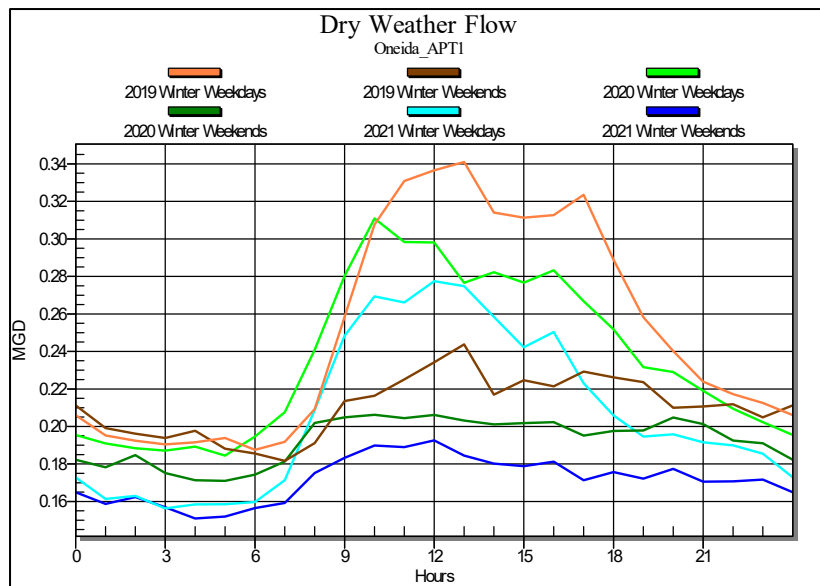
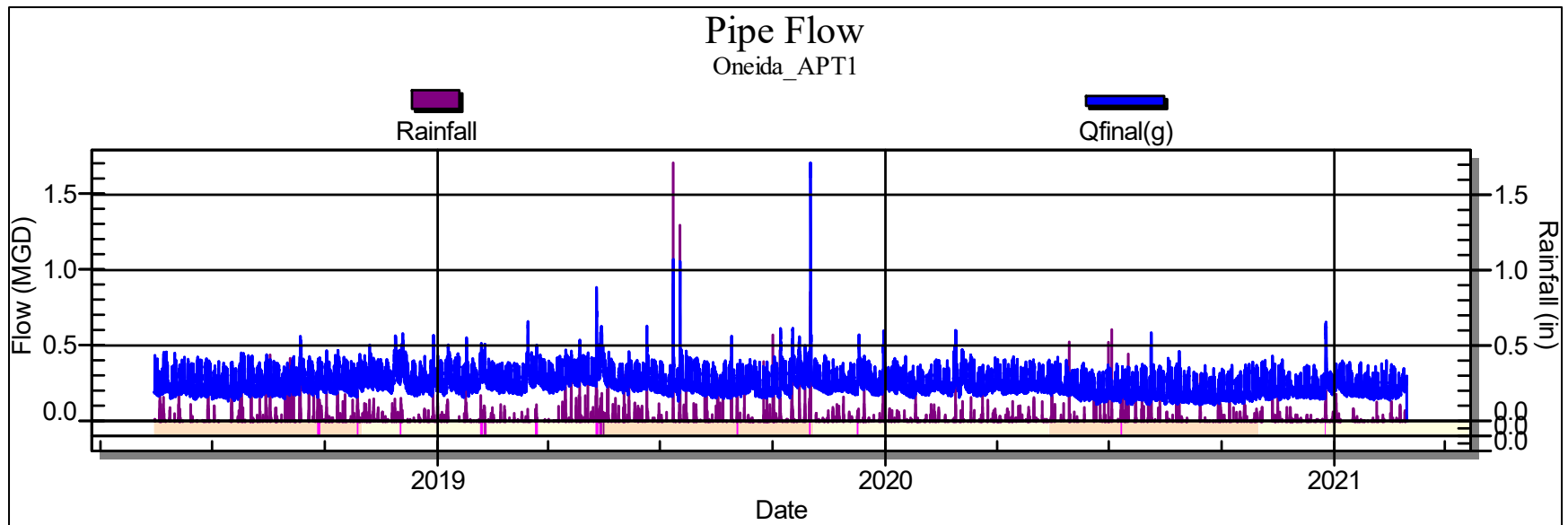


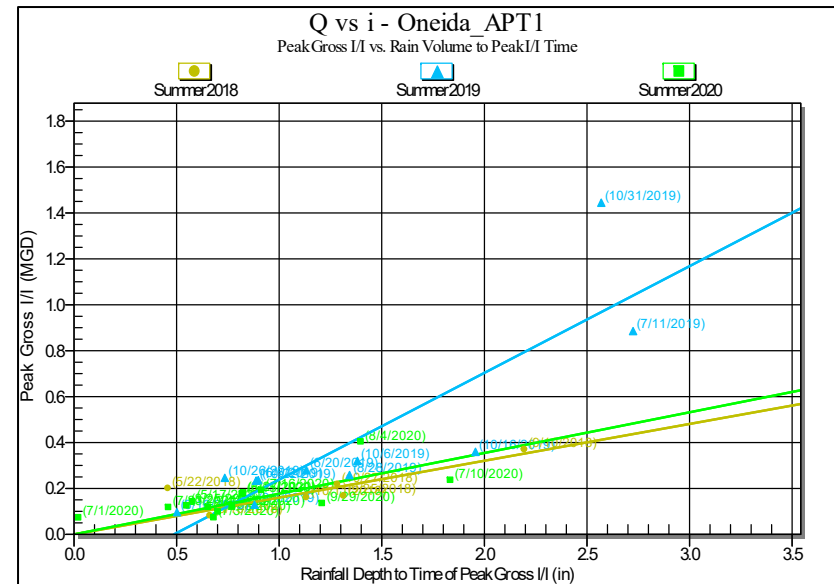
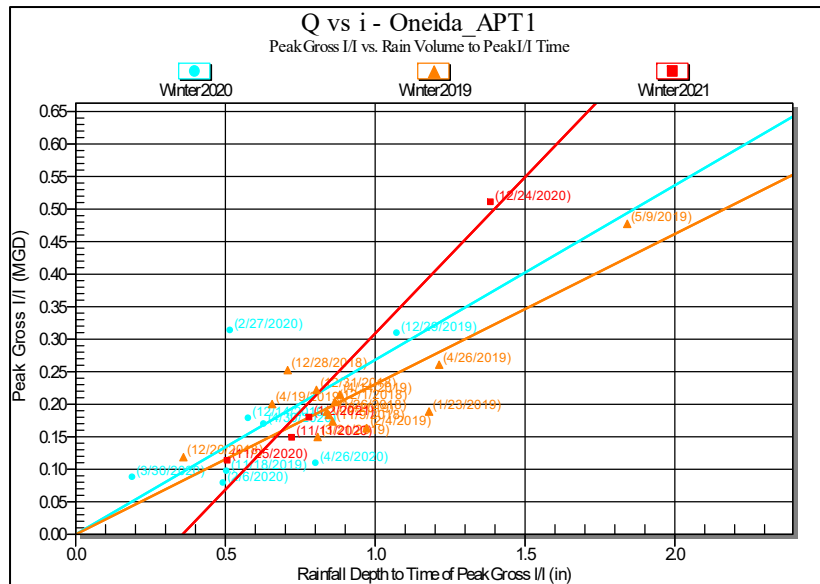
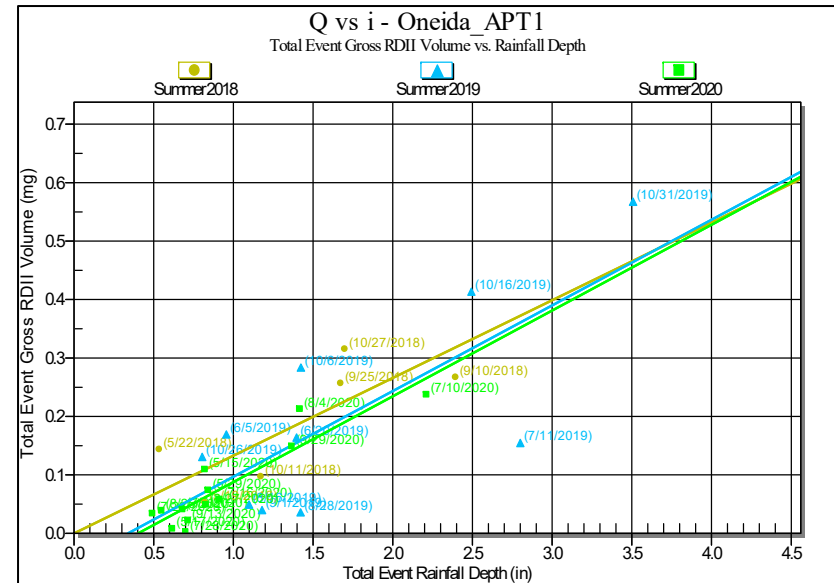
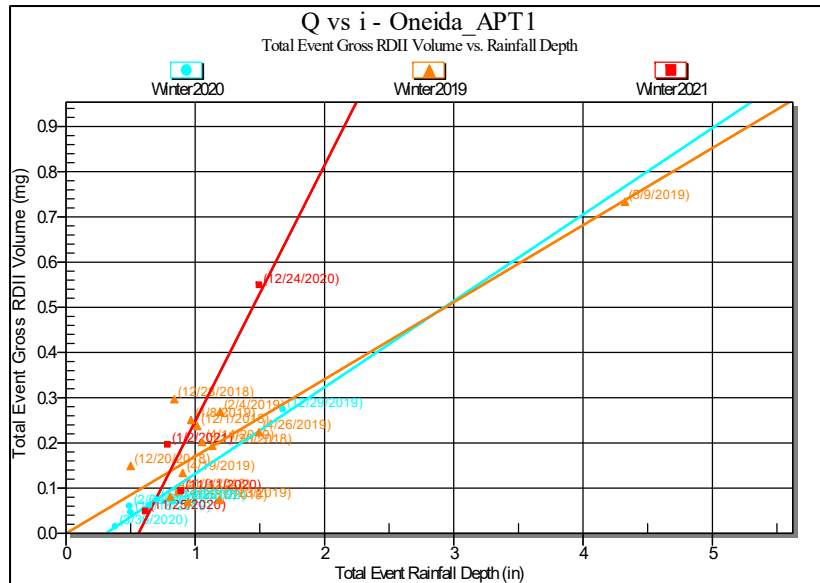
Figure 10 Q vs i plots of Winter periods

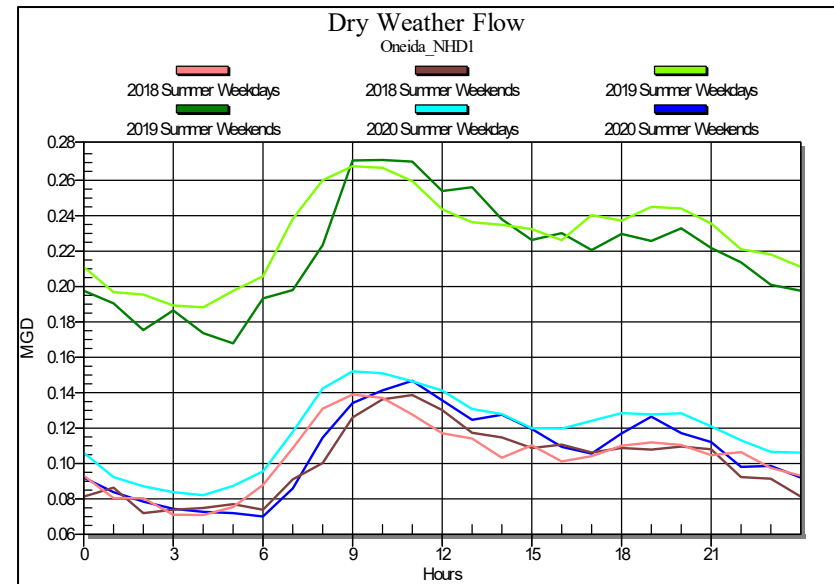
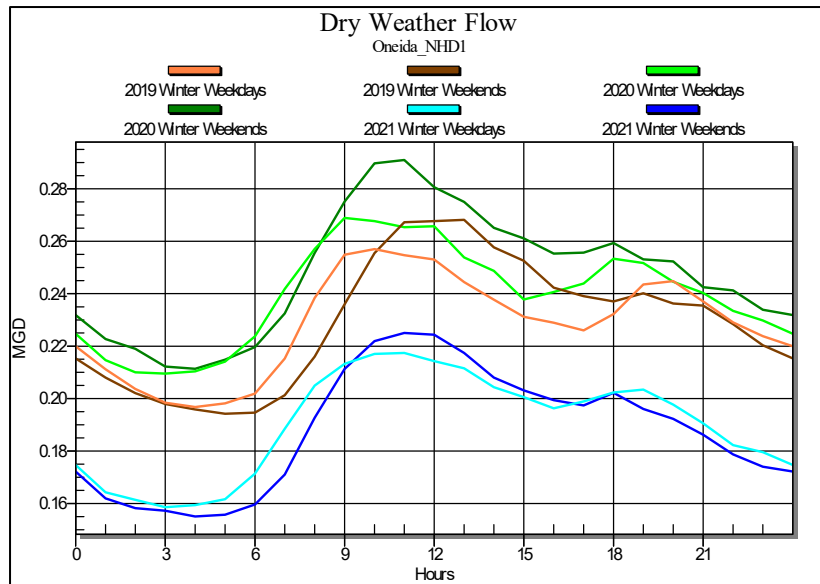
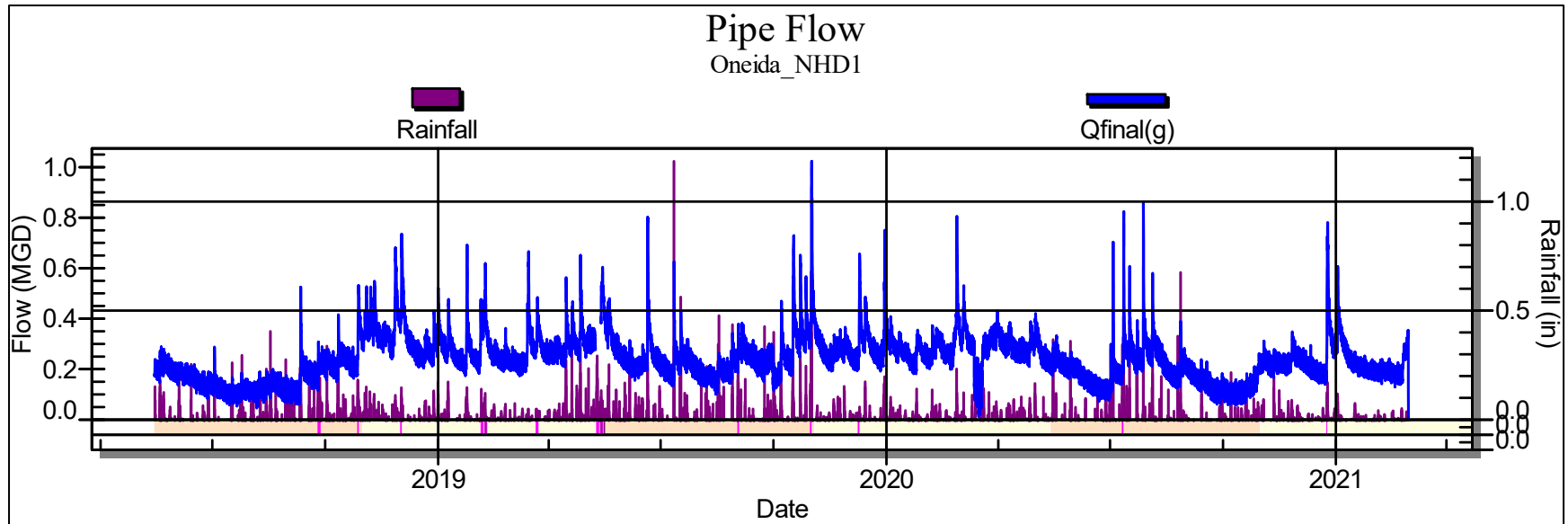


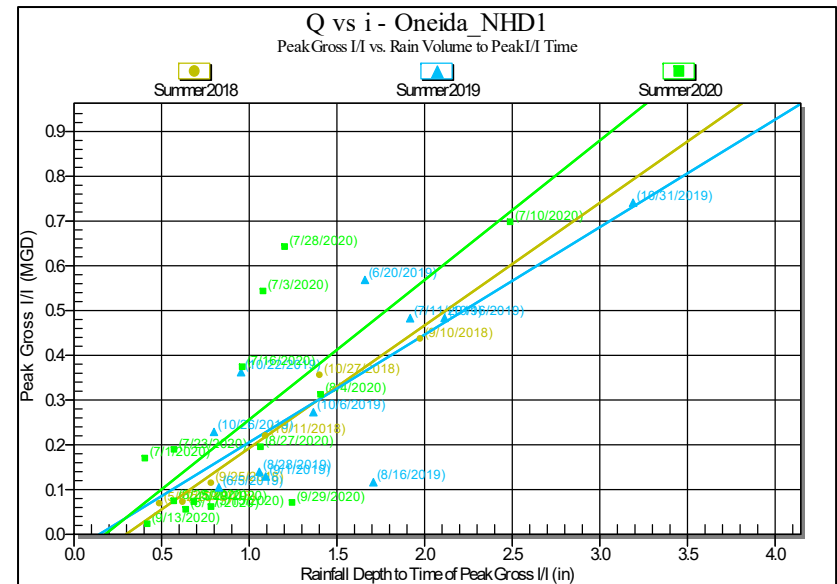
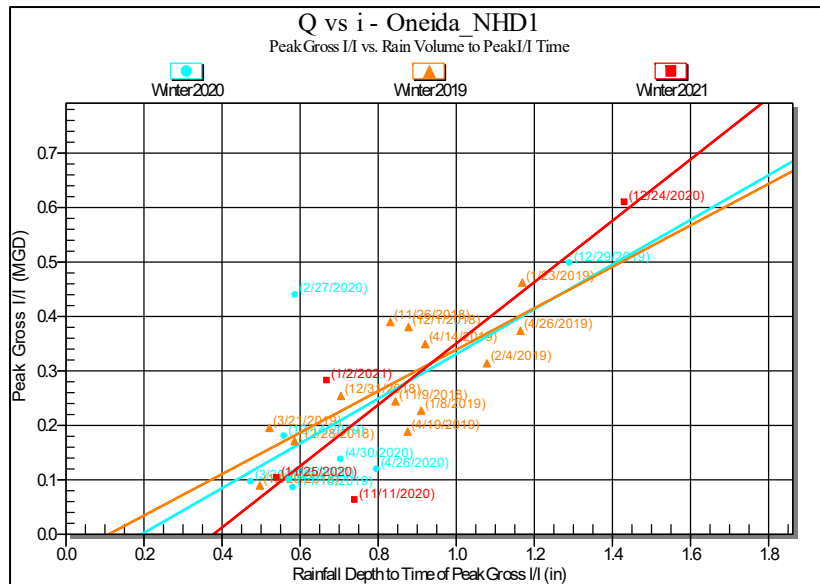
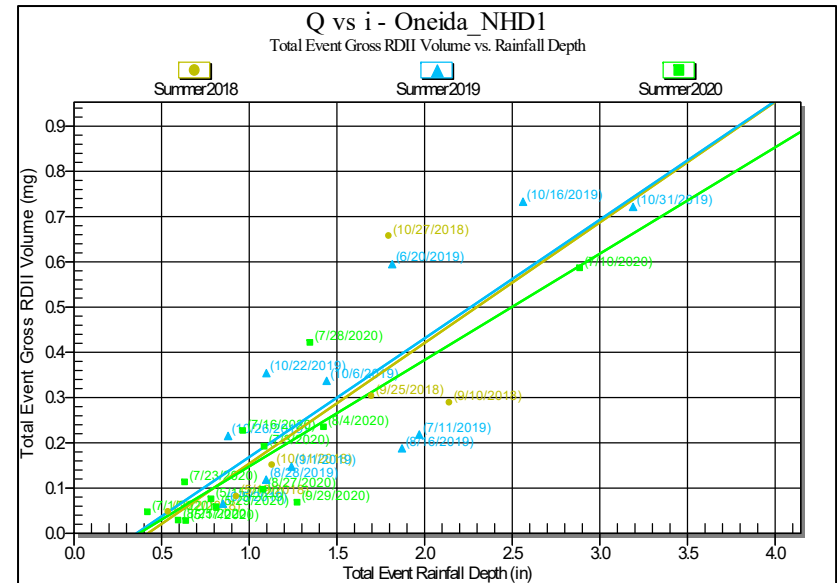
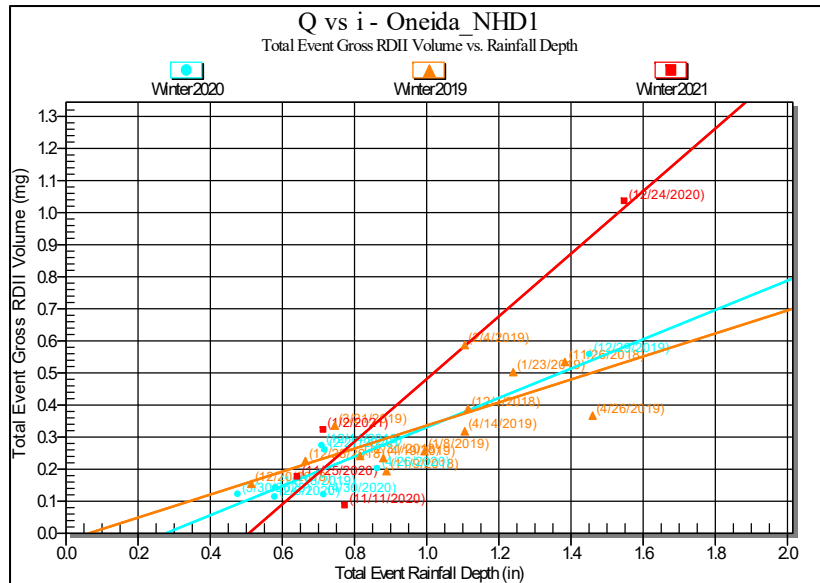
Appendix C

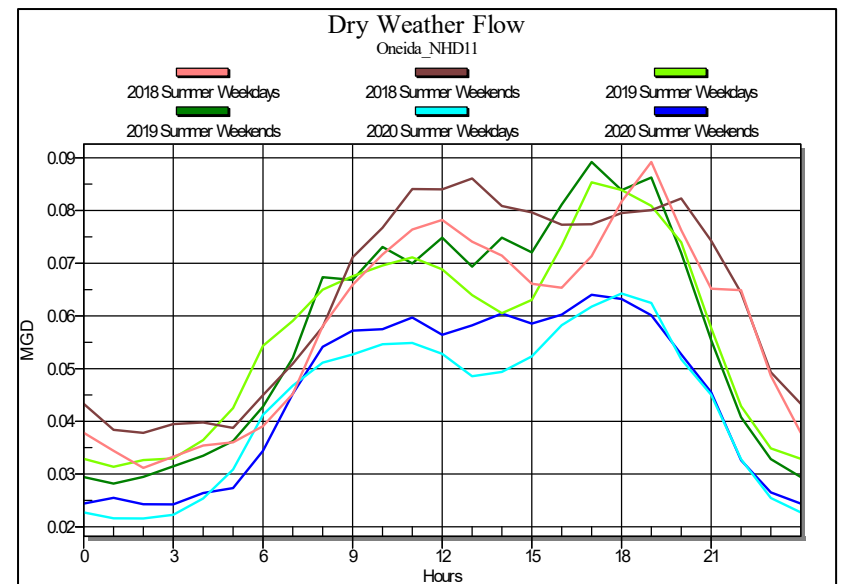
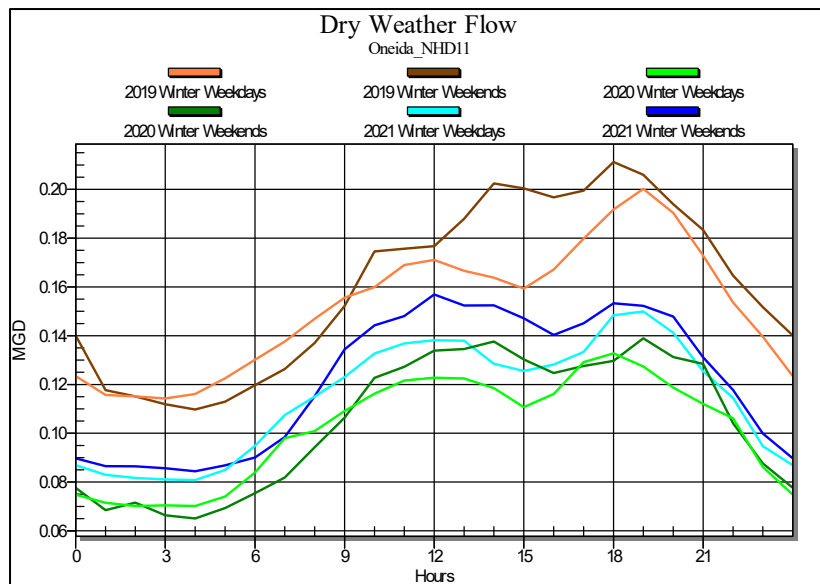
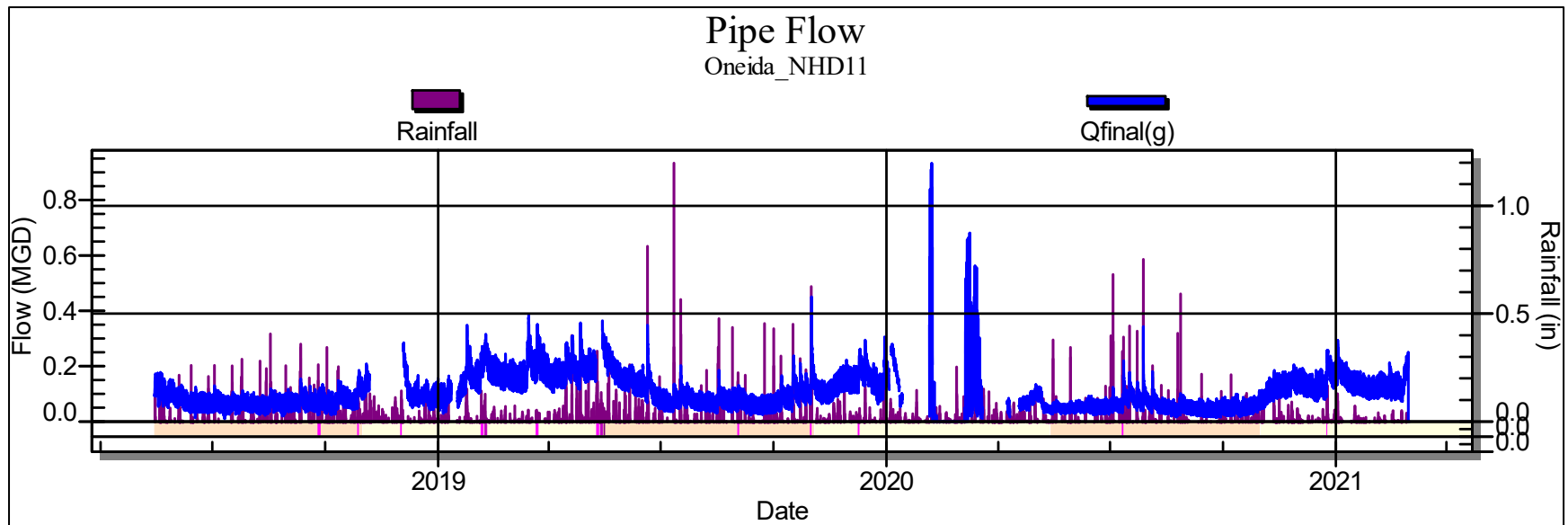
Oneida County Slicer Graphs (ADS)

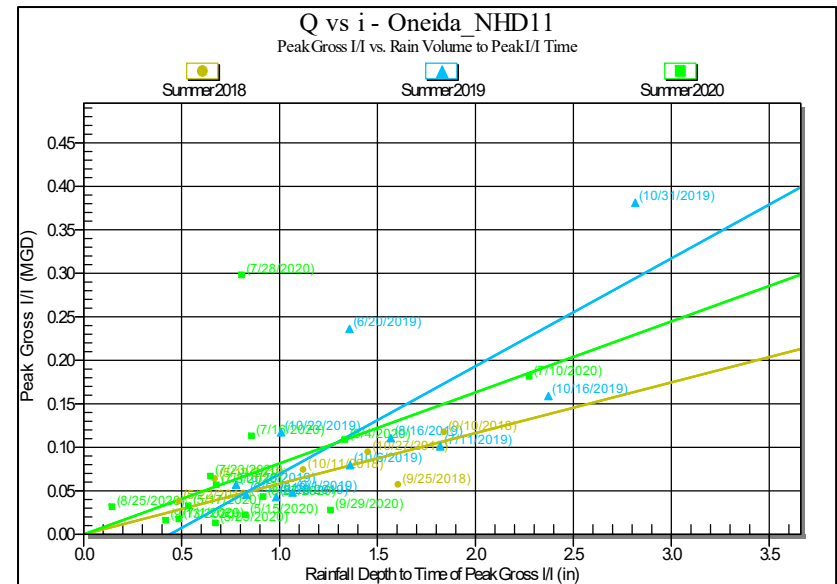
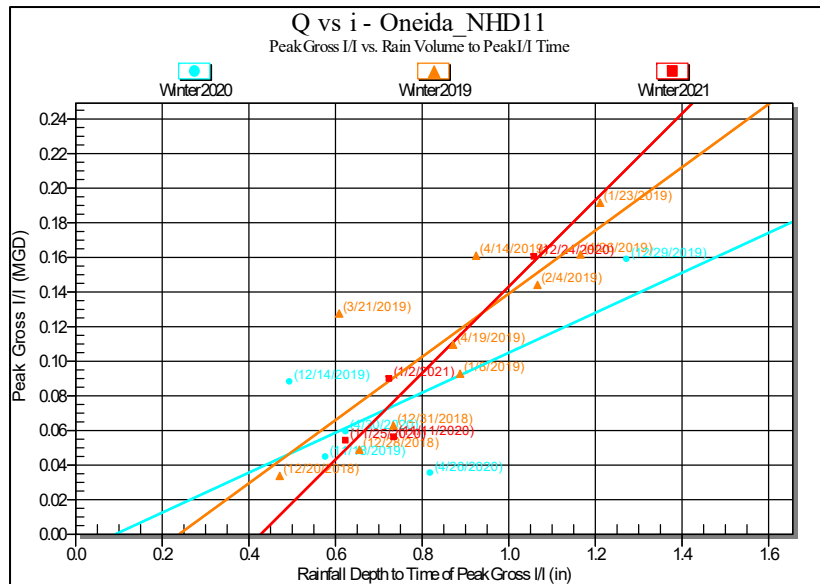
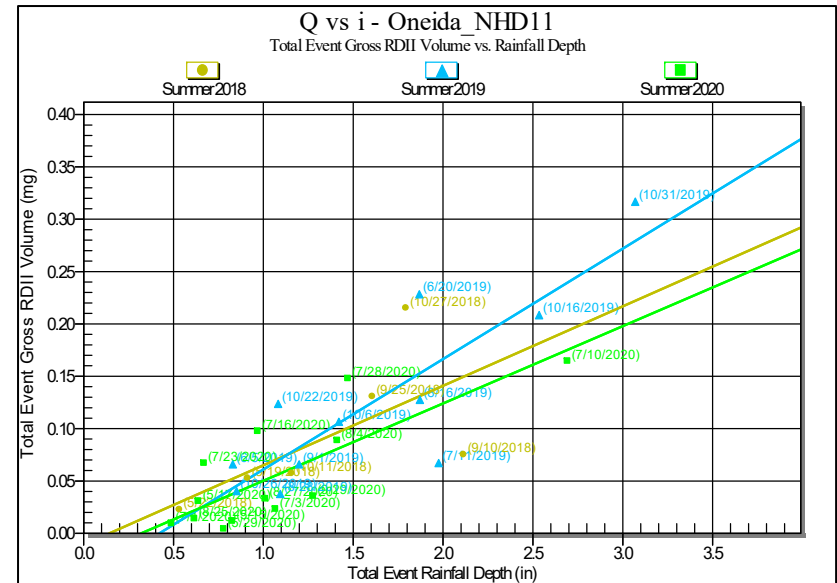
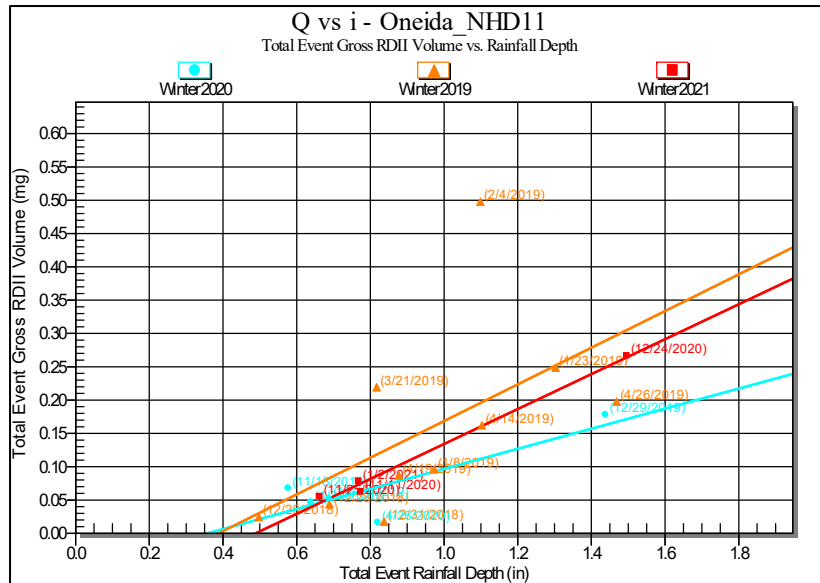


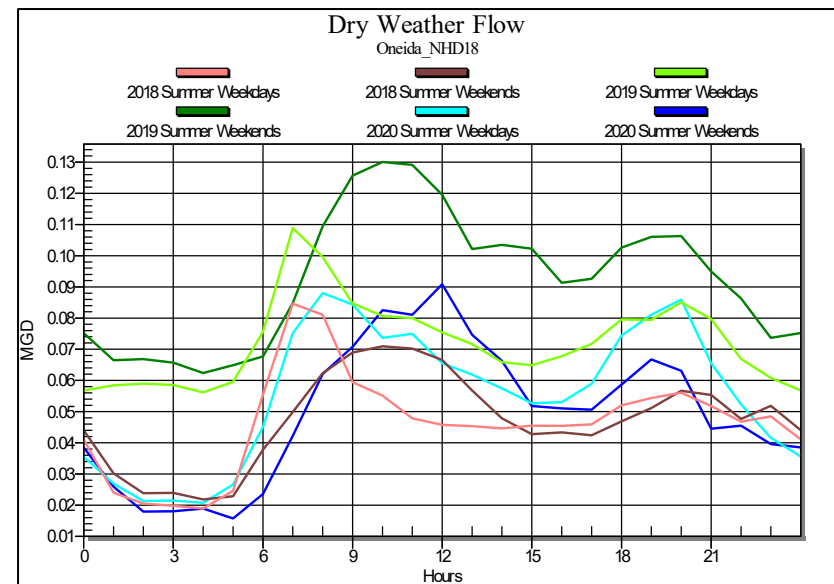
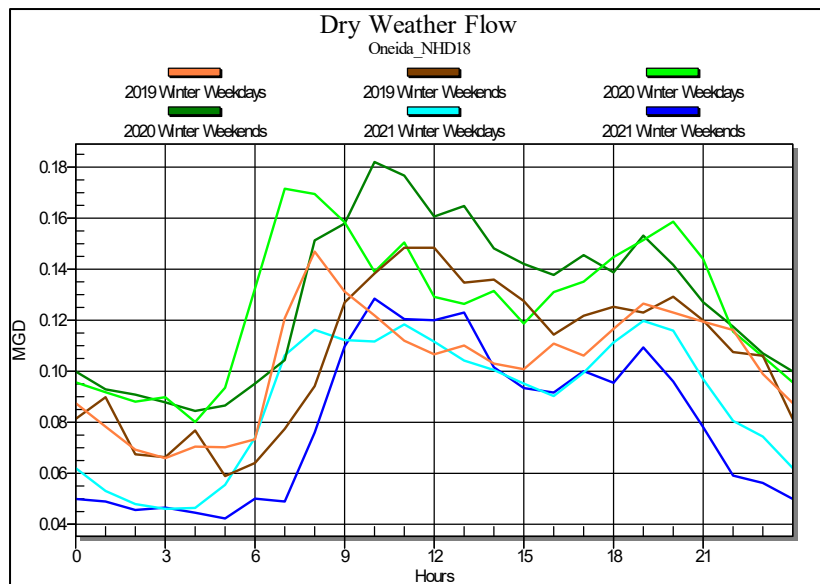
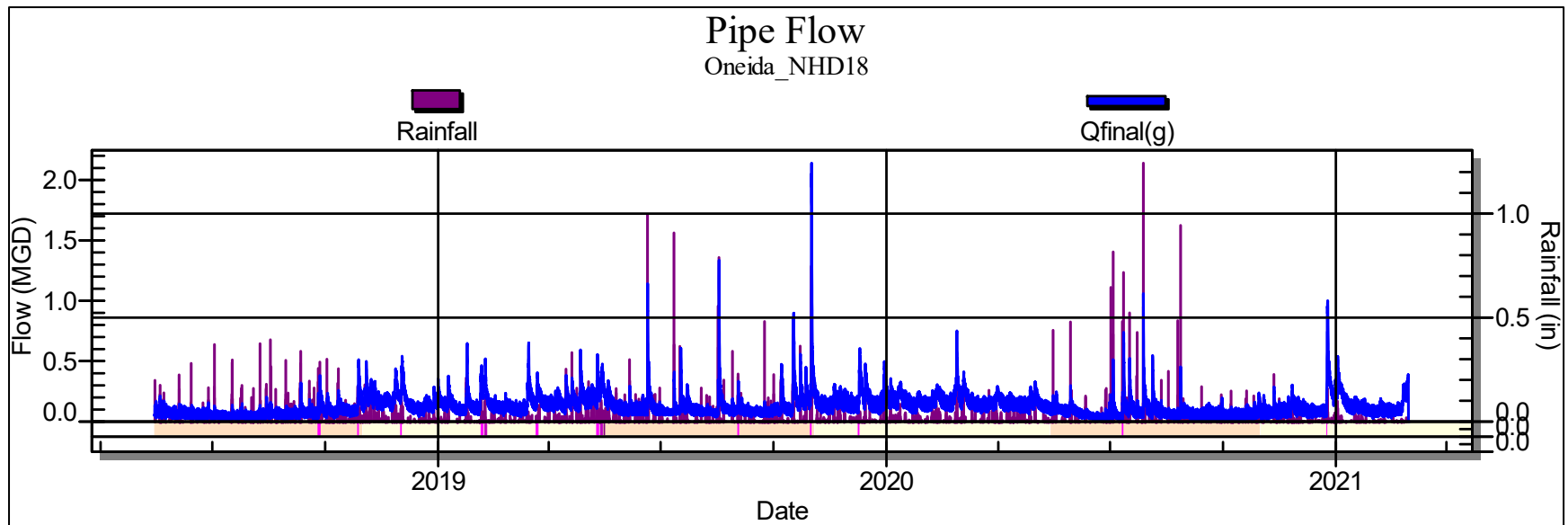


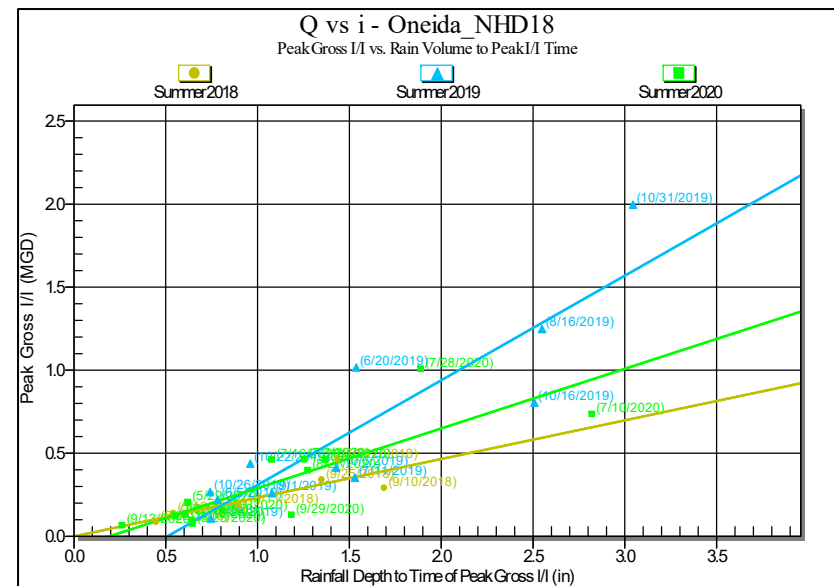
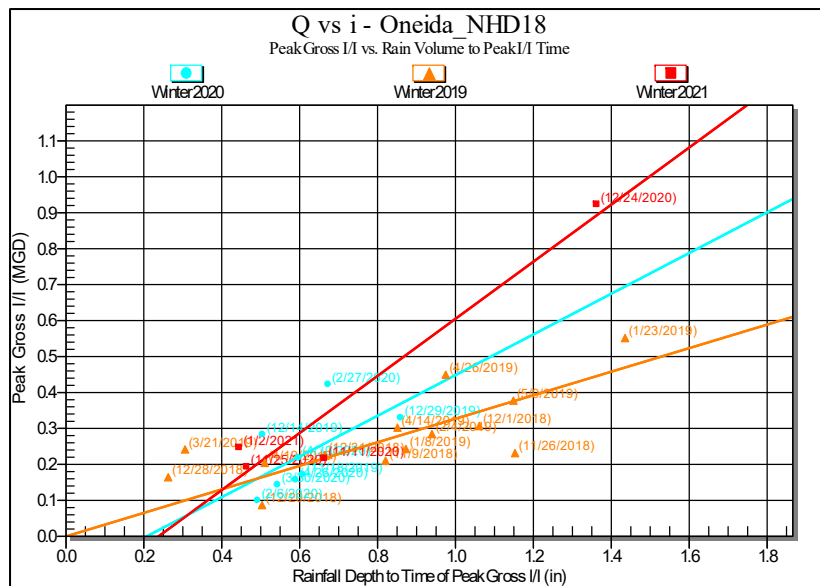
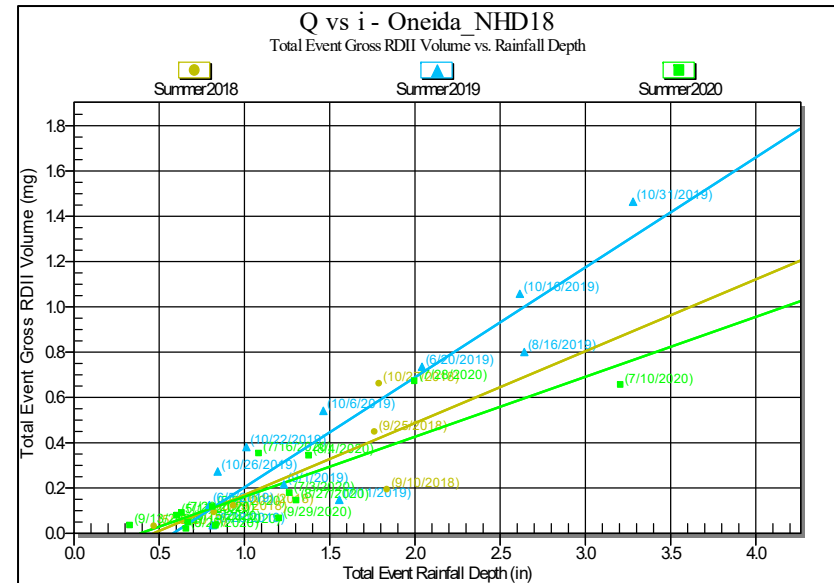
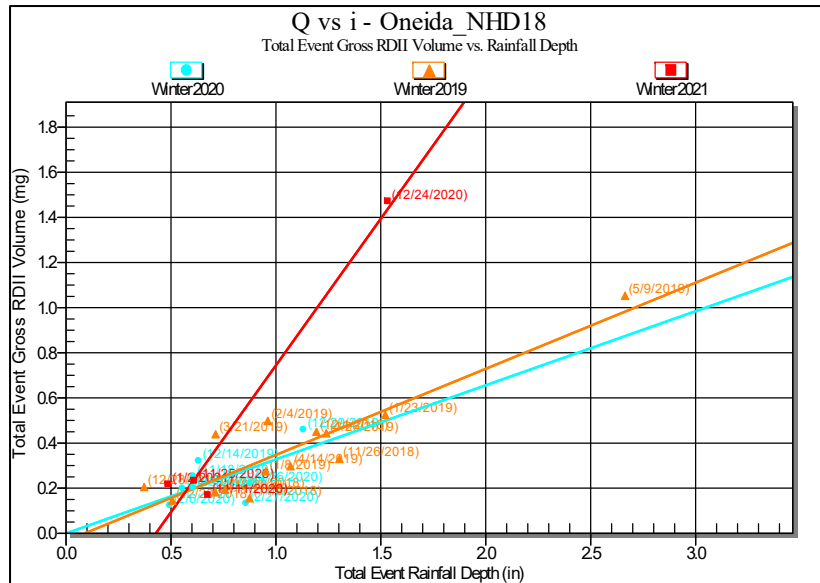


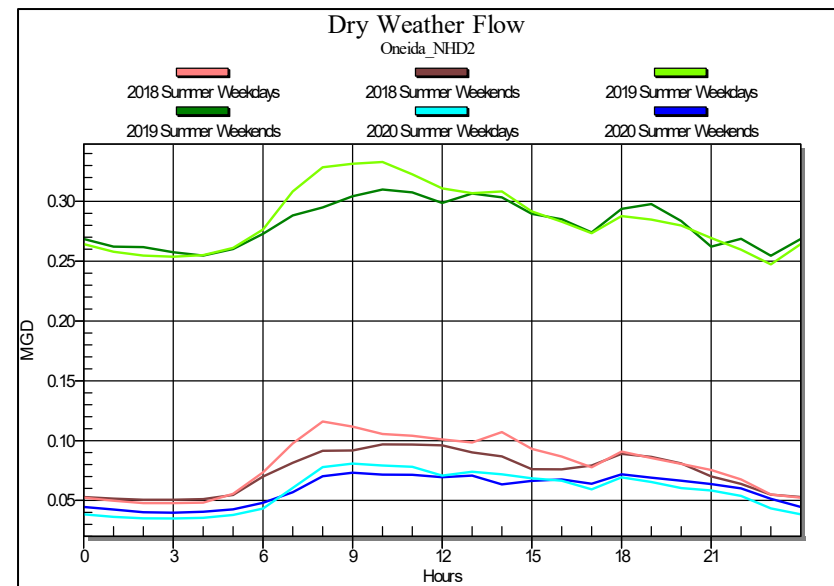
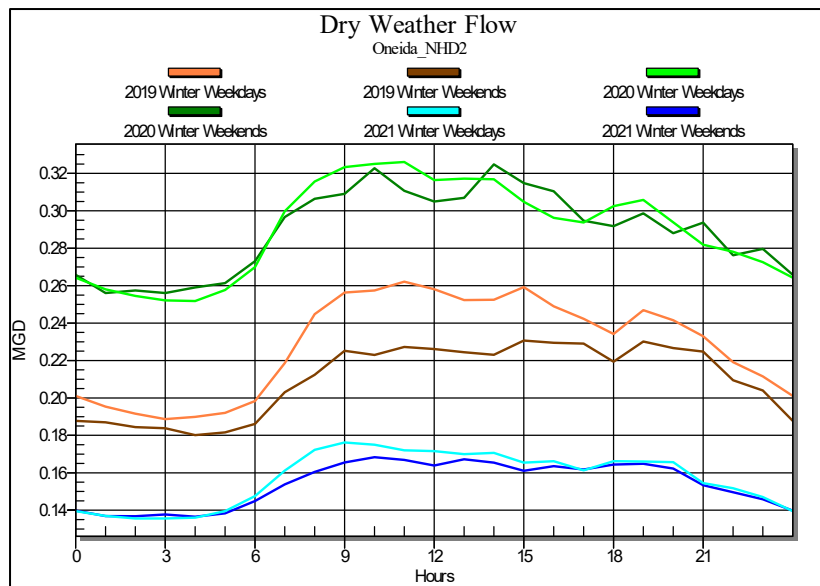
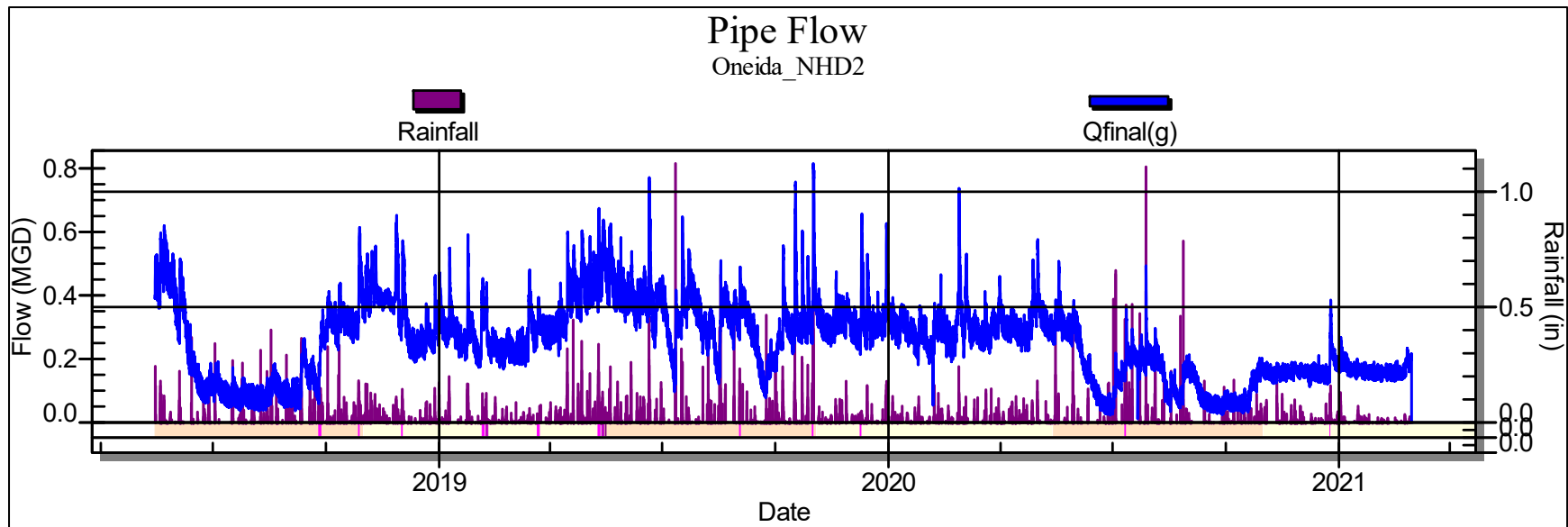


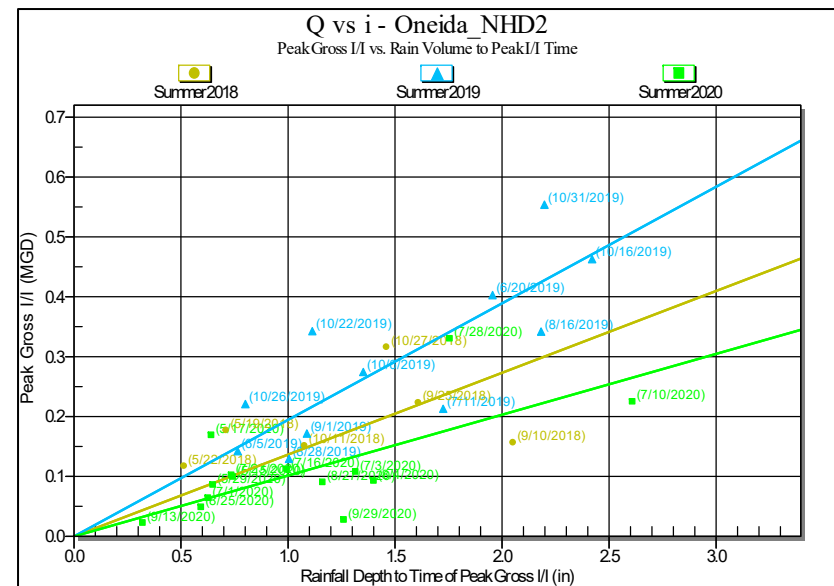
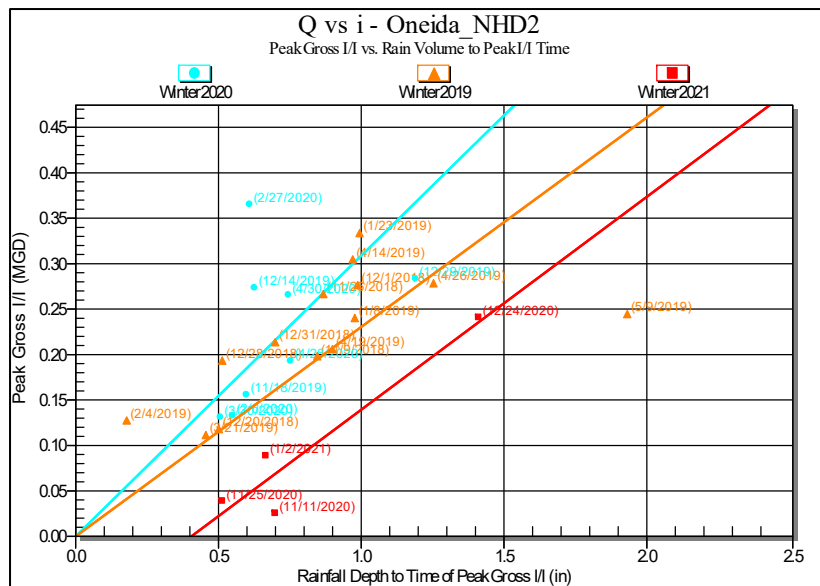
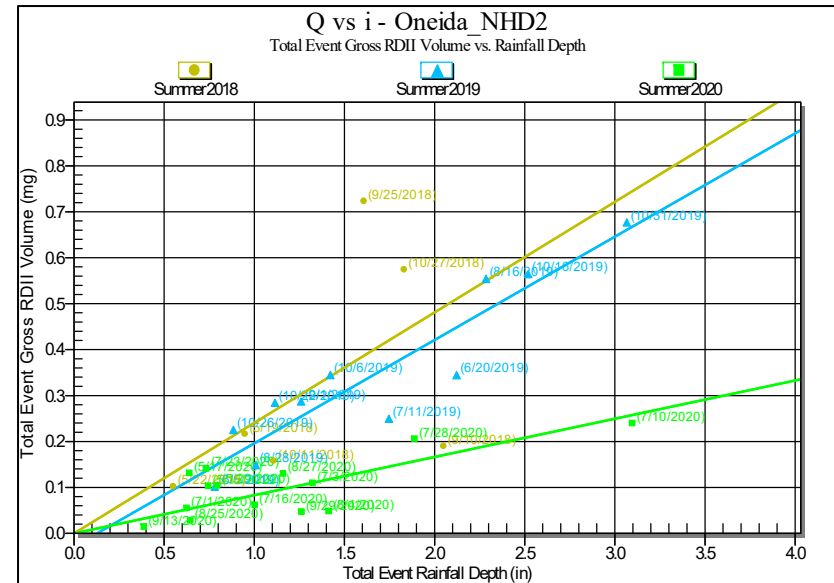
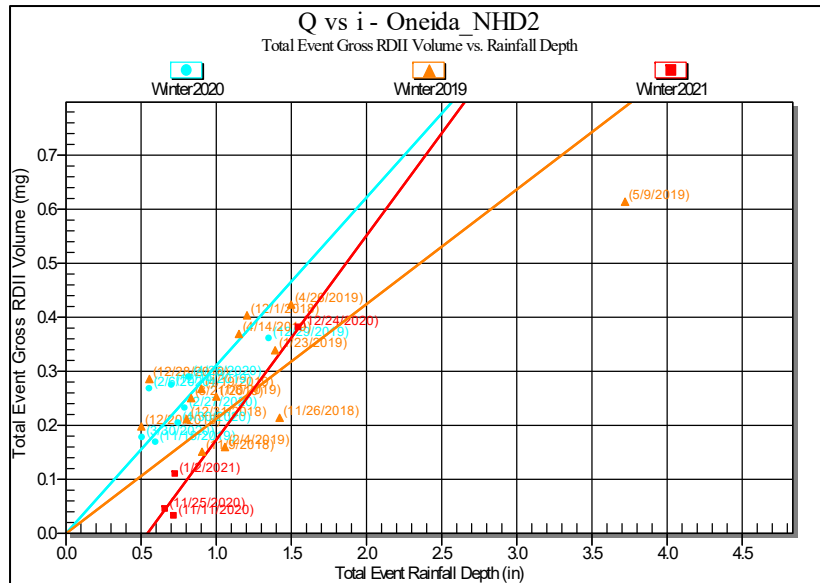


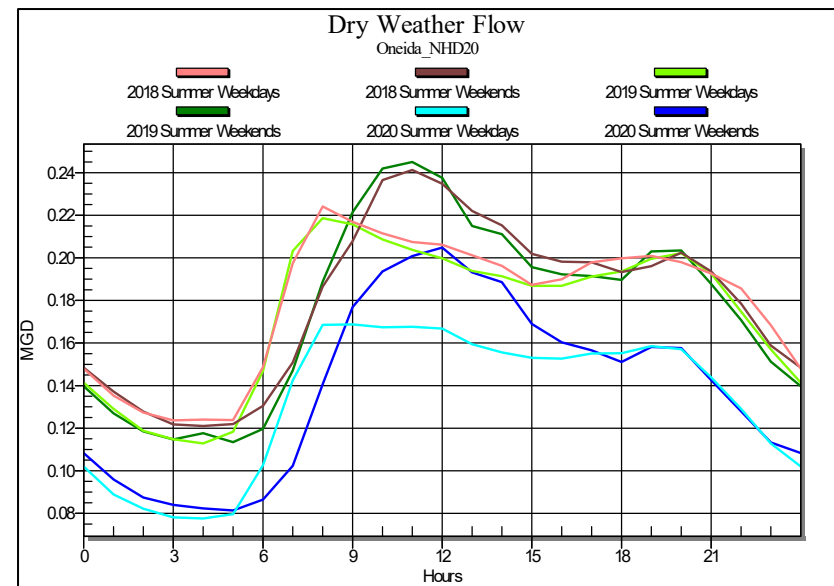
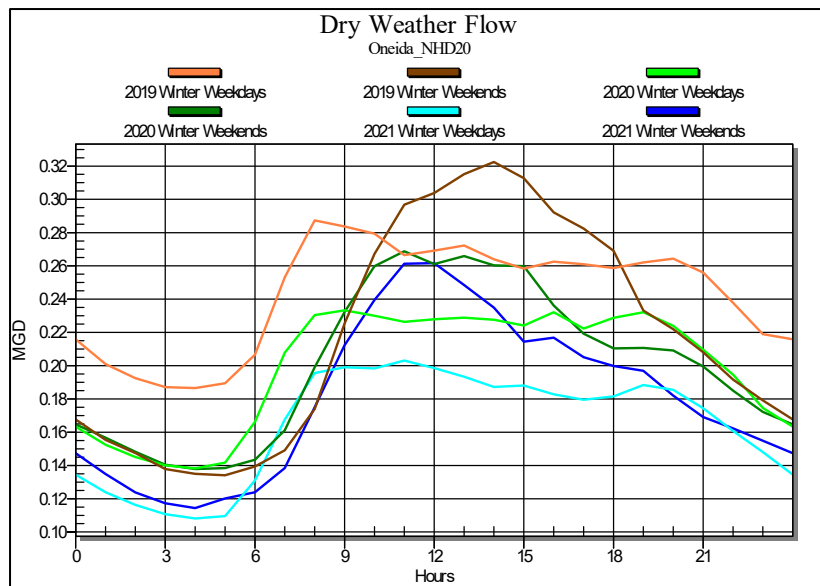
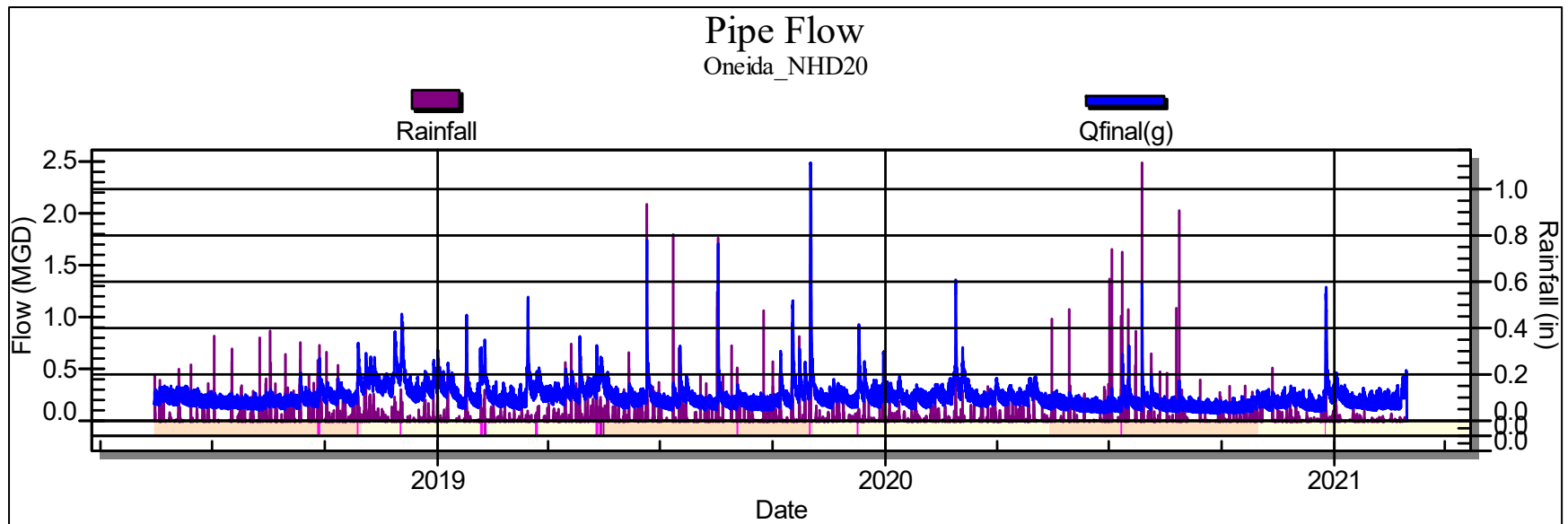


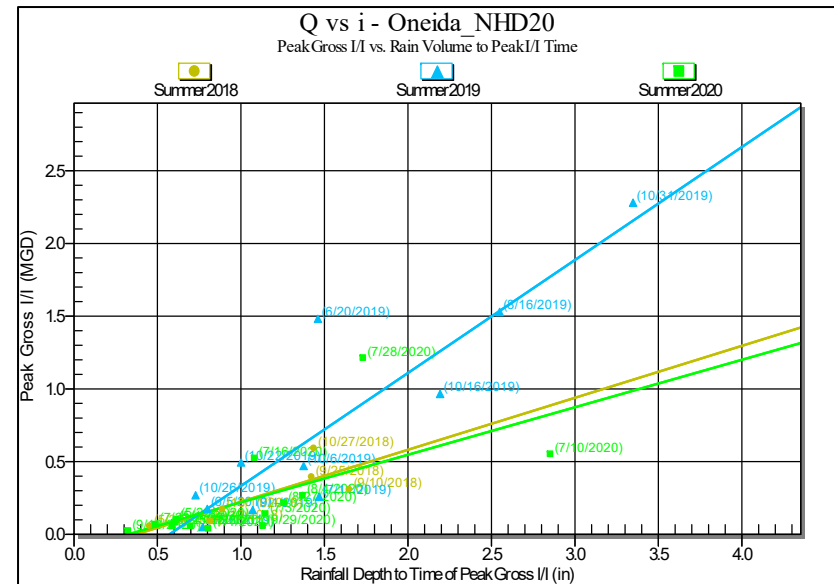
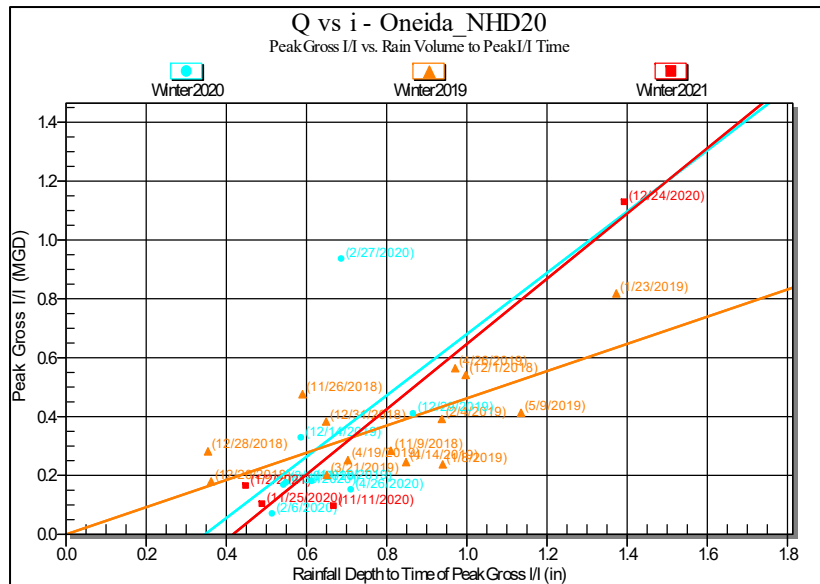
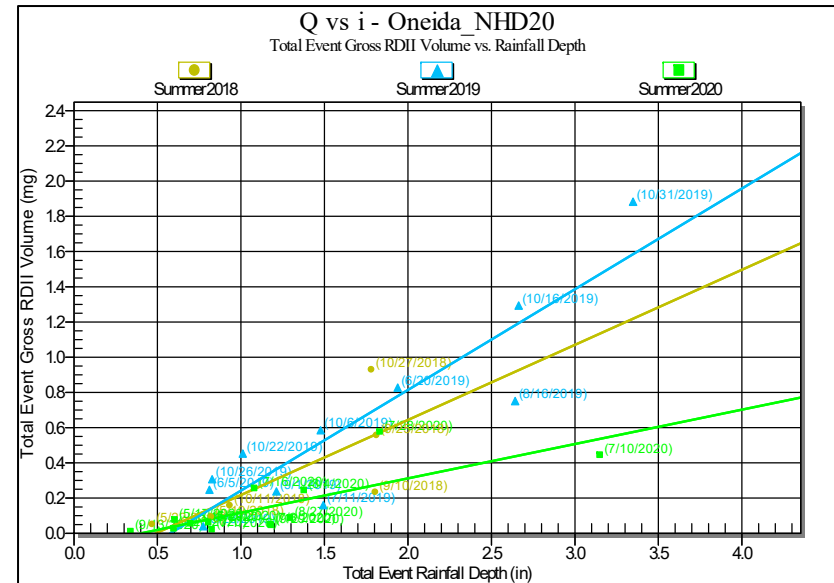
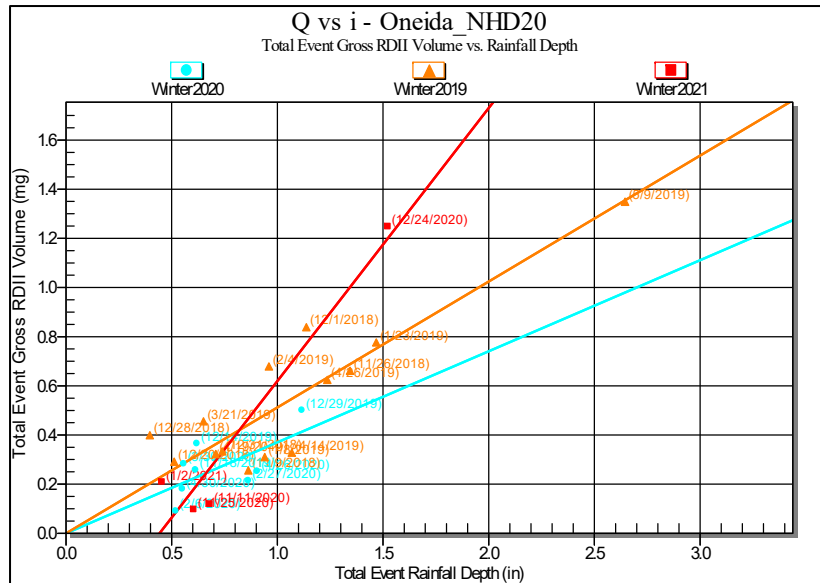


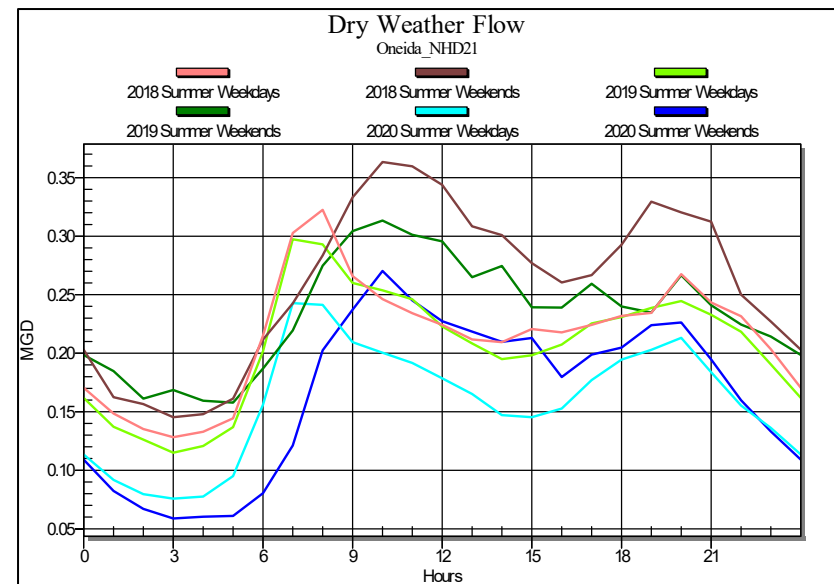
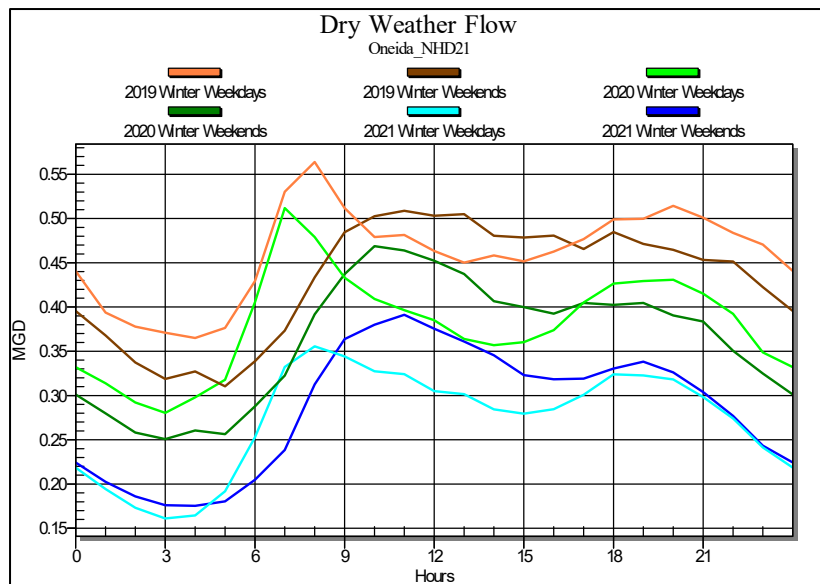
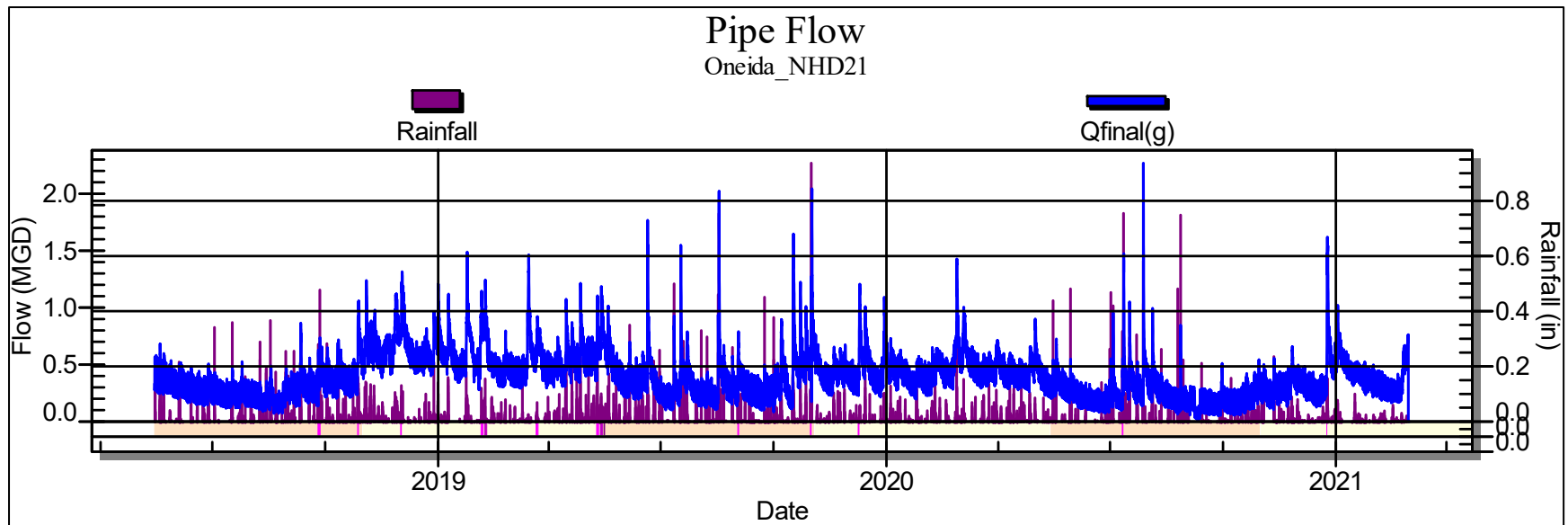


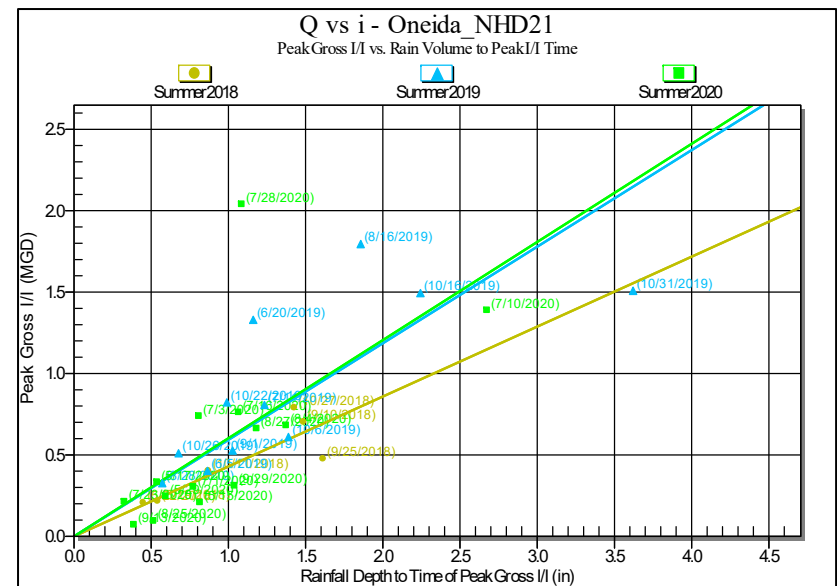
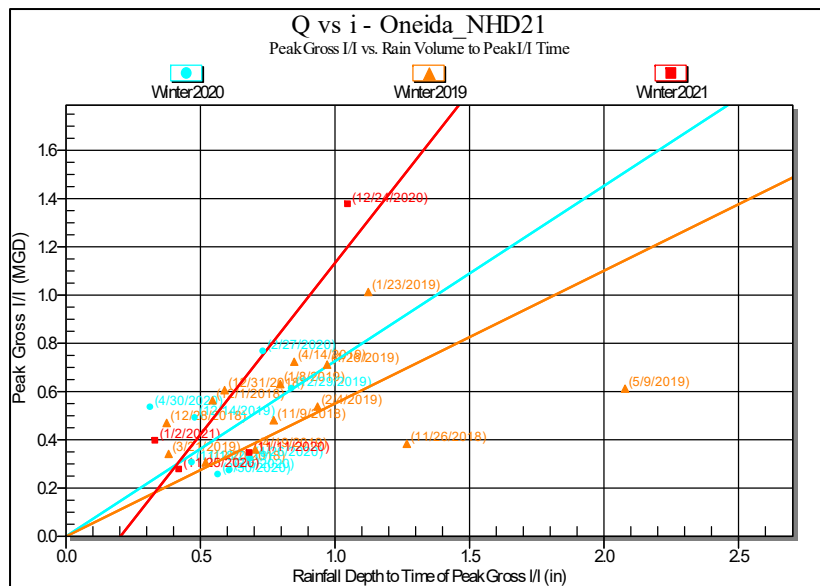
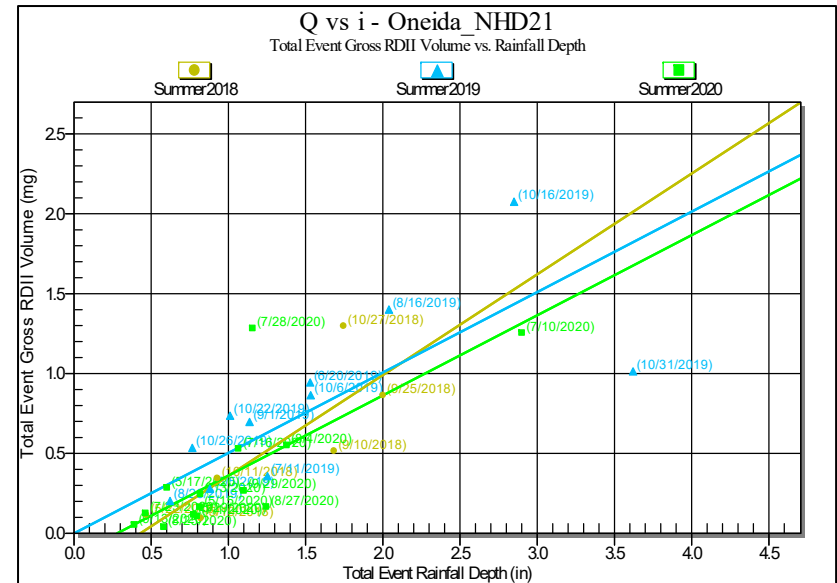
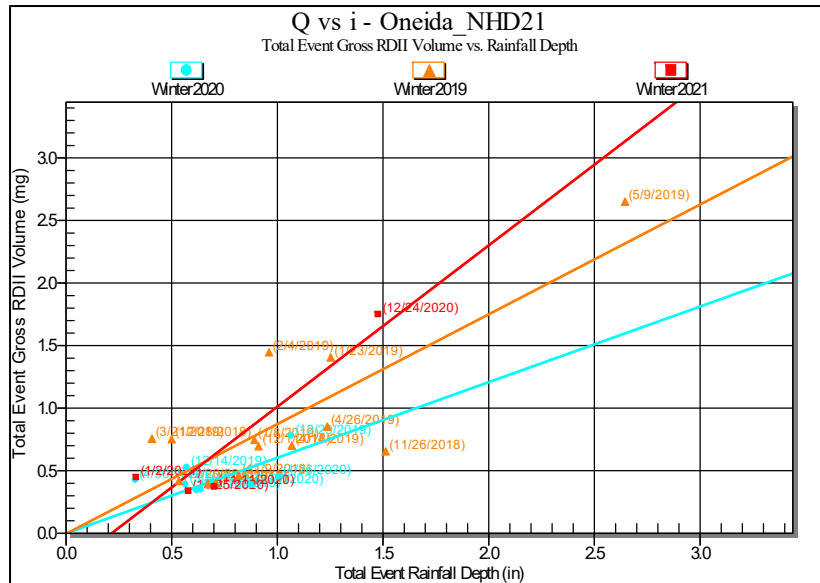


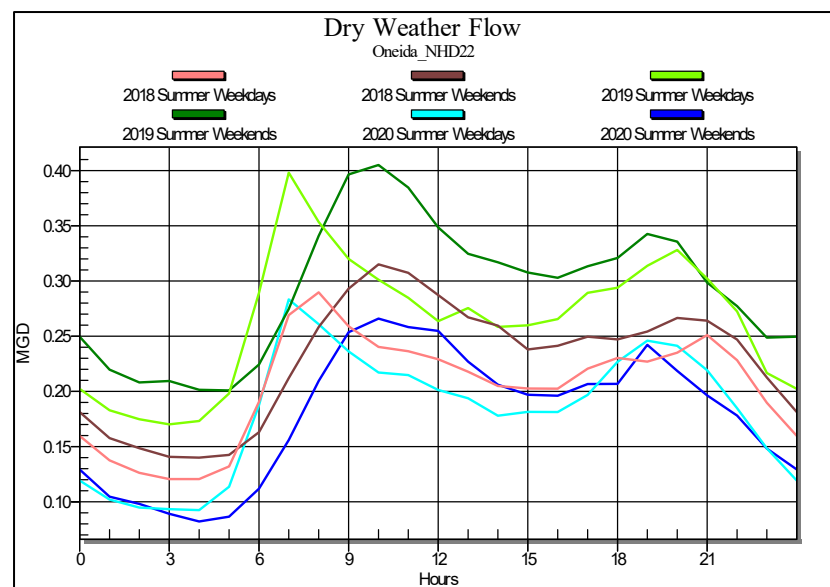
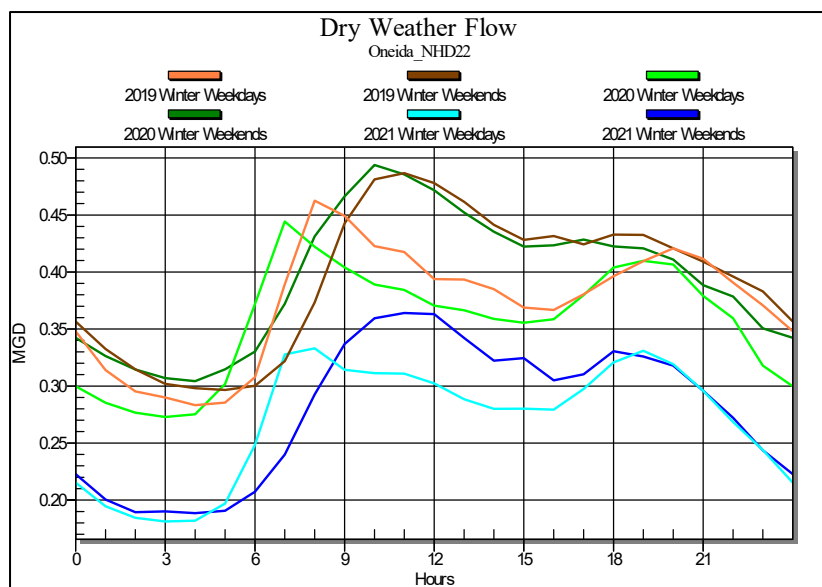
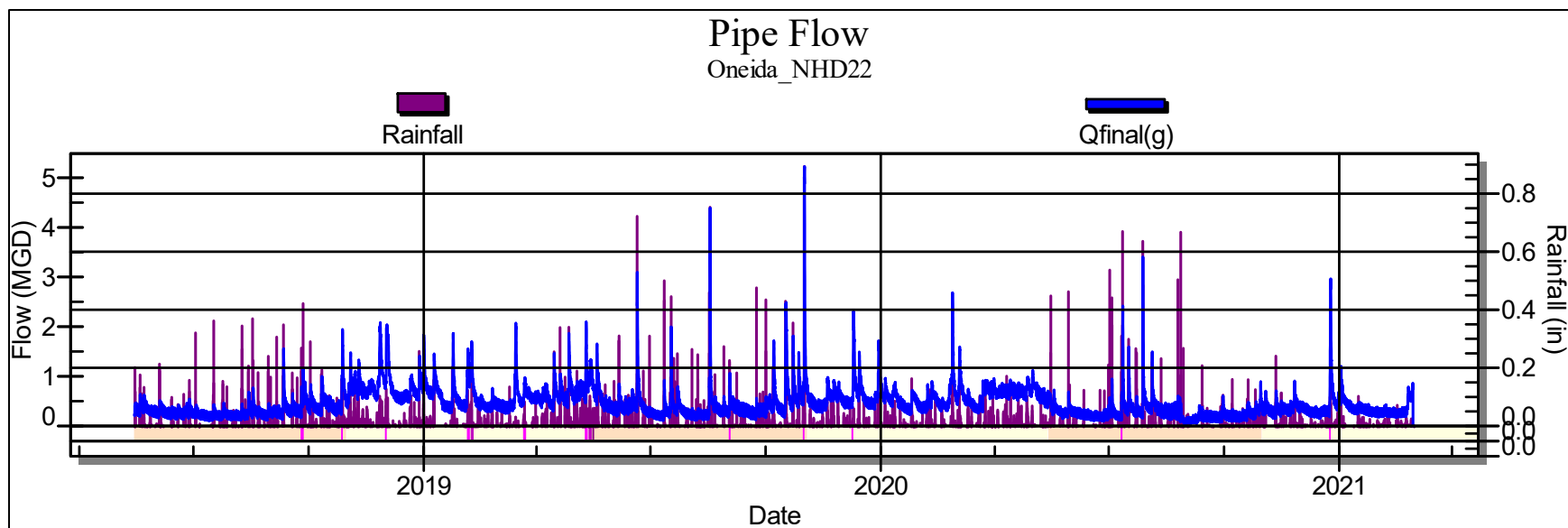


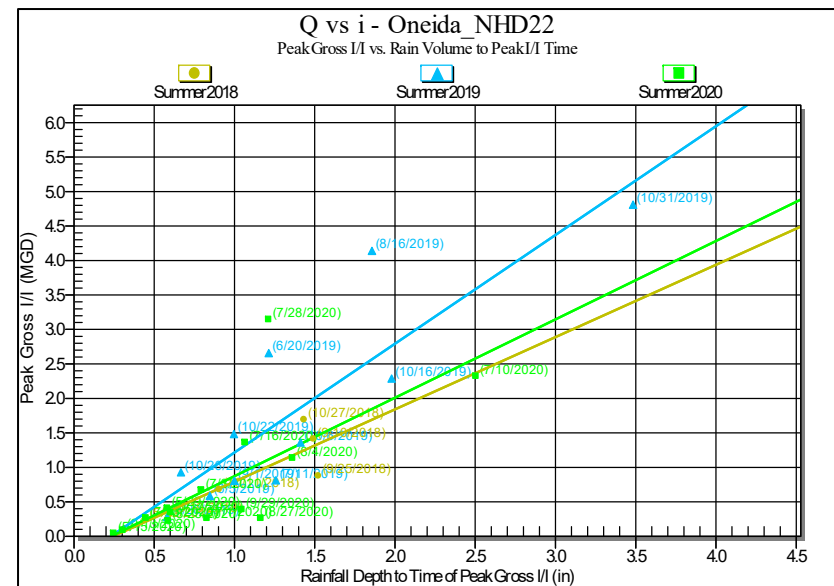
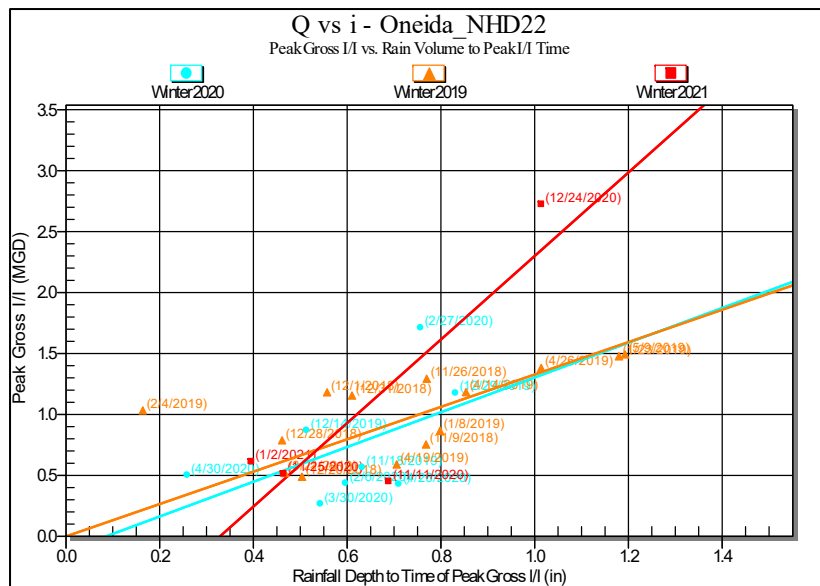
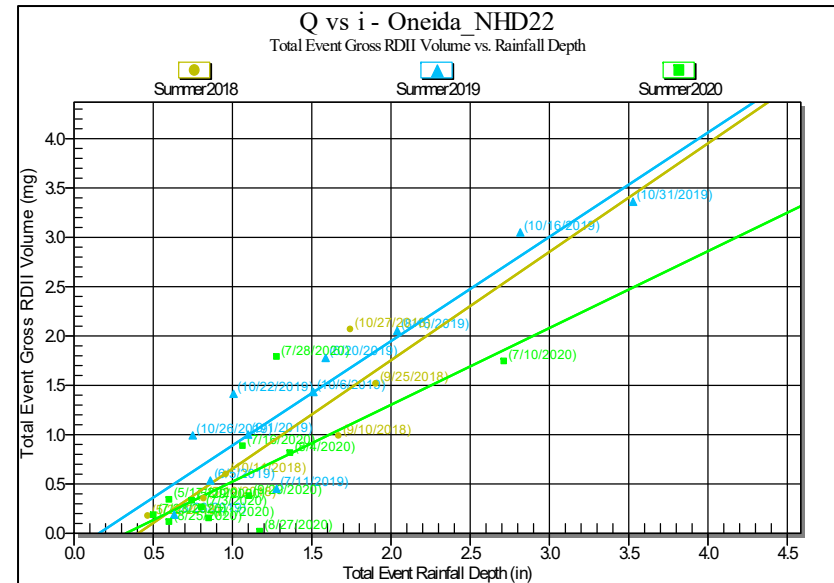
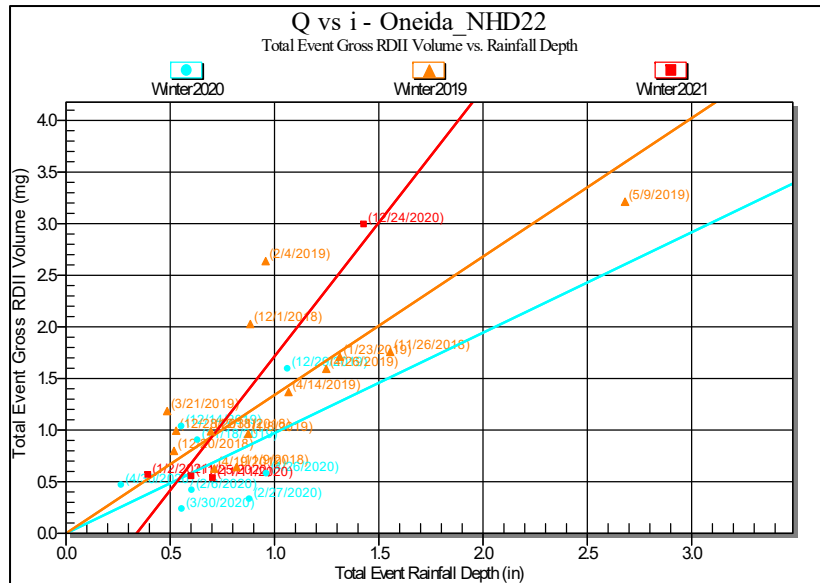


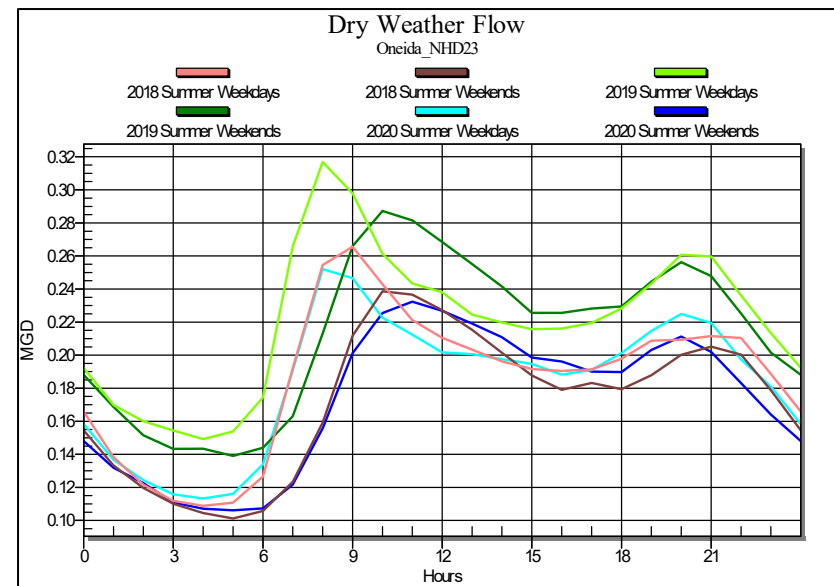
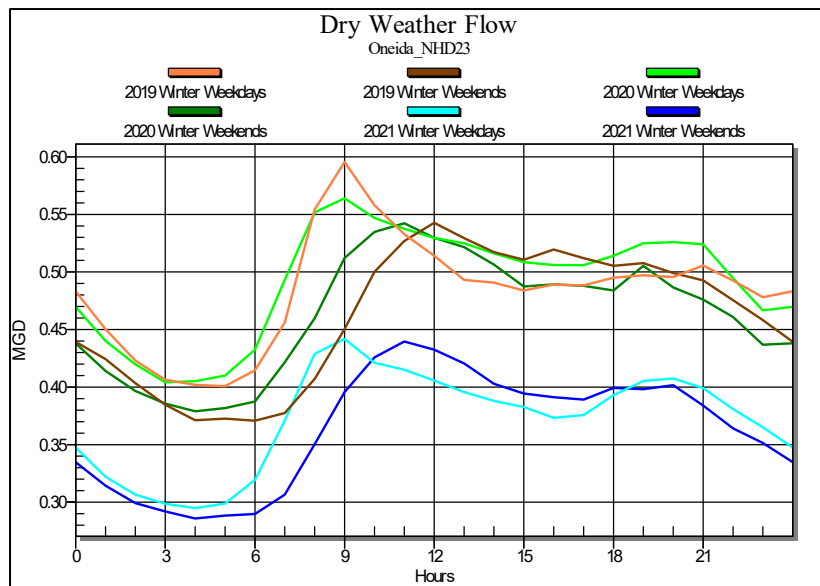
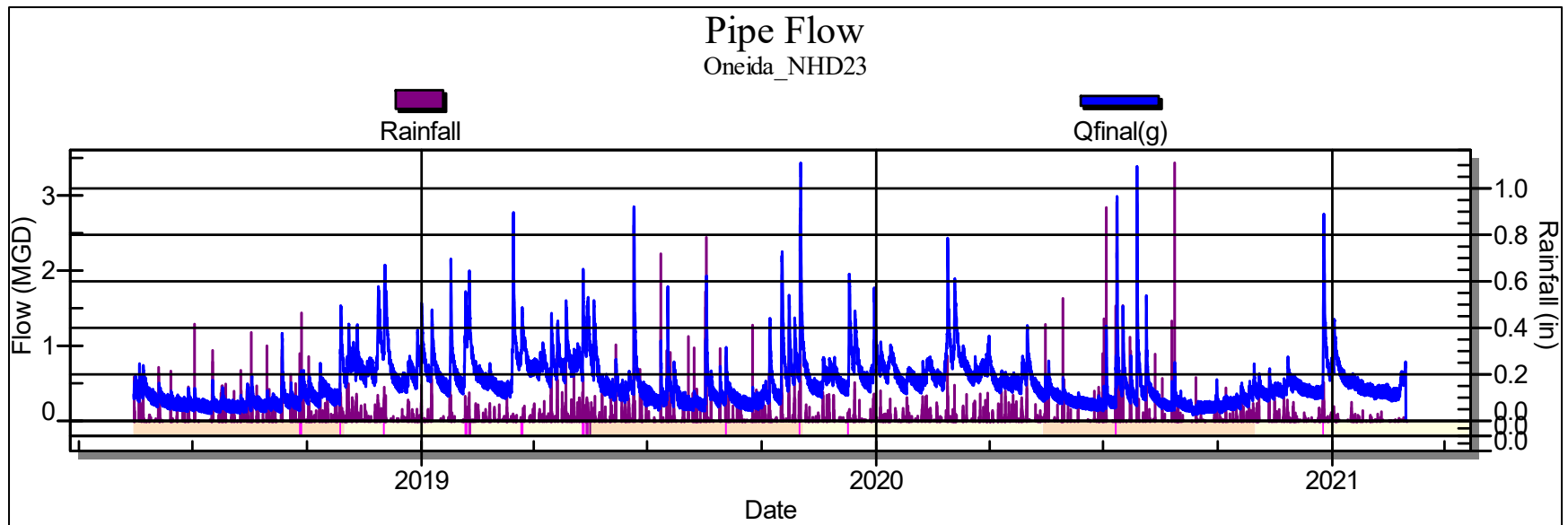


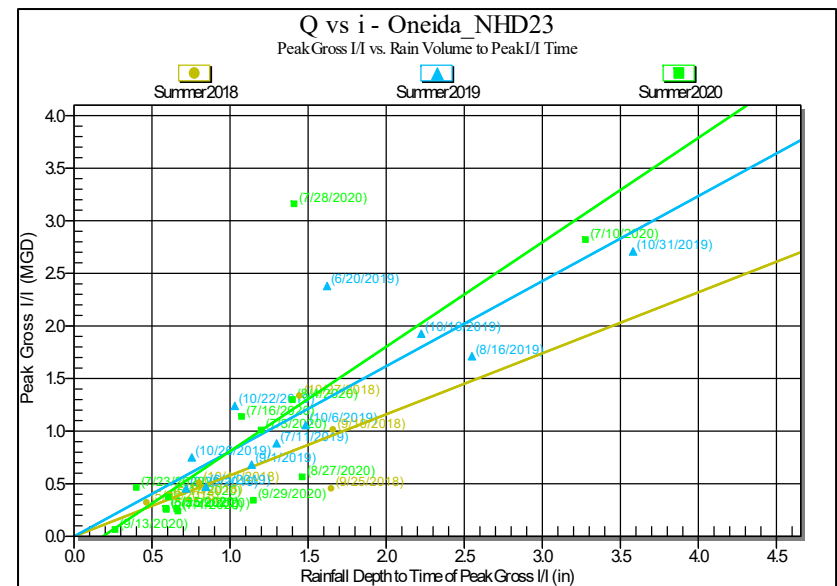
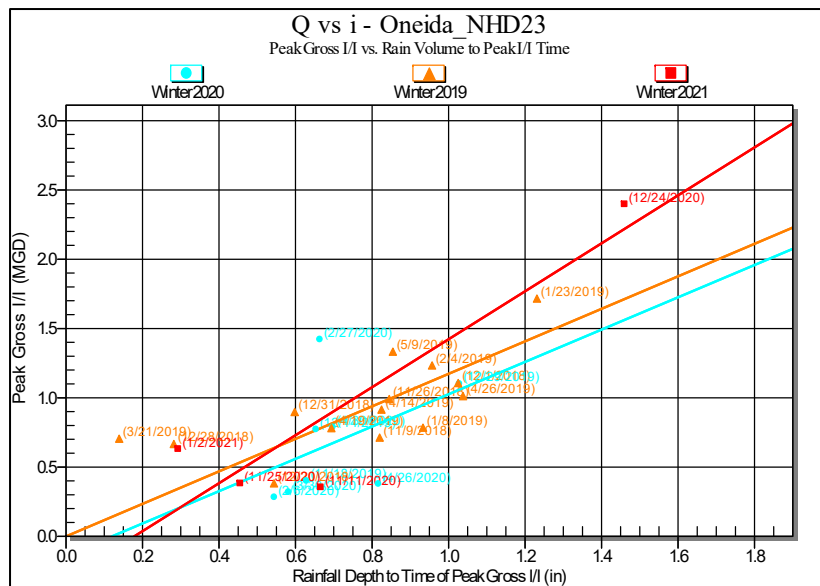
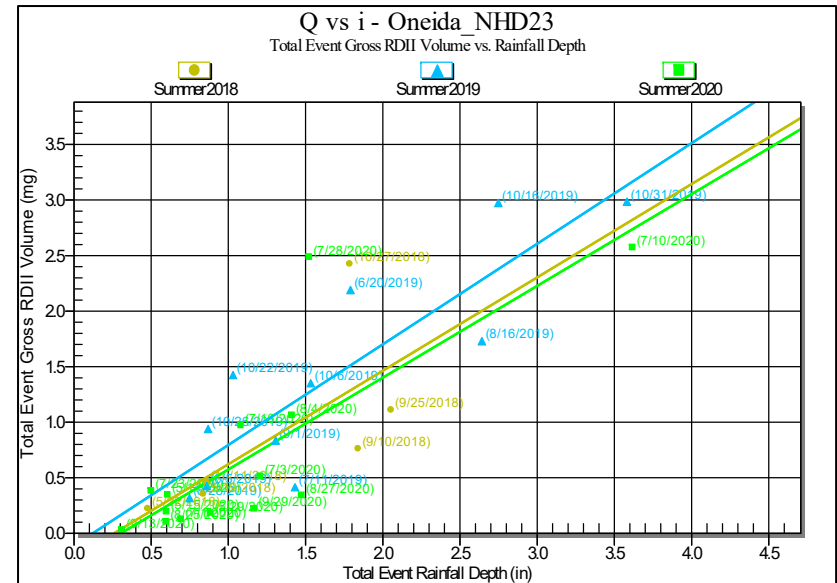
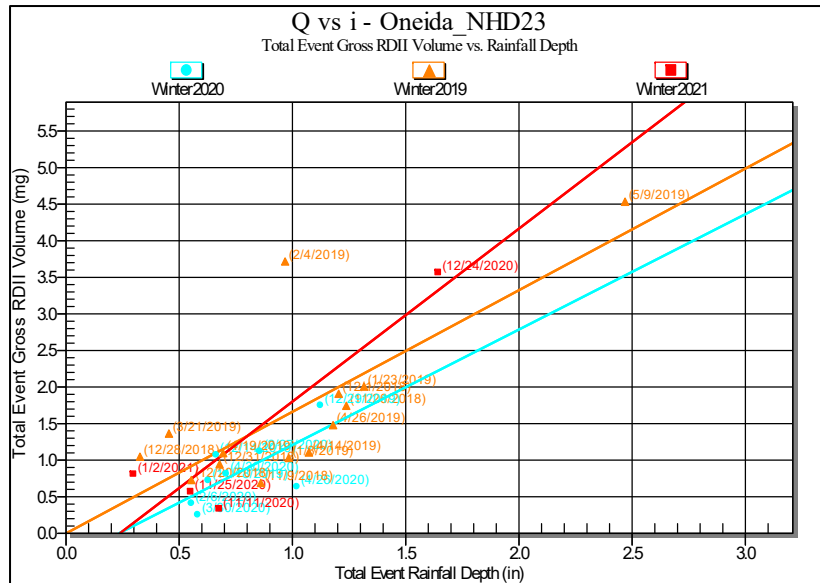


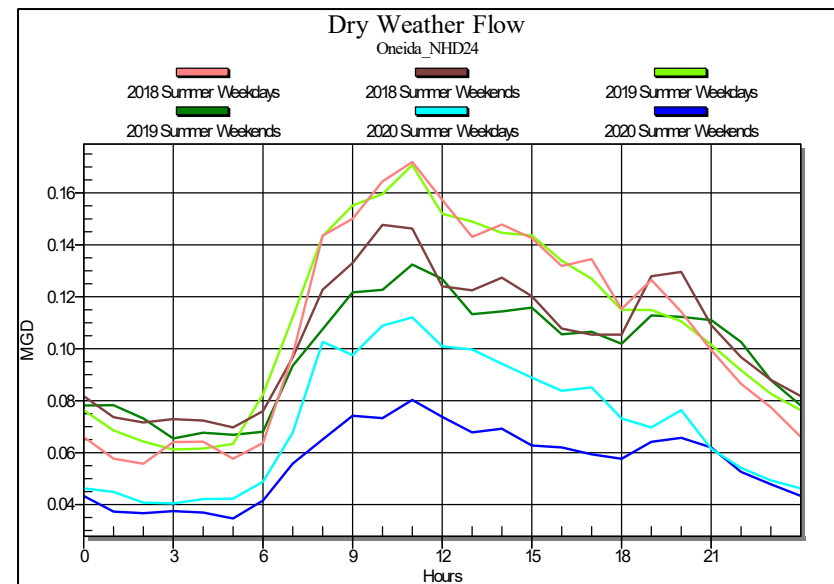
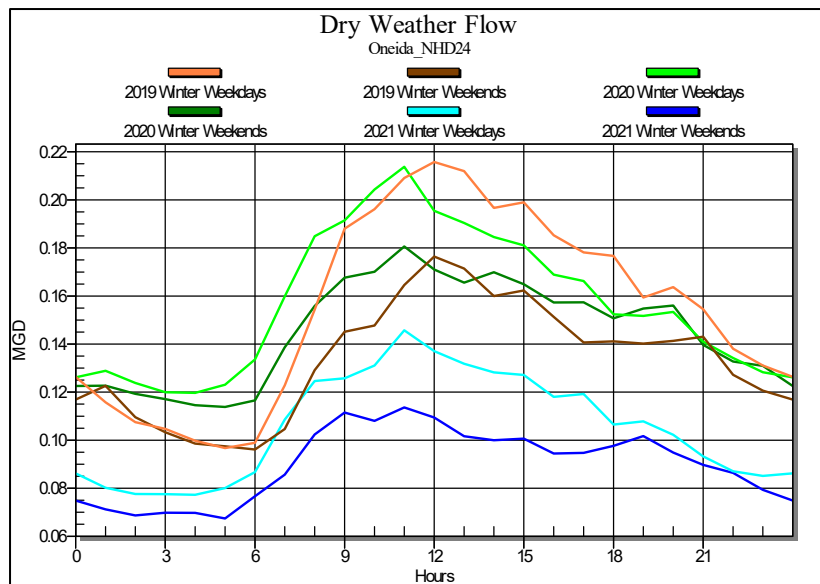
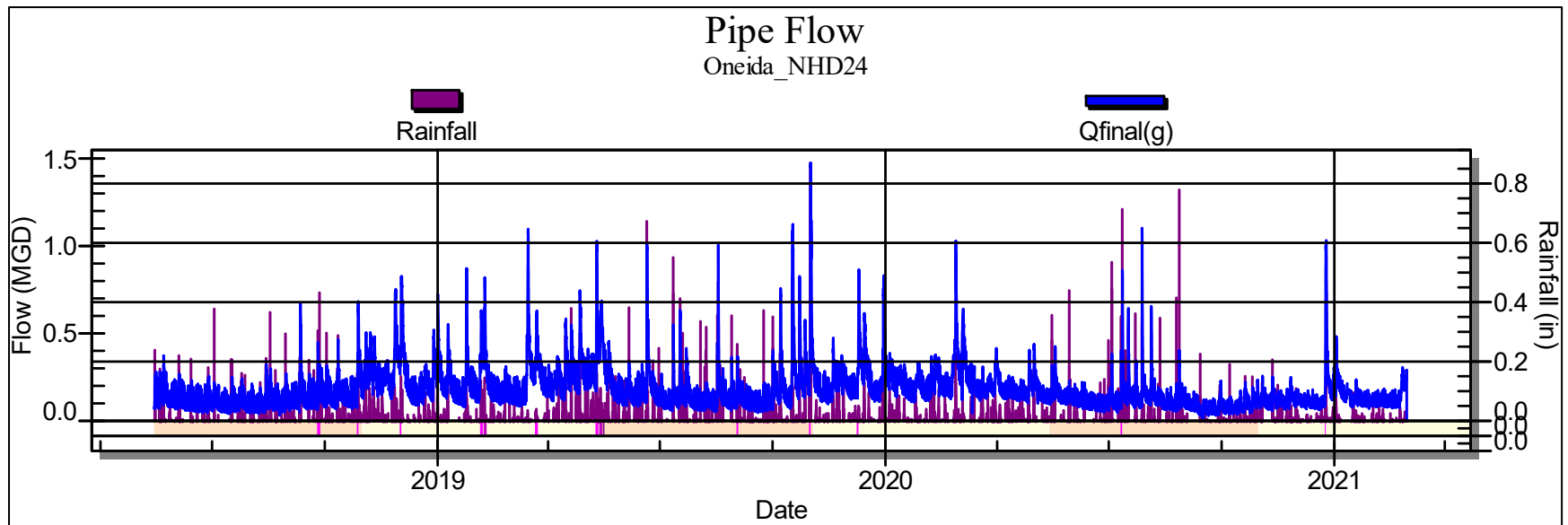


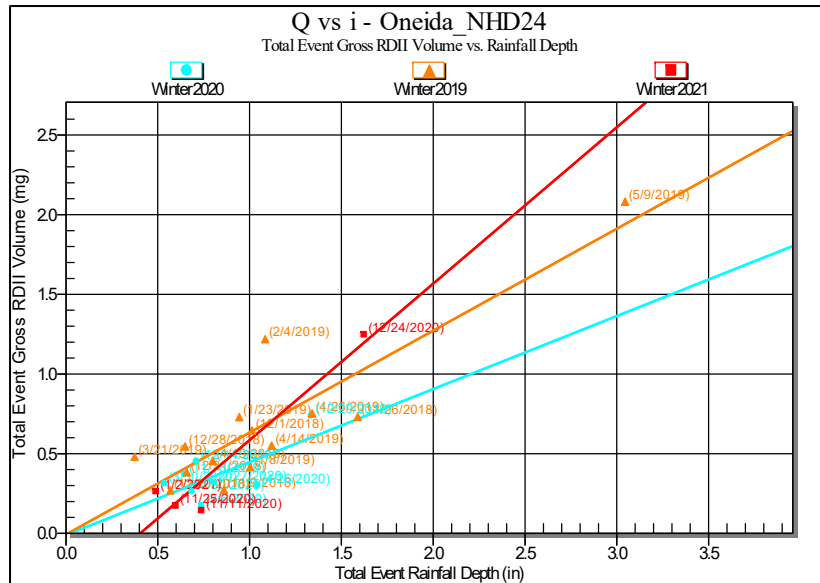


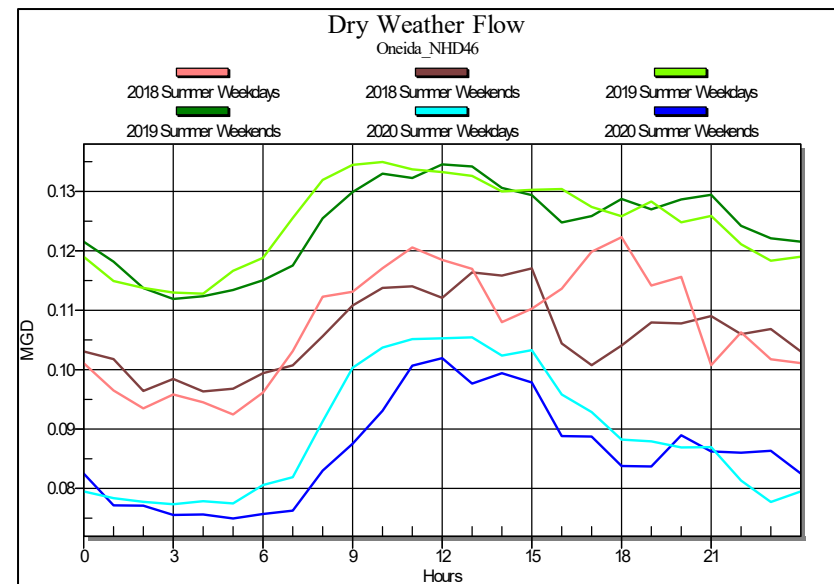
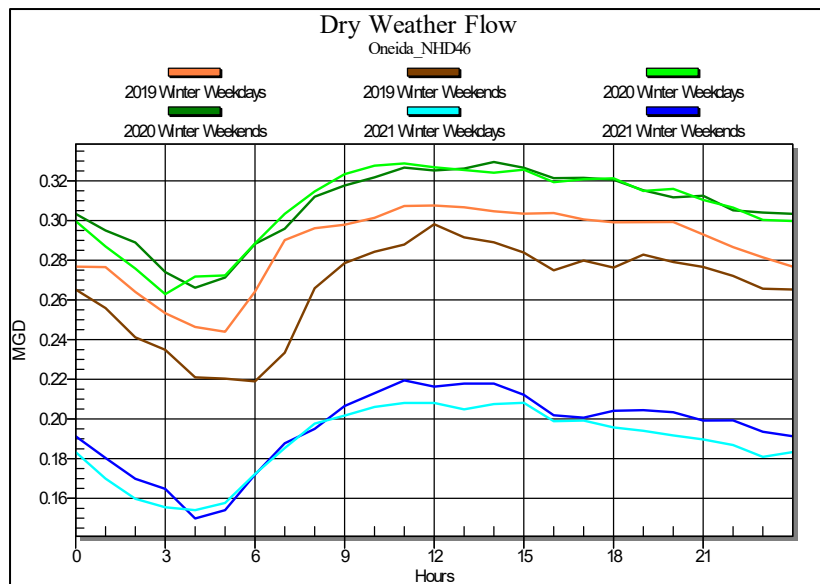
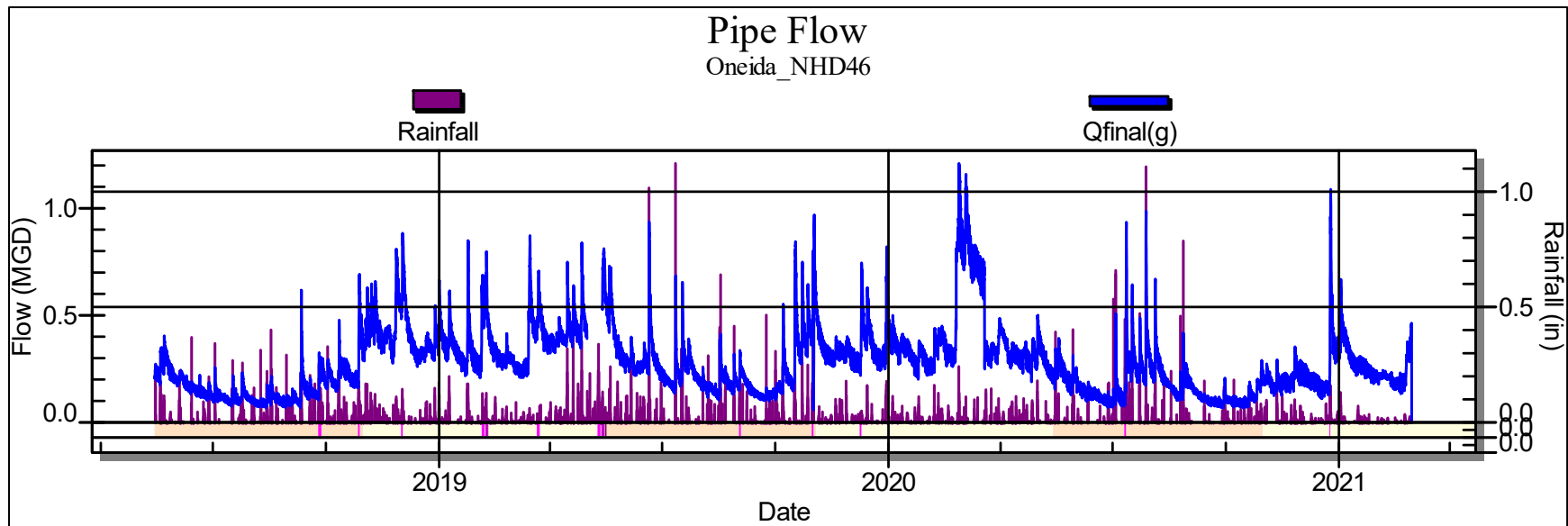


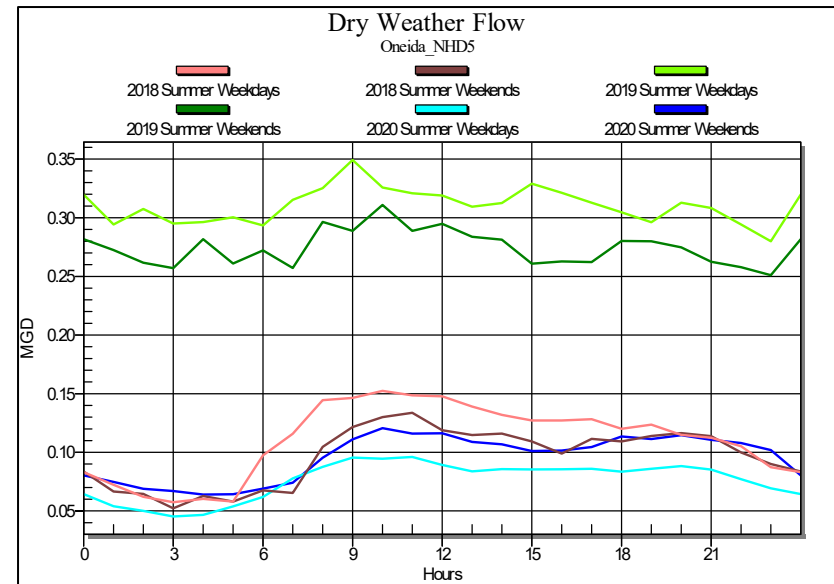
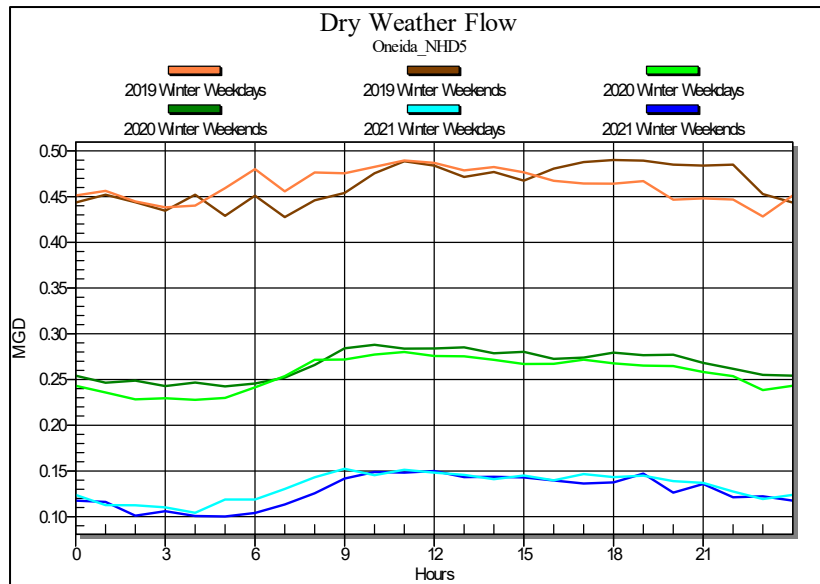
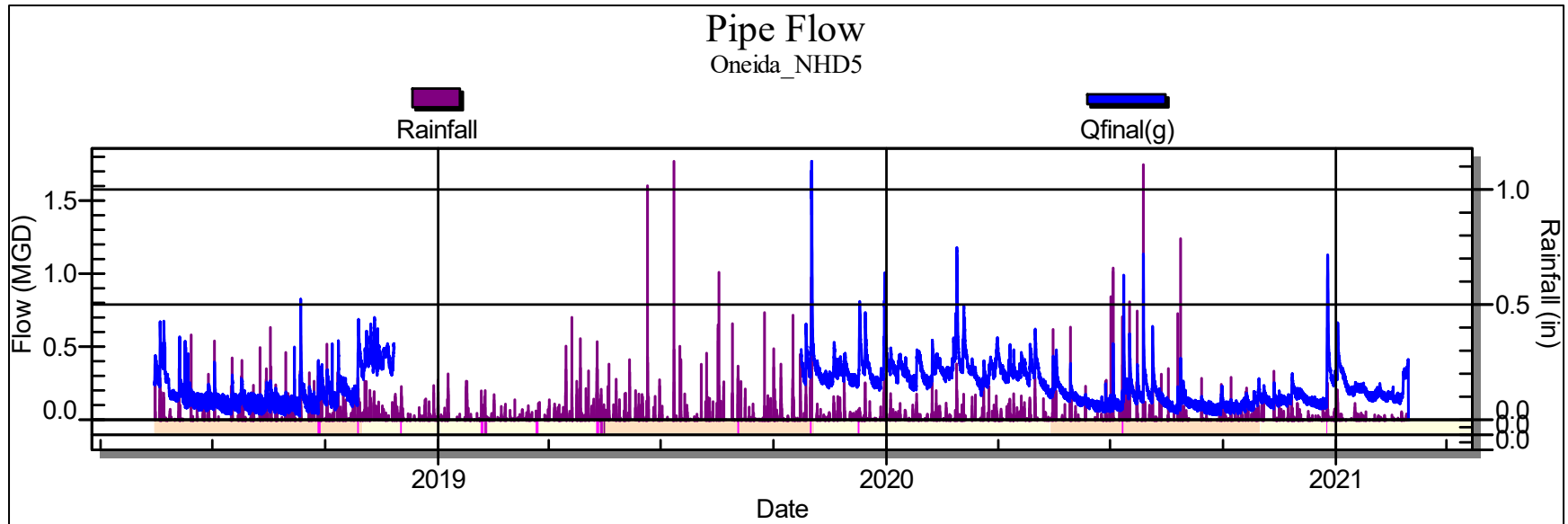


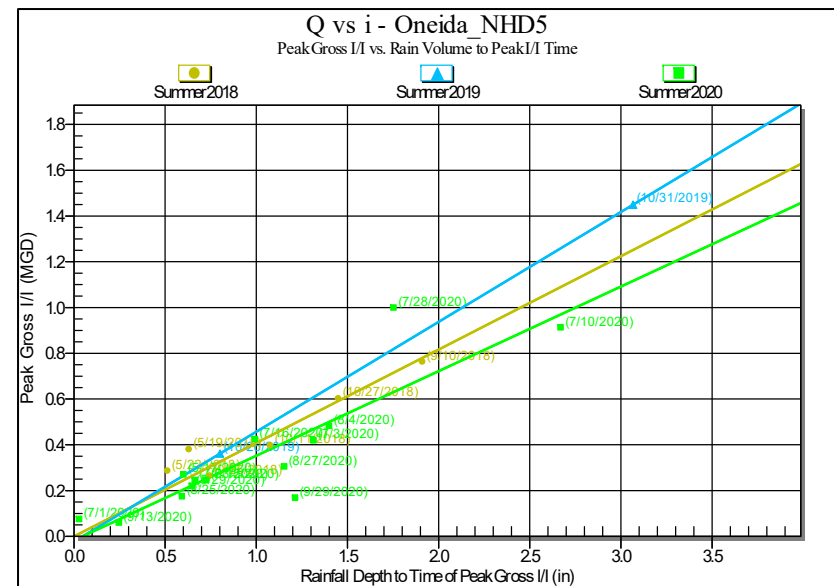
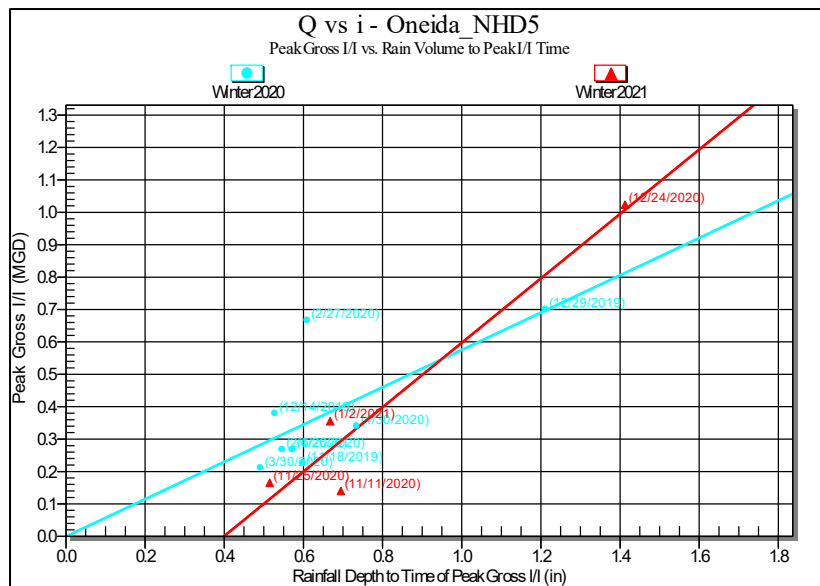
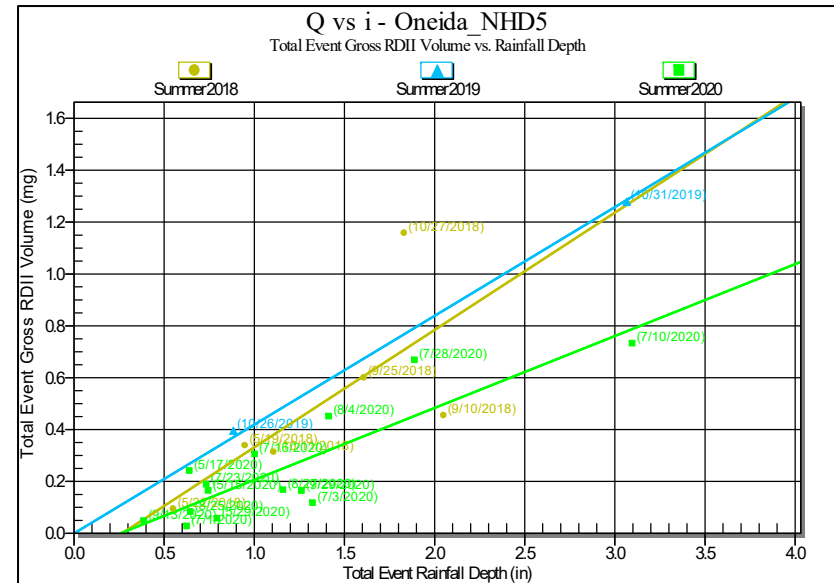
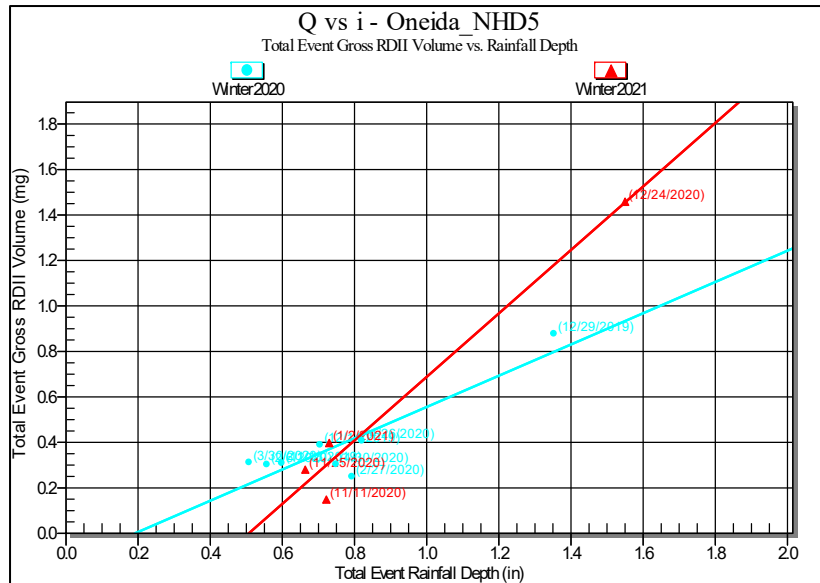


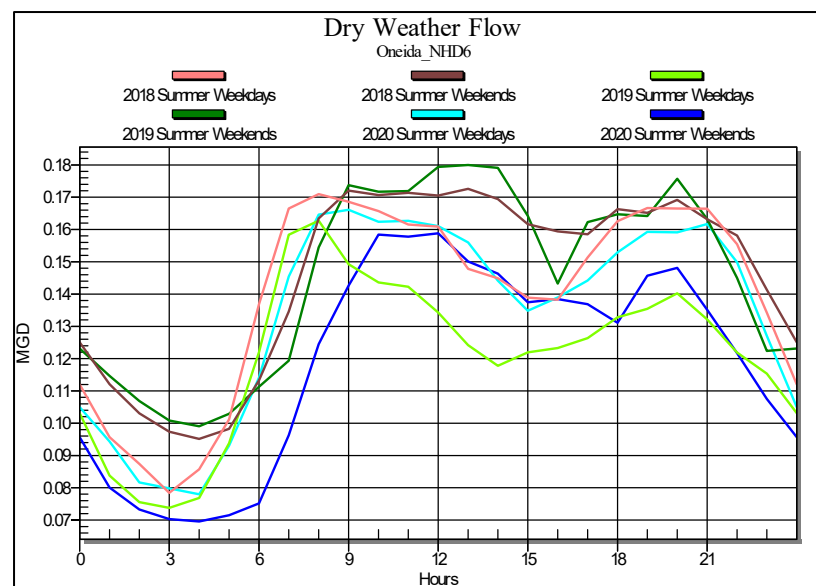
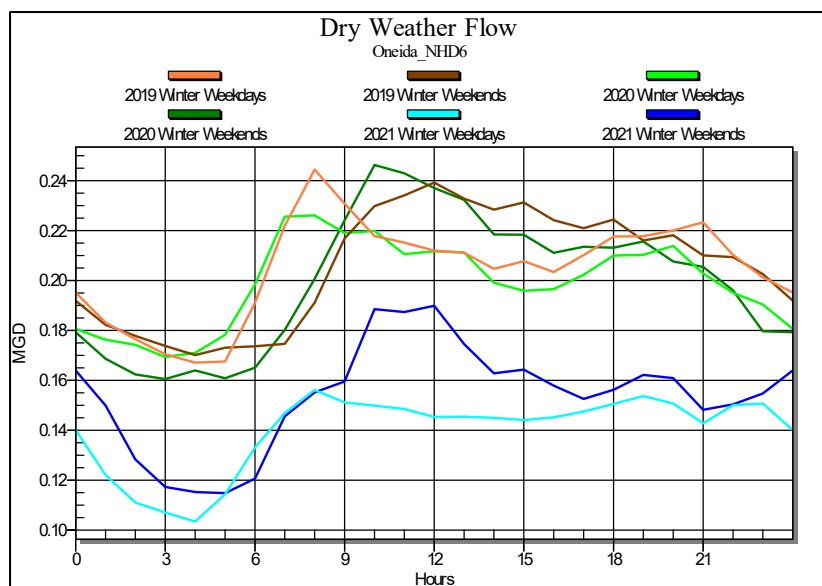
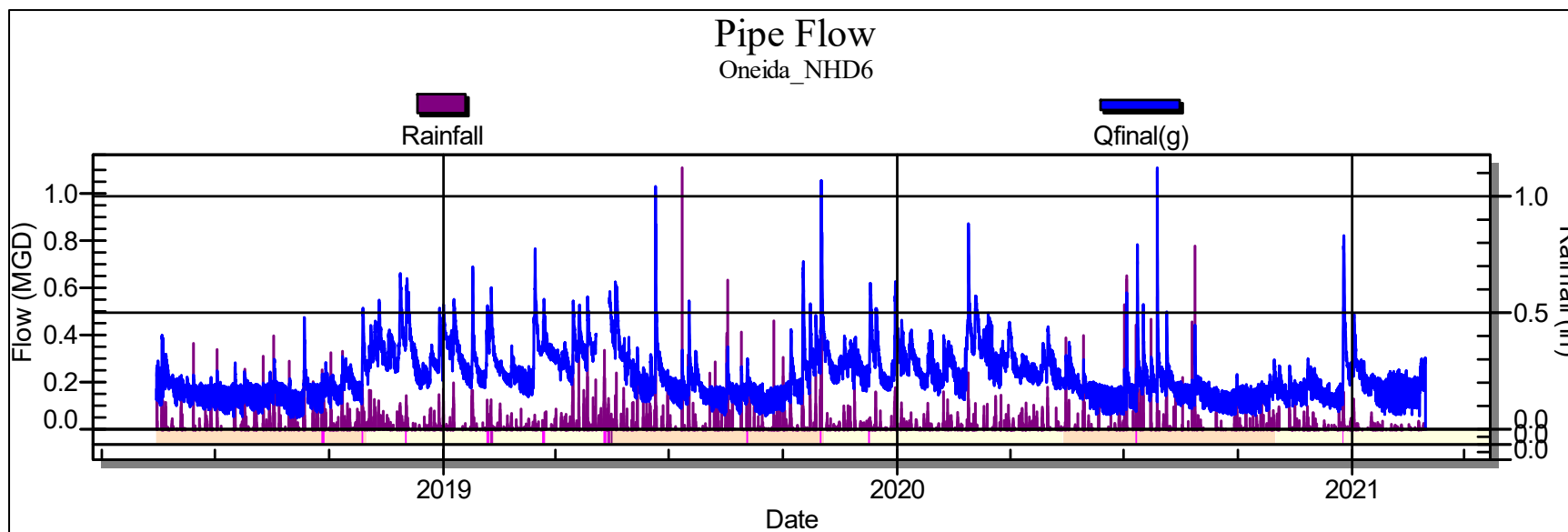


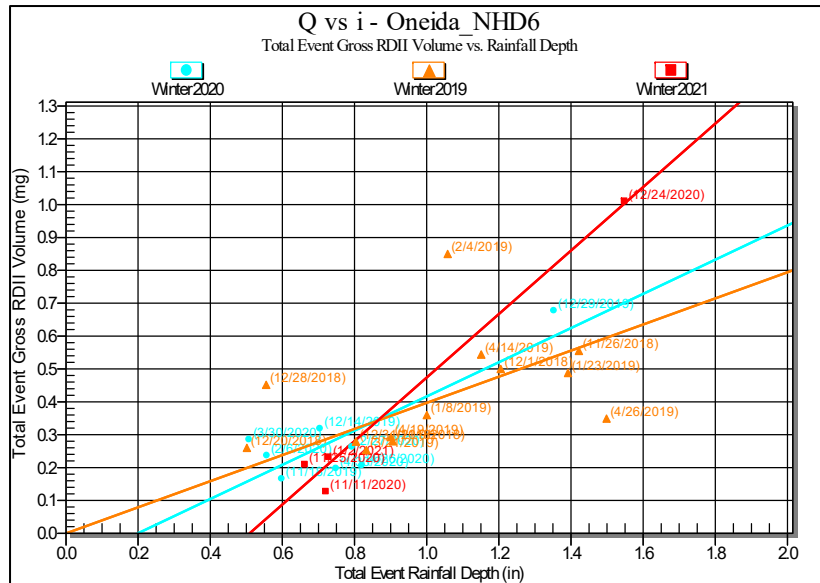


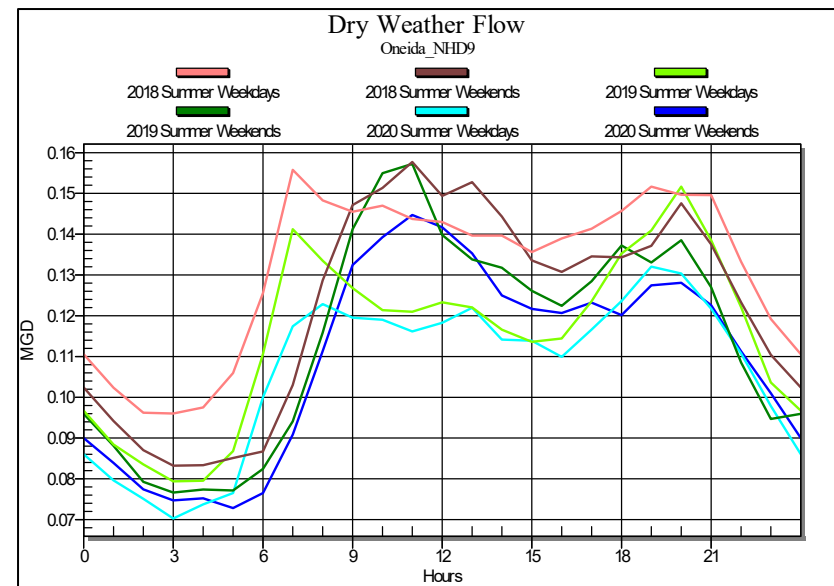
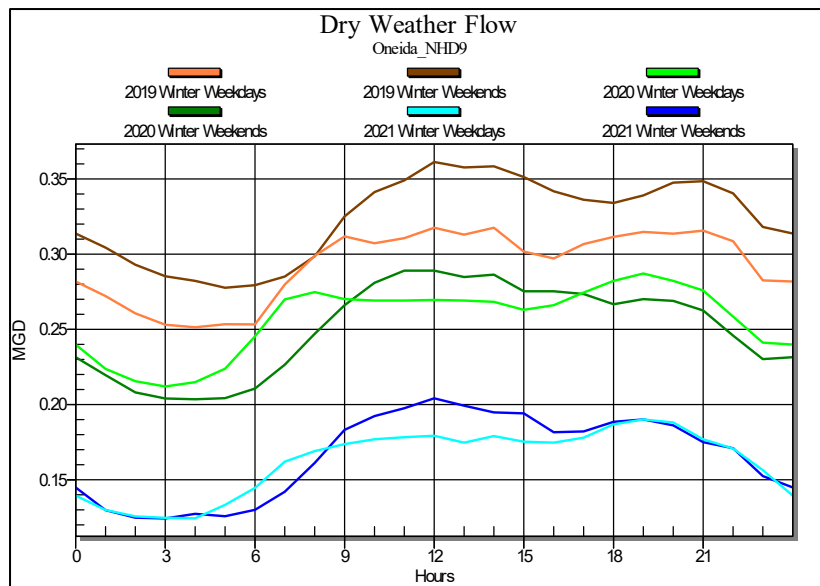
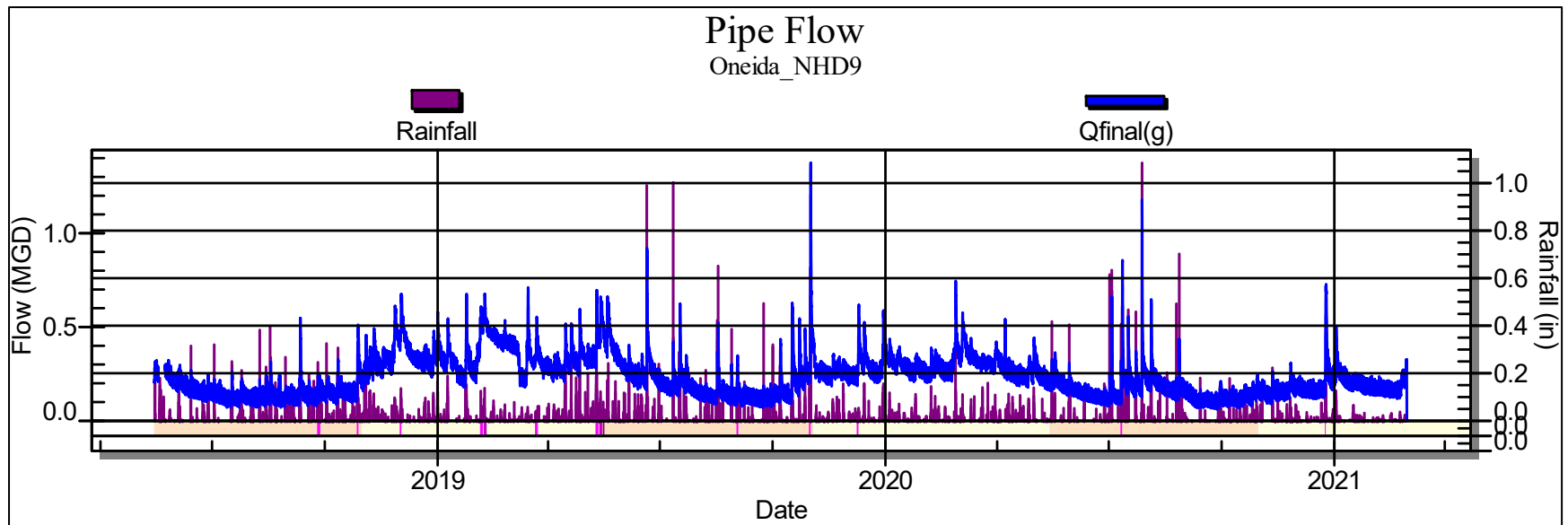


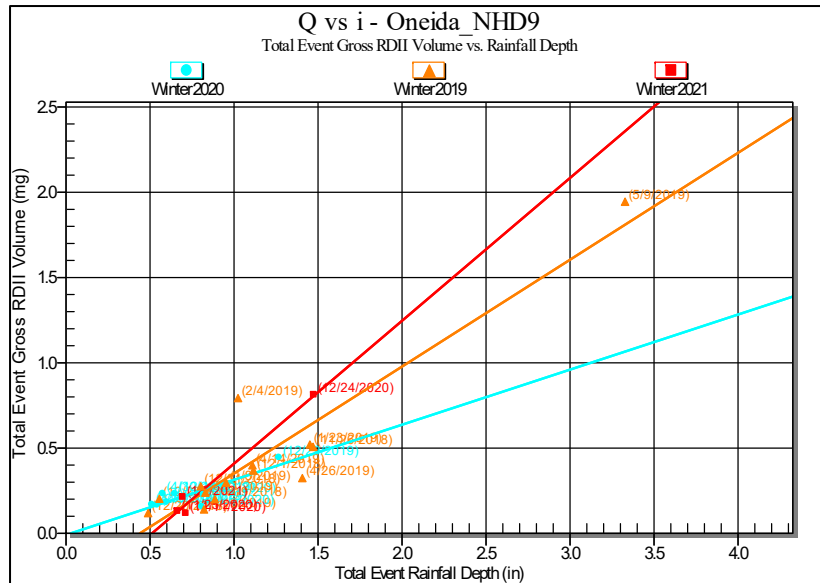


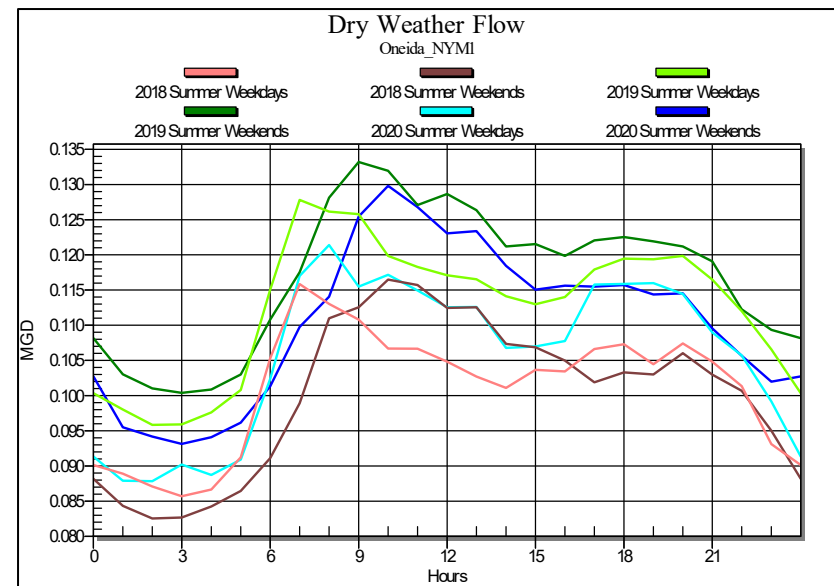
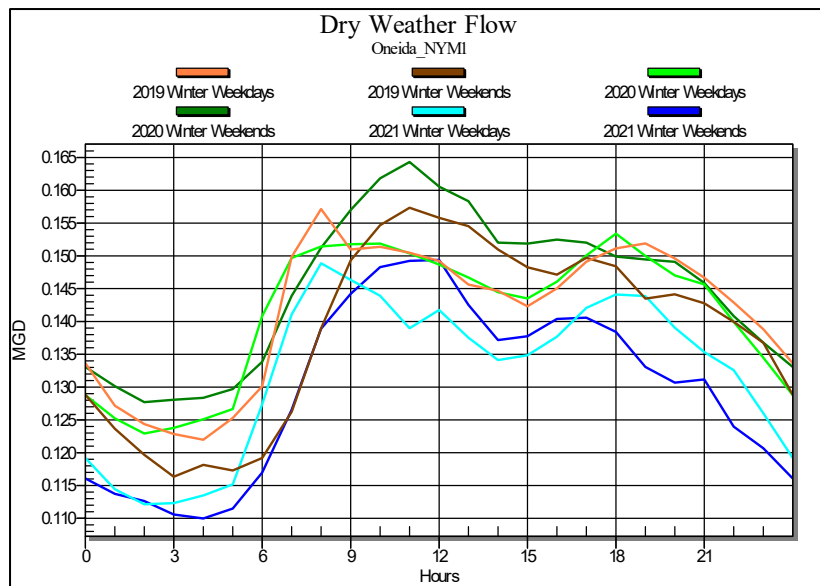
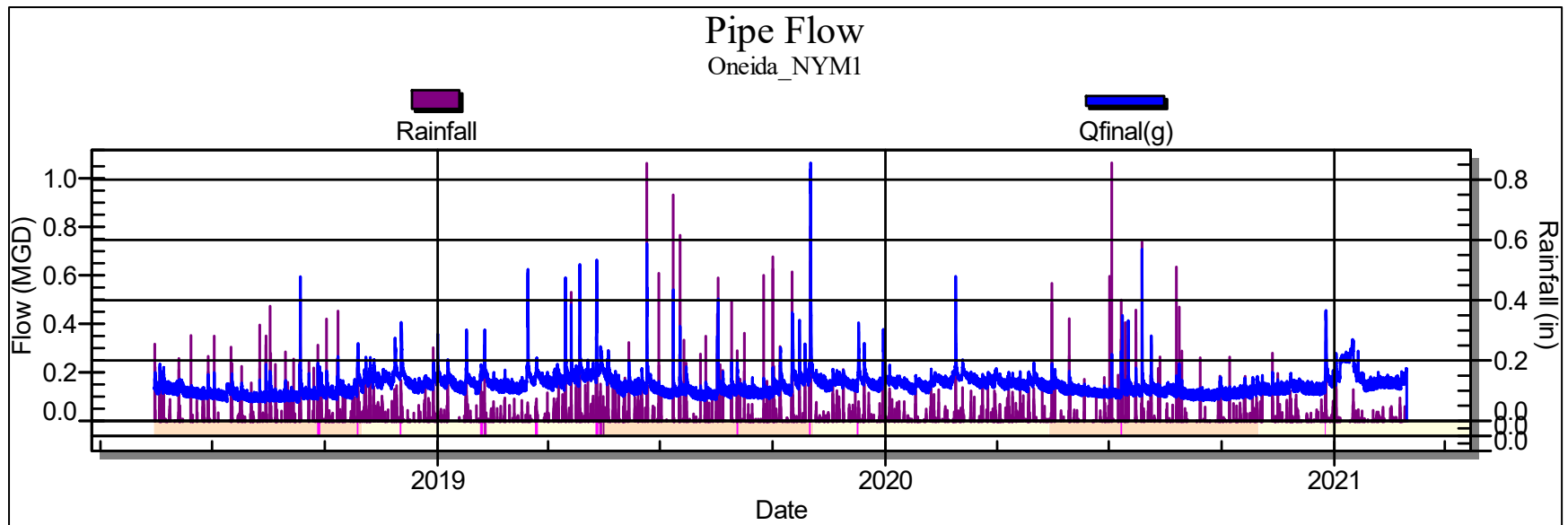


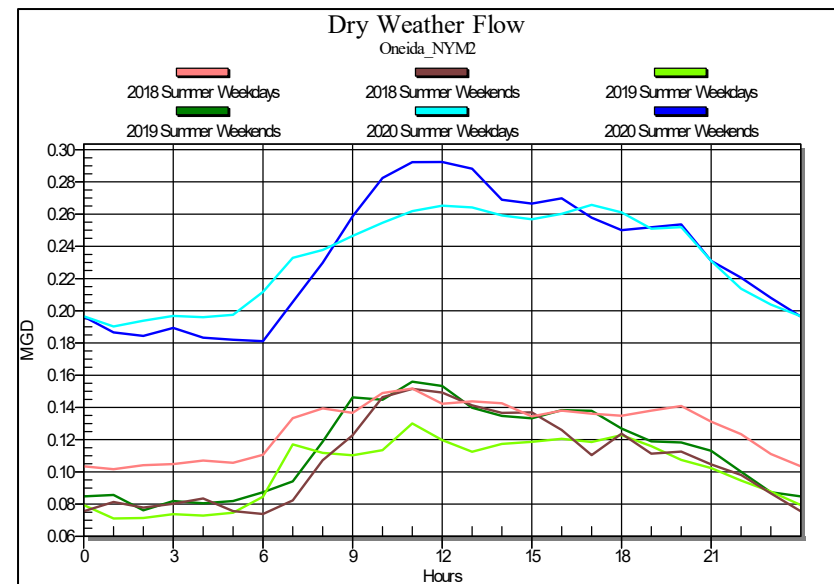
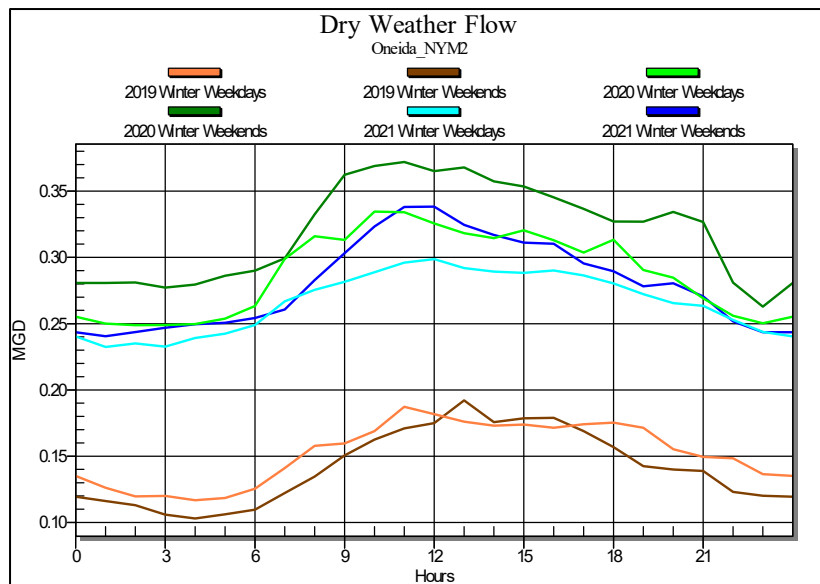
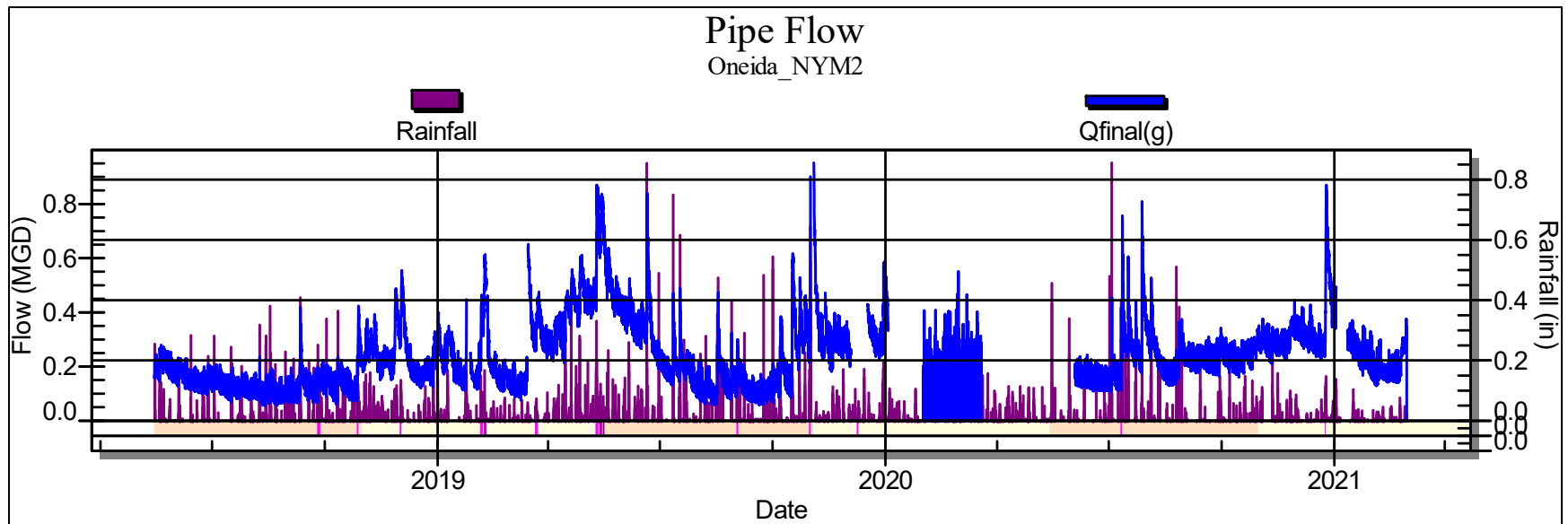


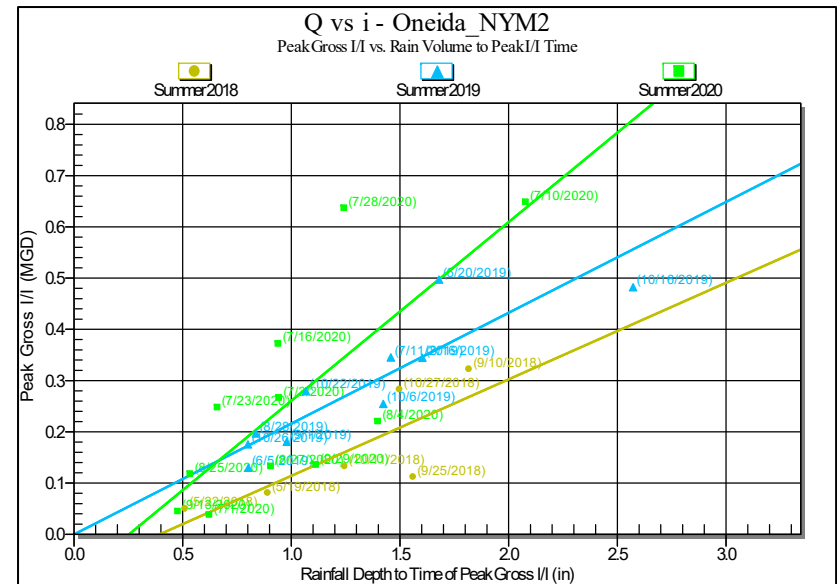
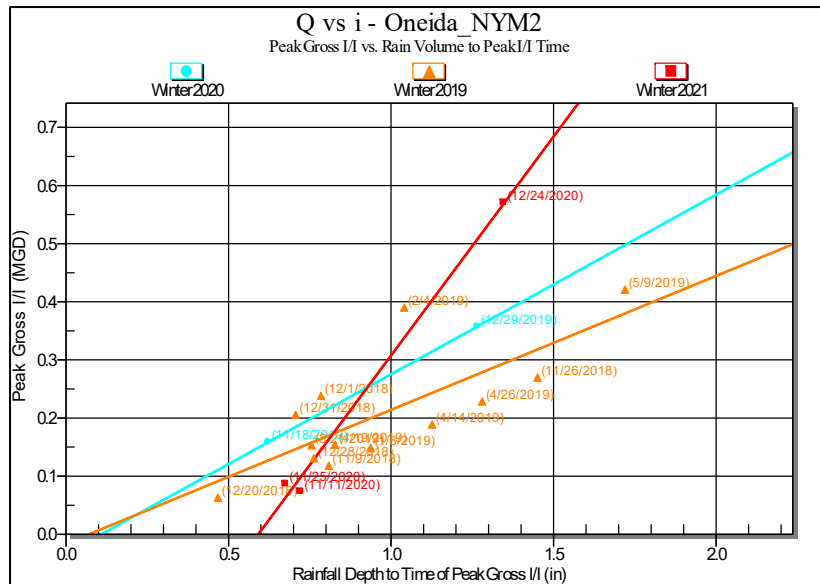
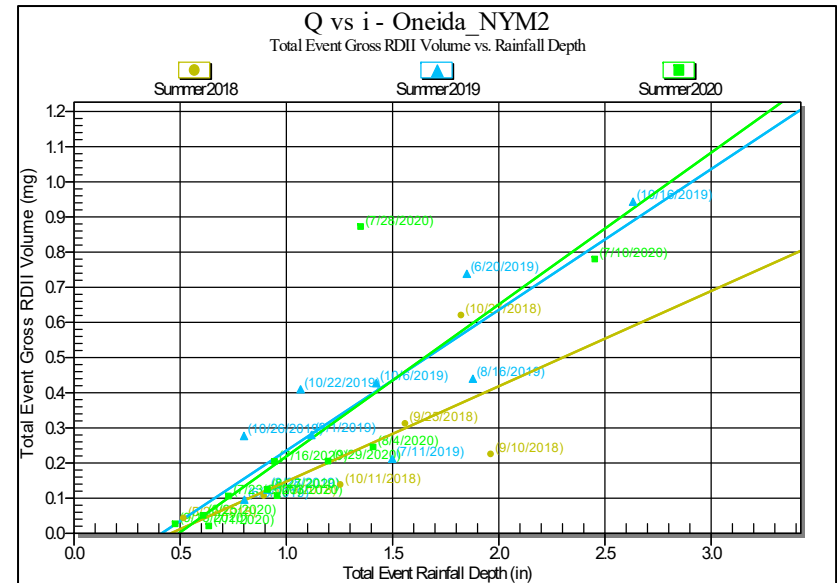
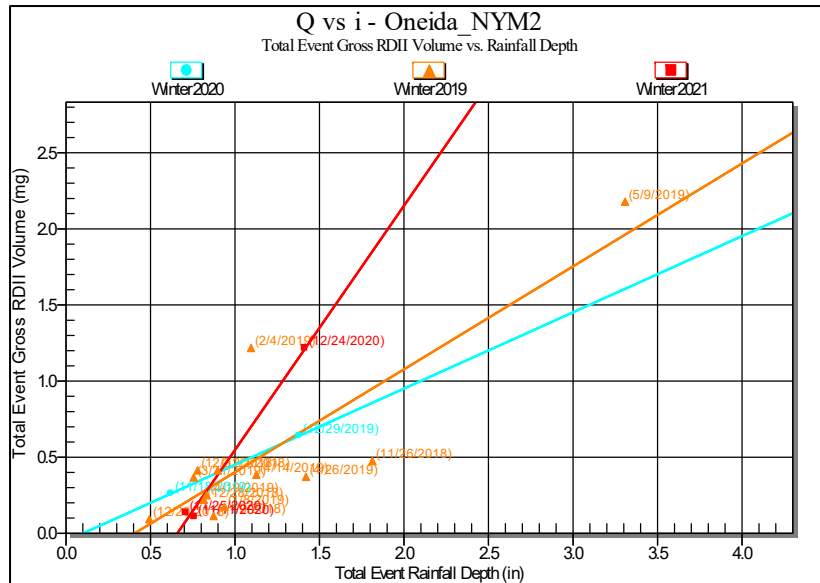


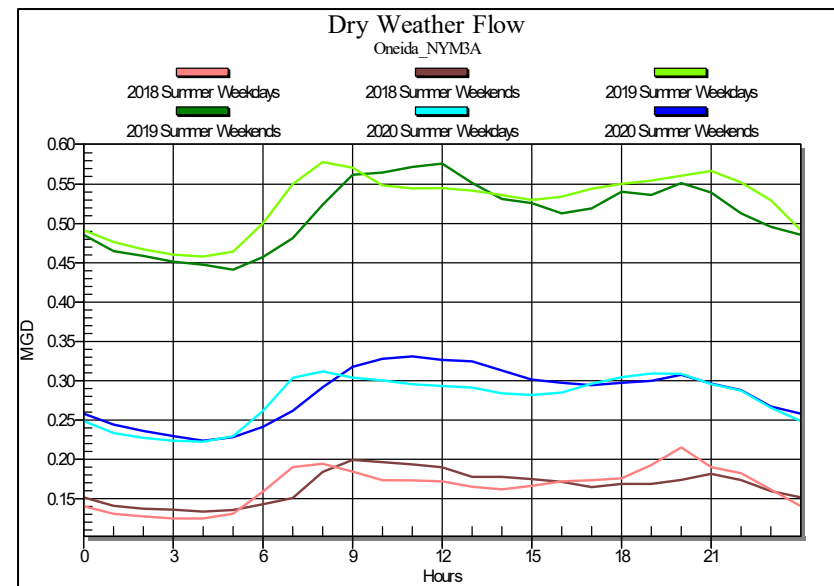
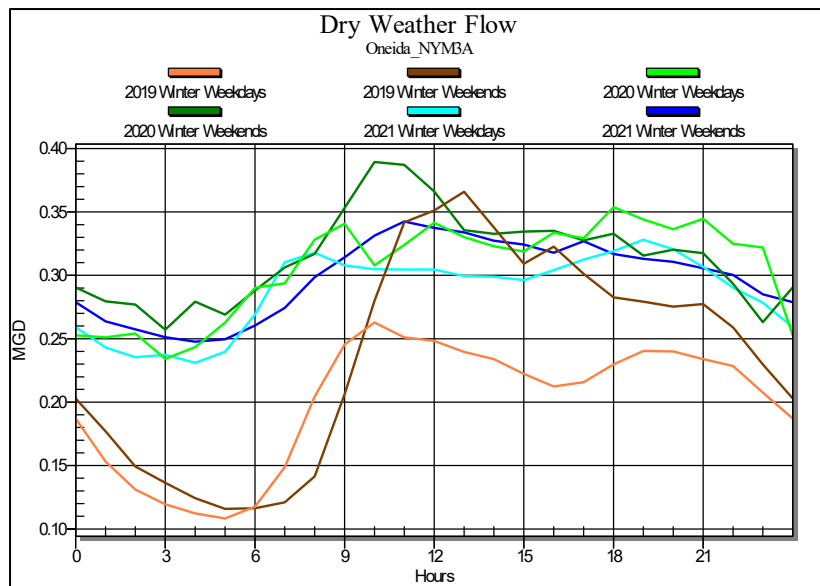
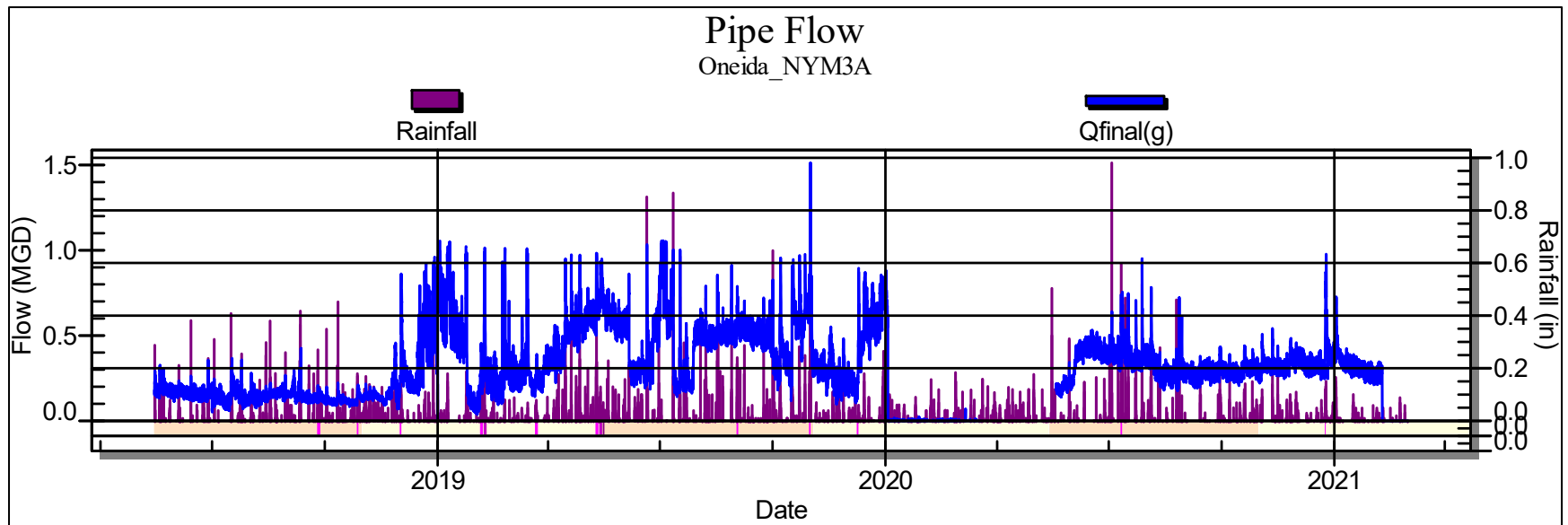


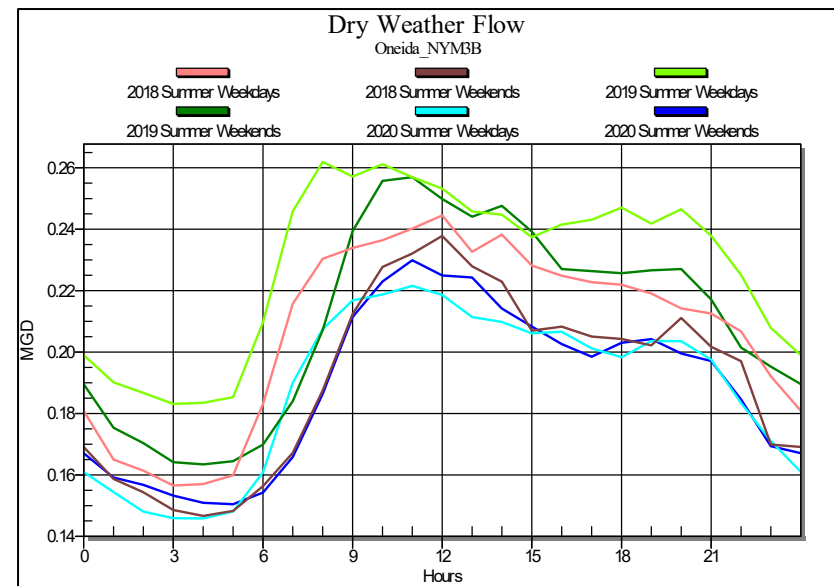
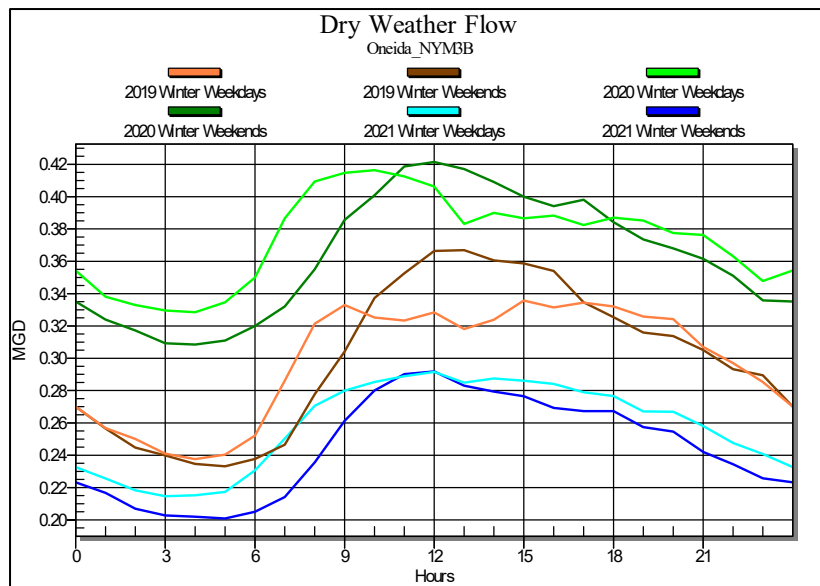
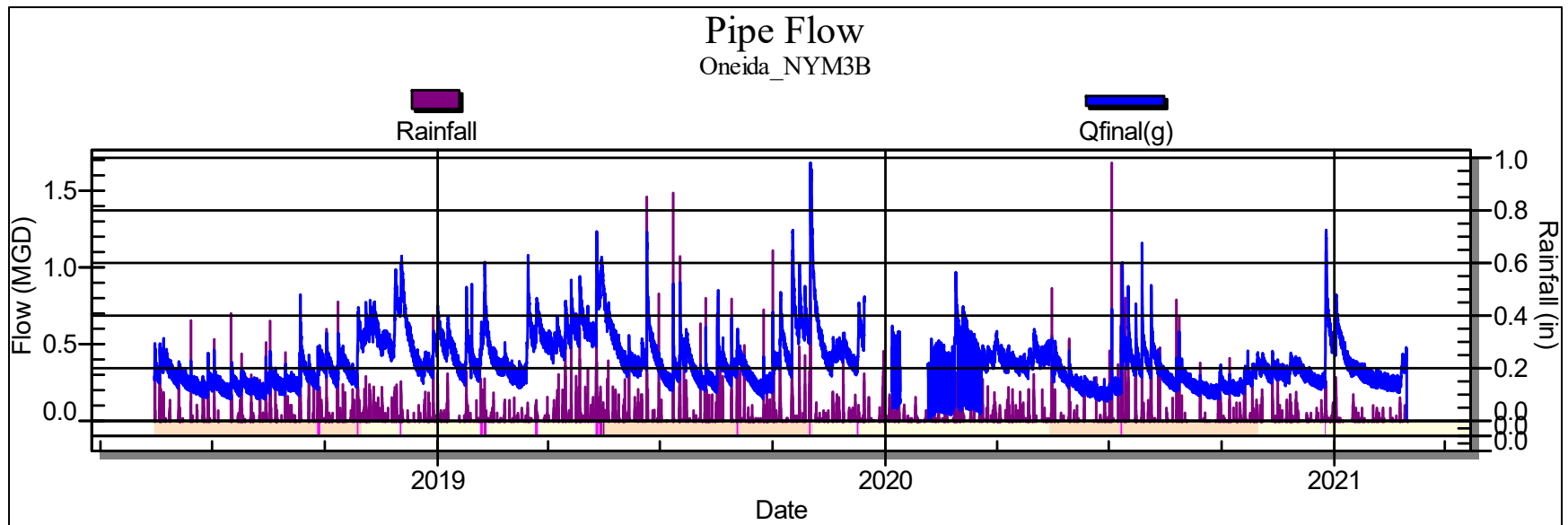


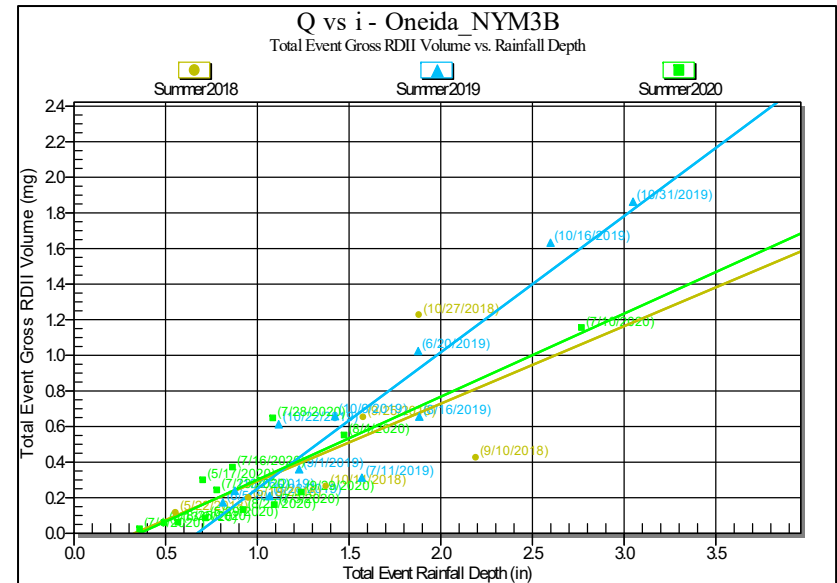
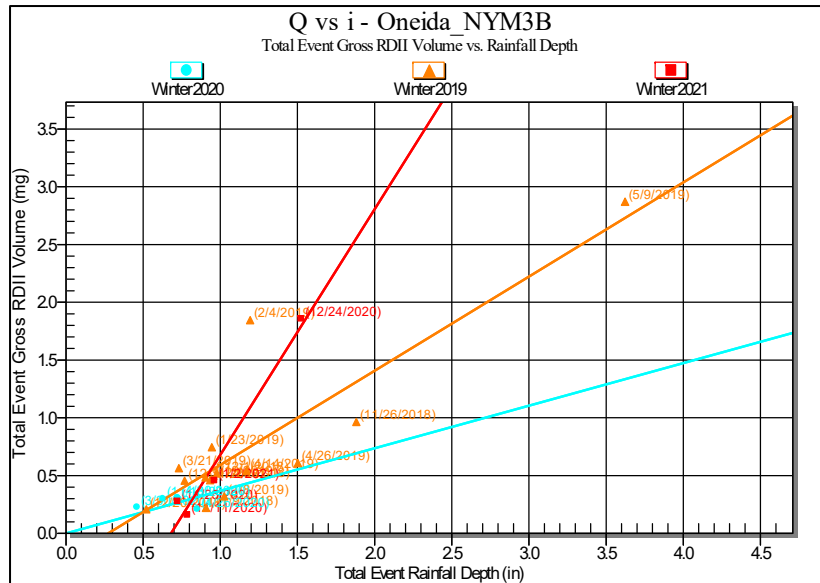


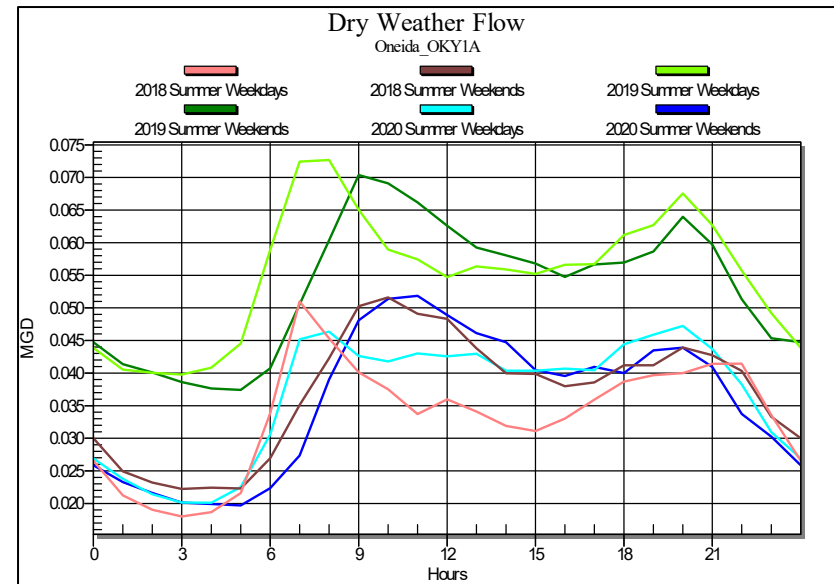
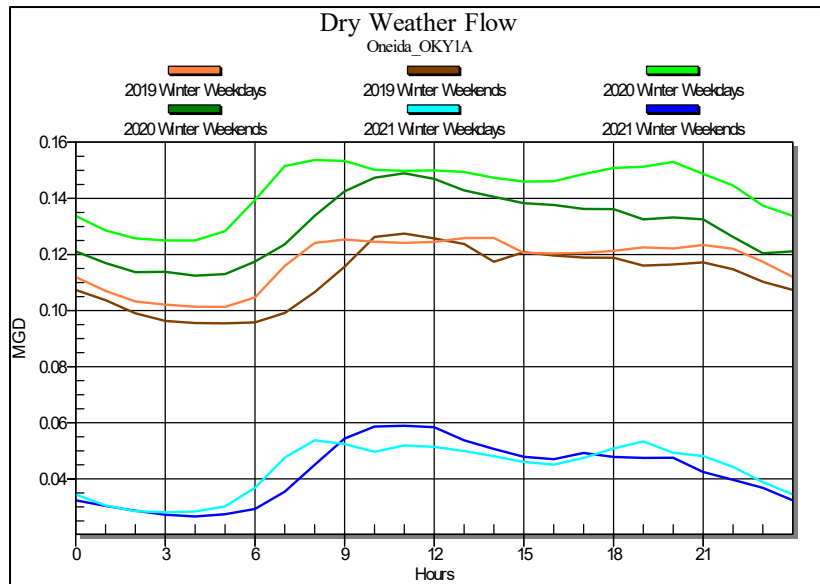
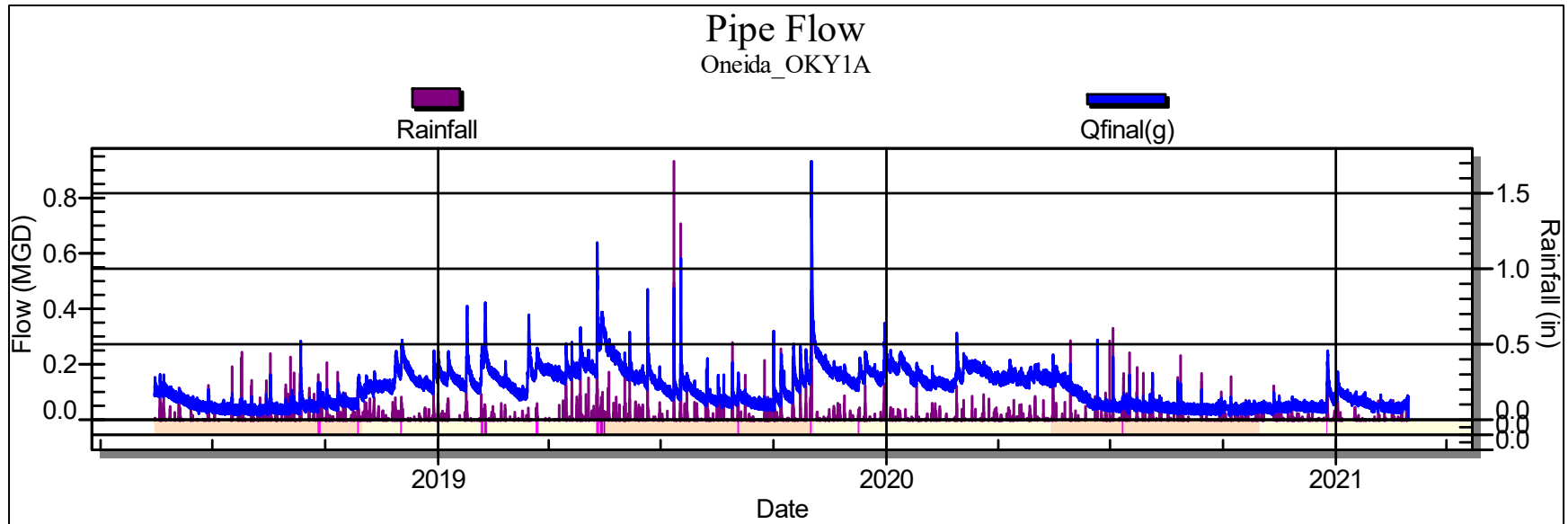


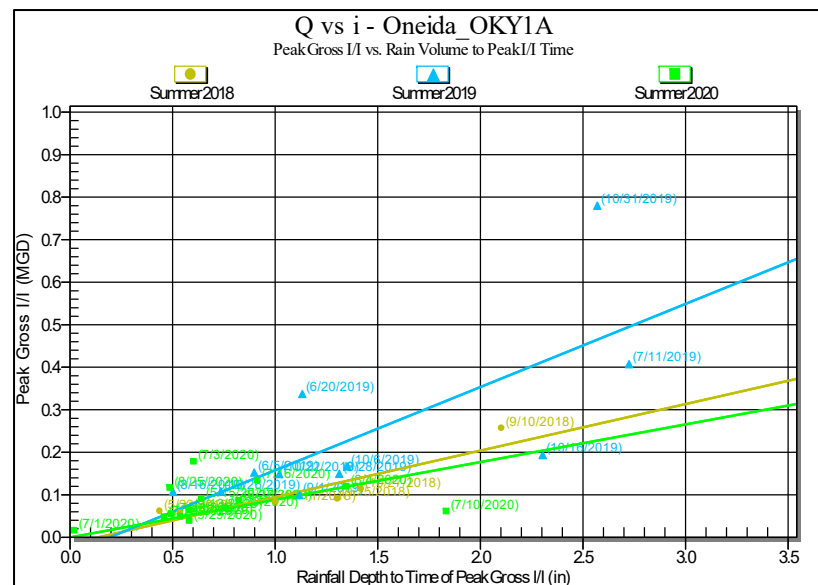
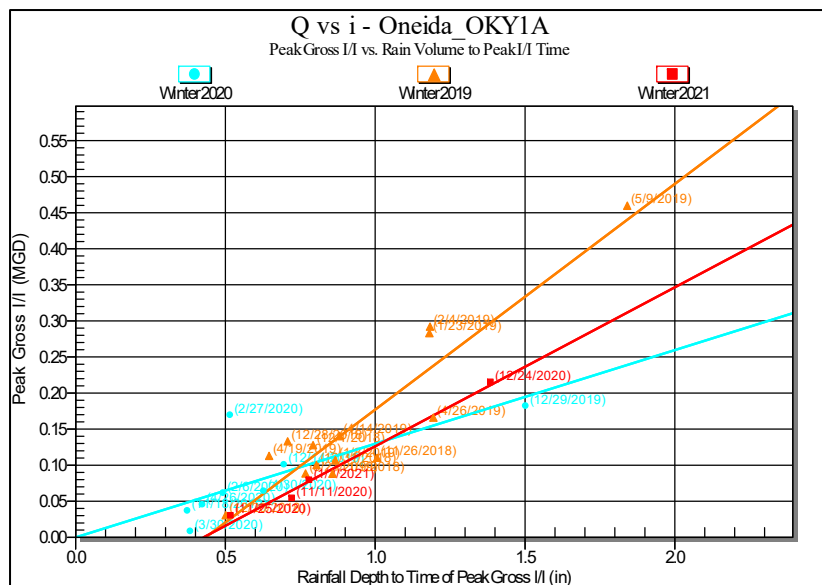
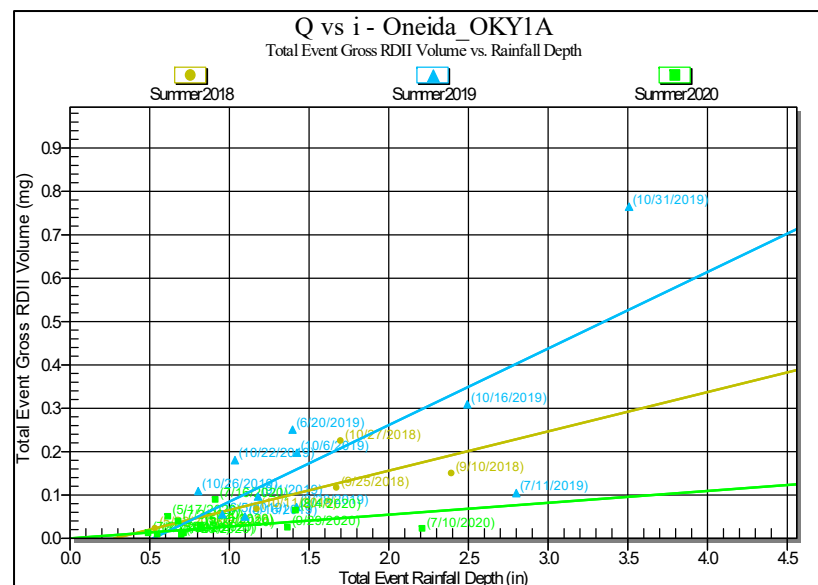
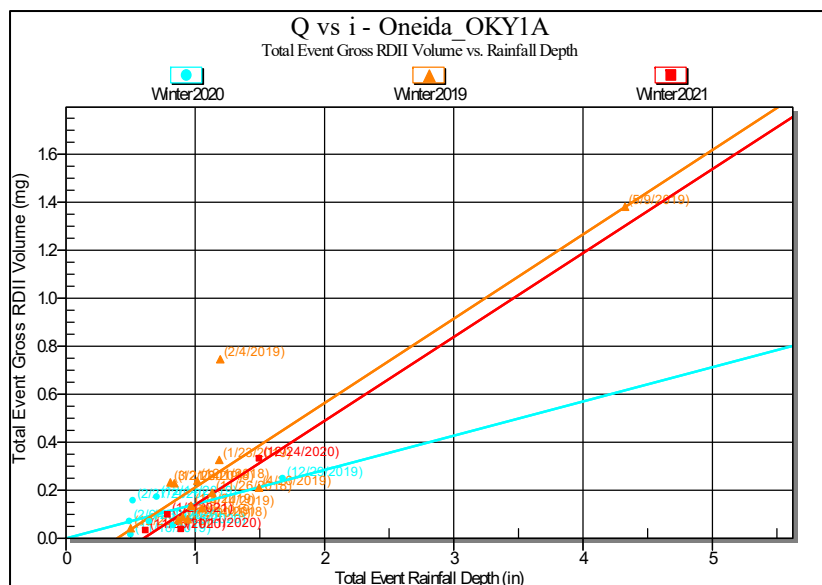


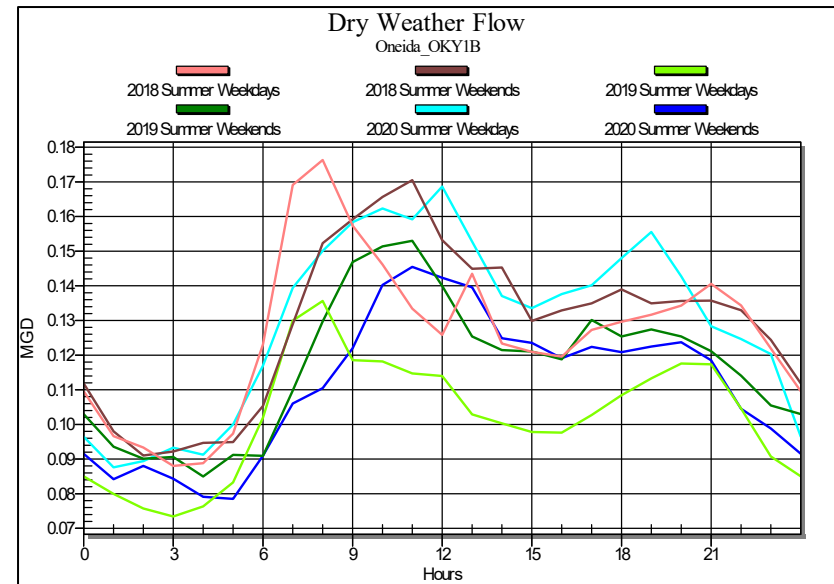
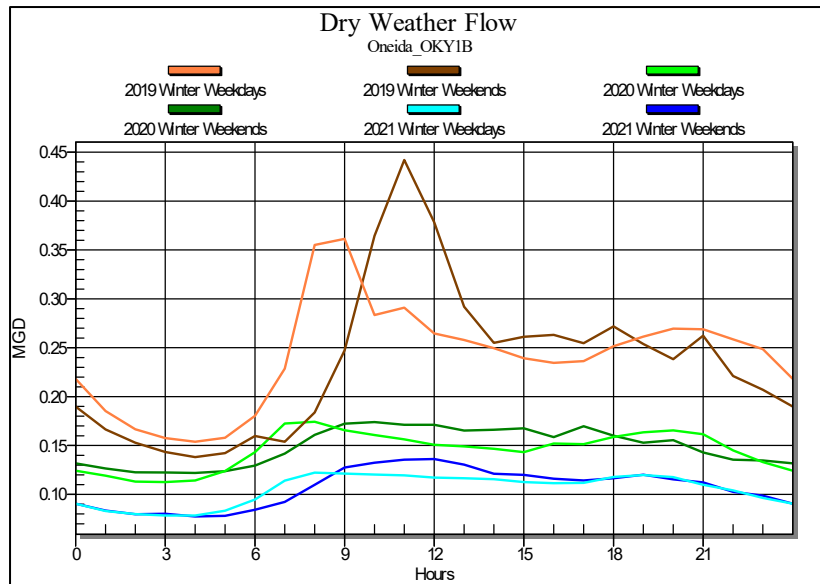
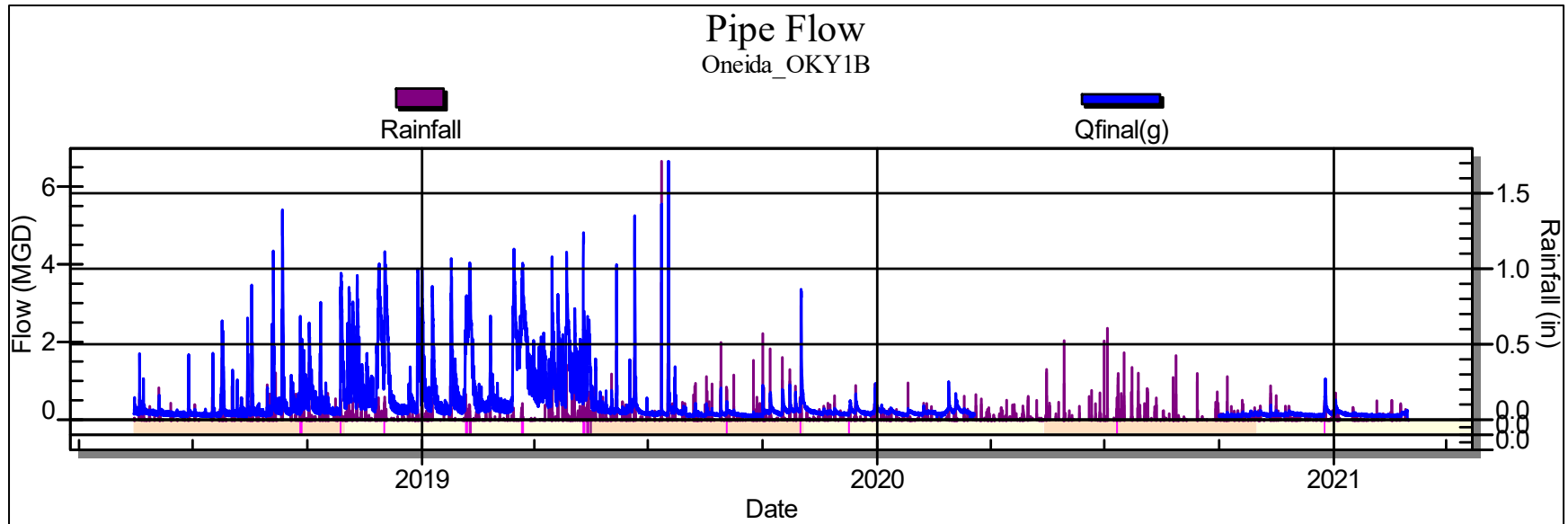


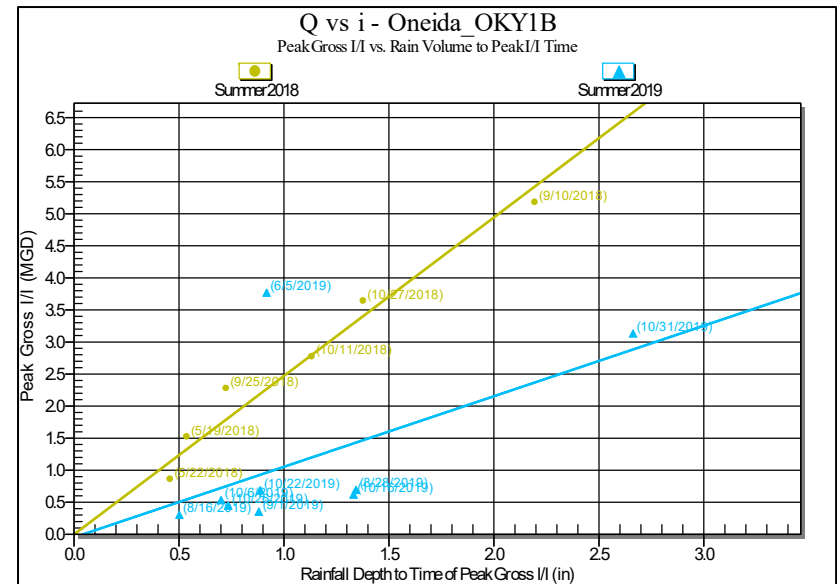
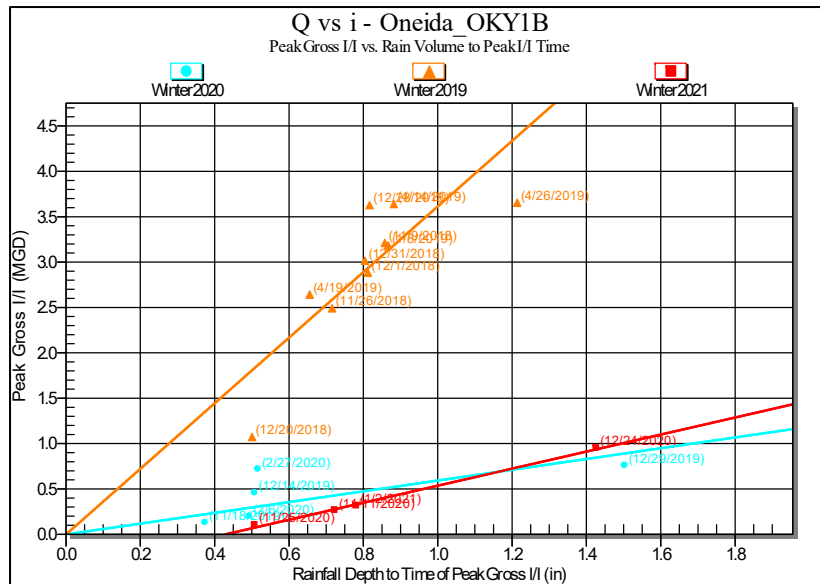
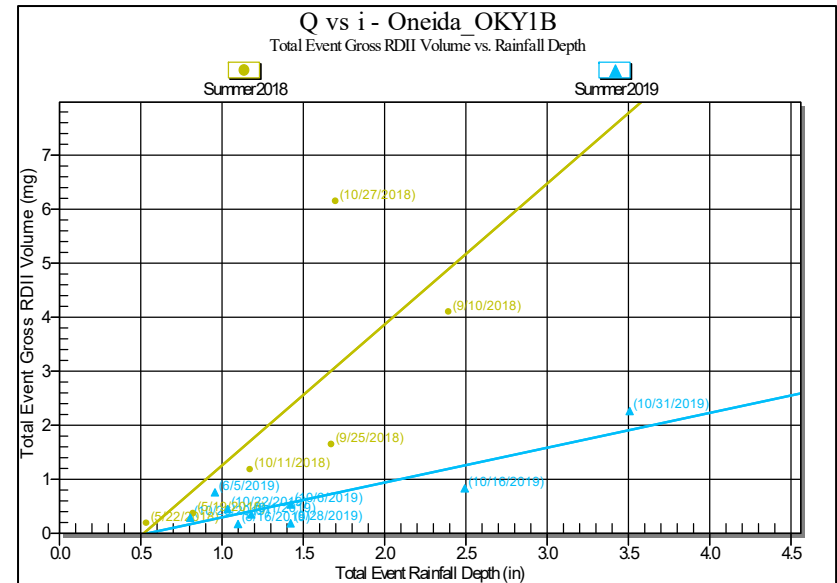
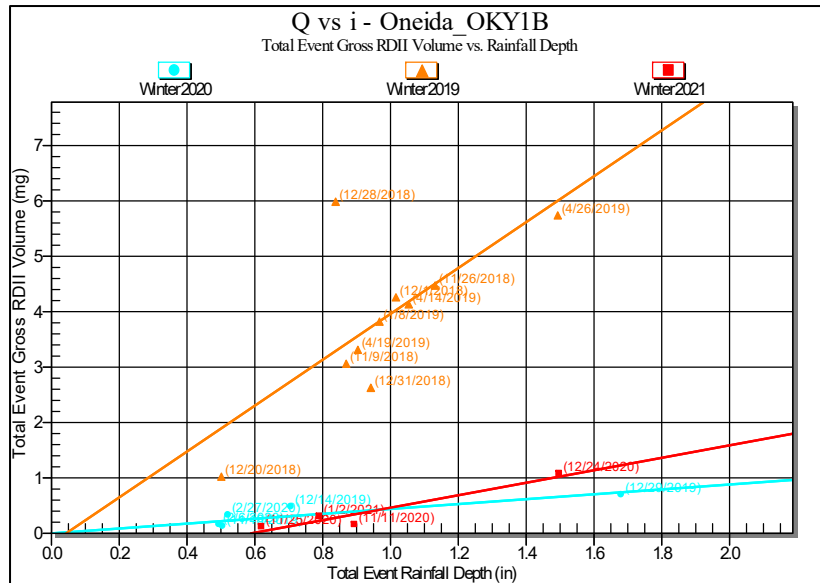


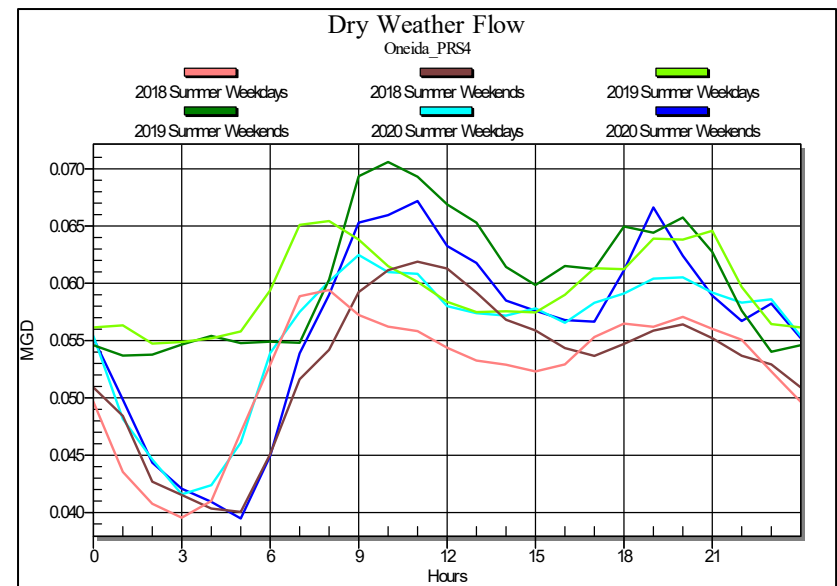
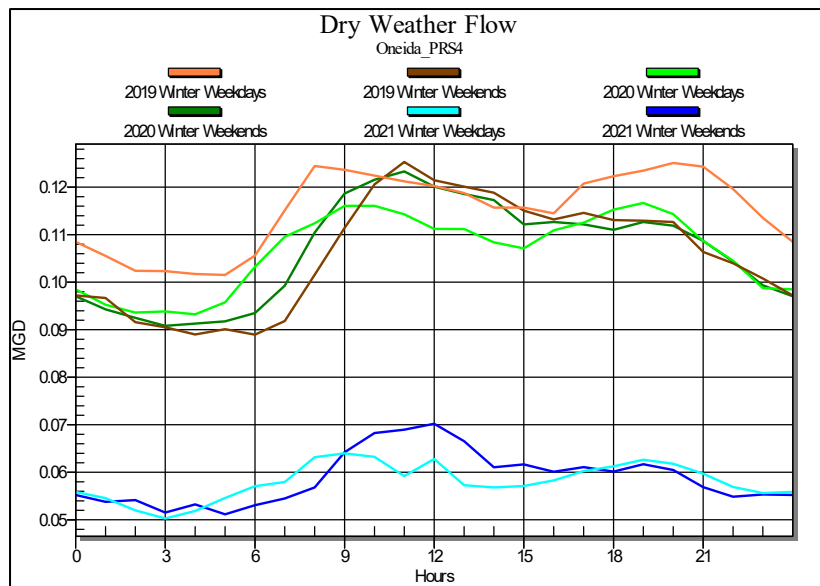
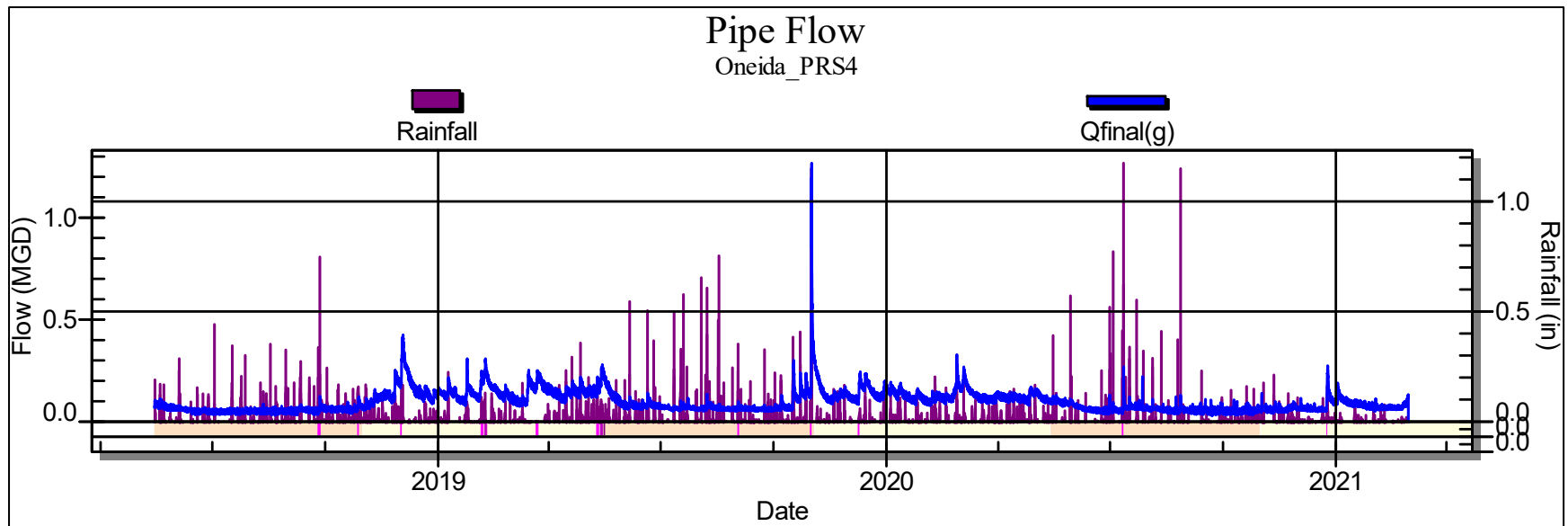


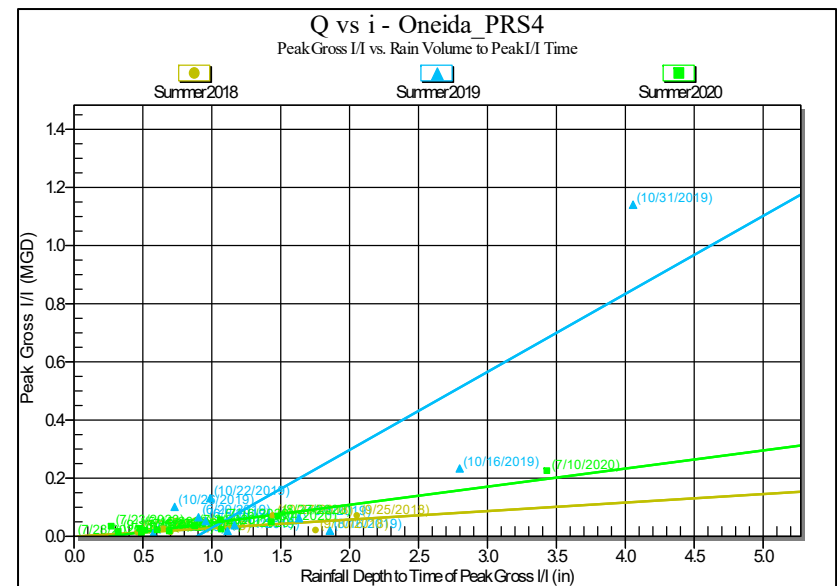
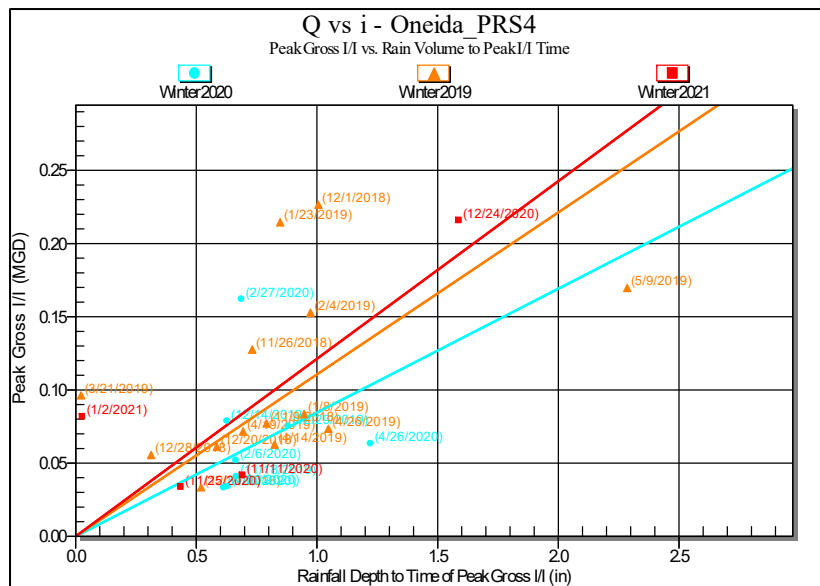
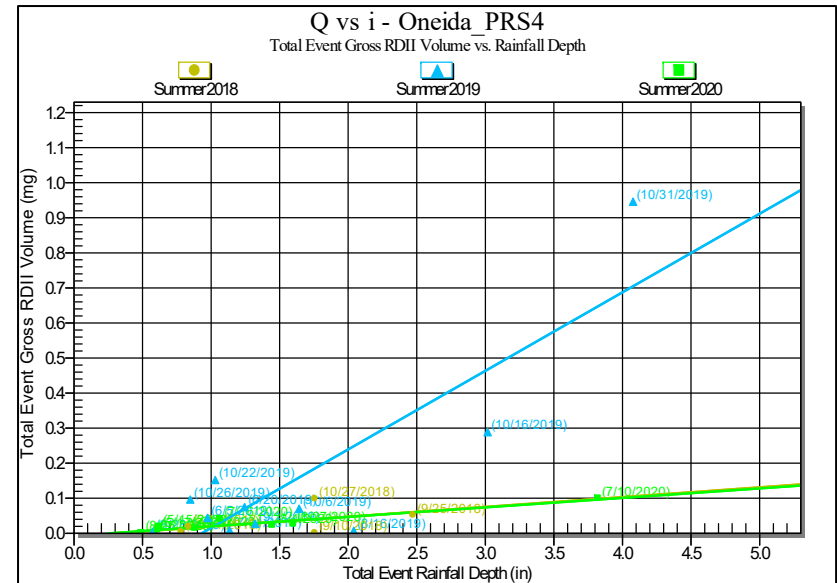
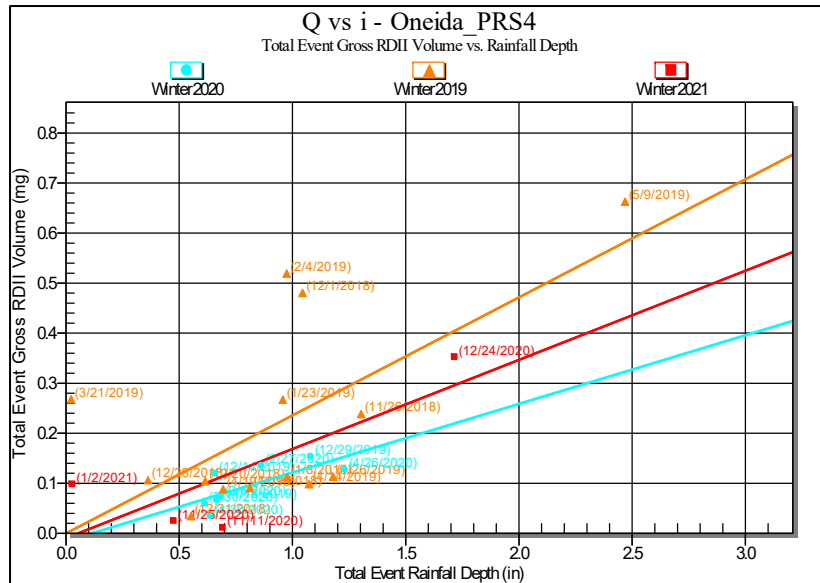


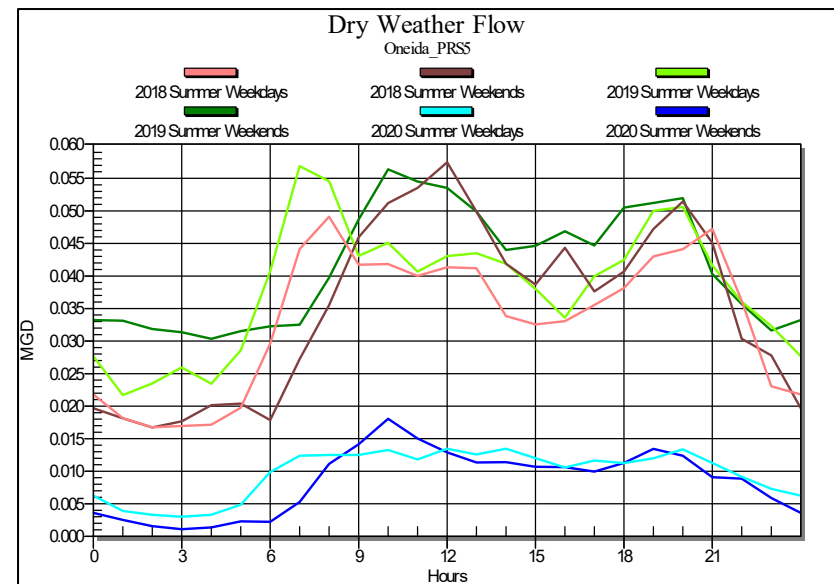
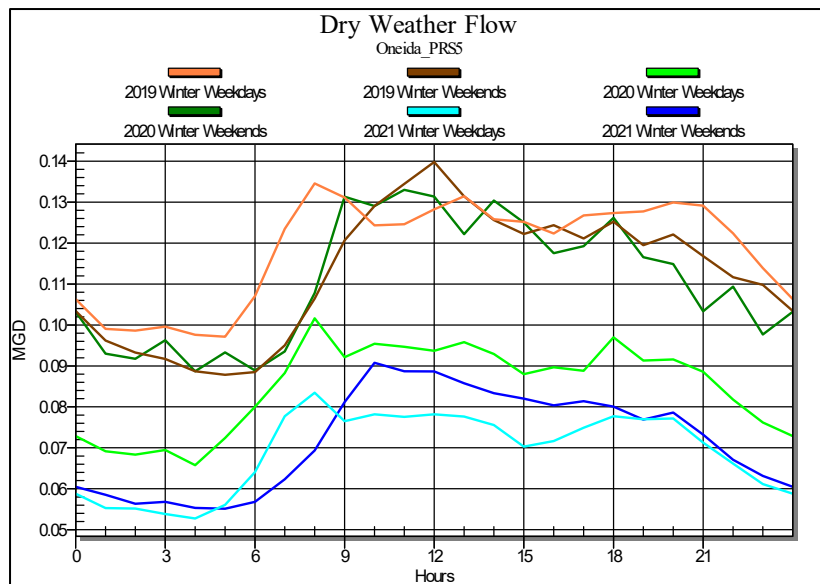
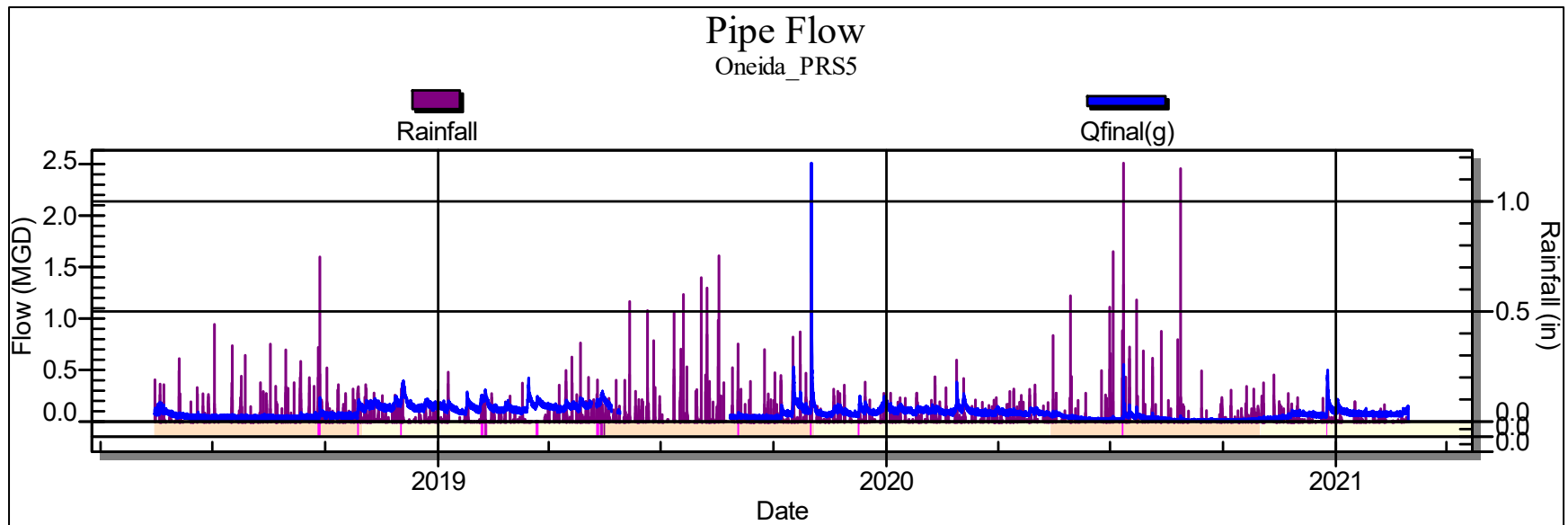


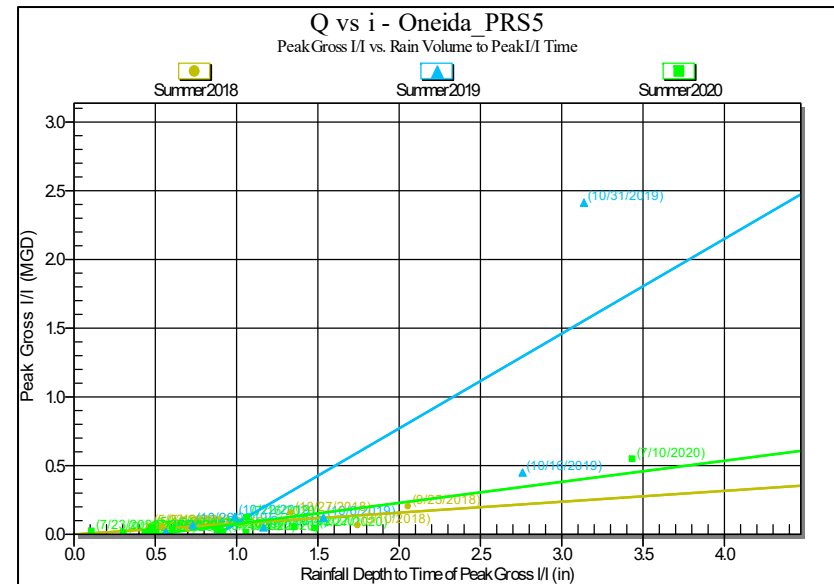
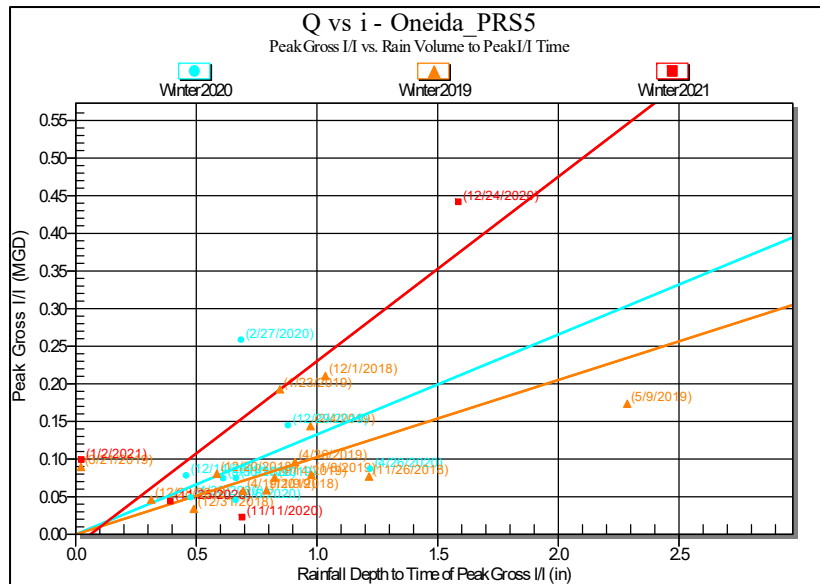
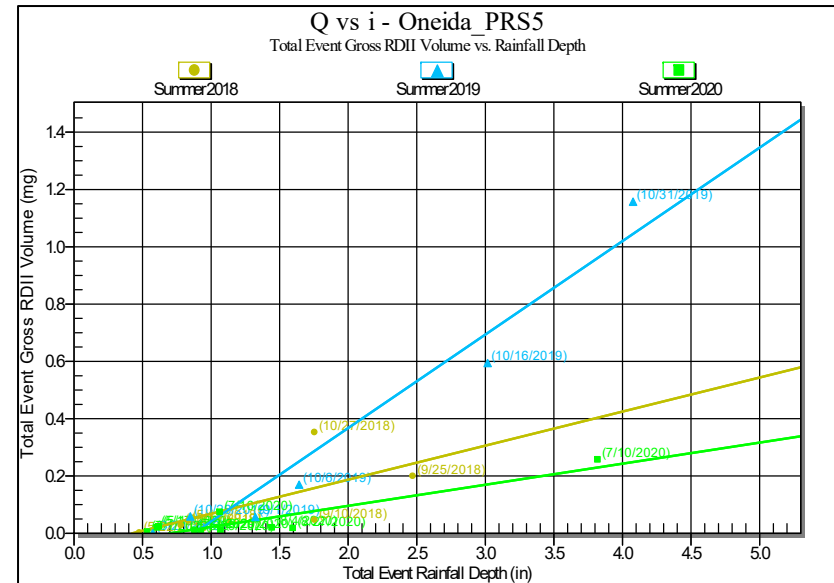
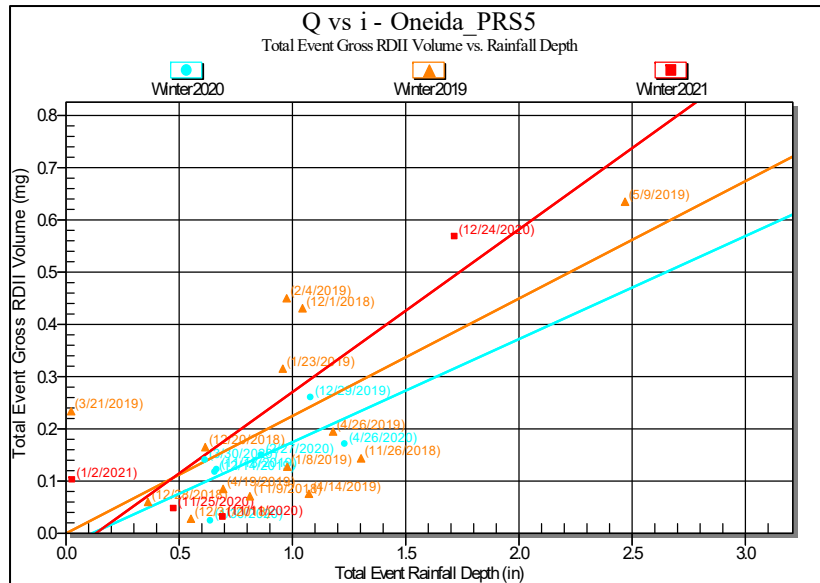


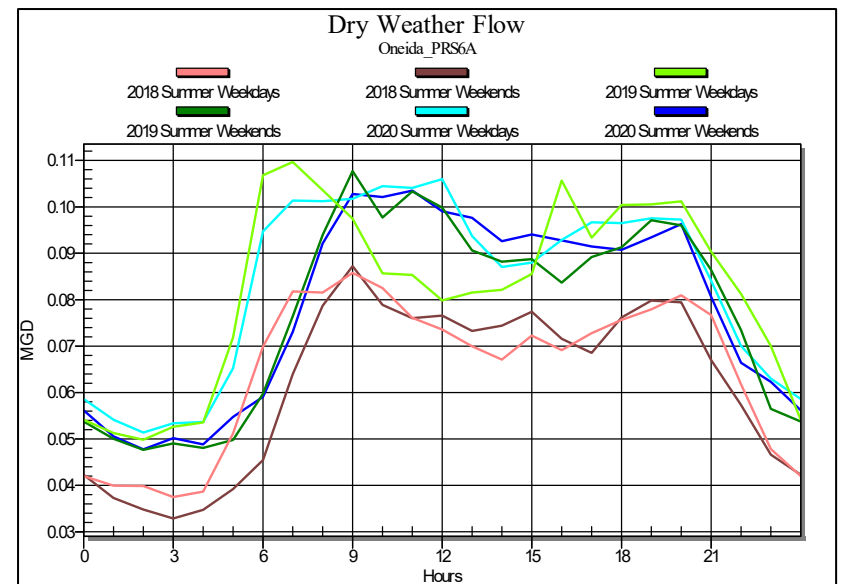
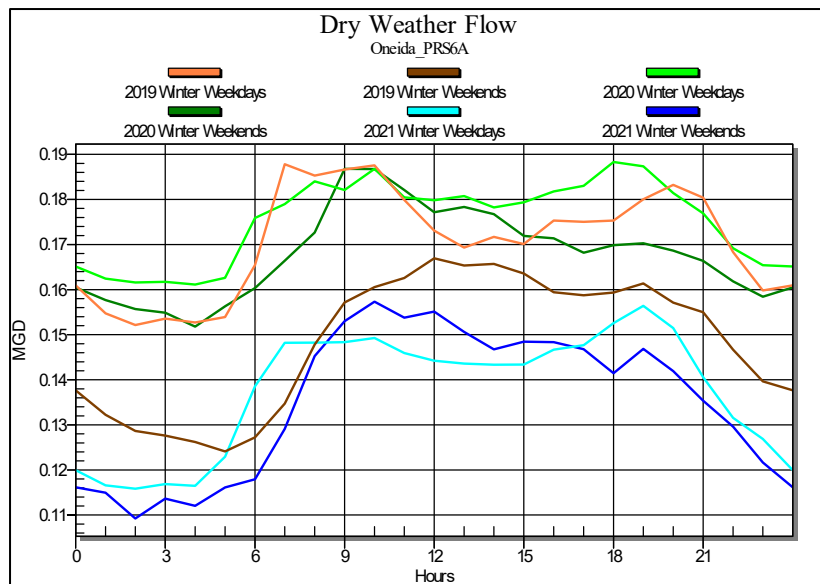
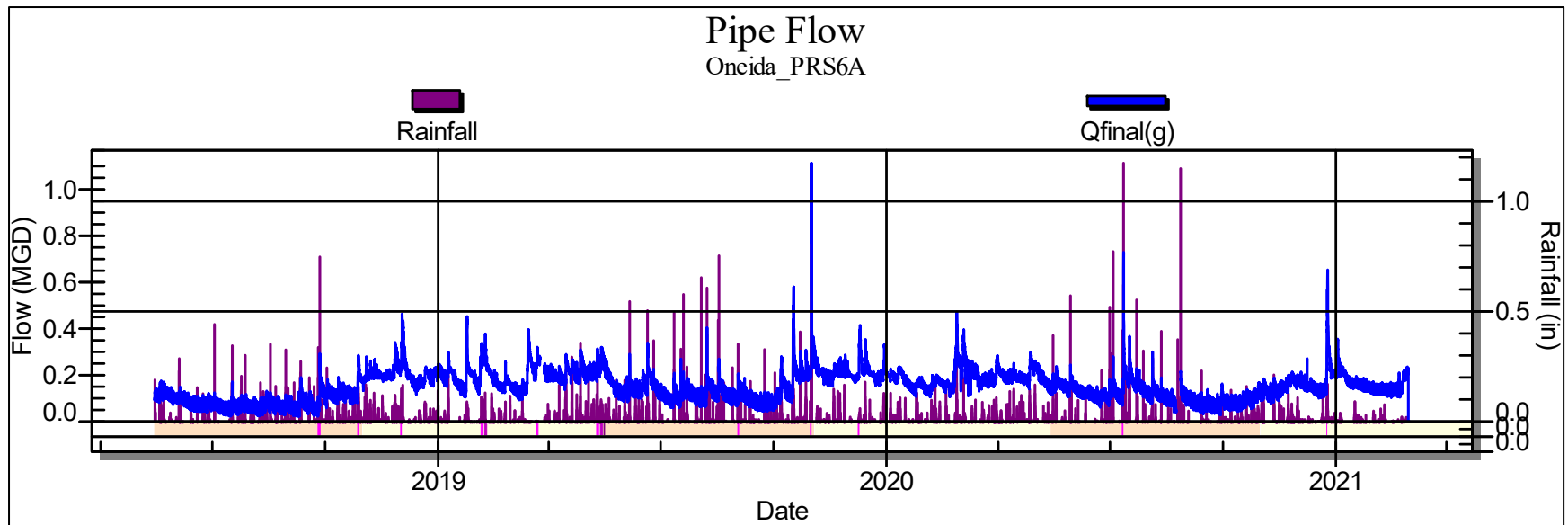


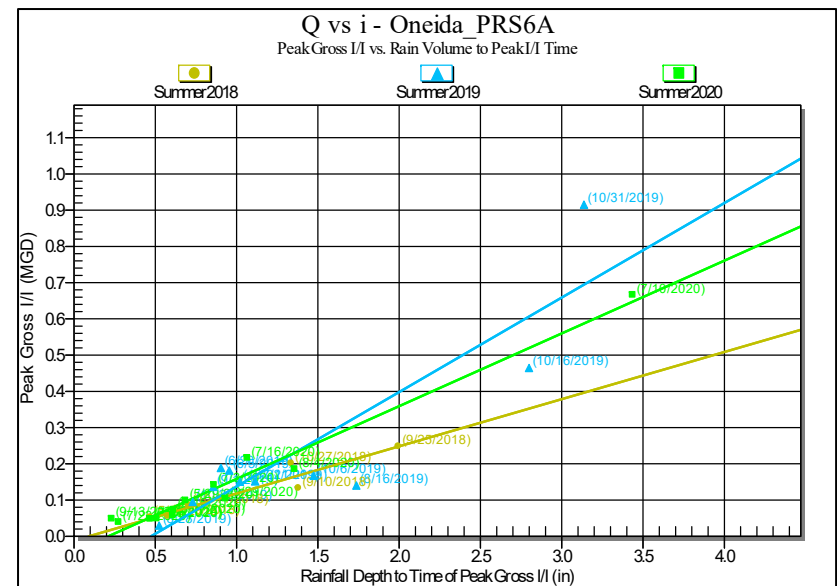
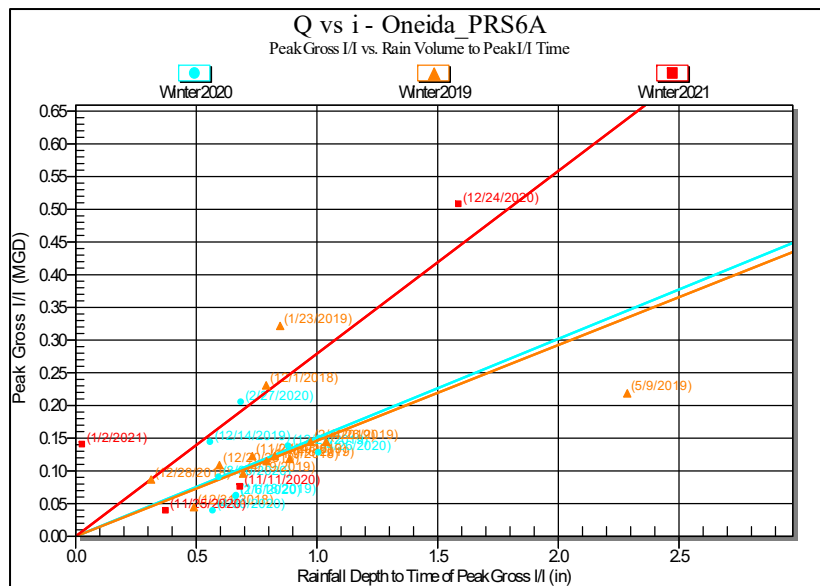
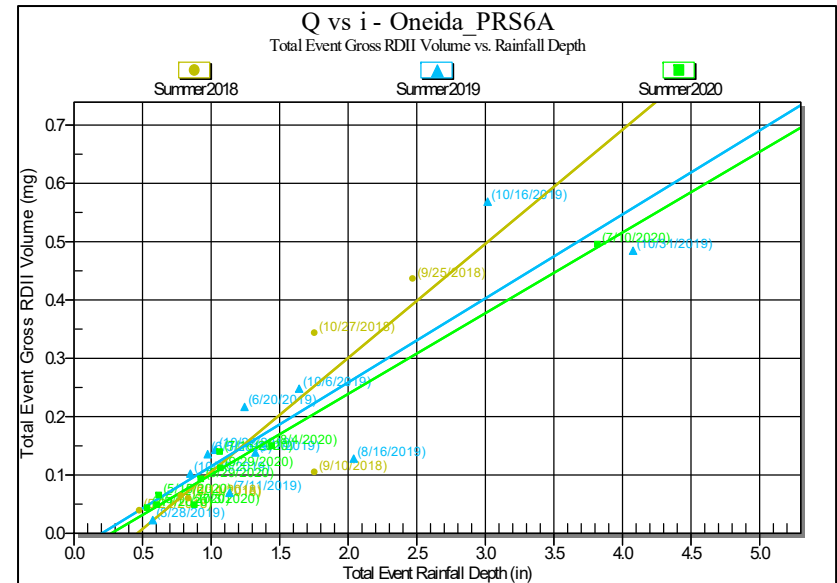
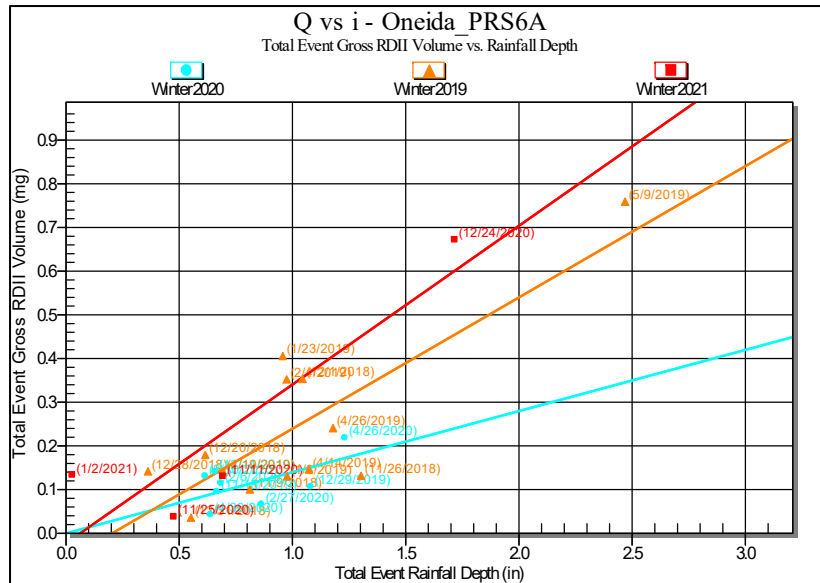


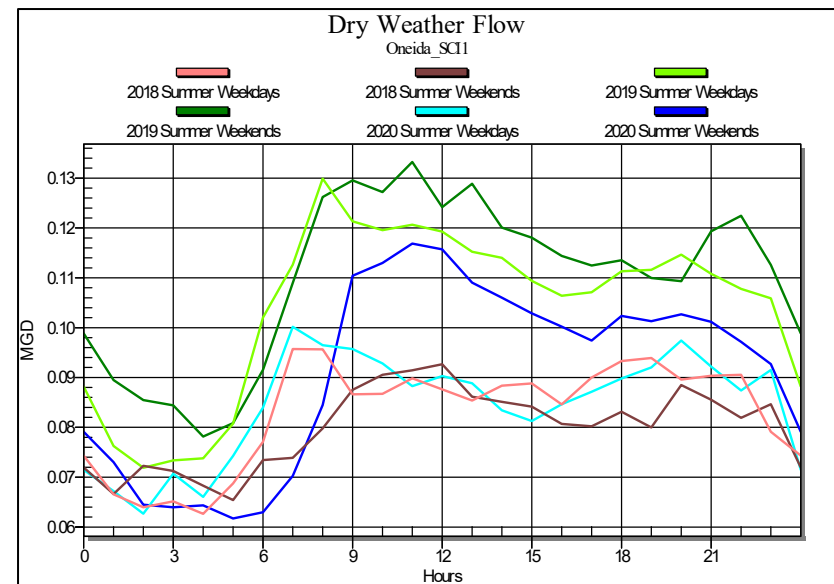
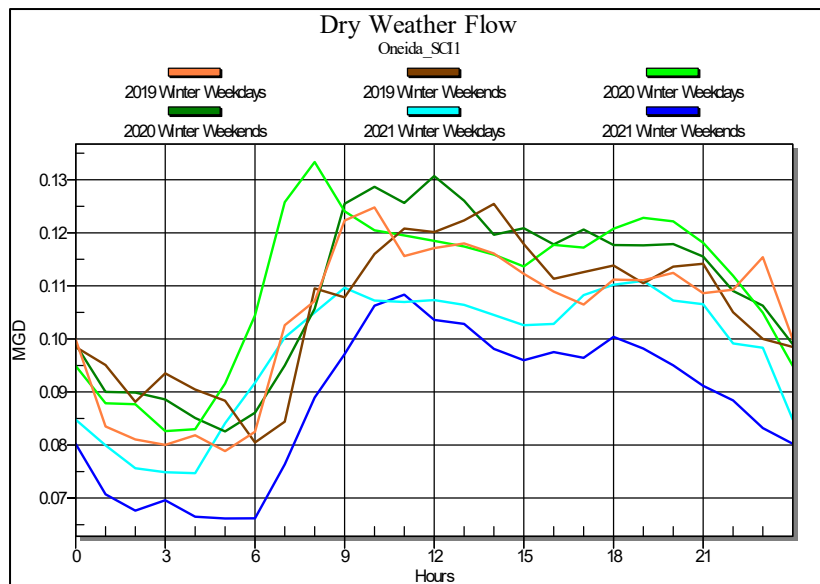
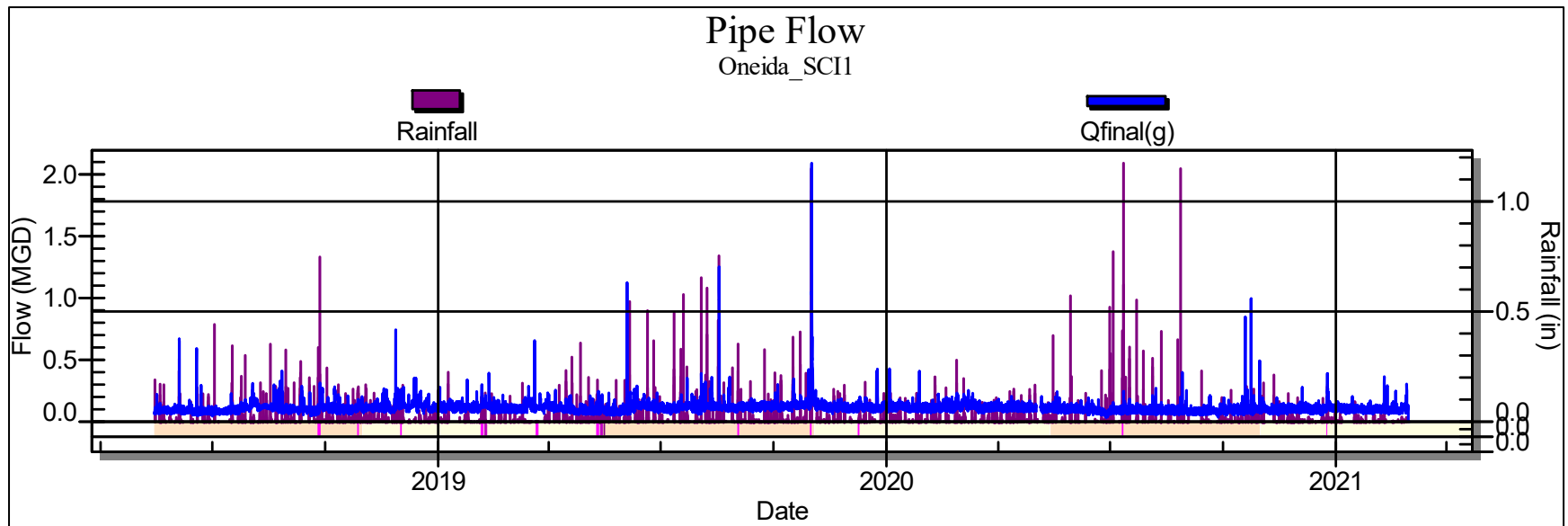


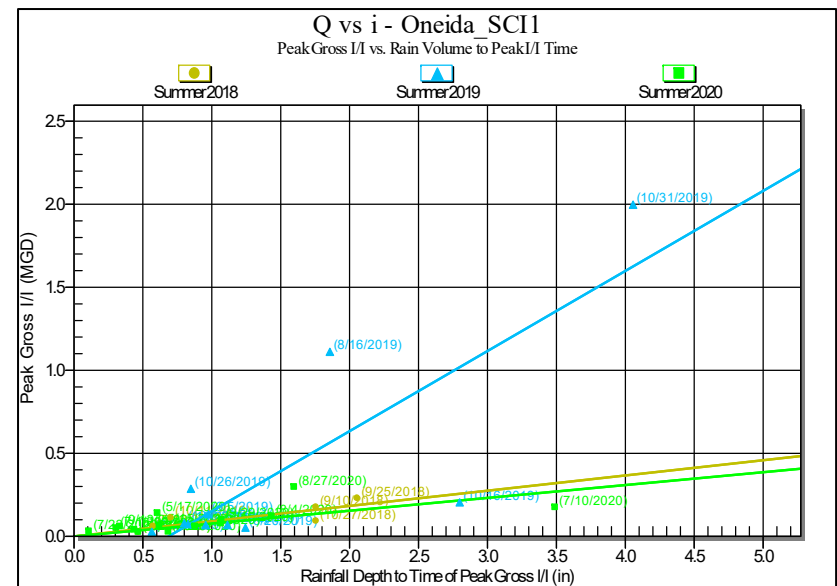
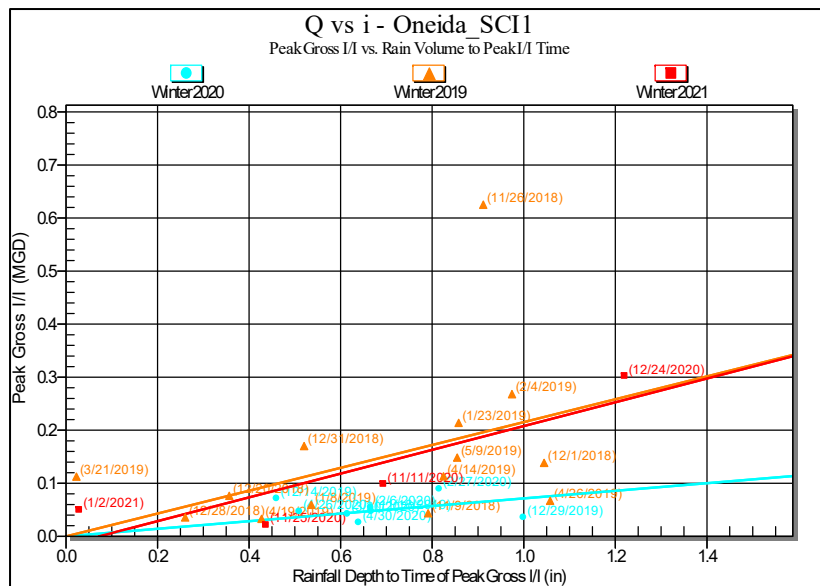
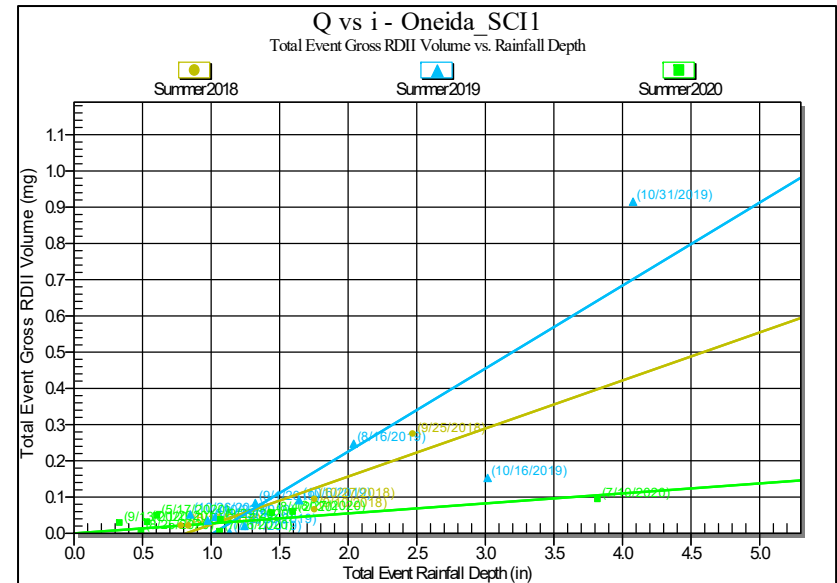
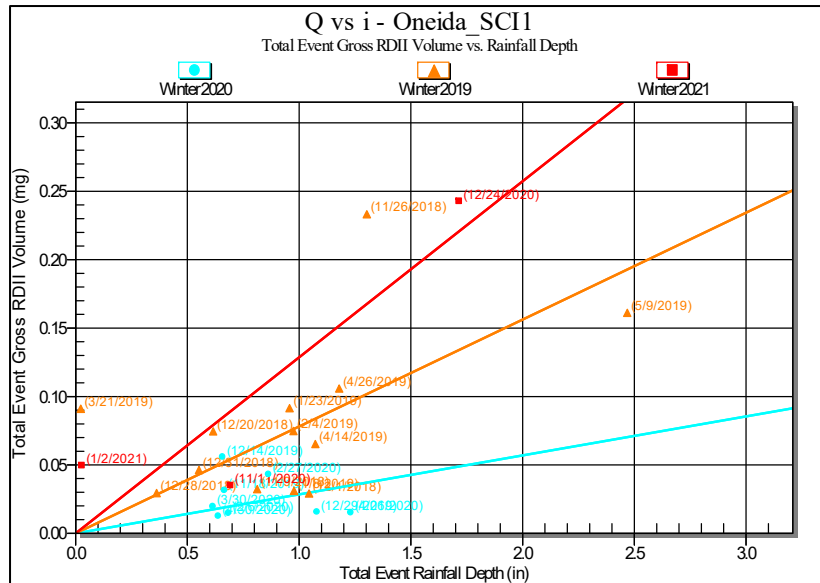


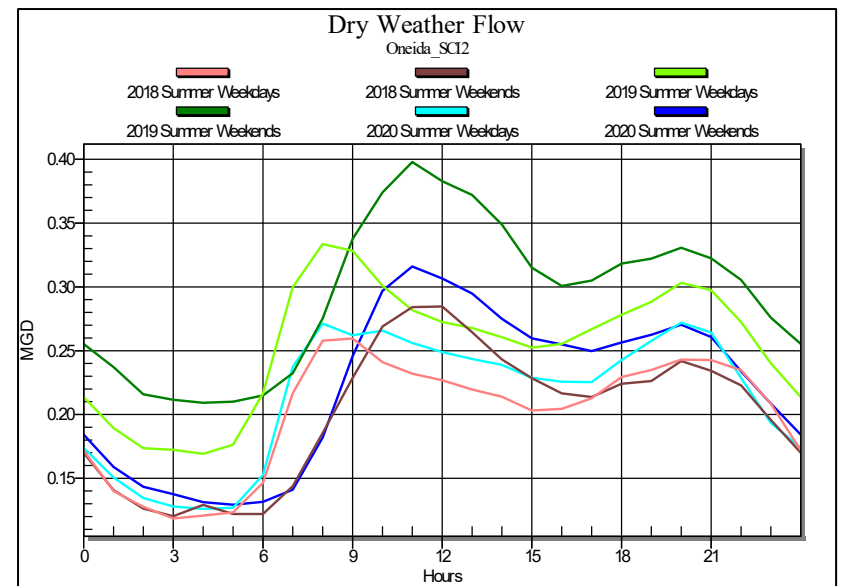
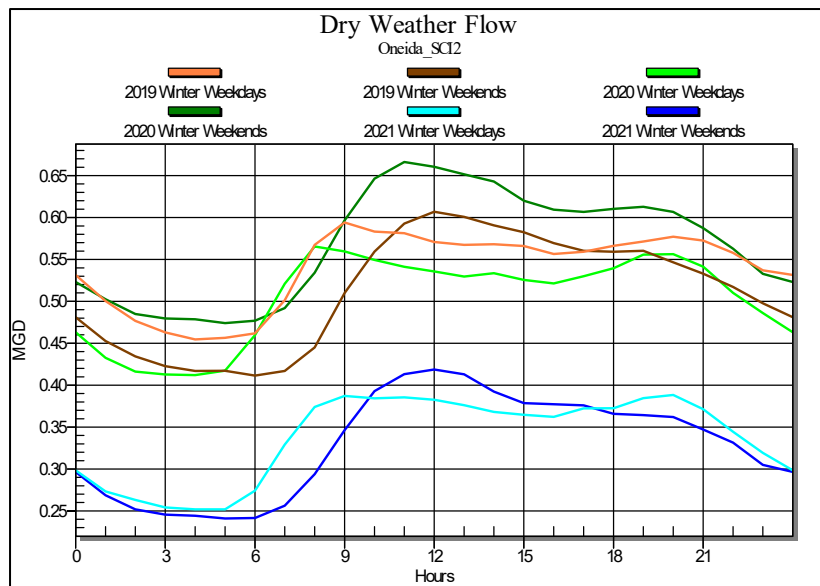
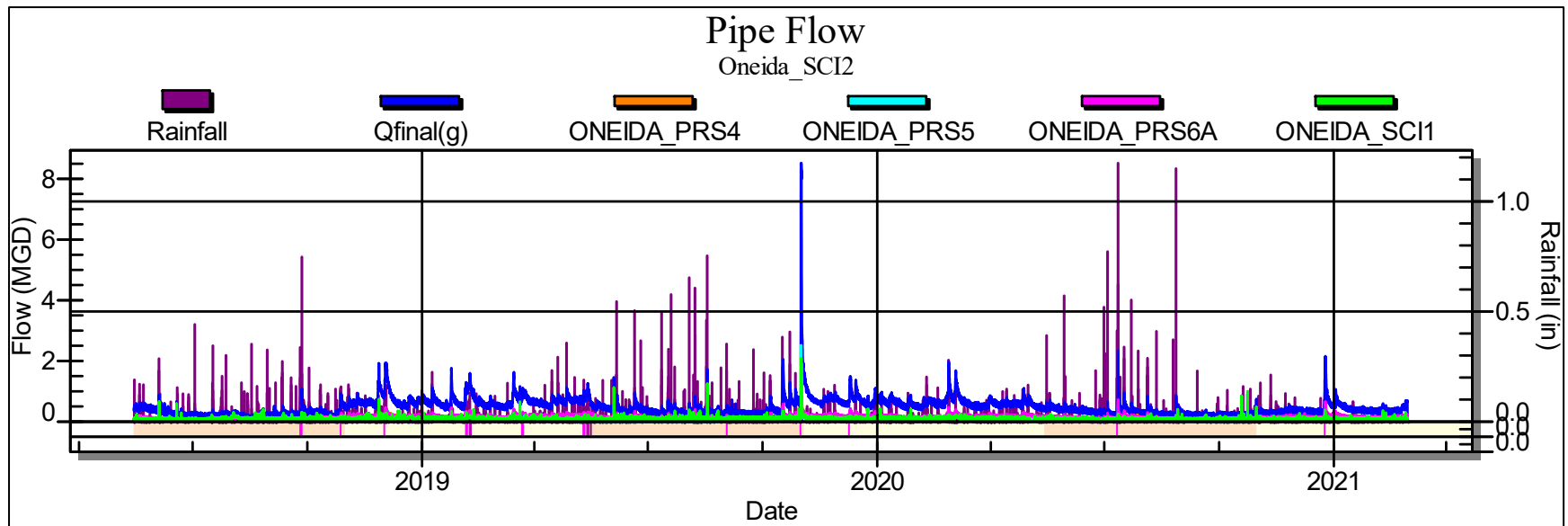


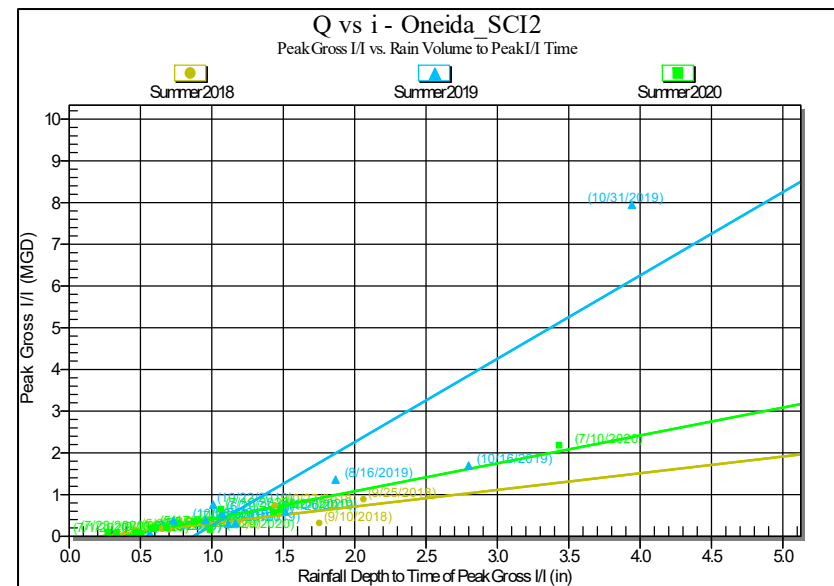
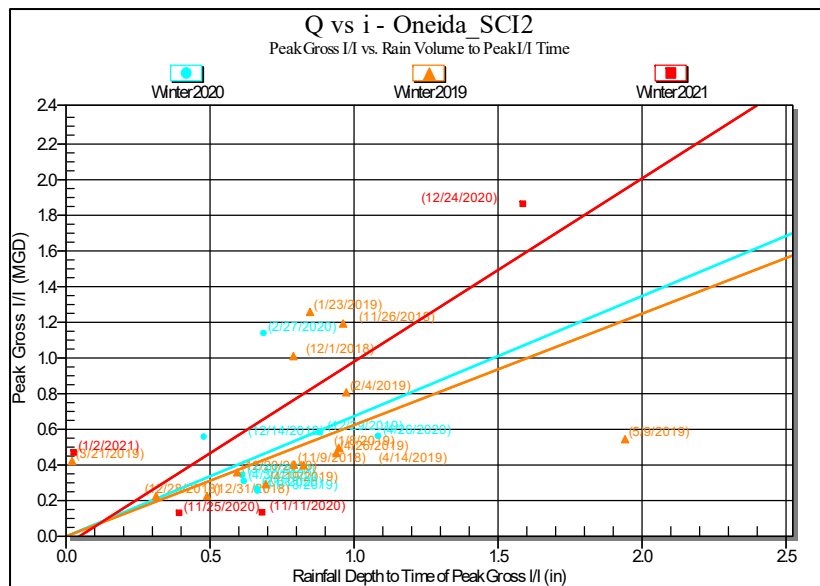
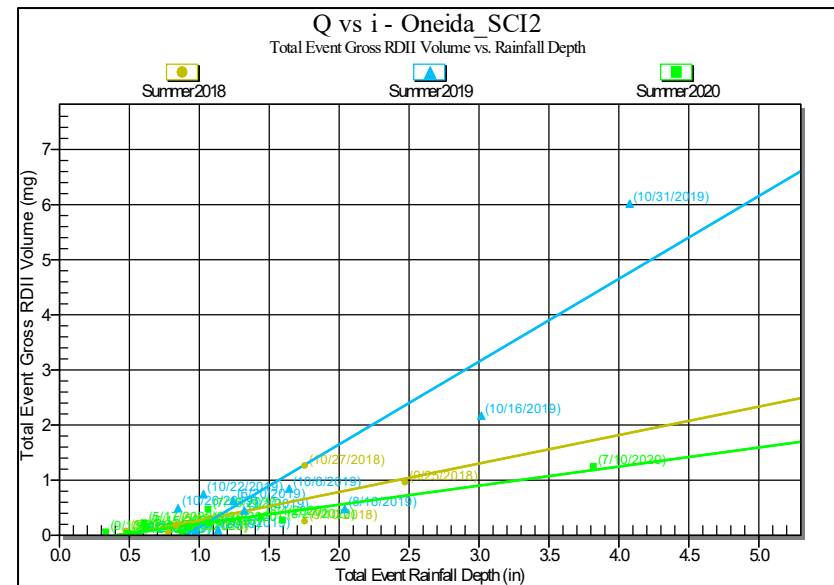
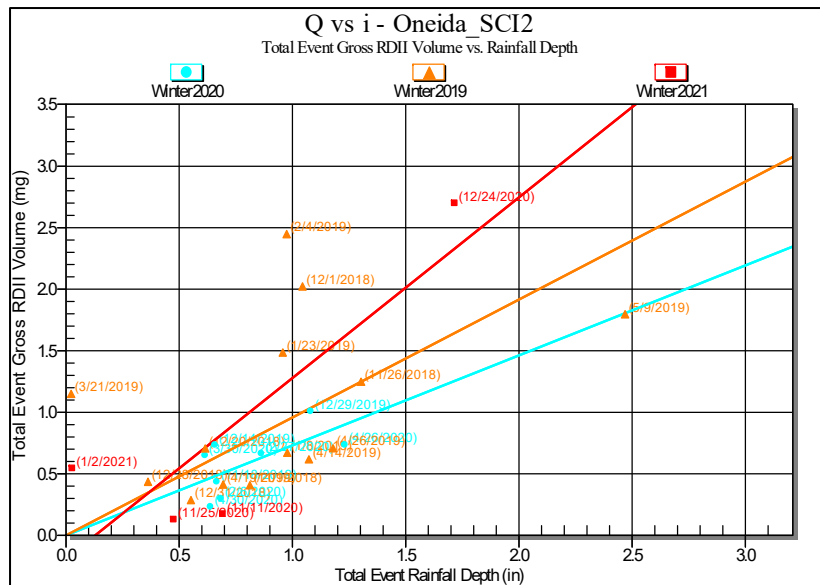


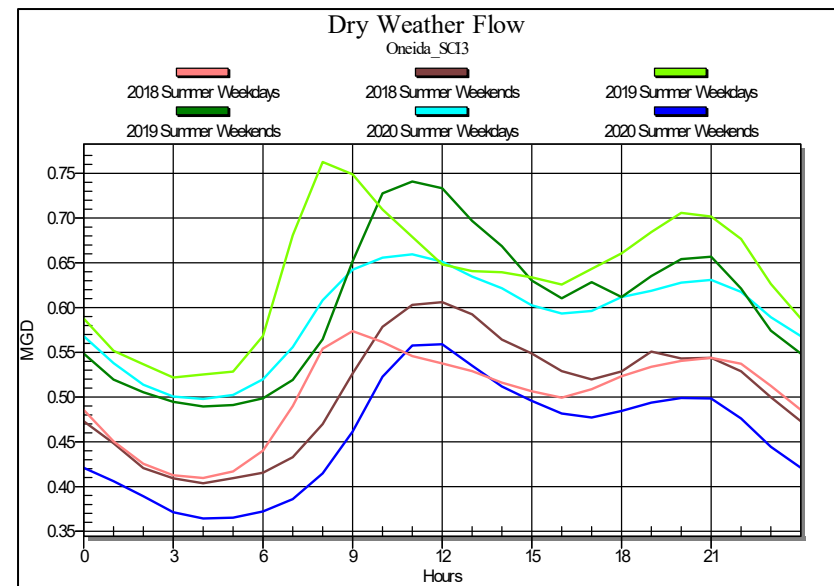
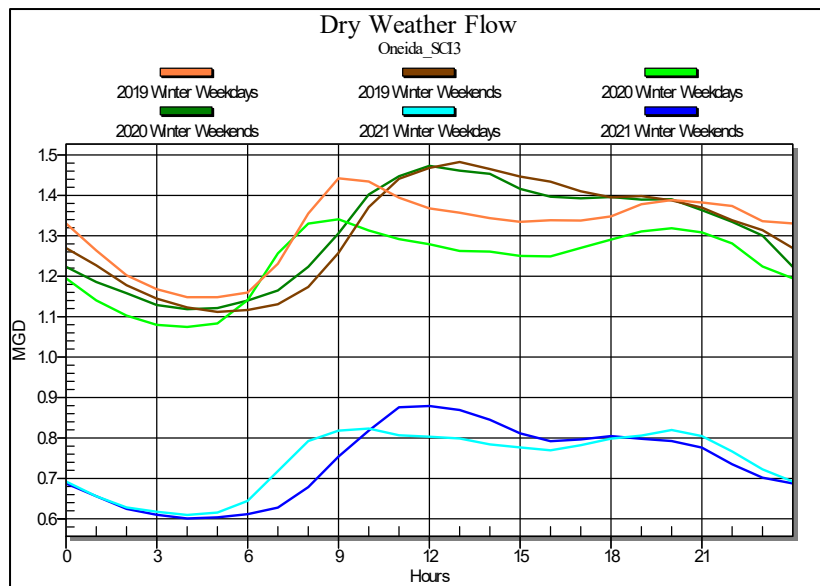
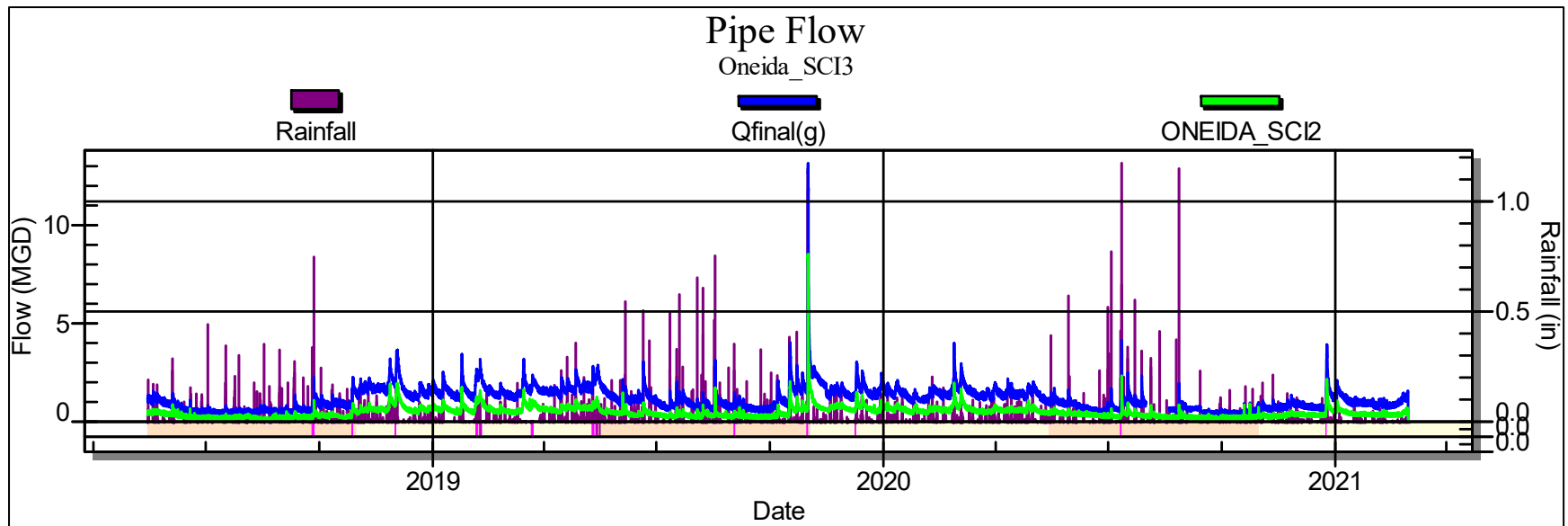


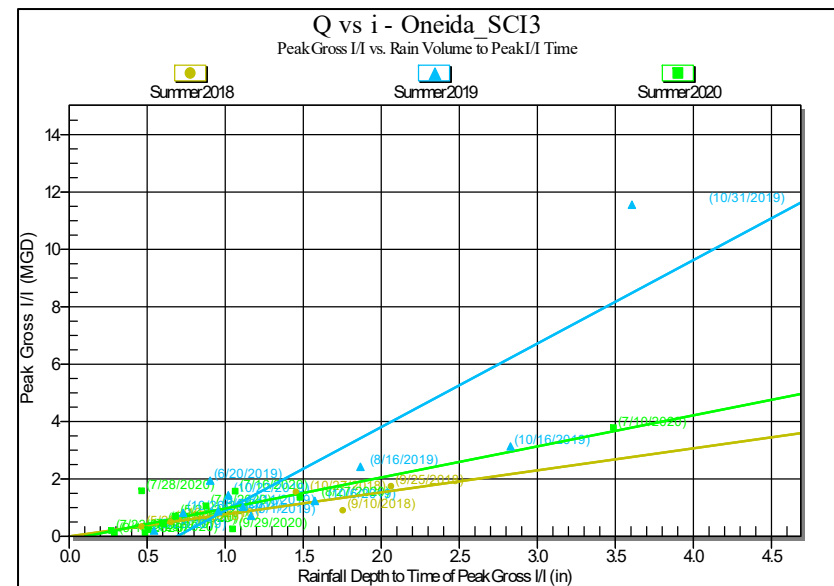
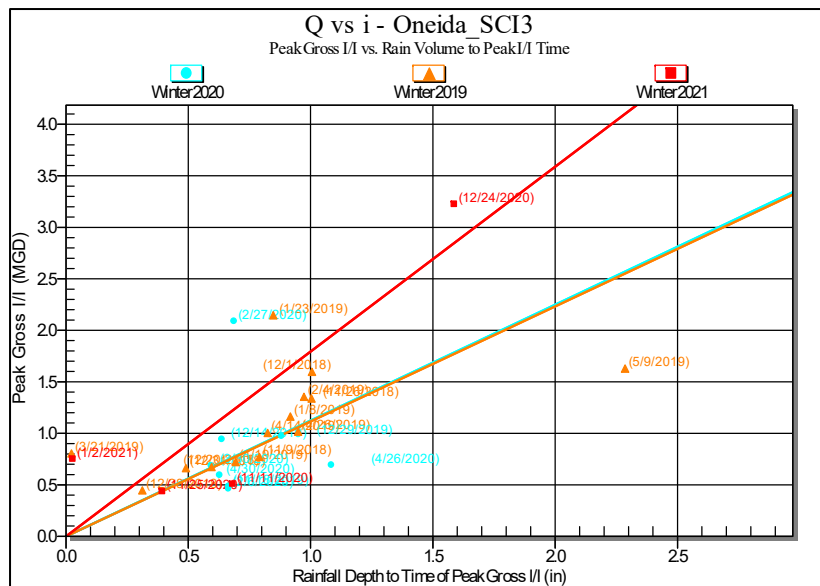
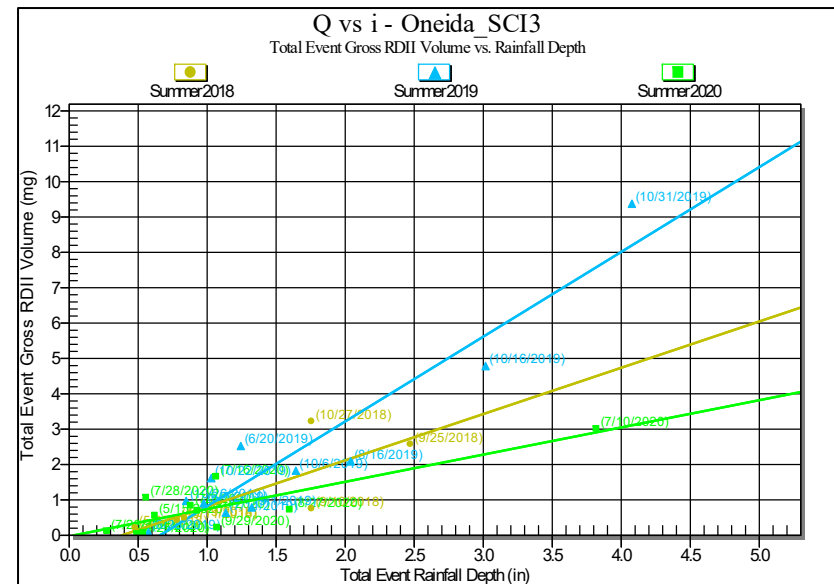
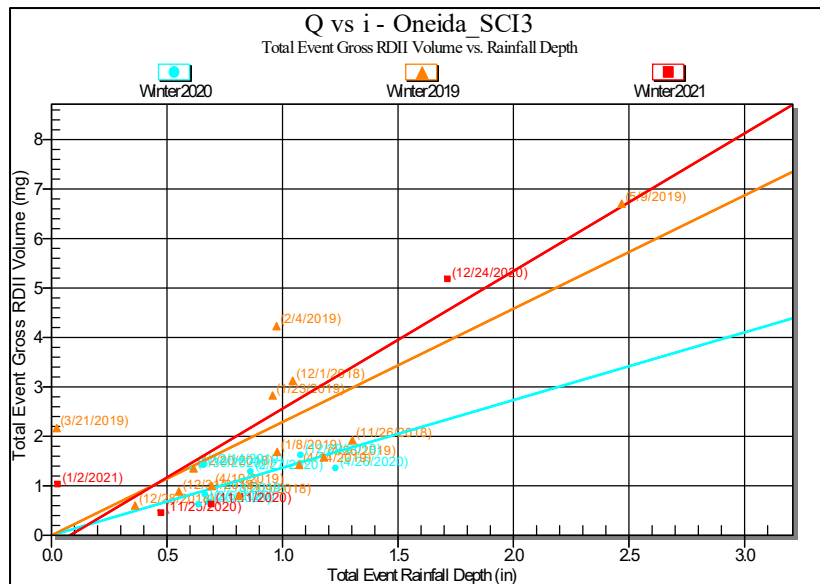


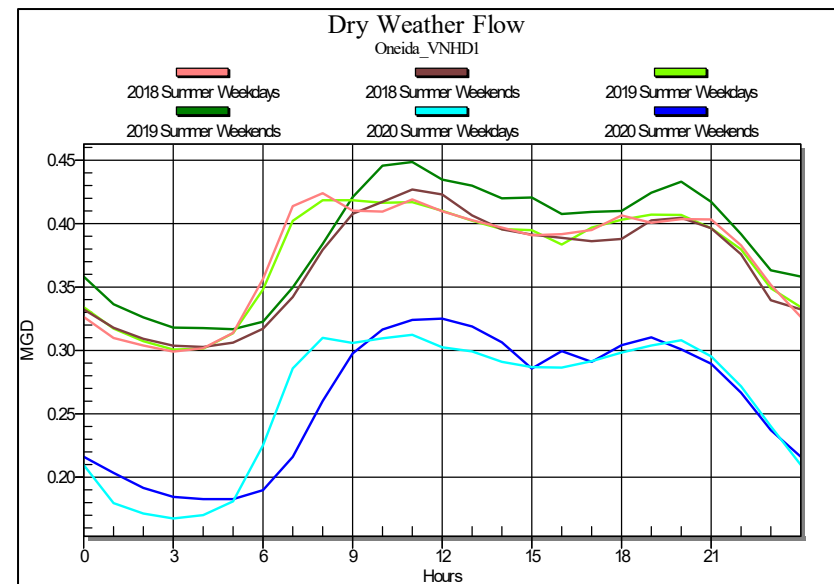
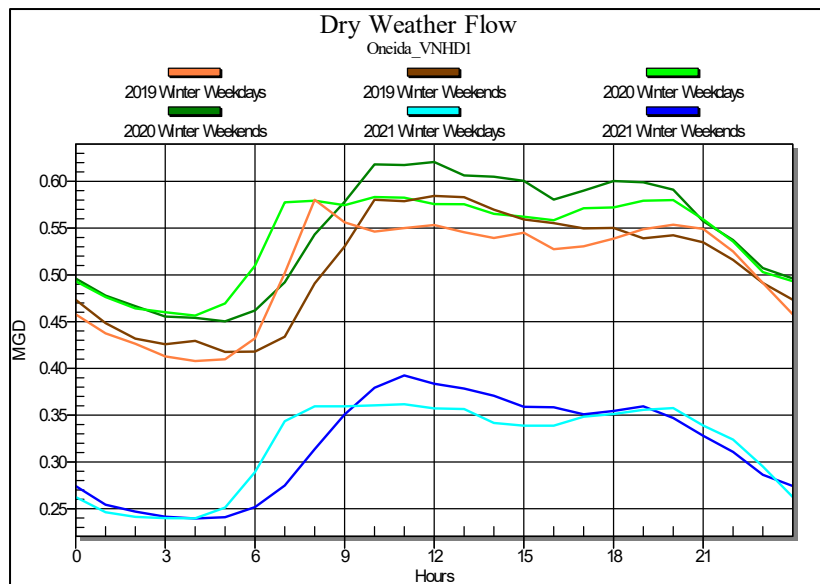
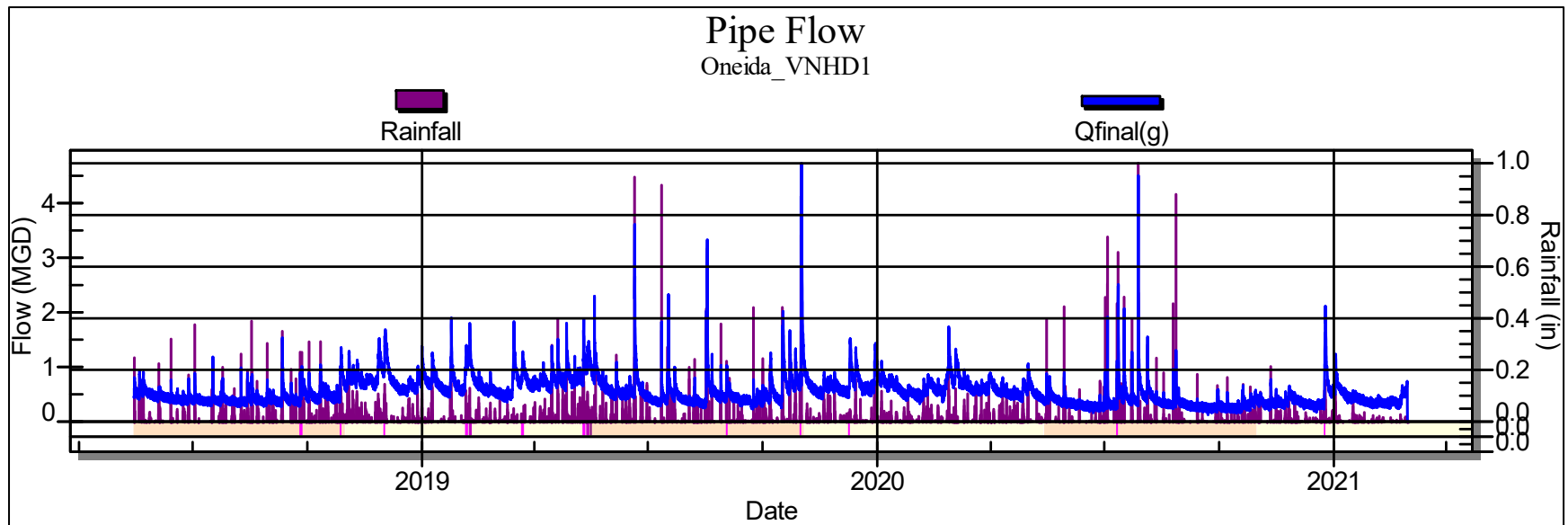


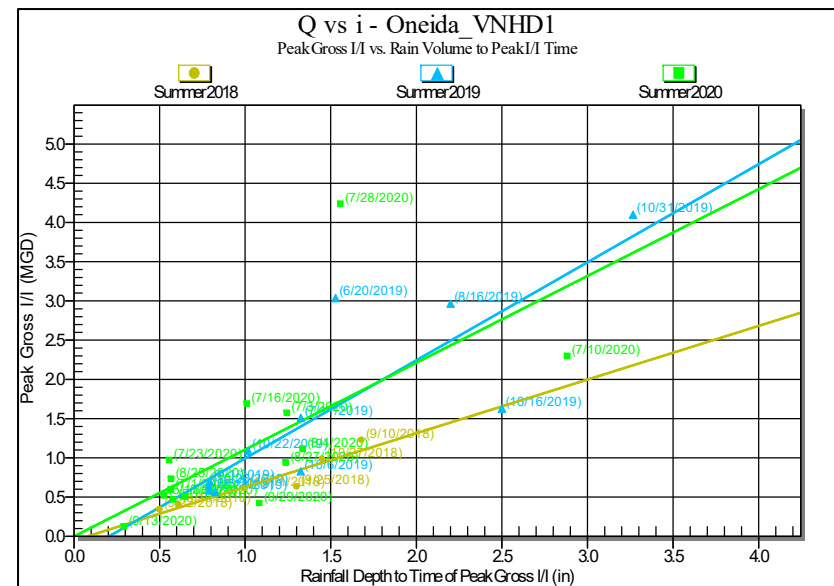
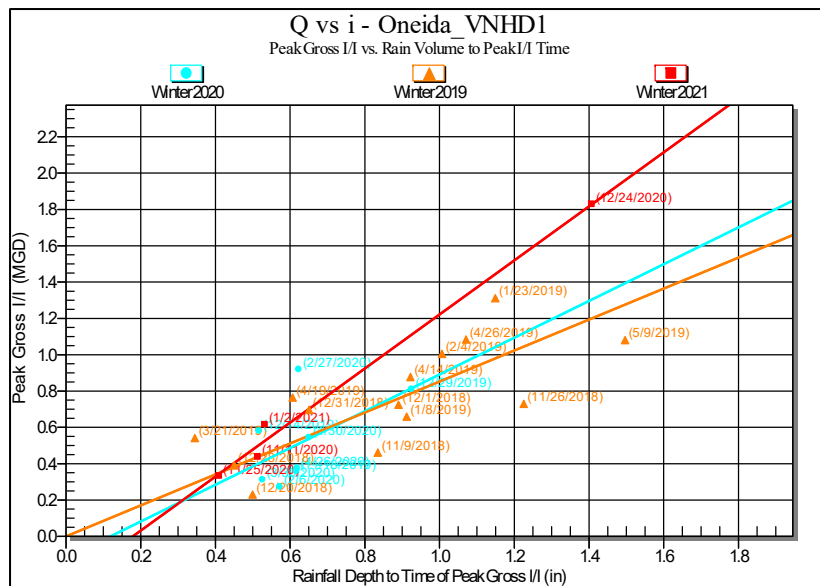
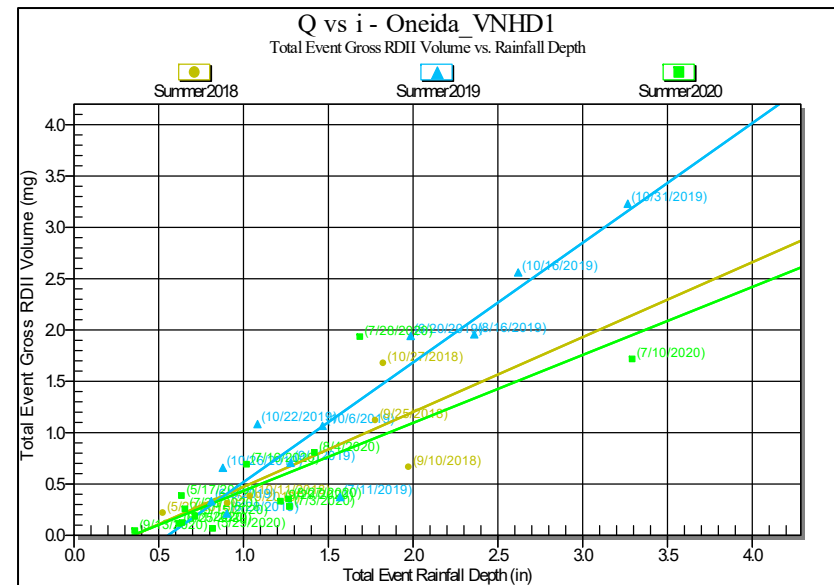
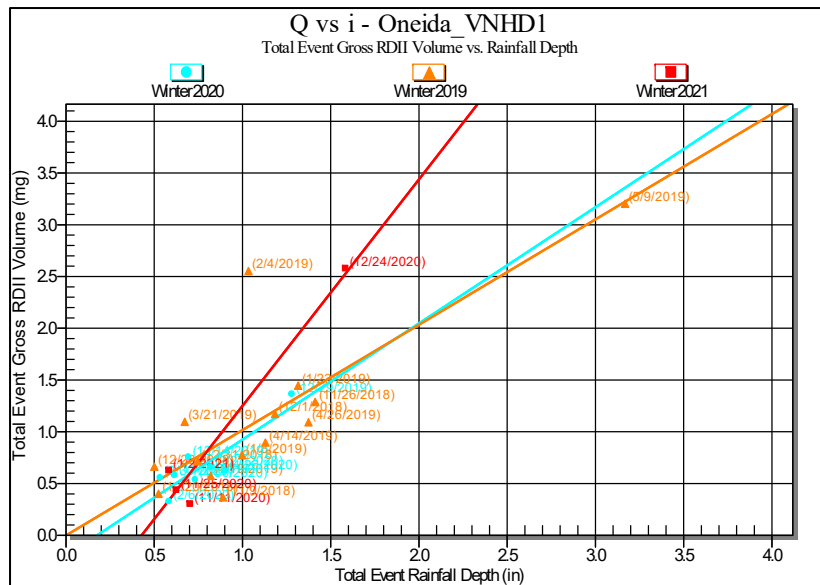


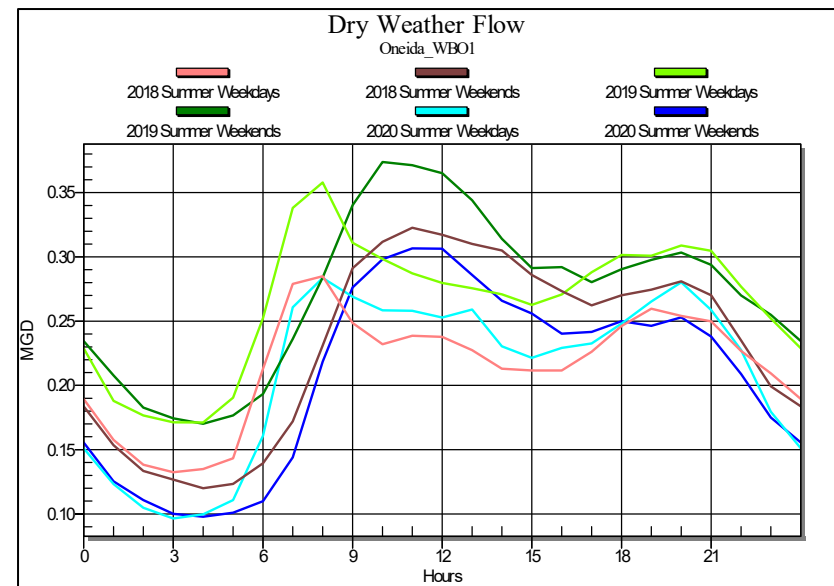
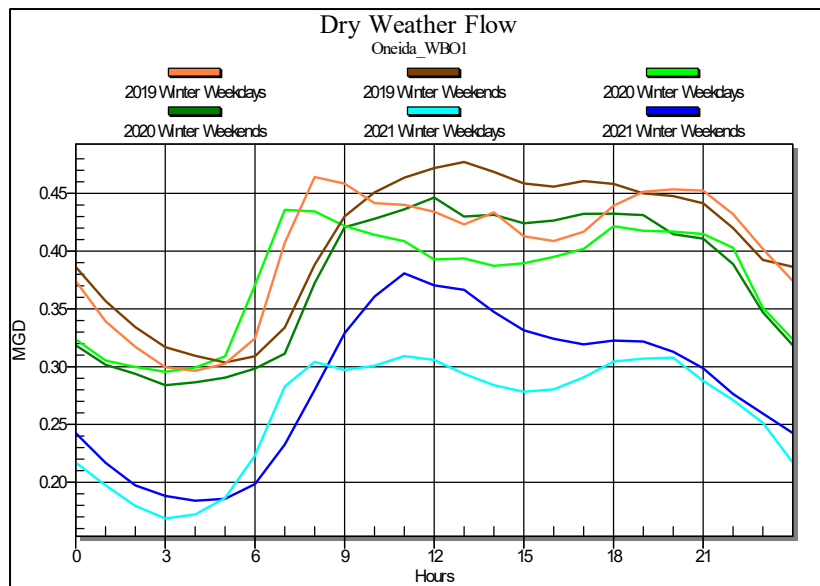
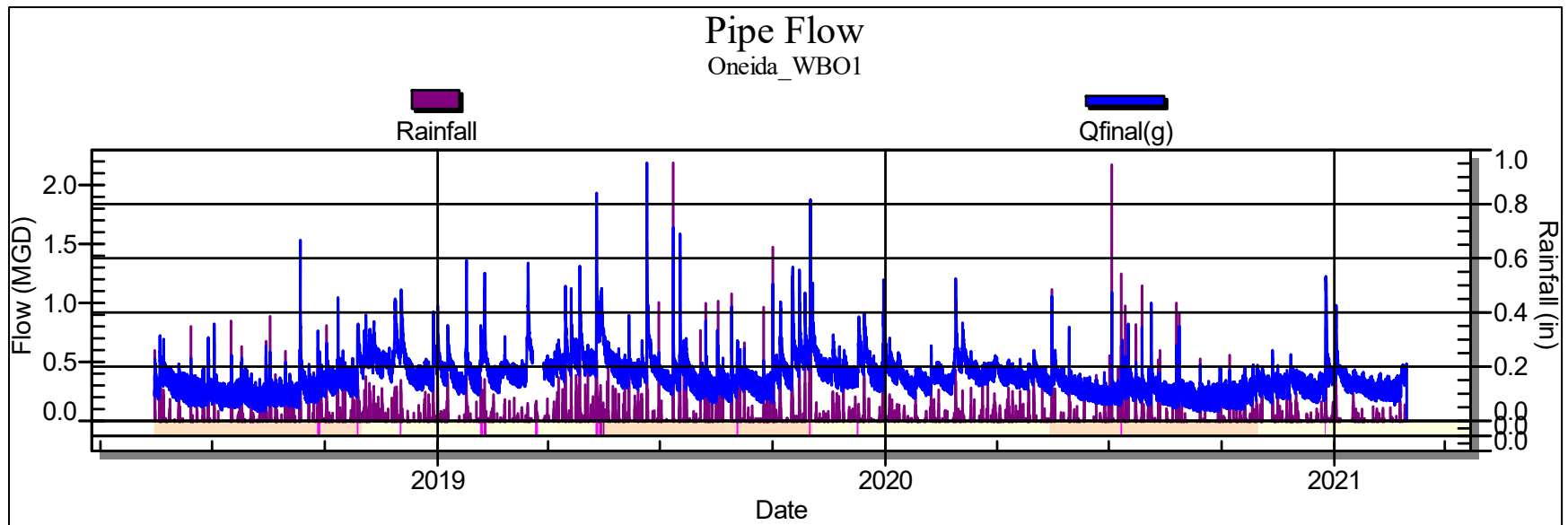


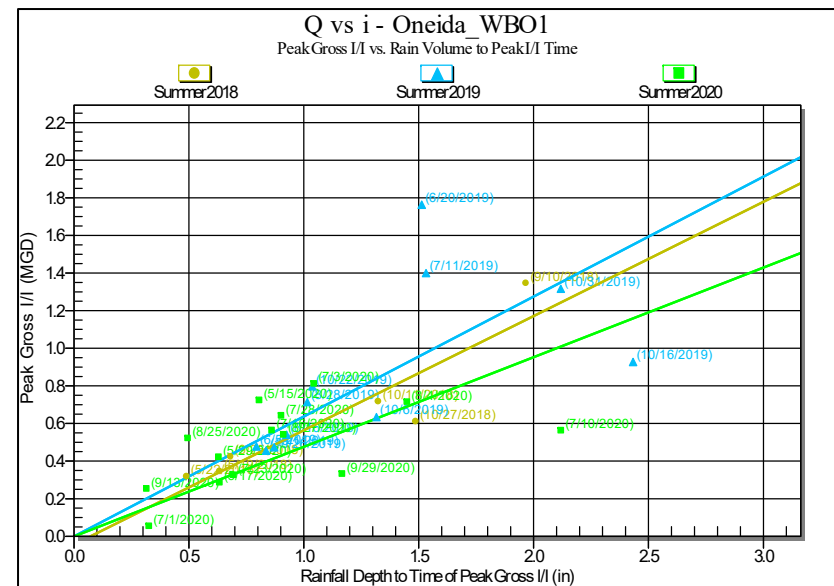
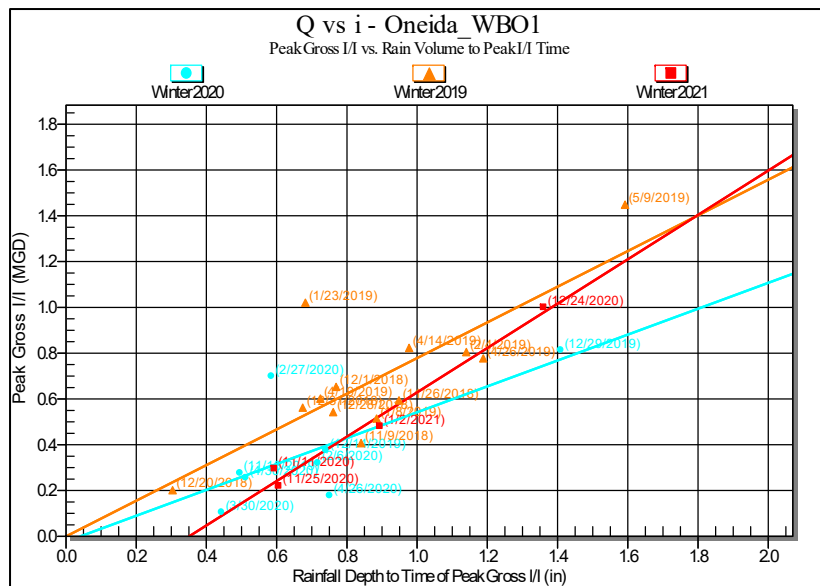
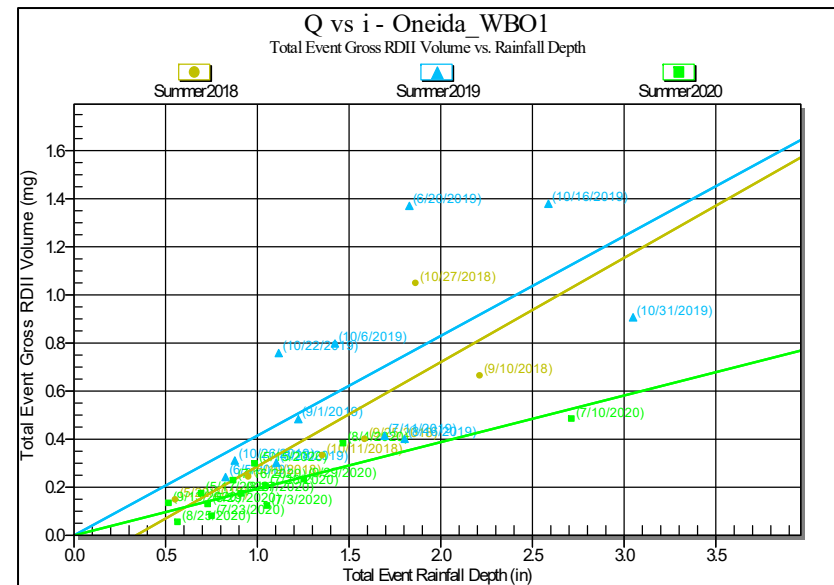
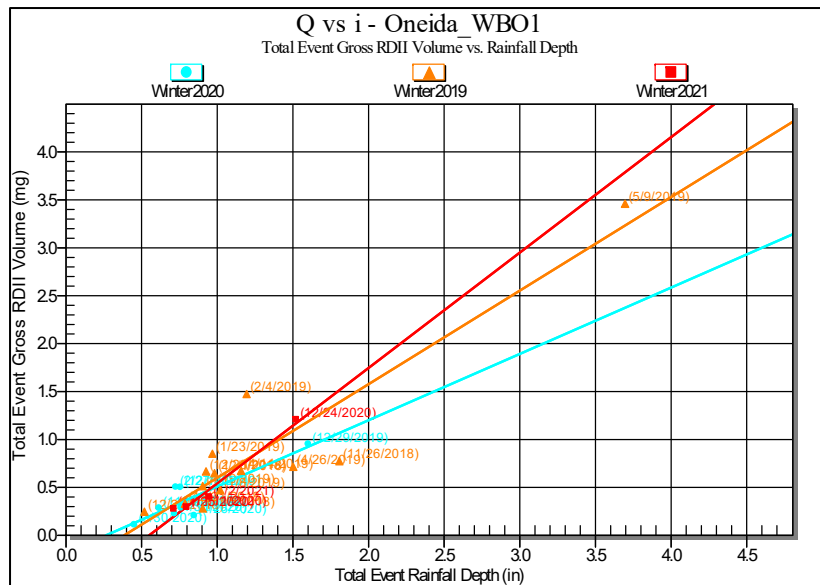


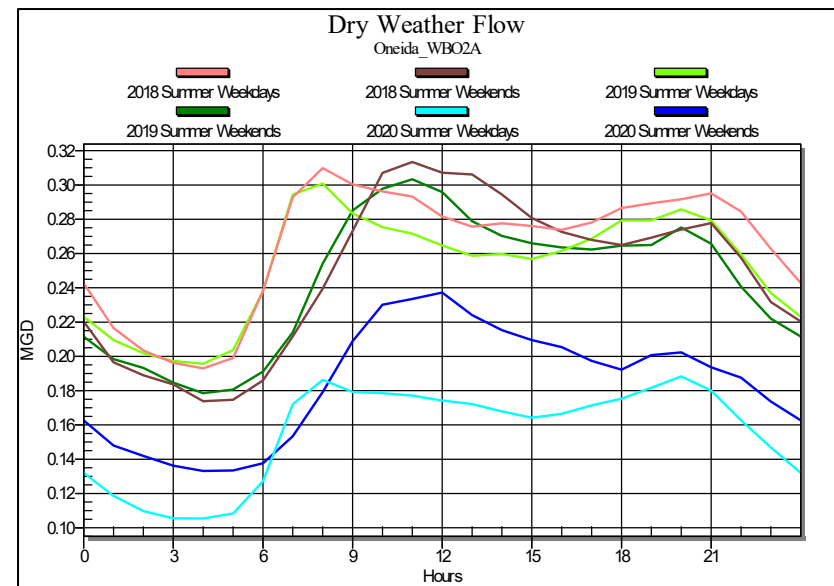
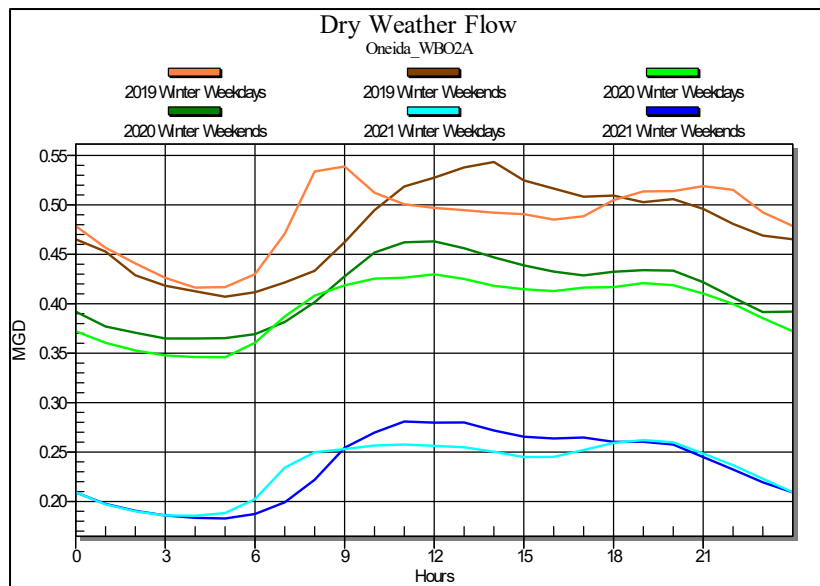
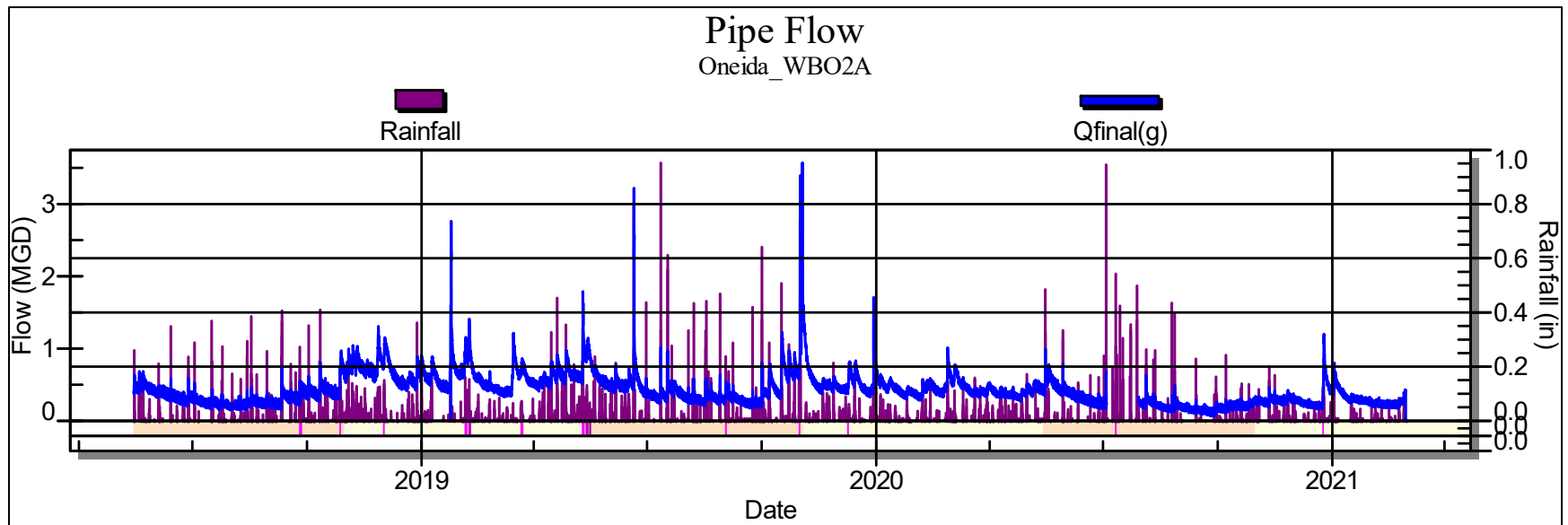


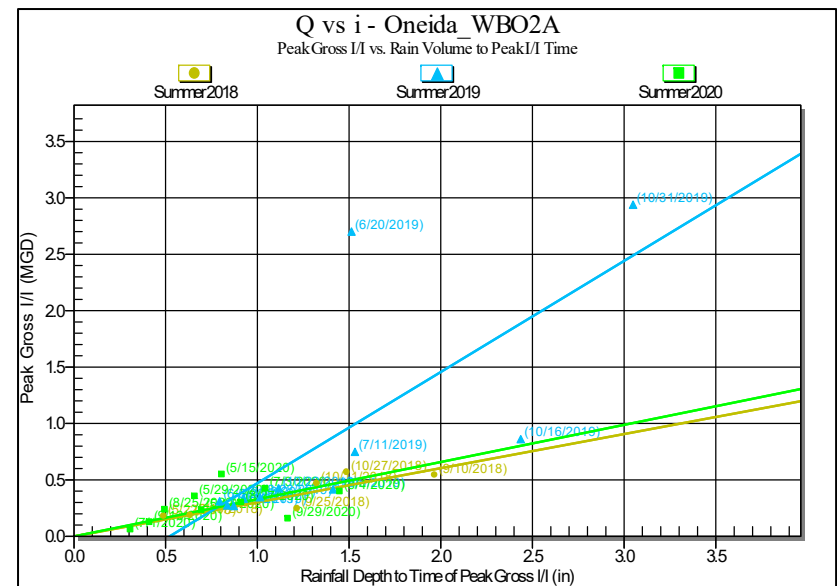
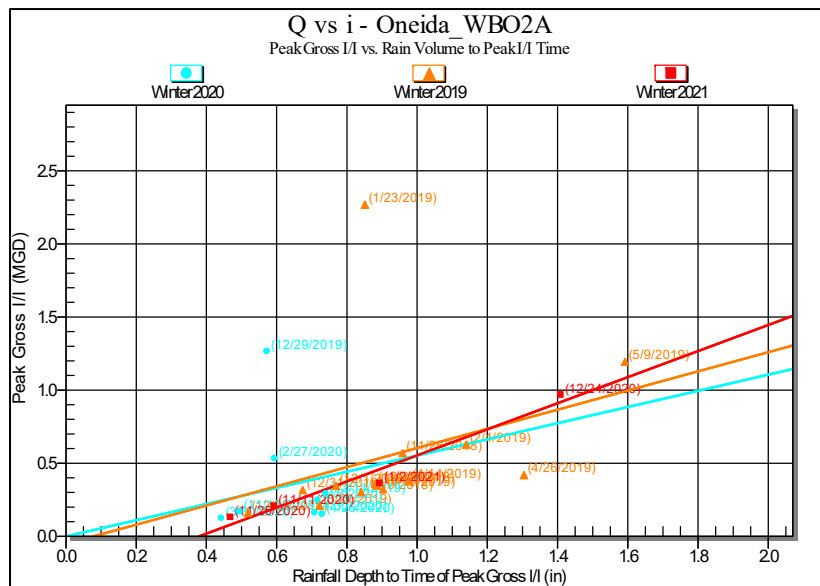
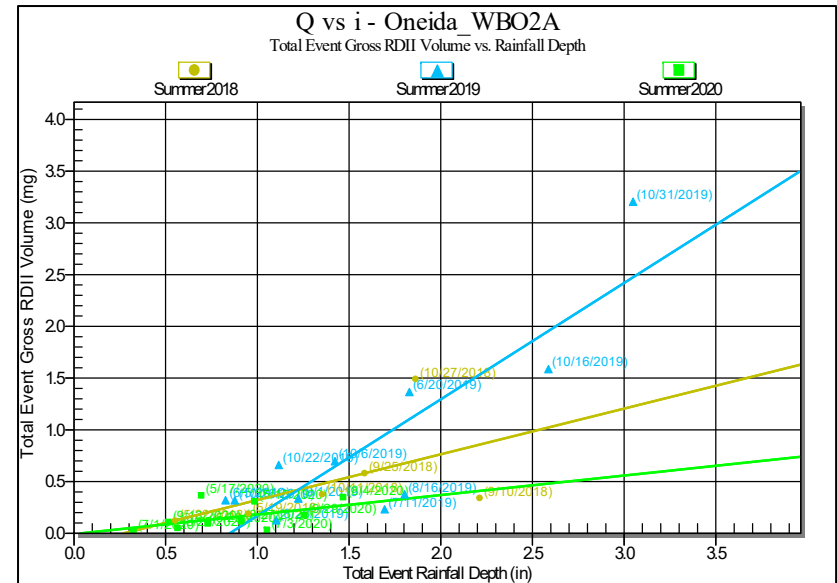
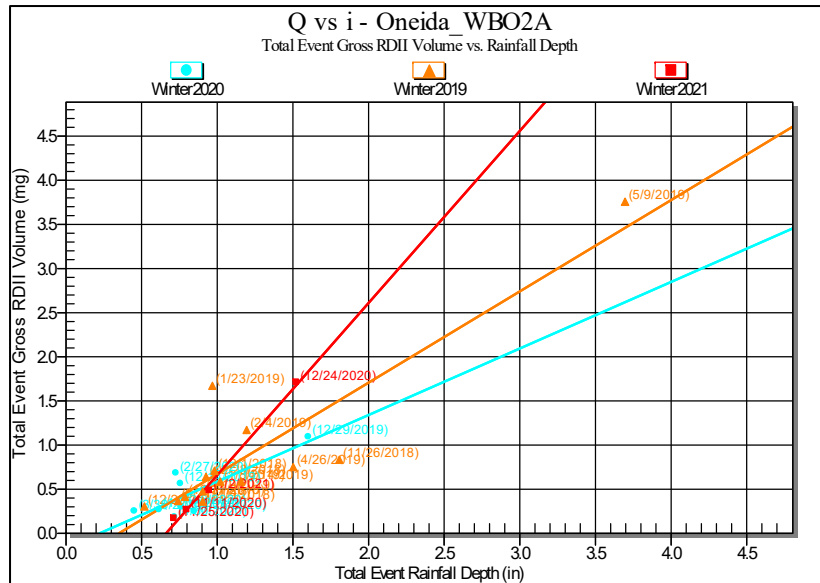


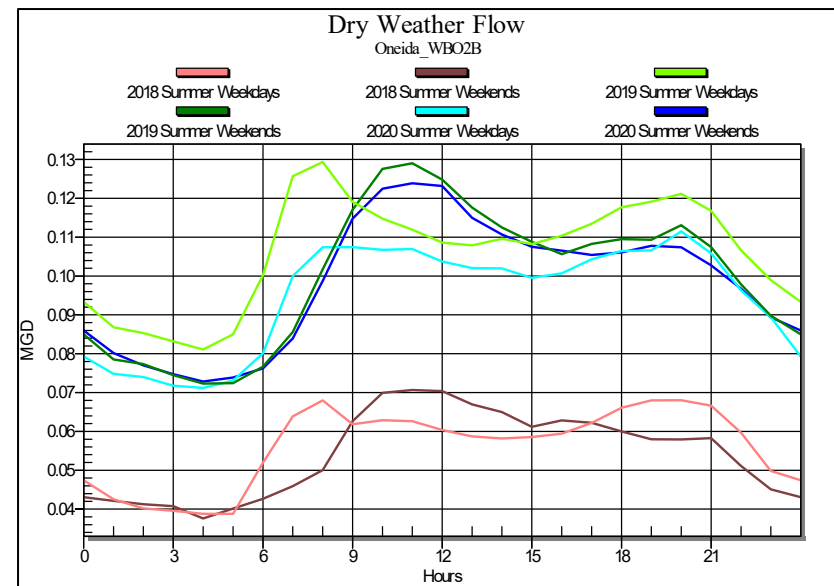
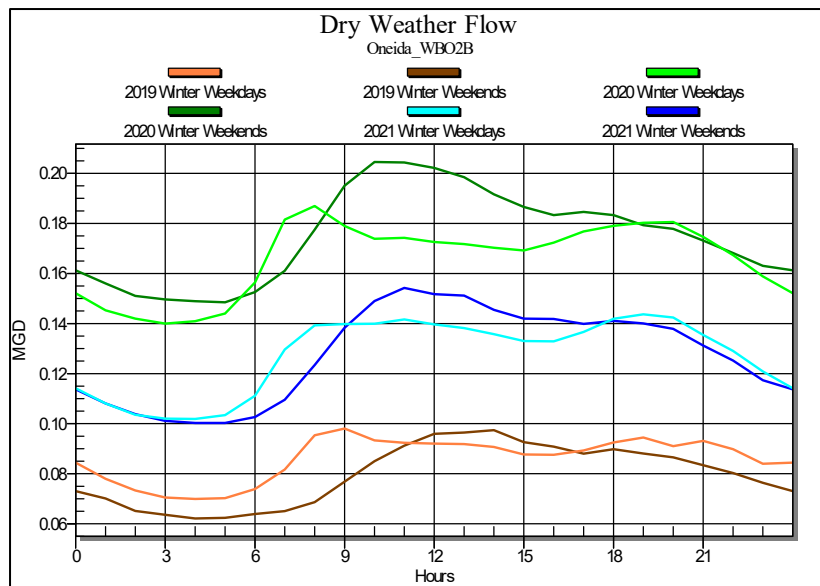
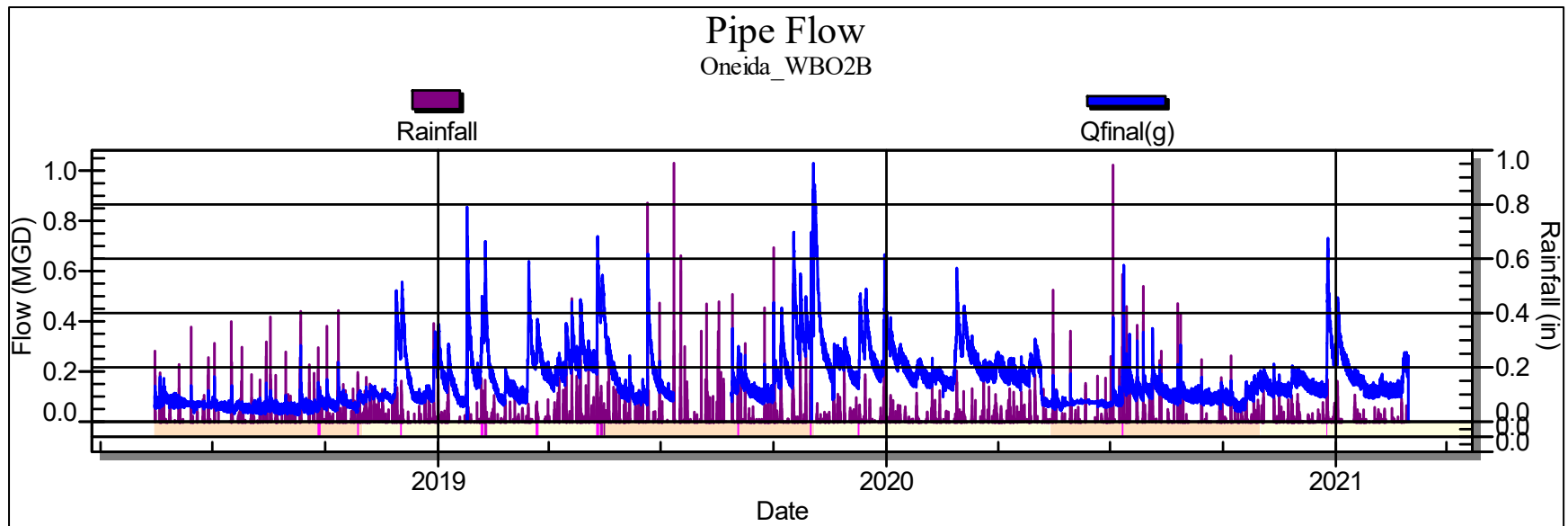


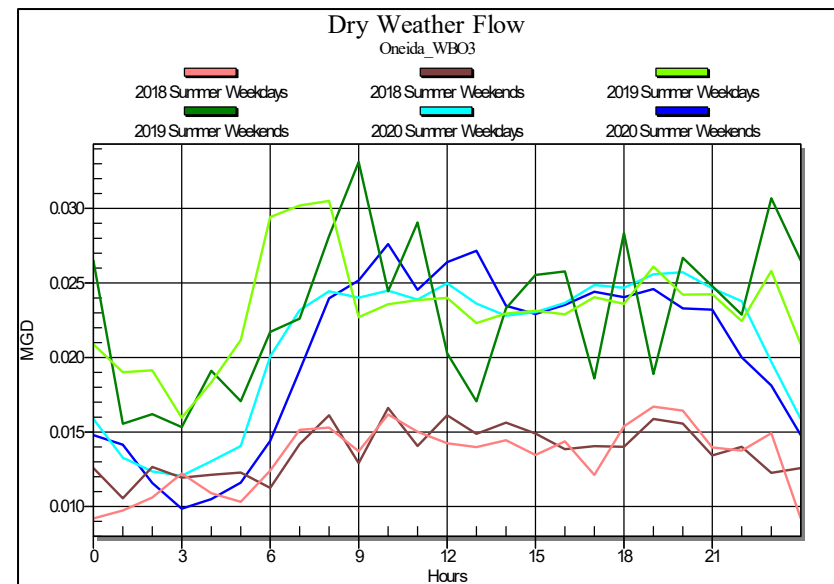
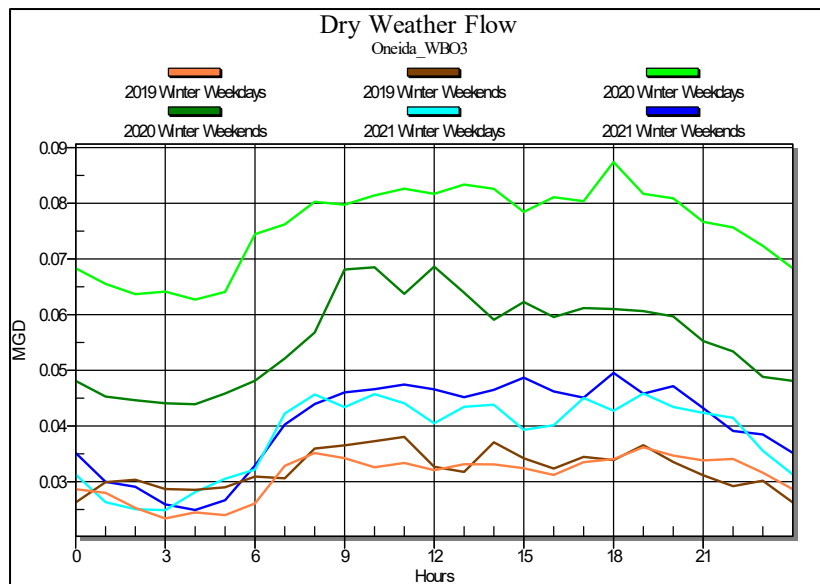
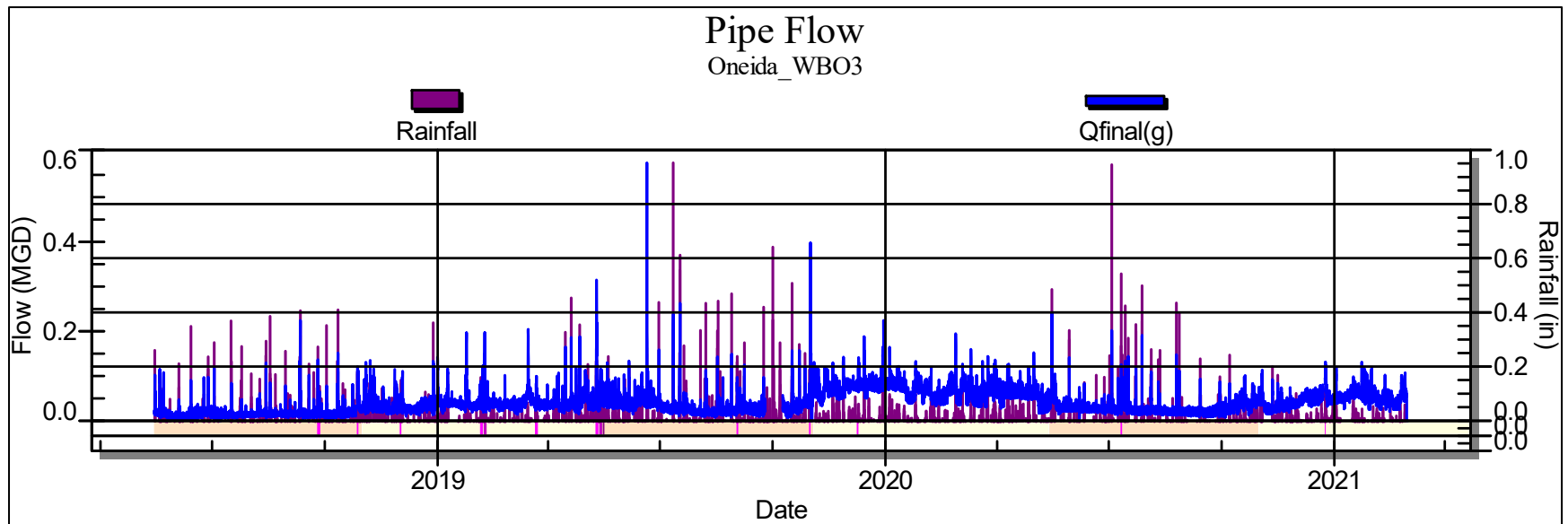


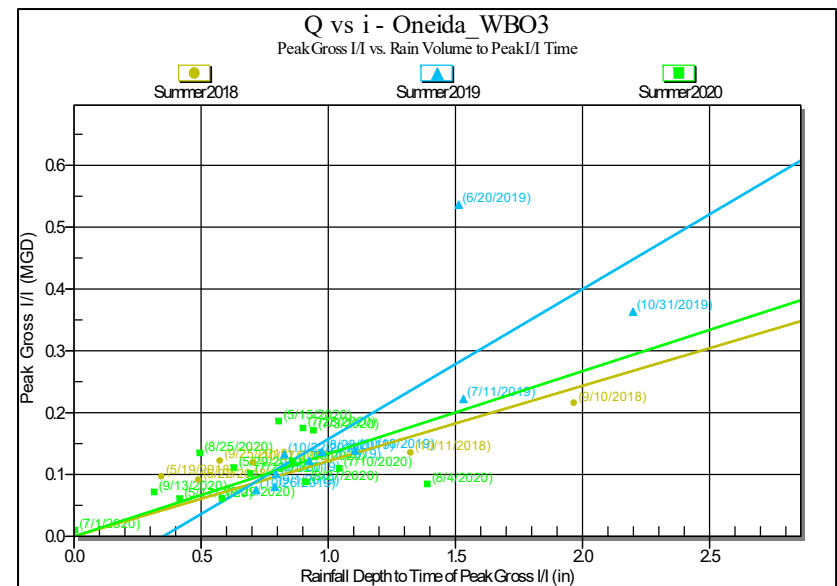
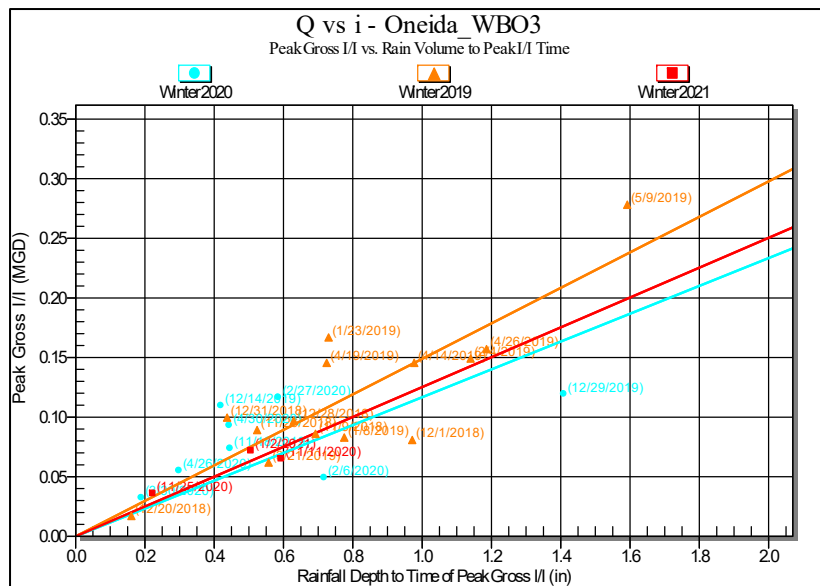
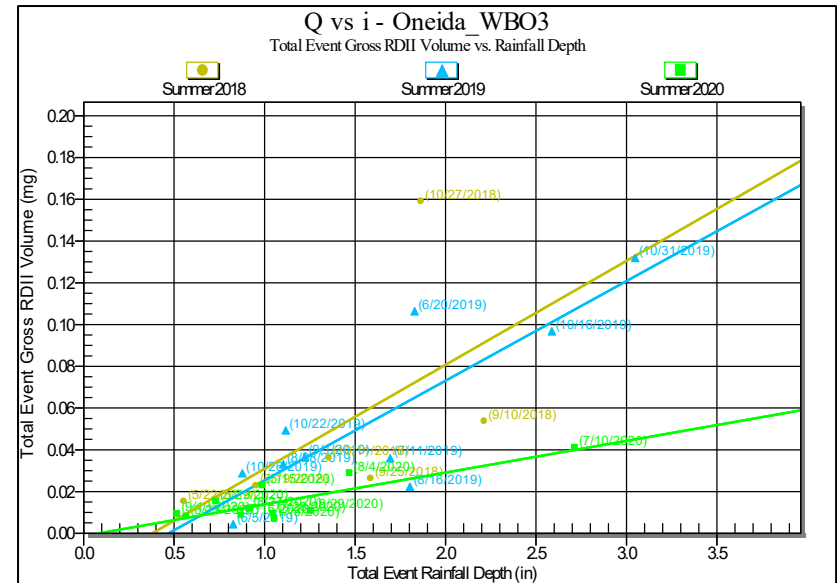
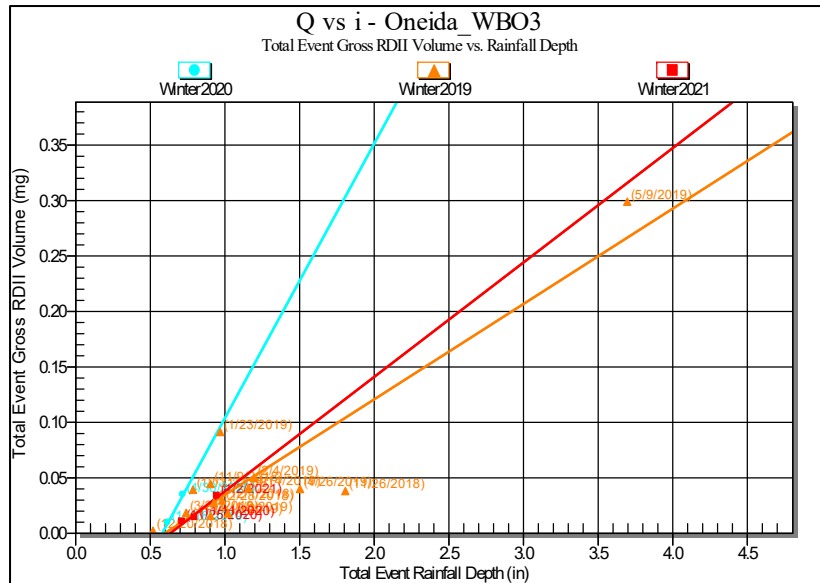


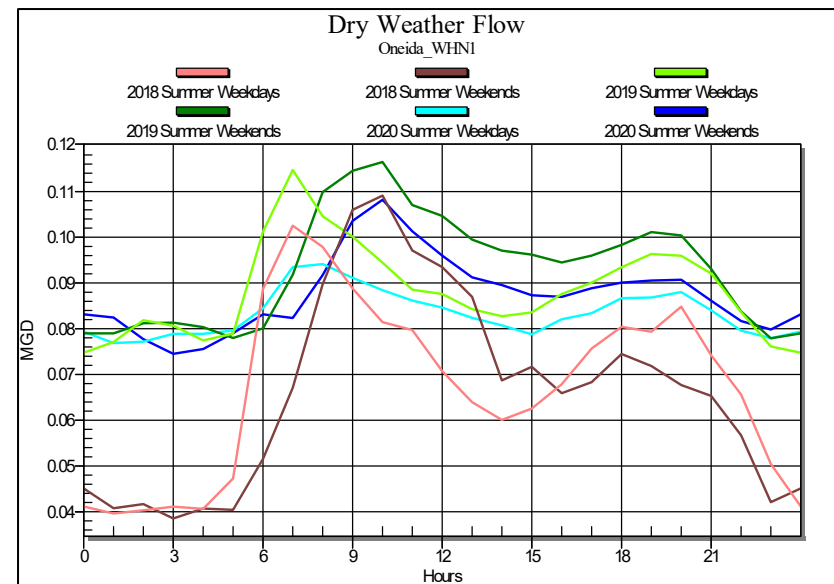
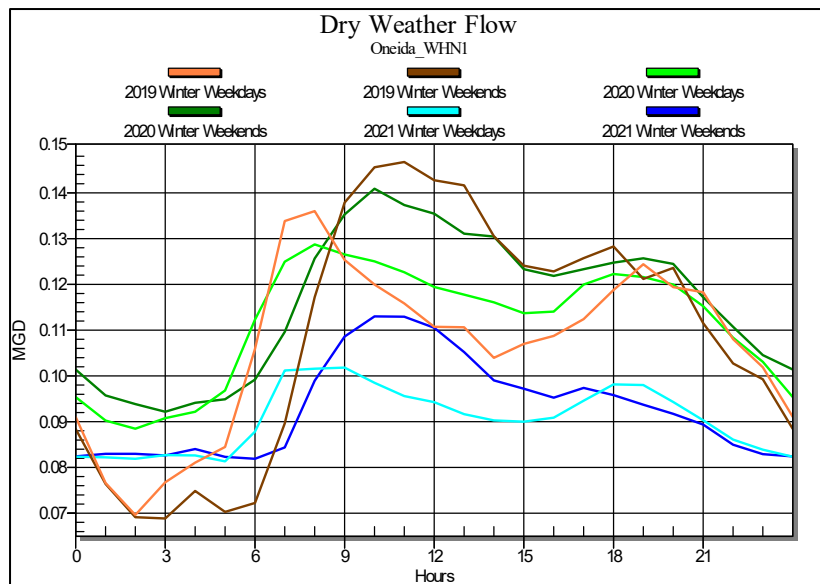
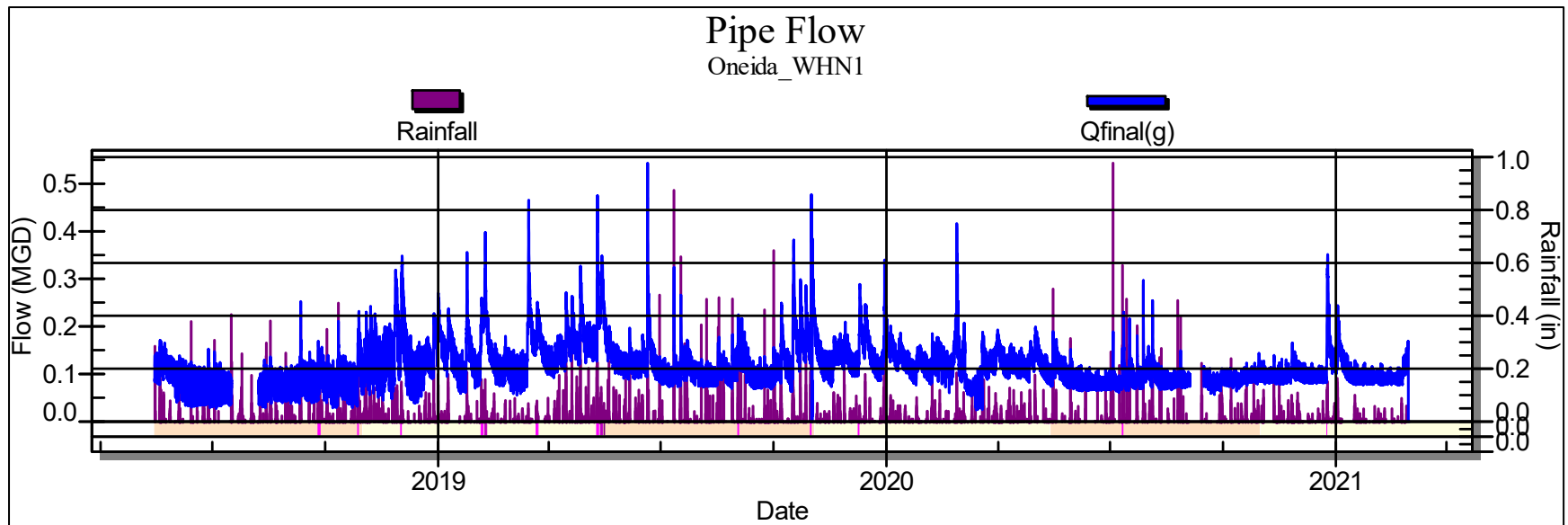


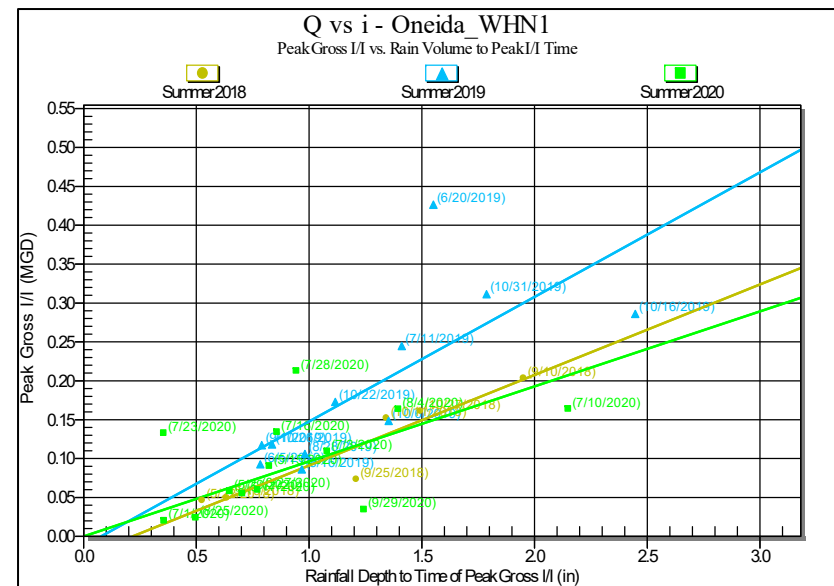
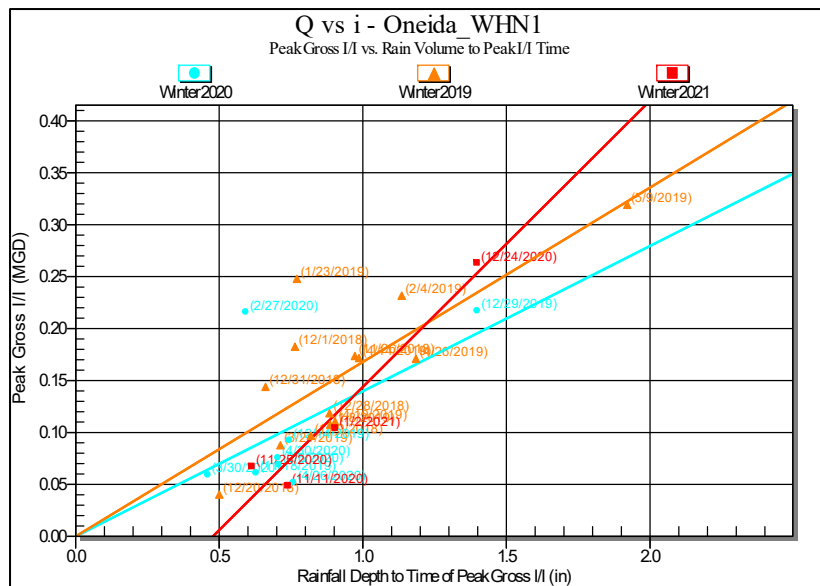
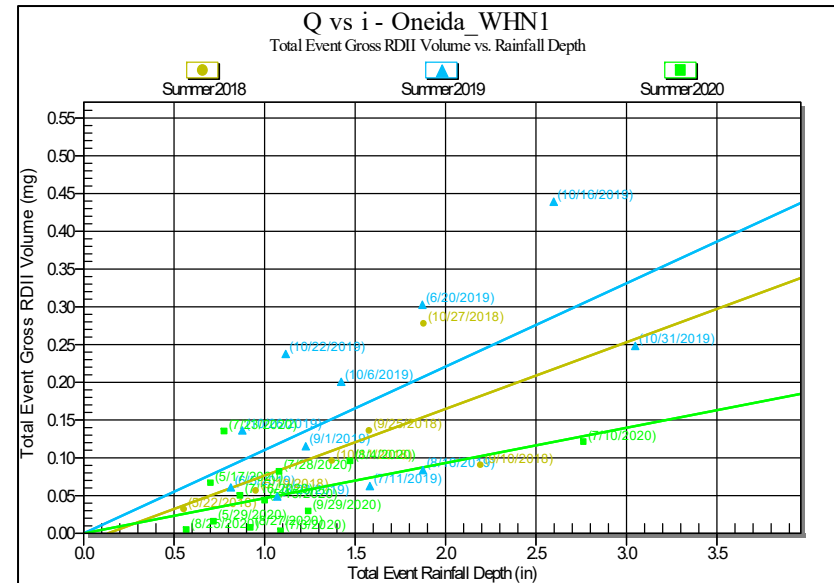
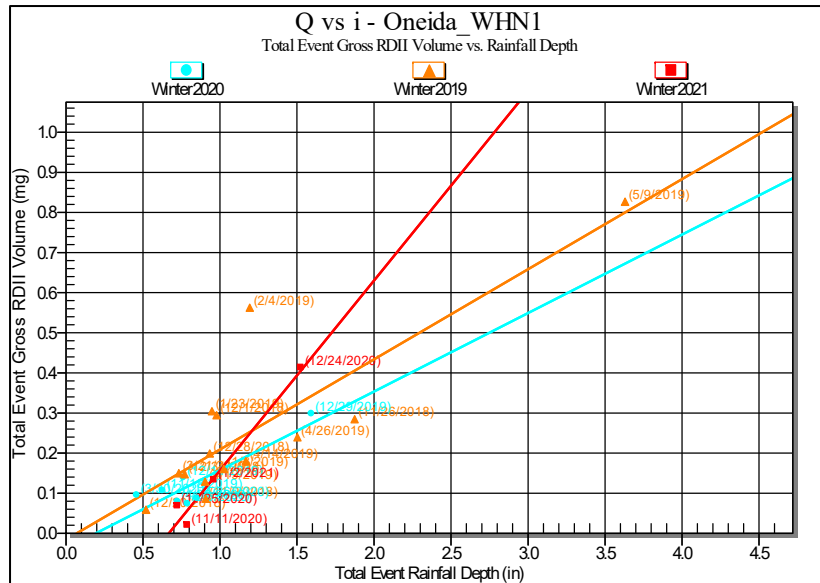


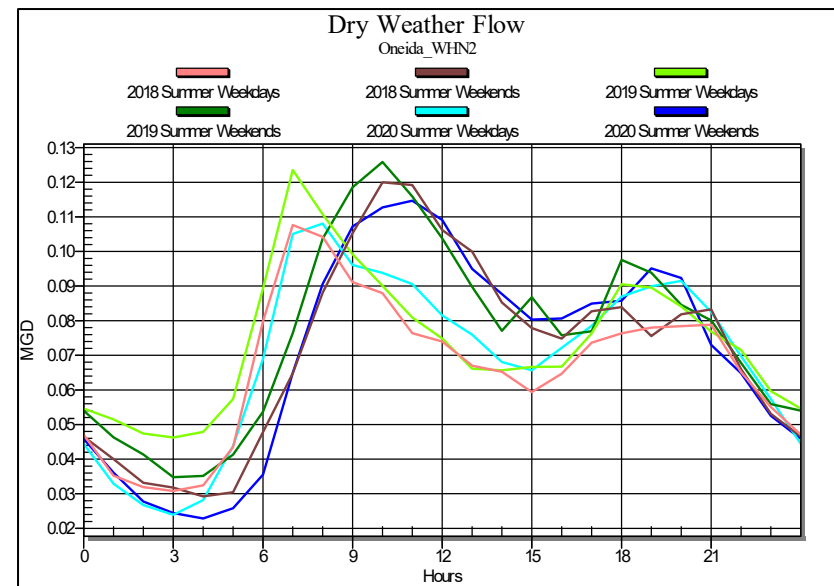
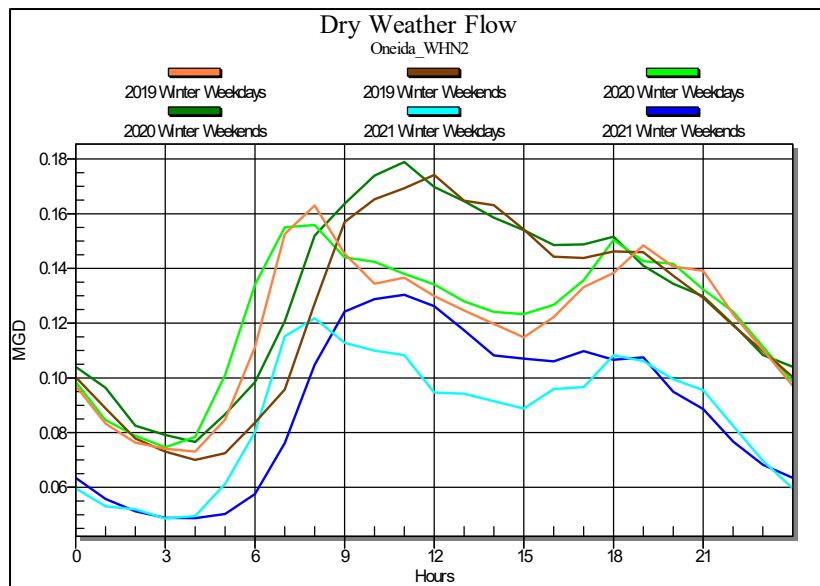
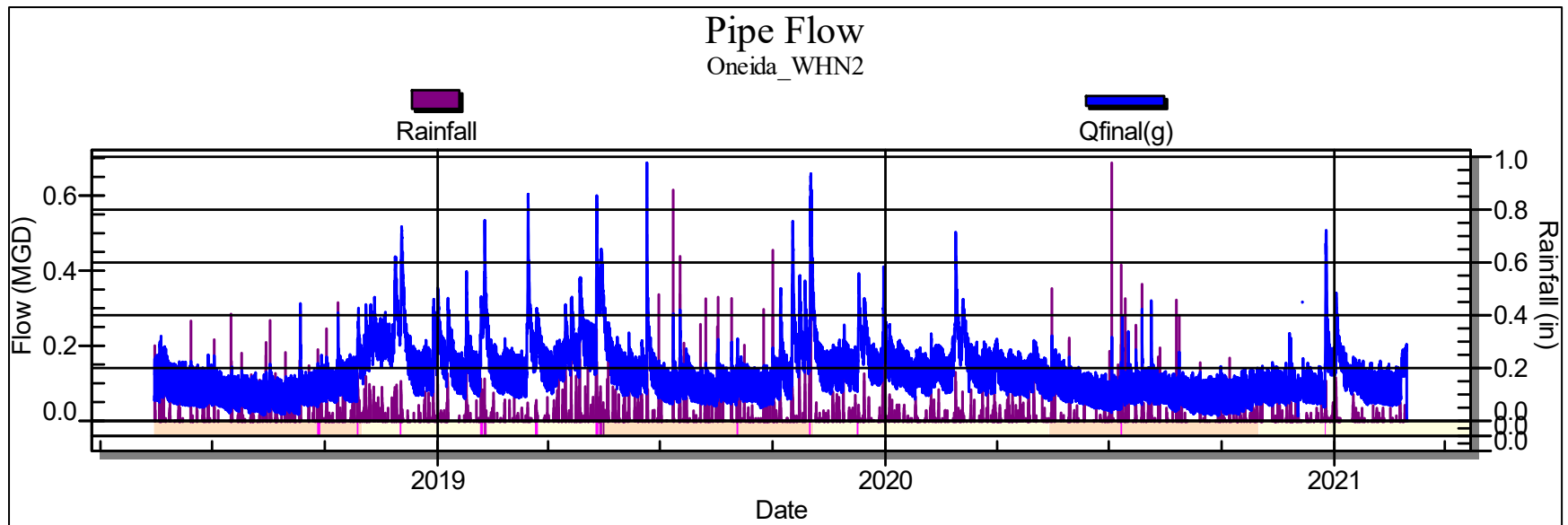


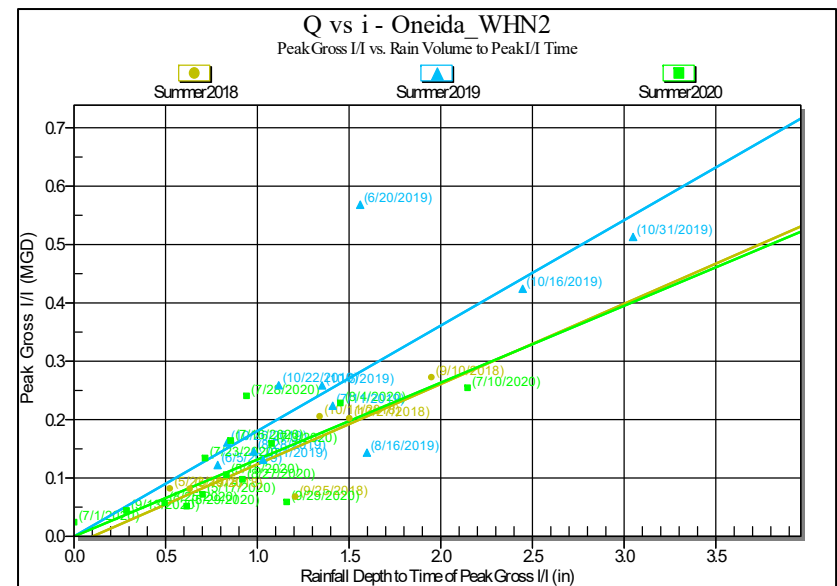
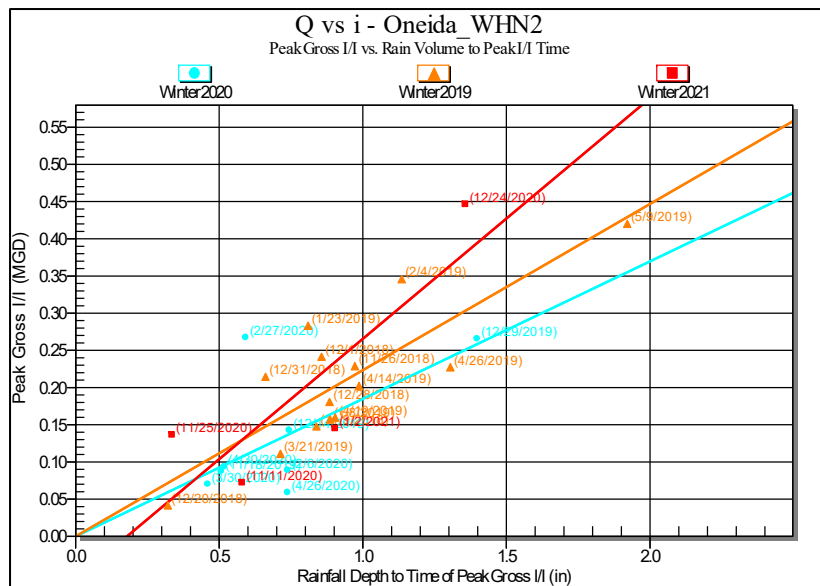
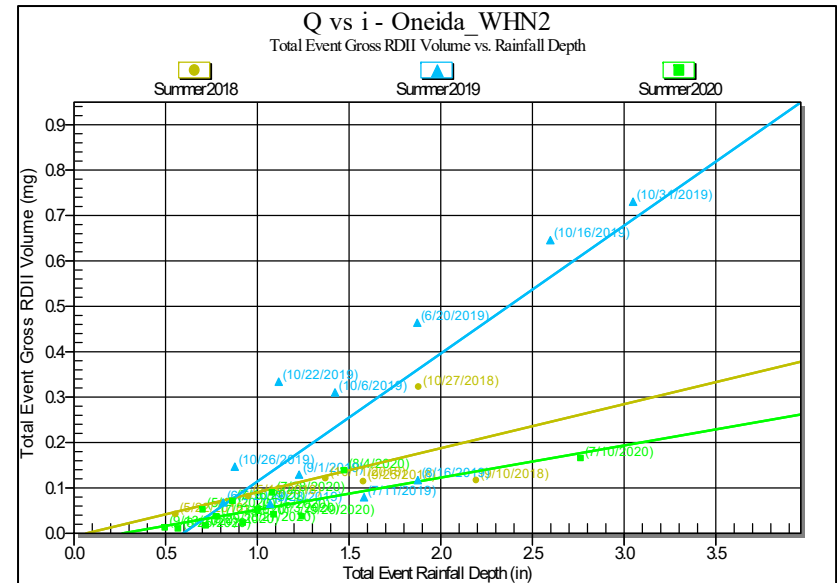
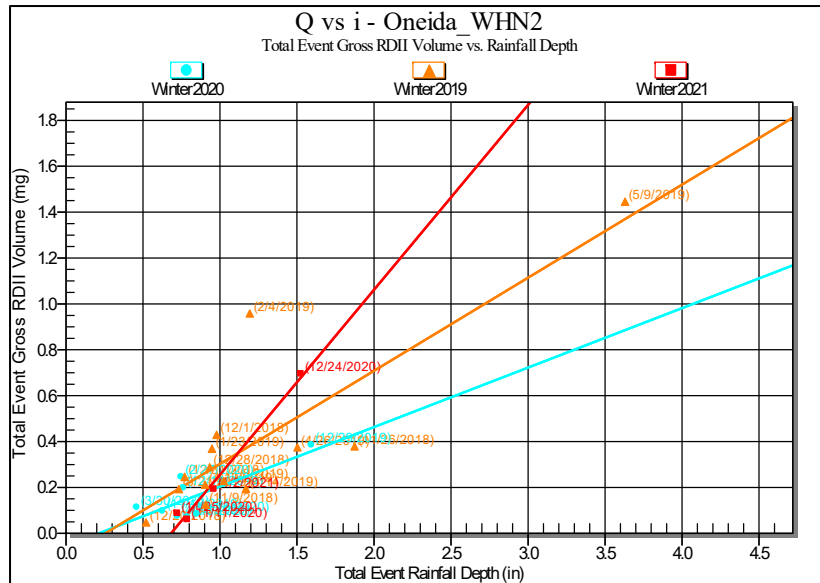


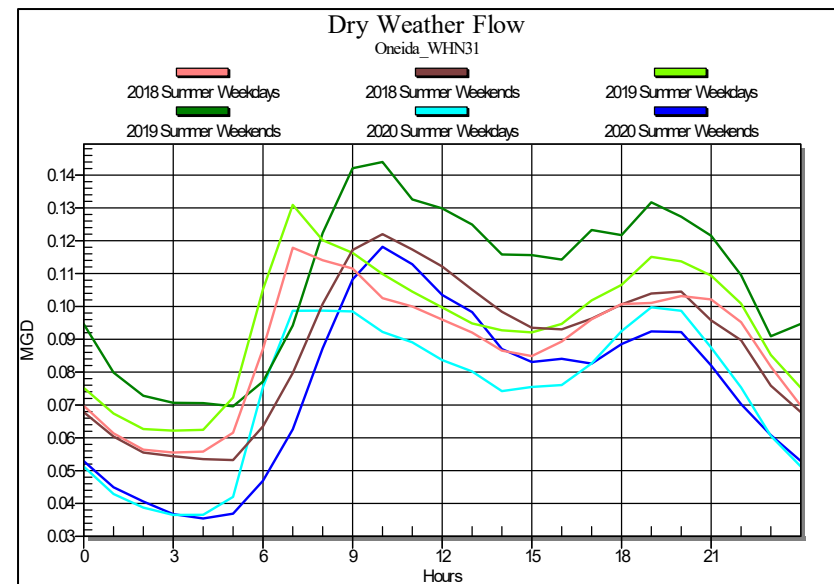
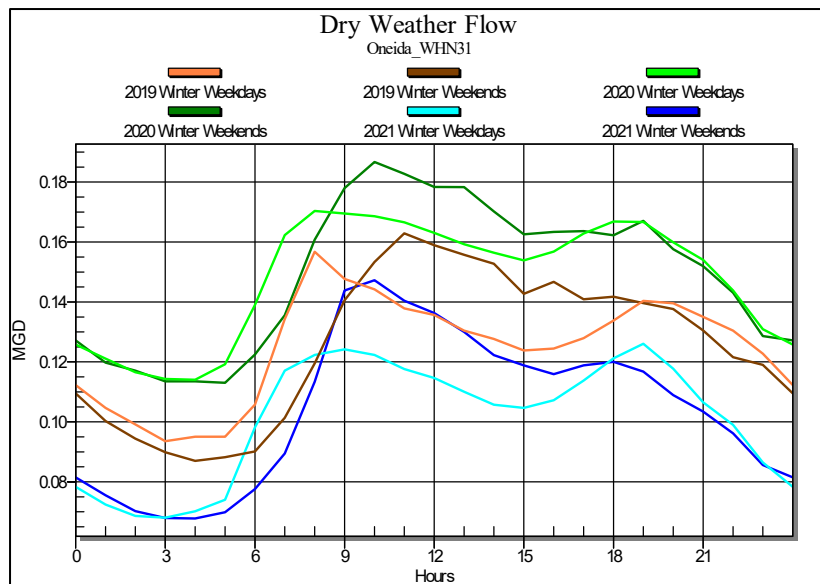
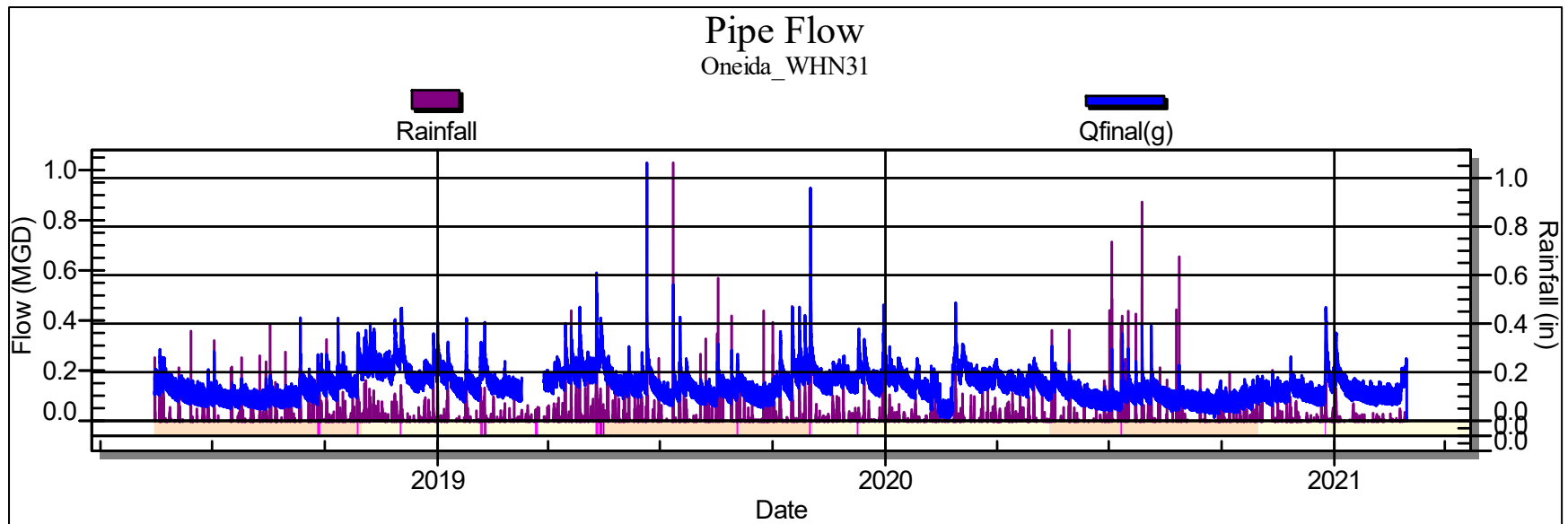


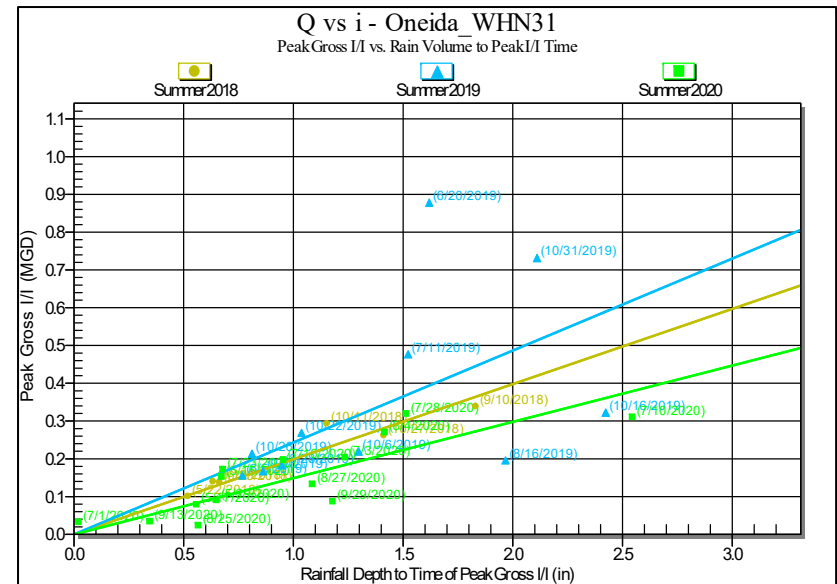
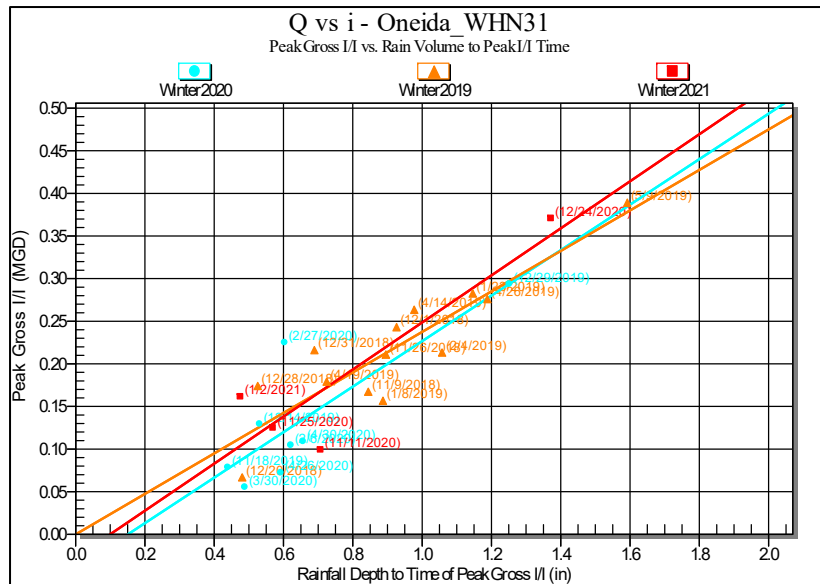
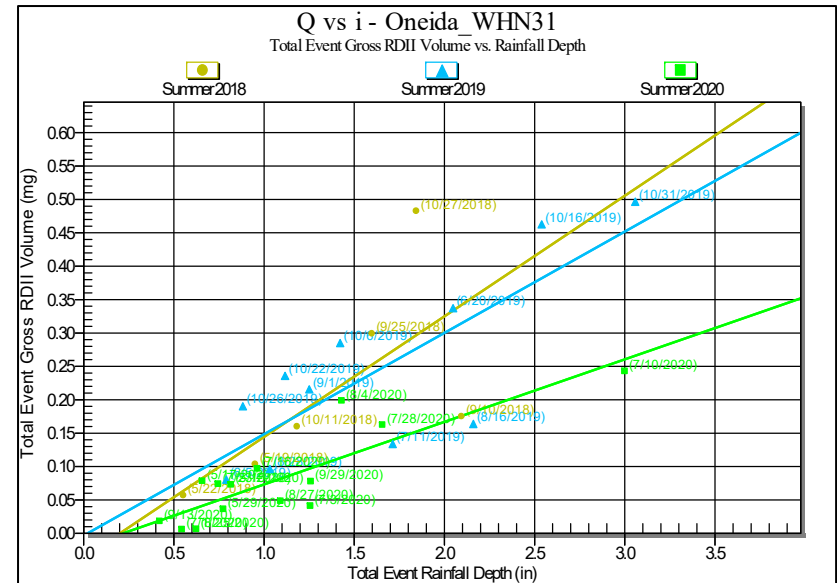
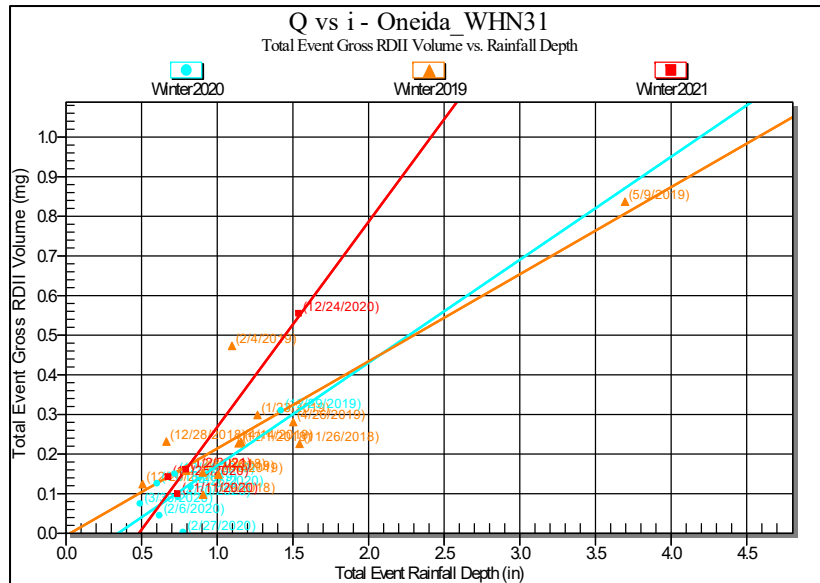


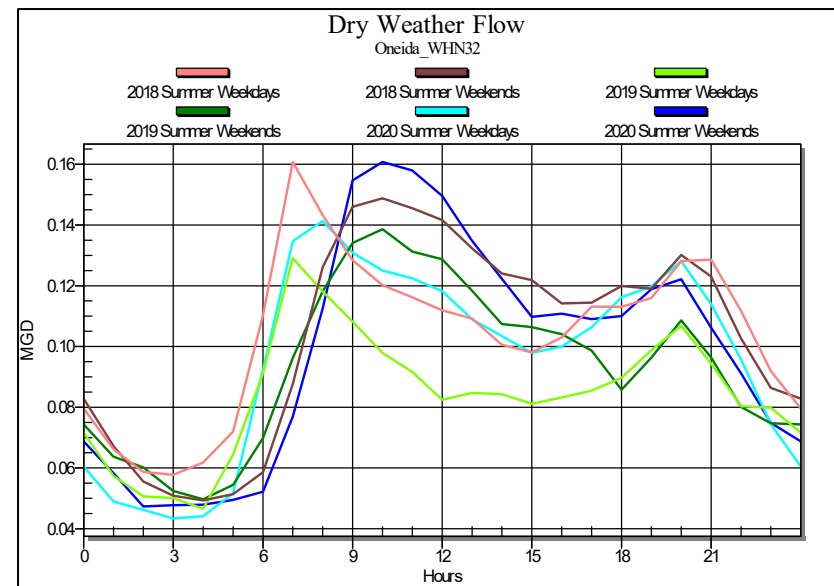
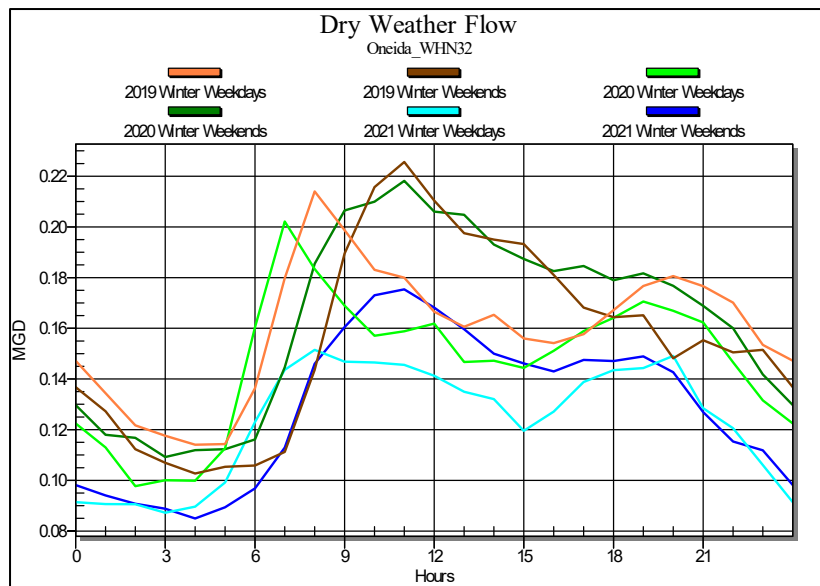
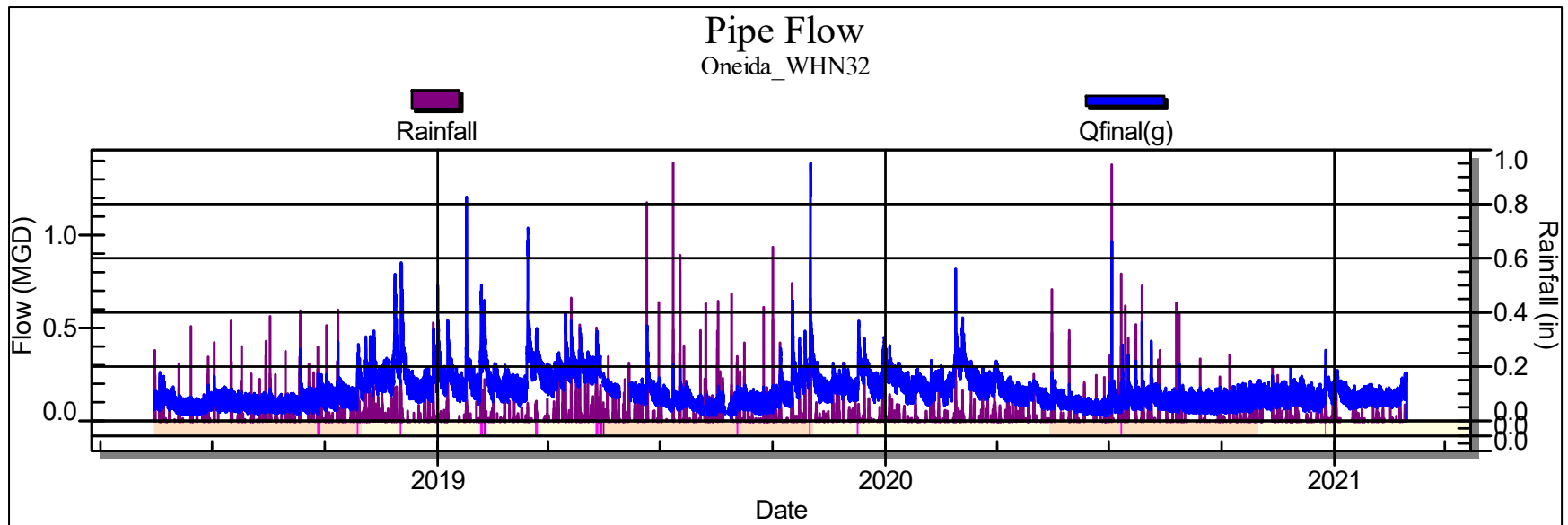


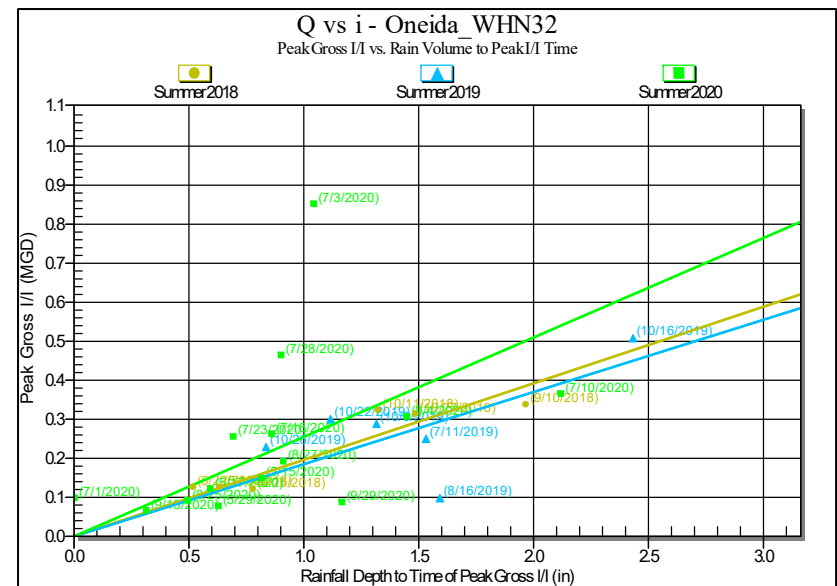
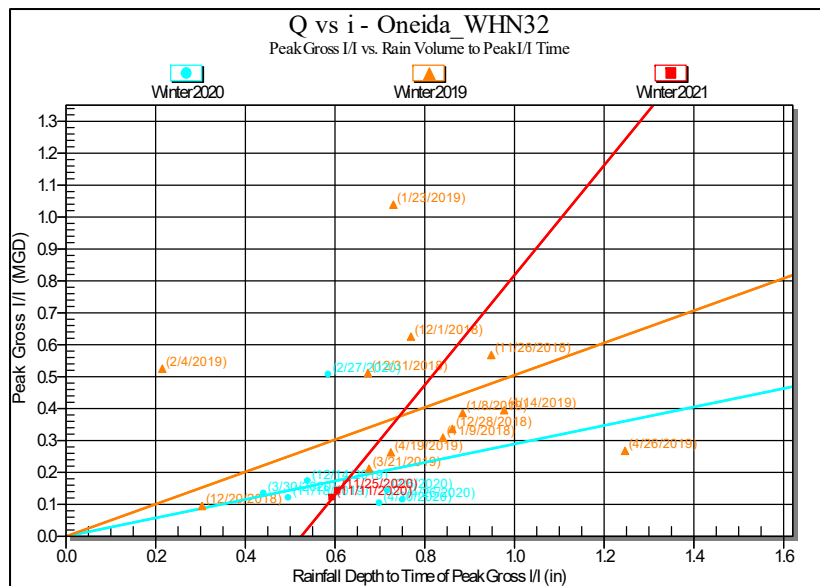
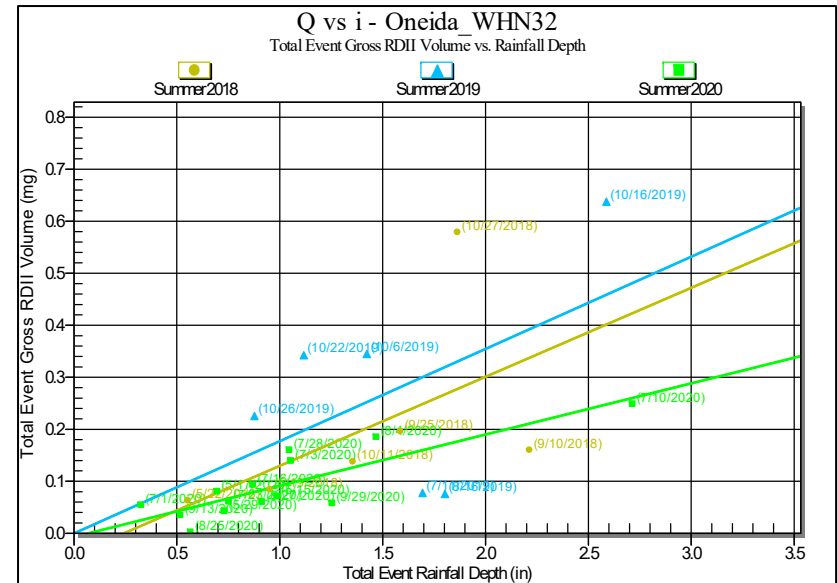
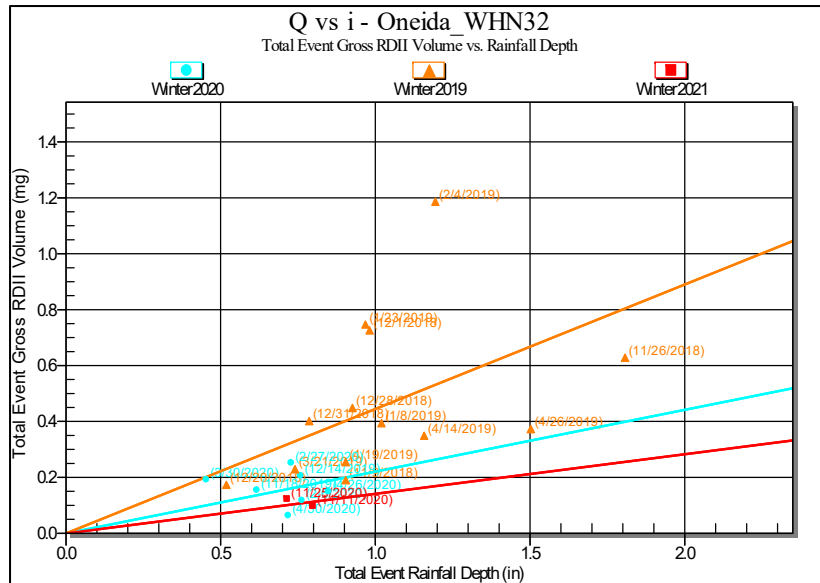


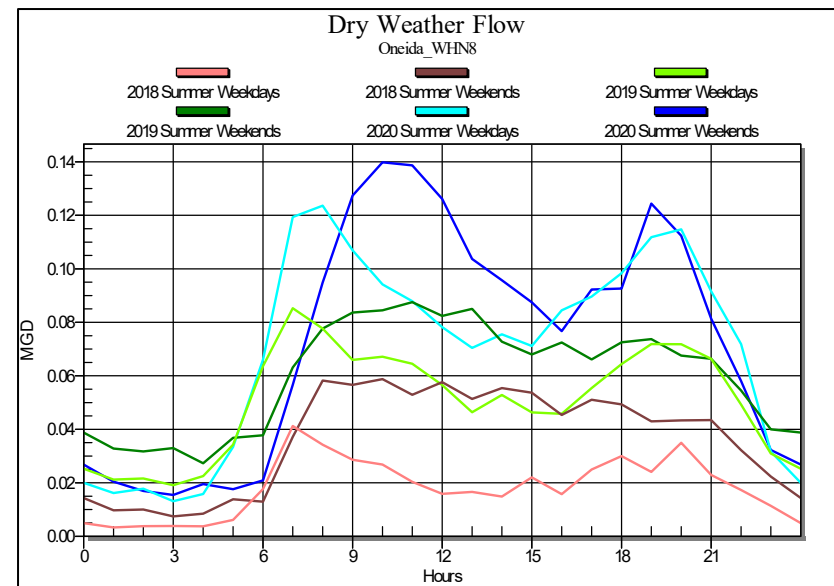
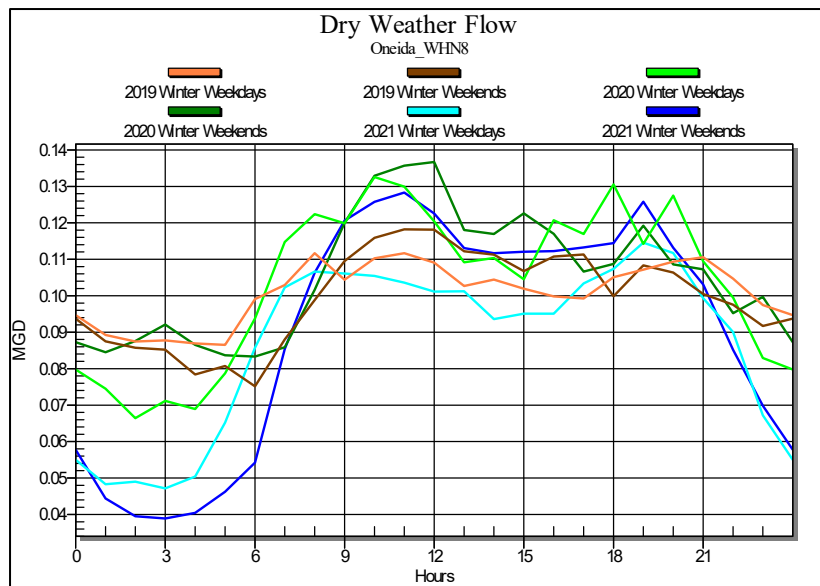
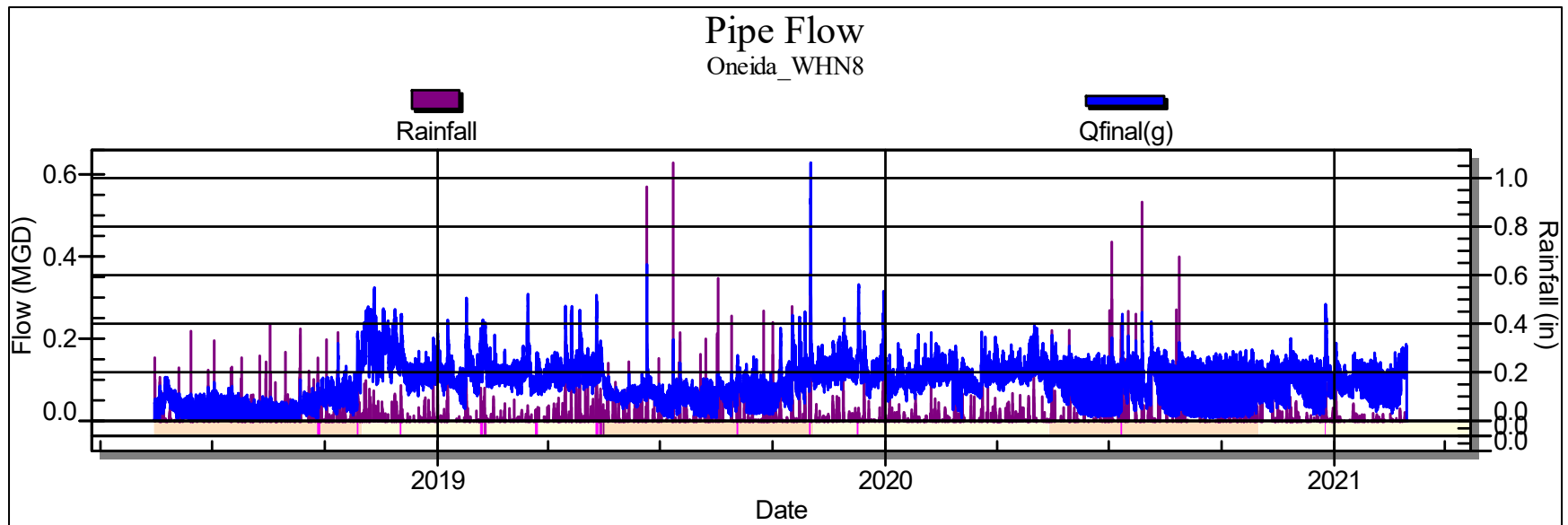


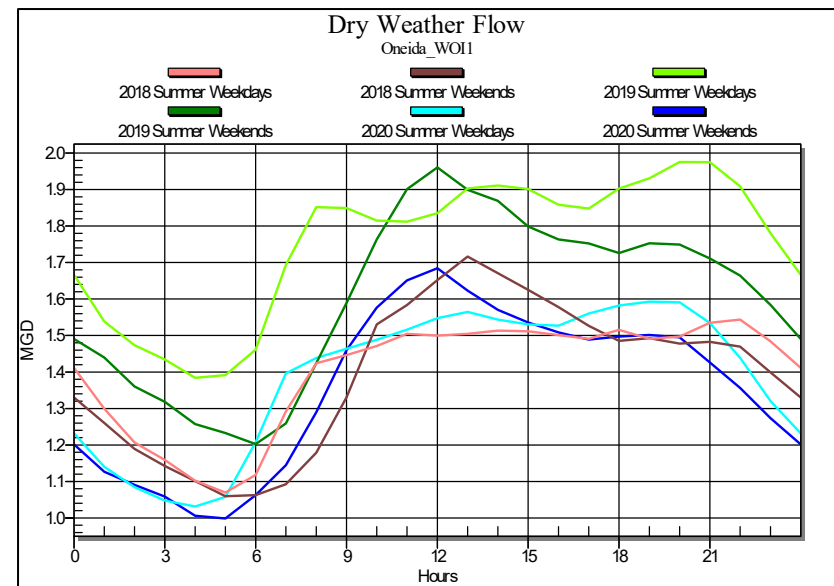
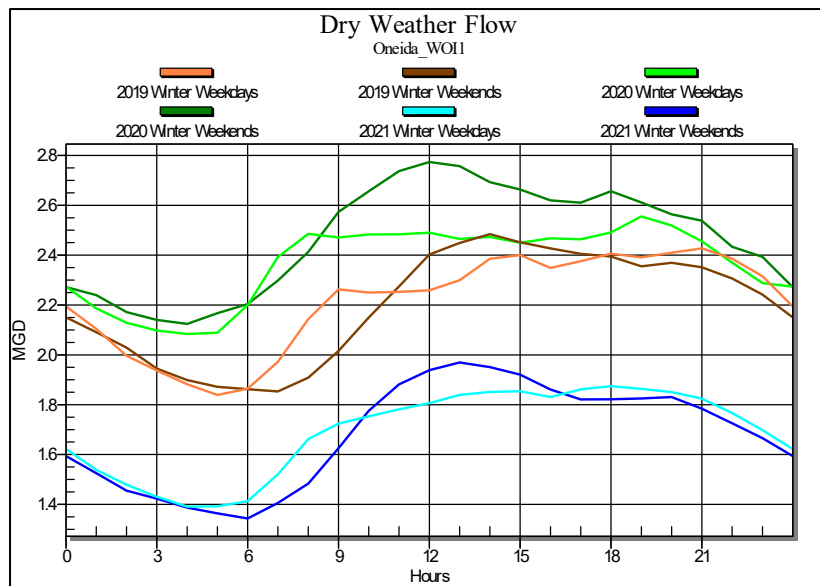
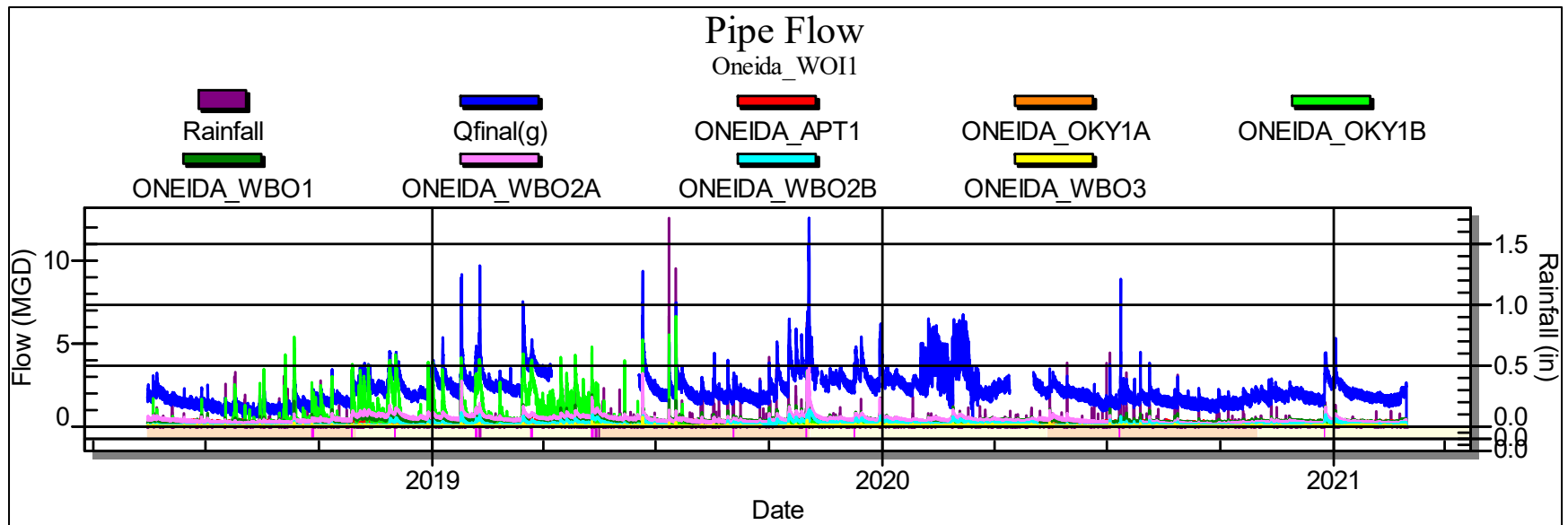


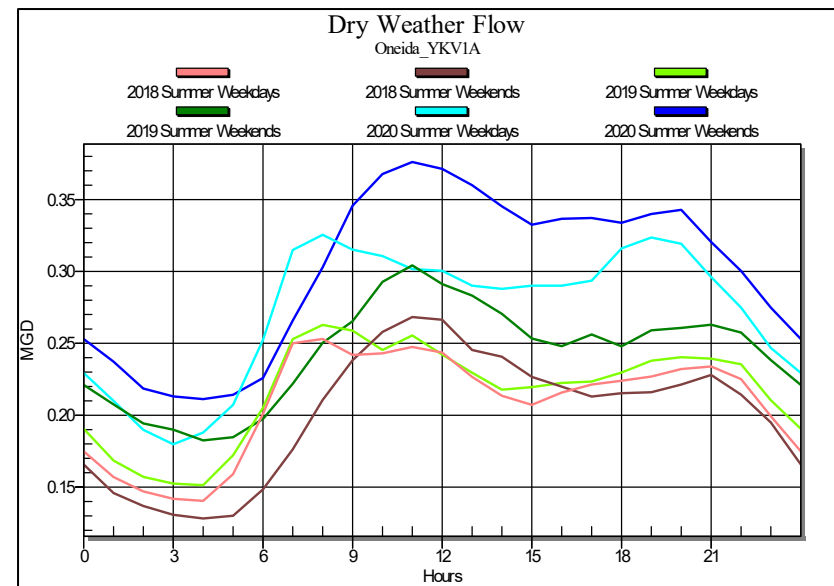
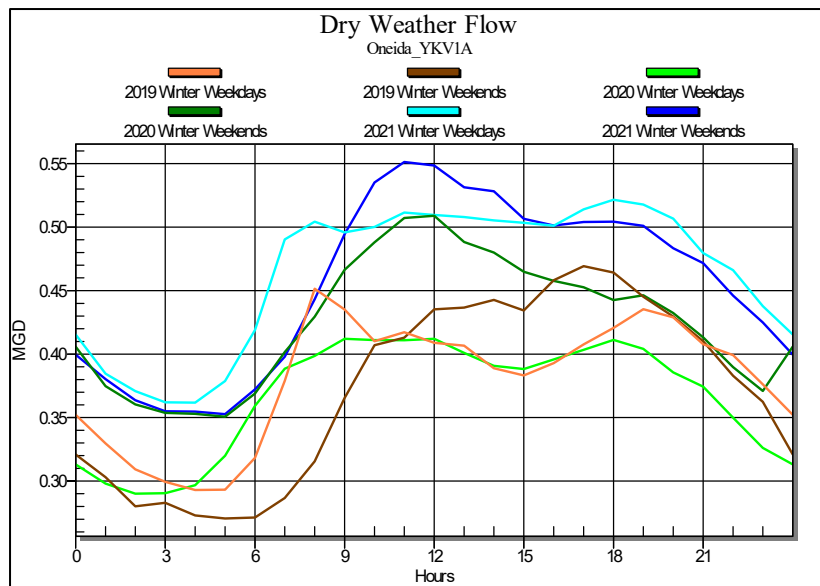
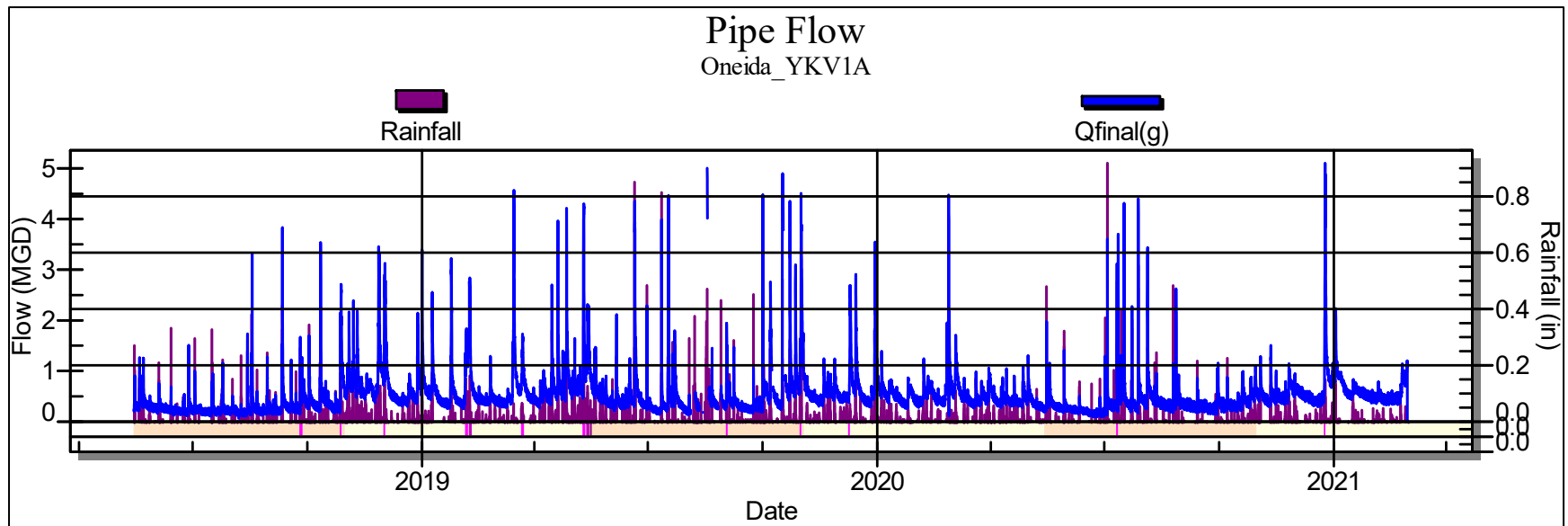


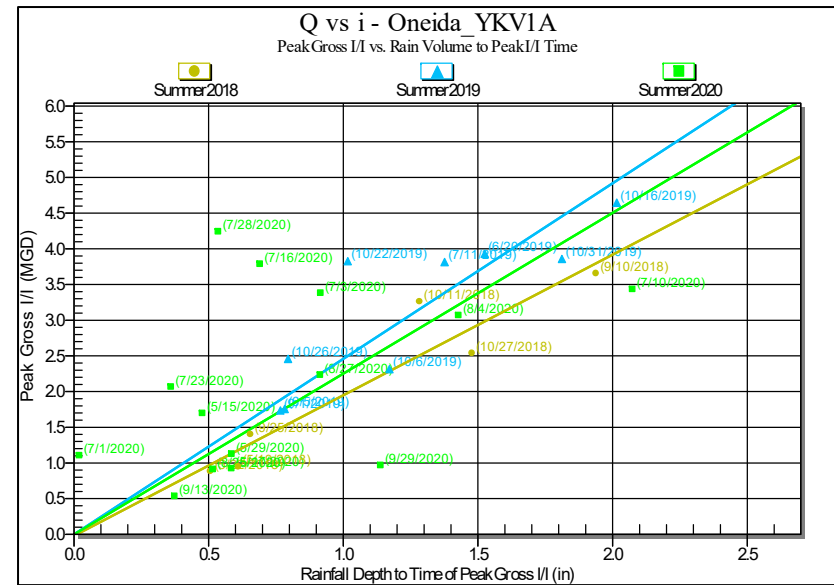
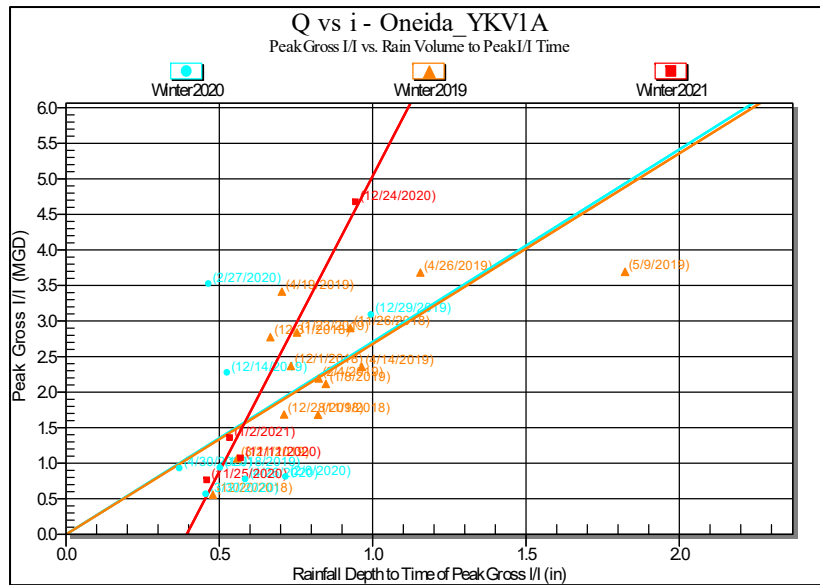
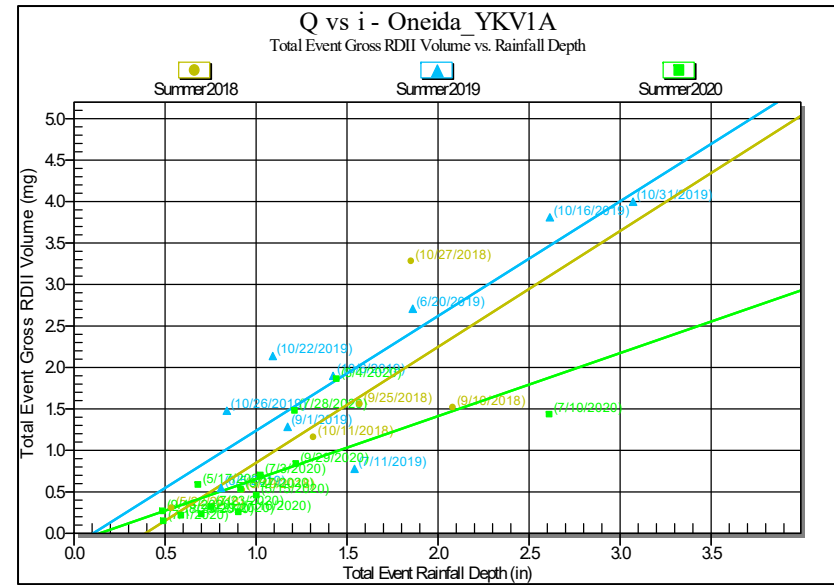
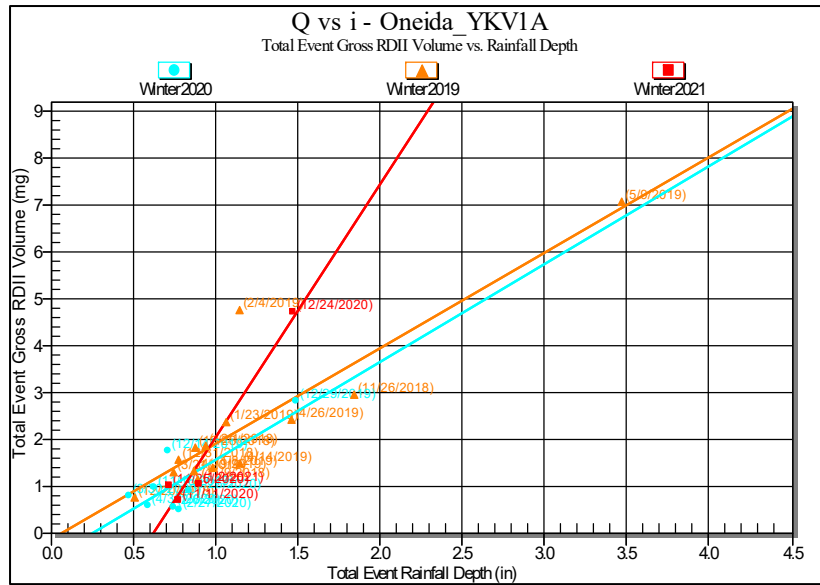


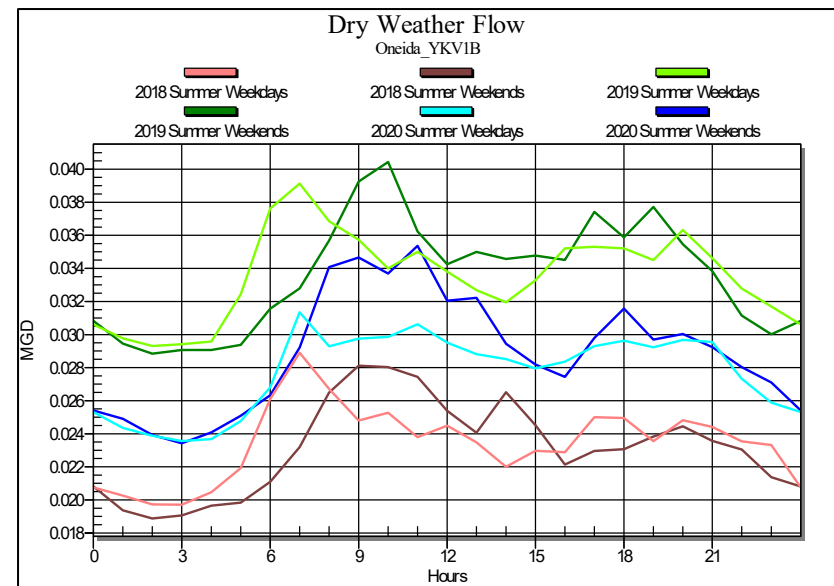
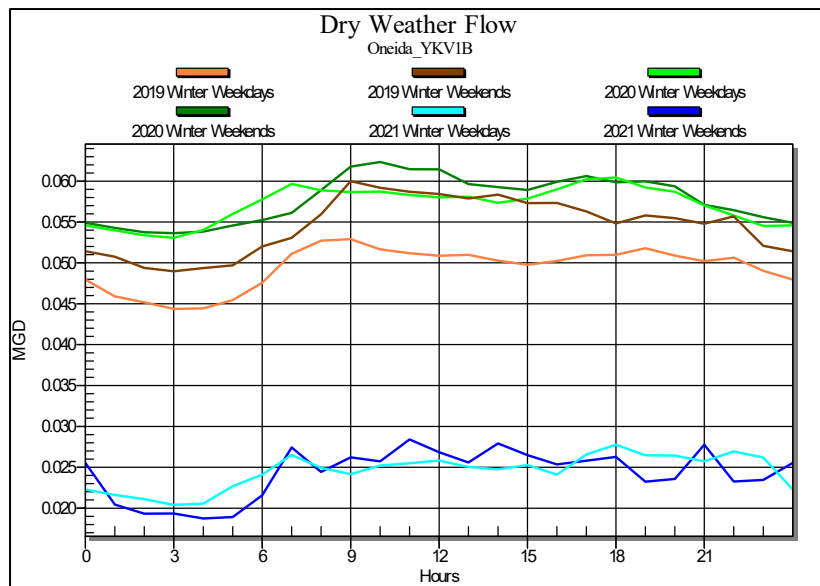
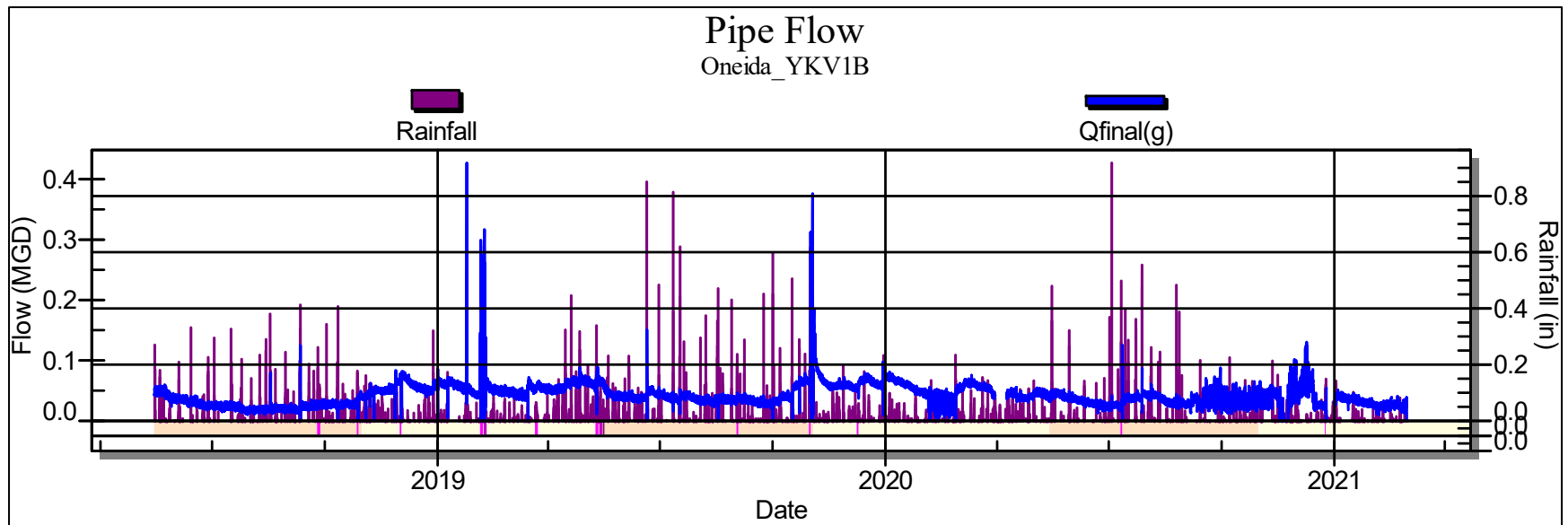


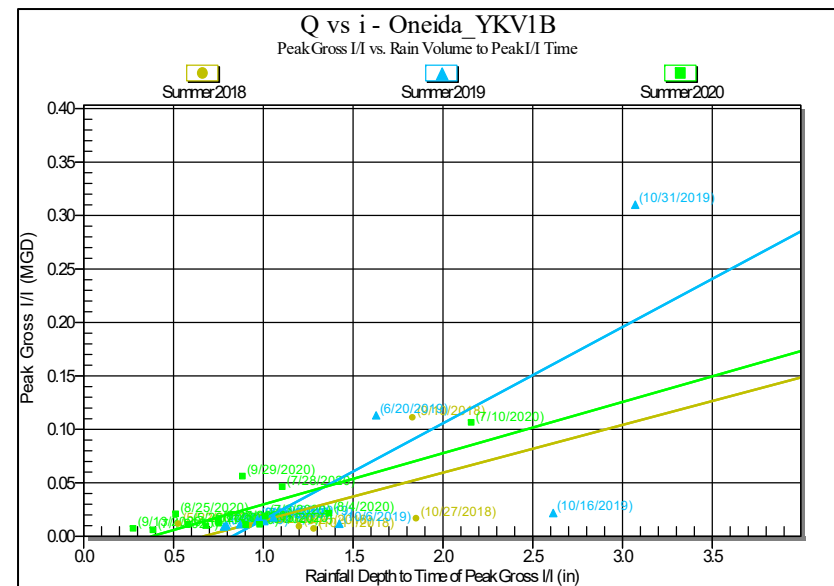
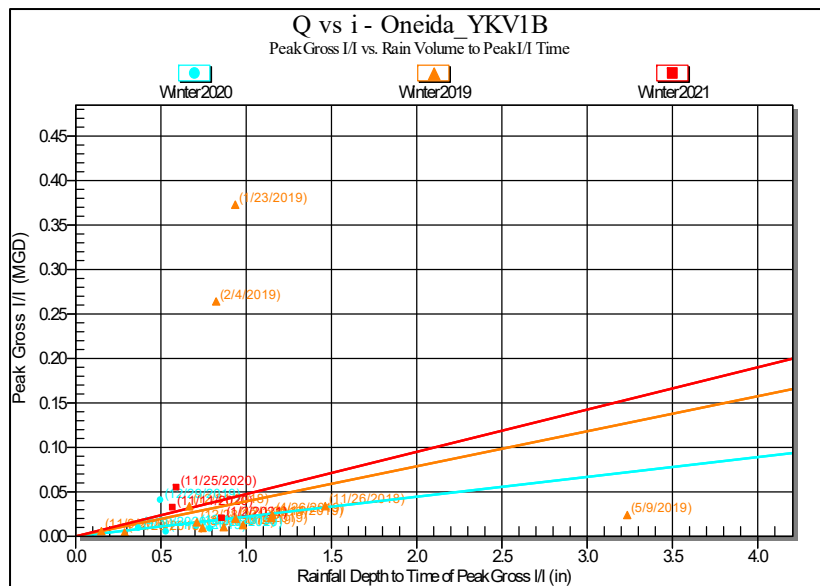
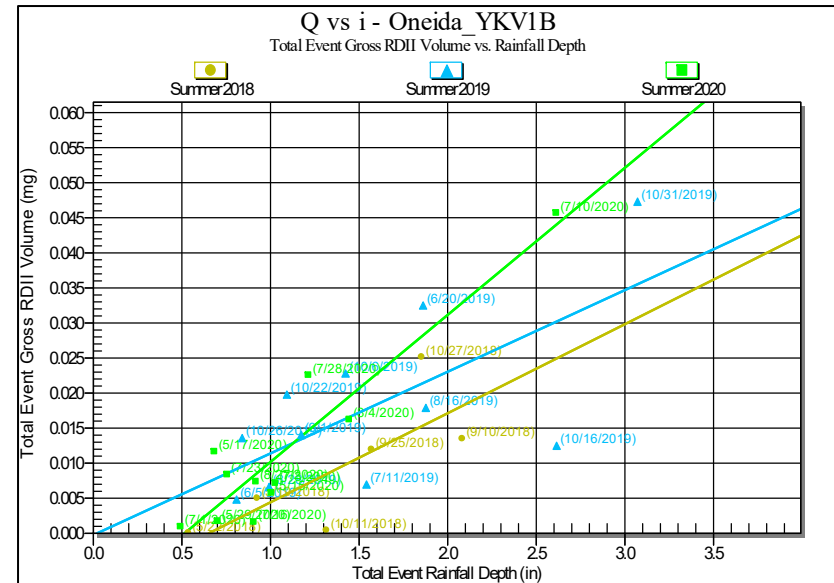
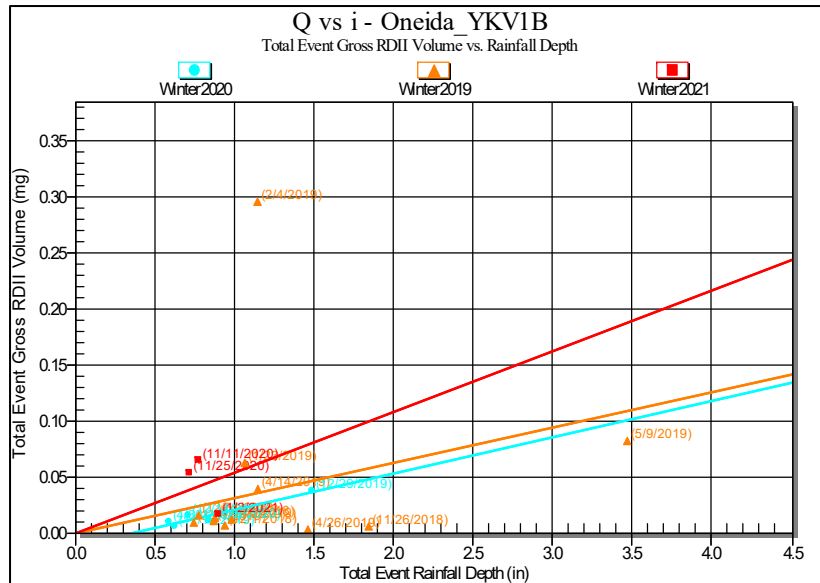


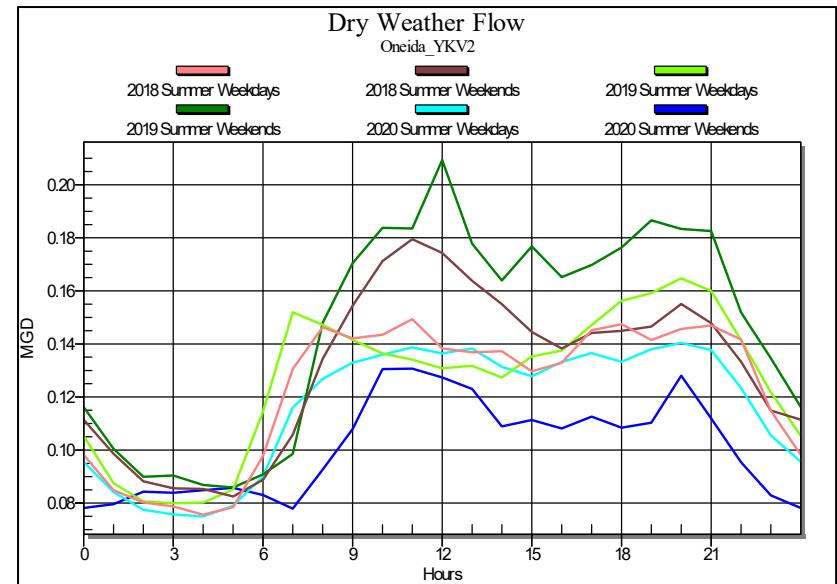
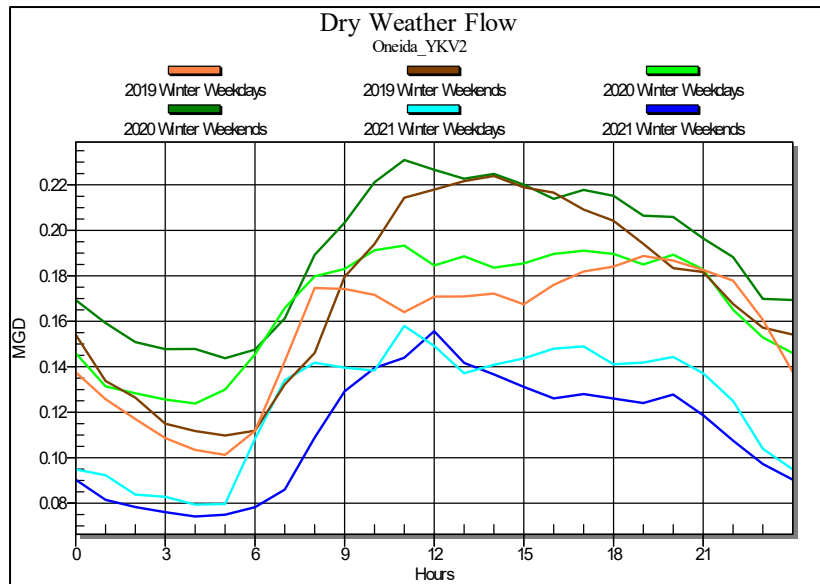
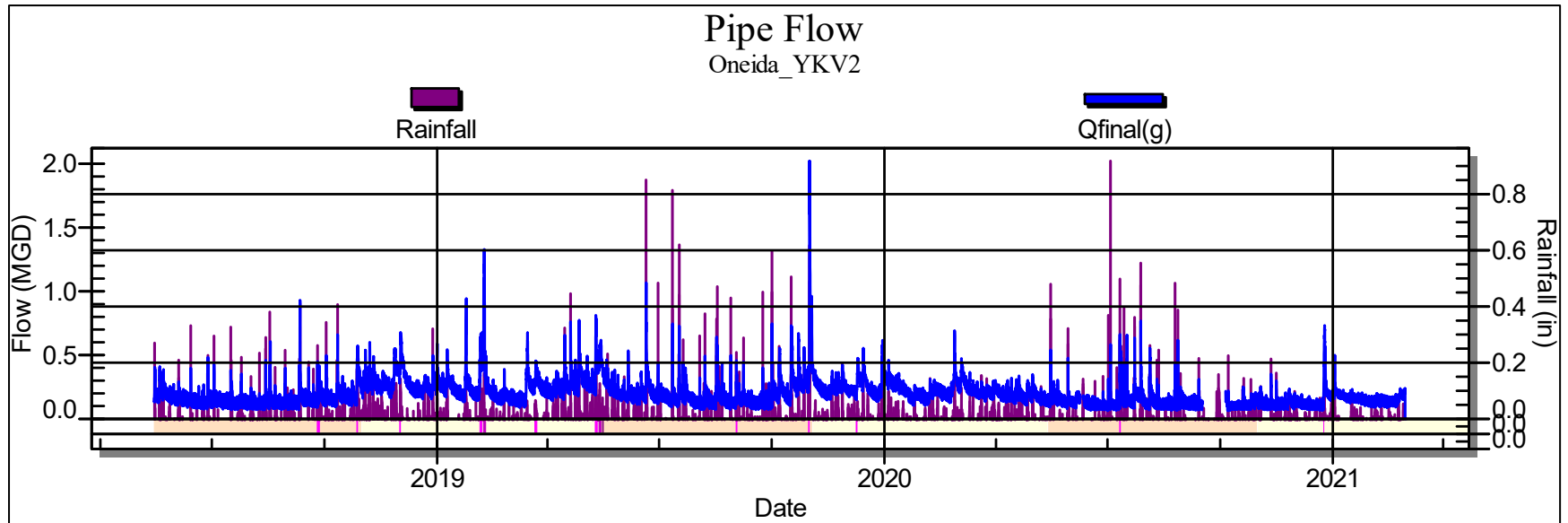


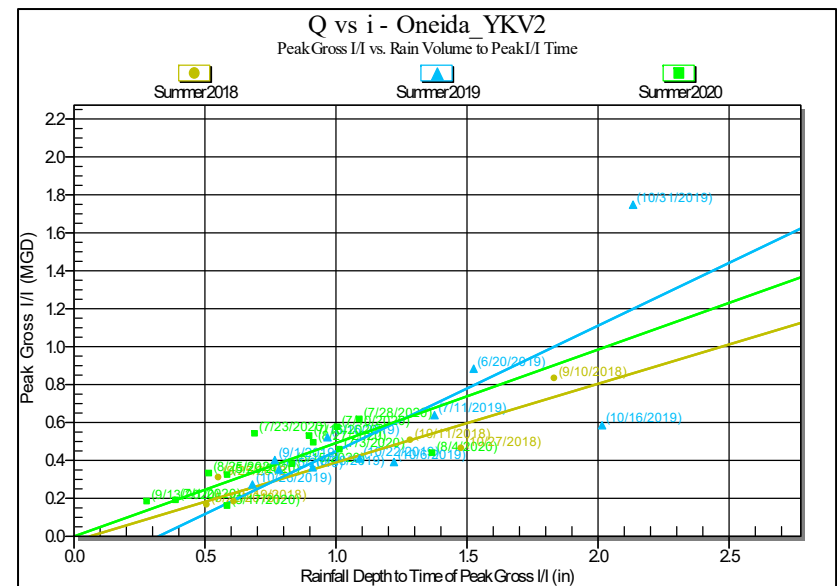
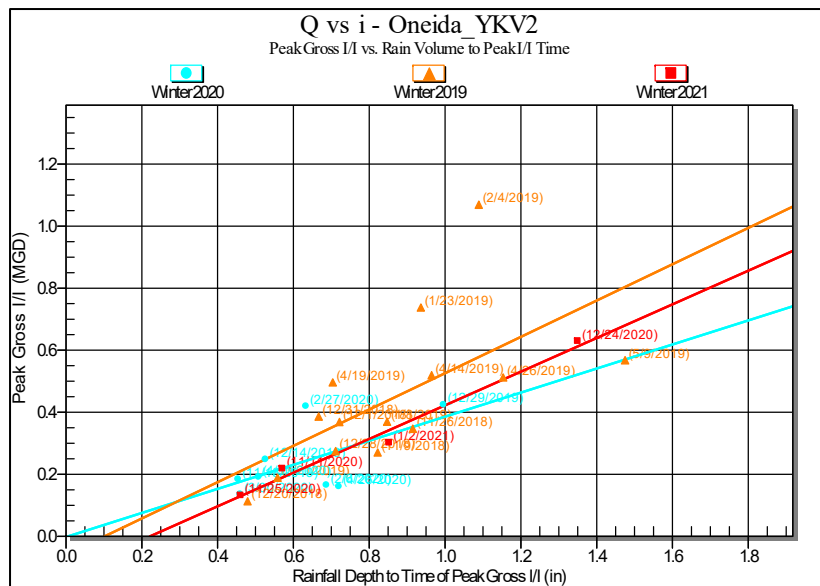
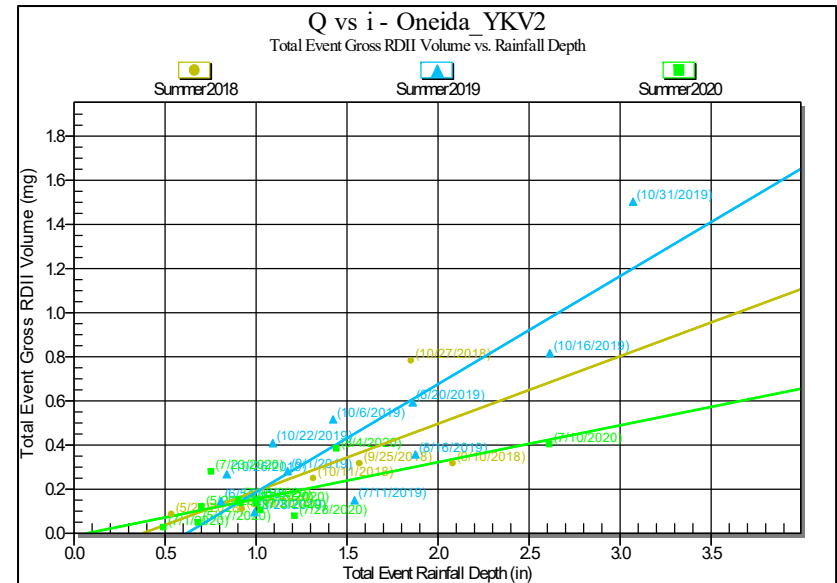
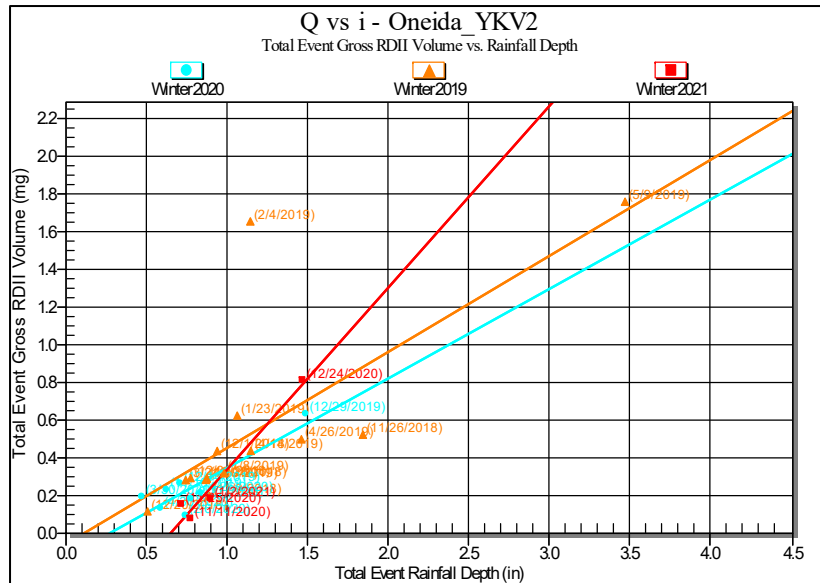


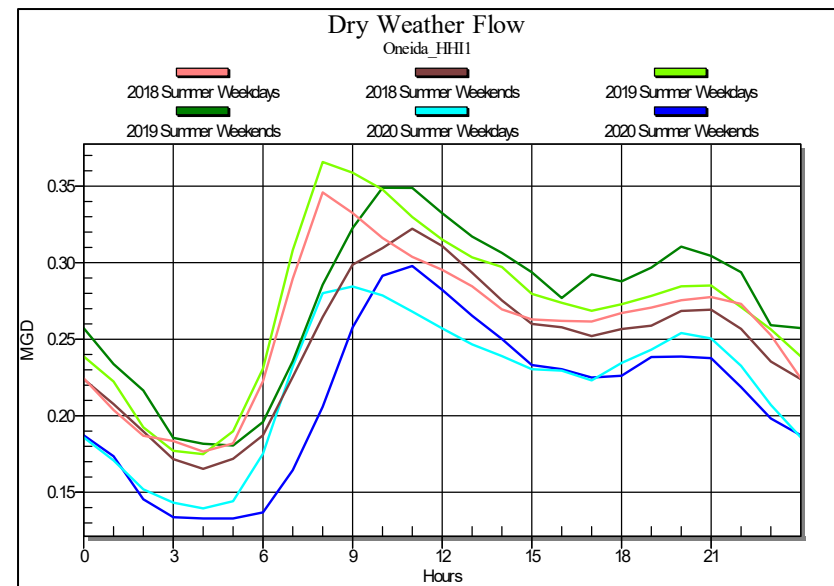
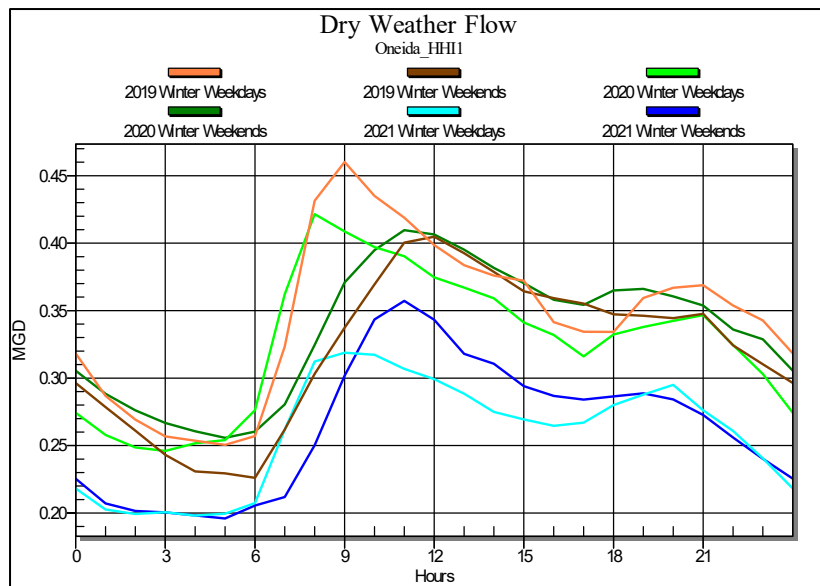
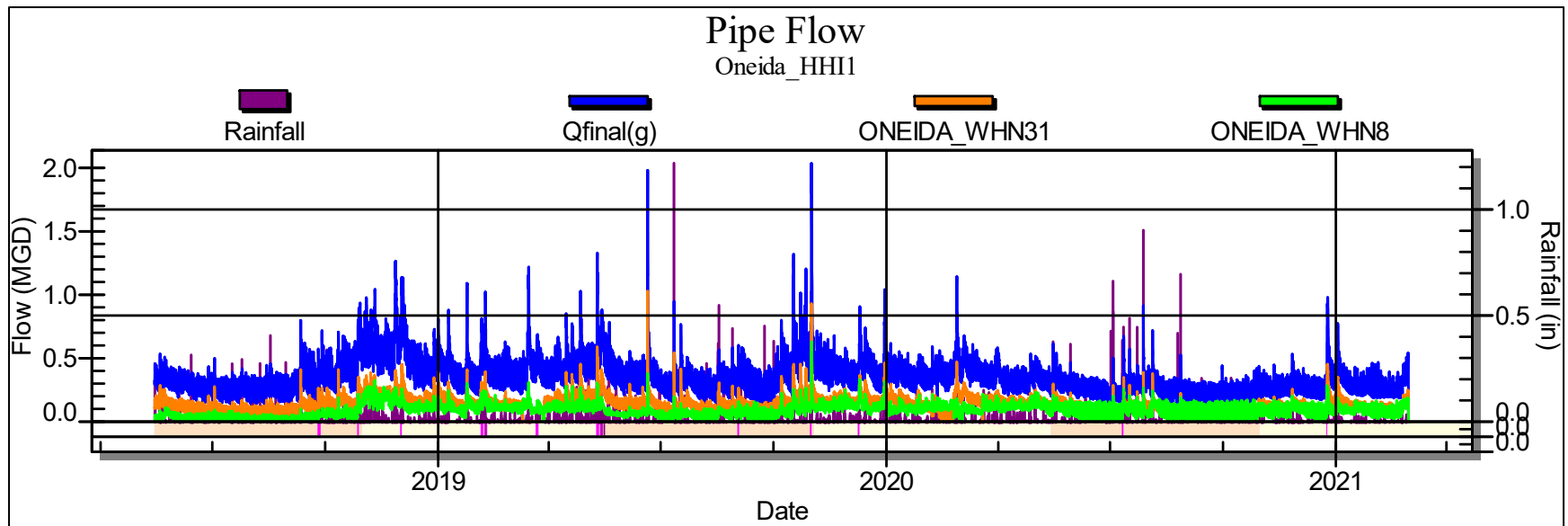


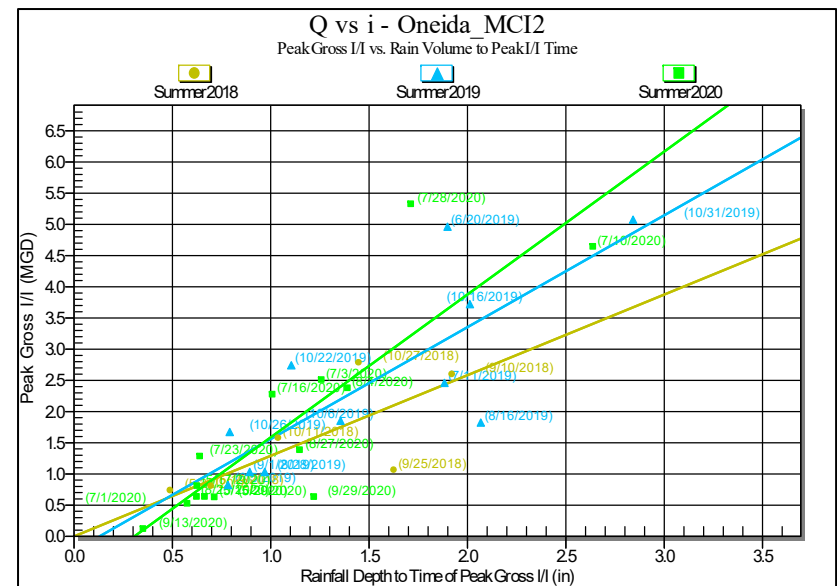
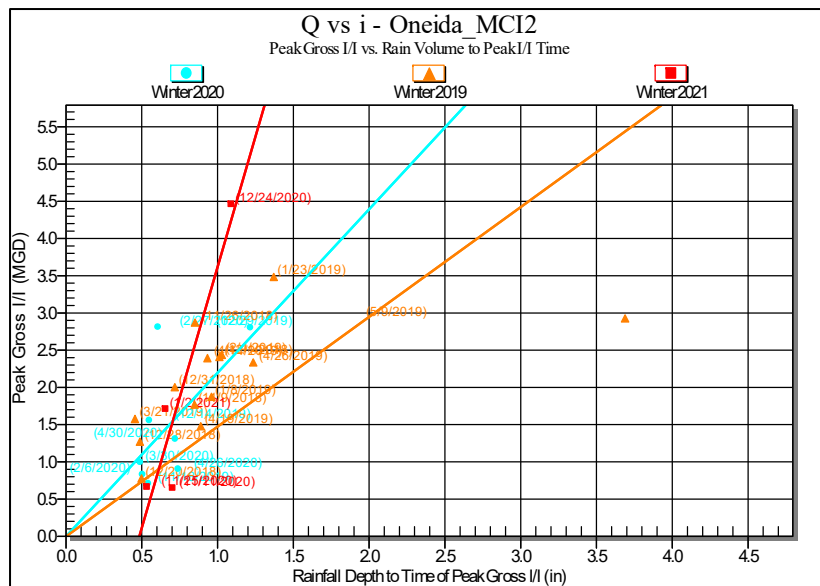
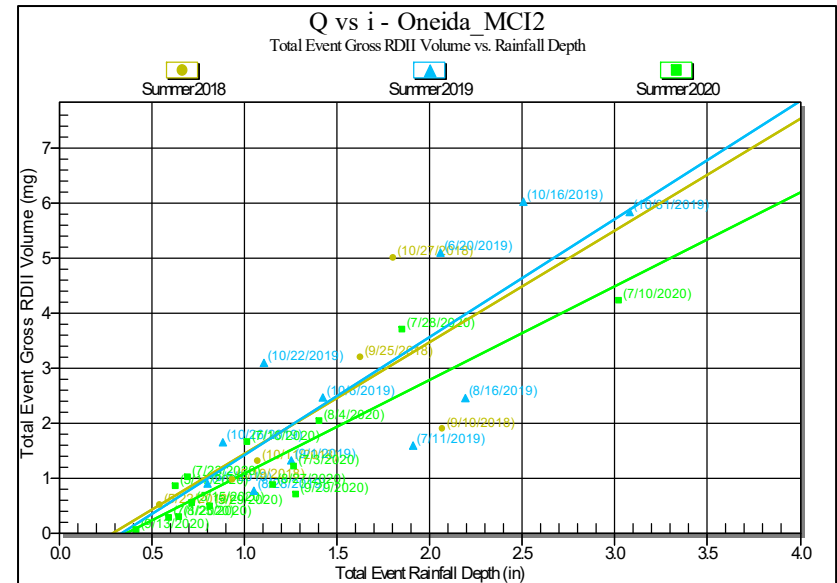
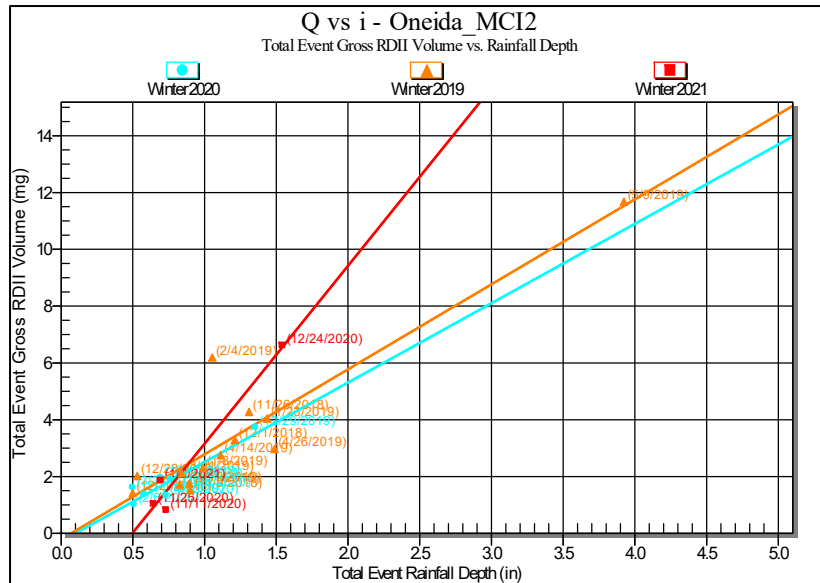


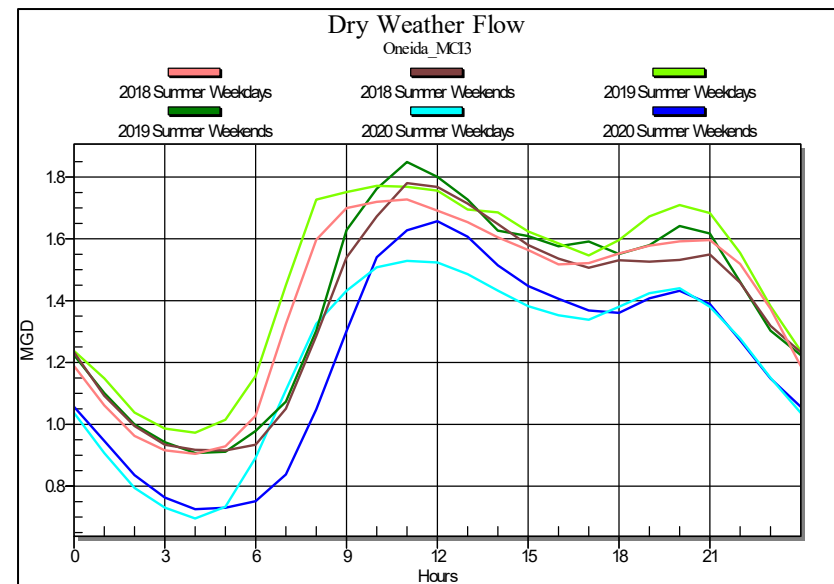
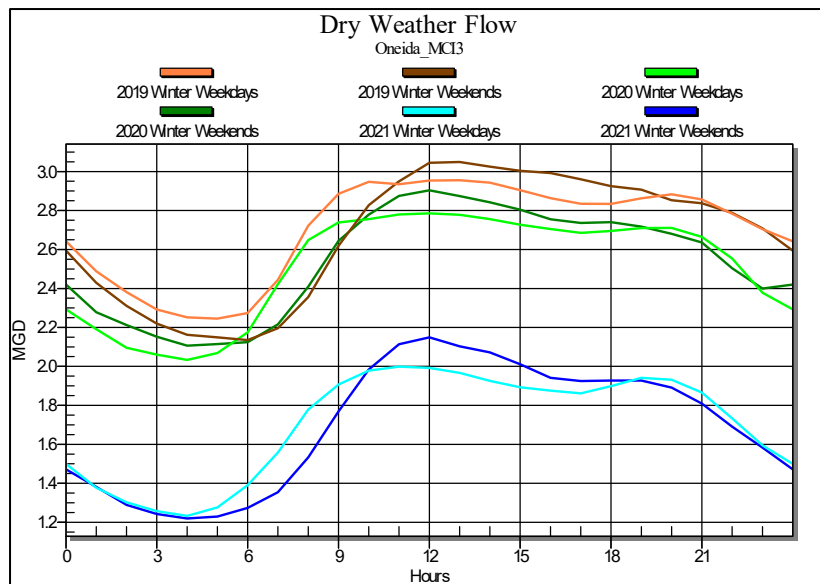
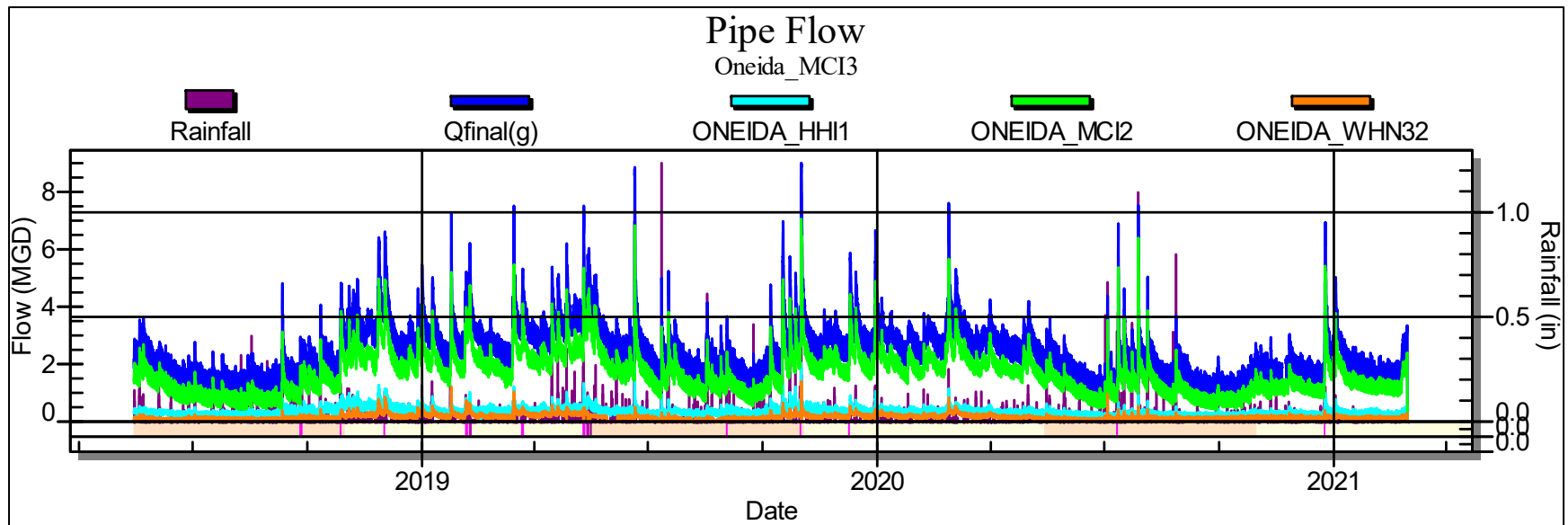


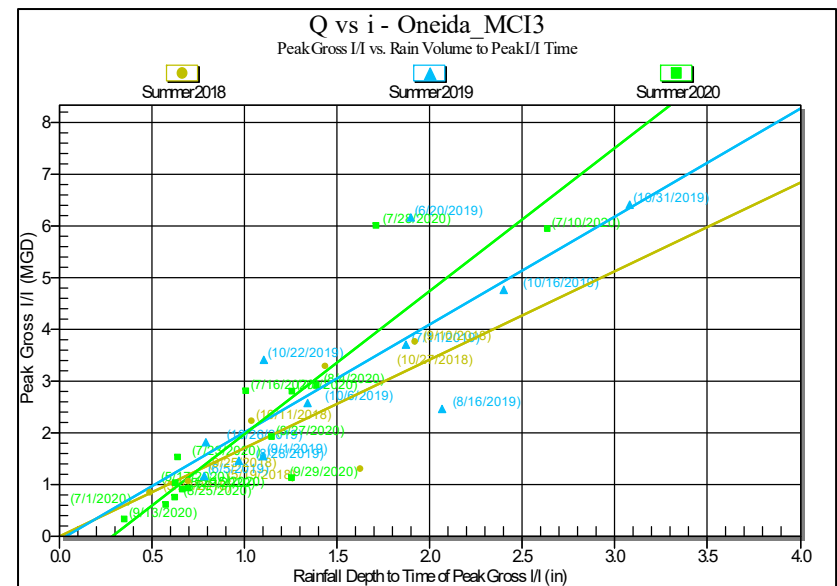
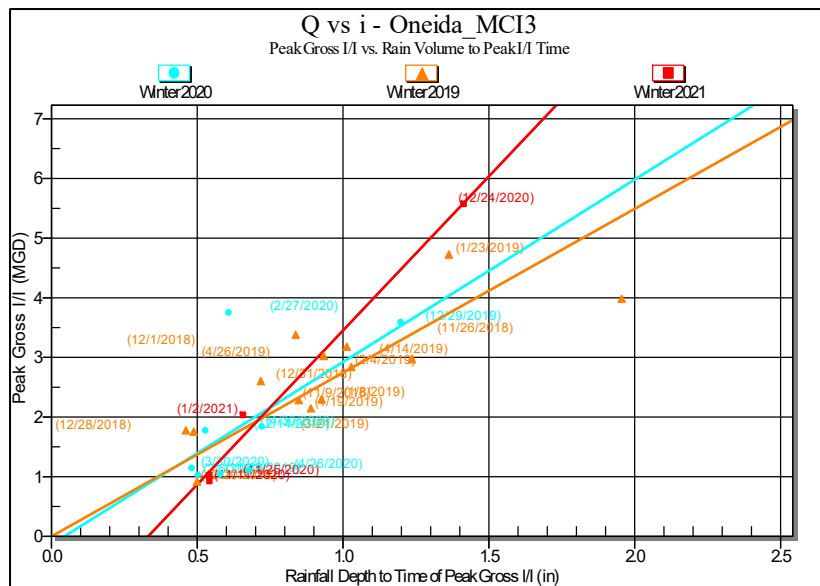
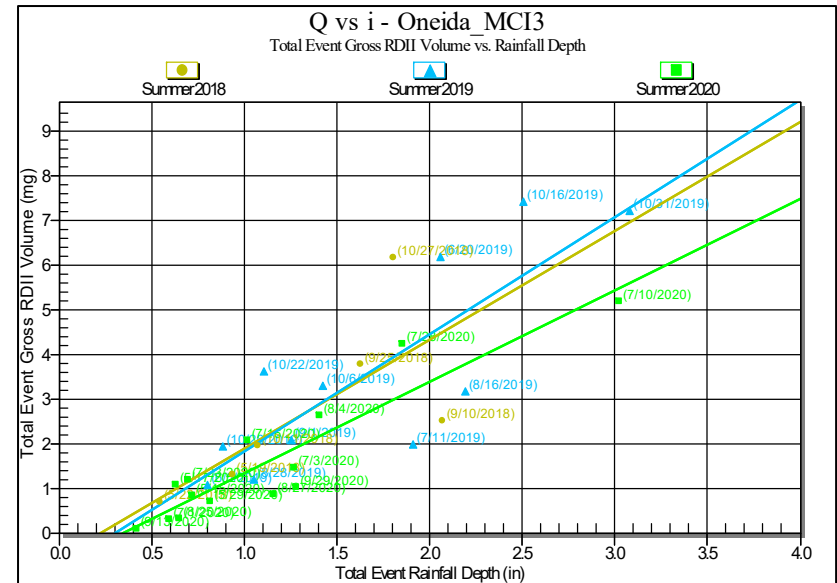
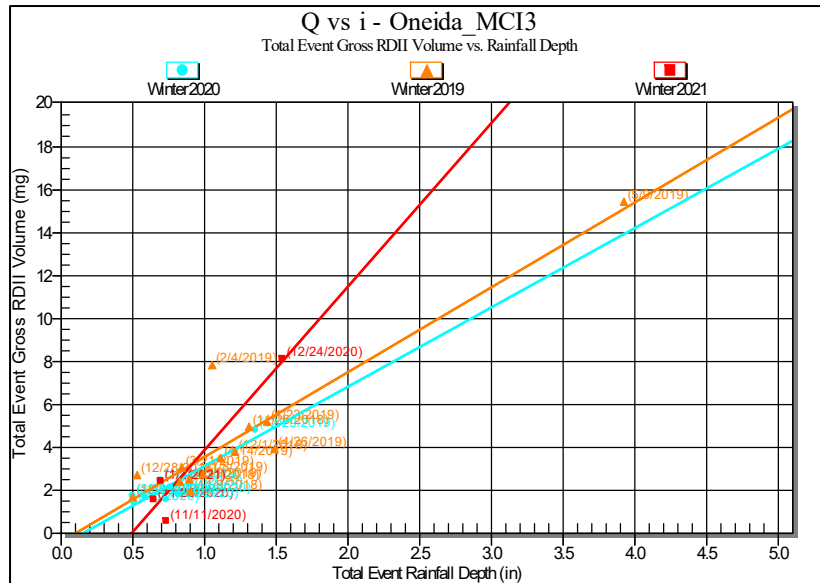


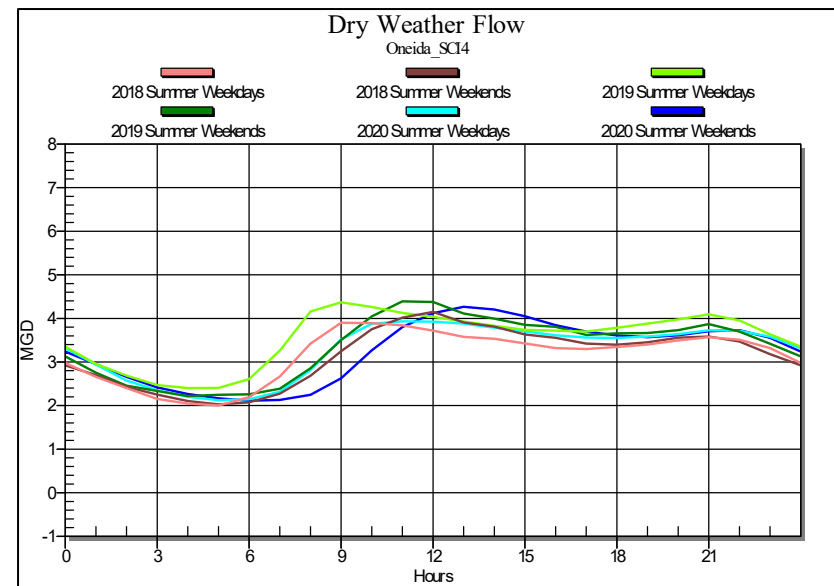
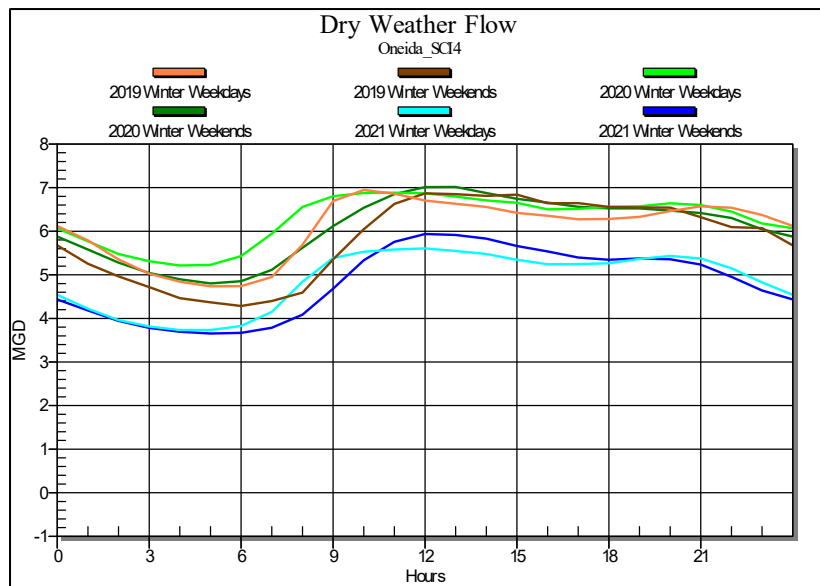
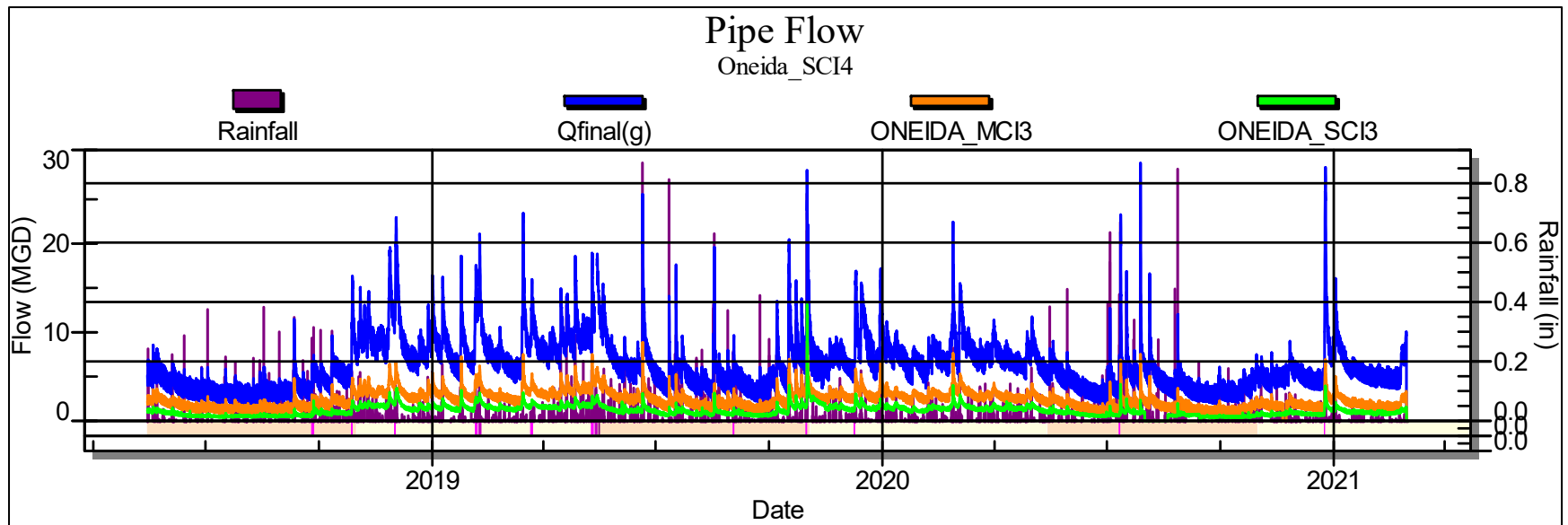


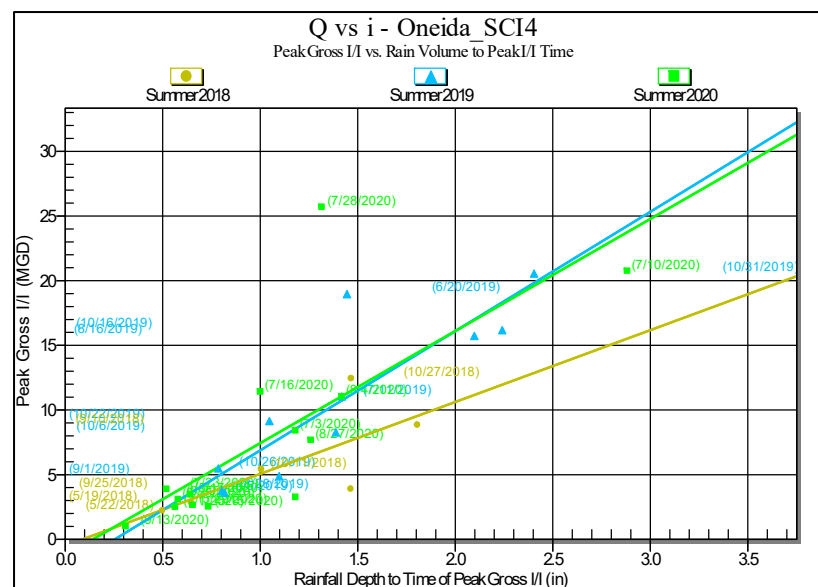
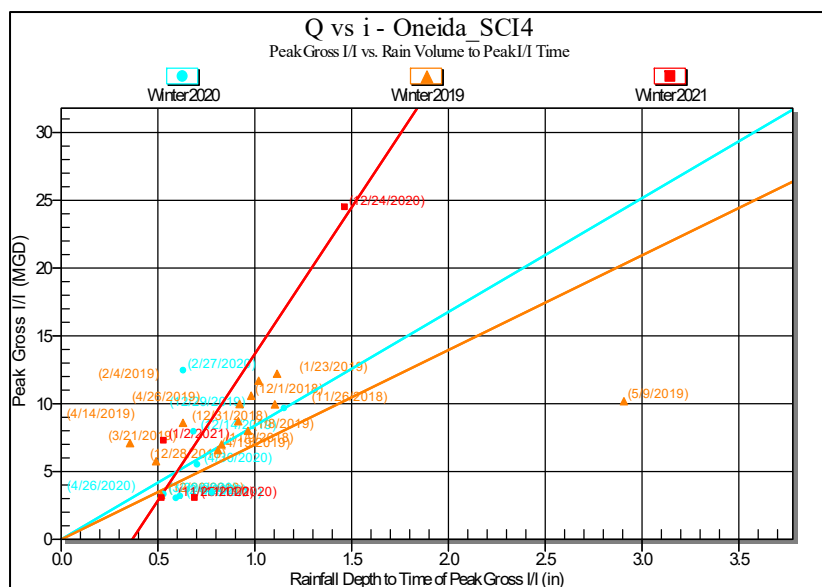
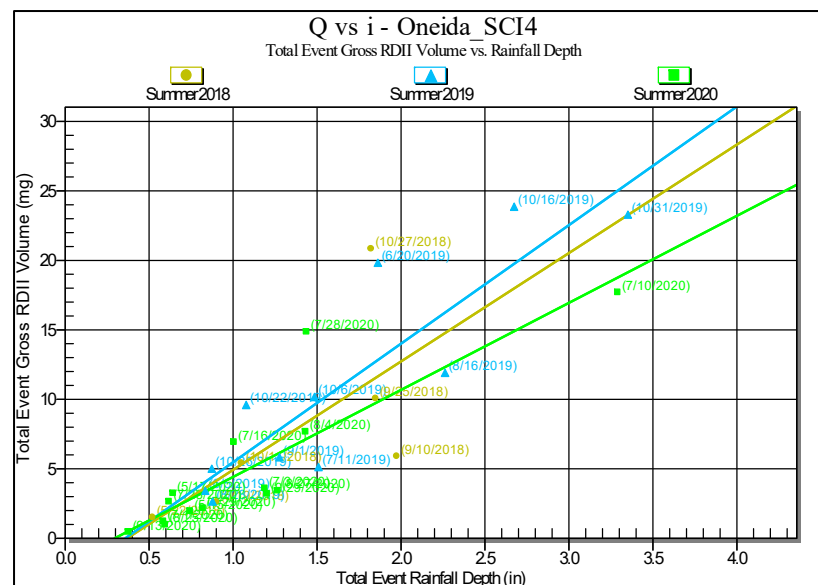
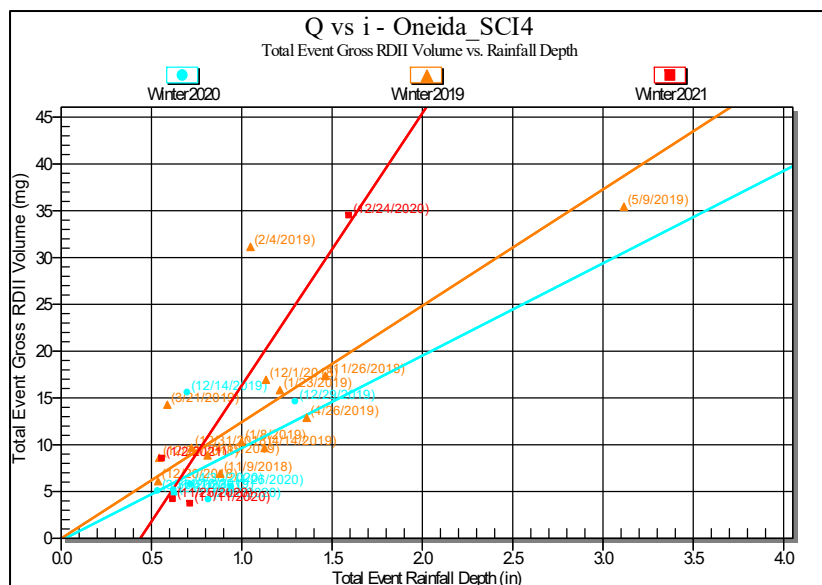








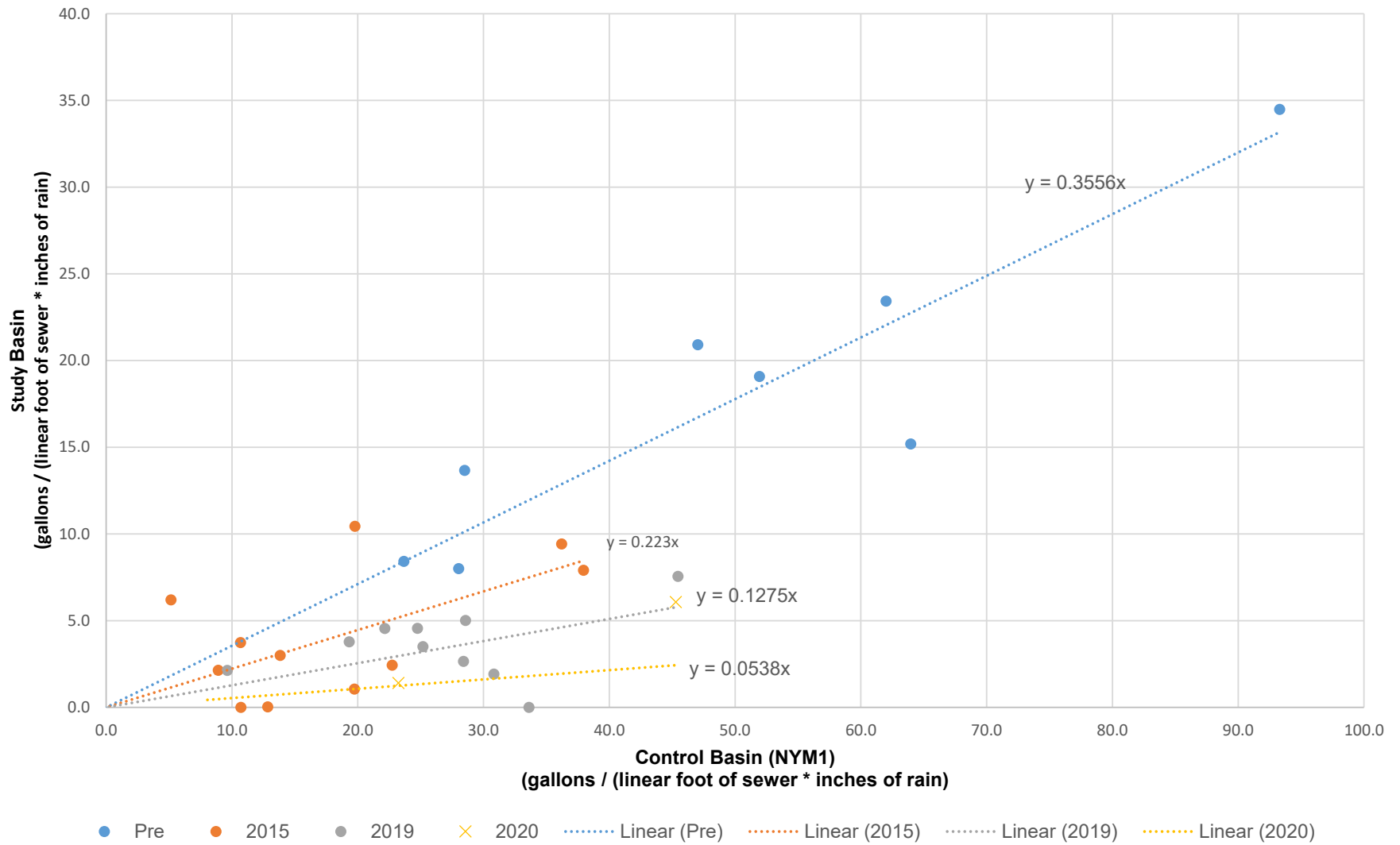




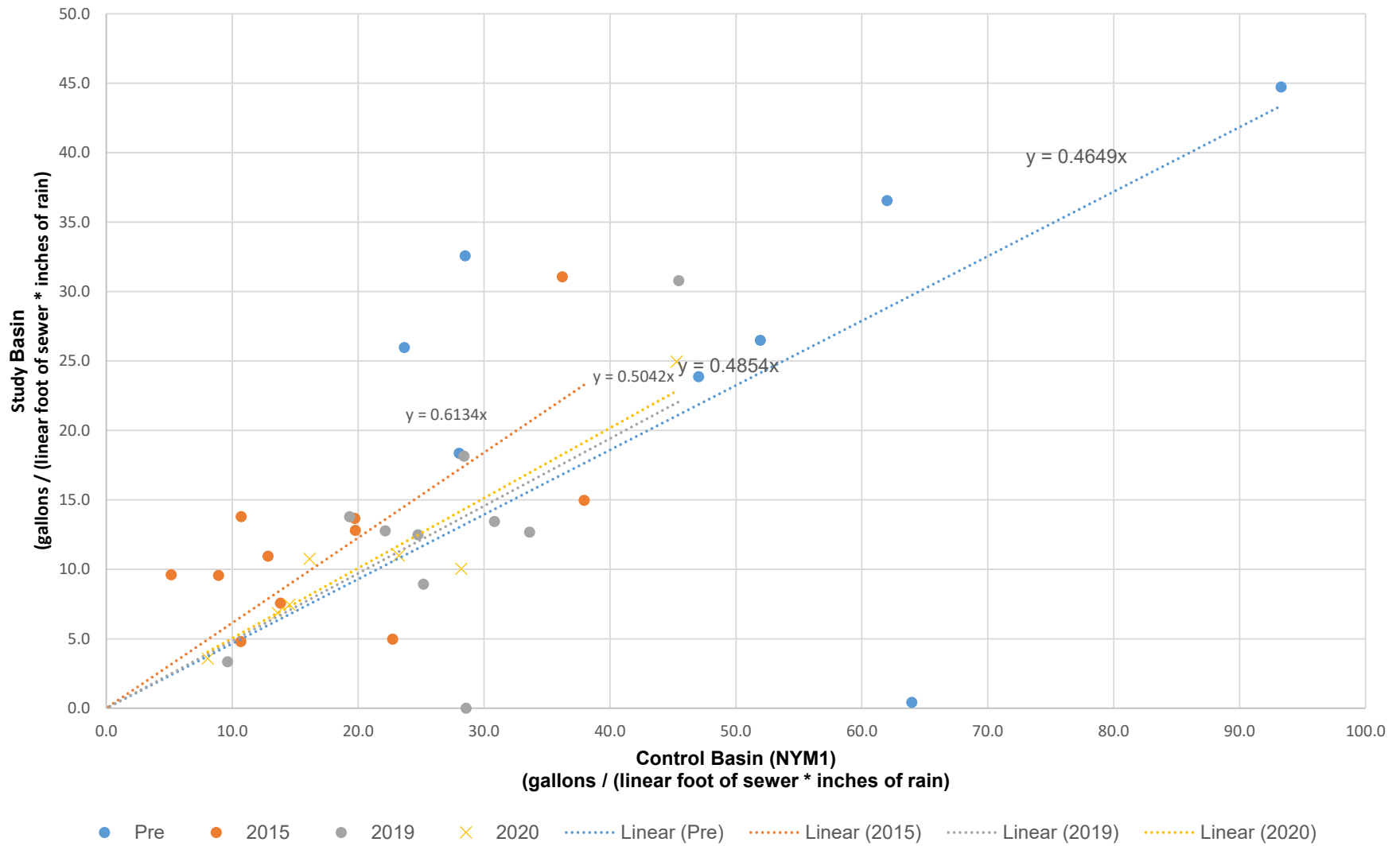
Appendix D

RDII Comparison

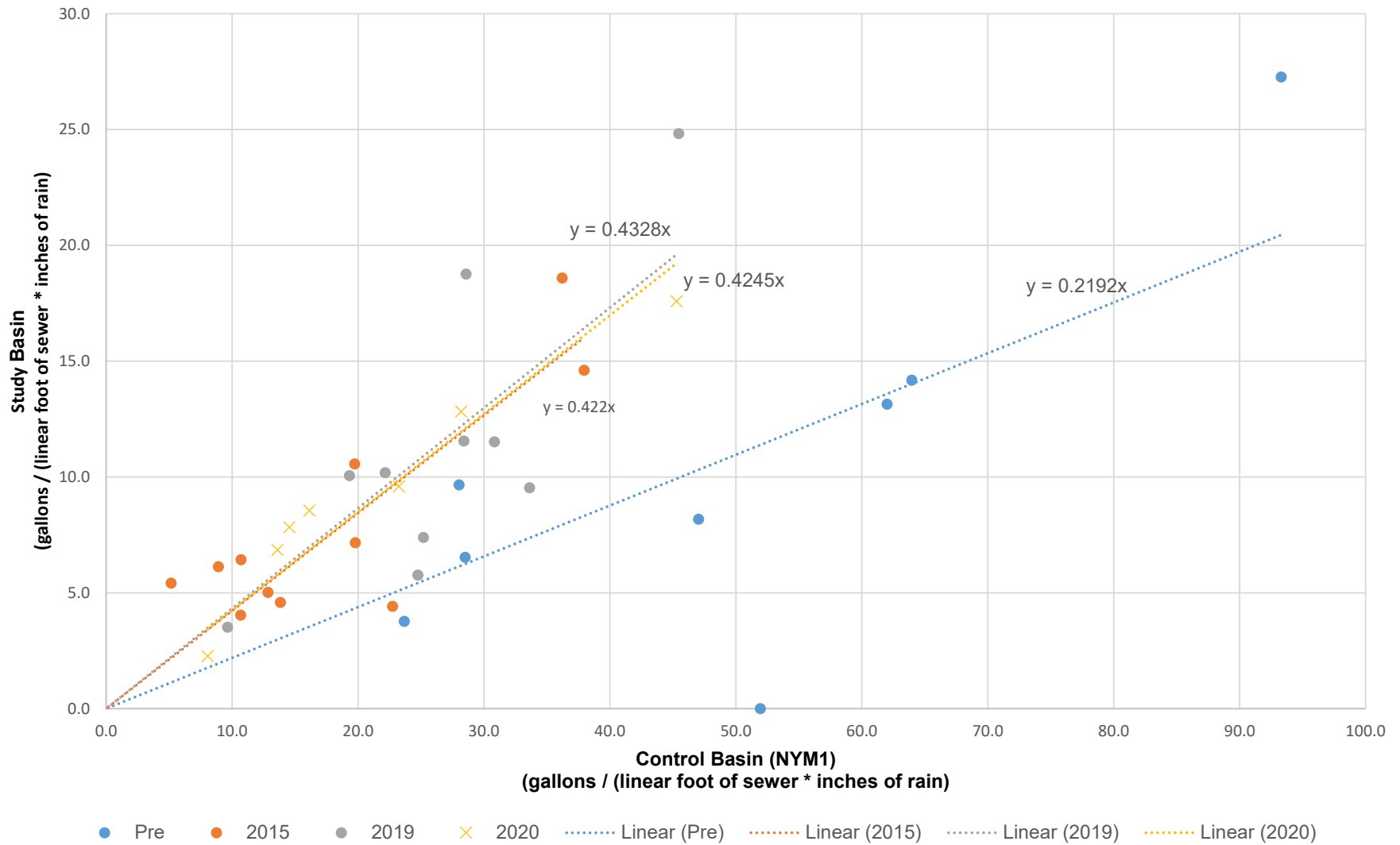
HHI1 I/I Comparisons



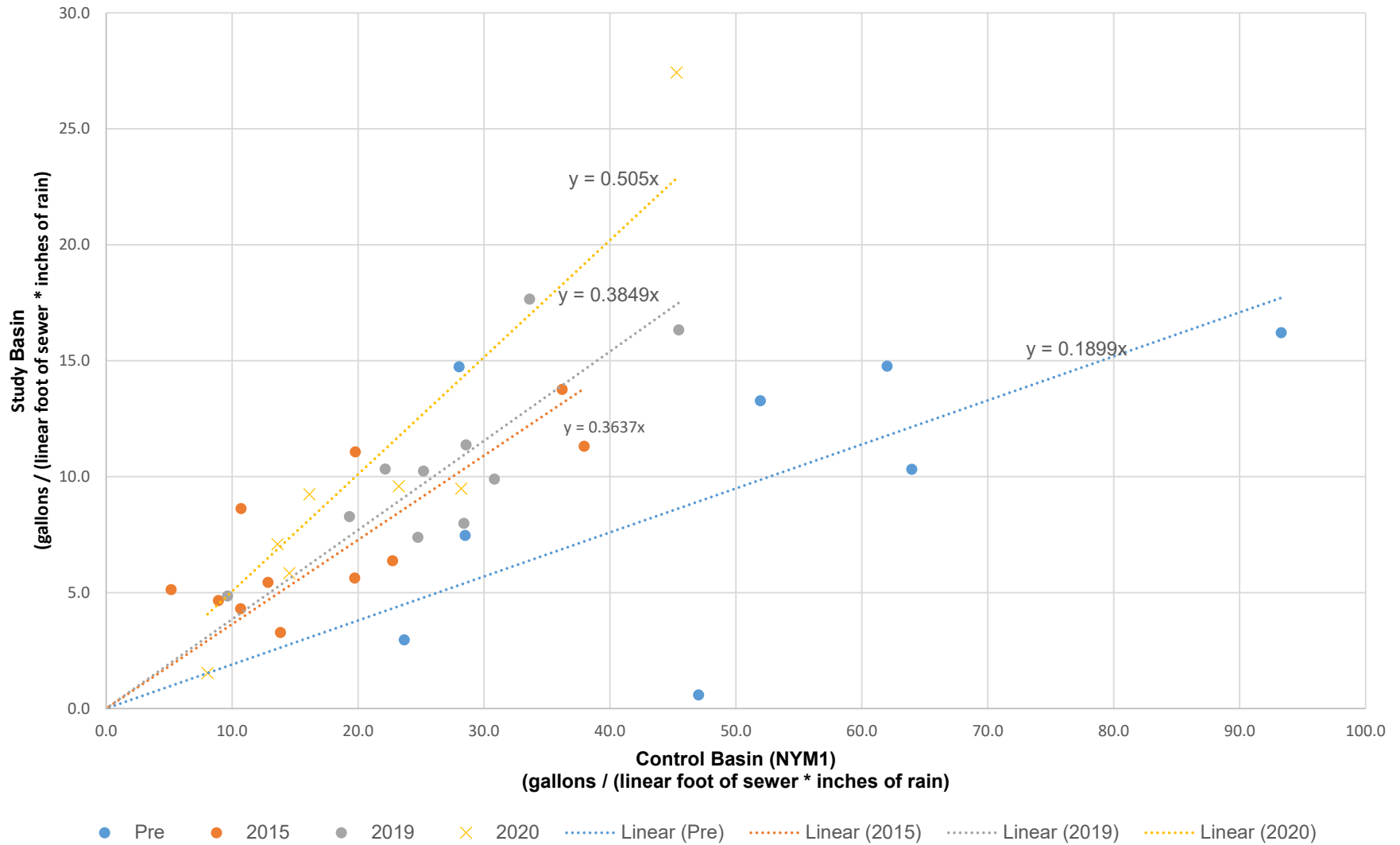
NHD6 I/I Comparisons



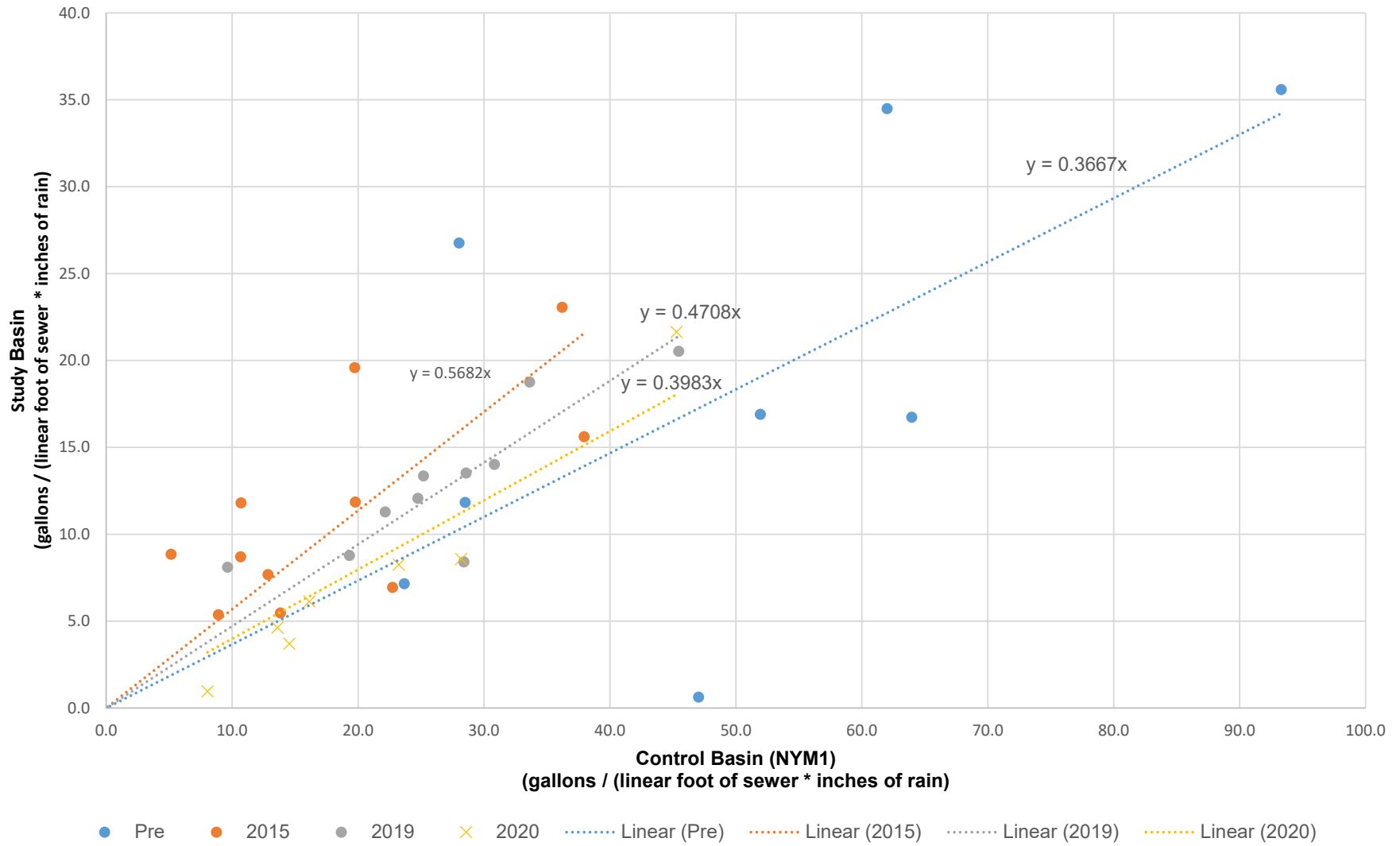
NHD9 I/I Comparisons



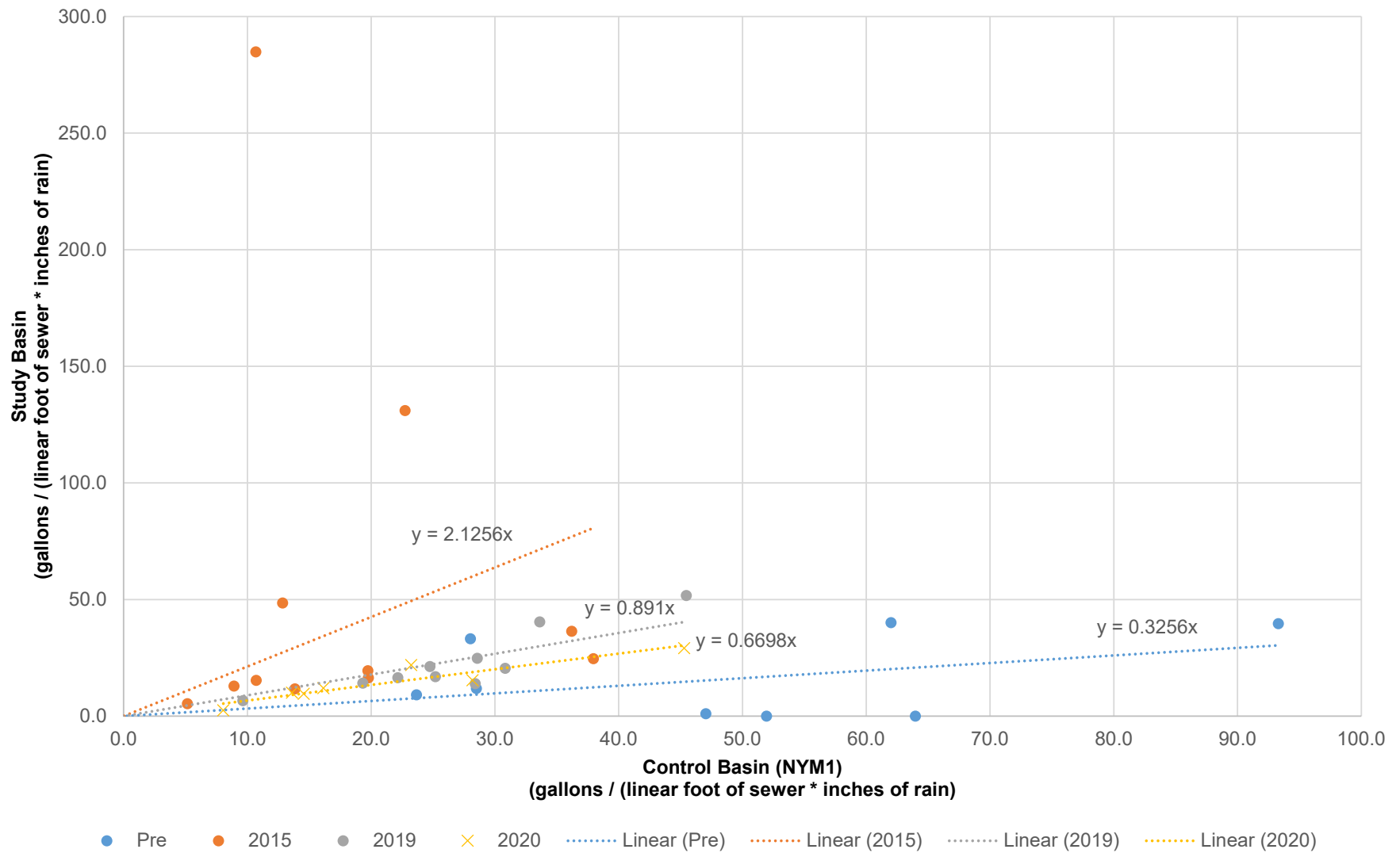
NHD18 I/I Comparisons



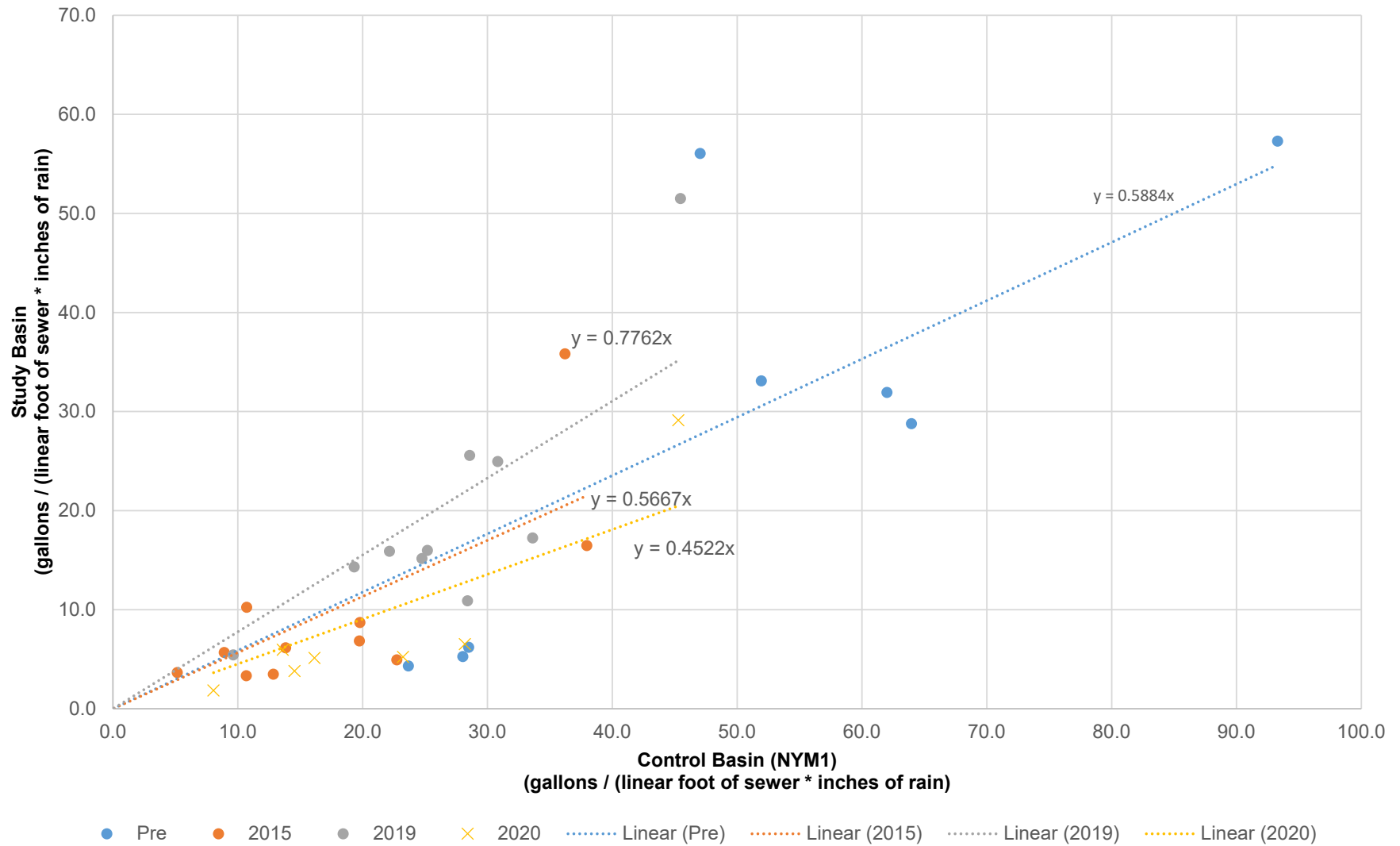
NHD20 I/I Comparisons



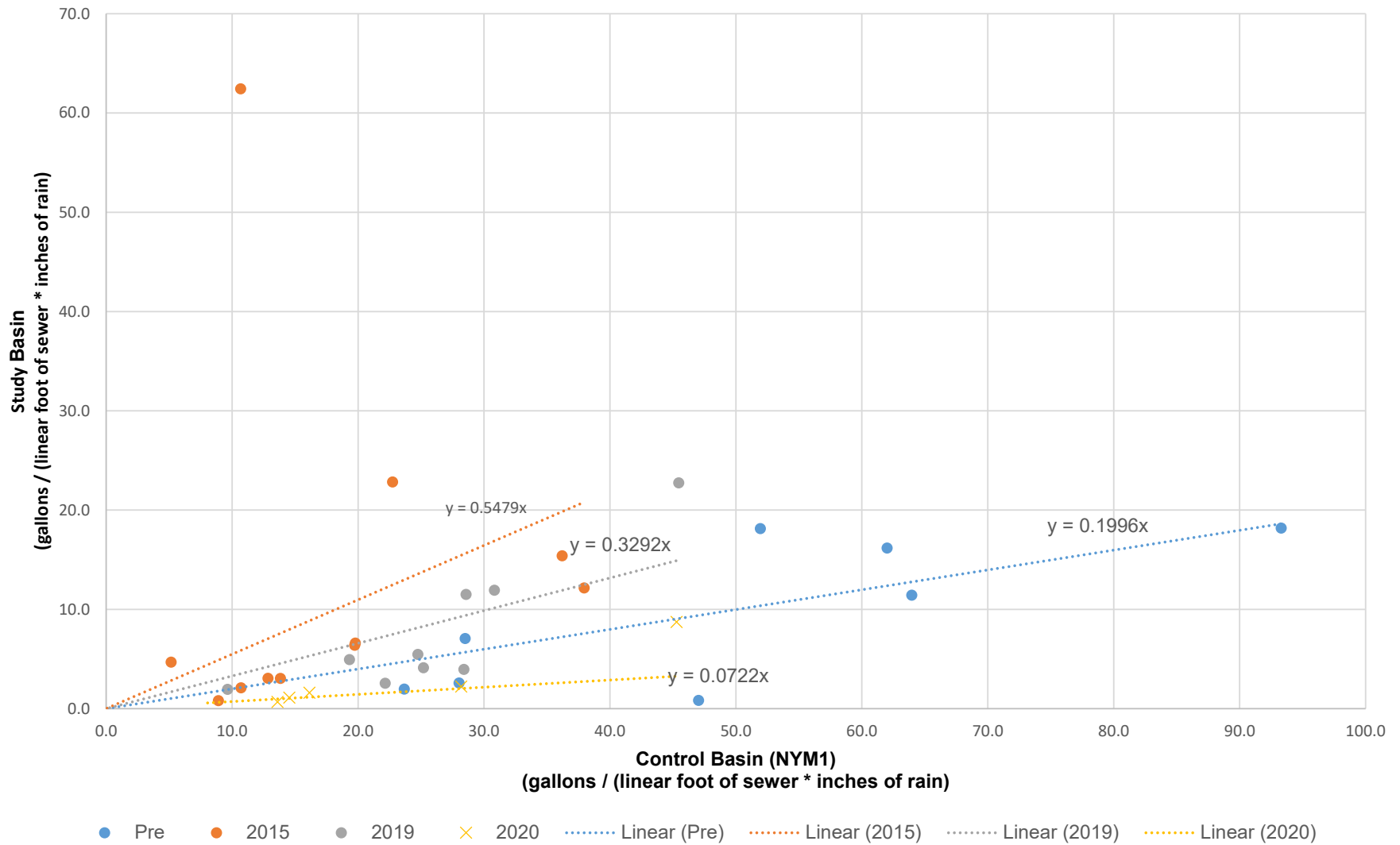
**NHD23
I/I Comparisons**



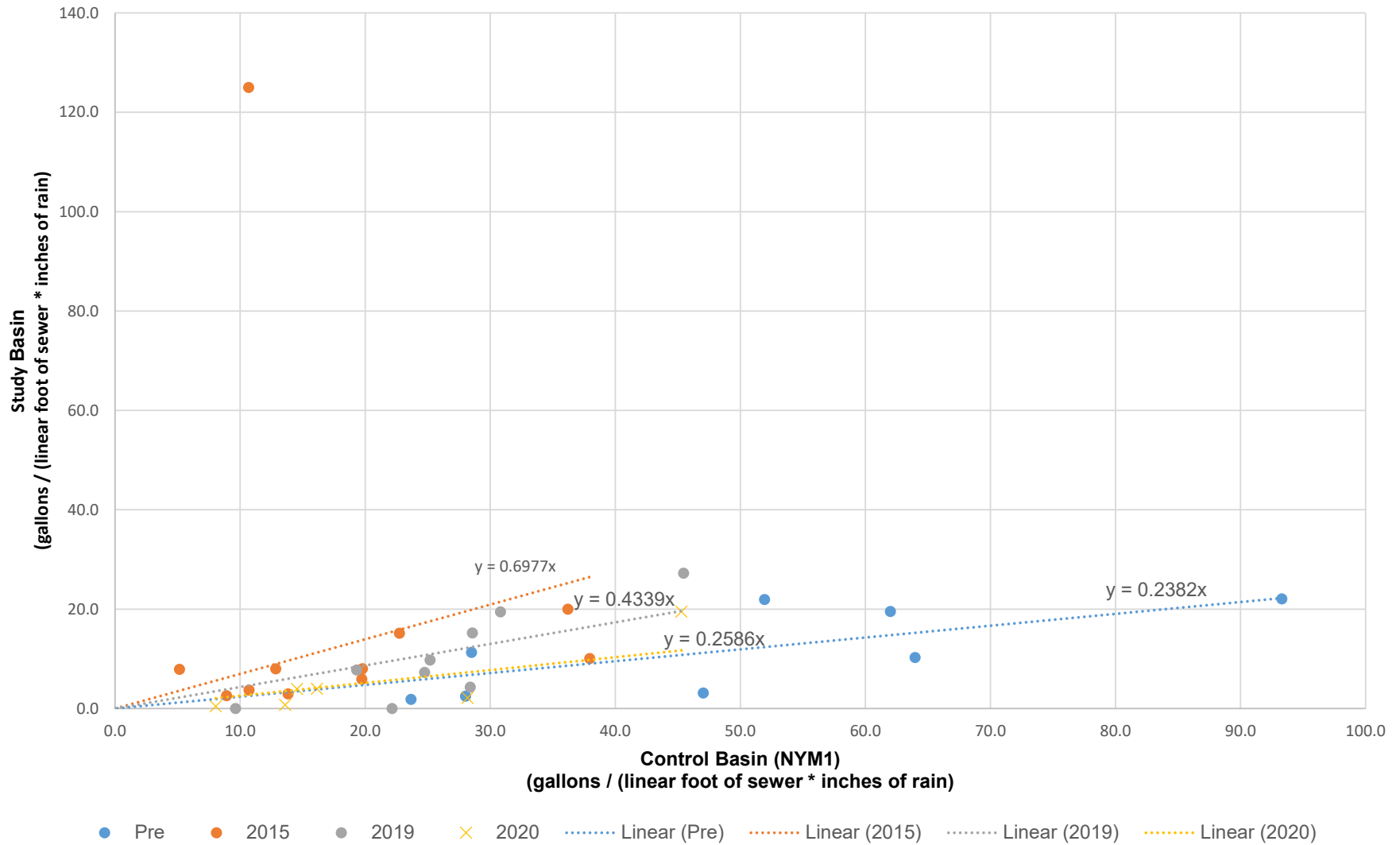
WHN2
I/I Comparisons



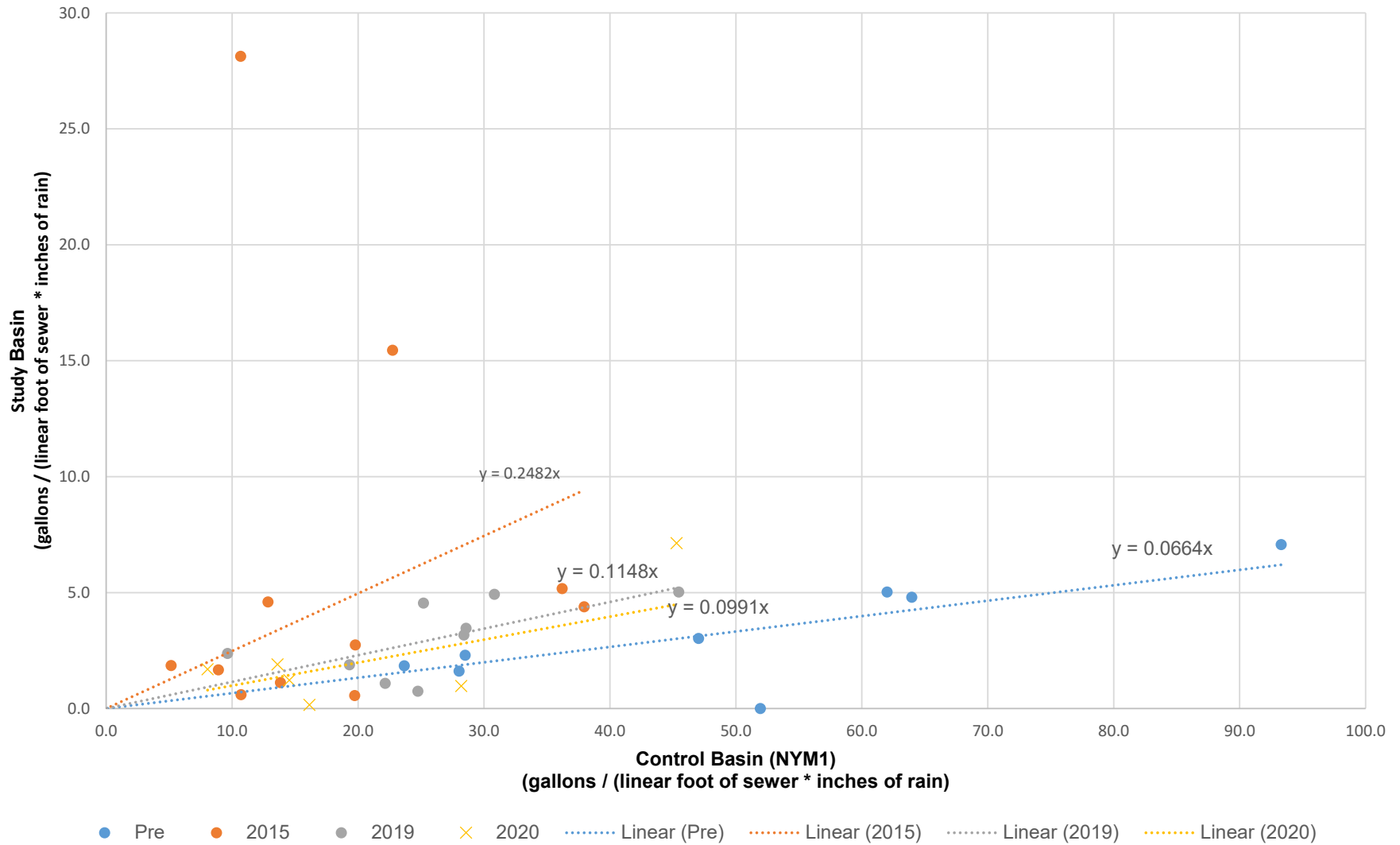
PRS4
I/I Comparisons



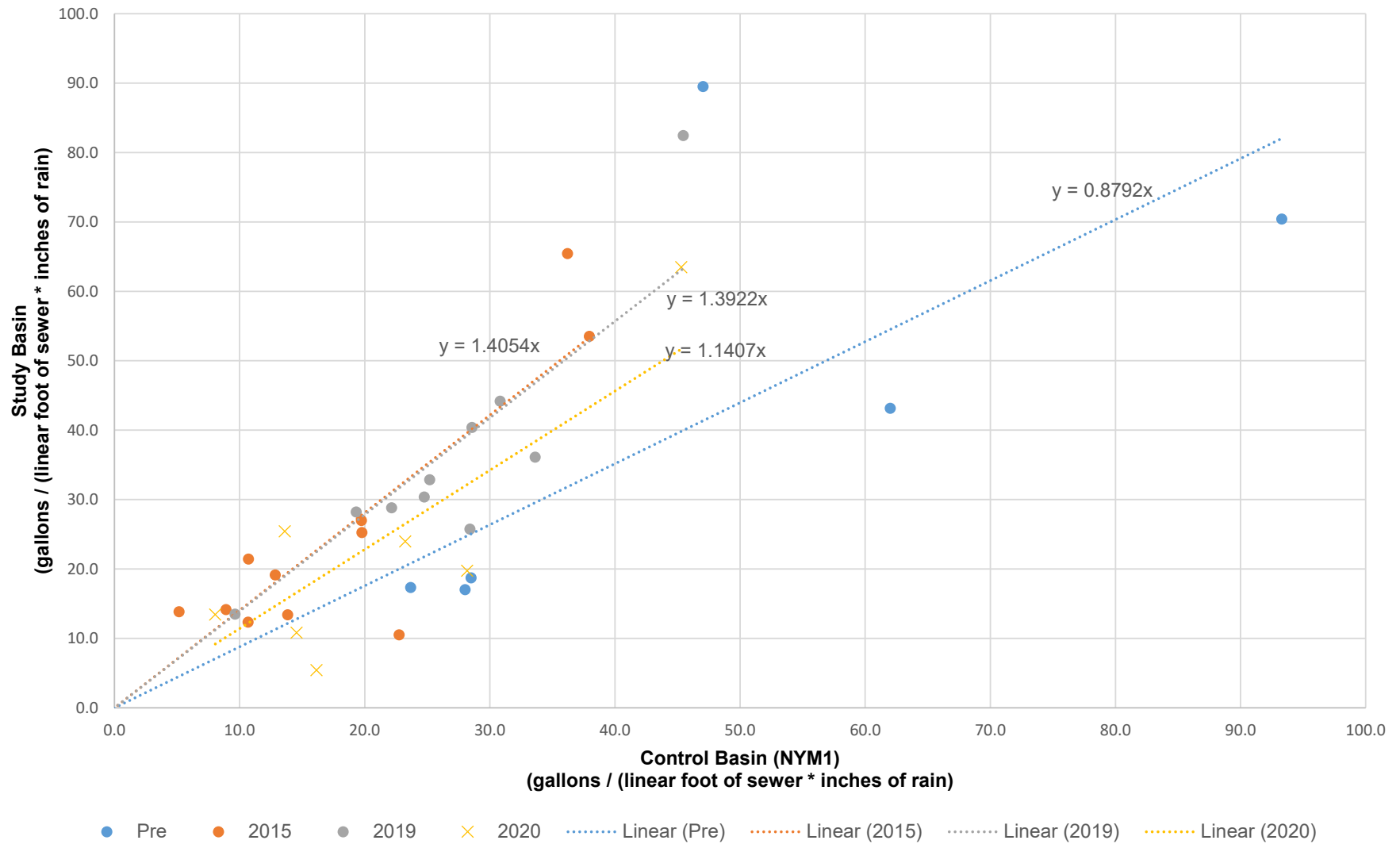
PRS5
I/I Comparisons



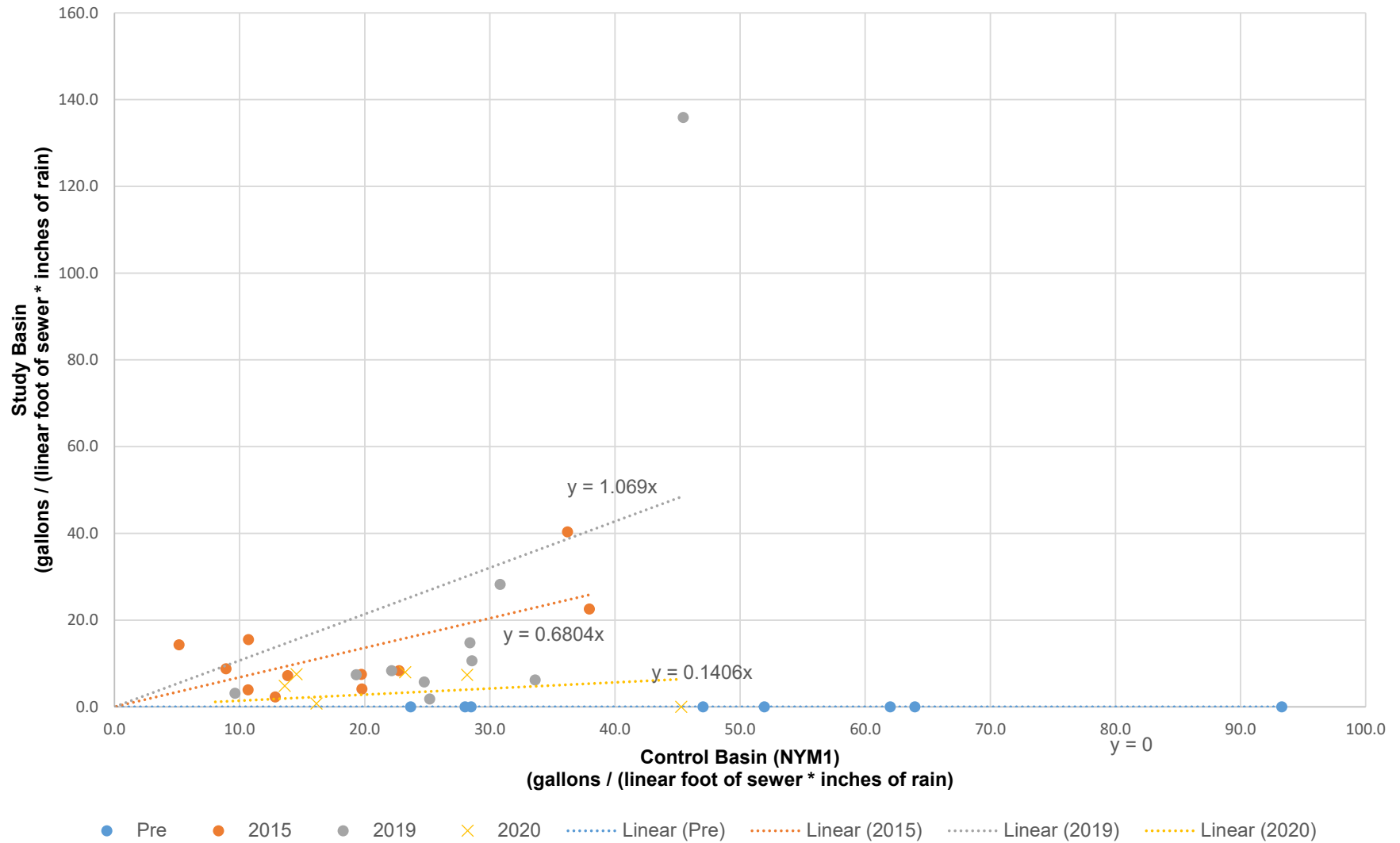
SCI1 I/I Comparisons



YKV1A
I/I Comparisons



YKV1B
I/I Comparisons



YKV2 I/I Comparisons

