



ONEIDA COUNTY DEPARTMENT OF WATER QUALITY & WATER POLLUTION CONTROL

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Anthony J. Picente, Jr.
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Commissioner

April 29, 2022

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317 Washington Street
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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 2022

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 – 2022 as required per Section XIII – Reporting Requirements of the Consent Order. This document summarizes the status and progress of work completed between January 1, 2022 and March 31, 2022 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

A handwritten signature in blue ink that reads "Karl E. Schrantz".

Karl E. Schrantz, P.E.
Commissioner

Enclosure: Quarterly Progress Report –1st Quarter 2022

cc: Anthony J. Picente, Jr. – Oneida County Executive
Peter M. Rayhill, Esq. – Oneida County Attorney
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**SANITARY SEWER COLLECTION SYSTEM
QUARTERLY PROGRESS REPORT
1ST QUARTER – 2022
ONEIDA COUNTY SEWER DISTRICT**

NYSDEC Consent Order R620060823-67



April 29, 2022



Syracuse, NY



Syracuse, NY



Utica, NY

**Sanitary Sewer Collection System
Quarterly Progress Report
1st Quarter - 2022
Oneida County Sewer District
NYSDEC Consent Order R620060823-67**

Prepared for:

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

Prepared by:

**GHD Consulting Services Inc.
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April 29, 2022

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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, 2022 and March 31, 2022 (1st Quarter of 2022) in support of the Consent Order compliance requirements.

In a letter dated June 16, 2021 to the NYSDEC, the County requested an extension of the SSO Mitigation Consent Order Compliance deadline to December 31, 2022. The basis for this request was to address project conditions beyond the control of the County, including program scheduling impacts due to the COVID-19 pandemic, numerous flooding events, and delays in completion of the new Sauquoit Creek Force Main construction due to unforeseen soil conditions. Through cooperative discussions with the NYSDEC, Modification No. 2 to the Consent Order was agreed upon, which included a one-year extension to December 31, 2022. The modification was executed by the NYSDEC on November 24, 2021.

2.0 ENGINEERING INVESTIGATIONS AND EVALUATIONS

During the 1st Quarter of 2022, 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 2022.

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. 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.

During 2021, CCTV inspections were completed in the Town of New Hartford, Village of New Hartford, and Village of Yorkville as part of the Contract 17 Sewer Rehabilitation. No additional televising was completed during the 1st Quarter of 2022.

2.1.3 Dye Testing

The dye testing program was completed in 2012. There was no additional dye testing performed during the 1st Quarter of 2022.

2.1.4 Contract 17 Sewer Rehabilitation

The televising, along with limited smoke testing, conducted in the 2nd Quarter of 2021 in the Town of New Hartford, Village of New Hartford and Village of Yorkville continued into the 3rd Quarter of 2021. Additionally, during the 3rd and 4th Quarters of 2021 the County's engineering consultants used the results of these sewer investigations to identify areas for potential rehabilitation (Contract 17) in the Village of Yorkville. In the 4th Quarter 2021, the County's engineering consultants prepared maps for sewer rehabilitation work in the Village of Yorkville, met with staff from Yorkville, and identified the general scope of work for the rehabilitation work. The County will next review the scope of work with the Village to move forward with a design and construction project to be completed in 2022-2023.

2.1.5 Additional Flow Metering to Assist with Sewer Rehabilitation

To further assist in refining sewer rehabilitation project scopes, the County purchased five level sensor devices (ADS ECHO™) that are easily installed in the manhole without the need for confined space entry. These level sensors were installed in basin NHD-23 in the Town of New Hartford during the second half of 2021 to collect I/I data on a sub-sewer basin scale. Eight of the 10 sub-basins showed signs of high I/I. Discussions with the Town are planned for 2022 to further investigate the eight sub-basins. The County is planning for a future phase of SSES work and NHD-23 will be included in this investigation.

2.1.6 Villages of Yorkville and New Hartford Engineering Planning Grant Sewer Investigation

In July 2021, the County assisted communities in applying for Engineering Planning Grant (EPG) funding through New York State Environmental Facilities Corporation (EFC) for a study to identify and evaluate infrastructure improvements to reduce I/I in the above areas. The Villages of New Hartford and Yorkville received notice in December 2021 that they were awarded an EPG in the amount \$100,000 each to conduct additional sewer investigations to further refine rehabilitation projects. The EPG funding is independent from Oneida County sponsored work. The EPG work began in March 2022, when Duke's installed over 100 depth sensors in manholes in the Villages of Yorkville and New Hartford. For a period of three months, the sensors will collect depth of flow data that will be used to analyze the micro-basins and prioritize areas for more detailed investigations in the future. Additional SSES work will be focused in the micro-basins with high I/I. The County's Engineering team will prepare a report in the summer of 2022 summarizing the data and recommend further SSES work. In both Villages, this work is being funded through the EPGs awarded in December 2021. Other additional flow metering and/or SSES investigations may also be considered in other areas based upon review of the flow metering data and mapping.

2.1.7 Additional Sewer Investigations Outside the SCPS Basin

With assistance from the County's Planning Department, the County examined the sewer mapping for the City of Utica to identify suspect cross-connections with the storm sewers tributary to the Starch Factory Creek Interceptor Sewer. The County provided the City of its findings in the 4th Quarter of 2021 and asked the City to further investigate these suspect cross-connections and develop a plan for mitigation. The City indicated it would follow up in 2022.

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 and/or new operation. 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 2-17 as listed on Table 5.1).

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. This section summarizes the damages to the Influent Building, sections of the Sauquoit Creek Interceptor Sewer and Force Main along Sauquoit Creek, and the SCPS.

Influent Building

The Influent Building was flooded nearly to the first floor level during this event. Major equipment impacted by the flood included:

- Submersible pumps
- Manually operated slide gates
- Overhead crane motor
- Magnetic flowmeters
- HVAC ductwork
- Lighting and electrical conduit

The identified corrective actions and repairs are now complete and the station was put back in service in the 1st Quarter of 2020.

Sauquoit Creek Interceptor Sewer and Force Main (FEMA Damages)

The flood event was particularly intense within the Sauquoit Creek drainage basin with extensive flooding along Sauquoit Creek that resulted in 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. The damages incurred at various locations and the current status of repairs are presented in Table 2.1. The County continues to coordinate with FEMA regarding the disaster recovery assistance program. Total cost of repairs to the remaining interceptor sewers and force main are expected to cost between \$500,000 and \$700,000.

Table 2.2 FEMA Damage Project Summary

Project Number	FEMA Damage Number	Title	Cost	Status
133024	366892	Sewer exposure repair (New Hartford Park, Washington Mills)	\$96,054	Work Completed 11/01/2021
	366893	Sewer exposure repair (Oneida St., Washington Mills - behind Salvatore's bakery)	\$51,000	Pending FEMA review/approval
	366894	Sewer exposure (Victoria Drive, Utica)	\$149,100	Pending FEMA review/approval
	366895	Manhole Exposure (New Hartford Street, New York Mills)	\$37,680	Pending FEMA review/approval
135064	374275	Sewer Line Encasement Undermining (Mud Creek)	\$53,287	Pending FEMA 406 HMP Completion
133005	n/a	Sewer line repair with stream bed restoration and bank armament	\$392,312	Work Completed 12/01/2021
133021	n/a	Pump Station/Access Road Repairs	\$199,720	Work Completed 06/20/2021
158181	n/a	Pump Station - Emergency Work	\$140,134	Work Completed 06/20/2021
145808	n/a	Oneida County DWQ Management Costs		Pending Formulation Completion
135067	n/a	Nail Creek Force Main	\$23,000	Pending FEMA review/approval
135066	374278	Creek Stabilization and Associated Damages (near Pietryka Park)	\$130,225	Pending Final FEMA Review/approval
135061	n/a	App-Cert Pump Station - Damaged Electrical Equipment	\$29,400	Work Completed 12/30/2022

SCPS

The SCPS was also impacted by the October 31, 2019 flood event. Flooding caused by the storm event carried gravel, rocks, debris, etc., through the Interceptor Sewers to the new Screening Building. Debris either became 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, impacting the pump instrumentation (temperature switches, vibration switches, etc.), as well as damaging the heating and electrical equipment in the lower level. 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. Incurred costs to date for the completed repairs are \$339,854.19. FEMA reimbursement for this completed work is pending.

The County continues to explore options for further flood mitigation of pumping station equipment and the facility itself in coordination with the FEMA disaster recovery assistance program. An engineering report outlining completed repairs plus those necessary to enhance resiliency at the station was prepared and submitted to FEMA during the second quarter 2021 with the goal of obtaining funding for the work; however, FEMA will not be able to cover the cost for this mitigation work and alternate sources of funding will be needed. Mitigation to the Pumping Station (buildings and site) is estimated to cost between \$700,000 and \$1,000,000.

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

In late May 2020, a valve on a “sparge water” line was inadvertently left open on the south grit tank at Grit Building No. 3 and continuously ran over the weekend, leading to flooding in the basement level. 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, resulting in damage to the motor control center, network cabinet, control panels, grit pump motors, etc. Damaged equipment has been repaired or replaced, including:

- 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

Construction work was completed during the 3rd Quarter of 2021 and Grit Building No. 3 is now operational. The total cost of the required repairs, \$324,698.31, 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 dispute the insurance claim rejection by the insurance carrier.

3.0 MANAGEMENT PROGRAMS

3.1 COMPUTERIZED MAINTENANCE MANAGEMENT SYSTEM

The County purchased a Computerized Maintenance Management System (CMMS) software system (Lucity – now a CentralSquare Technologies Company) 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 the County's Information Technology (IT) Department personnel; however, due to COVID restrictions, the servers were not installed during 2020. In 2021, the Consultant Team recommended a cloud-based server for the CMMS system, citing advantages such as maintenance/upgrades would be performed automatically by Dematic, performance issues would be resolved by Dematic, and the system could be accessed from anywhere with a trusted internet connection. The County's IT Department was consulted and agreed with the cloud-based server as long as they are kept informed as the work progresses. The CMMS system is now being hosted in the Cloud.

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 in February 2021 and issued the Notice to Proceed in May 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 vecto truck used for interceptor maintenance.

During the 1st Quarter of 2022, Barton & Loguidice and GHD performed the following:

- GHD completed organizing the asset list with corresponding Equipment Systems for C-2, C-5, C-6, C-7 and C-8 (aside from the Asset Management Building updates) – Equipment Systems are the method by which assets are shown in a hierarchical structure in Dematic Sprocket

Next quarter, the latest asset list, with their corresponding Preventive Maintenance (PM) tasks, will be imported into Dematic Sprocket by Barton & Loguidice for the County to view and test. Since C-8 is still under construction, there have not been any updates to the CMMS or asset list. The County will be notified when this is completed. The County should begin to evaluate and review Sprocket with the current data load. Any changes or updates should be documented and presented to GHD and Barton & Loguidice, and work together to apply the changes.

The County, working with its consultant team, prepared a Draft Asset Management Plan for compliance with the Consent Order and submitted the draft to the NYSDEC on Dec 22, 2021. It should be noted that the deadline extension of the Consent Order to December 31, 2022 includes delivery of the final Asset Management Plan. The Draft Asset Management Plan provided the current condition of major assets (those valued at \$50,000 or more), and a risk analysis to document the consequence of failure. This plan is being used as a planning and budgeting tool for replacing major equipment over time. The CMMS system will be the day-to-day method for tracing preventative and reactive maintenance tasks and managing spare parts inventory. GHD received comments from the County on the Draft Asset Management Plan and is working to address those. Also, GHD is adding linear assets (interceptors) to the Asset Management Plan and developing a model to calculate asset condition based on age, consequence of failure, and overall risk for these assets. The CMMS can be used as a tool for planning preventative maintenance in the collection system.

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. Forty-four meters were installed in the Sauquoit Creek Pump Station (SCPS) drainage basin, and 14 meters were installed in the North Utica drainage basin and other smaller basin. Two 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. Three new flowmeters were installed within the collection system tributary to the Starch Factory Interceptor (outside of the SCPS Basin) in December 2019. Currently, 66 flow meters are installed under the County's flow monitoring program. In 2022 the County and their consultants plan to review and discuss the current flow meter locations and make considerations to redeploying some flow meters to more strategic locations.

Flow metering data are available to the County and its Consultant Team by ADS to evaluate the impacts of sanitary sewer and manhole rehabilitation 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 is 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. Each 1st Quarter report provides a summary of the previous years' flow monitoring data. This report presents the data review and summary for 2021. A more detailed report from ADS can be found in Appendix A.

2021 Rainfall and Flow Data Summary

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 2019 through December 2021 are included in Appendix B. For comparison purposes, the annual precipitation totals for 2016 to 2021 are shown in Table 3.1, which indicates that 2019 had

the highest rainfall volume over the past six years, followed by 2017, and then 2021, while 2020 had the lowest rainfall volume over the six-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	34.81
2021	47.45*

* May 2021 data were not available for the SCPS rain gauge (clogging issue); City Hall rain gauge data were used for May.

ADS provided an Annual Report on RDII Analysis for all County flow meter data from April 2020 through December 2021, which is included in Appendix A. This report provided information on four storm events in 2021, the additional flow monitoring in the Starch Factory Interceptor basin, trends in average dry day flows (ADDI) and base infiltration, and trends in RDII volume and peak flows system-wide for the larger storm events in 2021. ADS also used Slicer to develop flow (RDII volume) versus rainfall or “Q vs i” graphs for each meter location, which also are included in their report.

The four 2021 storm events include July 8, August 17-21, October 24-26, and November 12. The ADS Annual Report presents hydrographs for select flow meters for these storm events, including meters in the Town of New Hartford, Village of New Hartford, and Village of Yorkville where the current sewer investigation efforts are focused, as well as New York Mills, Oriskany, and Whitesboro. Most every meter shows a notable increase in flow in response to the storm events. The two largest storm events evaluated were July 8 with 2.36 inches of precipitation and August 17-21 with 3.39 inches. To further quantify these events, Table 3 in the ADS Report (Appendix A) indicates the return period frequency of each rain event at all rain gauges, which shows the July 8 event had a 6.5-year return period frequency and the August 17-20 event had a 1.6-year return period frequency. The ADS Report also presented the calculated net RDII in units of gallons per linear foot of sewer per inch of rainfall (gallons/LF/inch) for each major wet weather event to help identify areas higher than normal RDII. A general rule of thumb is that the threshold for severe RDII is a net RDII greater than 15 gallons/LF/inch. The net RDII values for most of the select group of meters evaluated were above the 15 gallons/LF/inch threshold for the major storm events, suggesting potential severe RDII in these areas and further supporting the additional sewer investigations being conducted in these areas.

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 2021. There has been a noted decrease in annual overflow volumes over the period of 2017 to 2021, 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. The SSO volume for 2021 is a recorded low, despite over 47 inches of rainfall in 2021; this is likely attributed to the new 42-inch force main from the Sauquoit Creek Pump Station put into service in April 2021, which allows more flow to be pumped to the WPCP and treated.

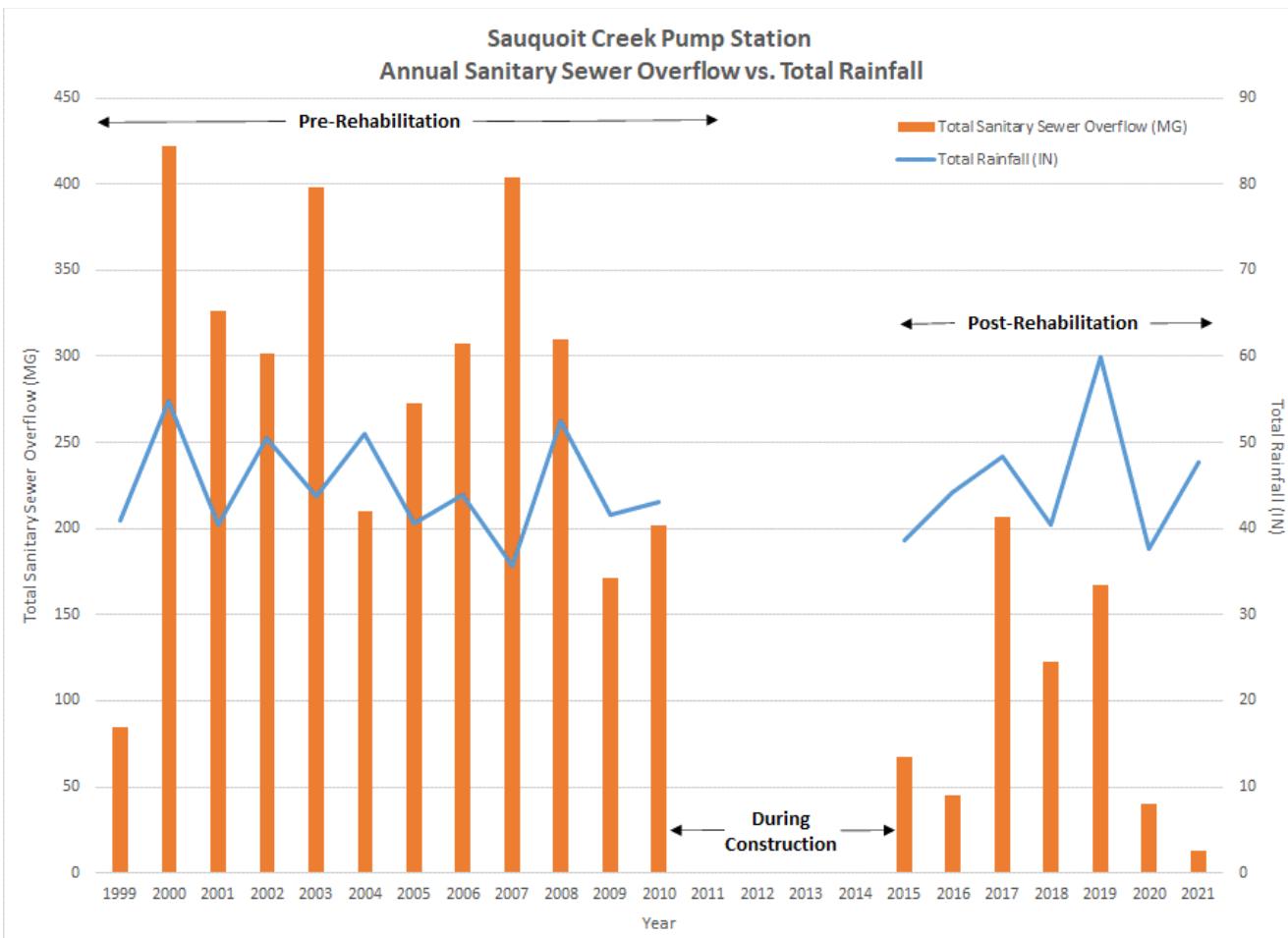


Figure 3.1: Annual Overflow Volume at Sauquoit Creek Pump Station vs. Total Rainfall

Overall, the results of these evaluations indicate that the significant amount of sewer investigation and subsequent rehabilitation work completed to date has had a generally positive impact on I/I abatement and reducing sanitary sewer overflow volumes at the Sauquoit Creek Pump Station, although results may vary depending on the rainfall intensity and storm characteristics. The 2021 SCPS SSO data showed that the new 42-inch force main from the Sauquoit Creek Pump Station (put into service in April 2021) contributed to a significant reduction in SSO volumes in a relatively wet year. Although the overflow volumes at the Sauquoit Creek Pump Station have been significantly reduced and this trend continues, 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, a second phase of sewer investigations are ongoing in the areas of noted concern in Section 2.1.4, followed by sewer rehabilitation design. 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.

2021 Starch Factory Drainage Basin Flow Data Summary

The flow meters in the Starch Factory drainage basin have been consistently collecting flow data since their installation in 2019. The purpose of these meters is to isolate portions of the Starch Factory Interceptor basin so

that areas of excess infiltration and inflow (I/I) can be identified. The data collected by these flowmeters continues to be reviewed and analyzed by GHD. That said, preliminary results provided in the report by ADS (see Appendix A) indicates that the sewershed tributary to meter “Oneida_205” located within Proctor Park, appears to be contributing proportionally the most Rain Derived I/I (RDII) in the Starch Factory Interceptor area. The City of Utica previously advised the County of its plans to conduct its own additional flow monitoring in the Starch Factory Creek area in 2022. Additionally, the County and City of Utica held a meeting with ADS in the 4th quarter 2021 to review and discuss the current flow meter locations and consideration is being given to redeploying some flow meters to more strategic locations. As of the 1st Quarter 2022, the City has not yet installed the flow meters.

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 amendment to the Work Order for continuation of the PPII program was approved by the County in the 1st Quarter of 2022. Planning among the Consultant Team regarding the 2022 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. The Consultant Team meets monthly to discuss recent efforts and updates. These efforts, specifically related to direct coordination/meetings with the Steering Committee, were on hold in 2020 due to the COVID-19 crisis, but have since resumed 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 2022, 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. However, the OCDOH recently hired some staff and has assigned an individual to assist with FOG inspections pending training. To date, a total of 225 FSEs have been visited. The OCDOH anticipates conducting limited FOG inspections of new and existing facilities later in 2022. 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 2022). In a letter dated June 16, 2021 to the NYSDEC, the County requested an extension of the SSO Mitigation Consent Order Compliance deadline to December 31, 2022. On October 6, 2021, the County received a proposed Consent Order modification with the one-year extension from the NYSDEC.

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, 2022*	Draft submitted Dec. 22, 2021
<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, 2022*	In progress
<u>Reporting</u>		
Annual Work Plan	January 31, Annually	Submitted annually
Quarterly Progress Report	Quarterly	Submitted quarterly

Notes: I/I – Inflow and Infiltration

* County received Consent Order modification to extend deadline to December 31, 2022, including Asset Management Plan.

4.2 MILESTONES

During the 1st Quarter of 2022, 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
<u>Remedial Measures</u>		
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 were set to expire on December 31, 2021, concurrent with the original 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. The County requested and recently received a Consent Order modification to extend the deadline to December 31, 2022, and the construction phase limits also will be extended concurrent with the modified Consent Order.

Contract C-8 was awarded in February 2021 and the Notice to Proceed was issued in May 2021. Under this contract, the secondary treatment system are being 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. The upgrades associated with Contract C-8 are not required in order to achieve the peak flow capacity of 111 mgd and are therefore not part of the Consent Order. Contract 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 the Village of Yorkville, as discussed in Section 2.1.4. Construction is anticipated to begin in 2022-23.

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 2022, 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	1,812,764	0	3631 Oxford Road (349.000-4-33) Permit #6088	320	1,811,476
			119 Woods Edge Road Cherrywood (328.000-2-26) Permit #6089 site 297	240	
			8048 Seneca Turnpike - Dollar General (328-2-25.2) Permit #6090	728	
		0			0
Town of Paris	253,064	0		0	253,064
Town of Whitestown	1,053,254	0	Wicked Sweets, 1402 Champlin Ave (317.008-8-29/30)	800	1,052,454
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
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	5,035,705	0		2,088	5,033,617

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 1st Quarter of 2022, there were no changes of key personnel.

9.2 SATELLITE COMMUNITY STAFF

During the 1st Quarter of 2022, there were no changes of key personnel to report.

9.3 CONSULTANT TEAM STAFF

During the 1st Quarter of 2022, there were no changes of key personnel to report.

9.4 COVID-19 IMPACT

In March 2020, the COVID-19 crisis began affecting daily work routines for the County, Consultant Team and contractors and resulted in various restrictions because of New York State and Oneida County Executive Orders. While COVID restrictions have since been lifted, the County, Consultant Team and contractors continue to abide by CDC regulations and their own company guidance with respect to COVID-19. The pandemic created a number of challenges early on for the various projects, and the County continues to deal with industry-wide challenges such as supply chain disruption and scheduling issues.

10.0 ADMINISTRATIVE ITEMS

10.1 WORK AUTHORIZATIONS

There were no new work authorizations issued during the 1st Quarter of 2022.

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 2021 CWSRF Intended Use Plan.

The financing agreement for CWSRF Project No. C6-6070-08-15 was amended in Q1-2022 to incorporate the upgrades to the Barnes Avenue Pumping Station.

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 NYSERDA 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

CWSRF PROJECT NO.	PHASE	CURRENT DESCRIPTION	CWSRF FINANCED AMOUNT
C6-6070-08-14	5B &6C	Balance from C6-6070-08-04.	\$15,000,000 – Interest Free loan <i>Long Term Debt 2019</i>
C6-6070-08-15 (3)	6A	Construction of remainder of the Water Pollution Control Plant, Sauquoit Creek Pumping Station and Force Main upgrades not financed in Phases 5B, 6B, and 6C. (Balance from C6-6070-08-05). Financing Agreement Amendment (Q1- 2022) – addition of Barnes Avenue Pumping Station Upgrades to financing agreement.	\$80,000,000 (2019 Annual List) \$40,000,000 (Additional Bond Authorization Request – Amendment 3 – March 2020)
C6-6070-08-17	6A	Help finance the two additional microturbines being installed under Contract C-8 (GIGP No. 1882).	\$1,250,000 GIGP Grant

(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 2022									
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 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 installation is complete and operational.	March 2018
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	The 42-inch force main is in service and conveying peak flows up to 38 mgd. Rehab of the existing 30-inch force main began in Q2-2021 and is ongoing (CIPP).	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	<p><u>Note - Site and buildings impacted by 7/1/2017, 1/24/2019, and 10/31/2019 ice jam/flooding events.</u></p> <p><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.</p> <p><u>Existing Pumping Station Building:</u> Electrical, HVAC, and plumbing renovations complete minus minor punch list items.</p>	Anticipated completion of HVAC, Electrical, and Plumbing Contracts June 2022. With exception of Huber screen equipment, anticipated completion of General Contract September 2022 (pending inspection by NYS Code Enforcement officials).

Table 2.1

Oneida County Sewer District

Summary of Contracts 1Q 2022

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	July 2022	December 2022	The Basis of Design Report was approved by the EFC in the 3rd quarter; EFC financing was approved and GHD has commenced the final design.	December 2023
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	<u>Influent Building:</u> 4 new influent pumps and 3 mechanically cleaned bar screens are substantially complete. <u>Combined Influent Building:</u> Refurbishment of building and equipment (4 pumps, 3 screens) is complete. <u>Grit Removal:</u> Grit buildings No. 2 and 3 are complete. Grit Building No. 3 was impacted by a flooding event on June 1, 2020; damaged equipment repairs/replacement are now complete, although the insurance claim is ongoing. <u>Administration Building:</u> Rehabilitation of the building is complete, and the building has been officially re-occupied. <u>Electrical:</u> 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. Generator system is fully operational. All 4 prime contractors (General, HVAC, Electrical, and Plumbing) are working on addressing final punch list items.	June 2022

Table 2.1

Oneida County Sewer District

Summary of Contracts 1Q 2022

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> HRD tank work is substantially complete and operational and all 4 prime contractors are addressing punch list items. Work change directive work in progress for HRD Sample pumps.</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> PSTs No. 3 and 4 are substantially complete and operational and all 4 prime contractors are addressing punch list items. Troubleshooting primary sludge pumps operation is ongoing.</p> <p><u>Disinfection Building:</u> Disinfection Building is substantially complete and operational and all 4 prime contractors are addressing punch list items. Work change directive work in progress on HVAC emergency shutdown.</p> <p><u>Administration and Operations Building:</u> Admin and Ops Building is substantially complete and operational and all 4 prime contractors are addressing punch list items.</p> <p><u>Aeration Tank Distribution Structure:</u> Aeration Tank Distribution Structure is substantially complete and operational.</p> <p><u>HRD Outfall Structure and Outfalls:</u> HRD Outfall Structure and Outfalls is substantially complete and operational and all 4 prime contractors are addressing punch list items.</p>	December 2021 (substantially complete)
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	Approved	Advertised November 17, 2020	Notice to Proceed May 13, 2021	<p><u>Blower Building:</u> Demolition of existing blower Nos. 3 and 4 and existing RAS pump Nos. 5 -7 are complete. New blower installation is complete and blower startup is in process. Delivery of the Blower Building unit substation is delayed due to supply chain issues; delivery is expected in summer 2022. Installation of associated electrical duct bank and conduit is ongoing.</p> <p><u>Aeration Tanks:</u> At Aeration Tank No. 3, installation of diffusers, aeration piping, concrete repairs and railing installation are complete and the aeration system has been started up. At Aeration Tank No. 3, demolition of existing equipment is ongoing.</p> <p><u>Final Settling Tanks:</u> Installation of equipment, railings and electrical conduit is ongoing. Concrete repairs are ongoing.</p> <p><u>Administration and Operations Building:</u> Concrete floor infill at the former Incinerator 1 and 3 locations is complete. Electrical feeder installation to the new Switch bank Room is ongoing.</p> <p><u>Asset Management Structure:</u> Installation of pile foundations is complete. Subgrade preparation and sub-slab utility installation is ongoing.</p>	Estimated June 2023

(1) - Estimated construction start = Notice to Proceed

Table 5.1

Oneida County Sewer District

Summary of Contracts 1Q 2022

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: Paris Road area (NHD-23)</u>	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: 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.</u>	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 2022

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
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>Village of Yorkville</u> Flow data, mapping, and SSES (smoke testing/CCTV) results were assessed to determine location(s) most appropriate for continued sewer system rehabilitation. Both sanitary and storm sewers will be lined. House laterals will be lined. Bid documents are nearly complete and anticipate project to be bid in 2nd Quarter 2022.	C6-6070-08-10	Preliminary	Tentative Submission Date - 2022	<1	To be determined from the assessment	\$ 600,000.00	TBD	Tentative Bid Date - 2nd Quarter 2022

* - 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

Oneida County Annual Report, RDII Analysis (ADS)



Oneida County Annual Report RDII Analysis

21 April 2022

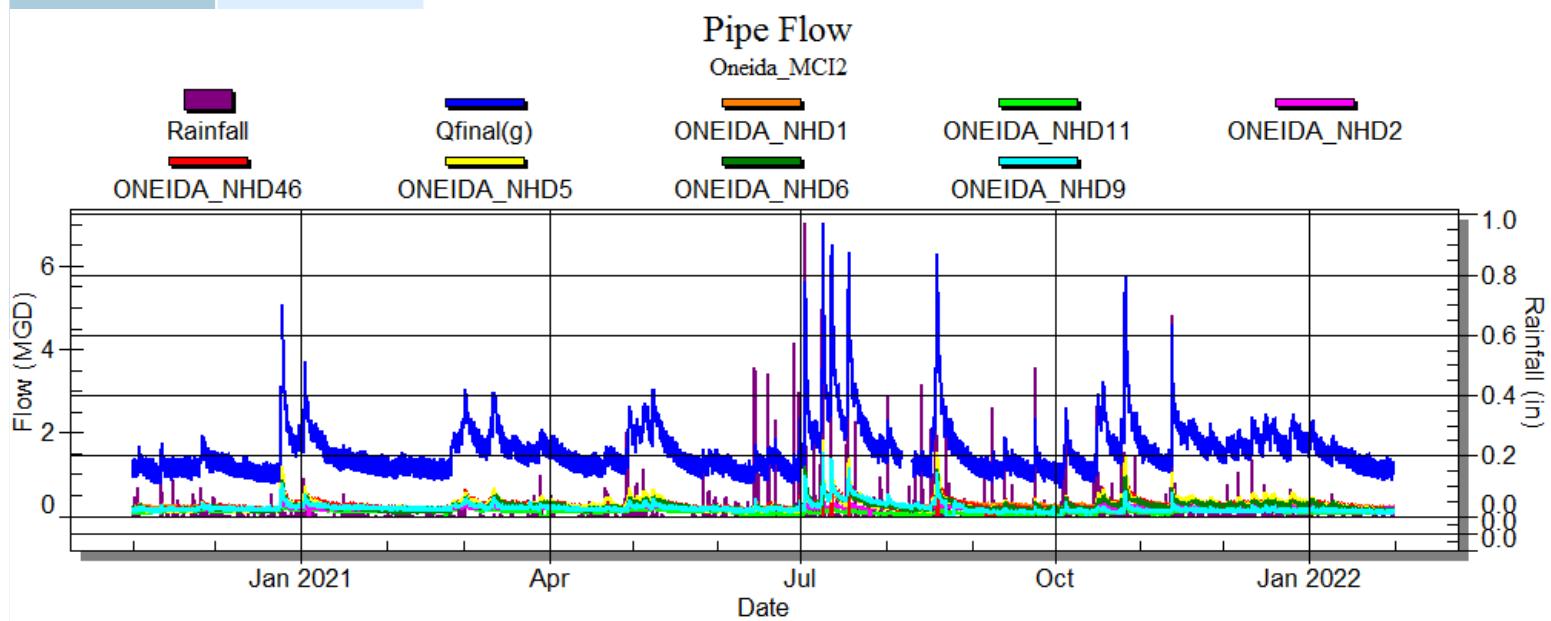


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1. - Overview

The objectives of this report are to review the historical flow data from the County's metering and rain gauge networks for calendar year 2021. The report will look at:

1. Hydrographs from three groups of specified meters of interest for storms of July 8, August 17-21, October 24-26, and November 12.
2. Meters in the Starch Factory Interceptor for the same four storms
3. Seasonal values in Average Dry Day Flow (ADD) 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.

FIGURE 1.

Oneida County, NY 2021 (28 Feb 22) Flow Monitoring Study Schematic

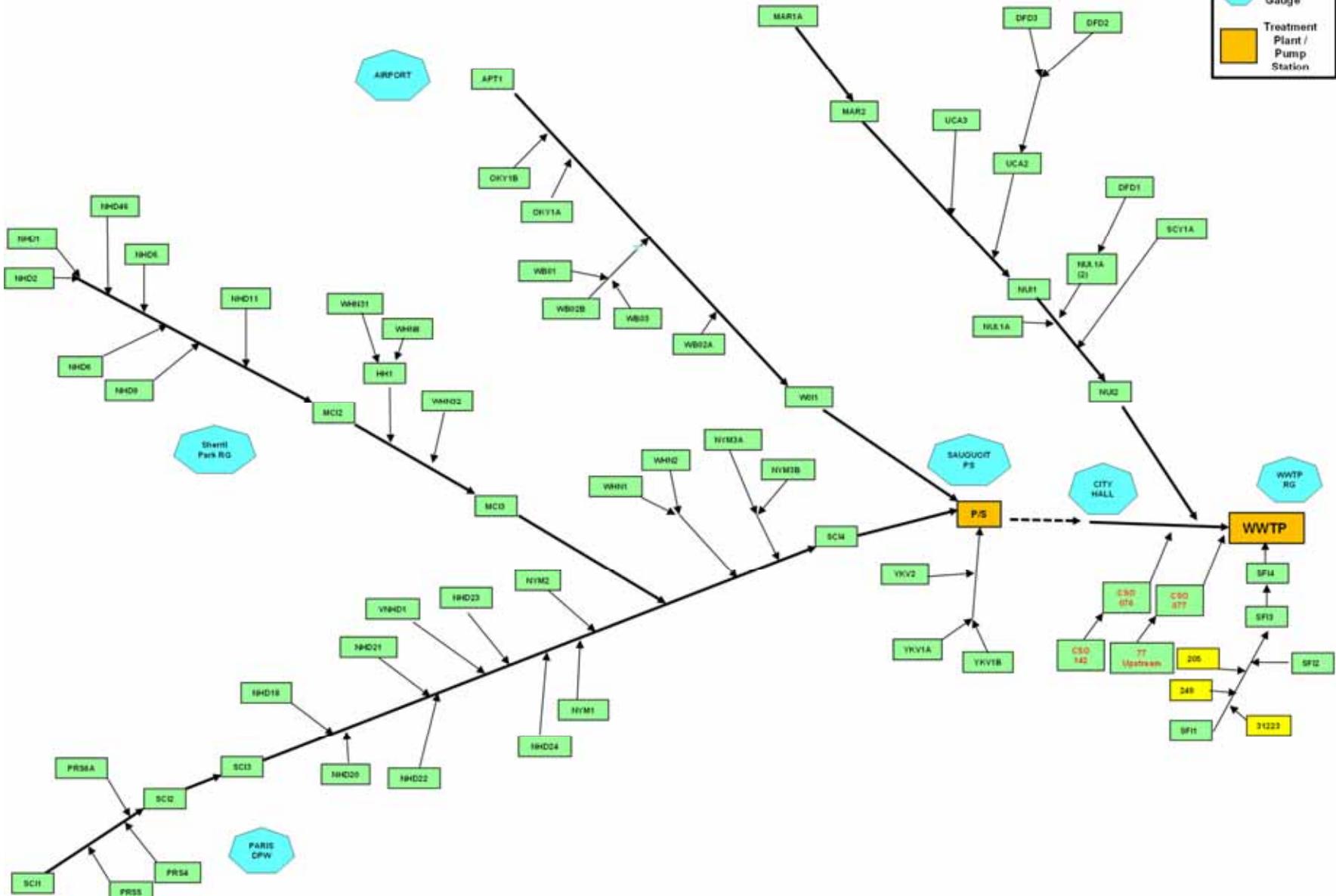


Table 1 lists the sizes of each of the metered sewersheds in Acres and linear feet of sewer. These values are used to ‘normalize’ RDII volumes to provide an apples-to-apples comparison. A series of 9’s indicates the value is unknown. These values have been provided to ADS.

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_SF11	767	81,909
Oneida_SF12	142	8,115
Oneida_SF13	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. – Hydrographs from Meters of Interest for Four Storms

It has been requested to view hydrographs from the three sets of meters listed in Table 2 for storms of July 8, August 17-21, October 24-26, and November 12.

Table 2 Three sets of meters for viewing hydrographs.

Set 1:	Set 2	Set 3
NHD5	VNHD1	NYM3
NHD18	YKV1A	OKY1A
NHD20	YKV2	WBO1
NHD21		WBO2A
NHD22		
NHD23		
NHD24		

The hydrographs for these three sets of meters are included in following nine figures. The four storms for the three sets of meters are grouped into 3 hydrographs for each group.

Hydrographs for the full period for all sites are included in Appendix A.

Figure 2A Set 1 July 9

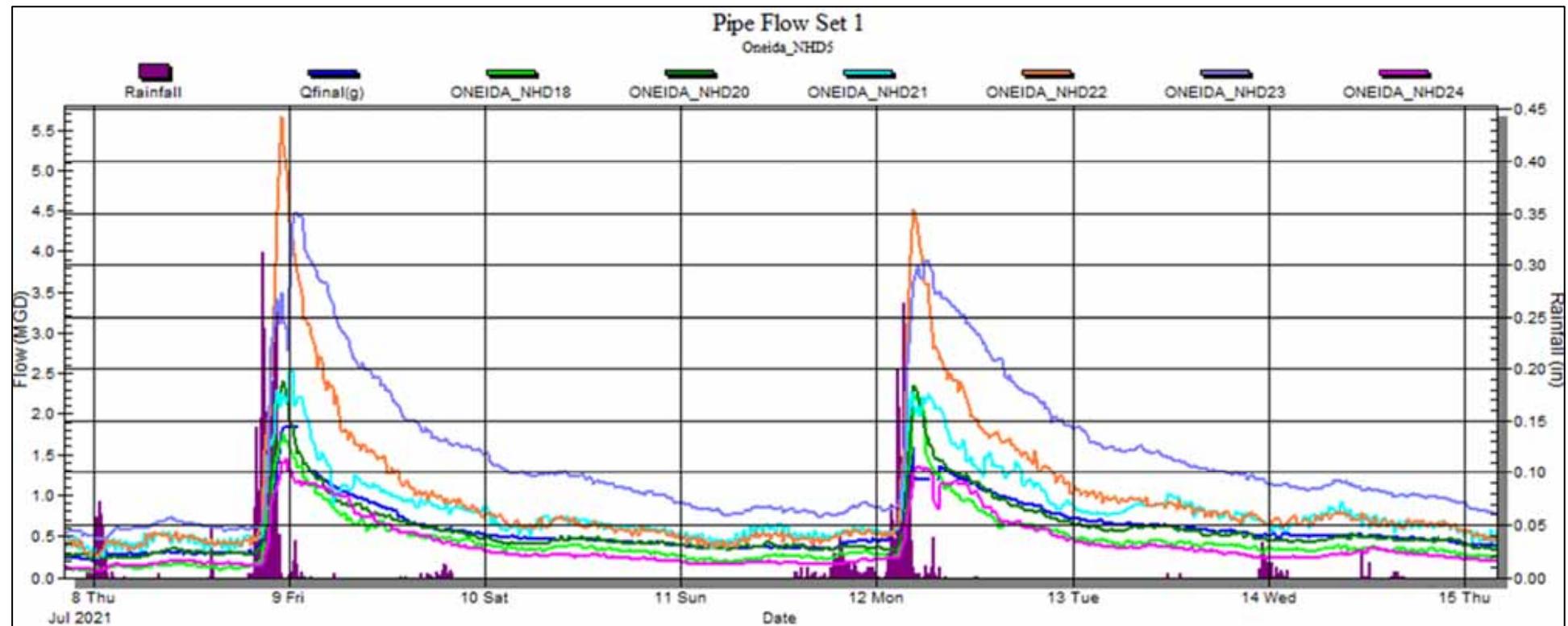


Figure 2B Set 1 August 18

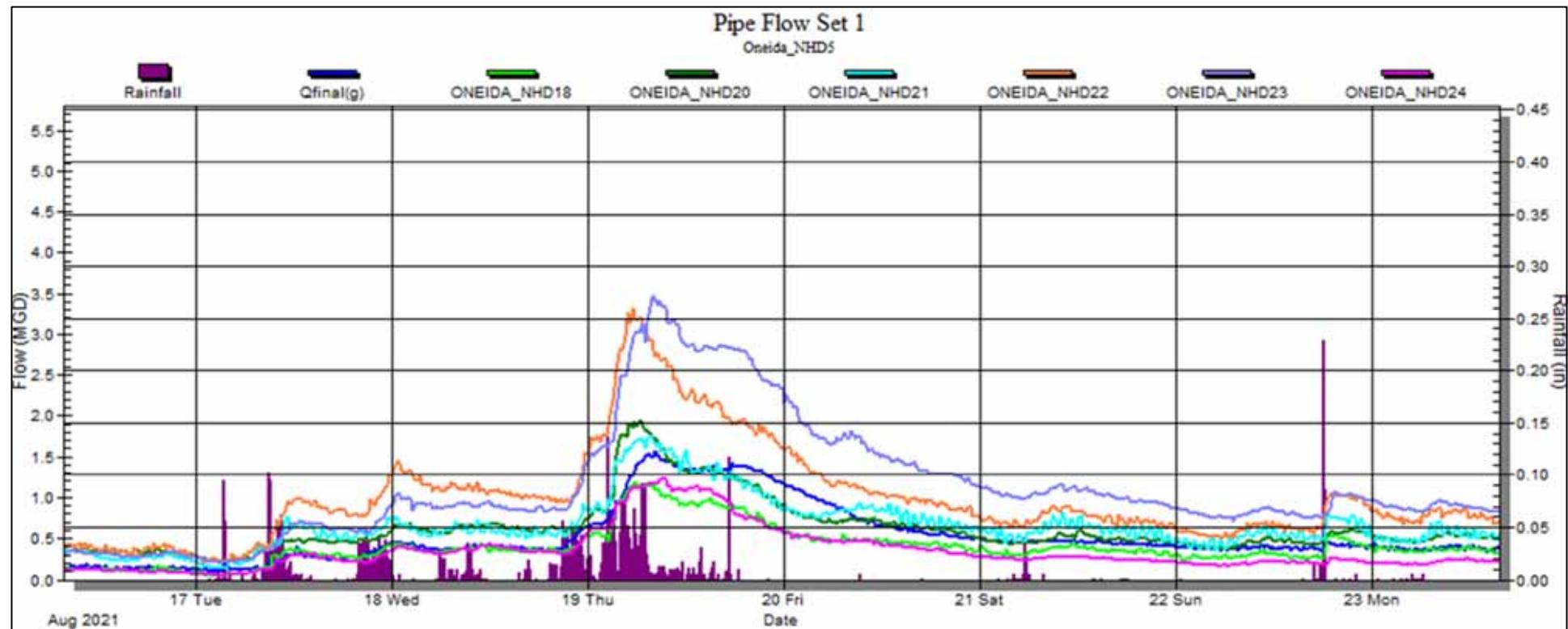


Figure 2C Set 1 October 26 and November 12

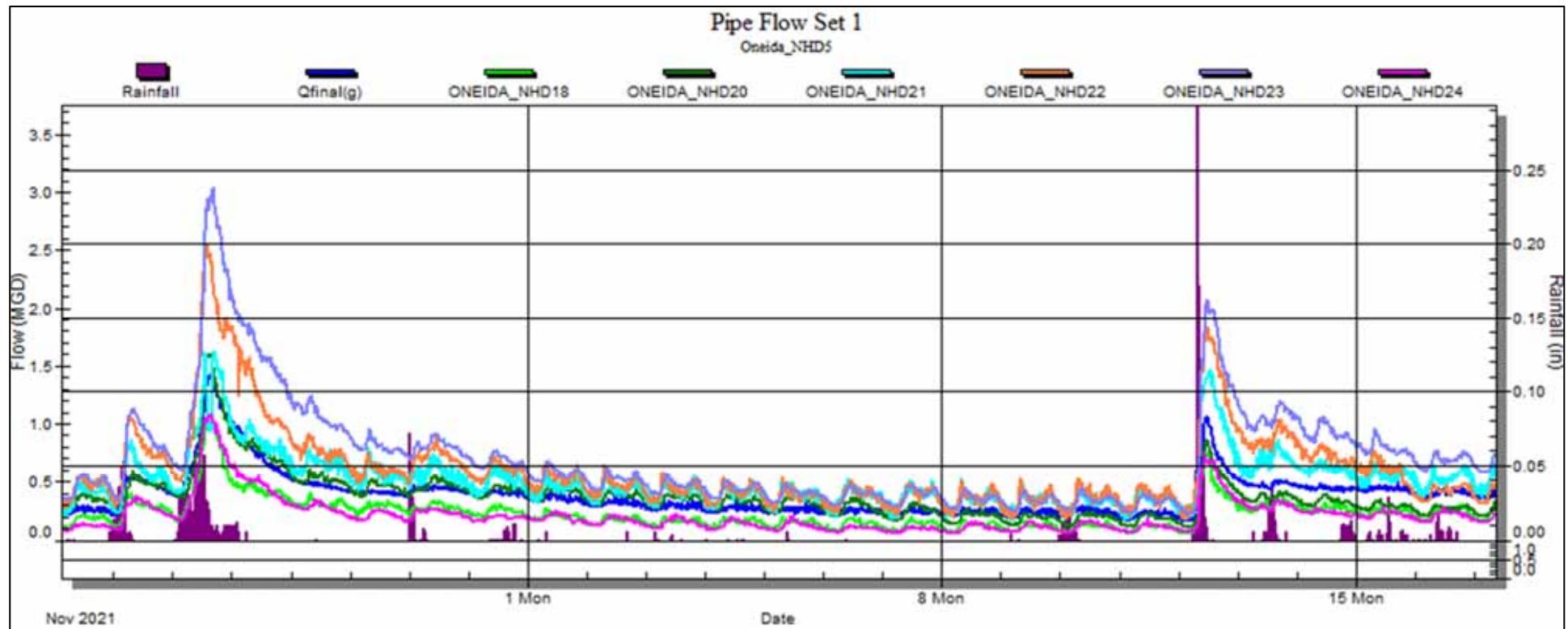


Figure 3A Set 2

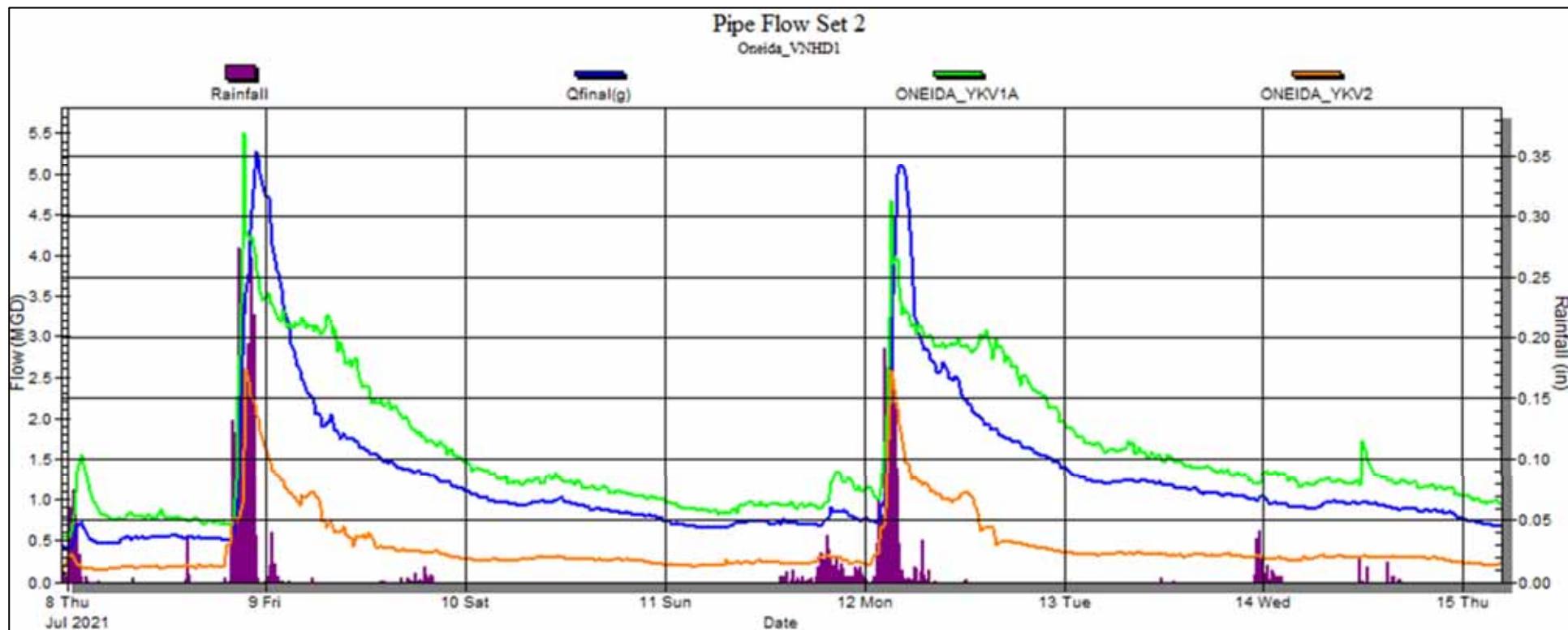


Figure 3B Set 2

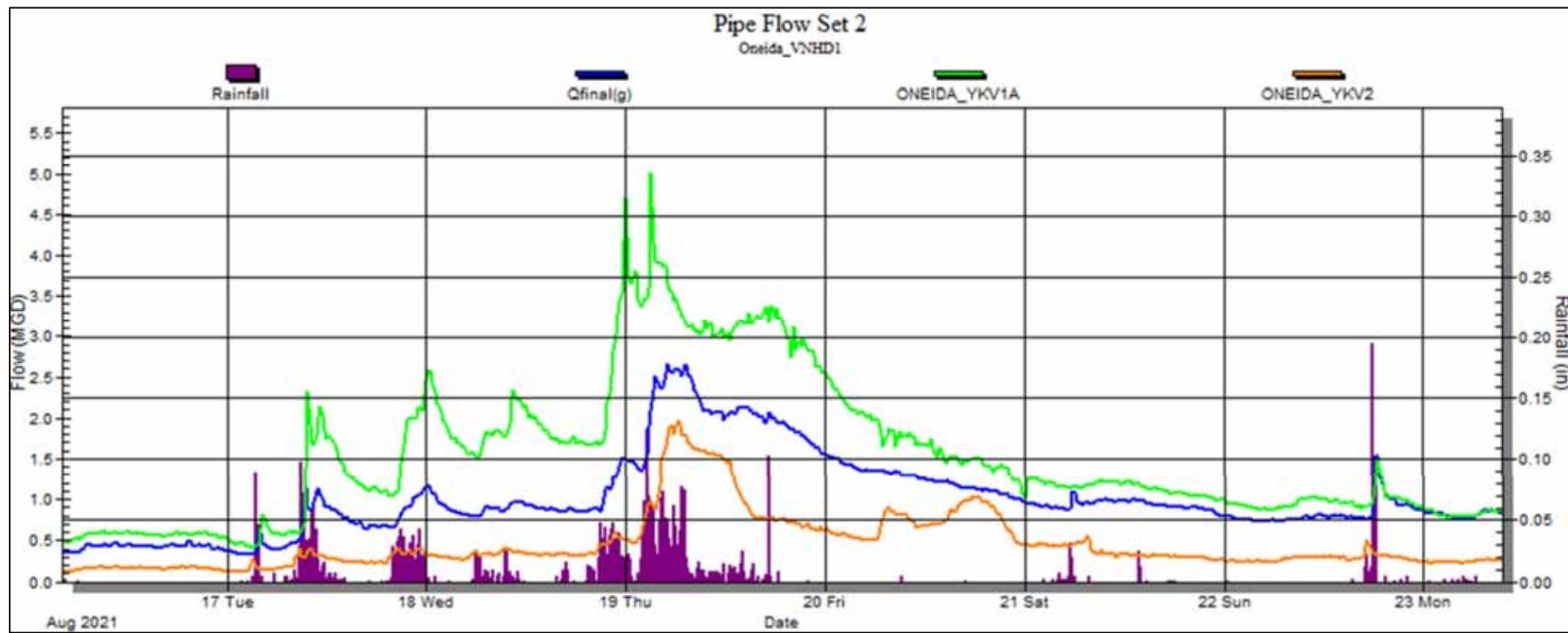


Figure 3C Set 2

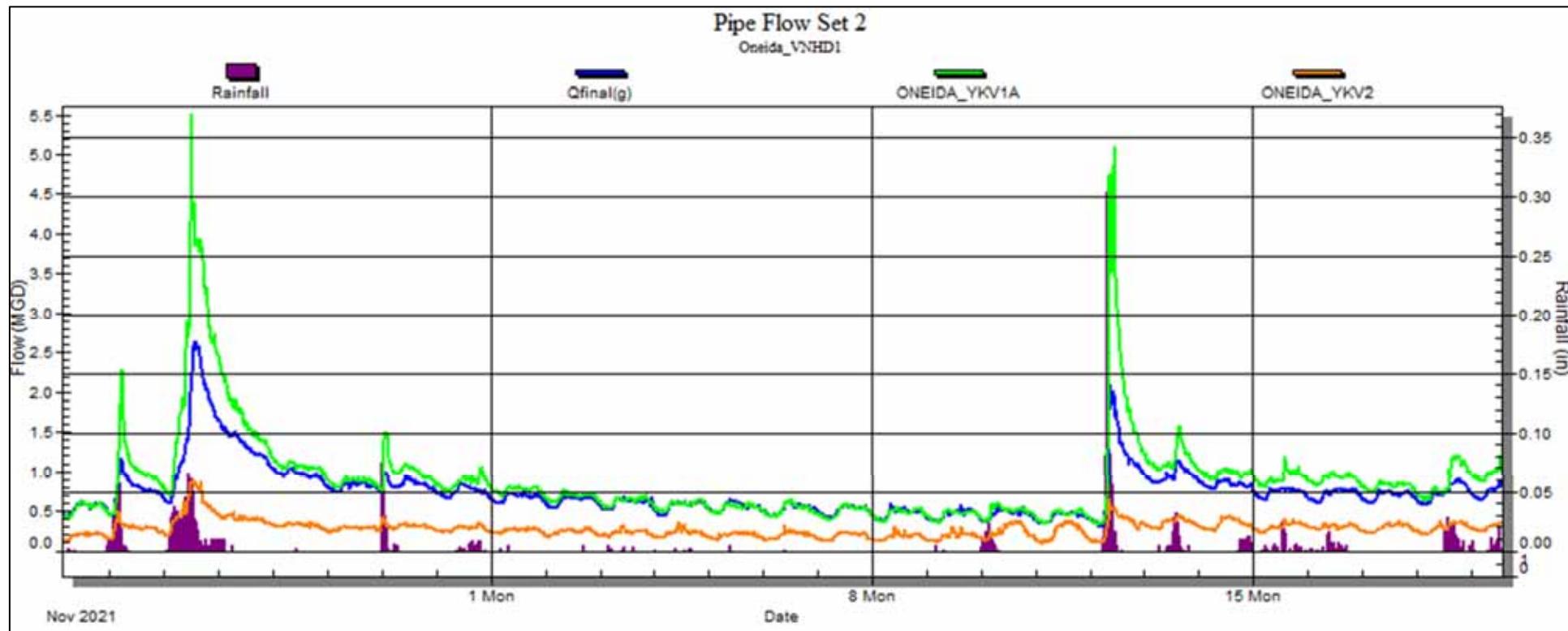


Figure 4A Set 3

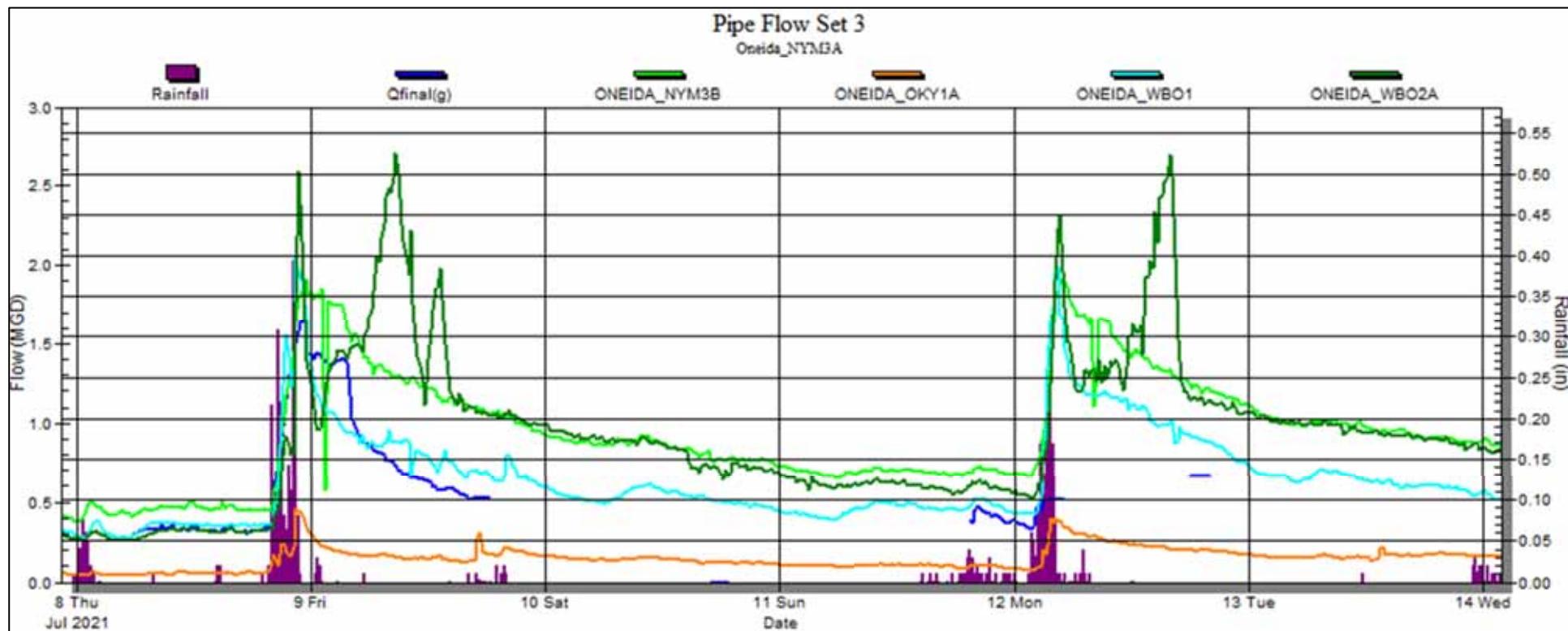


Figure 4B Set 3

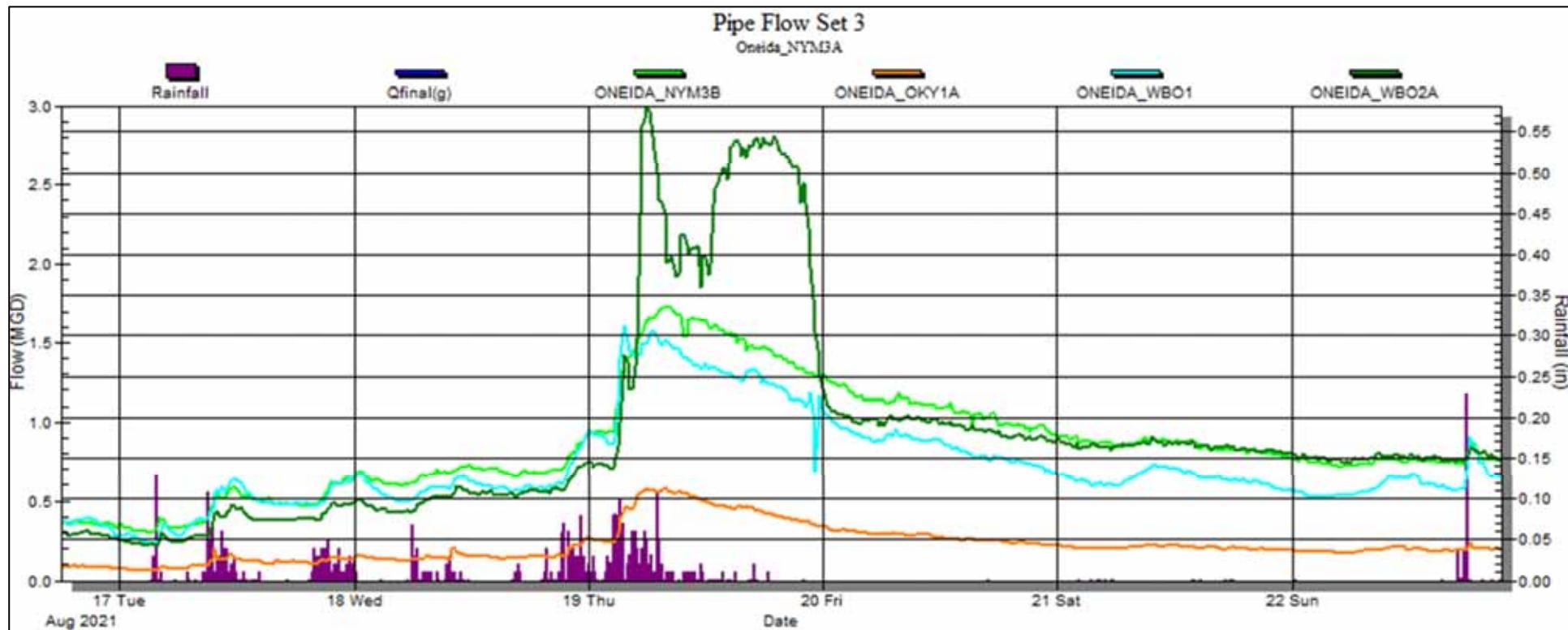
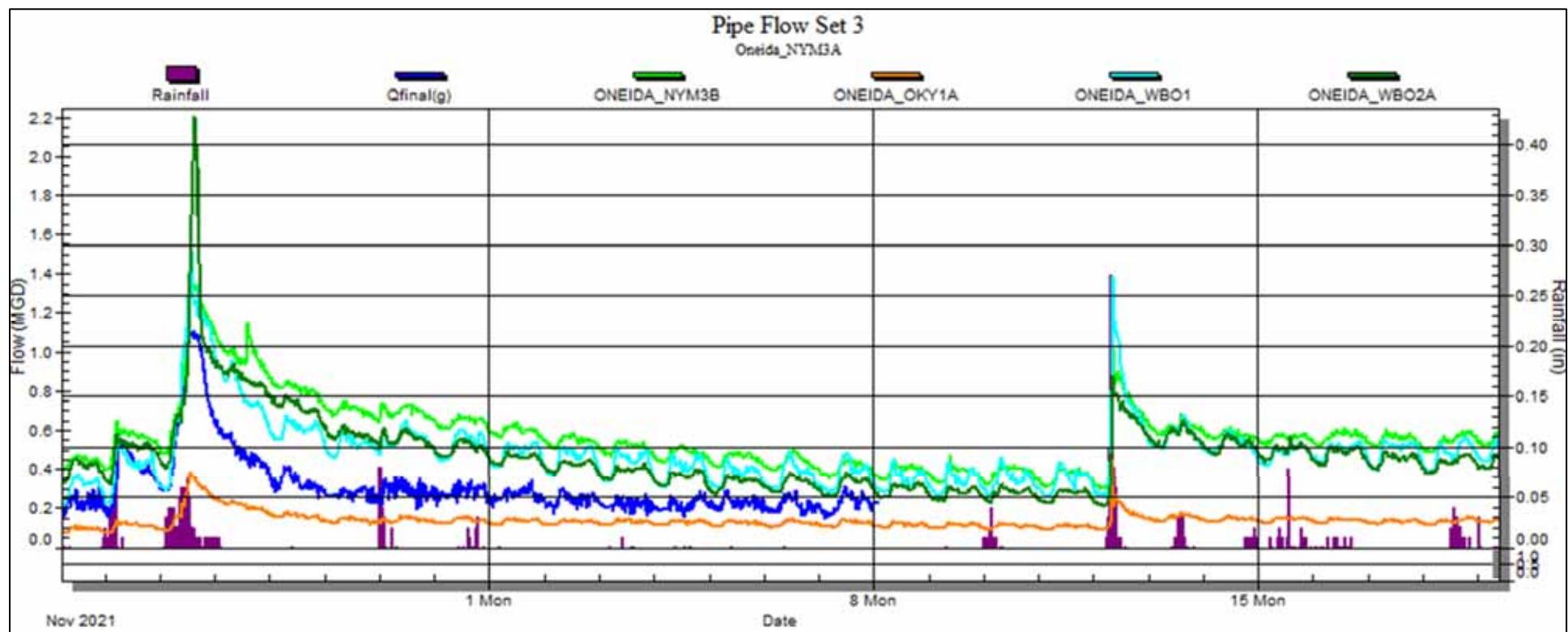


Figure 4C Set 3



2A Starch Factory Interceptor Hydrographs

The following three figures show the hydrographs from the four selected storms.

Figure 5A Starch Factory Interceptor

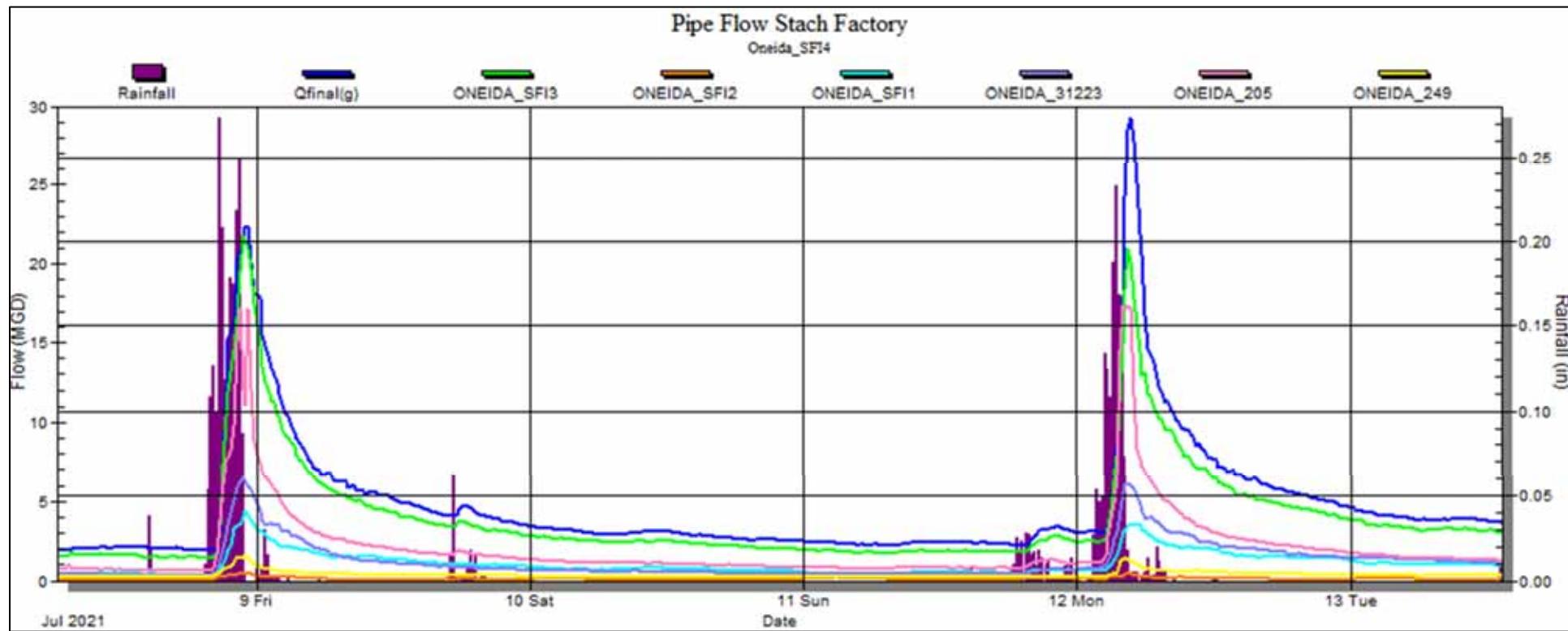


Figure 5B Starch Factory Interceptor

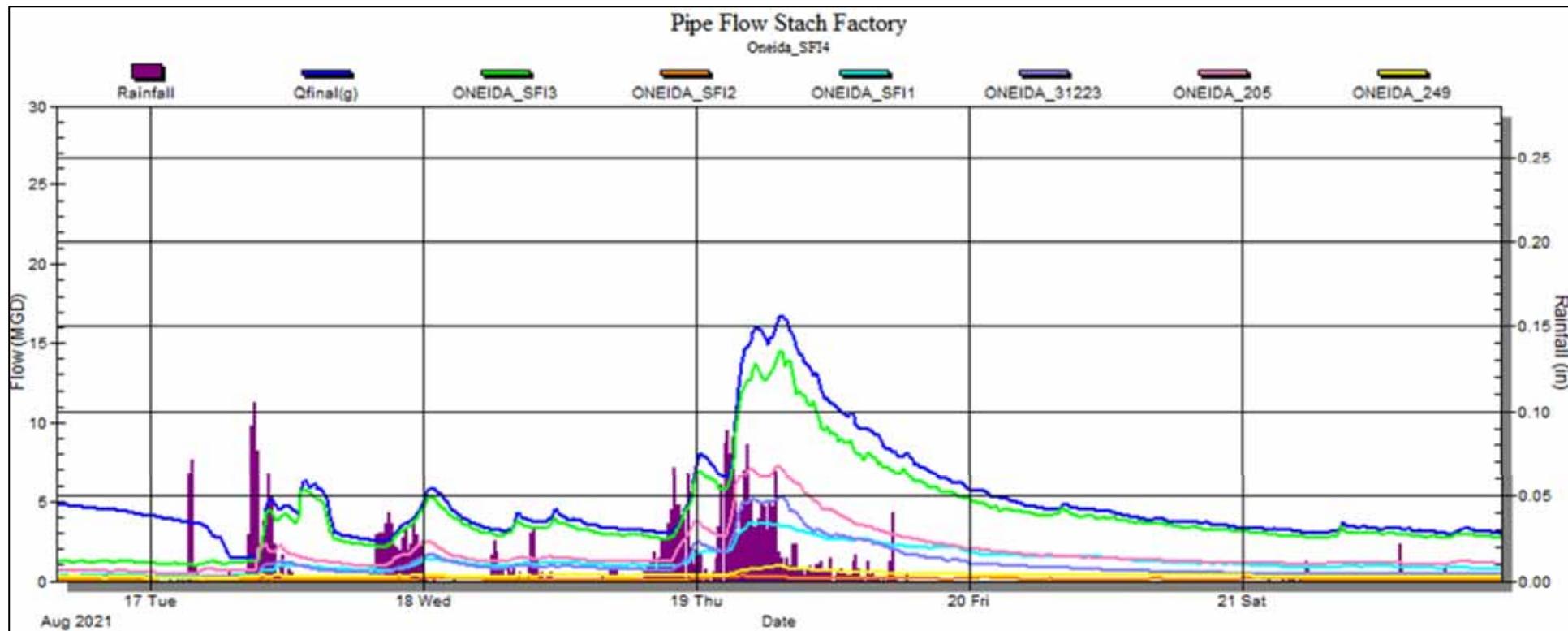
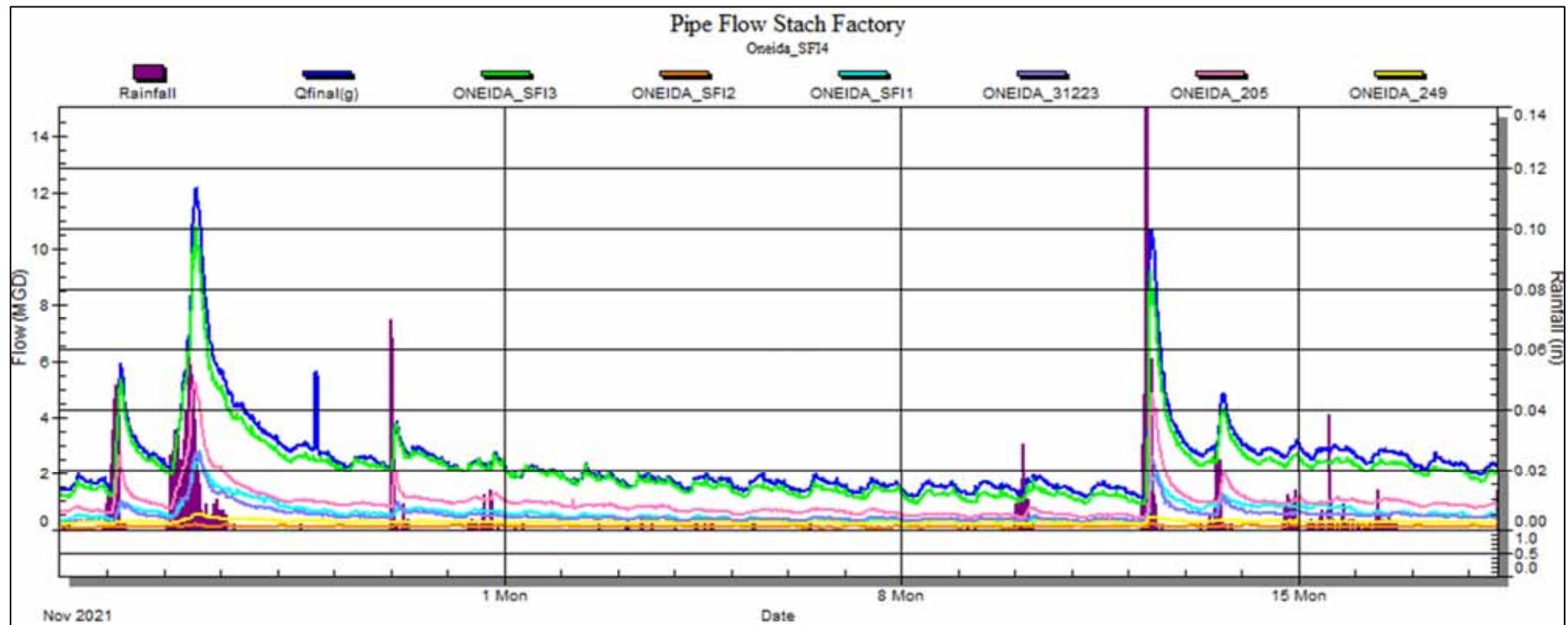


Figure 5C Starch Factory Interceptor



3. - Rainfall

Table 3 lists the rainfall recorded at each gauge from November of 2020.

Table 3 Rainfall totals since November 2020.

Storm	RG_Airport	RG_Cityhall	RG_ParisDPW	RG_SauquoitPS	RG_Sherillpark	RG_WWTP
11/2/2020	0.35	0.41	0.37	0.41	0.28	0.37
11/11/2020	0.9	0.71	0.69	0.79	0.66	0.88
11/22/2020	0.3	0.26	0.57	0.31	0.33	0.33
11/25/2020	0.62	0.69	0.47	0.73	0.63	0.66
12/24/2020	1.5	1.22	1.72	1.5	1.57	1.39
1/2/2021	0.8	0.64	0	0.98	0.58	0.73
3/28/2021	0.47	0.62	0.68	0.54	0.6	0.62
4/20/2021	0.48	0.52	0.69	0.69	0.83	0.52
4/29/2021	1.03	1.04	1.03	0	0.95	1.01
5/2/2021	0.88	0.73	0.63	0	0.56	0.83
5/4/2021	0.75	0.55	0.57	0	0.59	0.64
5/8/2021	0.92	0.82	0.89	0	0.86	0.8
5/26/2021	0.38	0.62	0.29	0	0.42	0.52
5/28/2021	0.63	0.45	0.6	0	0.54	0.53
6/2/2021	0.61	0.24	0.89	0.3	0.31	0.25
6/14/2021	1.14	1.27	0.88	1.61	1.83	1.64
6/19/2021	0	1.07	0.59	1.35	0.92	0.8
7/1/2021	0.42	0.49	1.49	0.61	3.02	0.88
7/8/2021	1.61	2.64	1.45	2.36	2.55	3
7/11/2021	1.24	1.9	1.58	1.79	2.01	2.22
7/17/2021	1.88	2.55	1.53	2.25	1.99	2.68
7/29/2021	0.6	0.54	0.28	0.73	0.32	0.83
8/1/2021	1.02	0.72	0.98	0.59	1.03	0.66
8/13/2021	0.31	1.28	0.47	1.64	1.08	1.8
8/17/2021	4.64	2.85	3.45	3.39	4.15	3.22
9/8/2021	0.63	0.6	0.63	0.53	0.53	0.61
9/12/2021	1.06	0.81	1.01	0.79	0.99	0.82
9/15/2021	0.44	0.44	0.59	0.33	0.36	0.41
9/23/2021	1.52	0.47	0.78	0.78	0.96	0.64
10/3/2021	2.03	1.3	1.35	1.74	1.62	1.83
10/15/2021	2.34	1.69	2.28	2	2.09	1.67
10/24/2021	2.24	1.7	2.25	2.12	2.21	1.85

Storm	RG_Airport	RG_Cityhall	RG_ParisDPW	RG_SauquoitPS	RG_Sherillpark	RG_WWTP
11/12/2021	1.69	1.6	1.74	1.74	1.93	1.61
12/2/2021	0.53	0.37	0.47	0.59	0.38	0.39
12/6/2021	0.54	0.44	0.52	0.51	0.4	0.42
12/11/2021	0.5	0.52	0.47	0.54	0.48	0.56
12/15/2021	0.74	0.49	0.57	0.69	0.57	0.53
12/25/2021	0.62	0.53	0.64	0.46	0.6	0.63

Table 4 on the following page lists the maximum return frequency and corresponding duration for all storm from November 2020.

Table 4 Maximum Return Frequency for storms since November 2020.

Storm	RG_Airport	RG_Cityhall	RG_ParisDPW	RG_SauquoitPS	RG_Sherillpark	RG_WWTP
11/2/2020	0.8-mo;3-hr;0.3-in	0.9-mo;3-hr;0.3-in	0.9-mo;1-hr;0.2-in	1.0-mo;3-hr;0.4-in	0.6-mo;6-hr;0.3-in	0.8-mo;3-hr;0.3-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
11/22/2020	0.6-mo;6-hr;0.2-in	0.5-mo;6-hr;0.2-in	1.0-mo;6-hr;0.4-in	0.6-mo;6-hr;0.3-in	0.6-mo;6-hr;0.2-in	0.6-mo;12-hr;0.3-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
3/28/2021	1.0-mo;2-hr;0.3-in	1.0-mo;1-hr;0.2-in	1.1-mo;2-hr;0.4-in	0.5-mo;2-hr;0.2-in	1.0-mo;15-min;0.2-in	1.2-mo;1-hr;0.3-in
4/20/2021	0.8-mo;12-hr;0.4-in	0.7-mo;12-hr;0.4-in	1.0-mo;48-hr;0.7-in	1.4-mo;6-hr;0.6-in	1.2-mo;48-hr;0.8-in	0.8-mo;12-hr;0.4-in
4/29/2021	1.6-mo;24-hr;1.0-in	1.6-mo;24-hr;1.0-in	1.5-mo;6-hr;0.7-in	0.0-mo;15-min;0.0-in	1.5-mo;24-hr;0.9-in	1.6-mo;24-hr;1.0-in
5/2/2021	1.2-mo;6-hr;0.5-in	1.2-mo;6-hr;0.5-in	0.9-mo;6-hr;0.4-in	0.0-mo;15-min;0.0-in	0.9-mo;6-hr;0.4-in	1.3-mo;6-hr;0.6-in
5/4/2021	1.4-mo;6-hr;0.6-in	1.0-mo;1-hr;0.2-in	0.8-mo;24-hr;0.5-in	0.0-mo;15-min;0.0-in	0.9-mo;6-hr;0.4-in	1.1-mo;6-hr;0.5-in
5/8/2021	1.2-mo;48-hr;0.9-in	1.1-mo;12-hr;0.6-in	1.2-mo;12-hr;0.7-in	0.0-mo;15-min;0.0-in	1.2-mo;48-hr;0.8-in	1.0-mo;48-hr;0.7-in
5/26/2021	0.9-mo;15-min;0.1-in	1.5-mo;15-min;0.2-in	1.0-mo;1-hr;0.2-in	0.0-mo;15-min;0.0-in	1.0-mo;1-hr;0.2-in	1.5-mo;1-hr;0.3-in
5/28/2021	1.1-mo;12-hr;0.6-in	0.8-mo;12-hr;0.4-in	1.0-mo;12-hr;0.5-in	0.0-mo;15-min;0.0-in	1.0-mo;12-hr;0.5-in	0.9-mo;12-hr;0.5-in
6/2/2021	1.6-mo;15-min;0.3-in	0.3-mo;48-hr;0.2-in	1.9-mo;15-min;0.3-in	0.5-mo;24-hr;0.3-in	0.5-mo;30-min;0.1-in	0.3-mo;48-hr;0.2-in
6/14/2021	1.3-yr;1-hr;0.9-in	2.1-mo;1-hr;0.4-in	1.6-mo;15-min;0.2-in	2.4-yr;1-hr;1.1-in	2.7-yr;15-min;0.7-in	3.3-mo;30-min;0.4-in
6/19/2021	0.0-mo;15-min;0.0-in	8.2-mo;1-hr;0.7-in	1.9-mo;15-min;0.3-in	3.3-yr;30-min;1.0-in	6.9-mo;30-min;0.6-in	3.3-mo;1-hr;0.5-in
7/2/2021	0.7-mo;12-hr;0.4-in	0.9-mo;12-hr;0.5-in	3.0-mo;30-min;0.4-in	1.7-mo;15-min;0.3-in	11.3-yr;1-hr;1.6-in	2.4-mo;1-hr;0.5-in
7/8/2021	6.7-mo;3-hr;1.1-in	12.7-yr;3-hr;2.5-in	1.0-yr;3-hr;1.3-in	6.5-yr;3-hr;2.2-in	10.6-yr;3-hr;2.4-in	14.5-yr;3-hr;2.5-in
7/11/2021	2.8-mo;3-hr;0.8-in	2.0-yr;2-hr;1.4-in	6.5-mo;2-hr;0.9-in	1.1-yr;3-hr;1.4-in	1.9-yr;2-hr;1.4-in	3.4-yr;2-hr;1.6-in
7/17/2021	5.1-mo;24-hr;1.7-in	1.4-yr;1-hr;0.9-in	2.7-mo;48-hr;1.5-in	1.9-yr;1-hr;1.0-in	5.7-mo;24-hr;1.8-in	1.2-yr;24-hr;2.5-in
7/29/2021	1.1-mo;6-hr;0.5-in	1.0-mo;1-hr;0.2-in	0.6-mo;6-hr;0.3-in	1.3-mo;6-hr;0.6-in	0.6-mo;6-hr;0.2-in	2.8-mo;15-min;0.4-in
8/1/2021	4.9-mo;15-min;0.4-in	1.8-mo;3-hr;0.7-in	1.8-mo;30-min;0.3-in	1.5-mo;2-hr;0.5-in	4.6-mo;1-hr;0.6-in	1.7-mo;3-hr;0.6-in
8/13/2021	1.2-mo;30-min;0.2-in	11.1-mo;1-hr;0.8-in	1.2-mo;15-min;0.2-in	7.0-yr;1-hr;1.5-in	2.3-yr;15-min;0.7-in	1.3-yr;6-hr;1.6-in
8/17/2021	4.8-yr;48-hr;4.0-in	8.8-mo;48-hr;2.5-in	1.2-yr;48-hr;2.8-in	1.6-yr;48-hr;3.0-in	2.5-yr;72-hr;4.0-in	1.3-yr;48-hr;2.9-in
9/8/2021	3.8-mo;1-hr;0.5-in	2.6-mo;1-hr;0.5-in	1.9-mo;1-hr;0.4-in	1.8-mo;1-hr;0.4-in	1.8-mo;1-hr;0.4-in	2.5-mo;1-hr;0.5-in
9/12/2021	3.7-mo;1-hr;0.5-in	1.6-mo;6-hr;0.7-in	1.9-mo;6-hr;0.8-in	1.7-mo;1-hr;0.4-in	2.5-mo;1-hr;0.5-in	1.6-mo;6-hr;0.7-in
9/15/2021	0.8-mo;12-hr;0.4-in	1.0-mo;15-min;0.1-in	1.4-mo;15-min;0.2-in	0.8-mo;2-hr;0.2-in	0.8-mo;2-hr;0.2-in	0.9-mo;6-hr;0.4-in
9/23/2021	3.4-yr;1-hr;1.2-in	1.0-mo;6-hr;0.4-in	2.0-mo;1-hr;0.4-in	3.8-mo;1-hr;0.5-in	7.5-mo;1-hr;0.7-in	1.4-mo;6-hr;0.6-in
10/3/2021	5.0-mo;48-hr;2.0-in	1.8-mo;48-hr;1.3-in	1.9-mo;48-hr;1.3-in	3.5-mo;48-hr;1.7-in	3.1-mo;48-hr;1.6-in	3.8-mo;48-hr;1.8-in
10/15/2021	4.8-mo;48-hr;2.0-in	2.0-mo;72-hr;1.7-in	4.4-mo;72-hr;2.3-in	3.2-mo;72-hr;2.0-in	3.5-mo;72-hr;2.1-in	2.0-mo;72-hr;1.6-in
10/24/2021	5.9-mo;48-hr;2.1-in	3.4-mo;48-hr;1.7-in	5.9-mo;48-hr;2.1-in	5.4-mo;48-hr;2.1-in	5.7-mo;48-hr;2.1-in	3.9-mo;48-hr;1.8-in
11/12/2021	5.1-mo;6-hr;1.2-in	4.8-mo;6-hr;1.2-in	5.8-mo;6-hr;1.3-in	6.9-mo;6-hr;1.3-in	1.0-yr;6-hr;1.5-in	4.8-mo;6-hr;1.2-in
12/2/2021	0.8-mo;24-hr;0.5-in	0.6-mo;24-hr;0.4-in	0.7-mo;24-hr;0.5-in	0.9-mo;24-hr;0.6-in	0.6-mo;24-hr;0.4-in	0.6-mo;24-hr;0.4-in
12/6/2021	1.2-mo;6-hr;0.5-in	0.8-mo;6-hr;0.3-in	1.1-mo;6-hr;0.5-in	0.9-mo;6-hr;0.4-in	0.9-mo;6-hr;0.4-in	0.7-mo;6-hr;0.3-in
12/11/2021	0.9-mo;6-hr;0.4-in	0.9-mo;2-hr;0.3-in	0.8-mo;2-hr;0.3-in	1.0-mo;1-hr;0.2-in	0.9-mo;2-hr;0.3-in	0.9-mo;2-hr;0.3-in
12/15/2021	1.3-mo;12-hr;0.7-in	0.9-mo;12-hr;0.5-in	1.0-mo;12-hr;0.5-in	1.2-mo;12-hr;0.7-in	0.9-mo;12-hr;0.5-in	0.9-mo;12-hr;0.5-in
12/25/2021	1.6-mo;15-min;0.3-in	1.5-mo;15-min;0.2-in	1.0-mo;24-hr;0.6-in	0.8-mo;1-hr;0.2-in	1.1-mo;12-hr;0.6-in	1.3-mo;1-hr;0.3-in

4. - 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 summer of 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 single family residential areas. Low density housing can be as low at 1 GPD/LF. High density housing such as multi-story apartments and commercial areas can be up to 10 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. High values for SFI4 are due to the ‘very tight’ subtraction from the upstream meter.

Figure 6 Base Infiltration for Summer 2021.

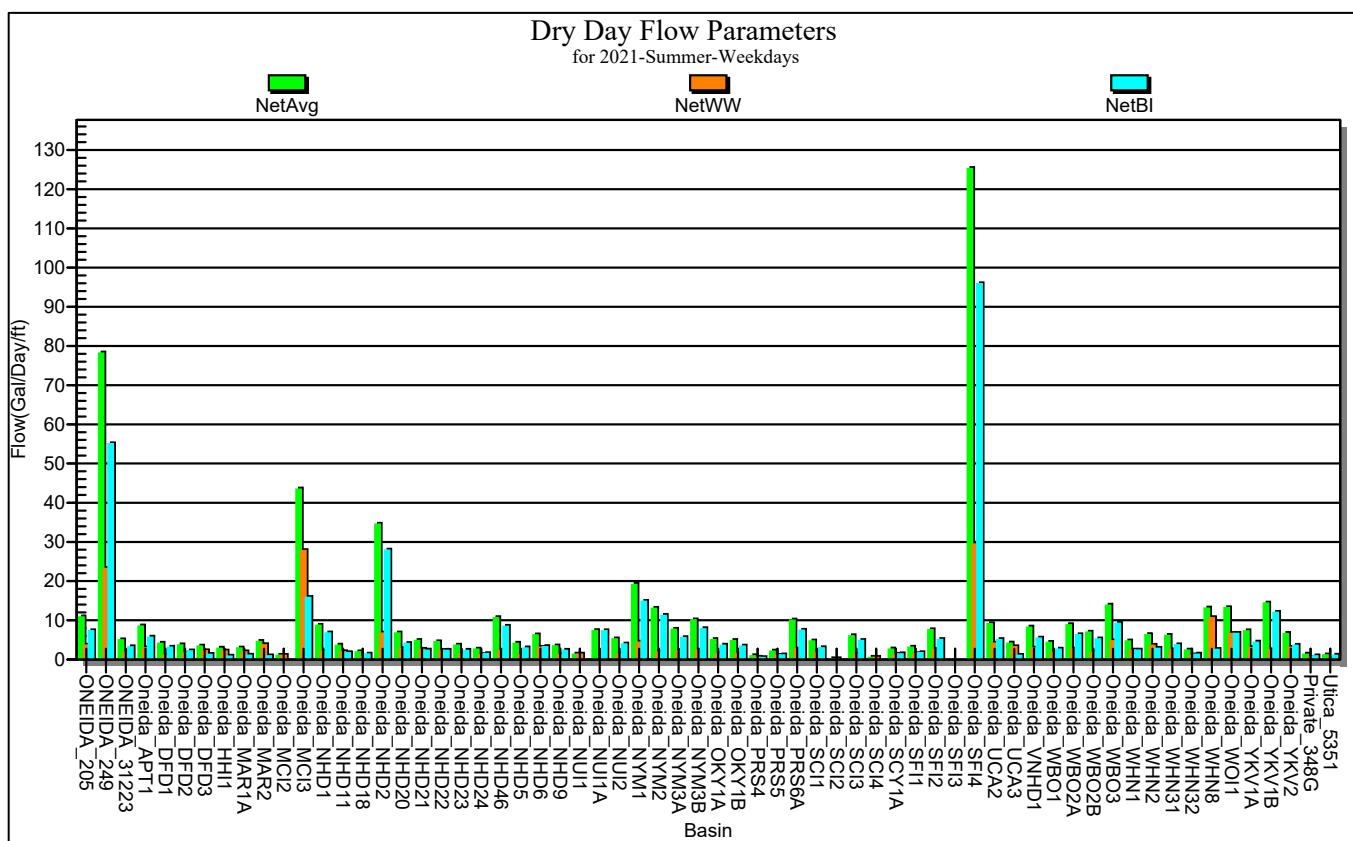


Table 5 Ranked List of sewersheds from Figure 6 with Net Base Infiltration Values greater than 5 GPD/LF

		Net Base Infiltration in GPD/LF		
Meter	NetAvg	NetWW	NetBI	
Oneida_SFI4	125.172	29.381	95.791	
ONEIDA_249	78.074	23.124	54.95	
Oneida_NHD2	34.44	6.641	27.799	
Oneida_MCI3	43.38	27.667	15.713	
Oneida_NYM1	19.044	4.31	14.734	
Oneida_YKV1B	14.277	2.364	11.913	
Oneida_NYM2	12.949	1.82	11.129	
Oneida_WBO3	13.747	4.648	9.099	
Oneida_NHD46	10.566	2.204	8.362	
Oneida_NYM3B	9.99	2.256	7.734	
Oneida_PRS6A	9.938	2.584	7.353	
Oneida_NUI1A	7.288	0.06	7.228	
ONEIDA_205	10.777	3.557	7.22	
Oneida_NHD1	8.616	1.955	6.66	
Oneida_WOI1	13.09	6.531	6.558	
Oneida_WBO2A	8.771	2.583	6.188	
Oneida_APT1	8.441	2.853	5.588	
Oneida_NYM3A	7.581	2.103	5.478	
Oneida_VNHD1	8.137	2.796	5.342	
Oneida_WBO2B	6.86	1.705	5.155	
Oneida_SFI2	7.473	2.48	4.994	

5. - RDII System Wide

Figure 7 shows the Gross Peak RDII flow rate for 5 of the largest storms.

Figure 7 Peak RDII flow rate recorded at each meter for 5 of the largest storms during the study period.

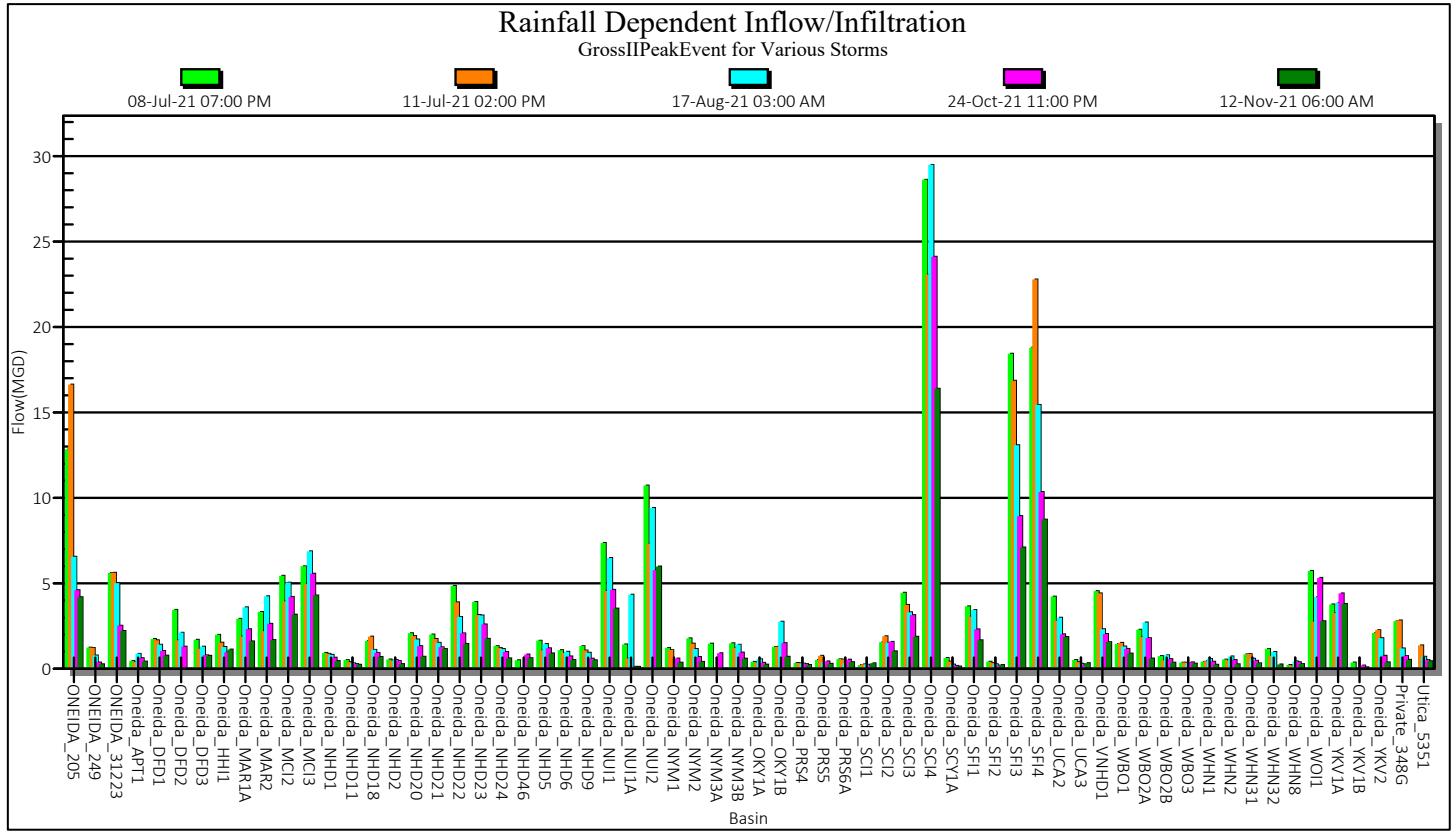


Figure 8 plots the Net RDII generated per linear foot of sewer per inch of rainfall (Gallons/LF/Inch). Although there is not a formal threshold for the definition of 'severe' RDII, a rule of thumb is that the threshold is 15 – 20 gal/LF/inch. Often the lower threshold is applied in the summertime and the upper limit is applied in the wintertime.

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.

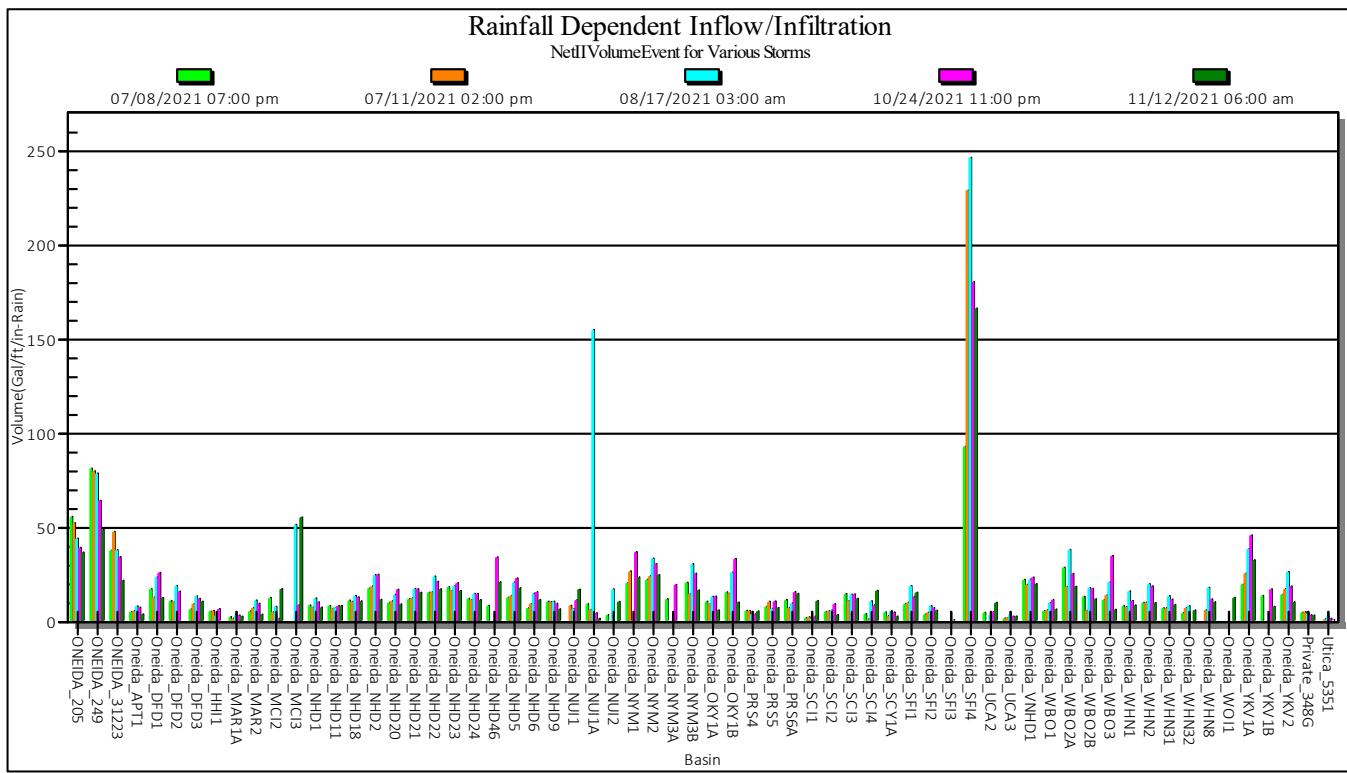


Table 6 is a ranked list of the sewersheds in Figures 7 and 8 with RDII severity exceeding 15 Gallons/LS/Inch of rainfall. These were the five largest storms observed during this period.

Table 6 Ranked List of sewersheds from Figure 7 and Figure 8 with RDII severity greater than 15 Gal/LF/Inch of rain.

Storm	RDII Volume in Million Gallons					RDII Severity in Gal/LF/In of rain				
	7/8/21	7/11/21	8/17/21	10/24/21	11/12/21	7/8/21	7/11/21	8/17/21	10/24/21	11/12/21
Oneida_SFI4	0.636	1.238	2.691	1.122	0.862	92.7	228.8	246.2	180.1	166.1
ONEIDA_249	0.321	0.336	0.72	0.38	0.224	81.0	79.7	78.5	64.0	48.6
ONEIDA_205	3.486	3.481	6.381	3.672	2.667	55.5	52.1	43.9	39.1	36.5
ONEIDA_31223	1.878	2.517	4.359	2.54	1.251	37.7	47.5	37.8	34.1	21.6
Oneida_WBO2A	1.719	0.84	3.513	1.413	0.839	28.4	18.3	37.9	25.1	18.3
Oneida_NYM2	1.071	0.864	2.099	1.175	0.82	22.1	23.9	33.3	30.4	24.7
Oneida_VNHD1	2.309	1.663	3.852	2.342	1.663	22.1	19.5	22.2	23.3	19.7
Oneida_NYM3B	1.324	0.708	2.803	1.465	0.778	20.5	14.4	30.2	25.3	16.4
Oneida_NYM1	0.289	0.281	n/a	0.417	0.228	20.2	26.5	n/a	36.7	23.4
Oneida_YKV1A	2.377	2.319	6.365	4.696	2.806	19.6	25.4	38.3	45.6	32.5
Oneida_NHD23	2.717	2.169	5.315	3.338	2.198	18.2	16.3	18.9	20.2	16.2
Oneida_NHD2	0.223	0.184	0.502	0.282	0.111	17.6	18.6	24.5	24.7	11.5
Oneida_DFD1	0.718	0.393	1.159	0.759	0.317	17.1	12.6	23.4	25.8	12.4
Oneida_OKY1B	0.558	0.411	2.623	1.633	0.37	15.4	14.7	25.9	33.1	9.9
Oneida_NHD22	1.894	1.58	4.235	2.324	1.622	15.2	15.5	23.7	21.0	17.0
Oneida_SCI3	1.627	1.281	3.701	2.415	1.572	14.5	10.7	14.2	14.3	12.0
Oneida_YKV2	0.792	0.715	1.996	0.873	0.399	14.2	17.1	26.2	18.5	10.1
Oneida_YKV1B	0.076	n/a	n/a	0.08	0.031	13.6	n/a	n/a	17.0	7.7
Oneida_WBO2B	0.789	0.26	1.642	0.976	0.54	13.0	5.6	17.7	17.3	11.8
Oneida_NHD5	0.918	0.777	2.431	1.502	0.981	12.5	13.7	20.6	22.8	17.6
Oneida_MCI2	0.928	0.437	1.577	0.098	1.013	12.4	4.8	7.8	1.4	17.1
Oneida_NHD24	0.78	0.651	1.713	1.087	0.668	11.9	11.3	14.6	14.6	11.2
Oneida_NYM3A	0.66	n/a	n/a	0.978	n/a	11.8	n/a	n/a	19.4	n/a
Oneida_NHD21	1.104	0.978	2.488	1.534	1.165	11.8	12.3	17.2	17.0	15.2
Oneida_WBO3	0.051	0.048	0.143	0.146	0.021	11.3	13.9	20.7	34.7	6.2
Oneida_PRS6A	0.223	0.15	0.44	0.465	0.339	11.2	7.1	9.5	15.5	14.6
Oneida_NHD18	0.91	0.698	1.776	0.947	0.677	11.0	10.5	13.5	12.8	10.6
Oneida_DFD2	1.353	0.935	2.758	1.387	n/a	10.8	10.1	18.6	15.7	n/a
Oneida_NHD9	0.805	0.606	1.197	0.603	0.359	10.4	10.3	10.4	9.3	6.4
Oneida_OKY1A	0.221	0.149	0.772	0.38	0.127	10.4	9.1	13.0	13.2	5.8
Oneida_NHD20	0.862	0.752	1.945	1.335	0.614	9.9	10.6	14.1	16.9	9.0
Oneida_WHN2	0.361	0.279	1.041	0.612	0.265	9.8	10.0	19.7	18.6	9.8
Oneida_SFI1	1.777	1.595	5.082	2.141	2.074	9.1	10.0	18.7	13.0	15.2
Oneida_NUI1A	0.189	0.097	5.983	0.092	0.024	9.1	6.2	154.7	4.3	1.4
Oneida_NHD1	0.543	0.379	1.481	0.675	0.395	8.4	7.4	12.1	10.1	7.3
Oneida_NHD46	0.356	n/a	n/a	1.311	0.677	8.3	n/a	n/a	34.0	20.7

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 than 7% to 10% fall into the severe category. Very high values are indicative that basin sizes are not correctly known.

Figure 9 Capture Coefficient for 5 of the largest response storms.

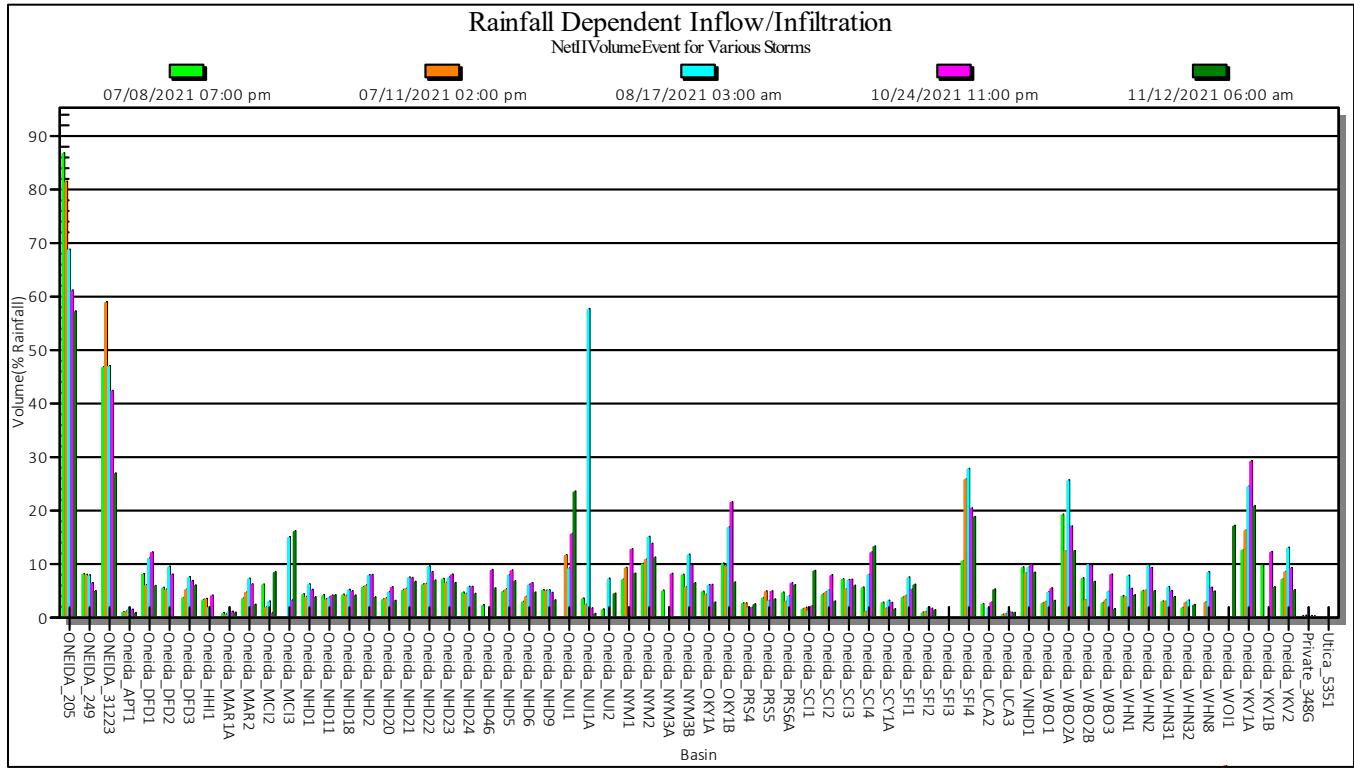


Table 7 is a ranked list of the sewersheds in Figure 9 with Capture Coefficients exceeding 10%. These were the five largest storms observed during this period.

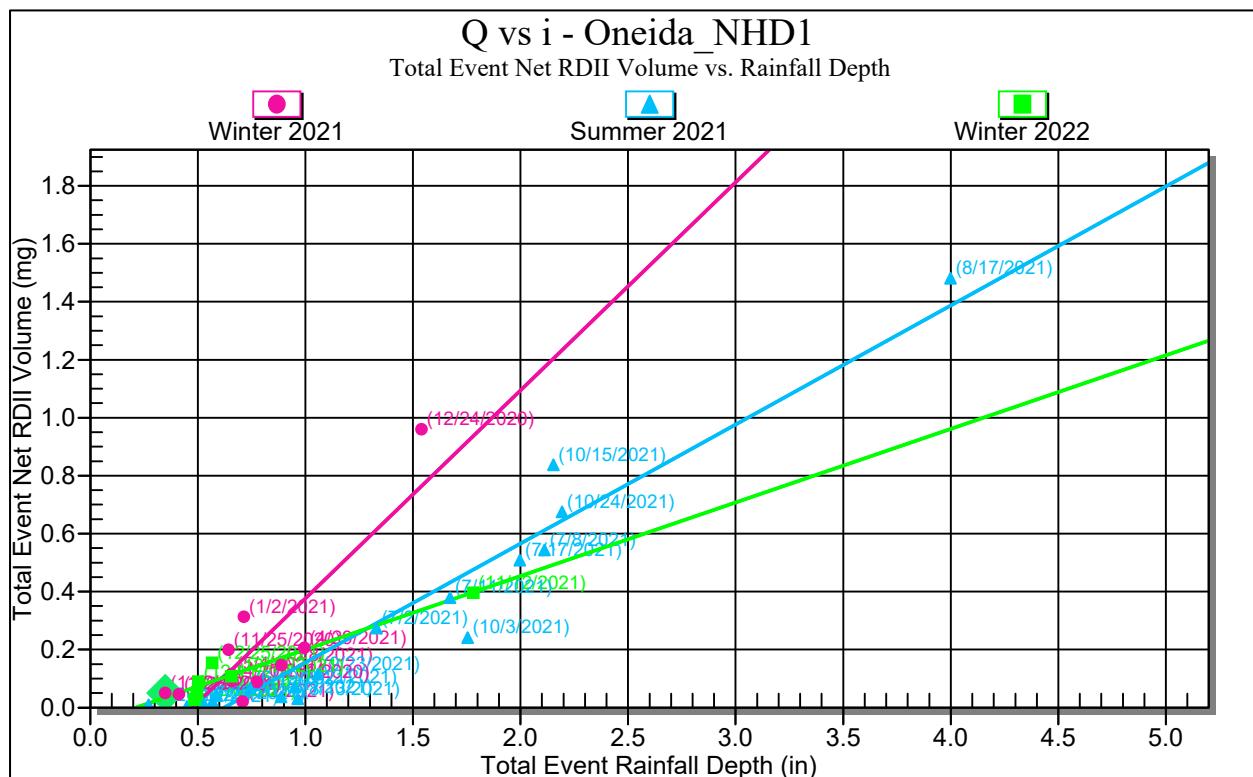
Table 7 Ranked List of Sewersheds in Figure 9 with Capture Coefficient greater than 10%.

	RDII as Capture Coefficient -(% Rainfall as RDII)				
Storm	7/8/21	7/11/21	8/17/21	10/24/21	11/12/21
ONEIDA_205	86.6	81.3	68.6	61.0	57.1
ONEIDA_31223	46.7	58.8	46.9	42.2	26.8
Oneida_WBO2A	19.1	12.3	25.5	16.9	12.3
Oneida_YKV1A	12.5	16.2	24.4	29.1	20.7
Oneida_SFI4	10.4	25.7	27.7	20.2	18.7
Oneida_OKY1B	10.0	9.5	16.7	21.4	6.4
Oneida_NYM2	9.9	10.7	15.0	13.7	11.1
Oneida_YKV1B	9.7	n/a	n/a	12.1	5.5
Oneida_VNHD1	9.2	8.1	9.3	9.7	8.3
ONEIDA_249	8.0	7.9	7.7	6.3	4.8
Oneida_DFD1	8.0	5.9	10.9	12.0	5.8
Oneida_NYM3B	7.9	5.5	11.6	9.7	6.3
Oneida_WBO2B	7.2	3.1	9.8	9.6	6.5
Oneida_NHD23	7.1	6.4	7.4	7.9	6.3
Oneida_SCI3	7.0	5.2	6.9	6.9	5.8
Oneida_YKV2	7.0	8.4	12.9	9.1	5.0
Oneida_NYM1	7.0	9.1	n/a	12.6	8.1
Oneida_NHD22	6.0	6.2	9.4	8.4	6.8
Oneida_MCI2	6.0	1.8	2.9	0.7	8.3
Oneida_NHD2	5.6	5.9	7.8	7.8	3.6
Oneida_SCI4	5.5	1.0	7.9	12.0	13.1

6. - Q vs i Plots

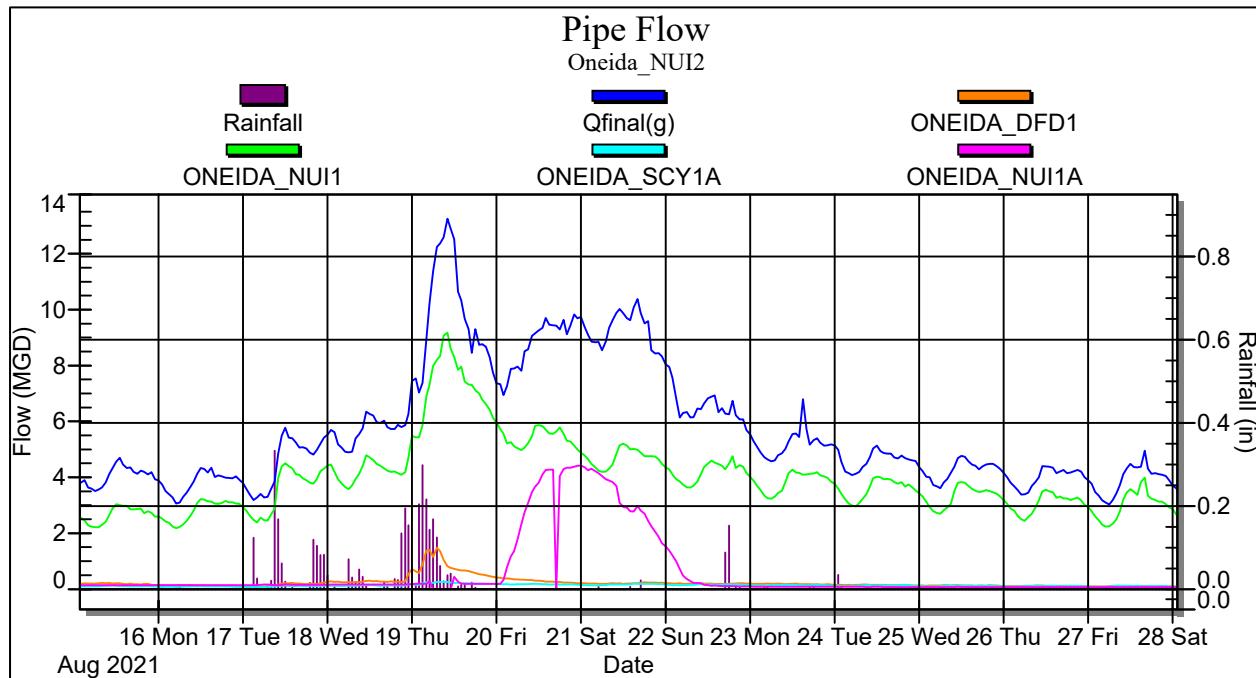
Figure 10 is a Q vs i plot for NHD1 and the behavior of the entire systems is similar to this plot. The Christmas storm that began on 24 December 2020 is an outlier when compared to all other winter storms. Storms that include a snow melt appear this way on a Q vs i plot; the RDII volume is unusually 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.

Figure 10 Q vs i plot reveals that the Christmas 2020 storm is an outlier.

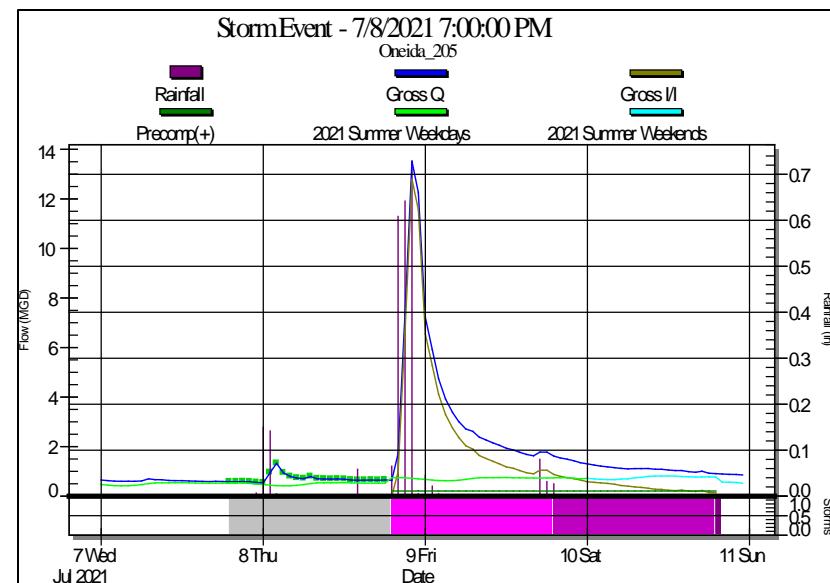
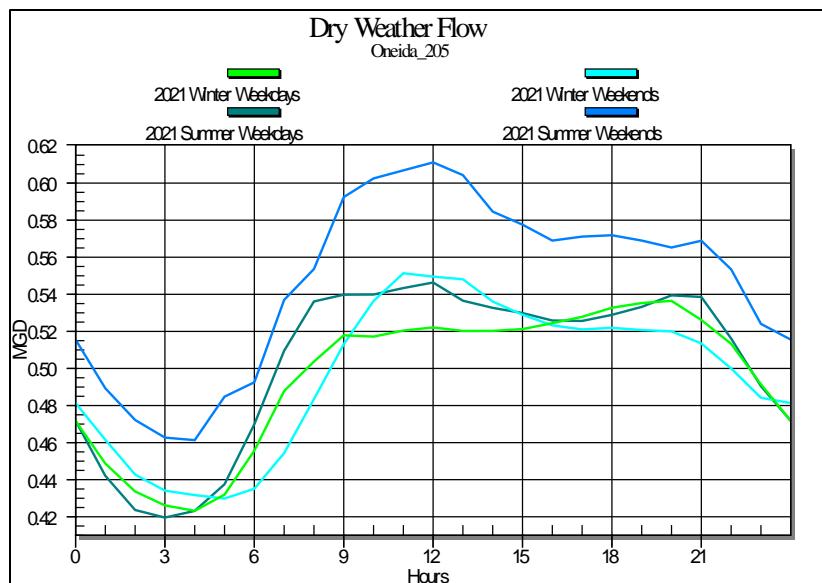
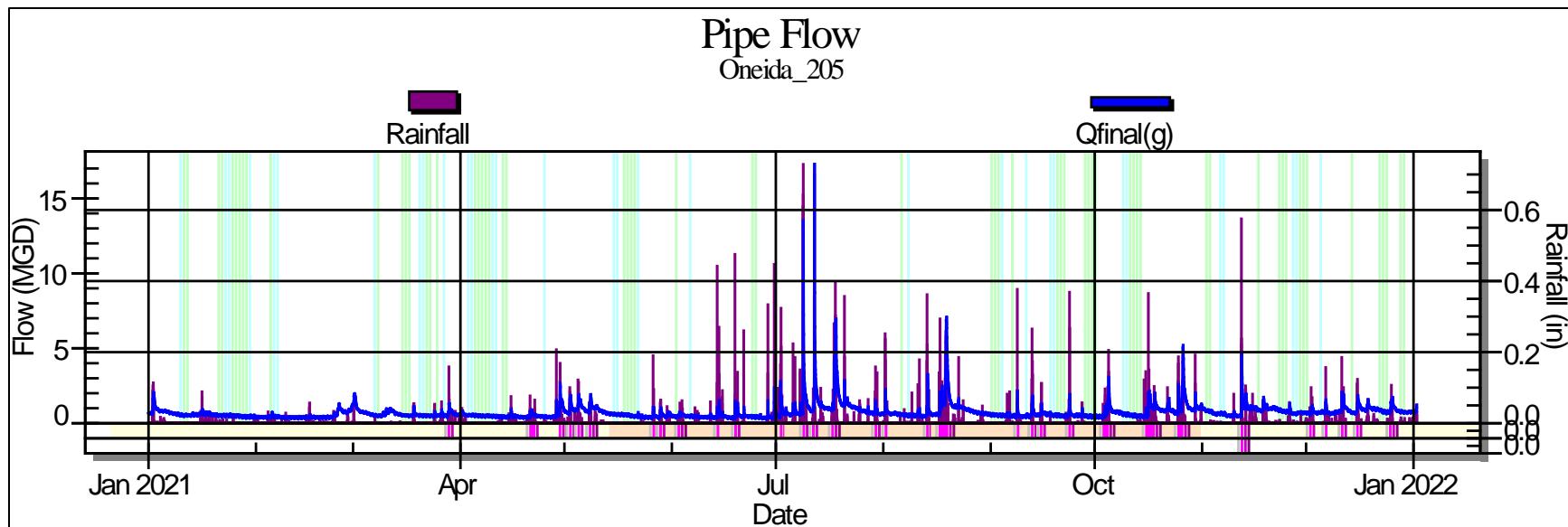


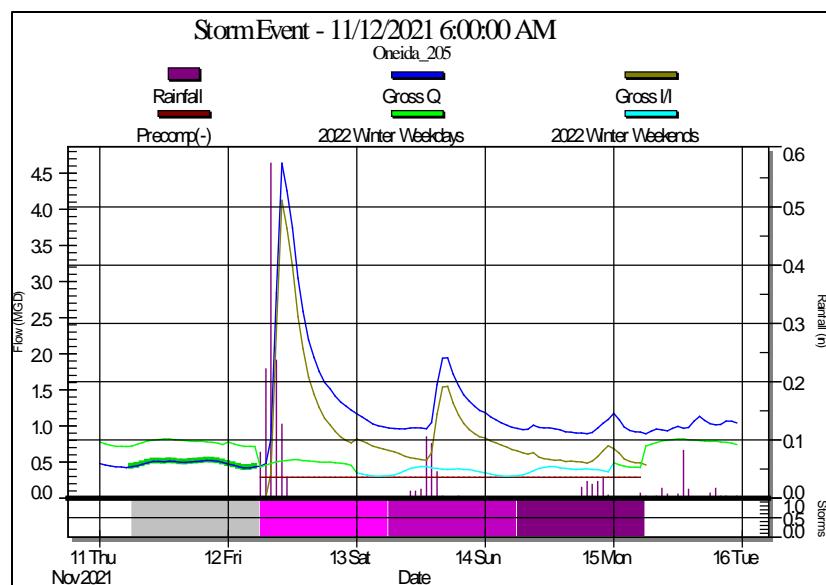
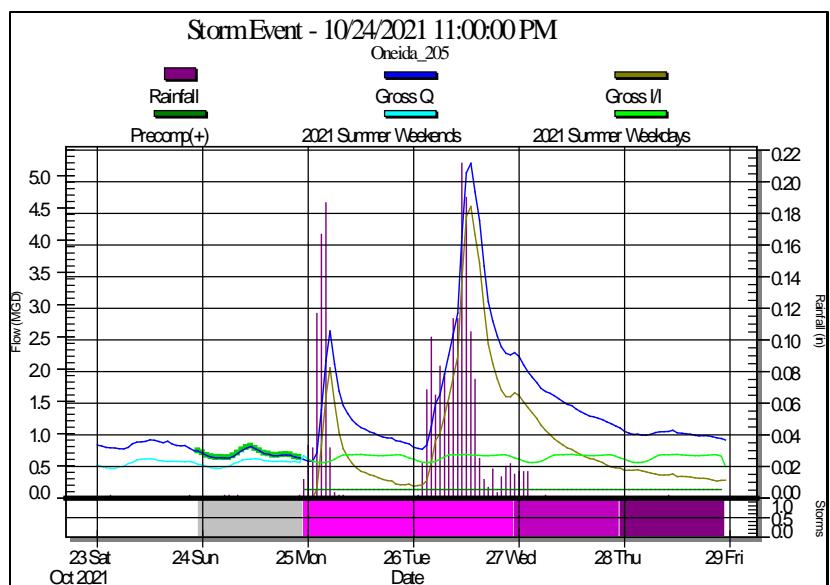
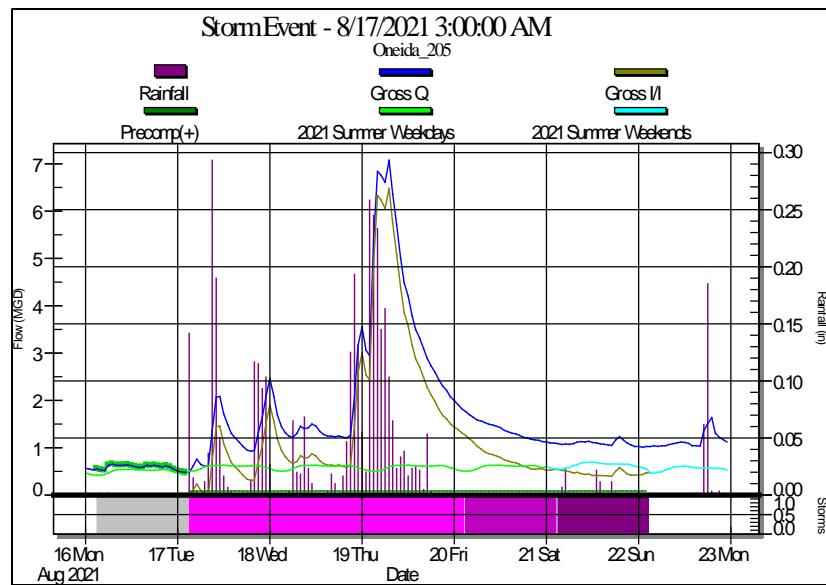
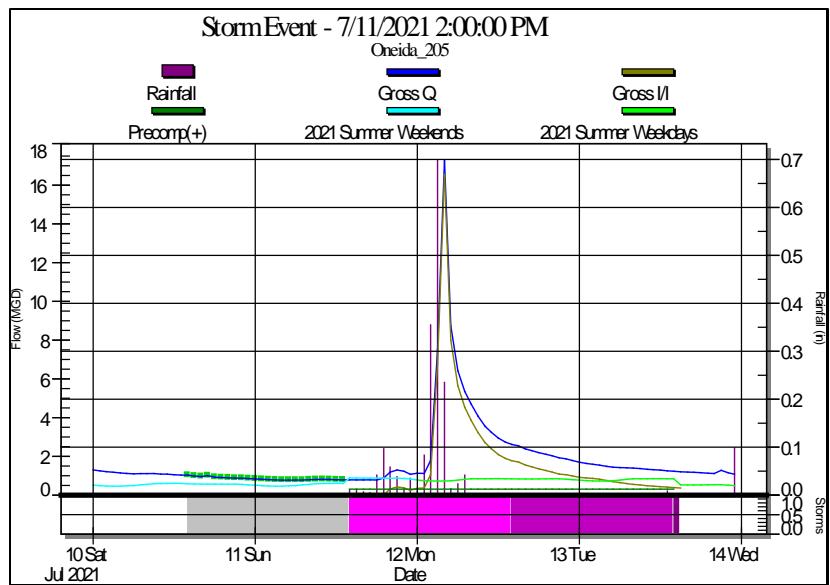
7. Possible River Intrusion

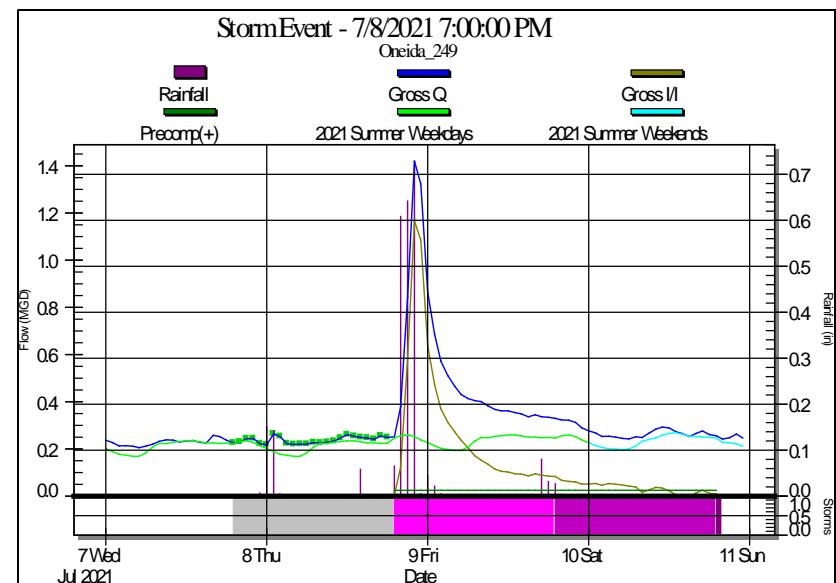
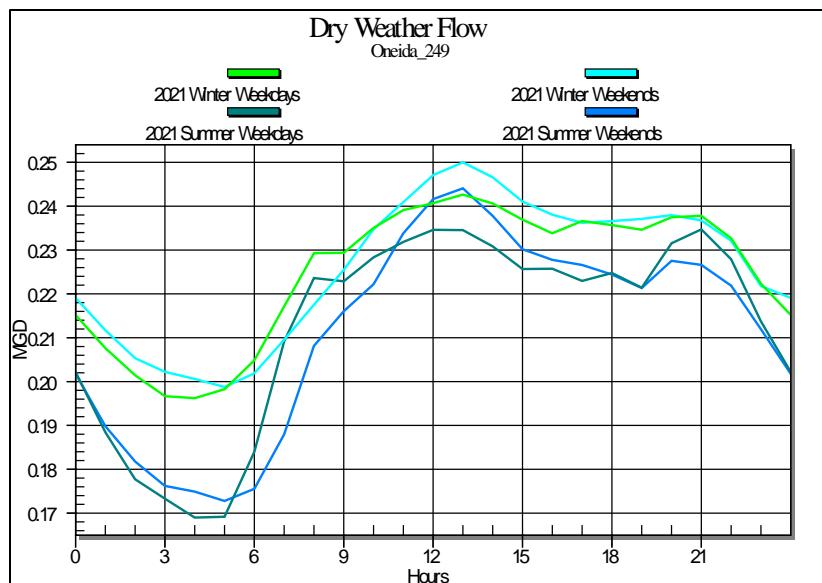
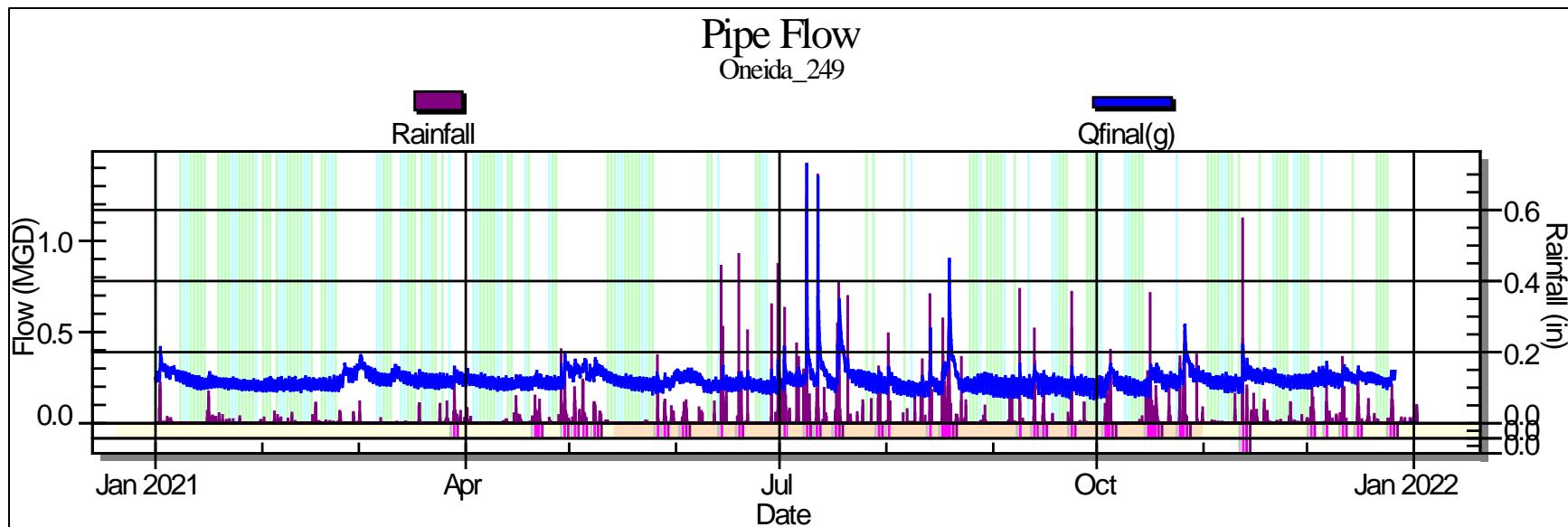
We have spotted what appears to be possible river intrusion upstream of meter Oneida_NUI1A. Figure 11 shows all meters immediately upstream of Oneida_NUI2 and both meters show the classic pattern of river intrusion, a flow response well after the rainfall. The rainfall was the early morning hours of 19 August, and the response begins the early morning hours of 20 August. As a general rule, the longer the delay for the intrusion response, the larger the watershed of the water way. A small roadside ditch or creek may overtop a defective manhole cone within minutes or an hour after the storm, but it may take a full day for a larger river reach an elevation to overtop a defective manhole top.

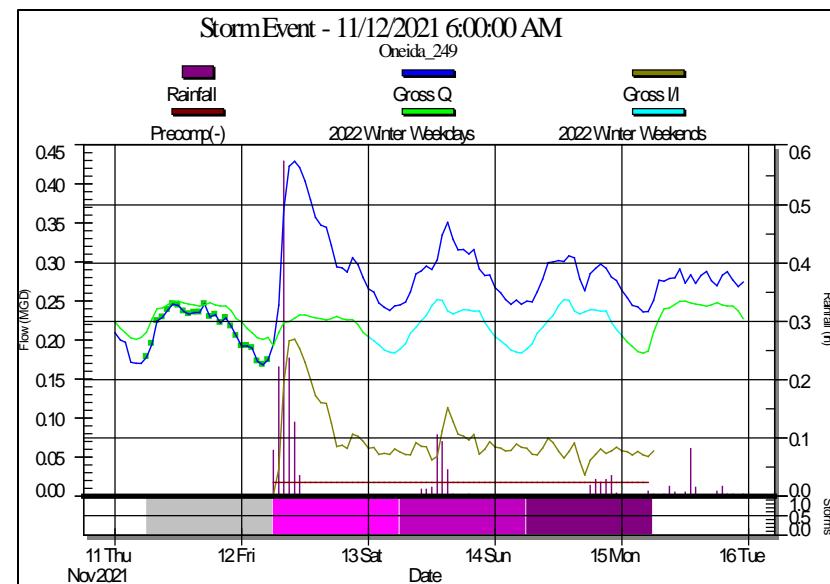
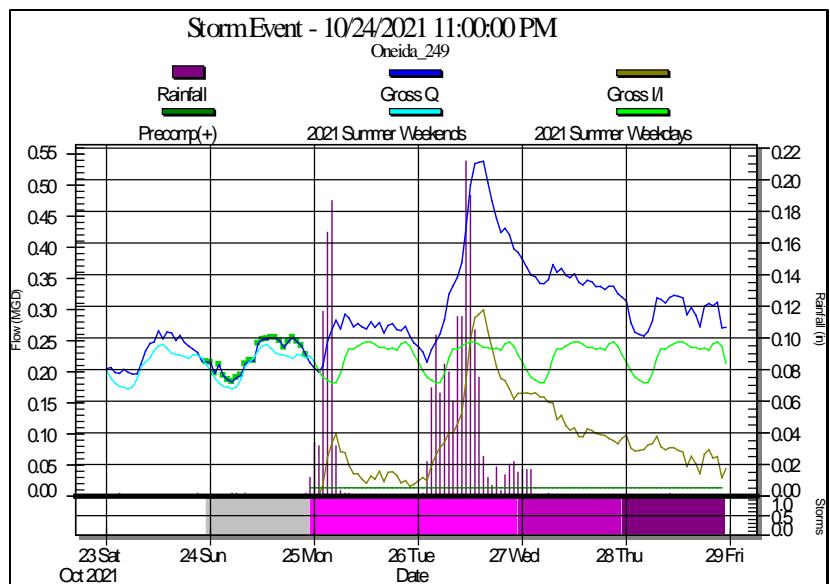
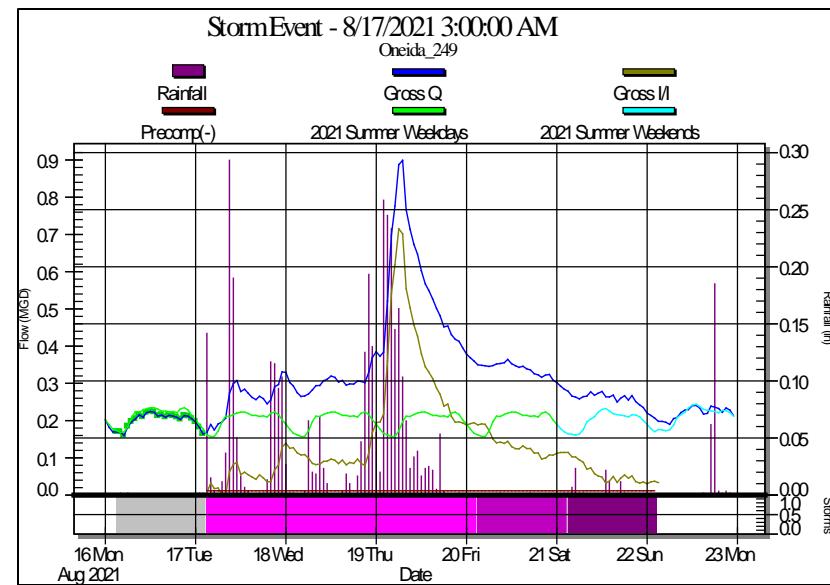
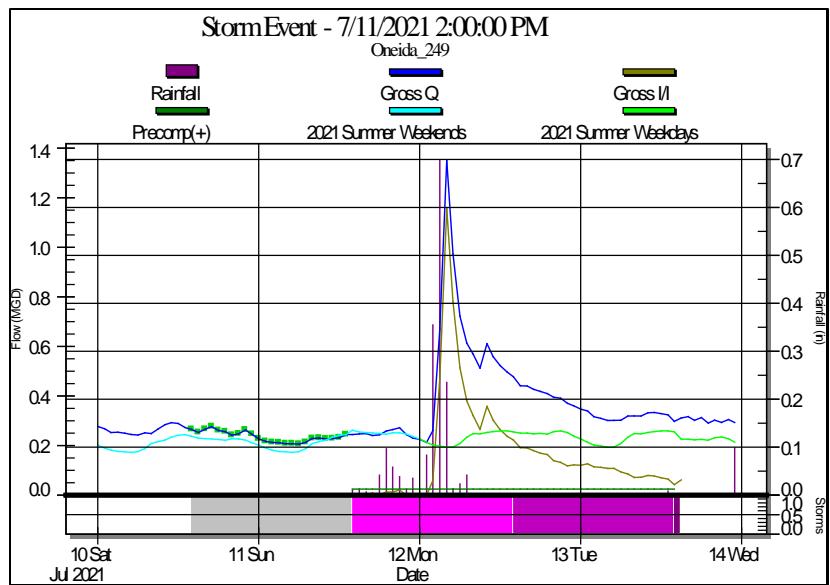


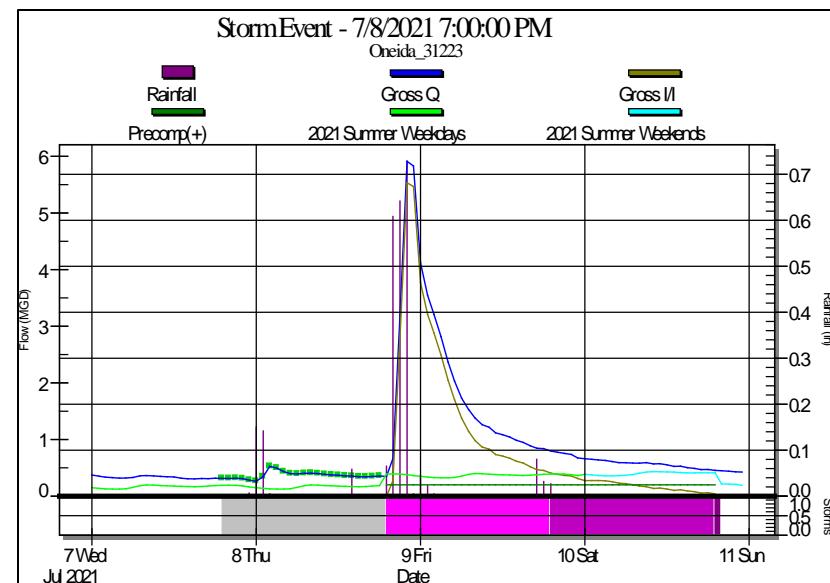
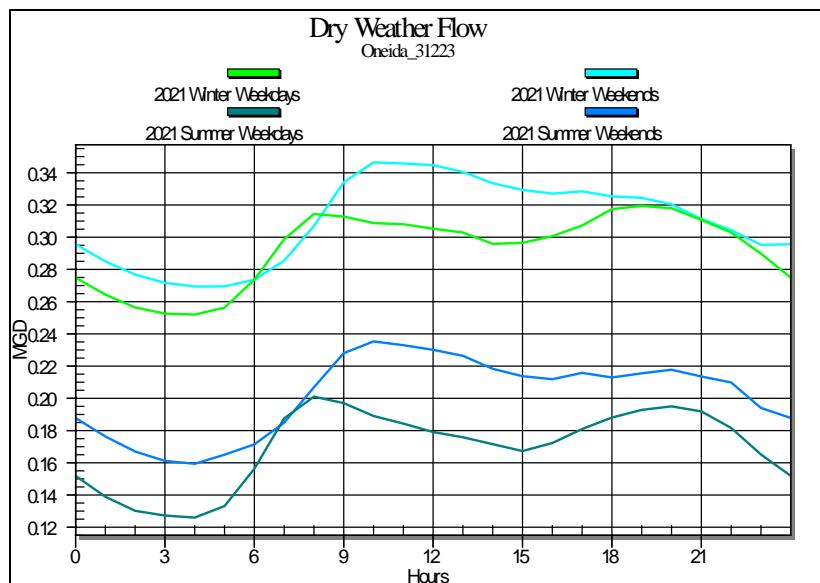
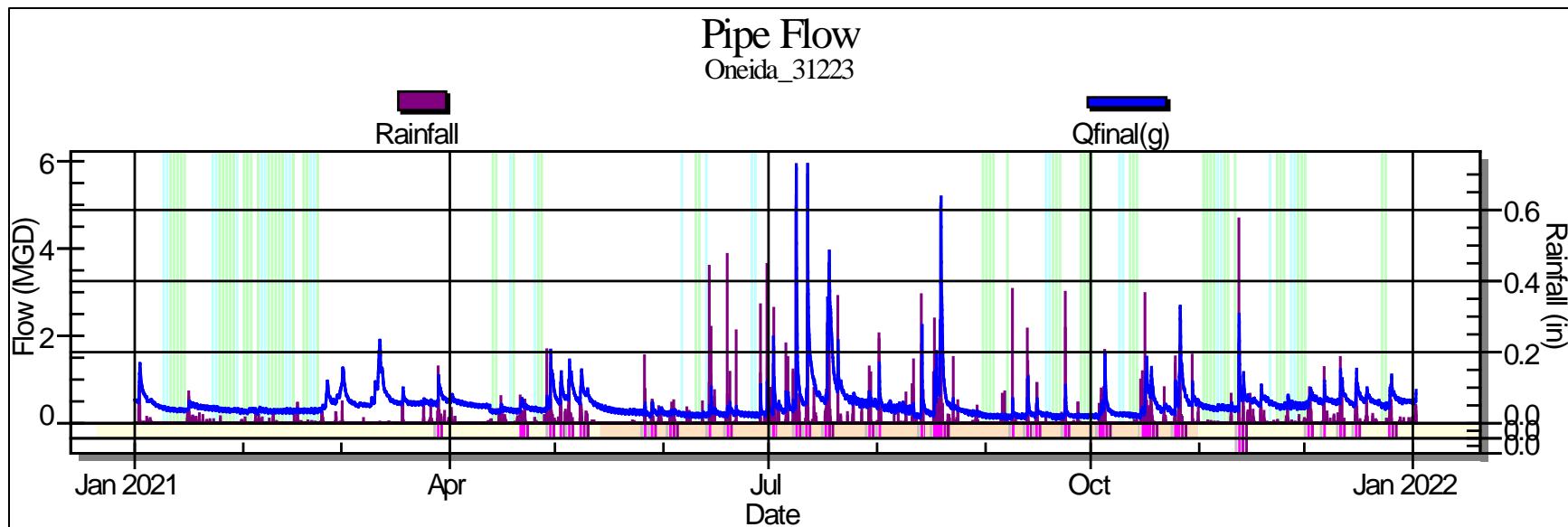
Appendix A – Slicer Graphics

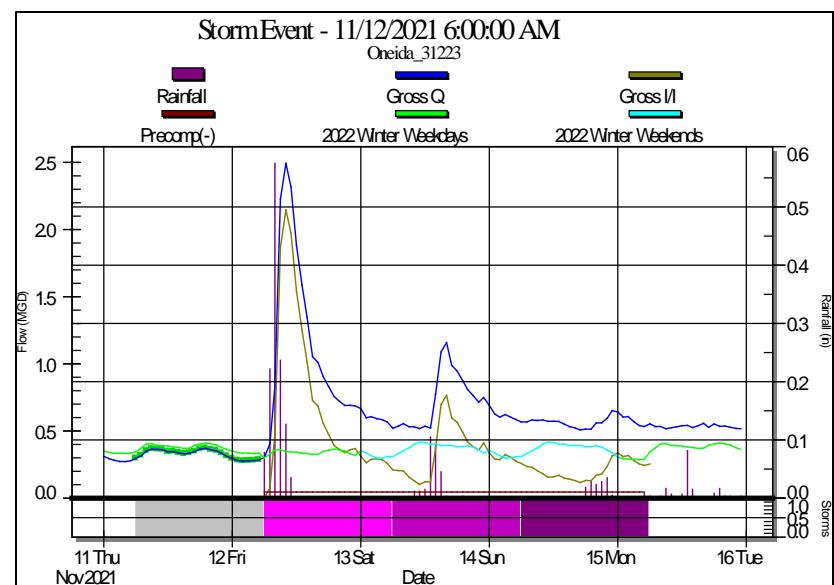
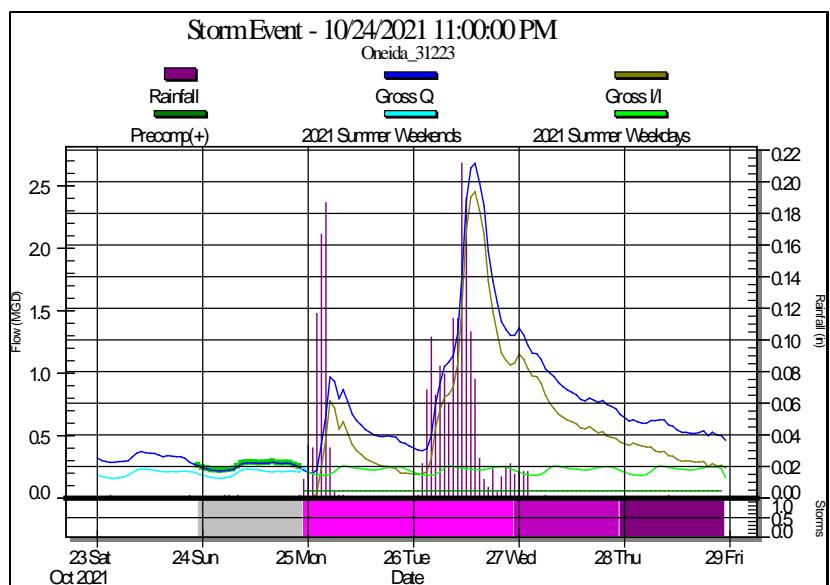
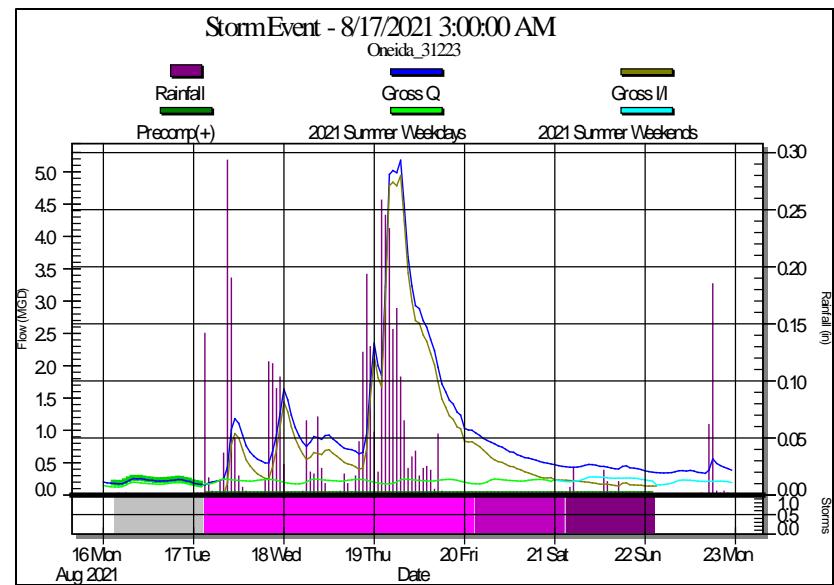
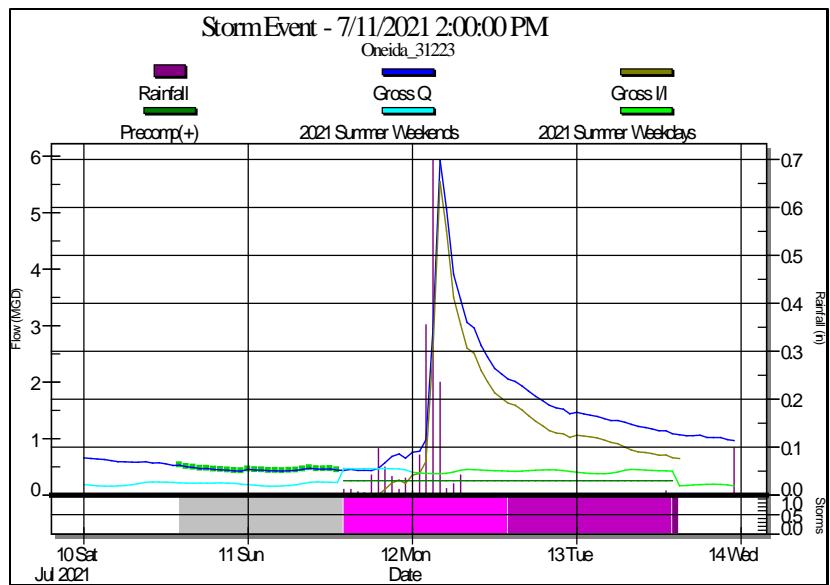


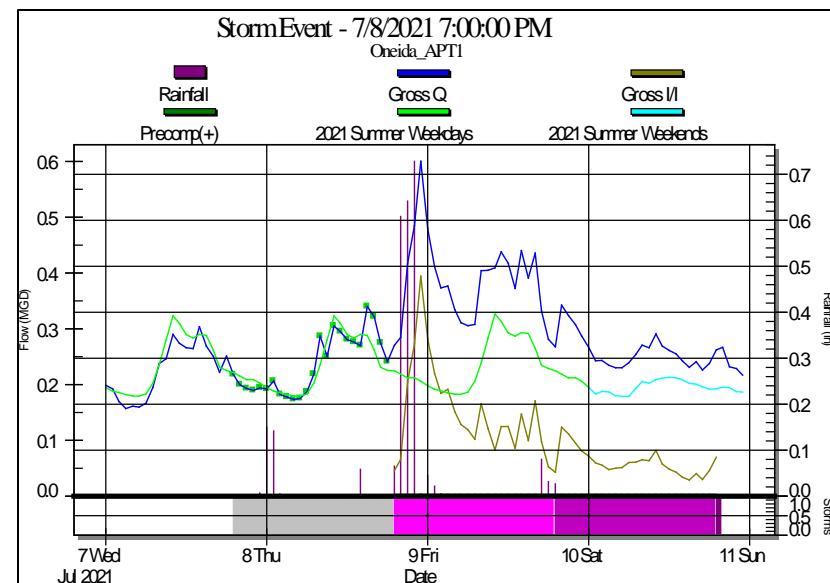
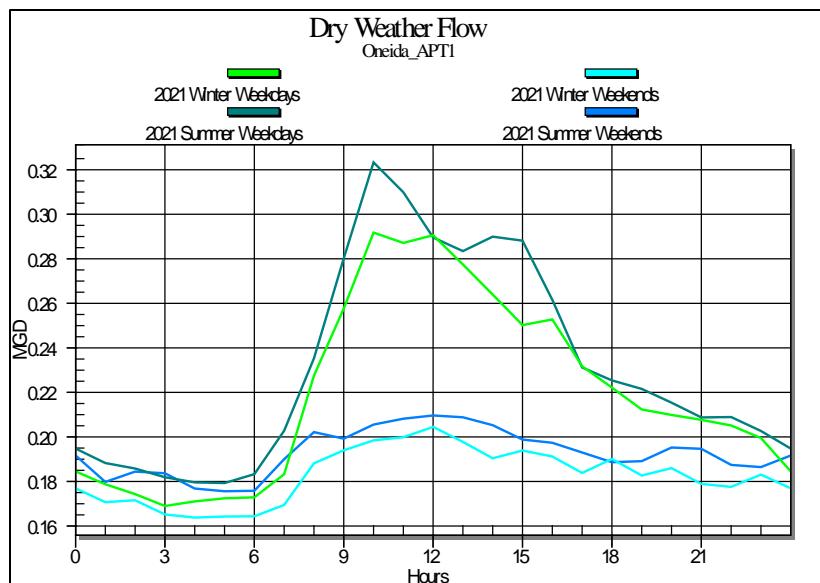
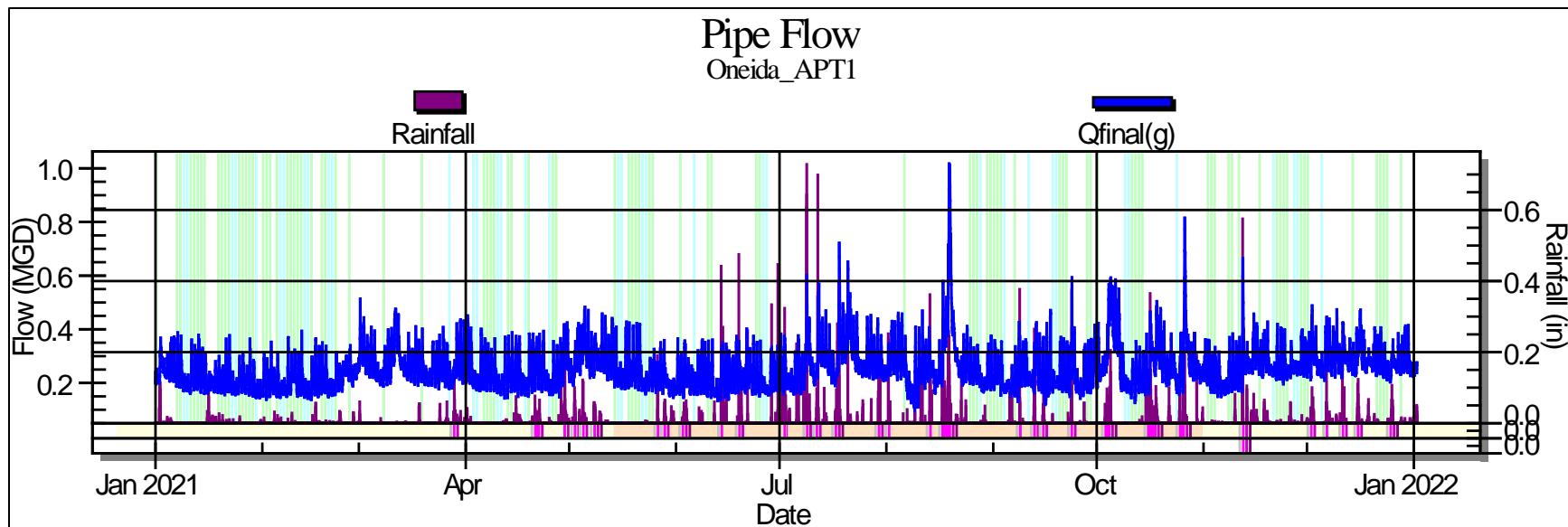


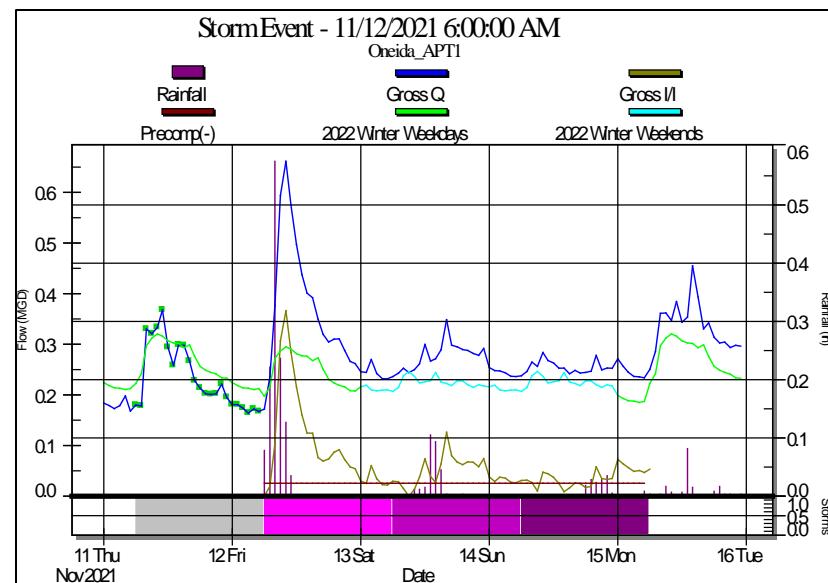
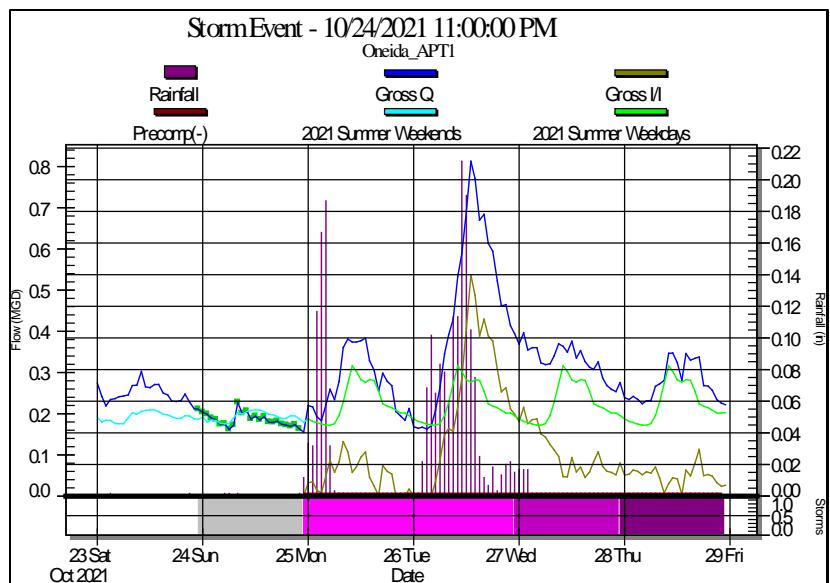
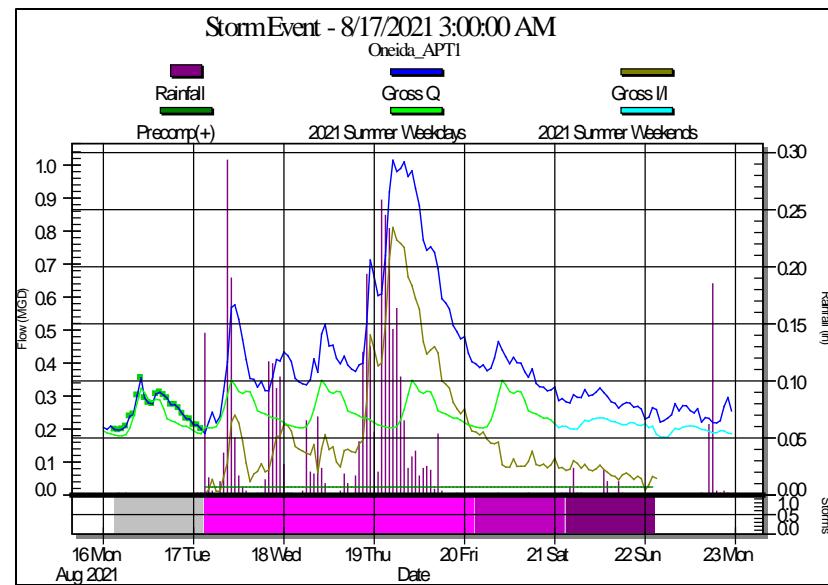
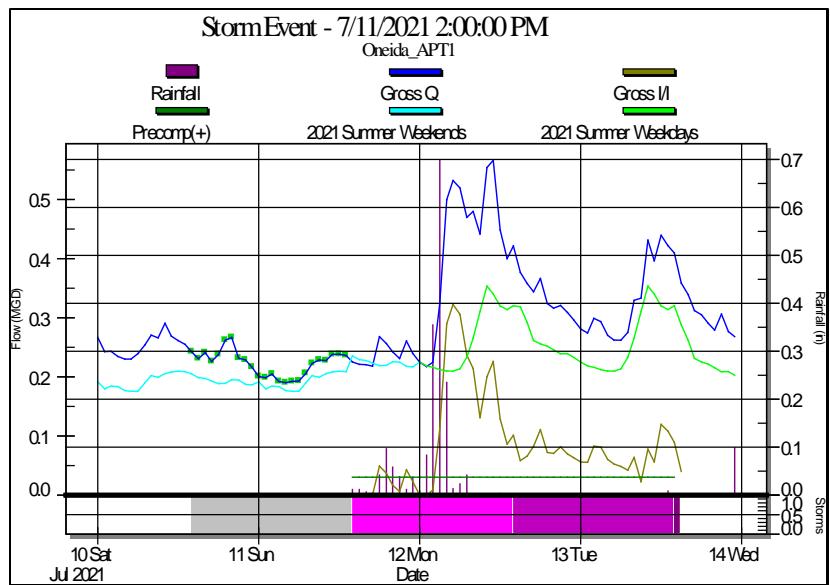


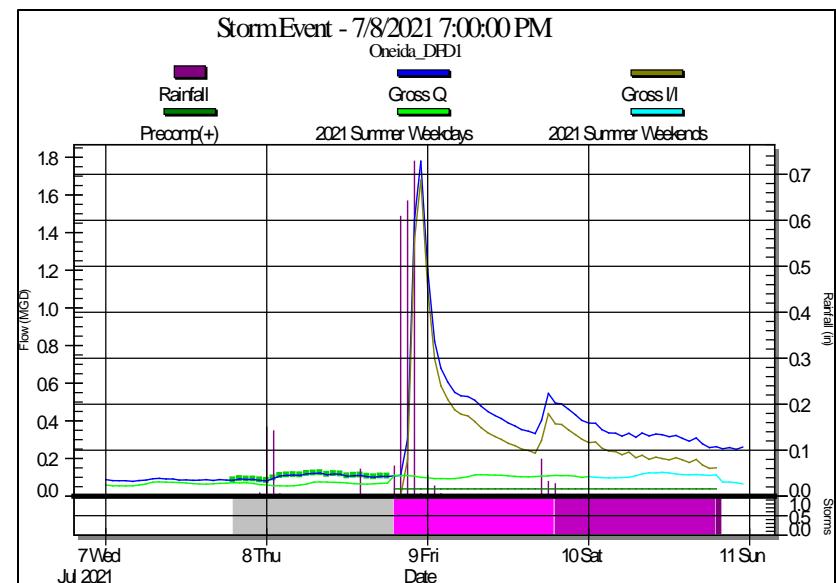
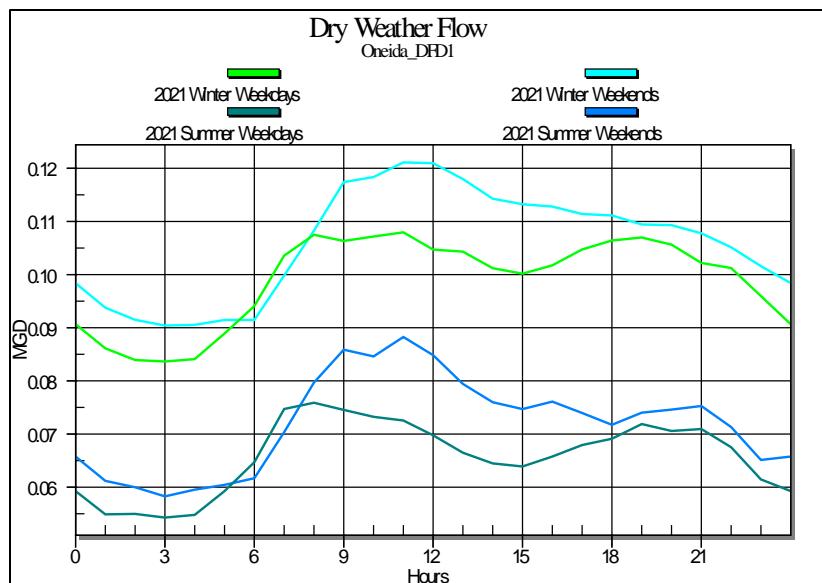
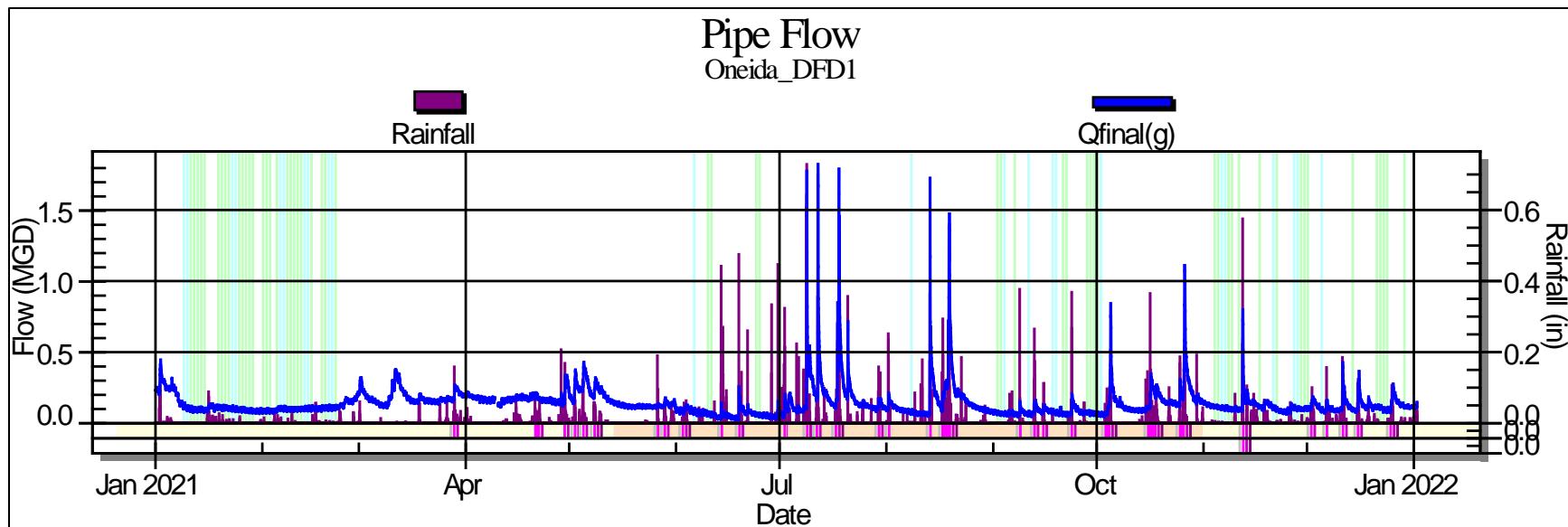


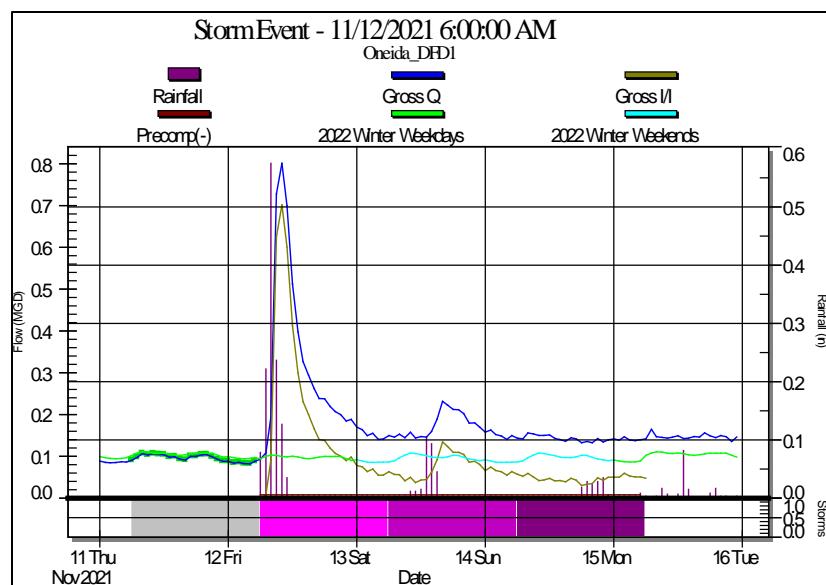
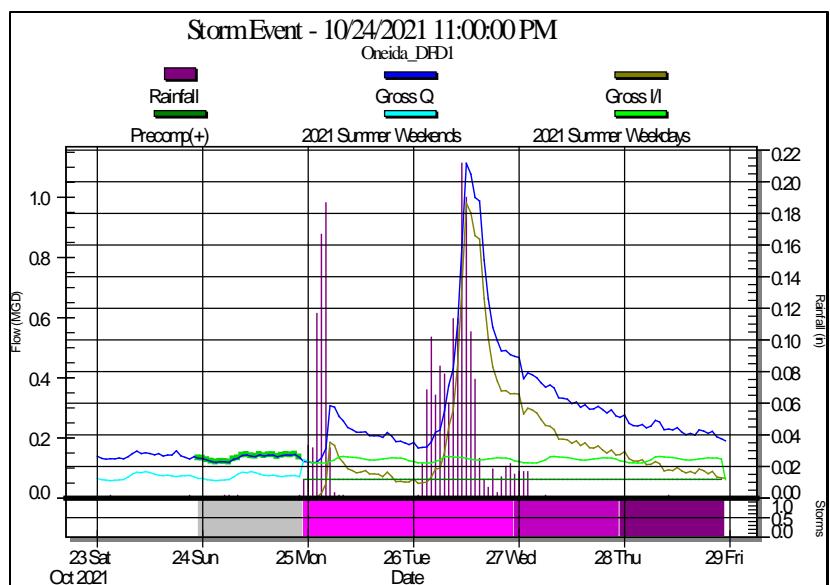
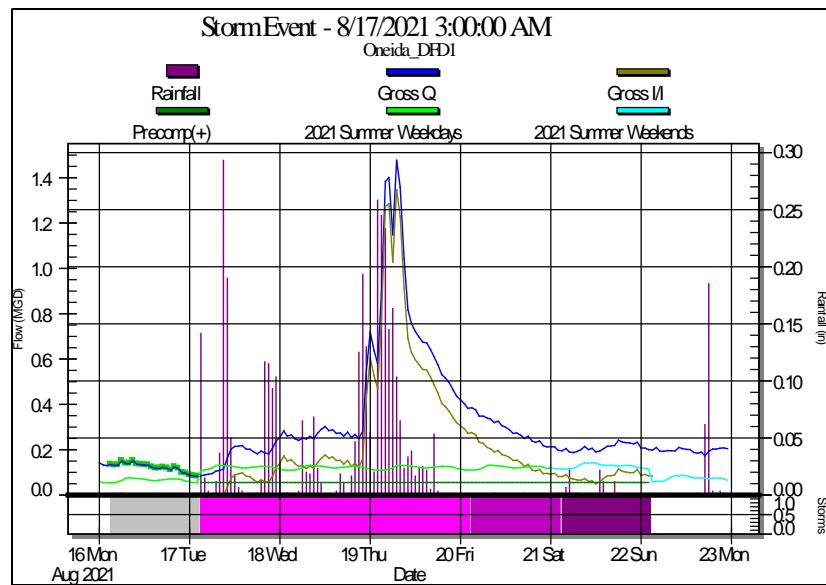
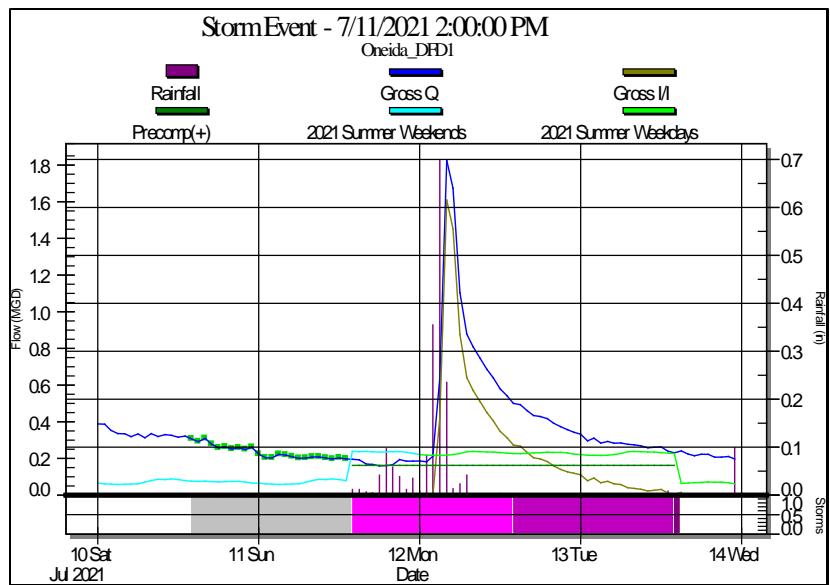


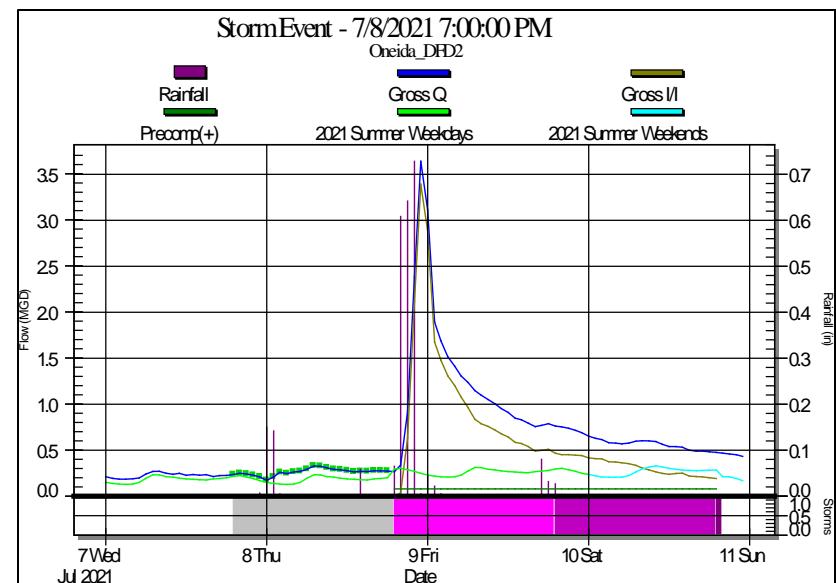
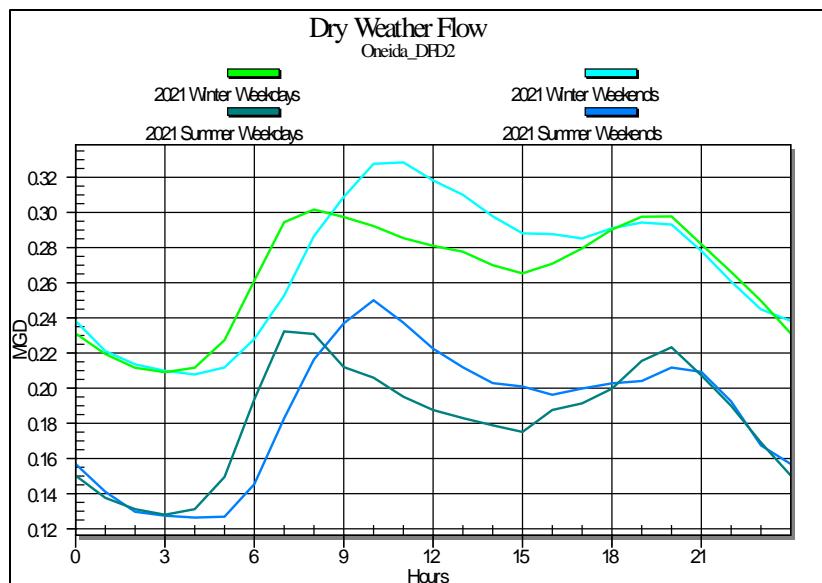
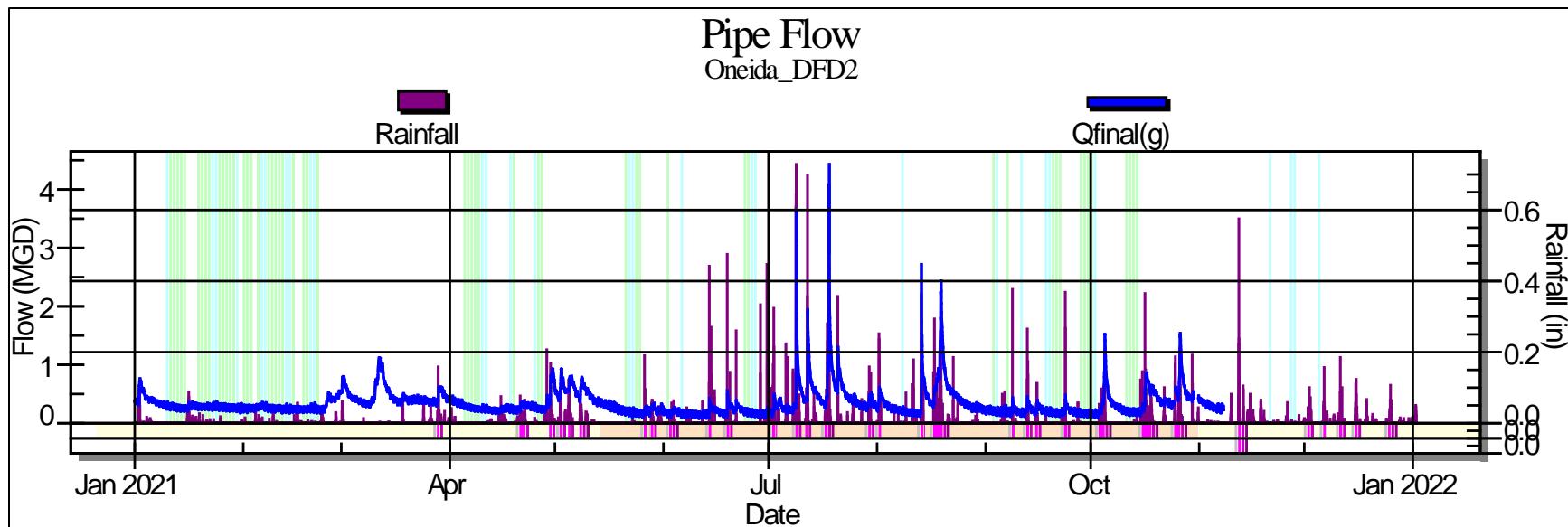


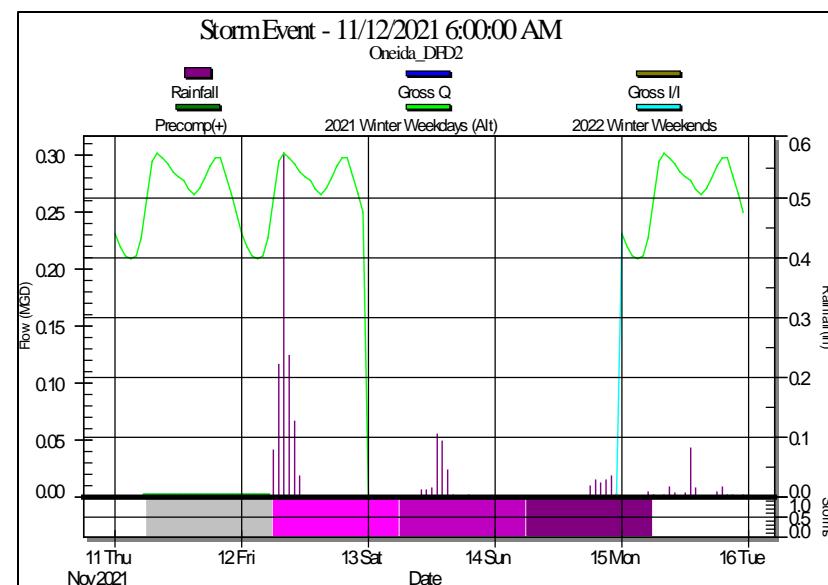
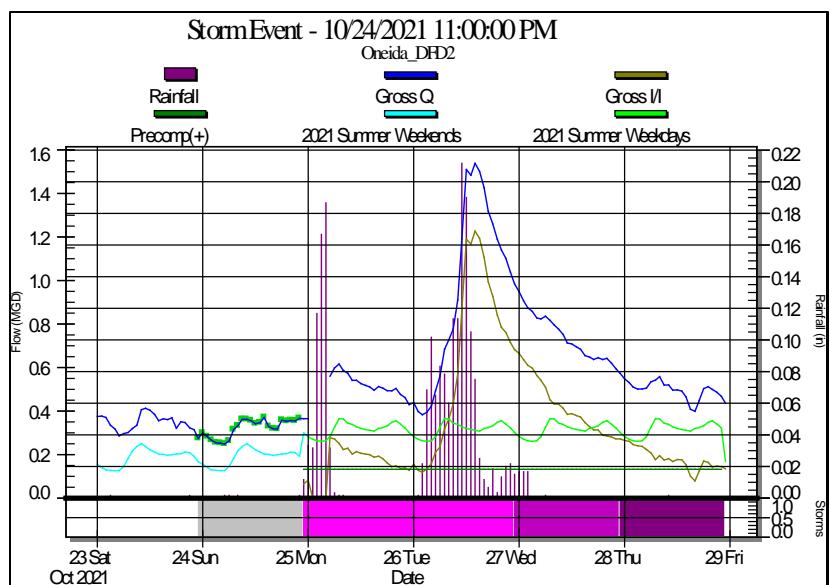
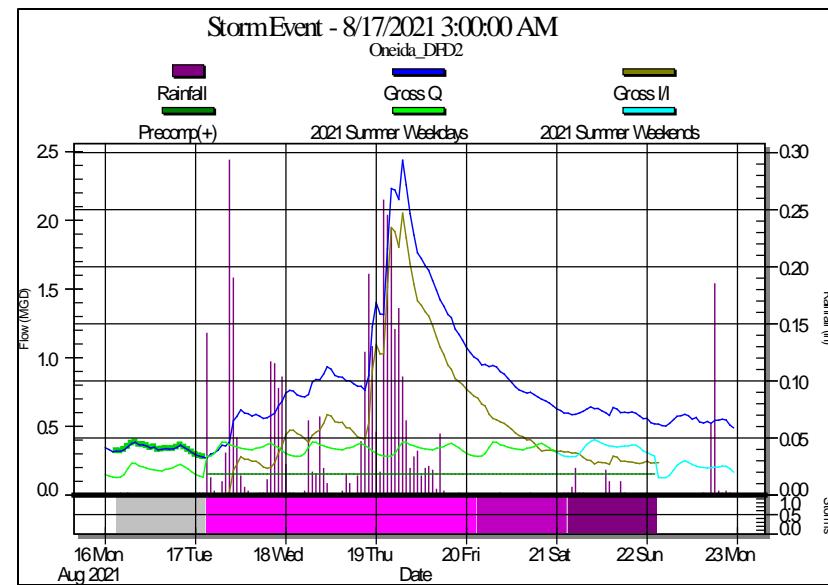
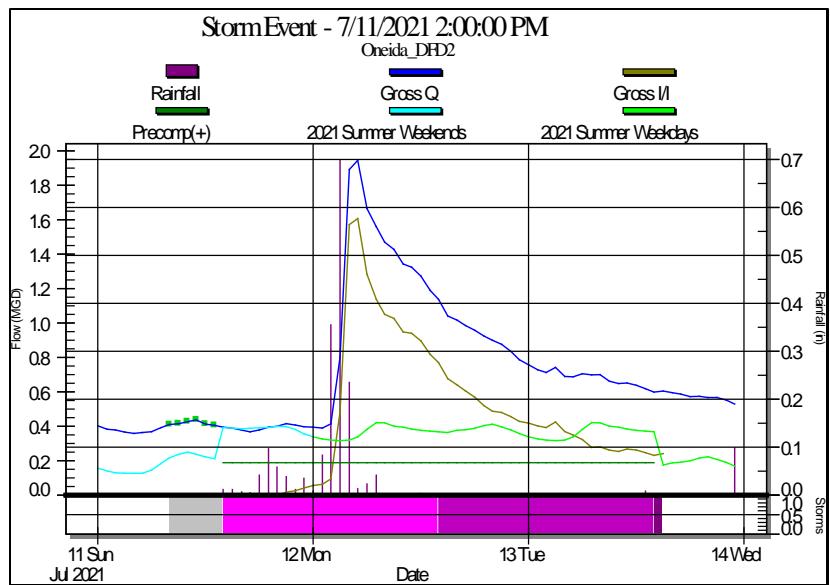


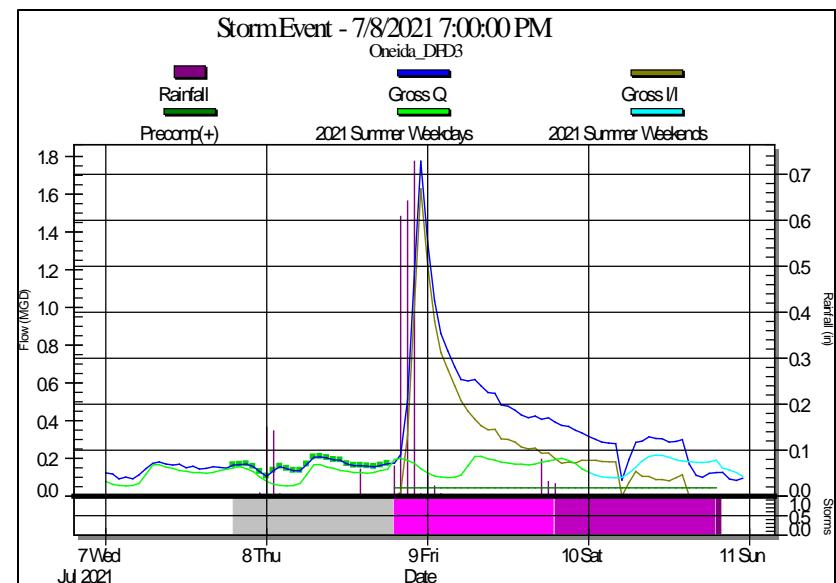
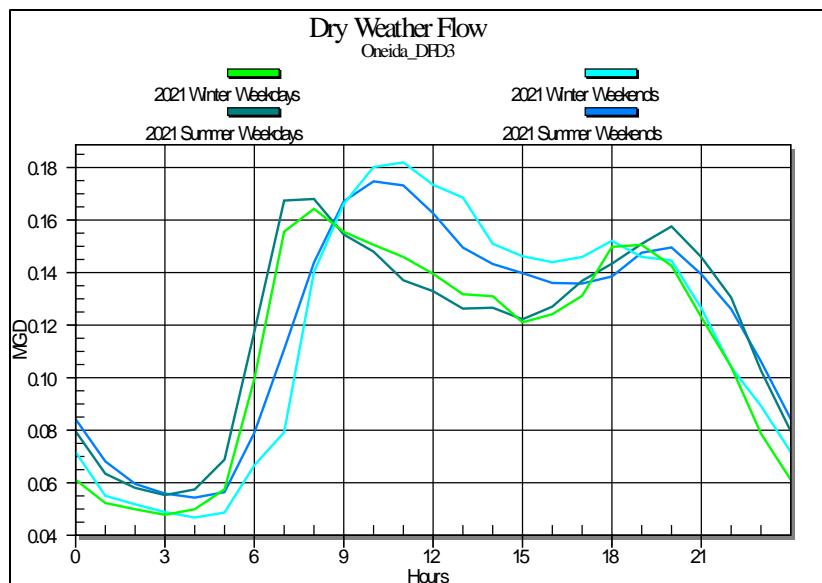
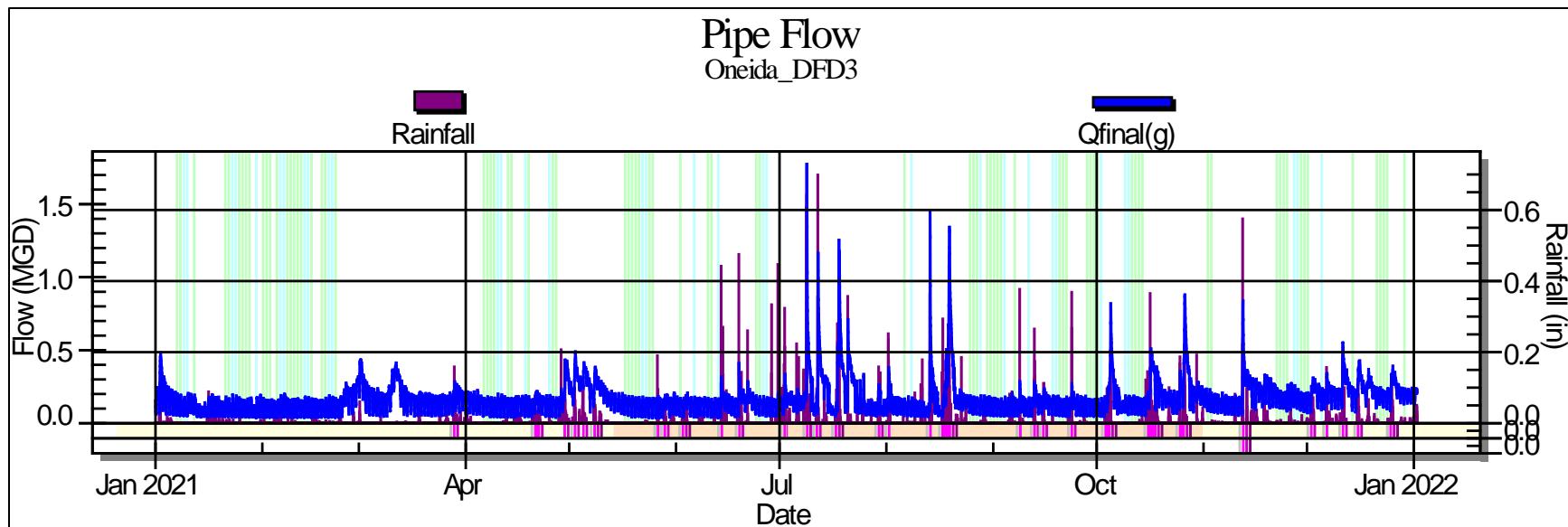


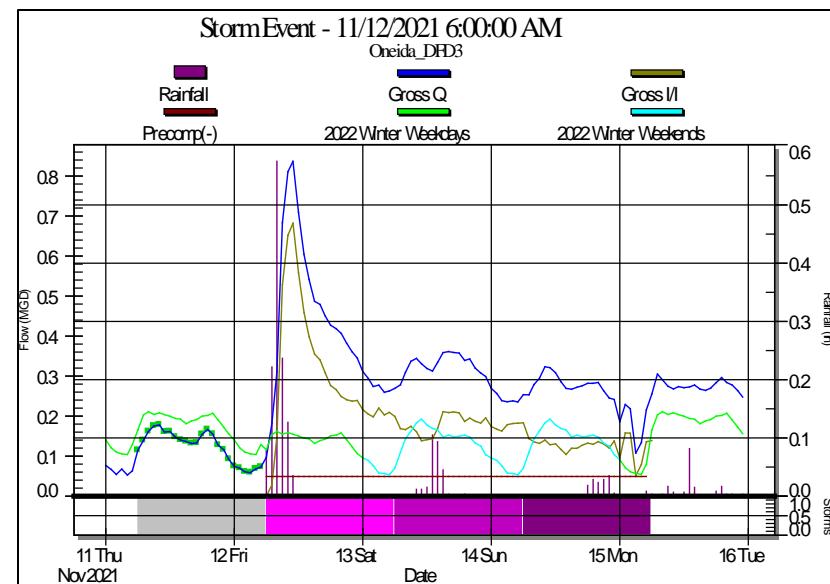
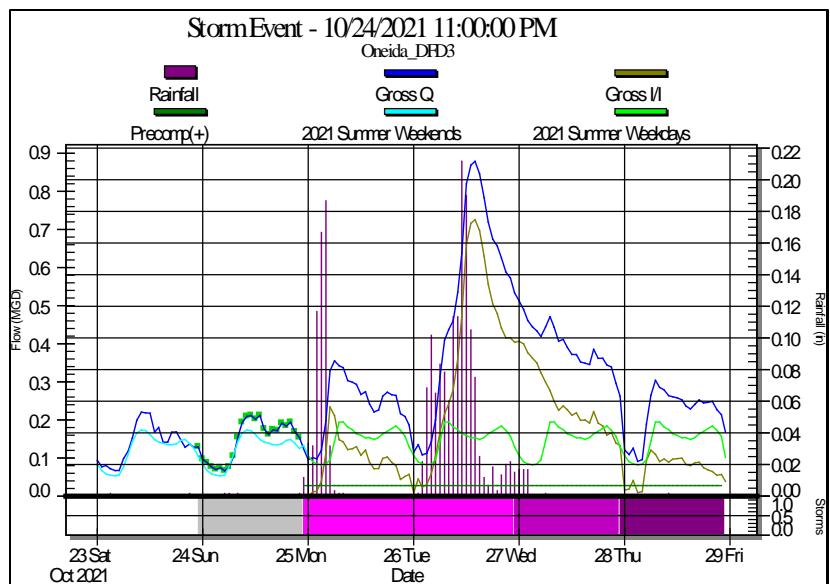
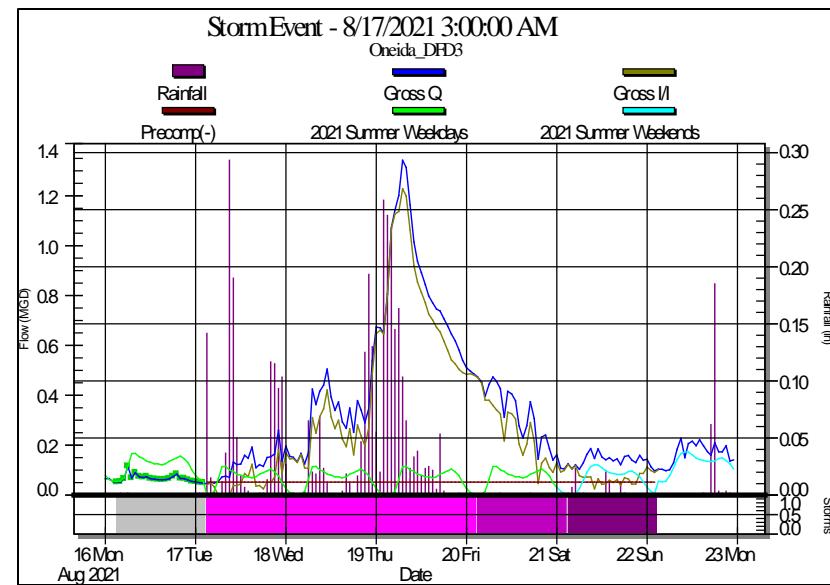
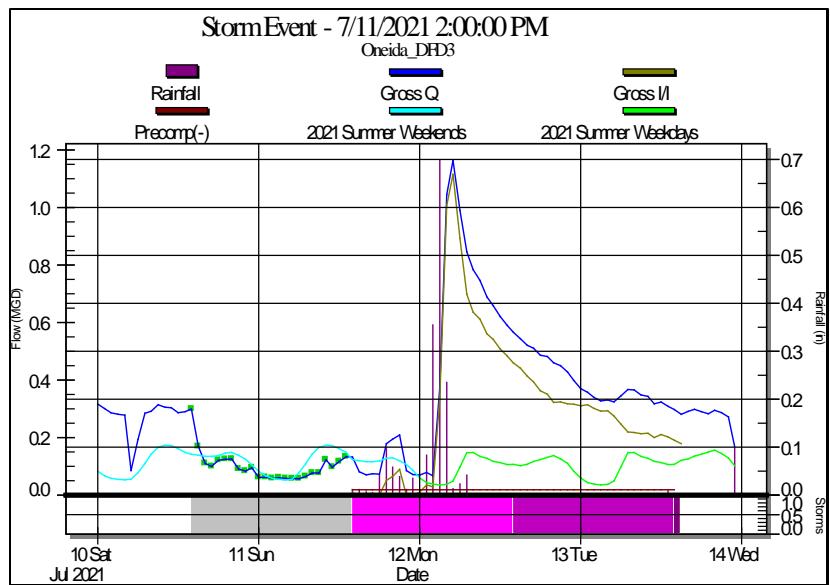


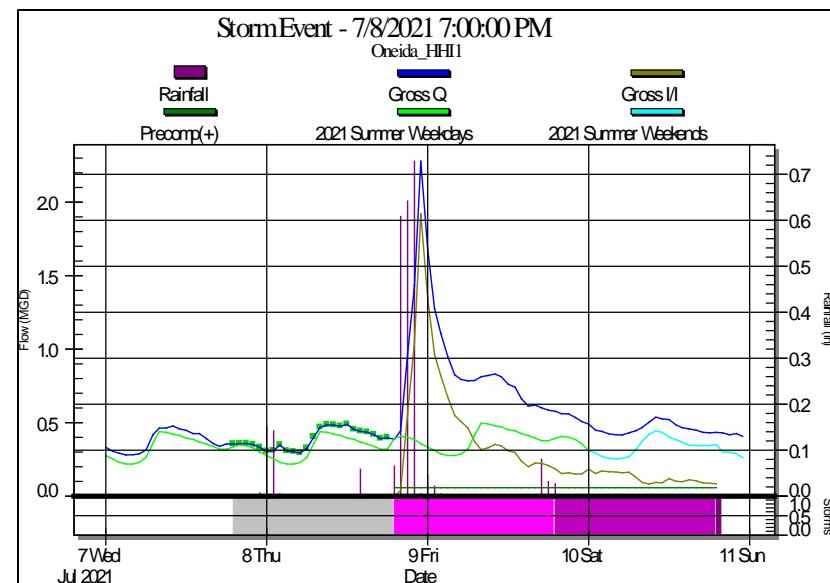
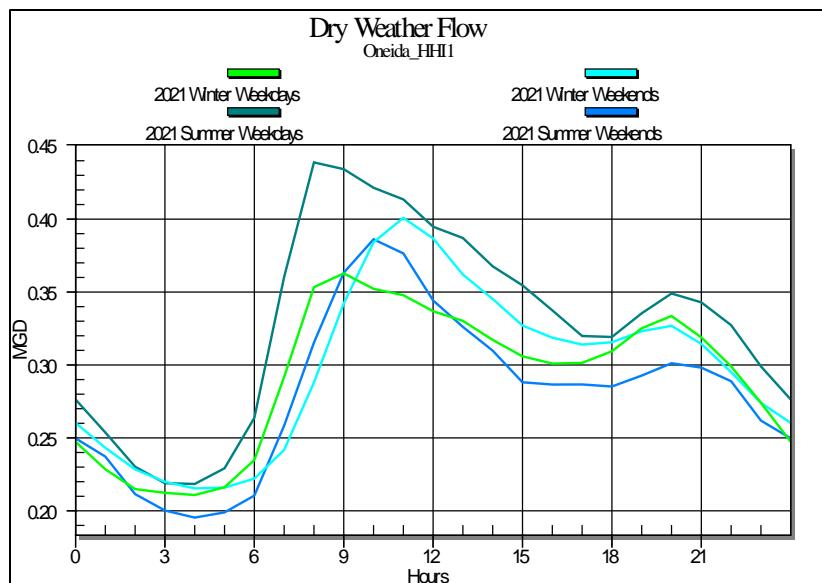
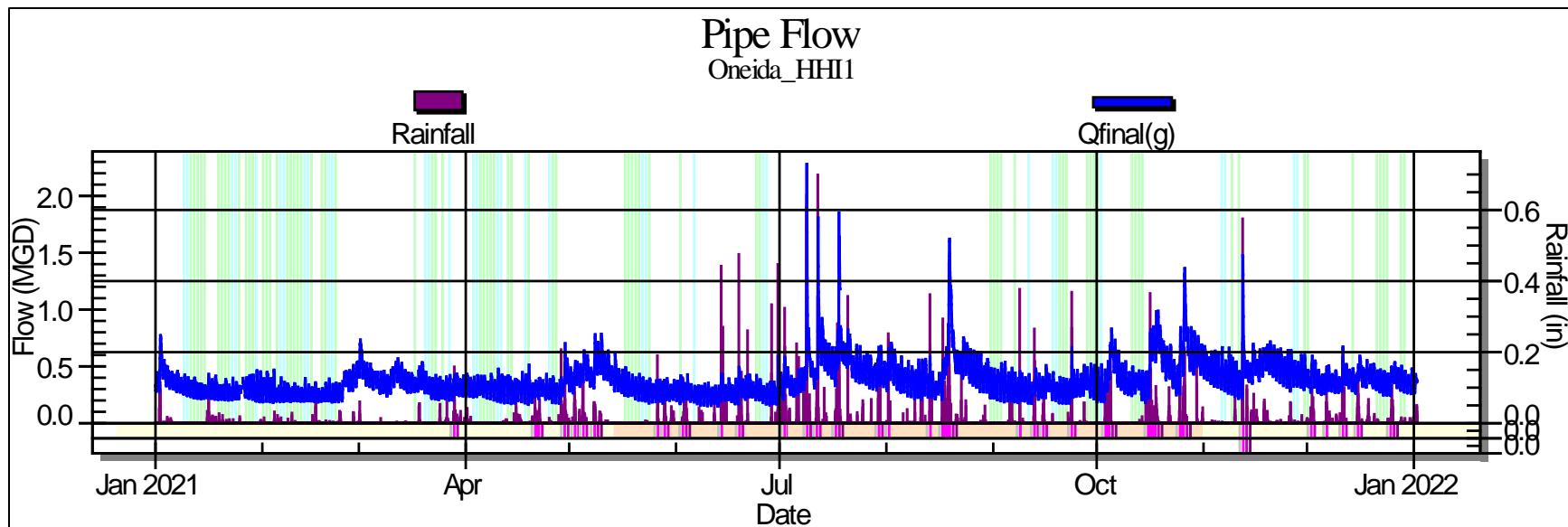


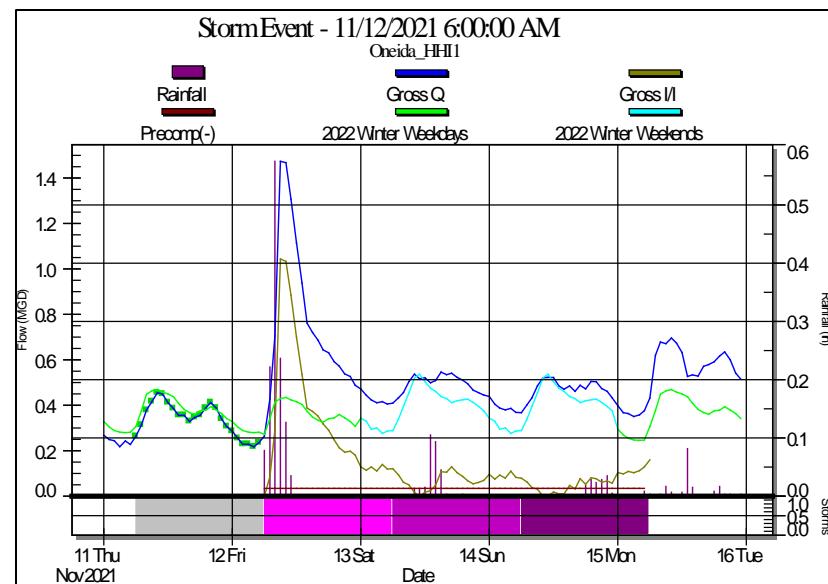
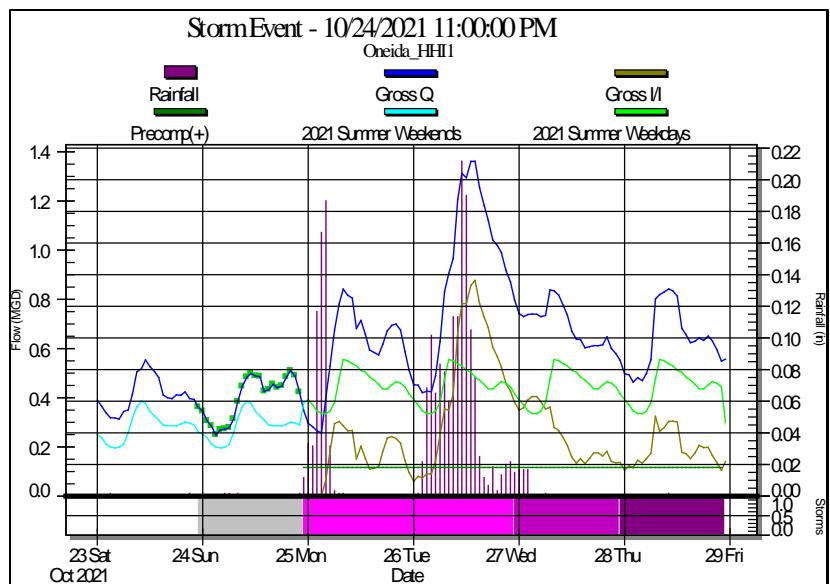
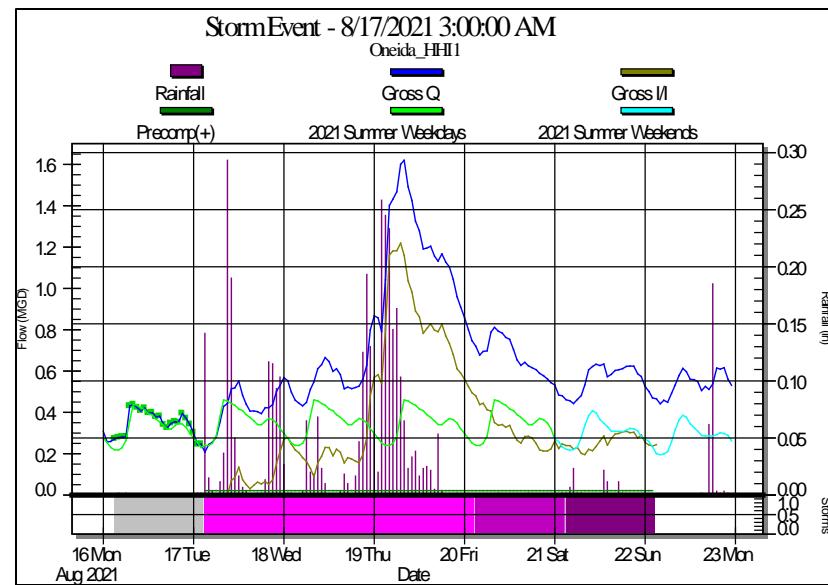
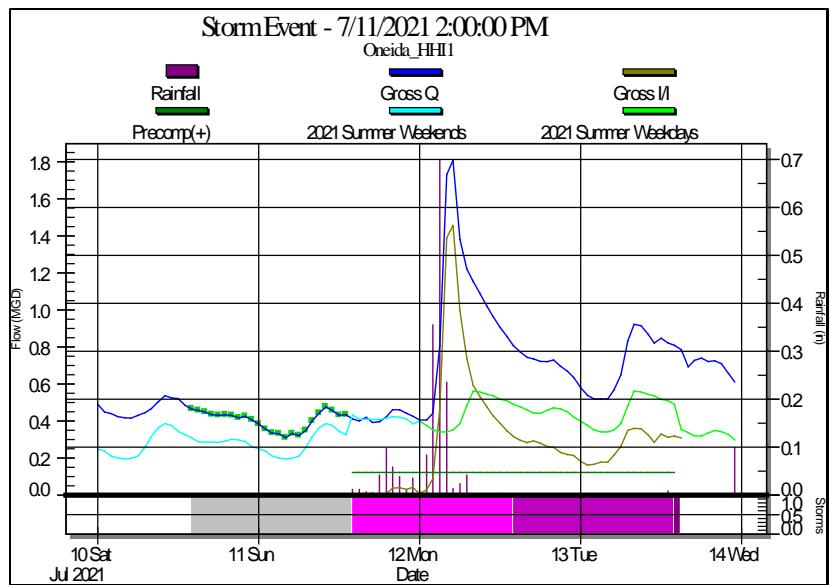


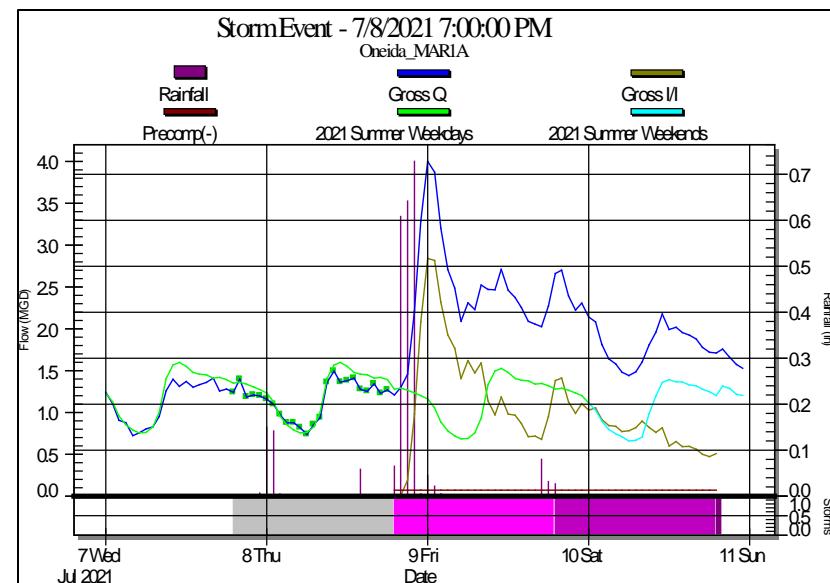
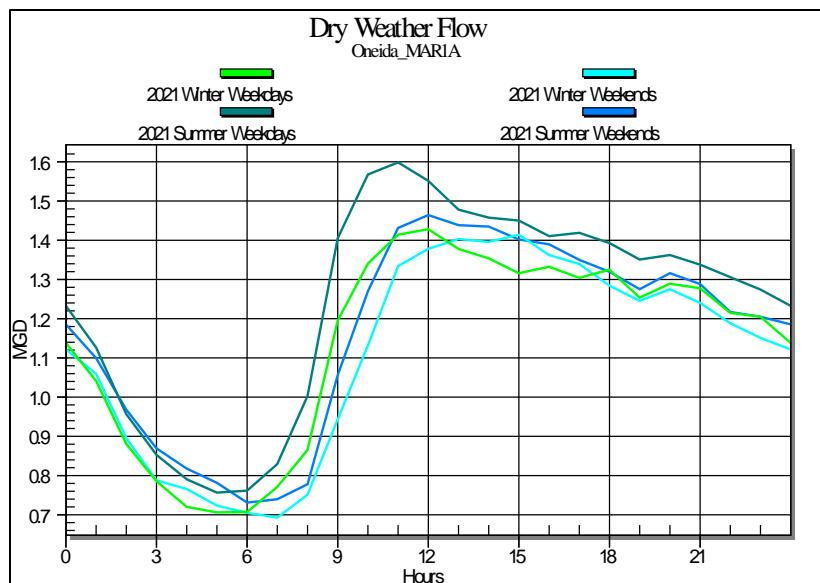
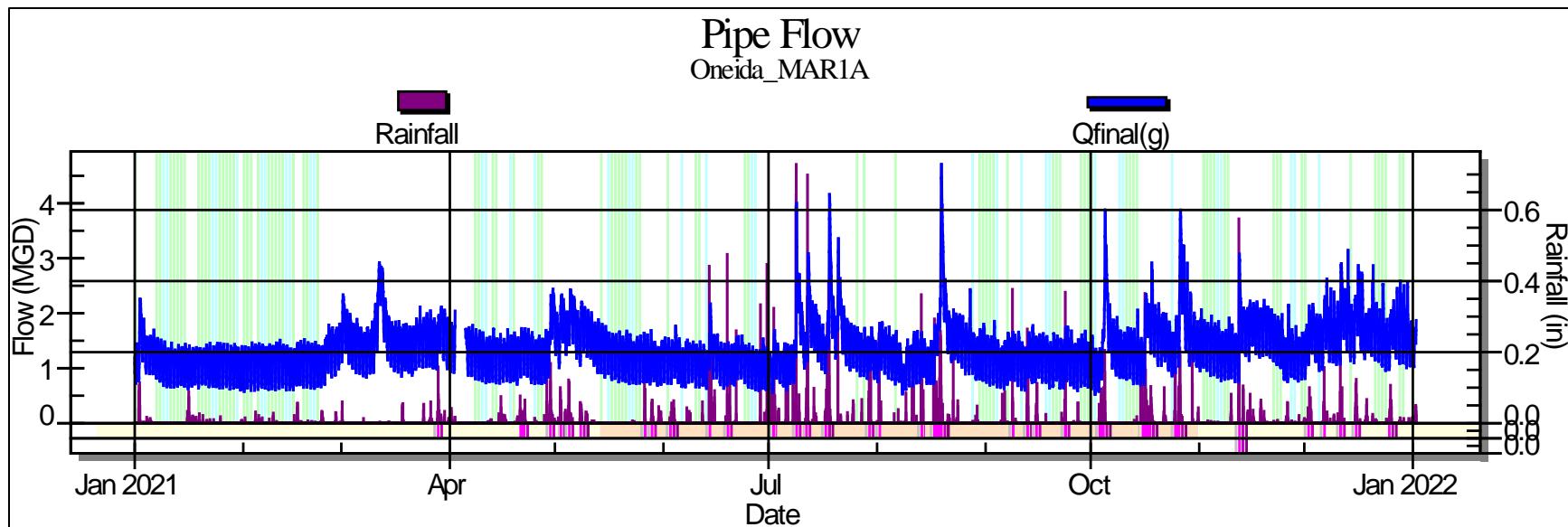


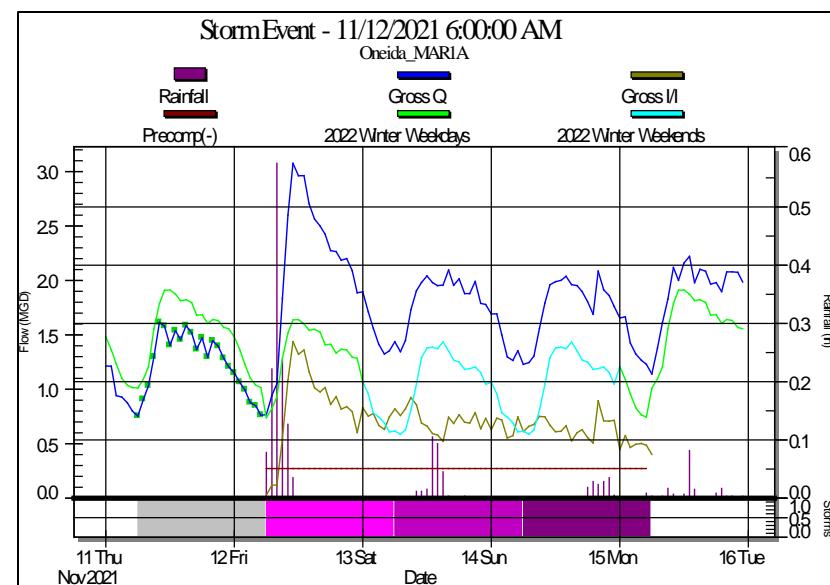
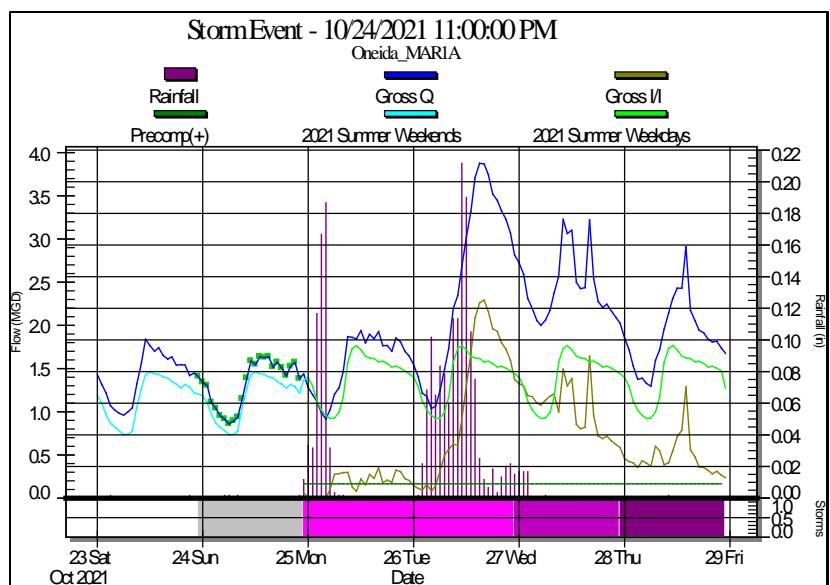
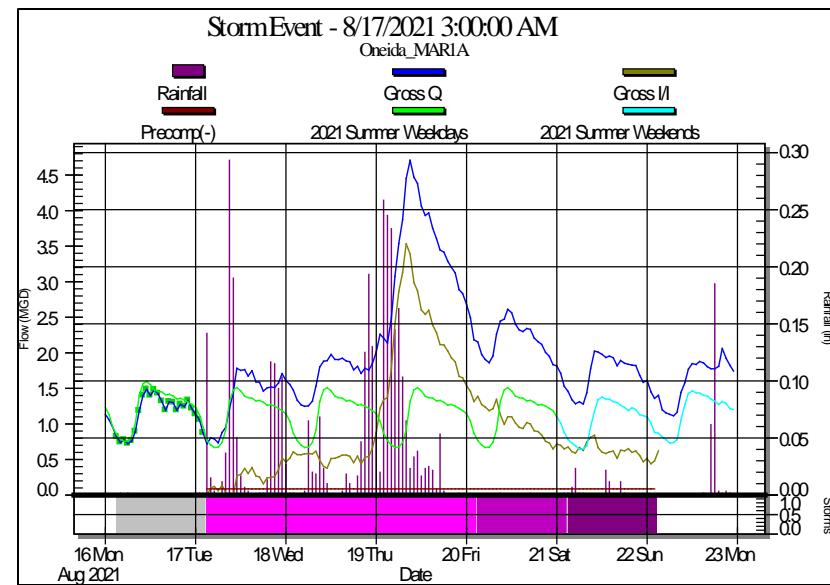
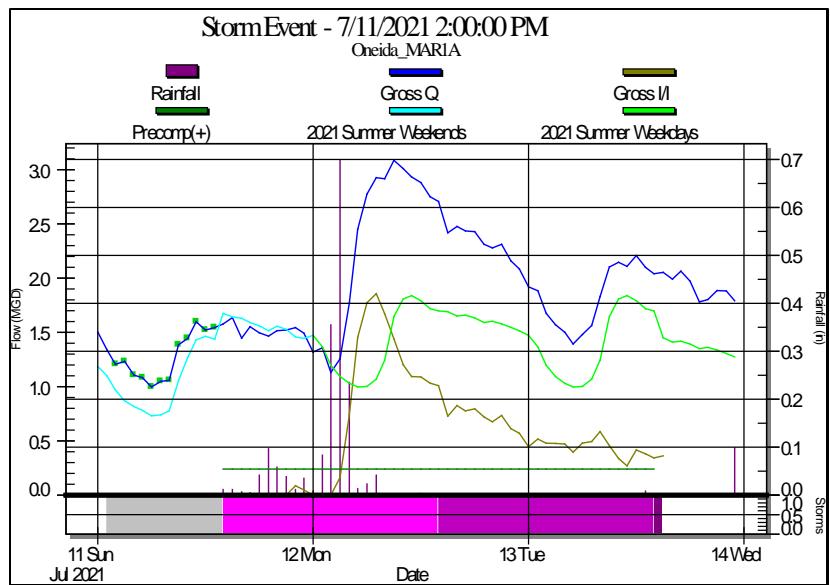


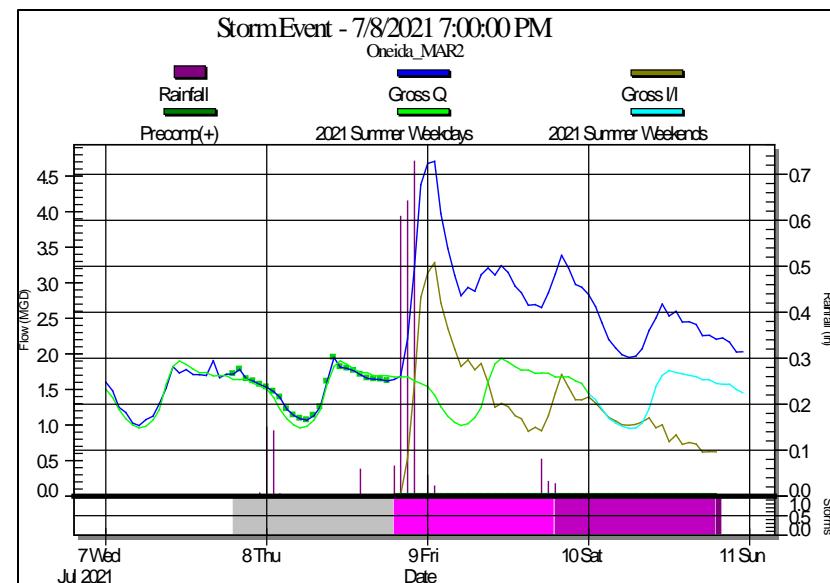
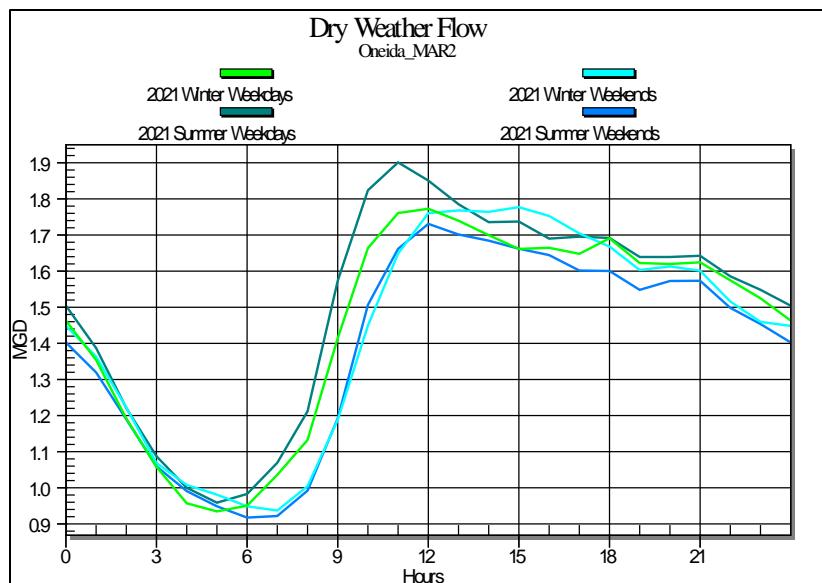
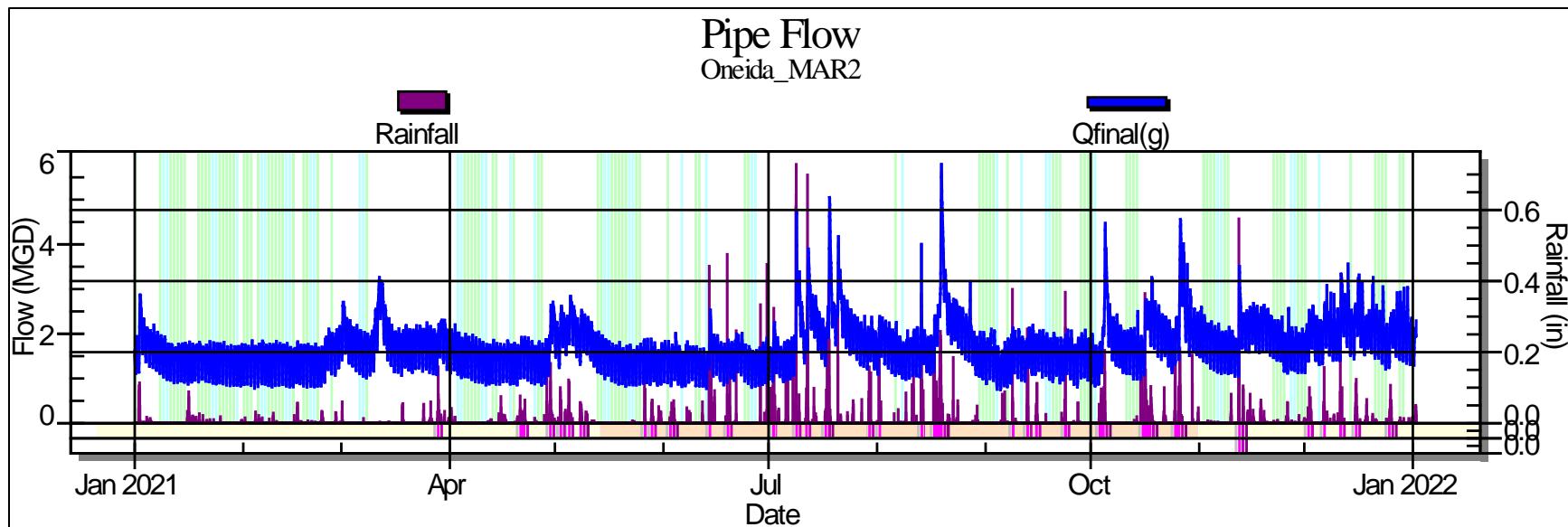


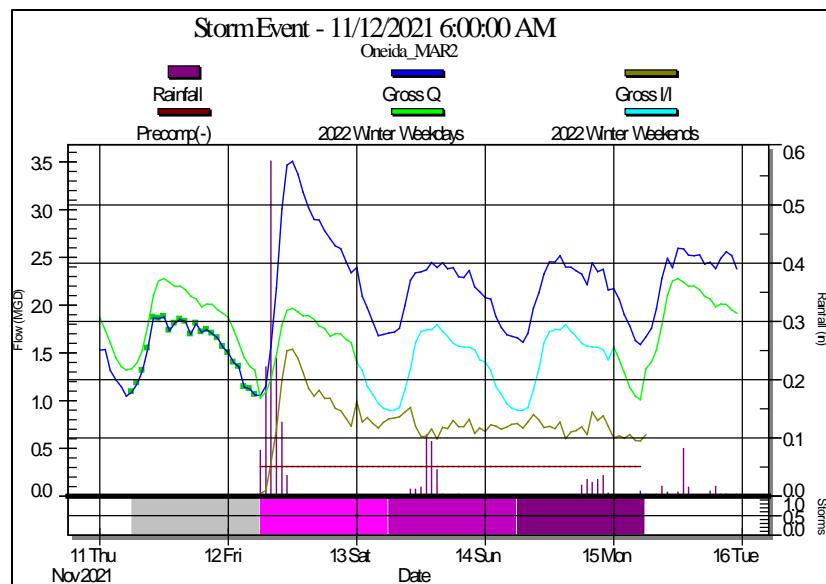
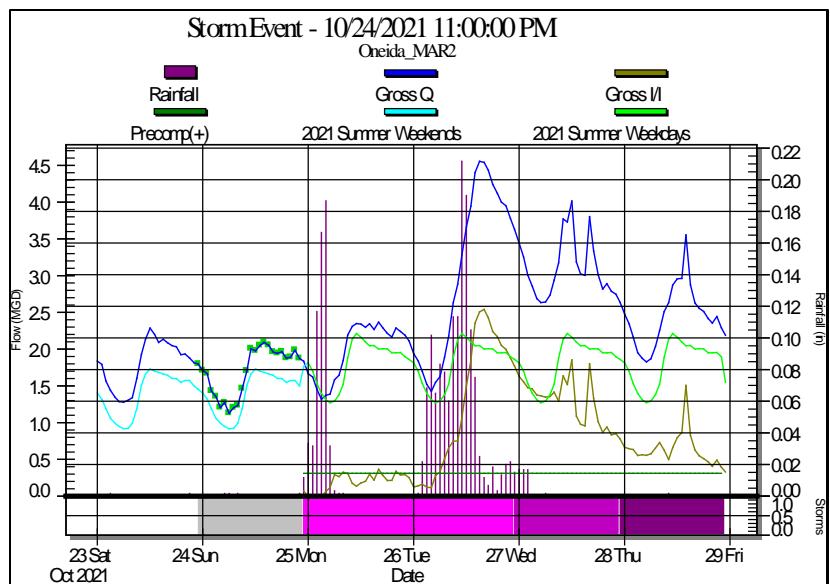
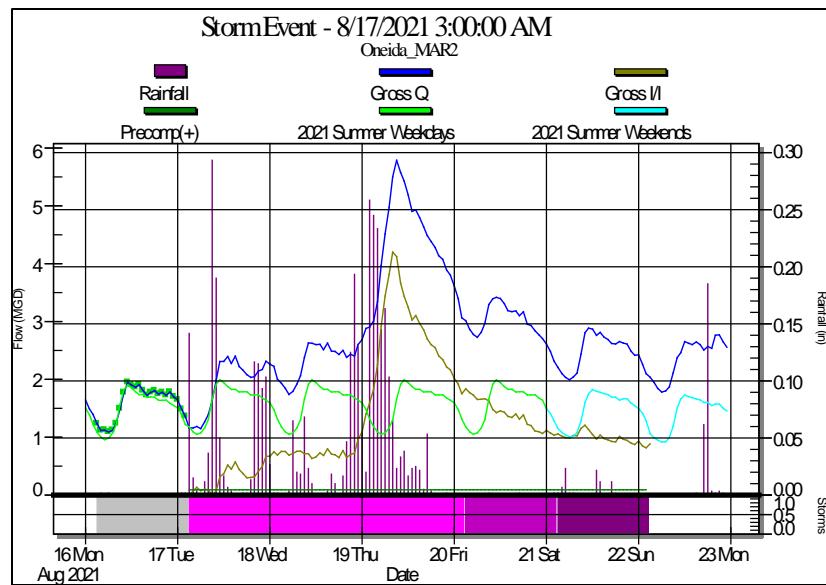
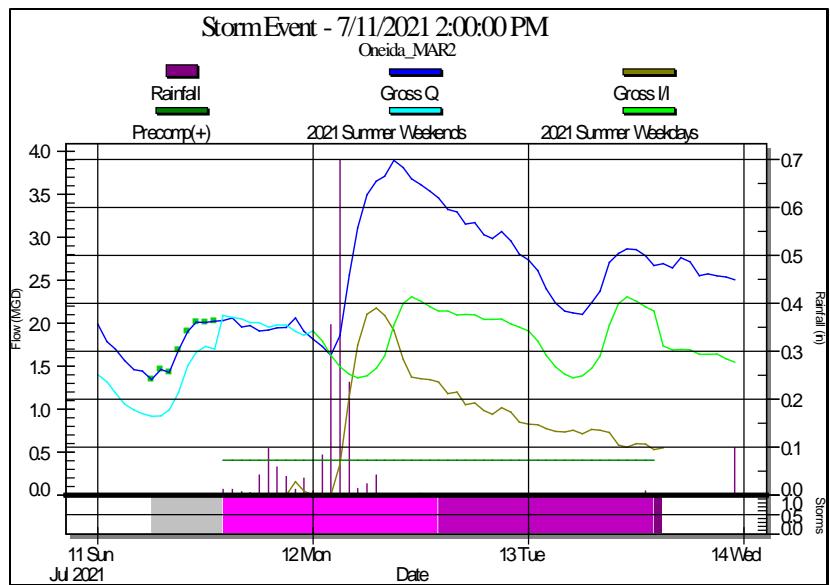


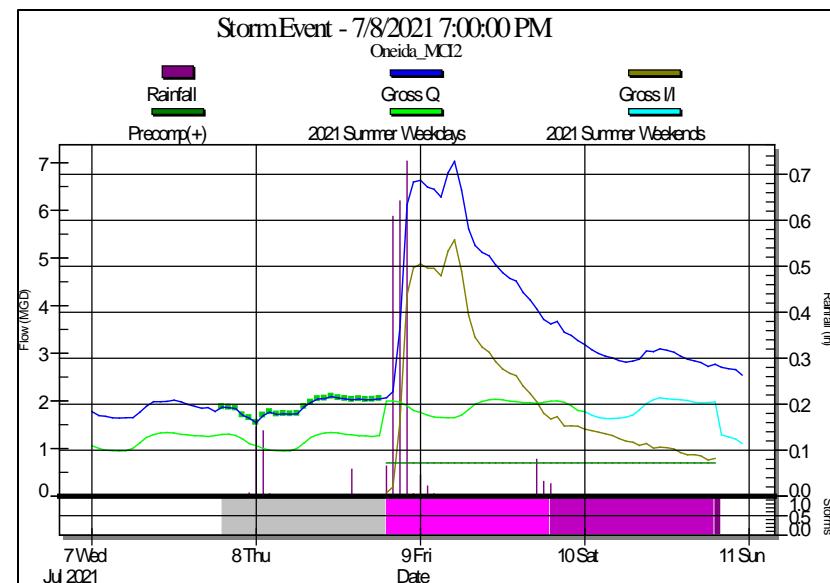
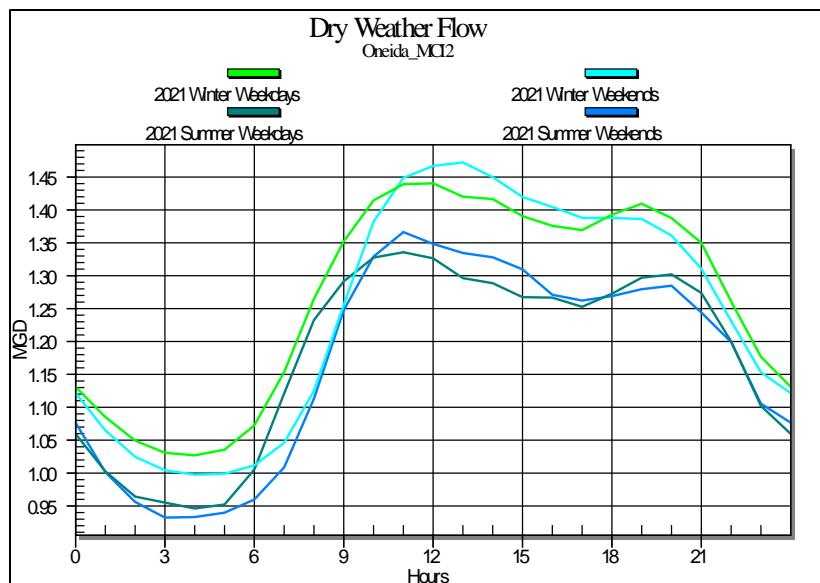
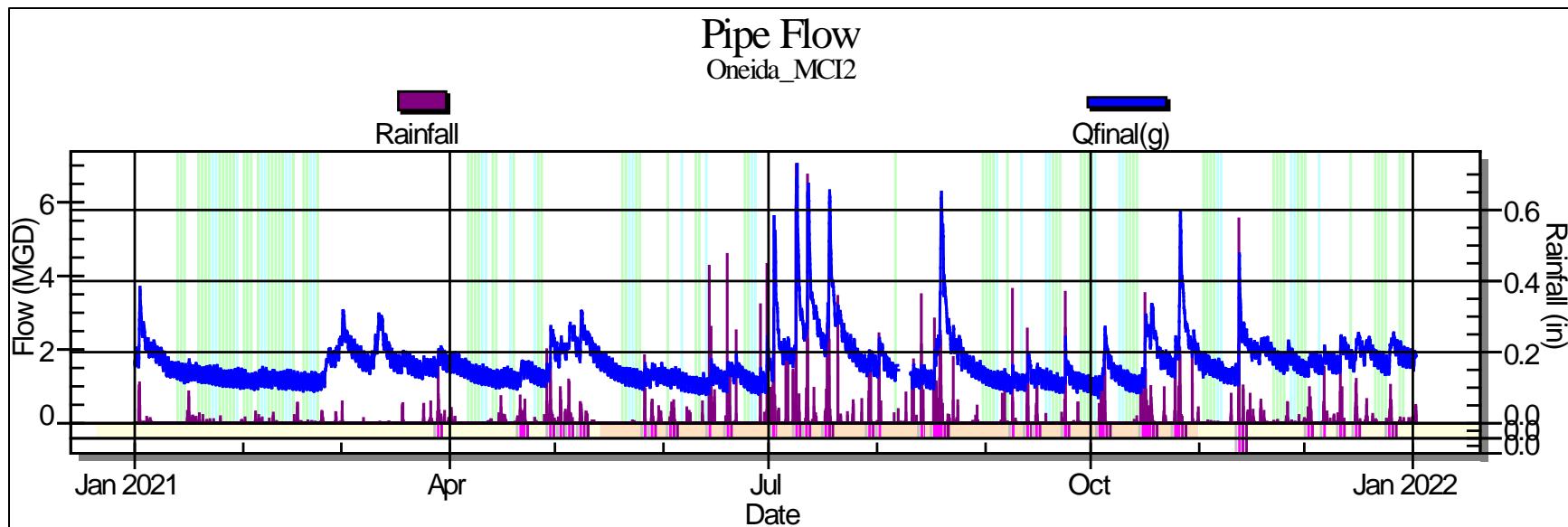


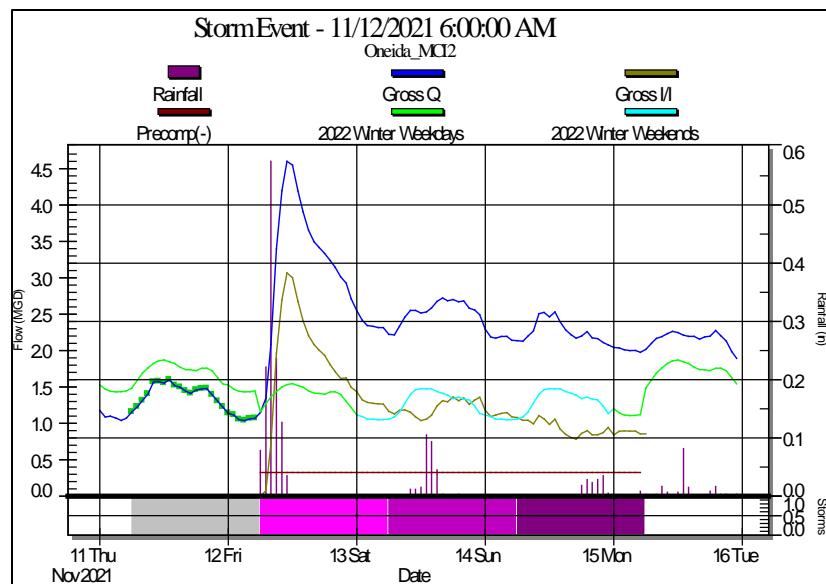
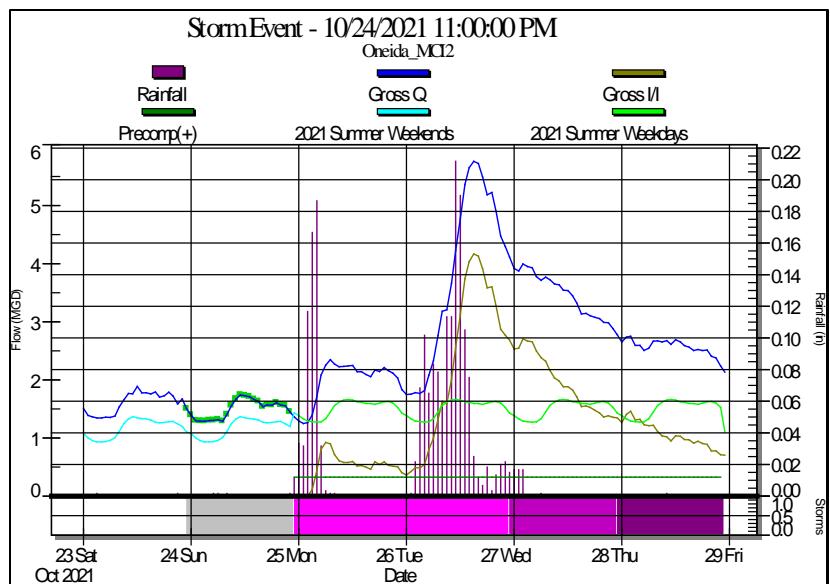
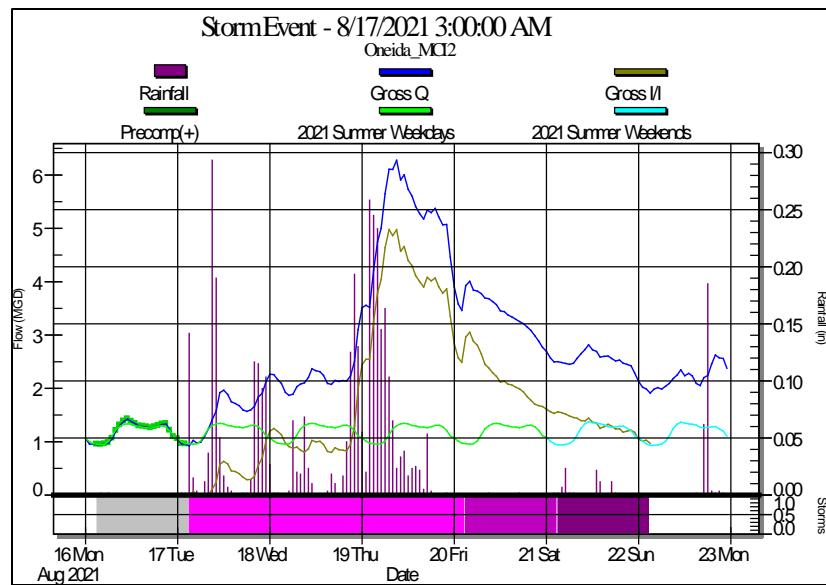
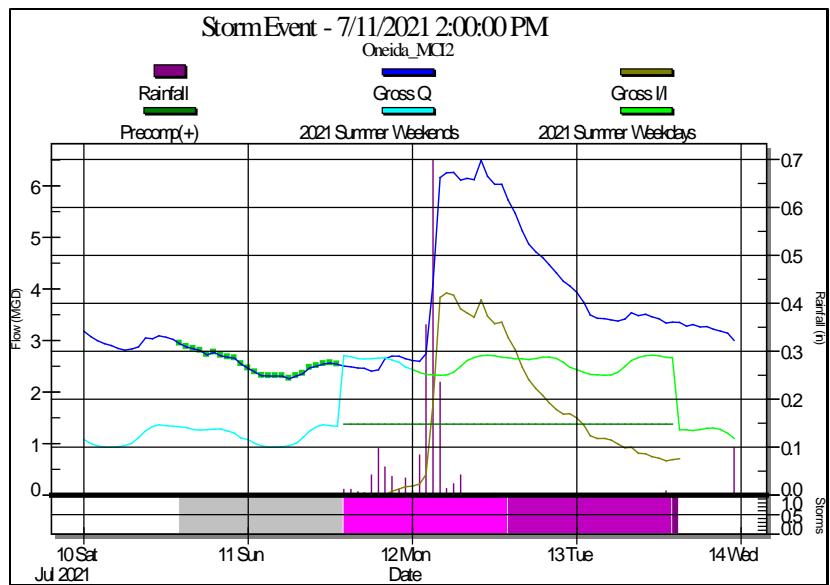


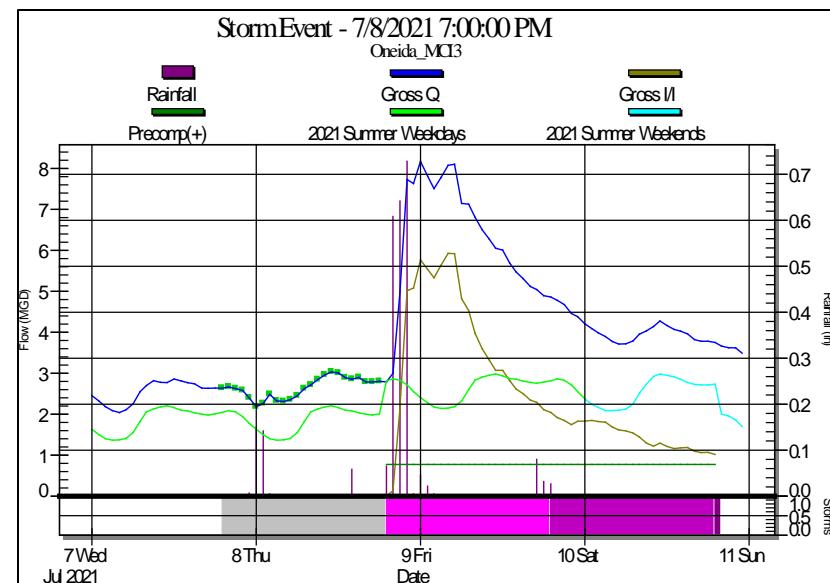
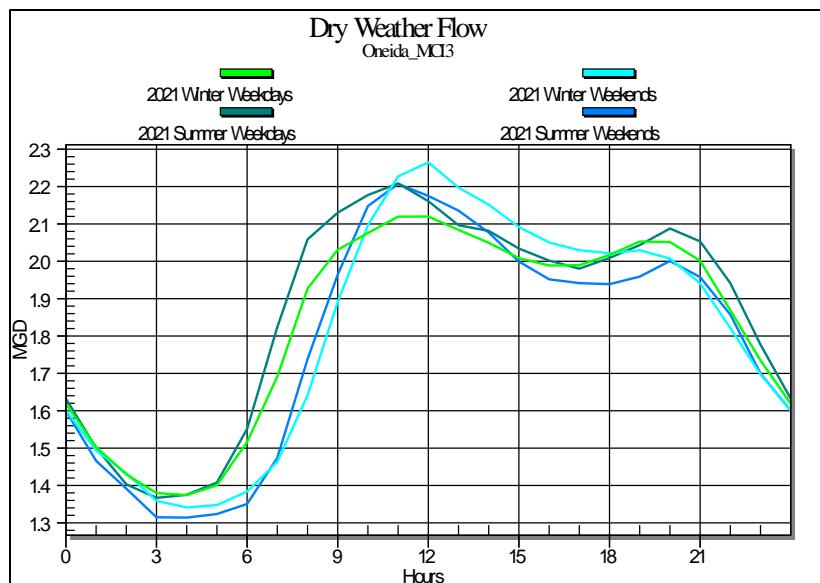
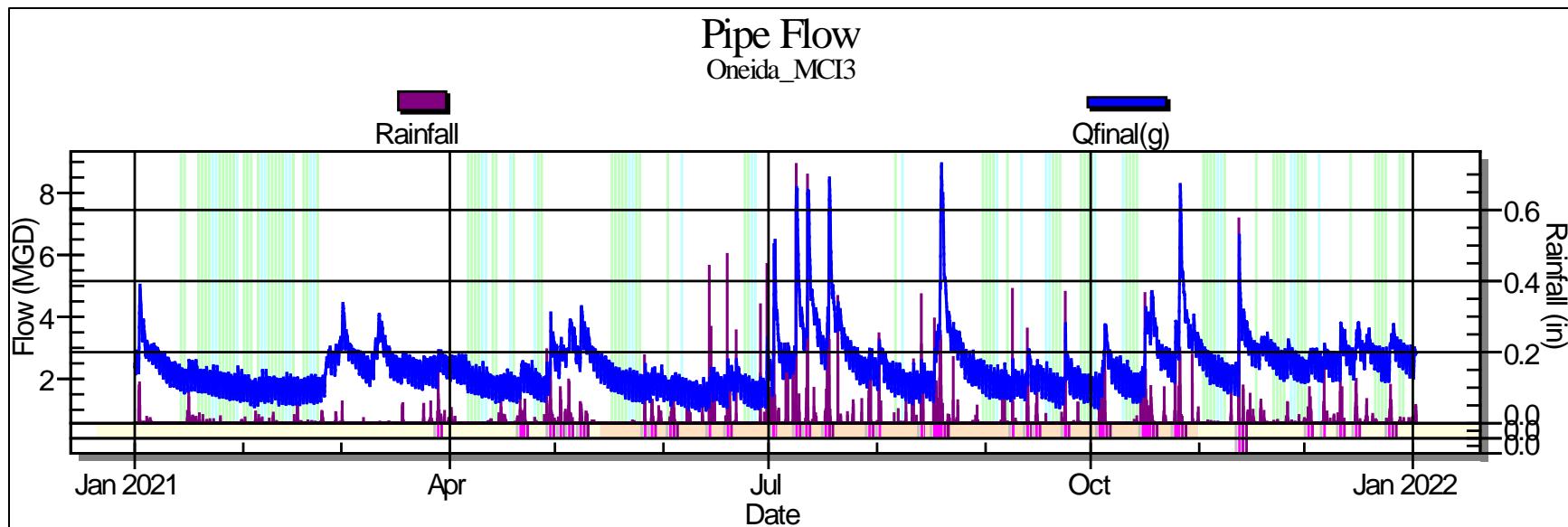


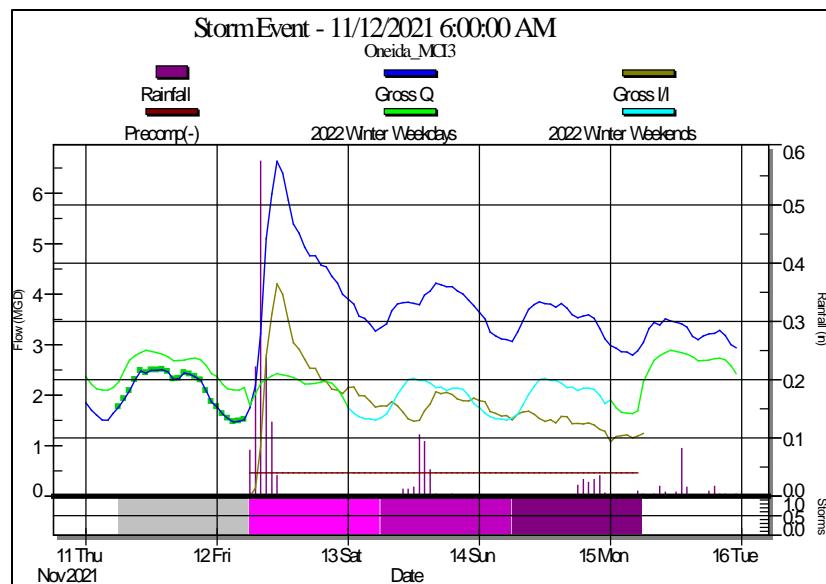
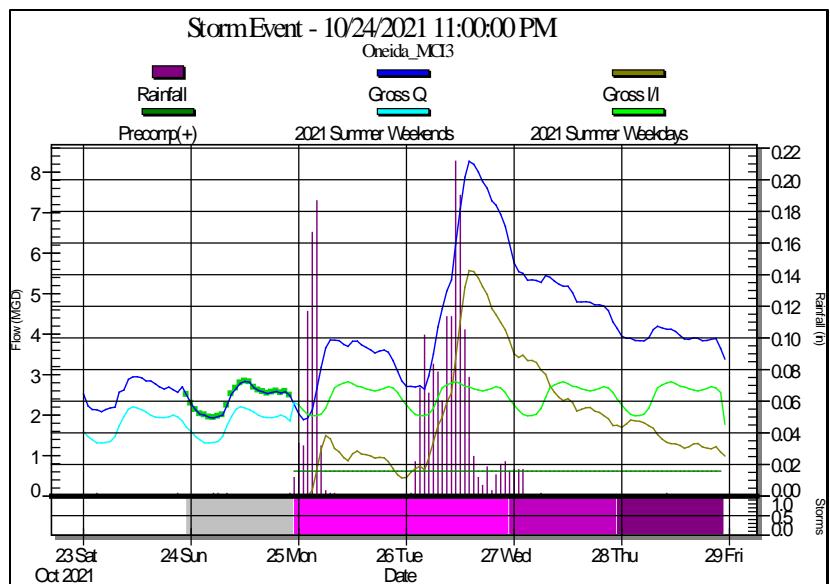
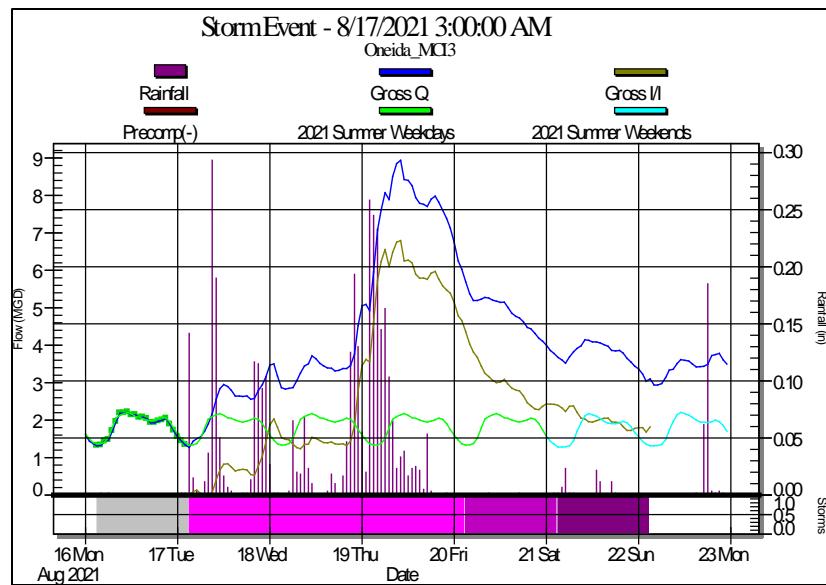
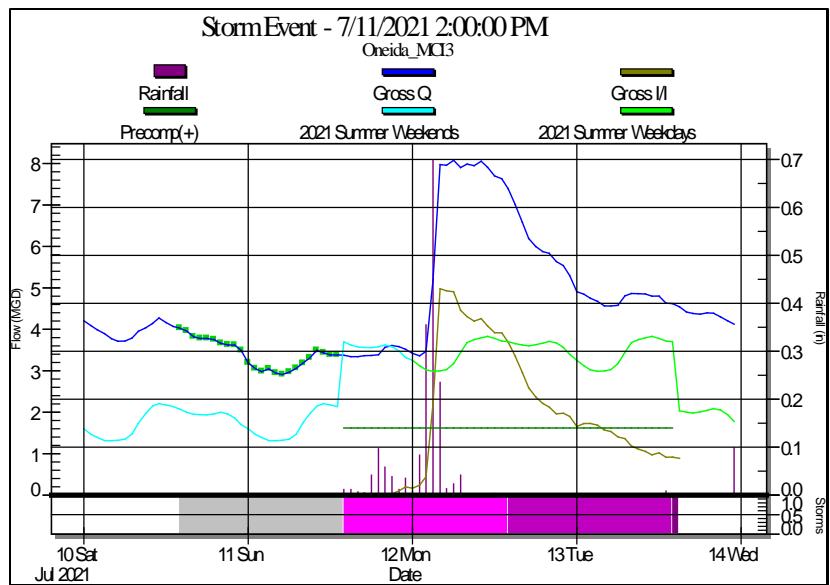


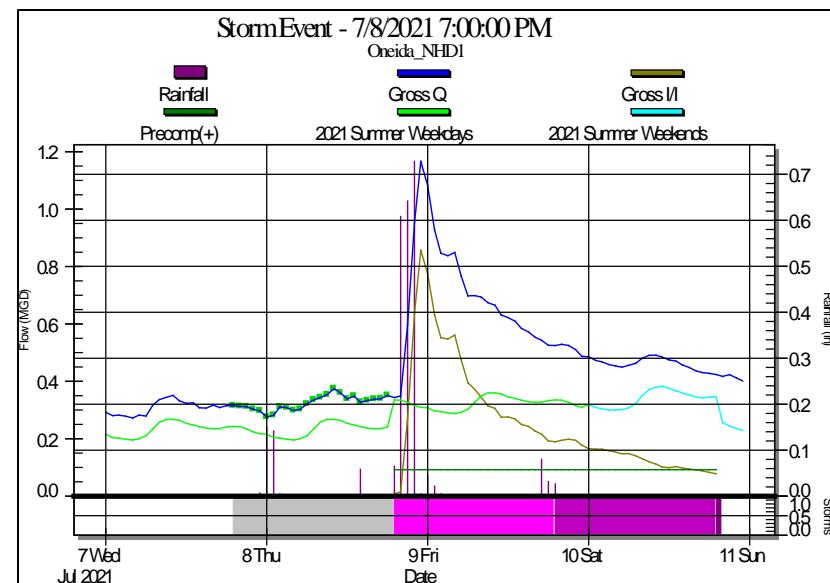
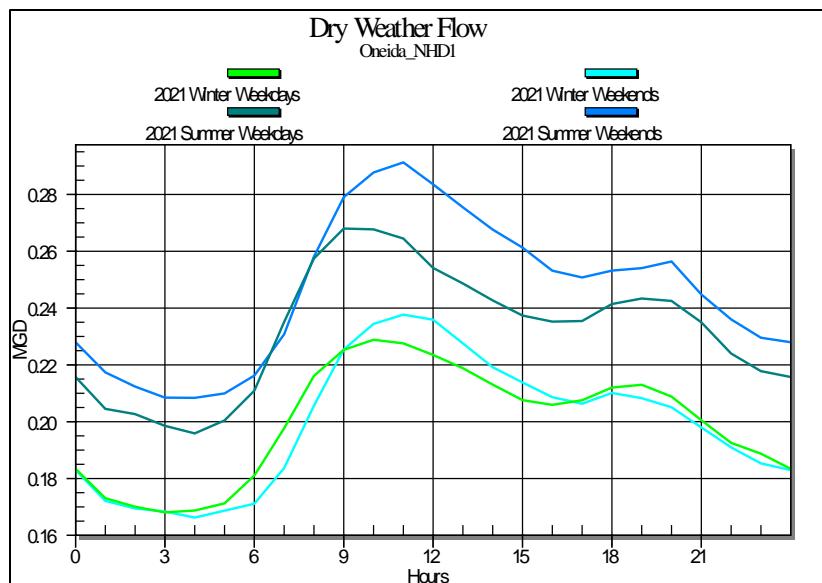
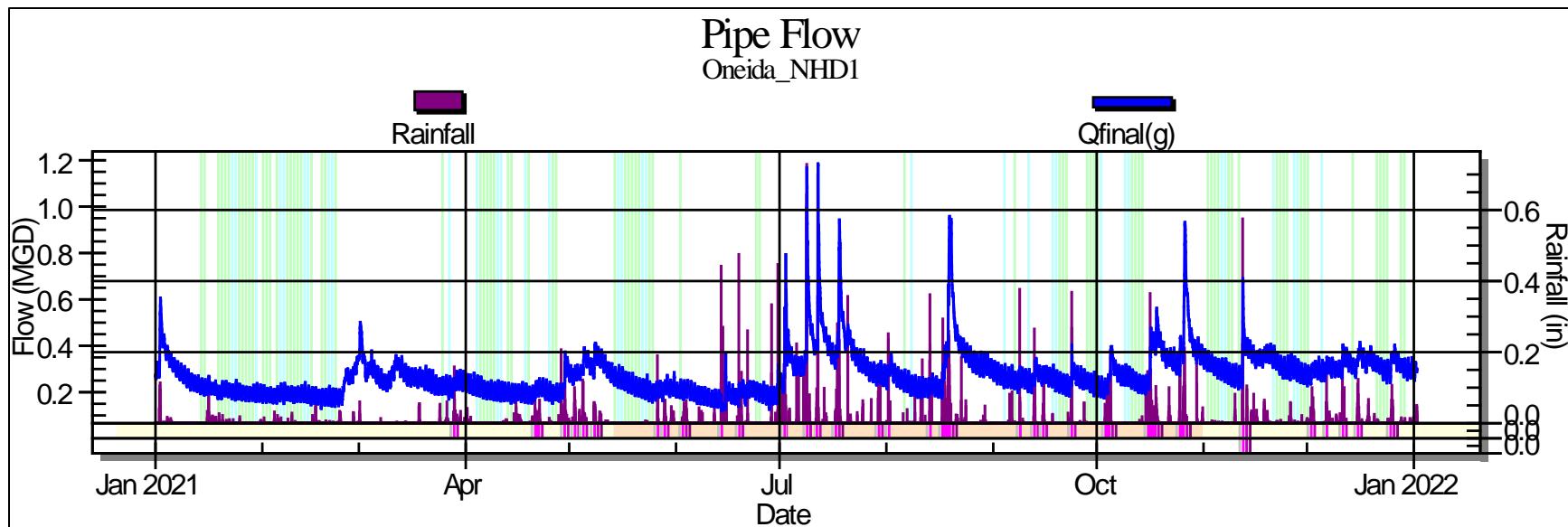


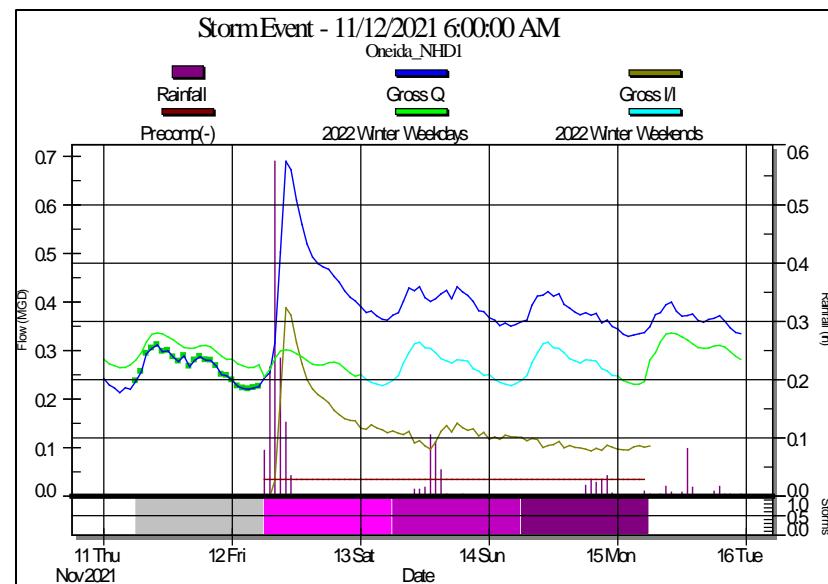
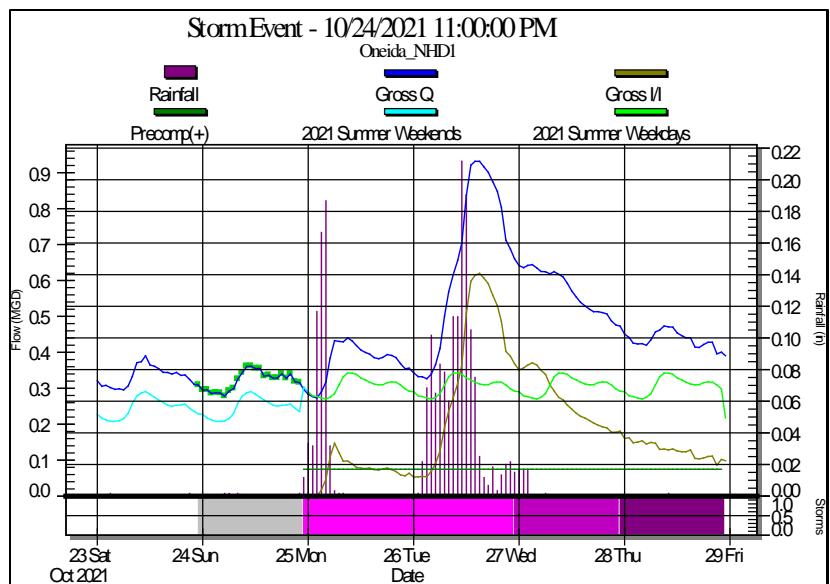
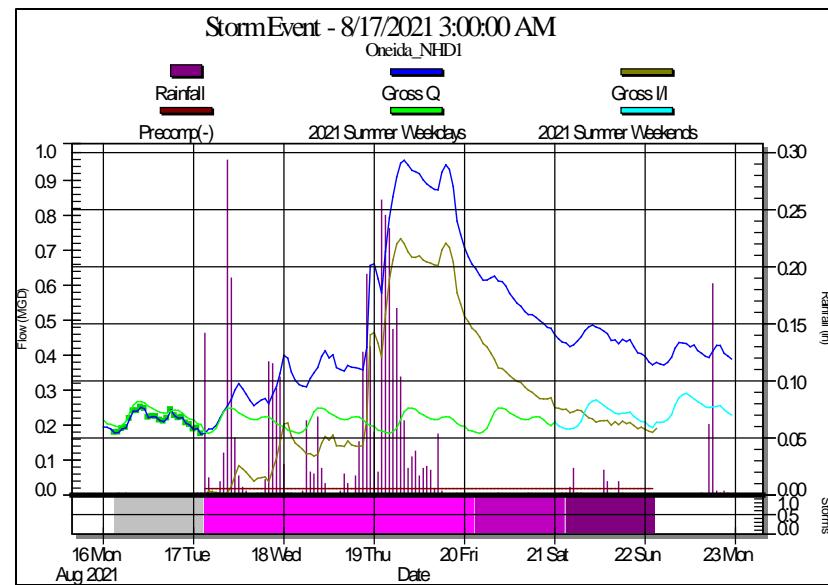
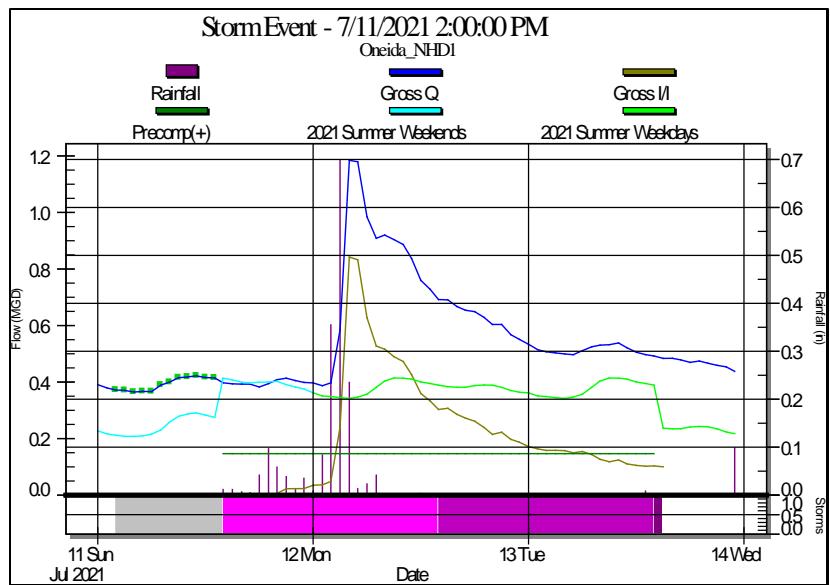


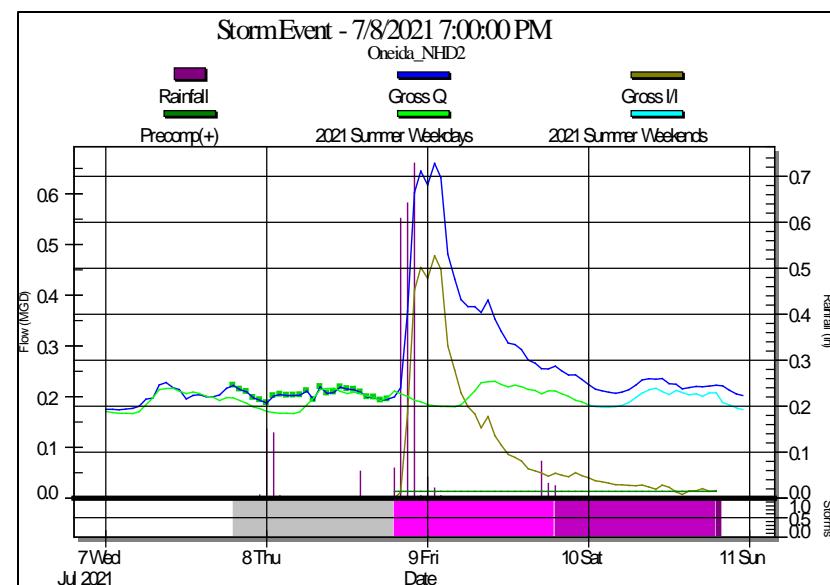
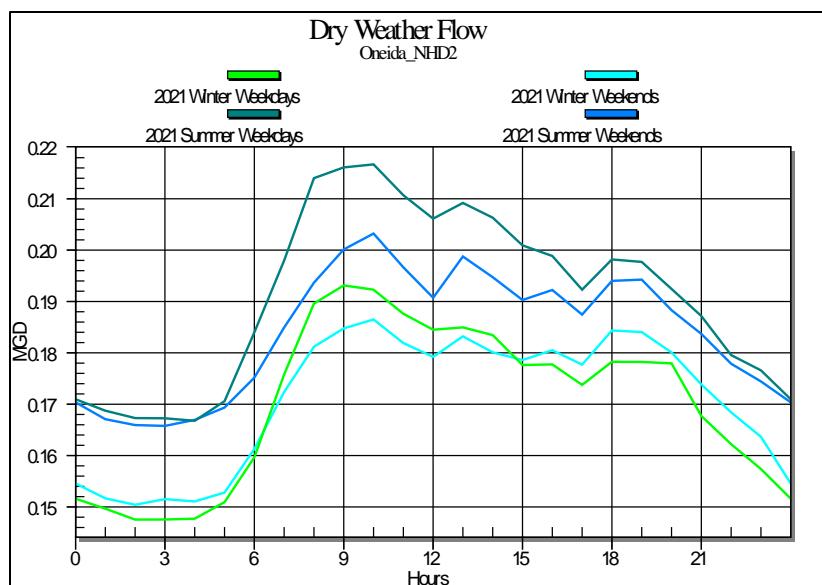
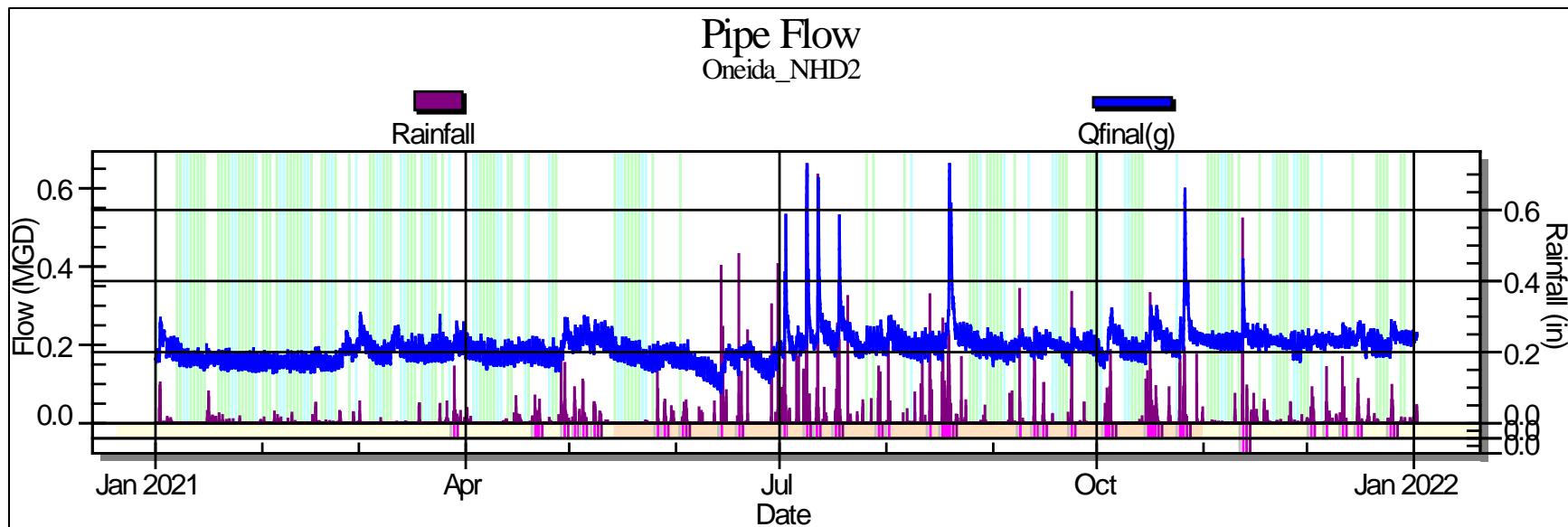


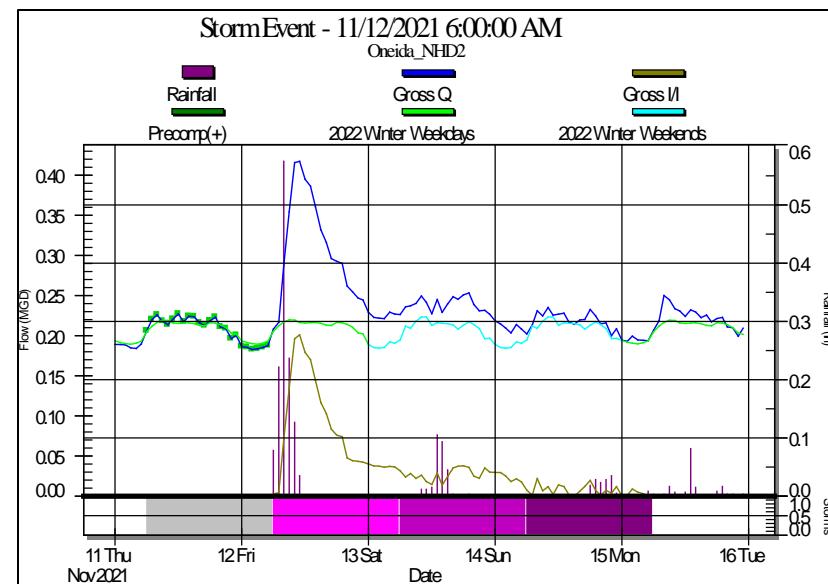
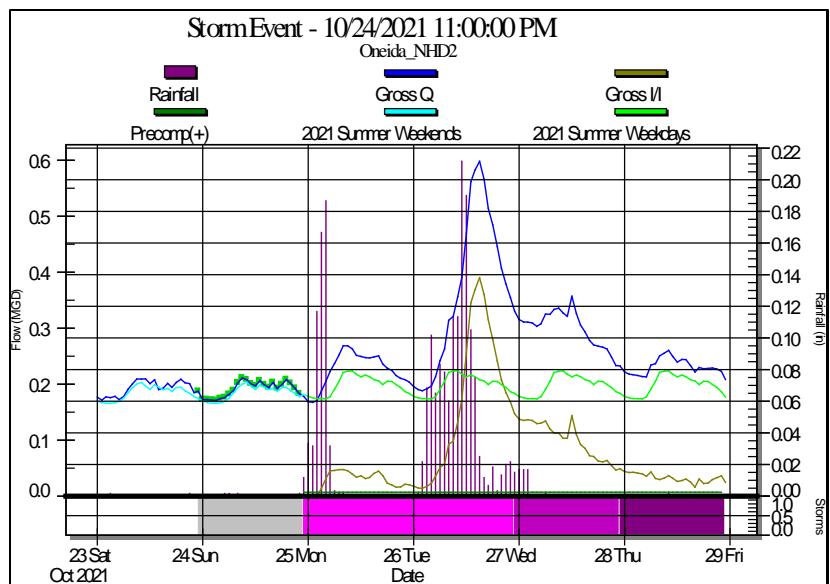
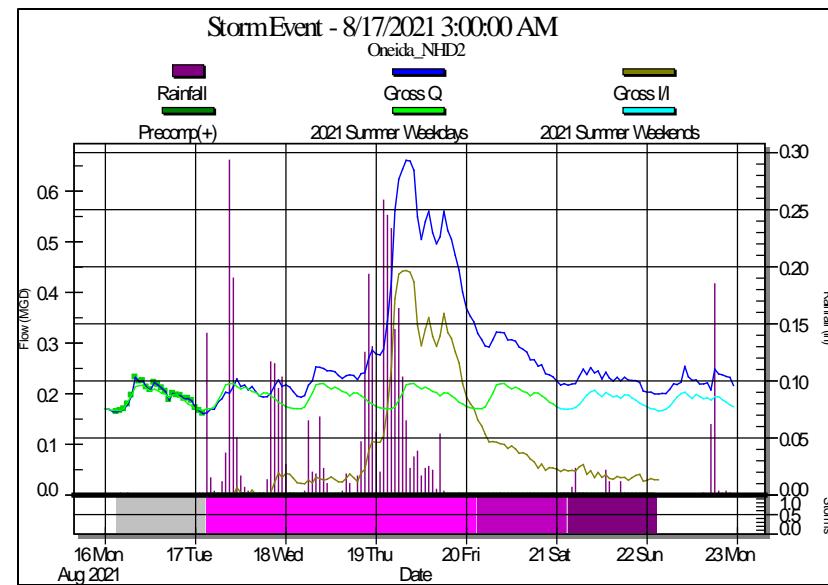
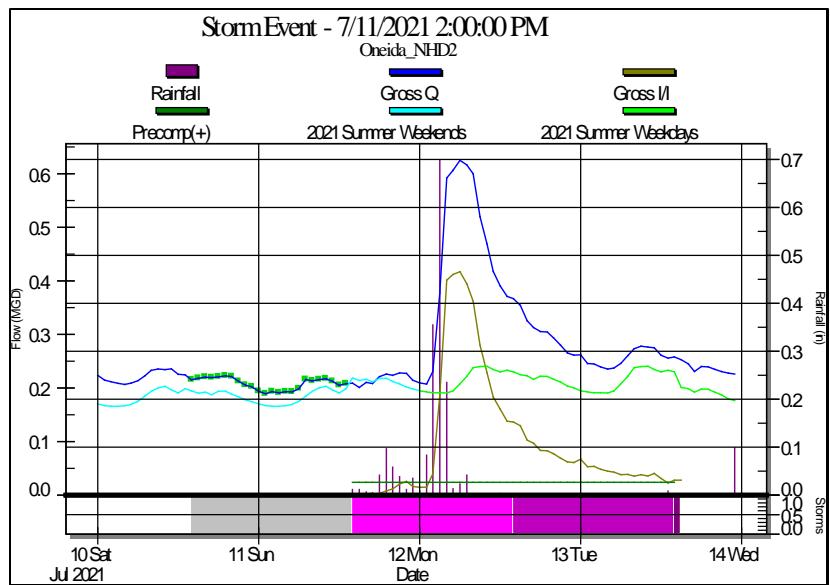


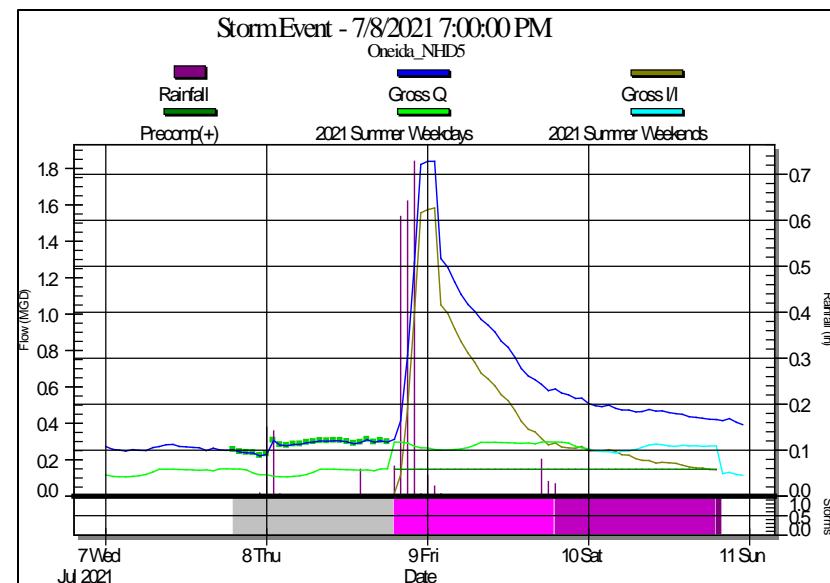
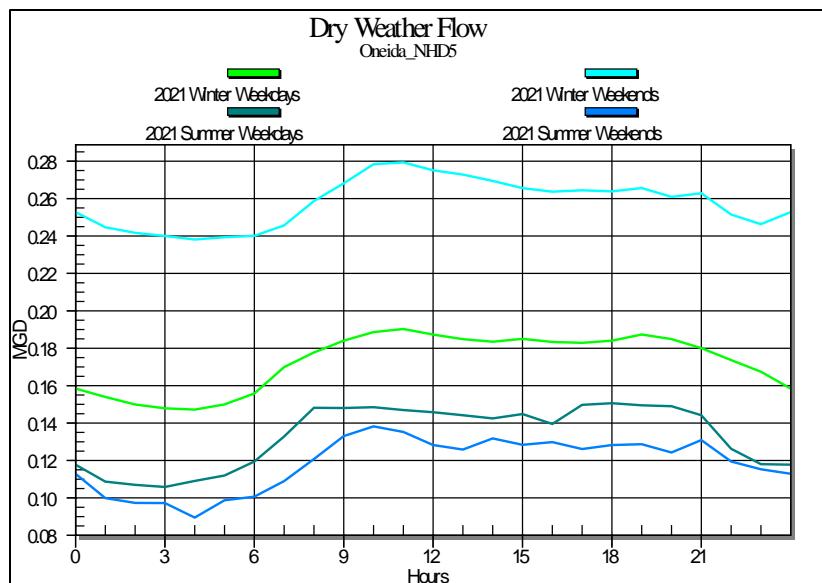
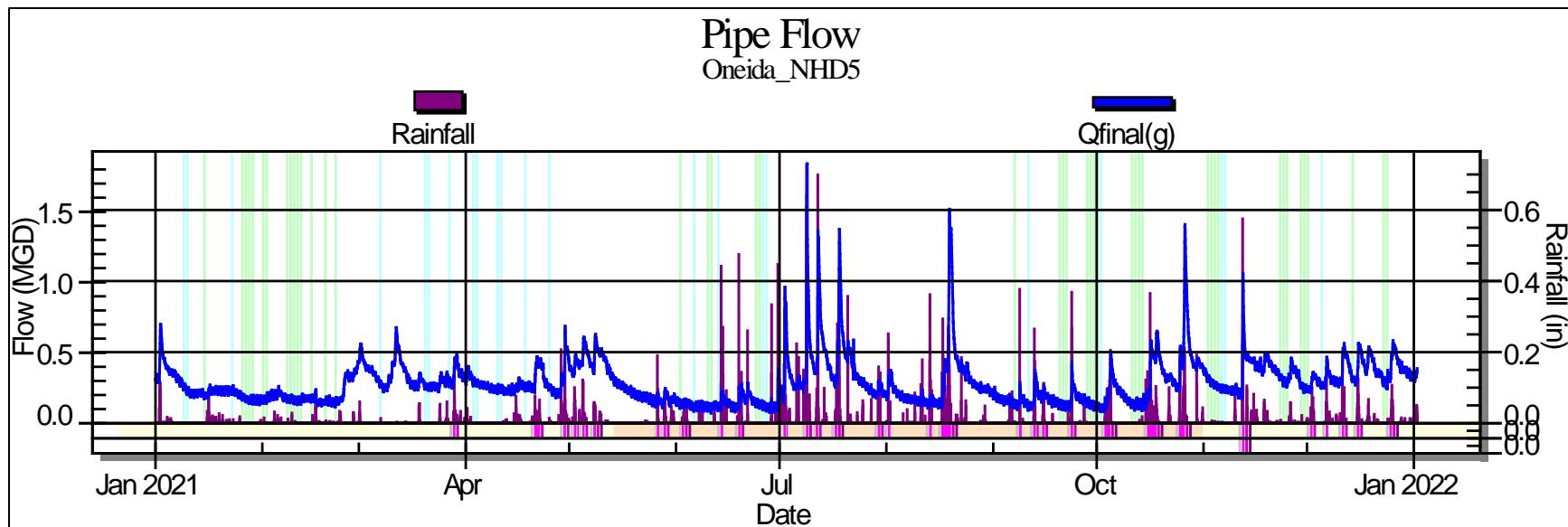


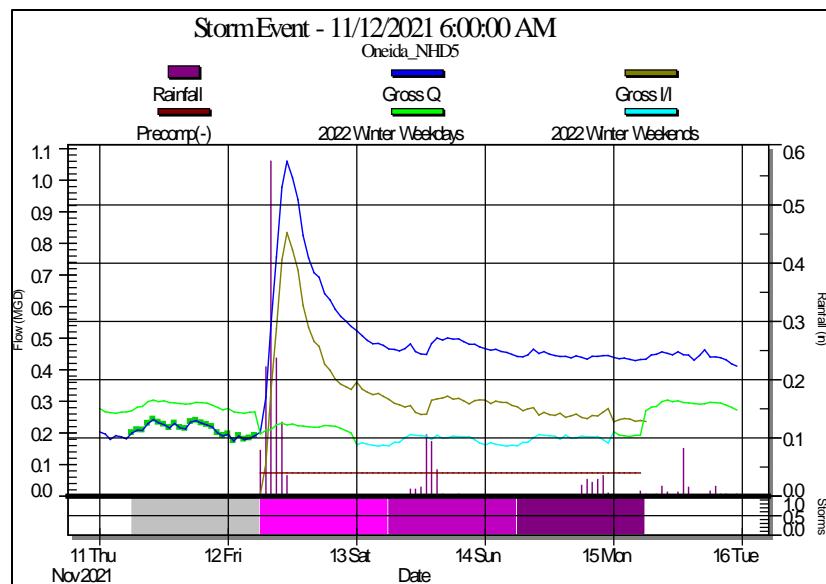
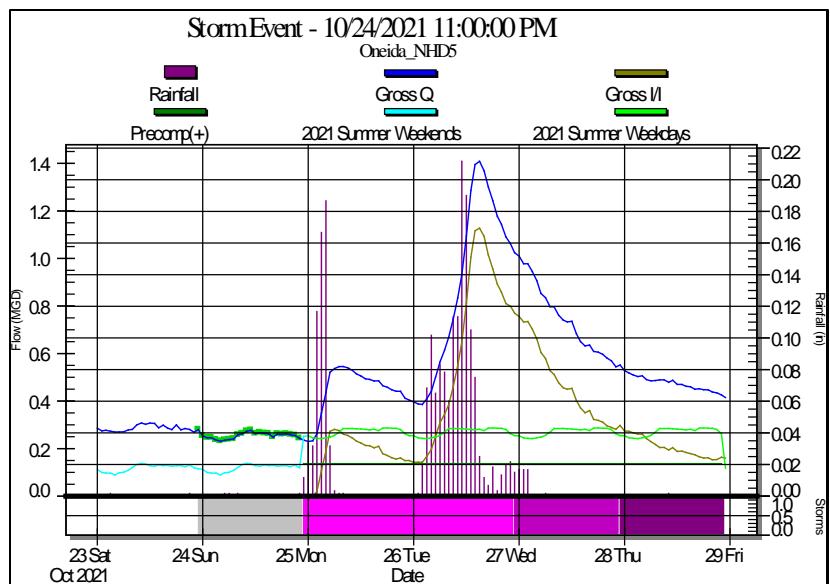
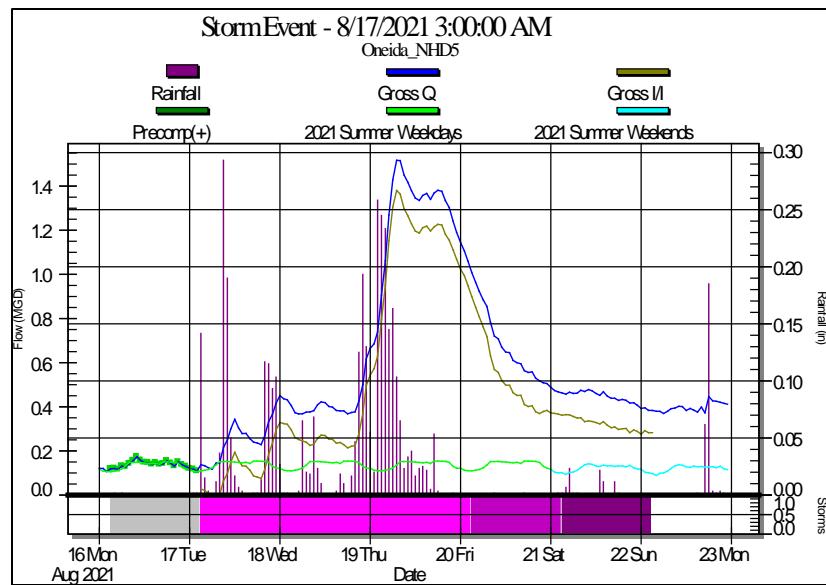
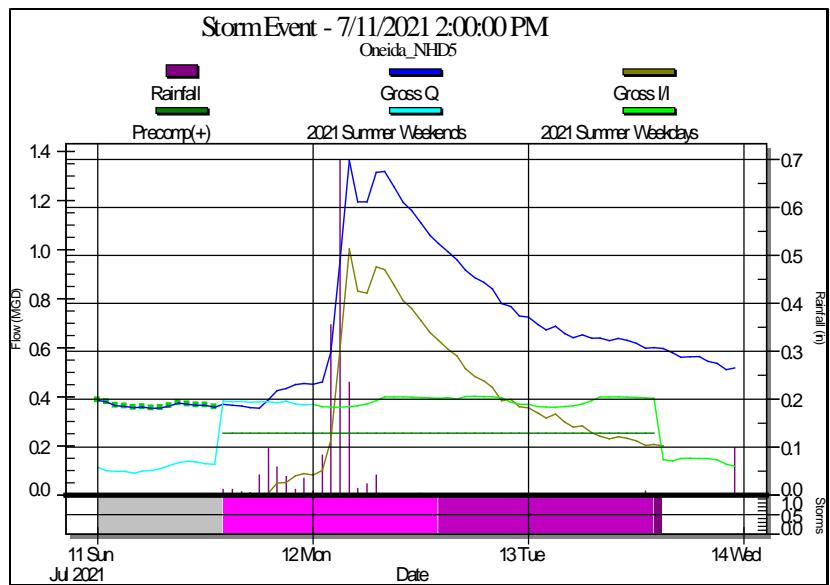


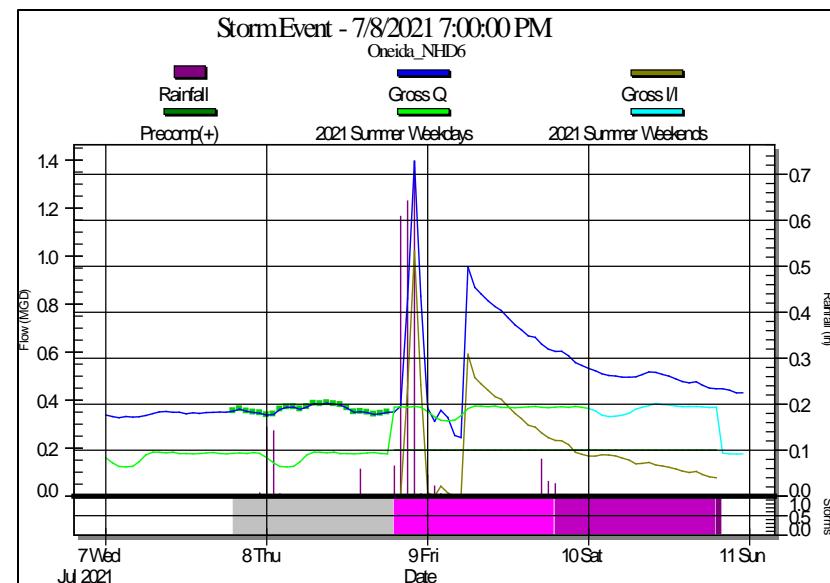
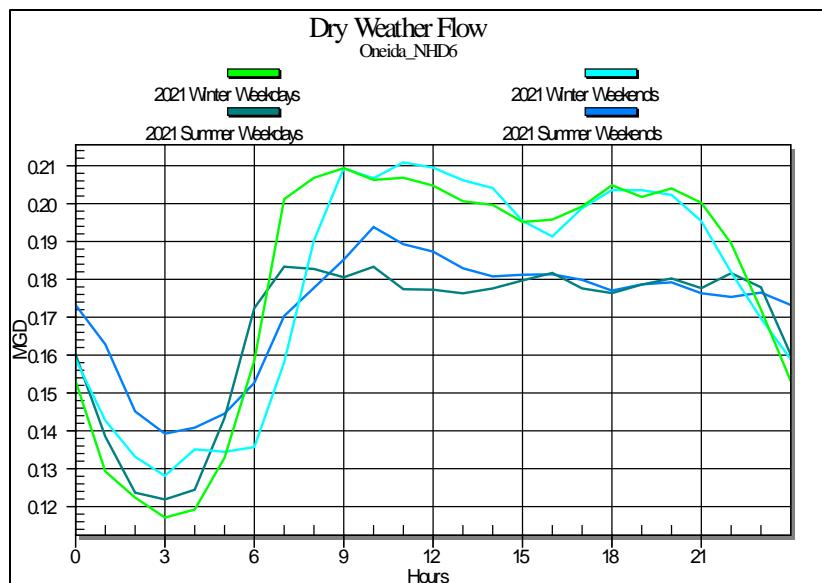
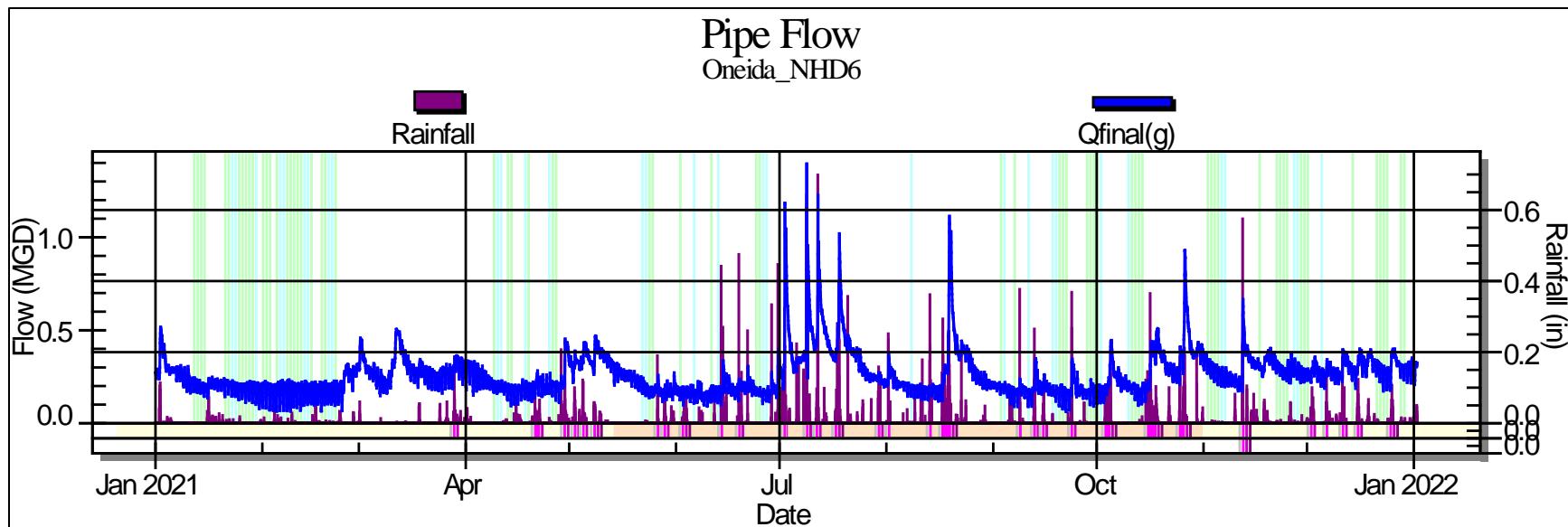


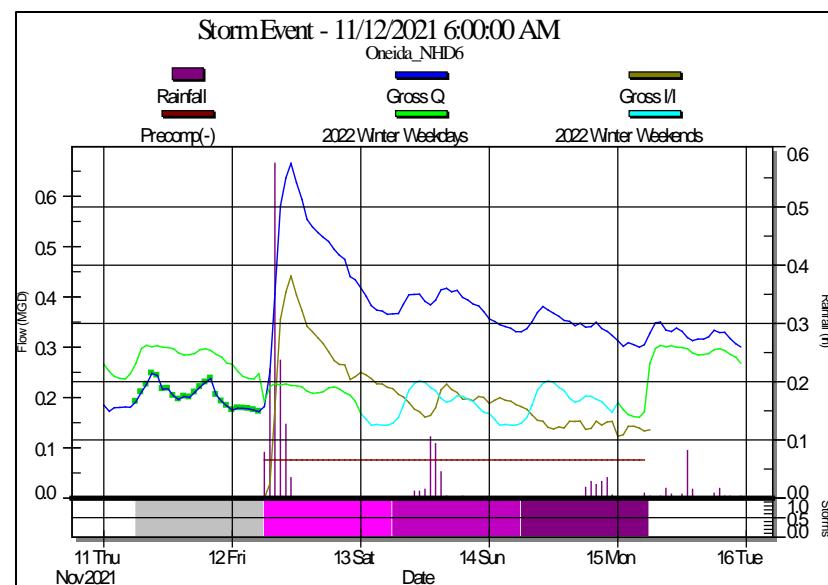
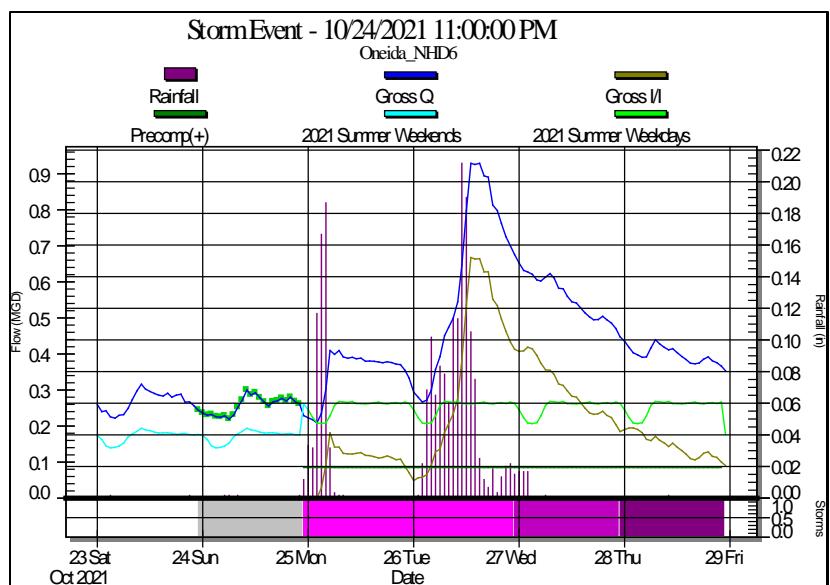
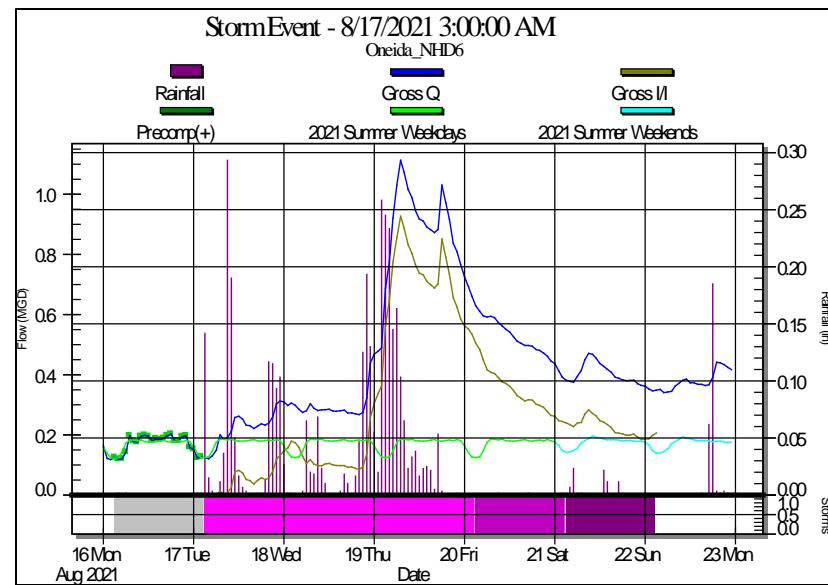
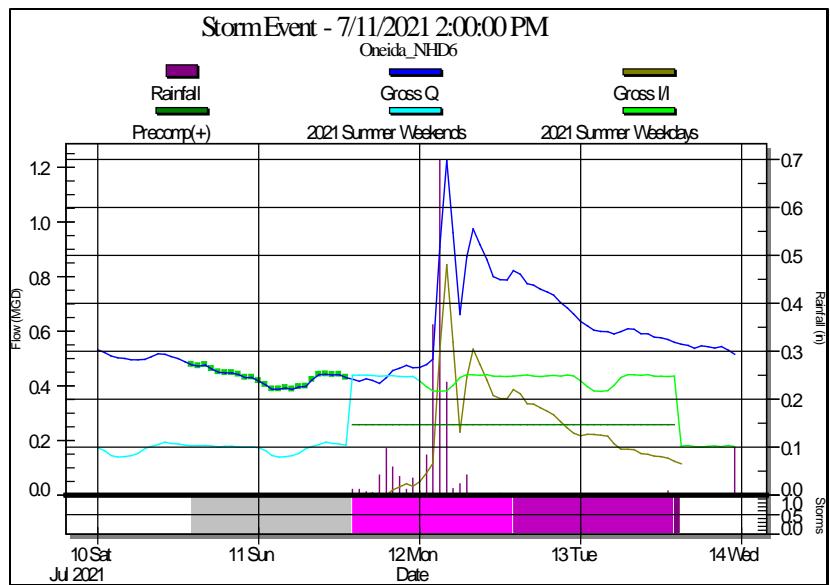


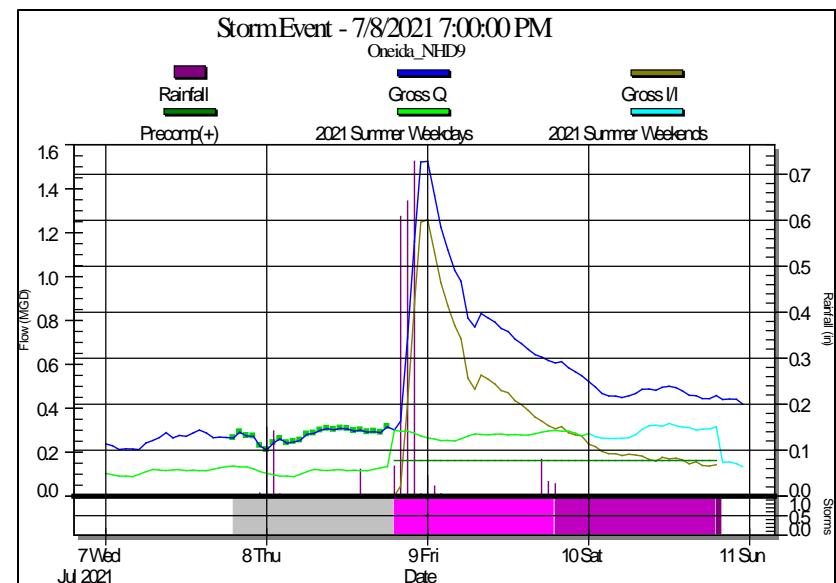
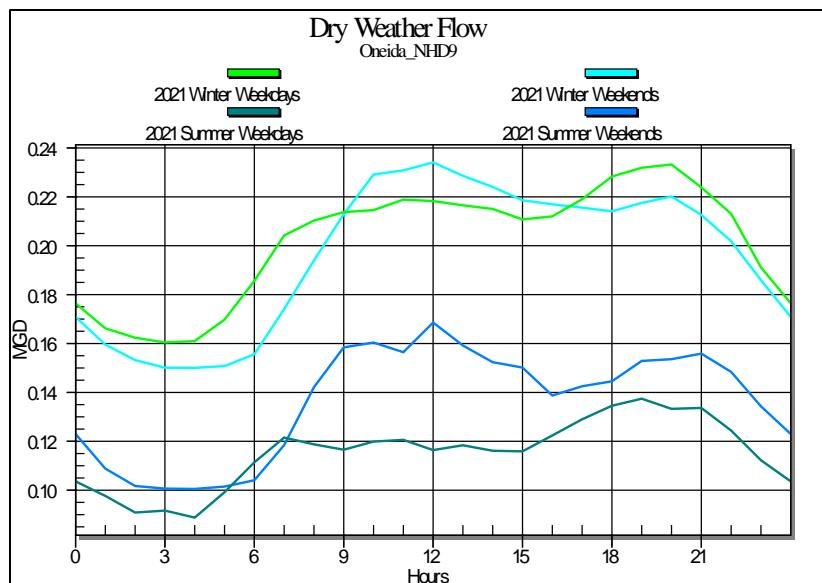
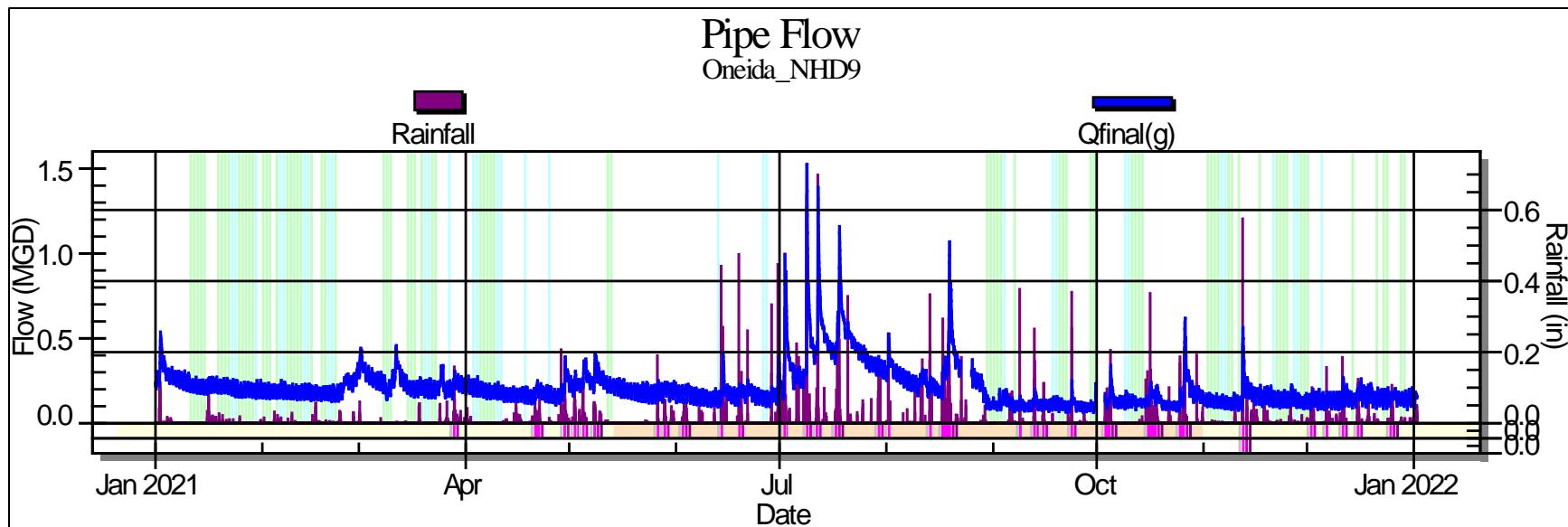


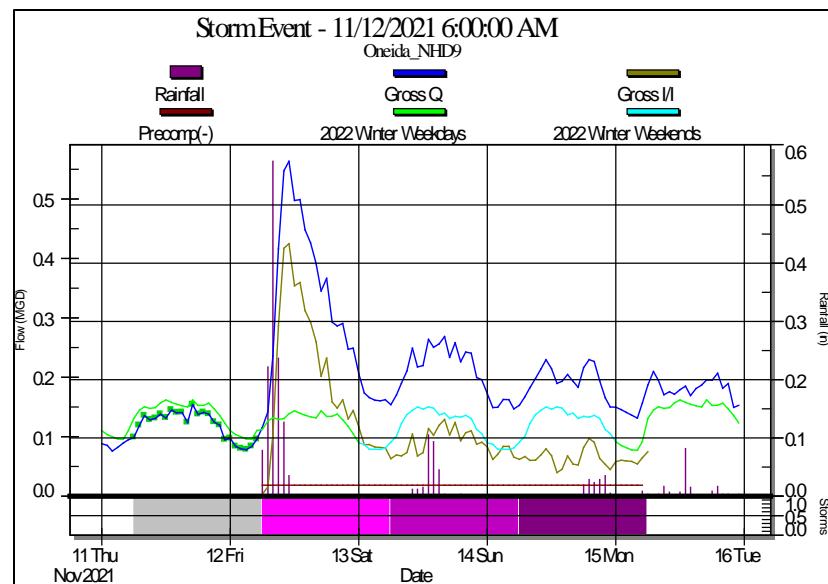
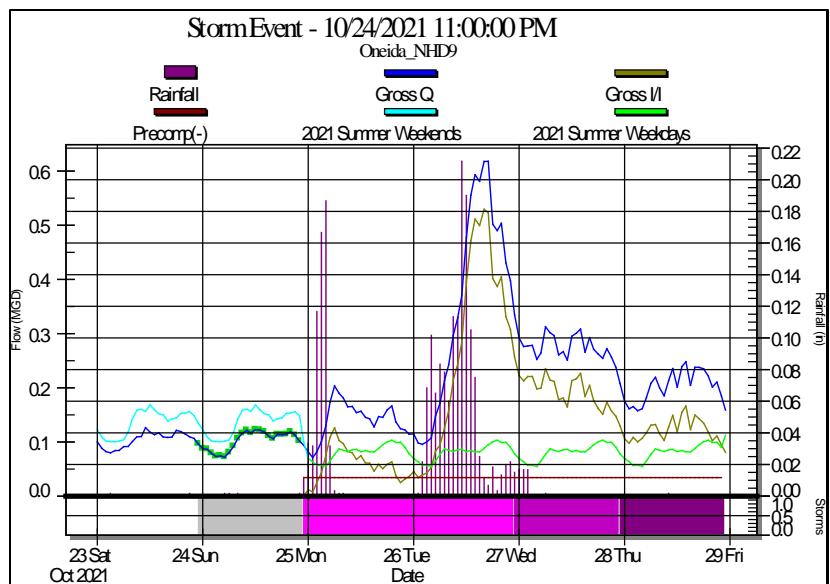
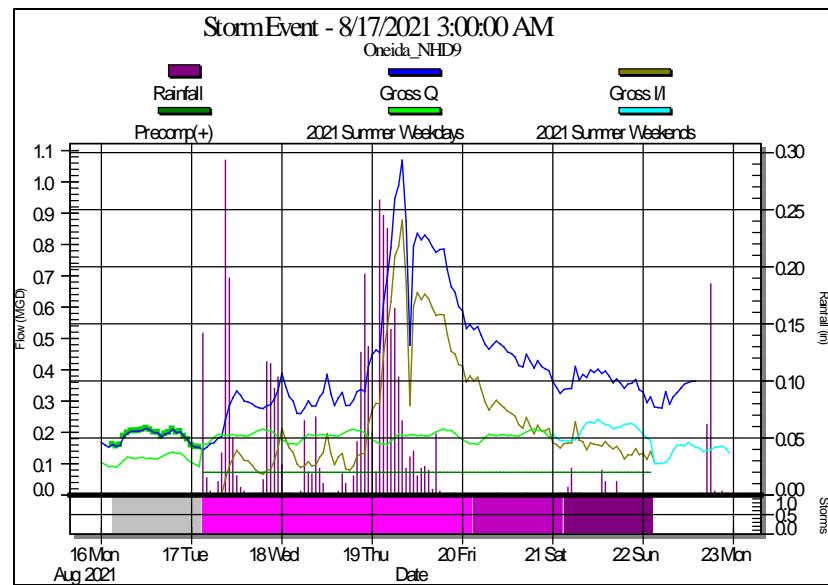
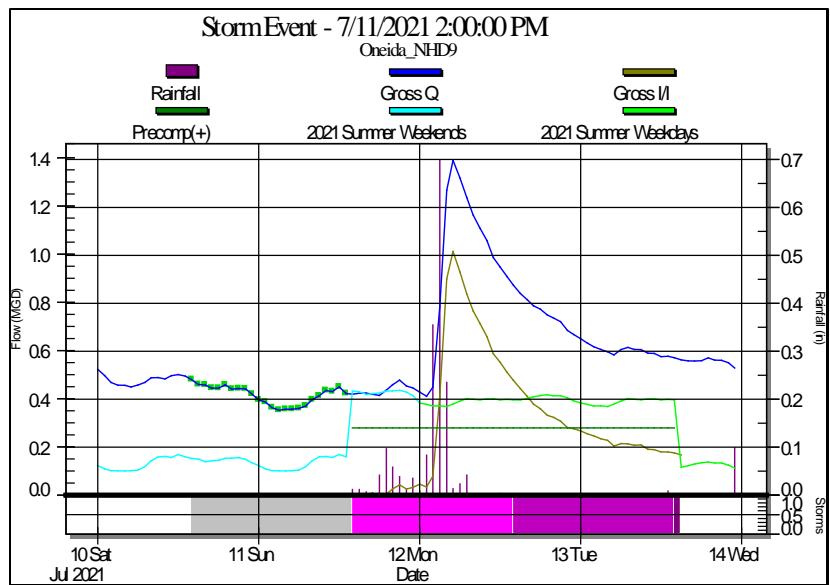


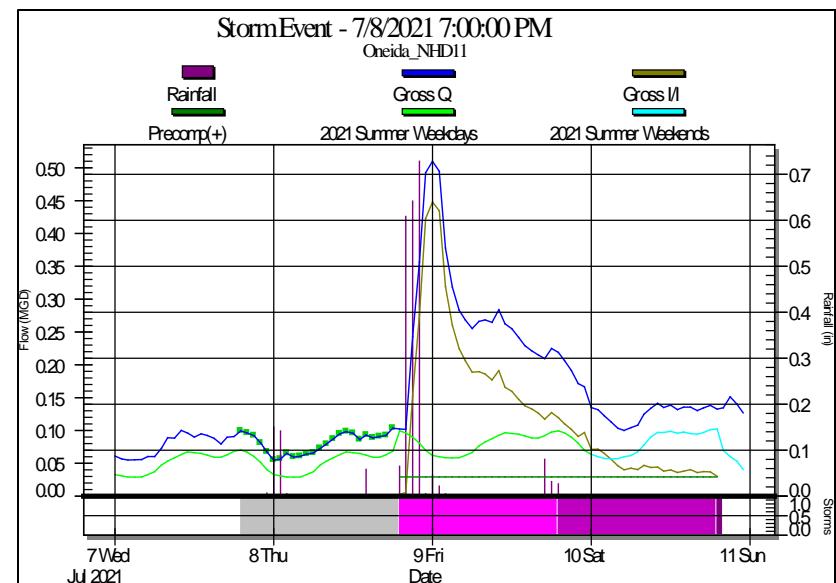
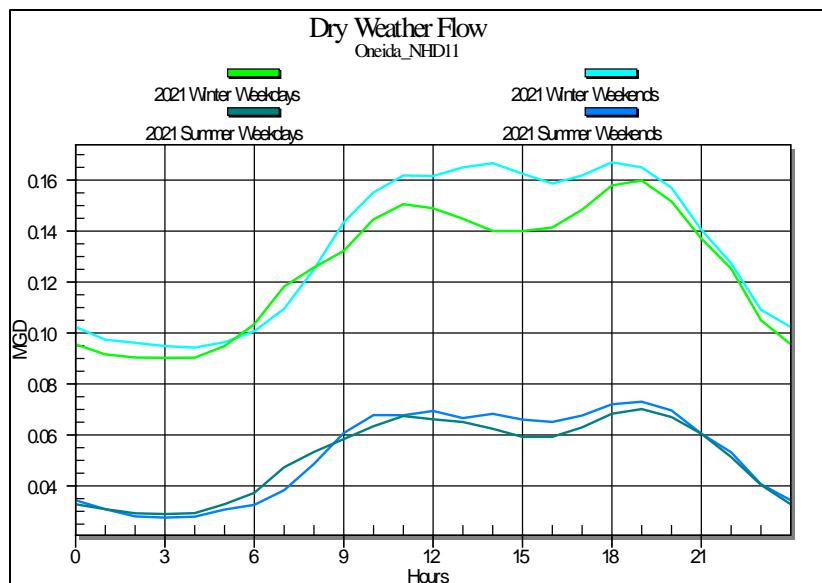
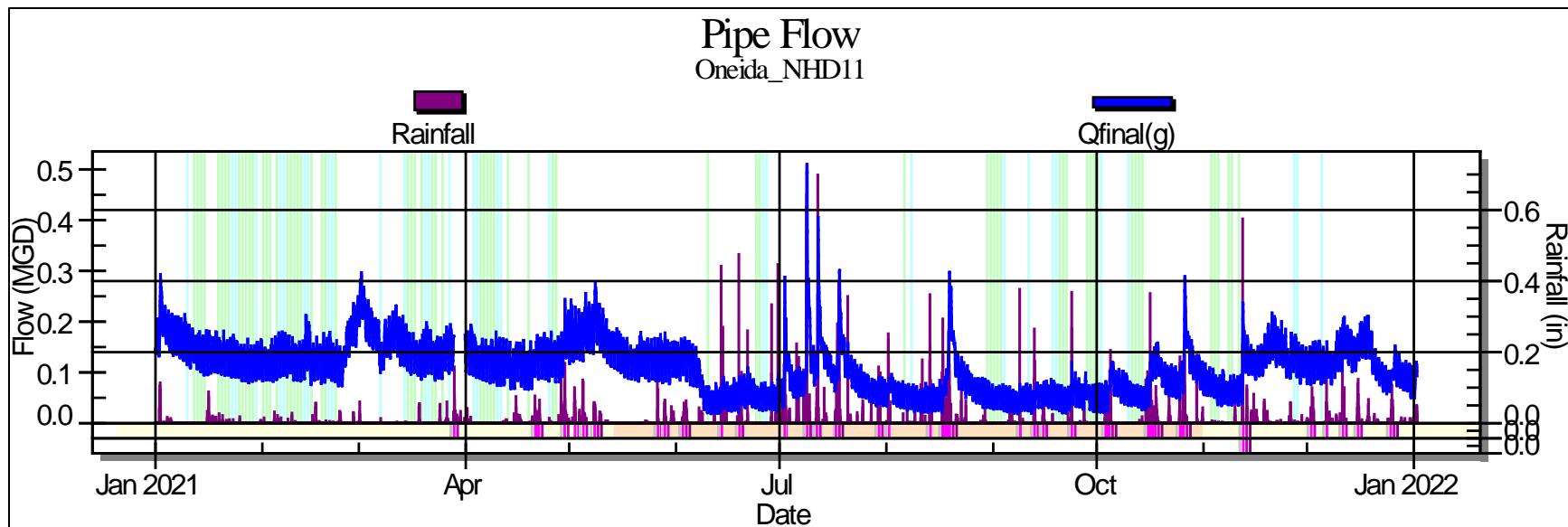


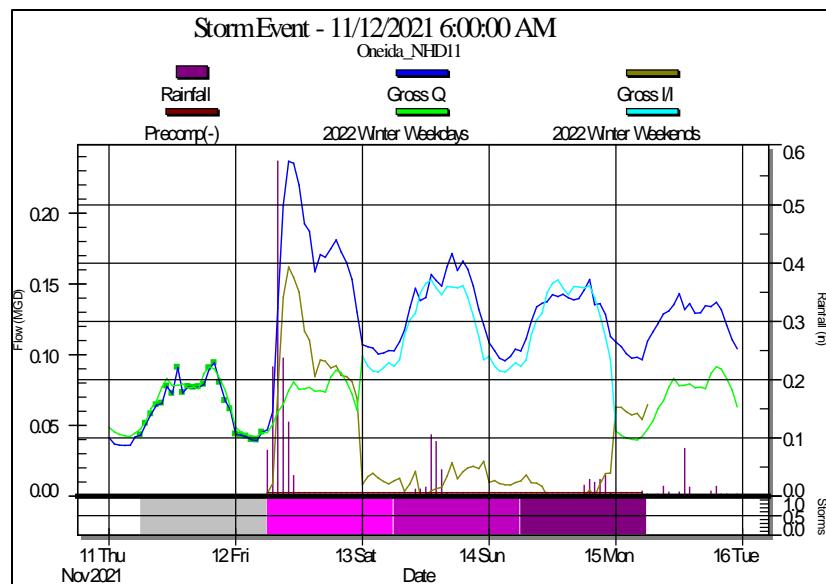
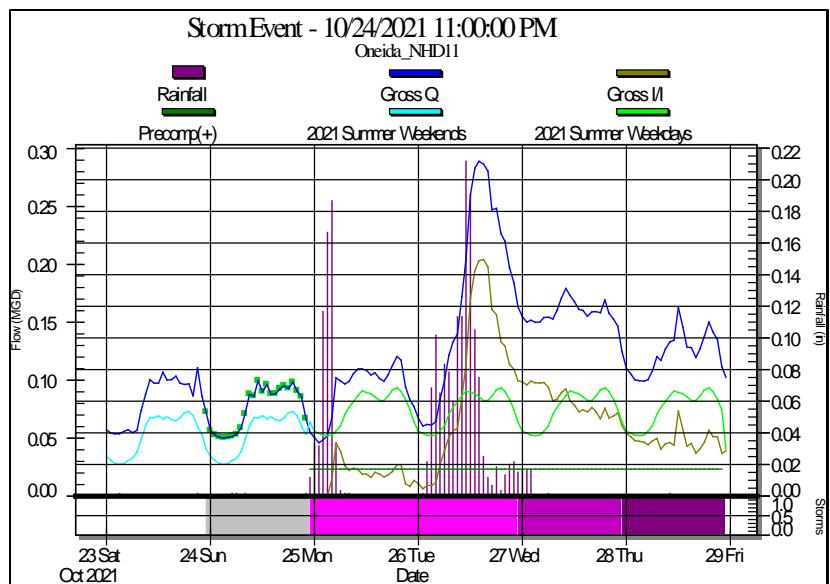
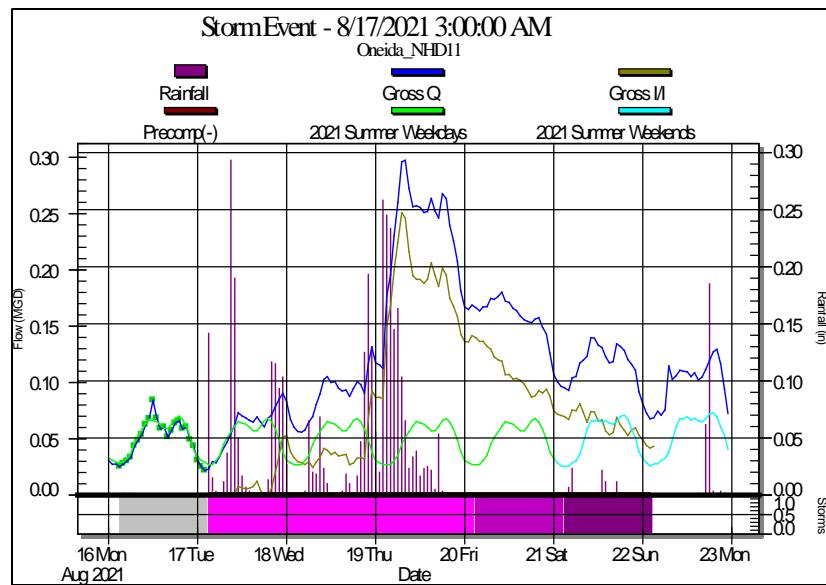
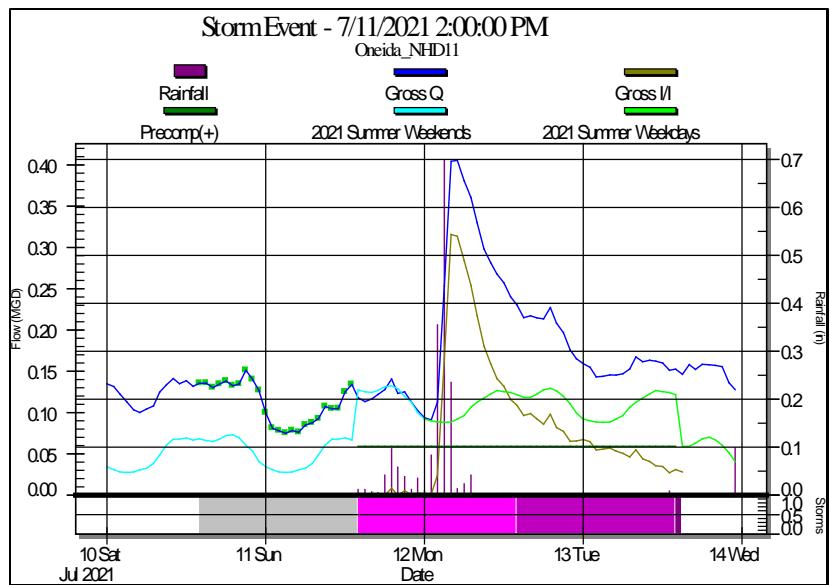


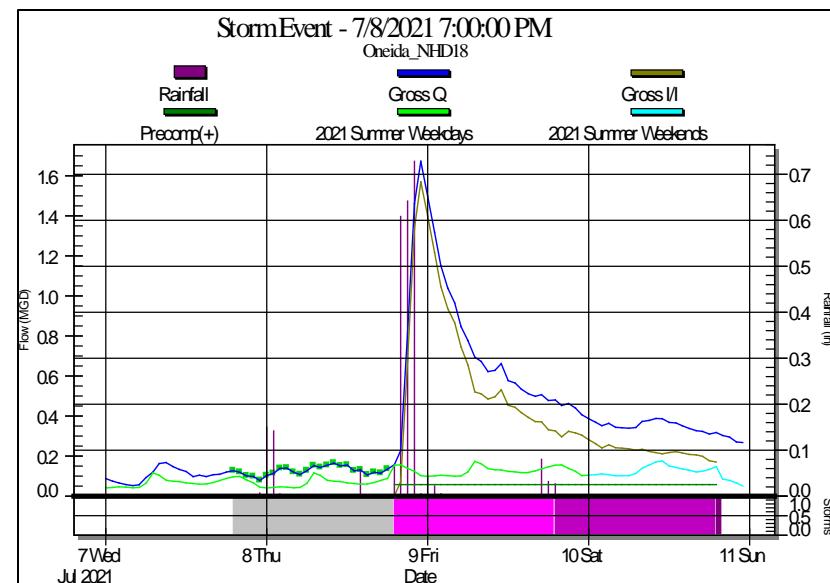
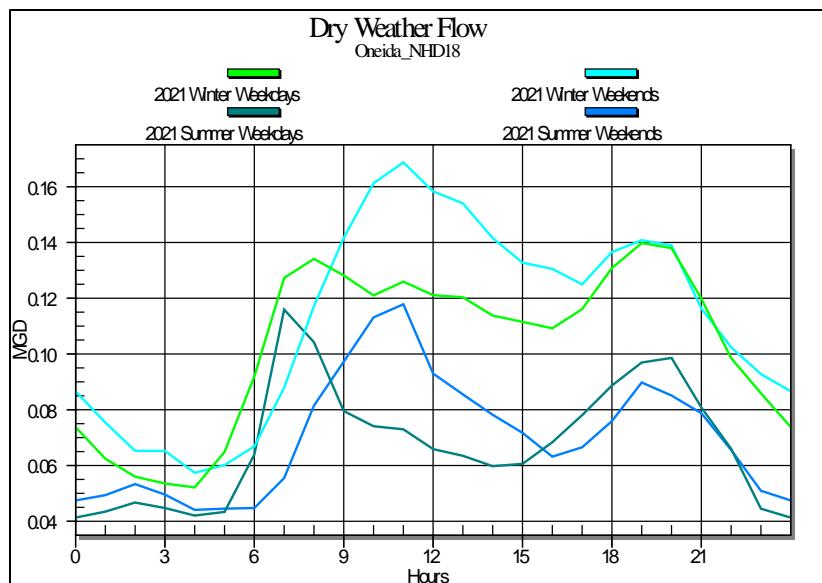
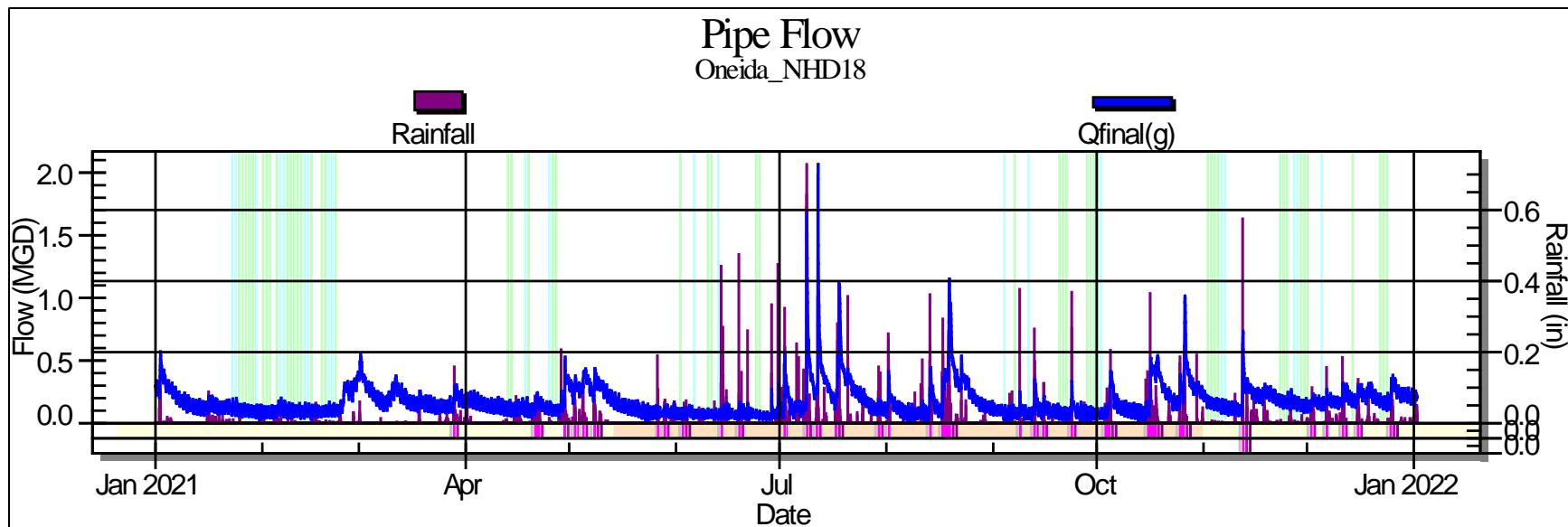


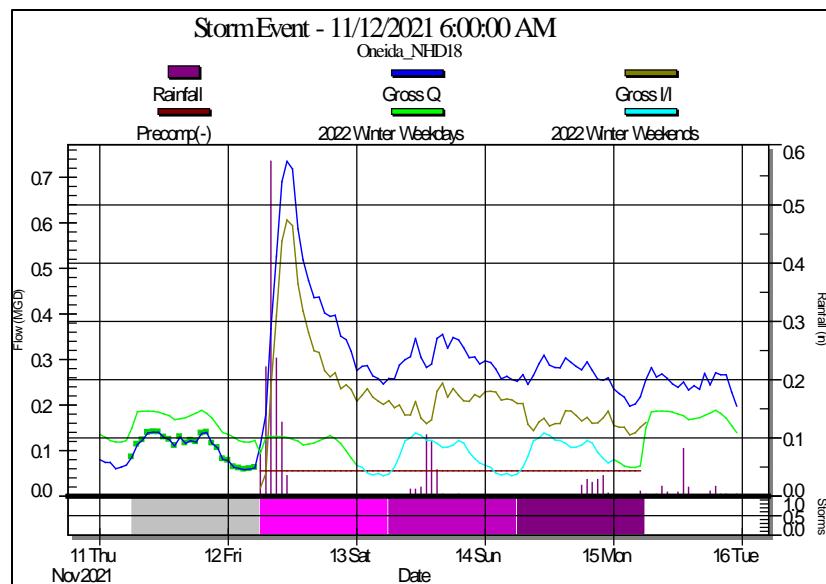
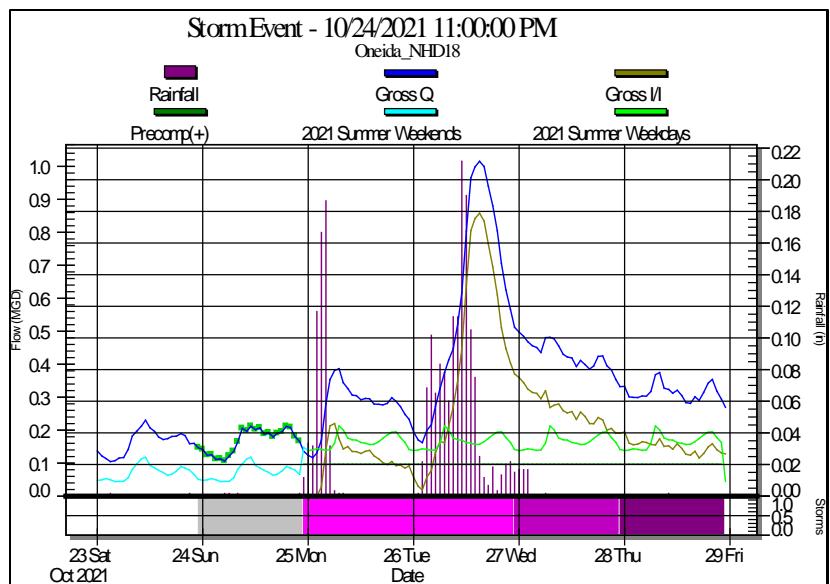
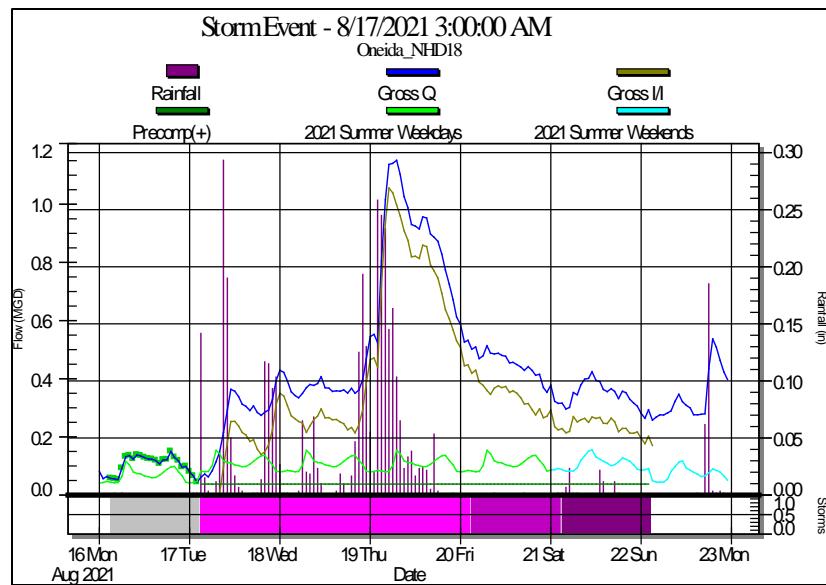
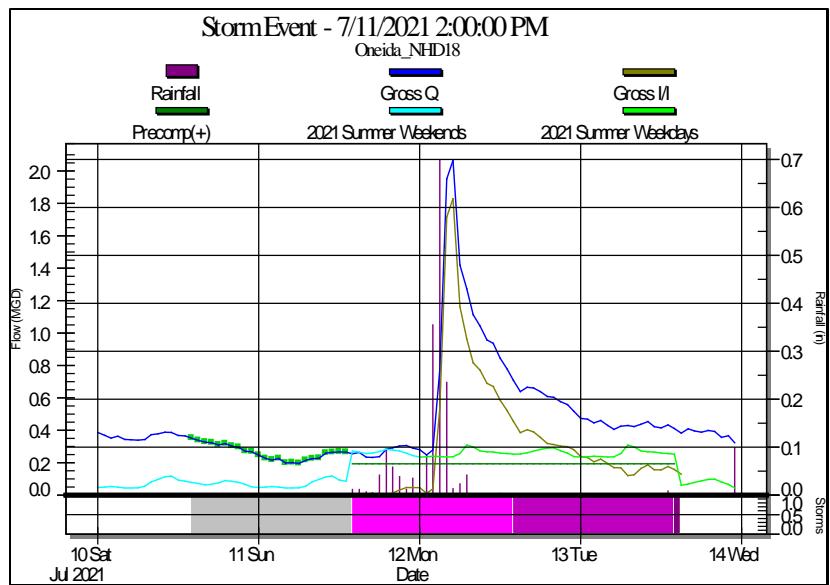


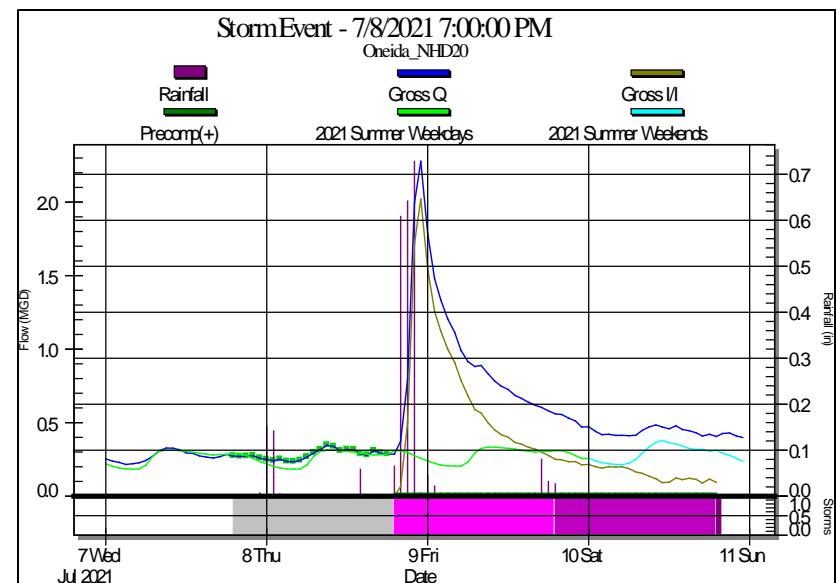
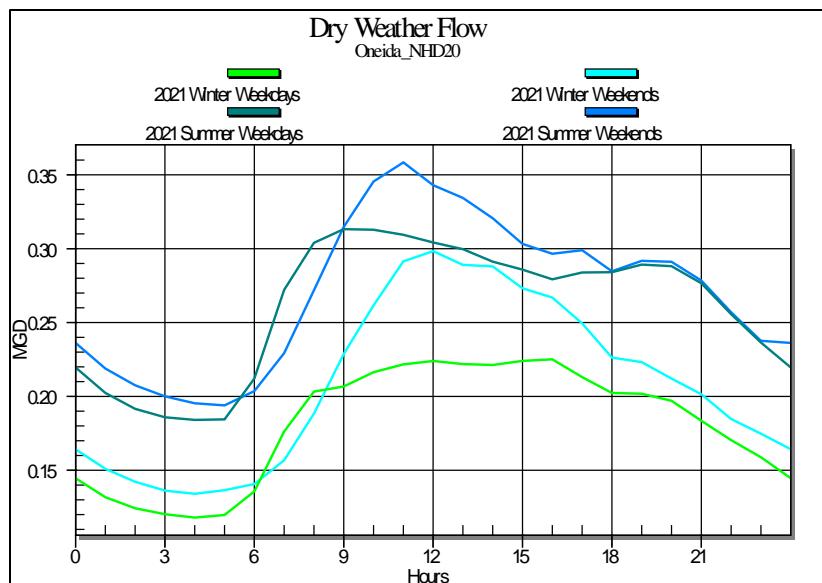
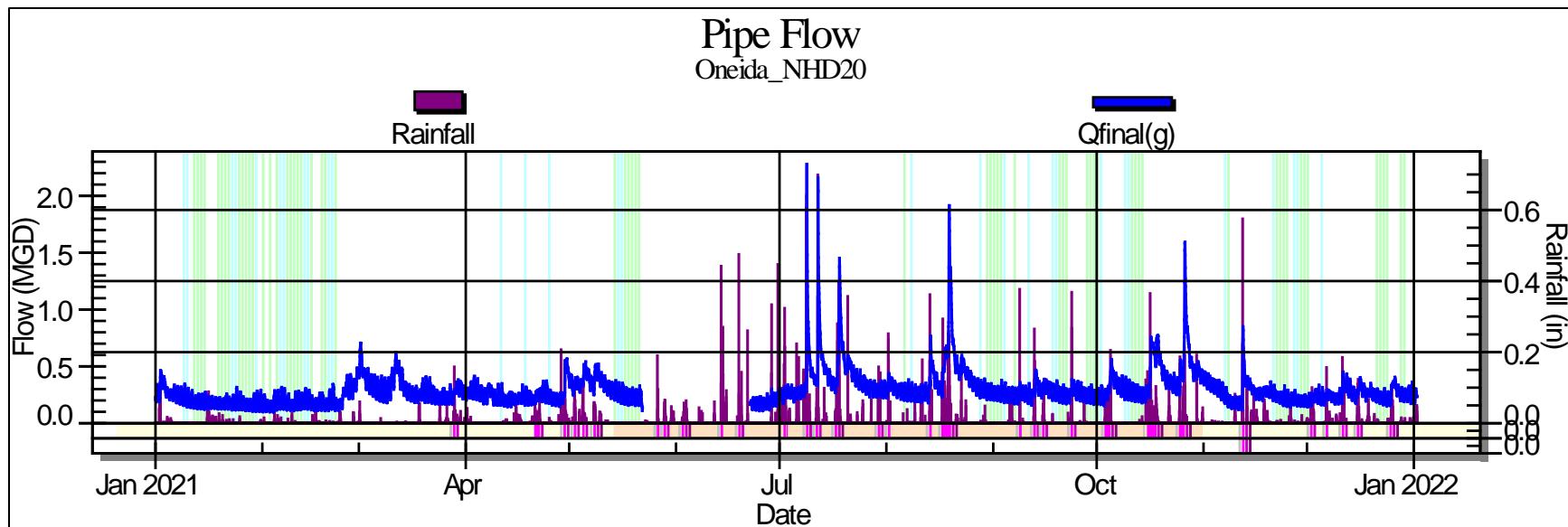


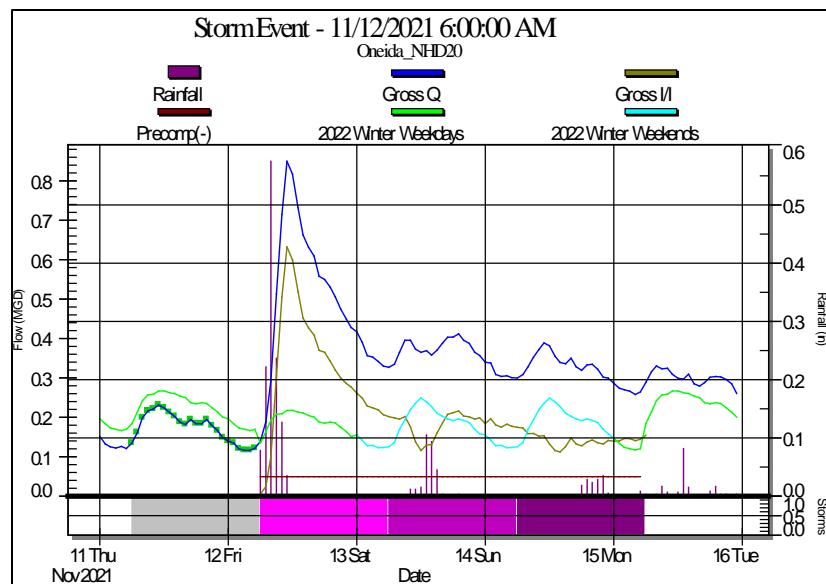
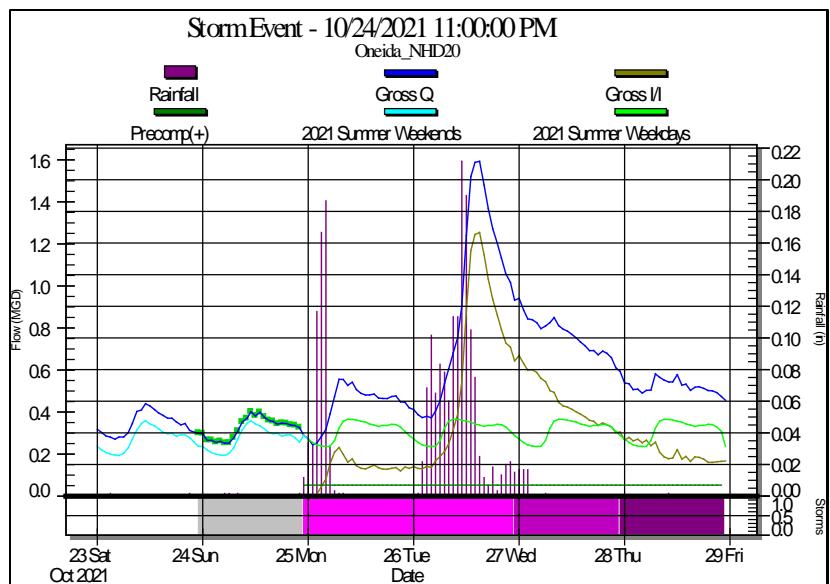
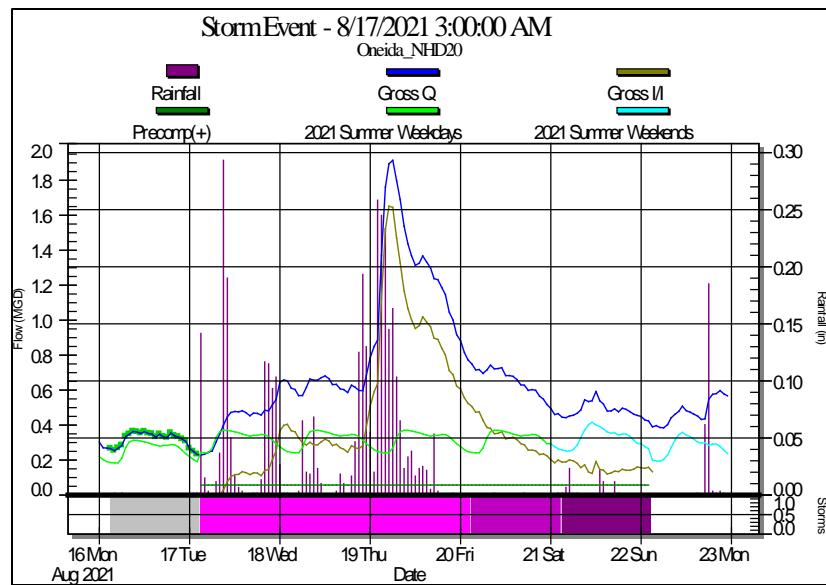
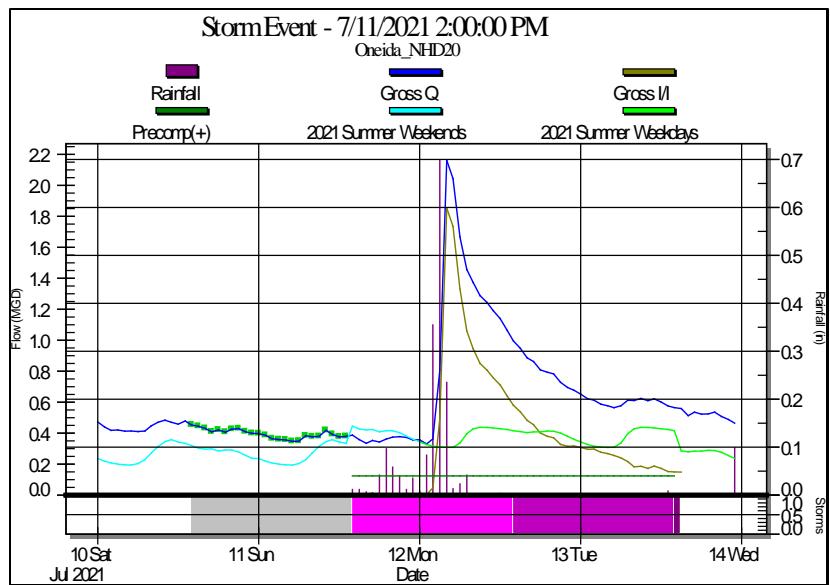


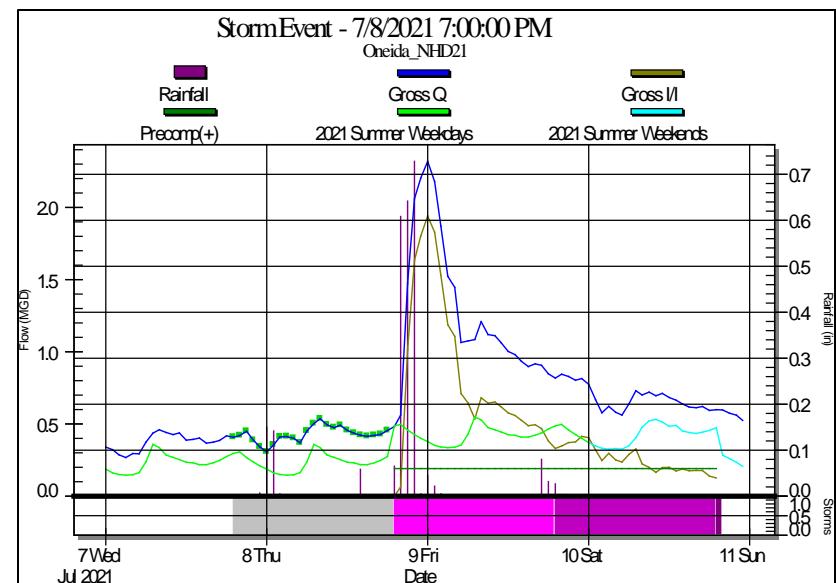
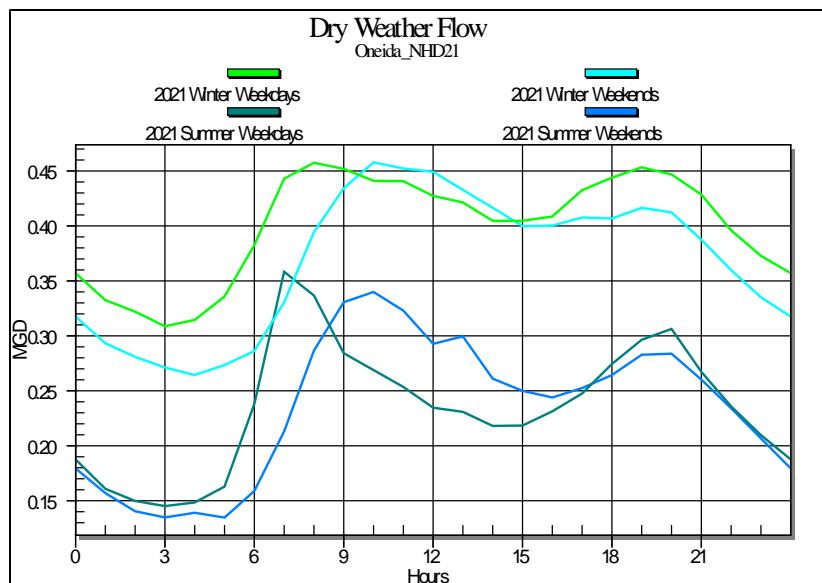
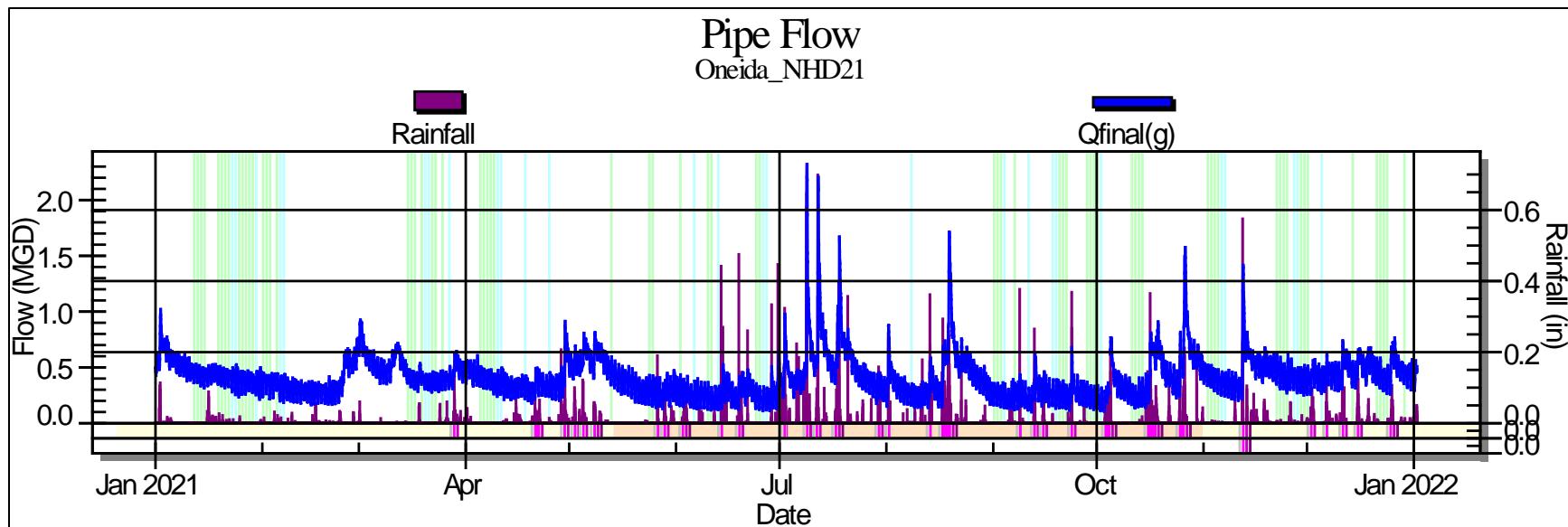


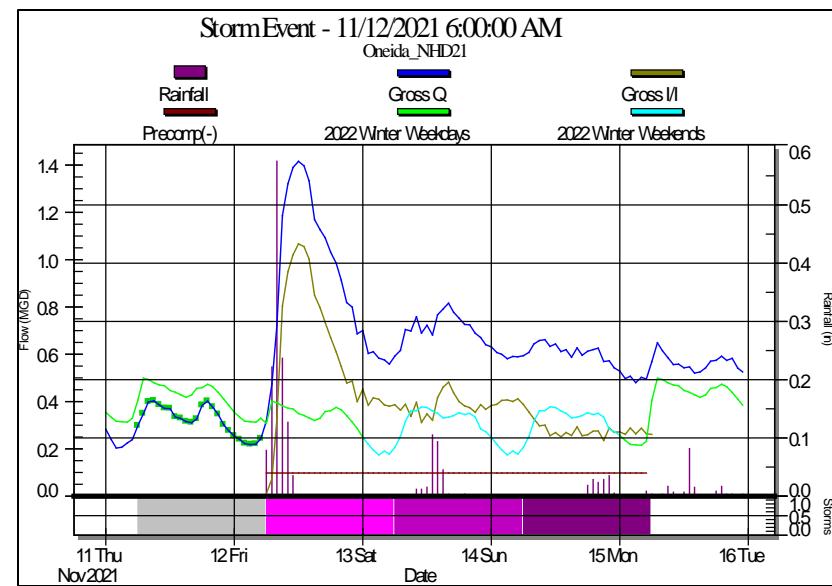
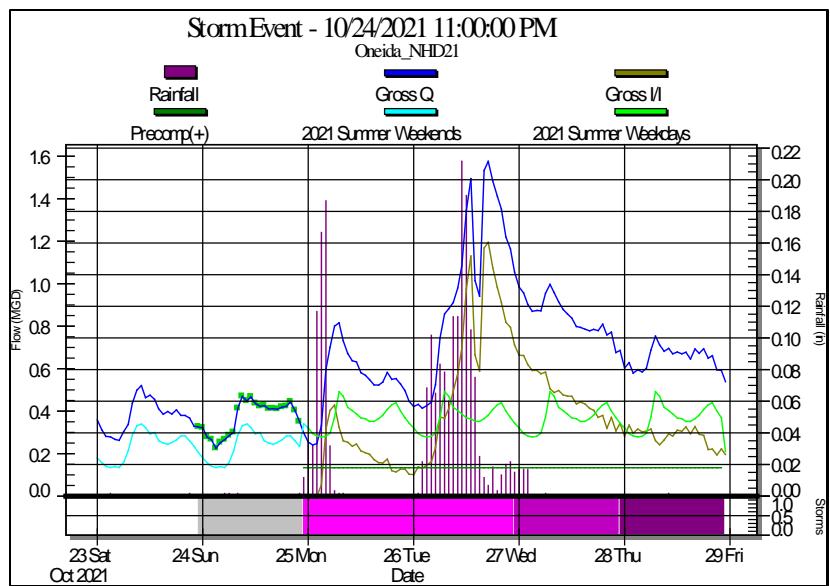
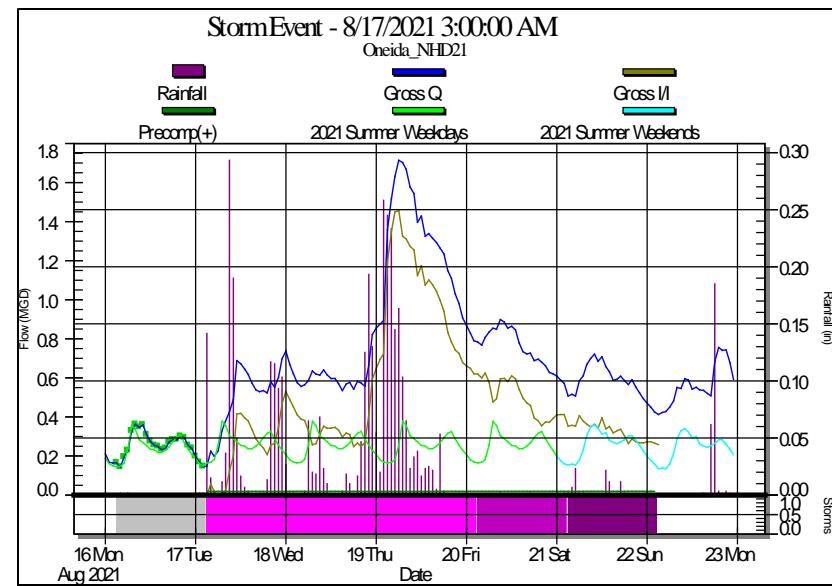
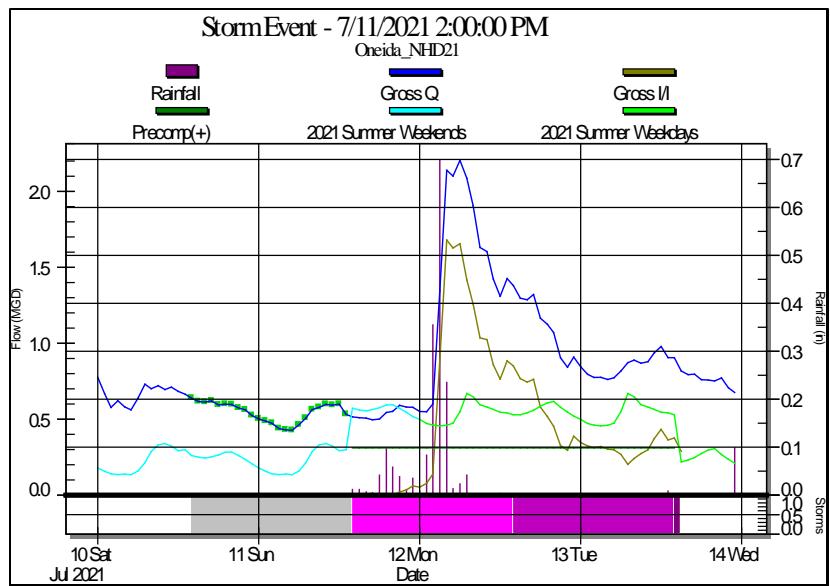


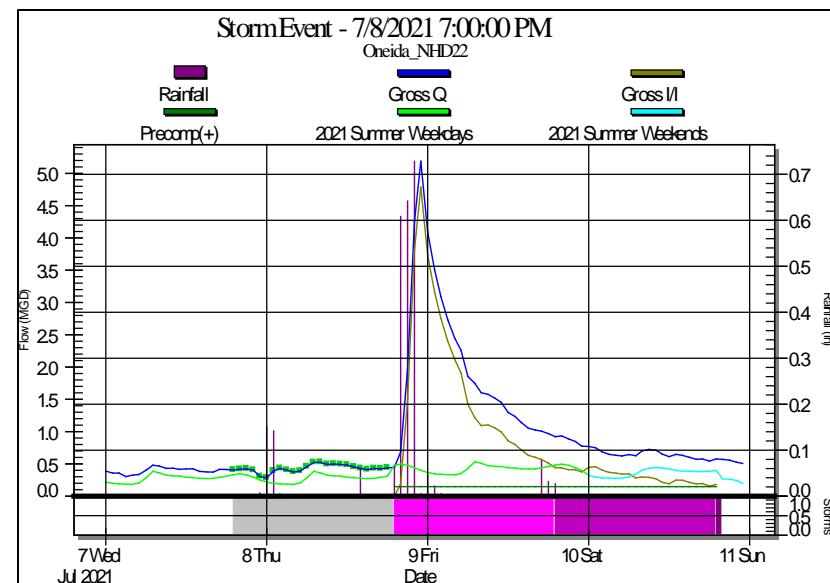
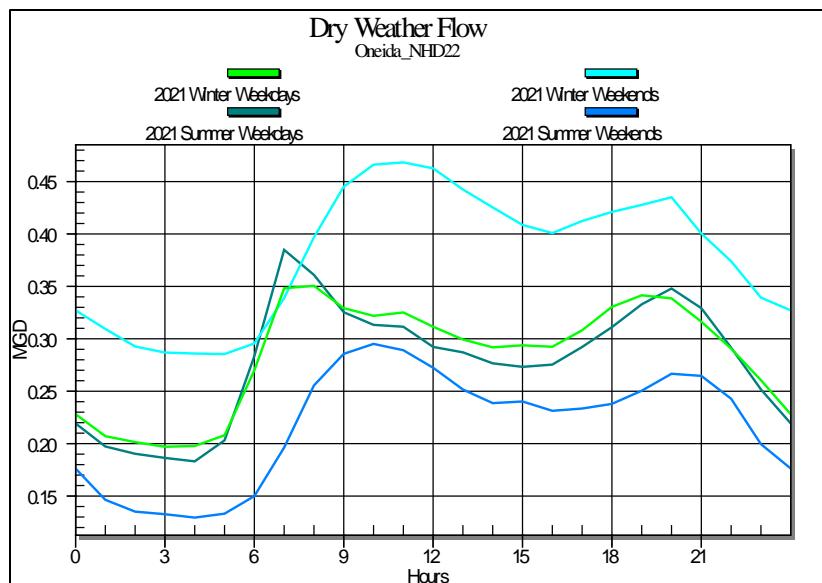
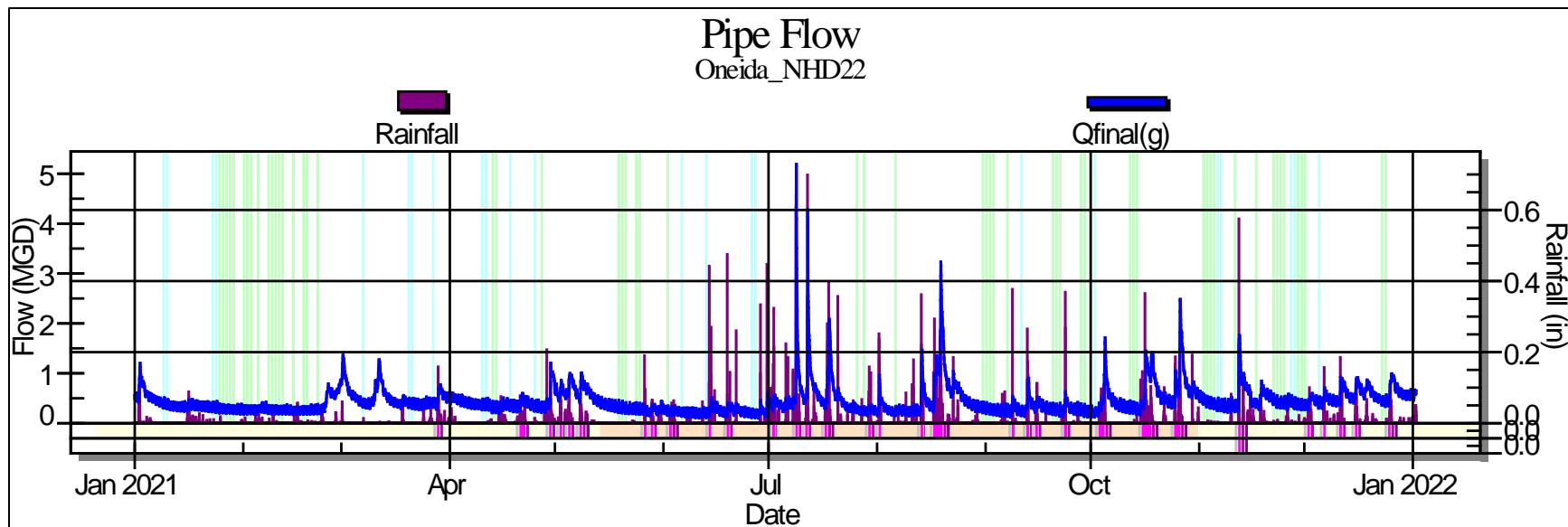


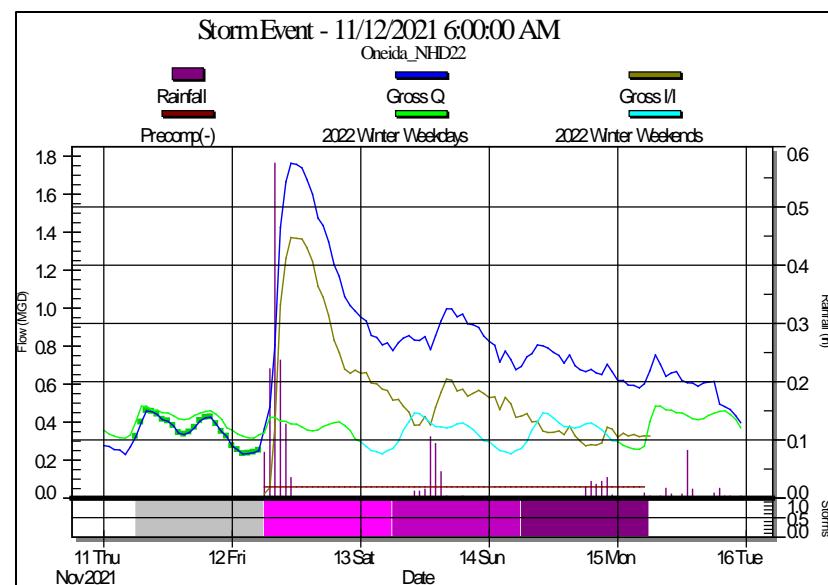
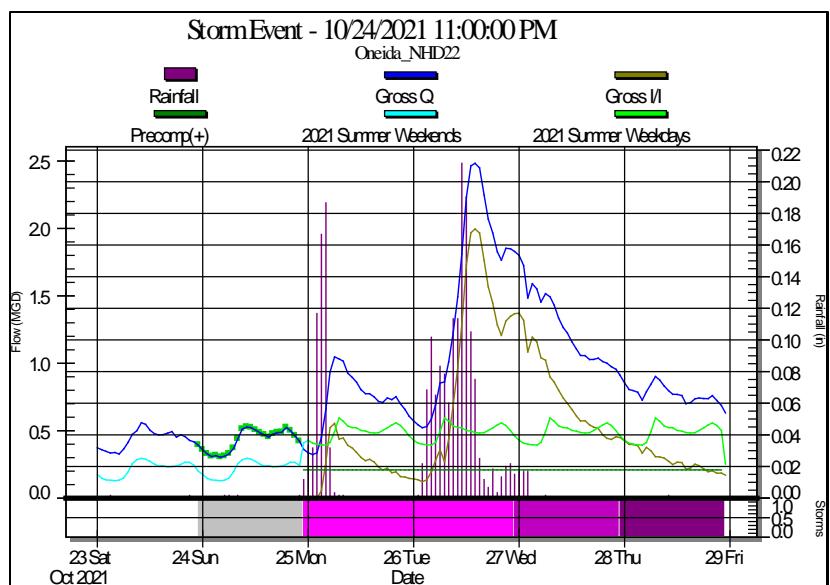
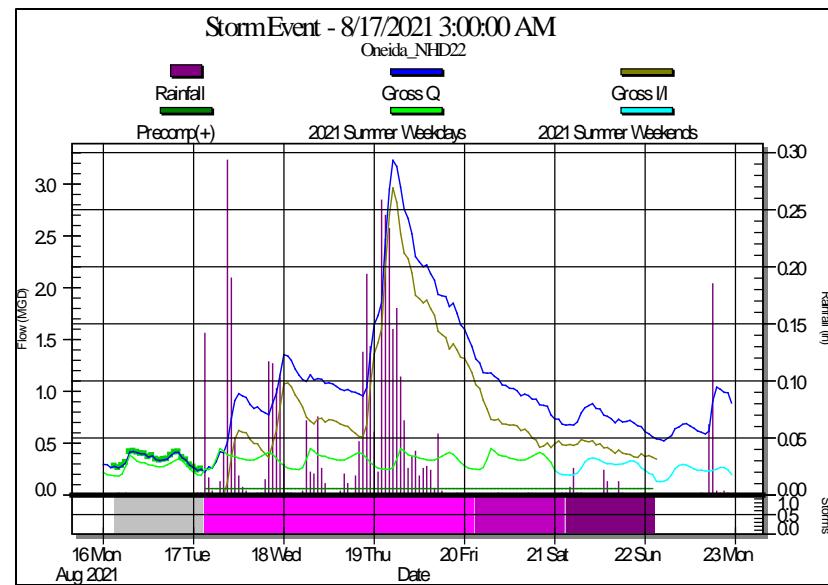
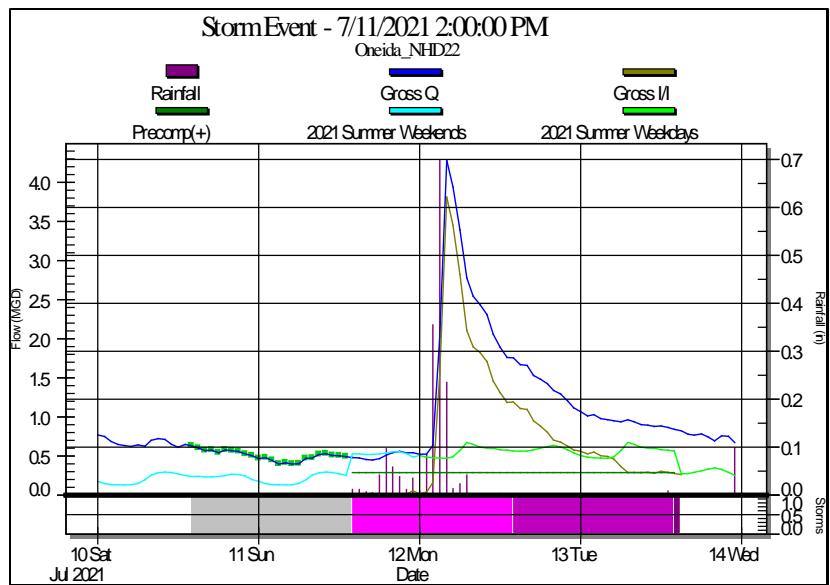


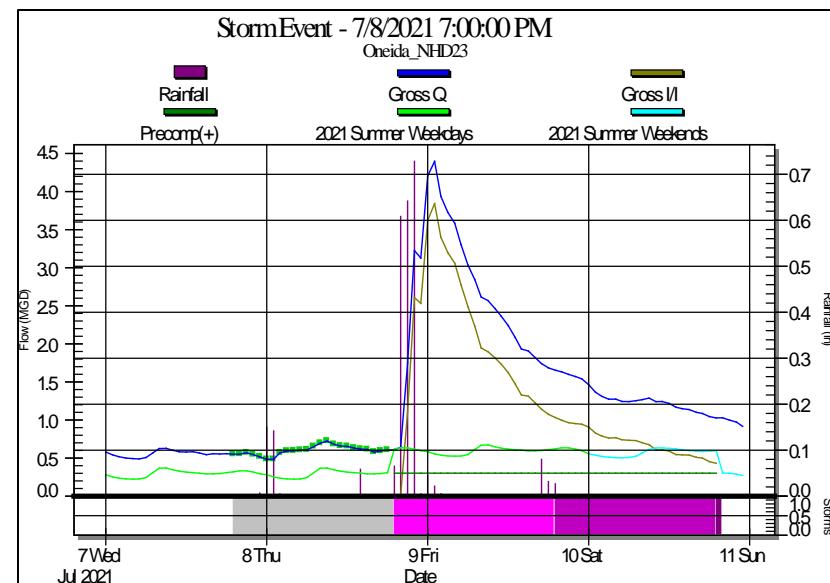
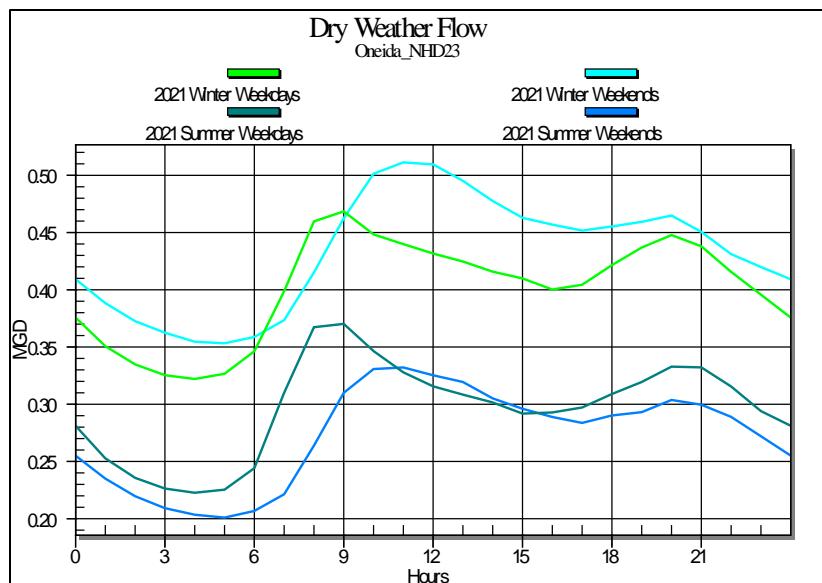
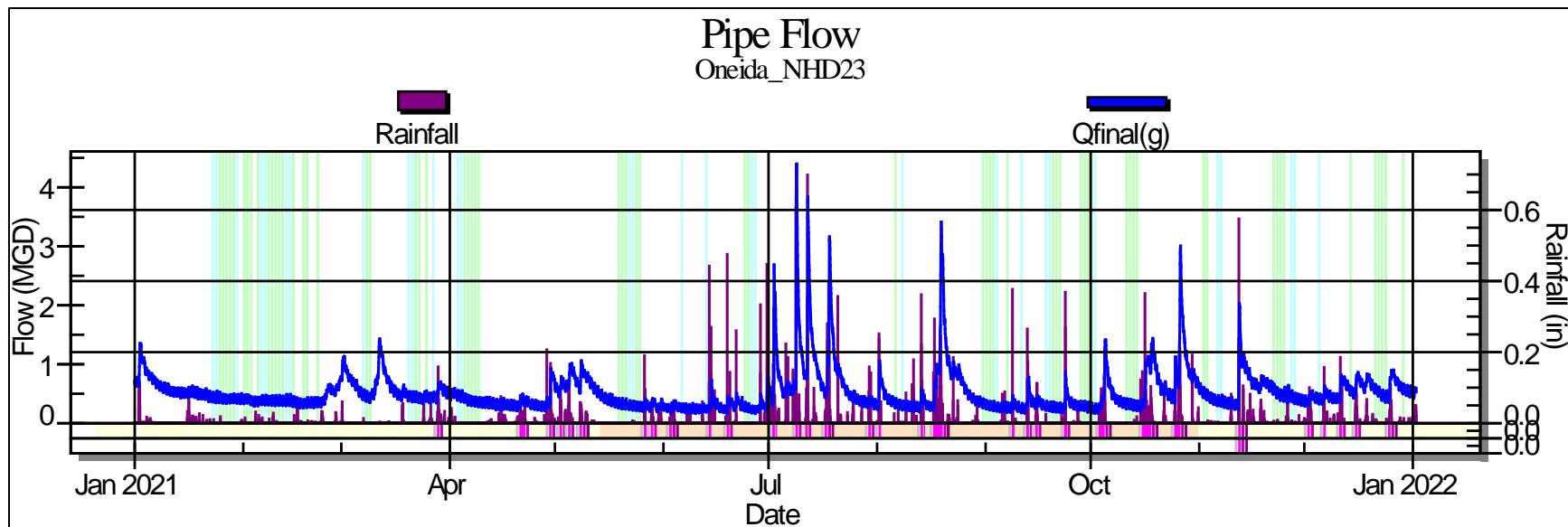


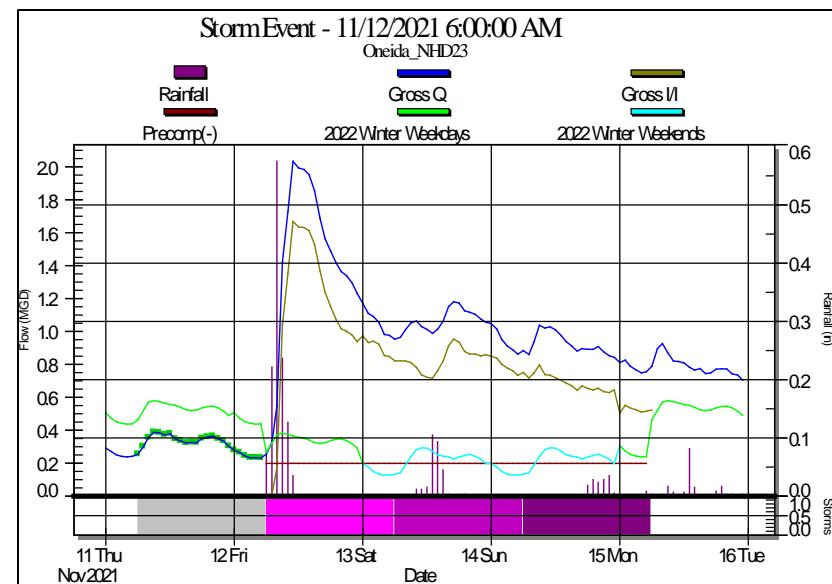
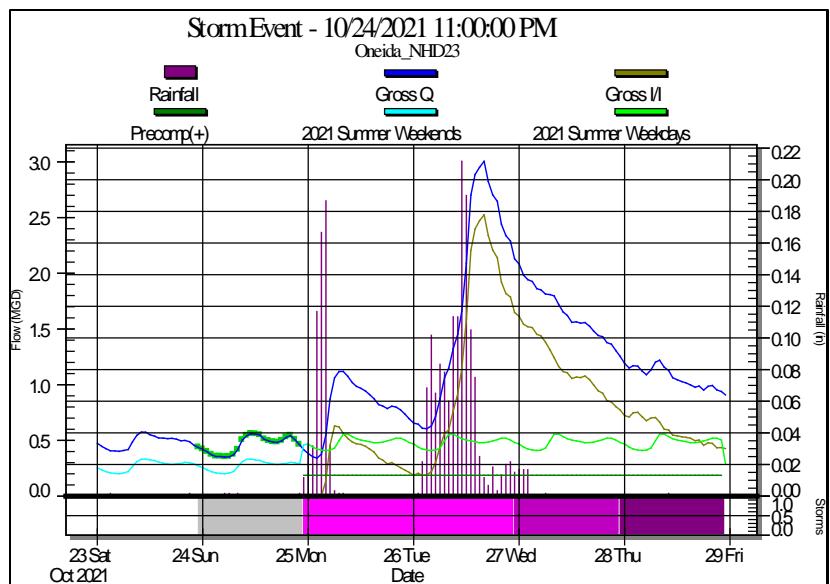
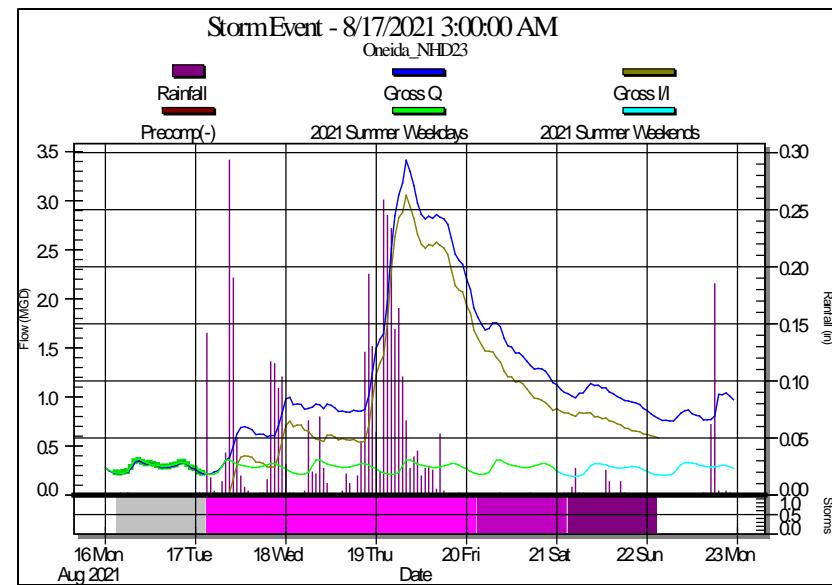
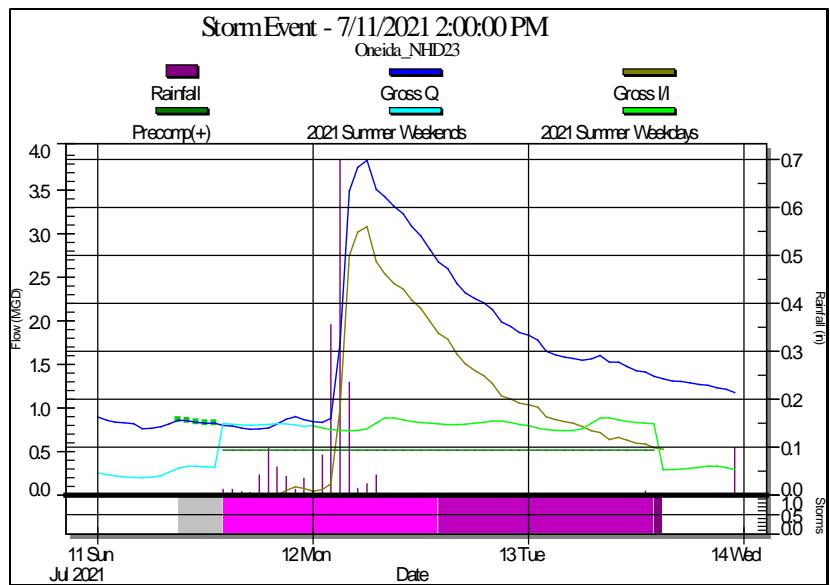


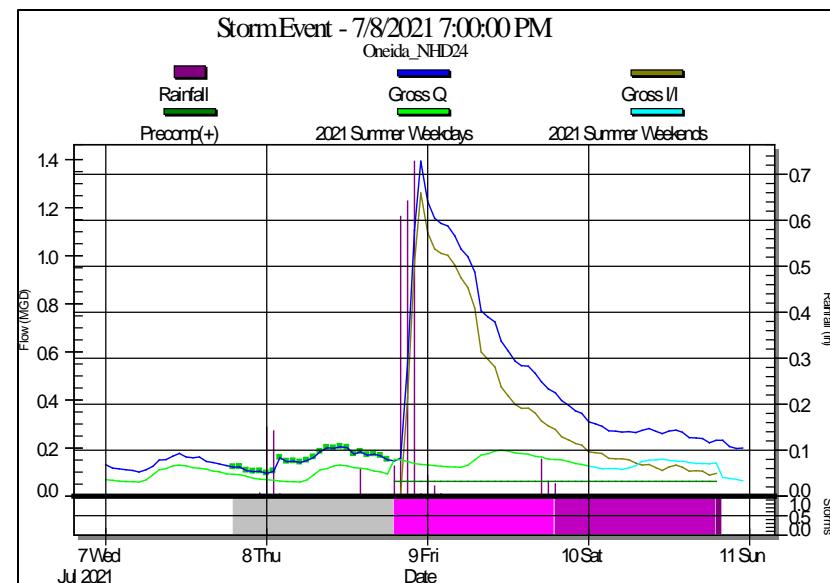
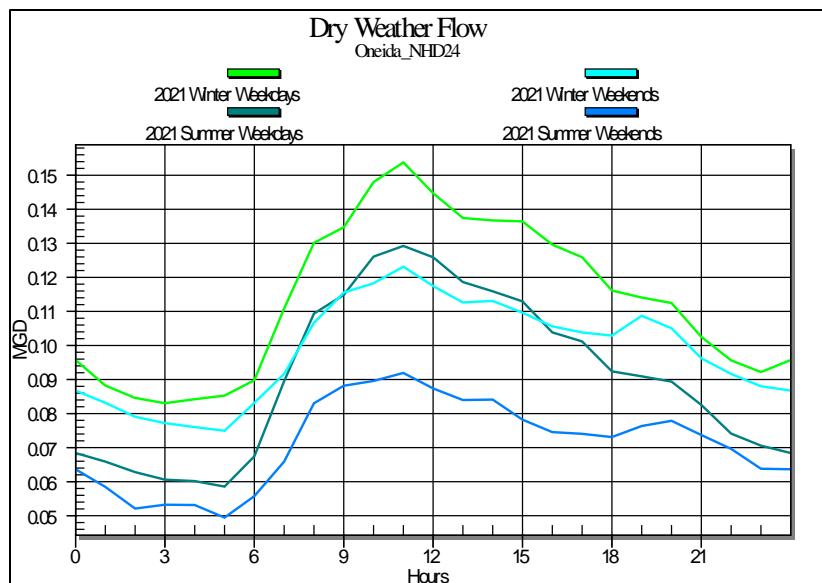
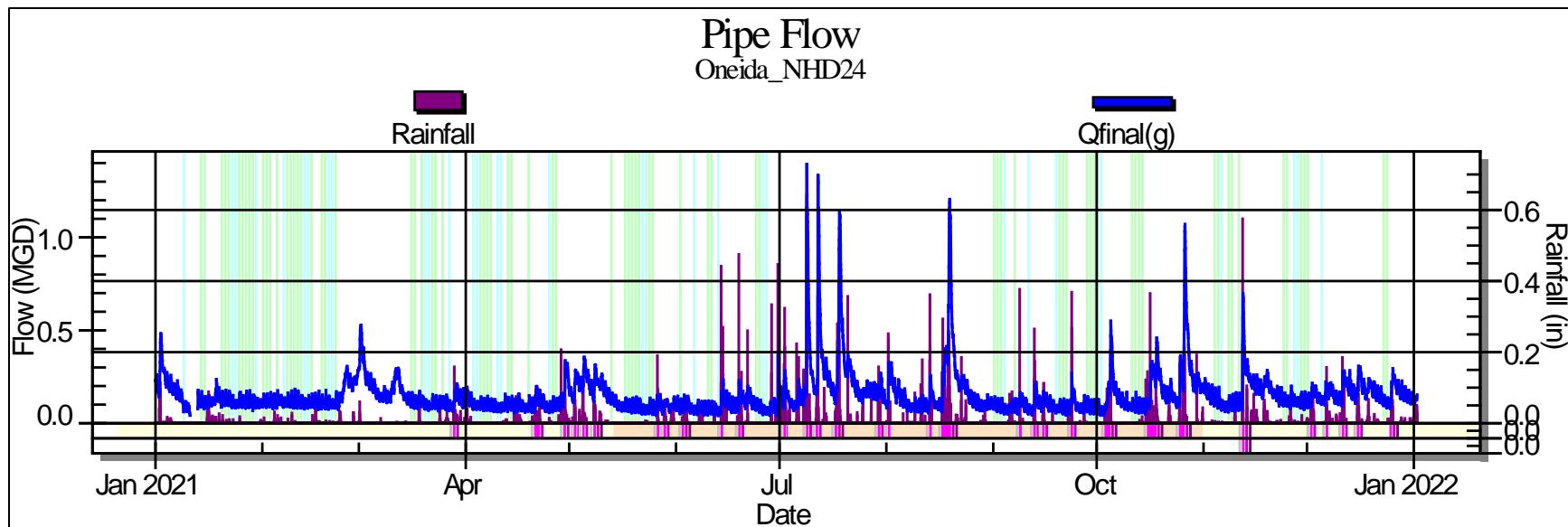


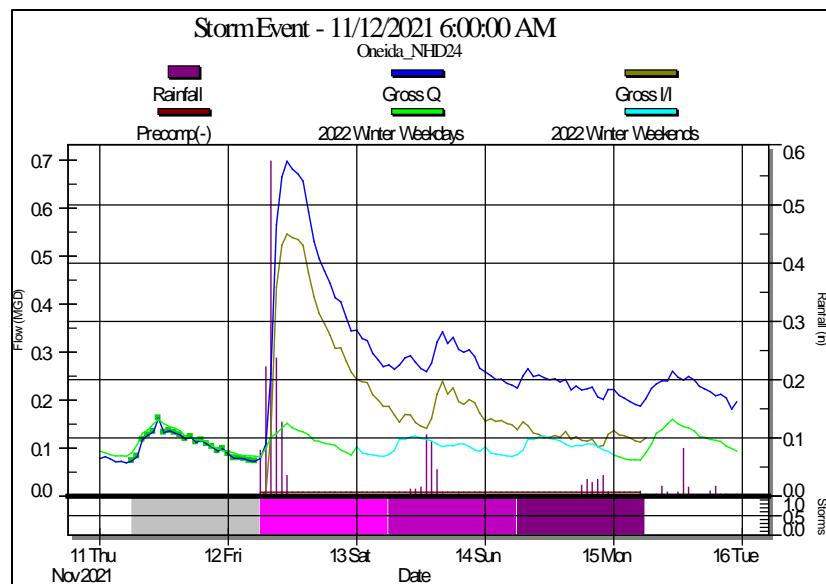
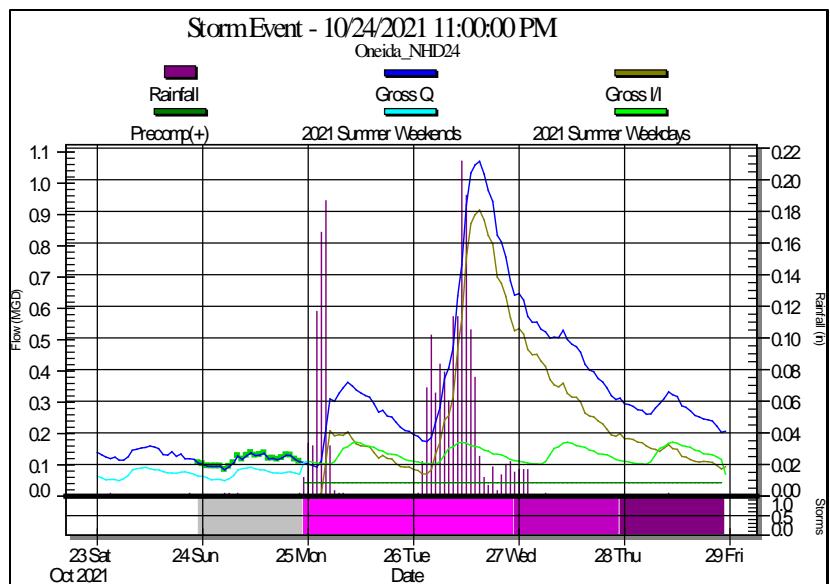
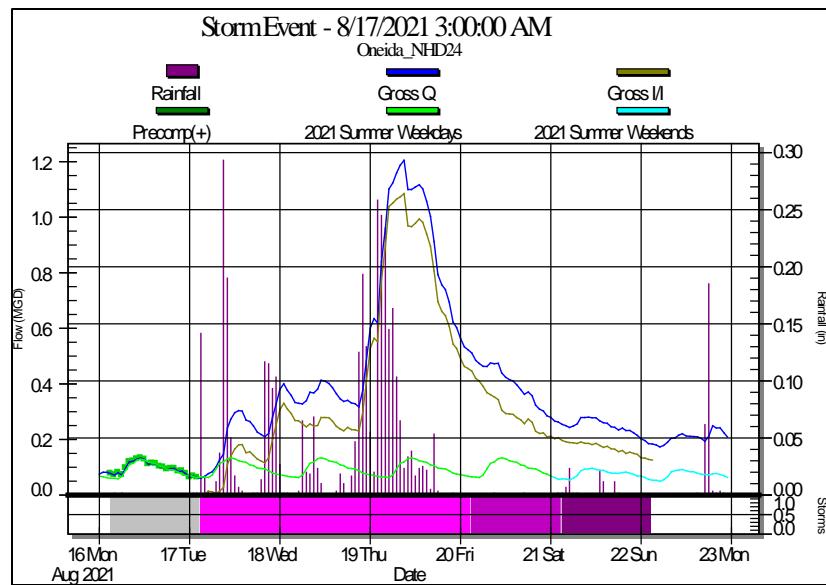
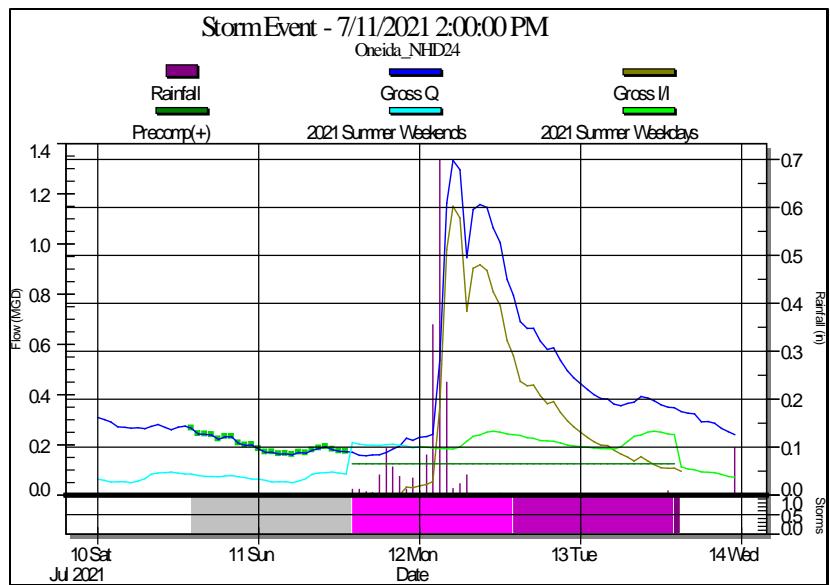


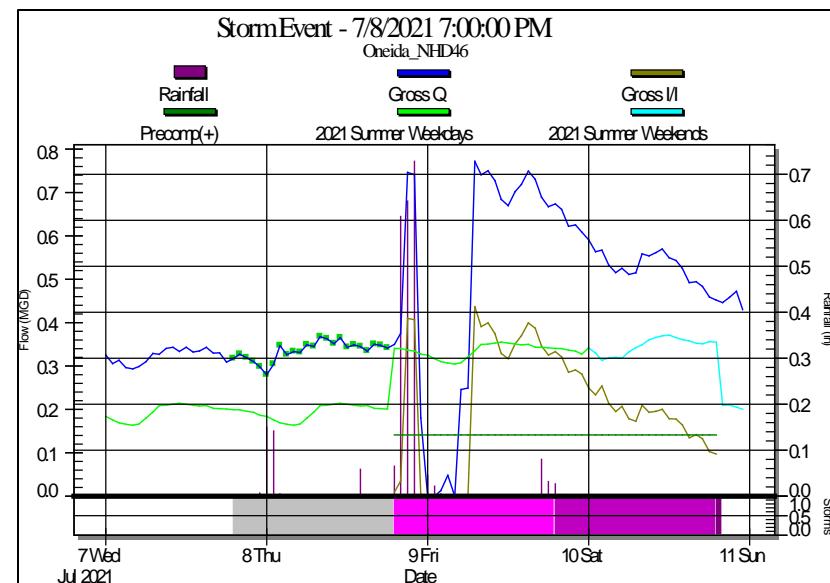
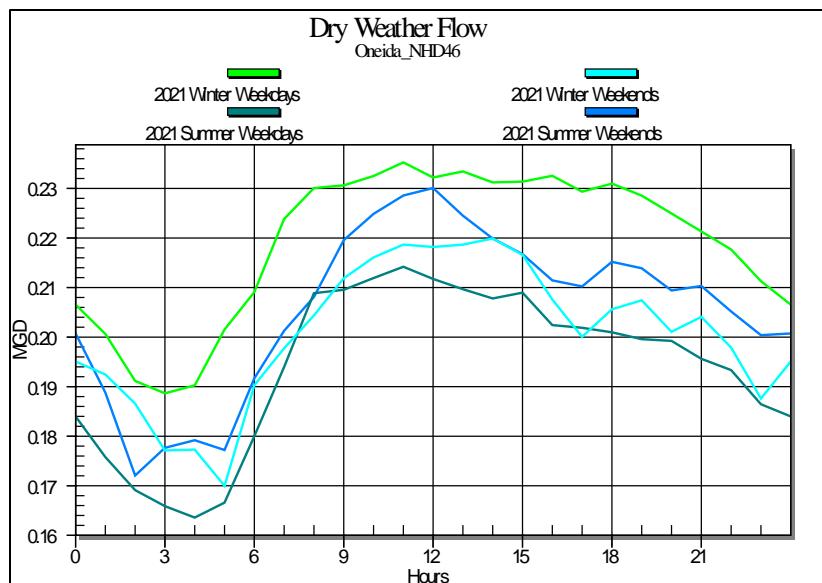
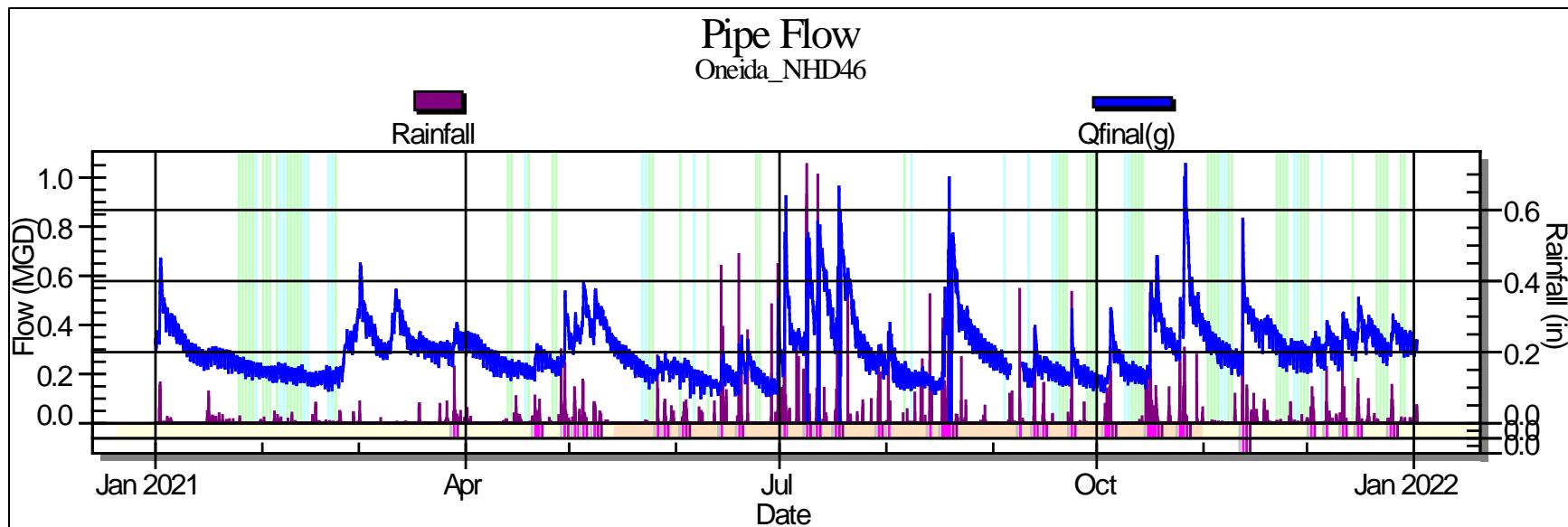


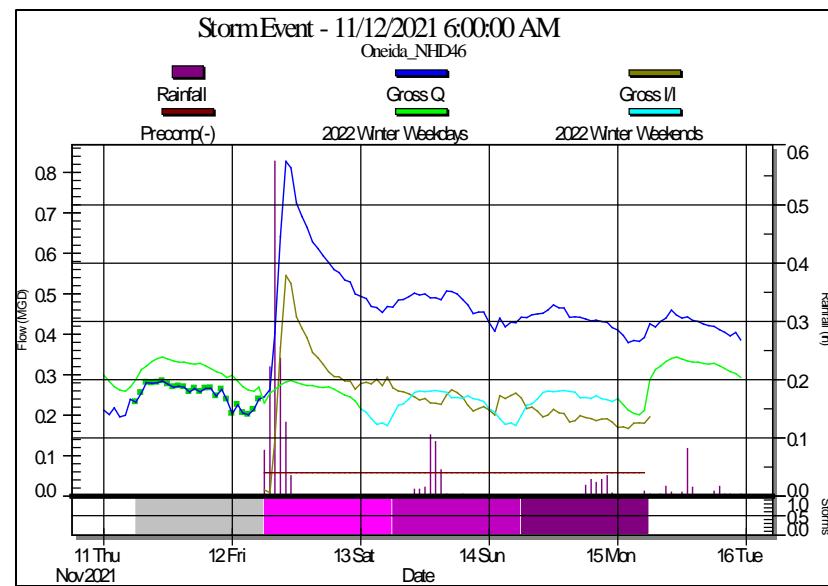
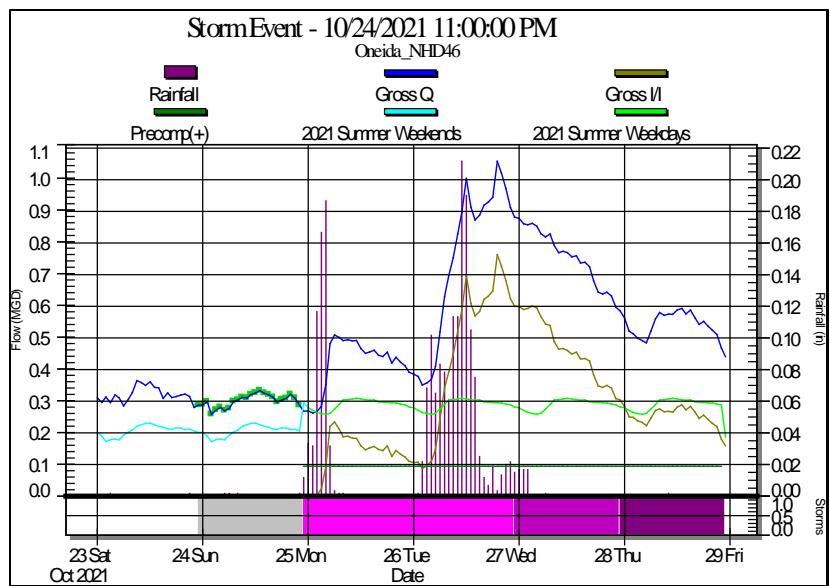
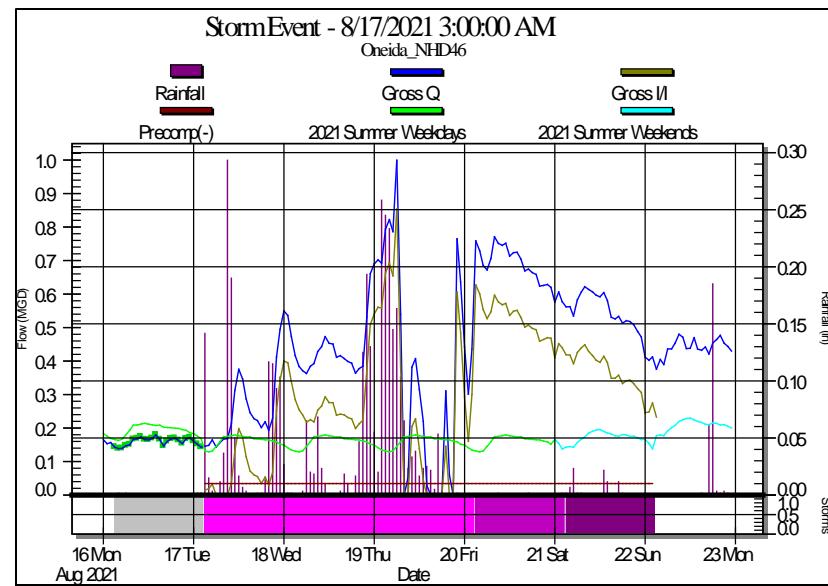
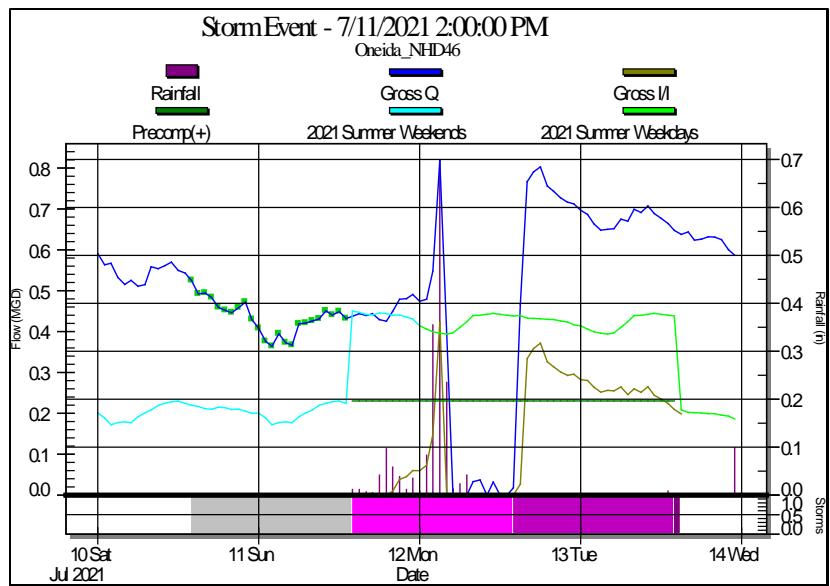


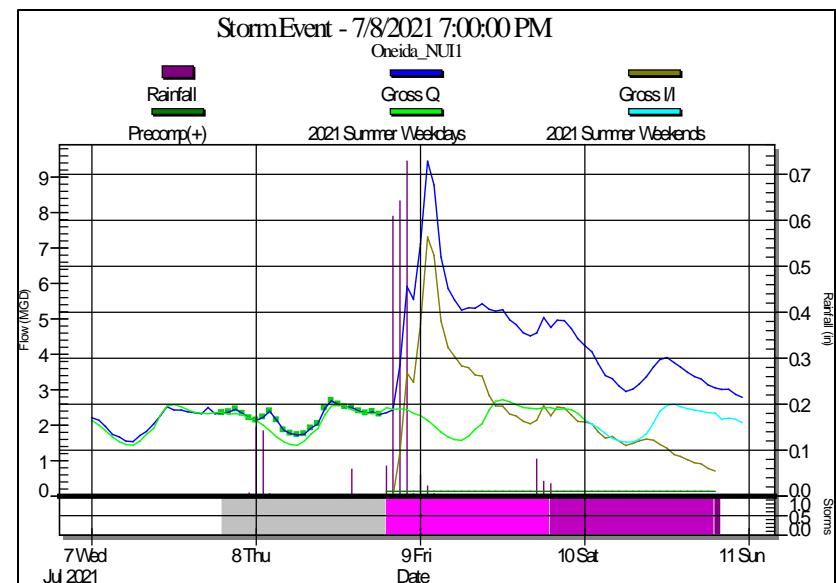
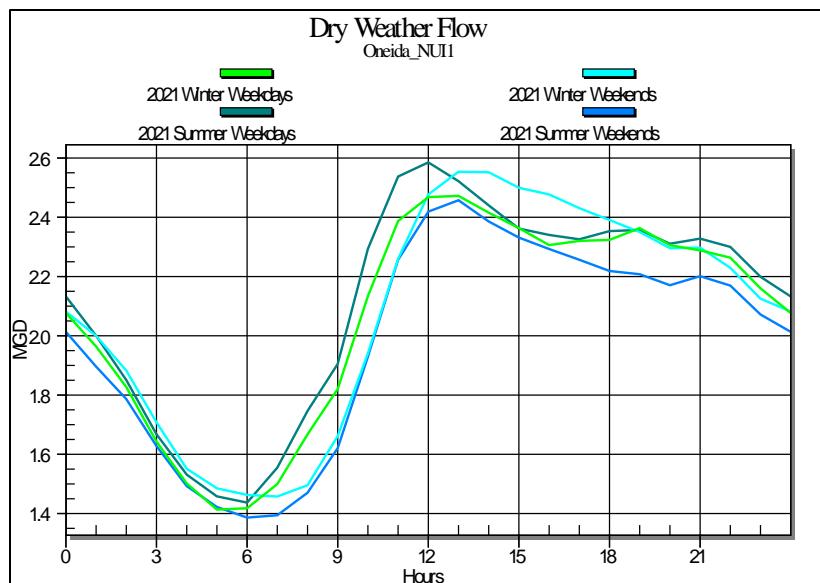
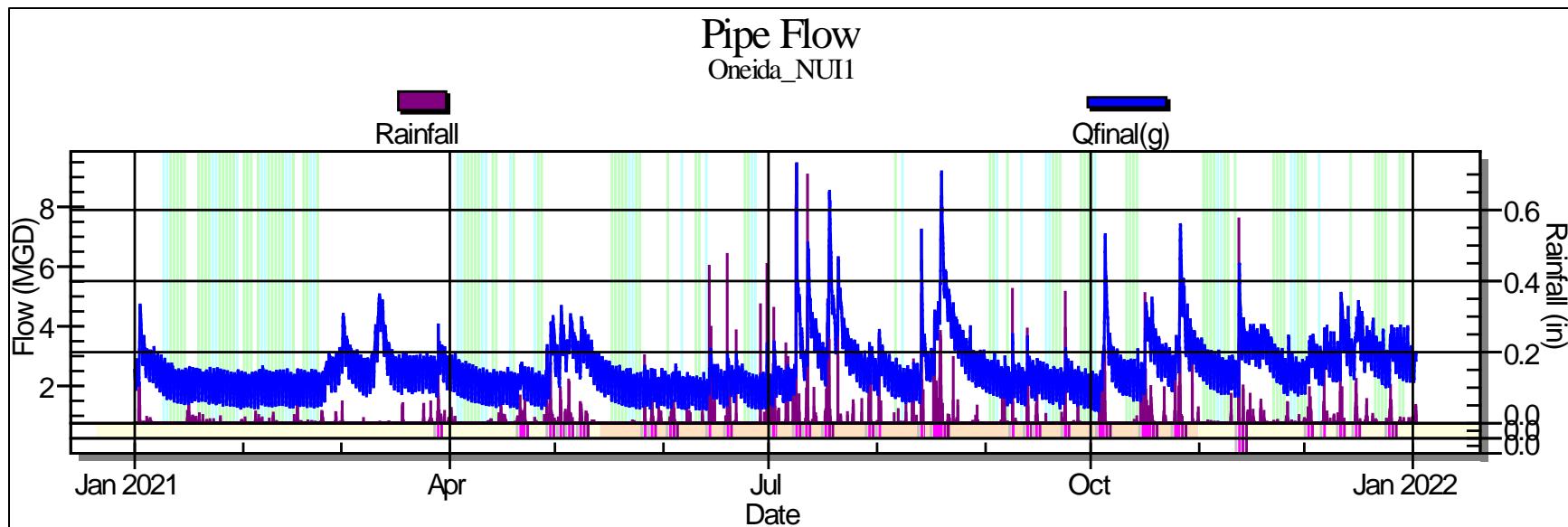


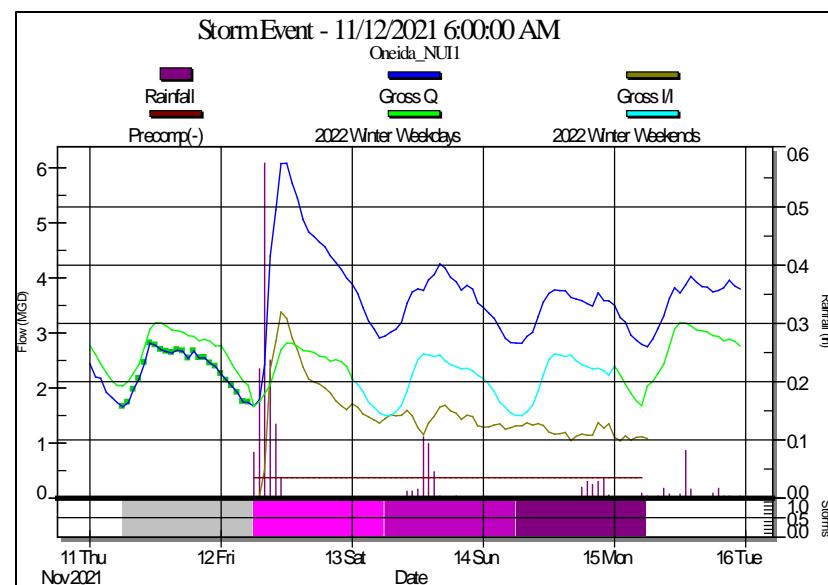
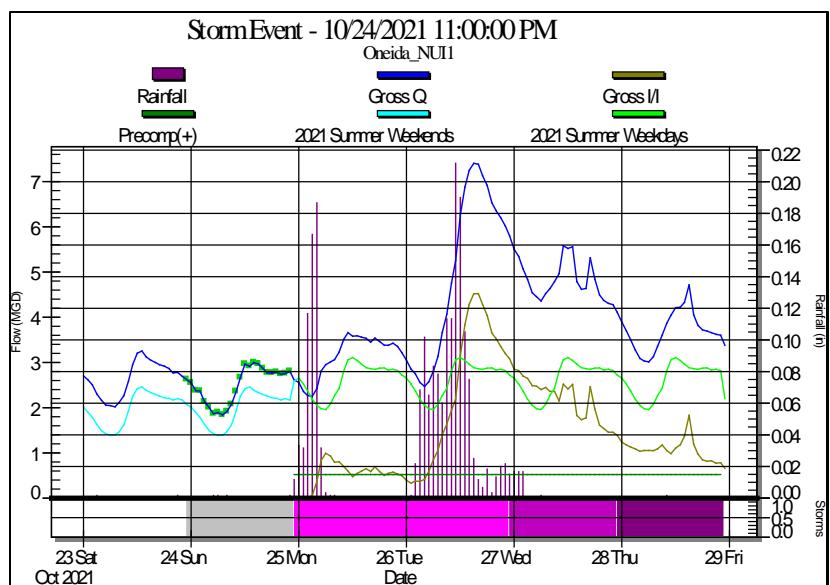
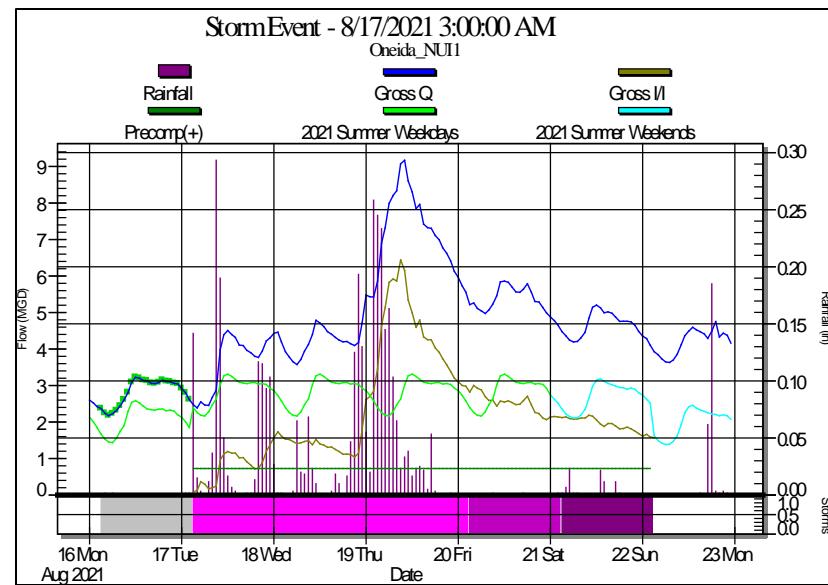
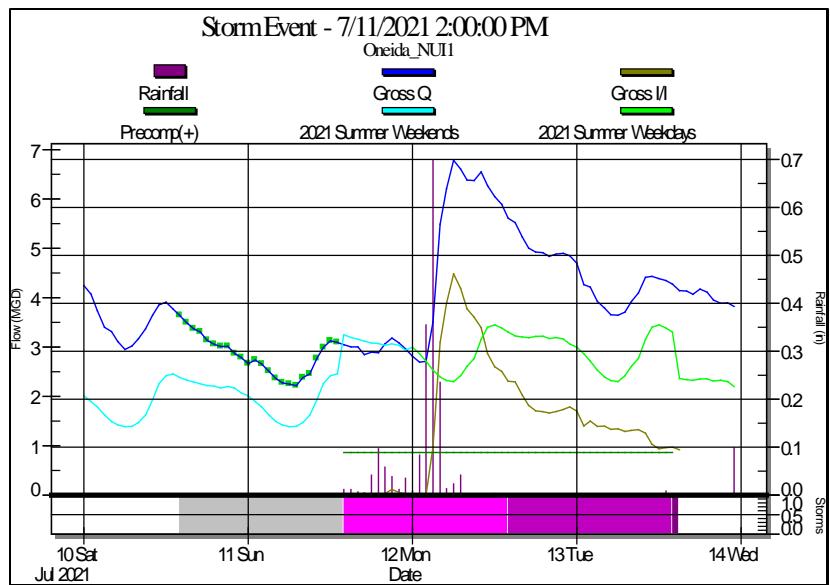


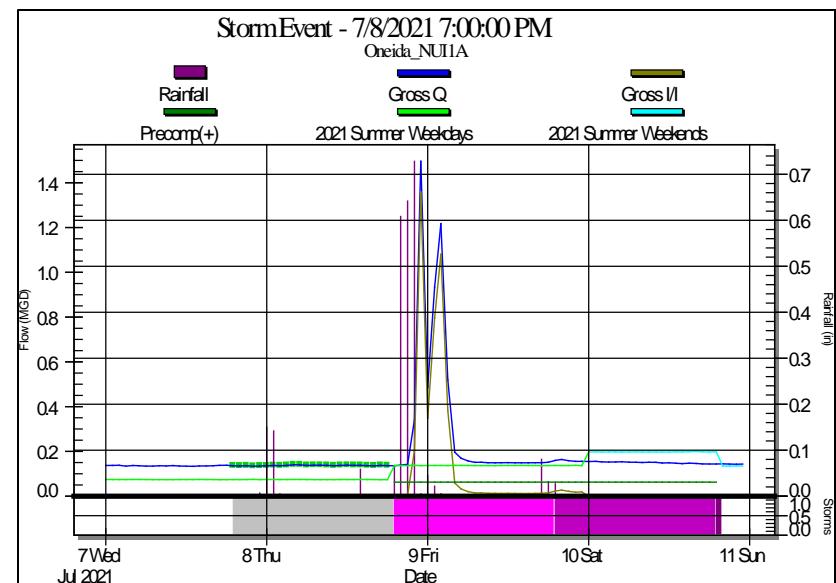
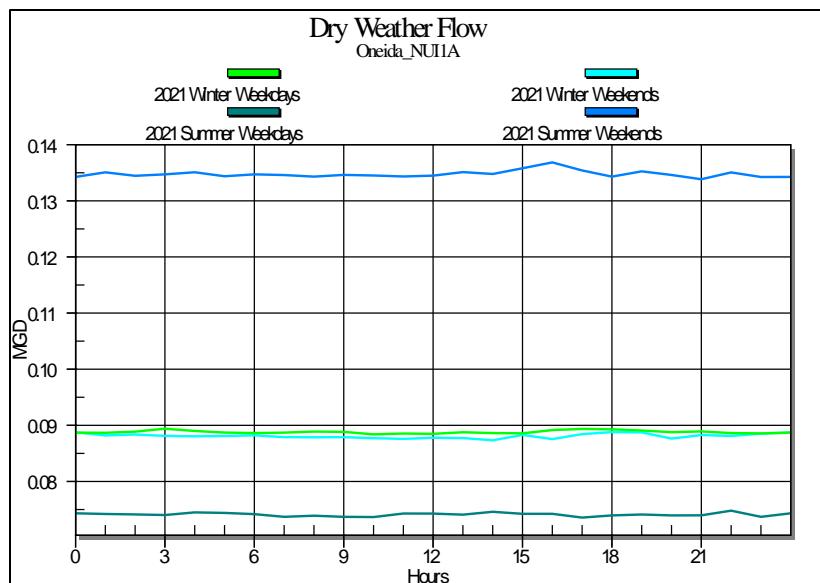
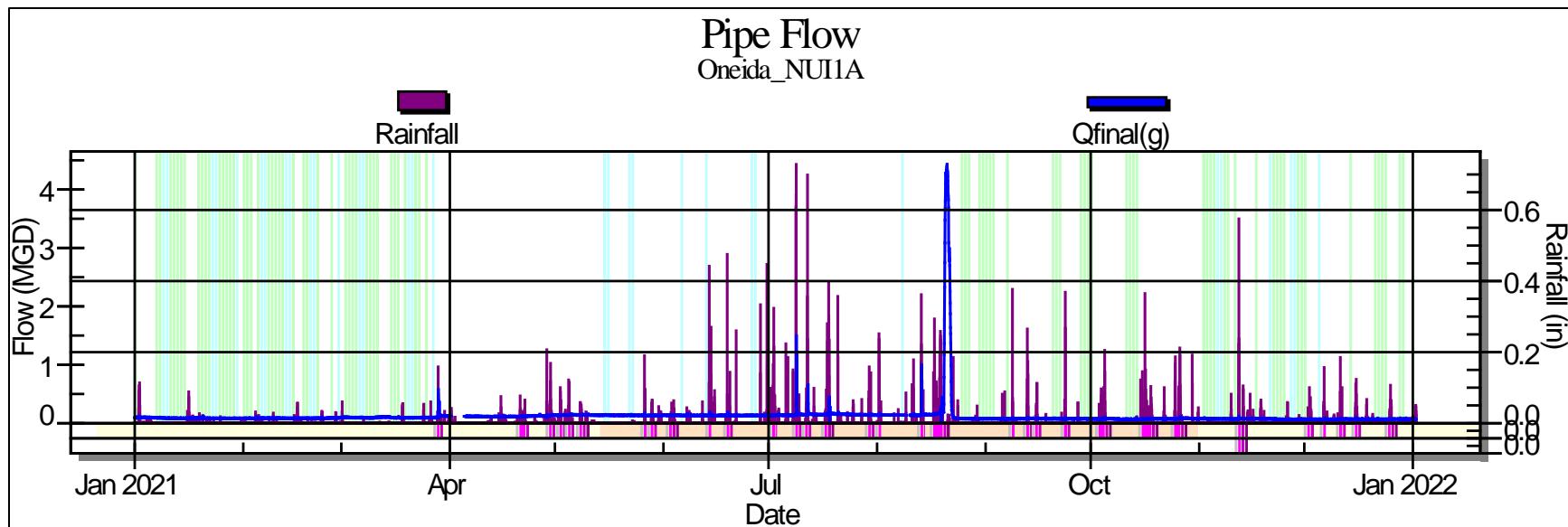


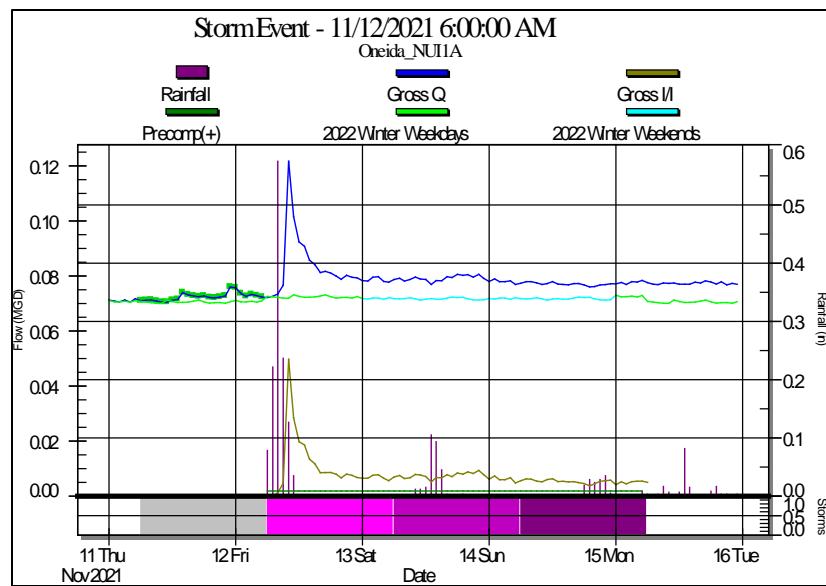
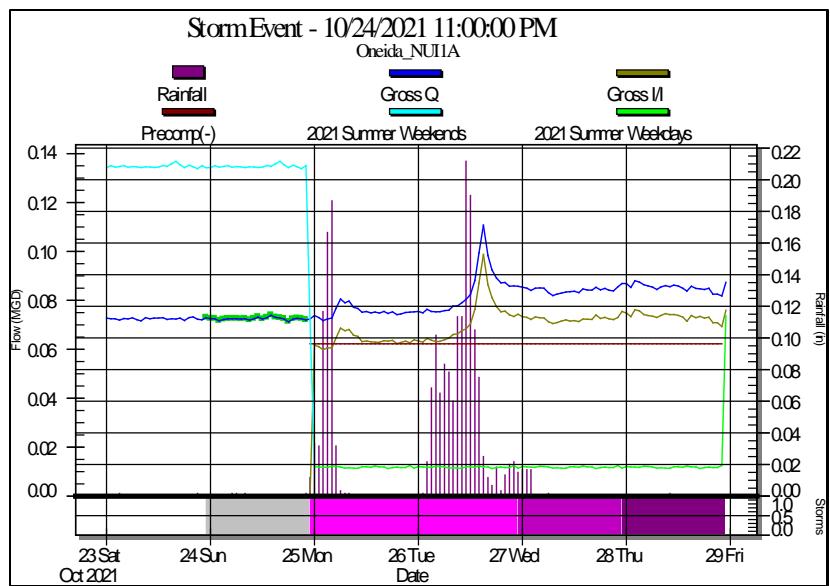
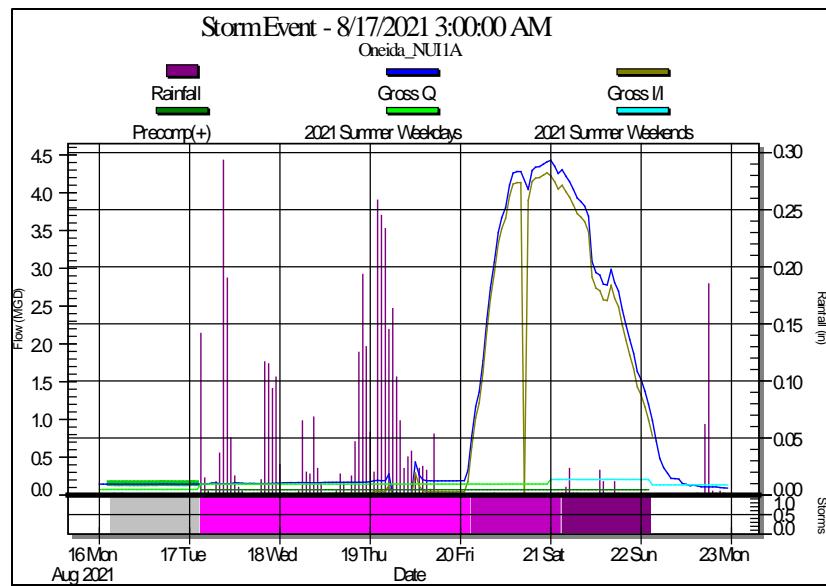
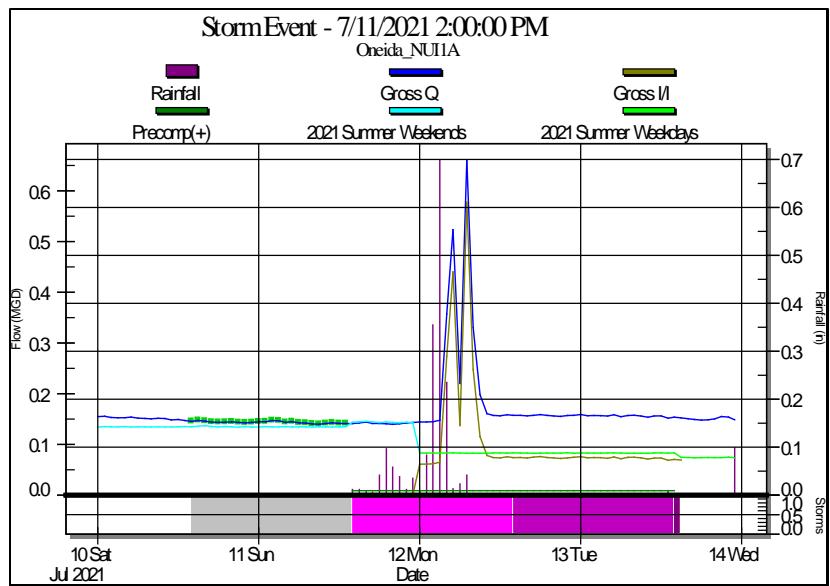


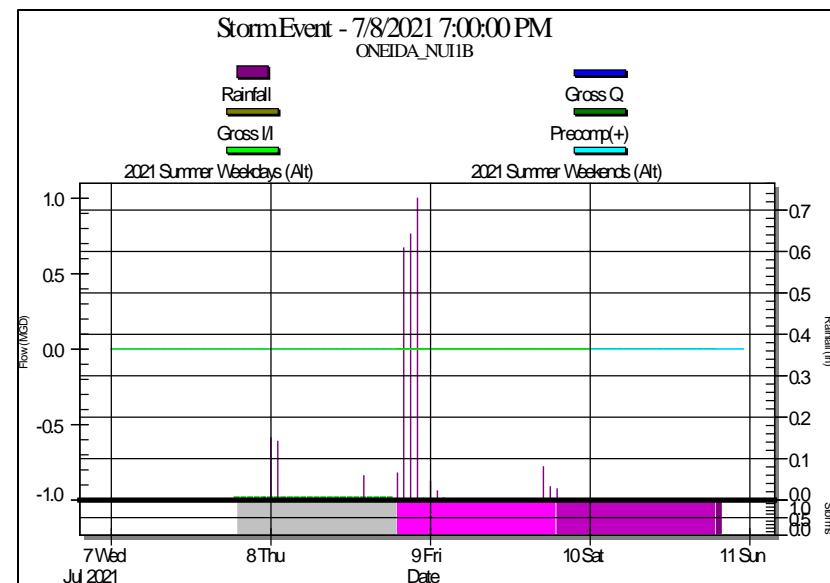
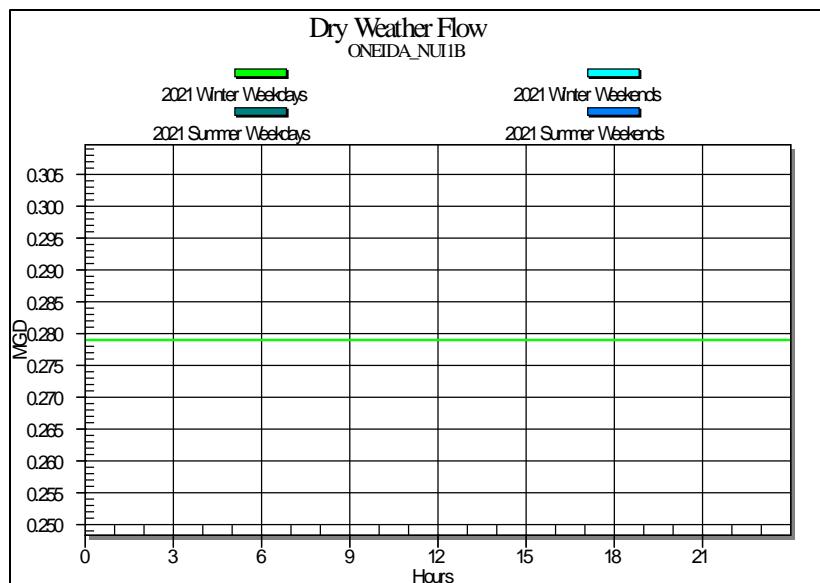
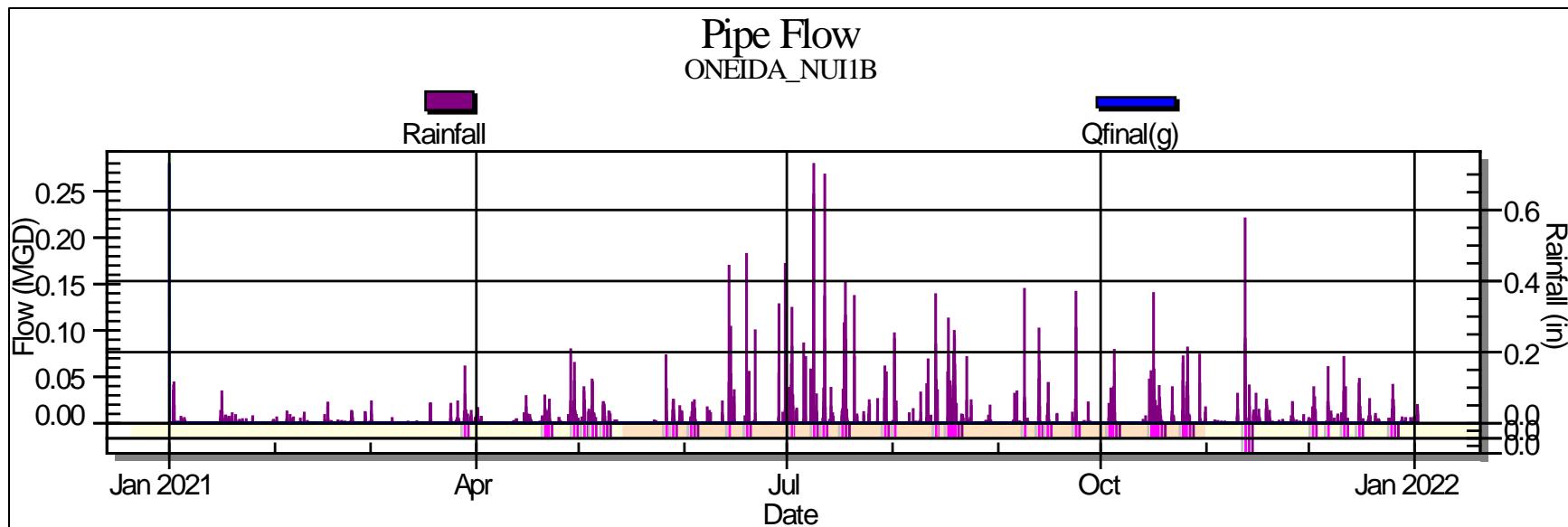


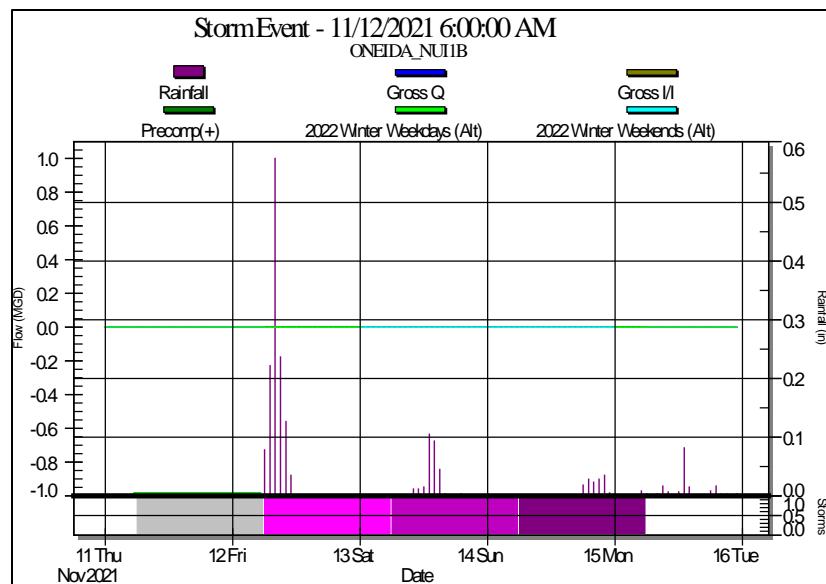
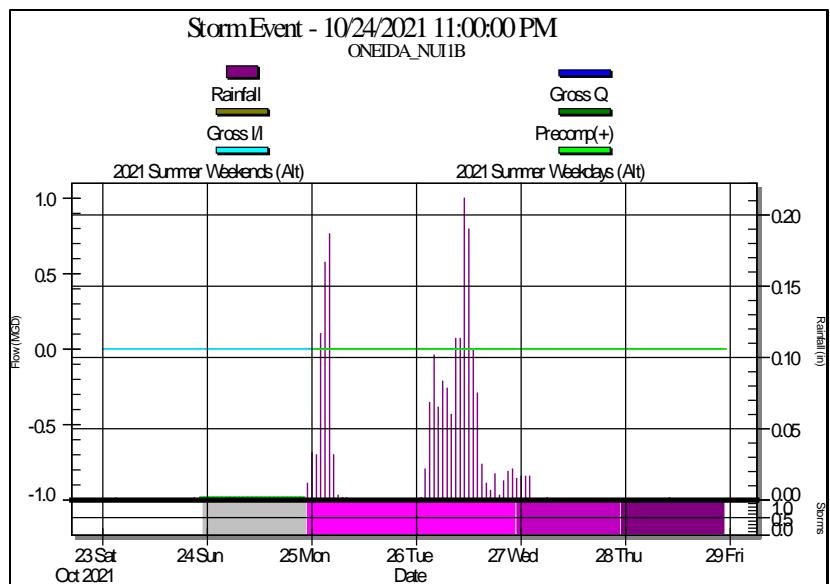
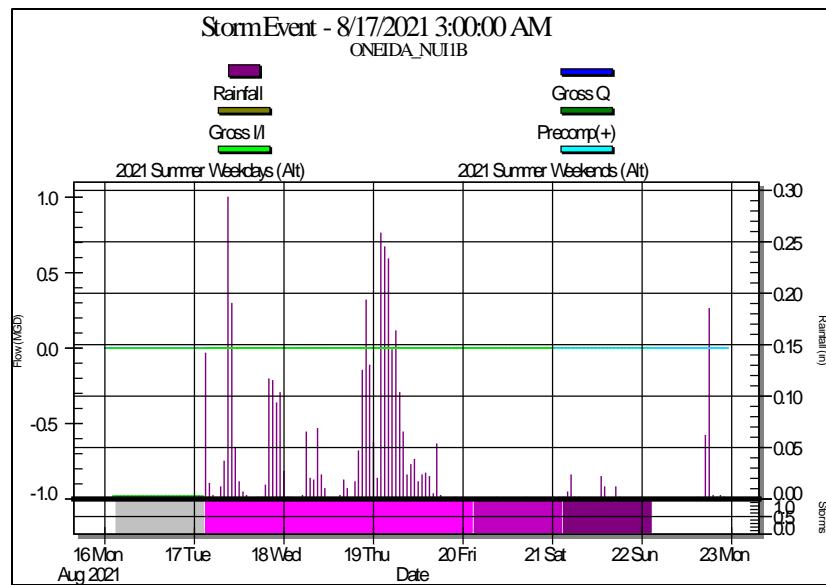
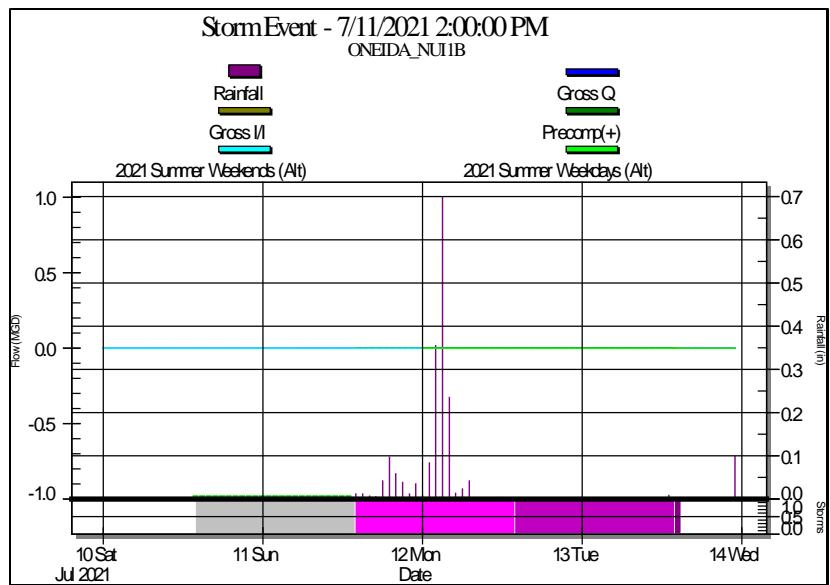


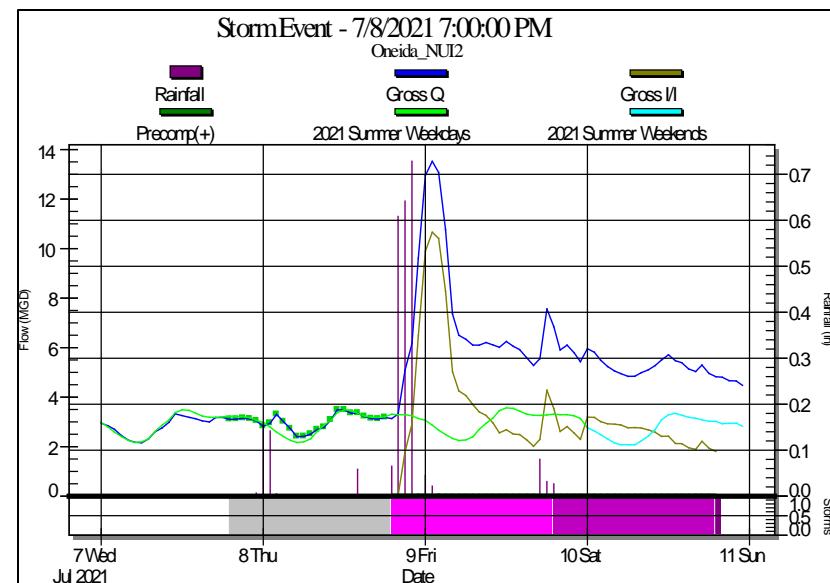
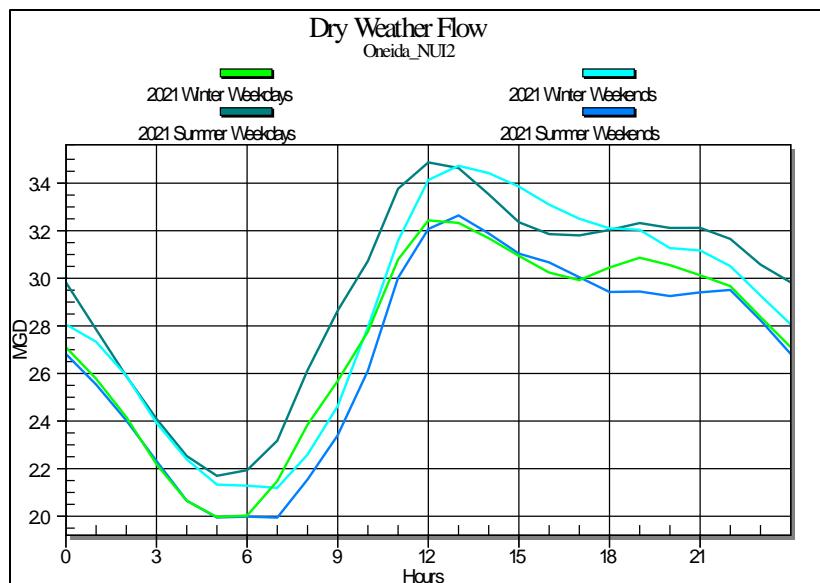
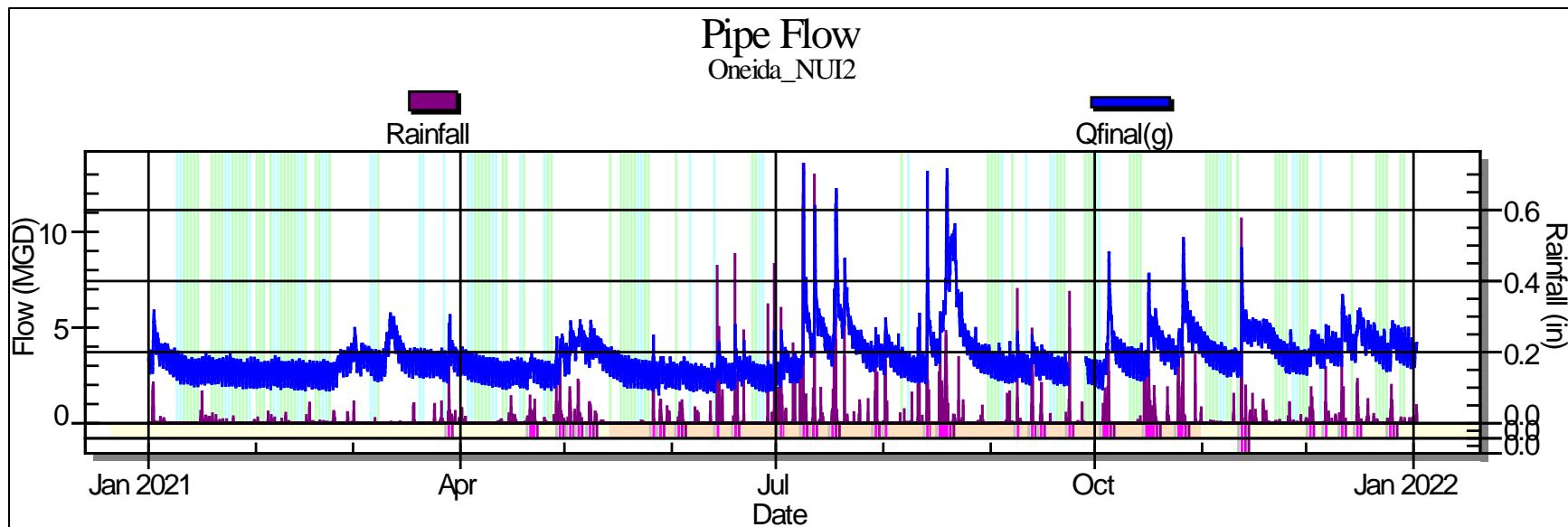


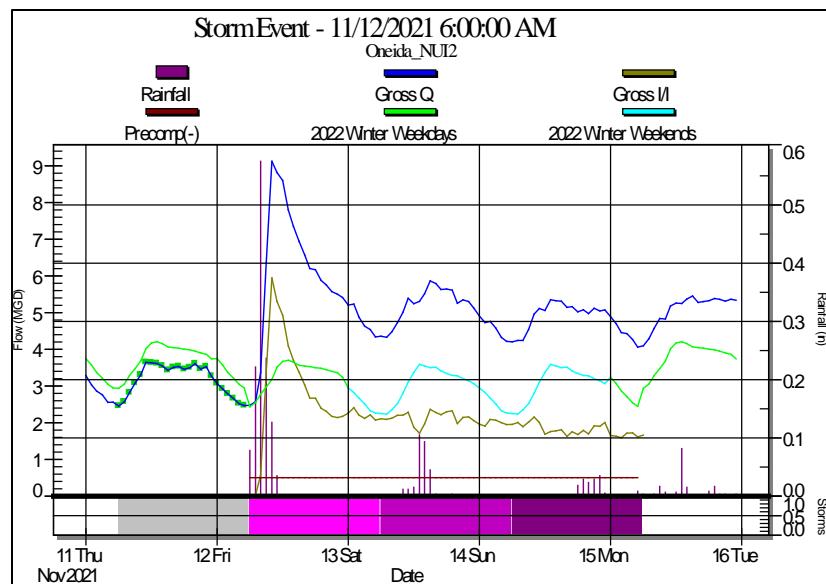
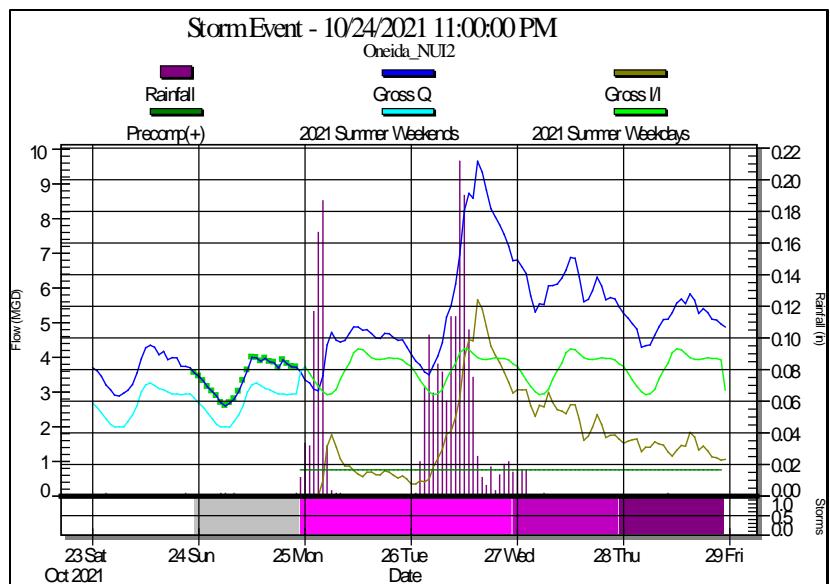
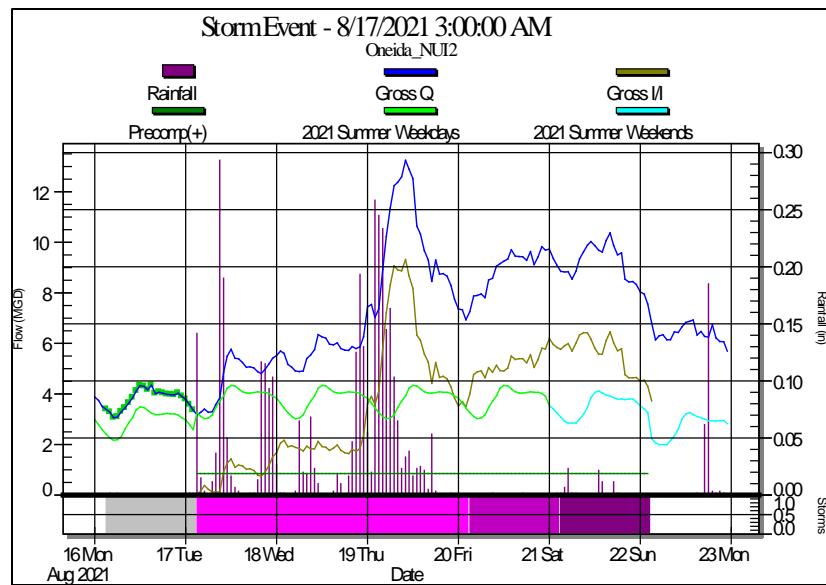
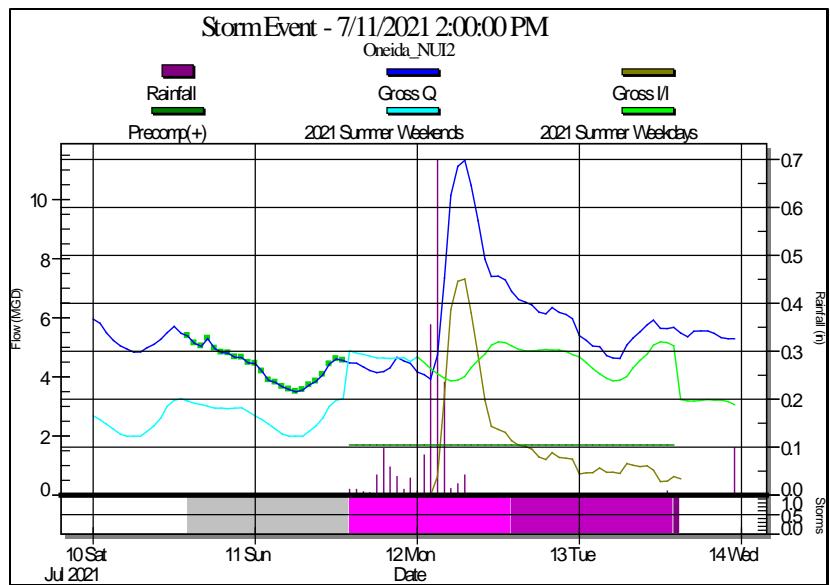


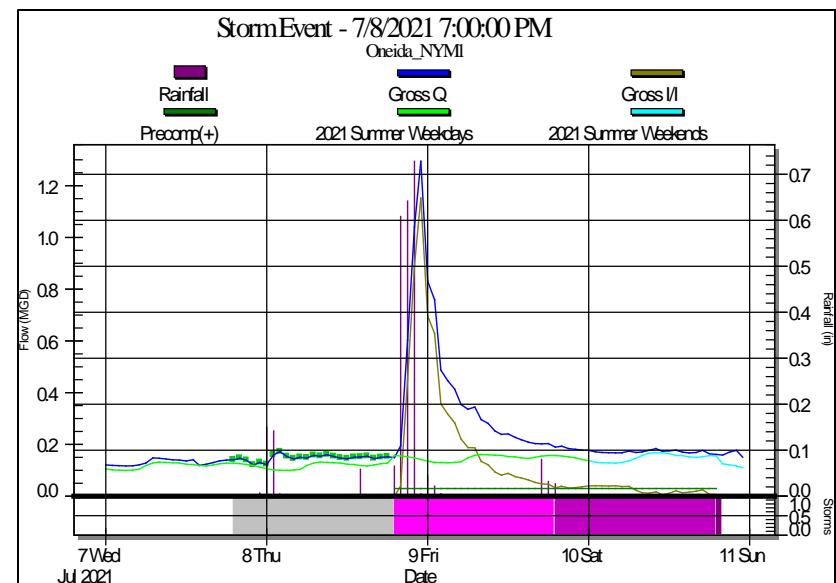
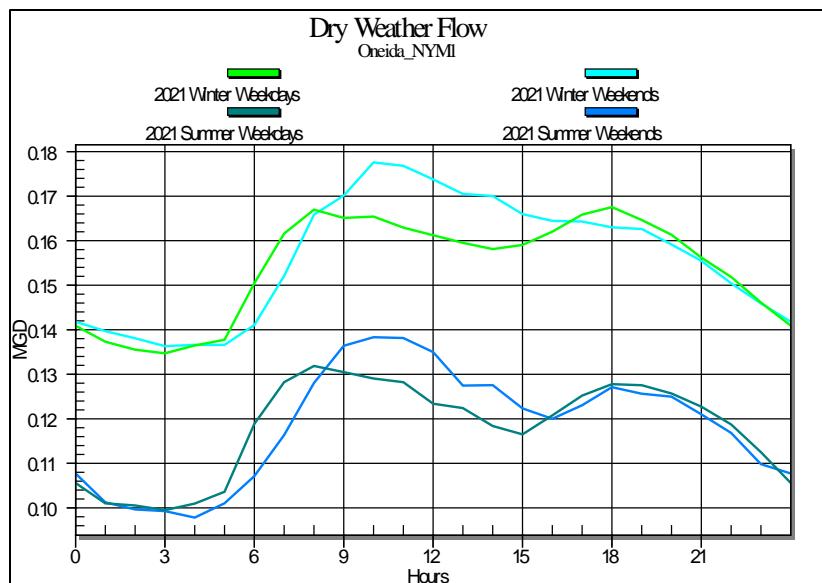
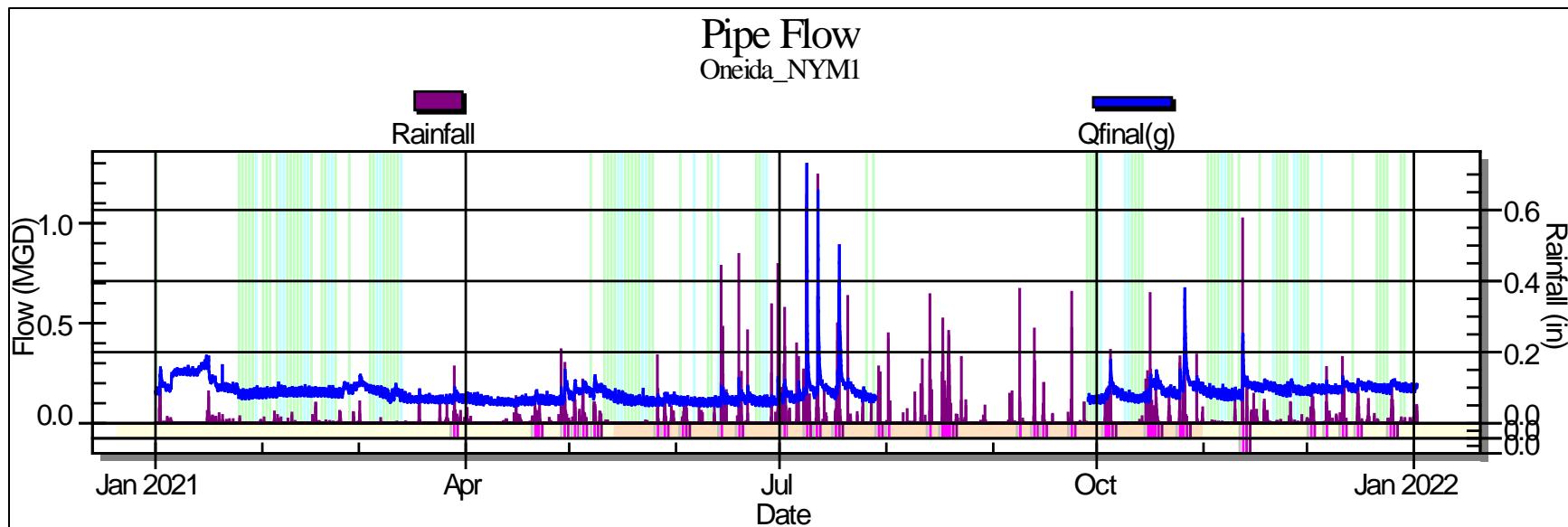


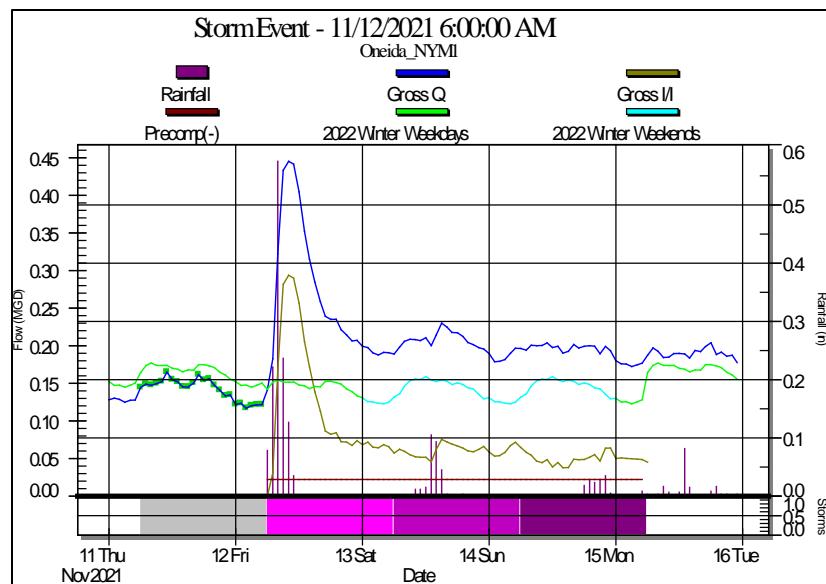
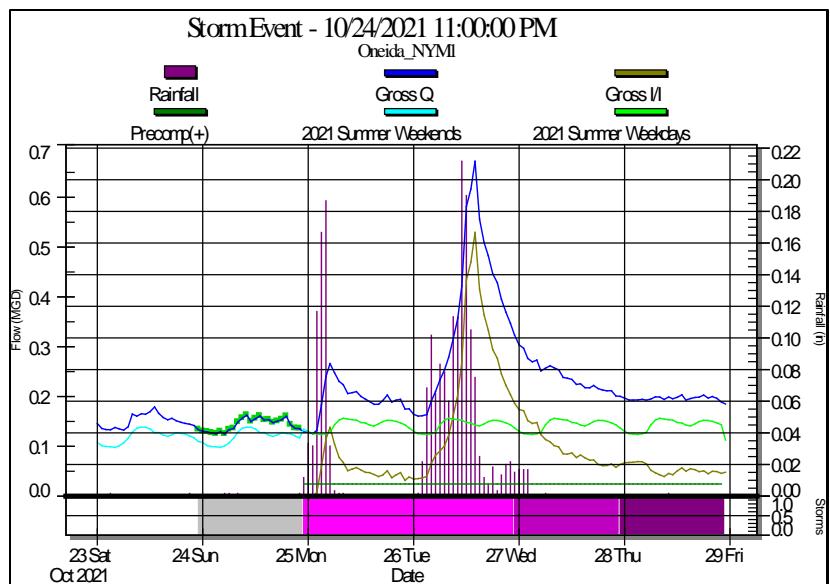
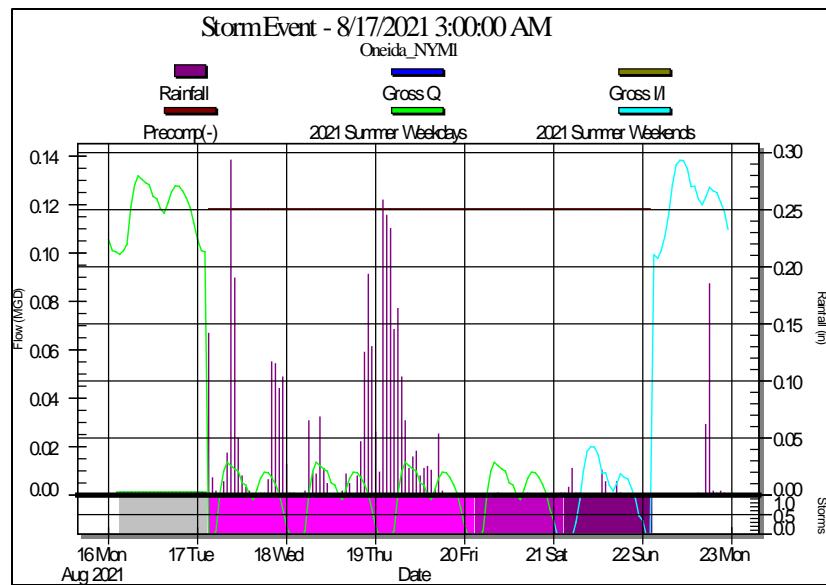
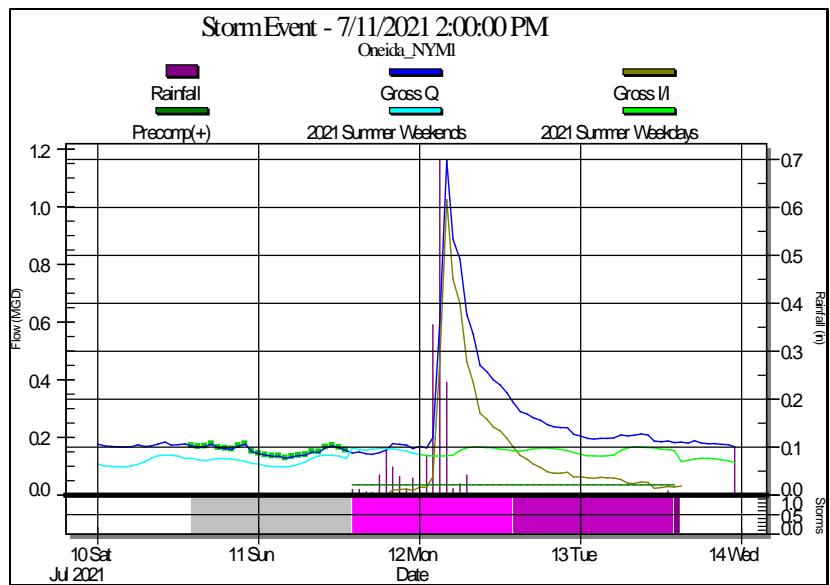


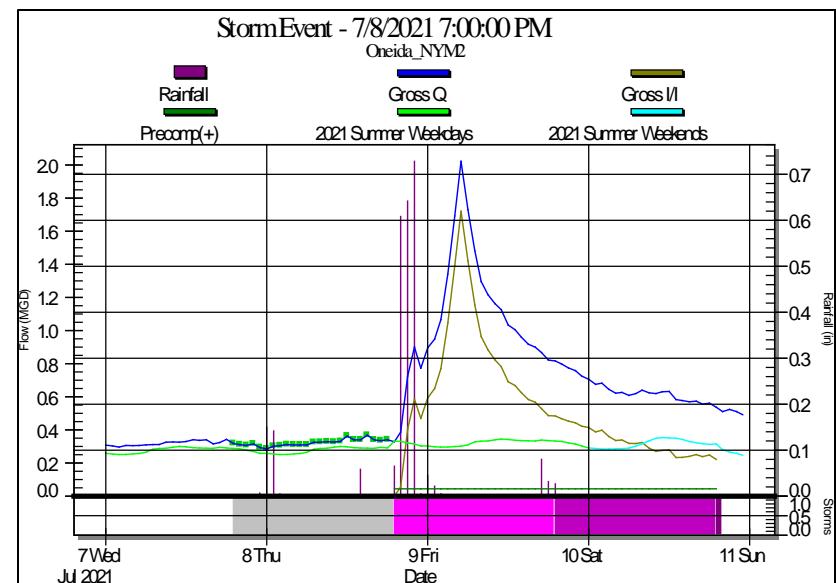
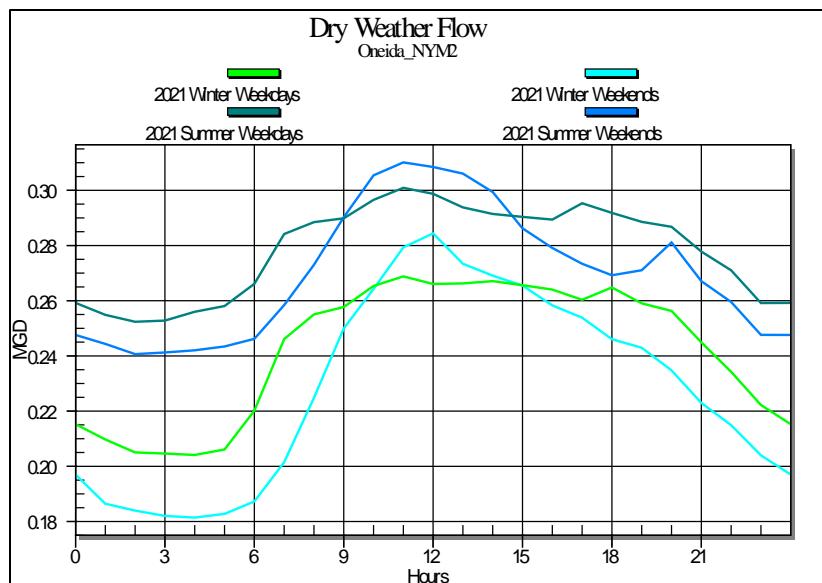
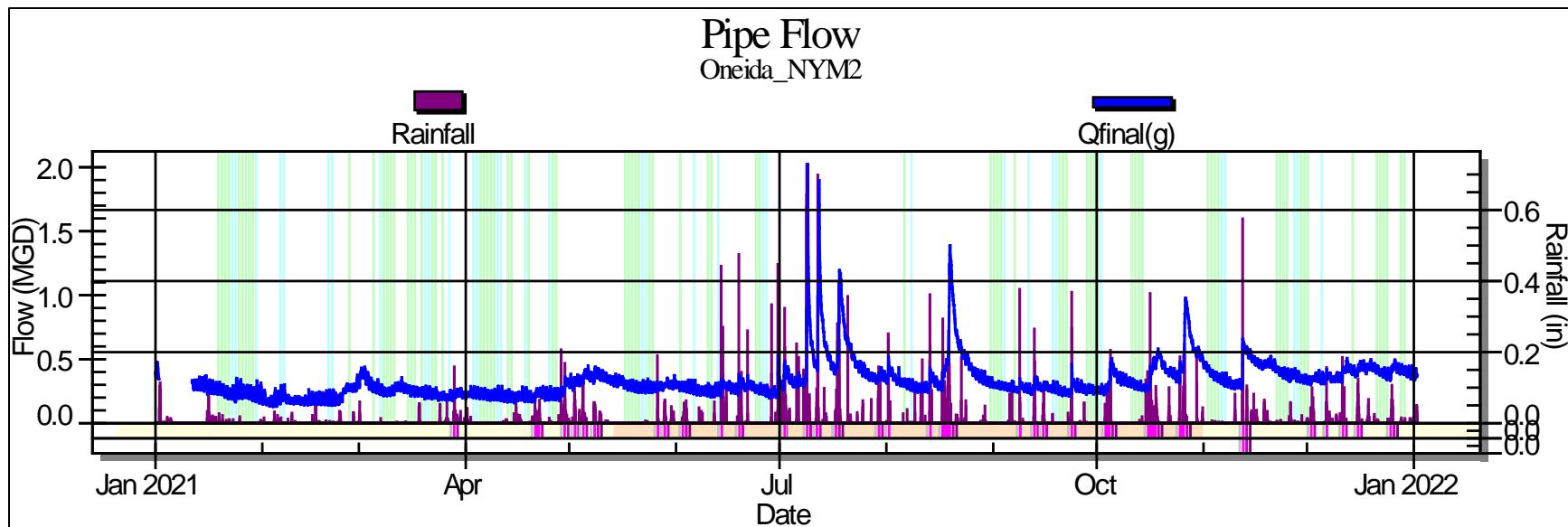


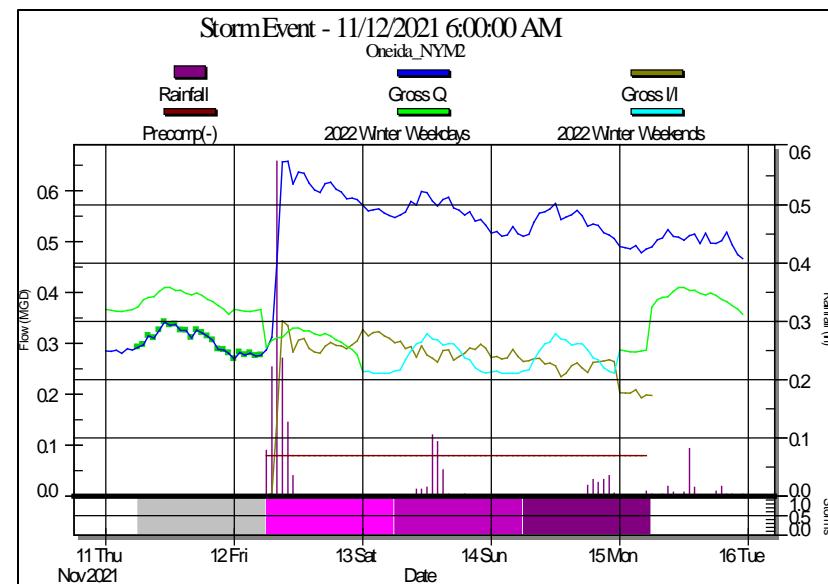
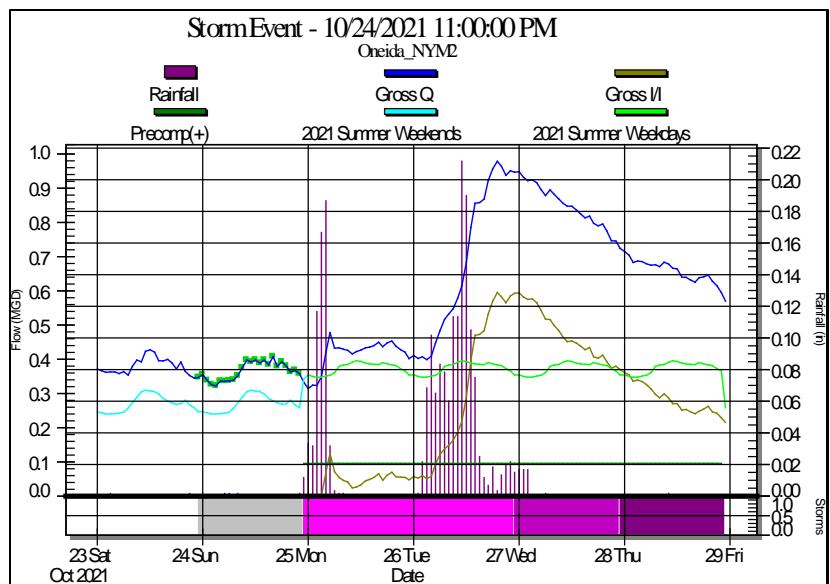
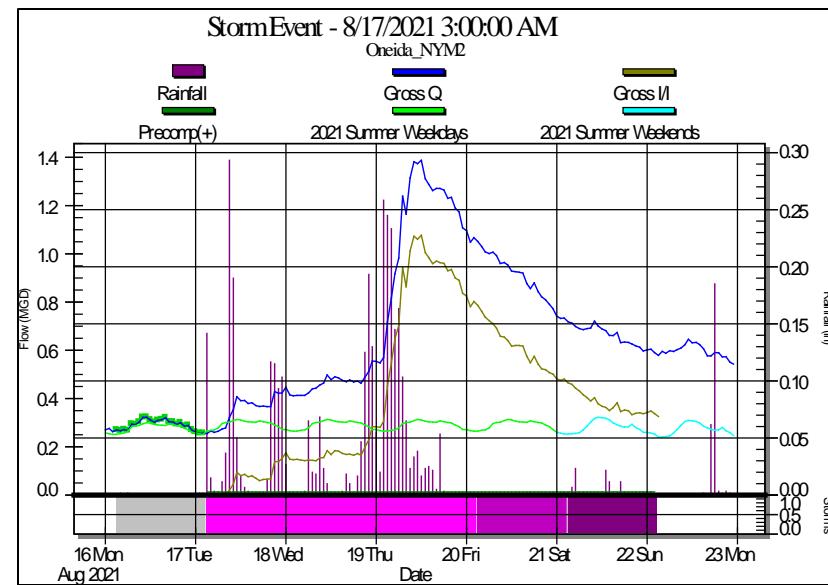
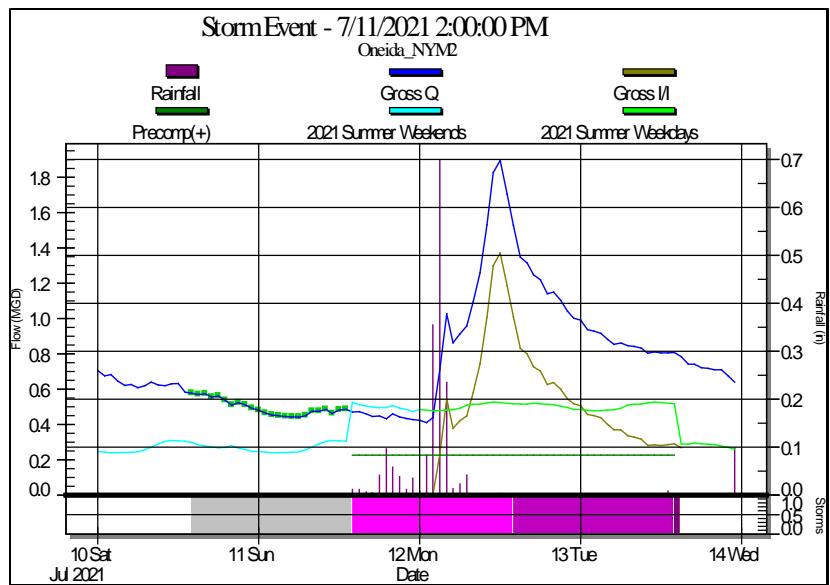


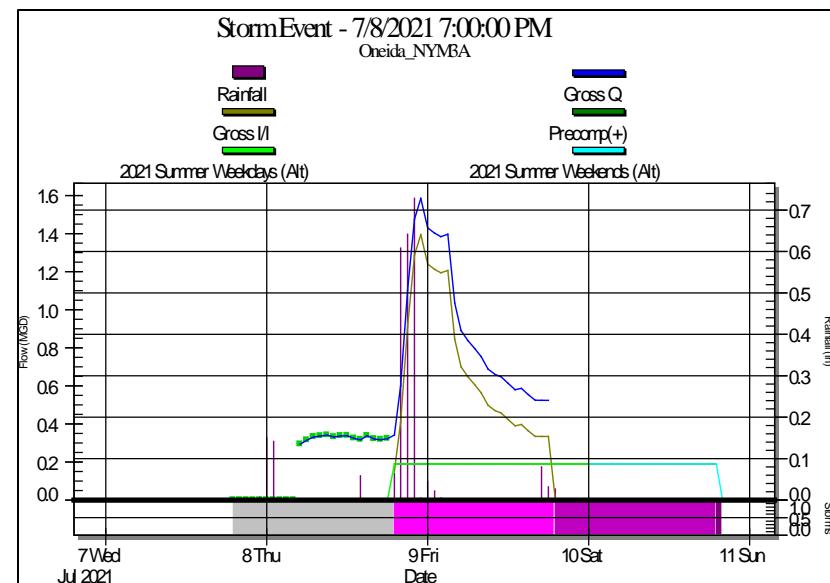
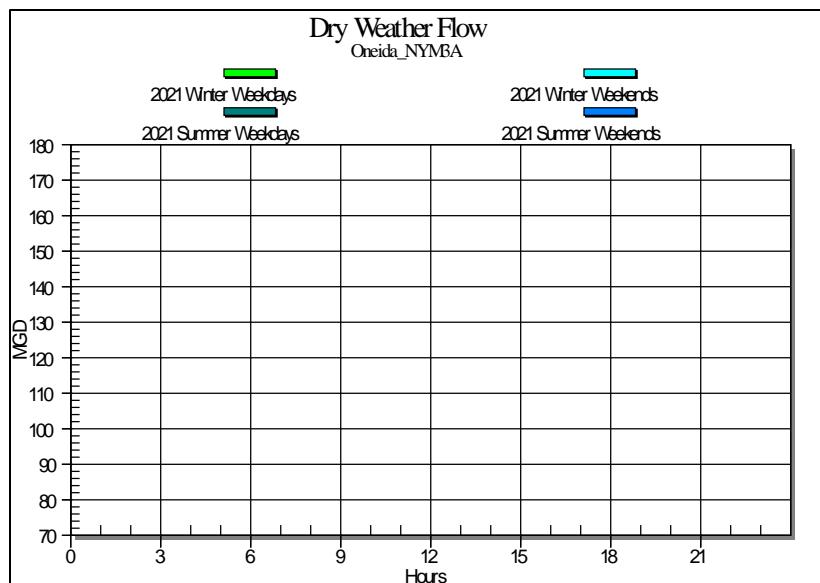
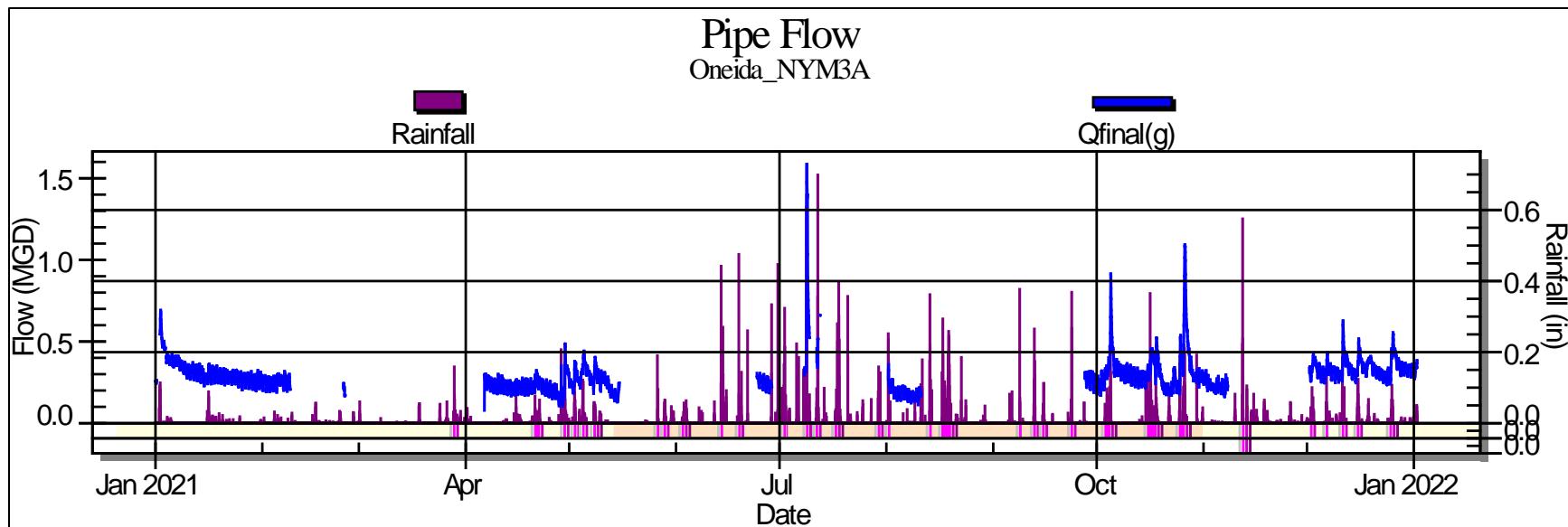


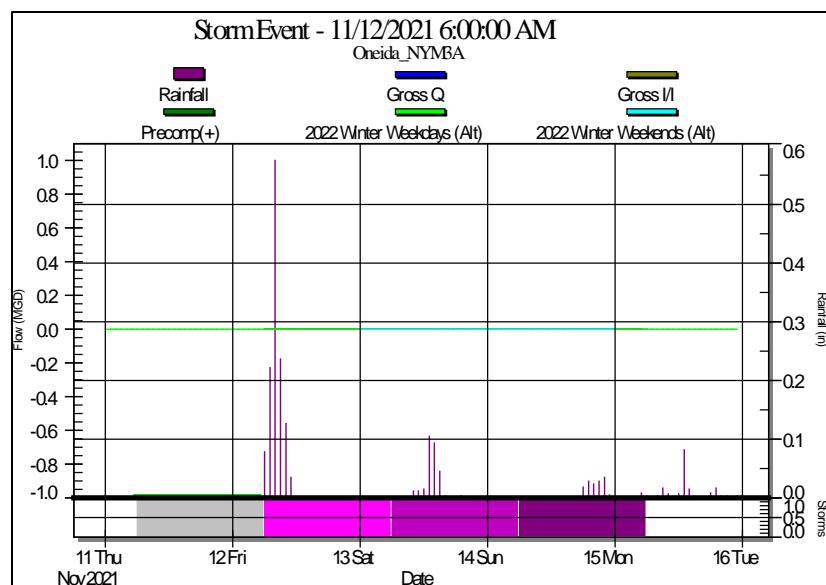
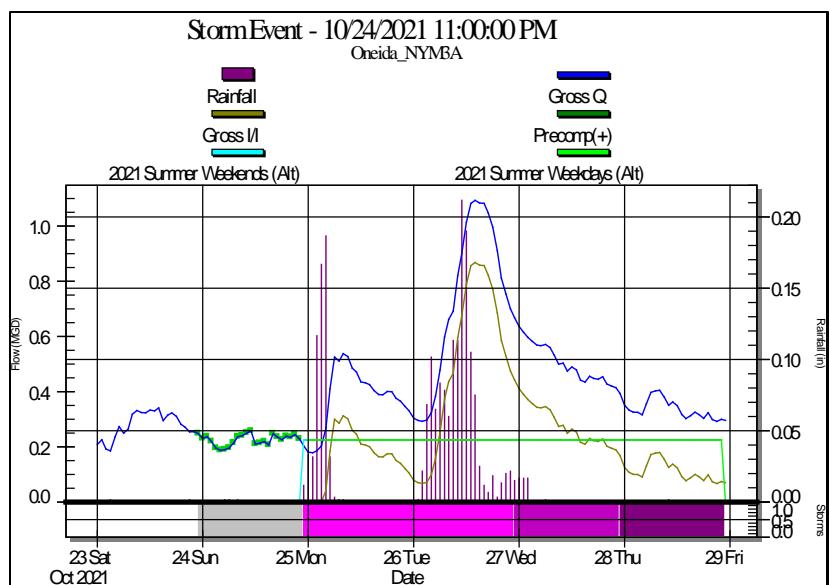
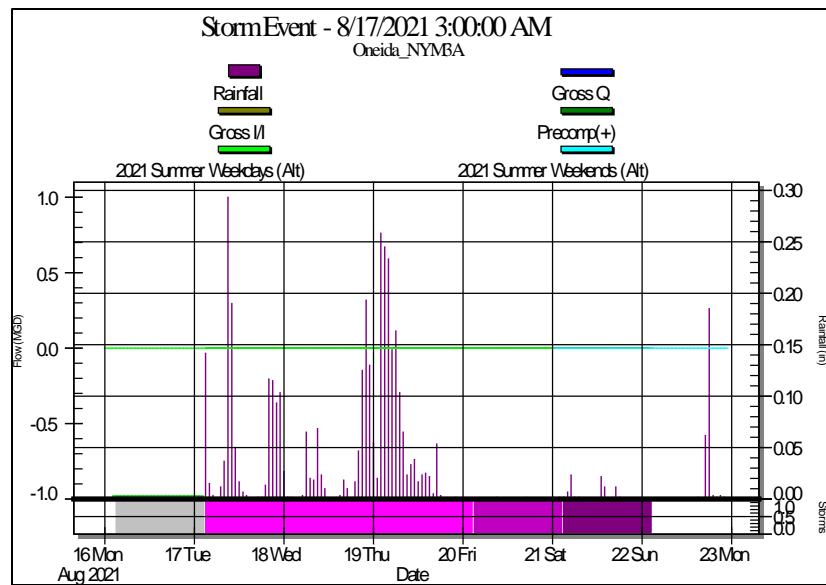
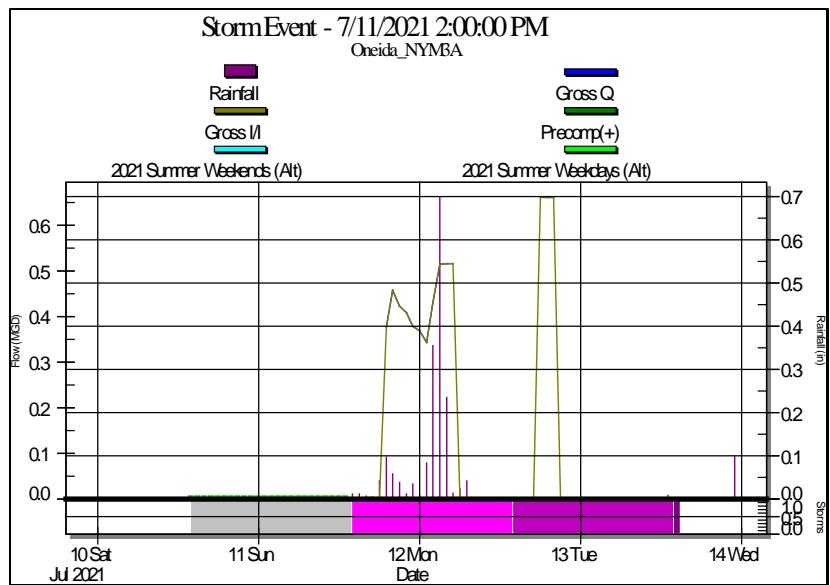


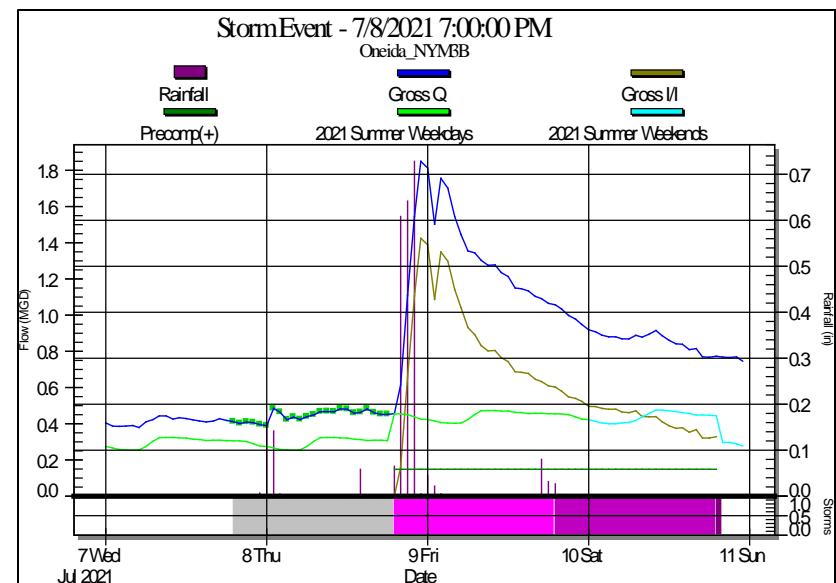
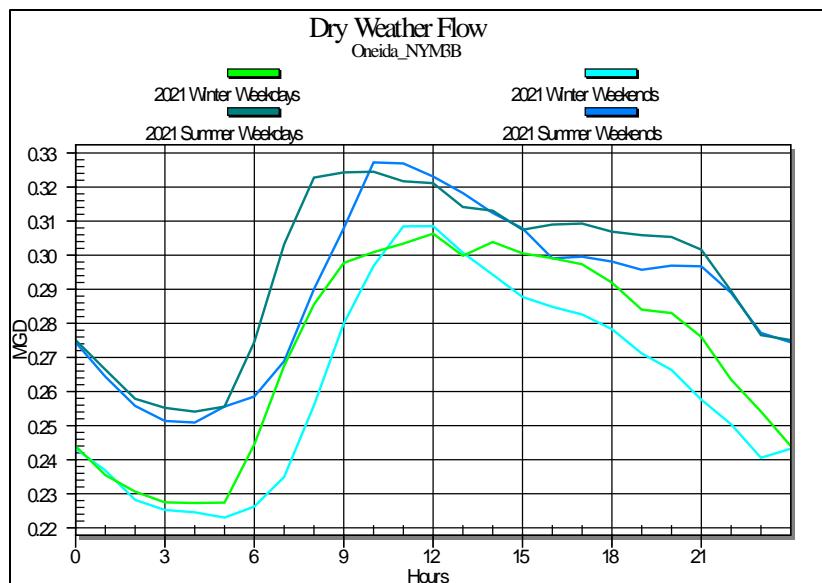
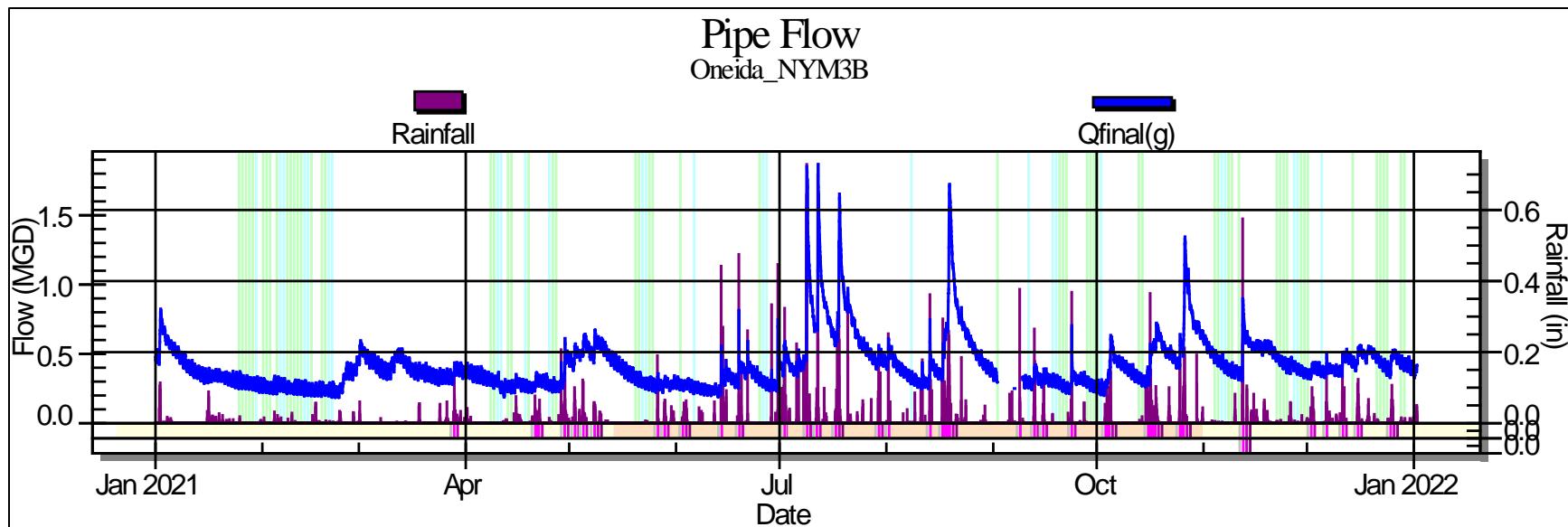


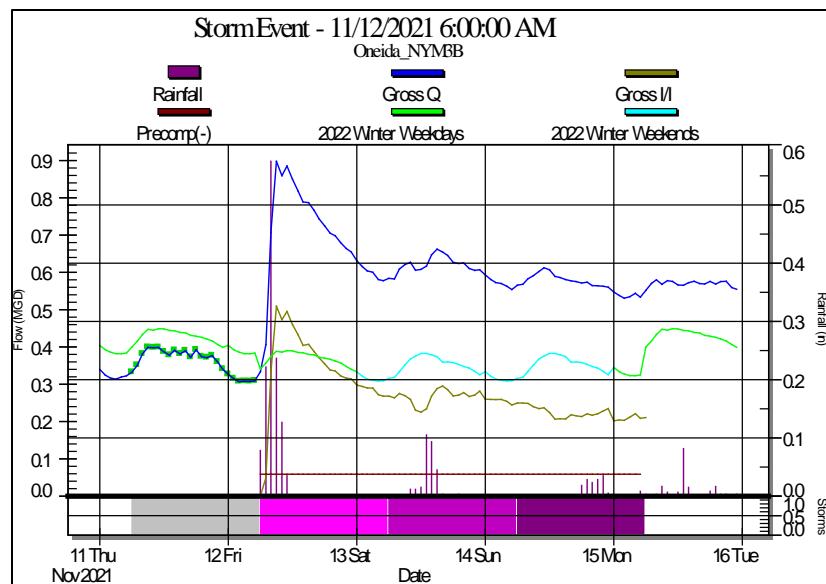
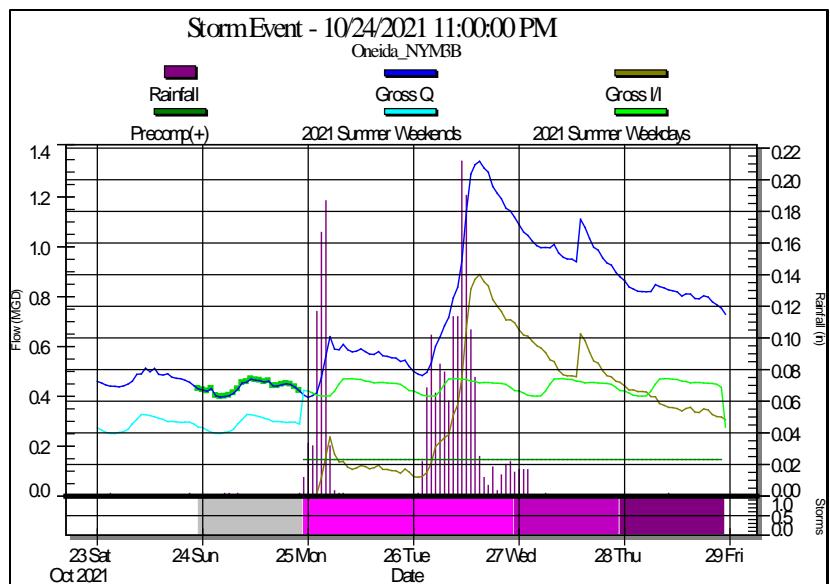
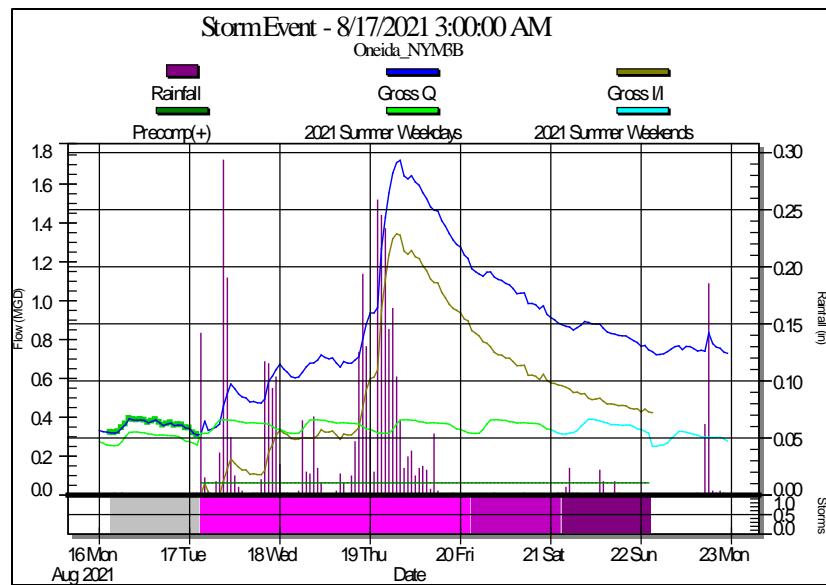
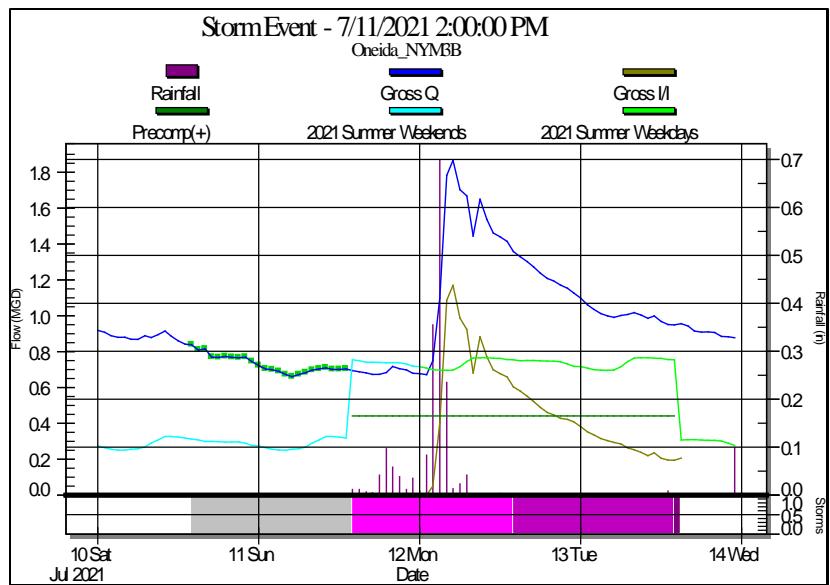


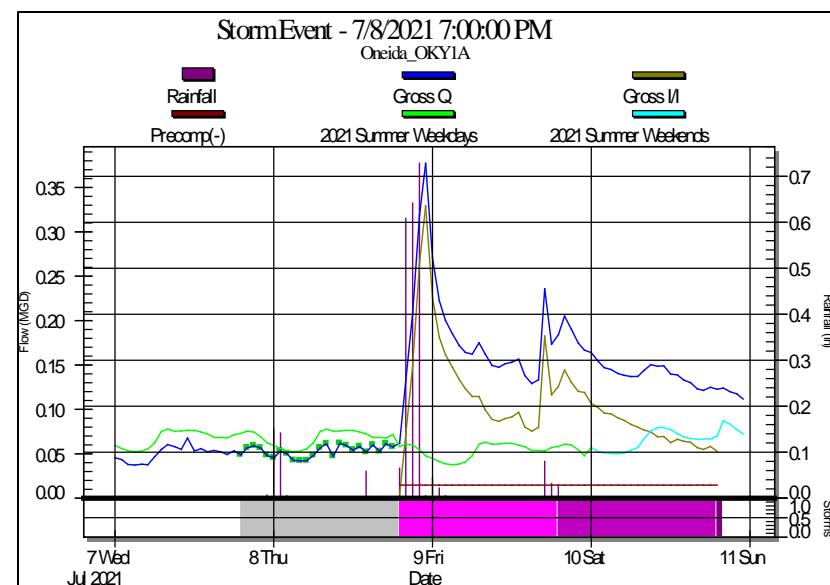
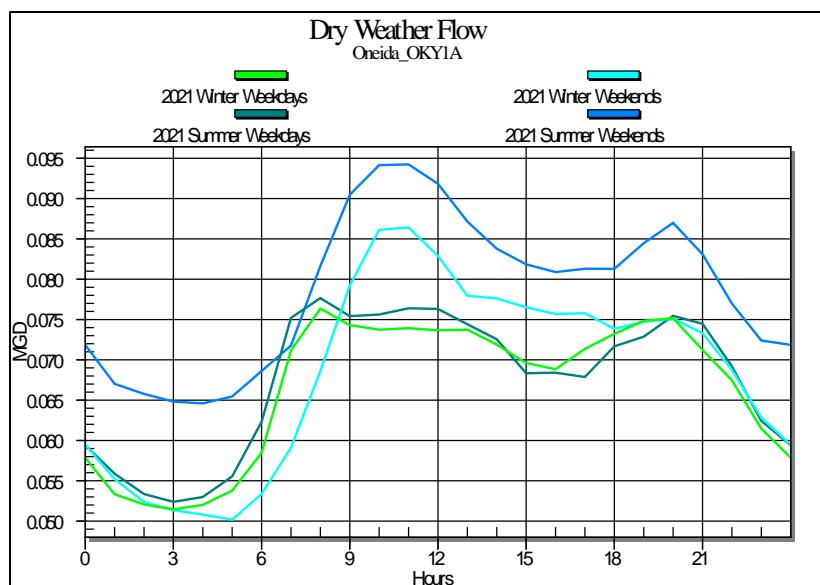
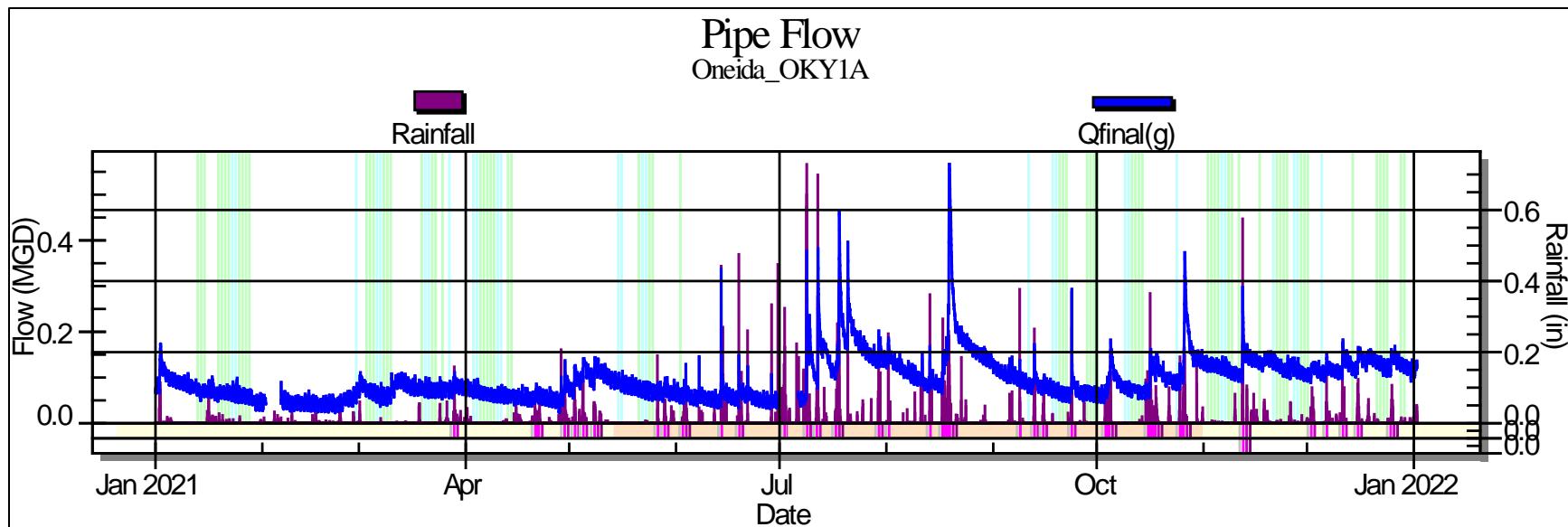


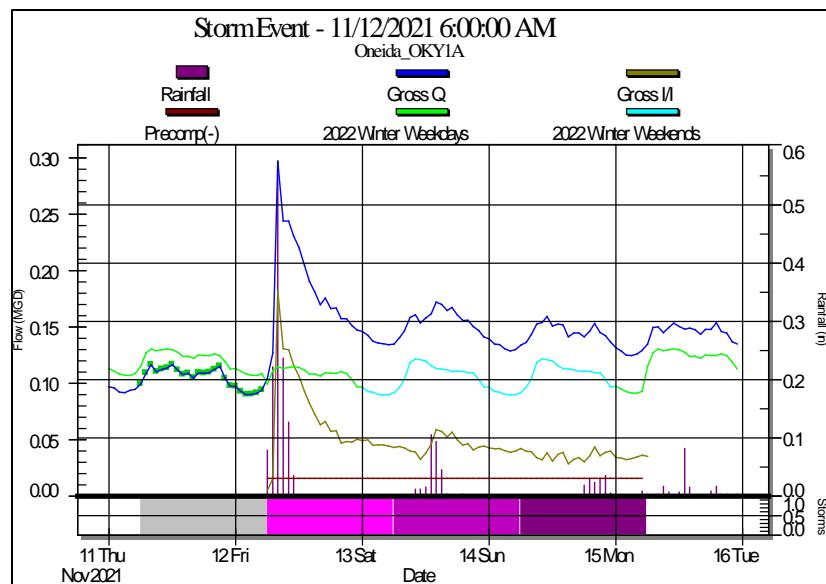
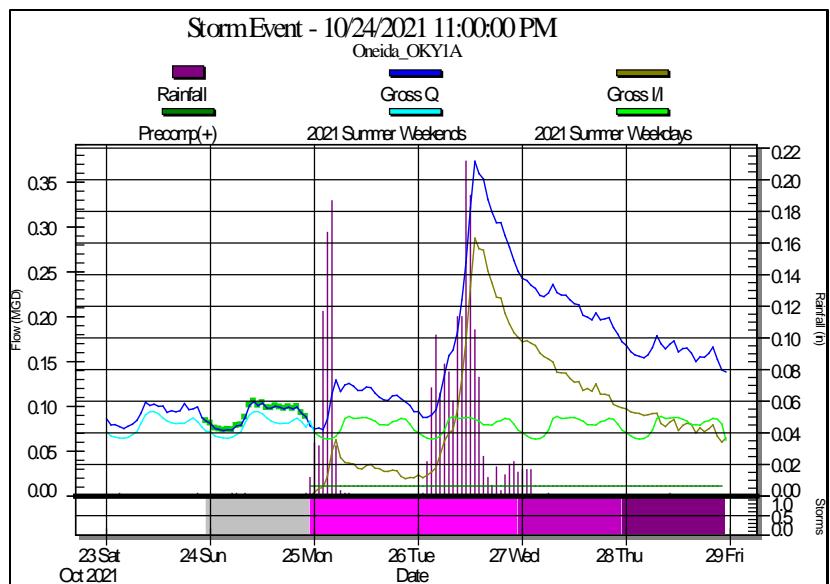
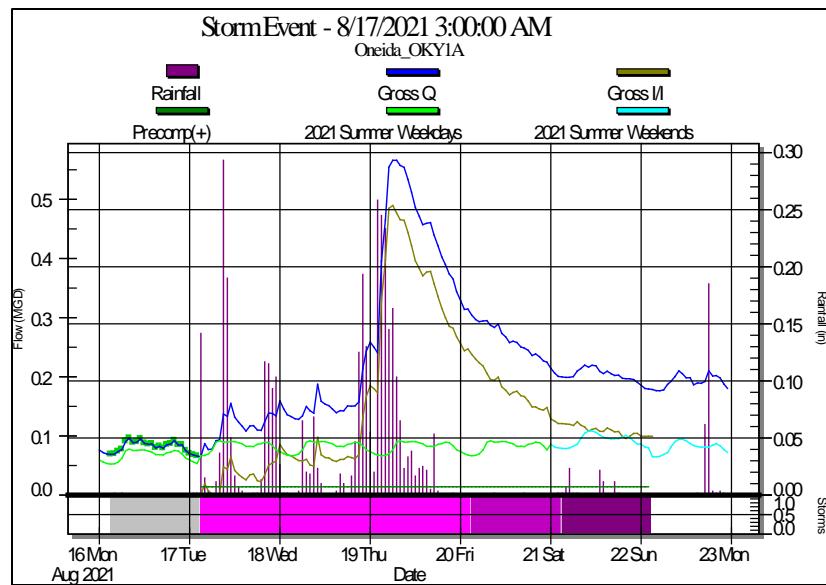
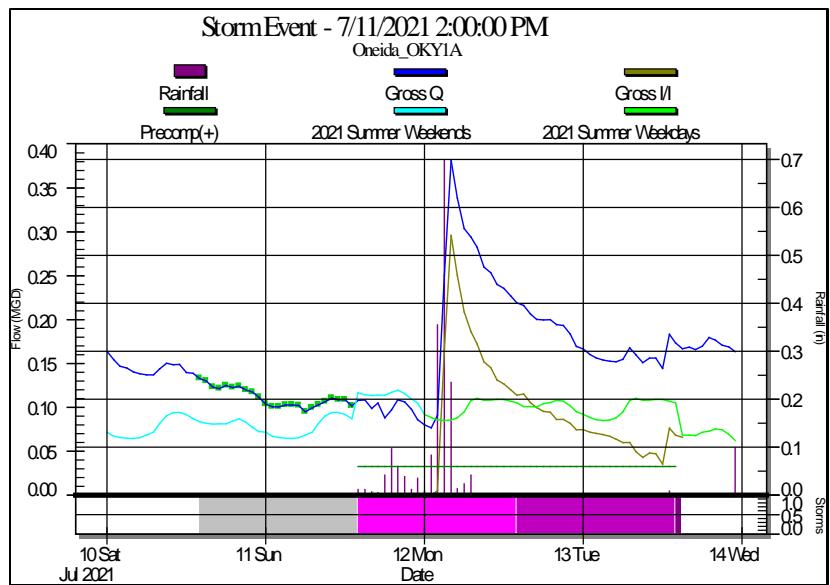


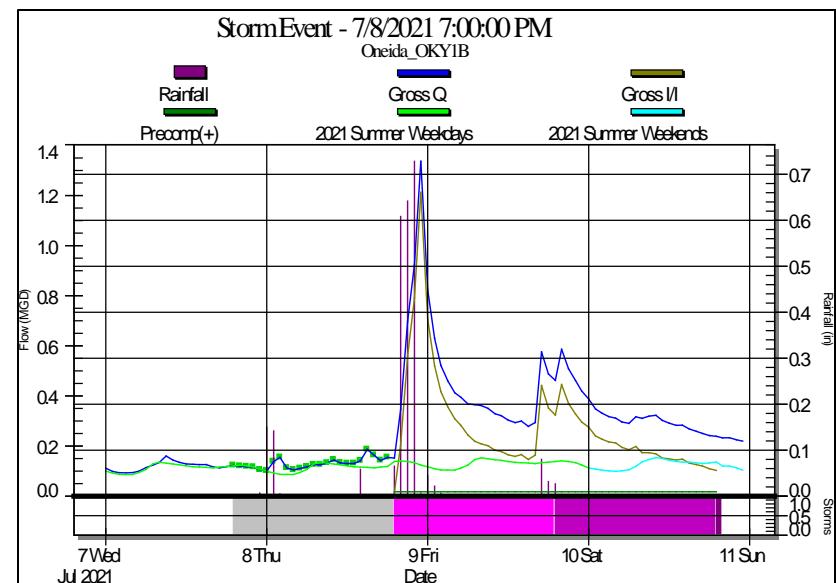
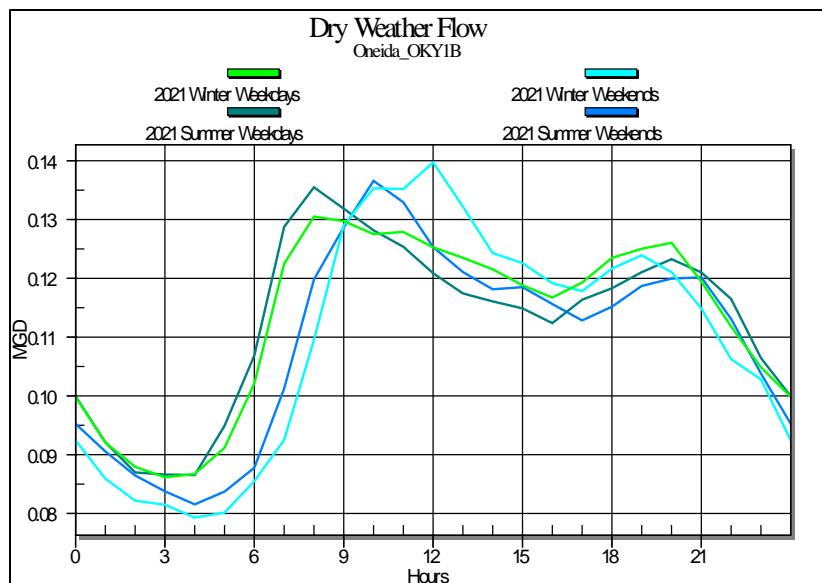
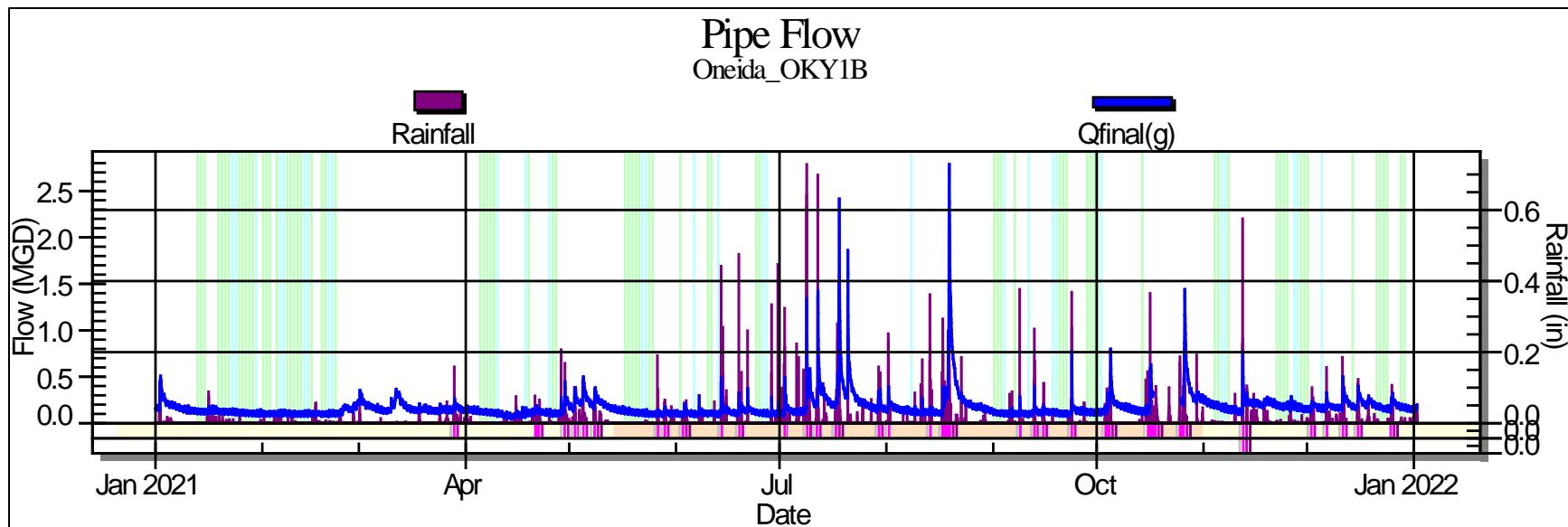


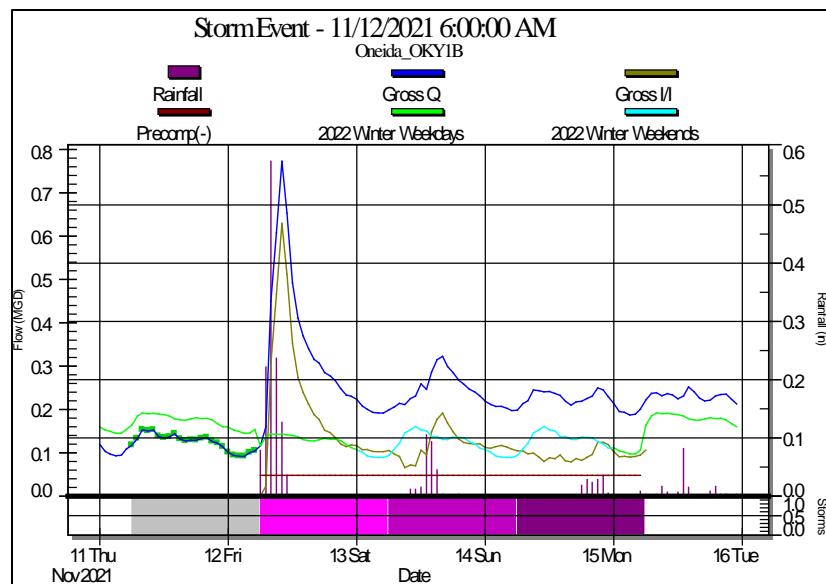
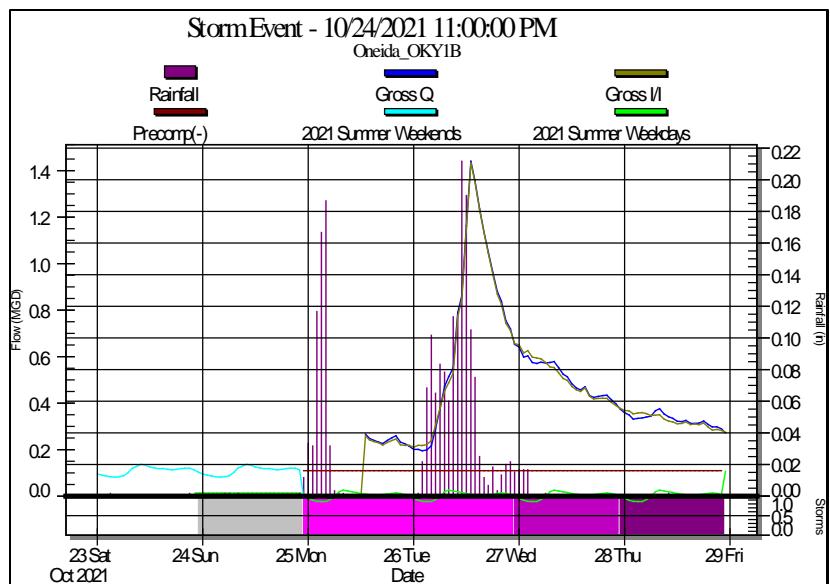
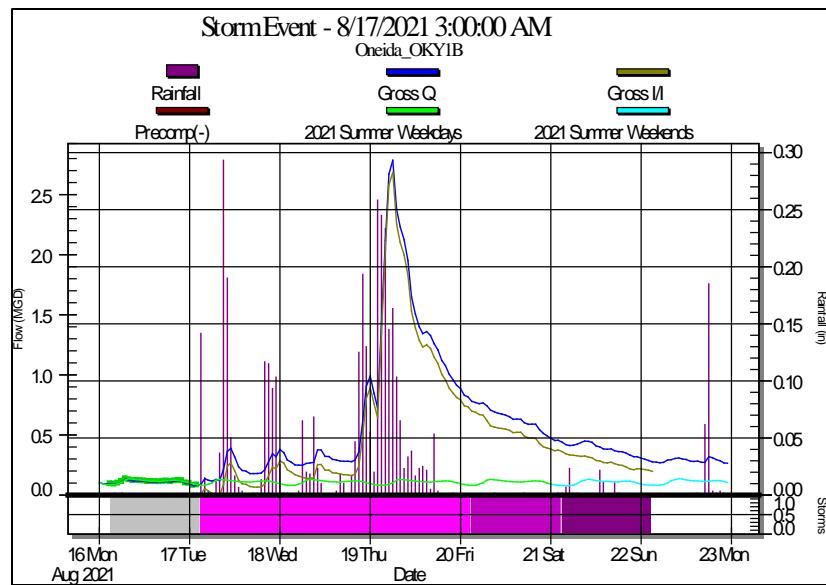
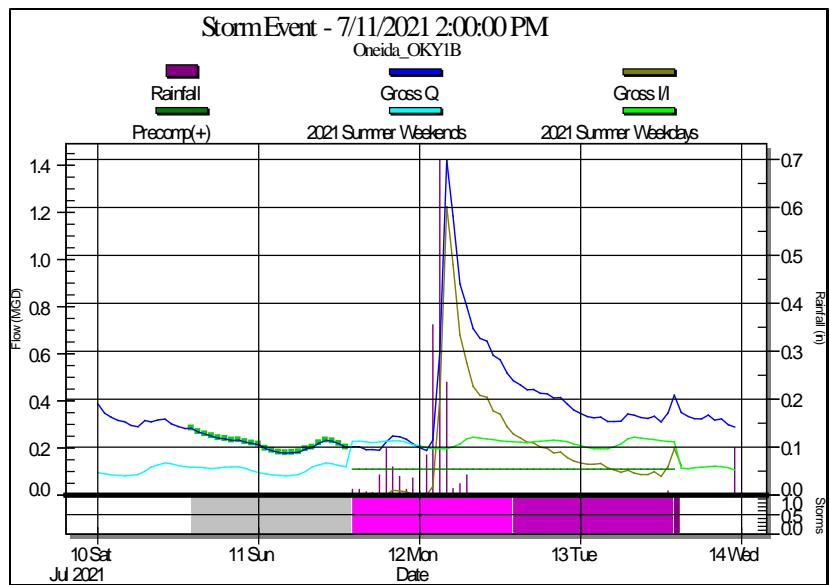


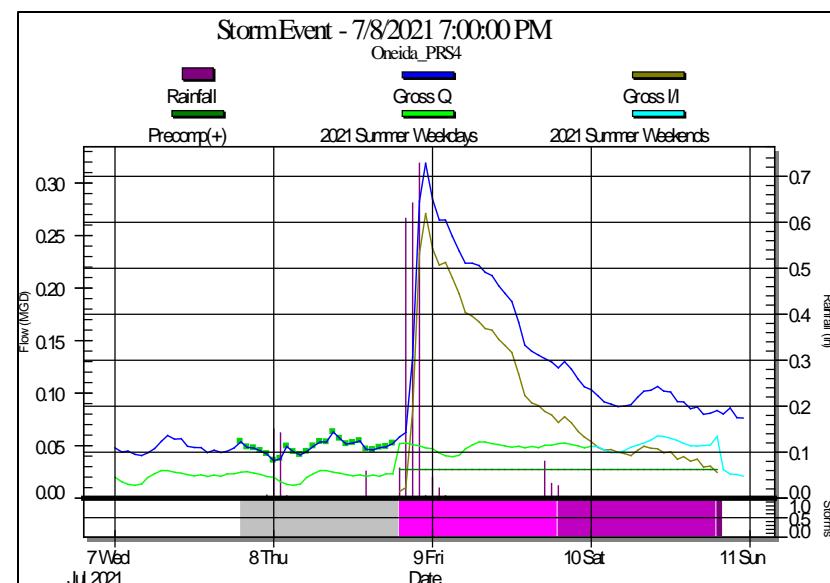
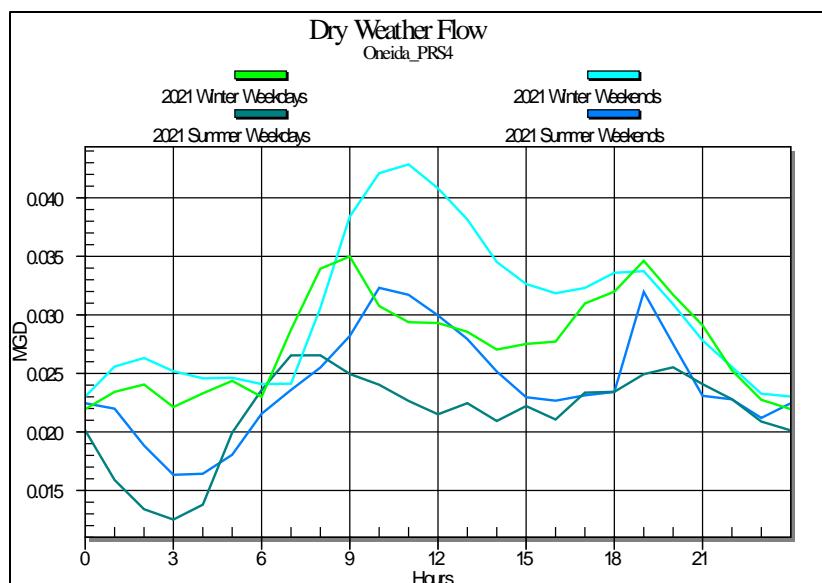
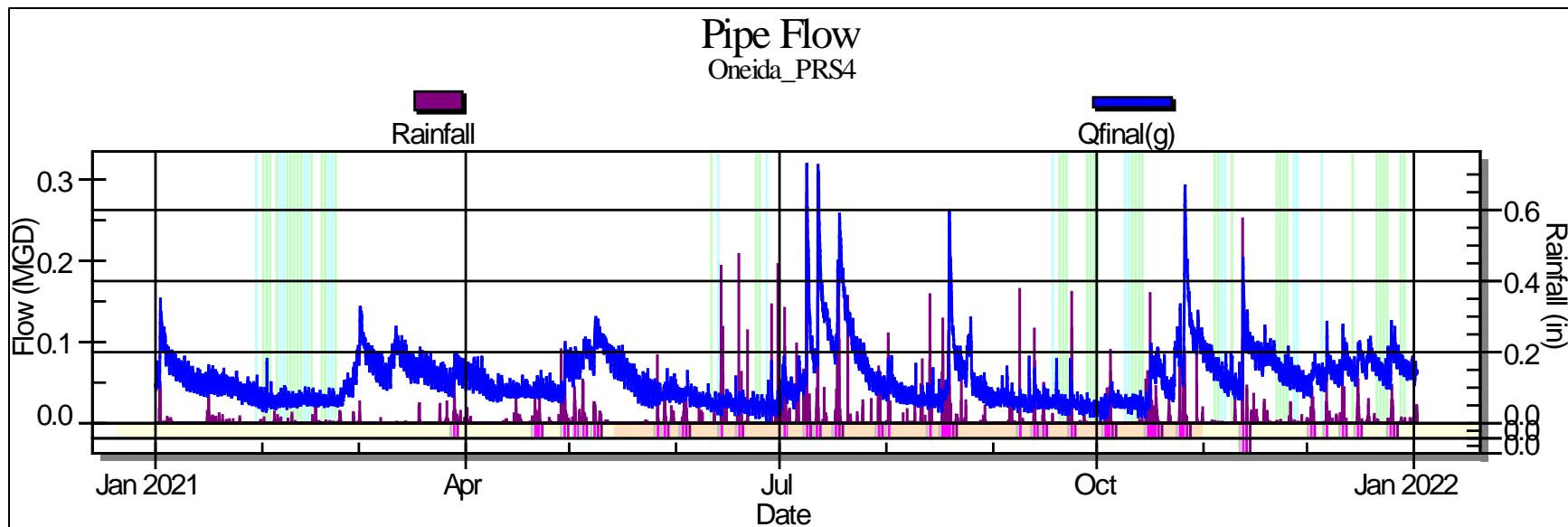


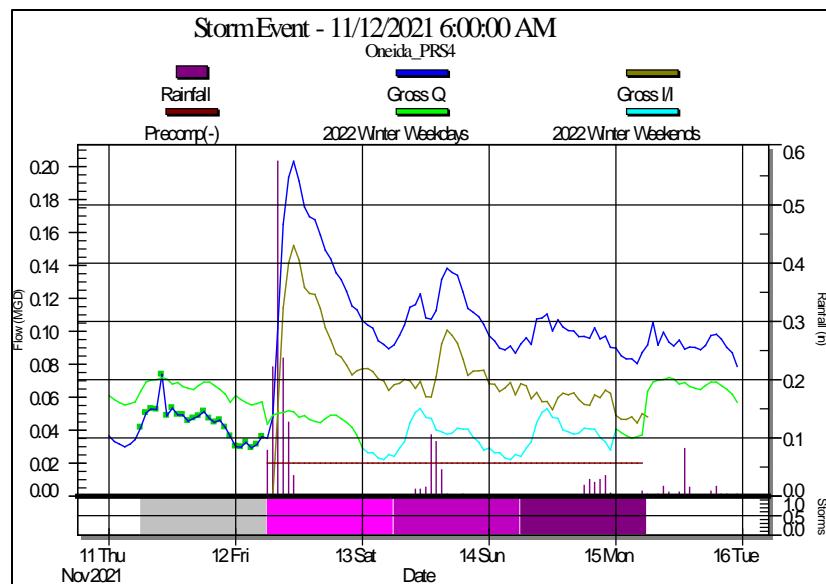
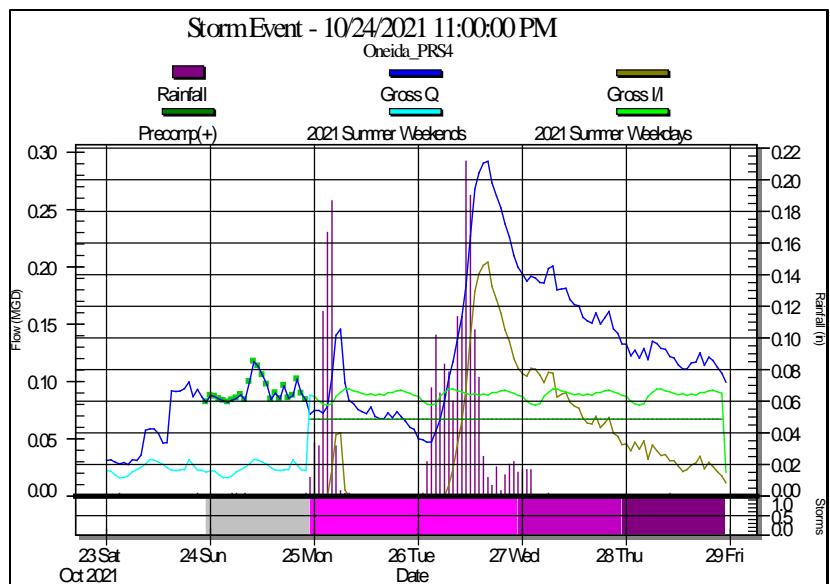
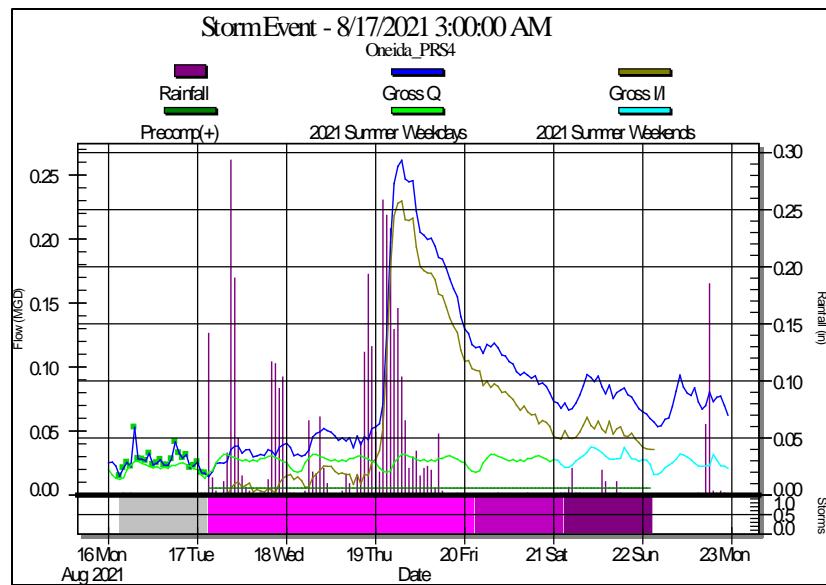
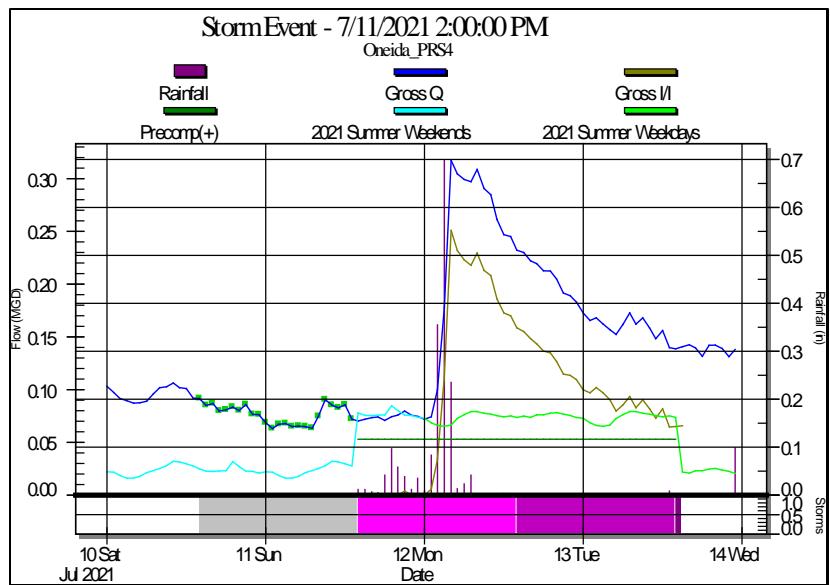


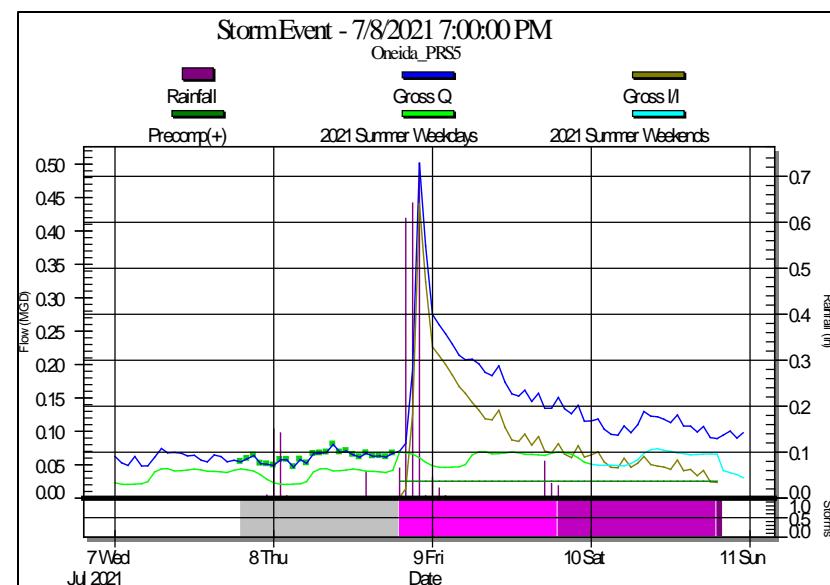
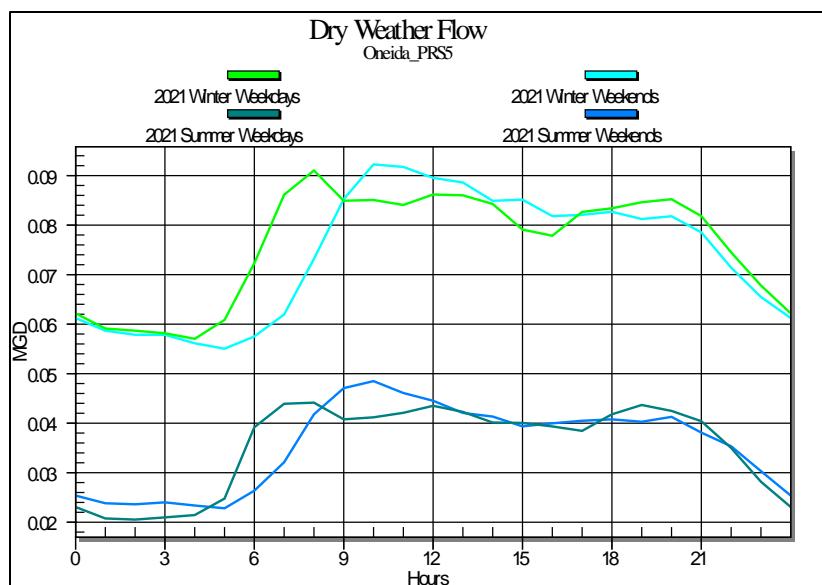
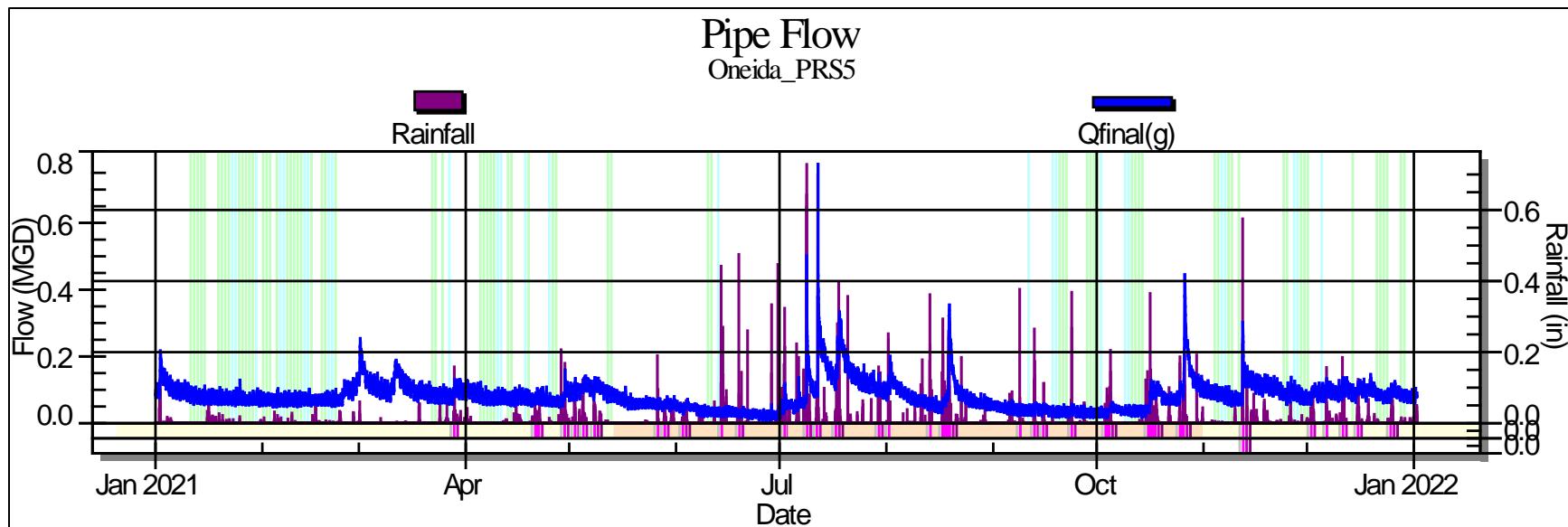


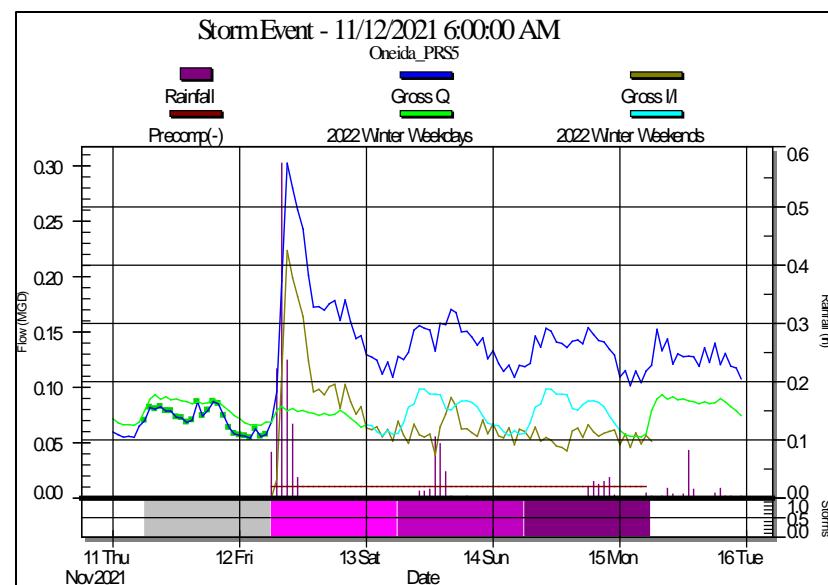
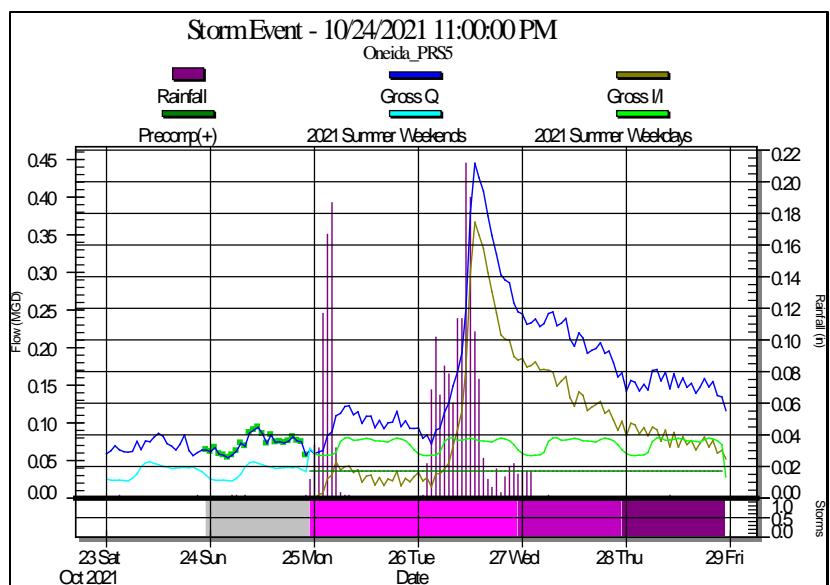
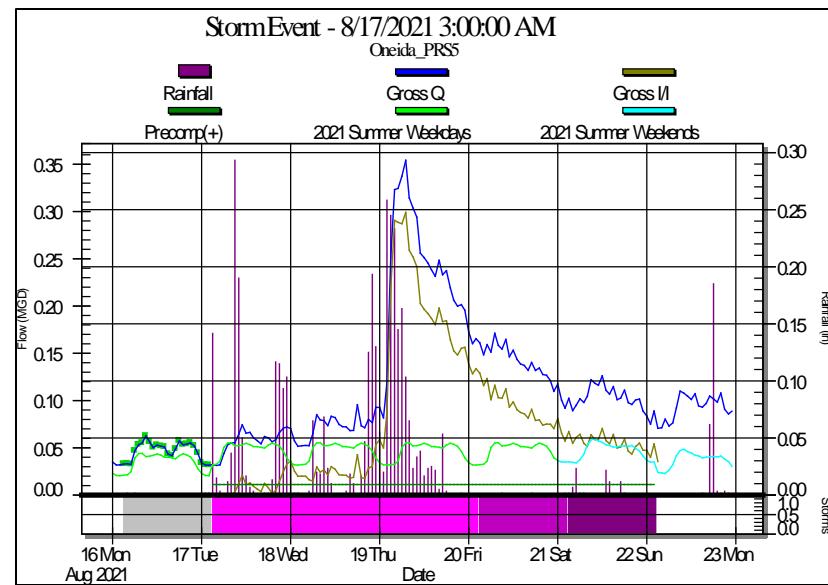
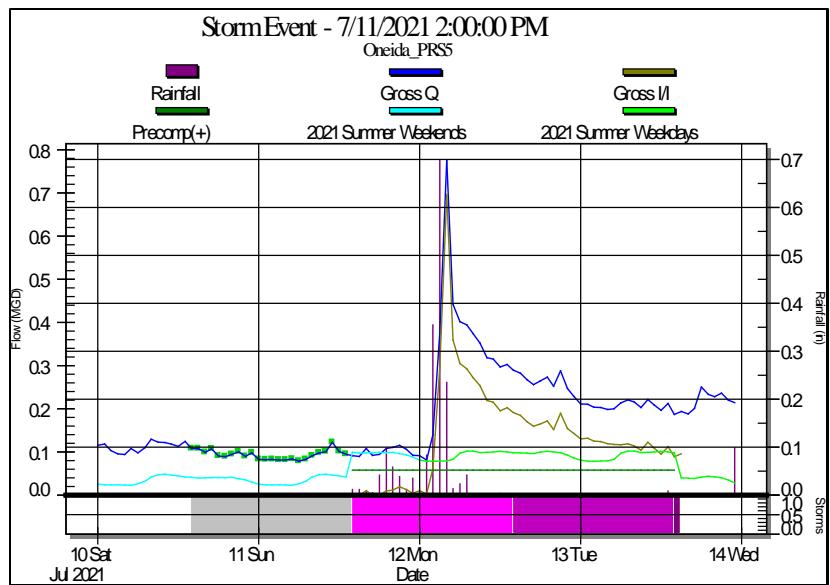


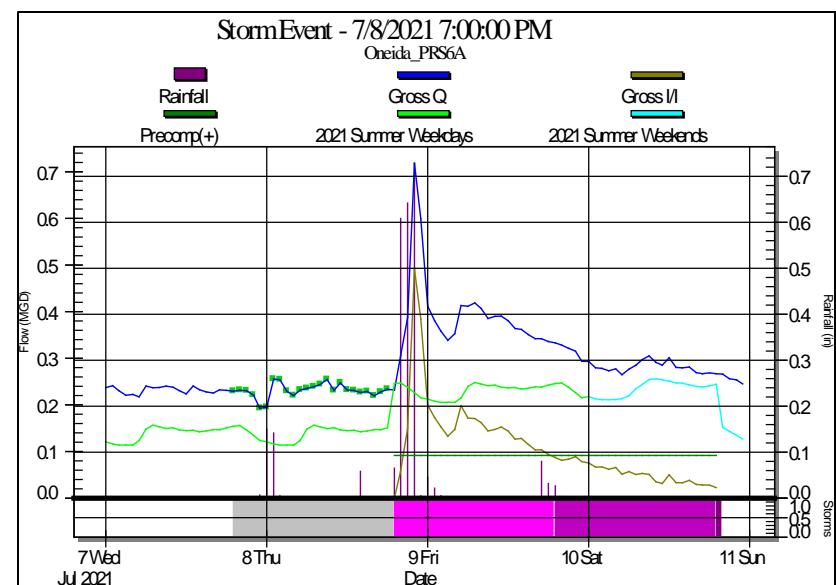
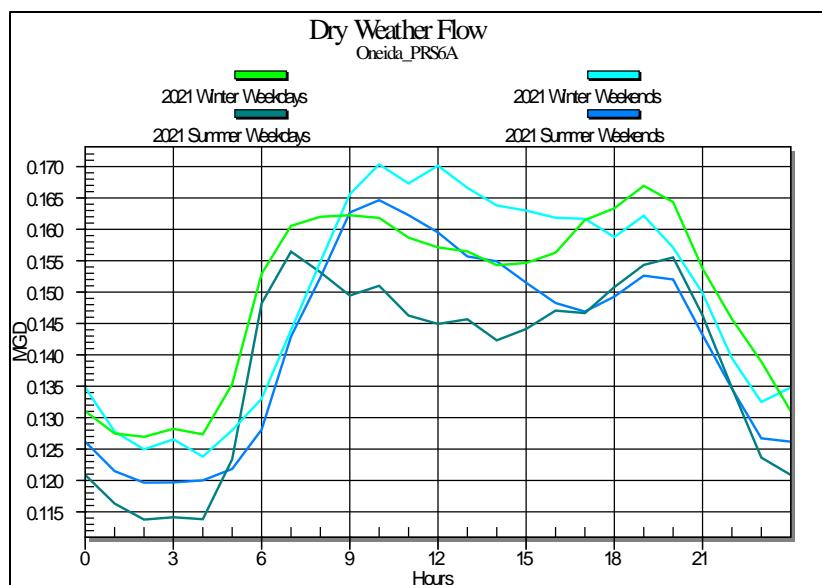
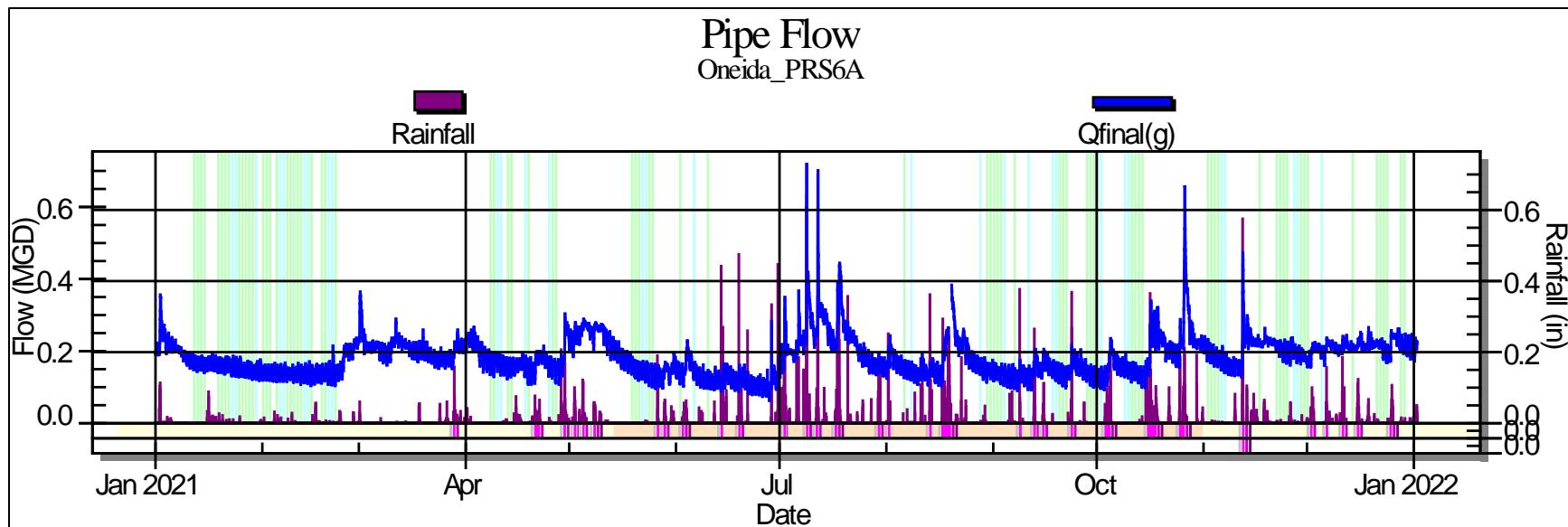


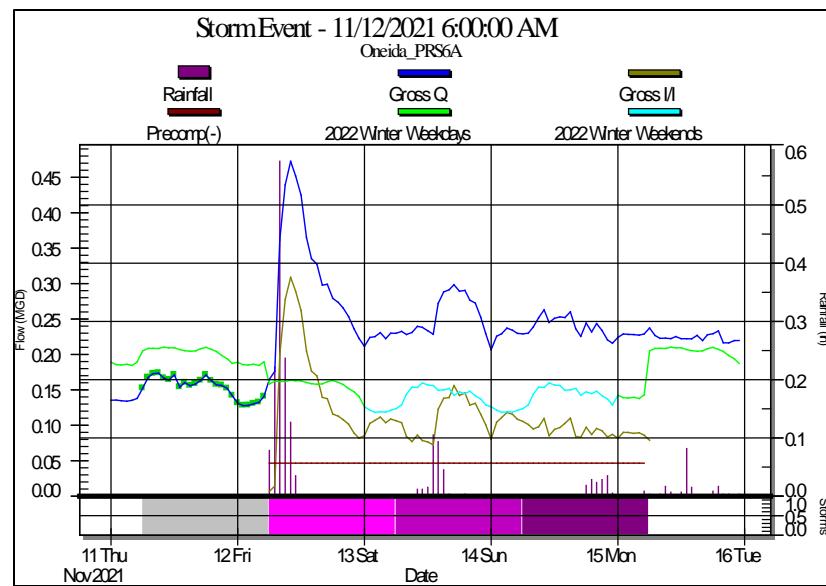
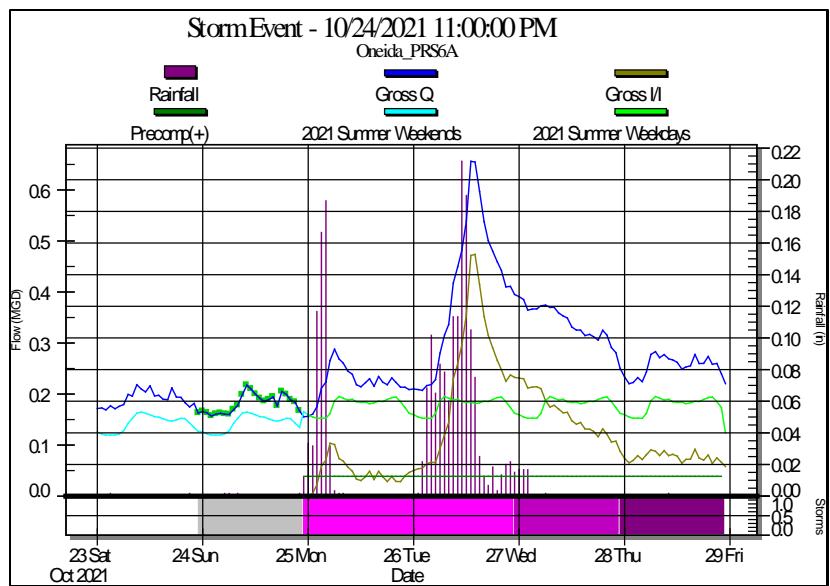
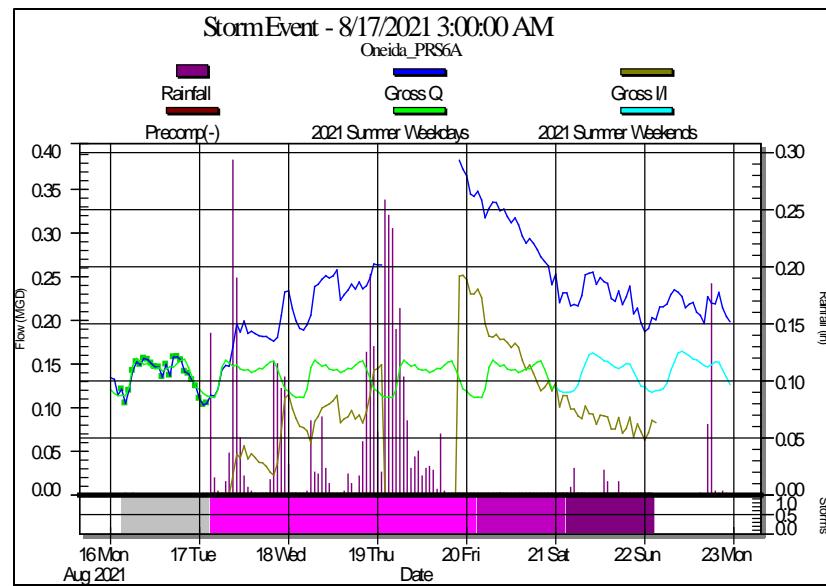
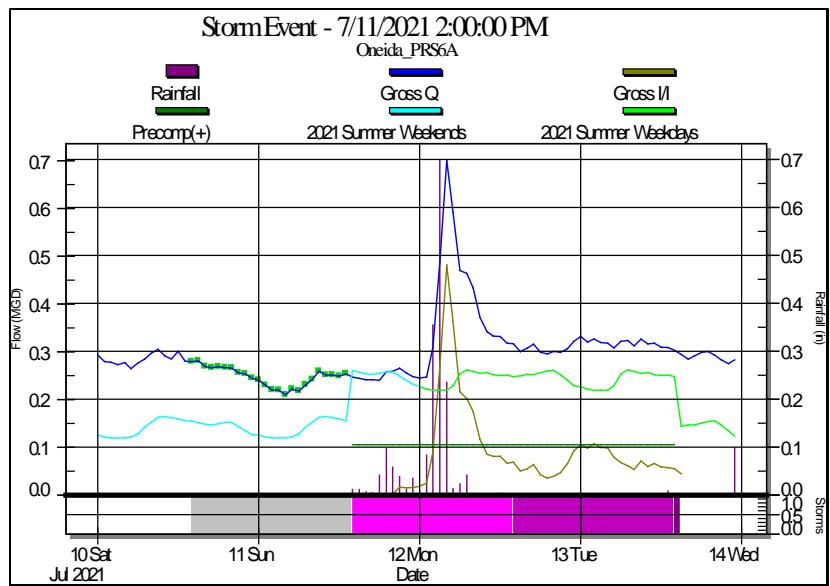


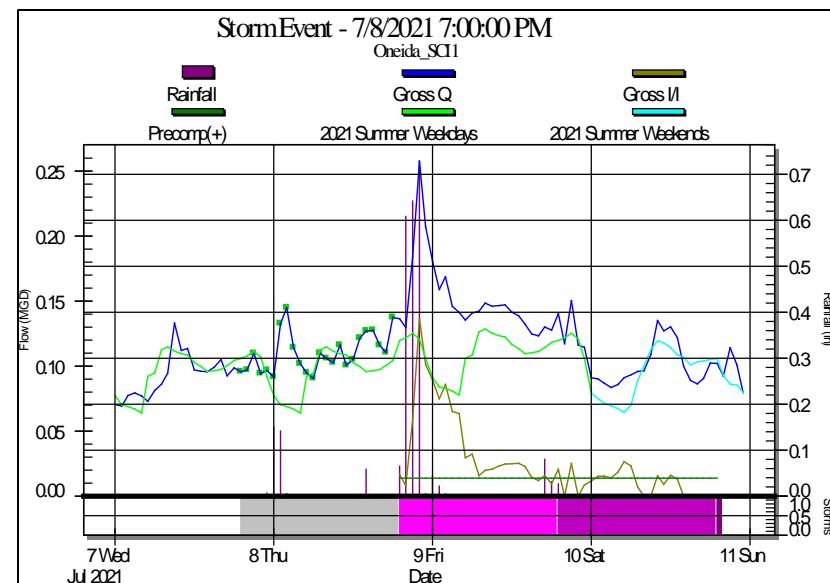
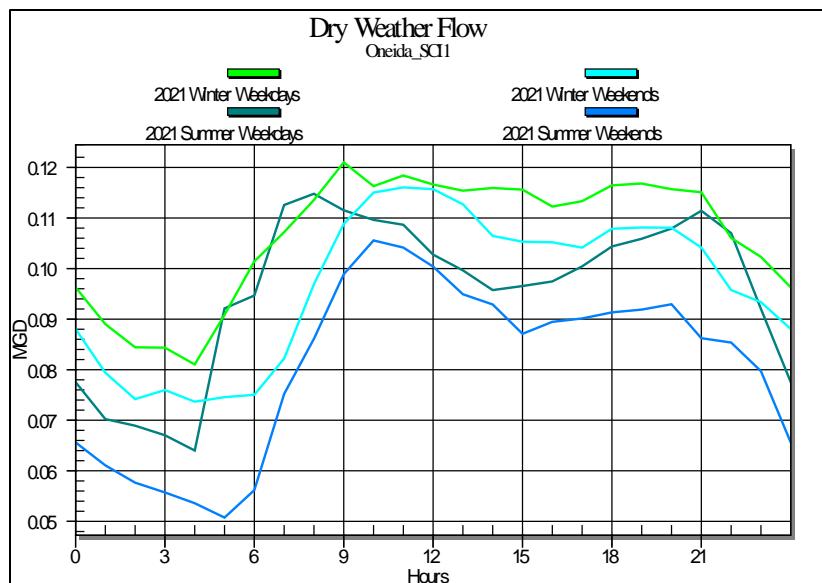
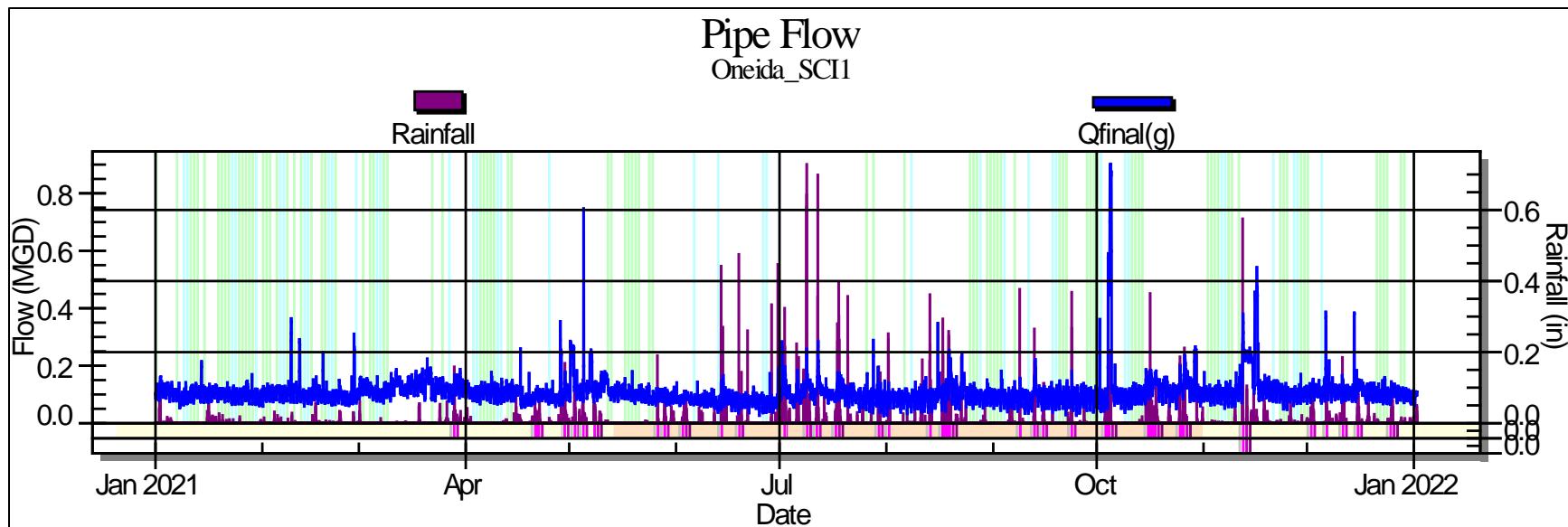


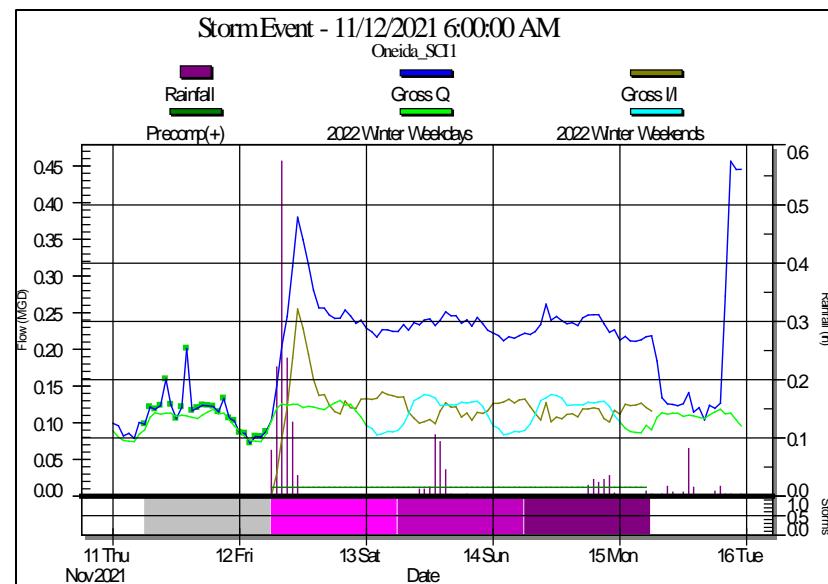
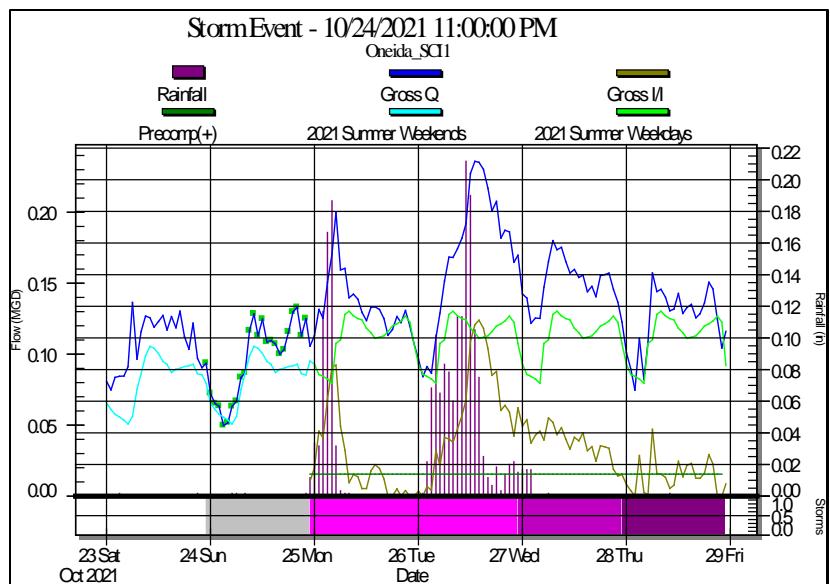
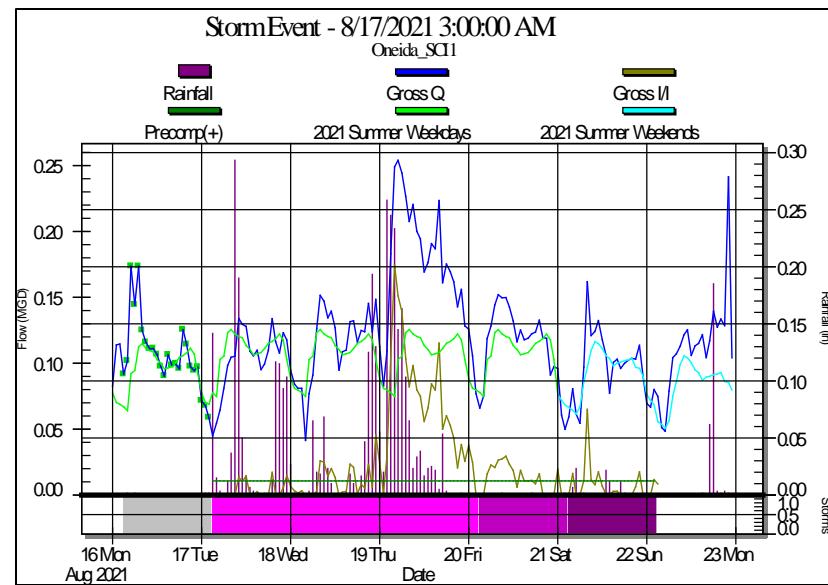
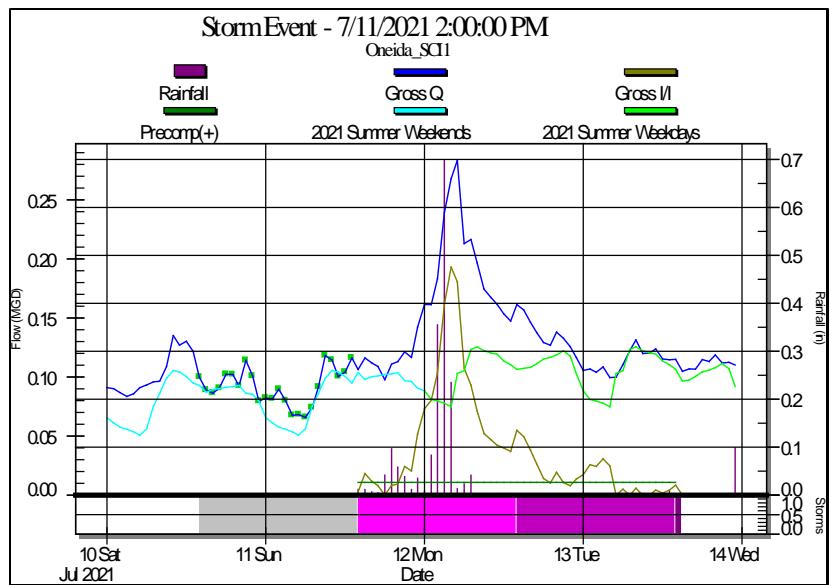


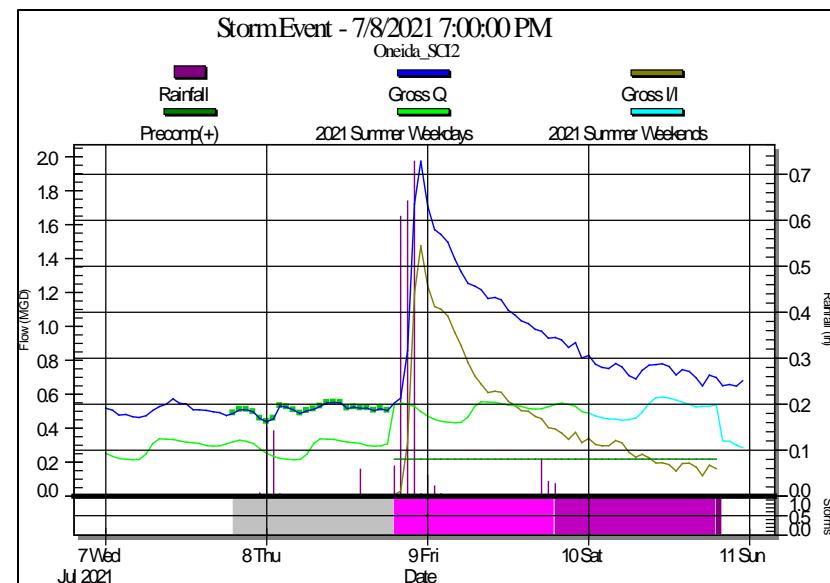
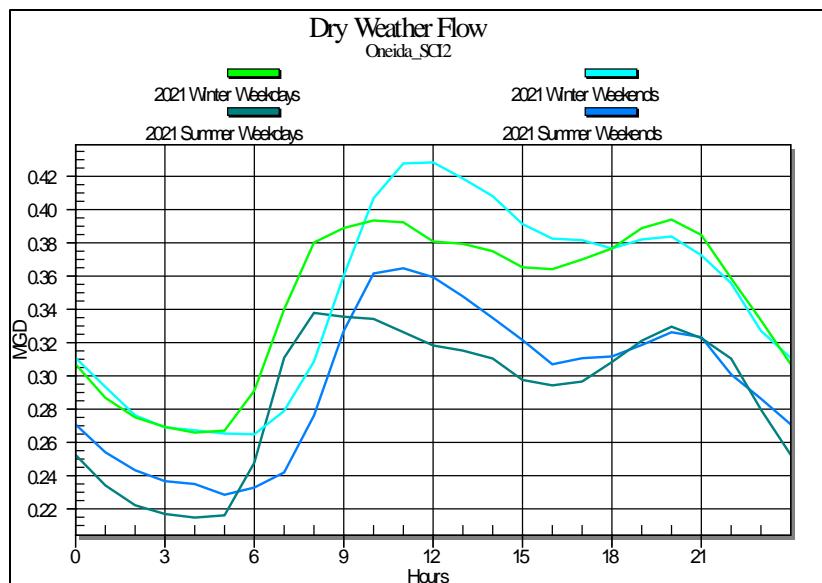
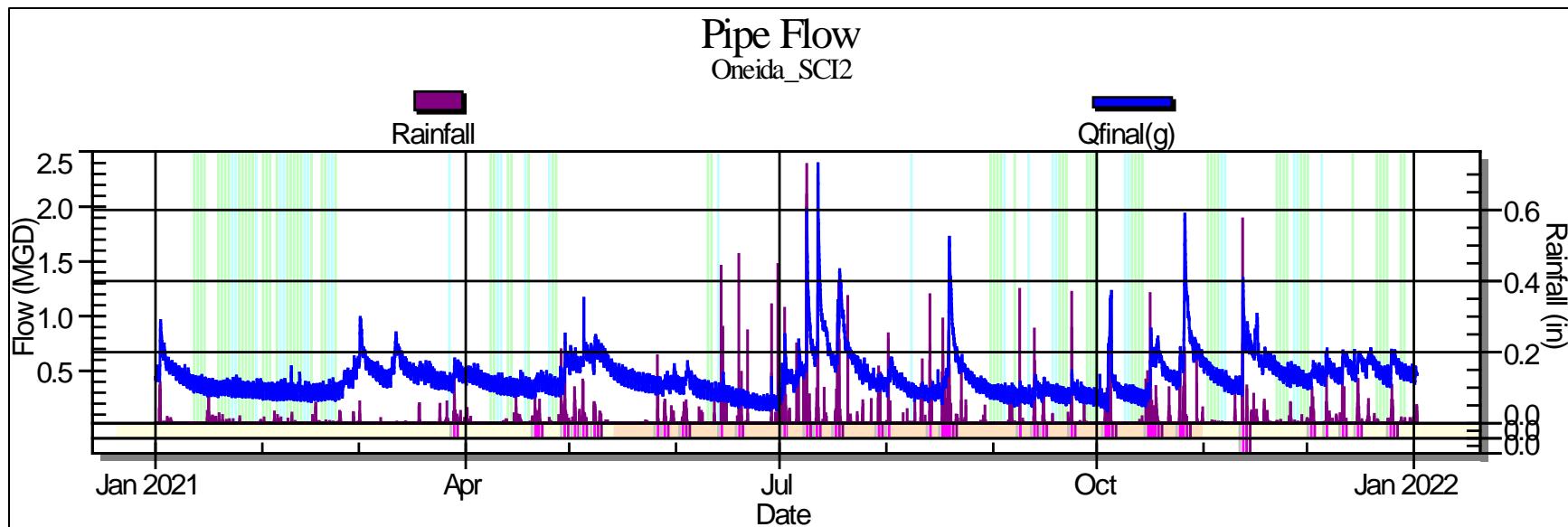


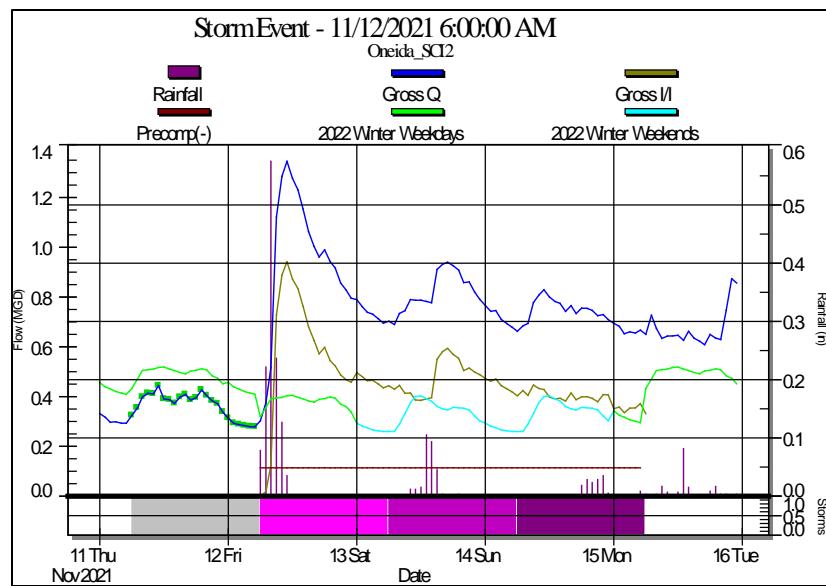
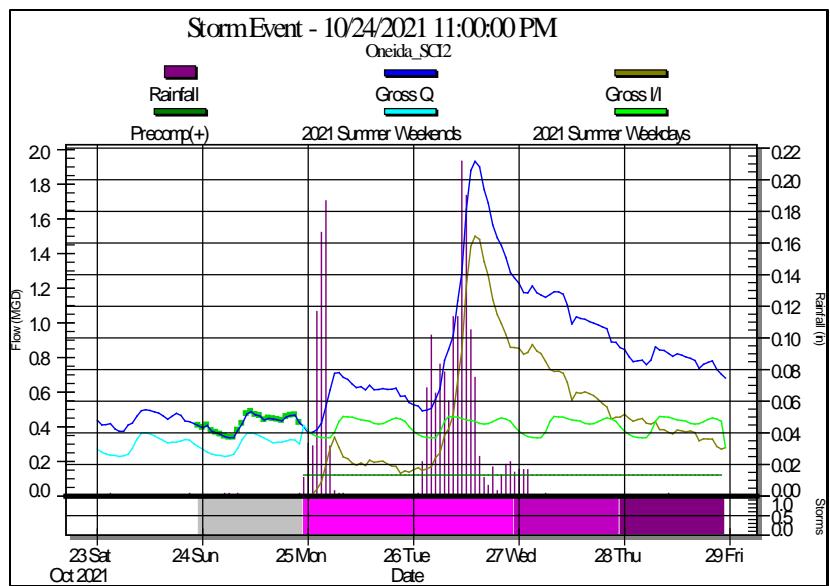
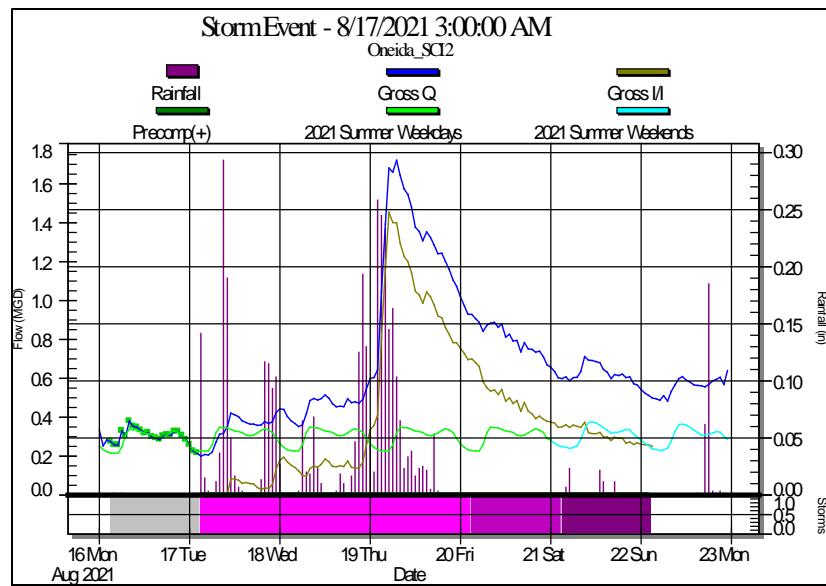
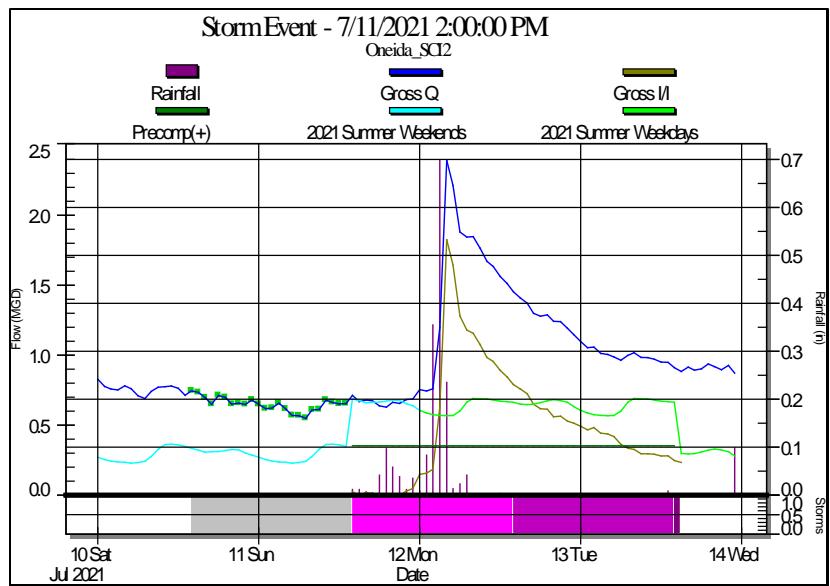


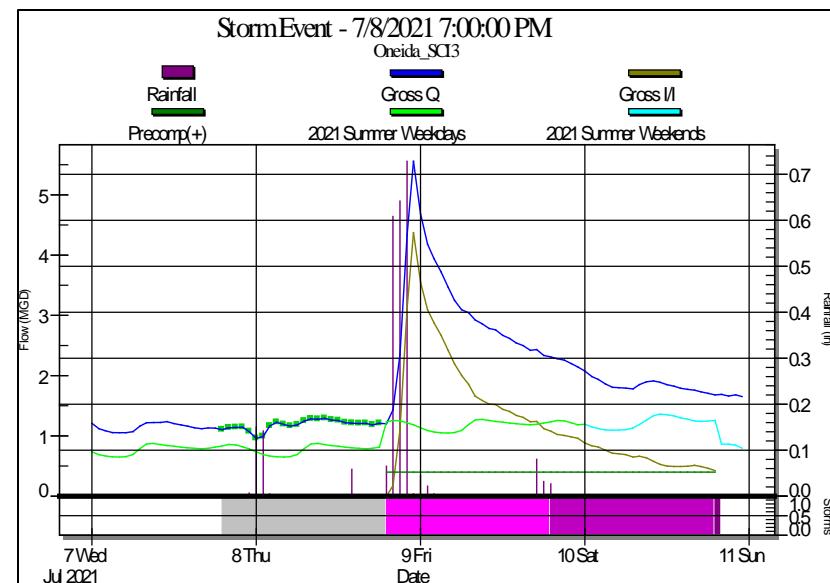
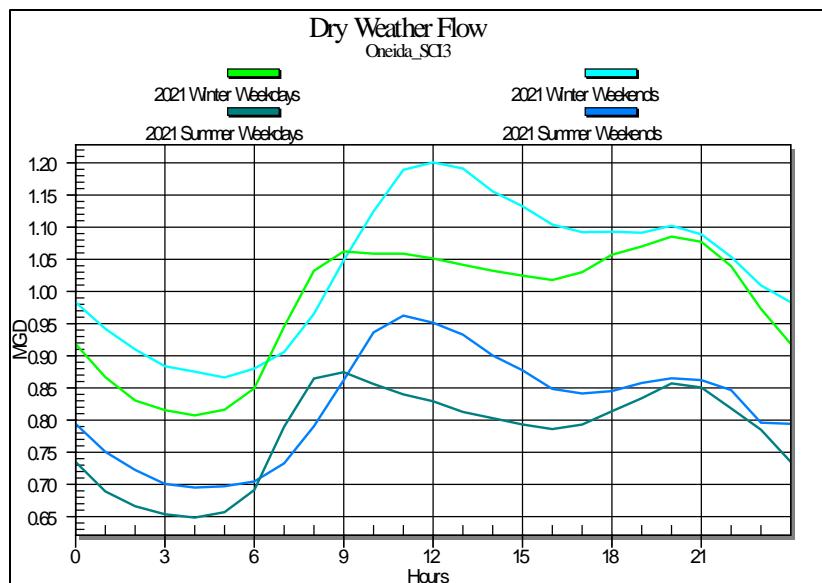
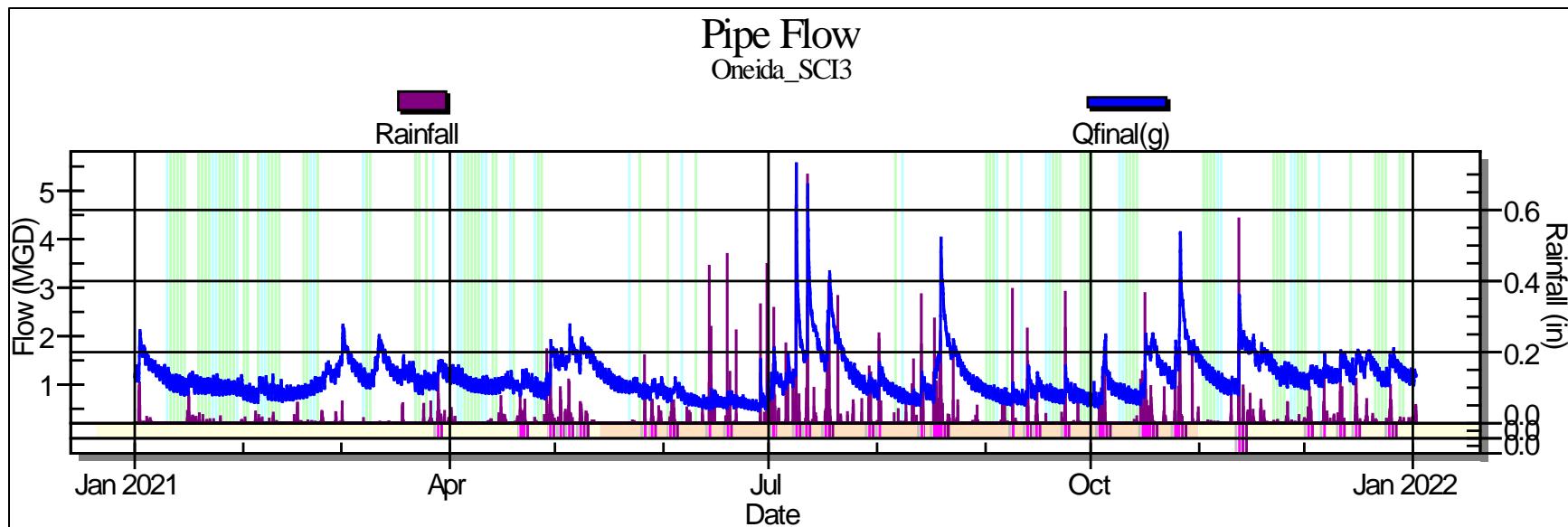


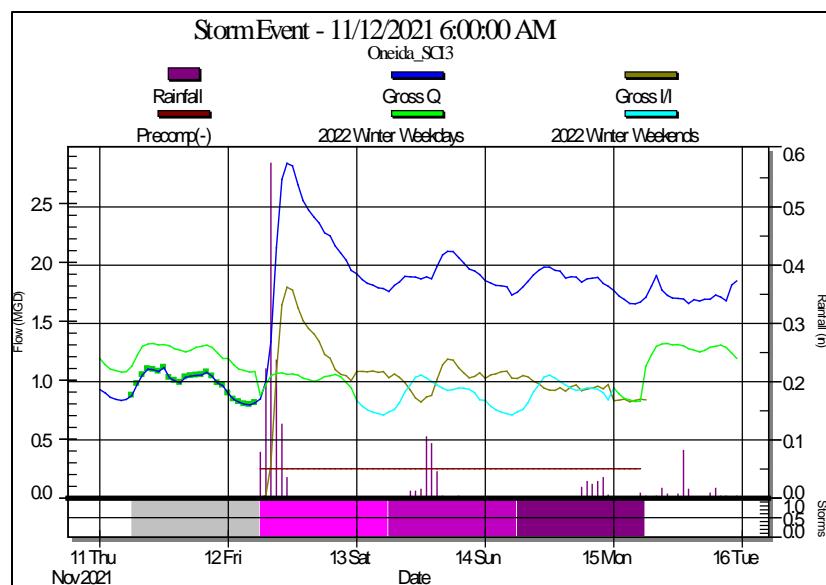
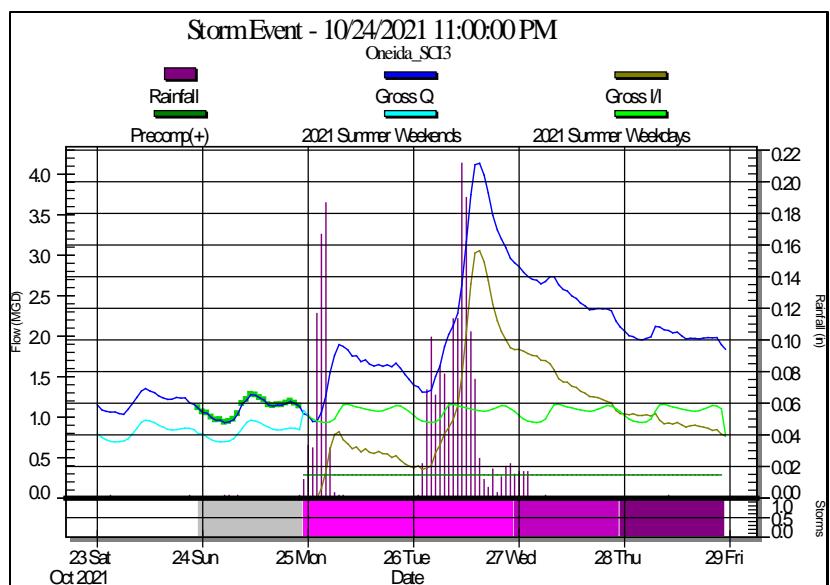
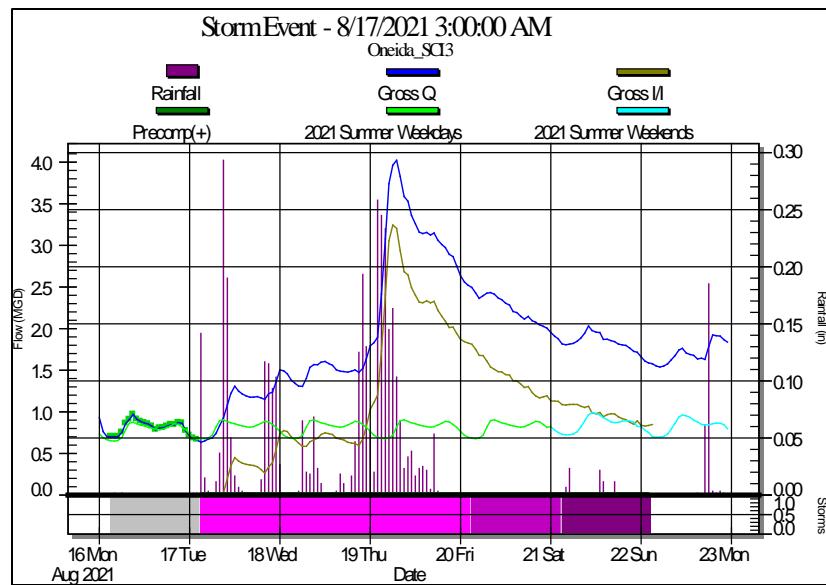
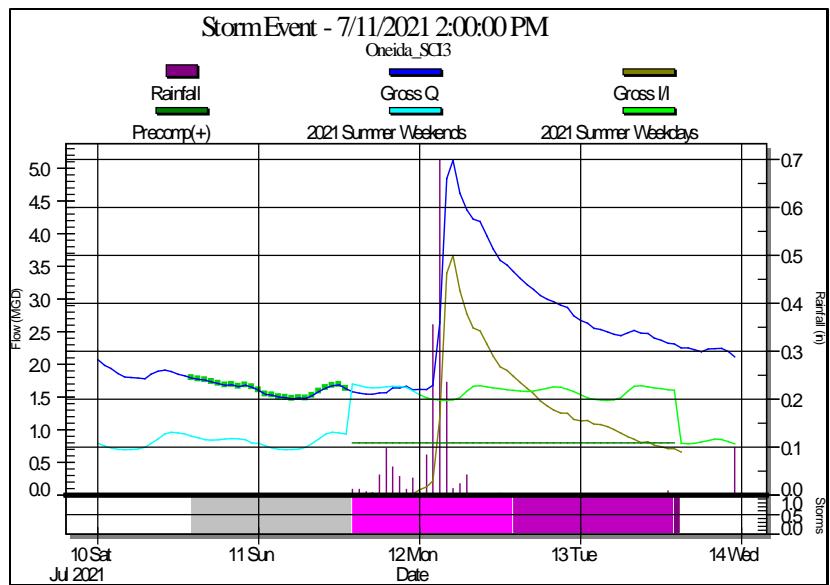


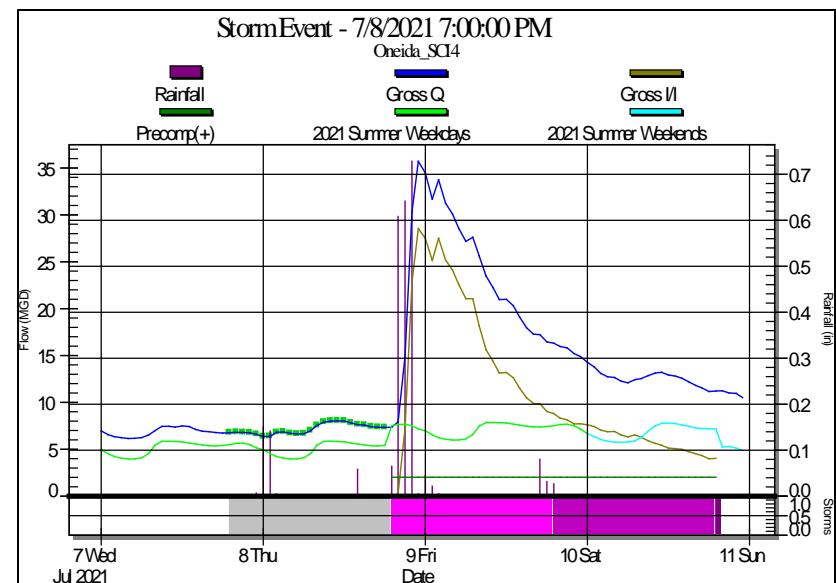
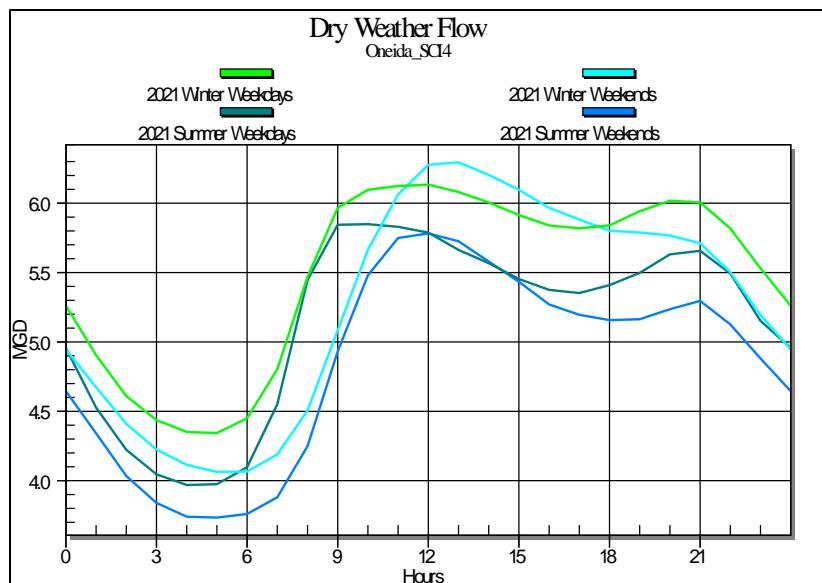
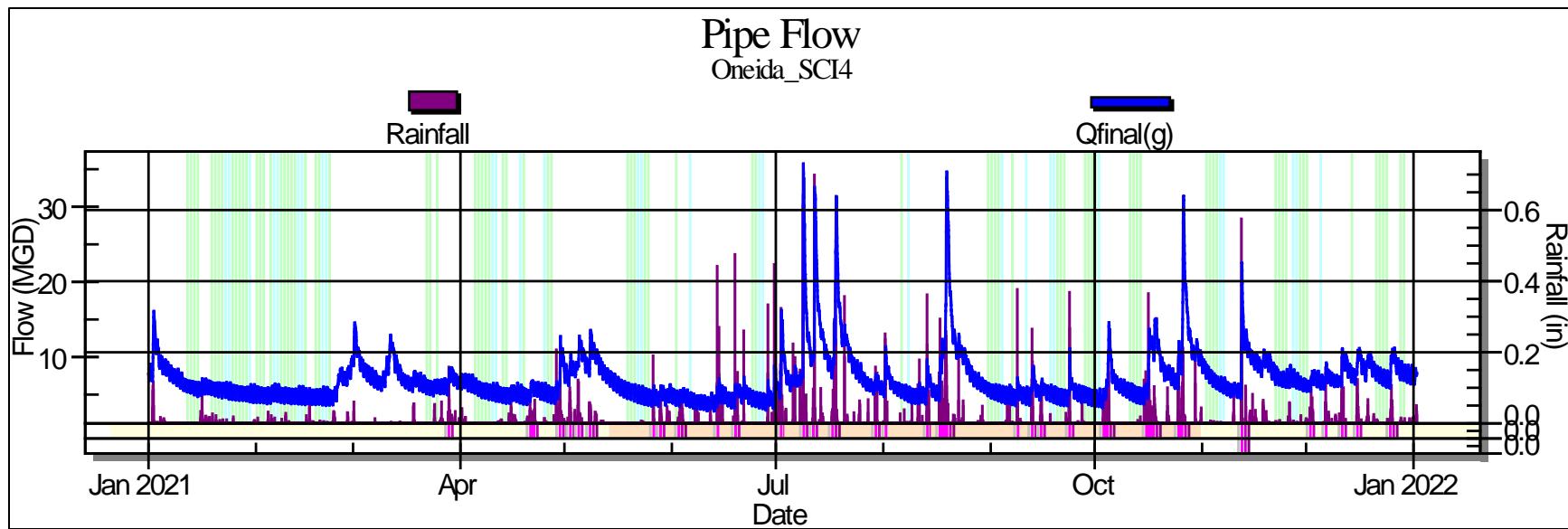


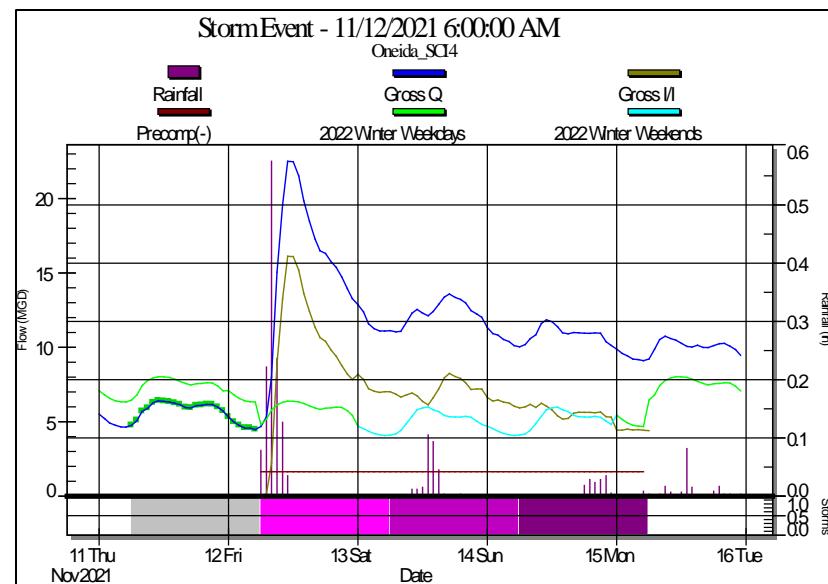
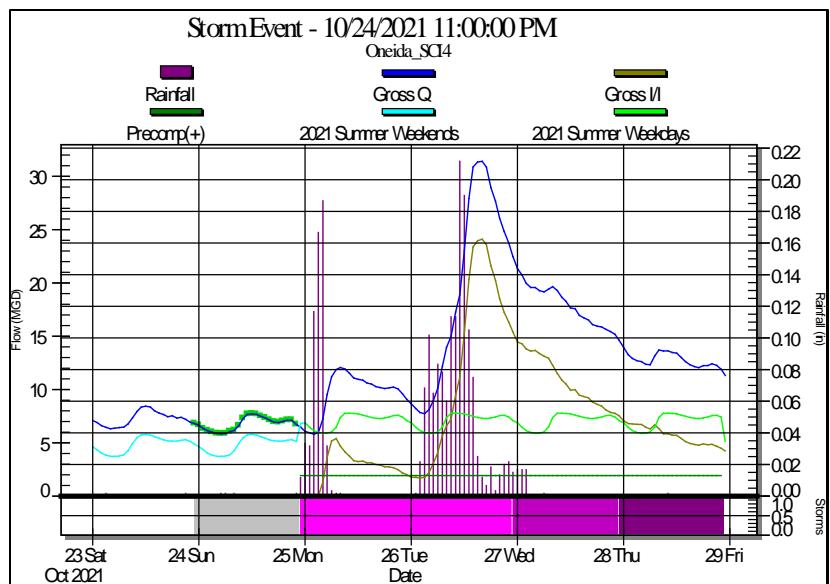
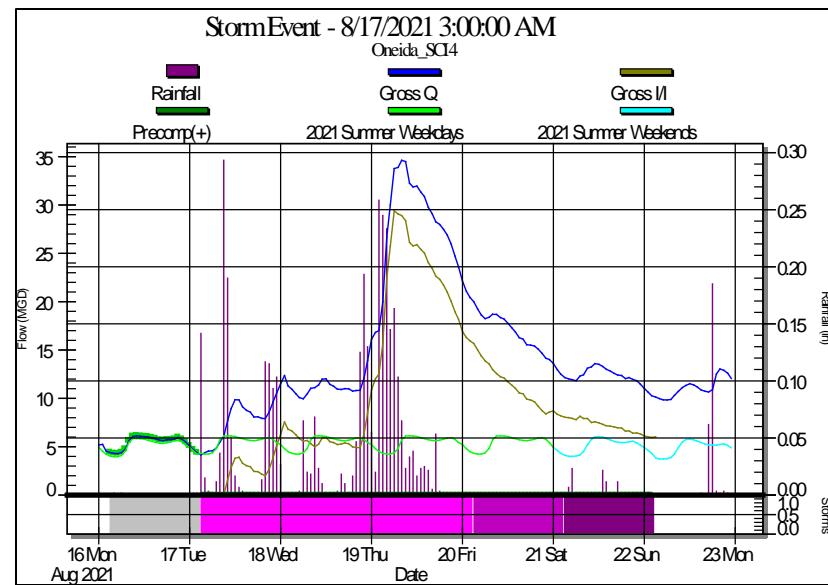
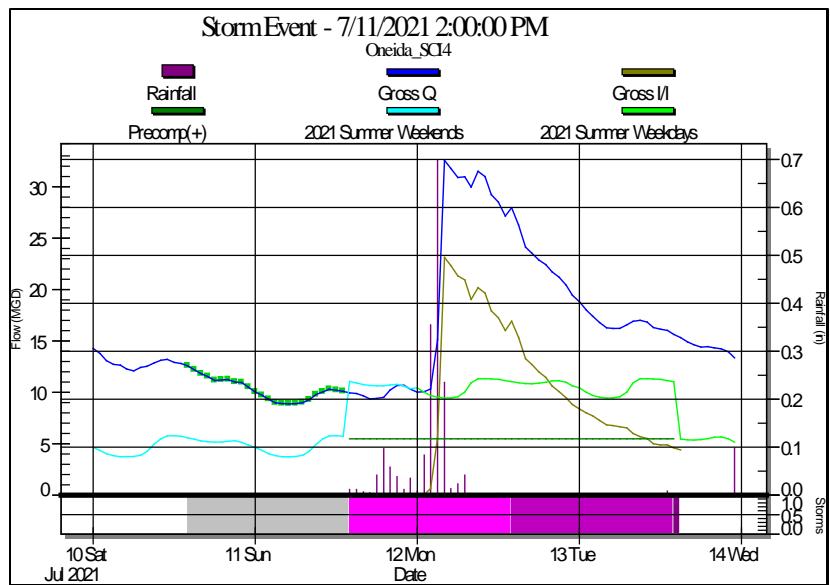


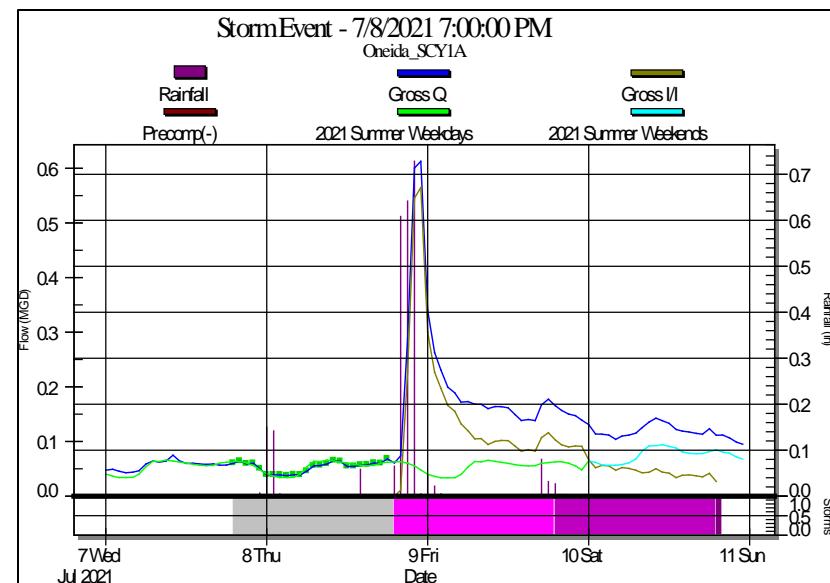
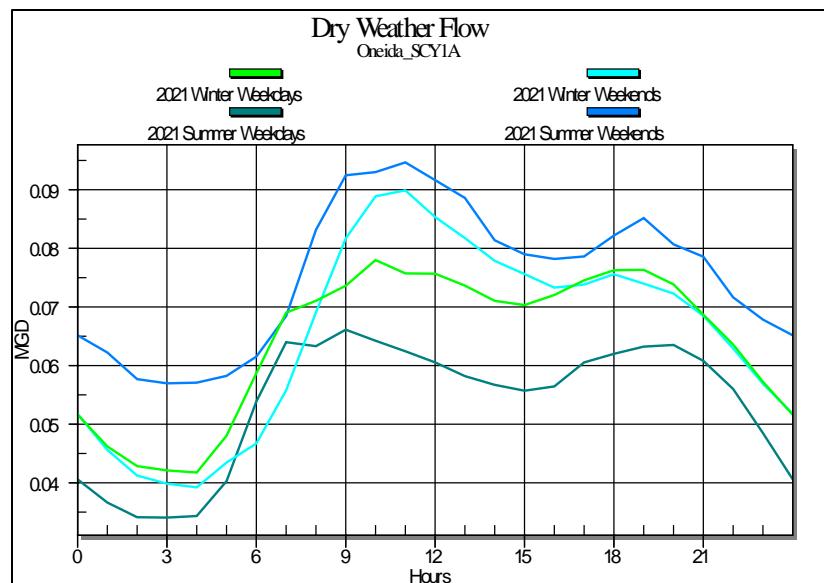
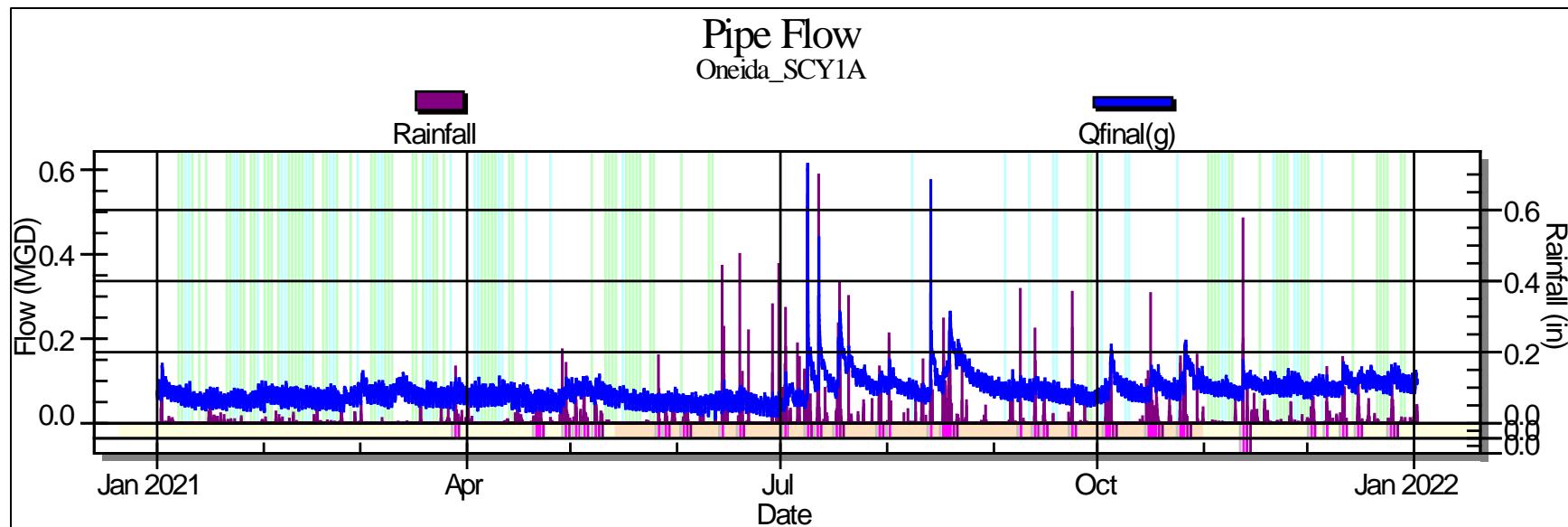


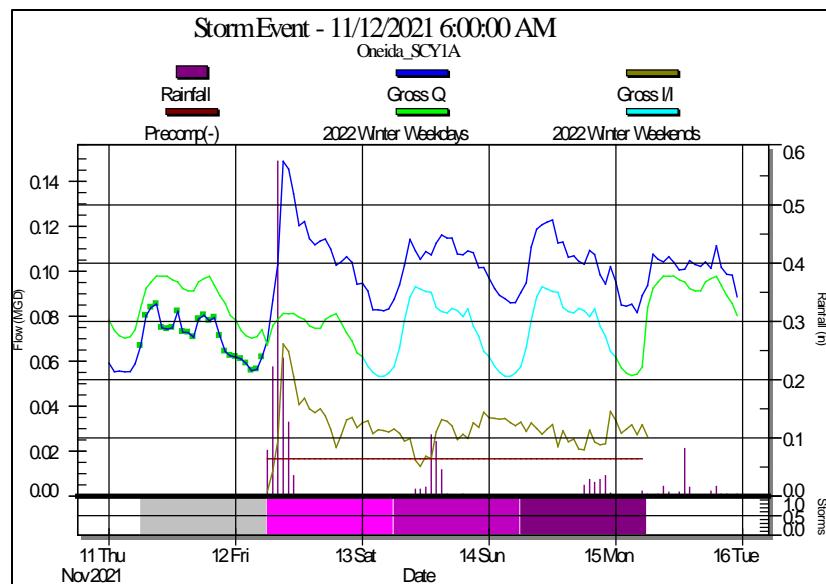
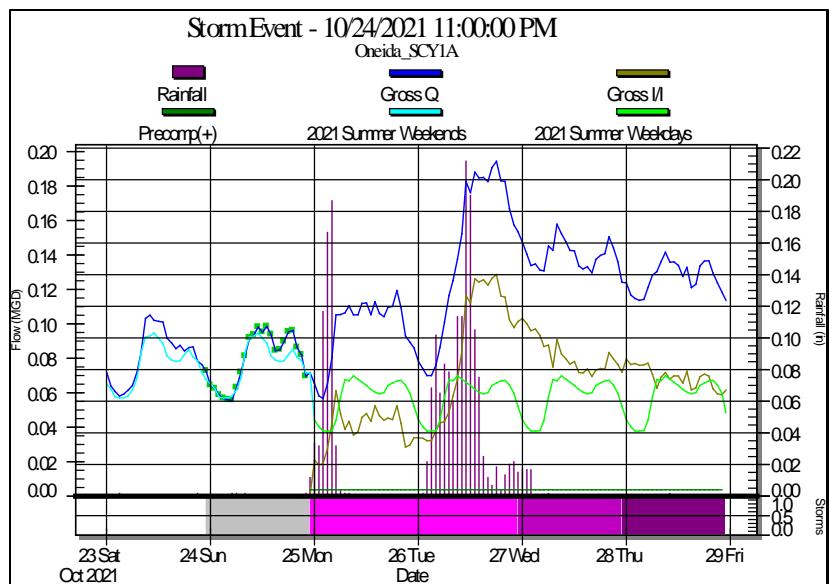
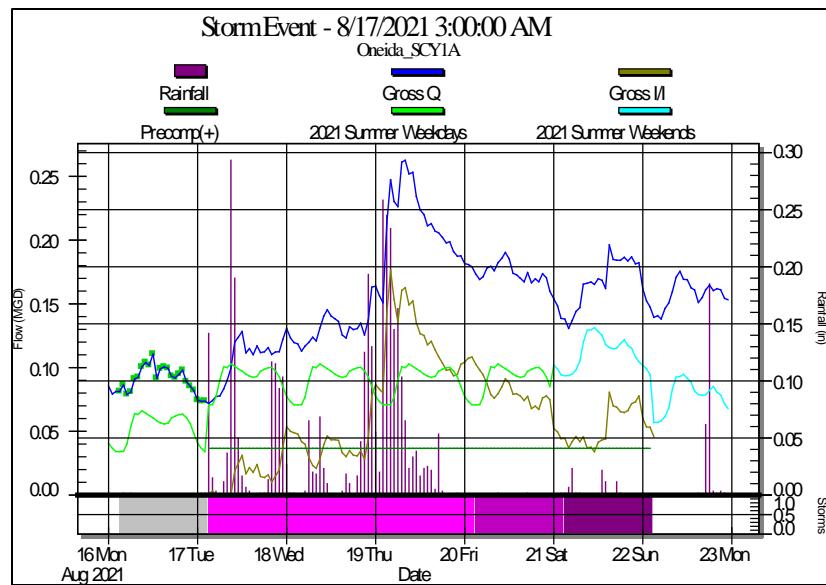
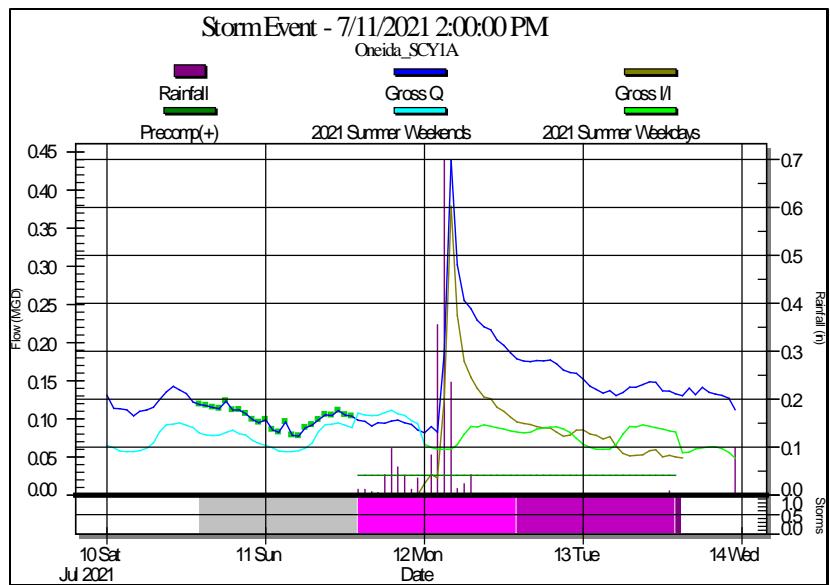


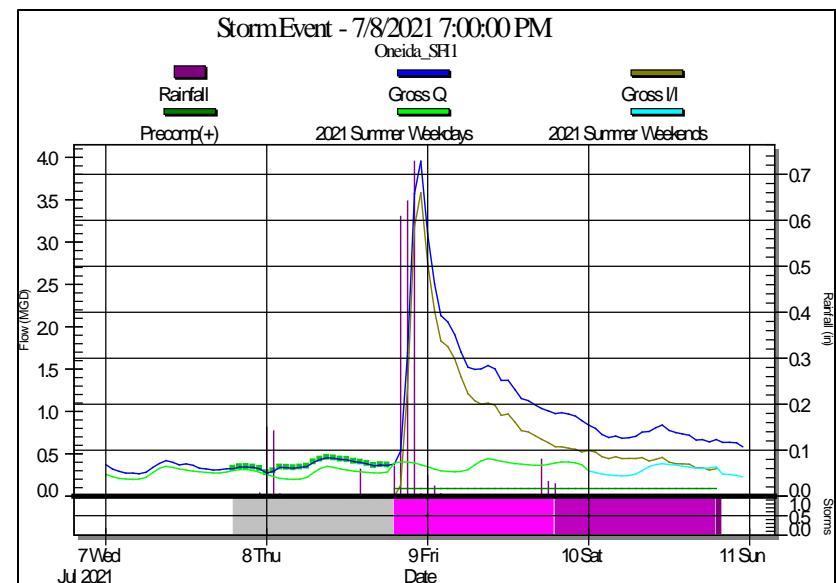
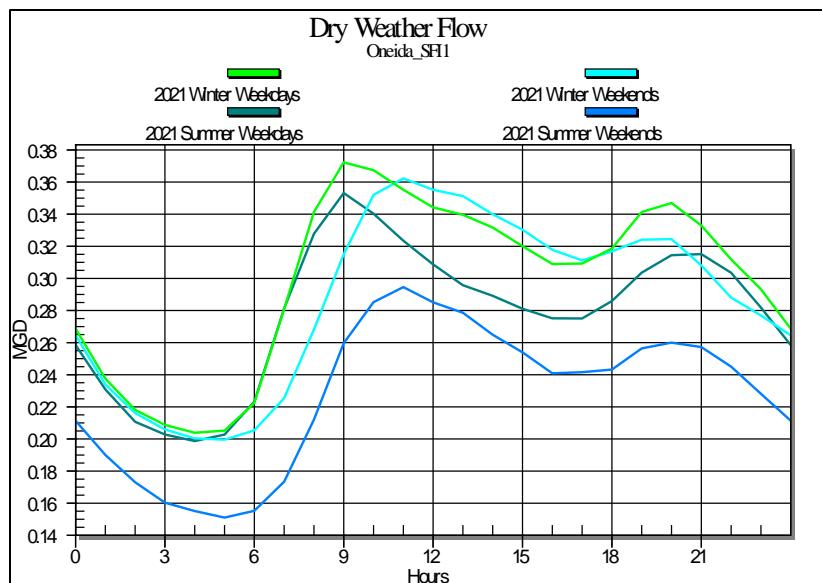
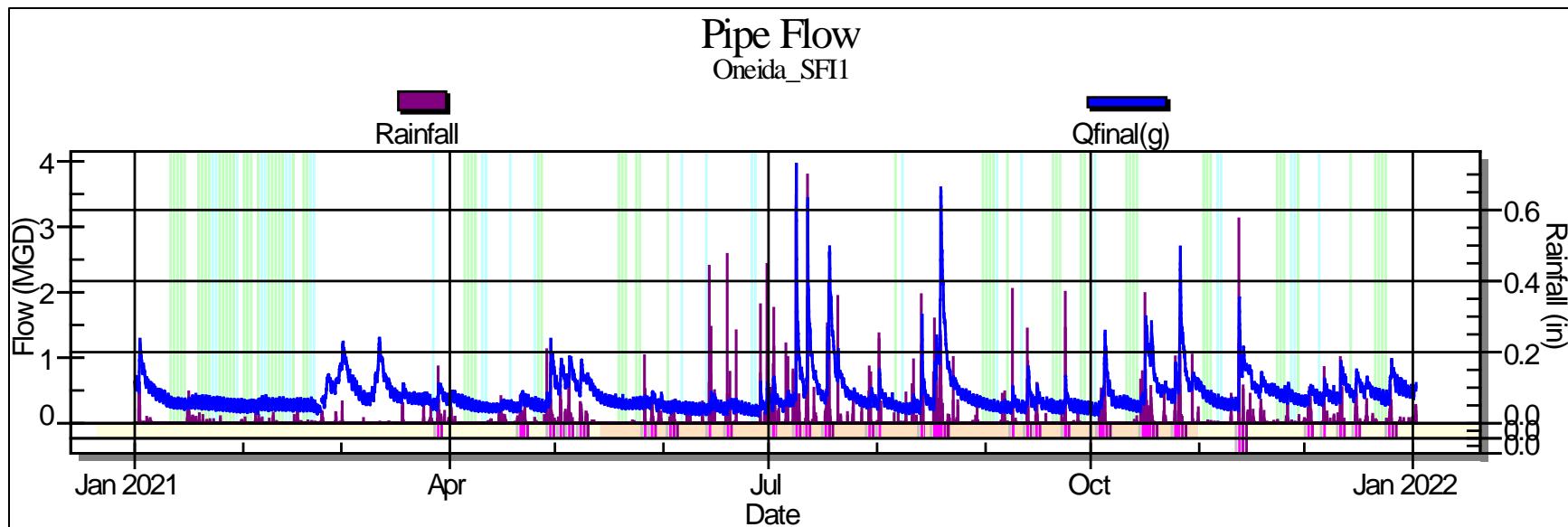


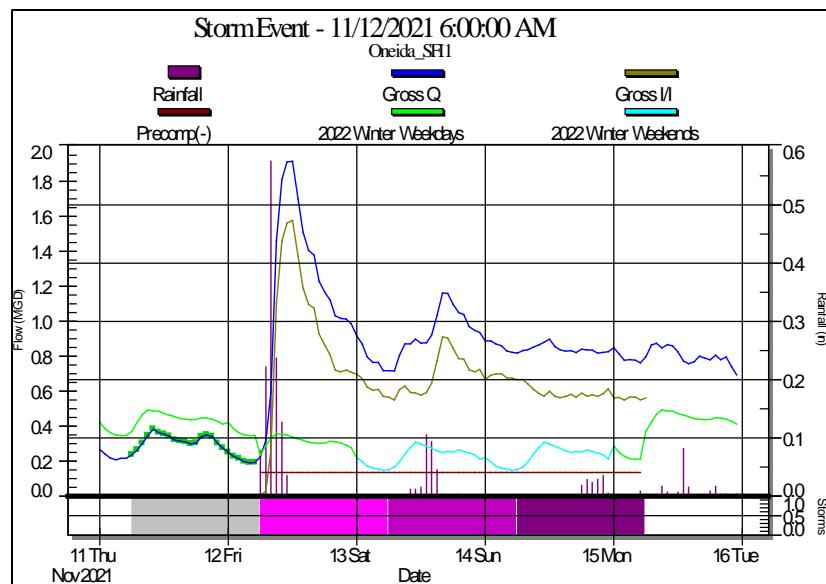
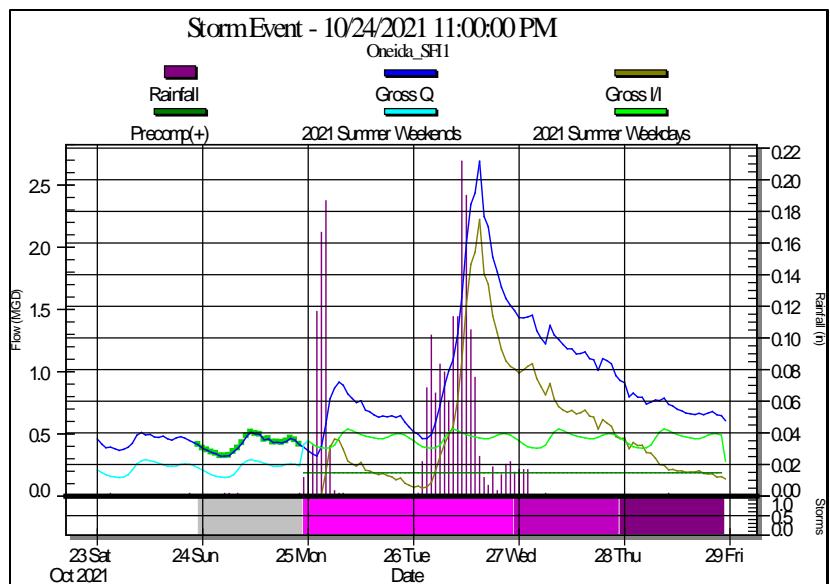
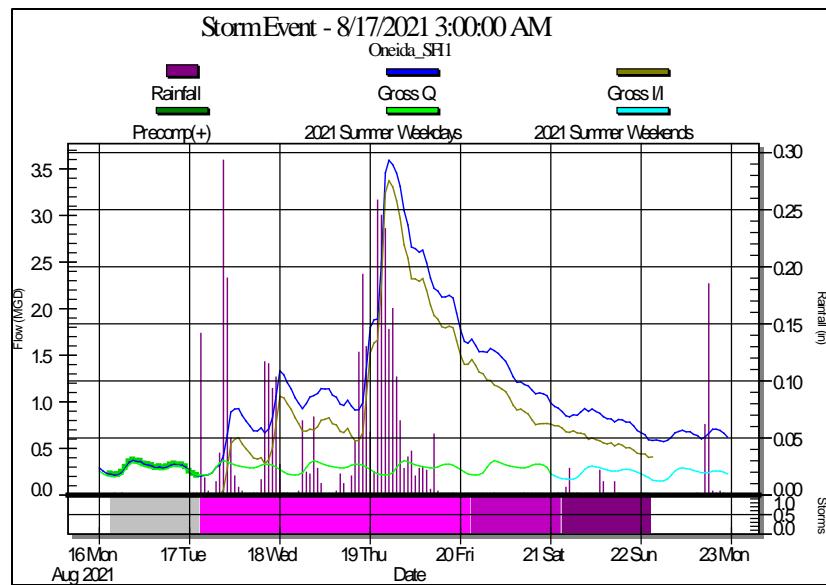
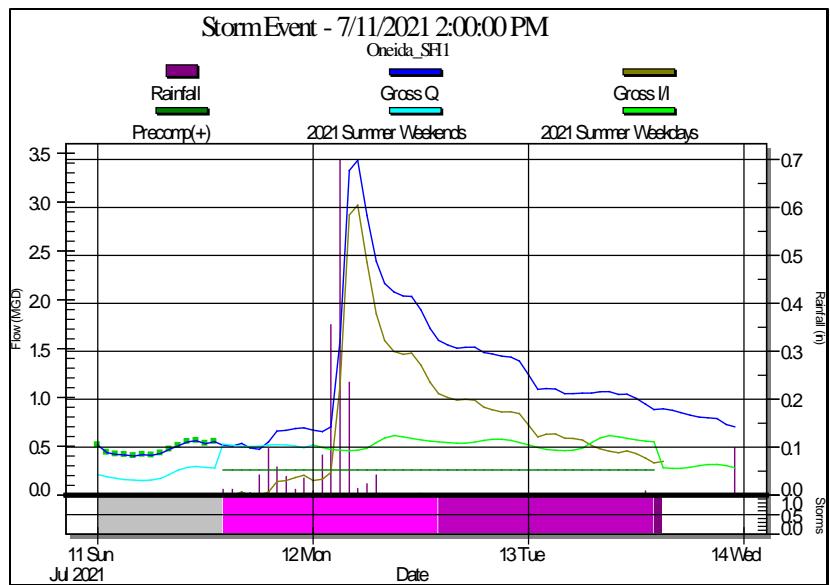


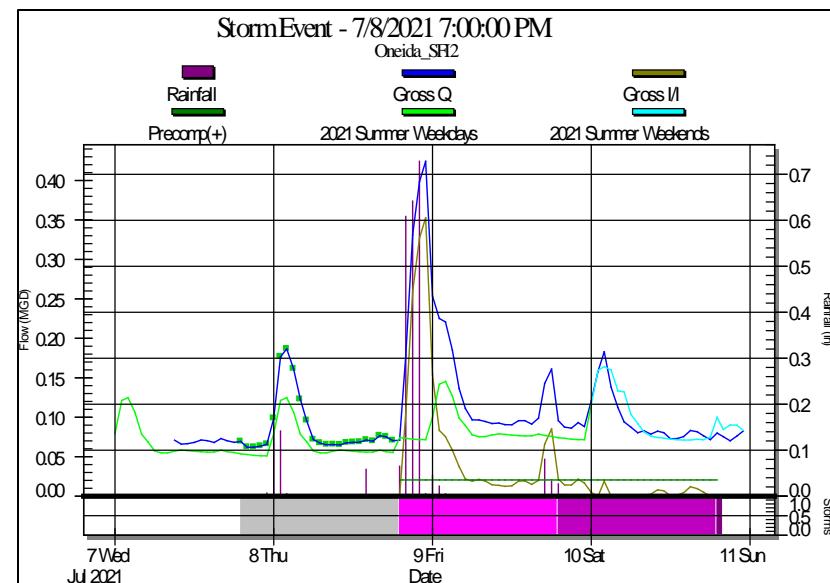
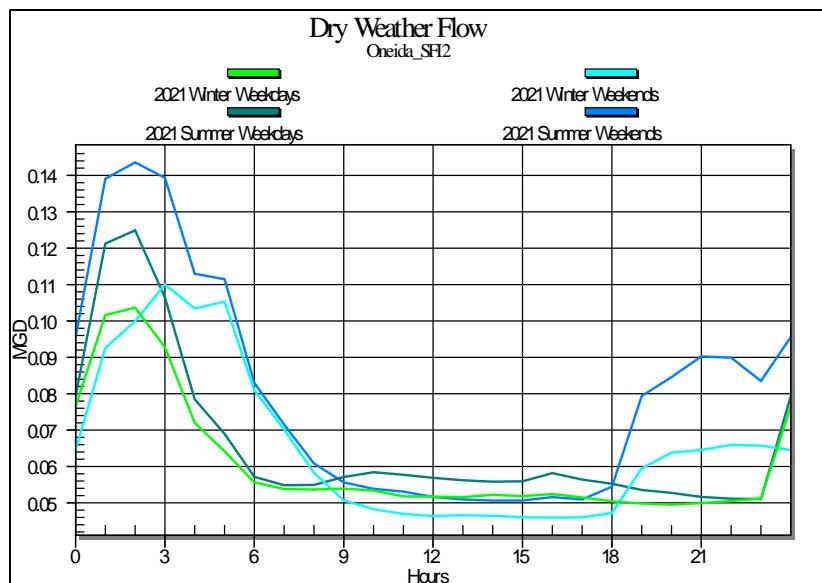
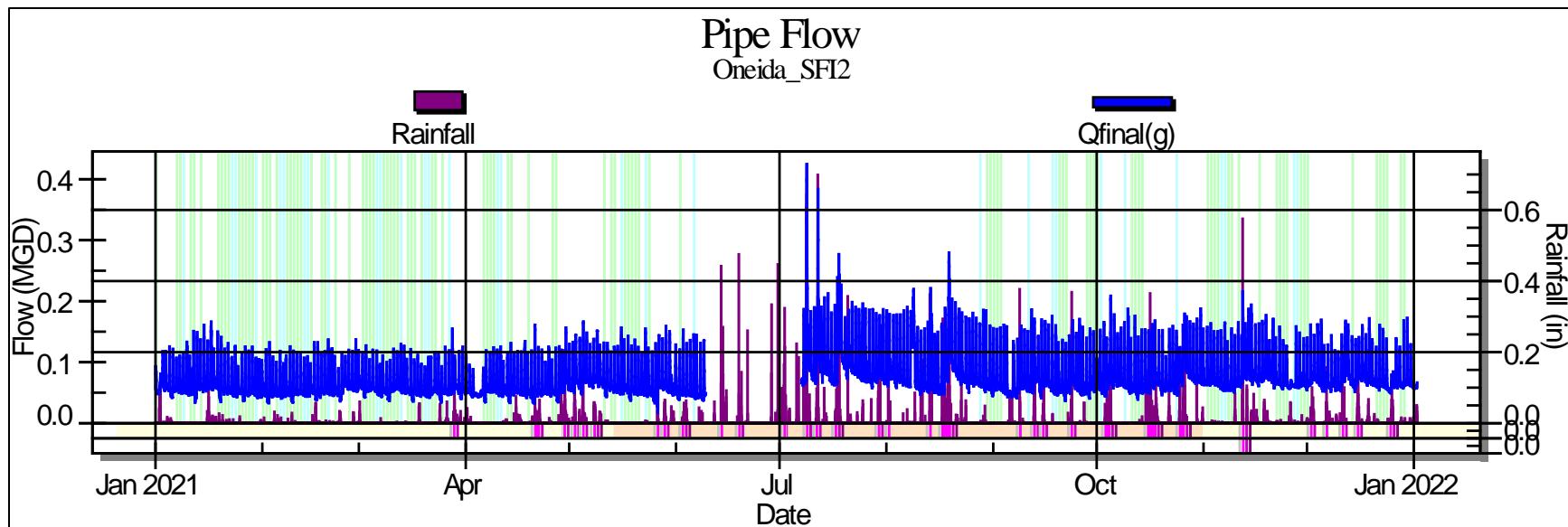


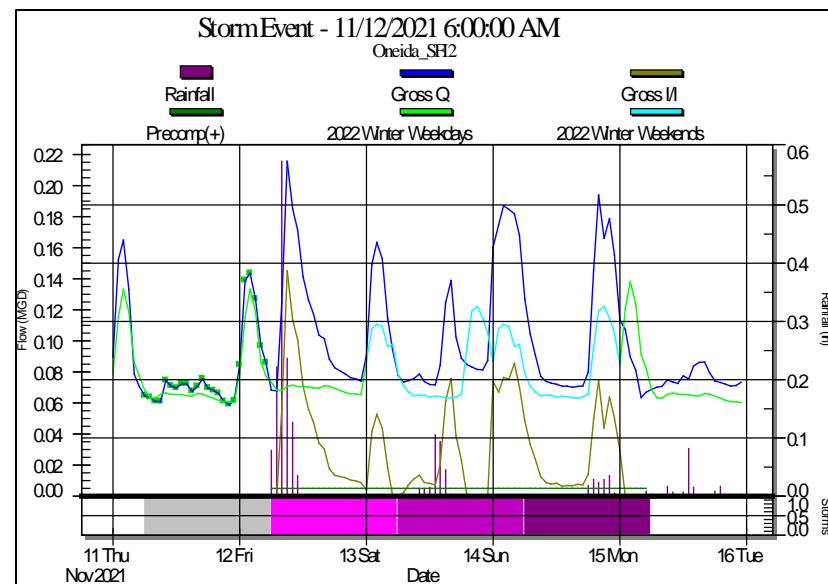
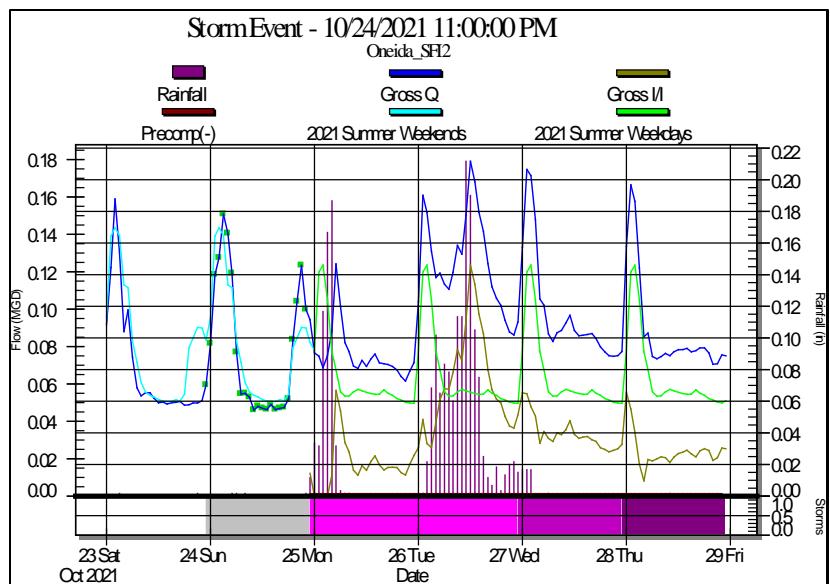
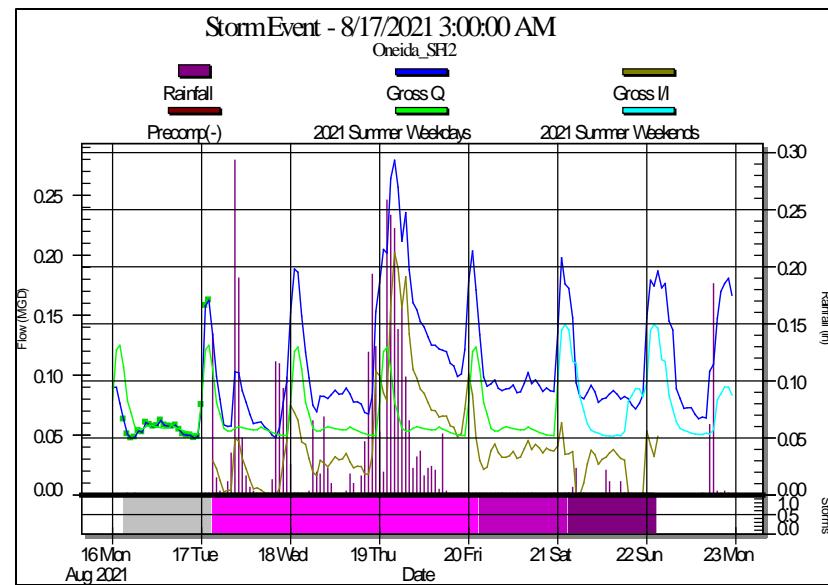
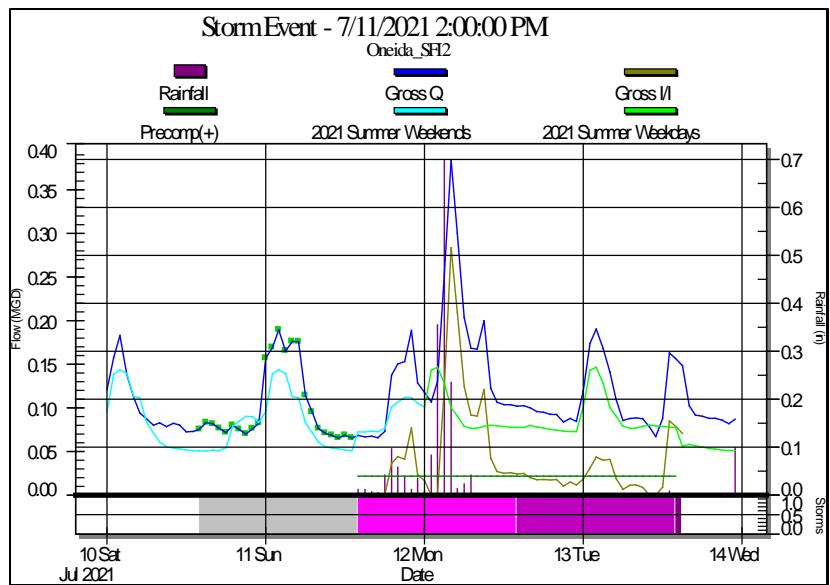


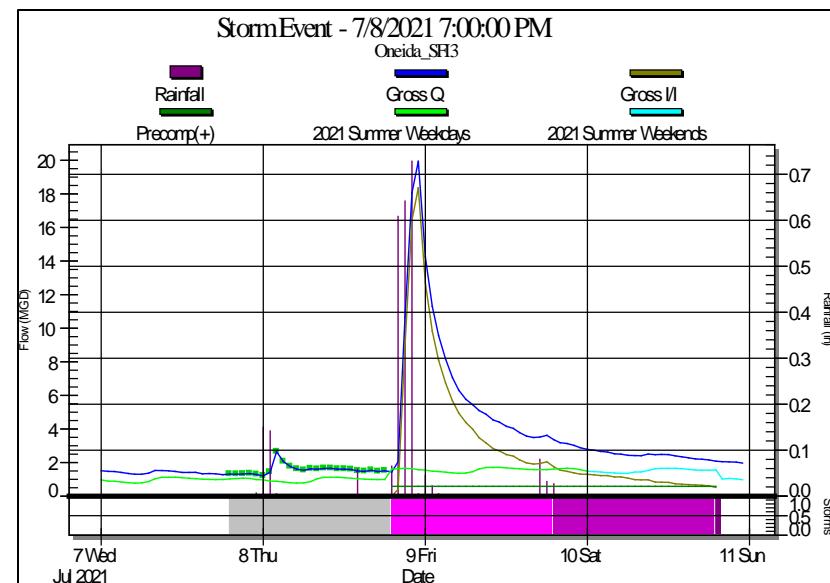
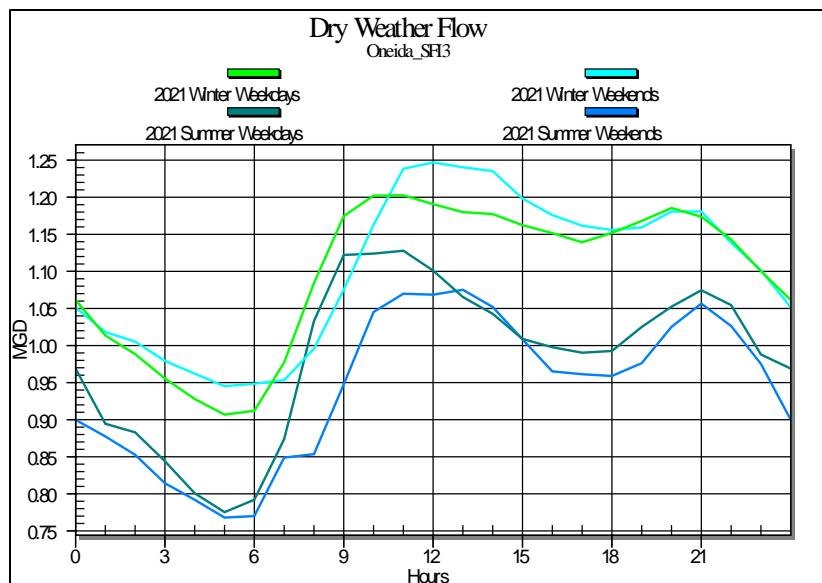
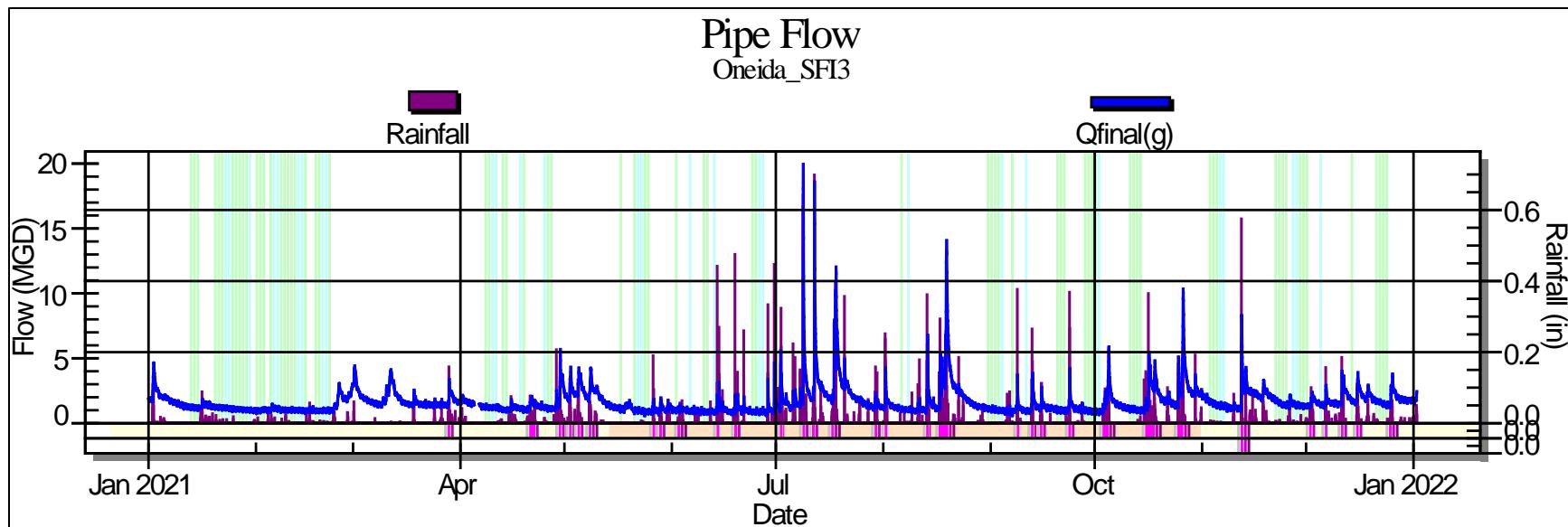


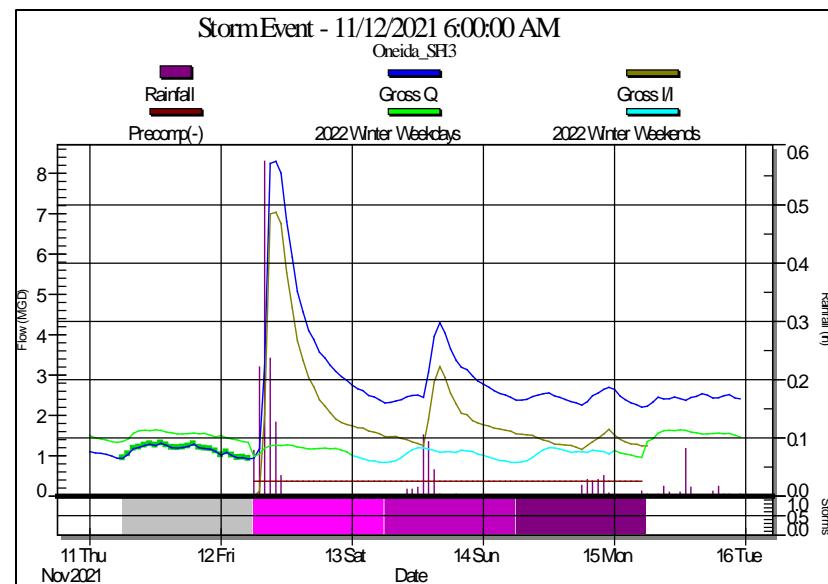
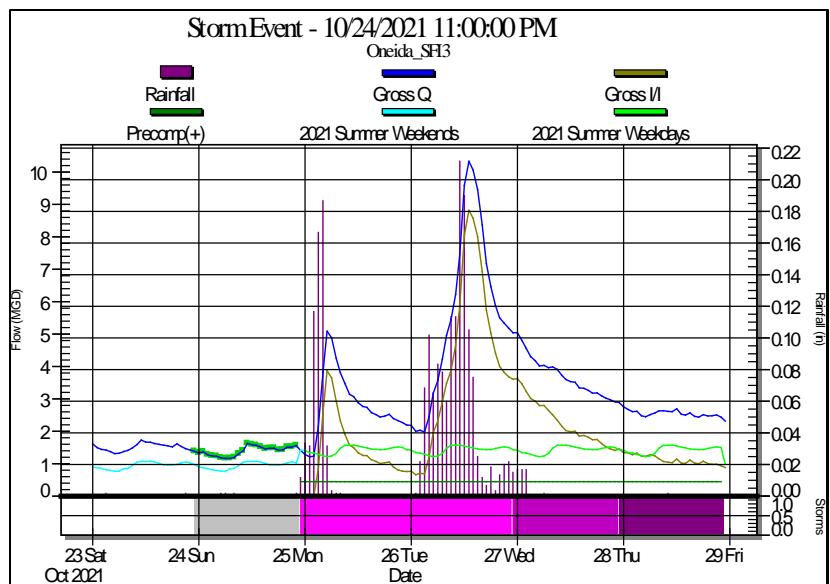
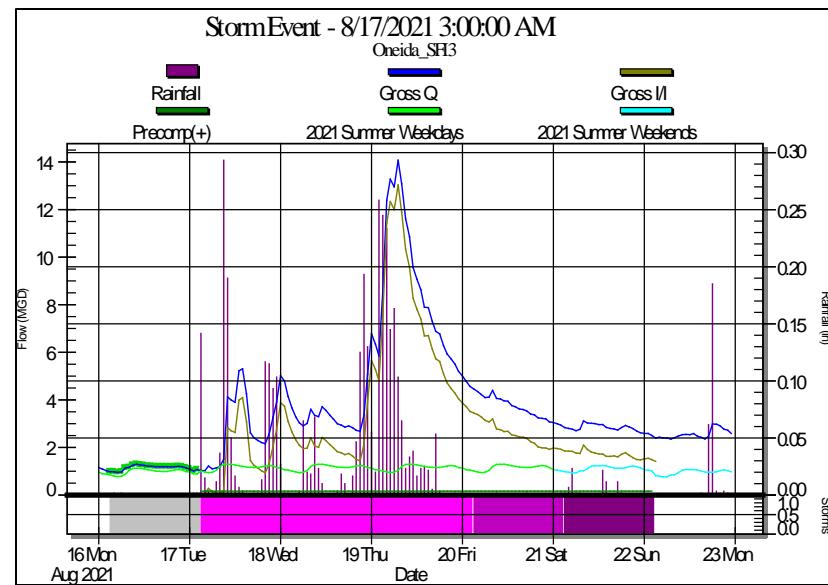
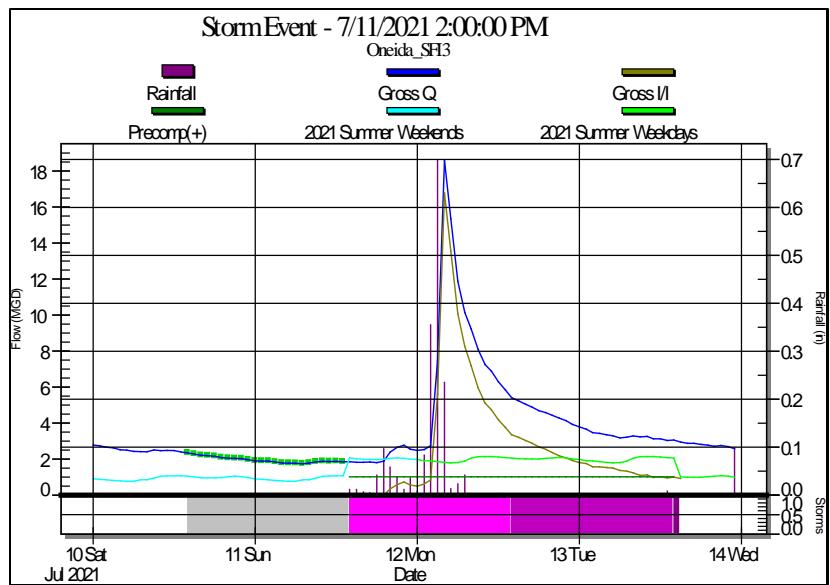


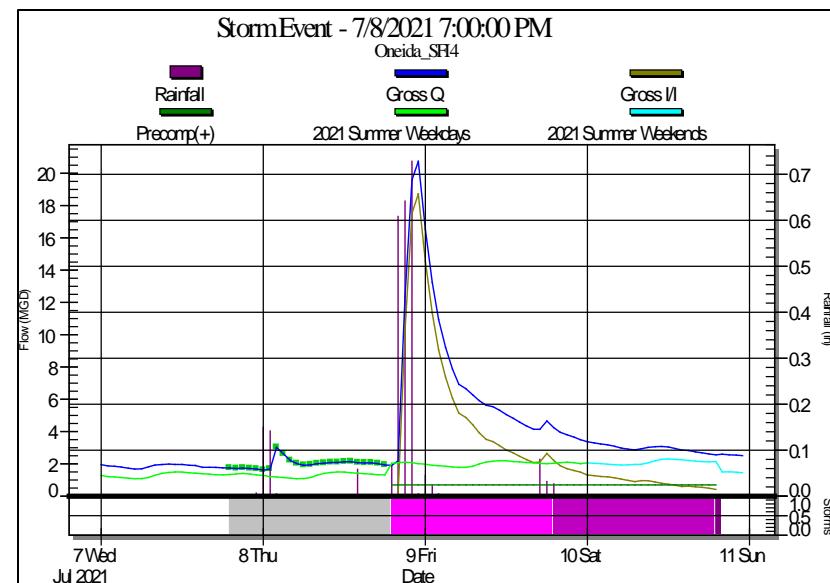
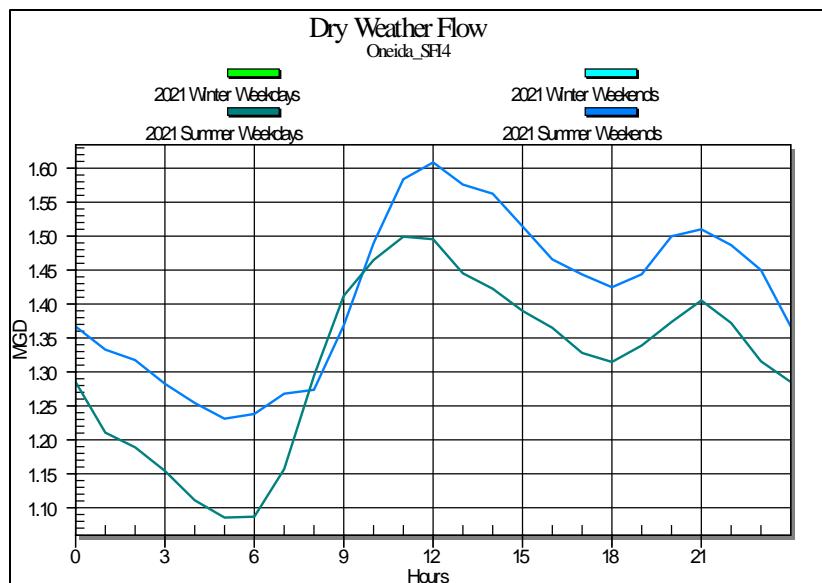
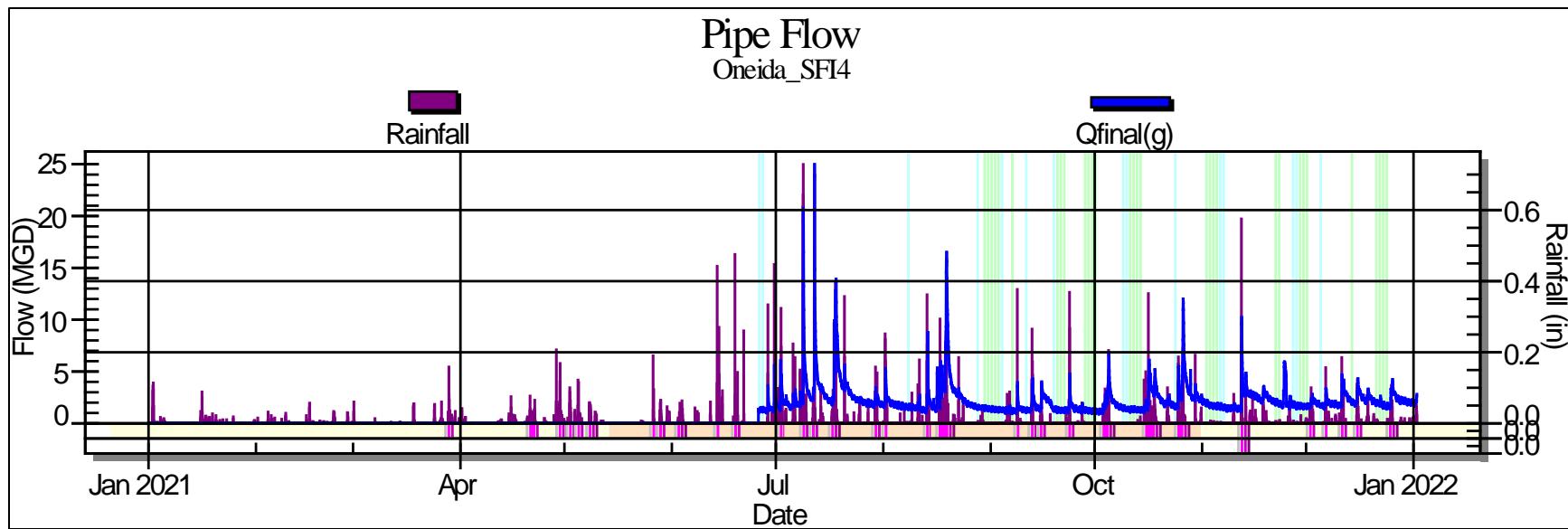


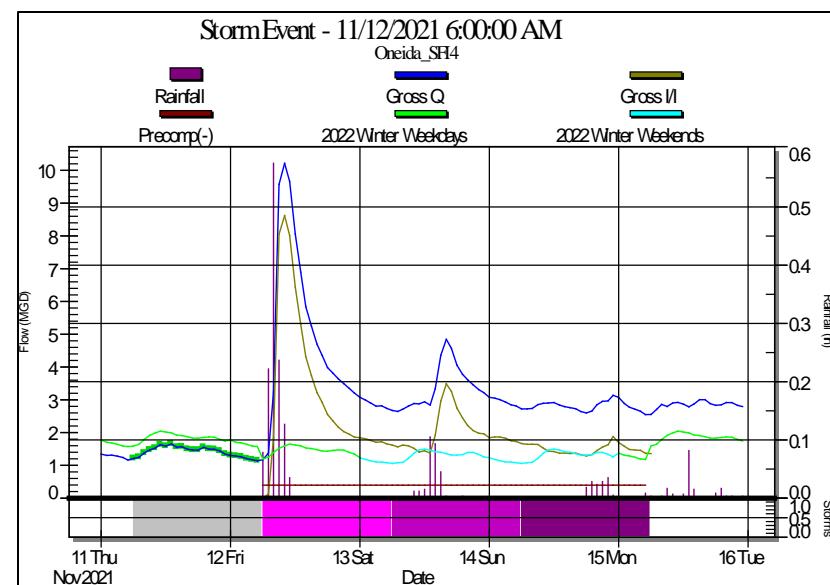
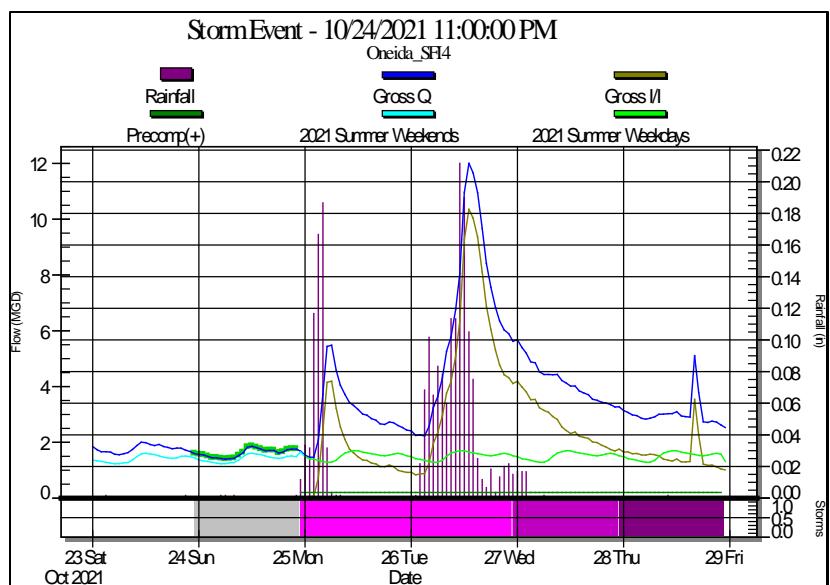
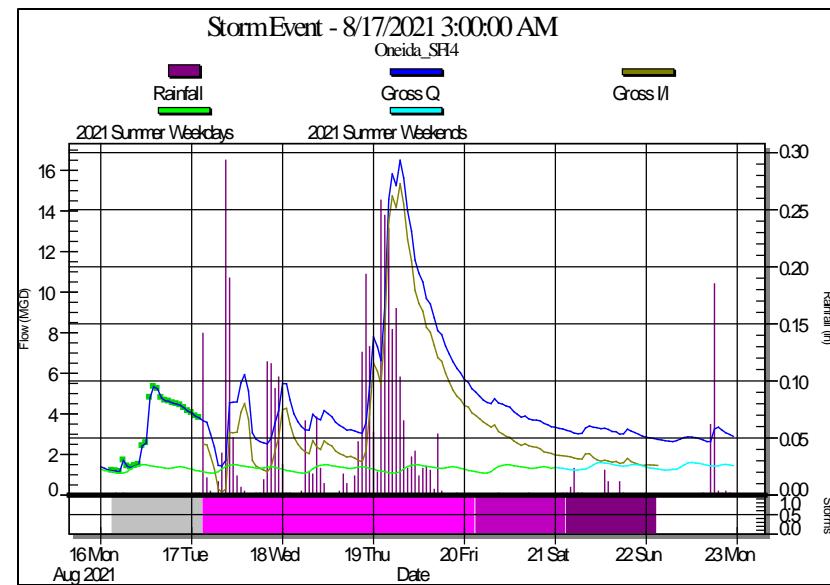
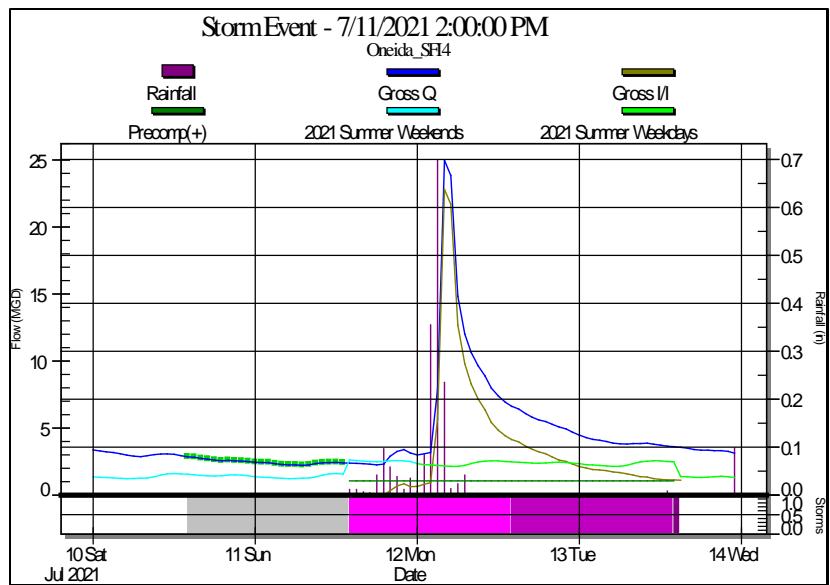


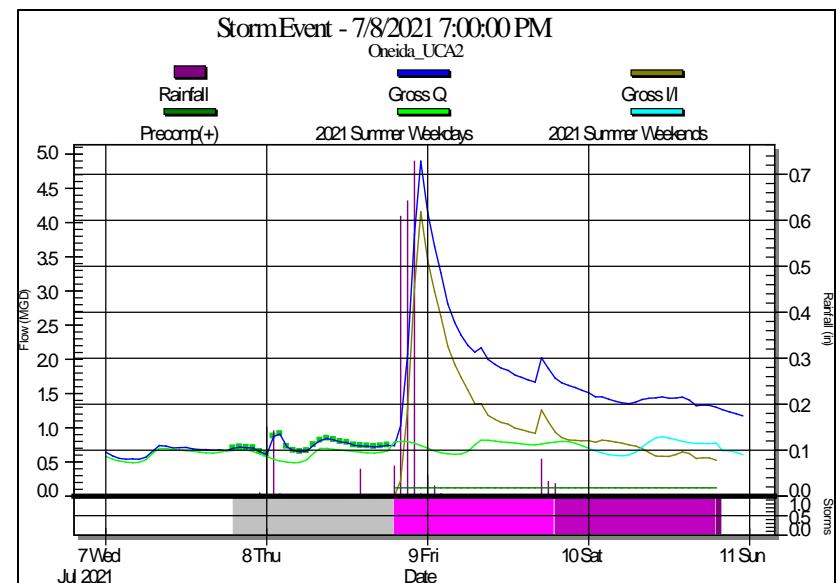
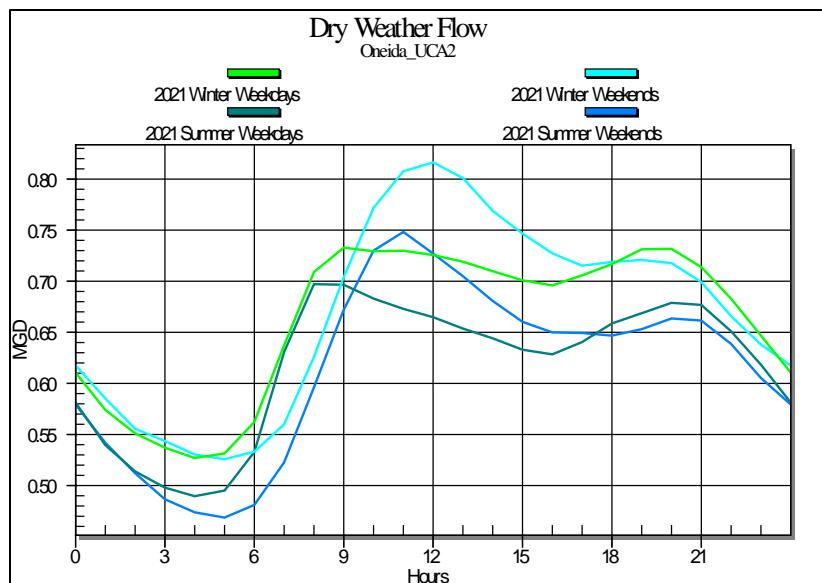
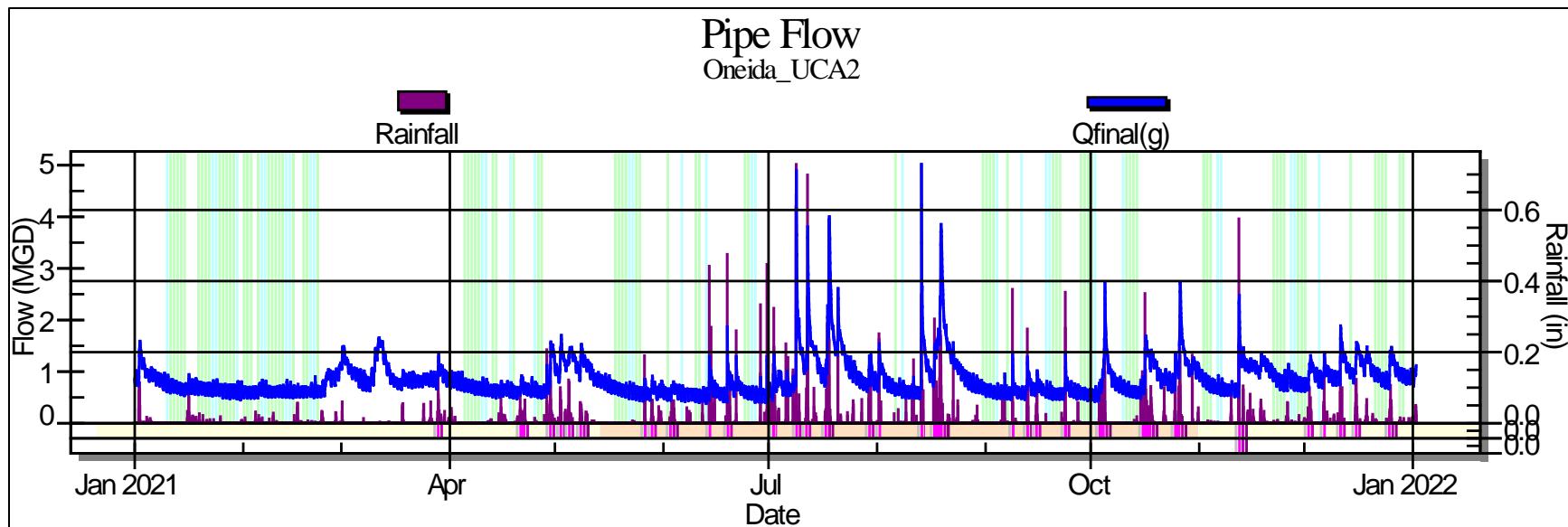


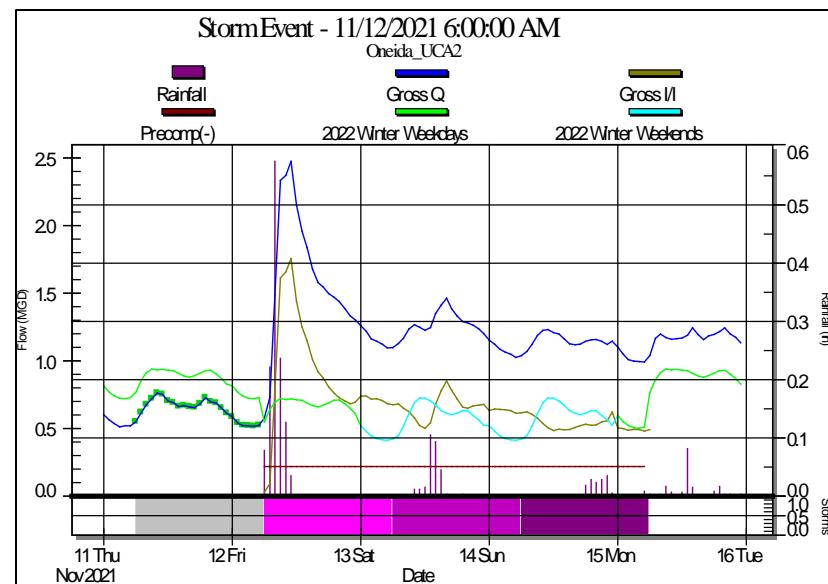
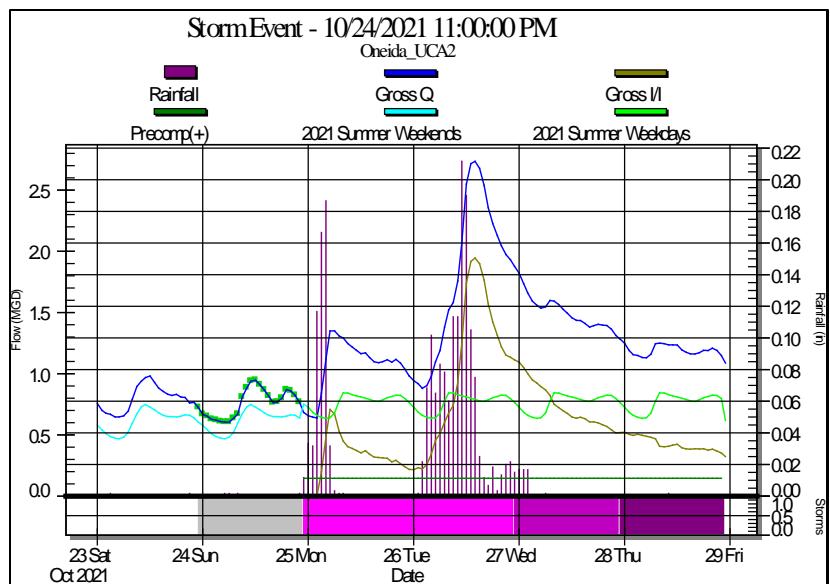
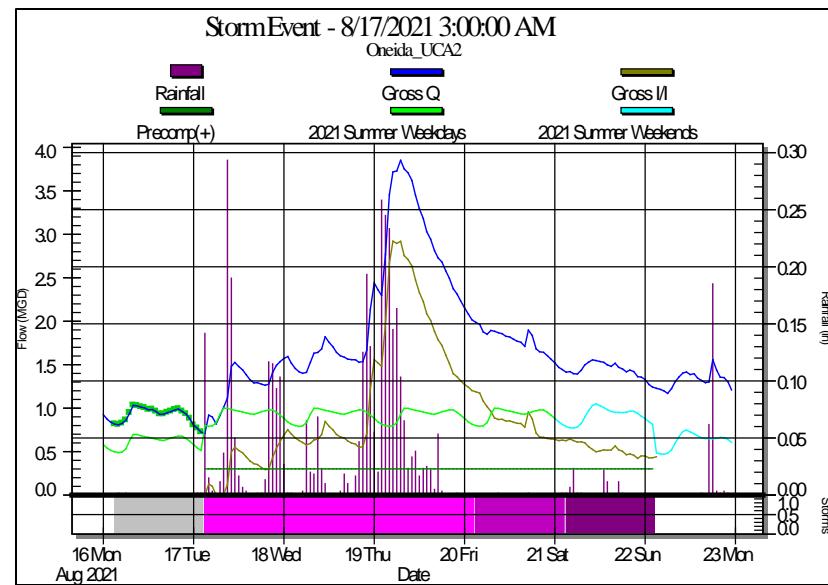
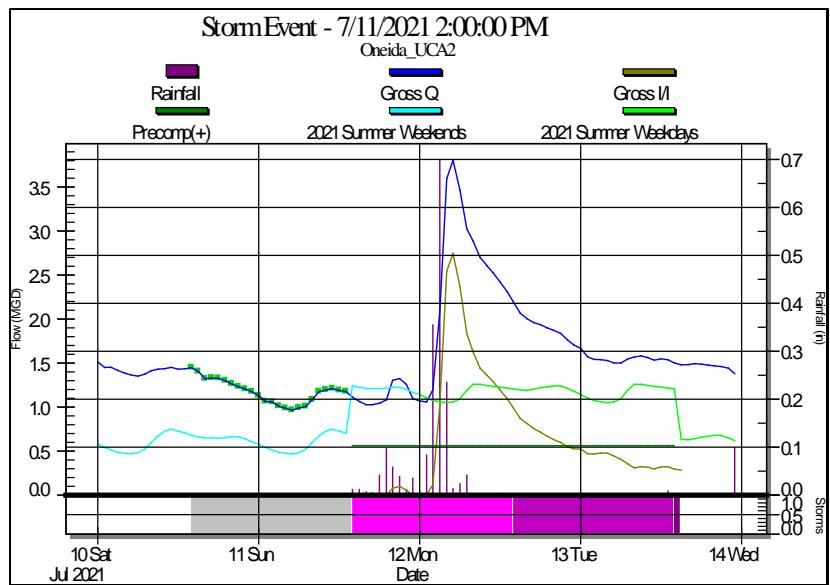


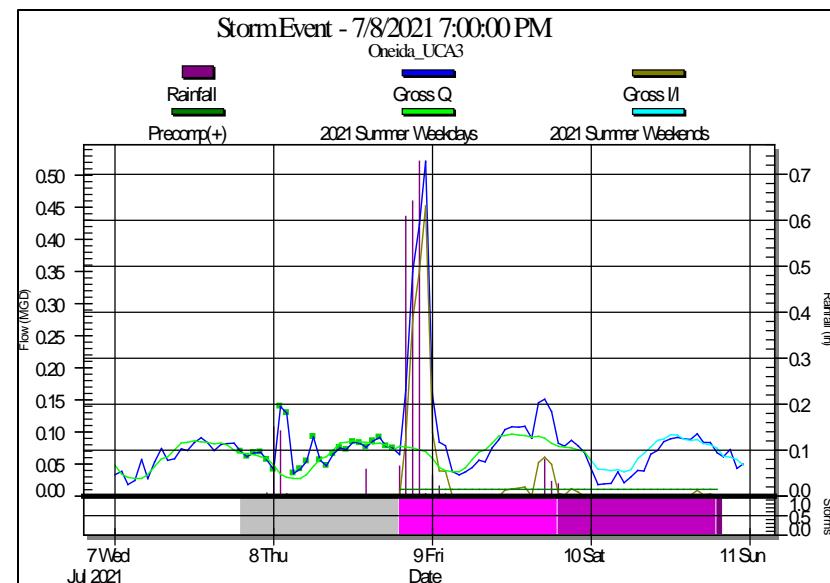
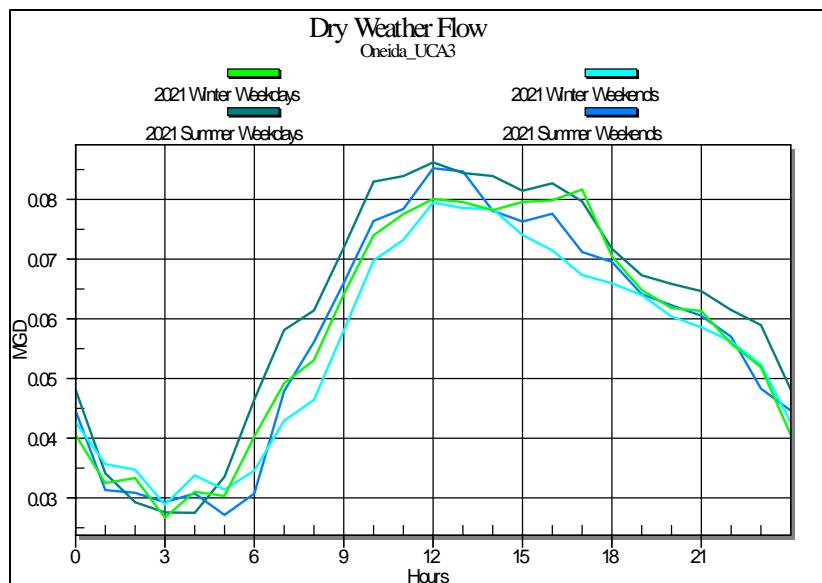
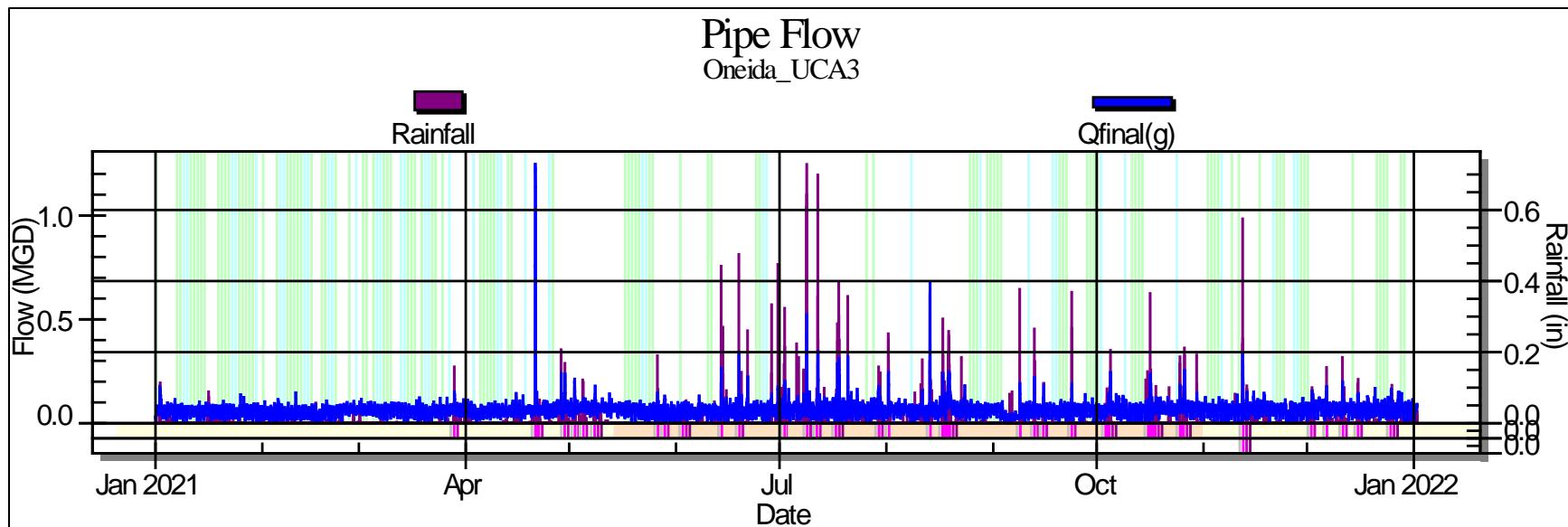


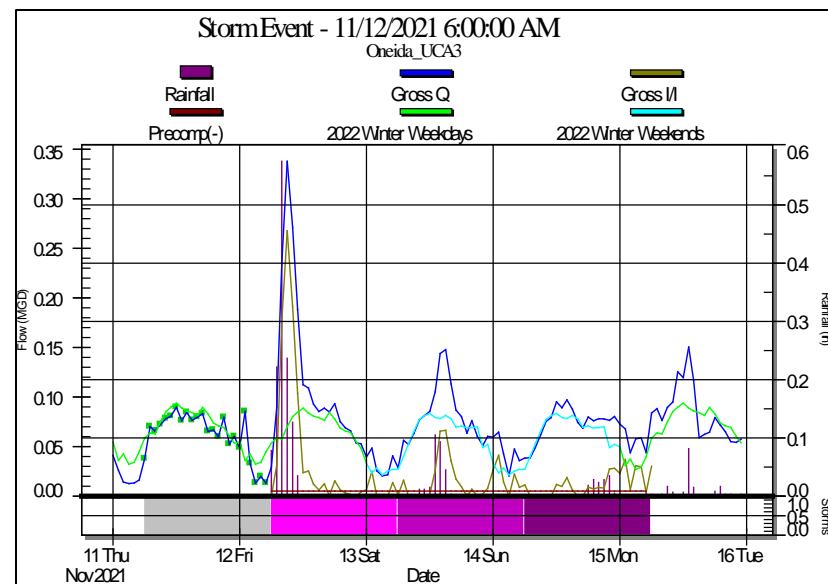
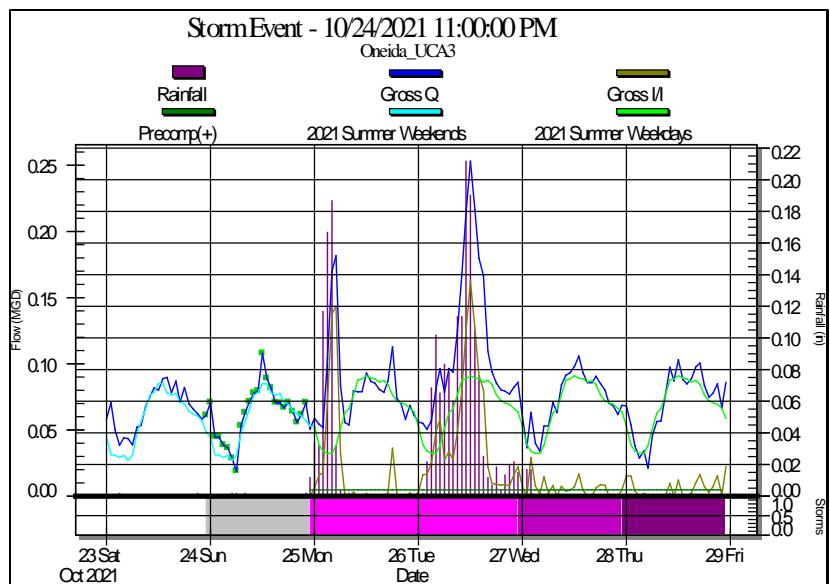
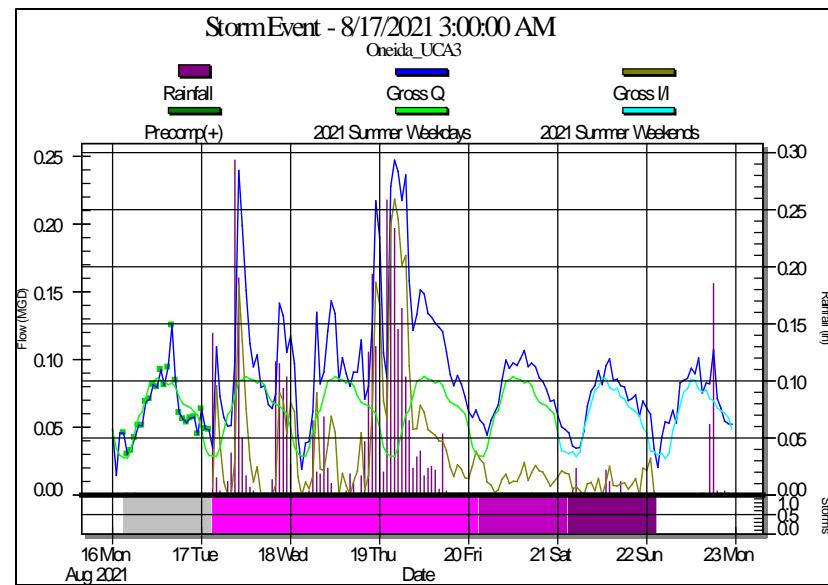
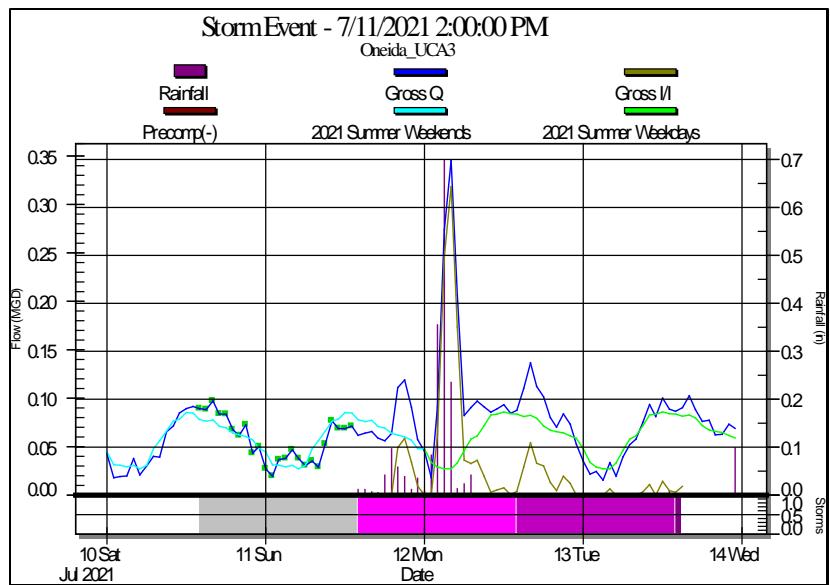


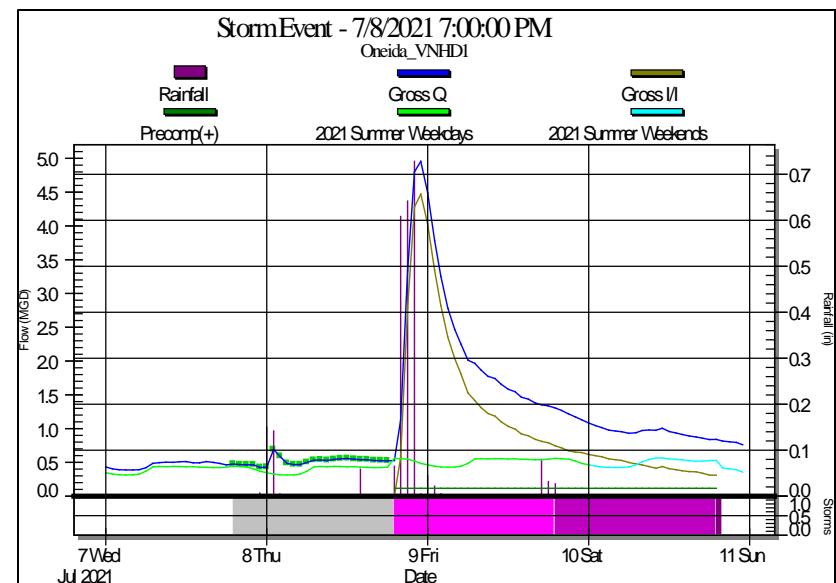
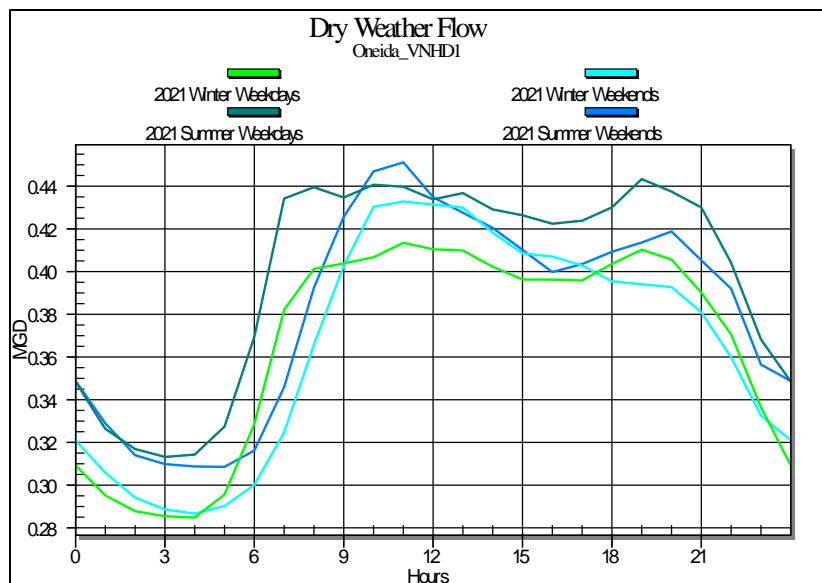
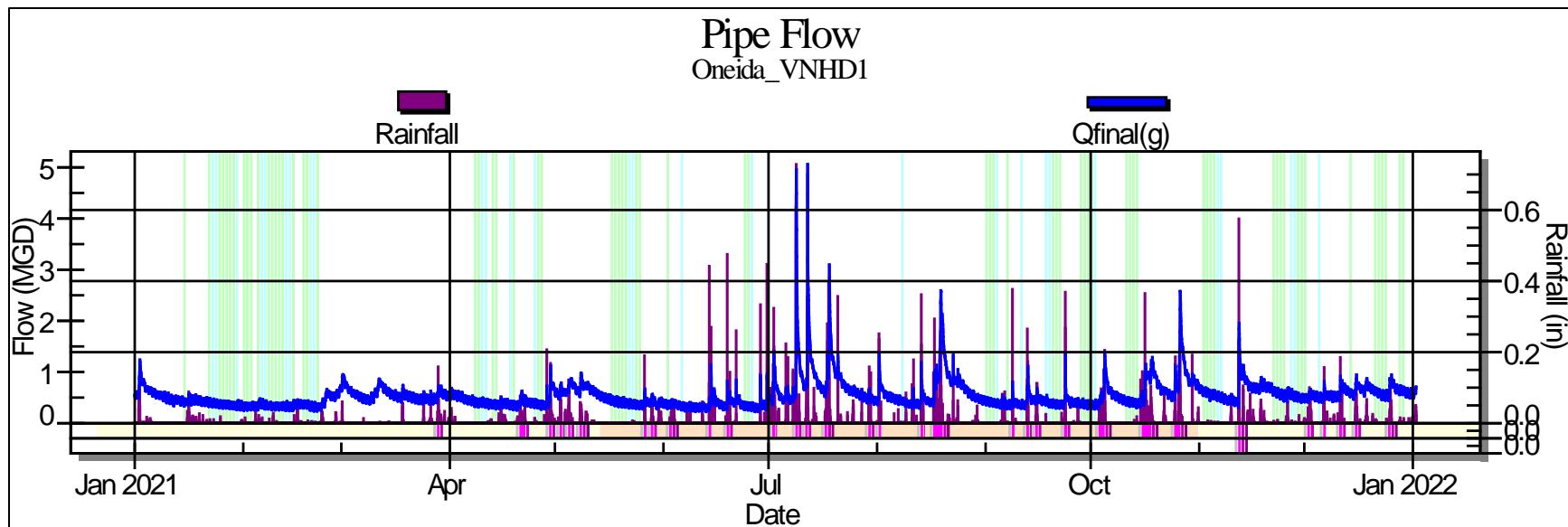


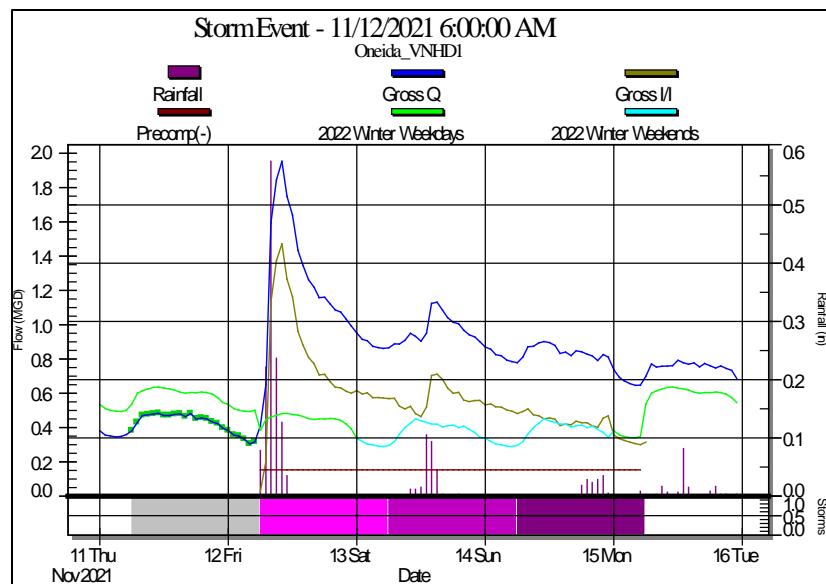
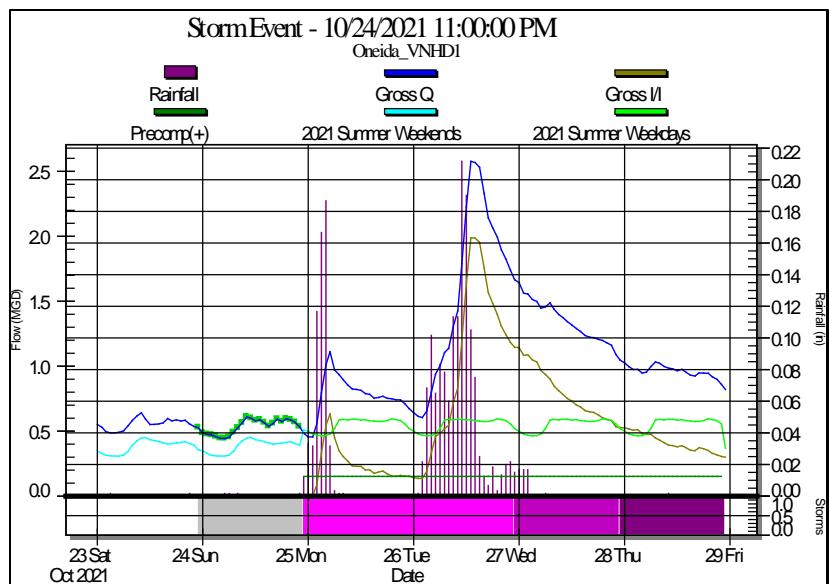
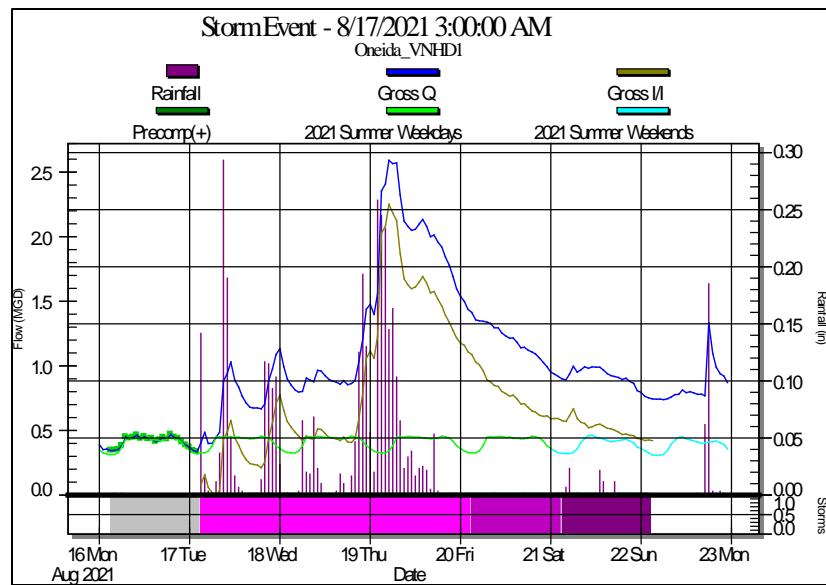
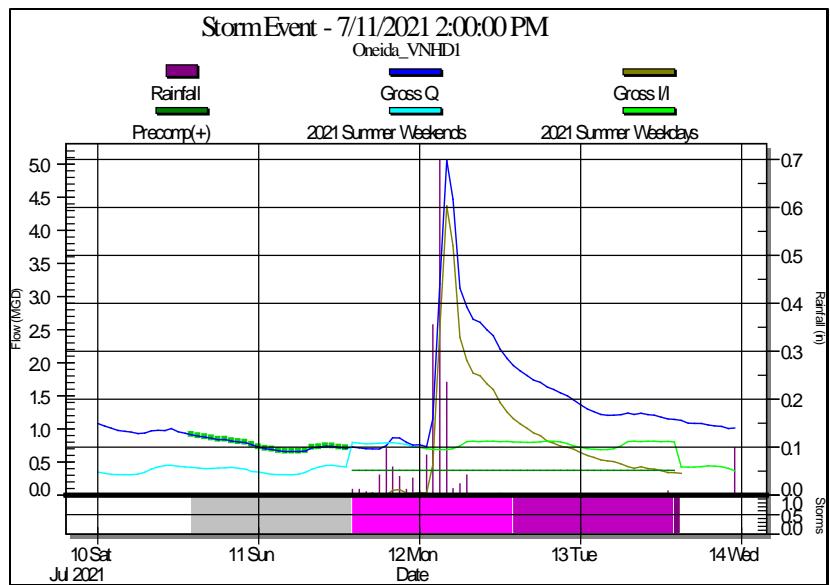


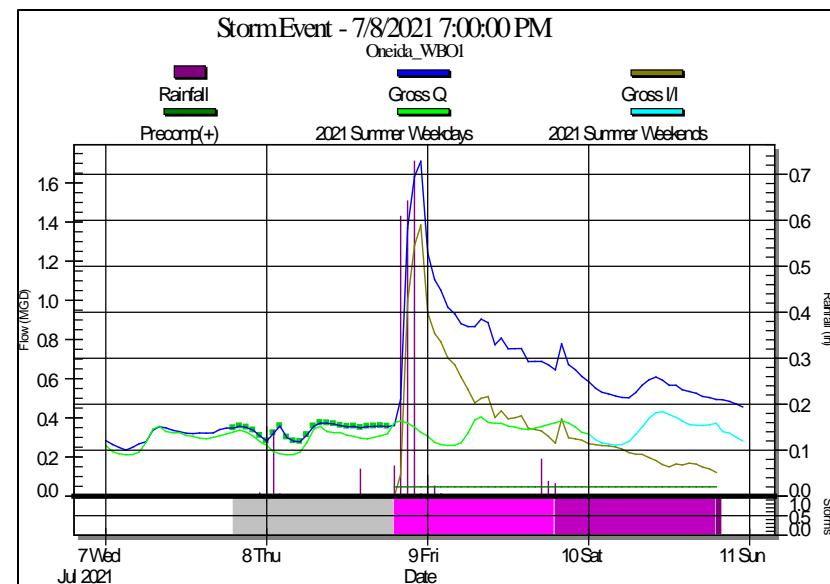
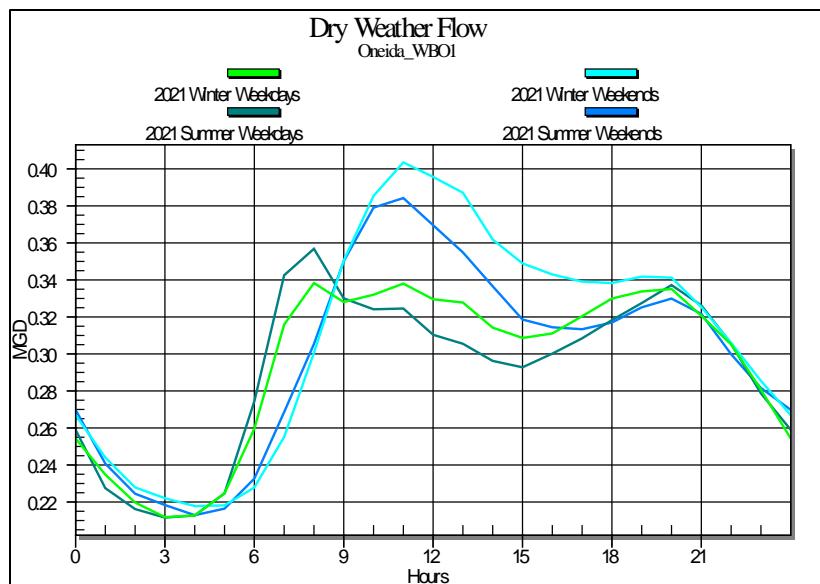
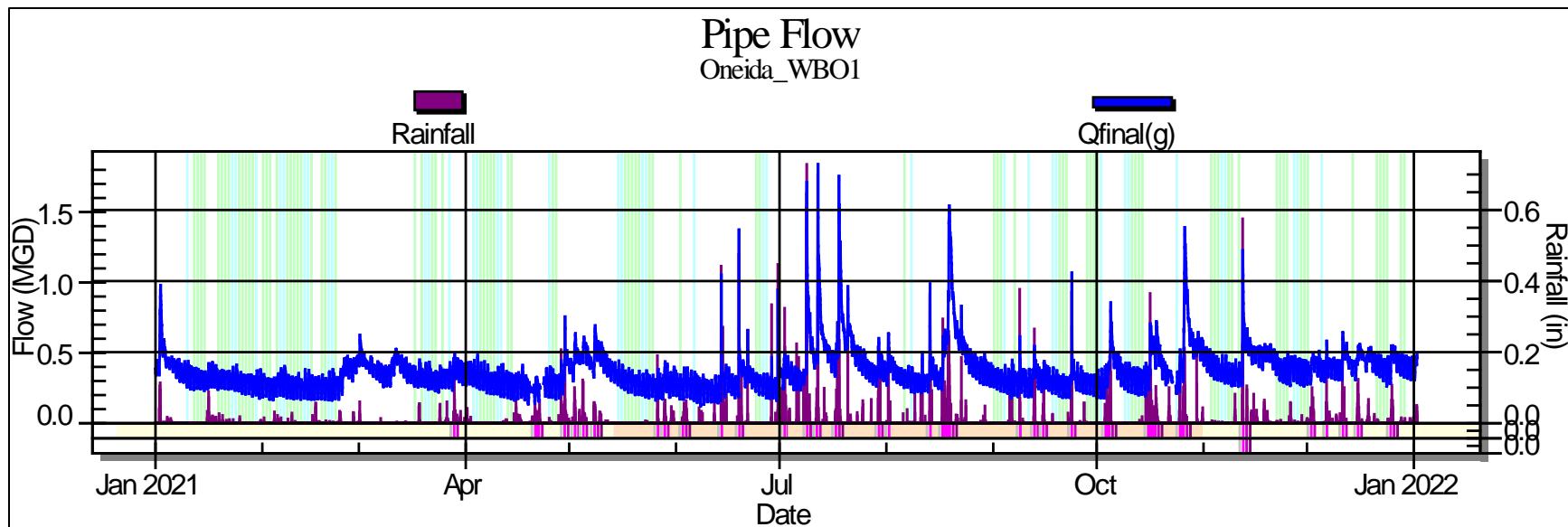


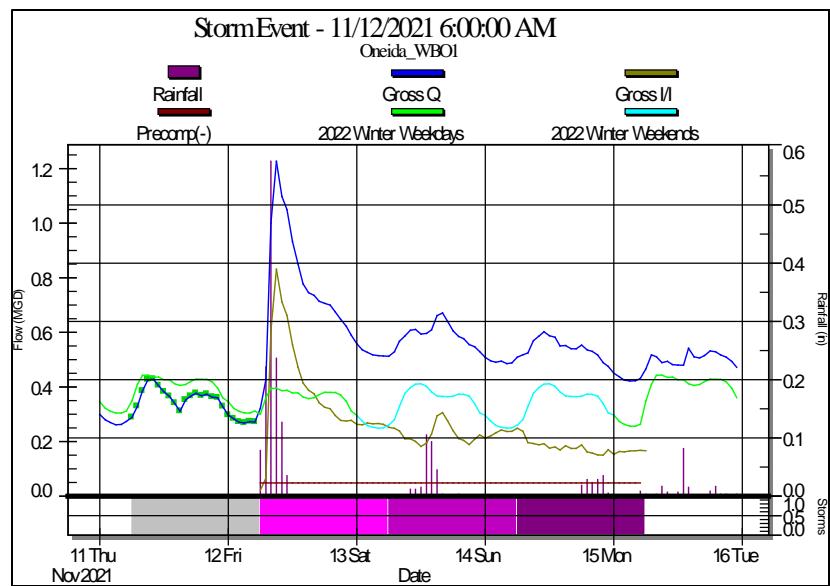
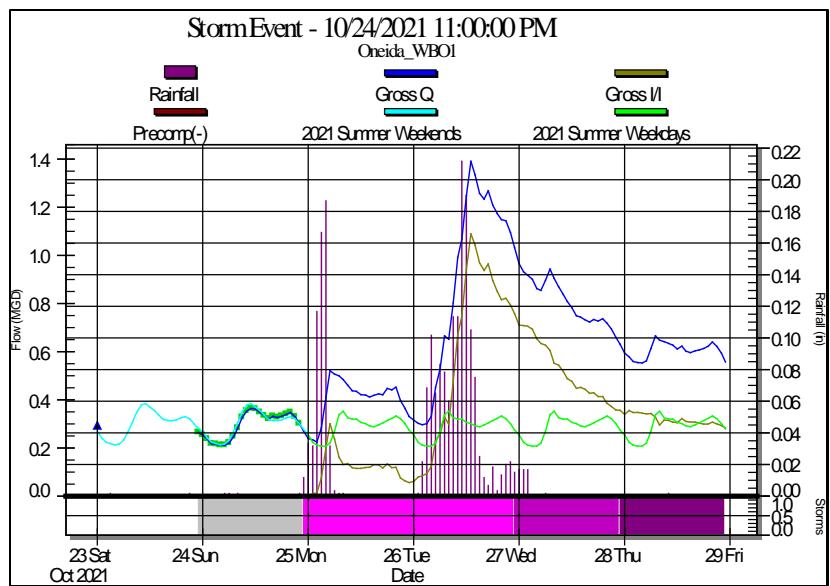
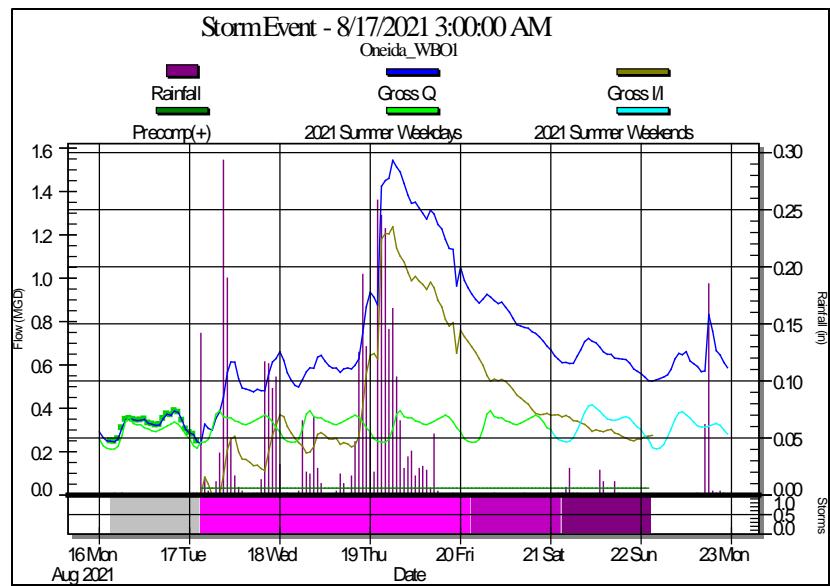
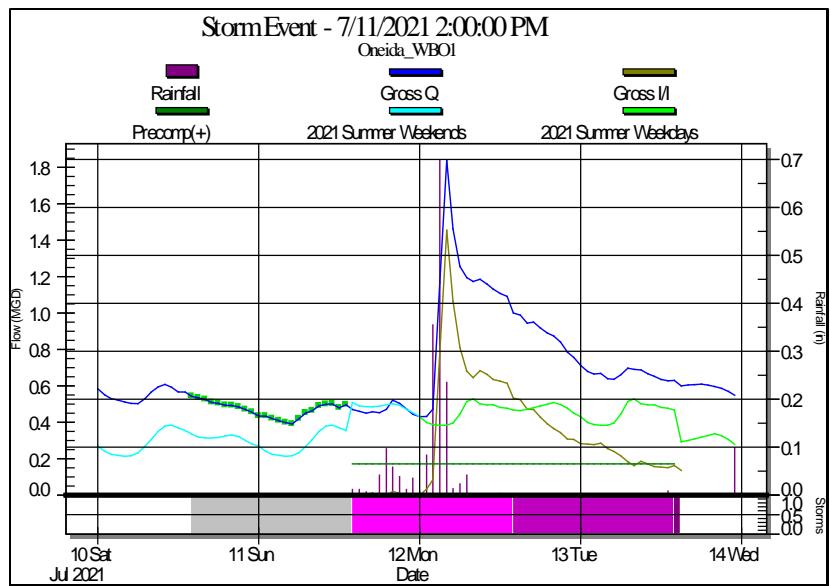


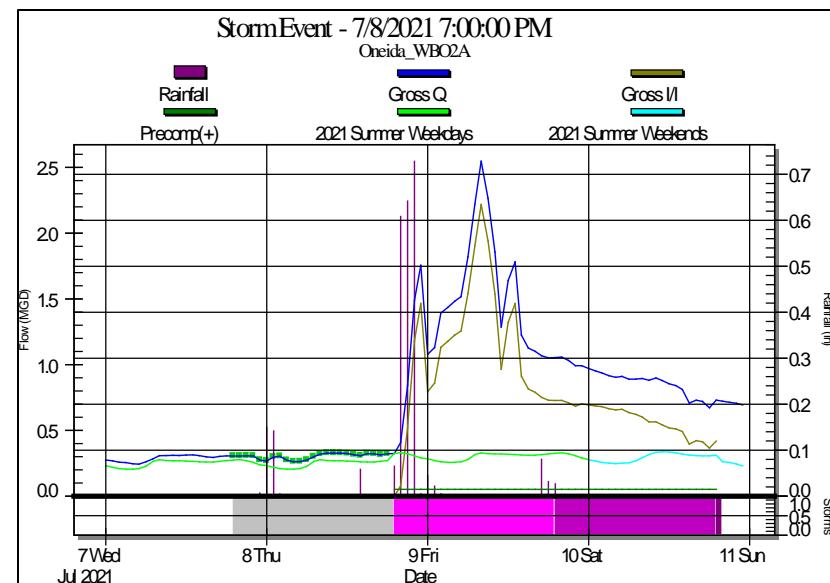
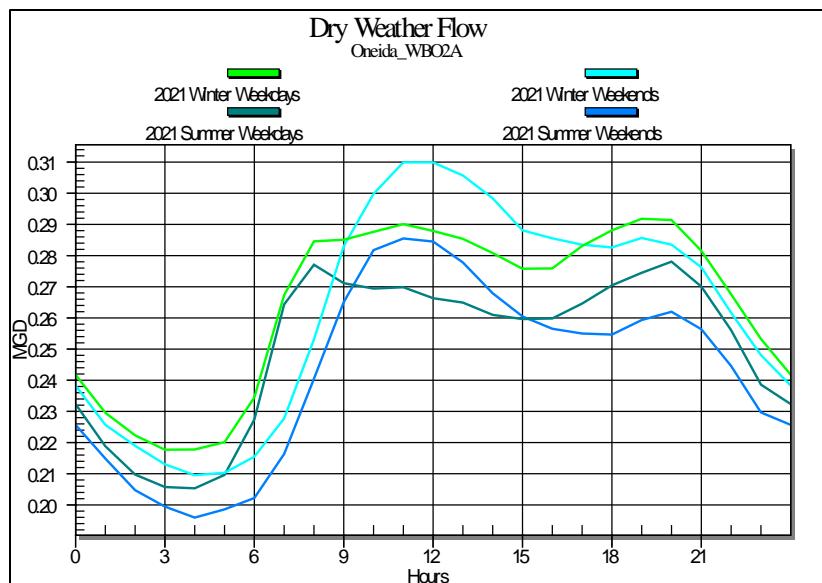
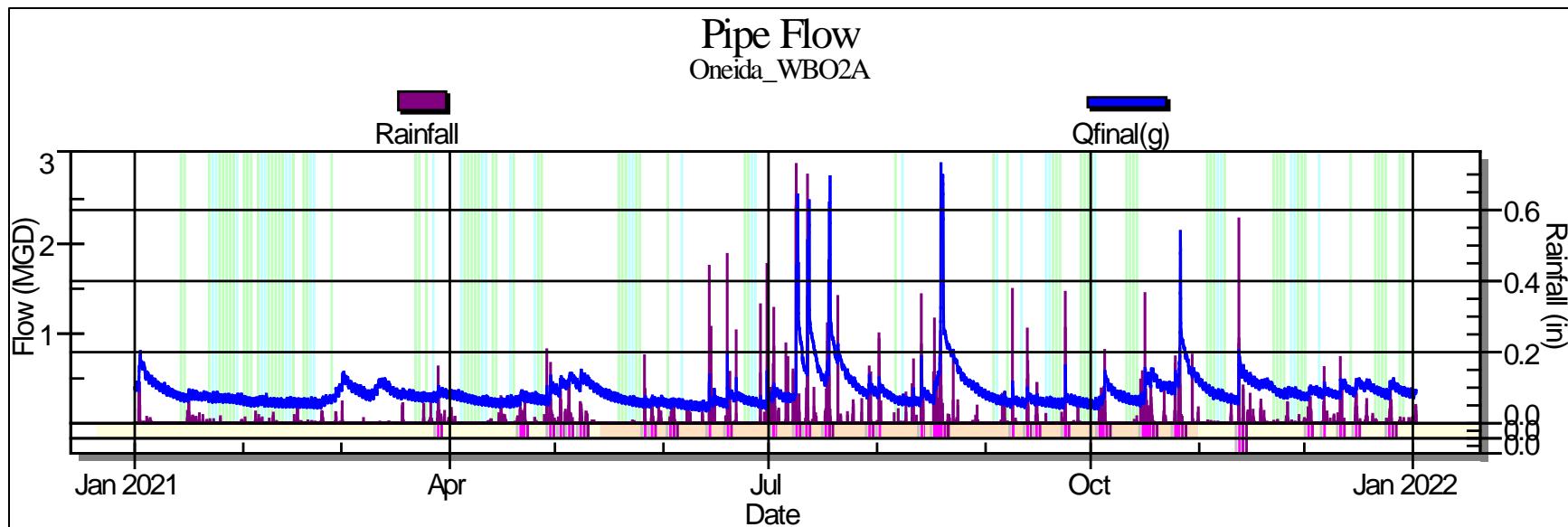


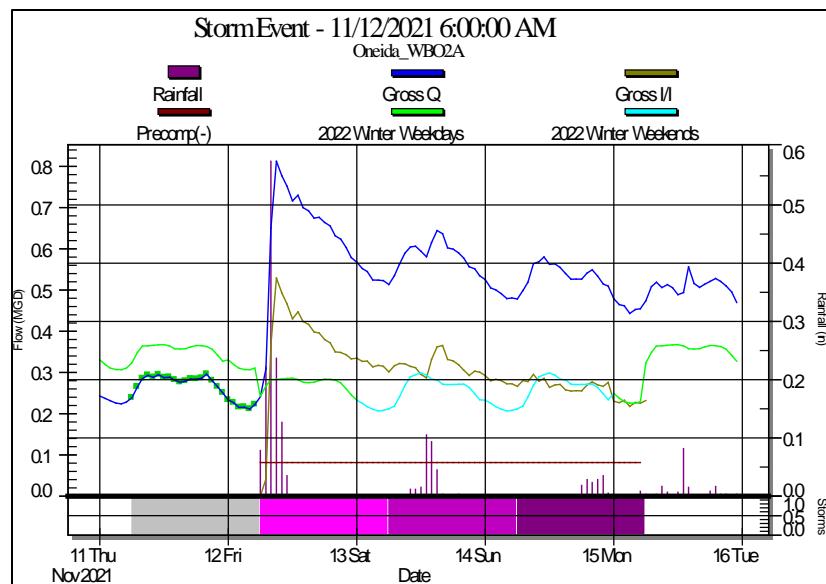
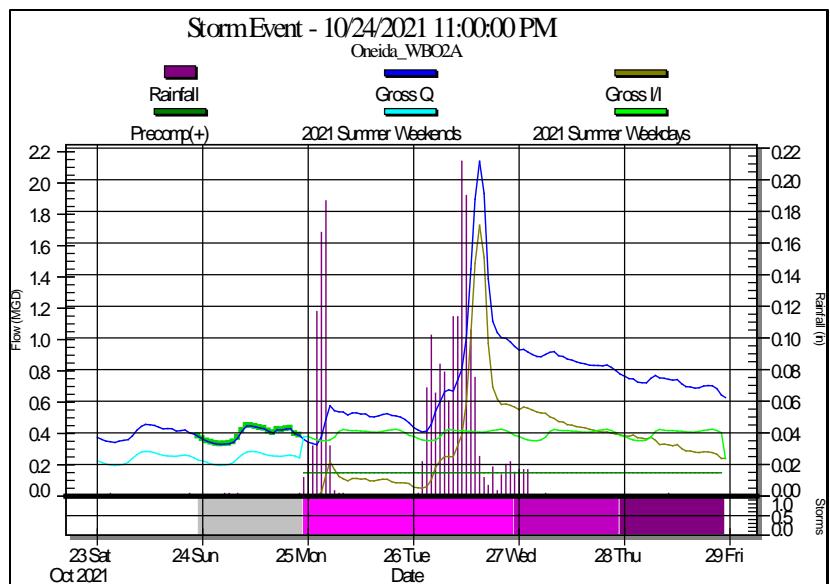
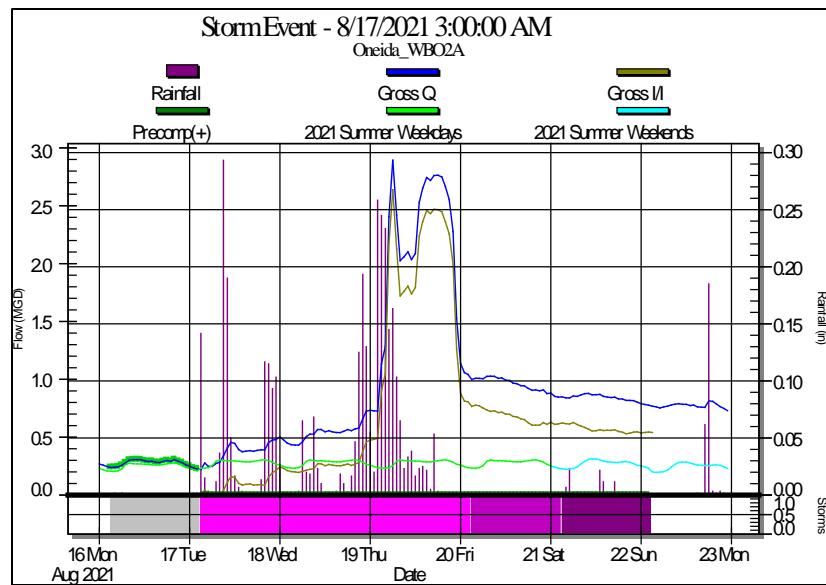
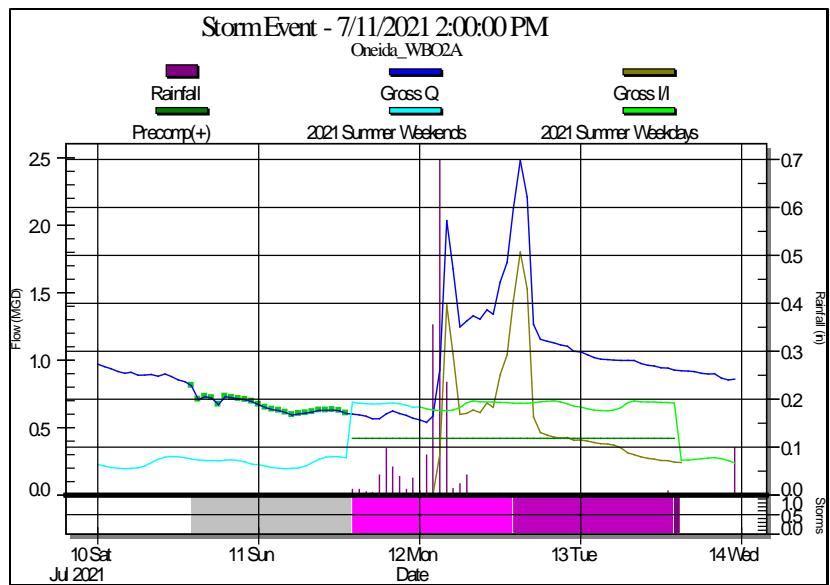


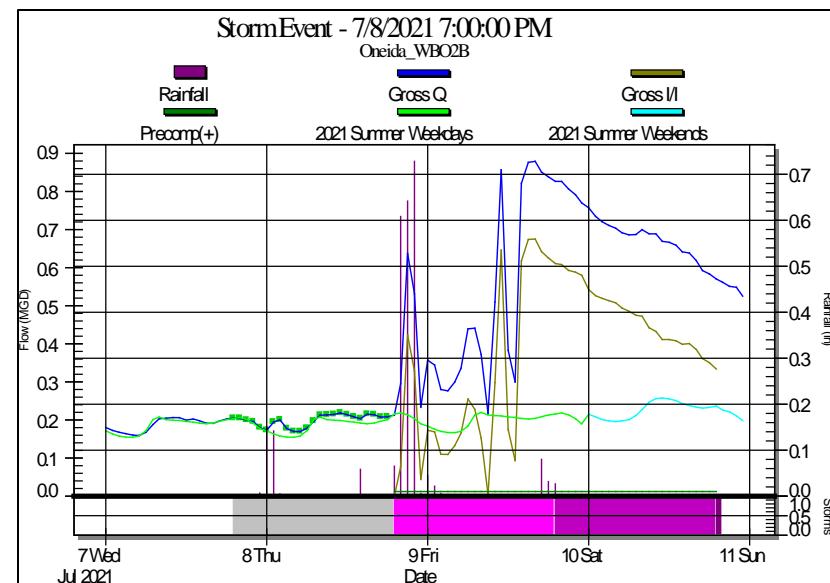
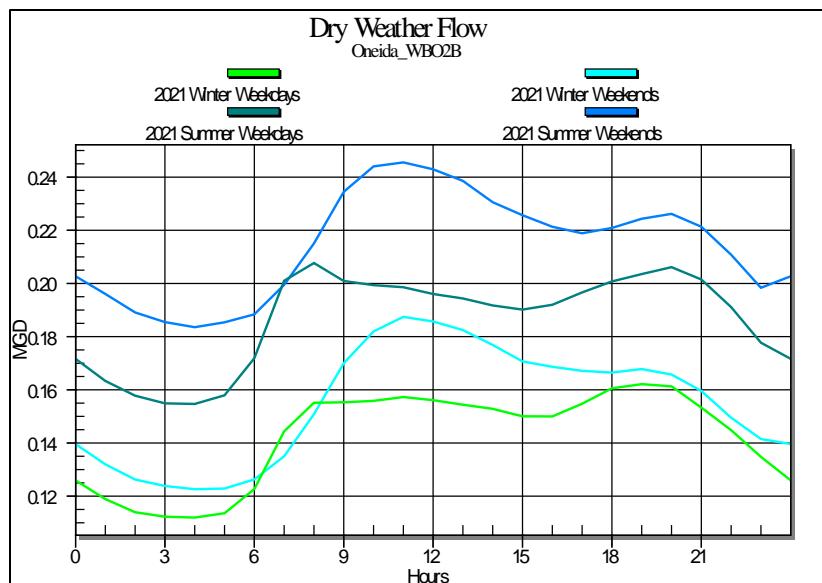
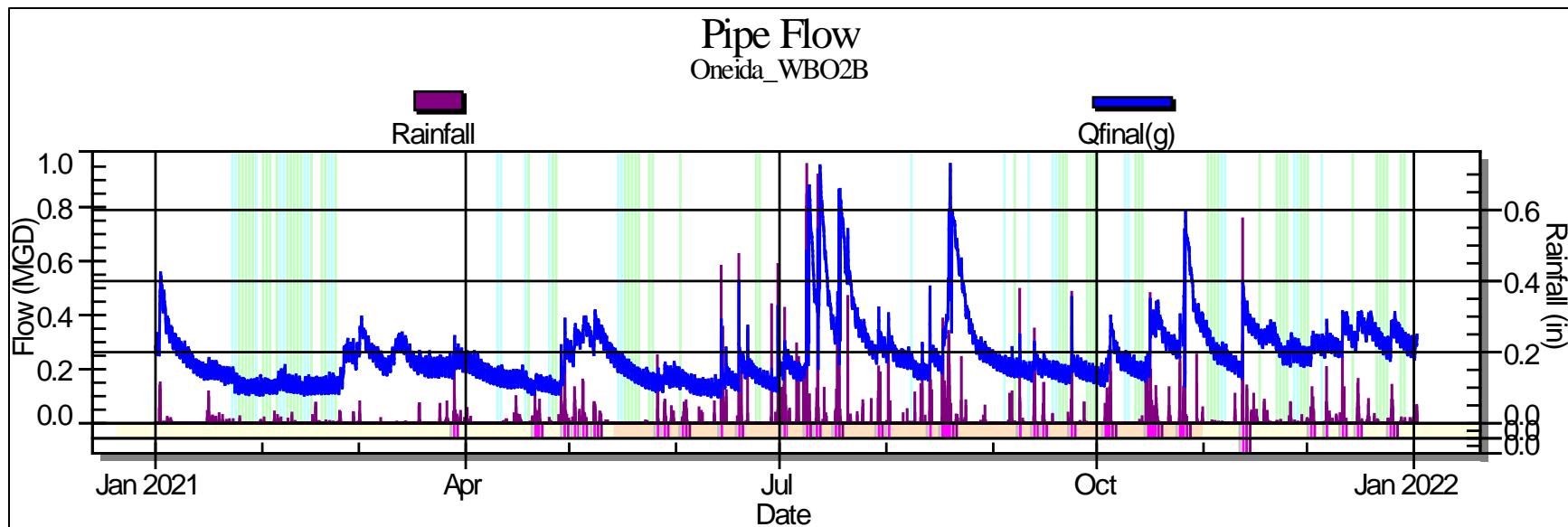


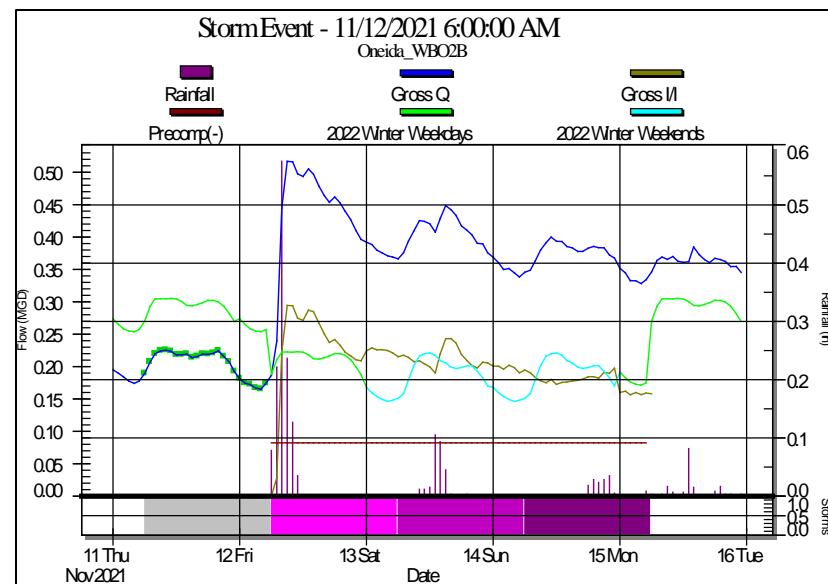
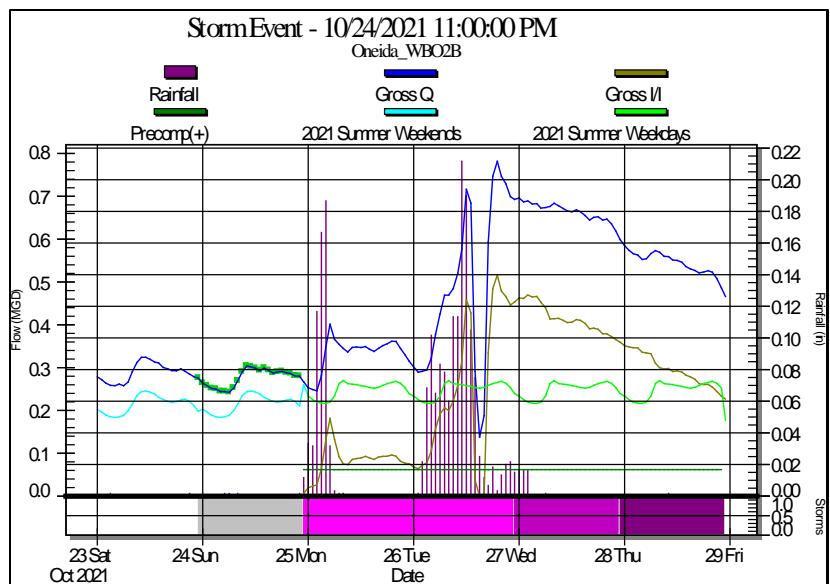
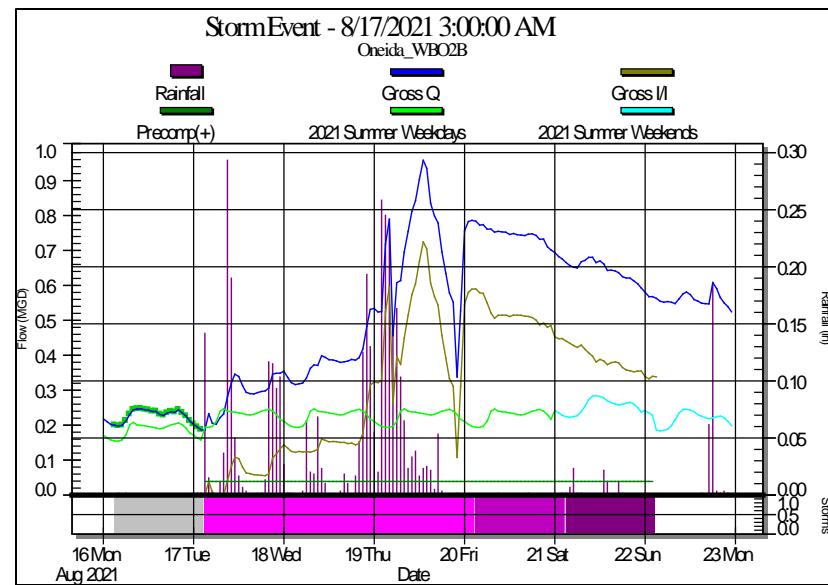
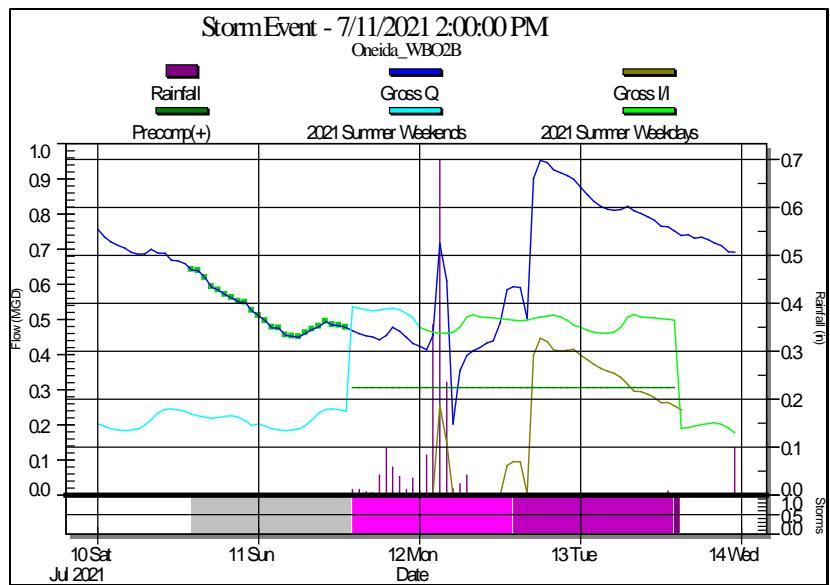


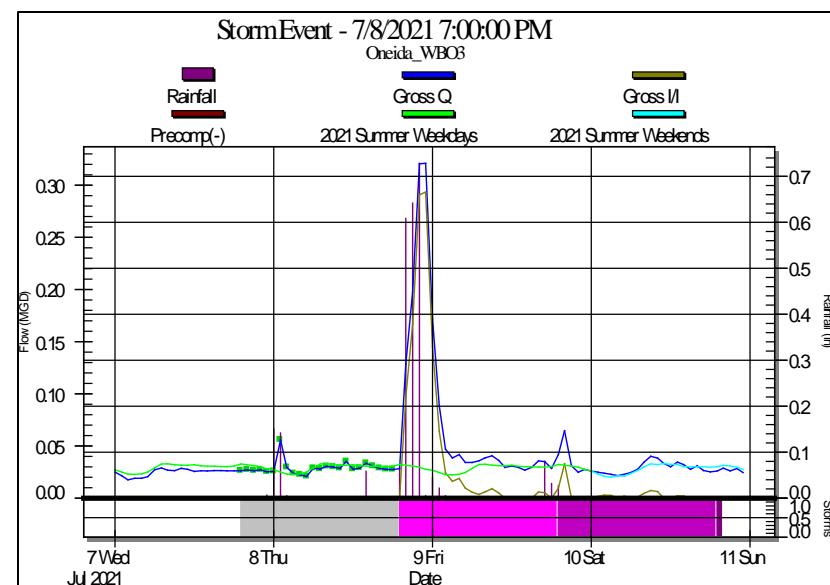
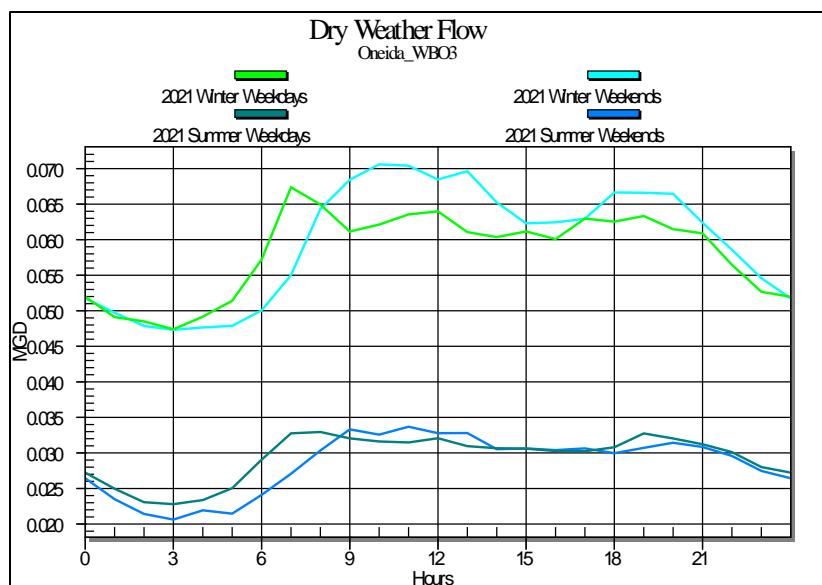
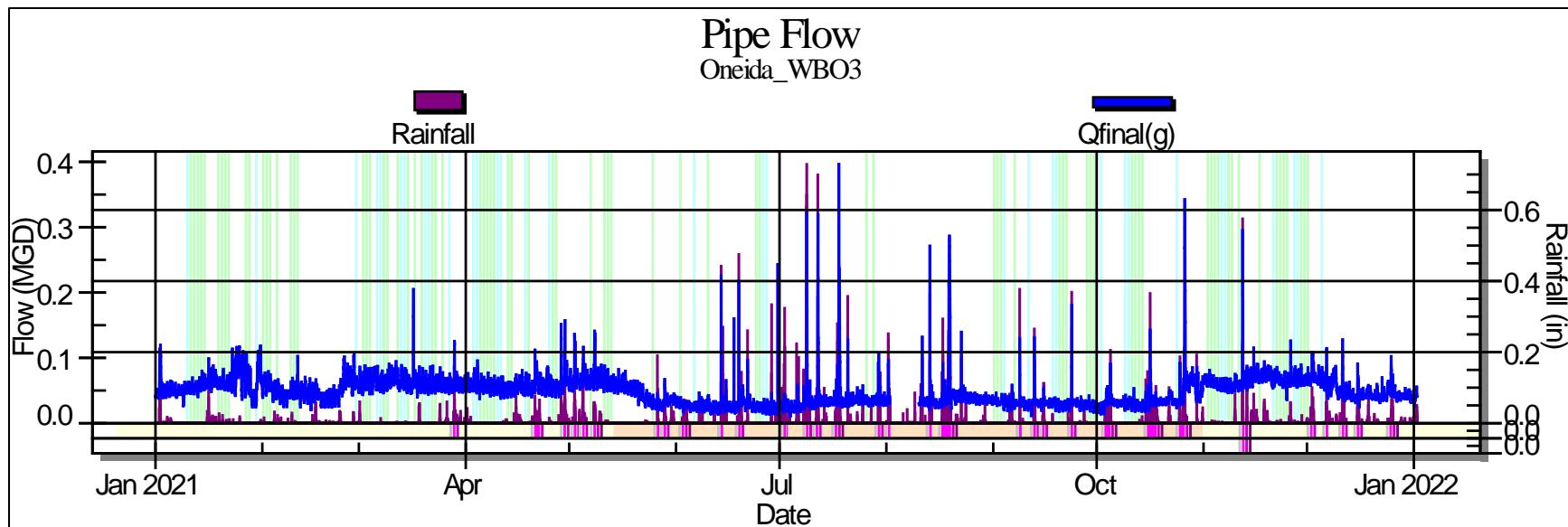


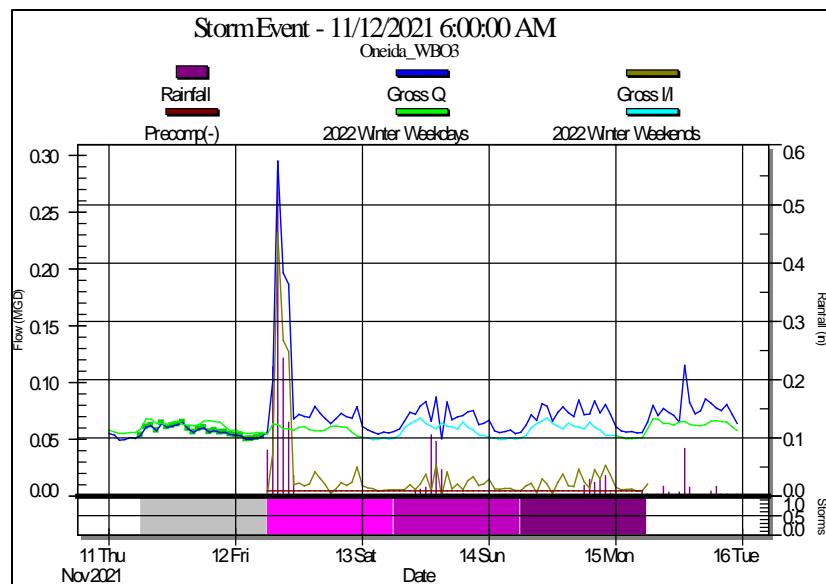
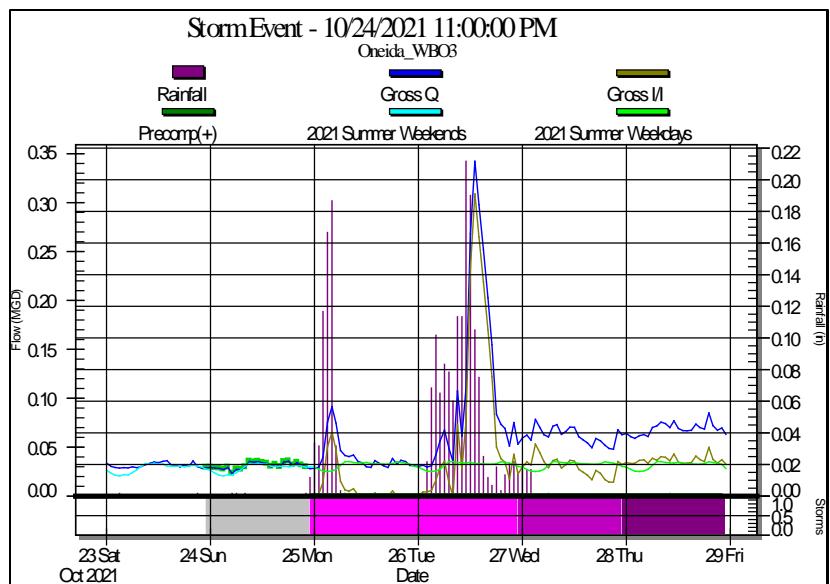
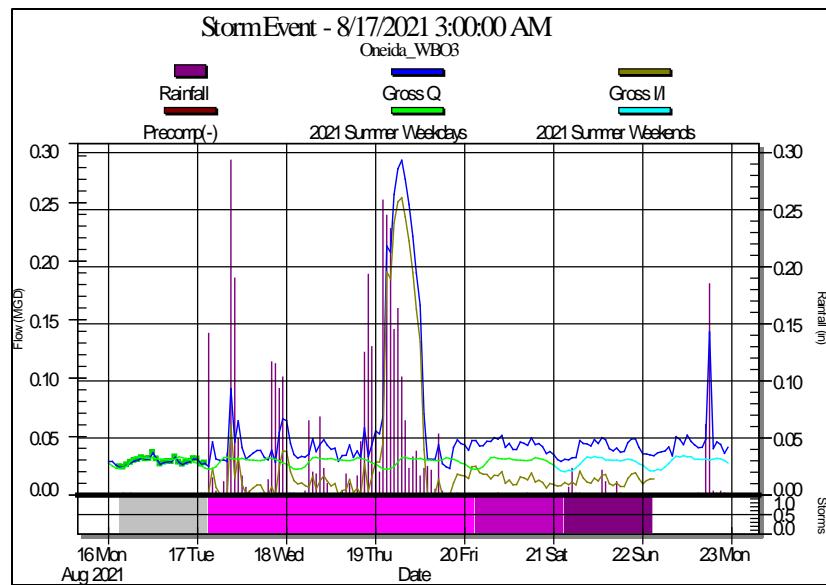
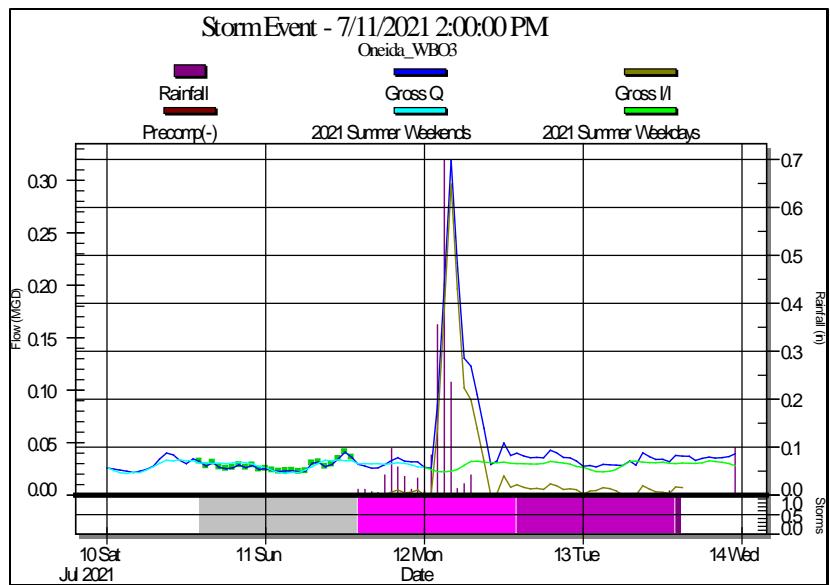


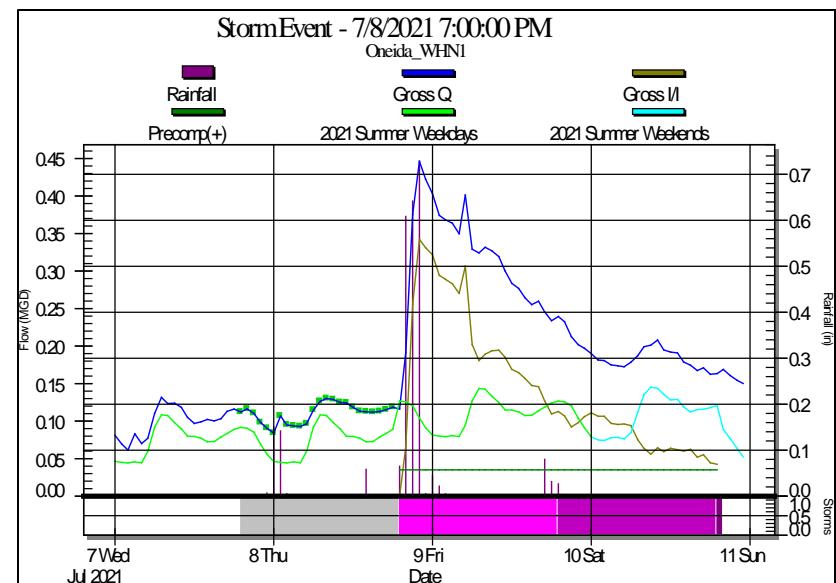
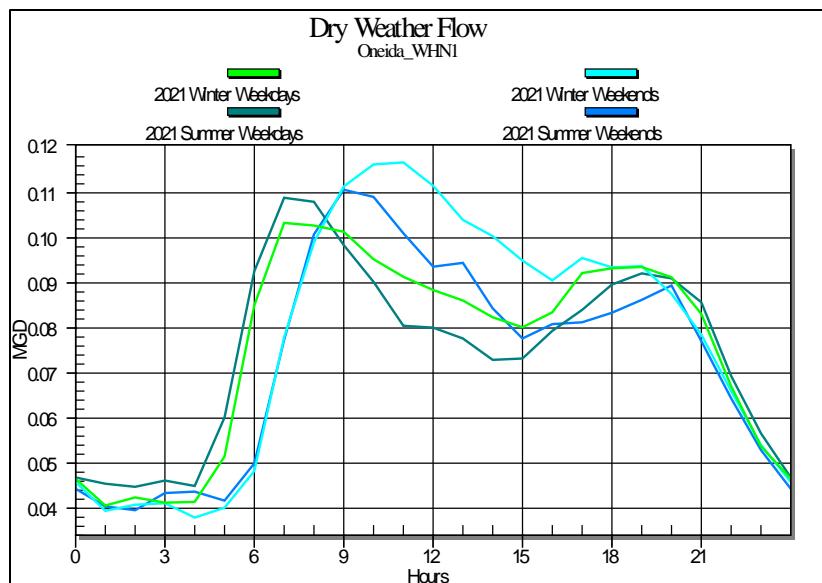
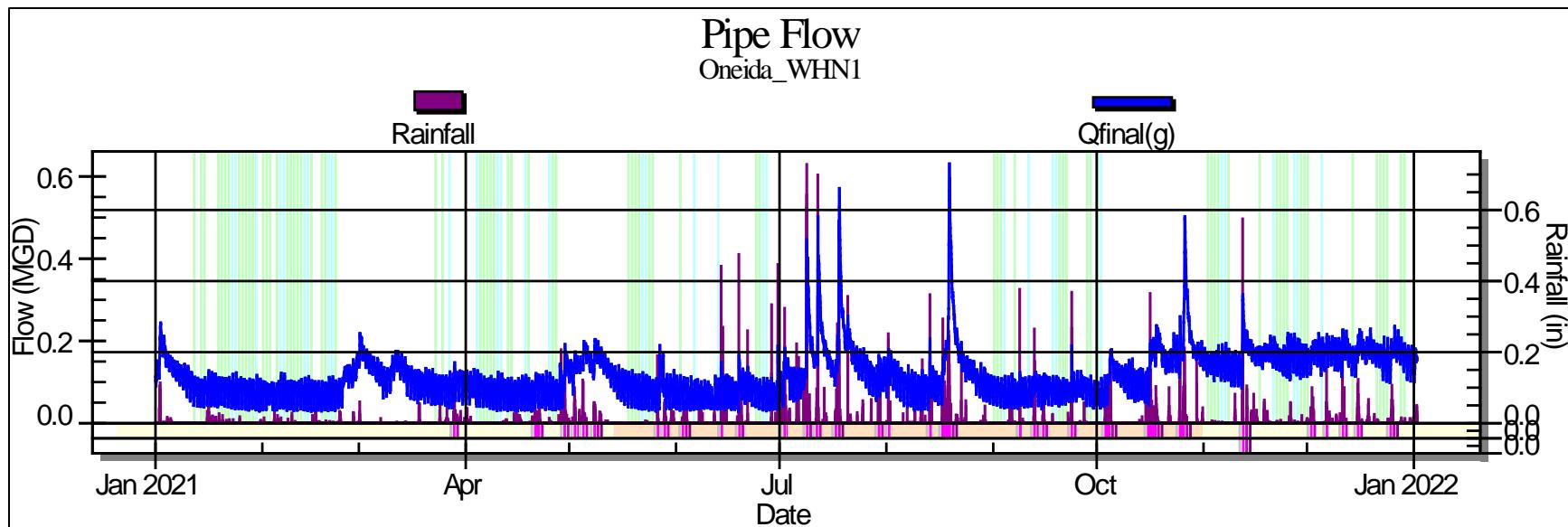


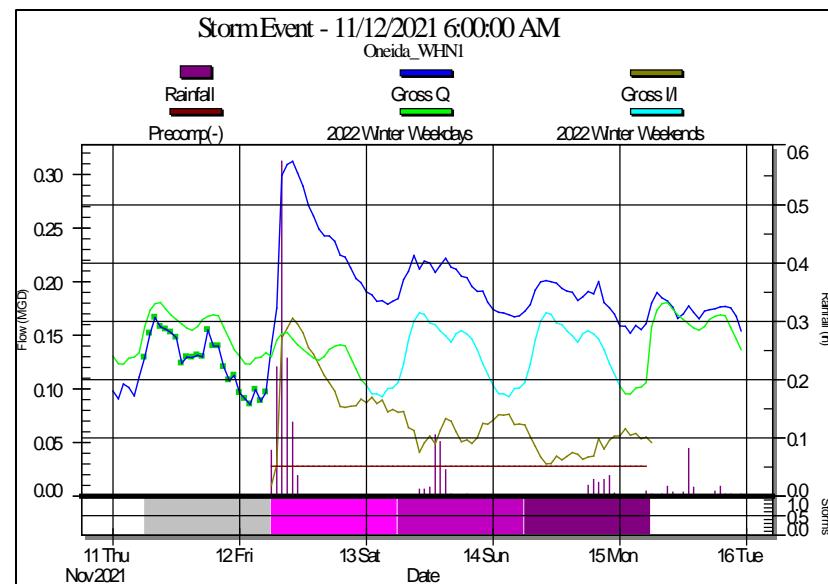
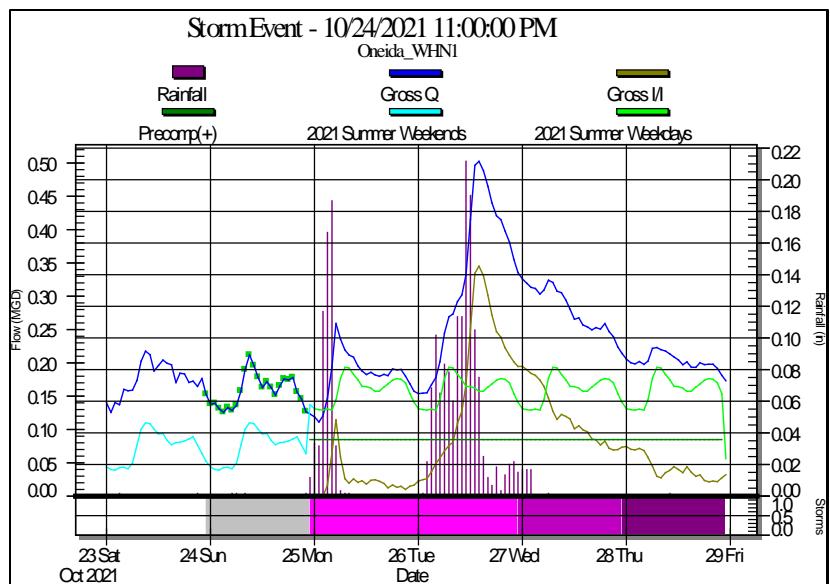
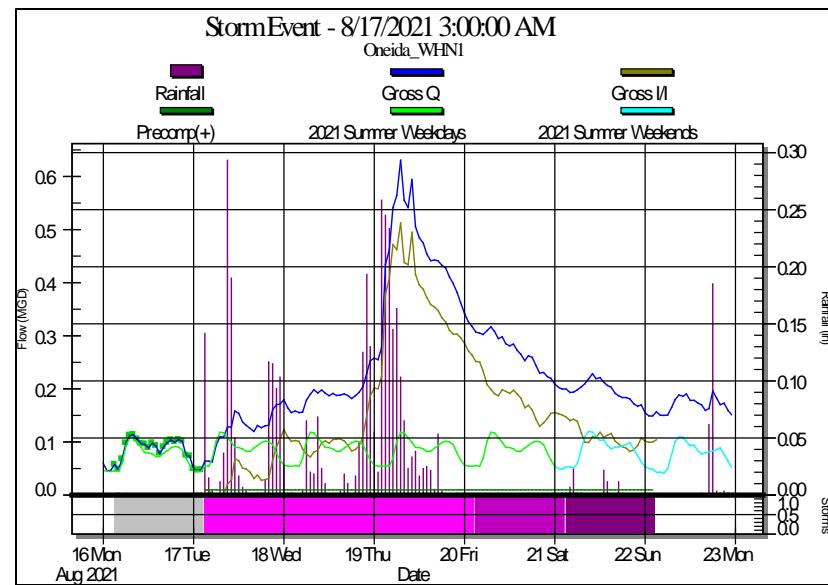
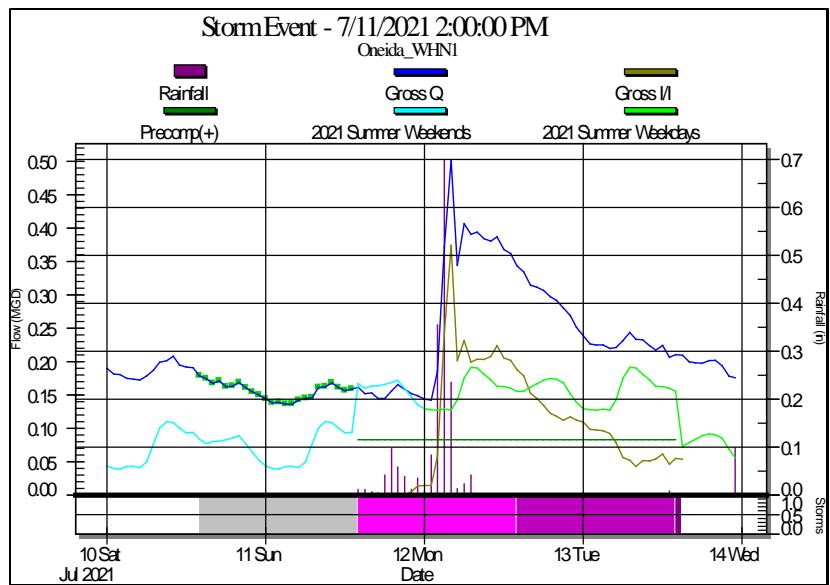


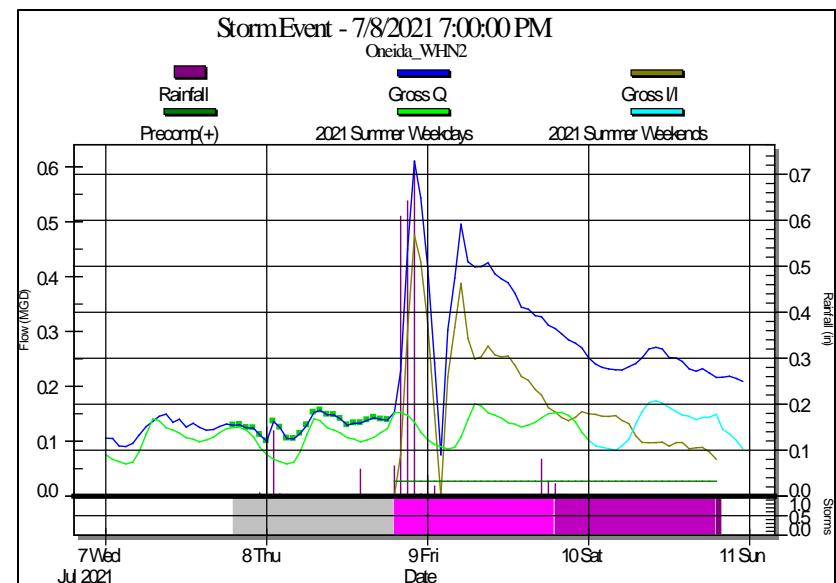
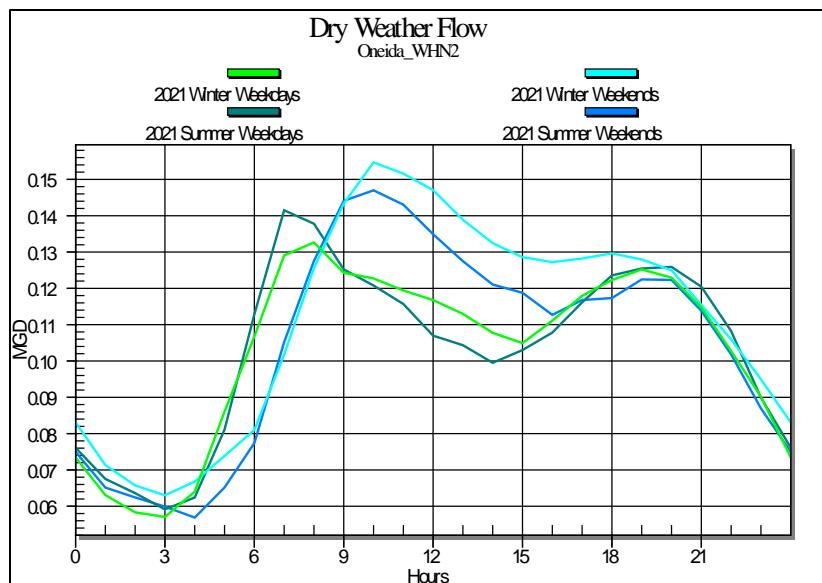
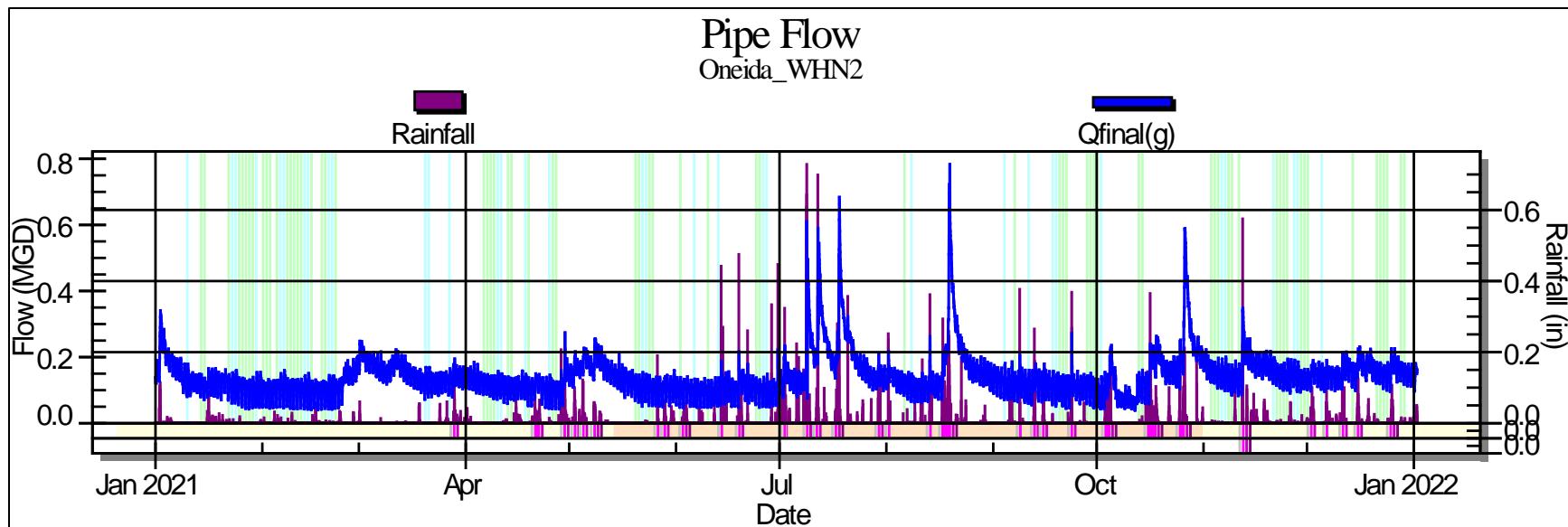


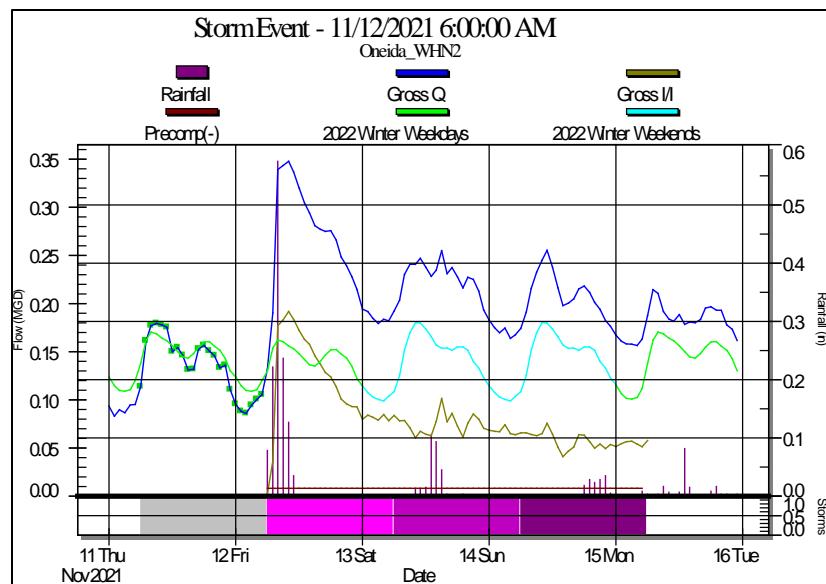
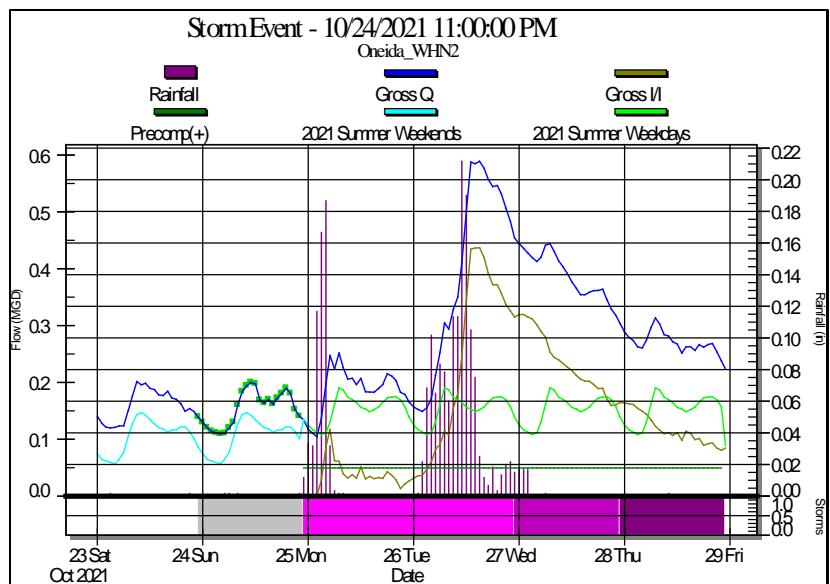
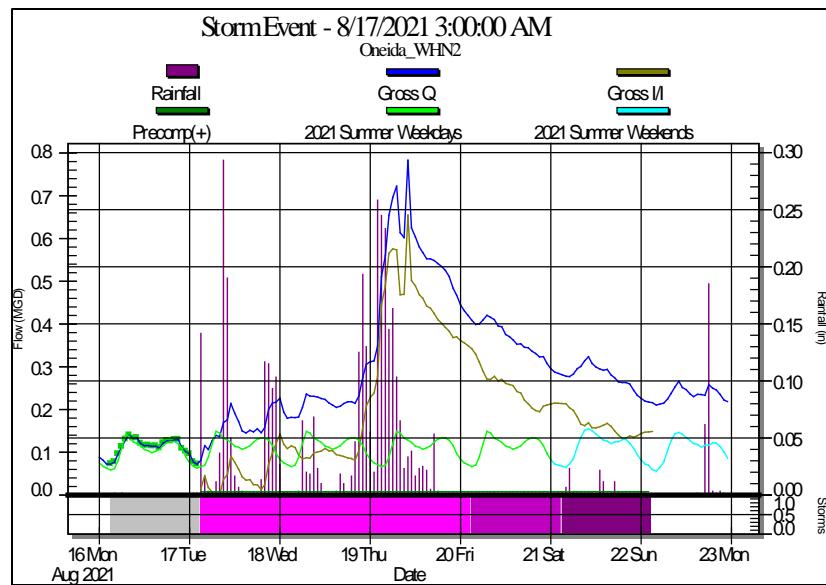
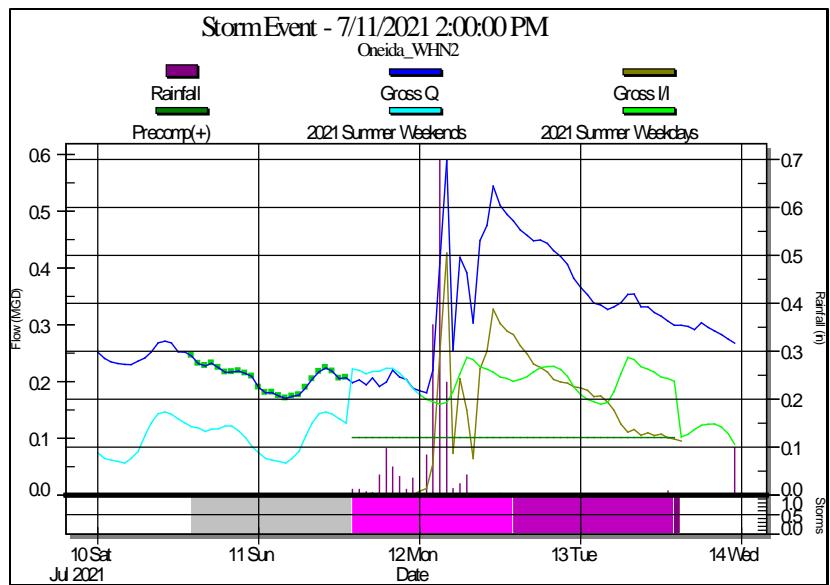


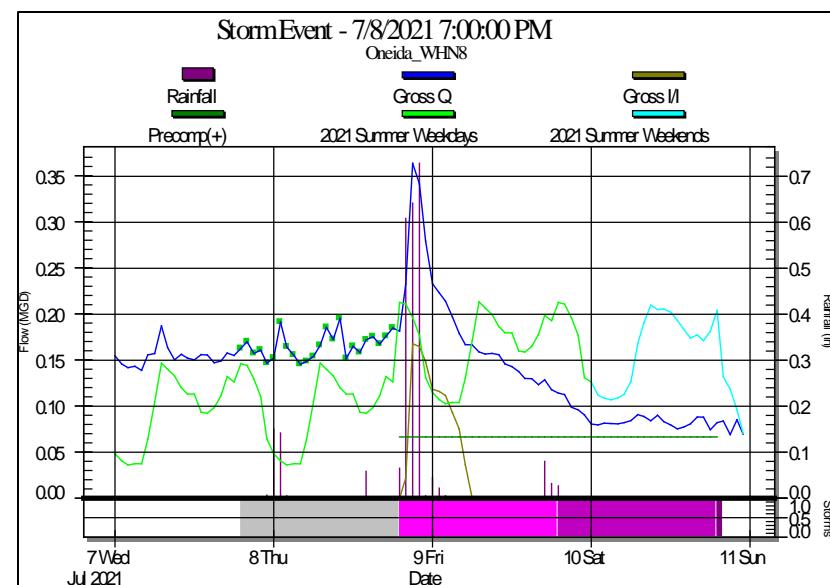
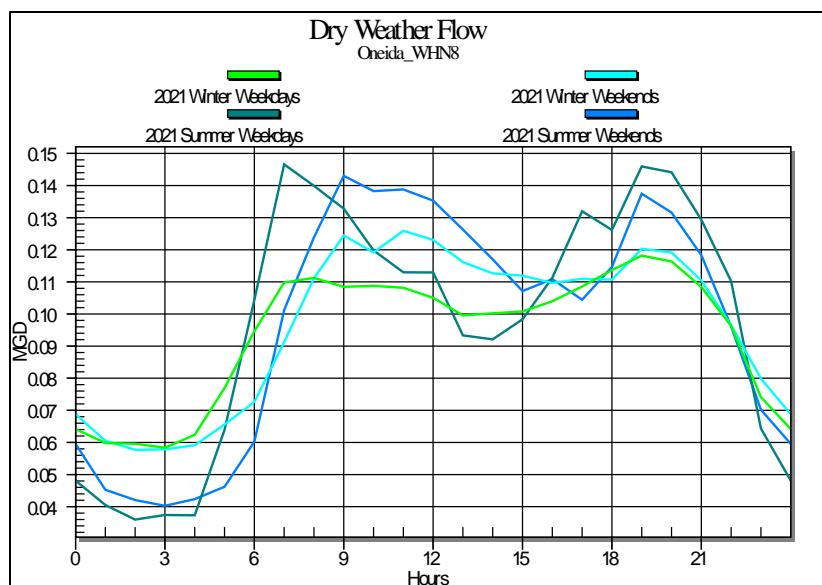
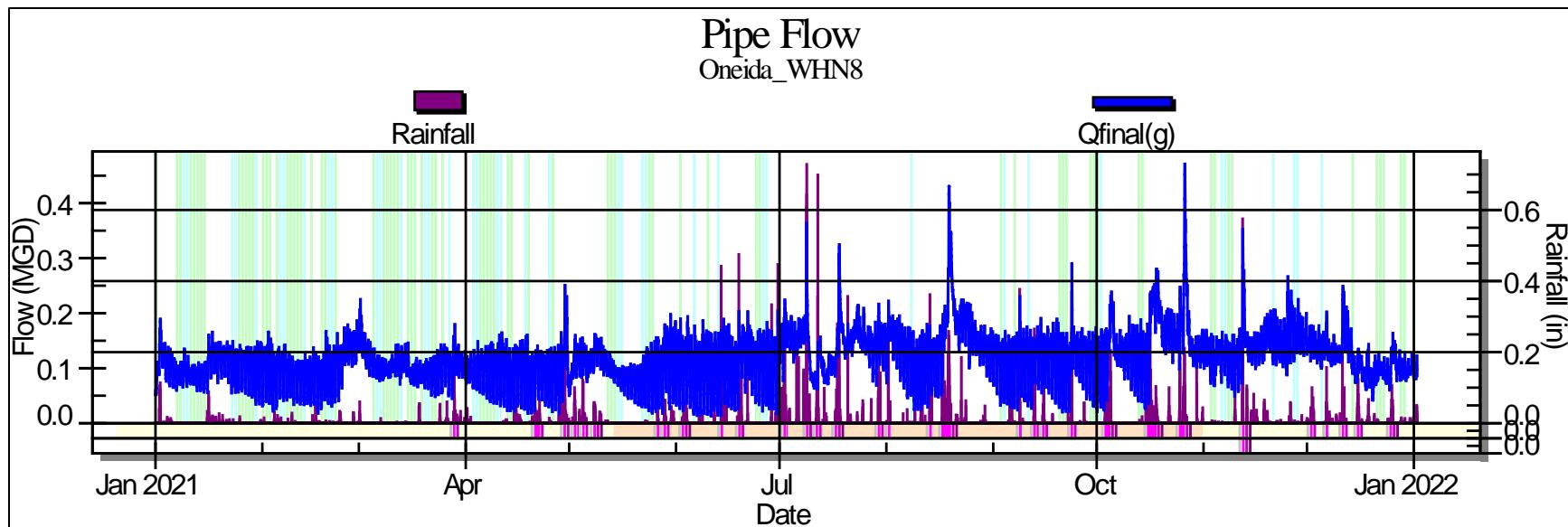


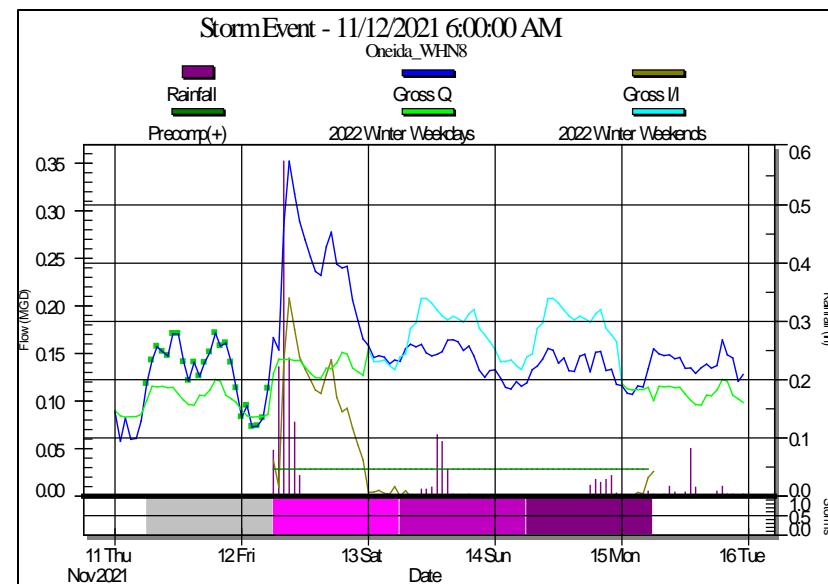
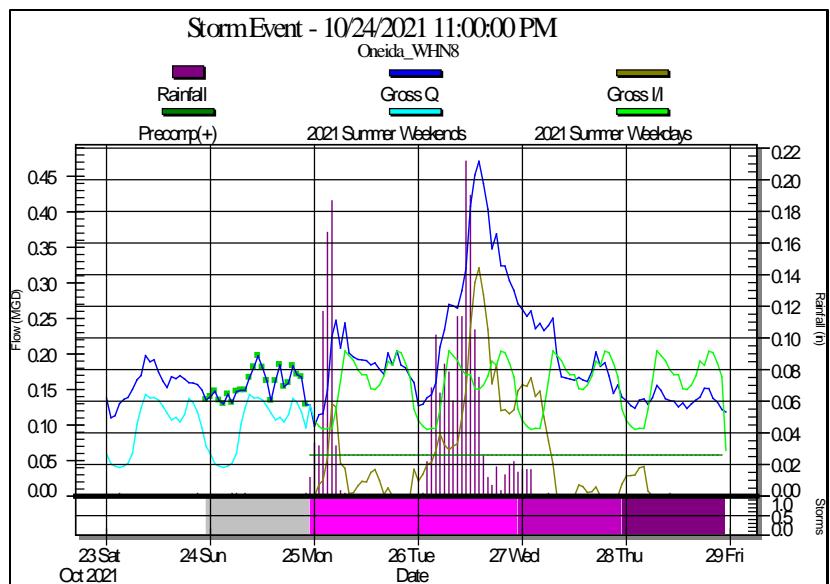
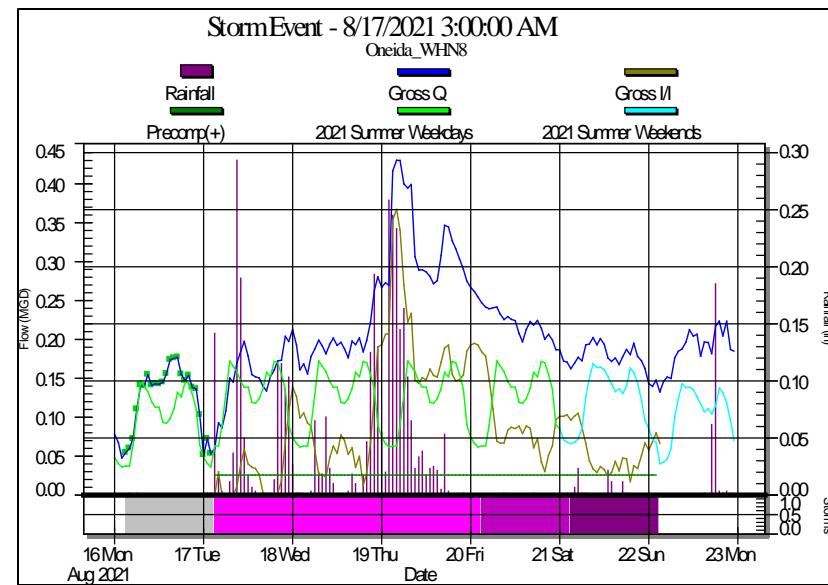
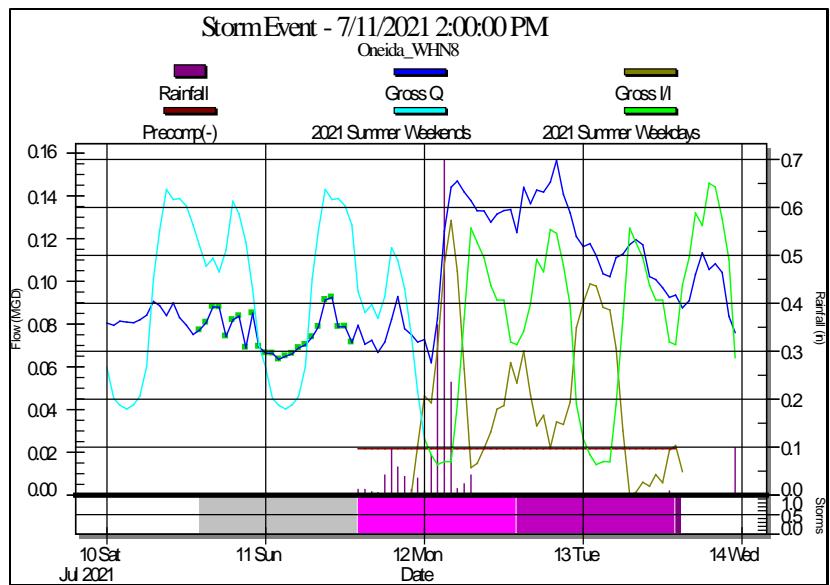


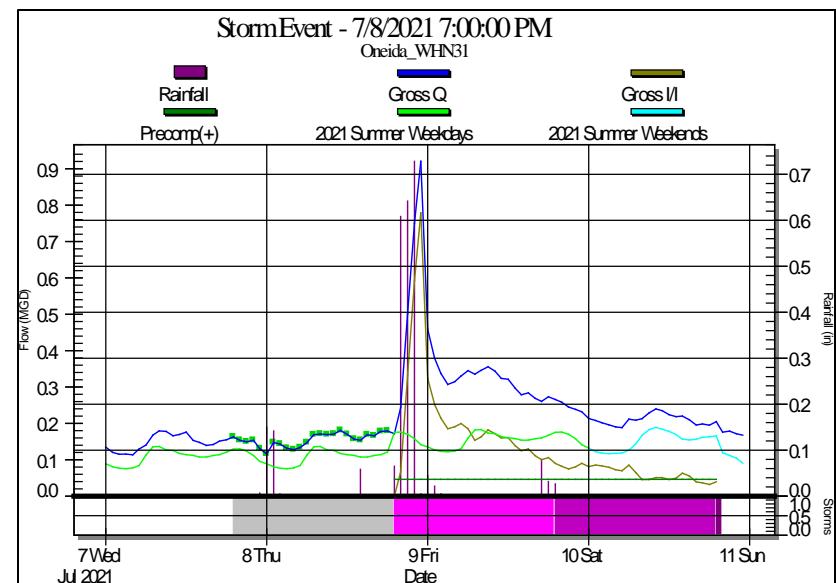
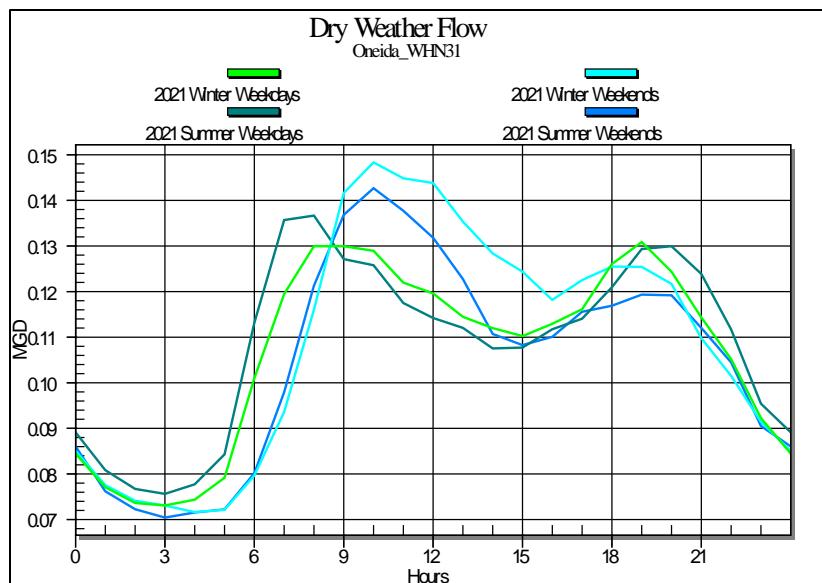
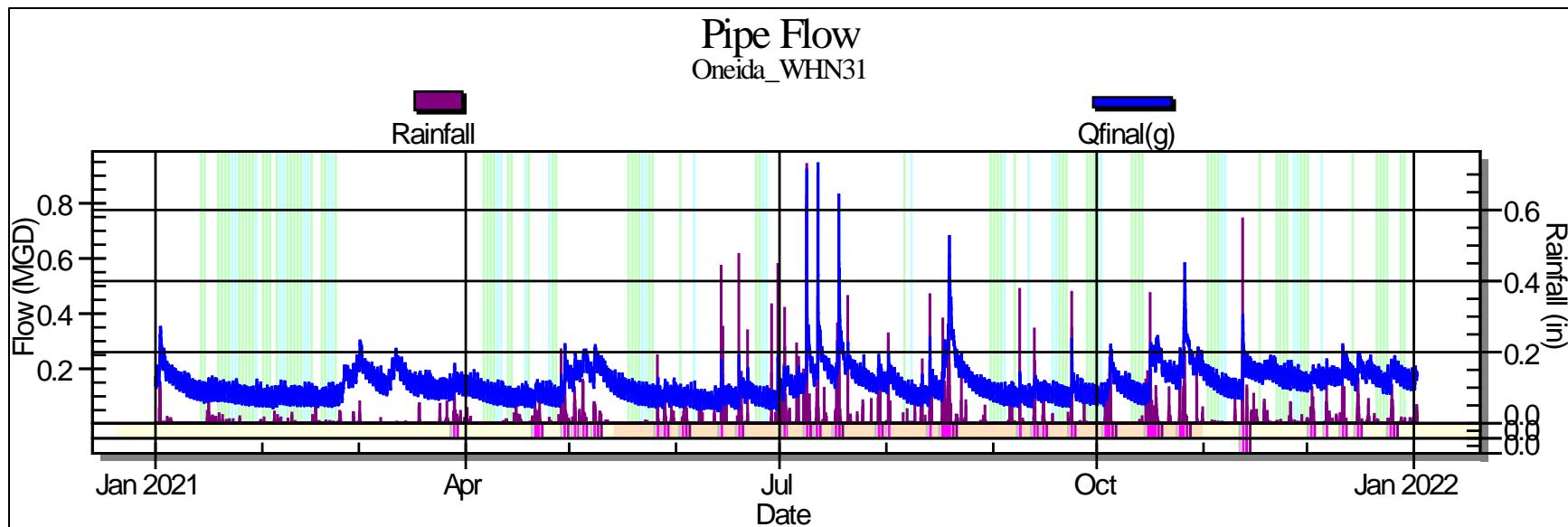


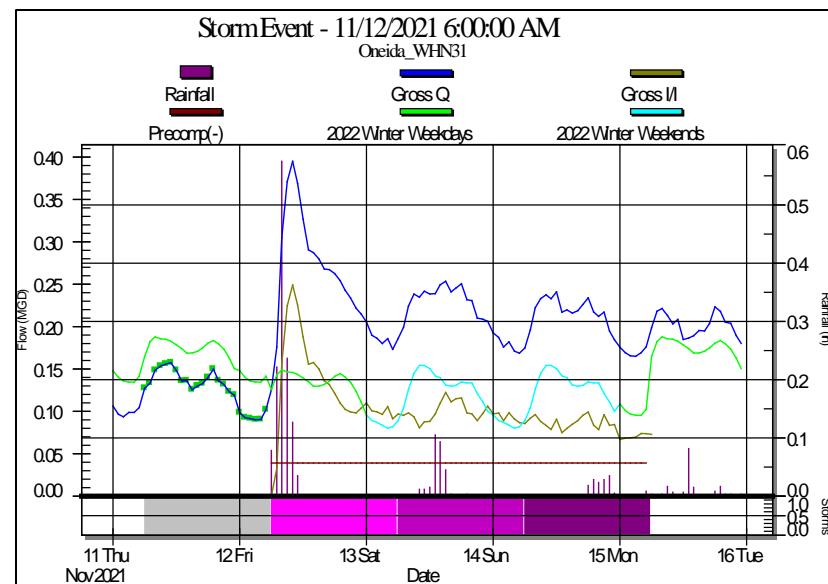
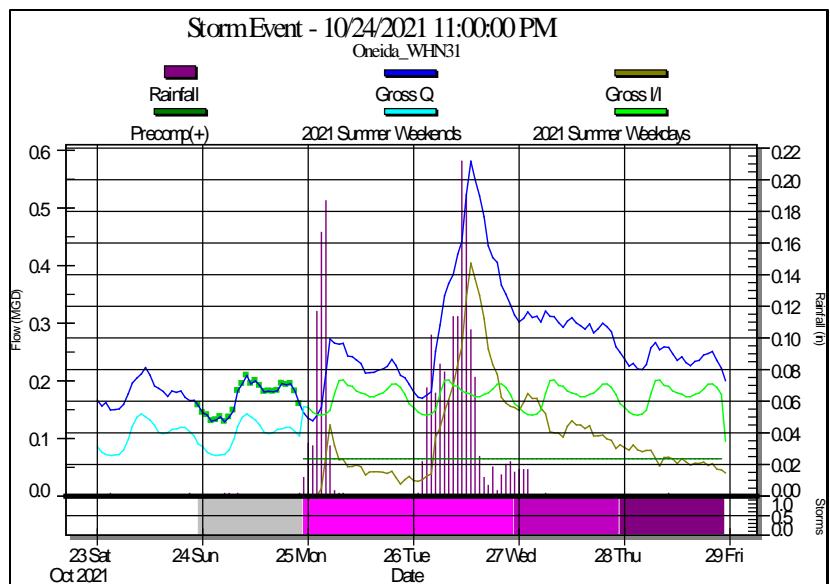
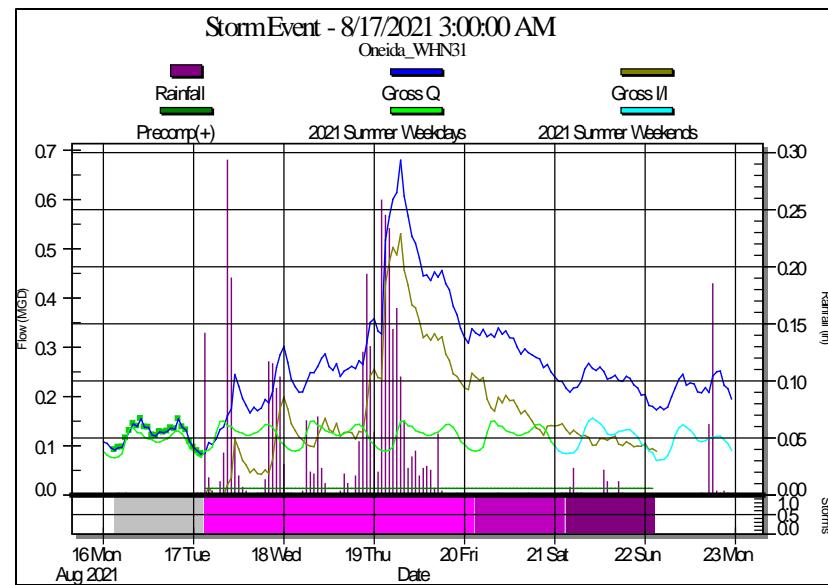
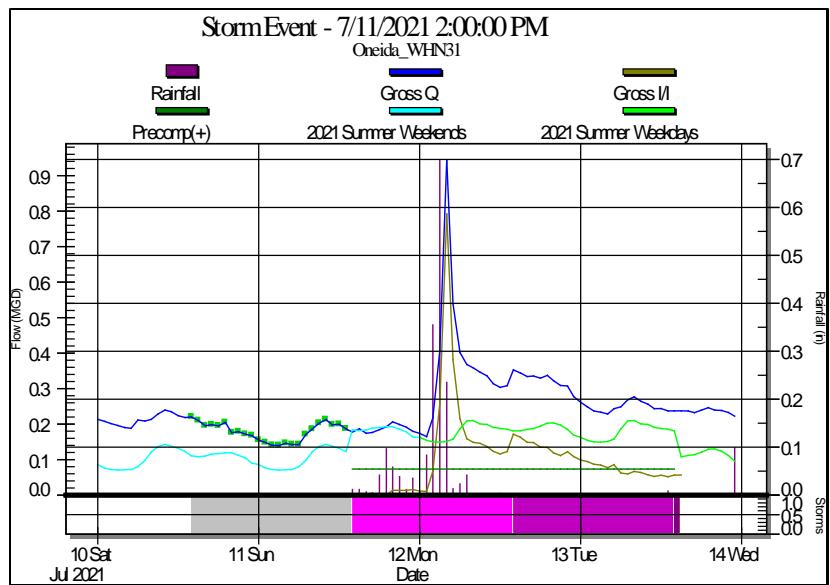


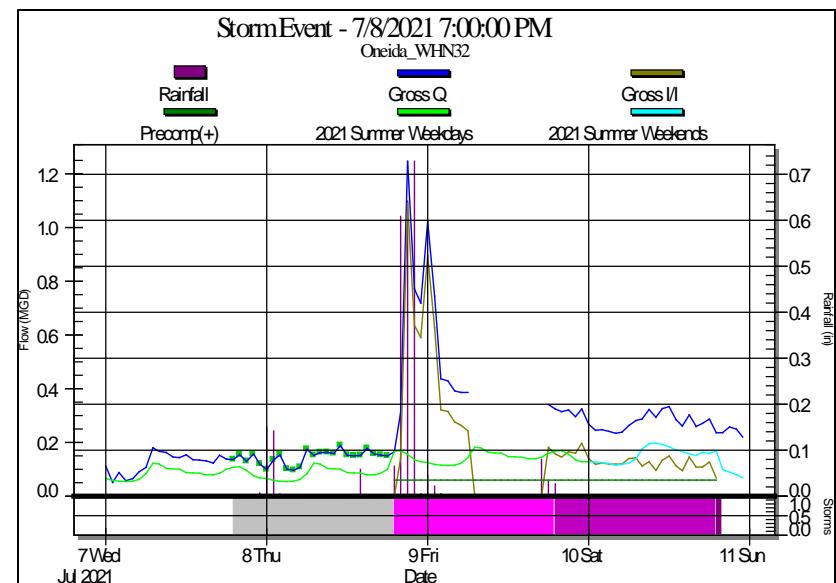
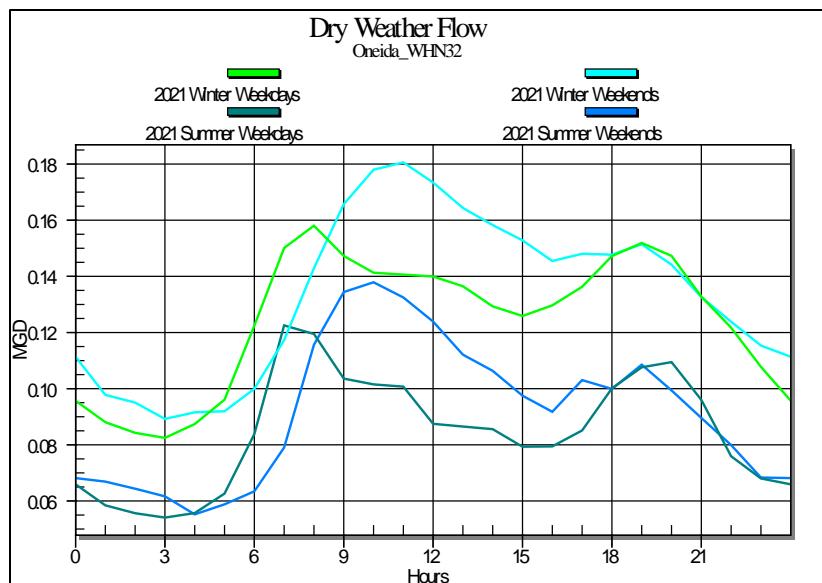
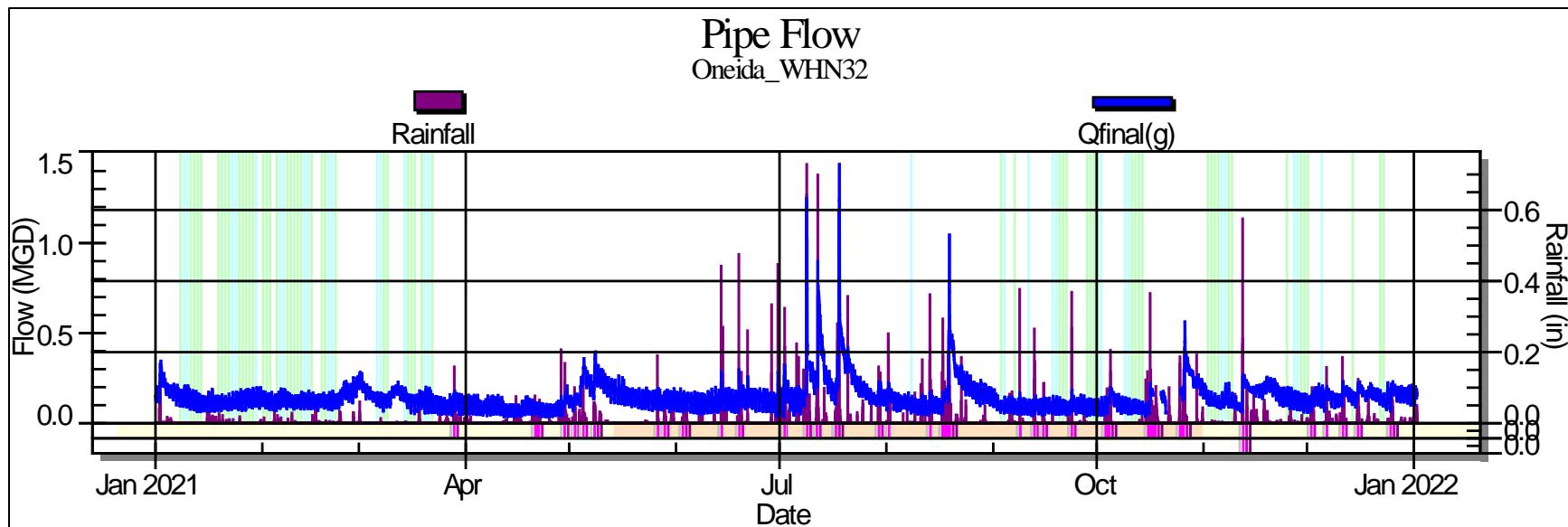


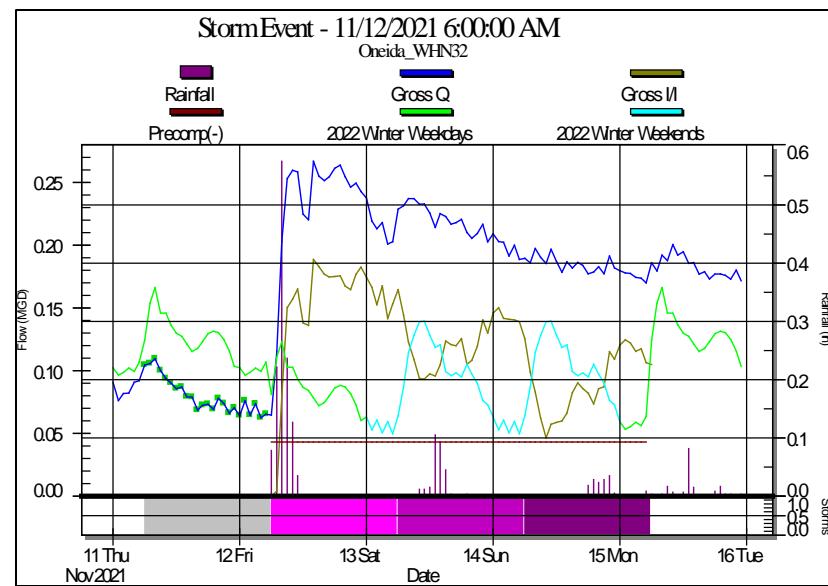
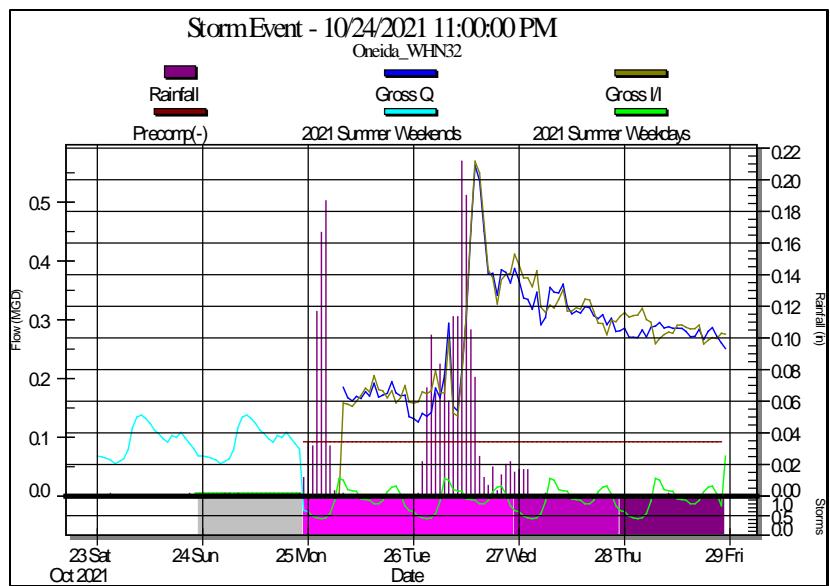
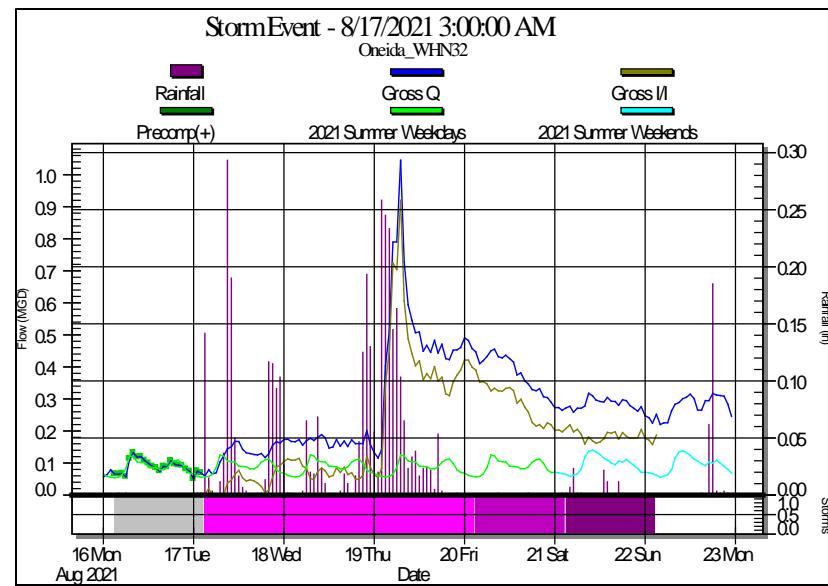
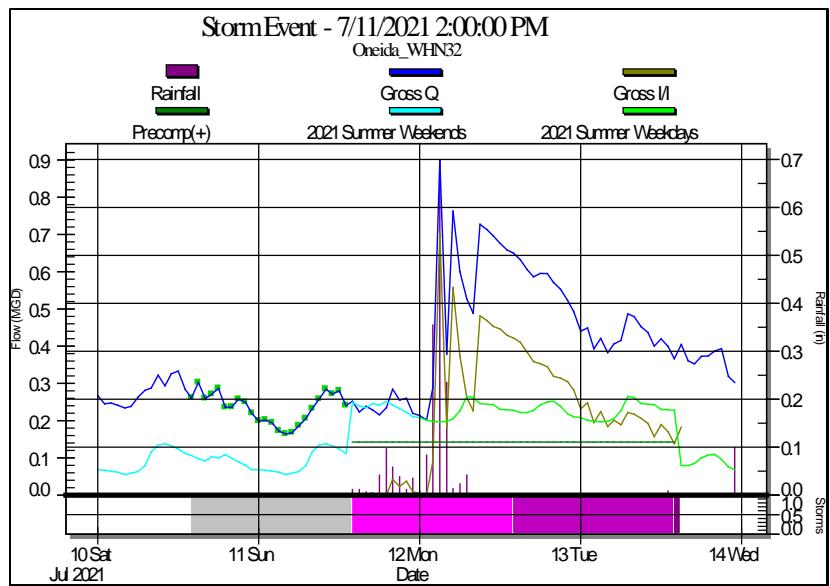


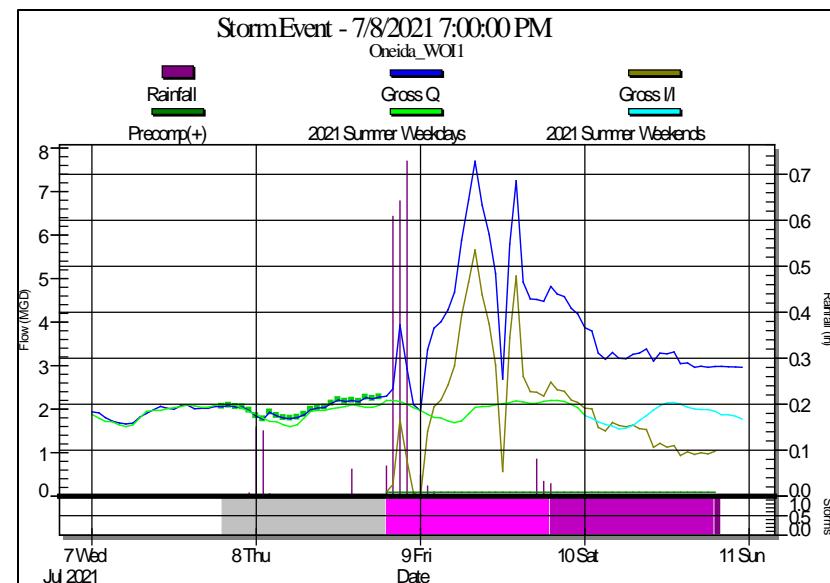
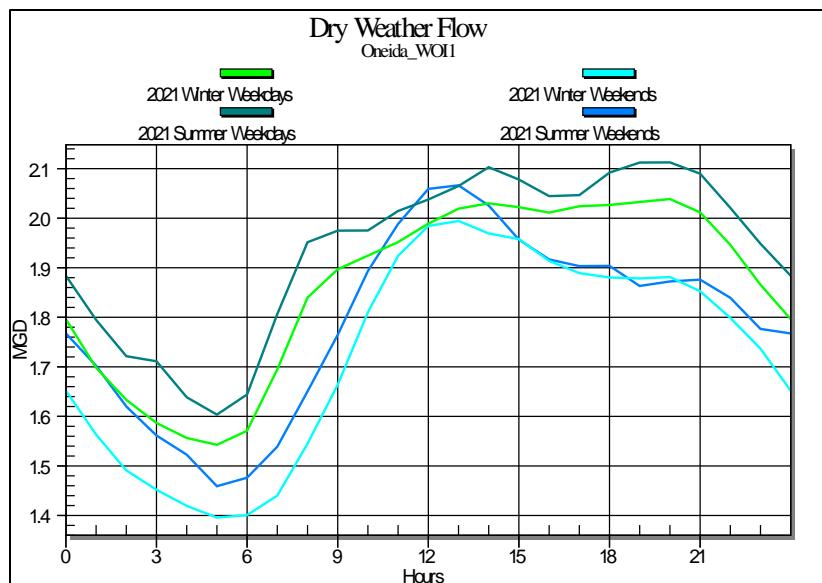
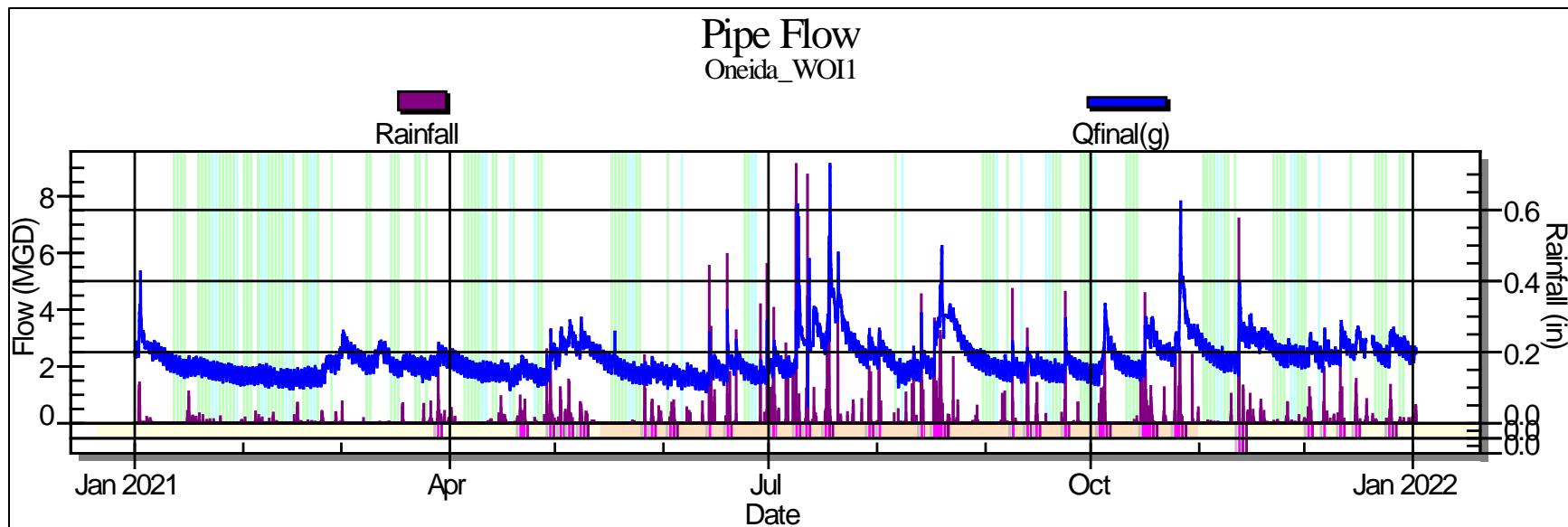


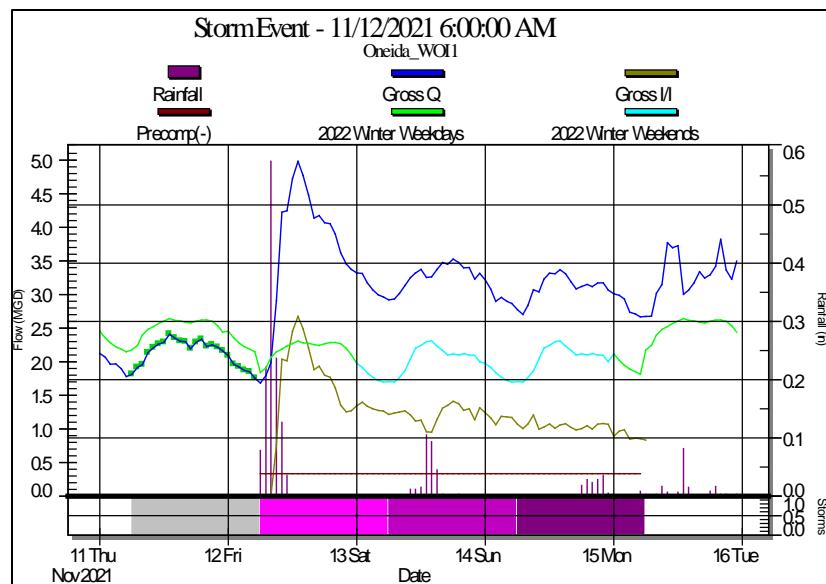
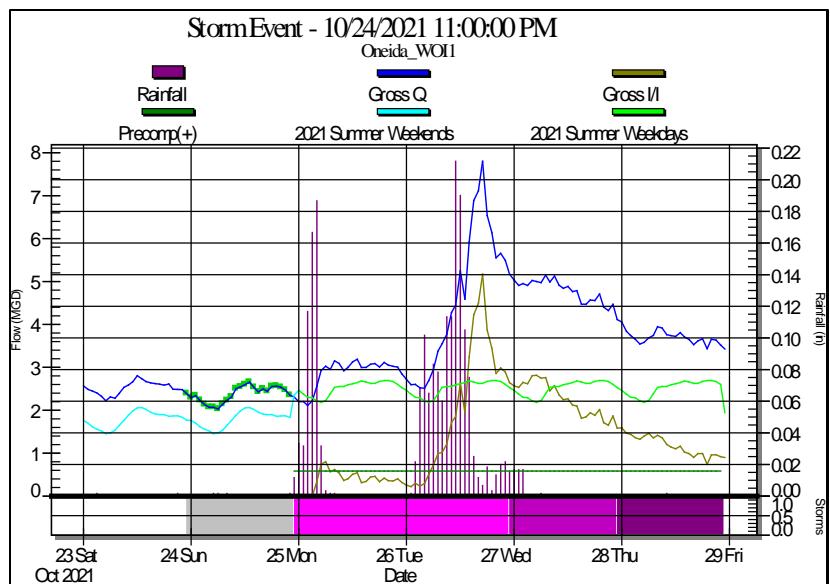
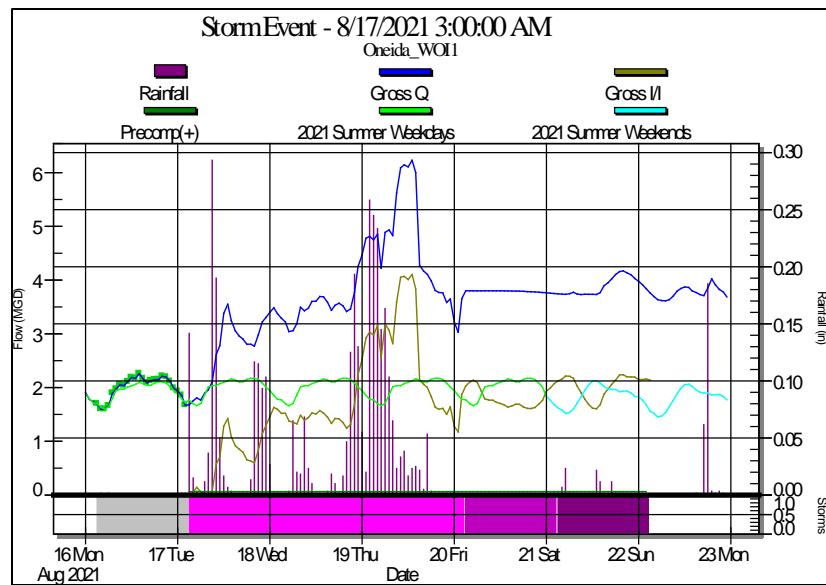
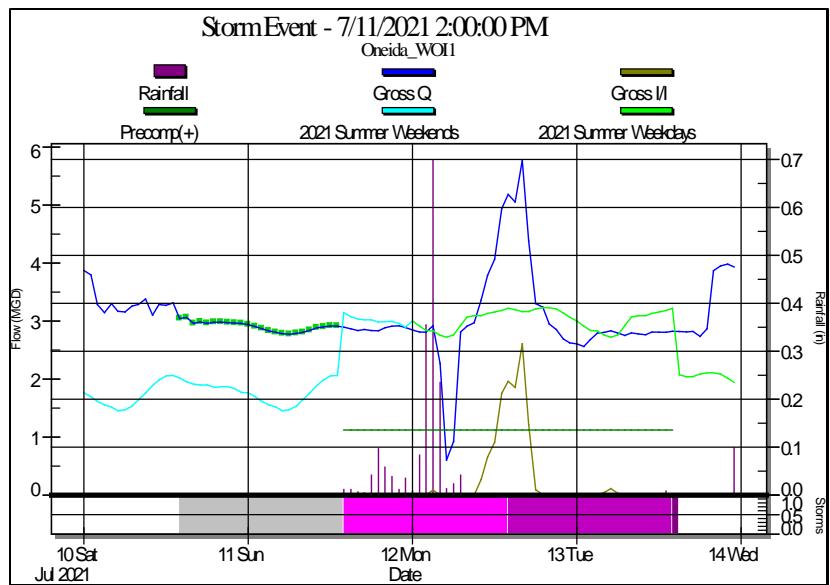


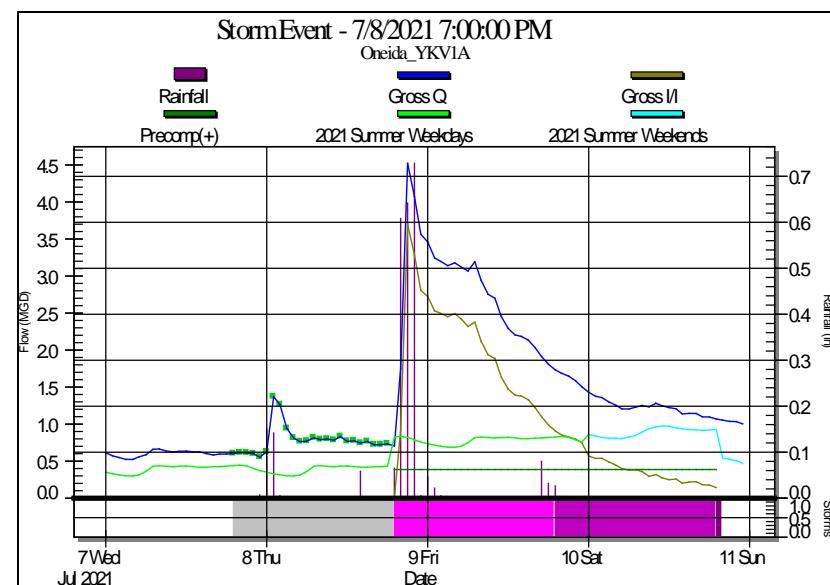
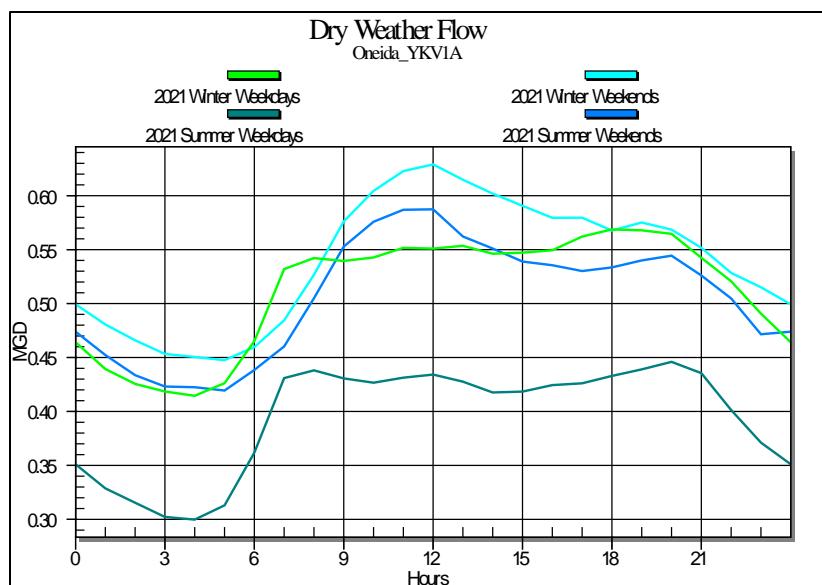
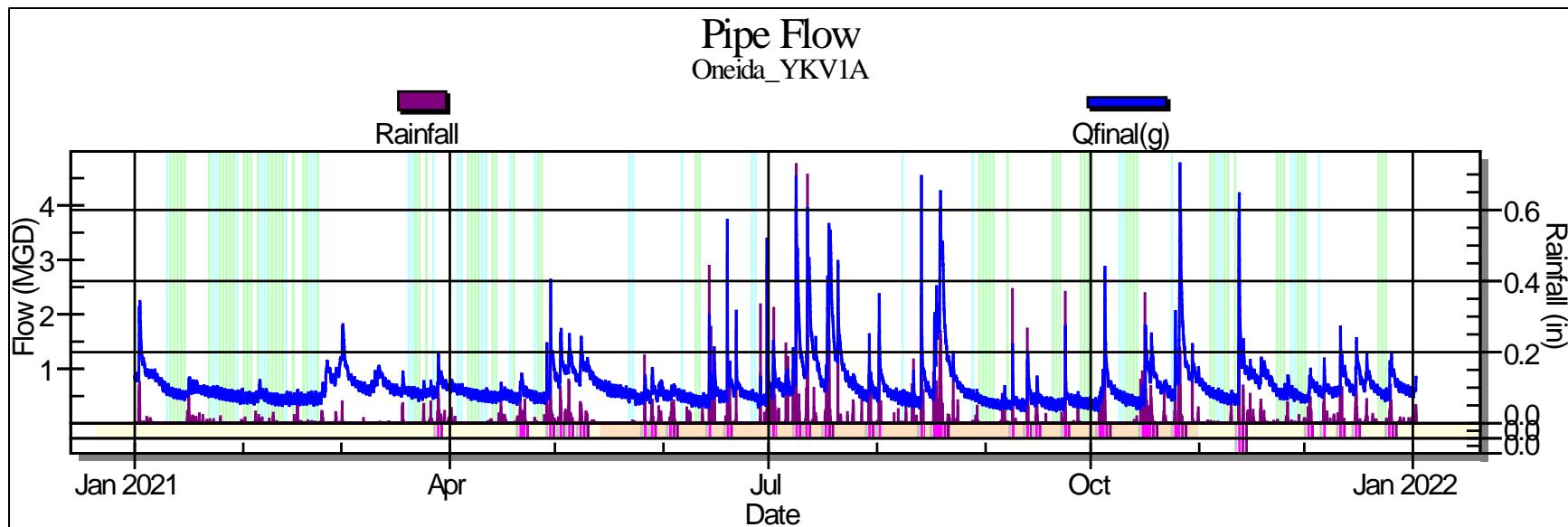


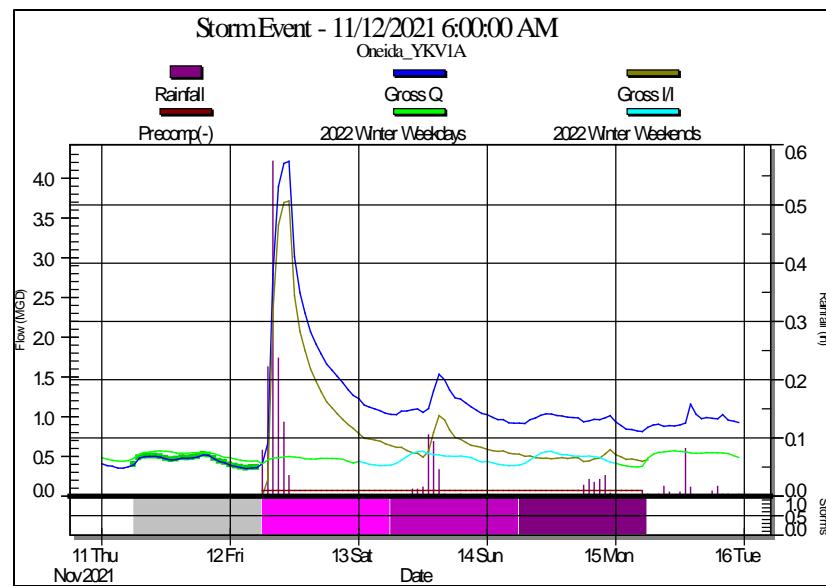
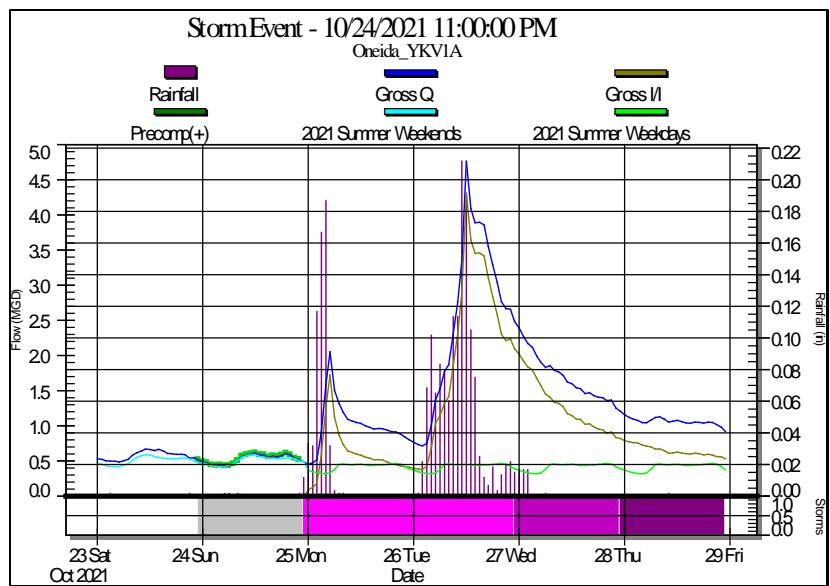
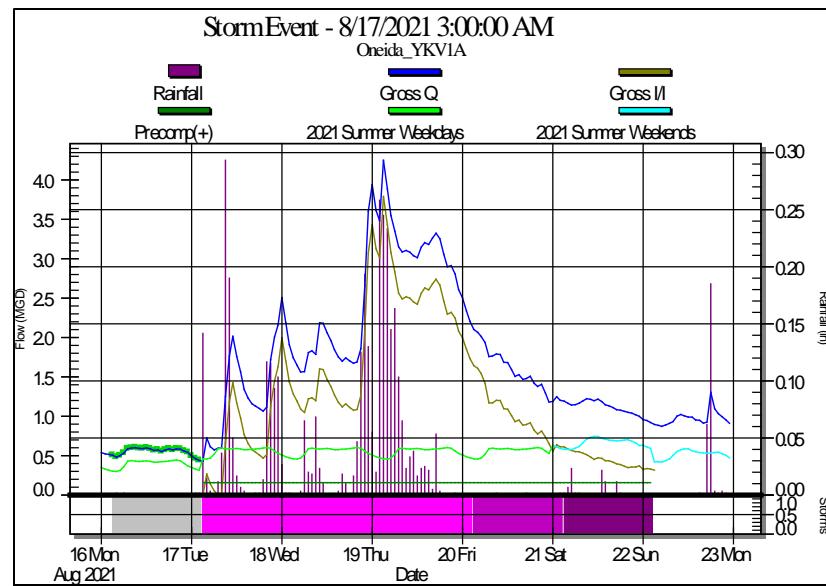
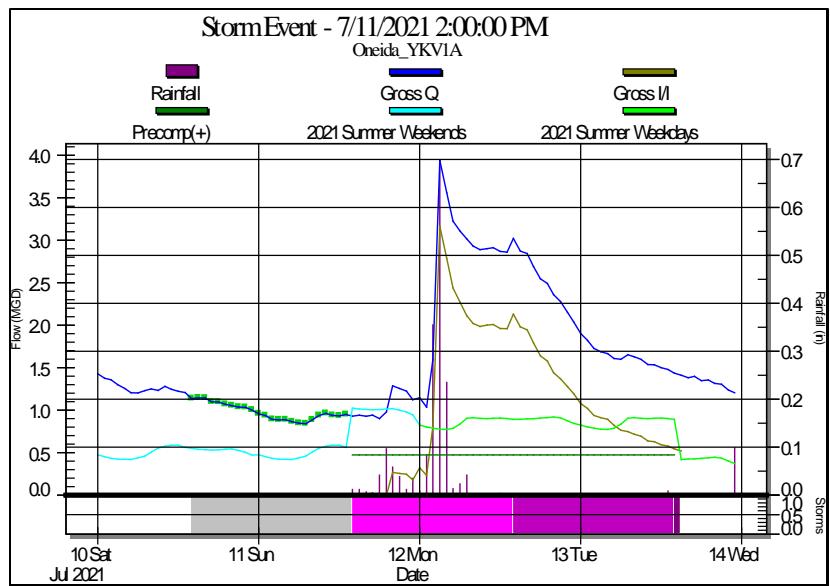


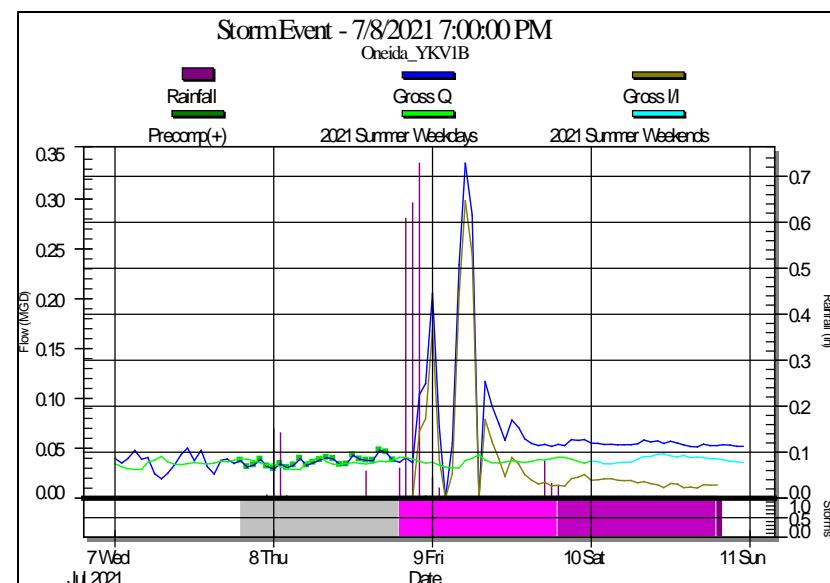
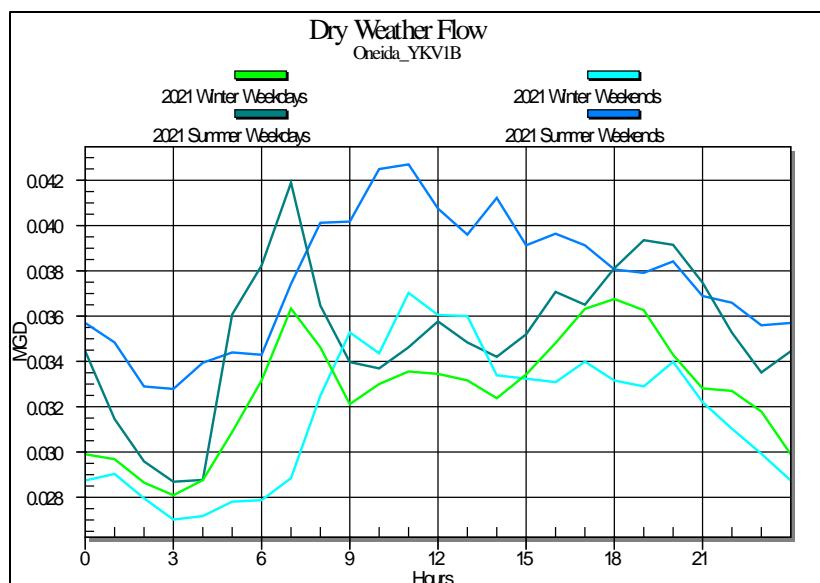
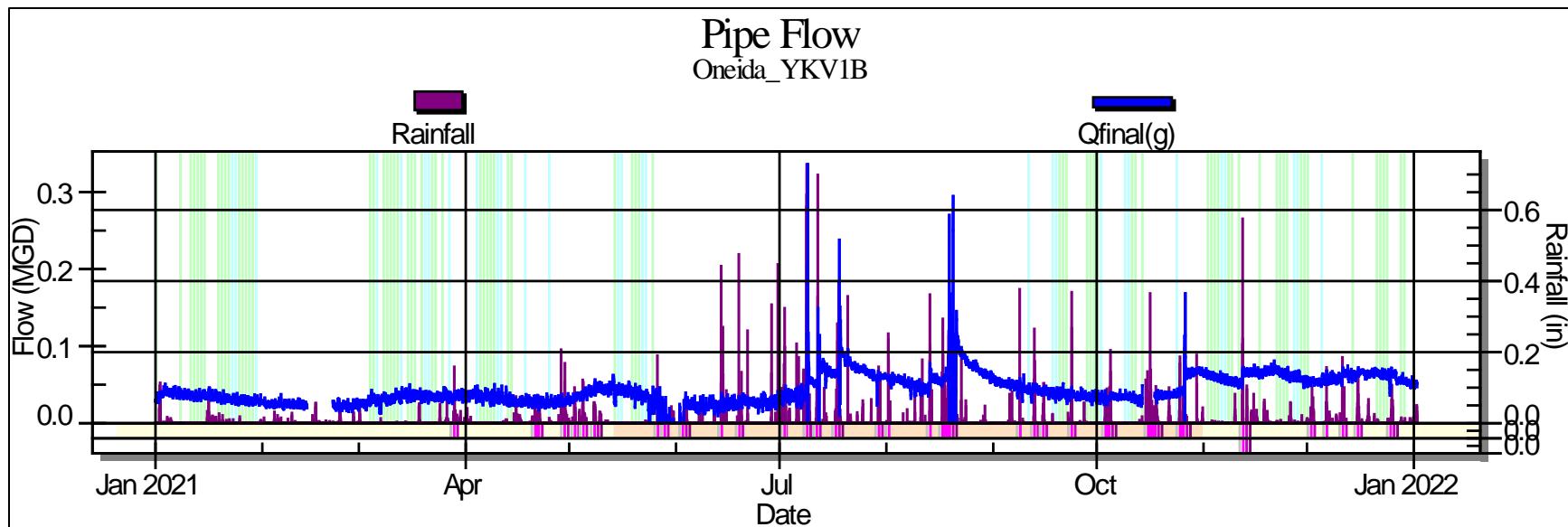


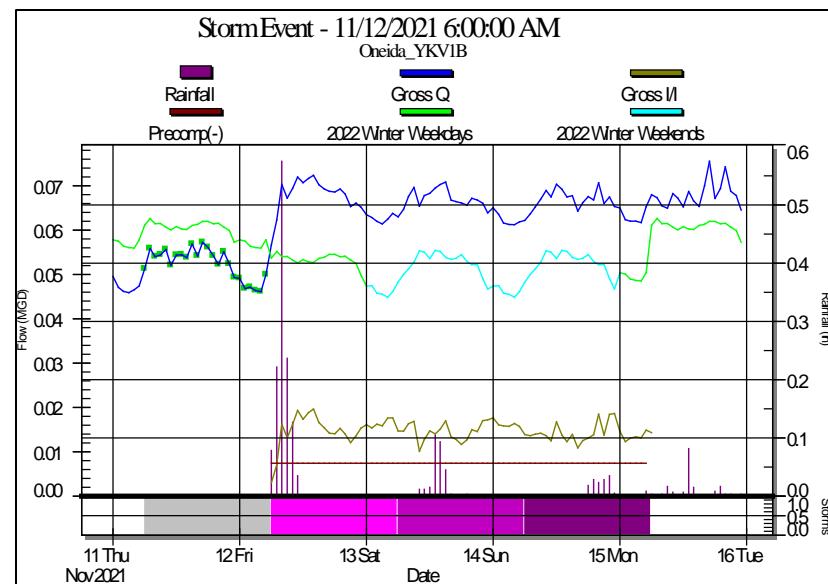
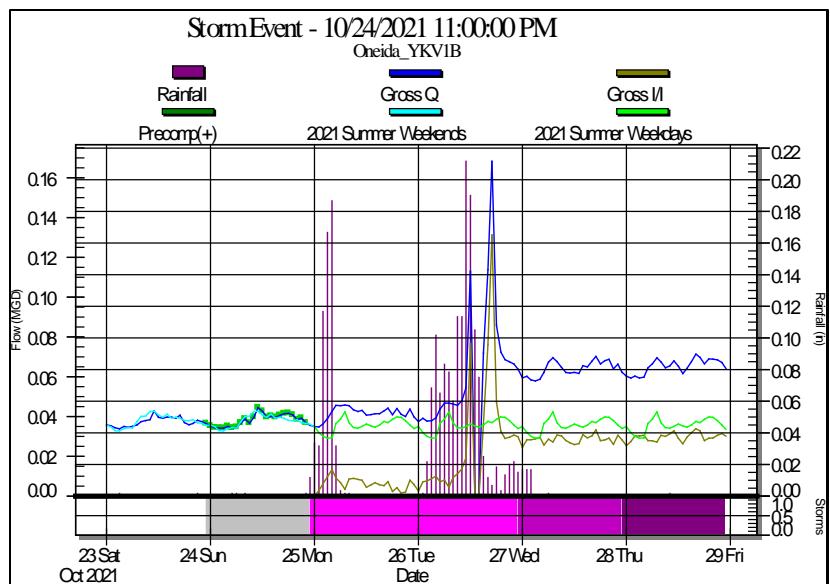
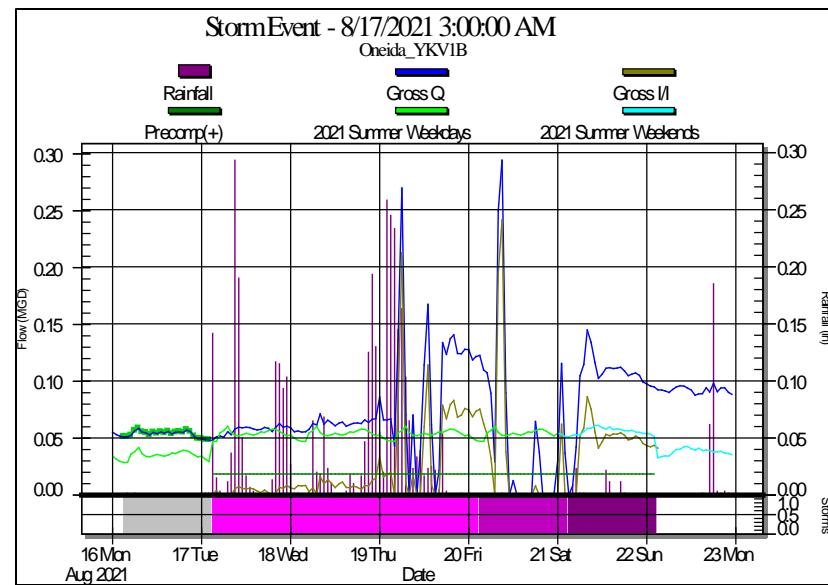
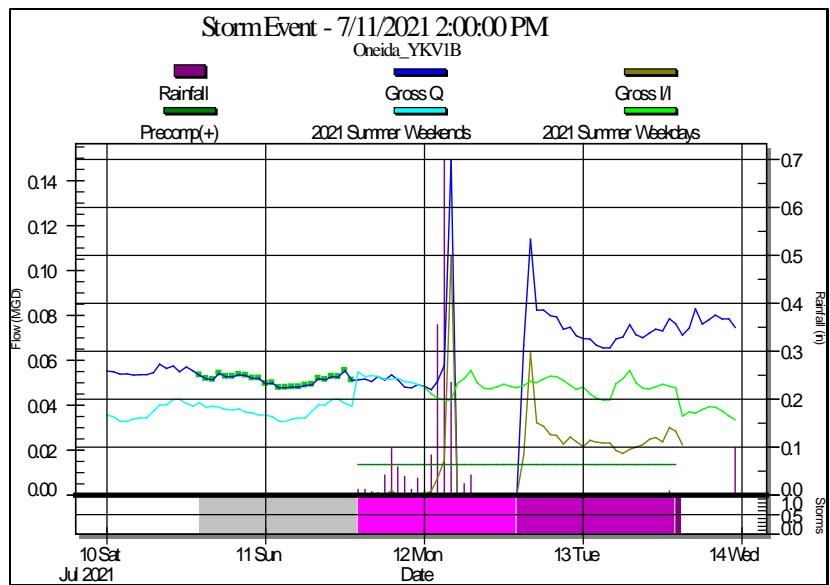


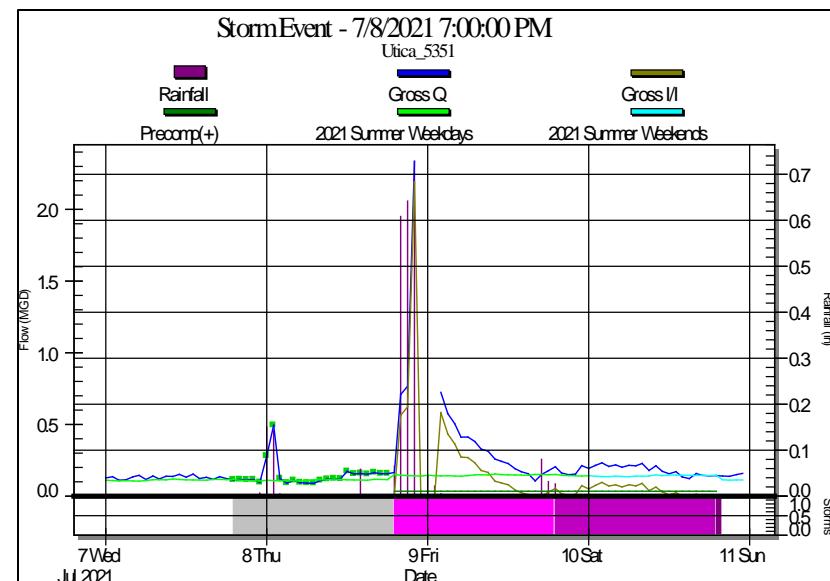
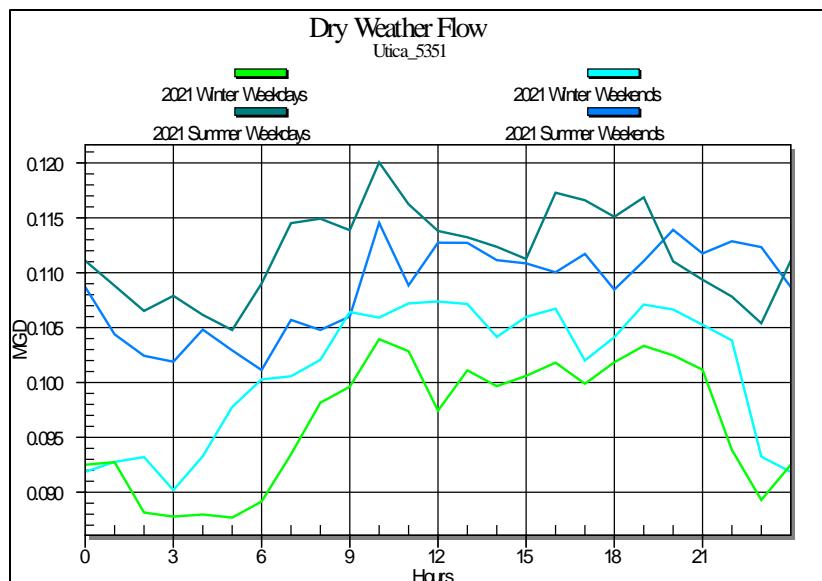
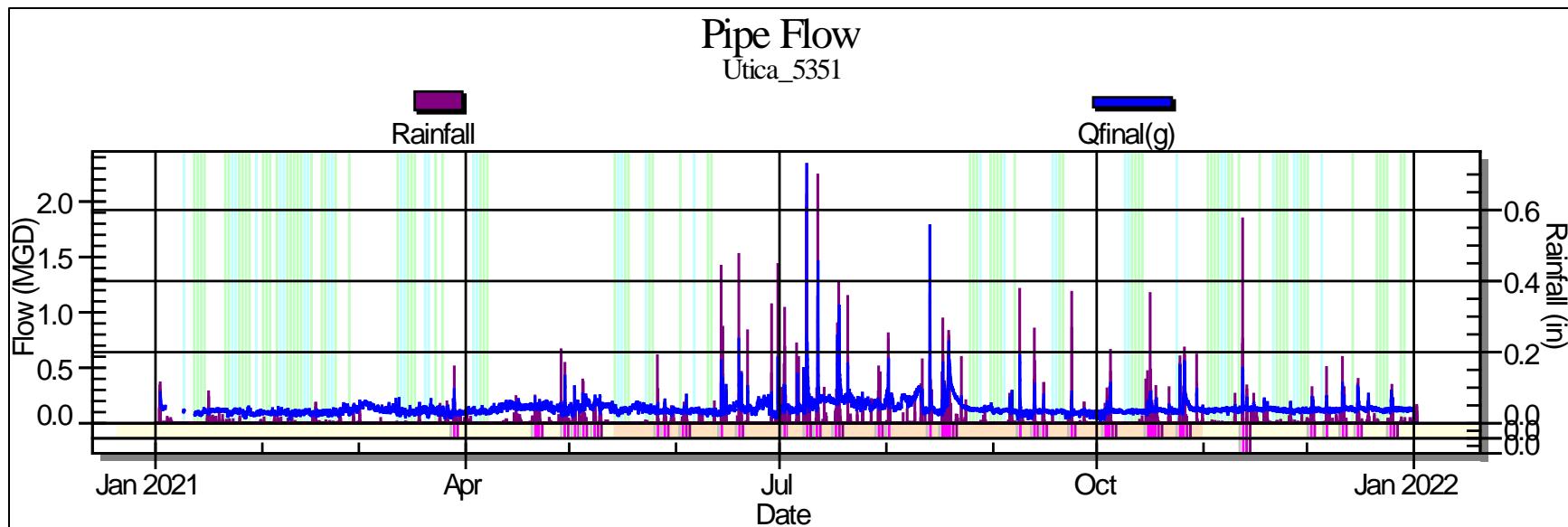


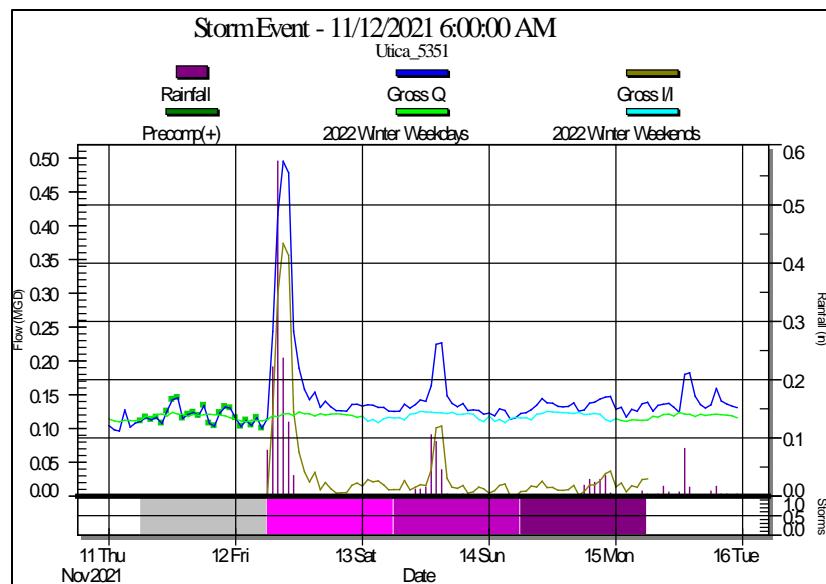
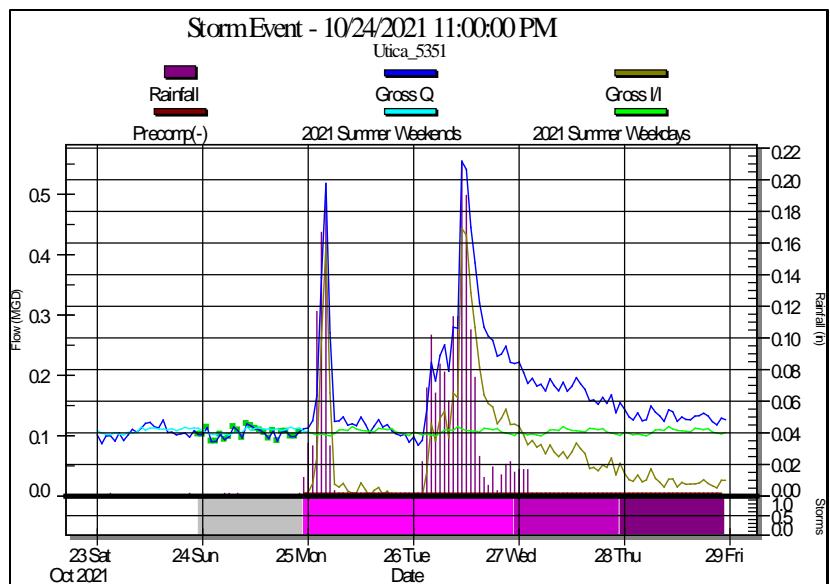
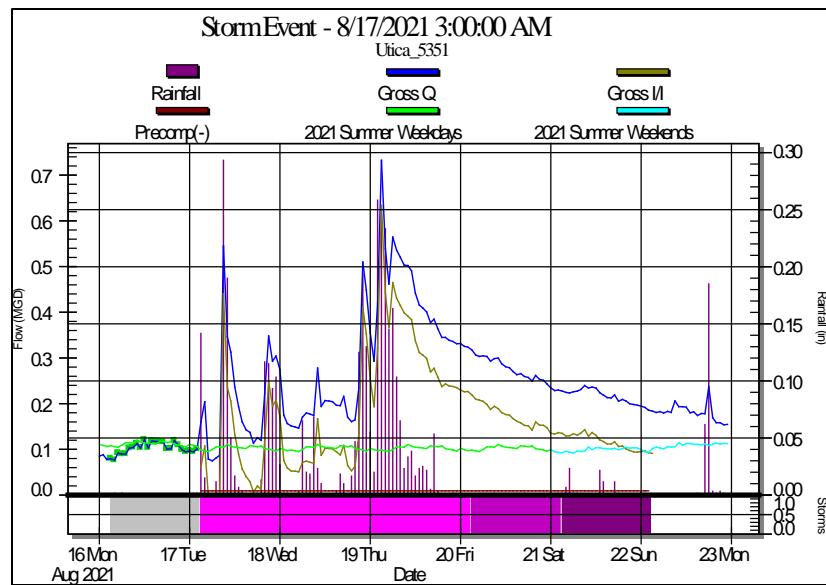
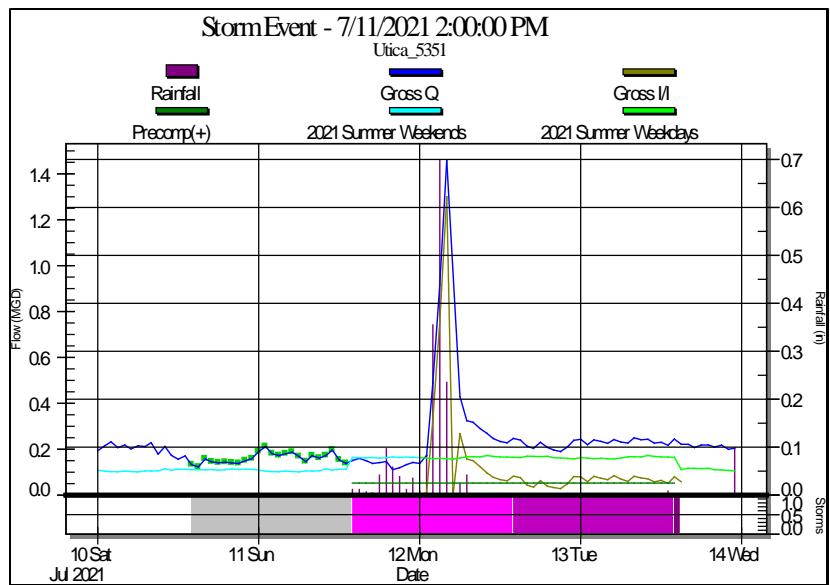


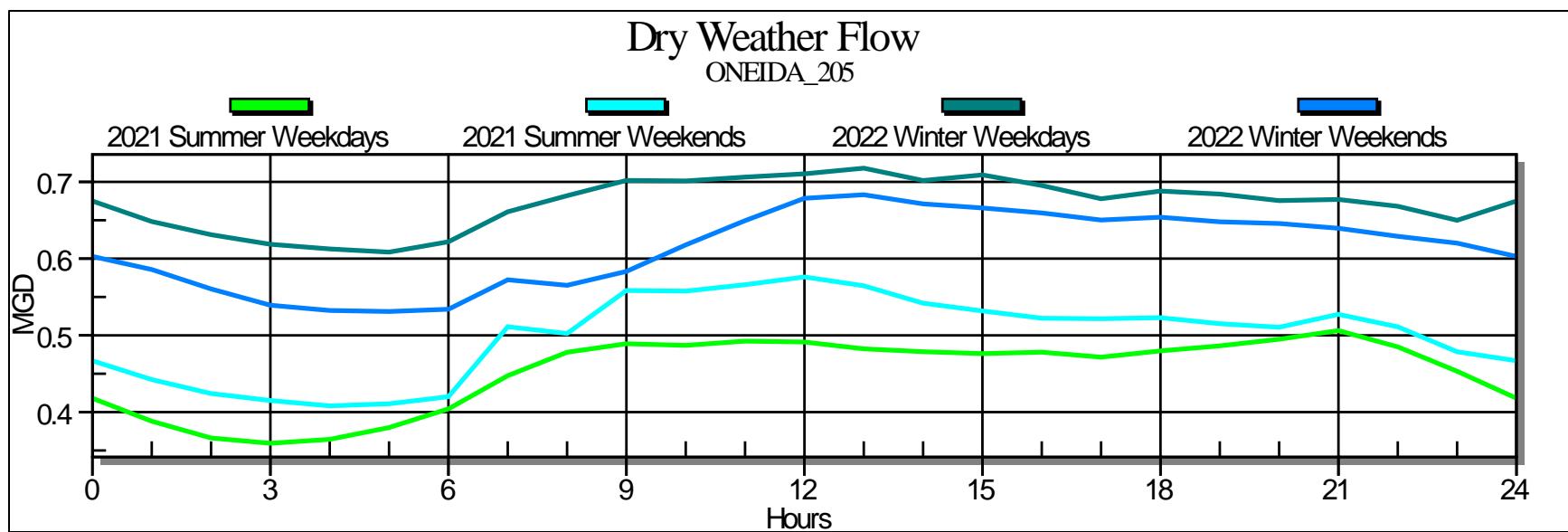
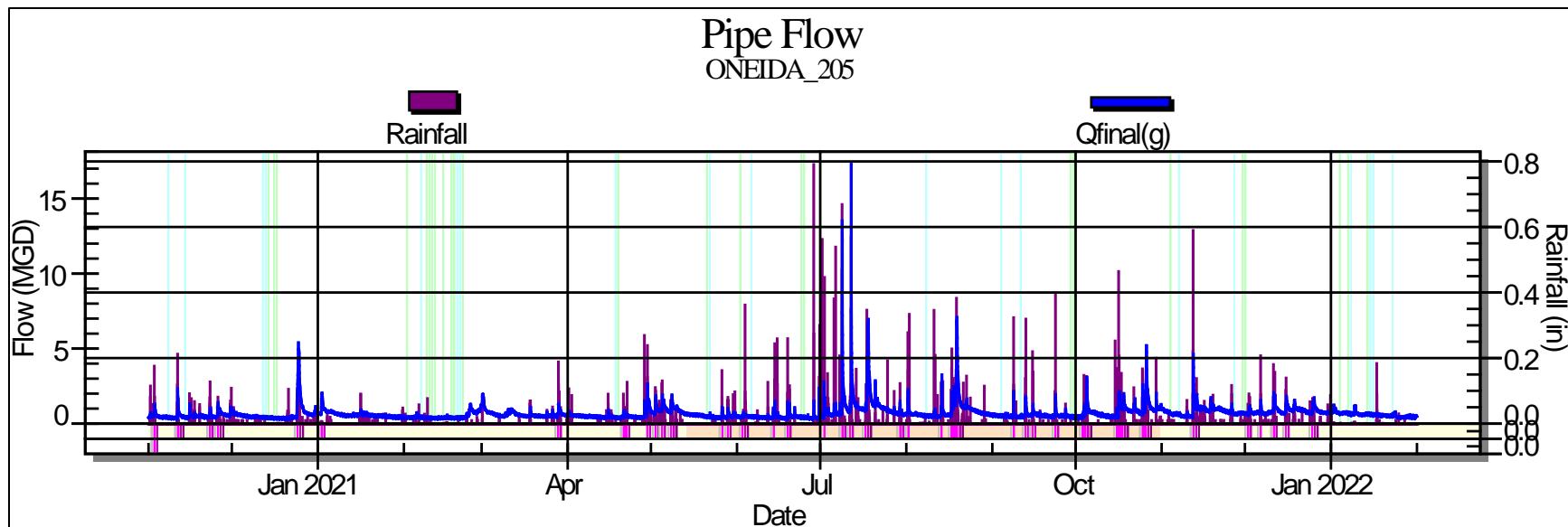


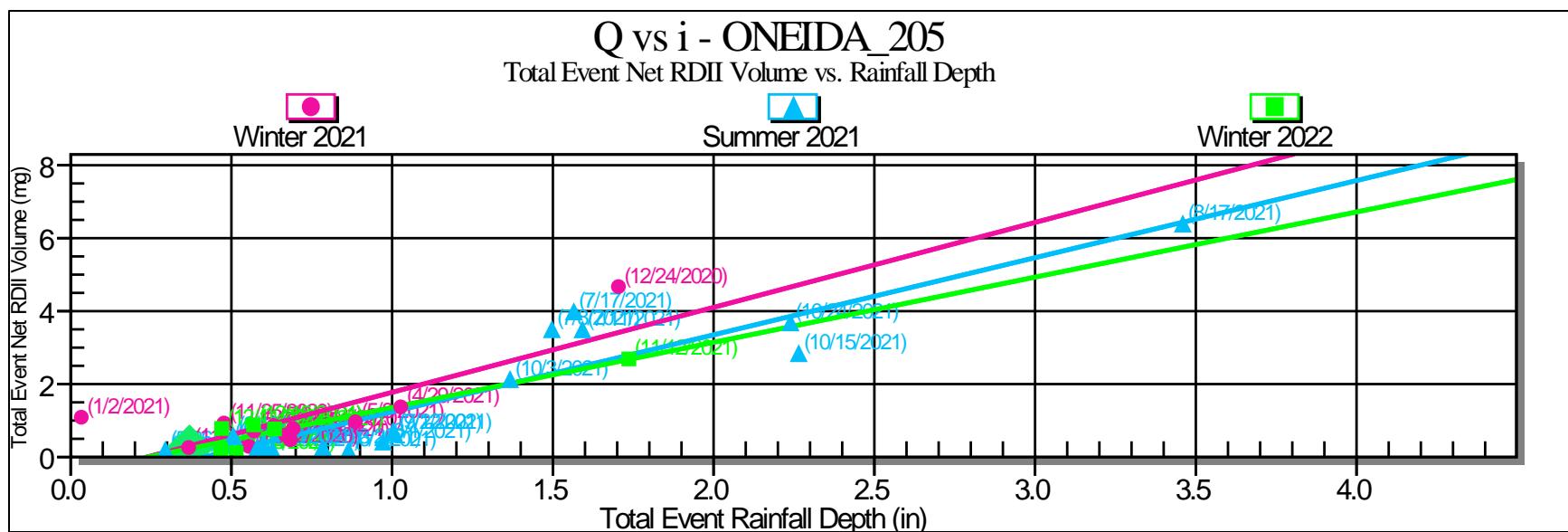
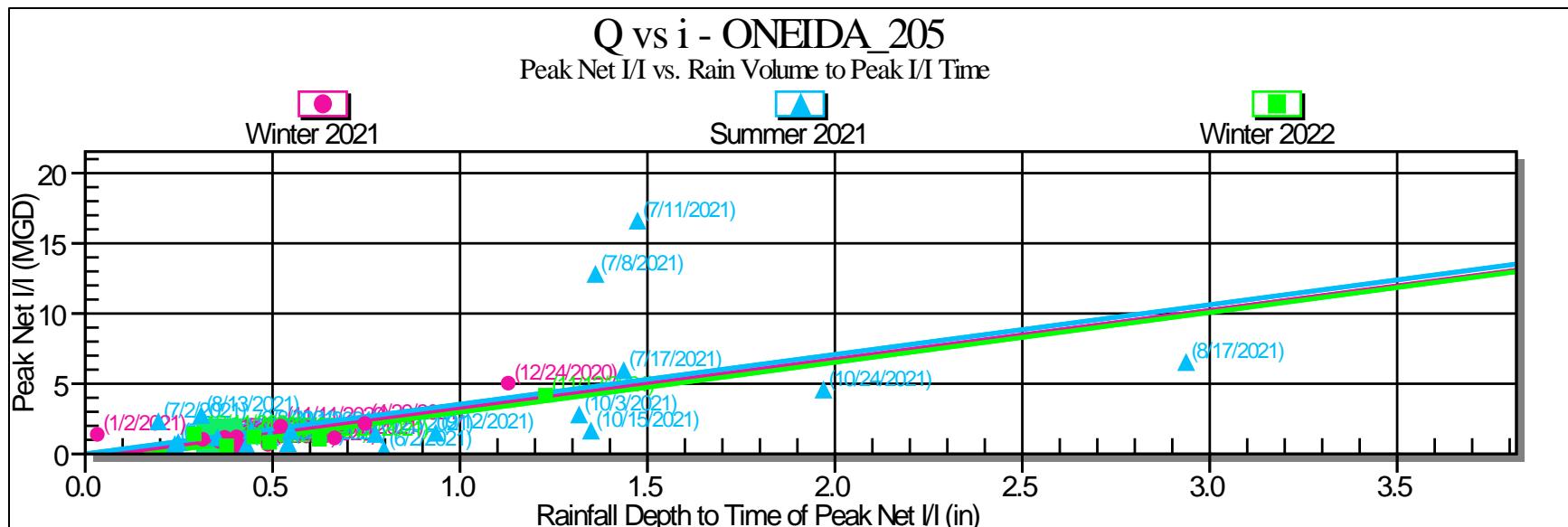


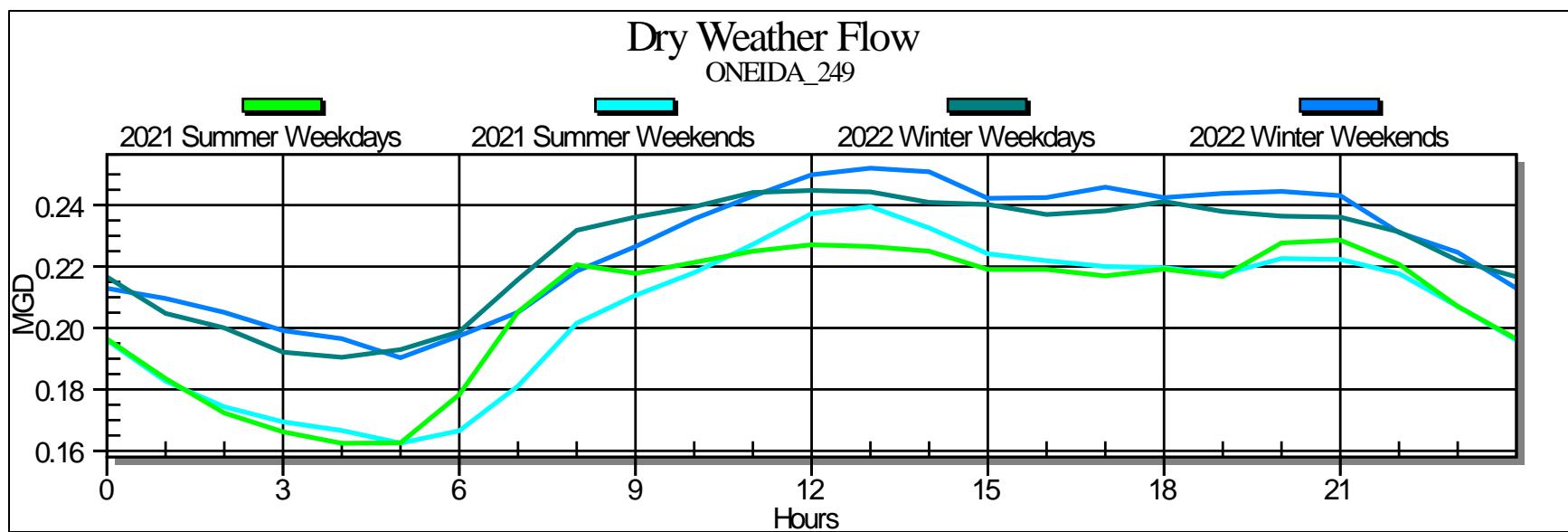
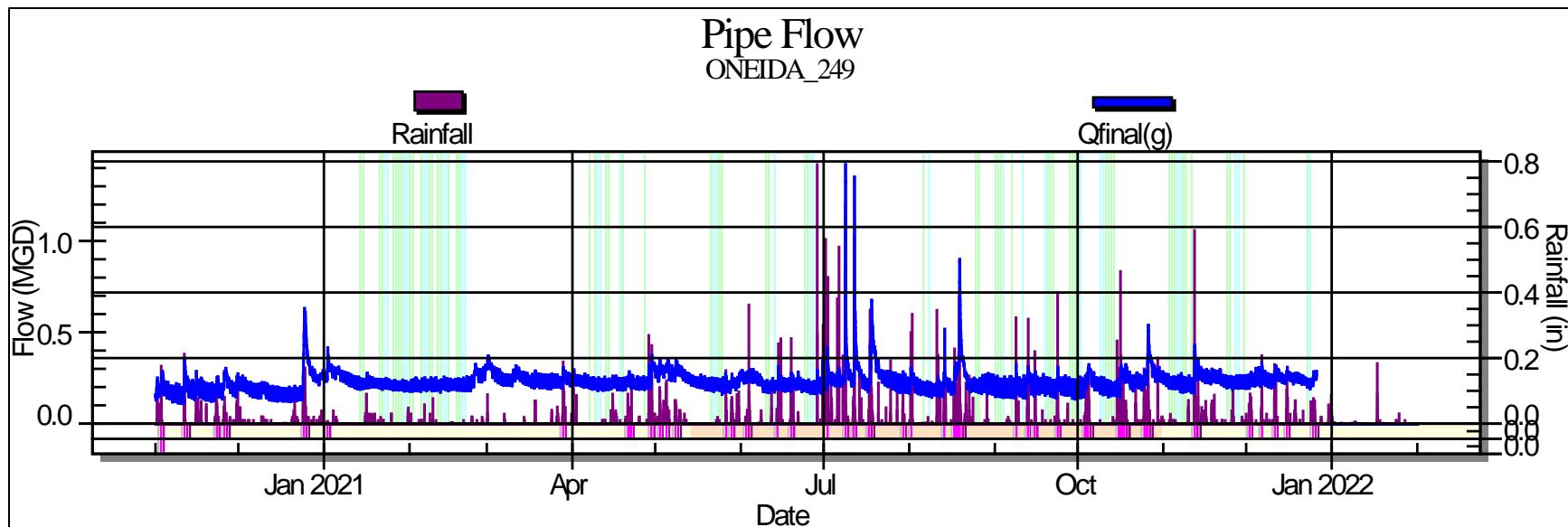


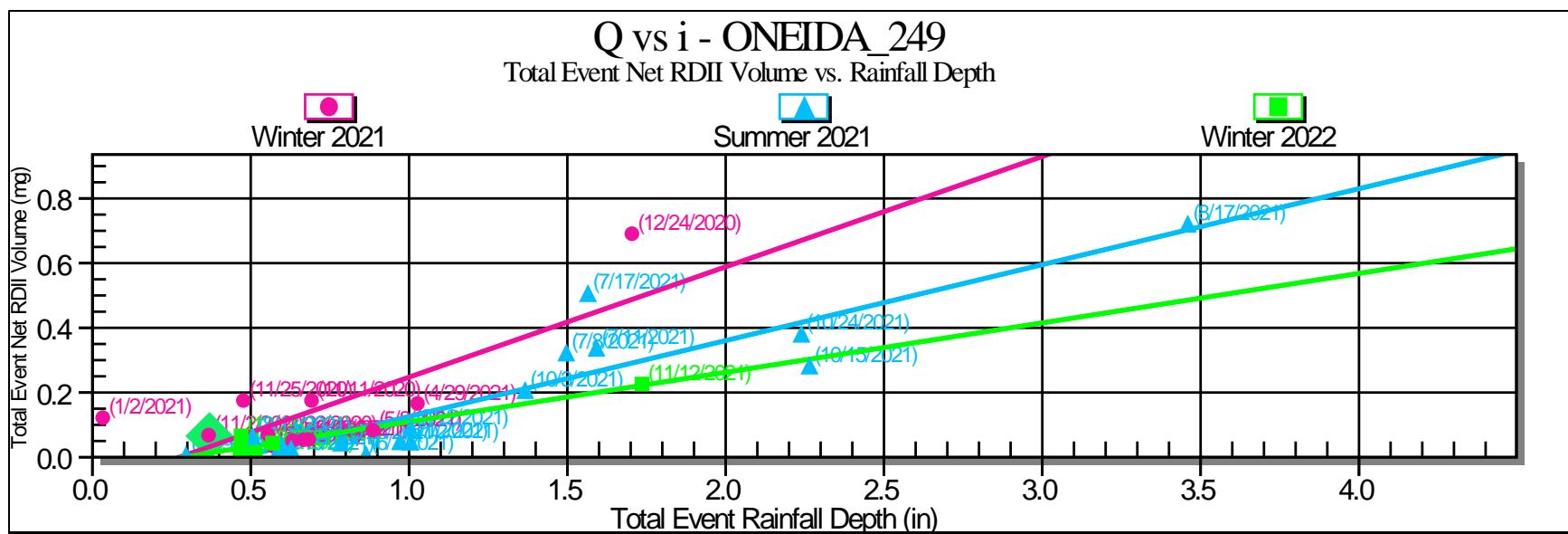
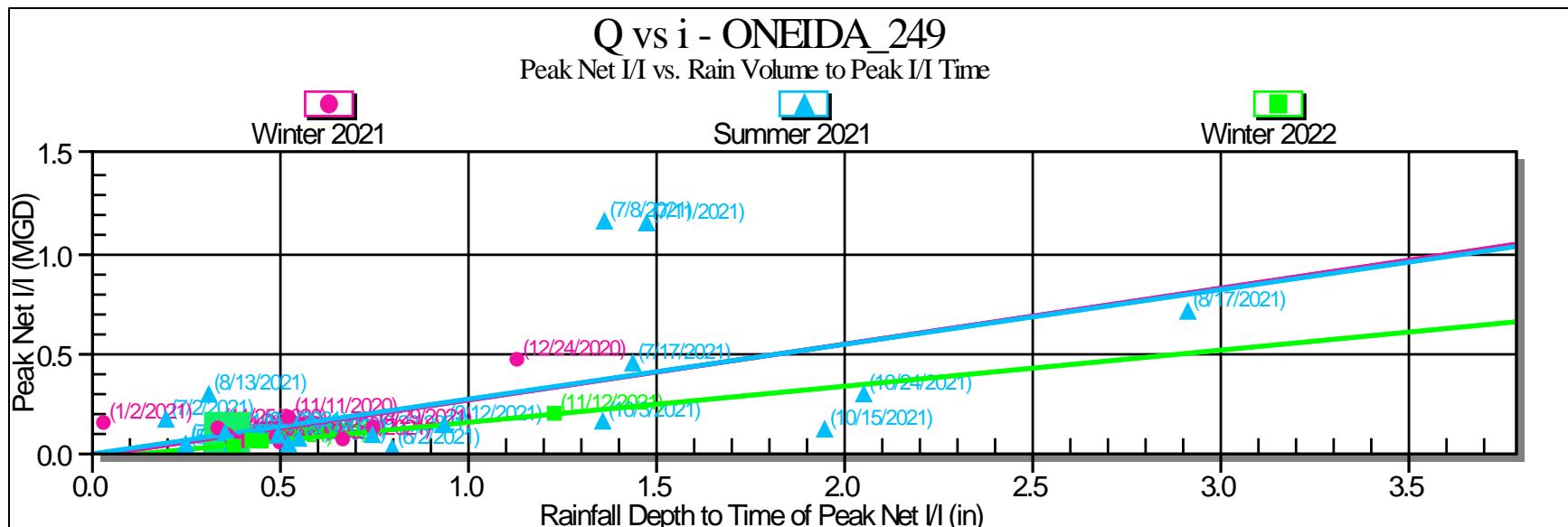


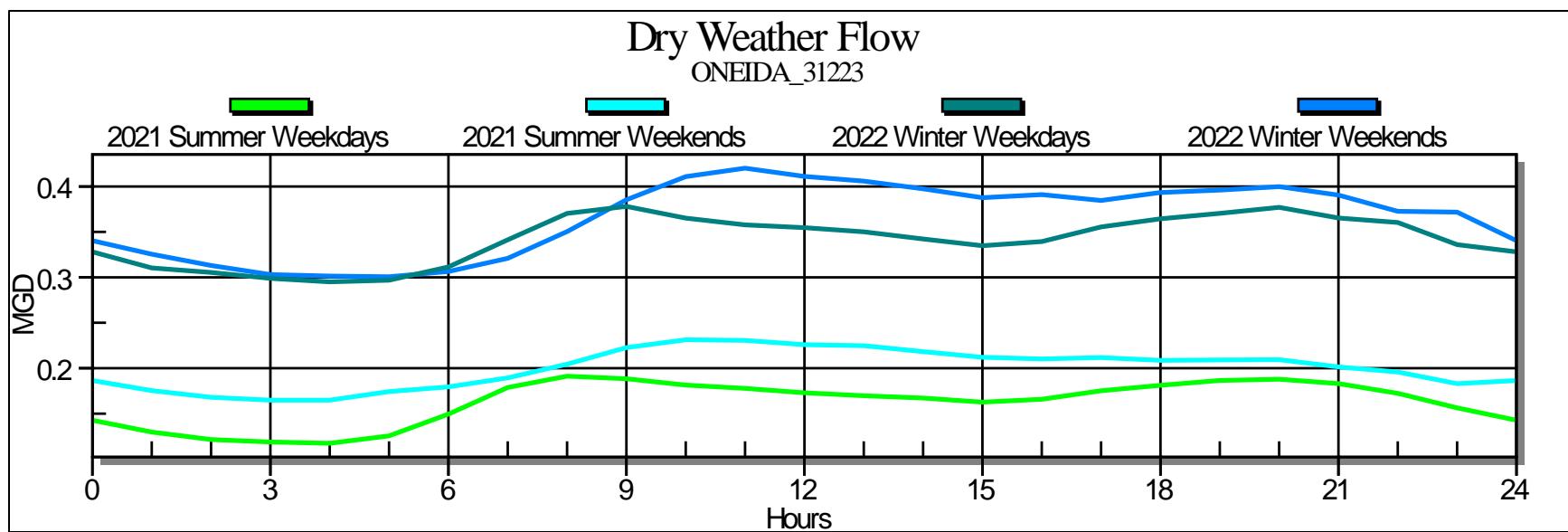
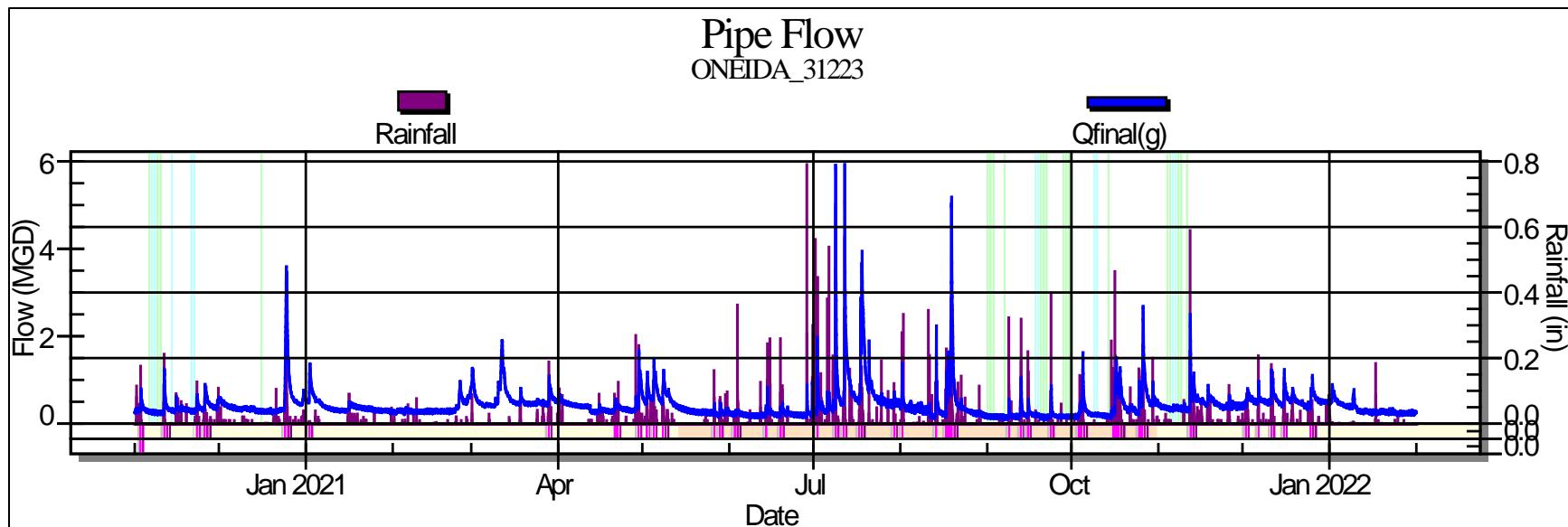


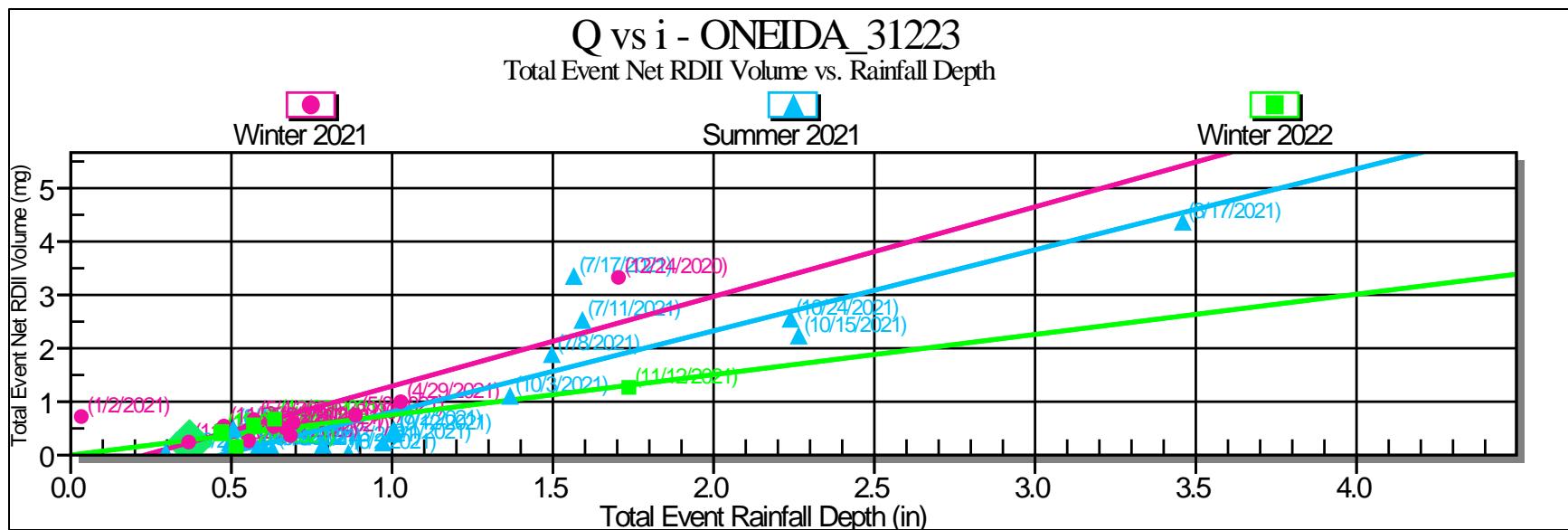
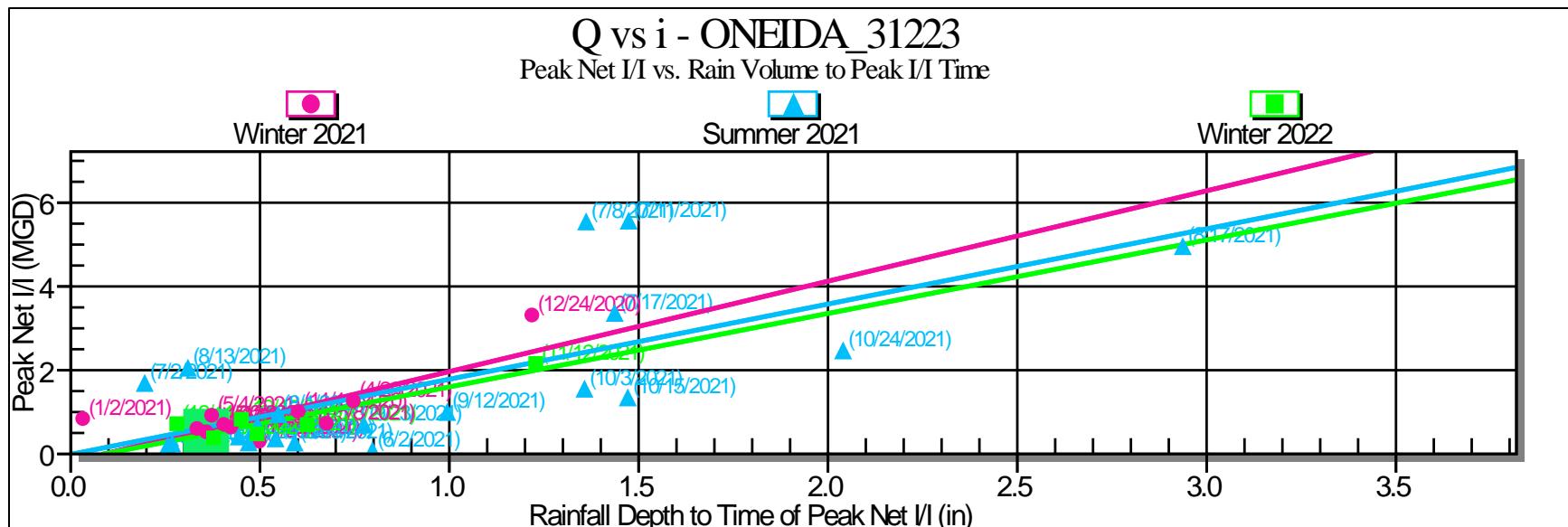


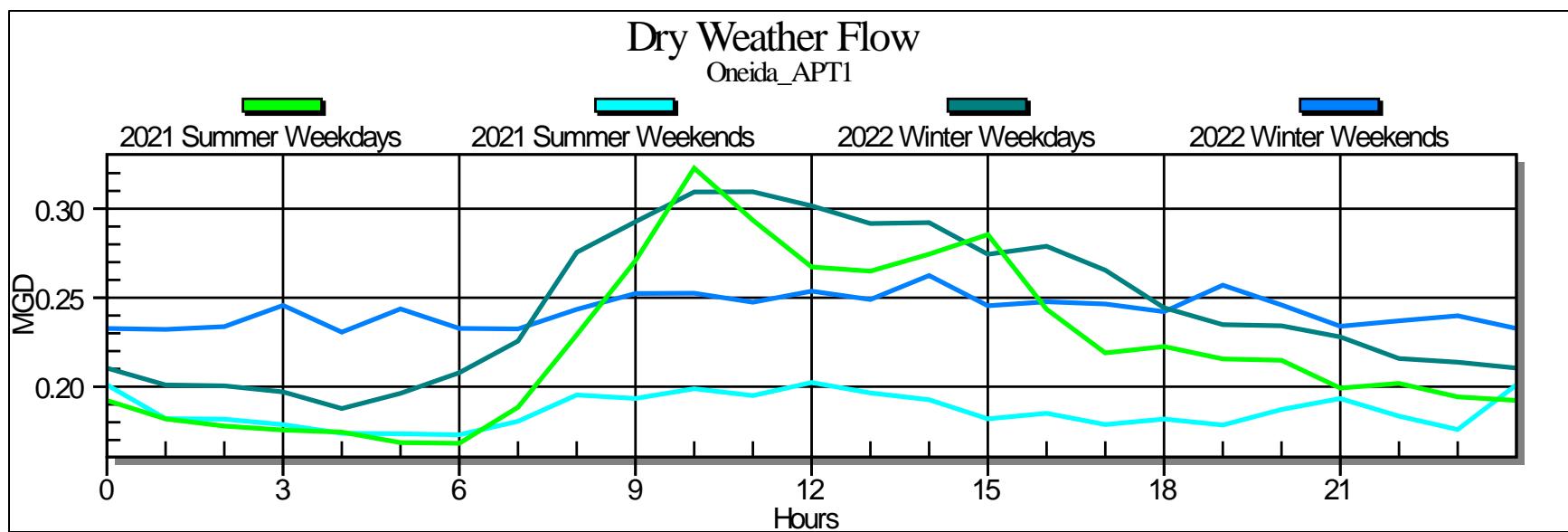
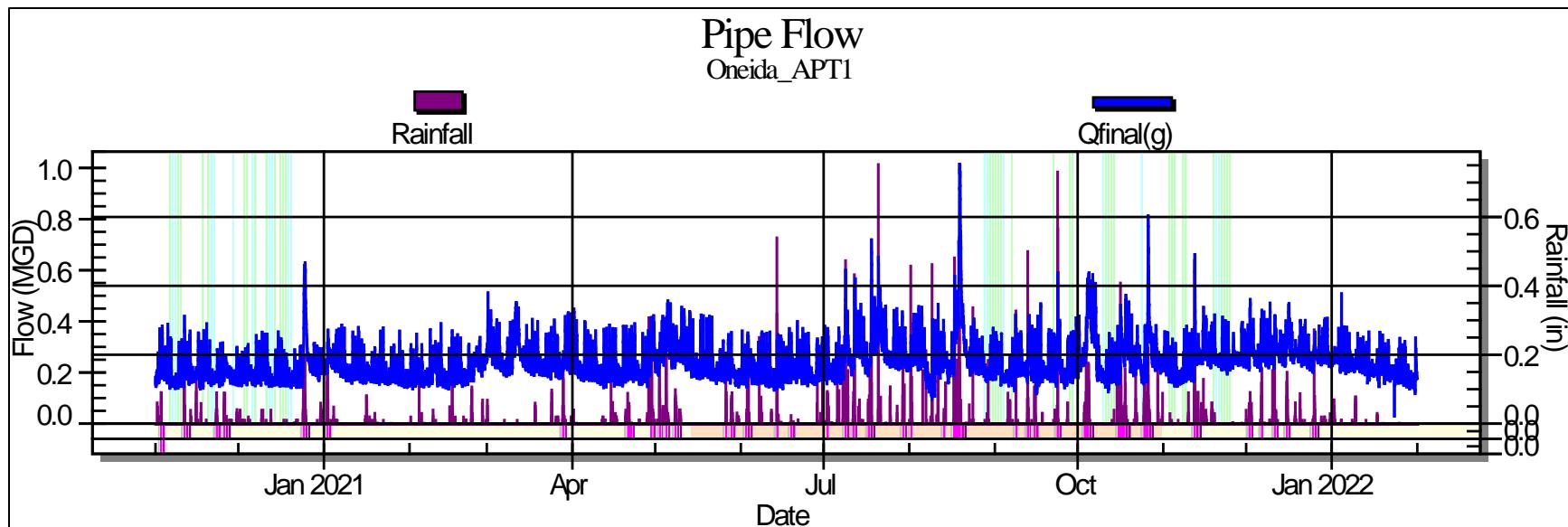


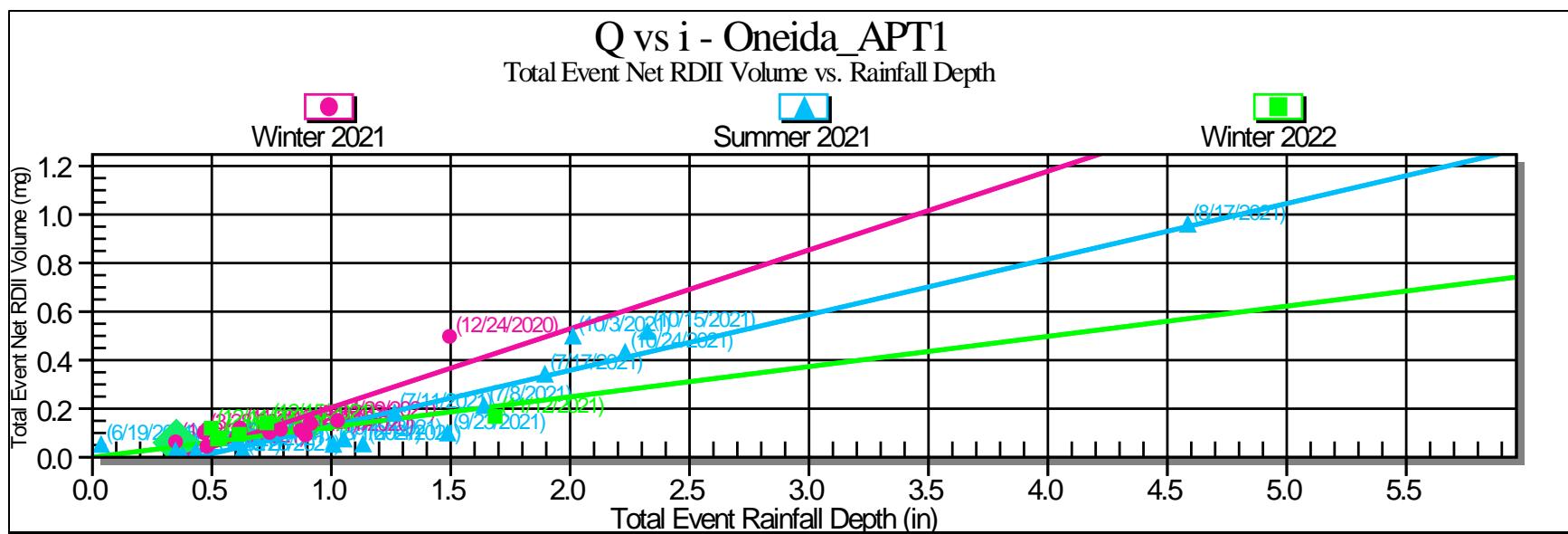
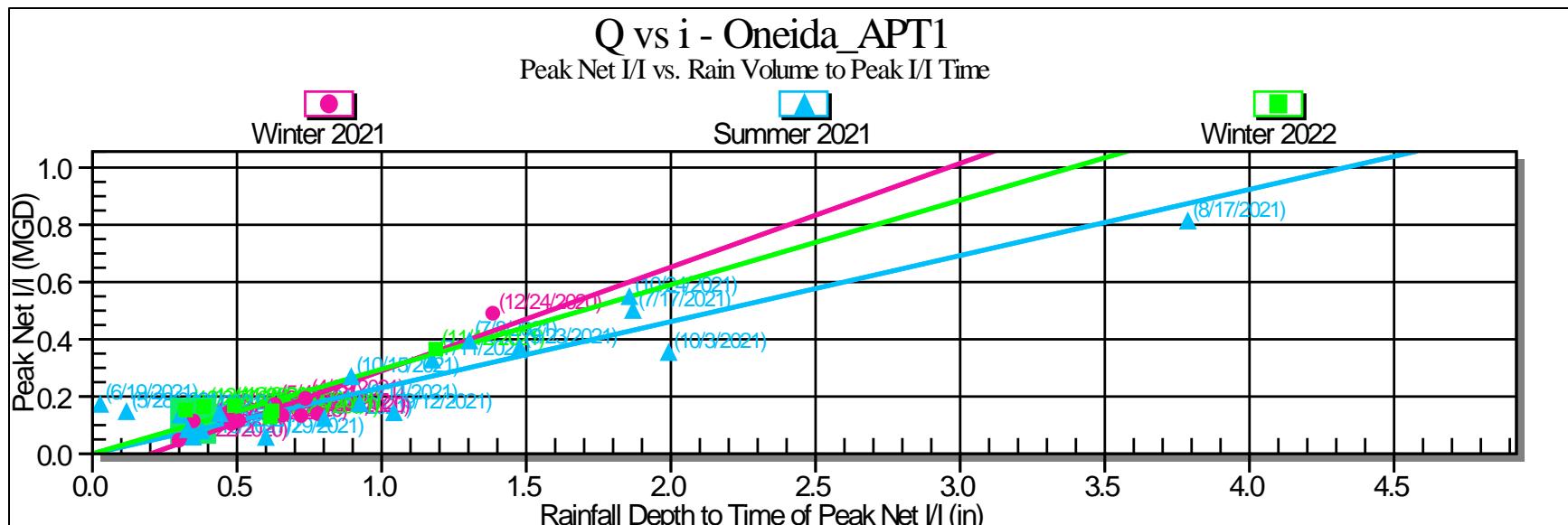


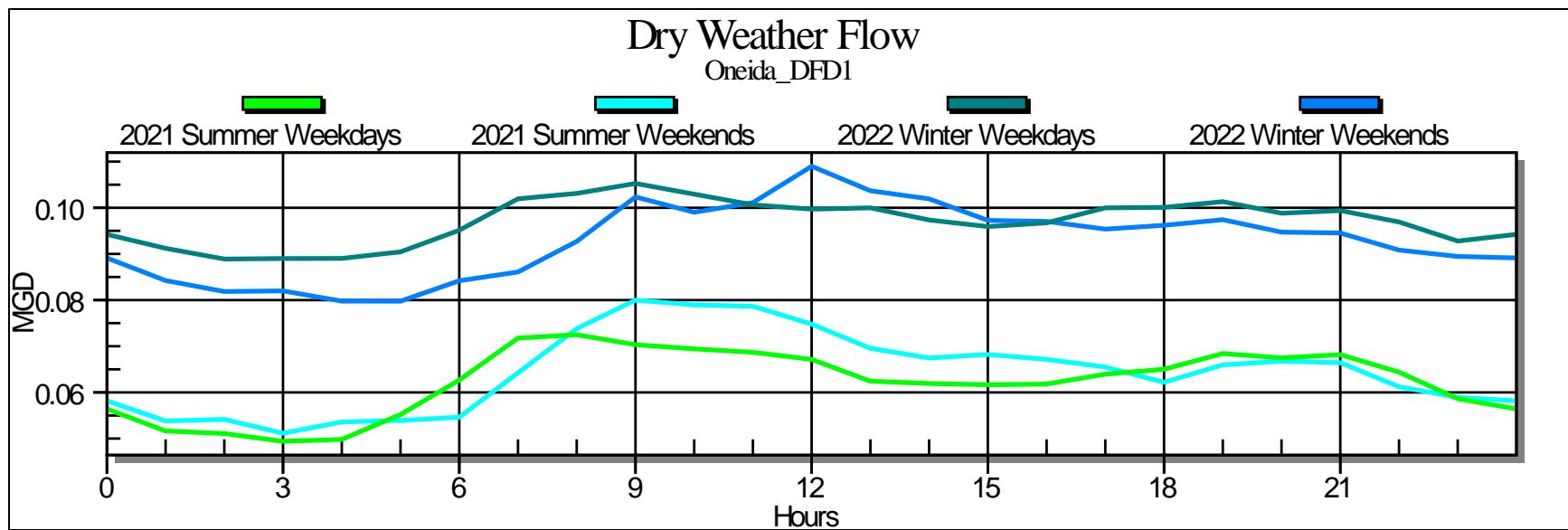
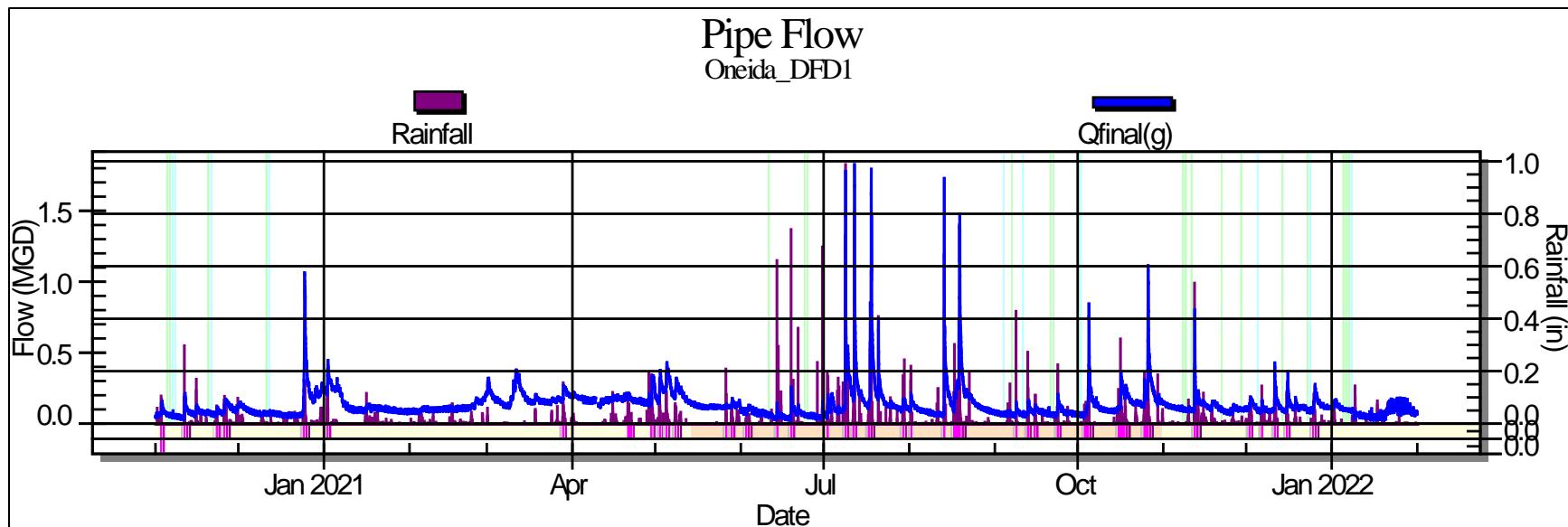


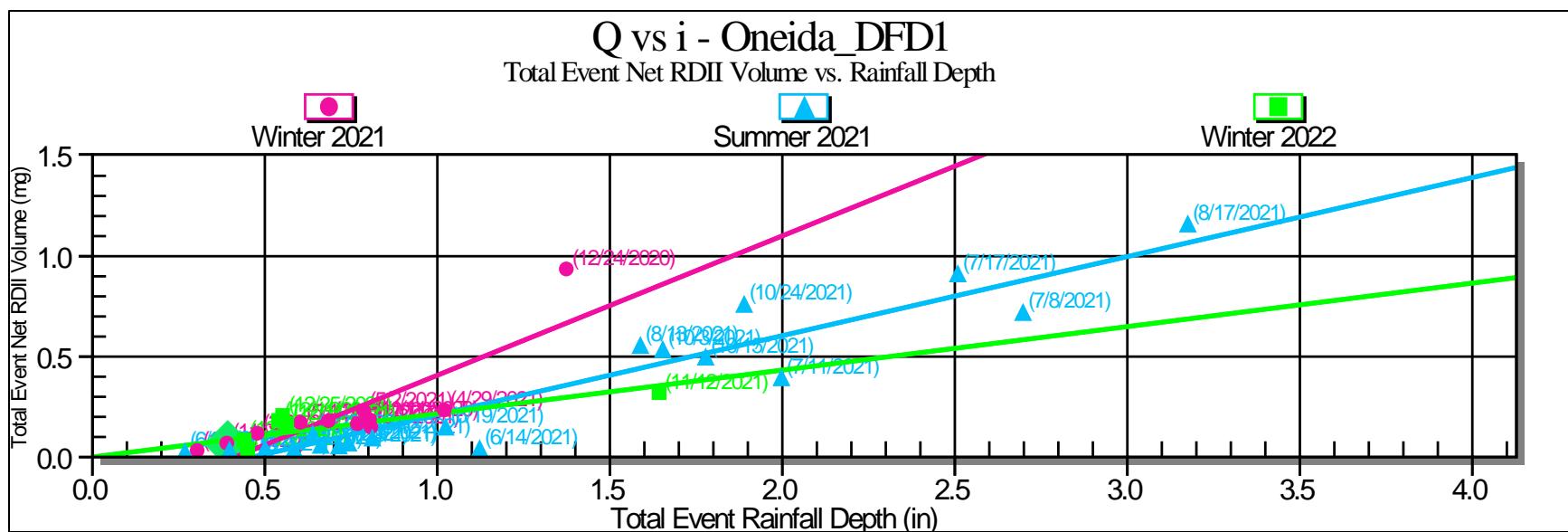
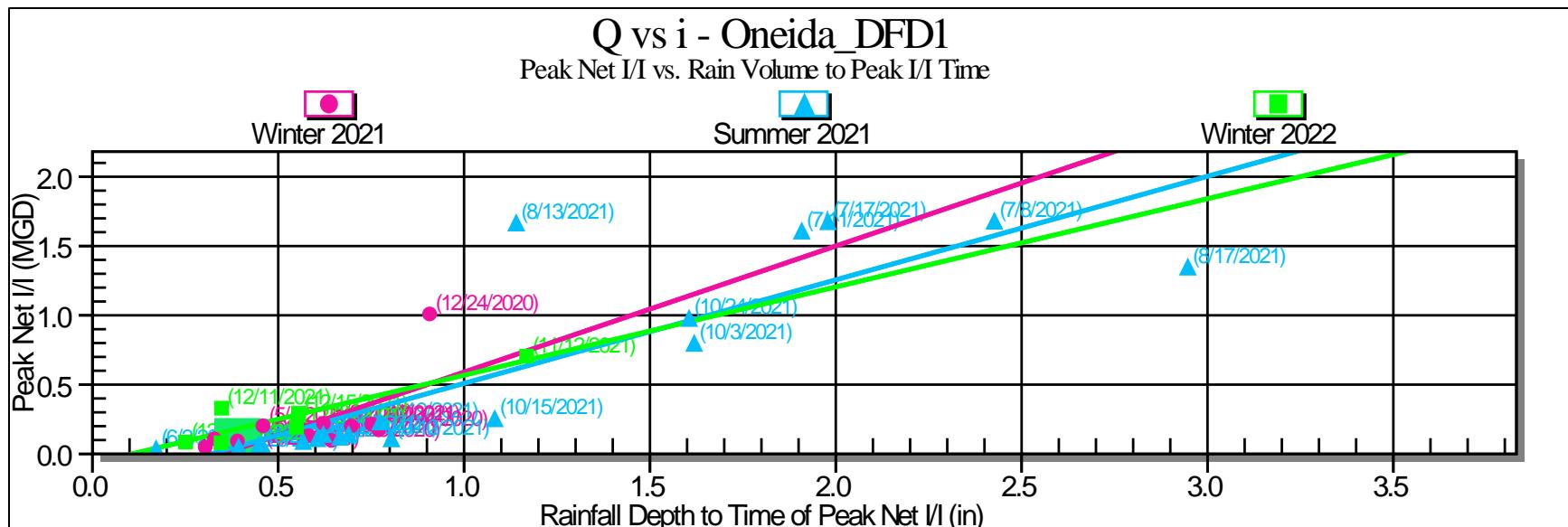


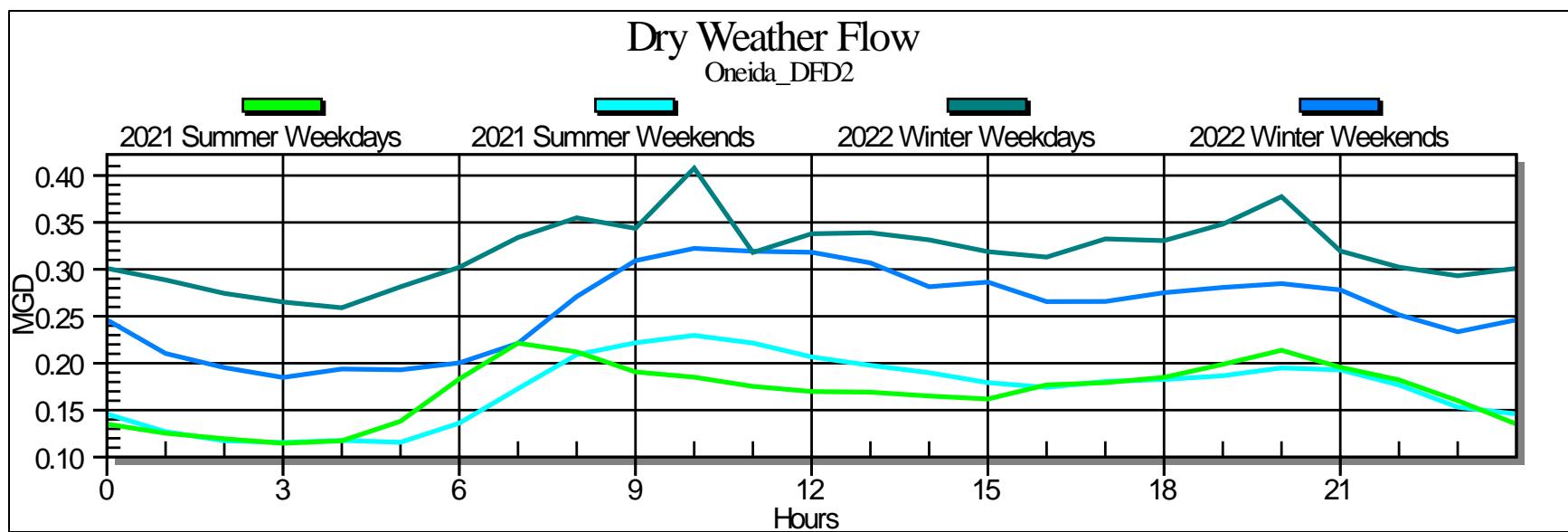
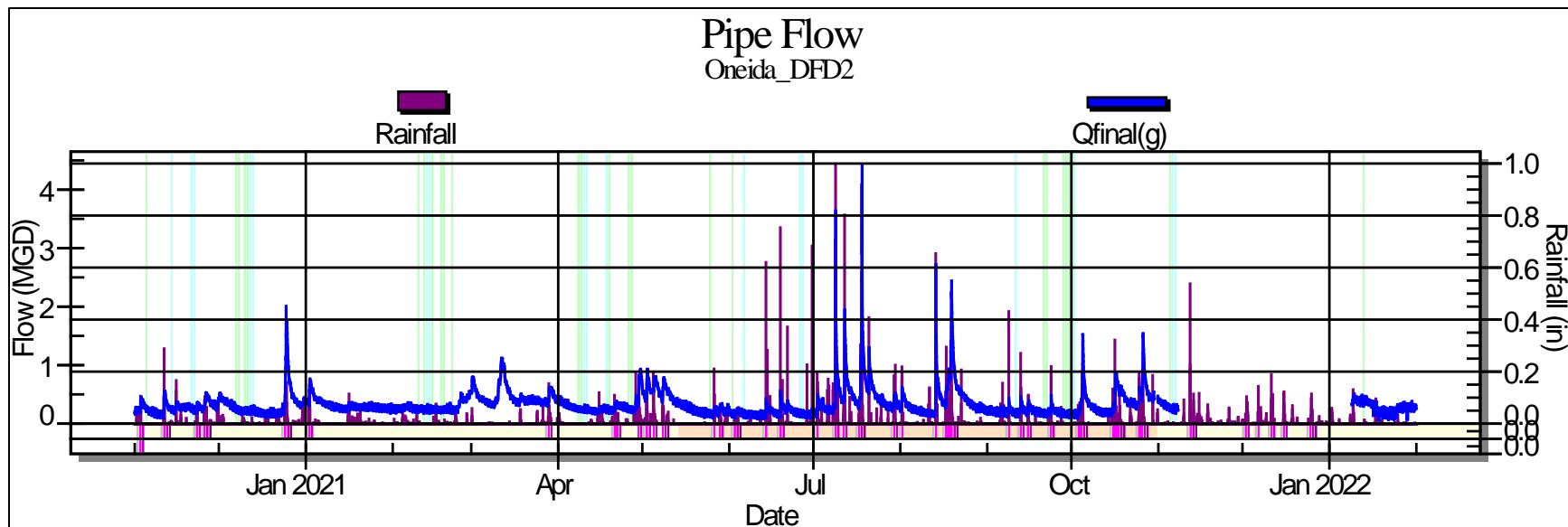


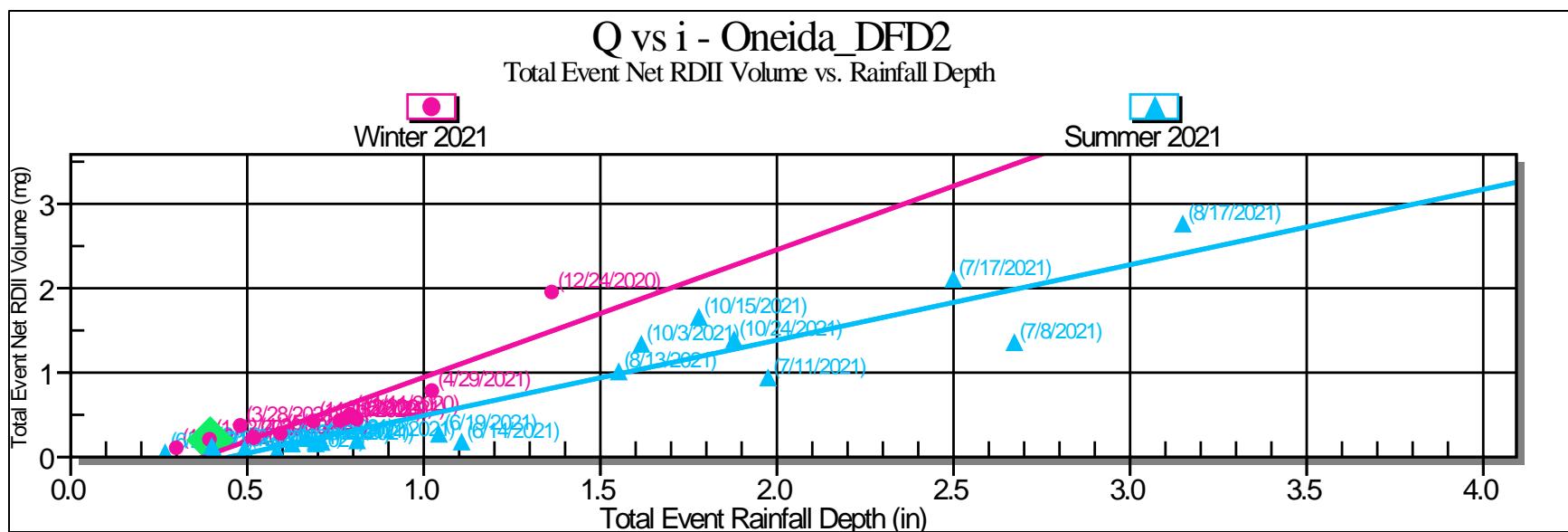
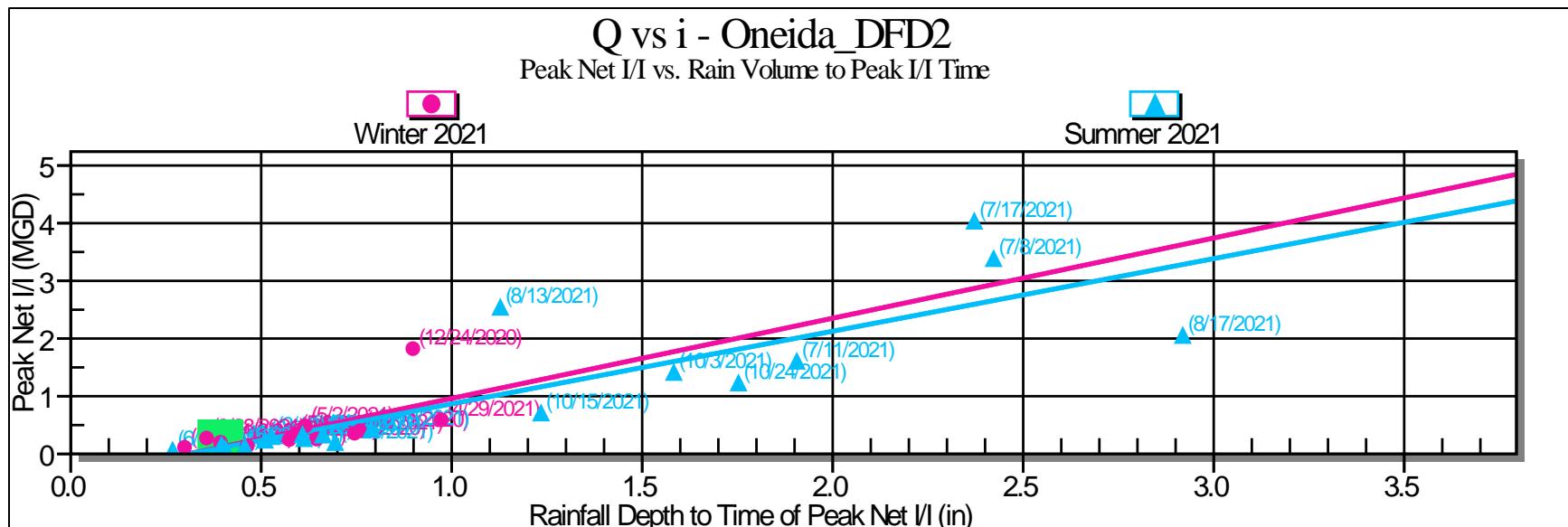


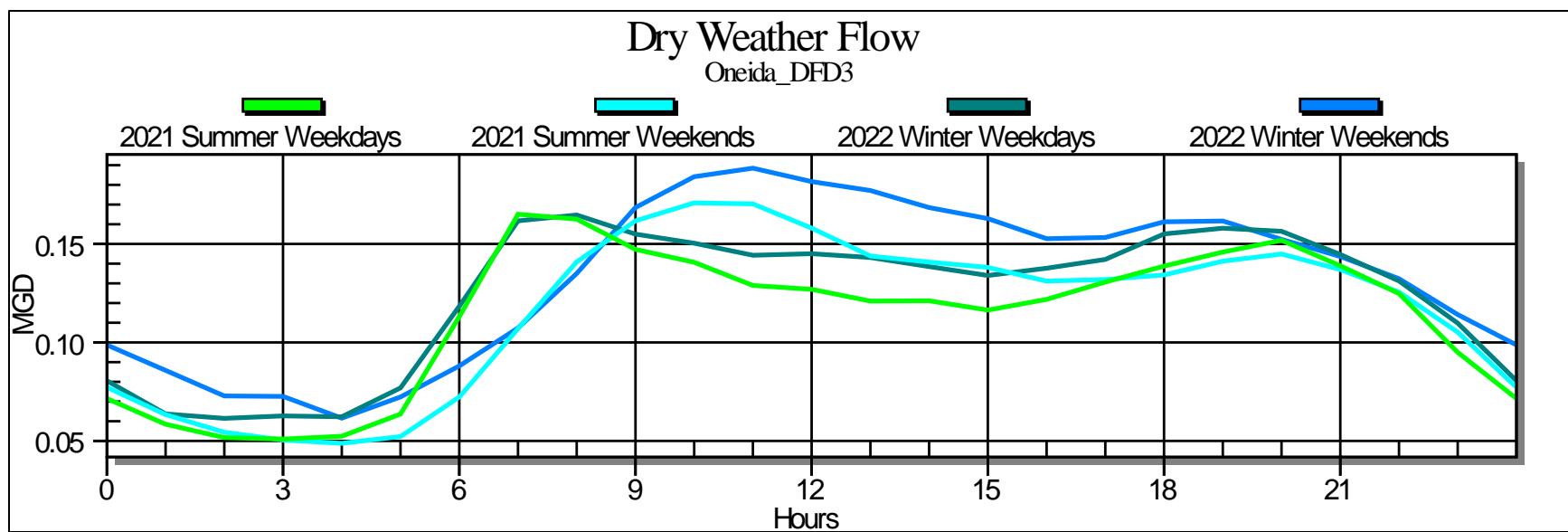
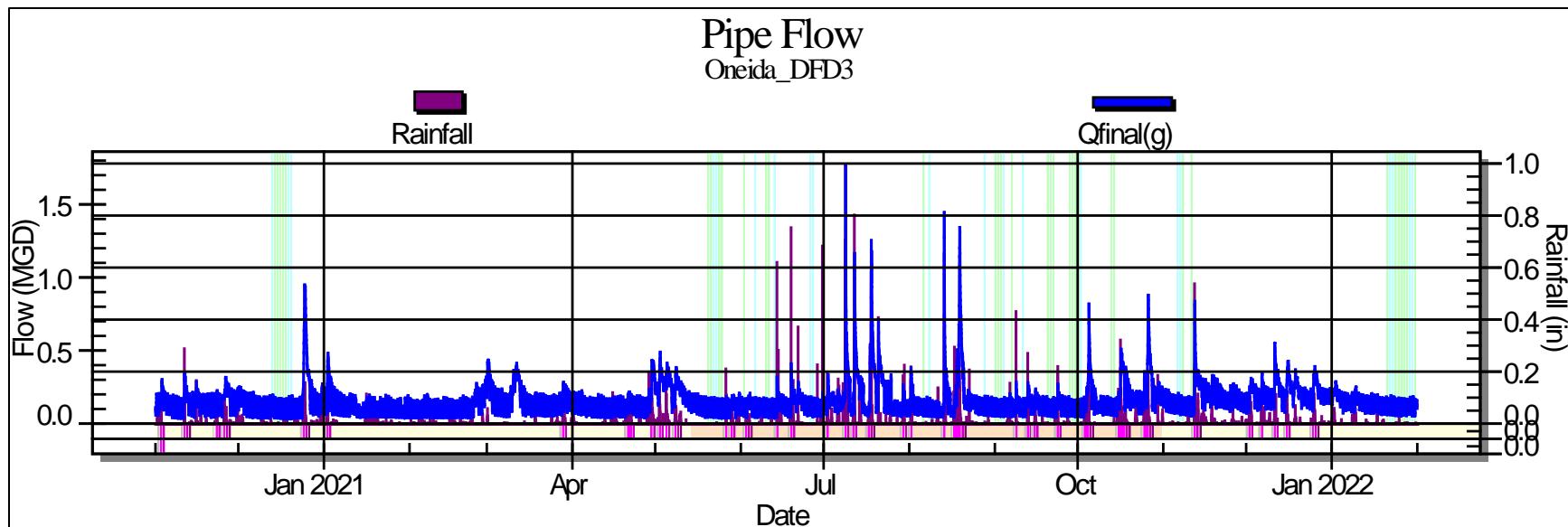


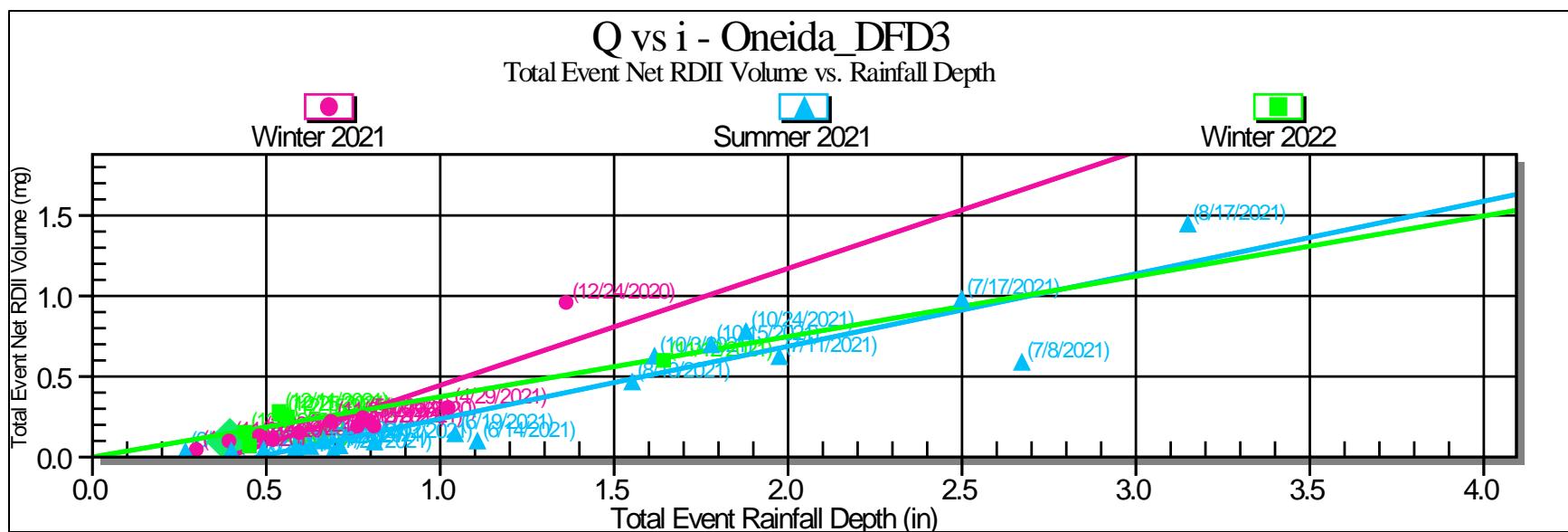
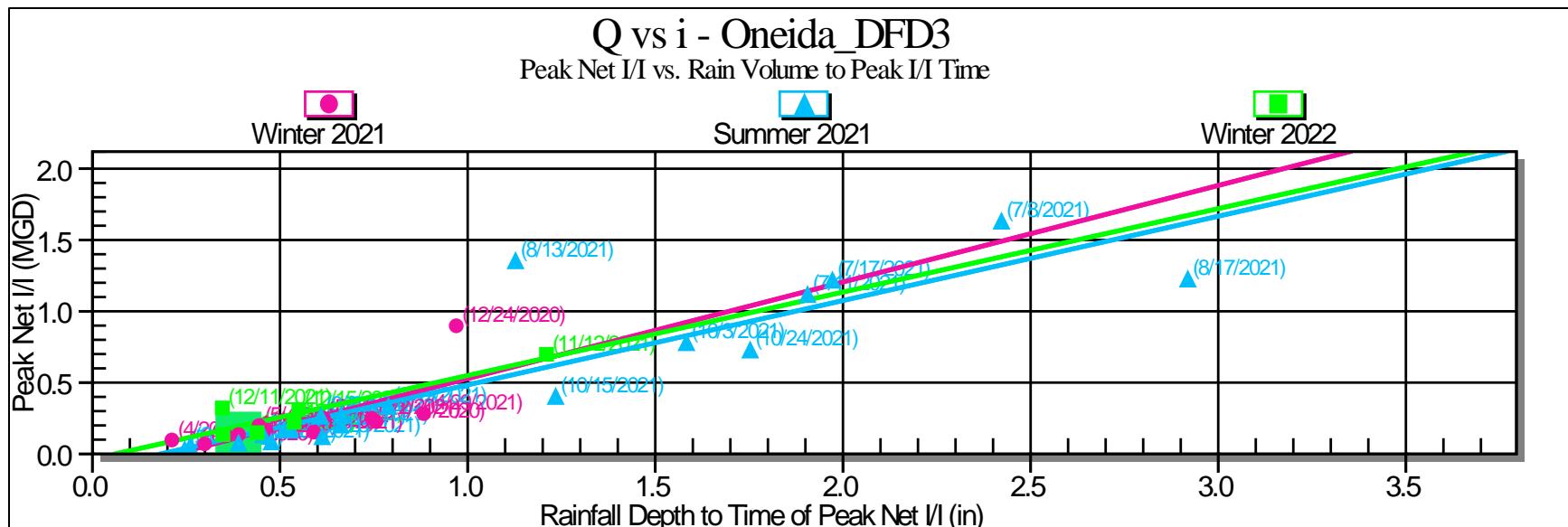


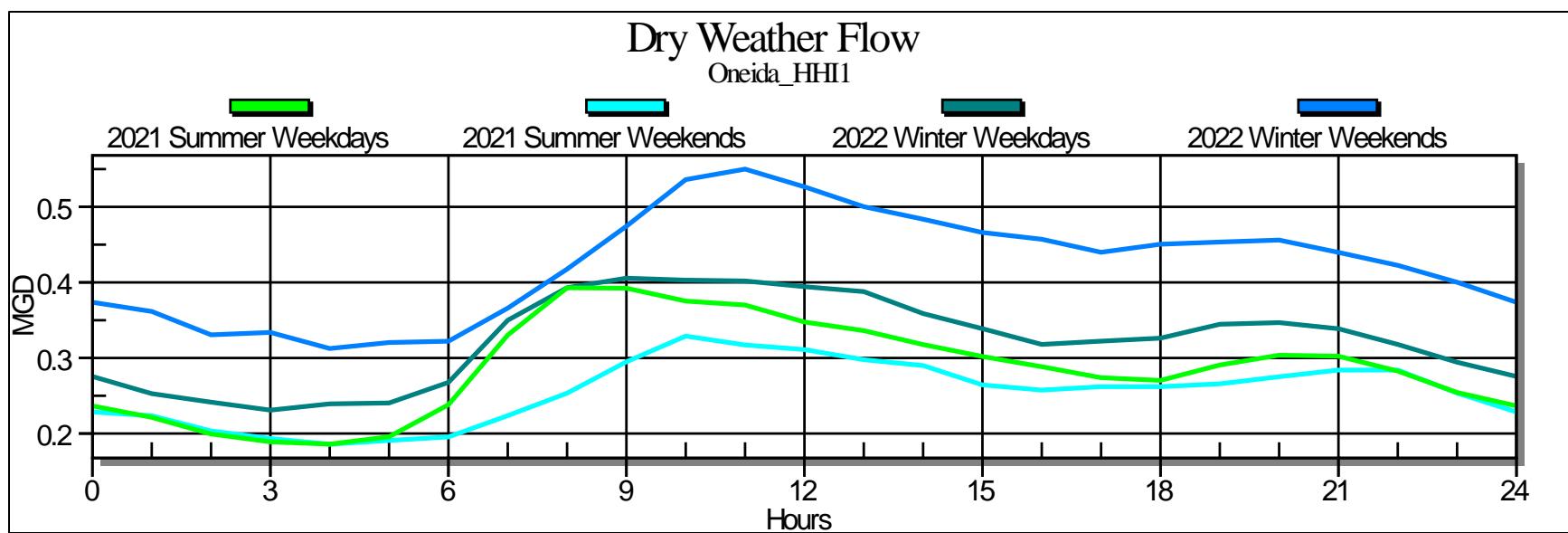
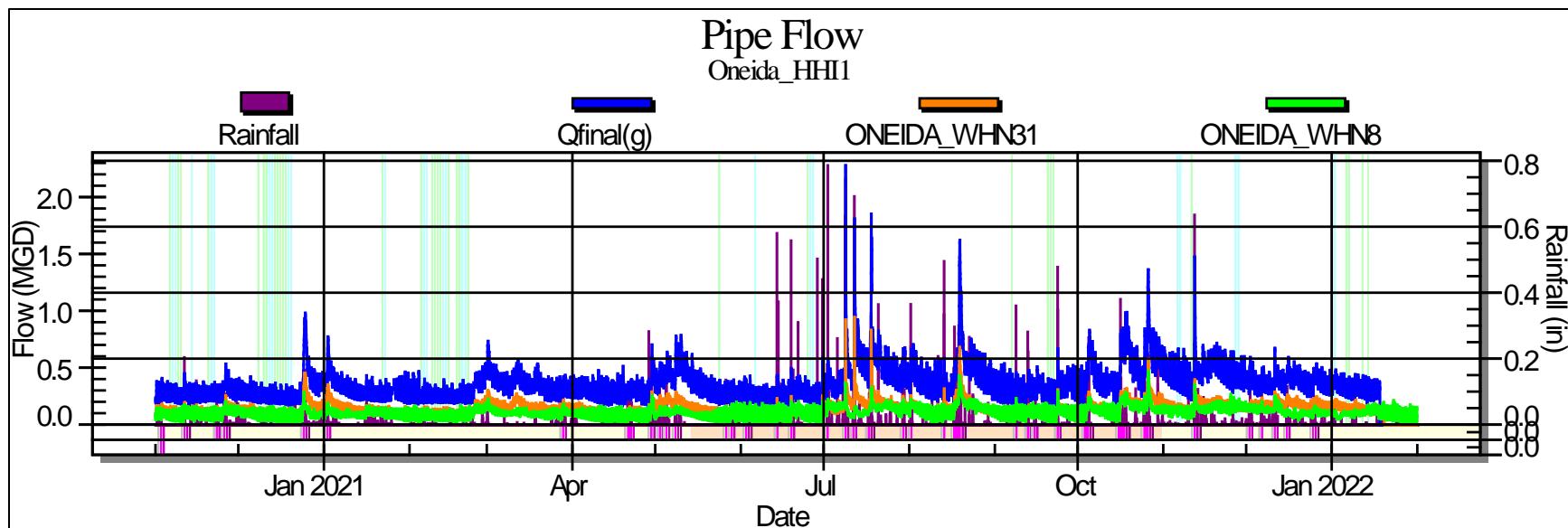


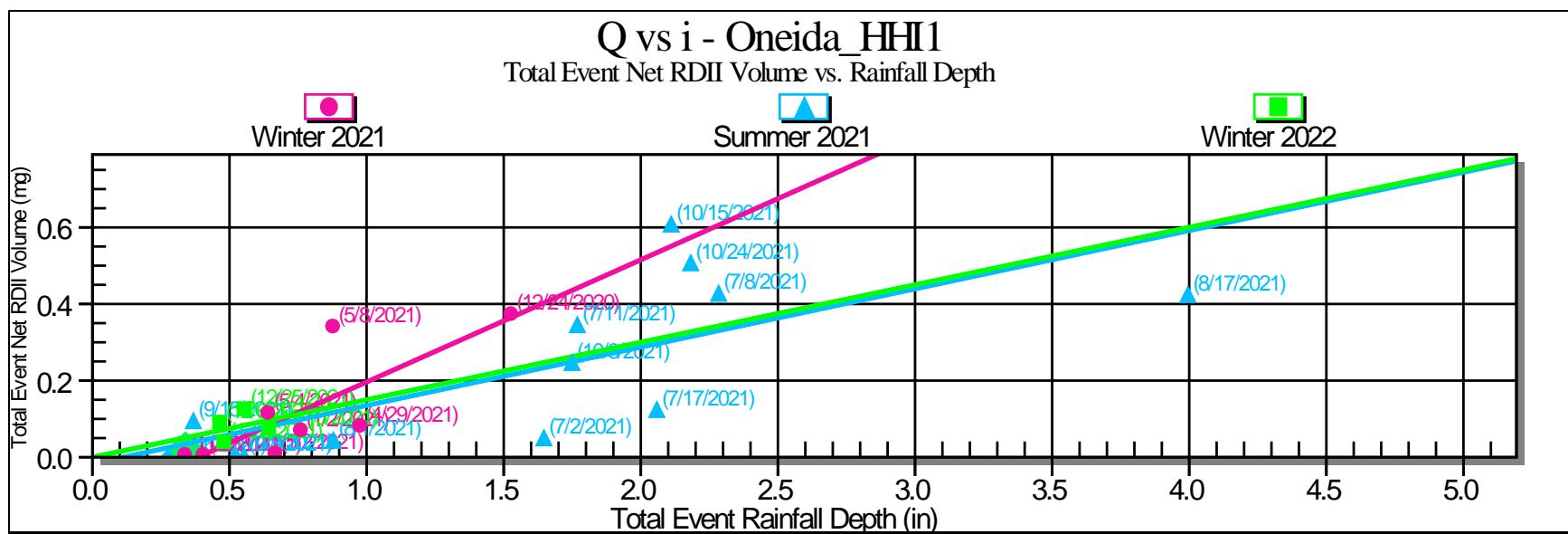
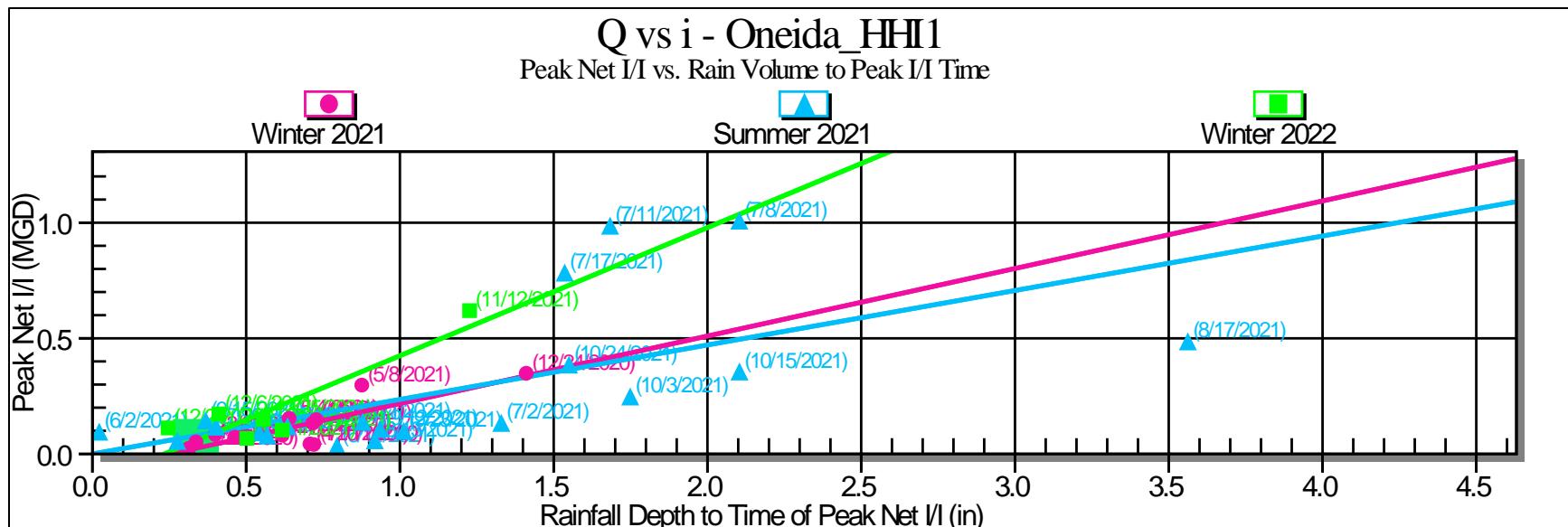


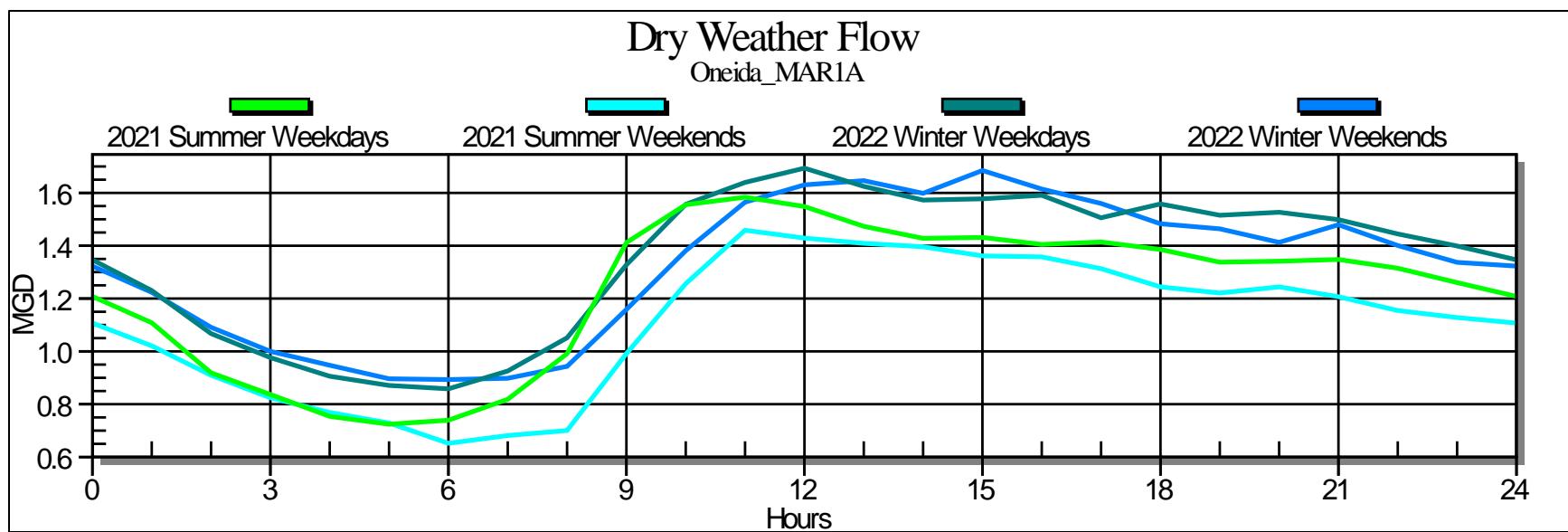
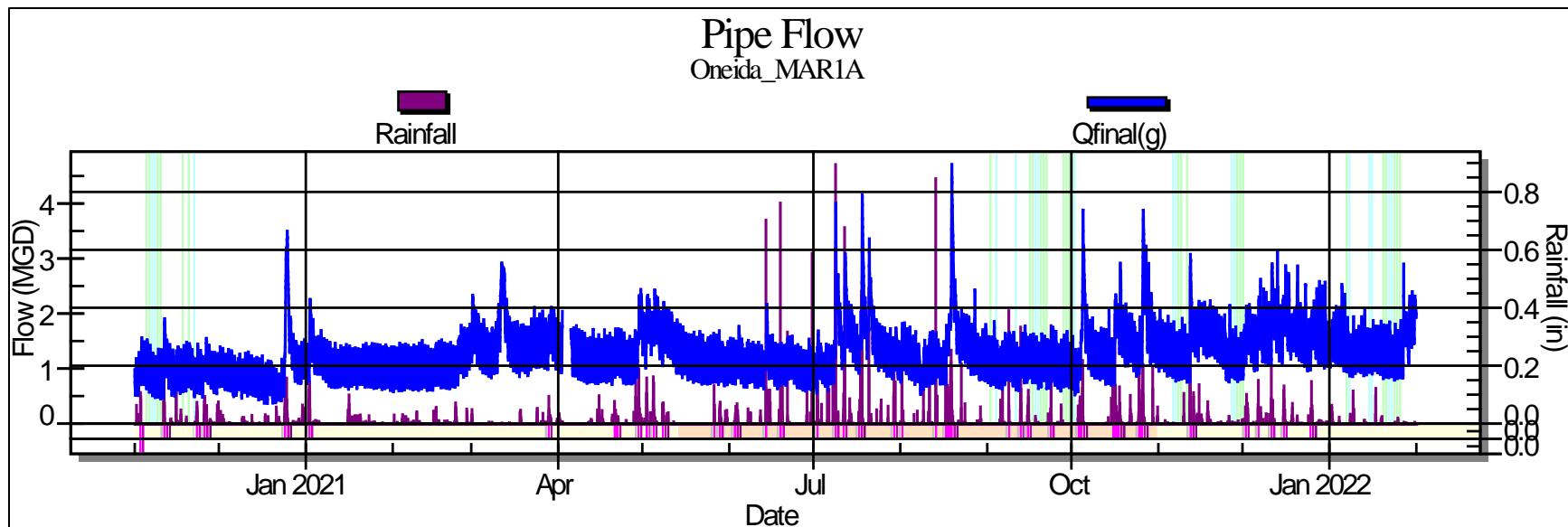


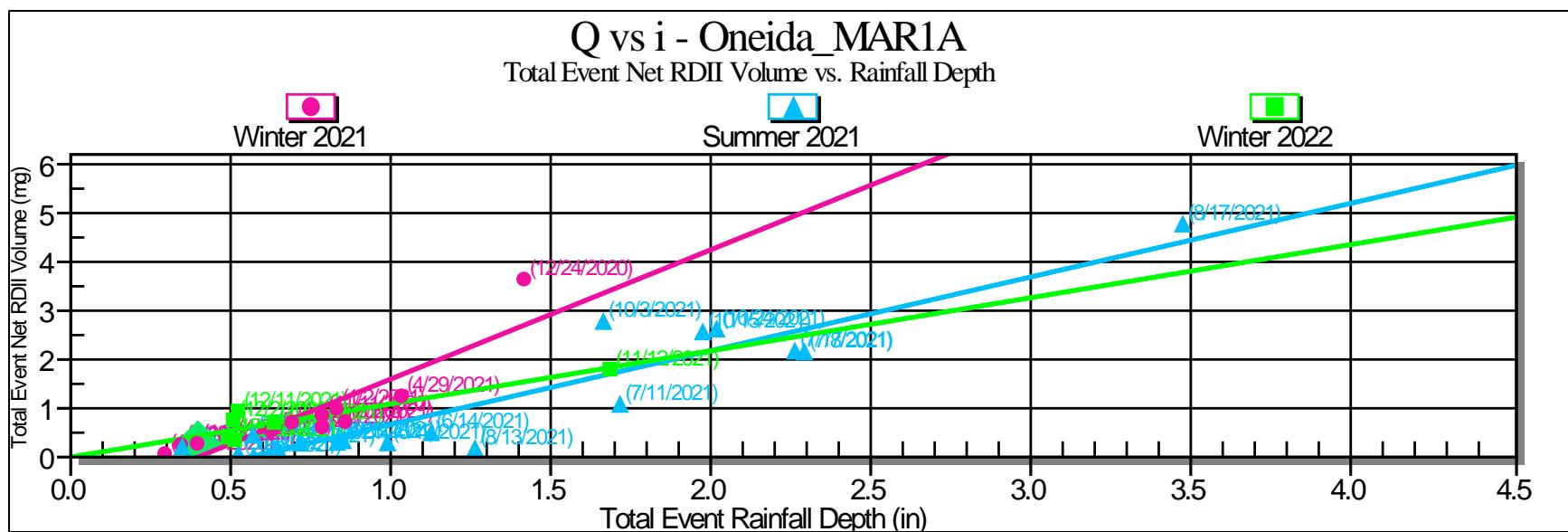
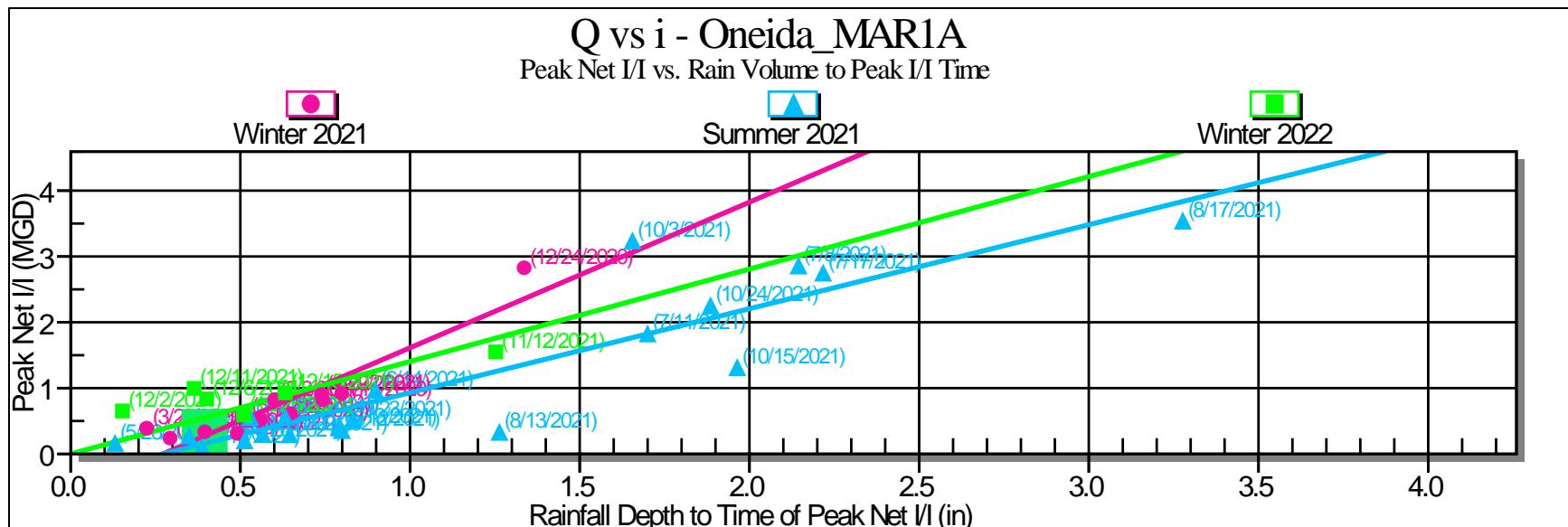


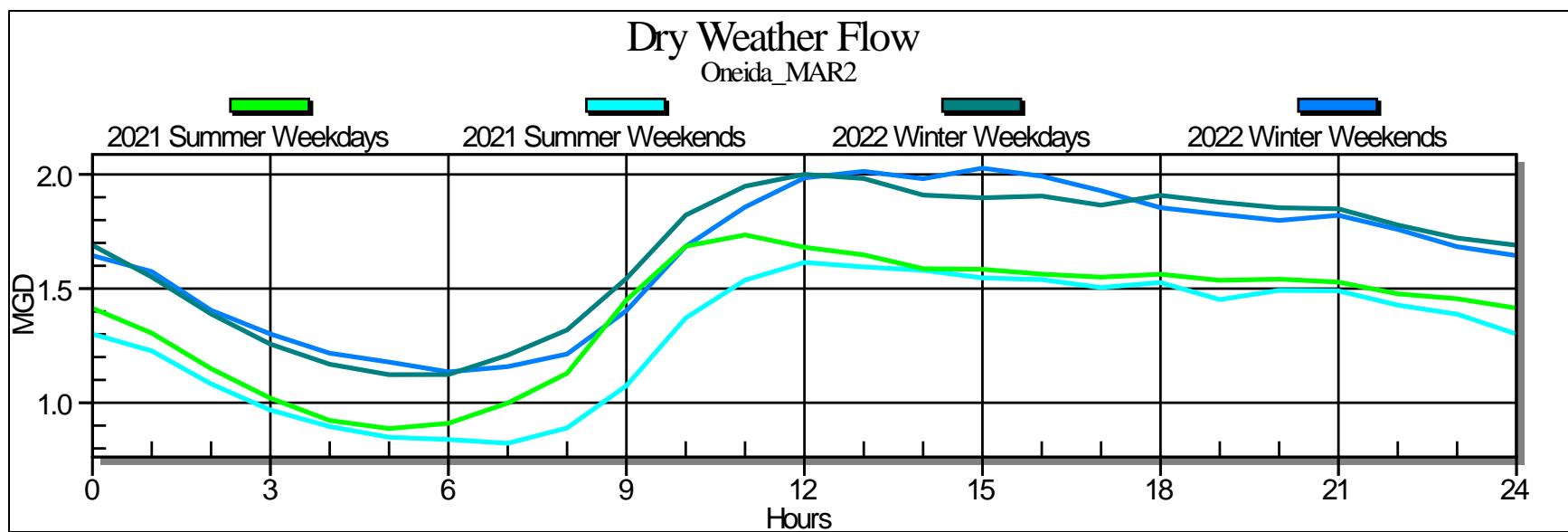
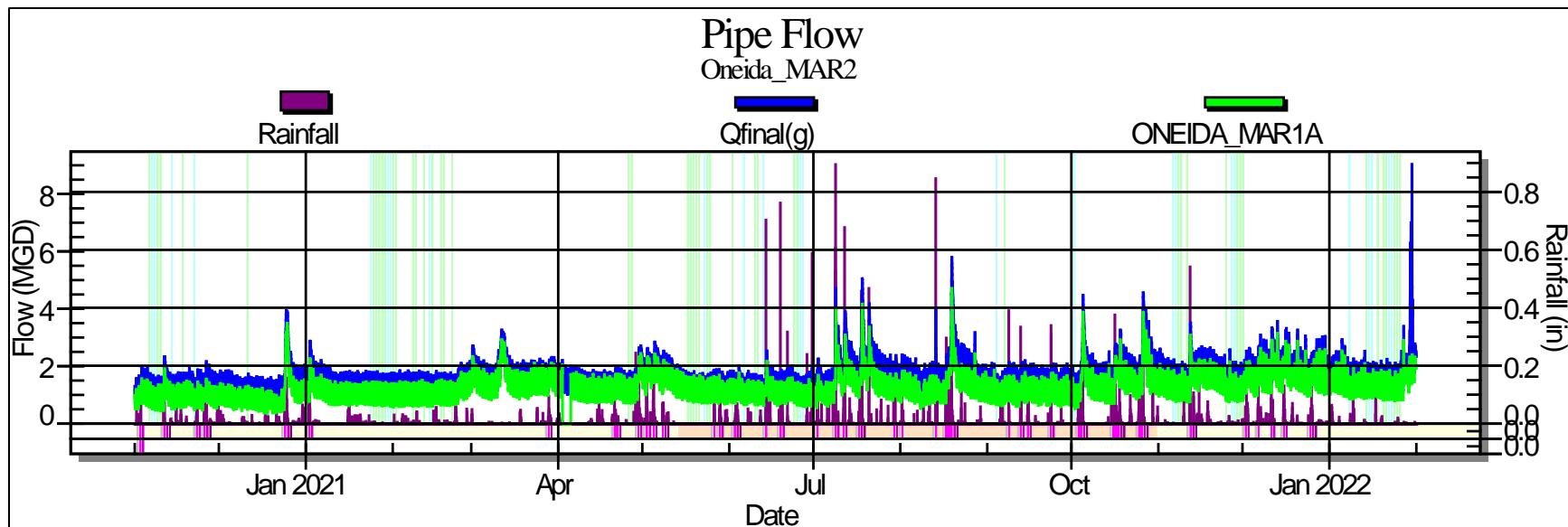


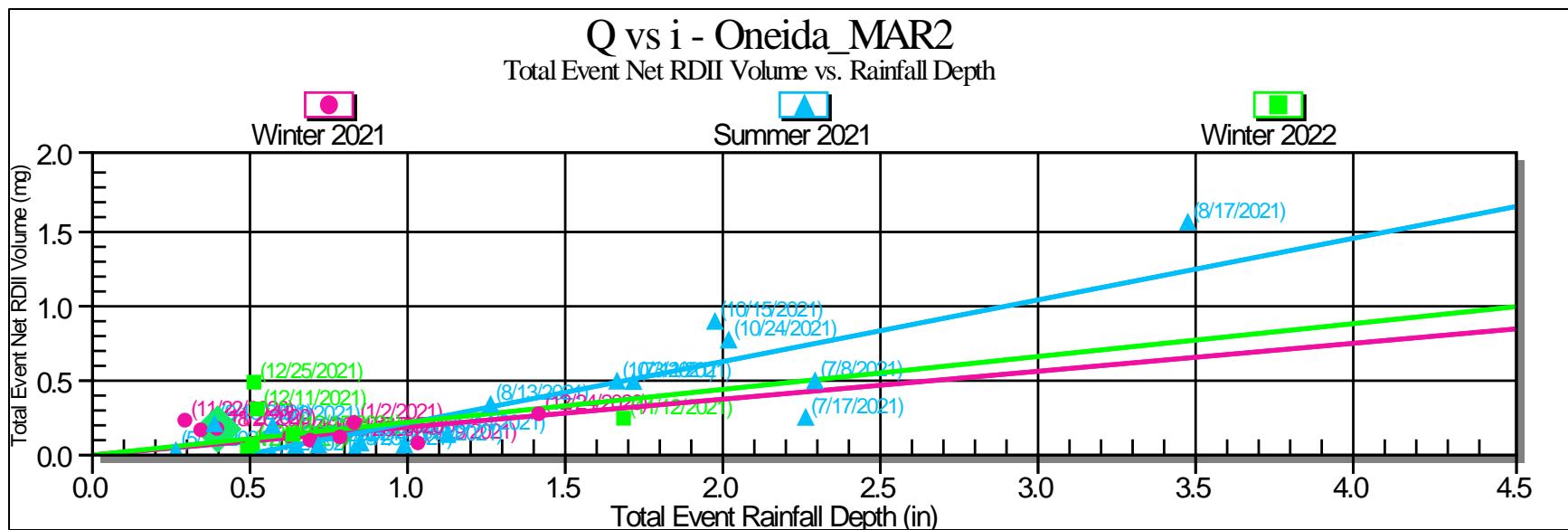
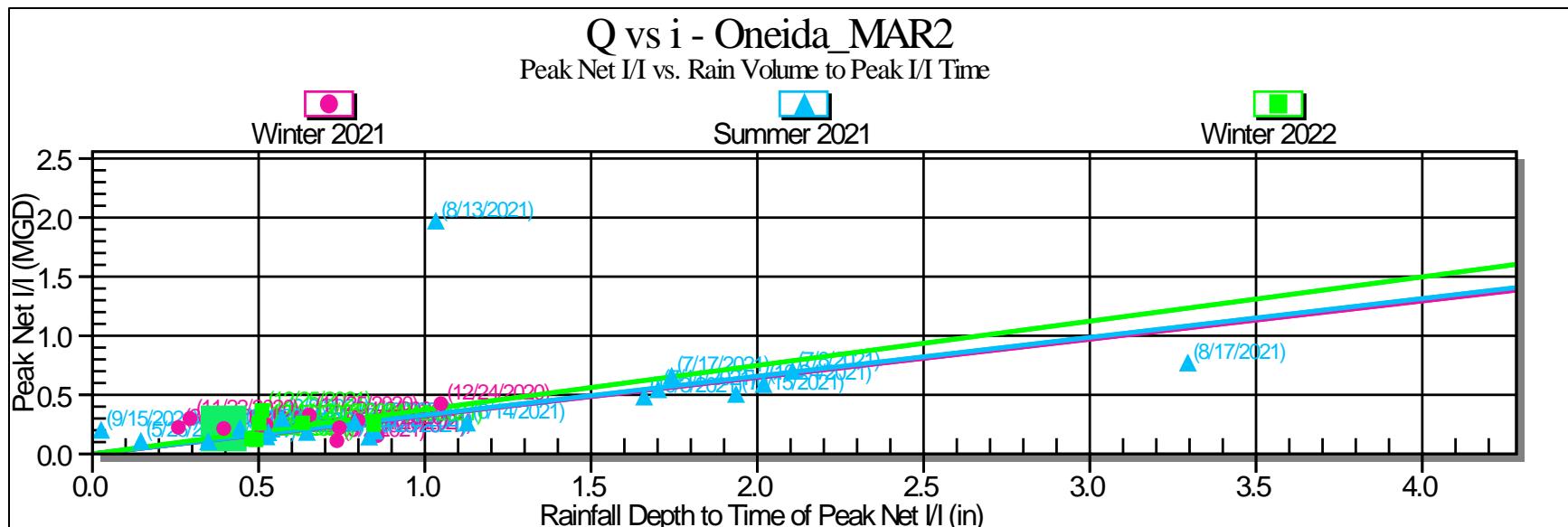






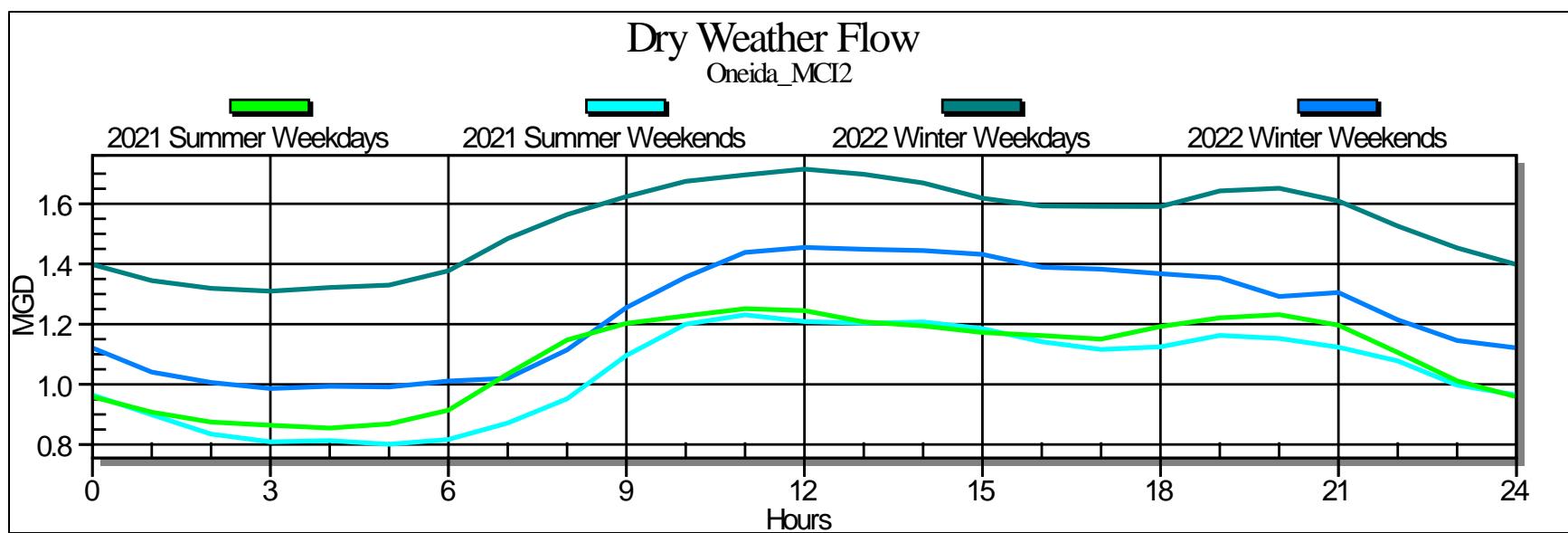


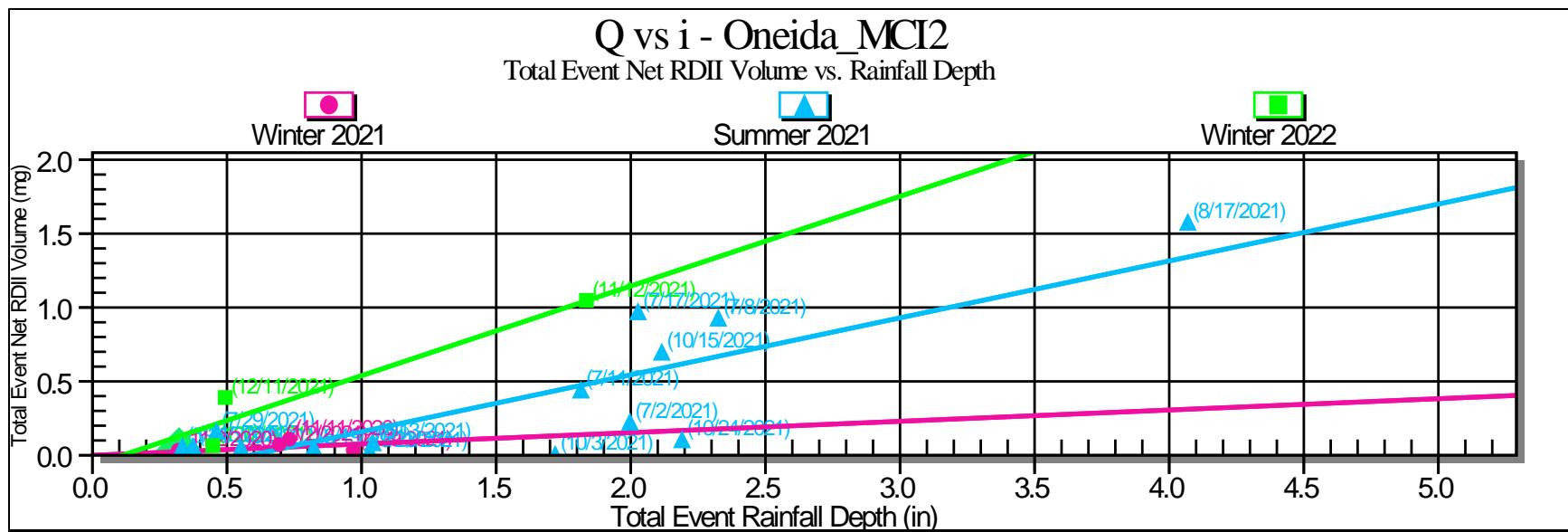
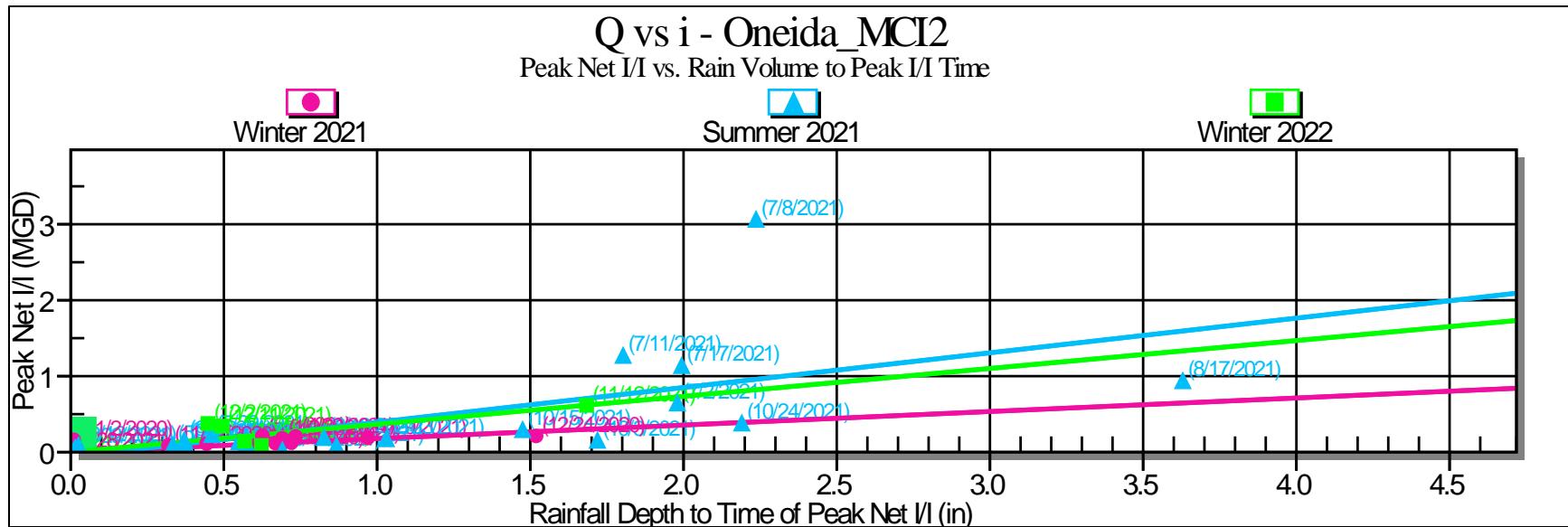


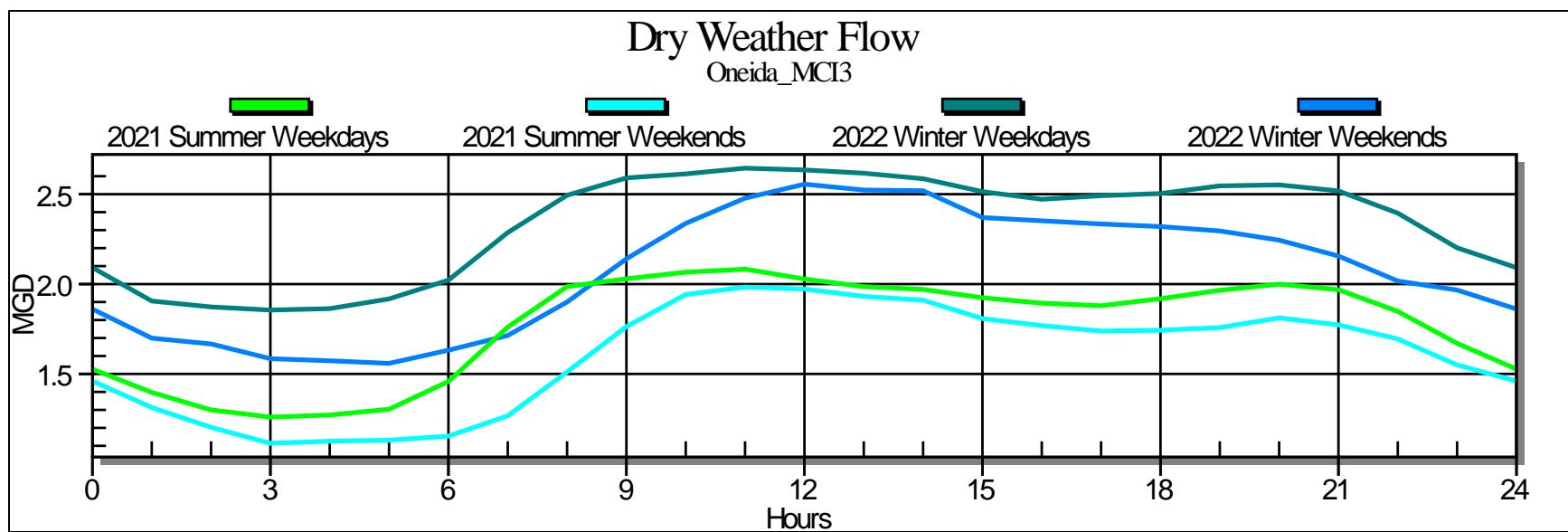
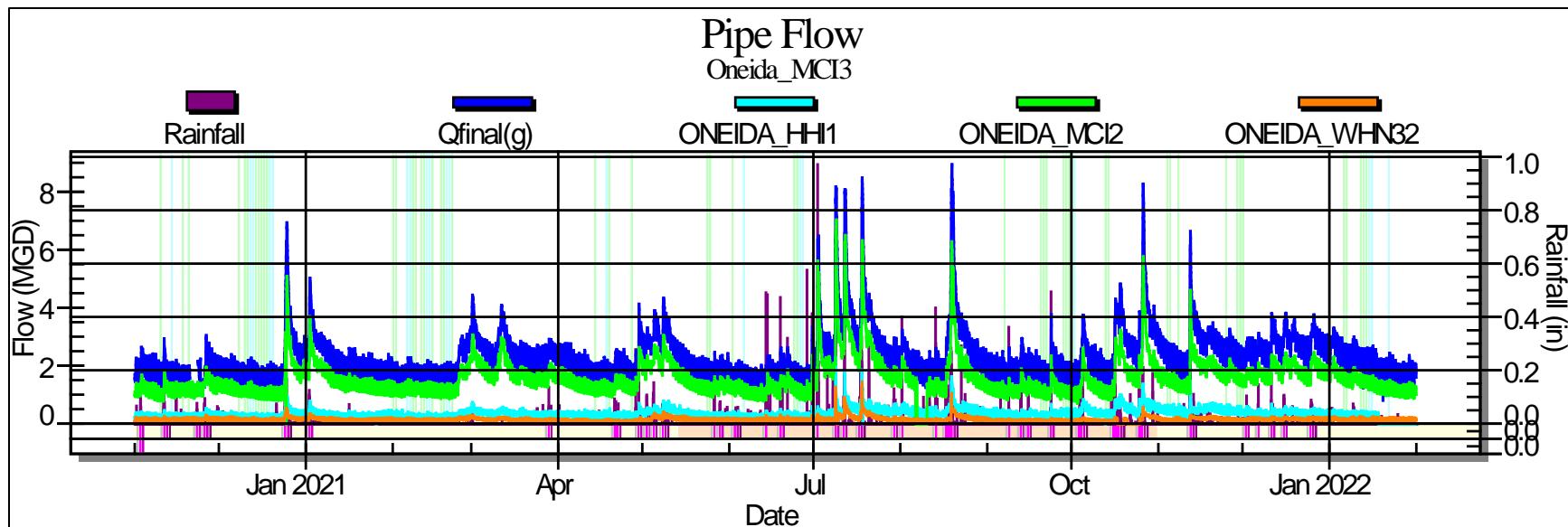


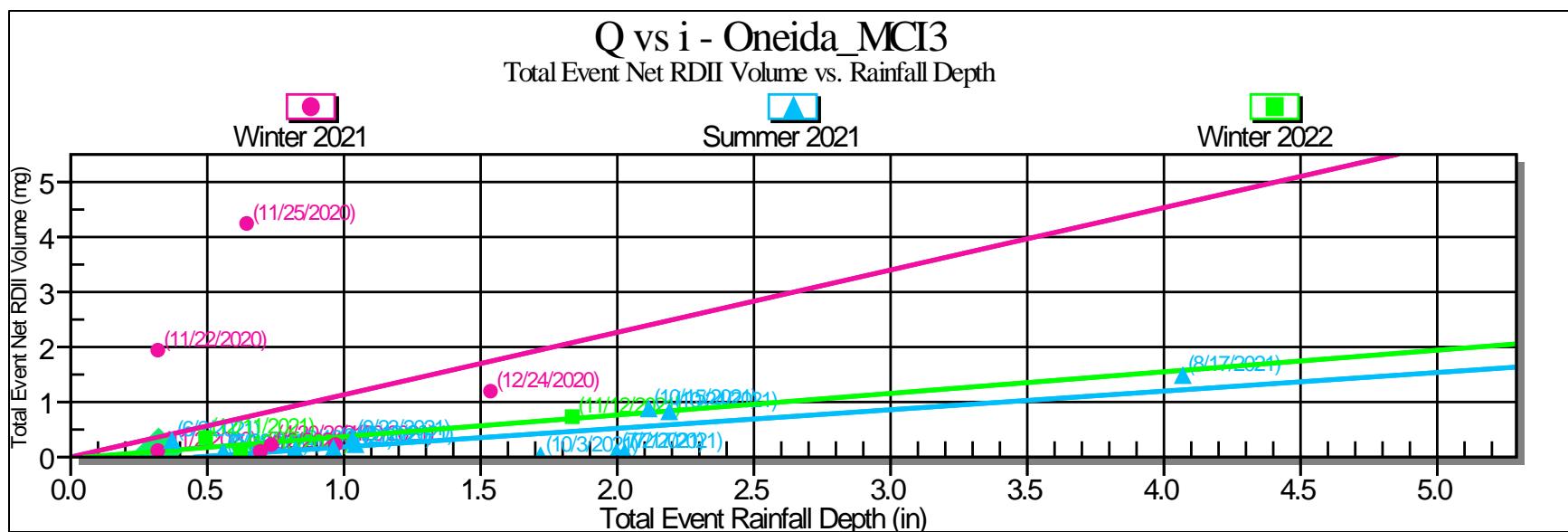
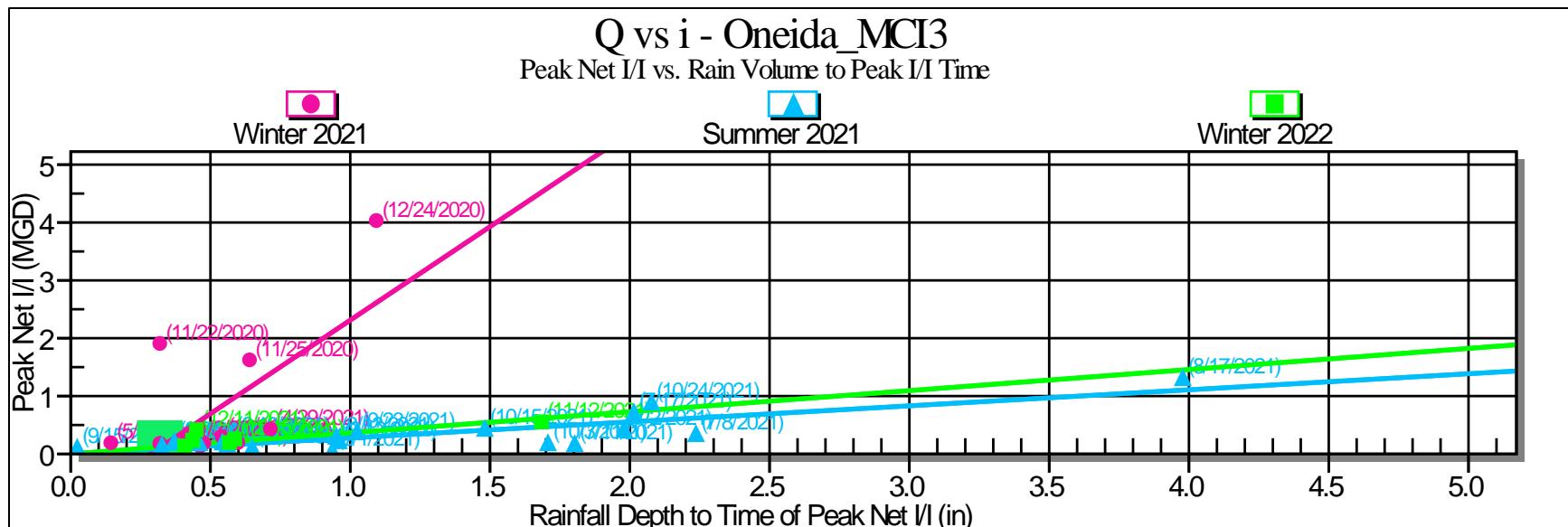
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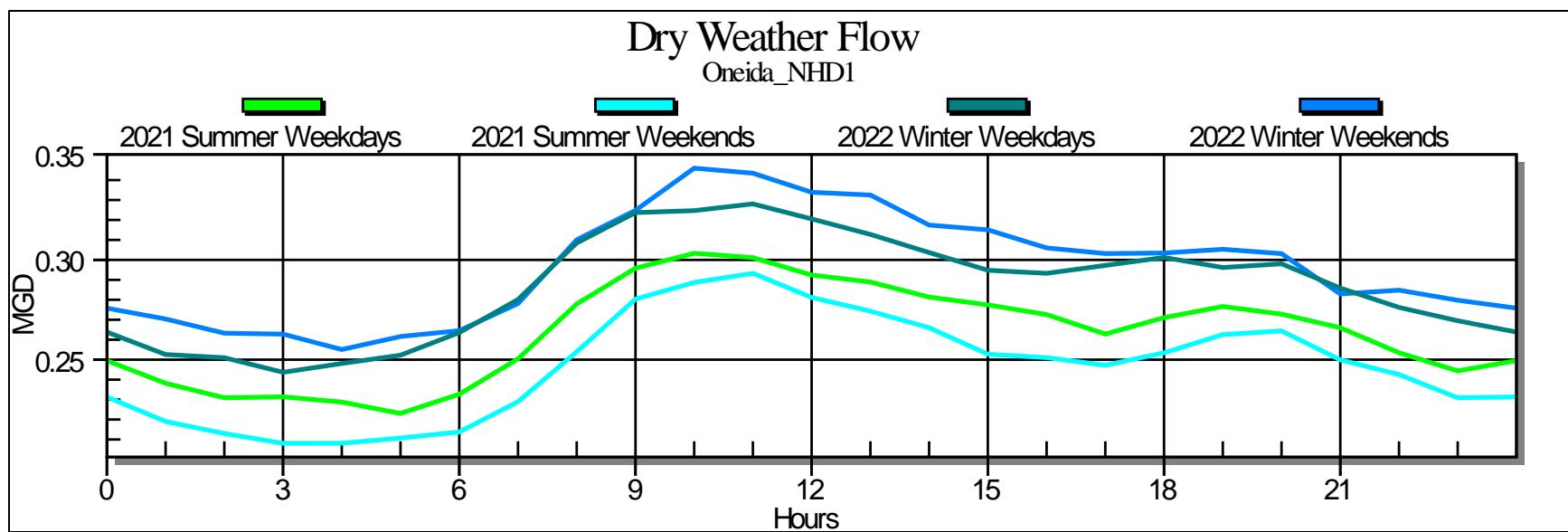
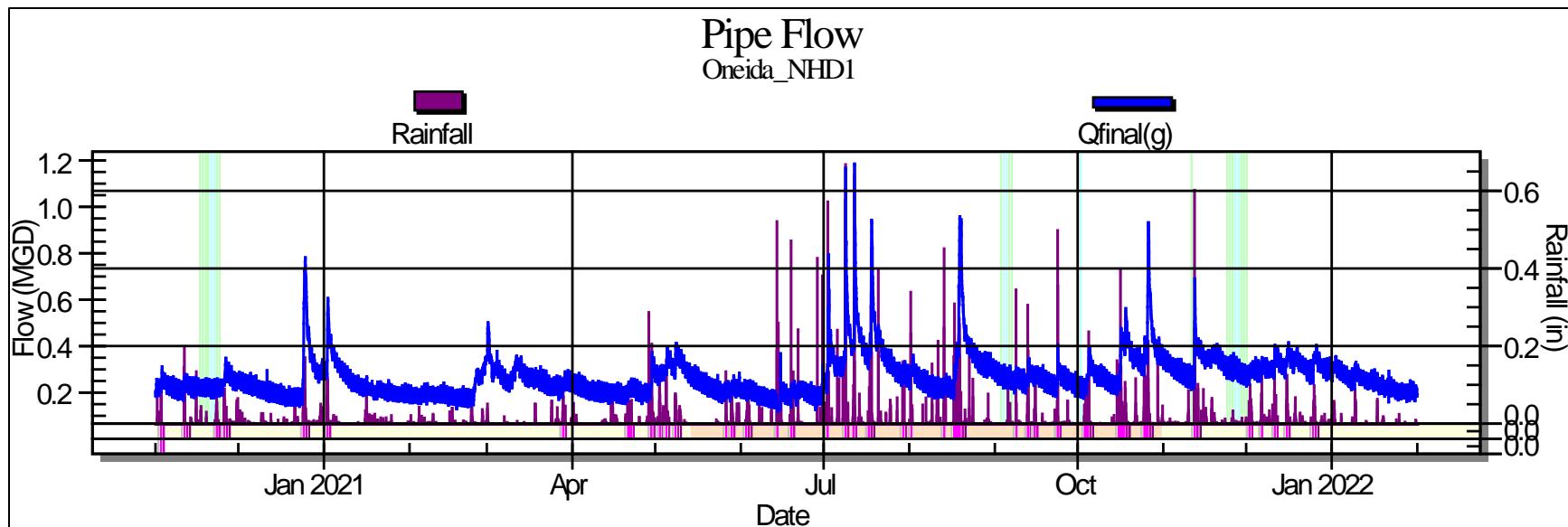
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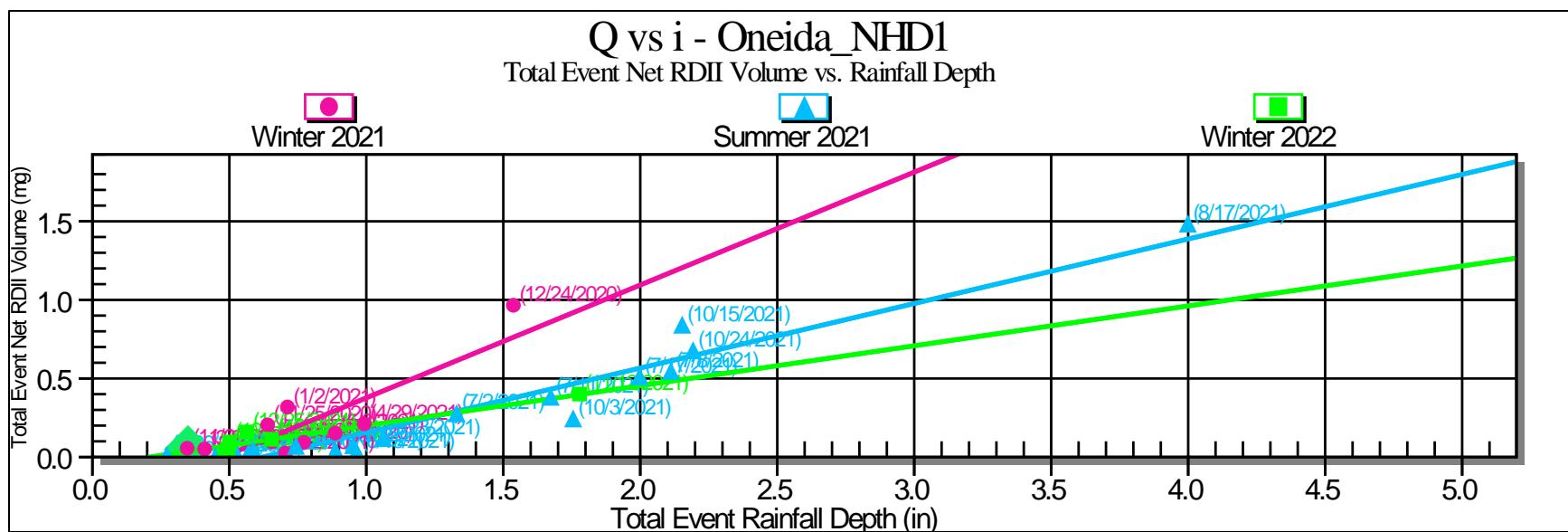
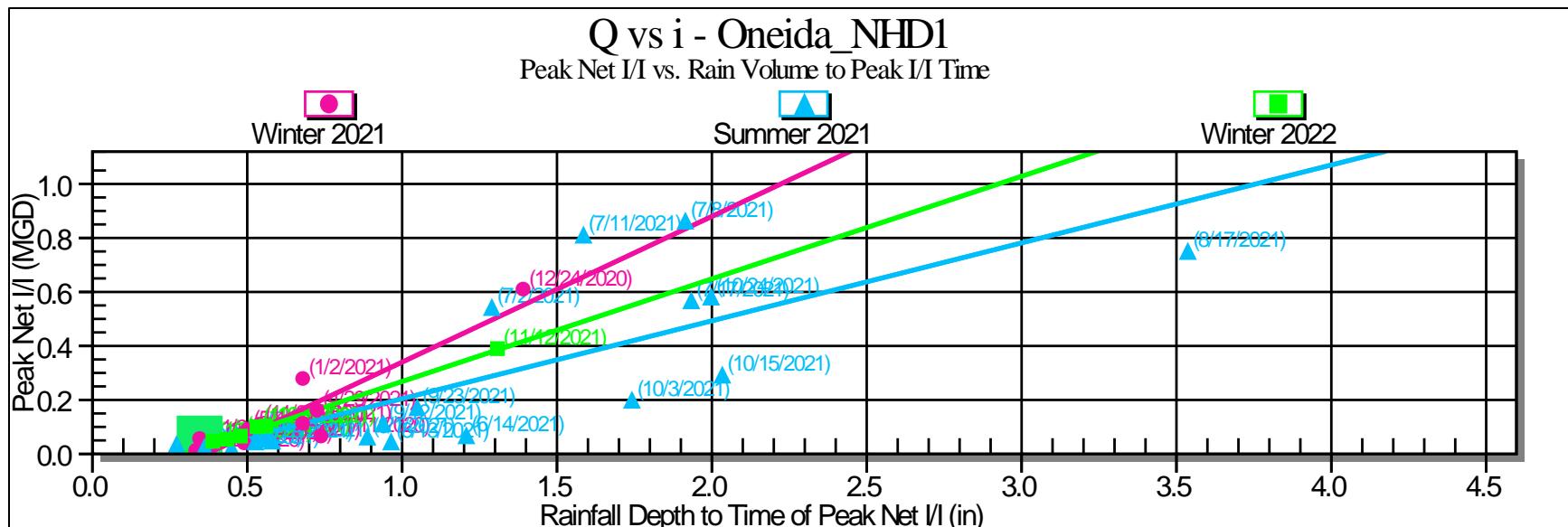


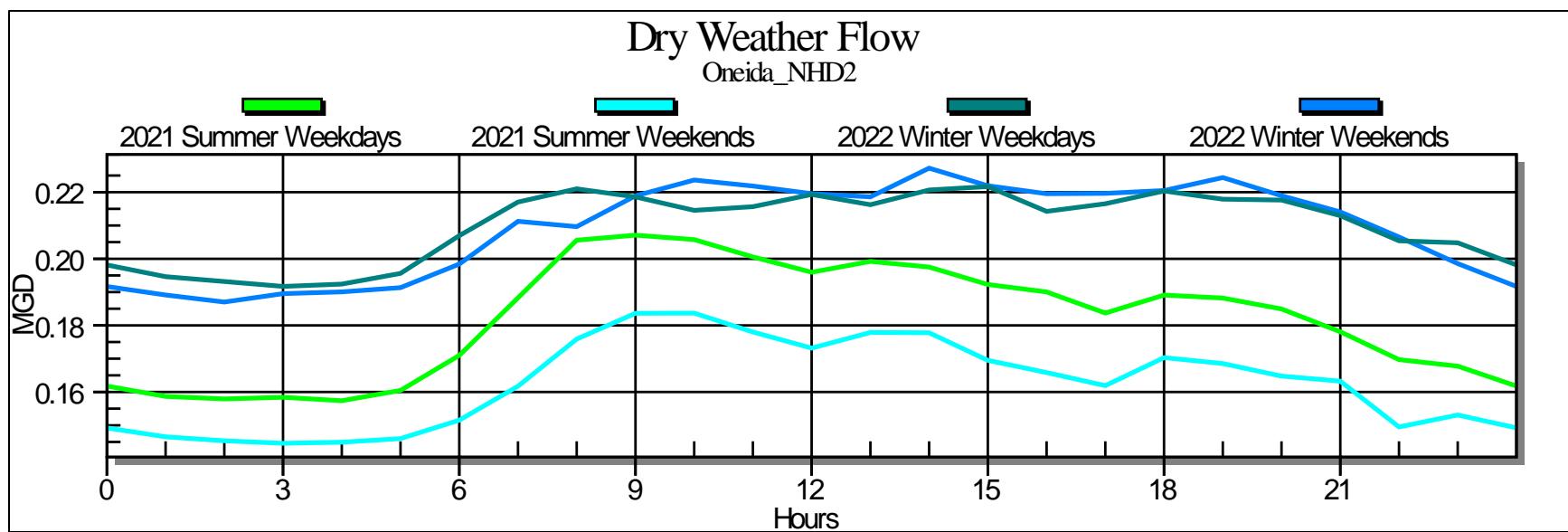
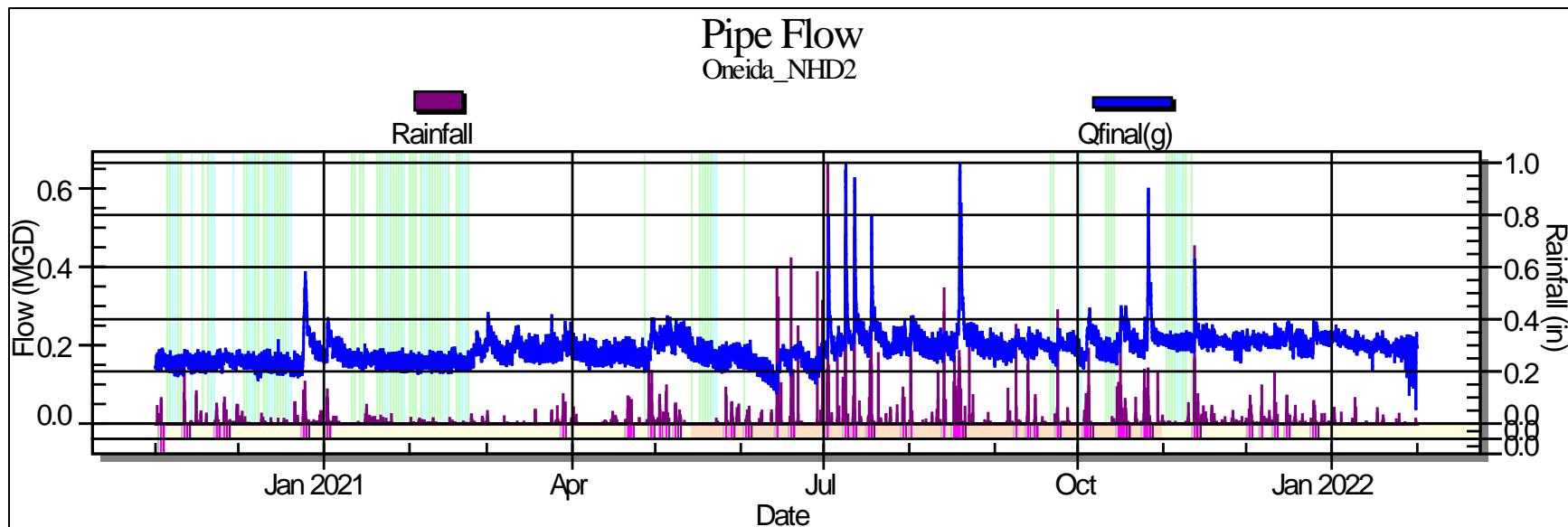


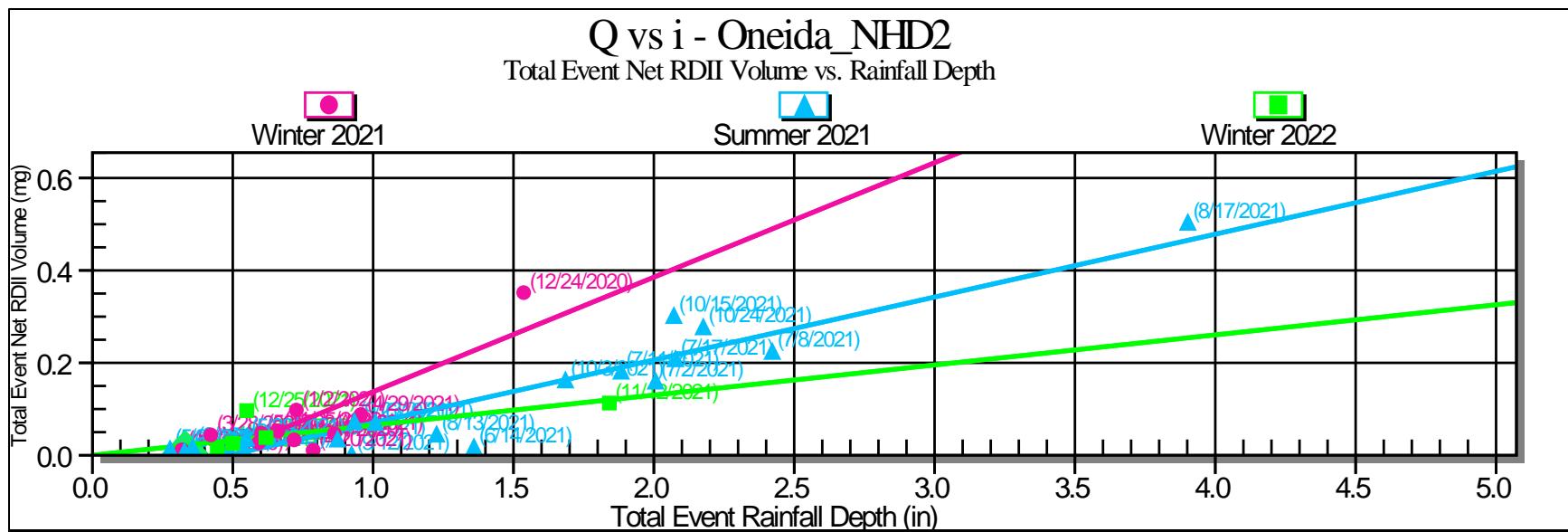
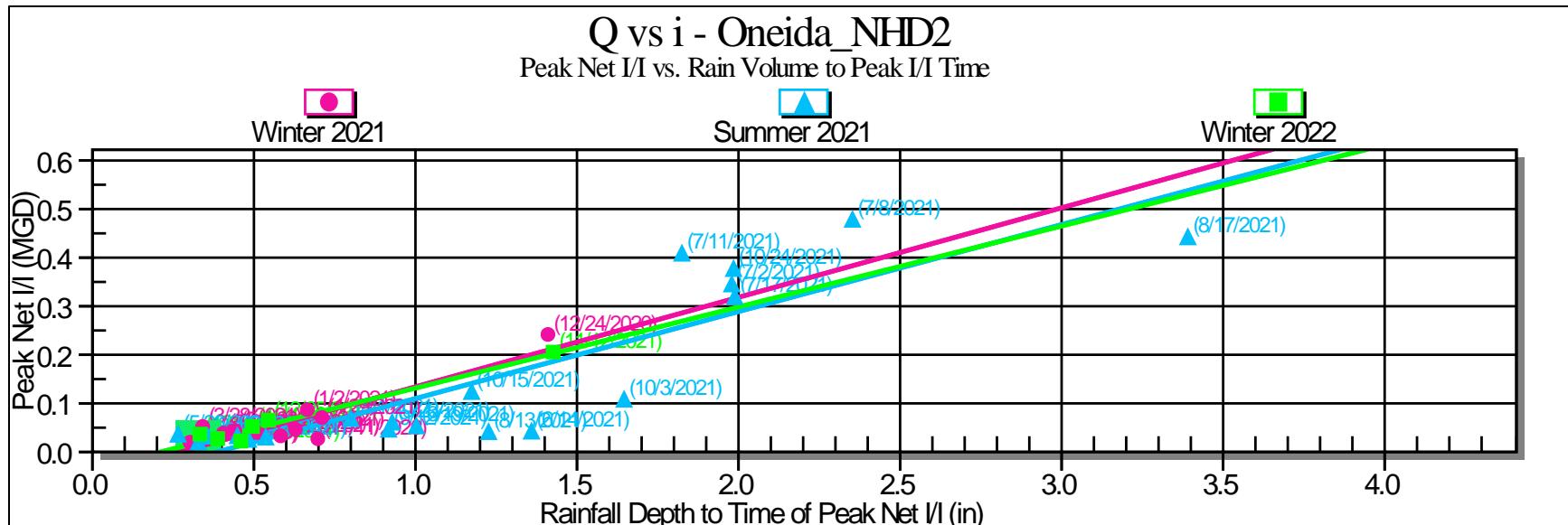


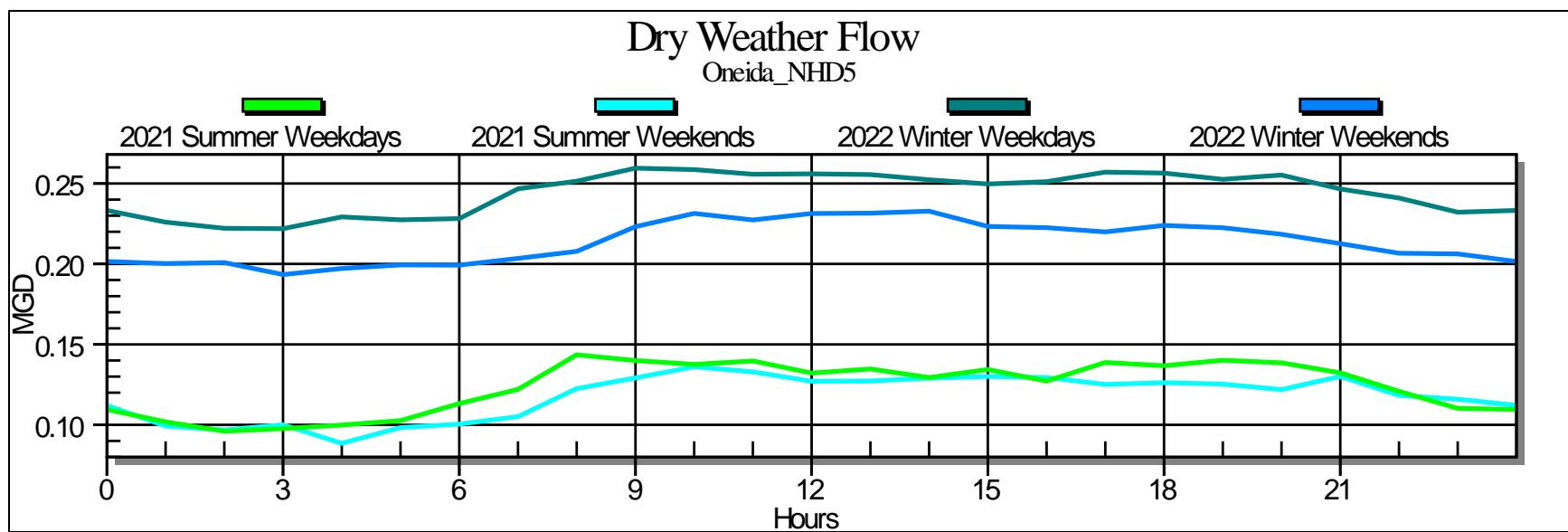
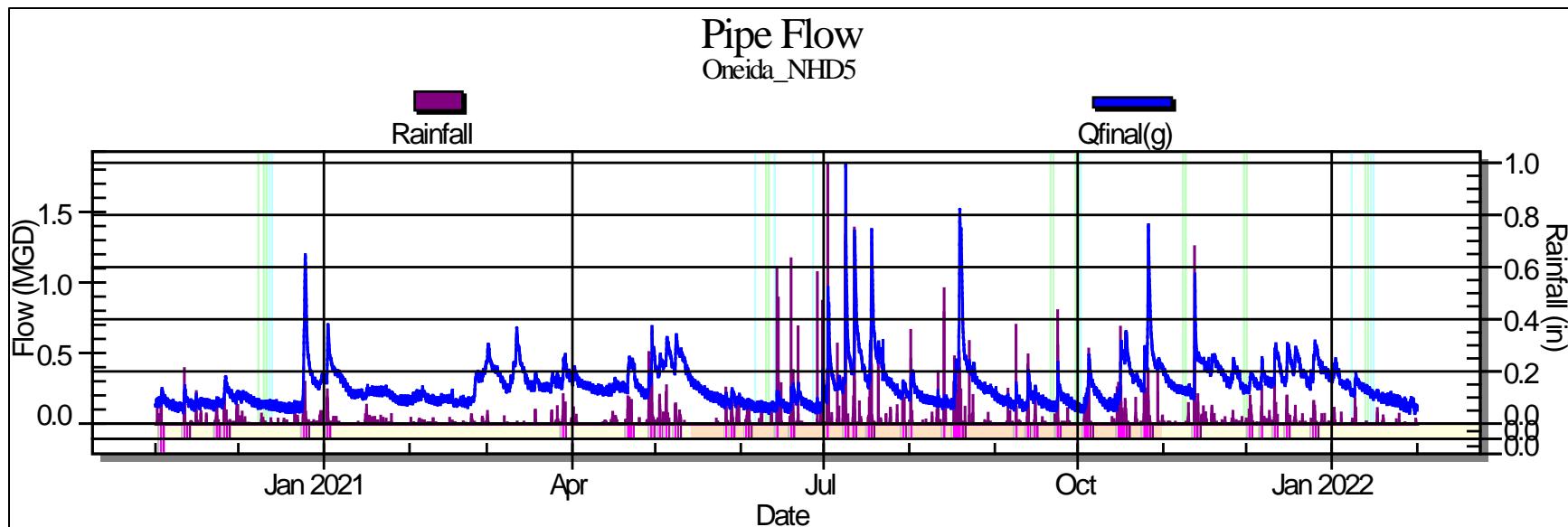


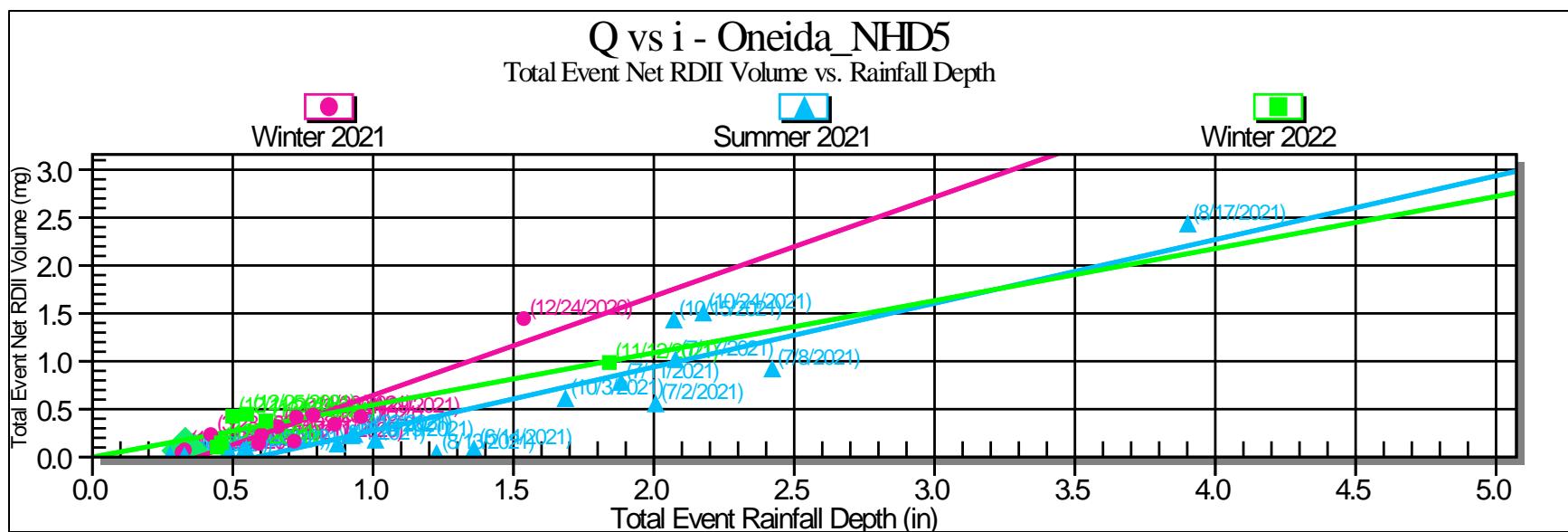
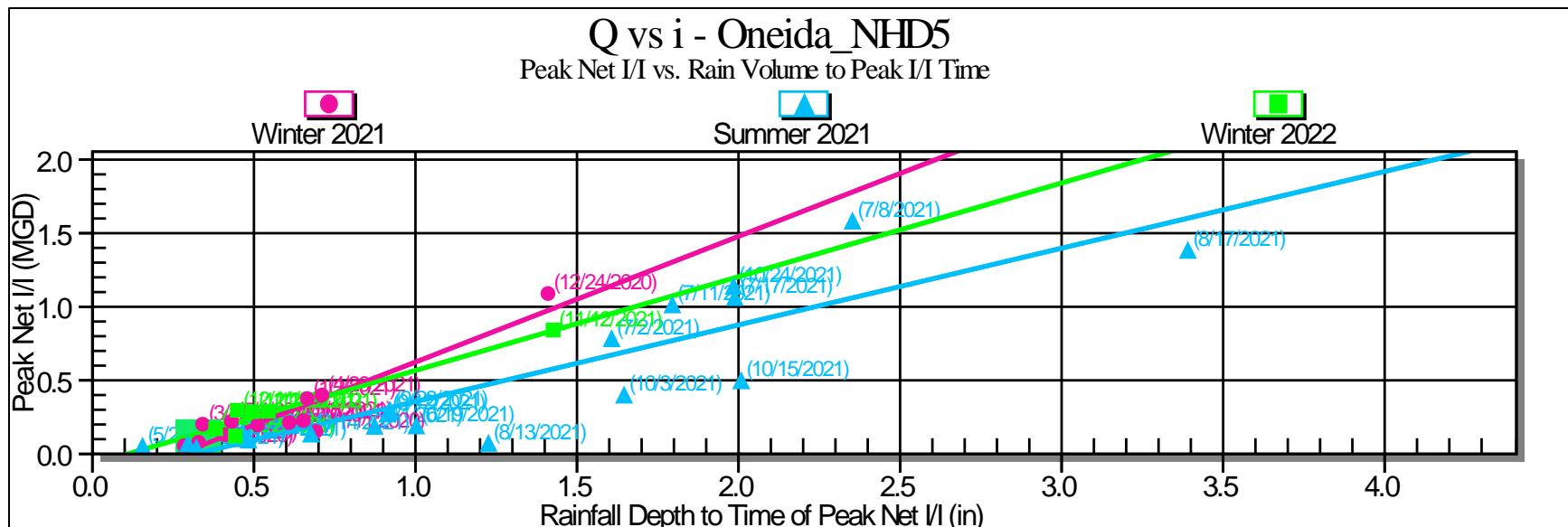


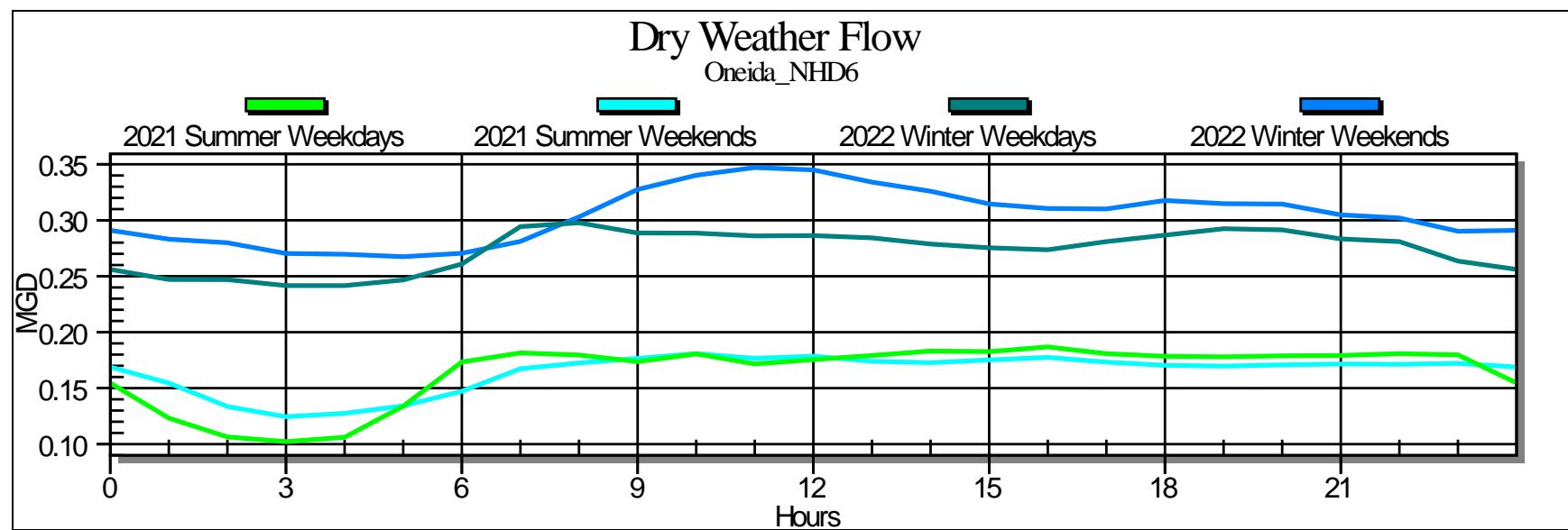
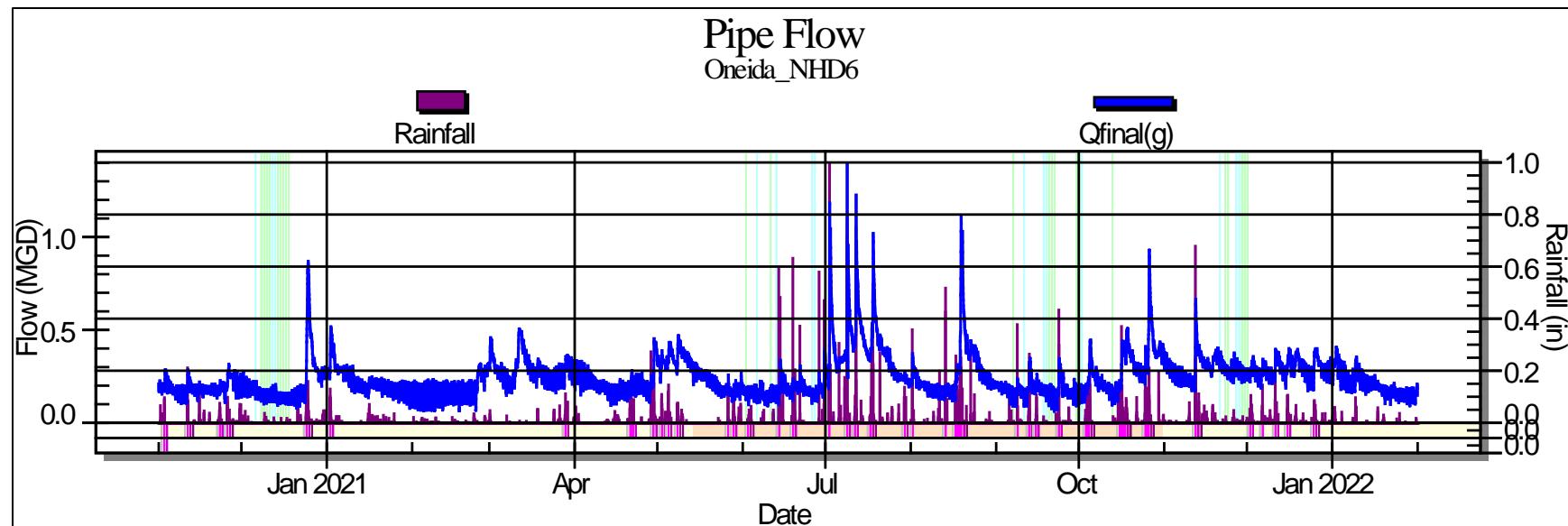


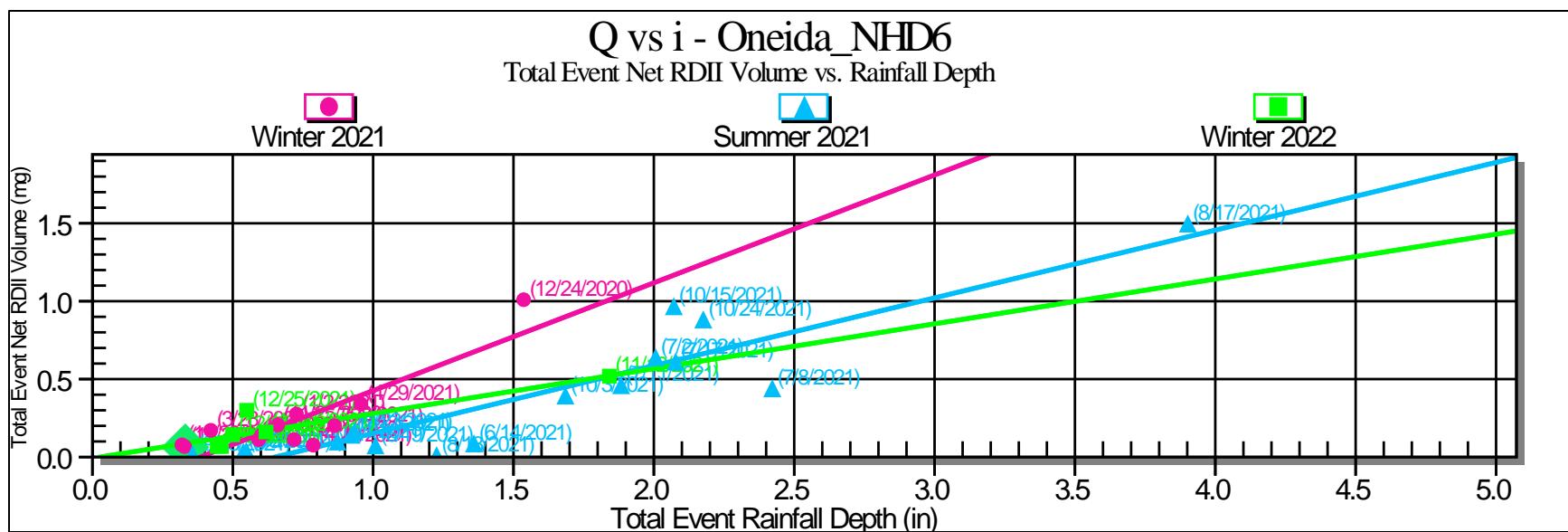
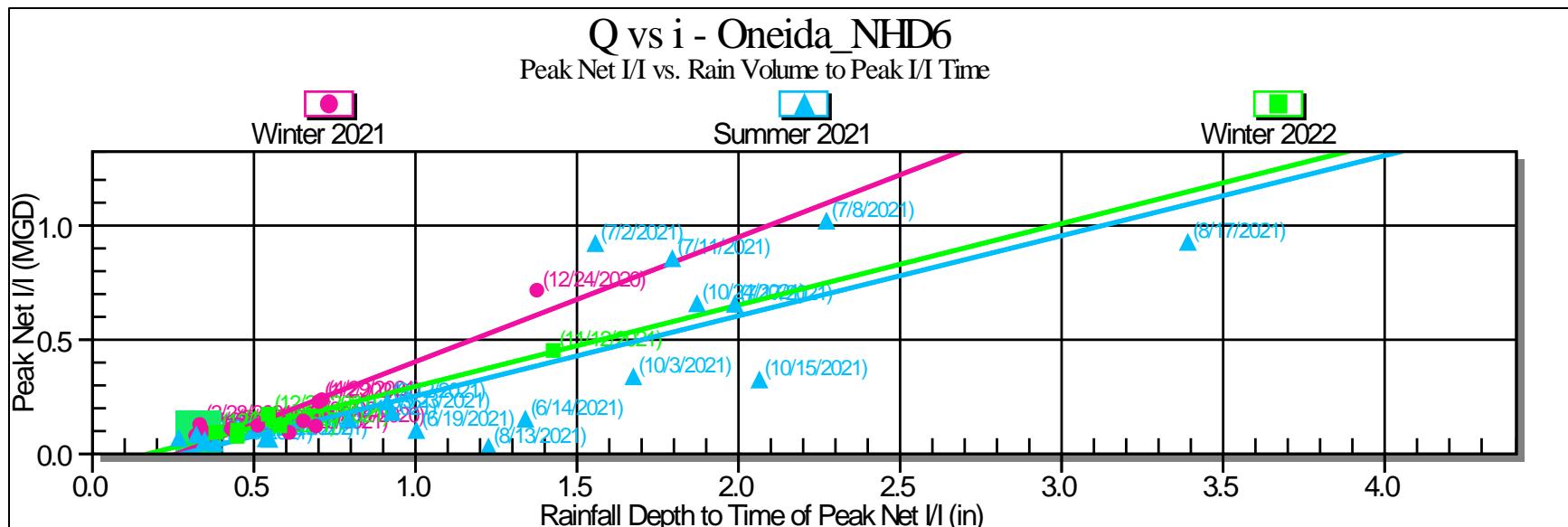


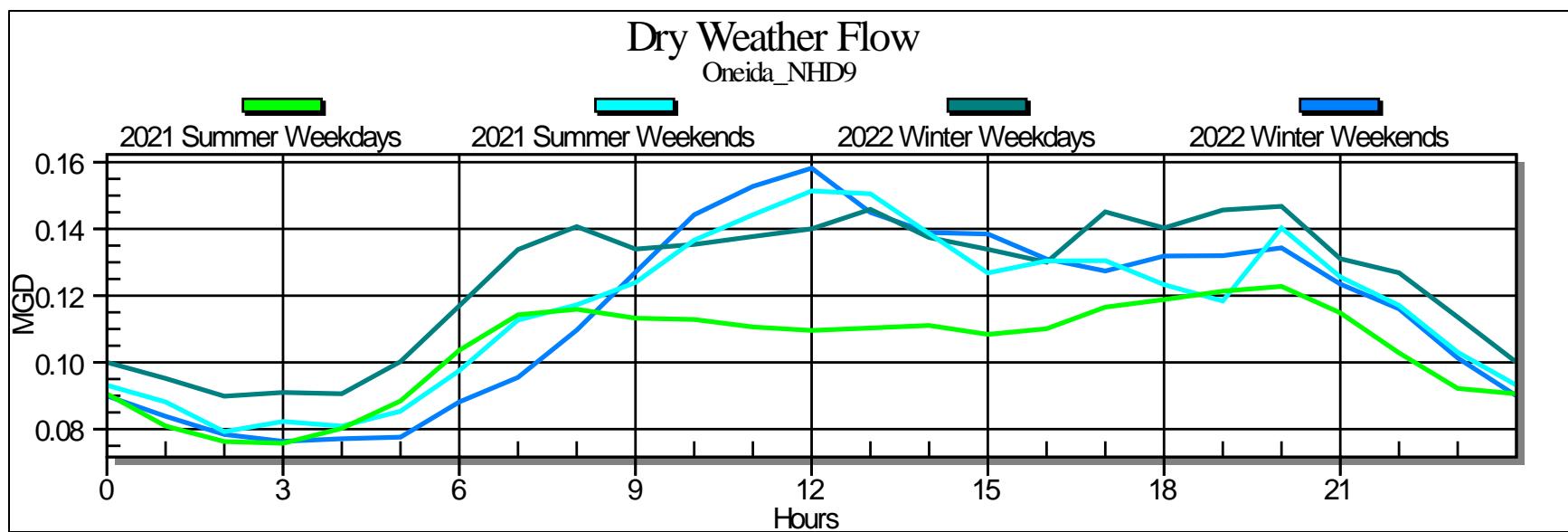
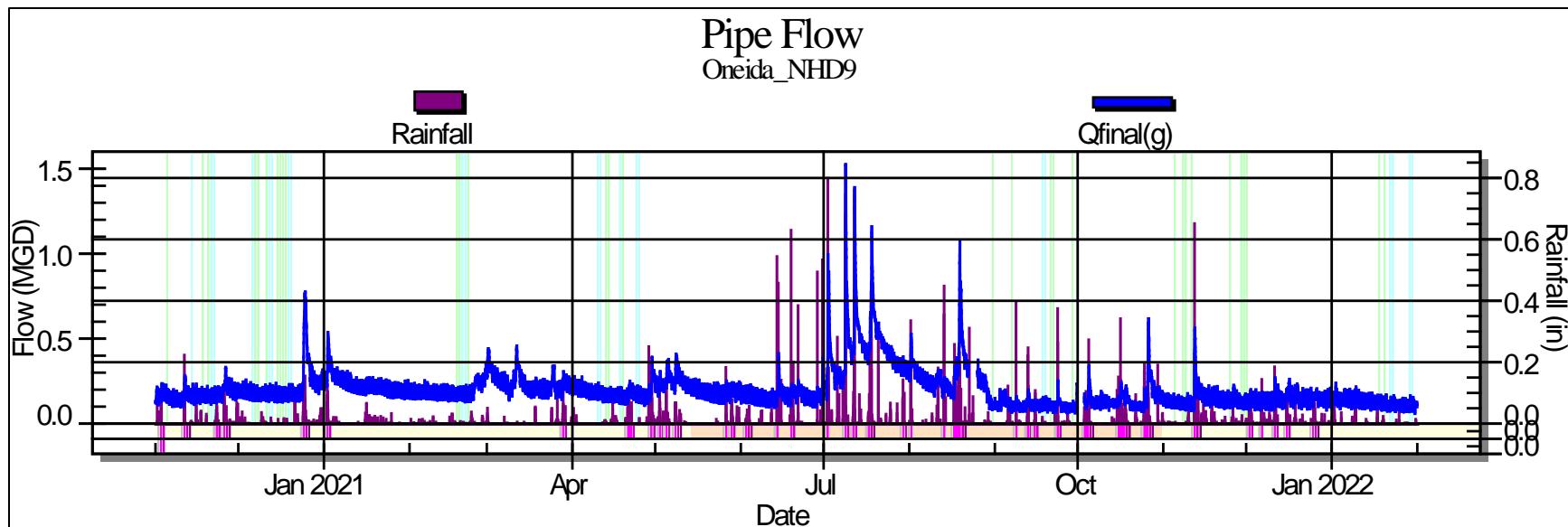


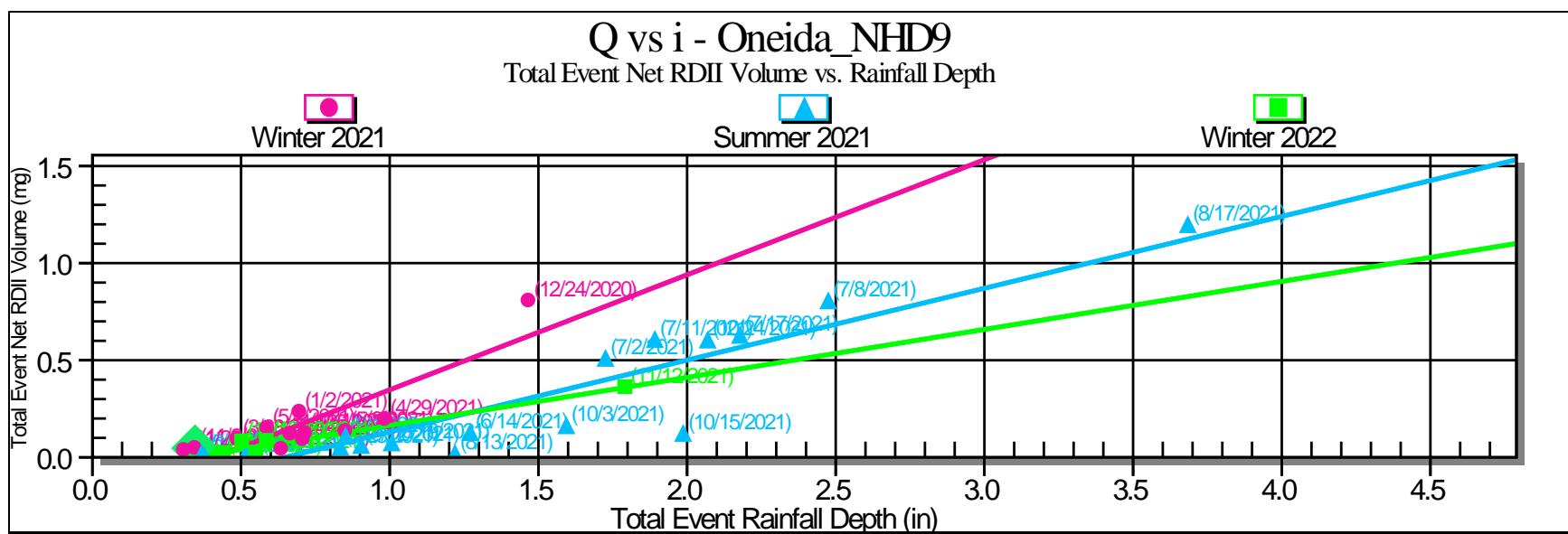
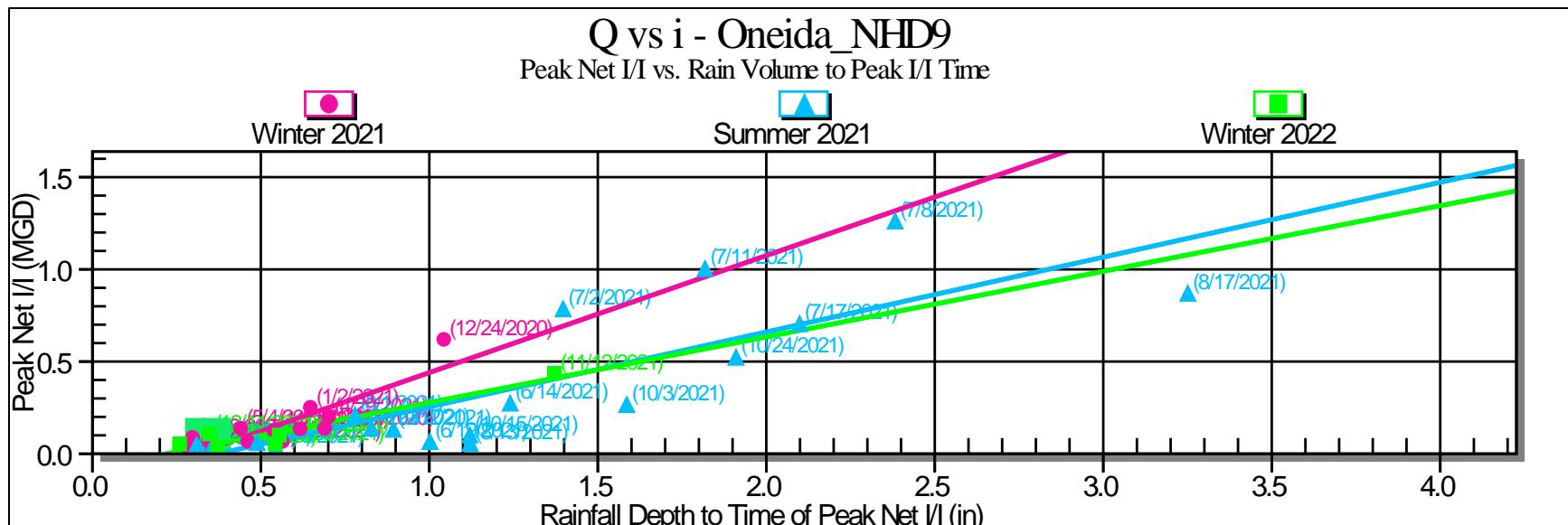


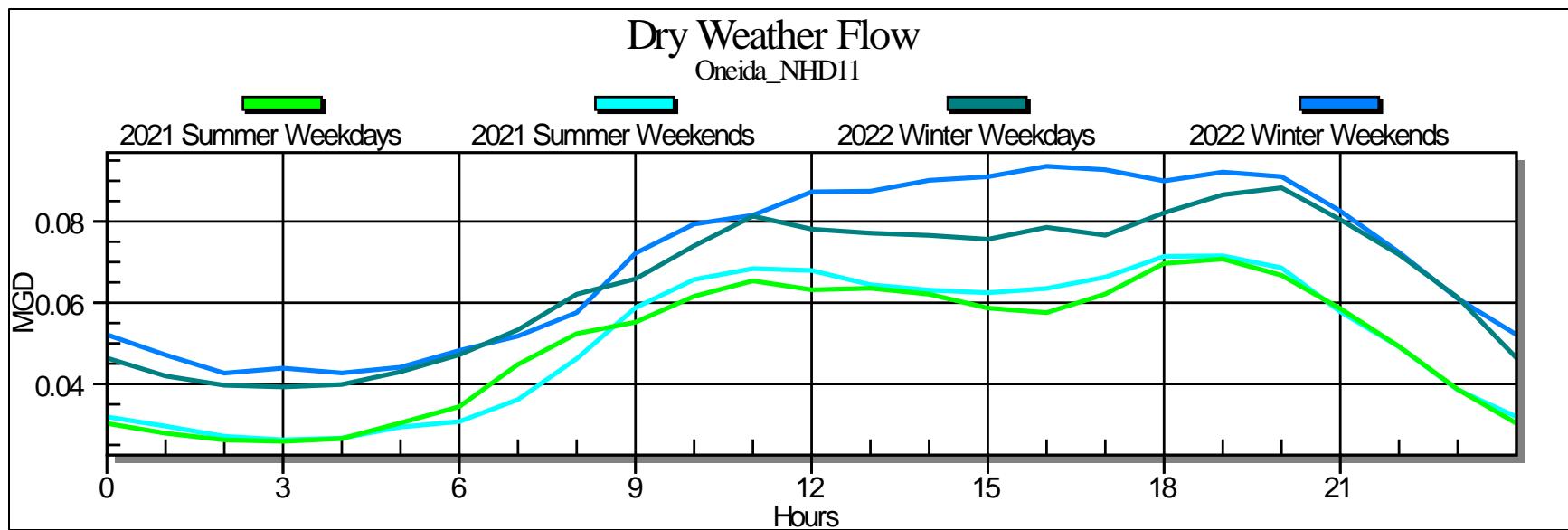
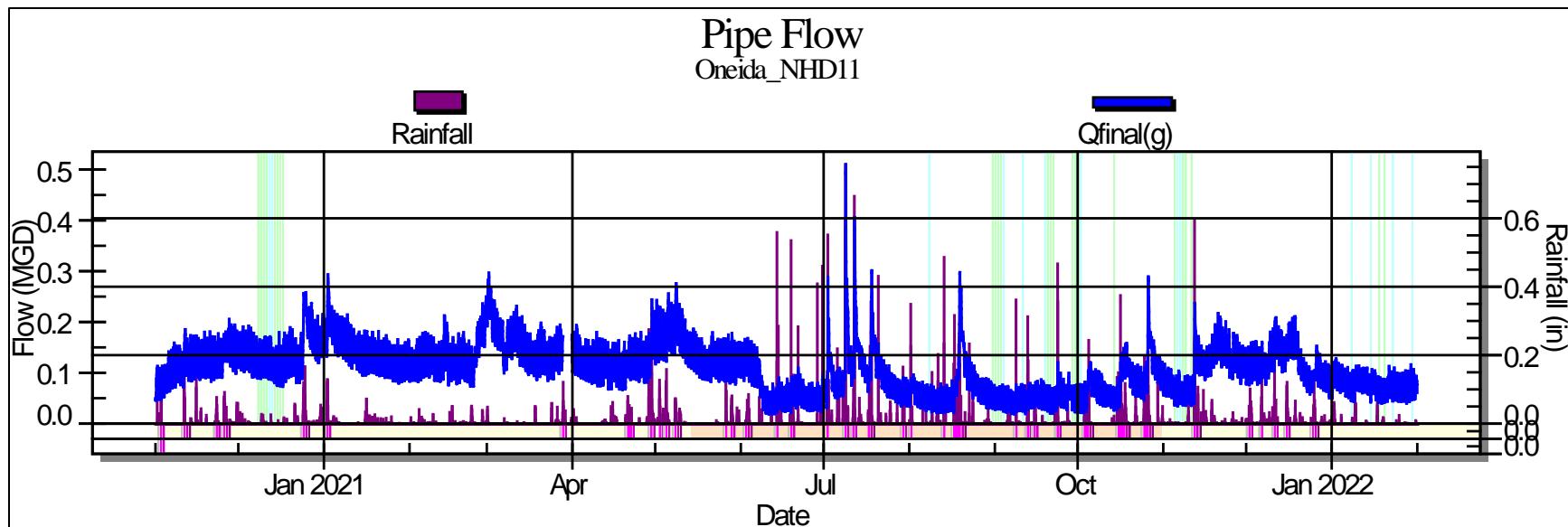


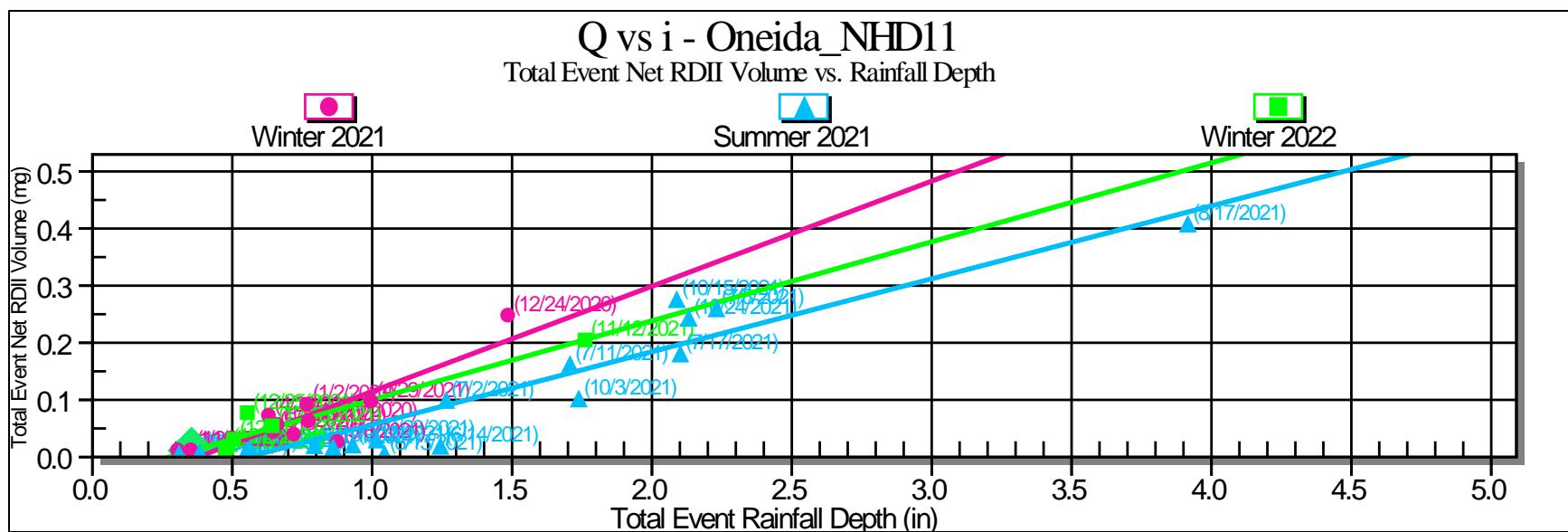
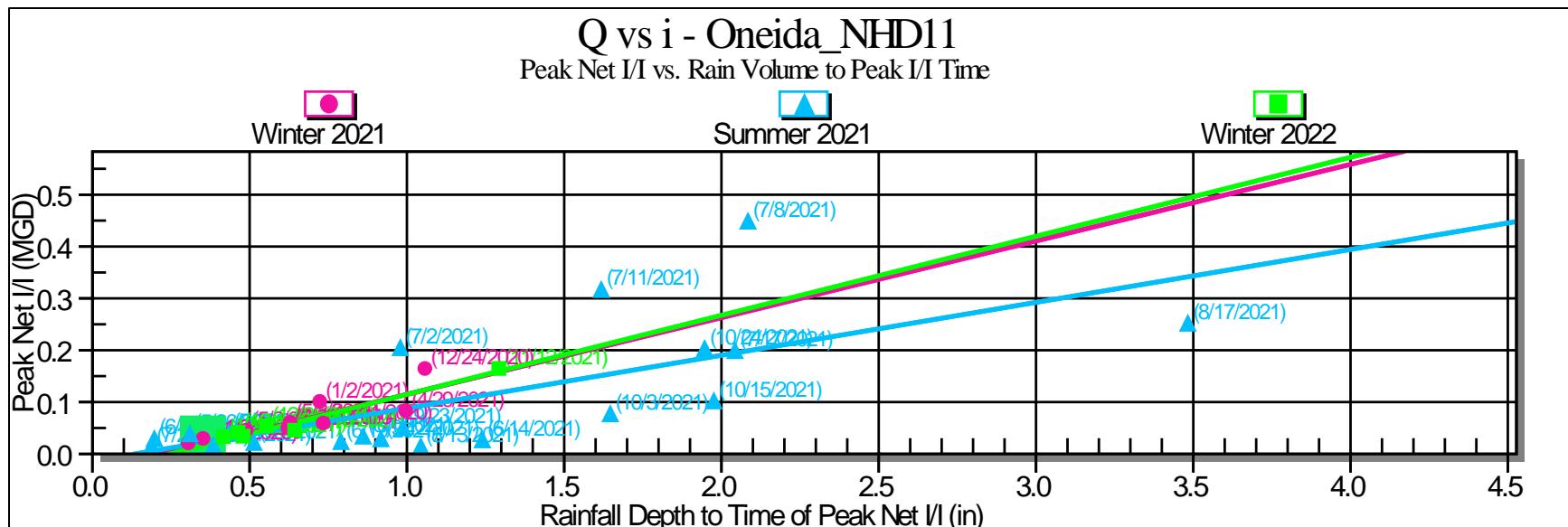


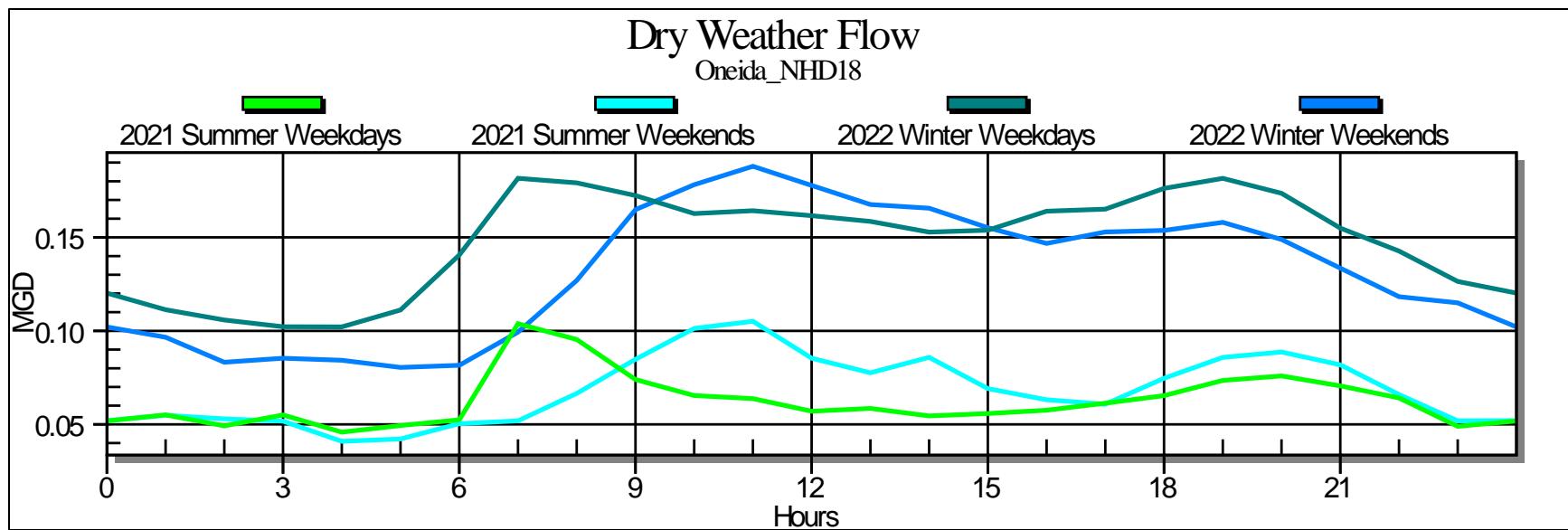
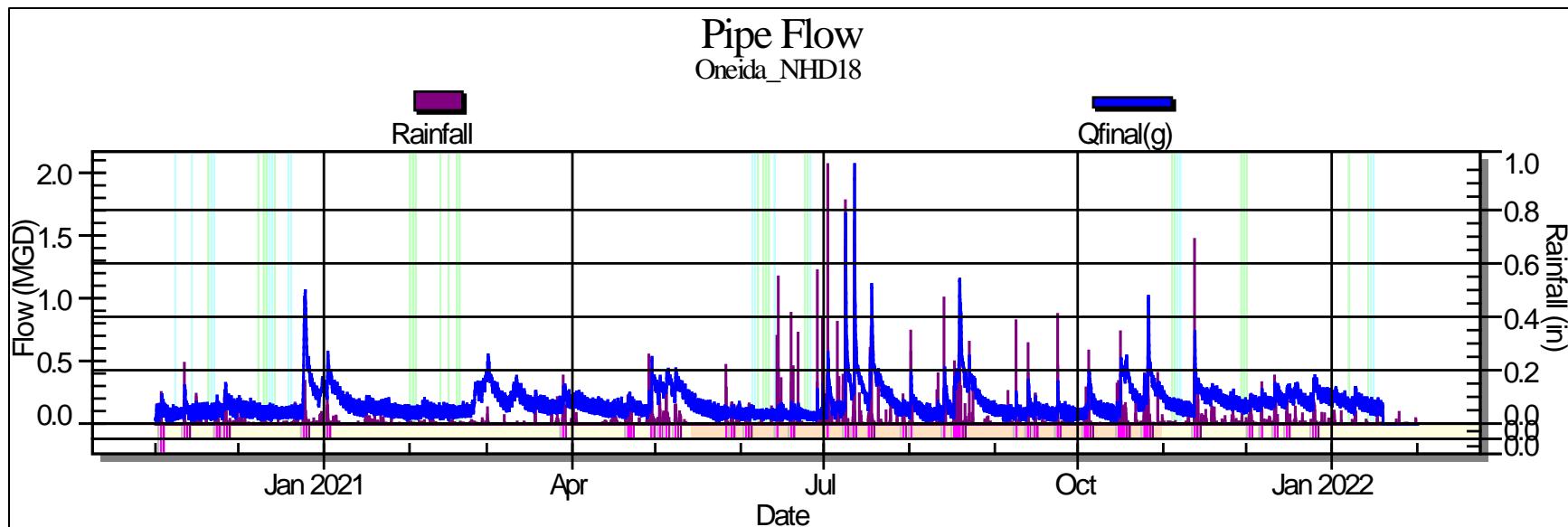


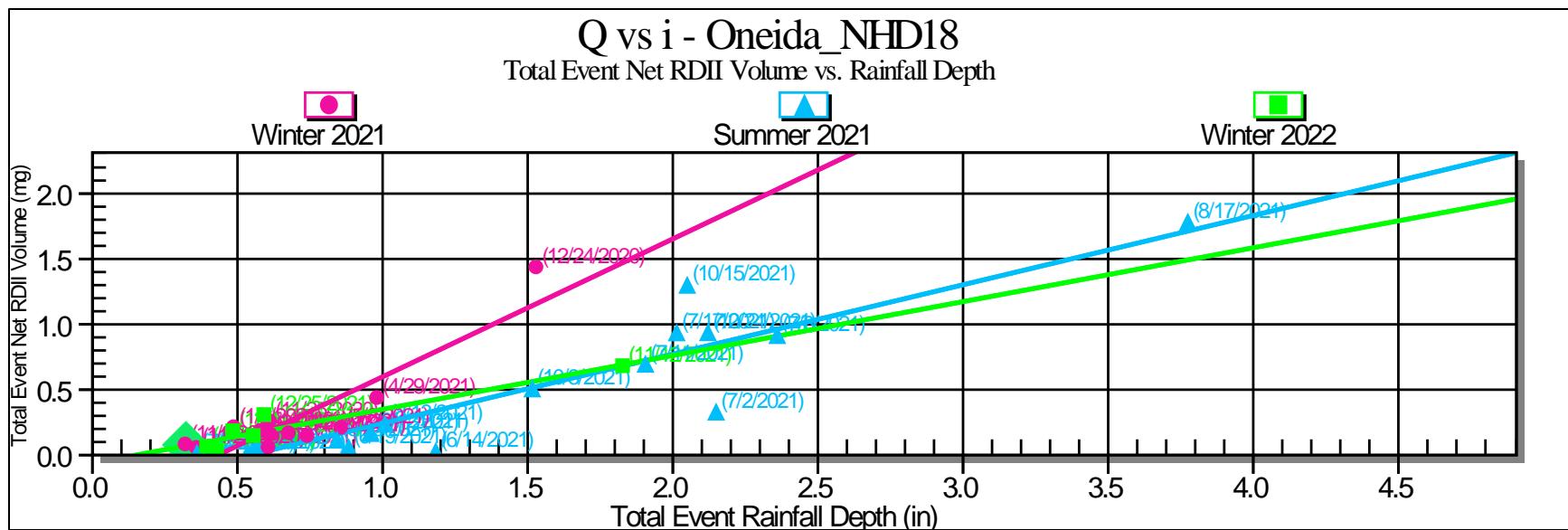
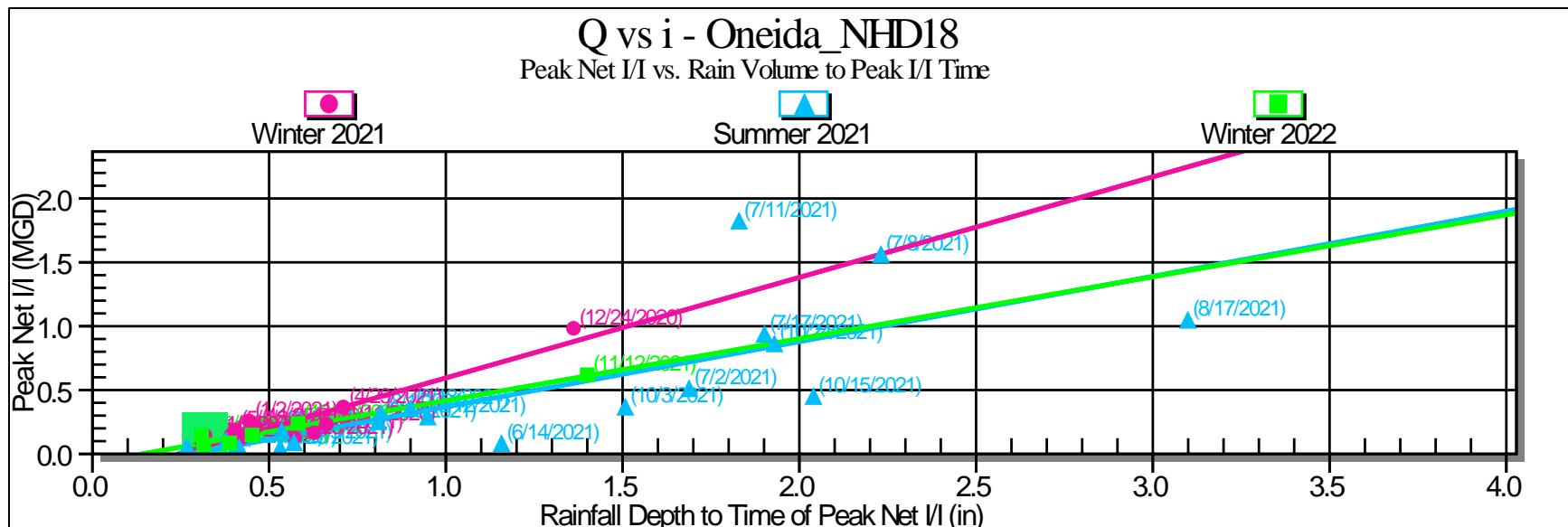


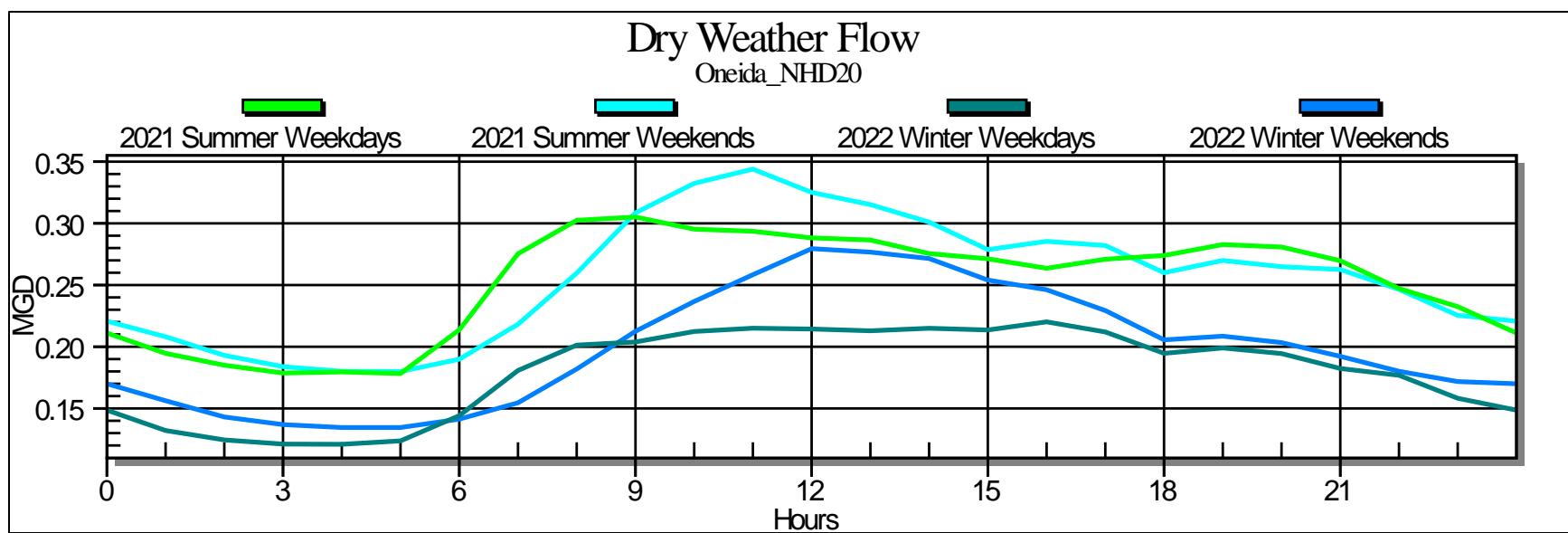
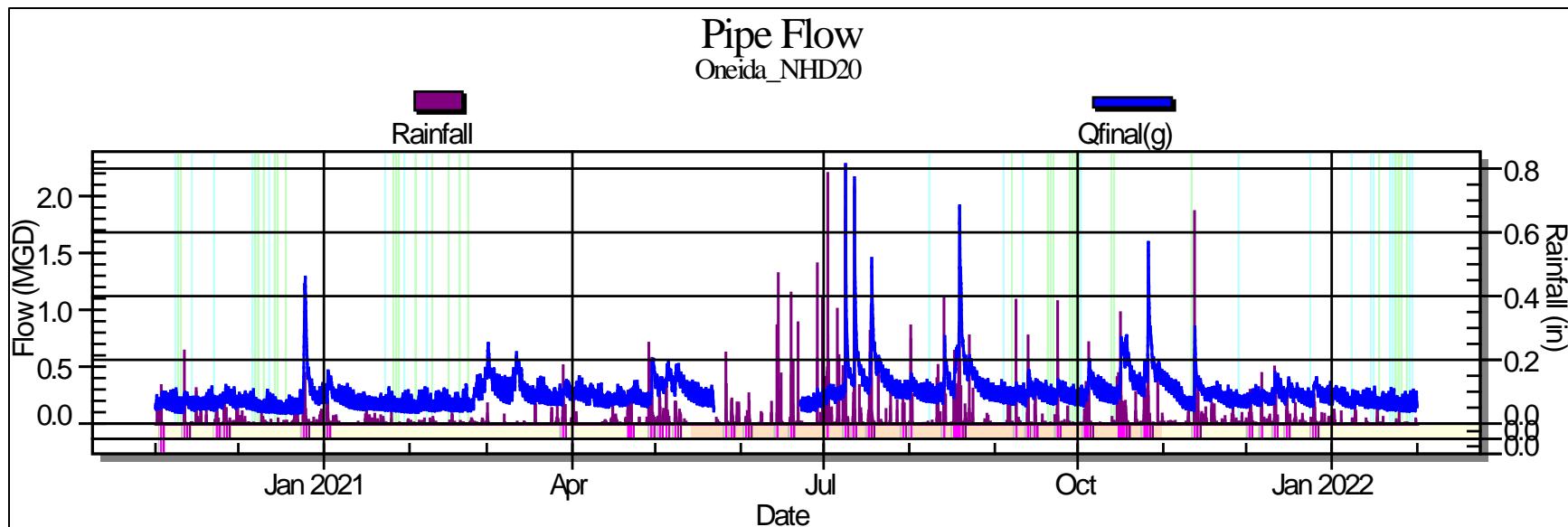


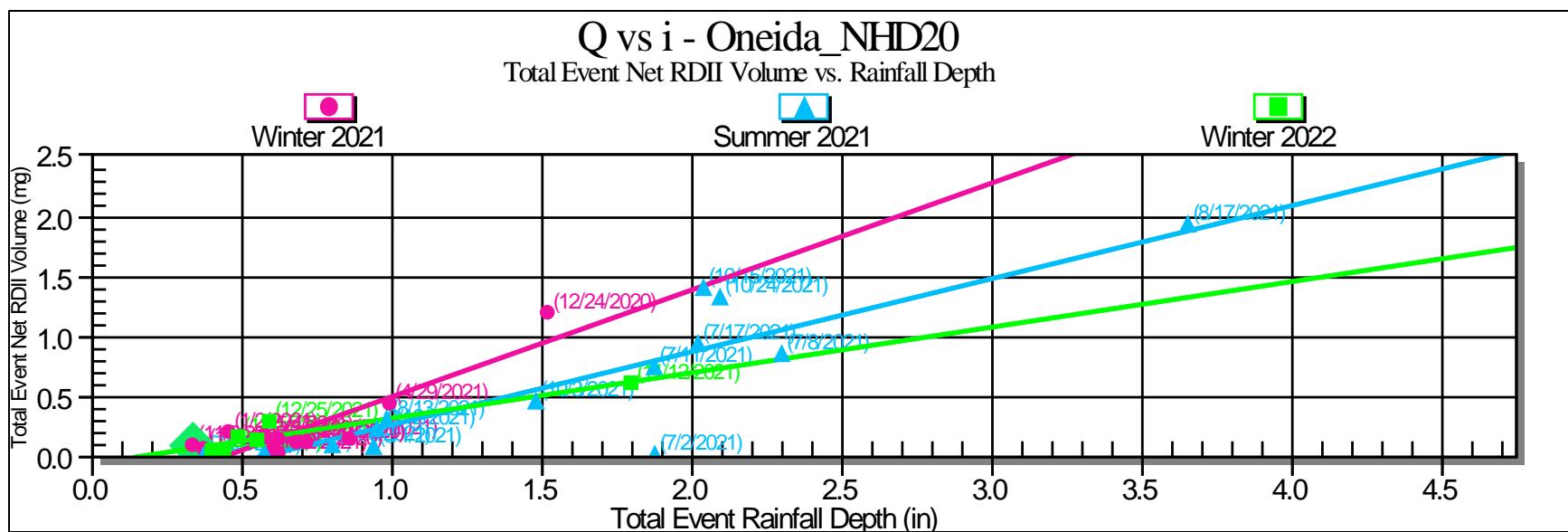
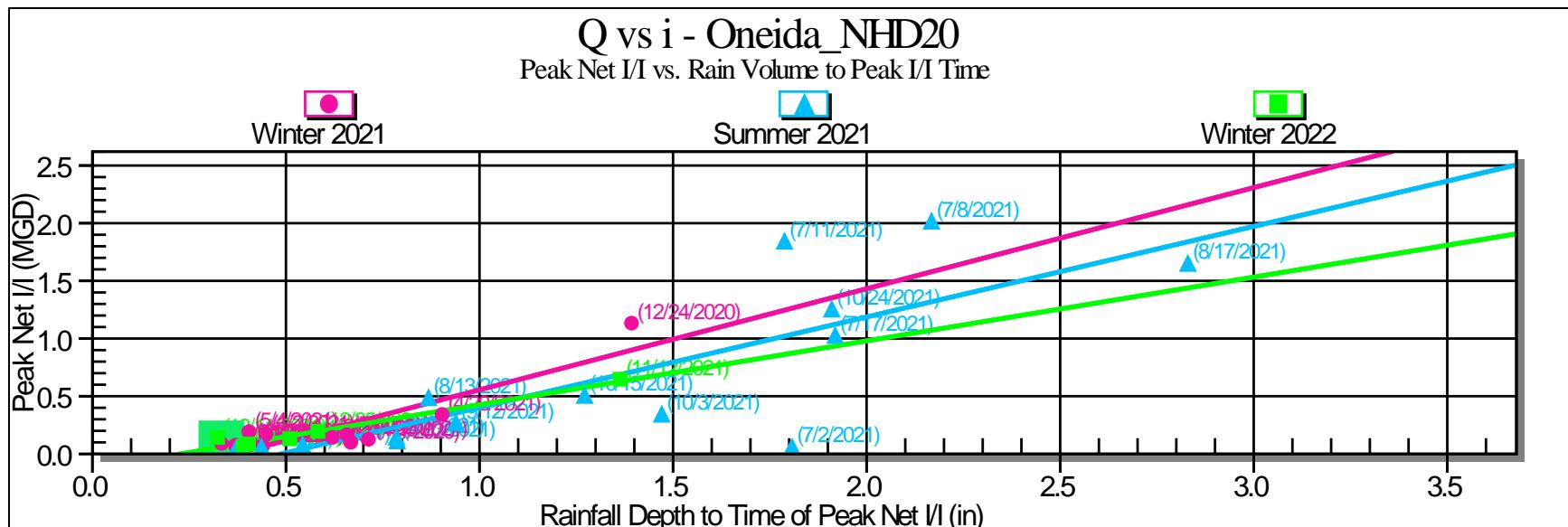


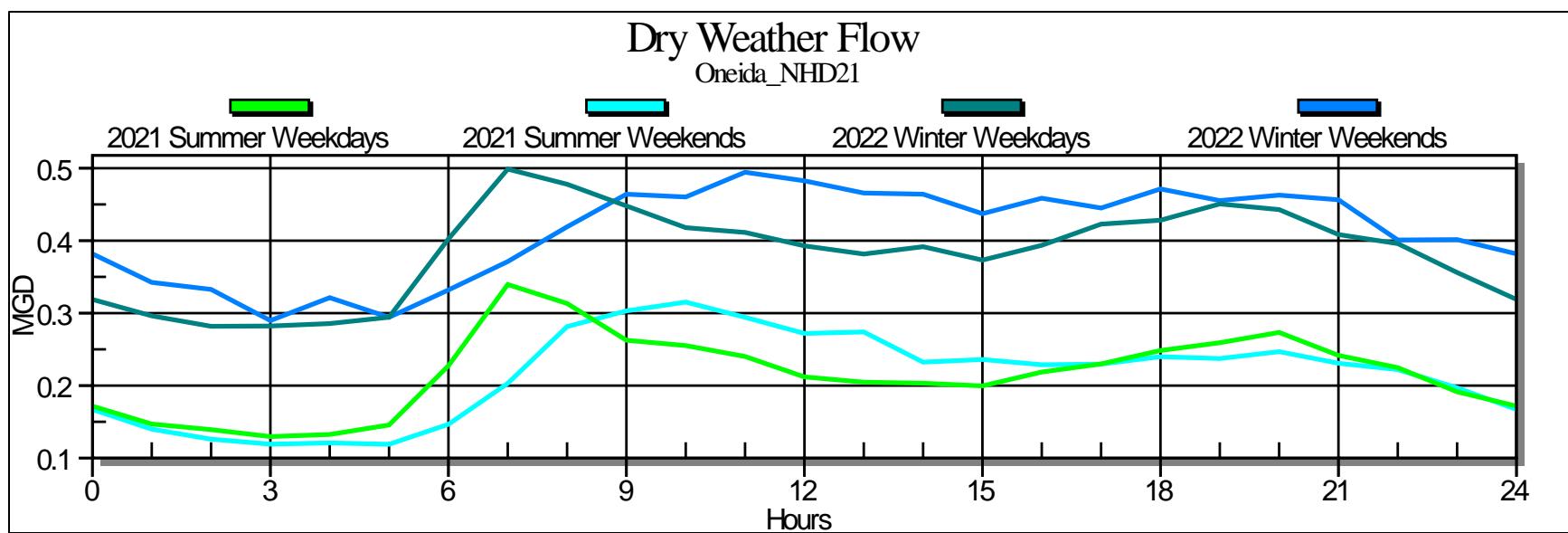
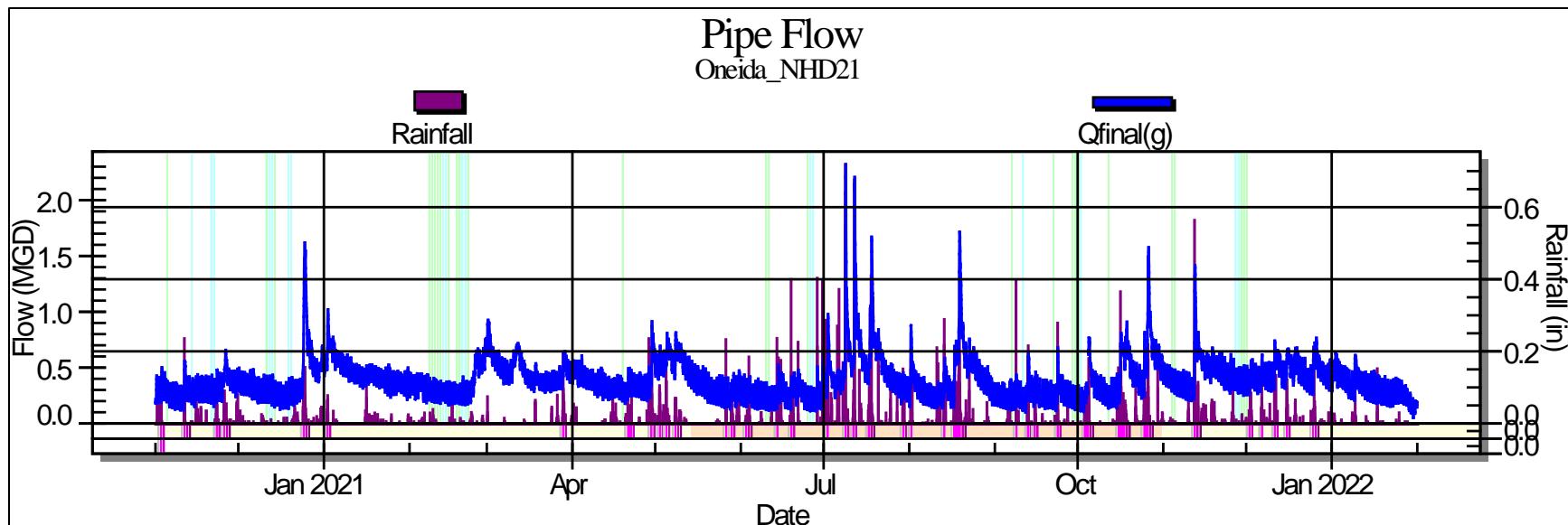


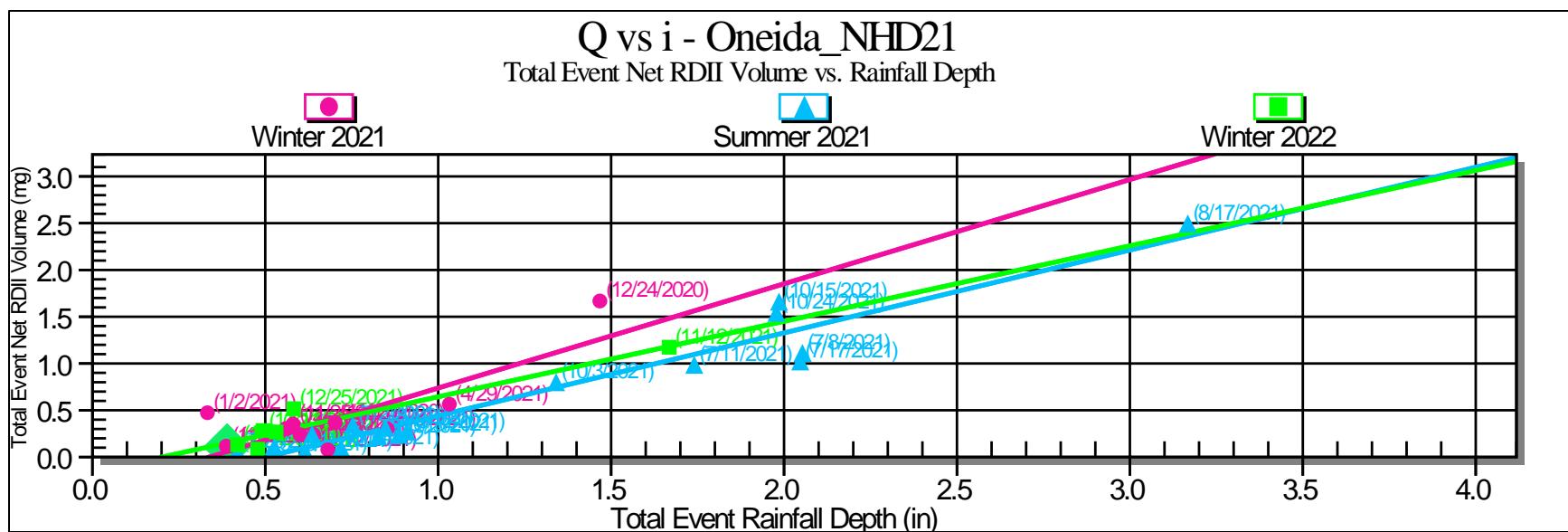
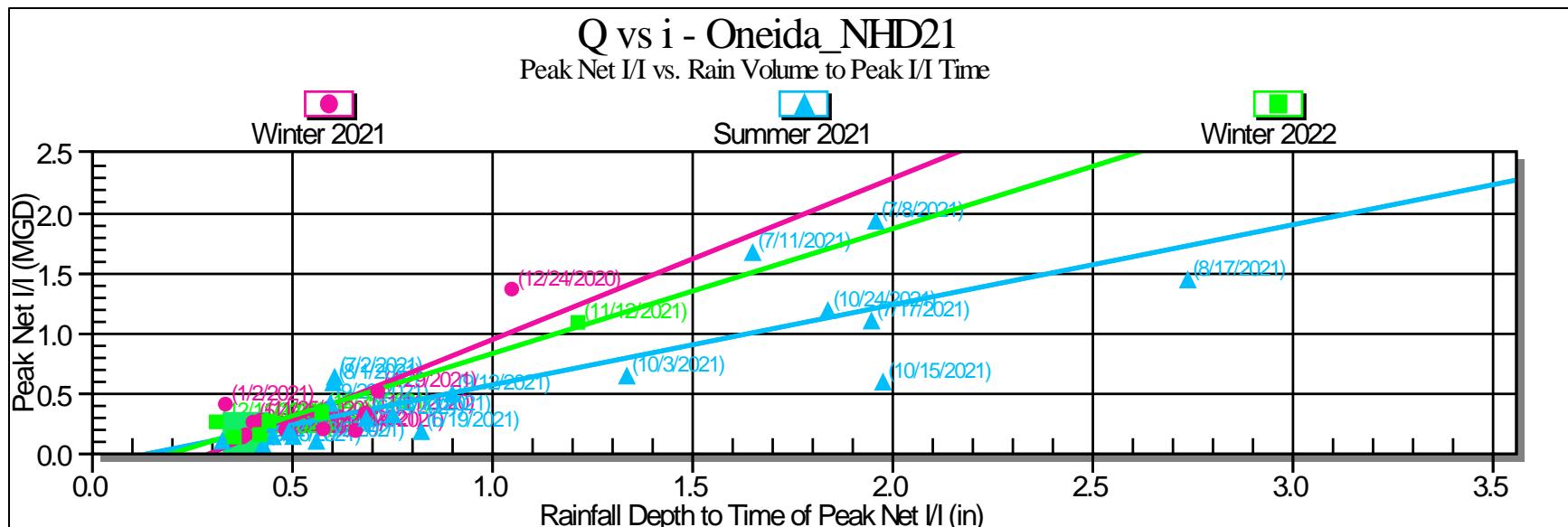


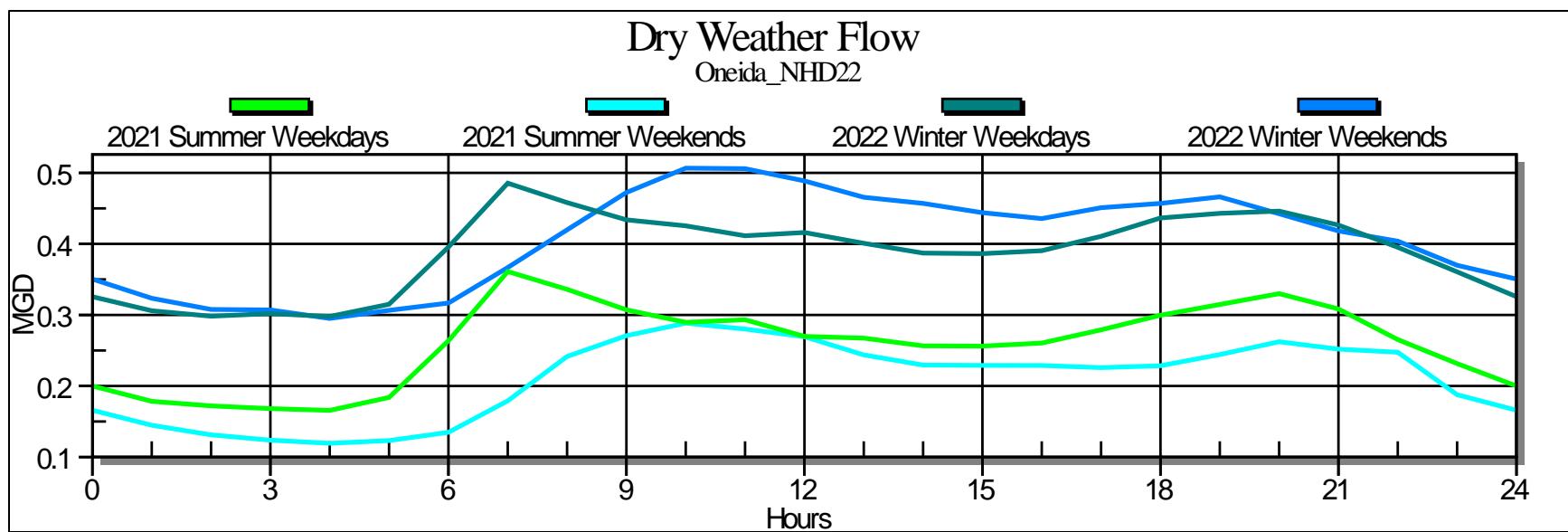
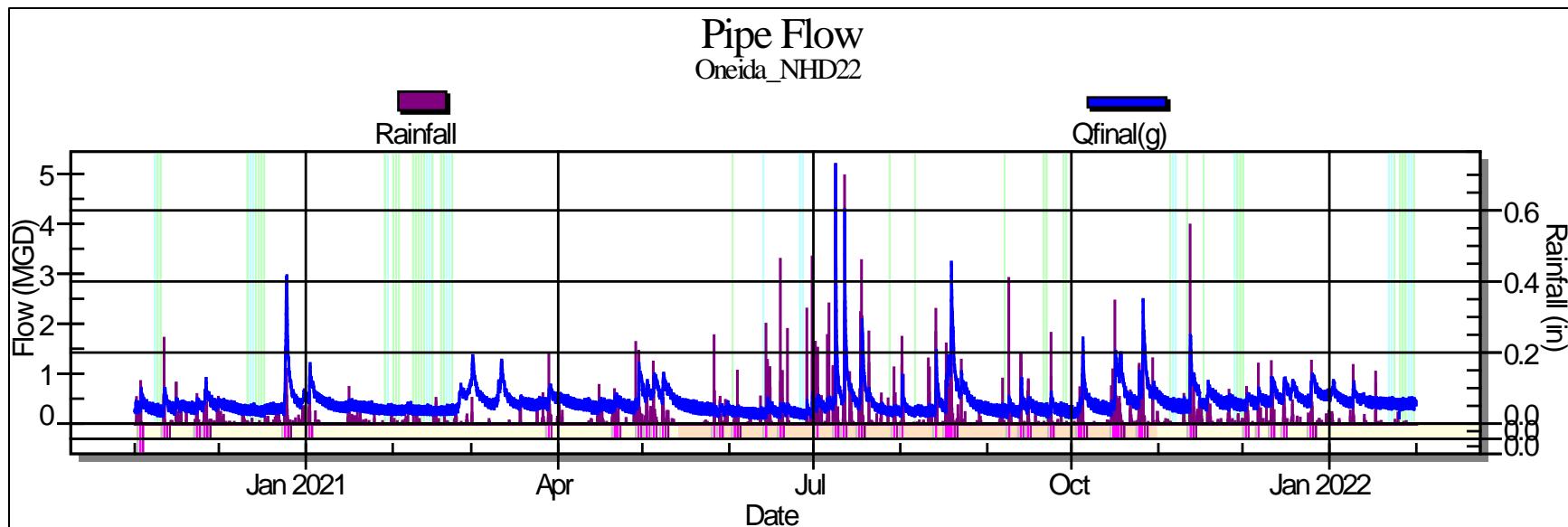


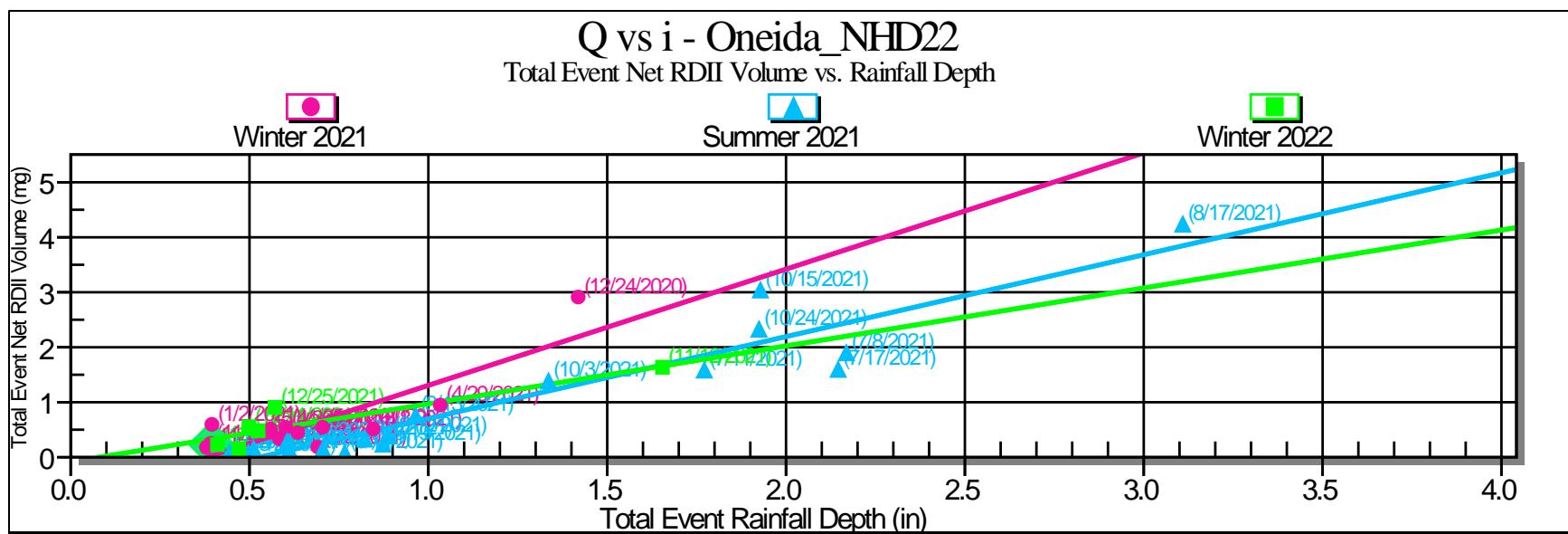
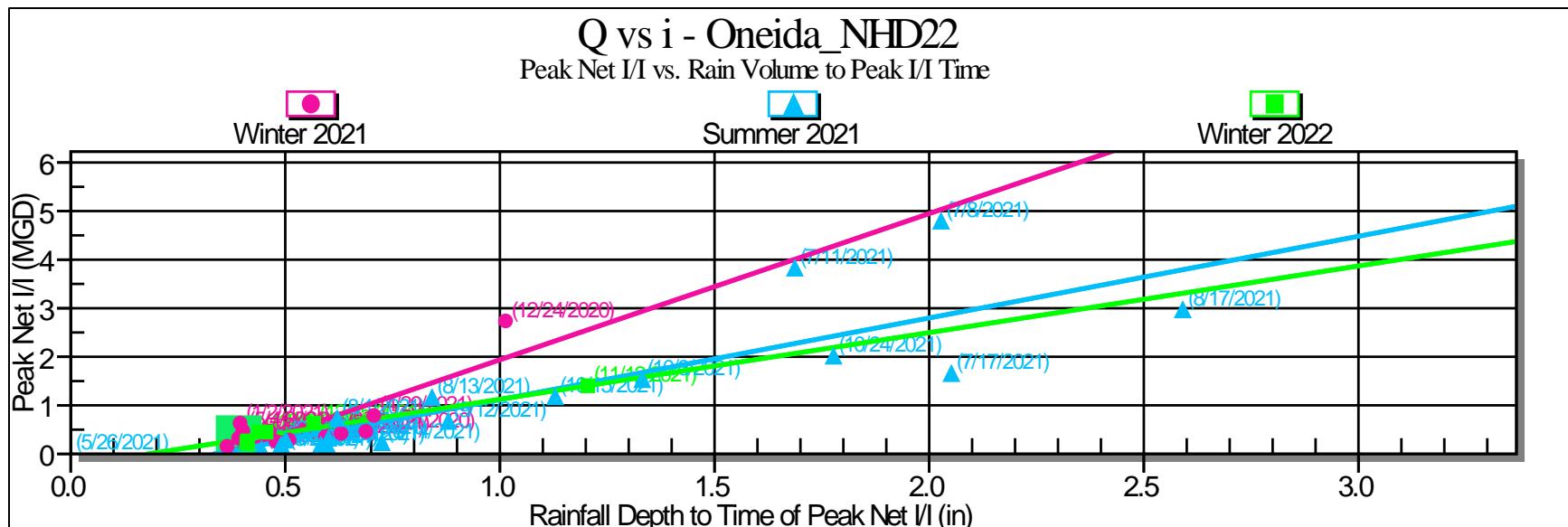


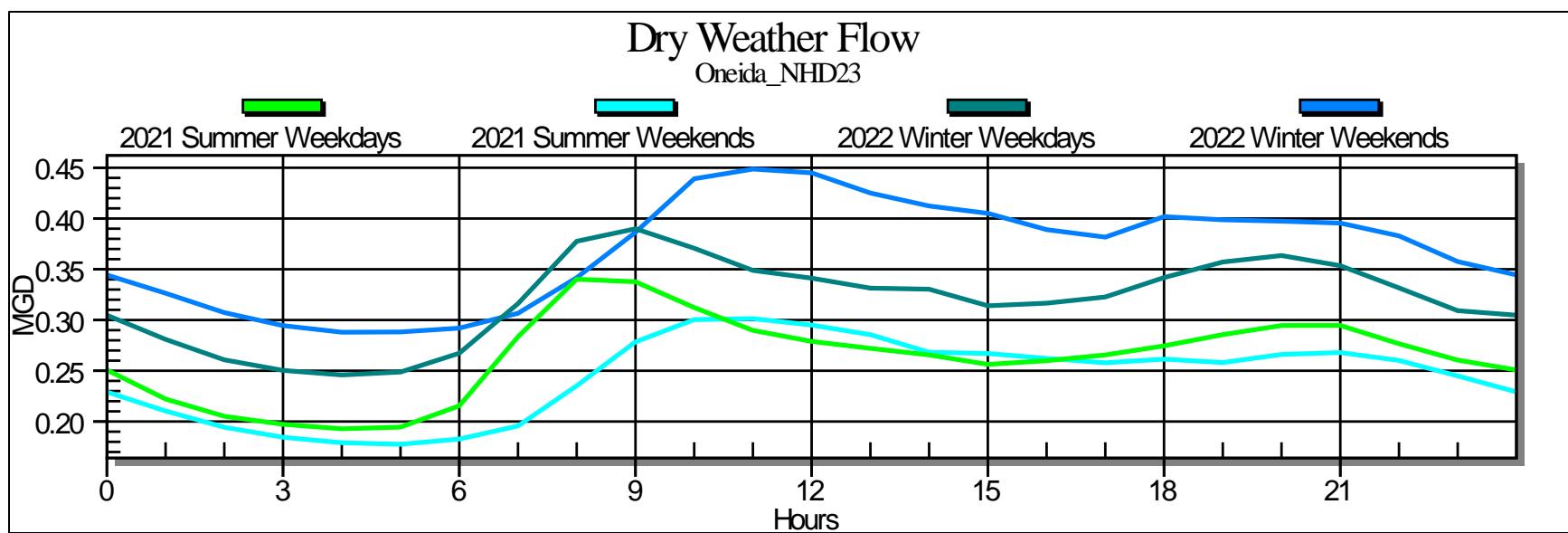
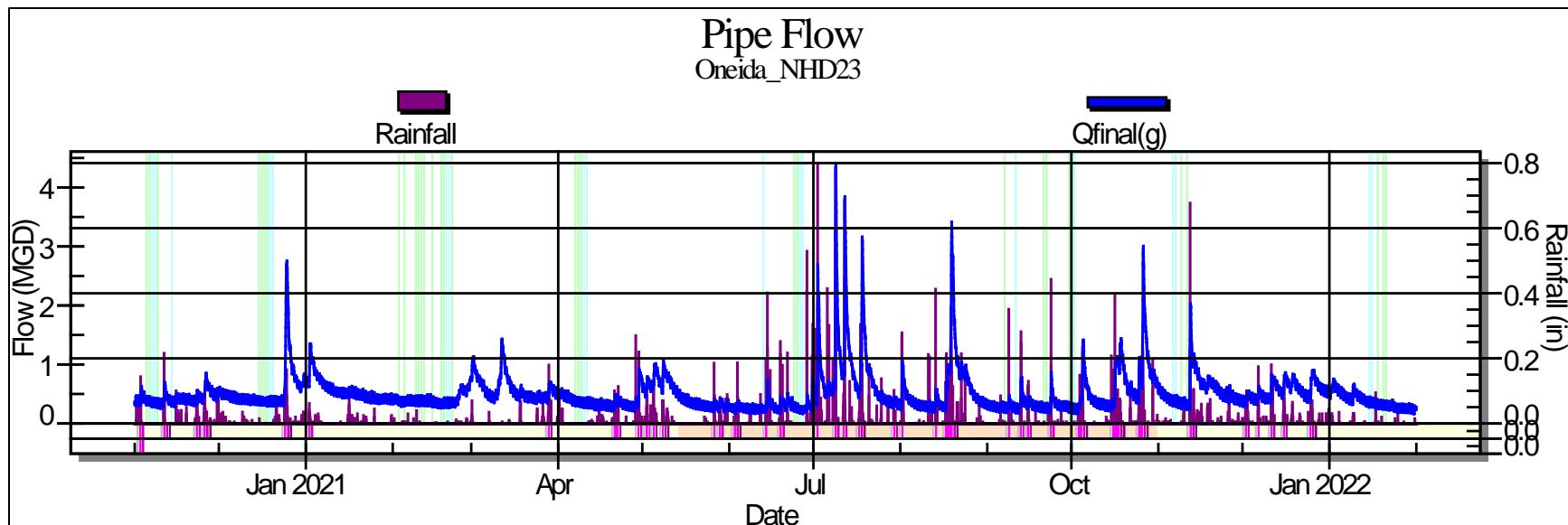


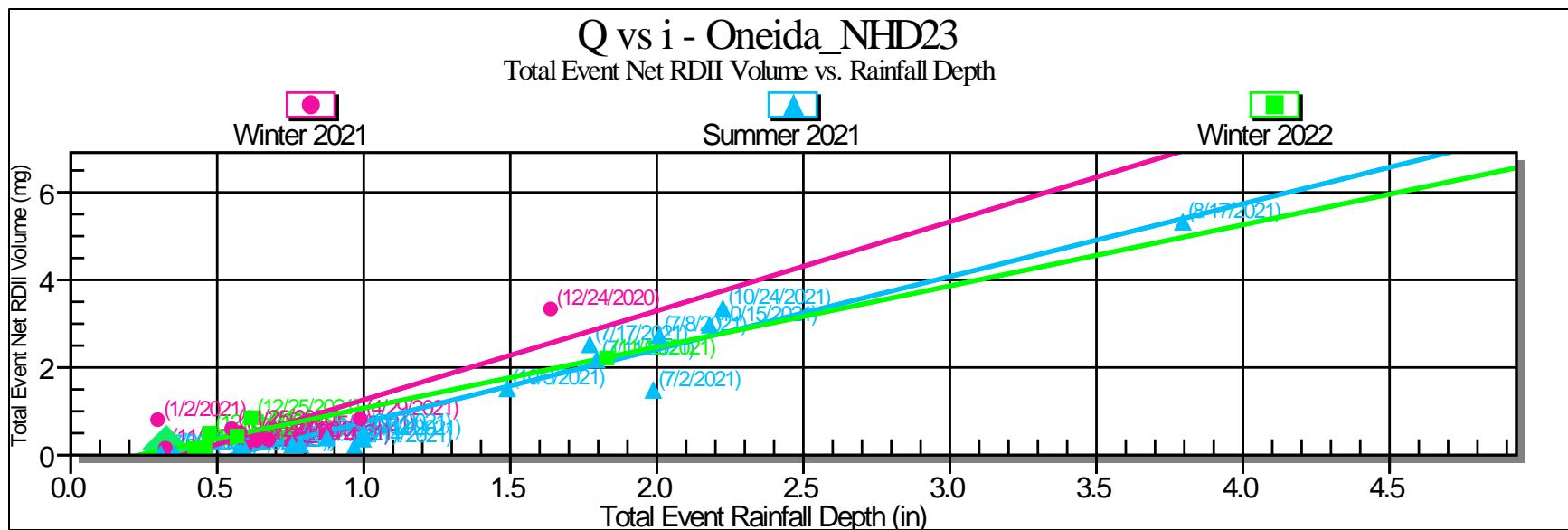
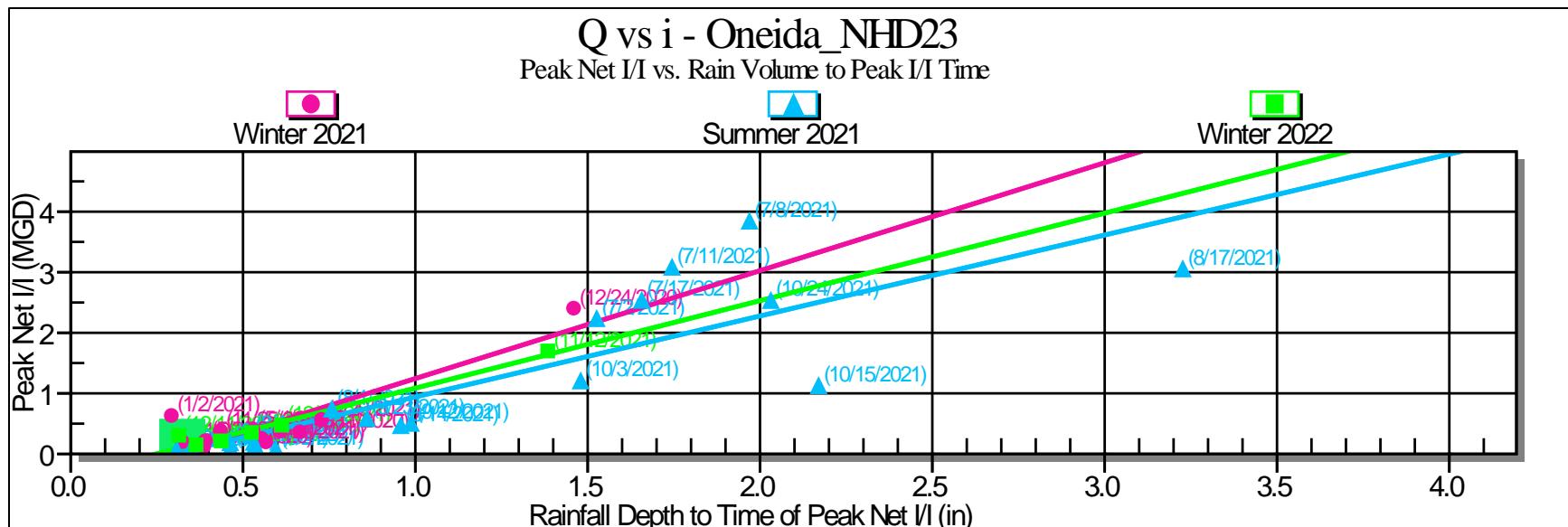


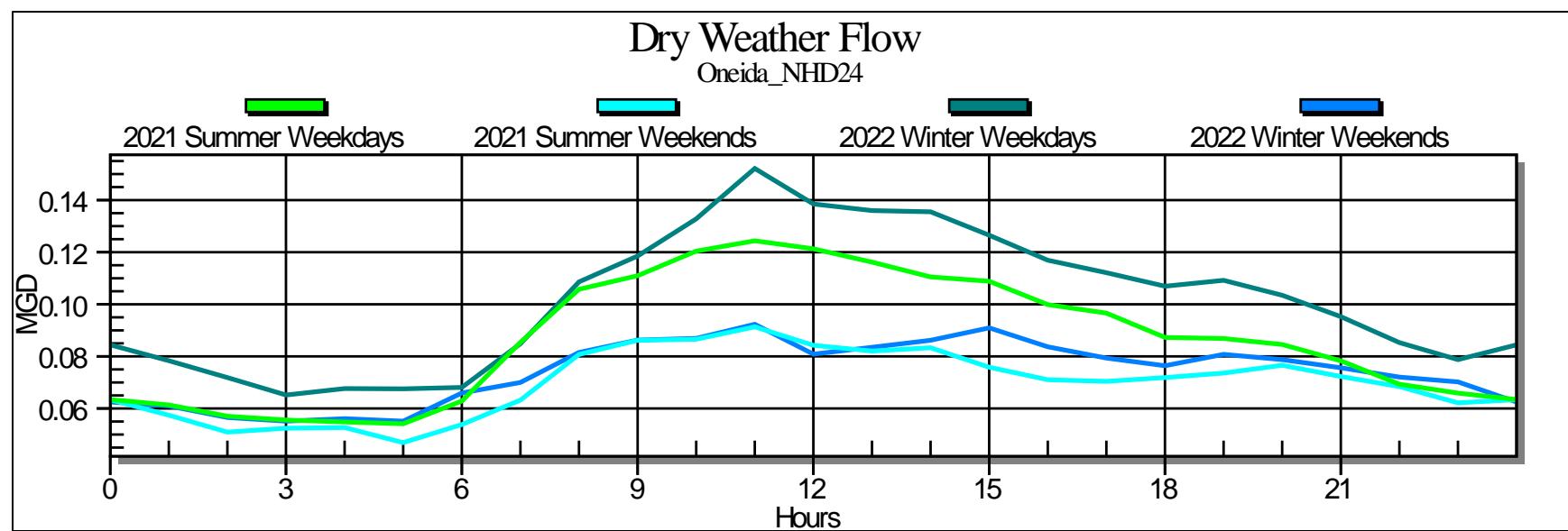
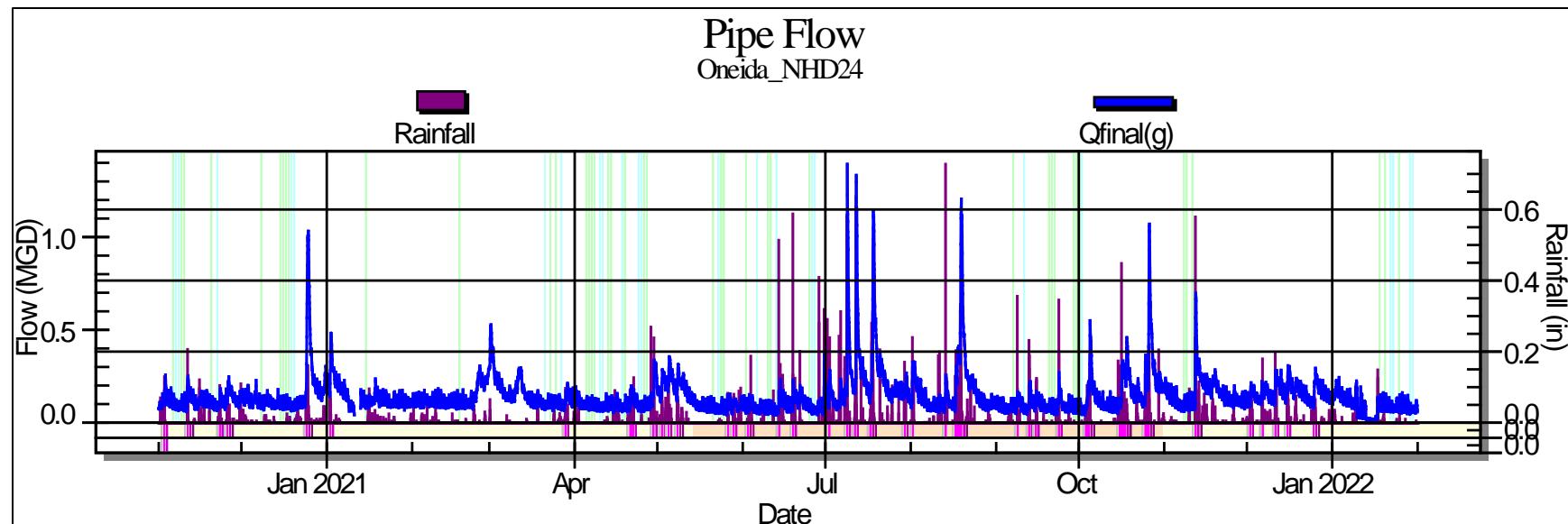


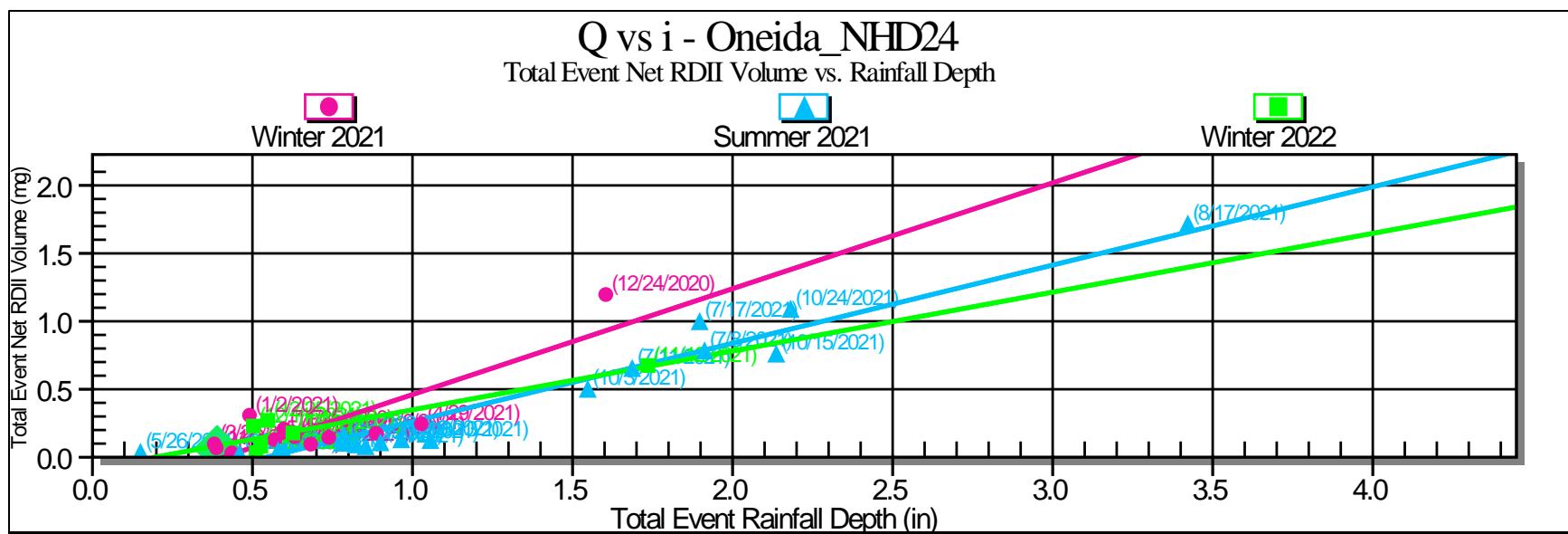
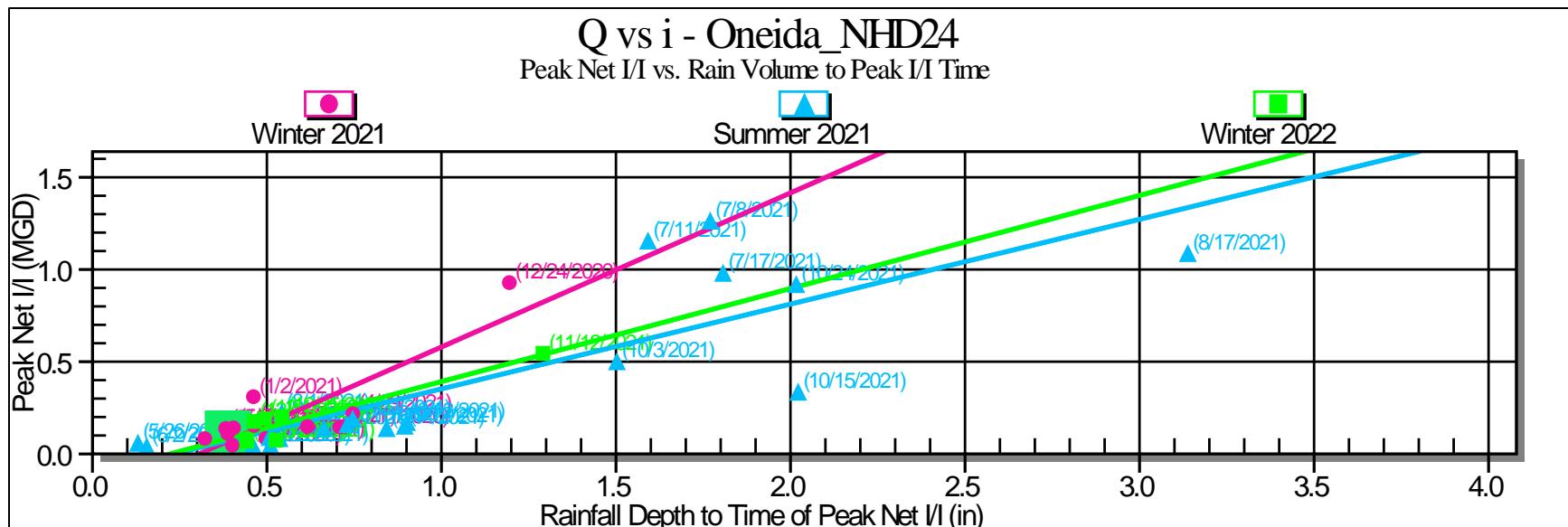


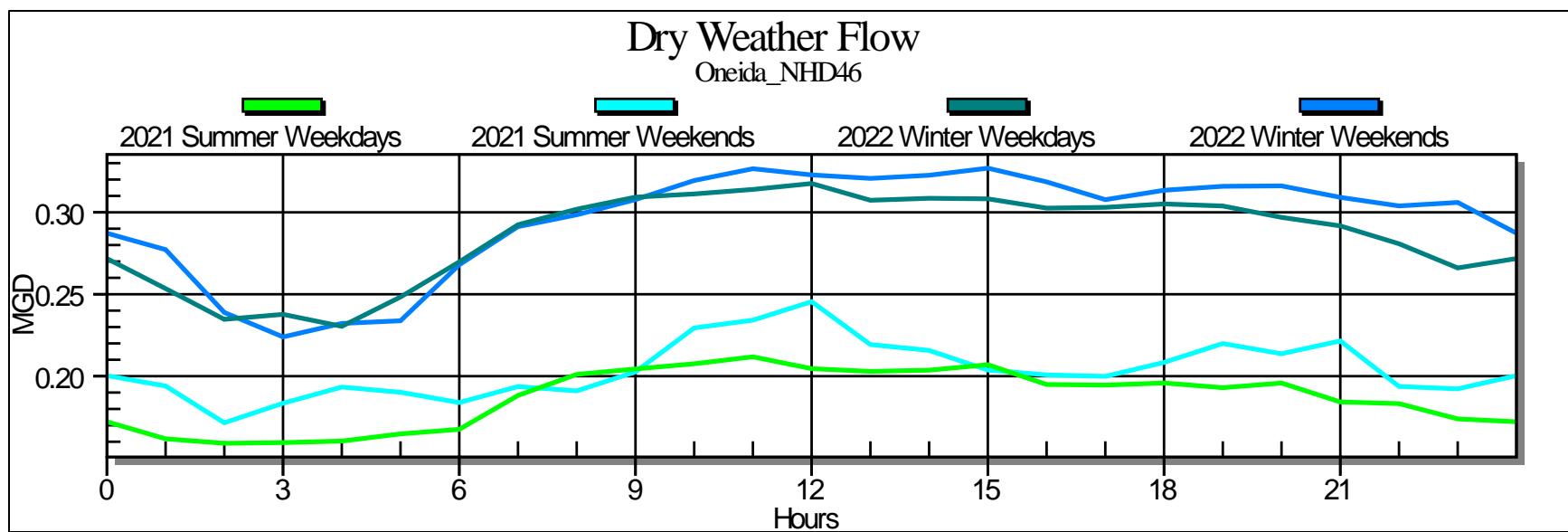
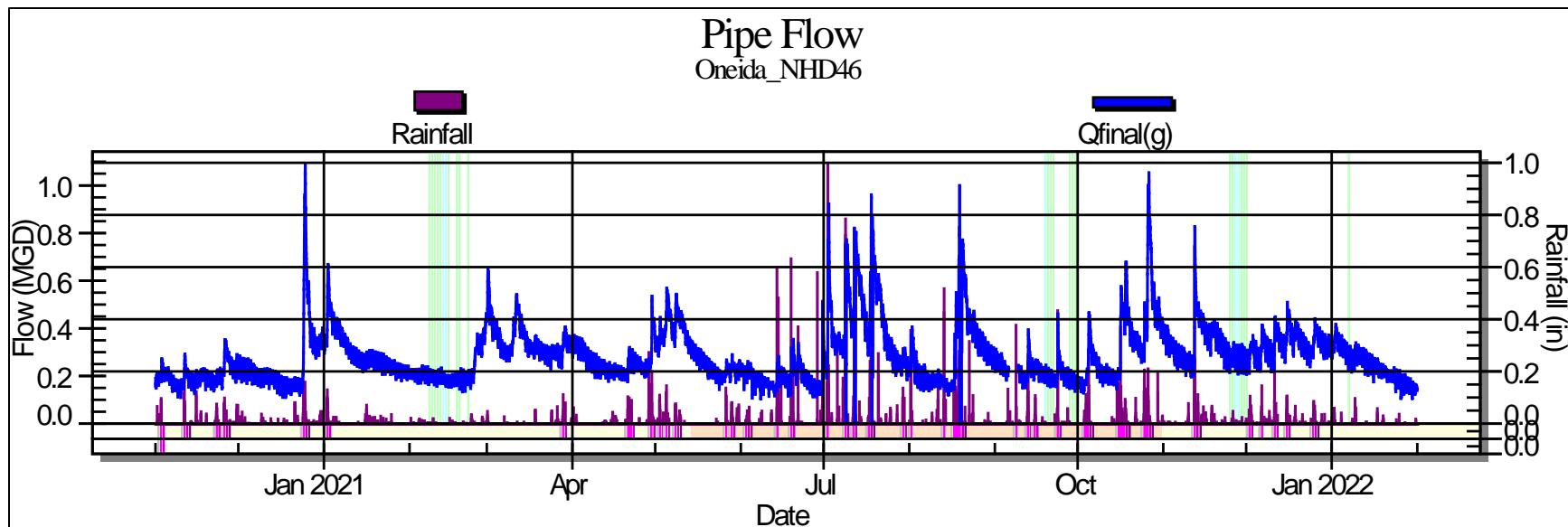


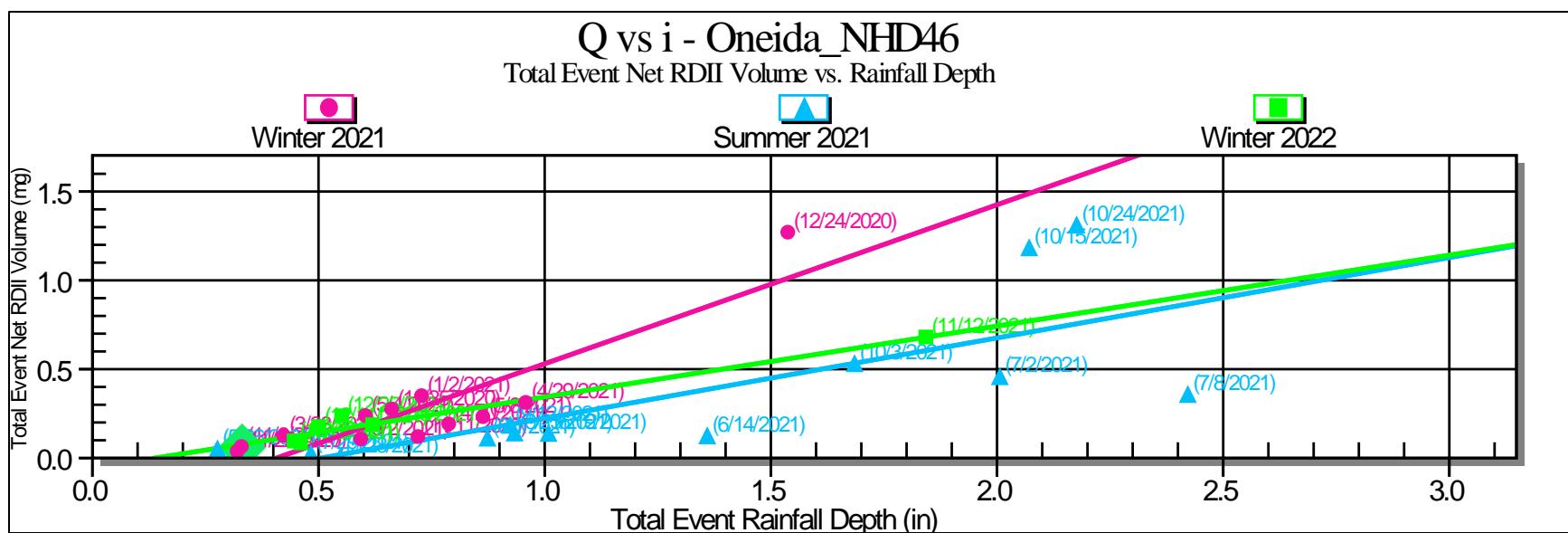
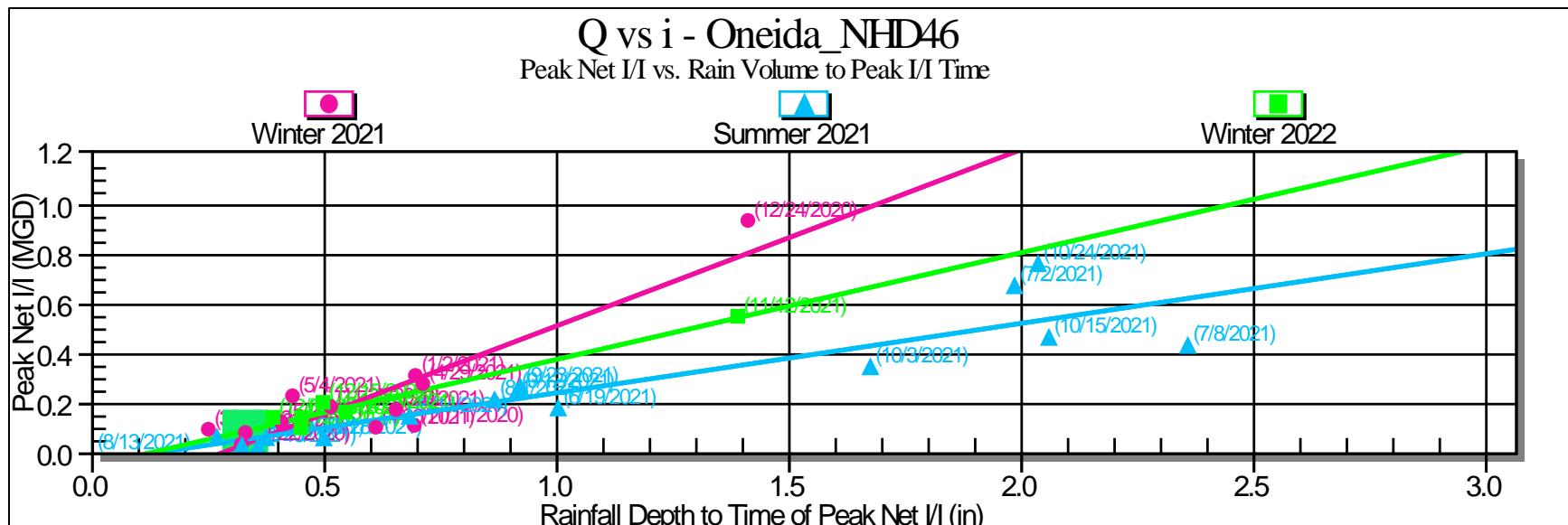


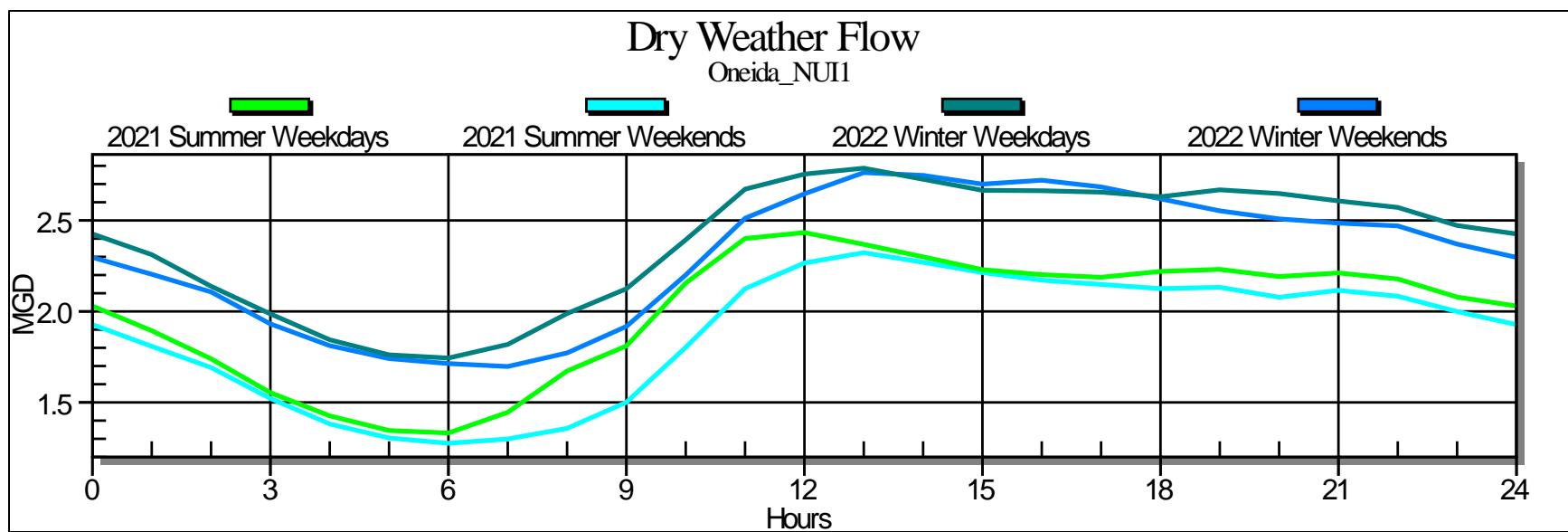
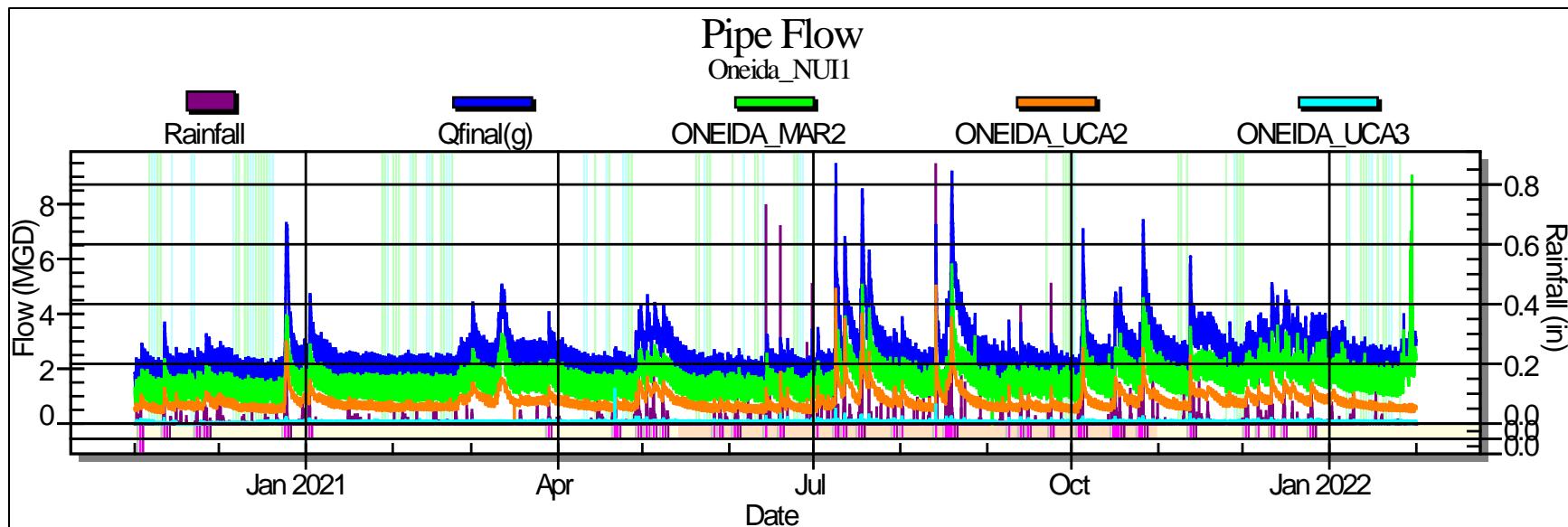


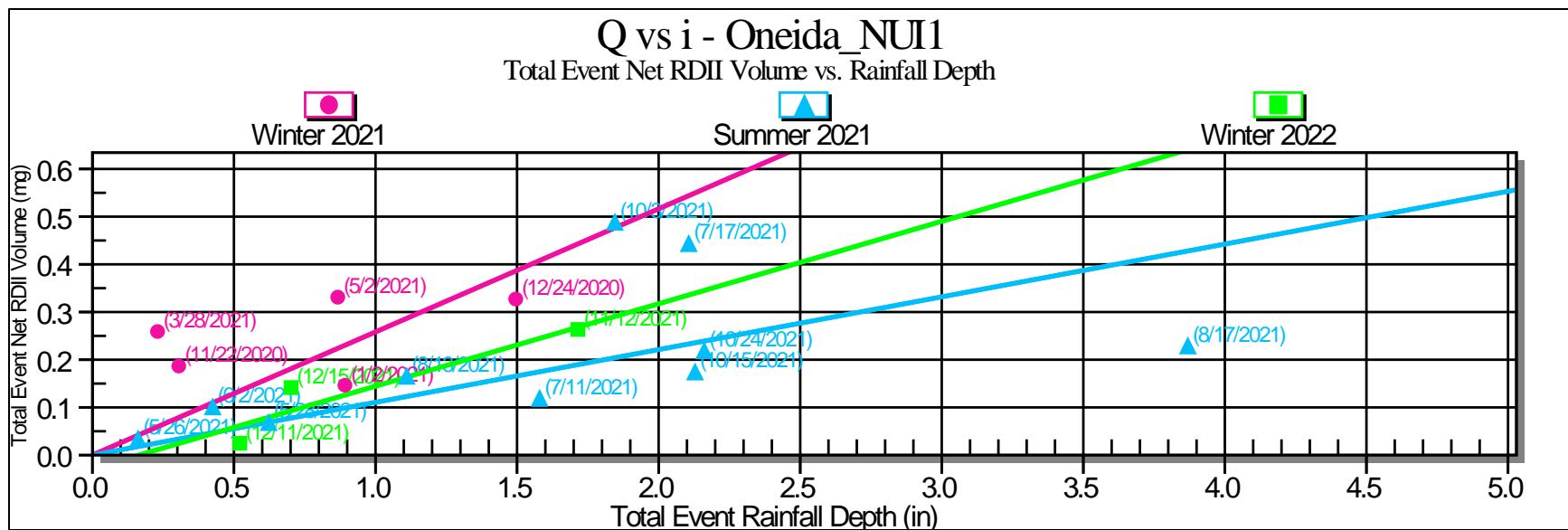
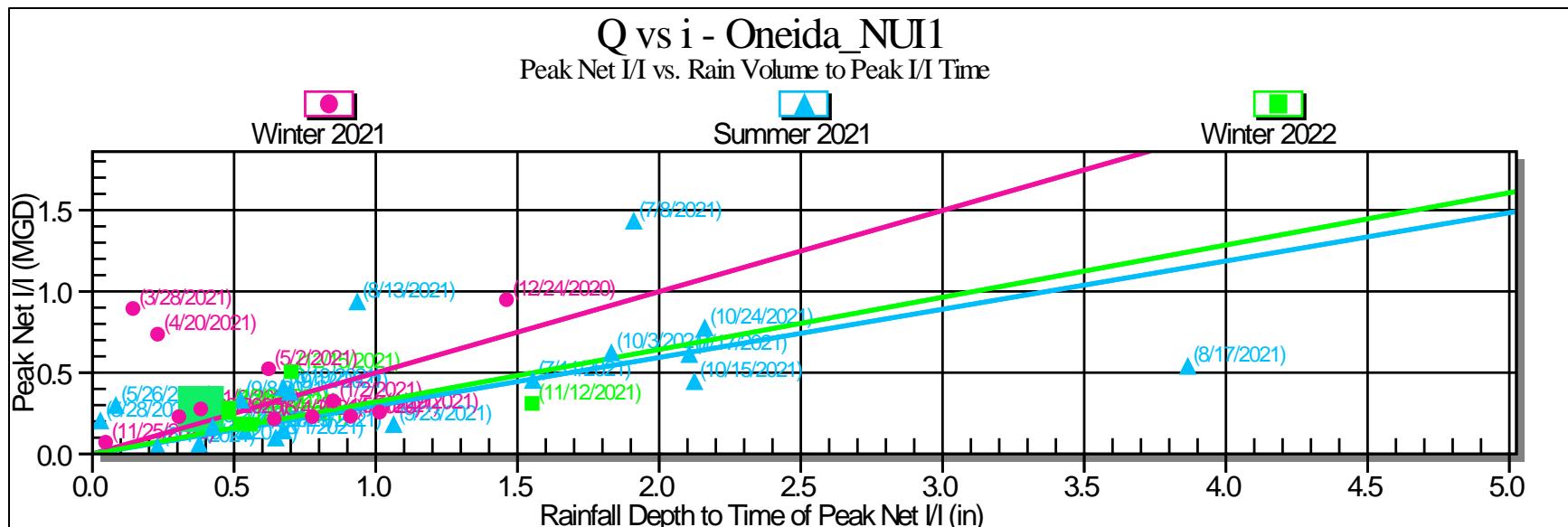


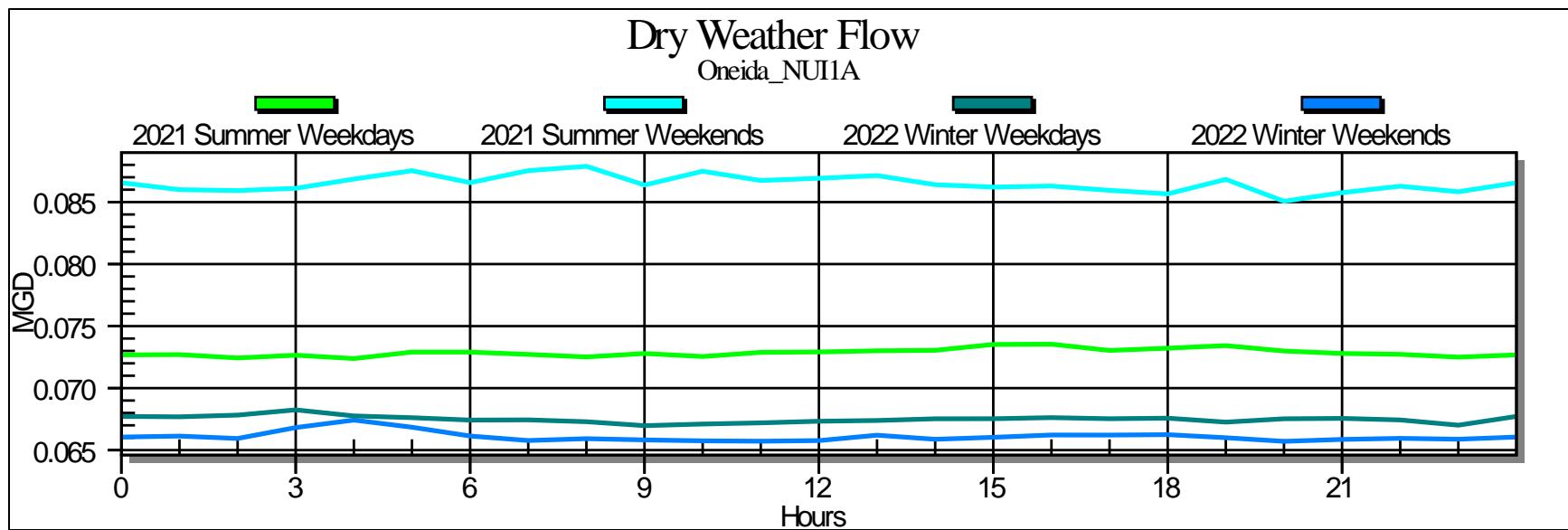
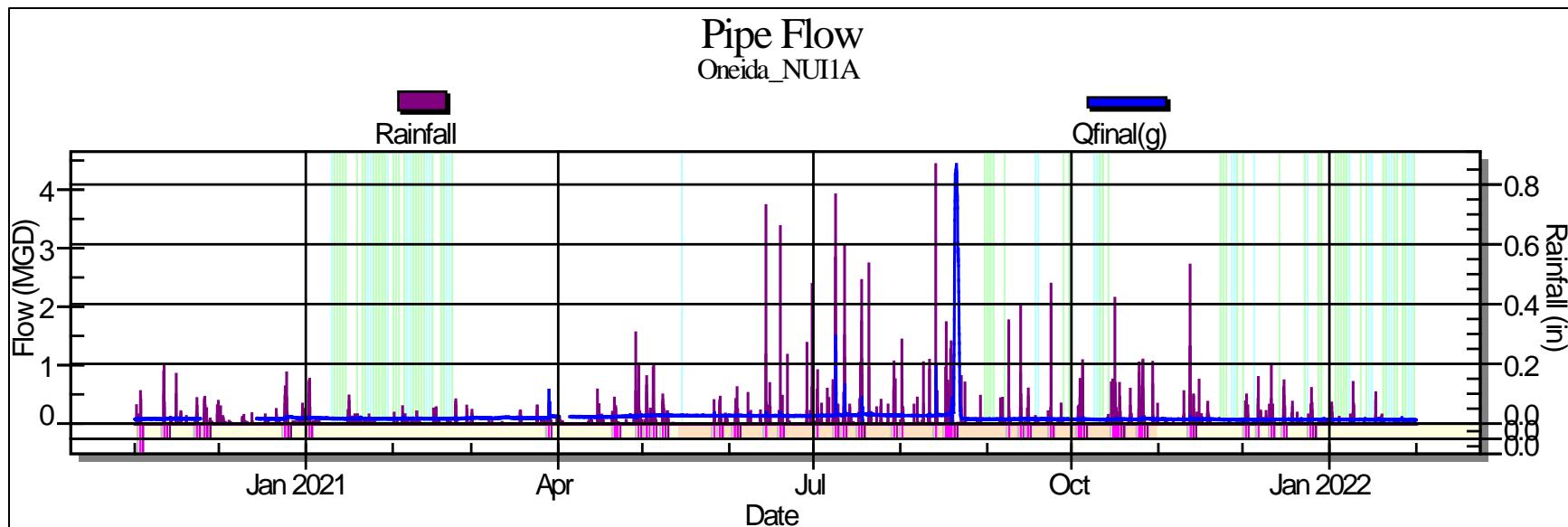


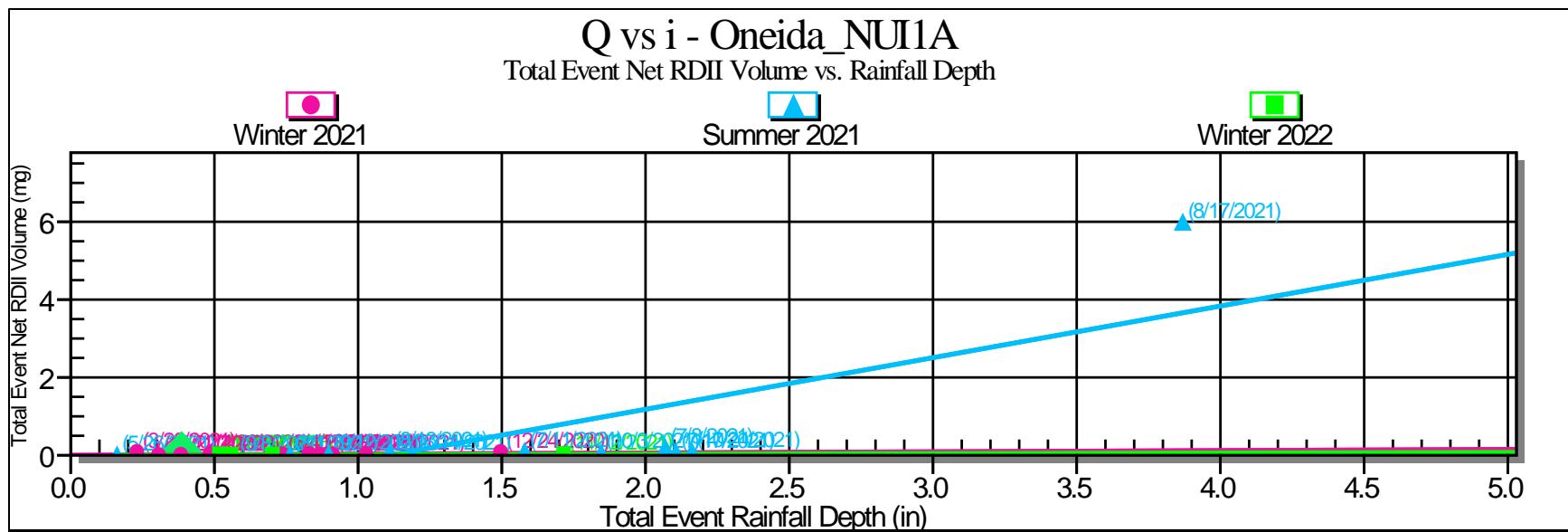
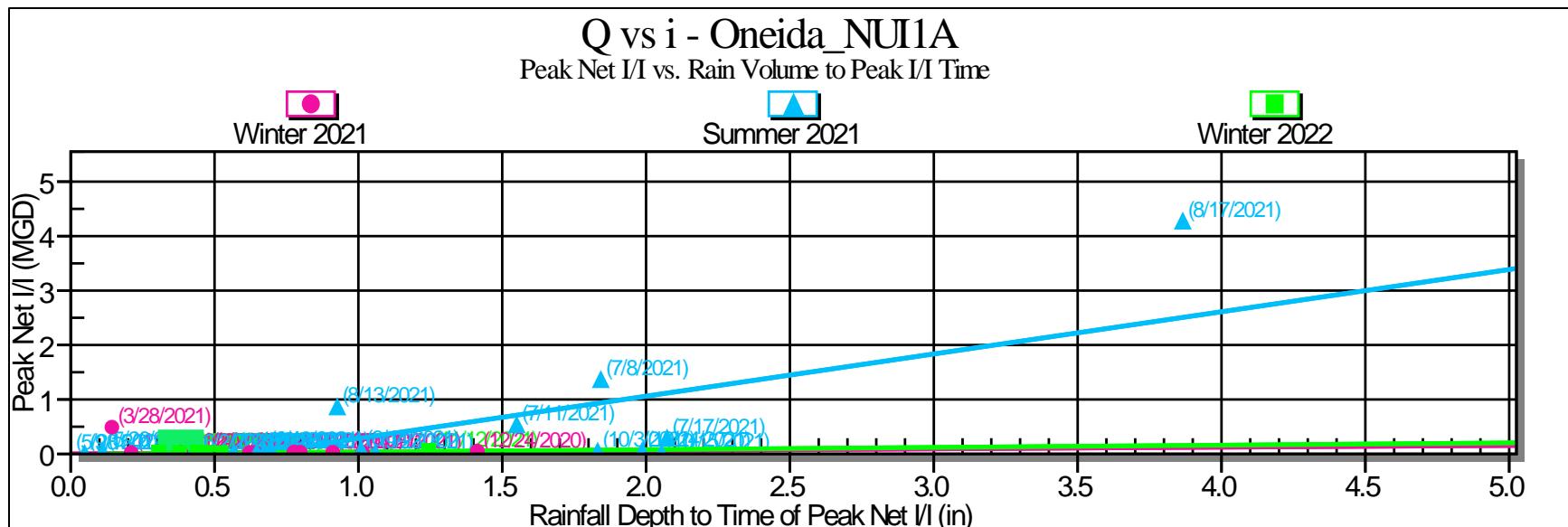


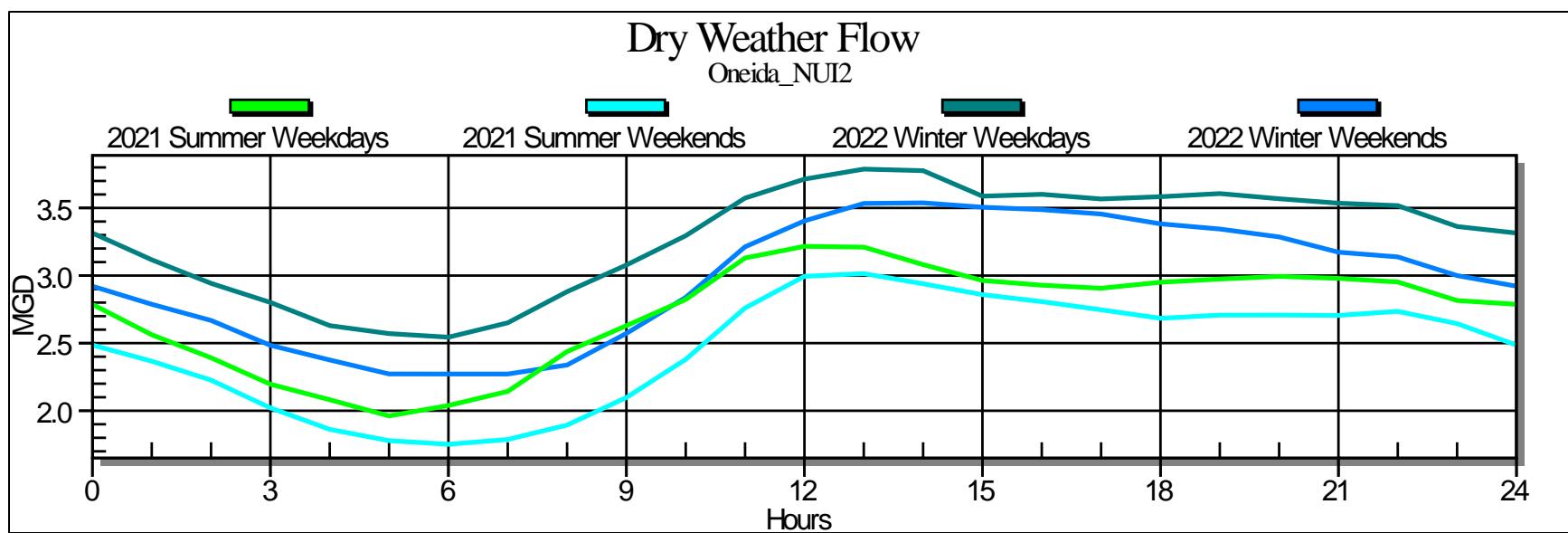
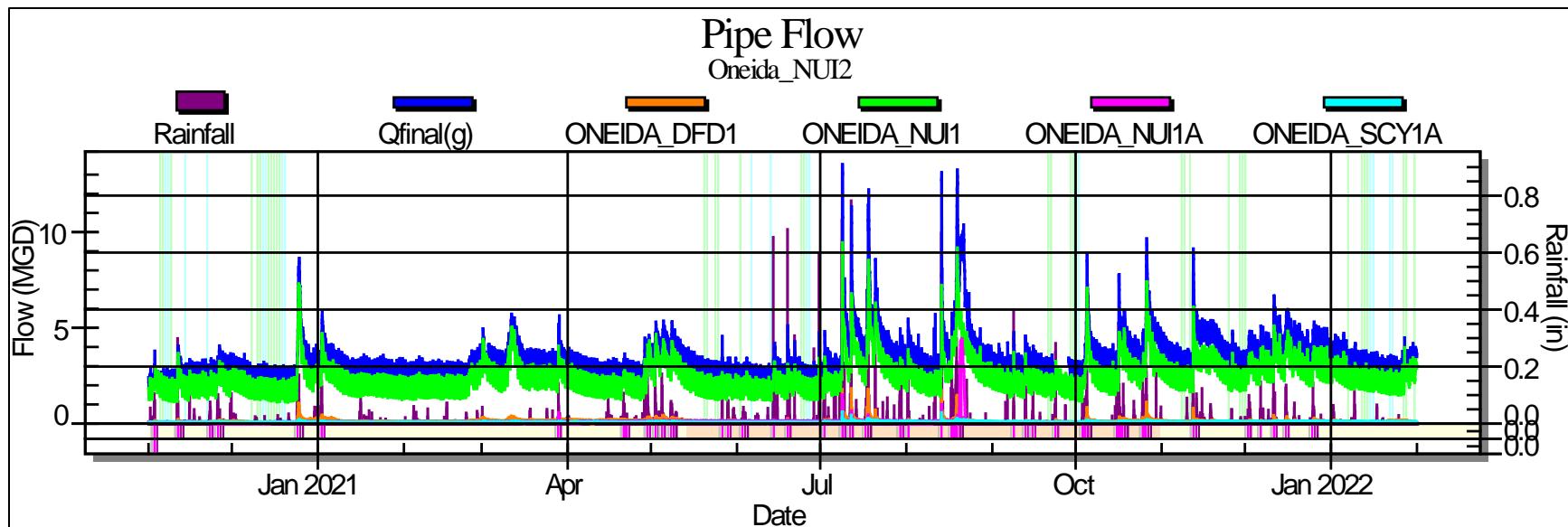


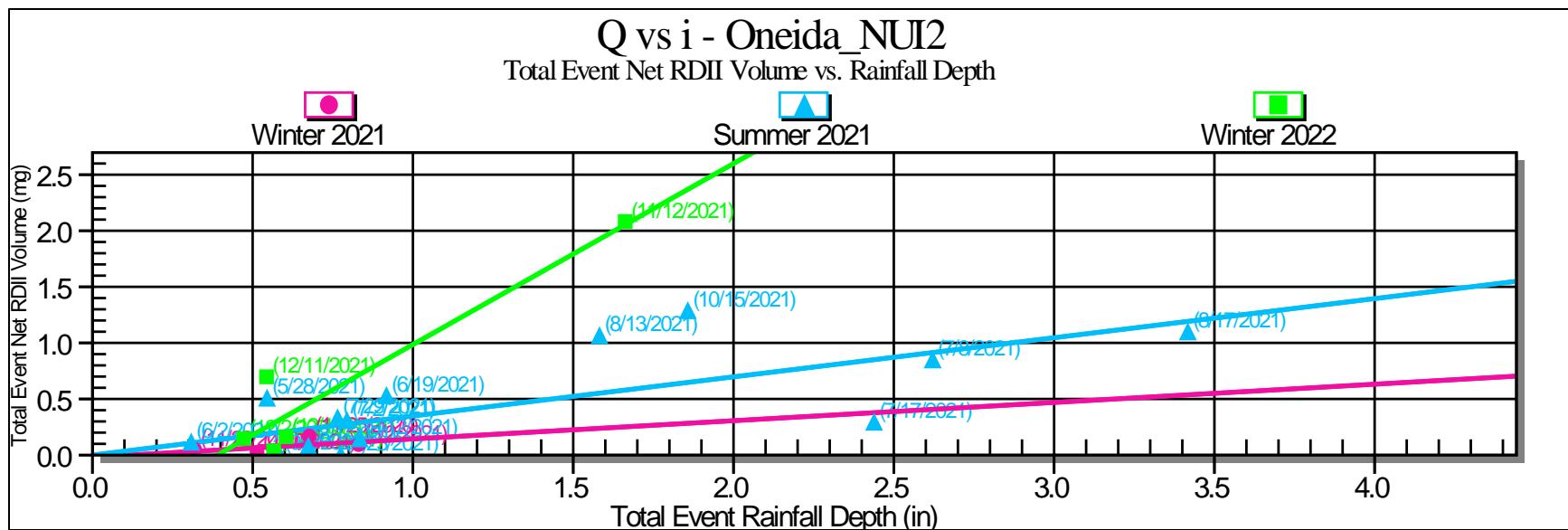
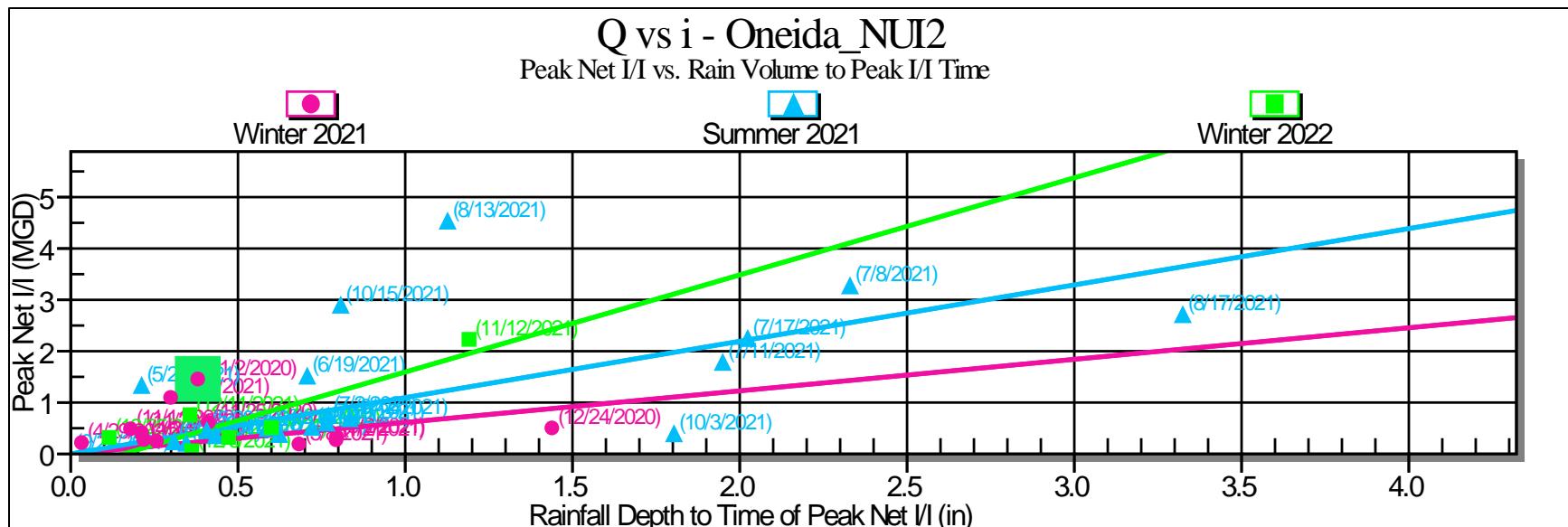


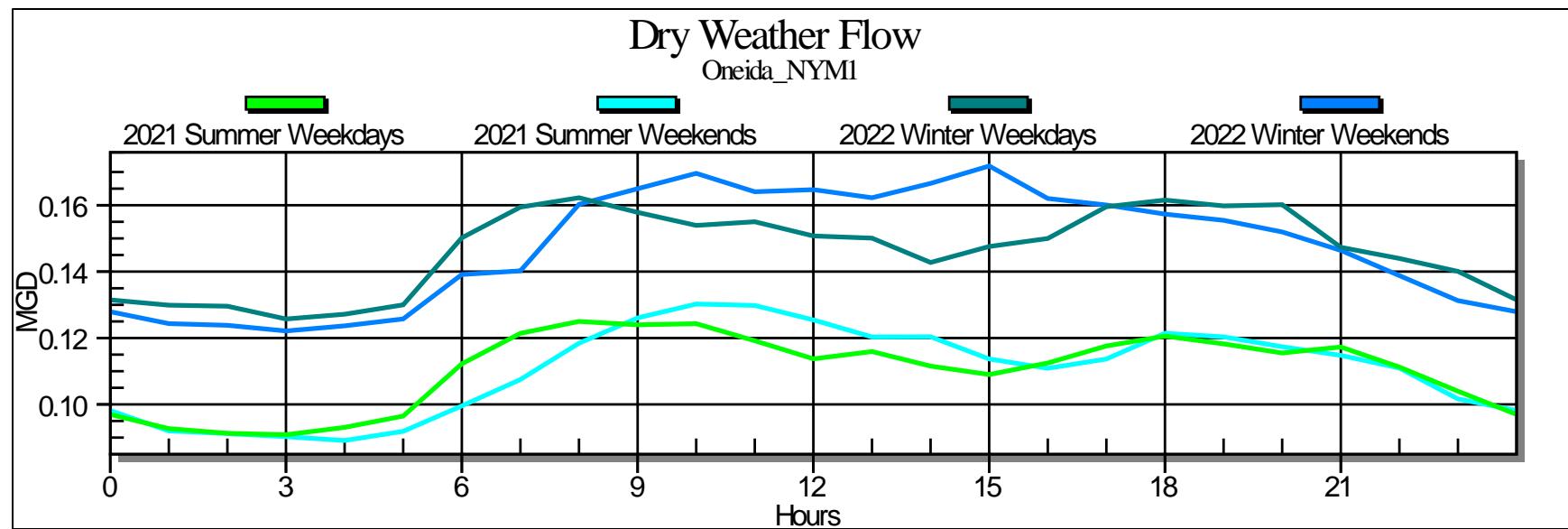
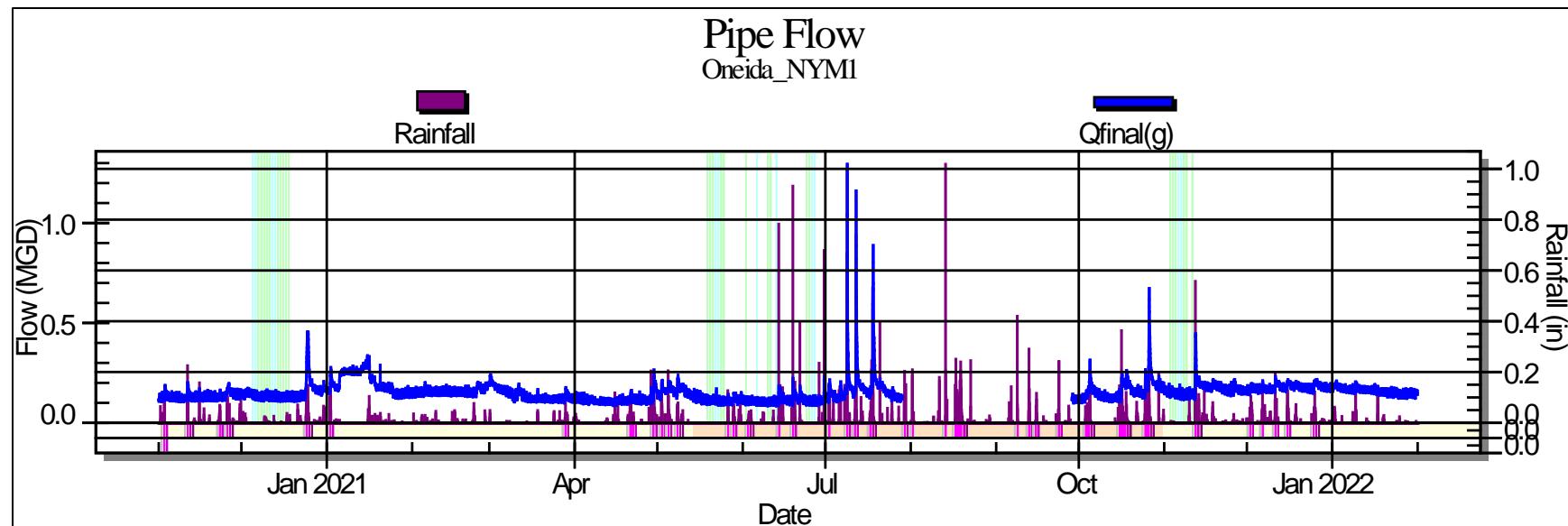


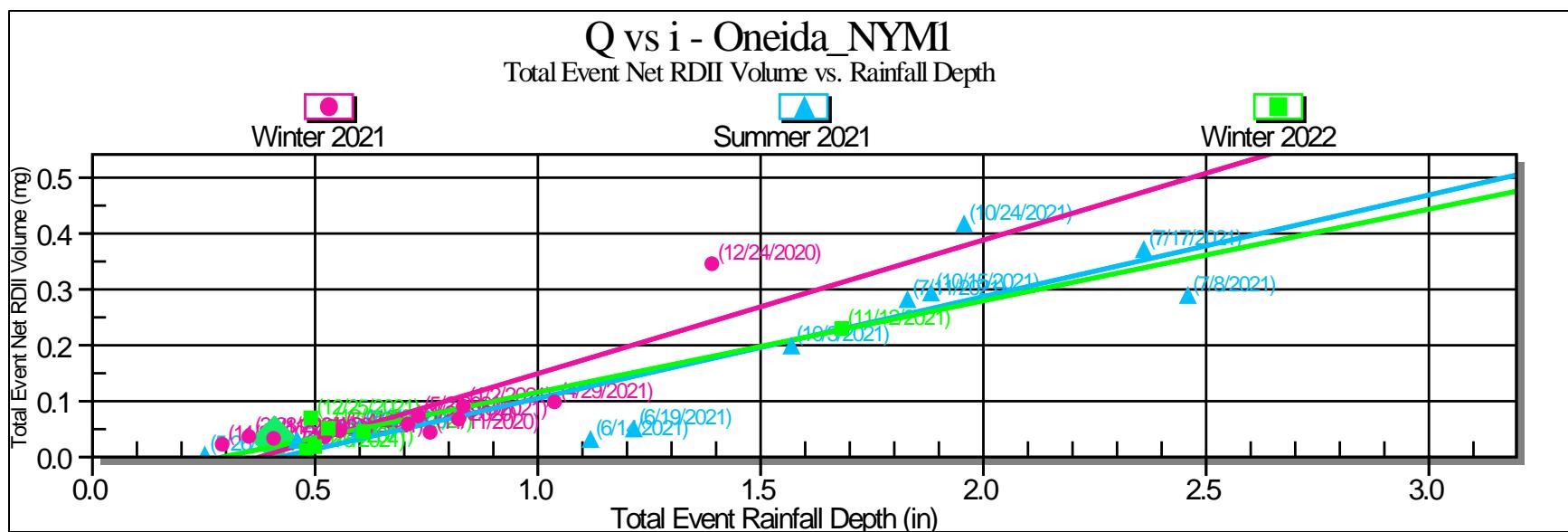
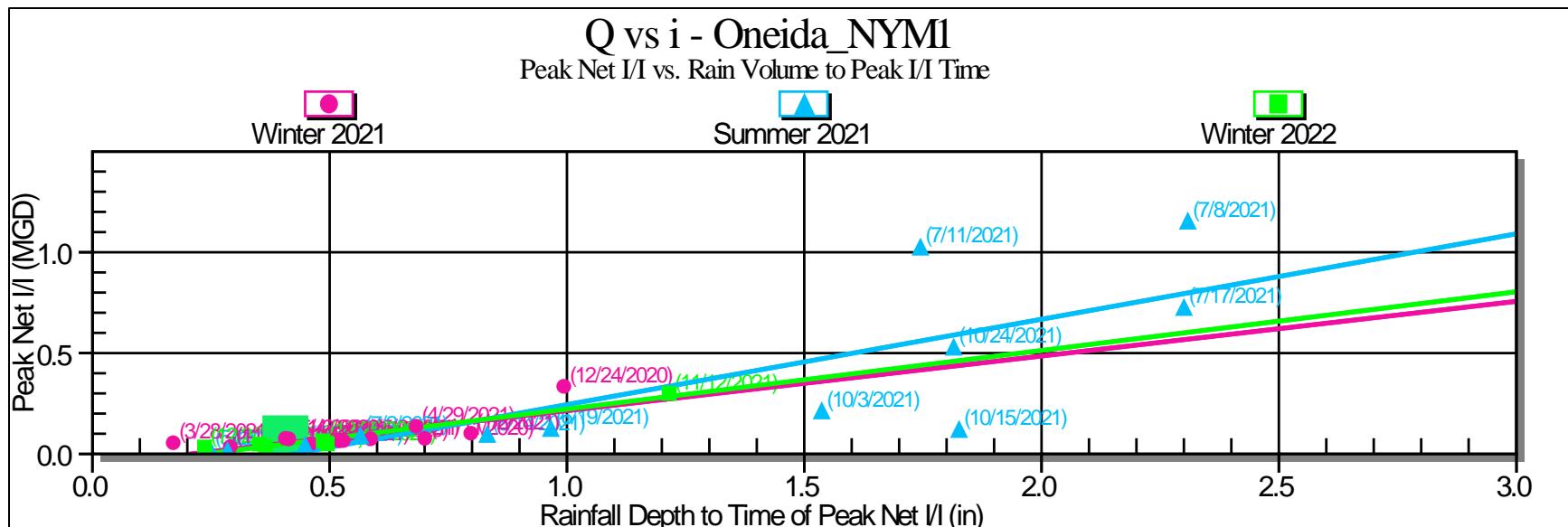


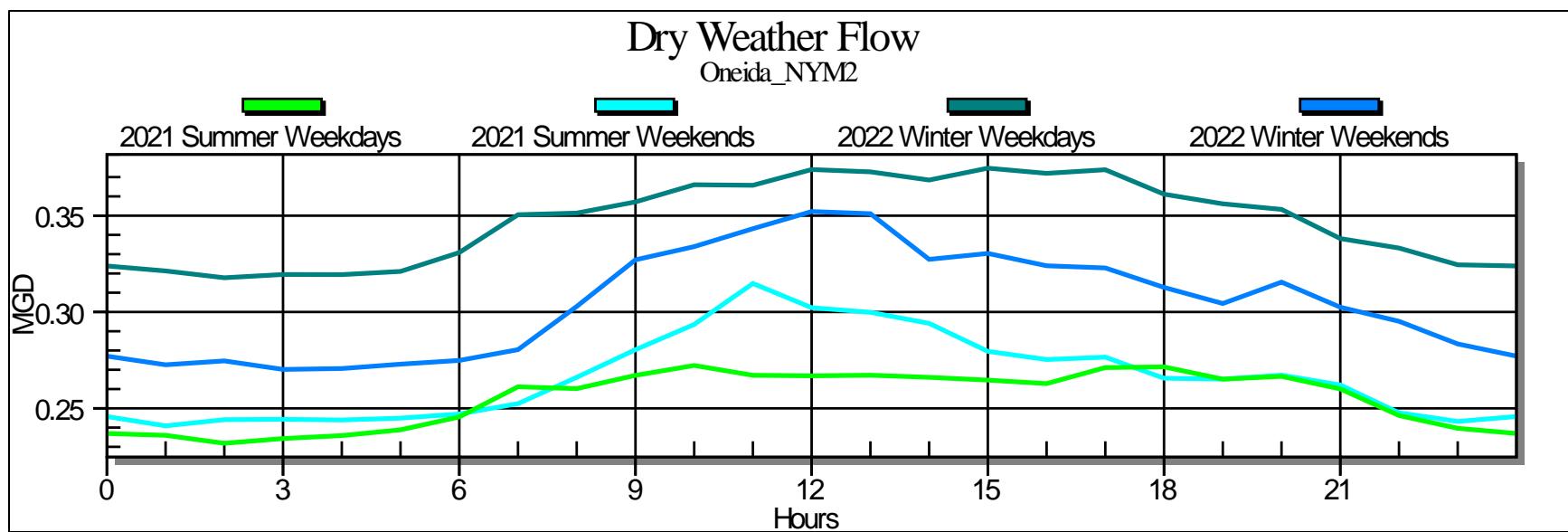
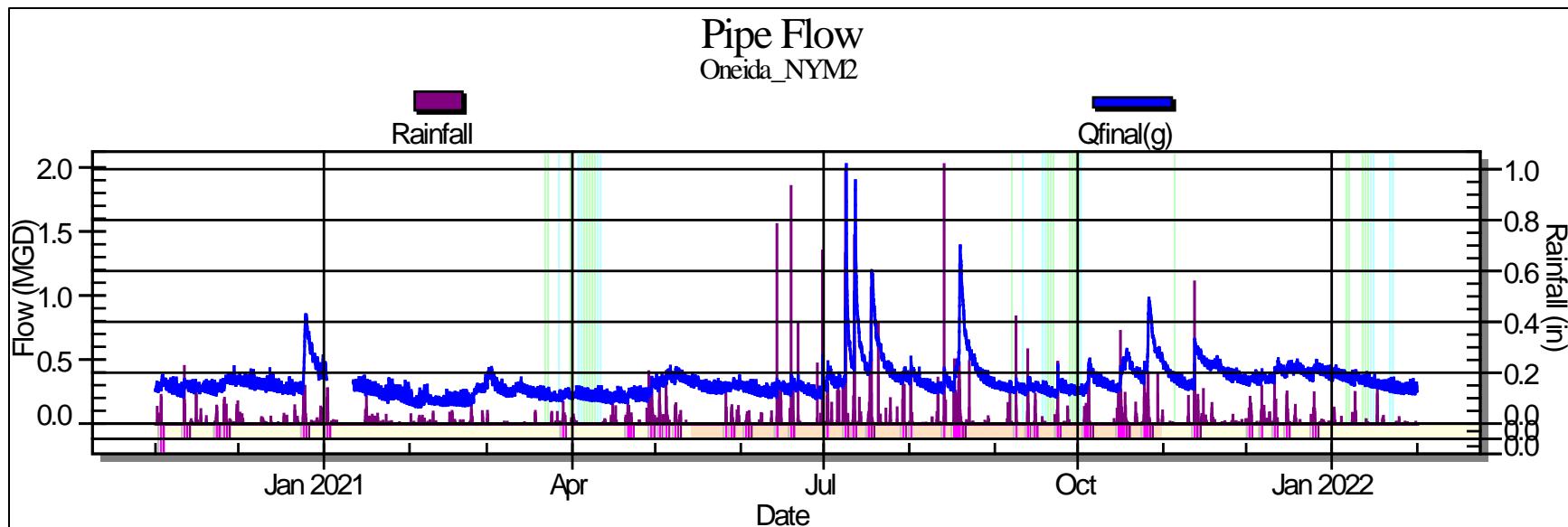


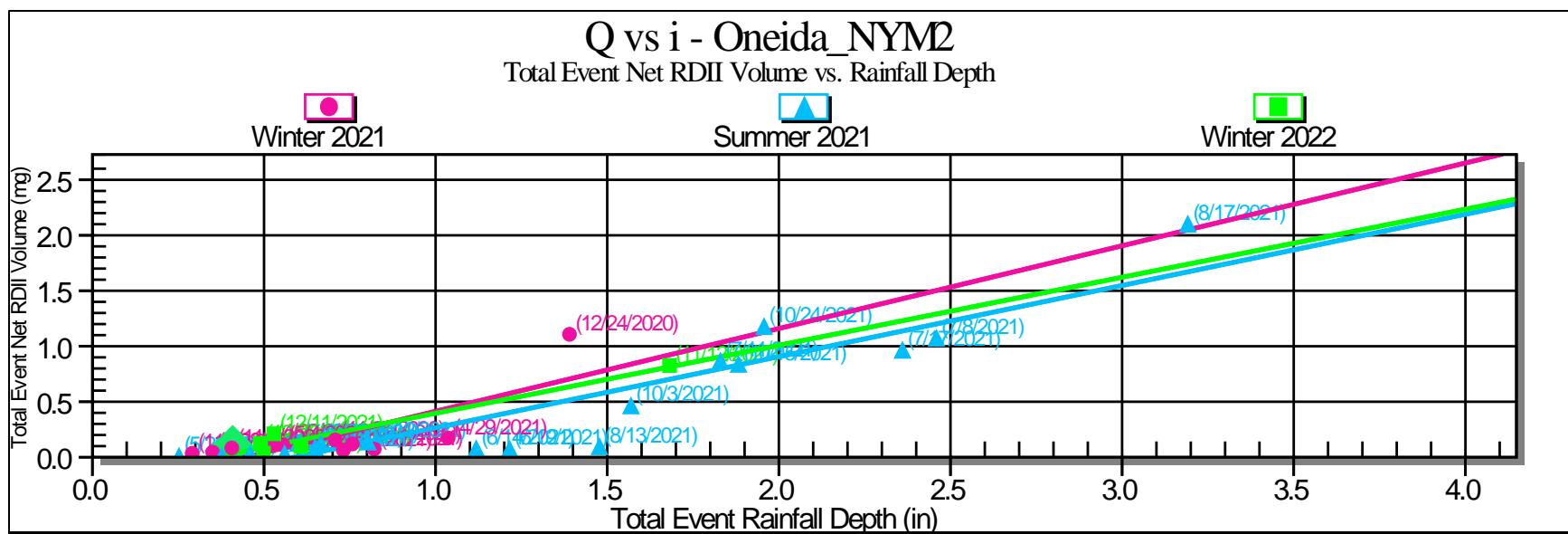
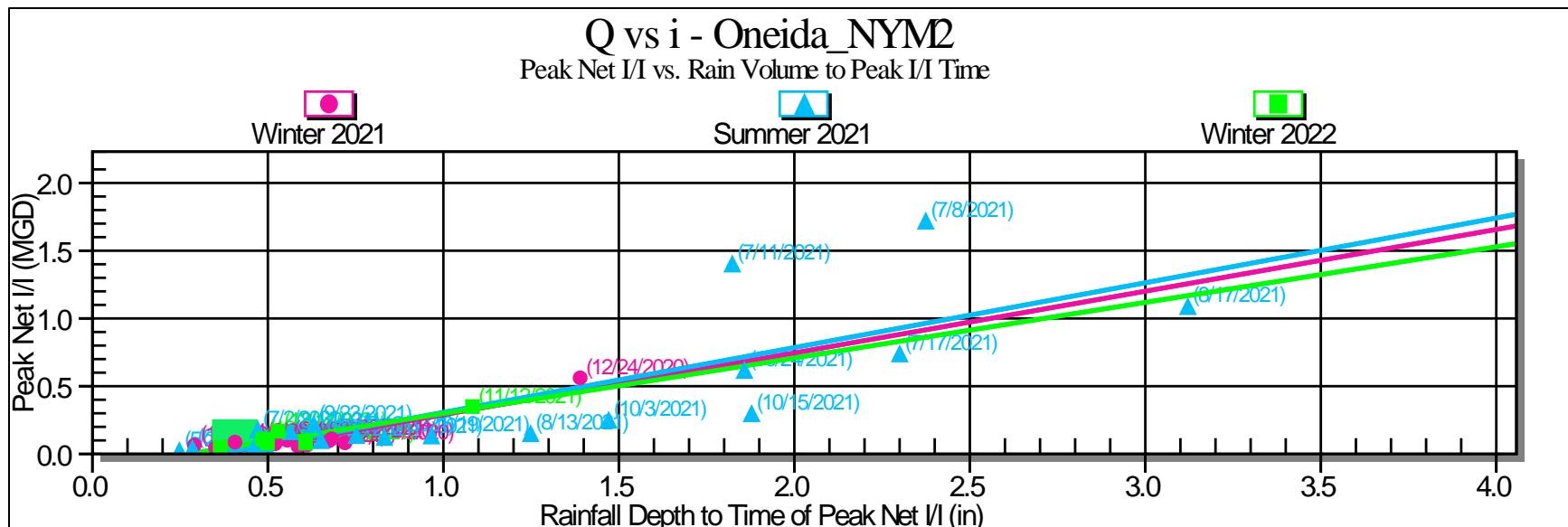


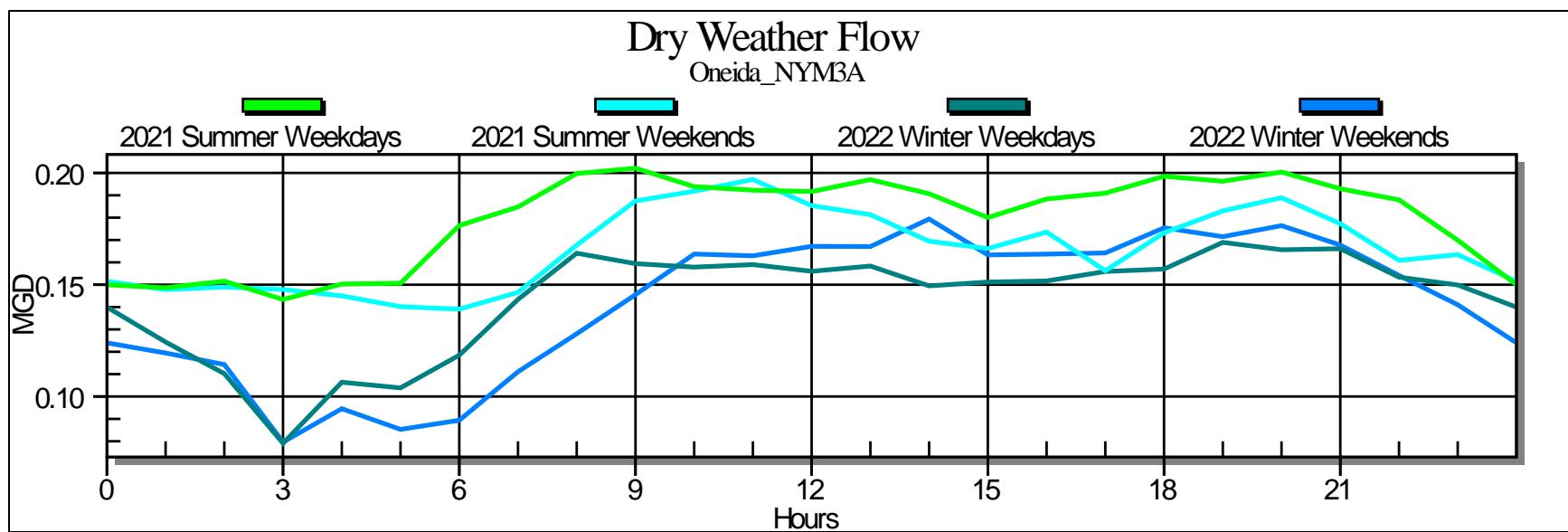
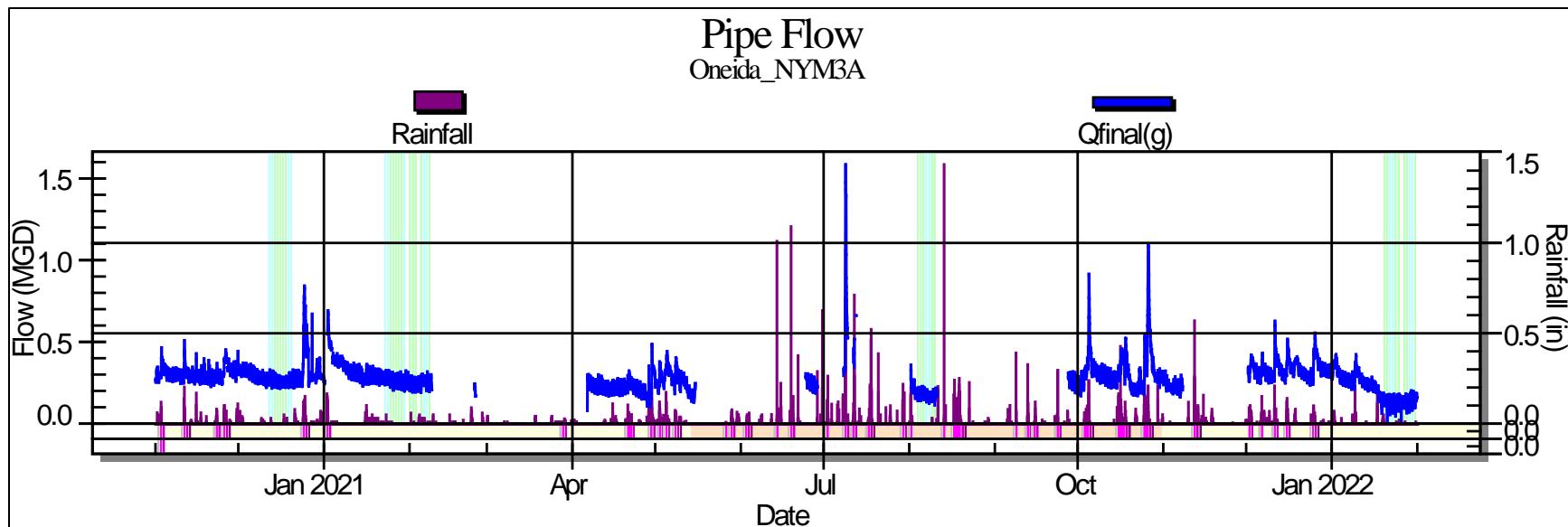


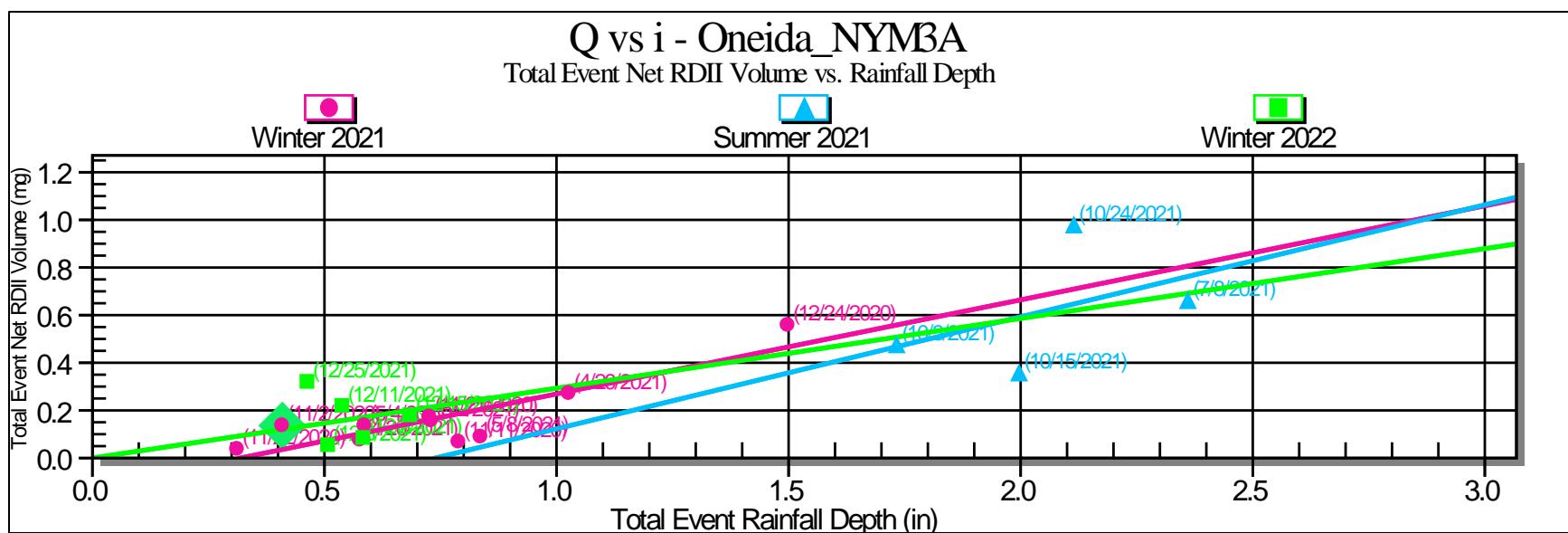
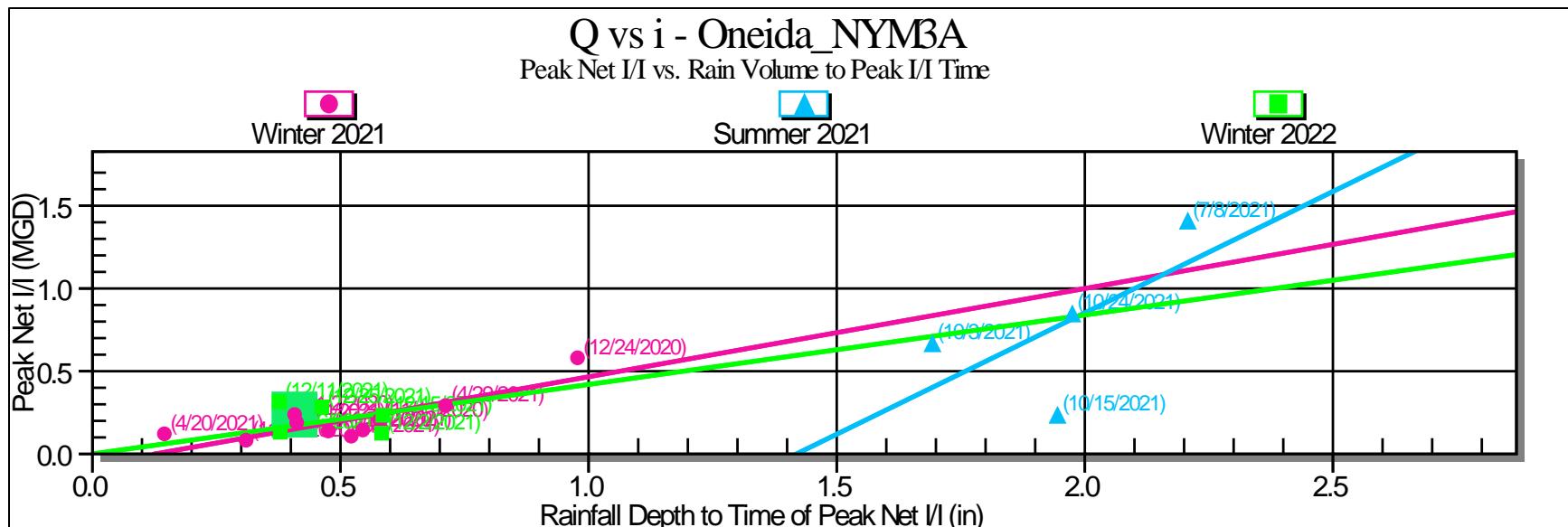


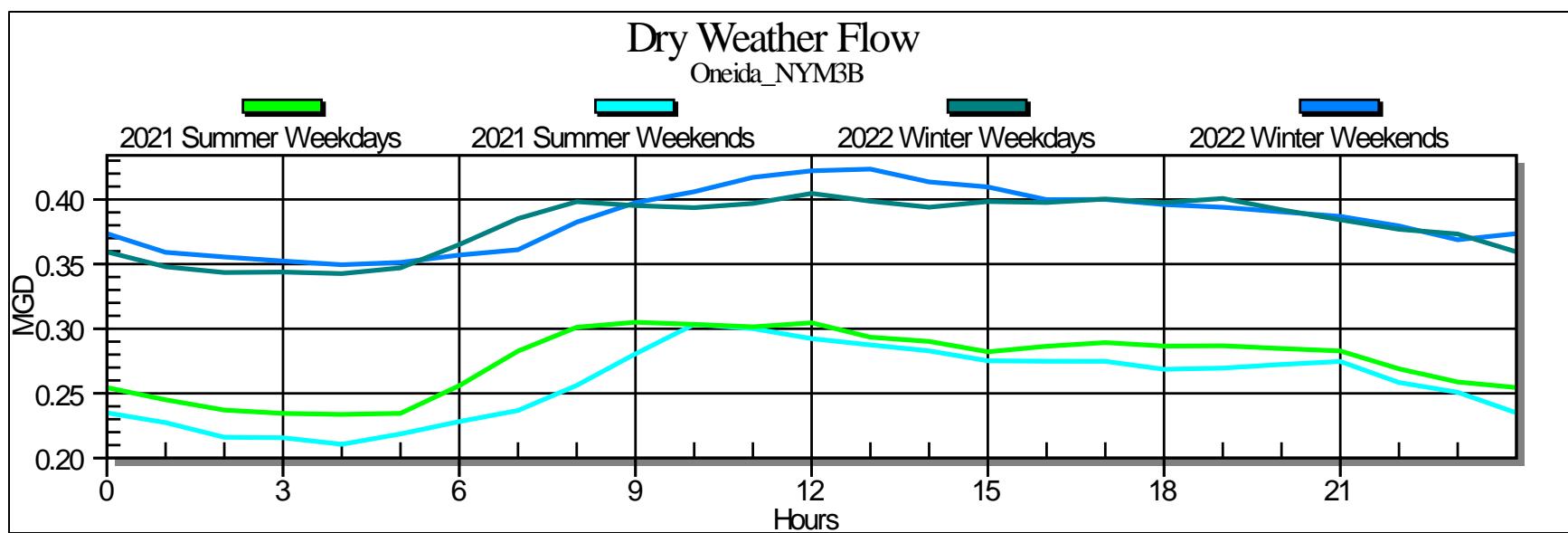
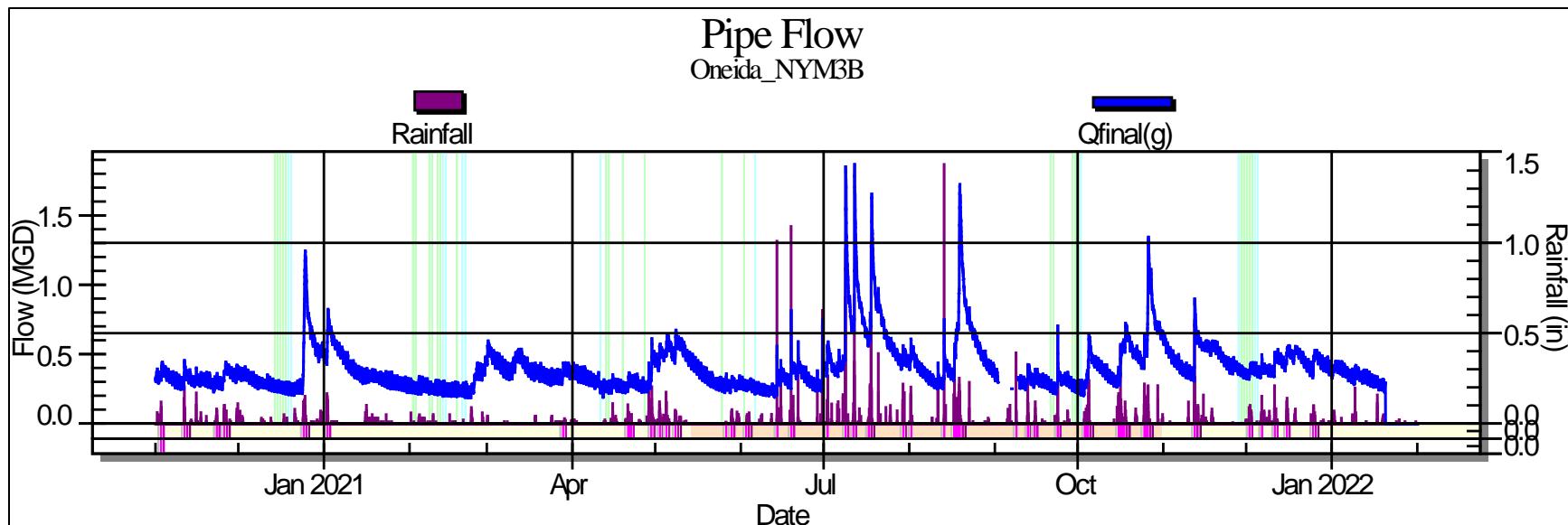


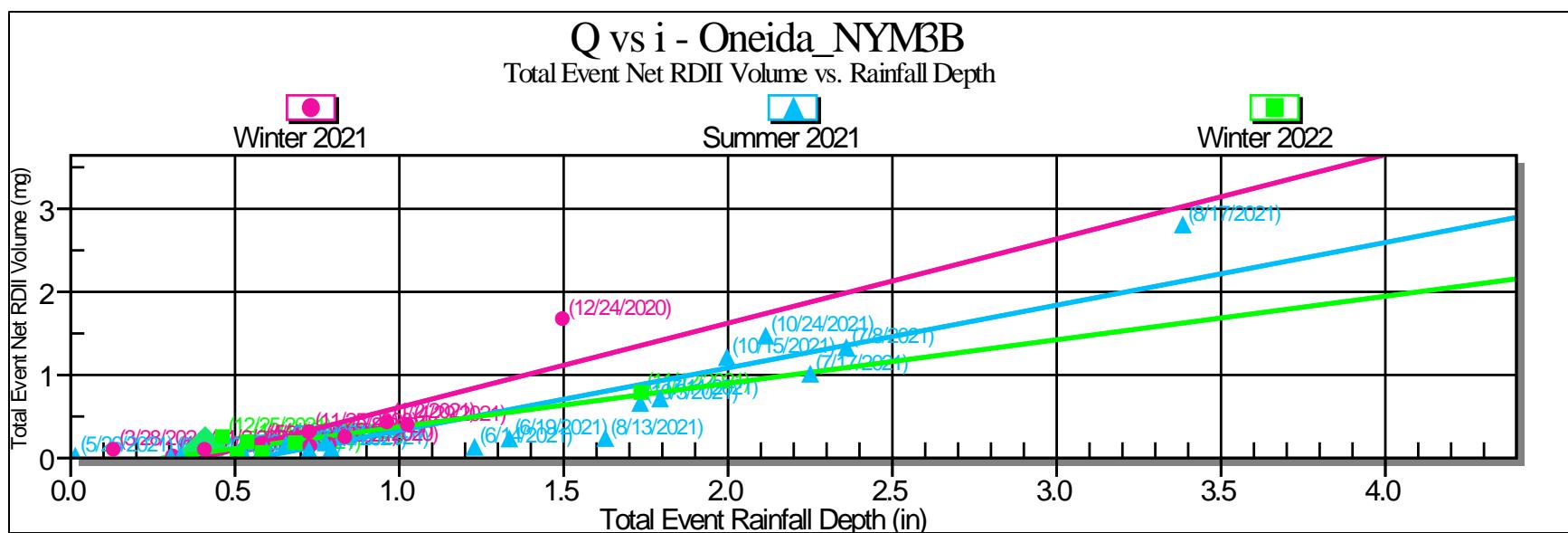
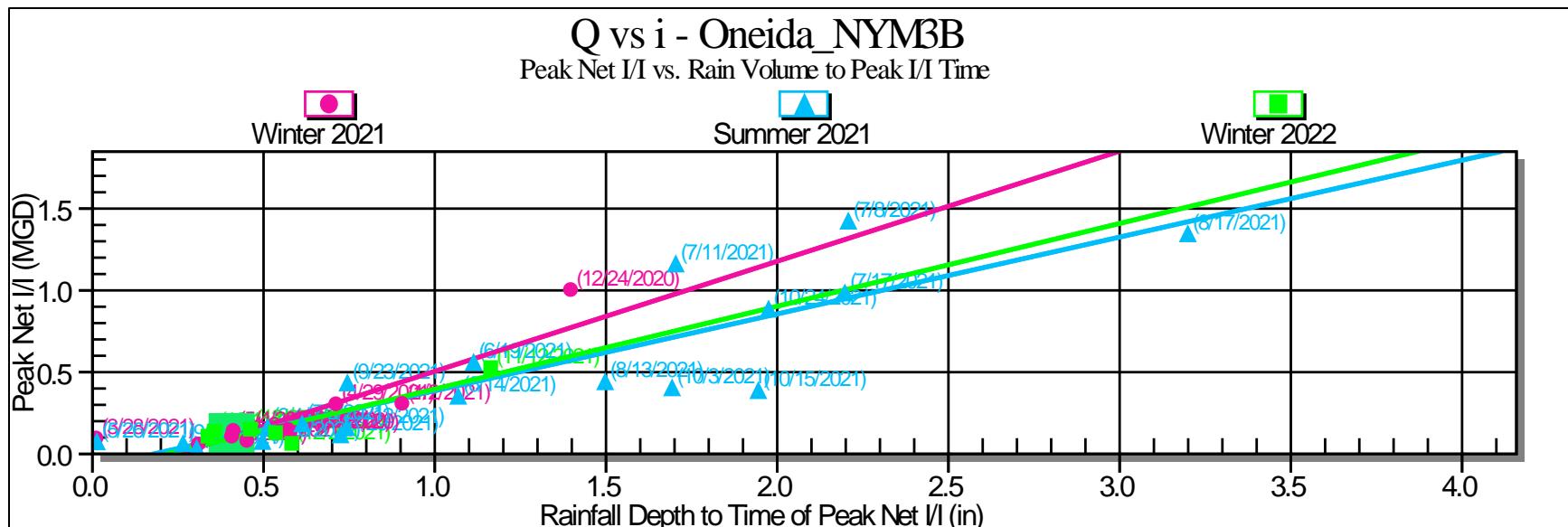


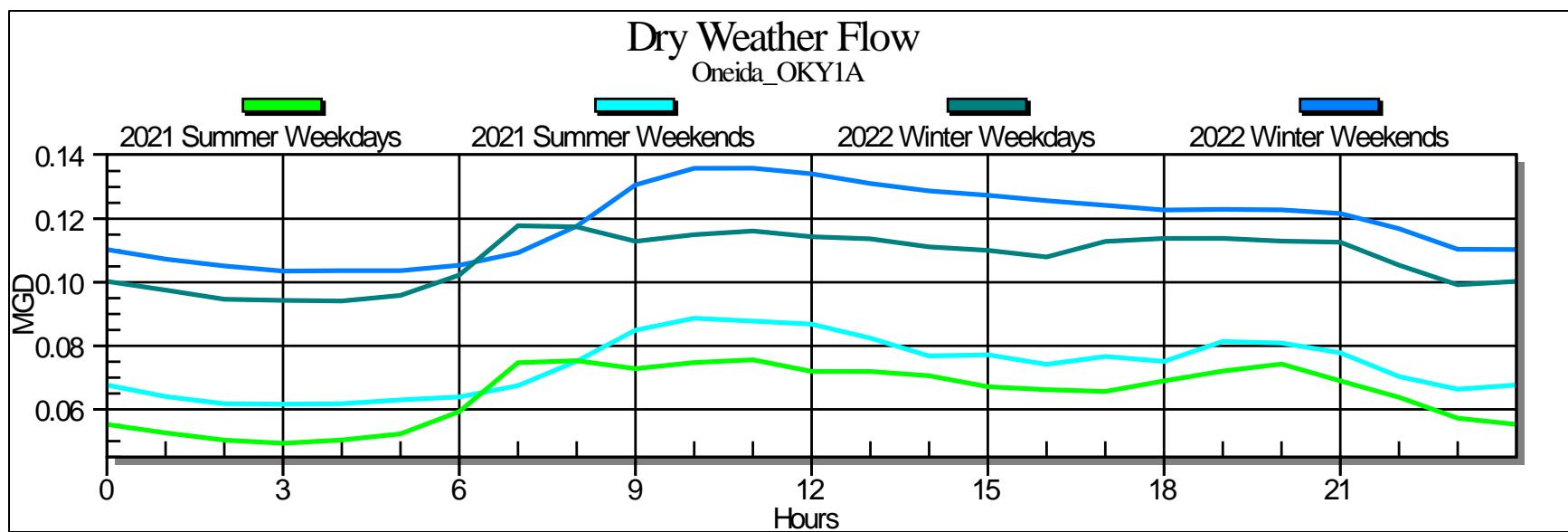
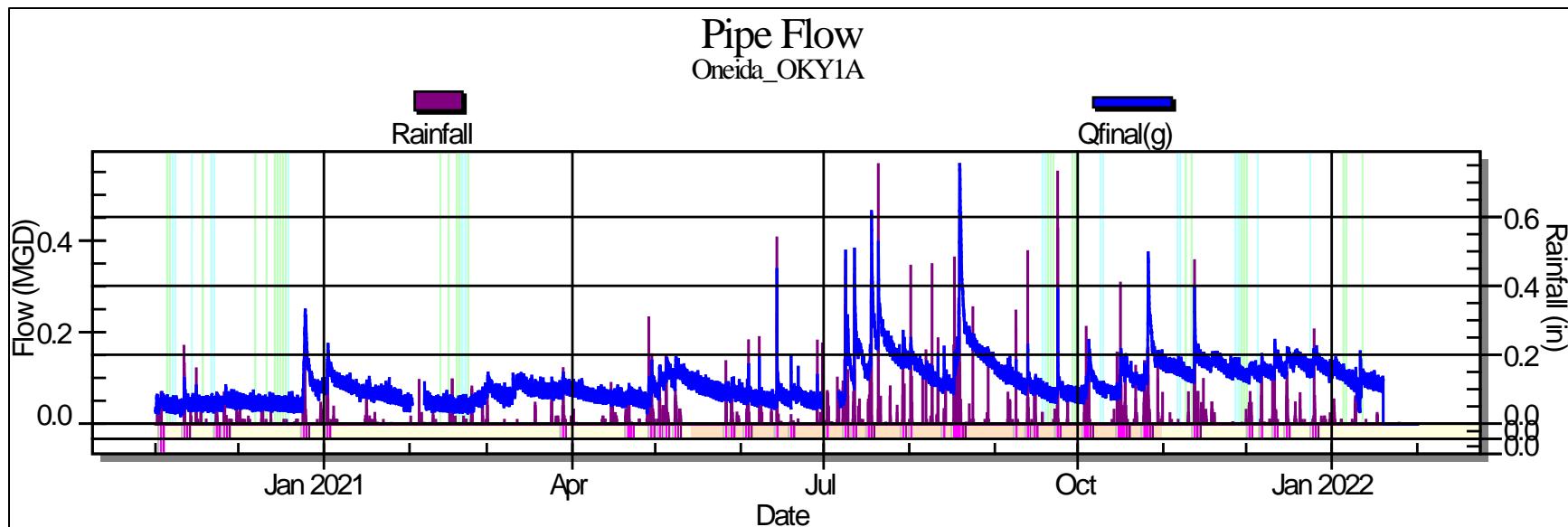


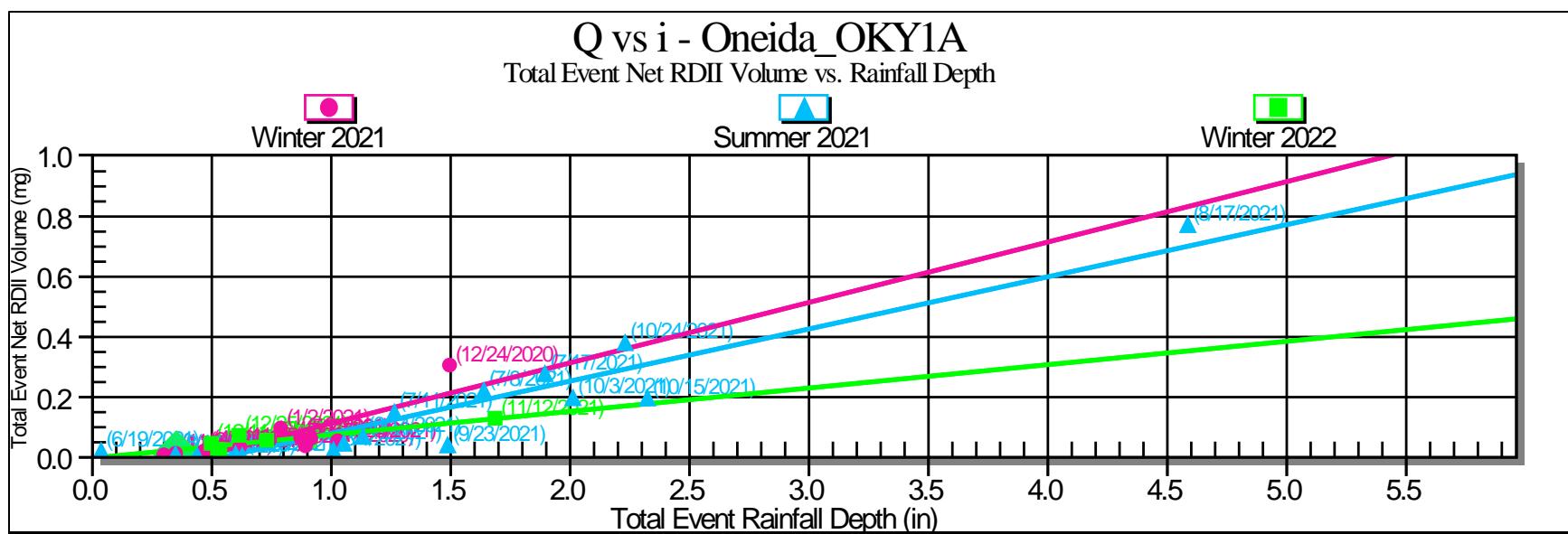
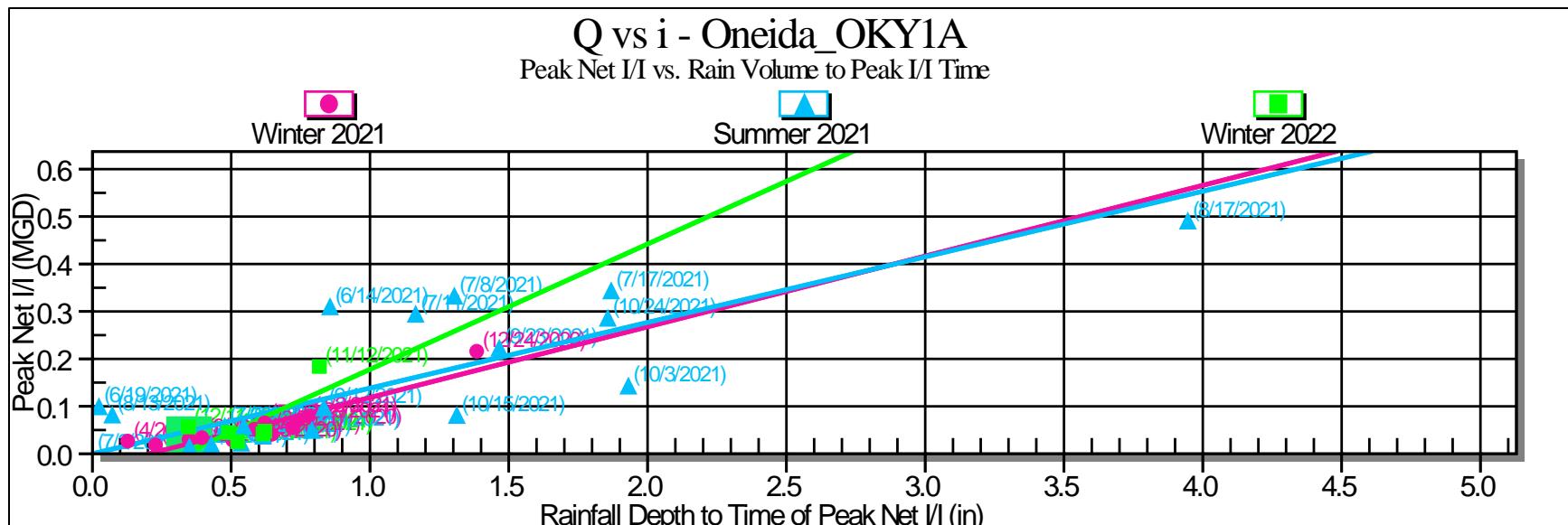


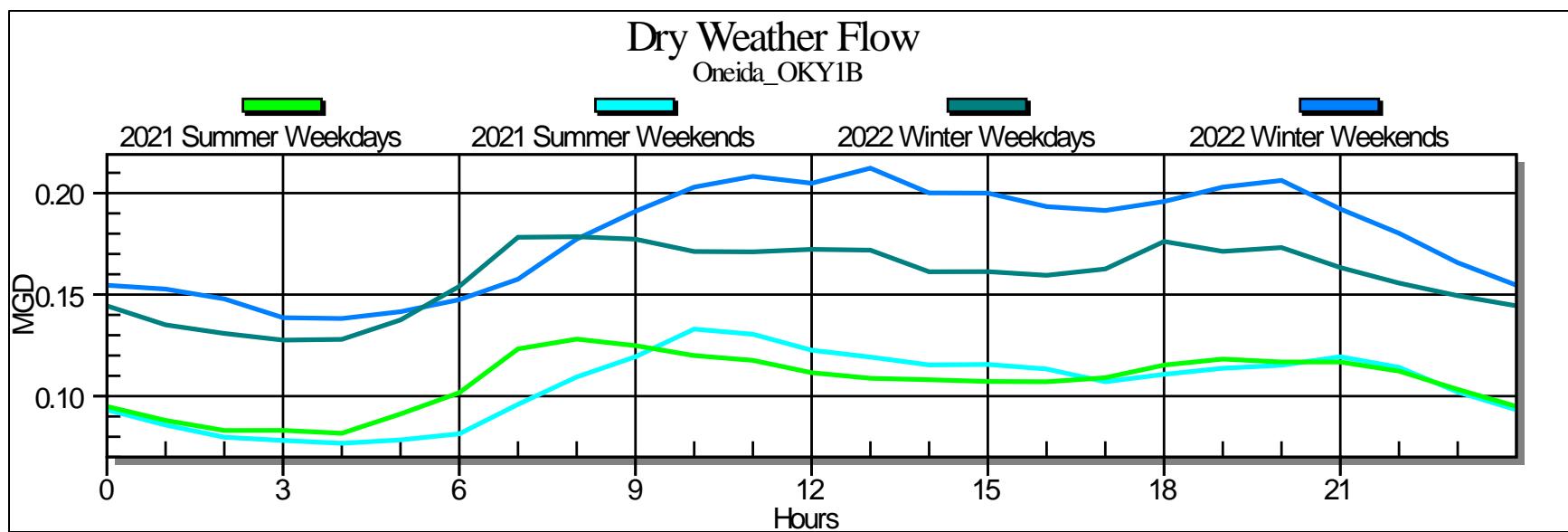
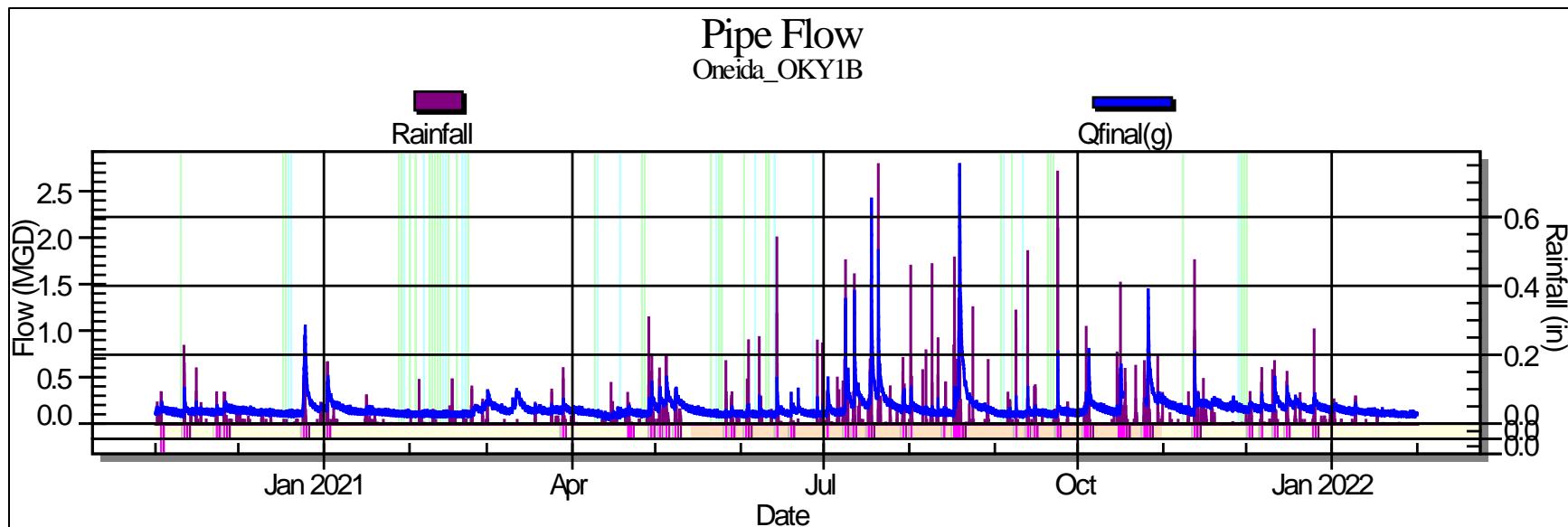


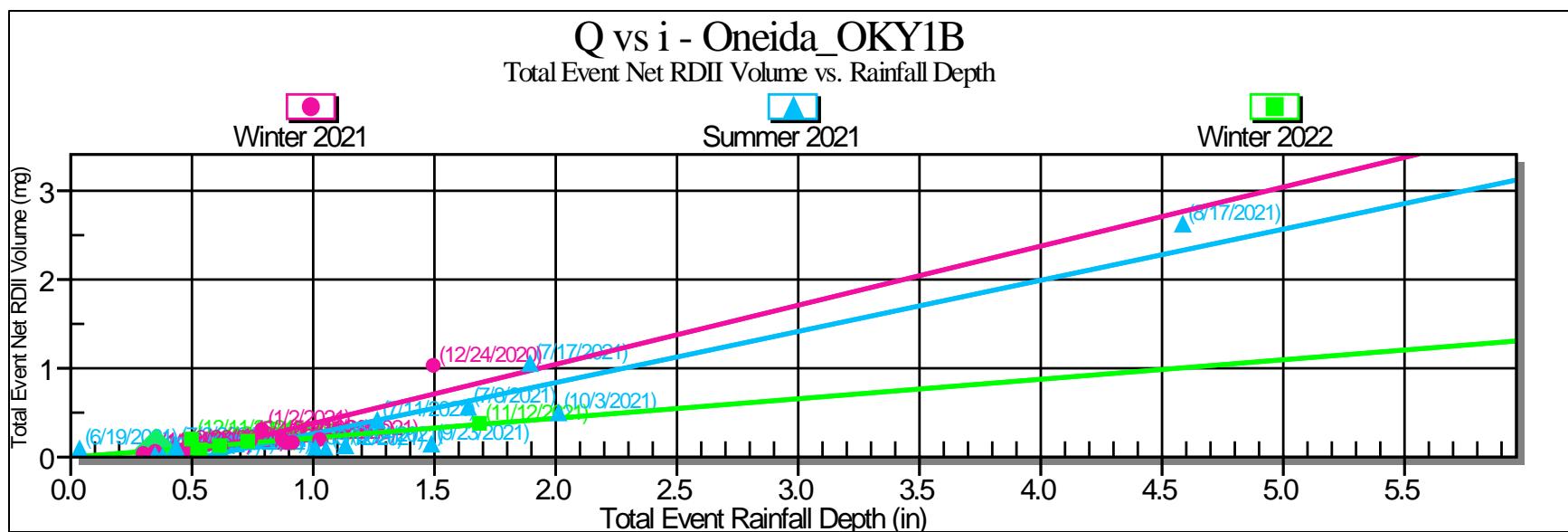
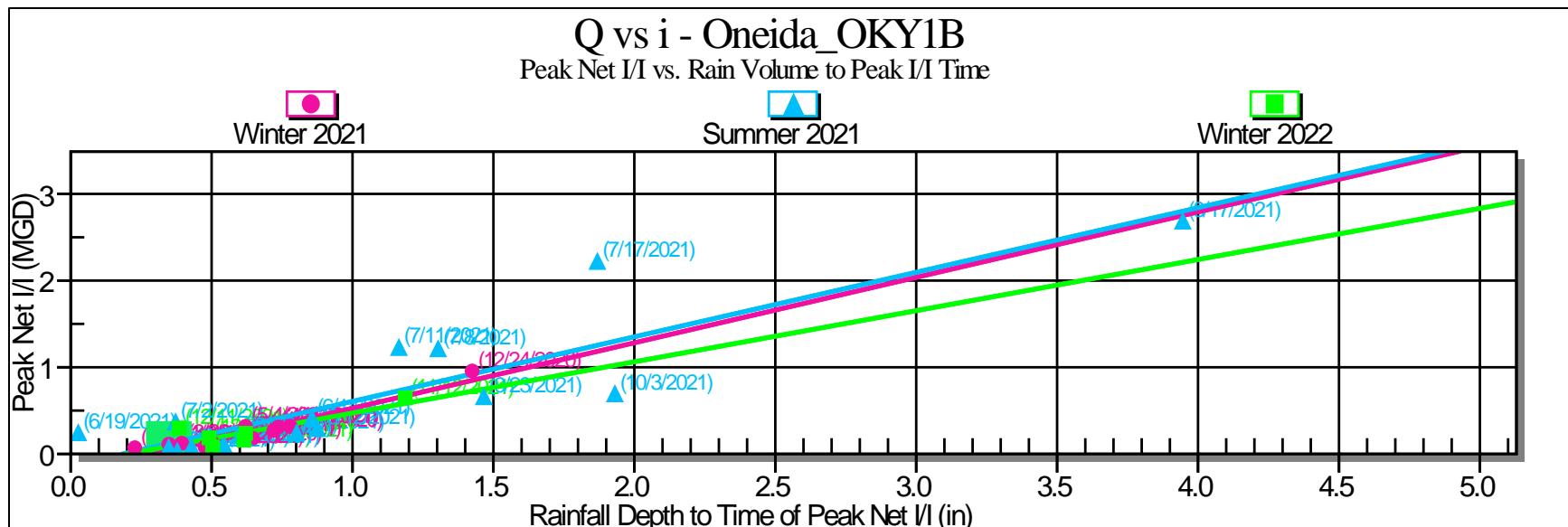


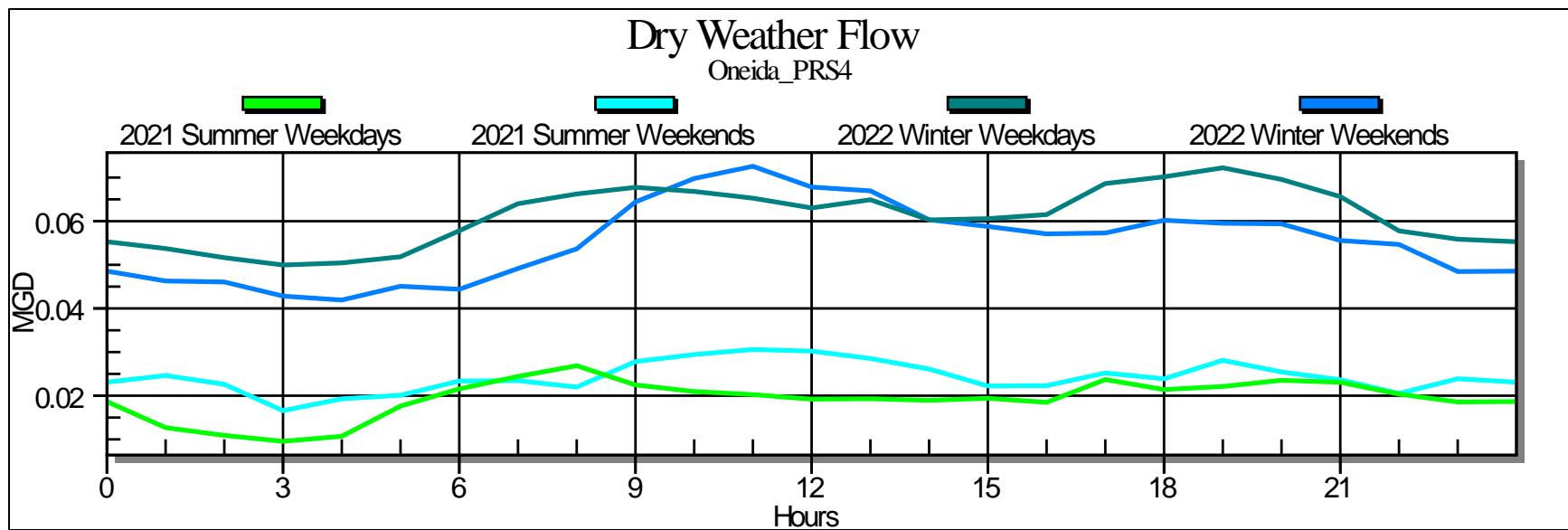
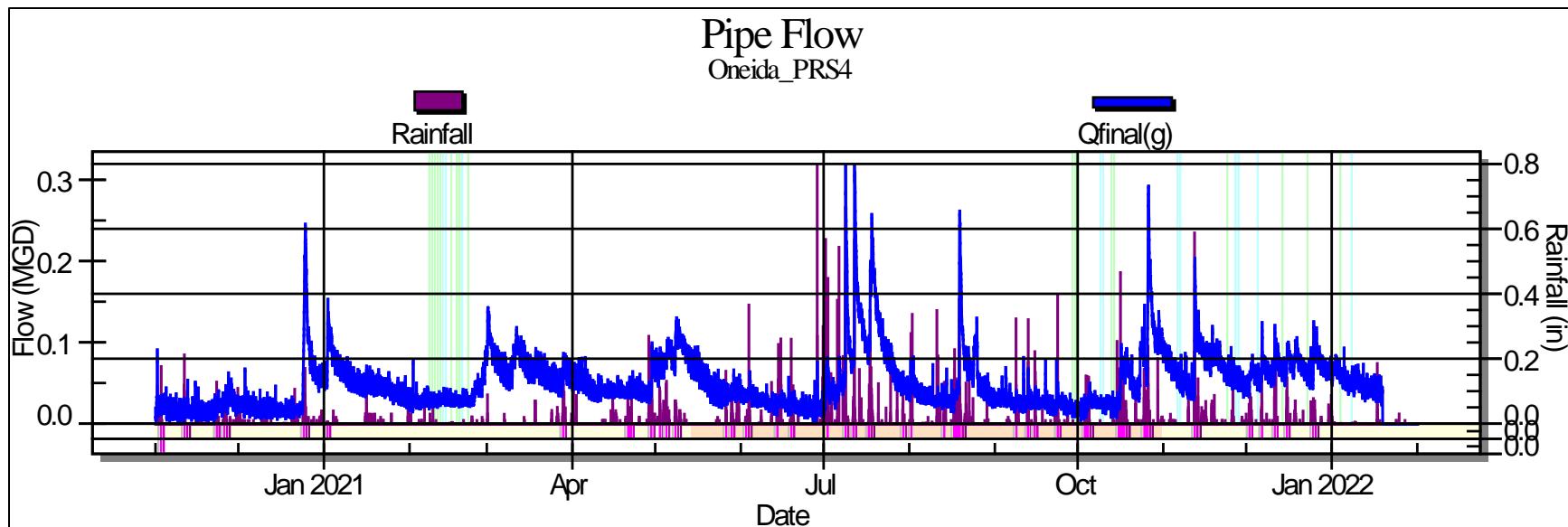


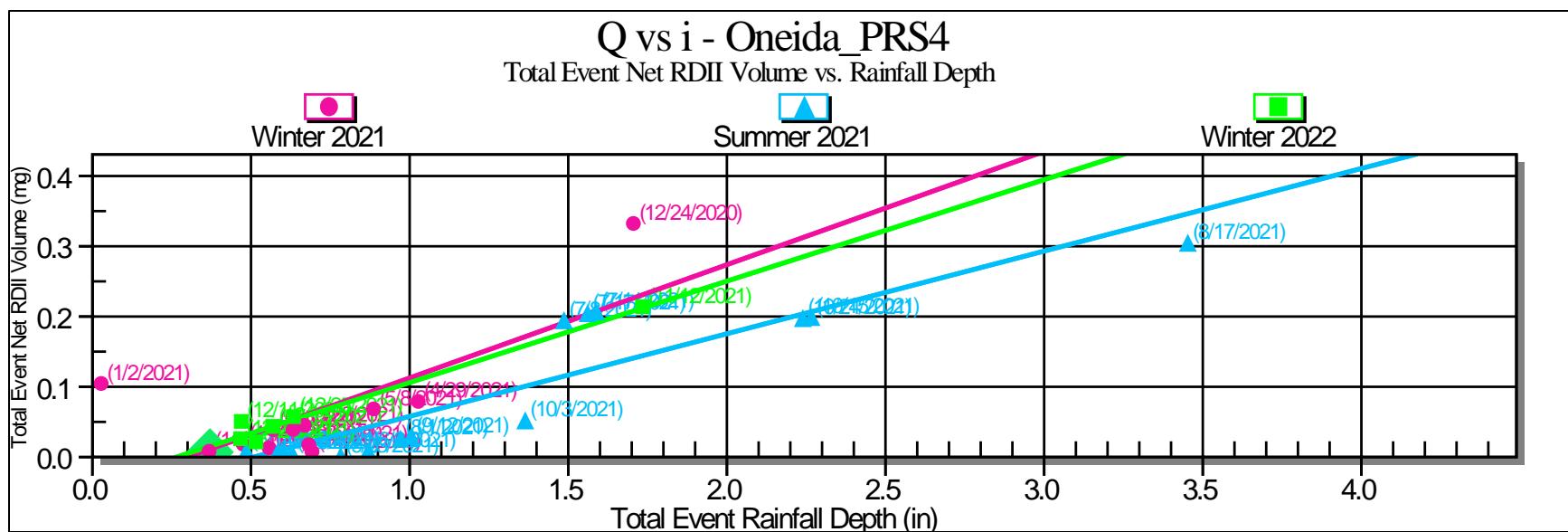
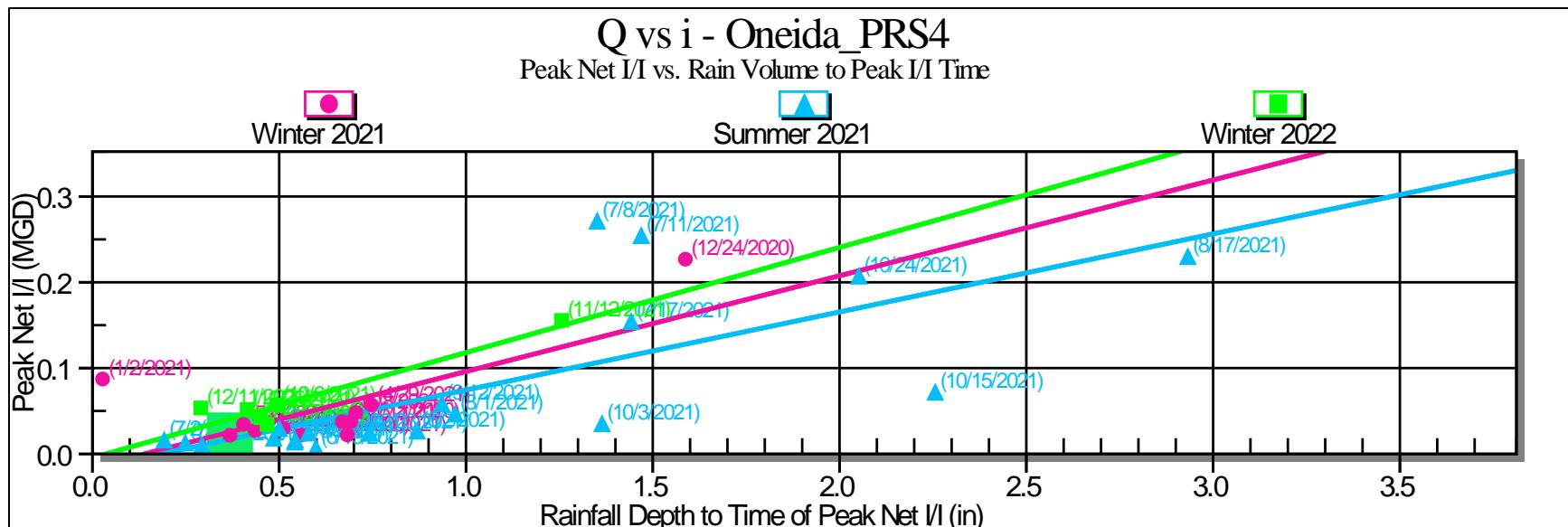


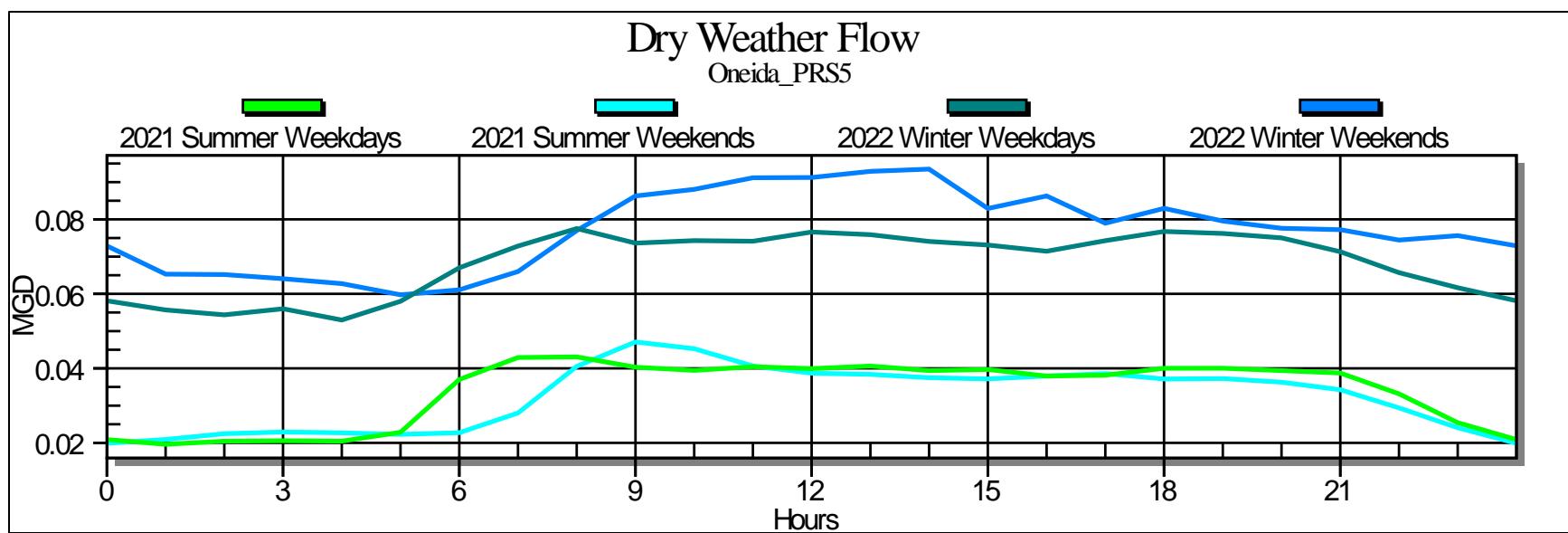
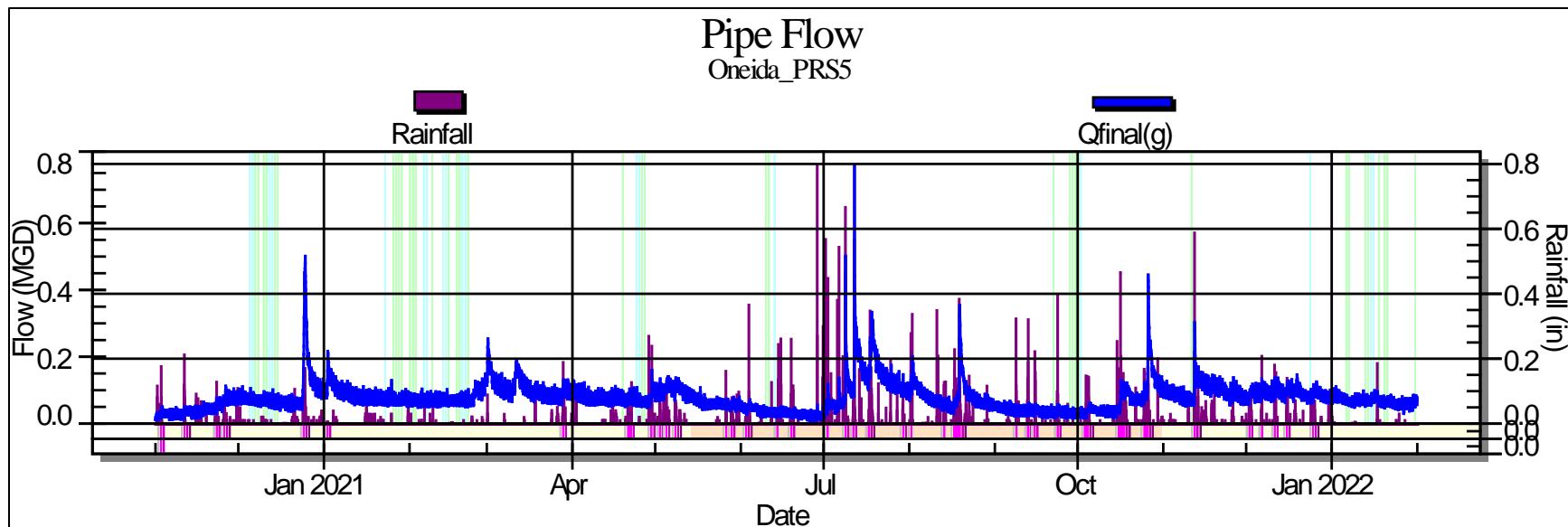


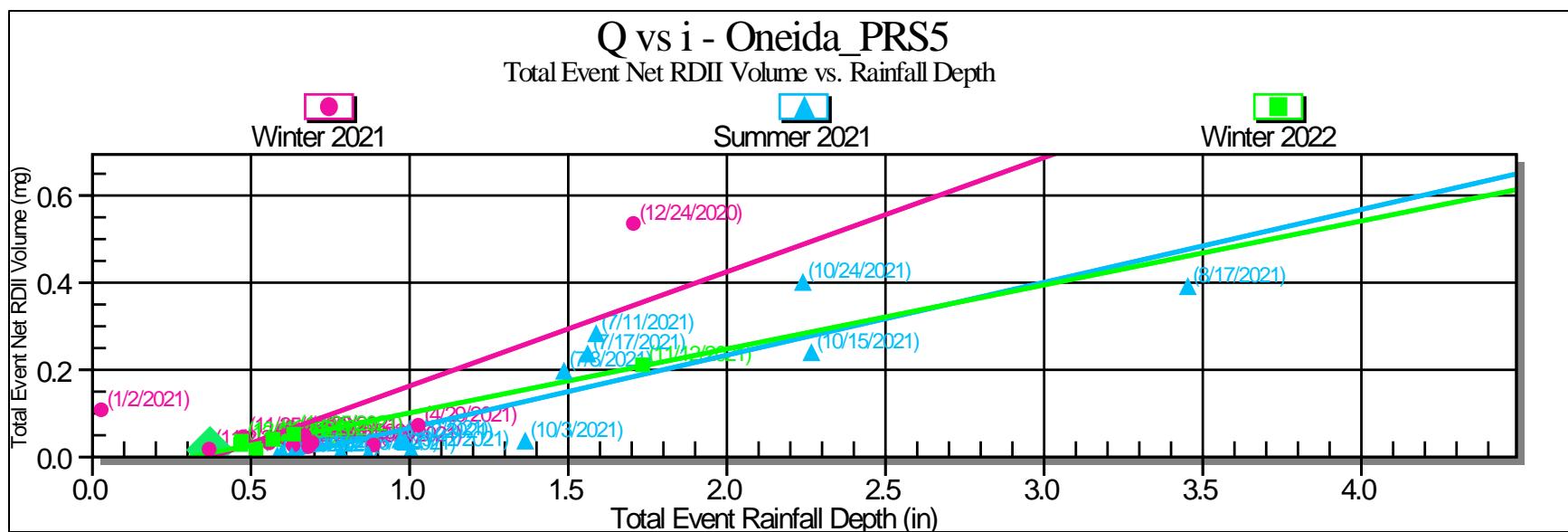
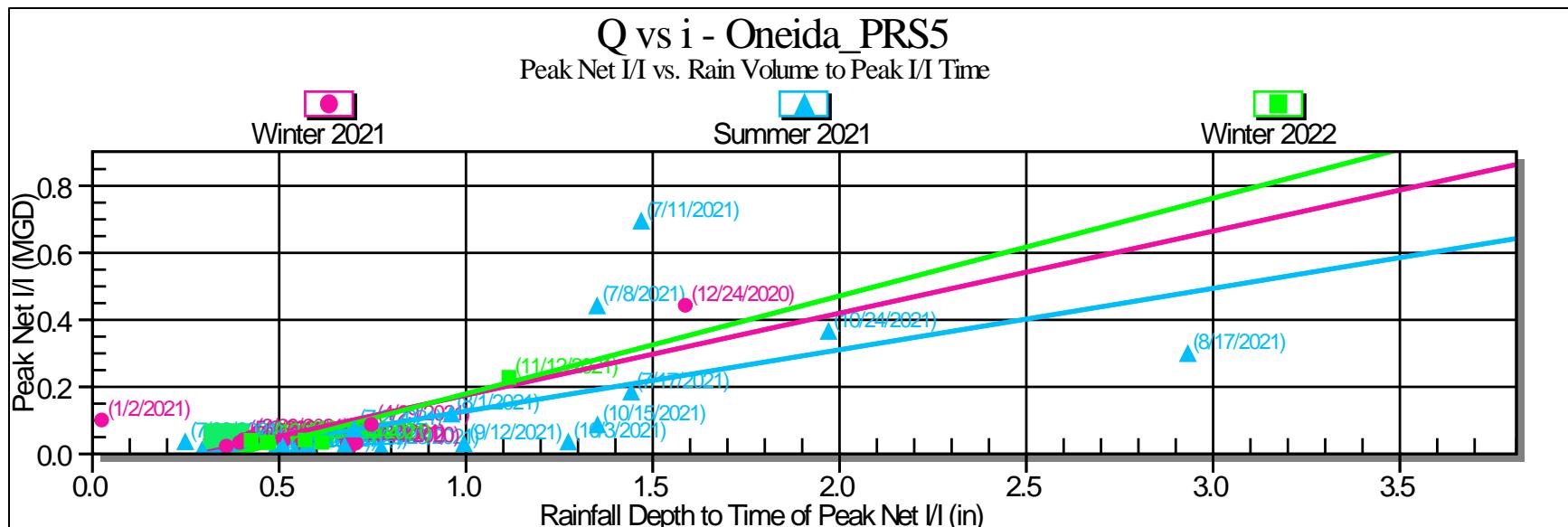


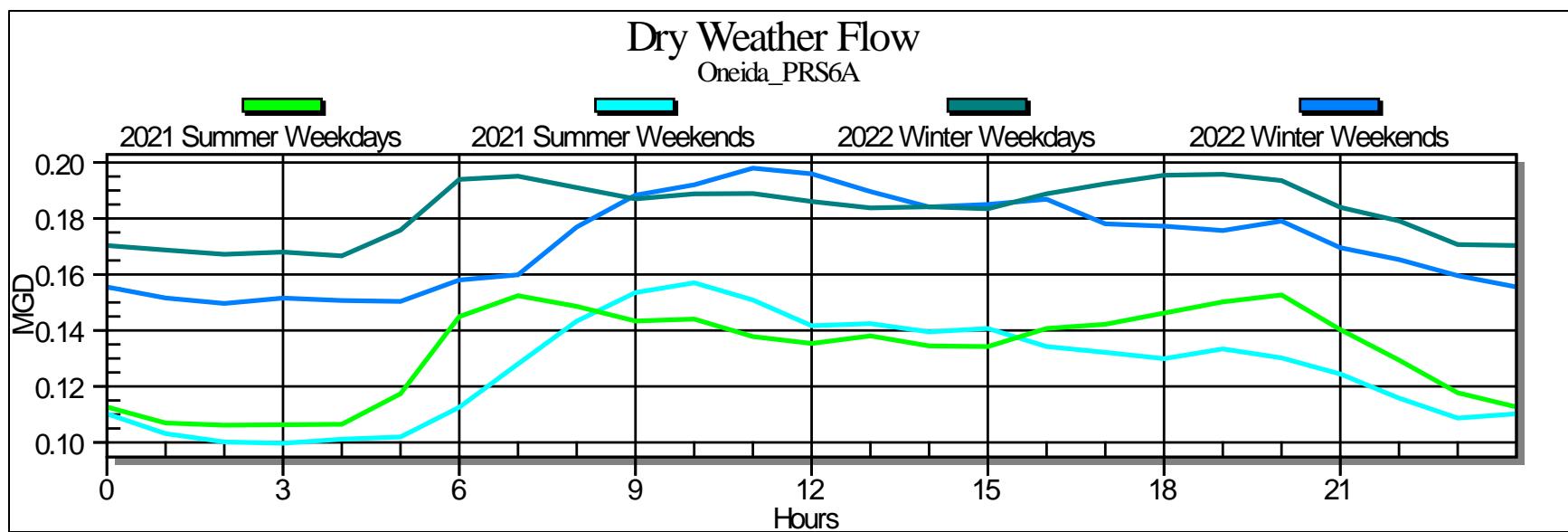
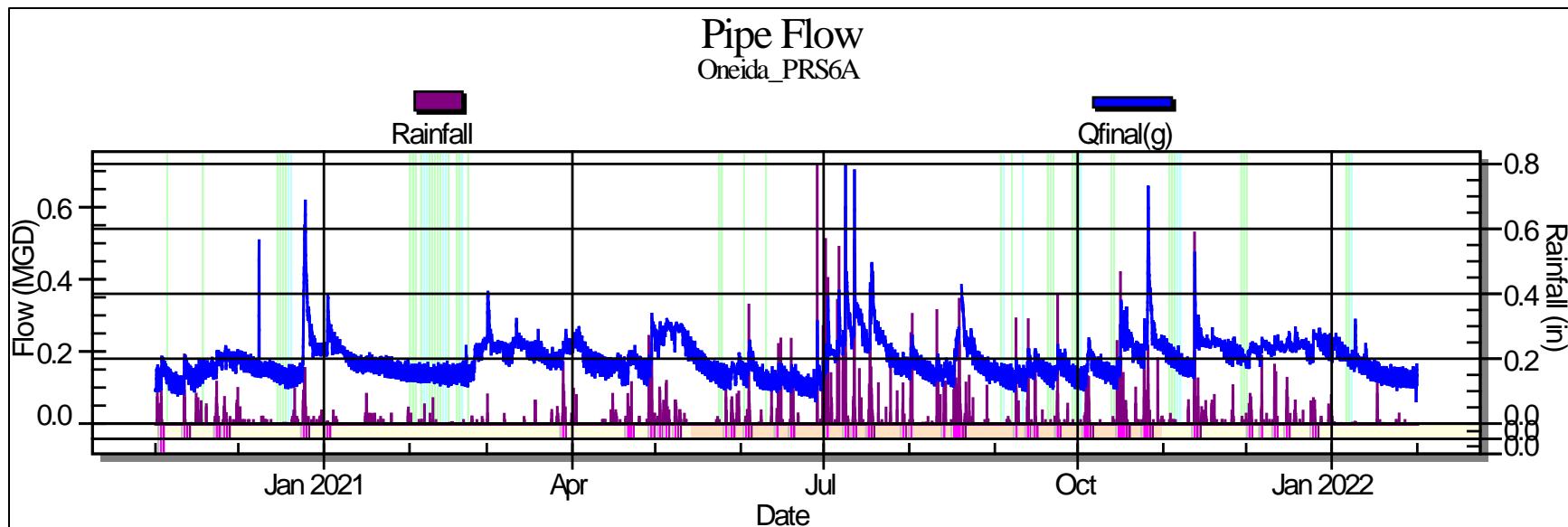


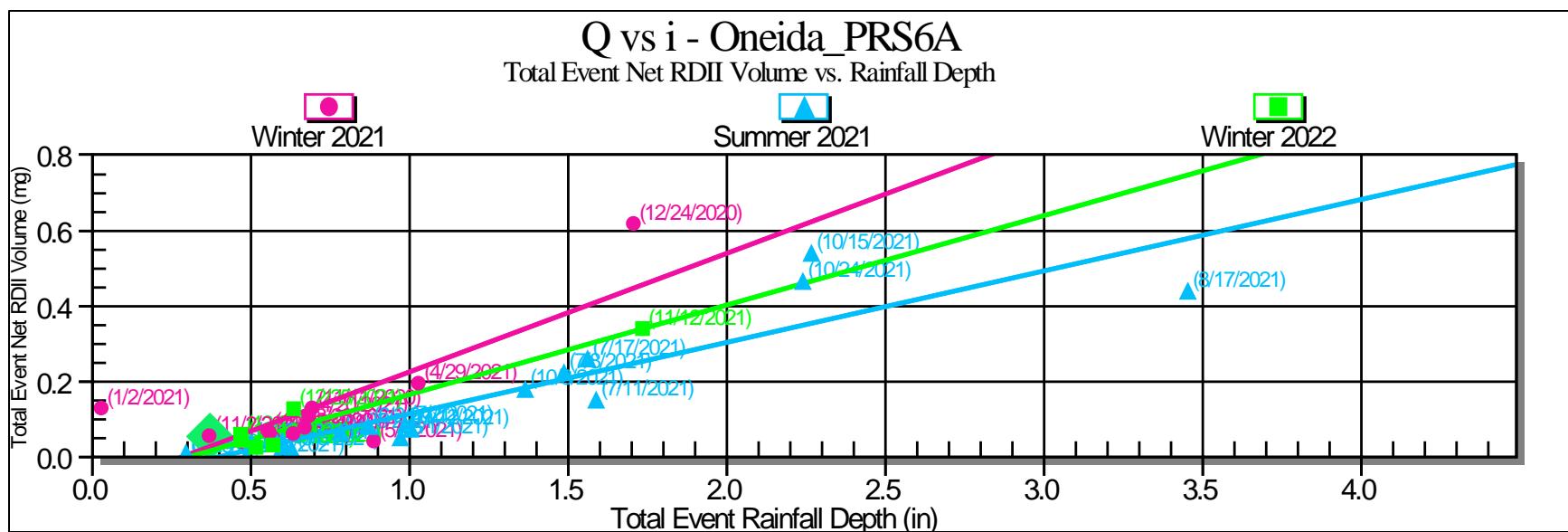
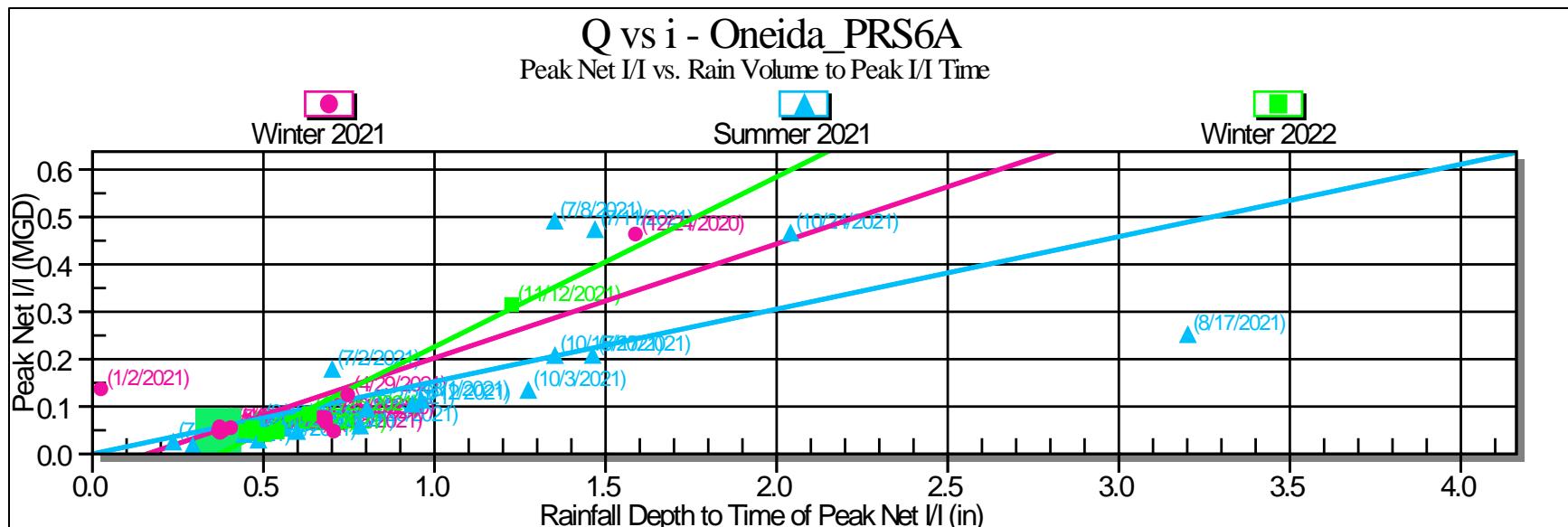


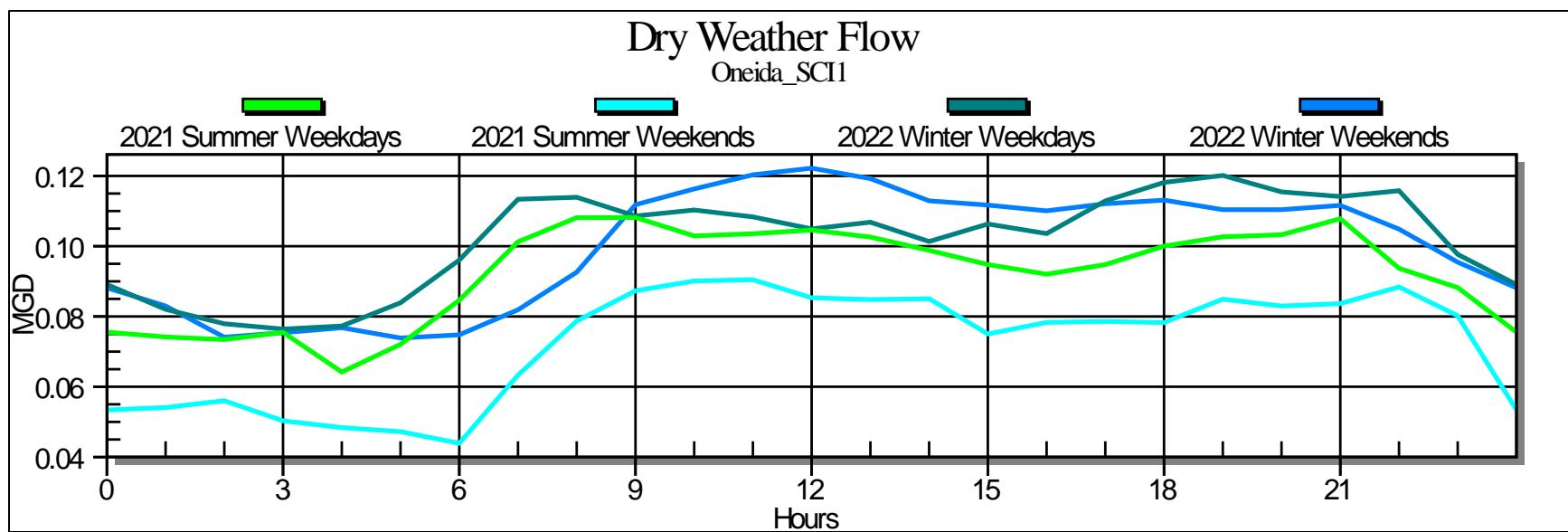
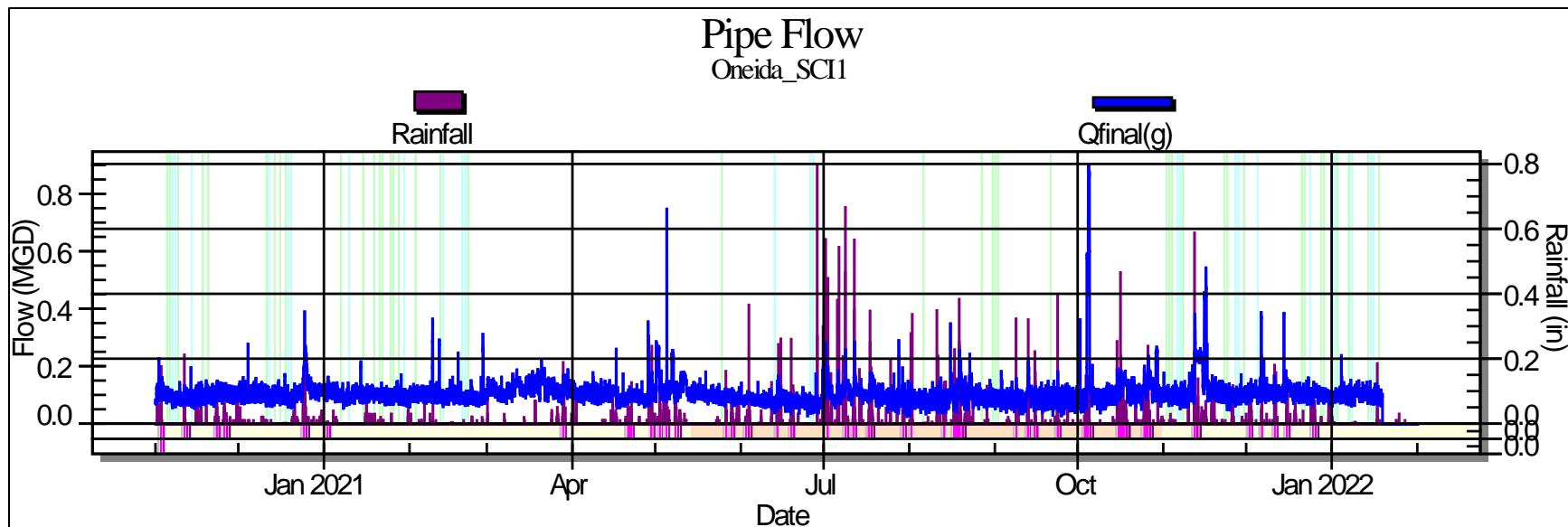


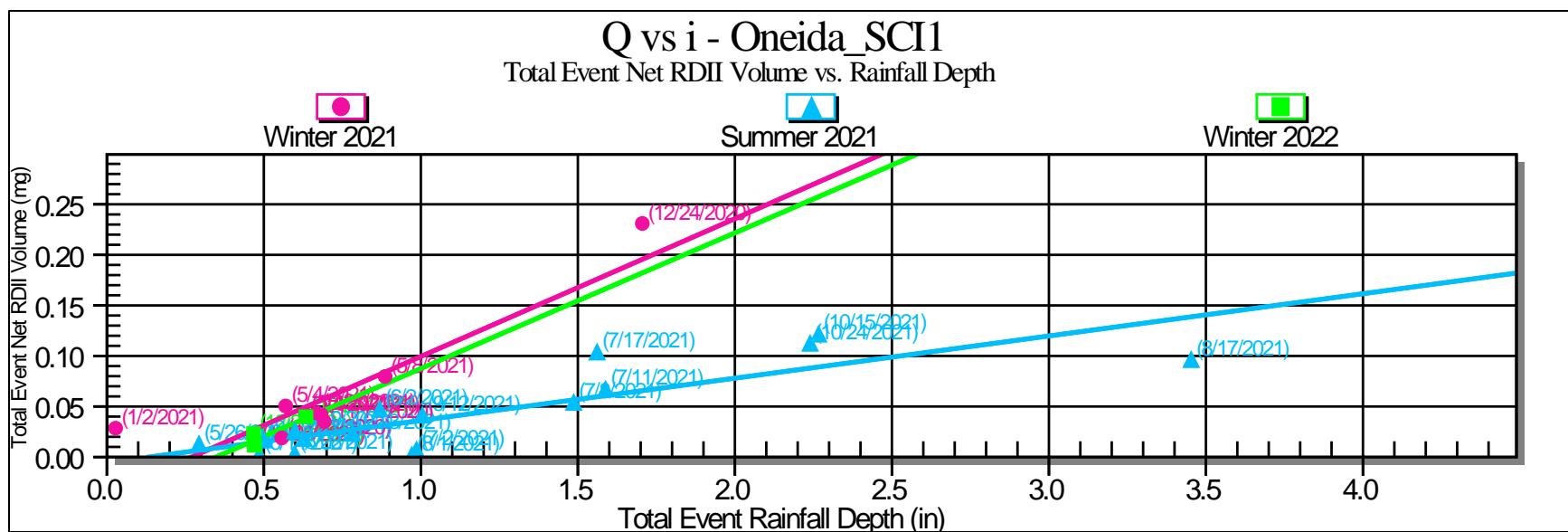
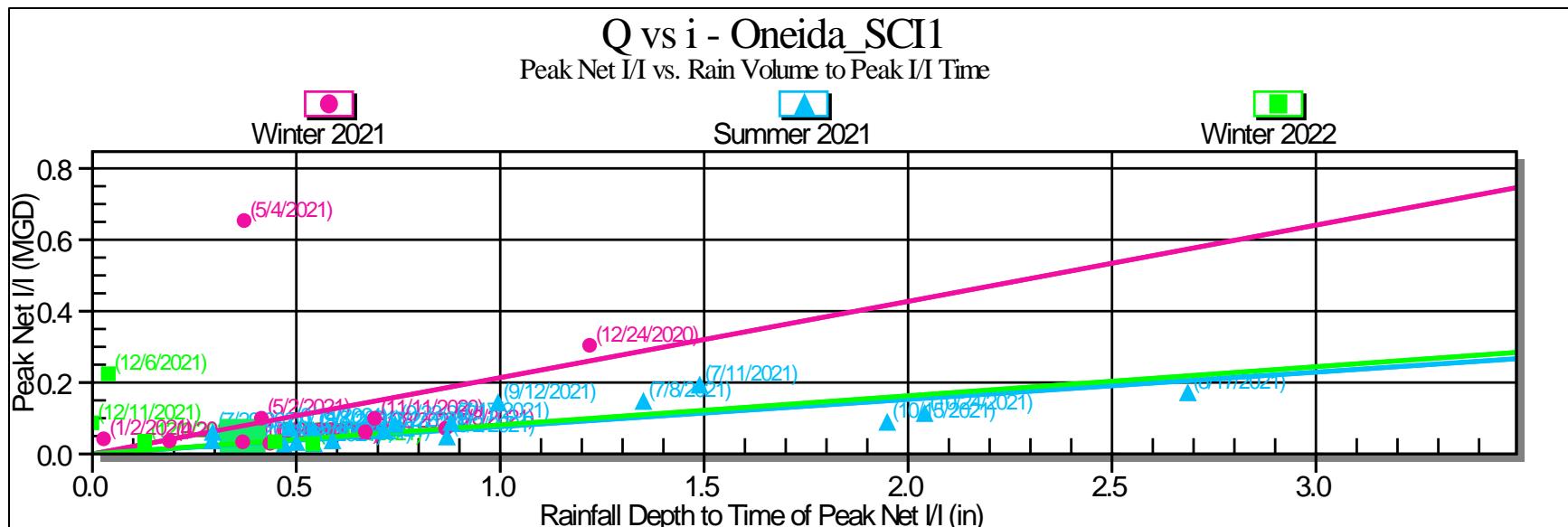


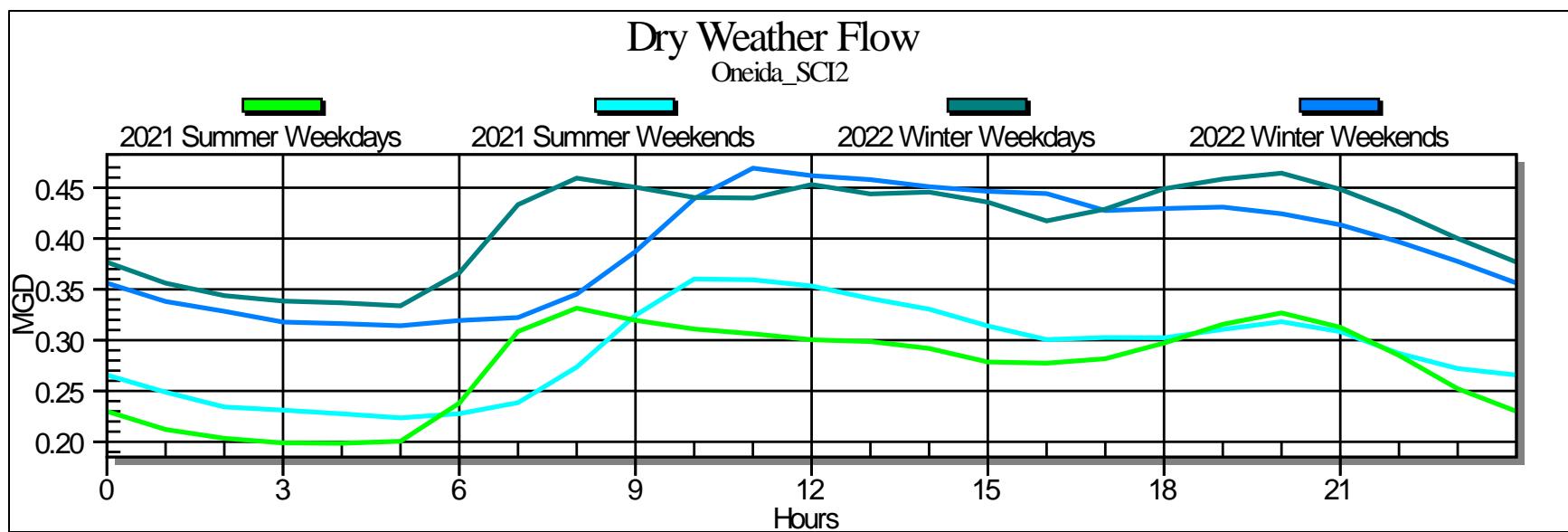
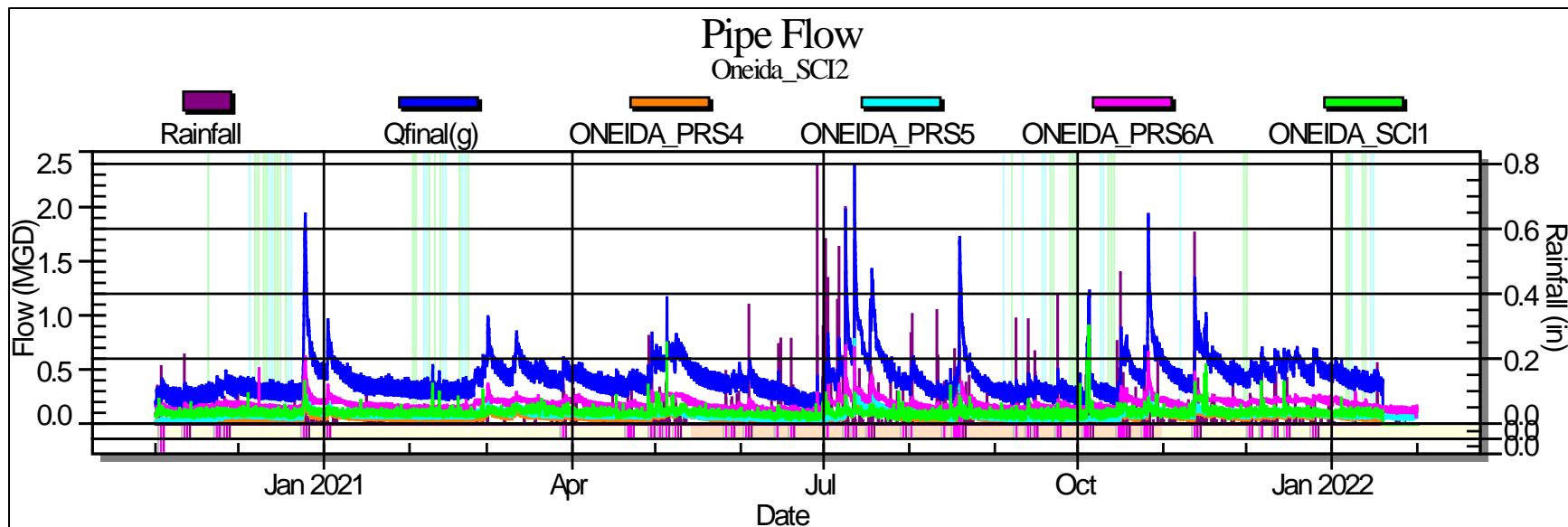


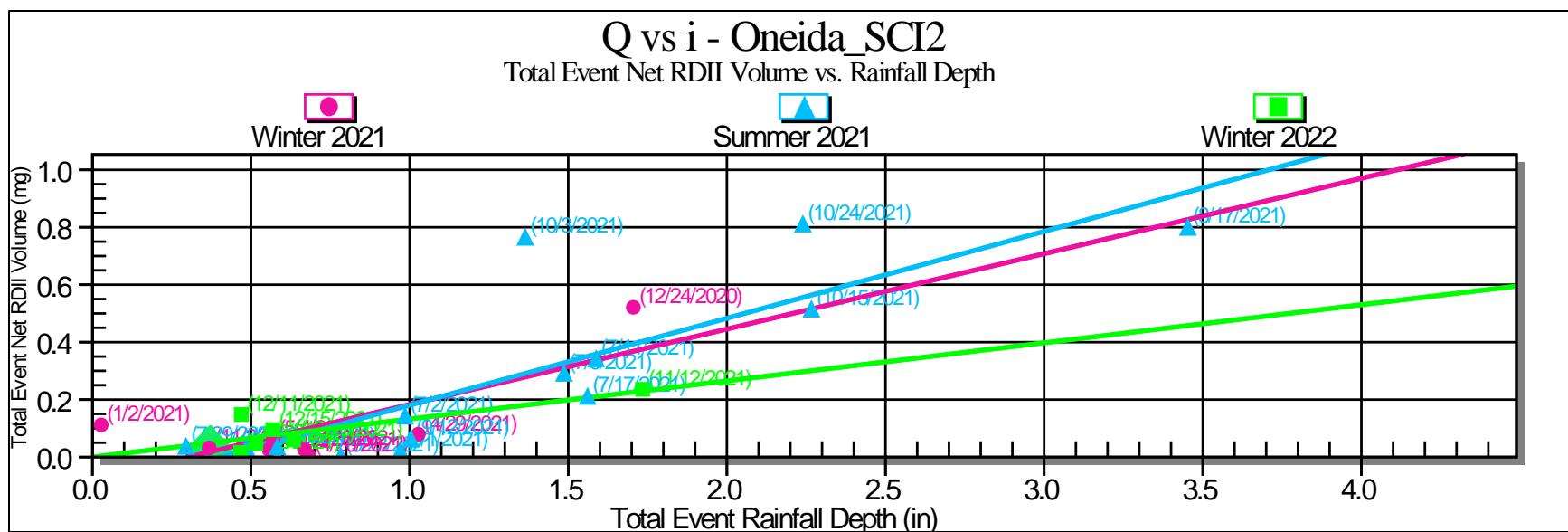
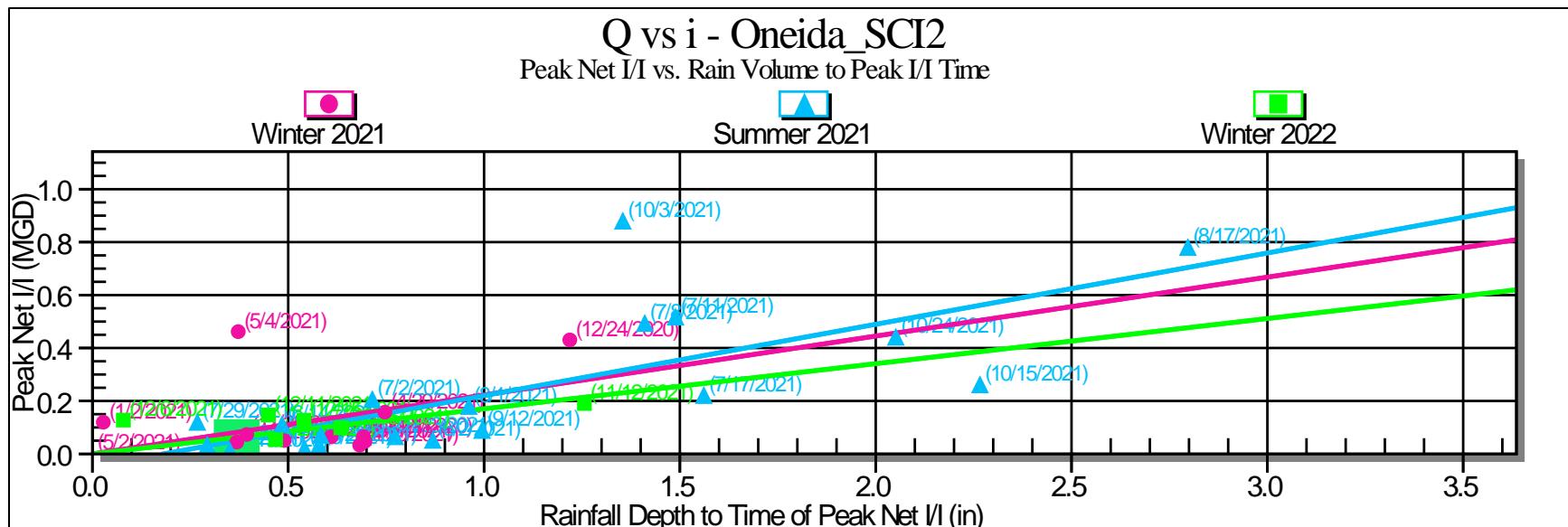


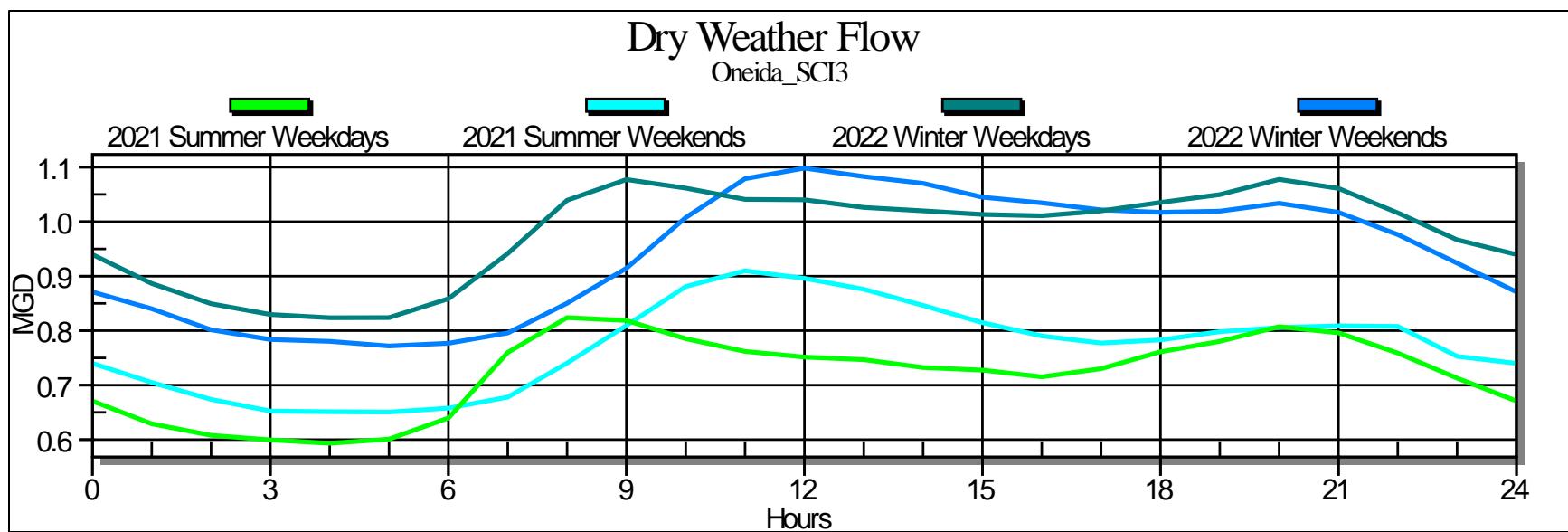
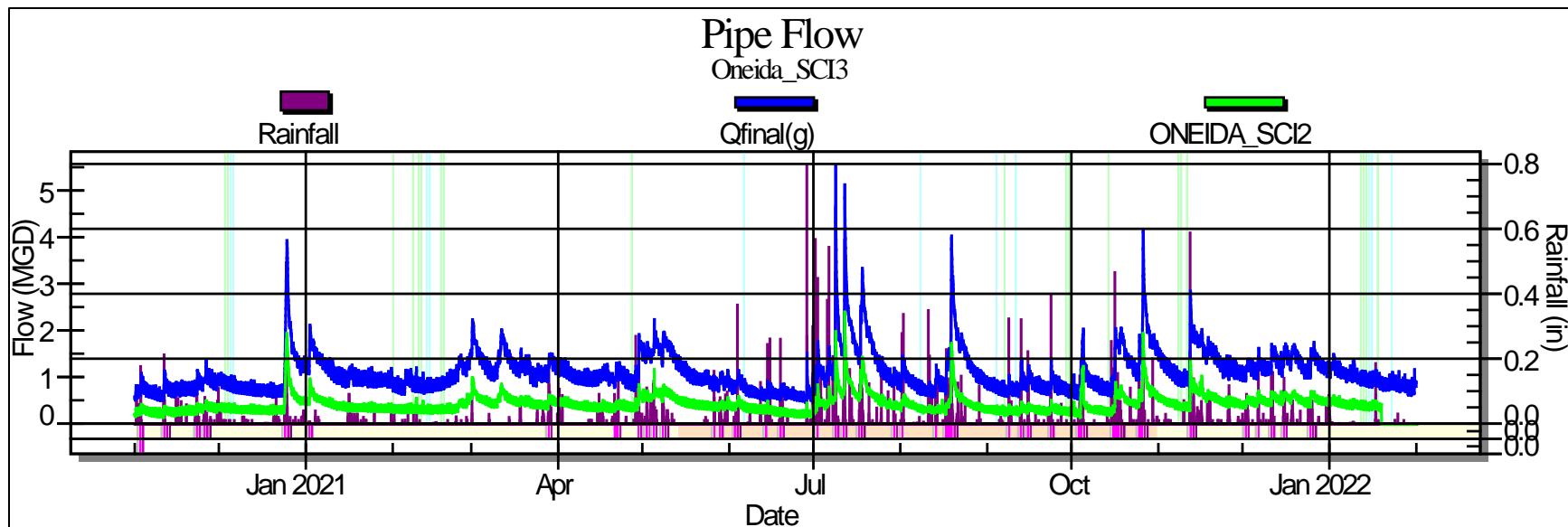


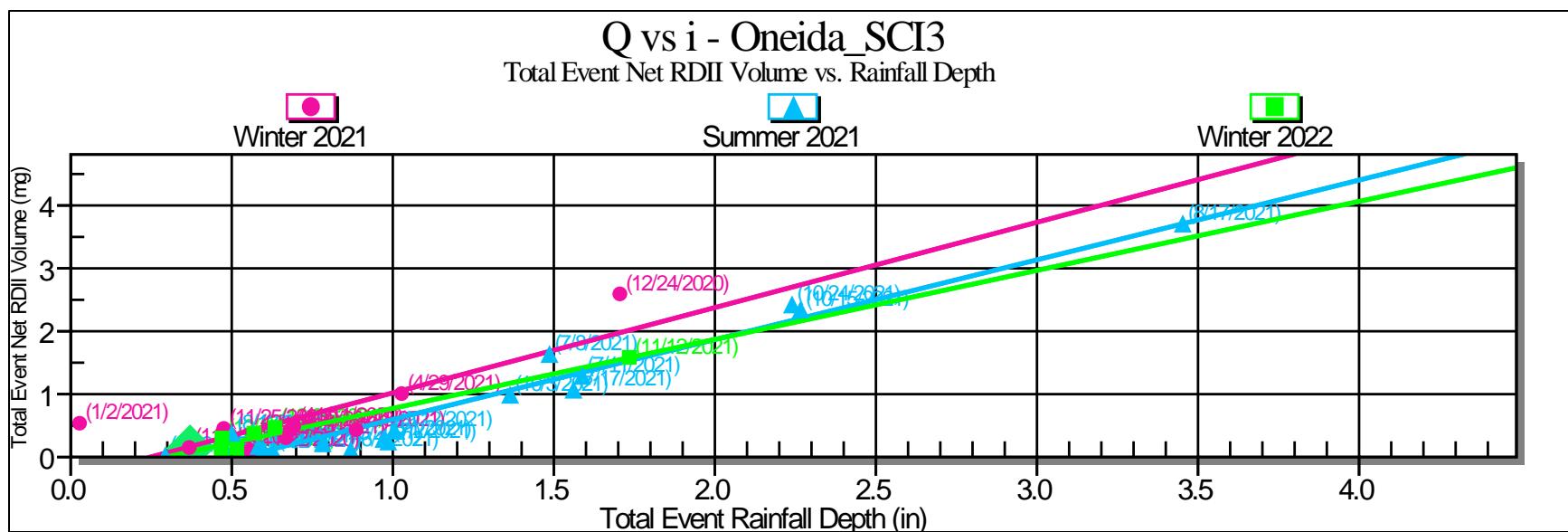
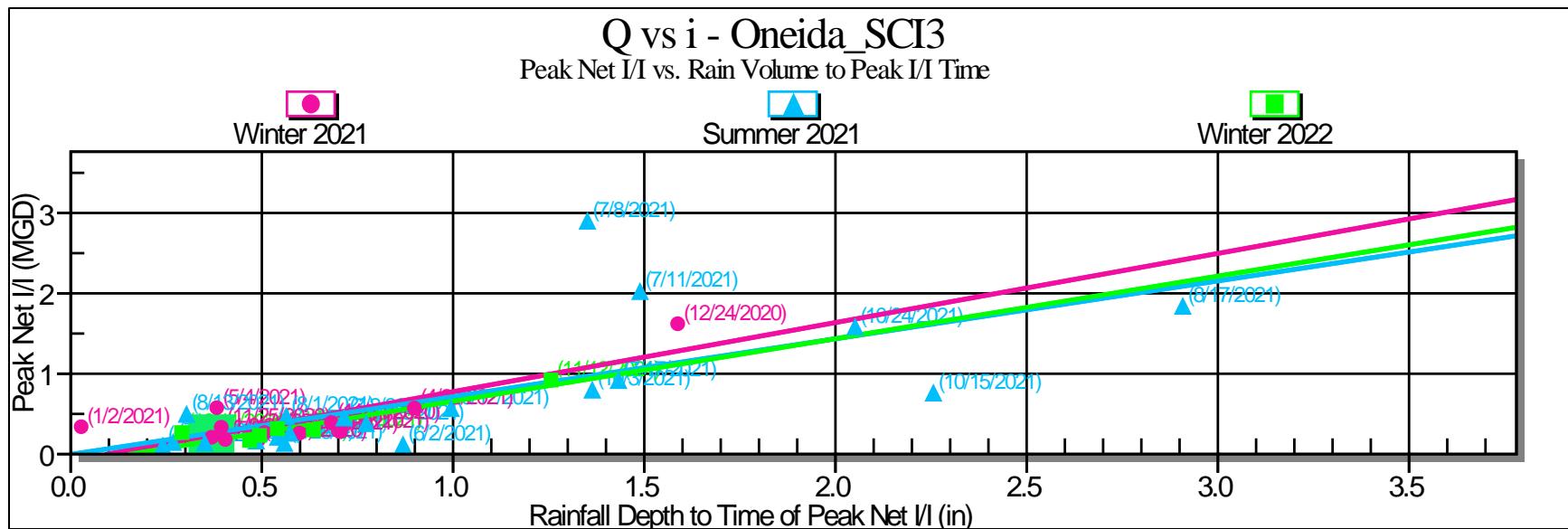


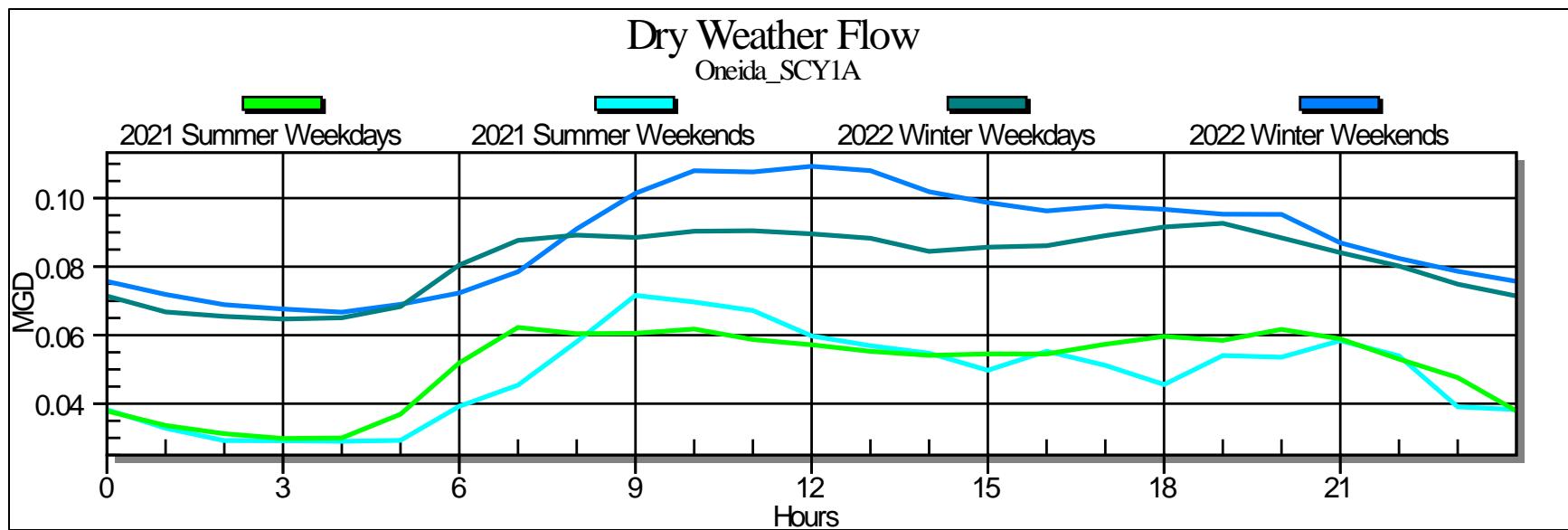
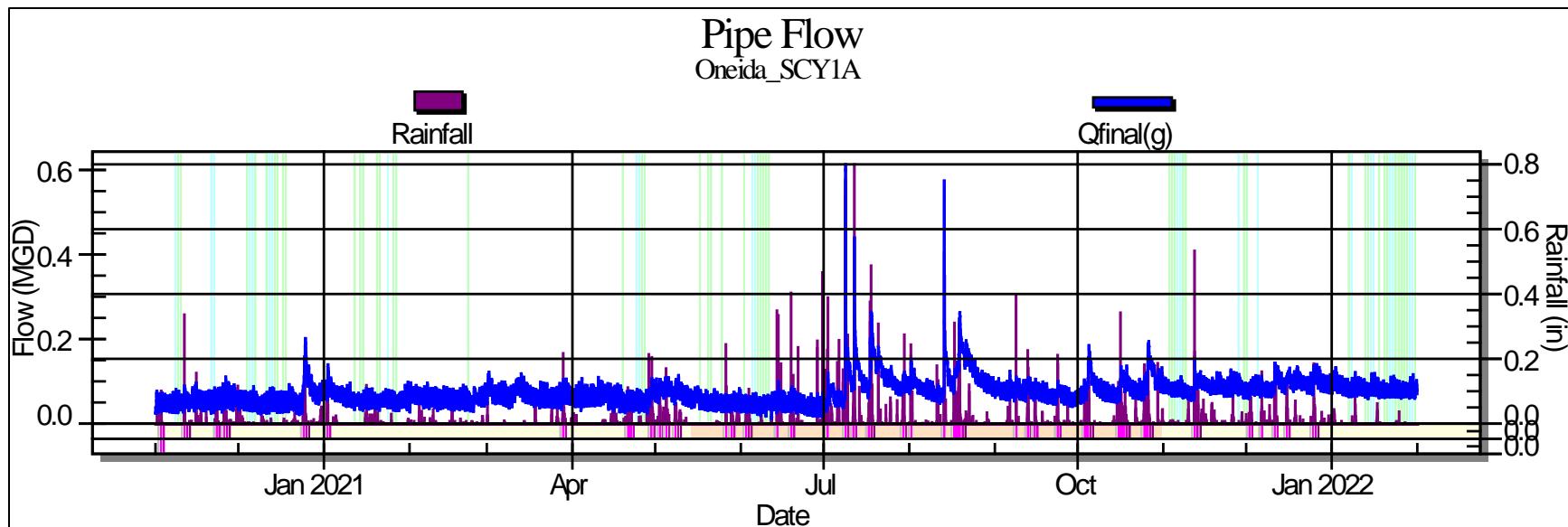


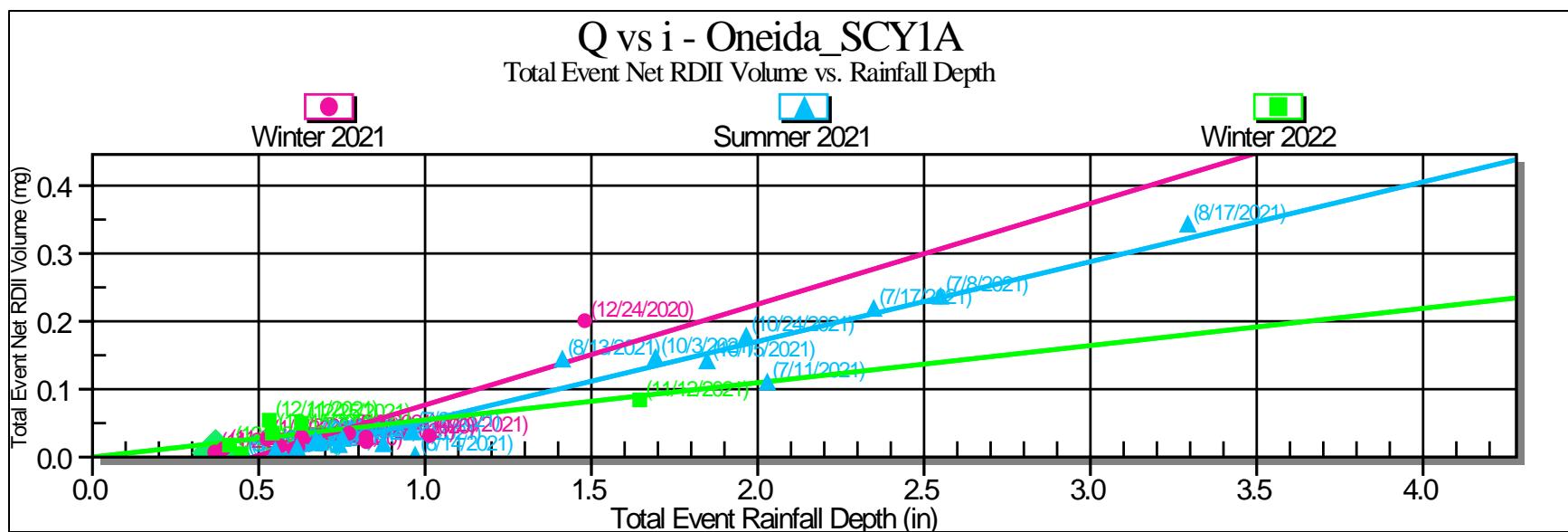
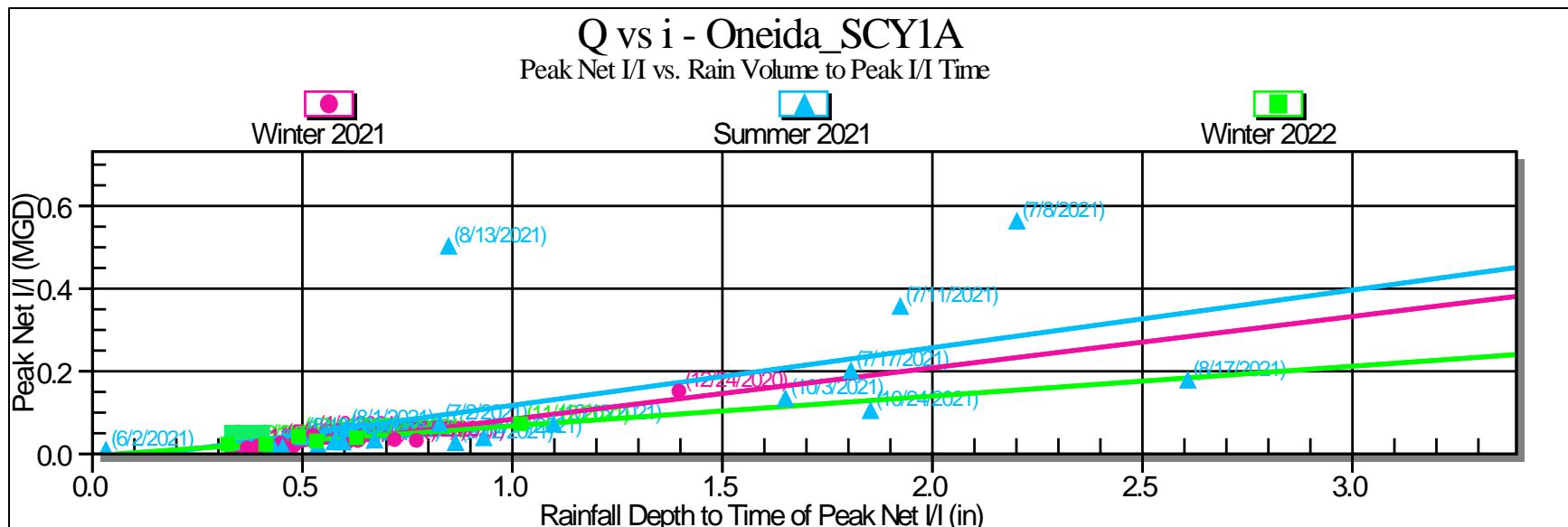


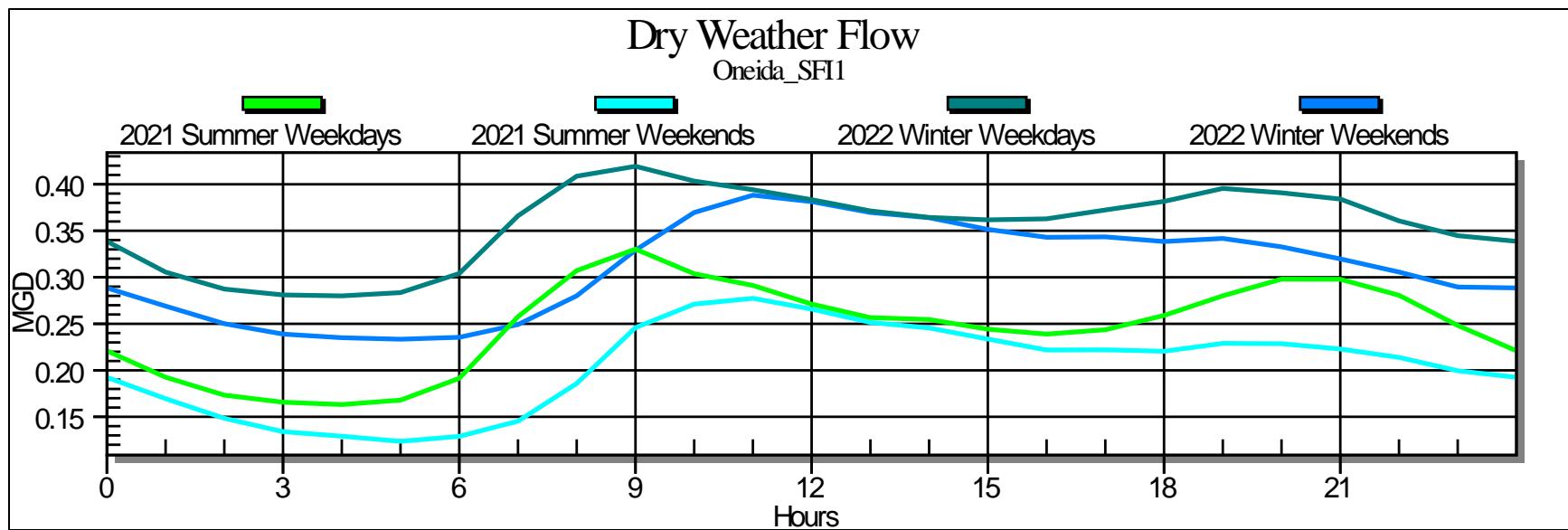
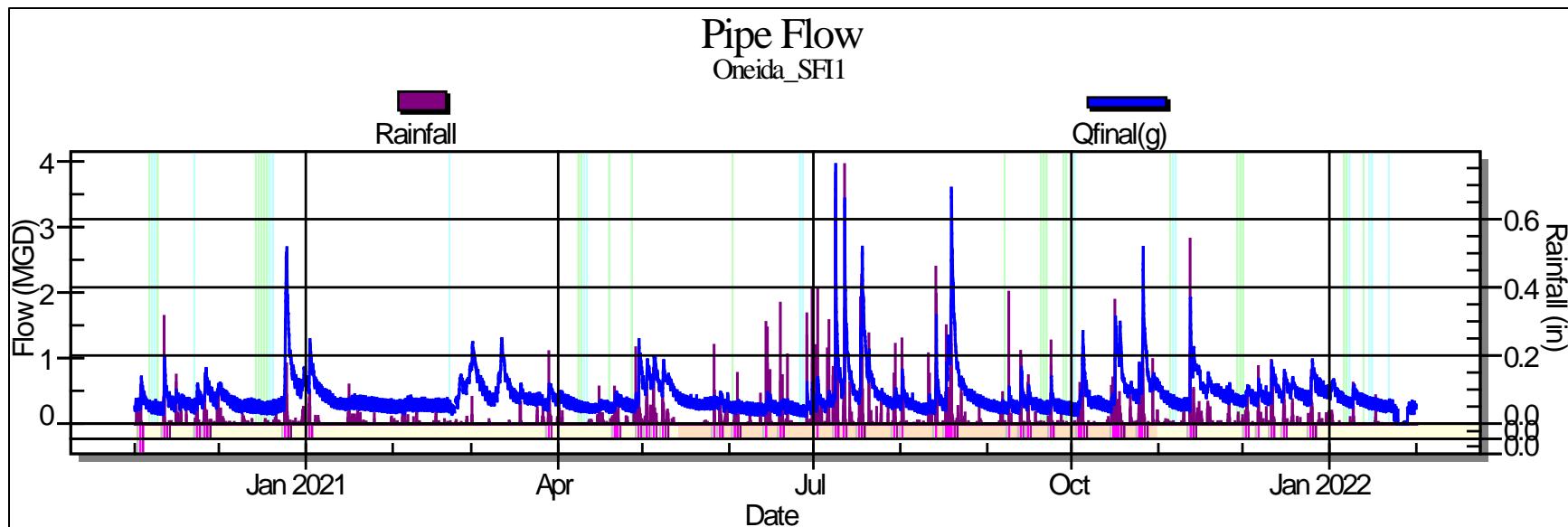


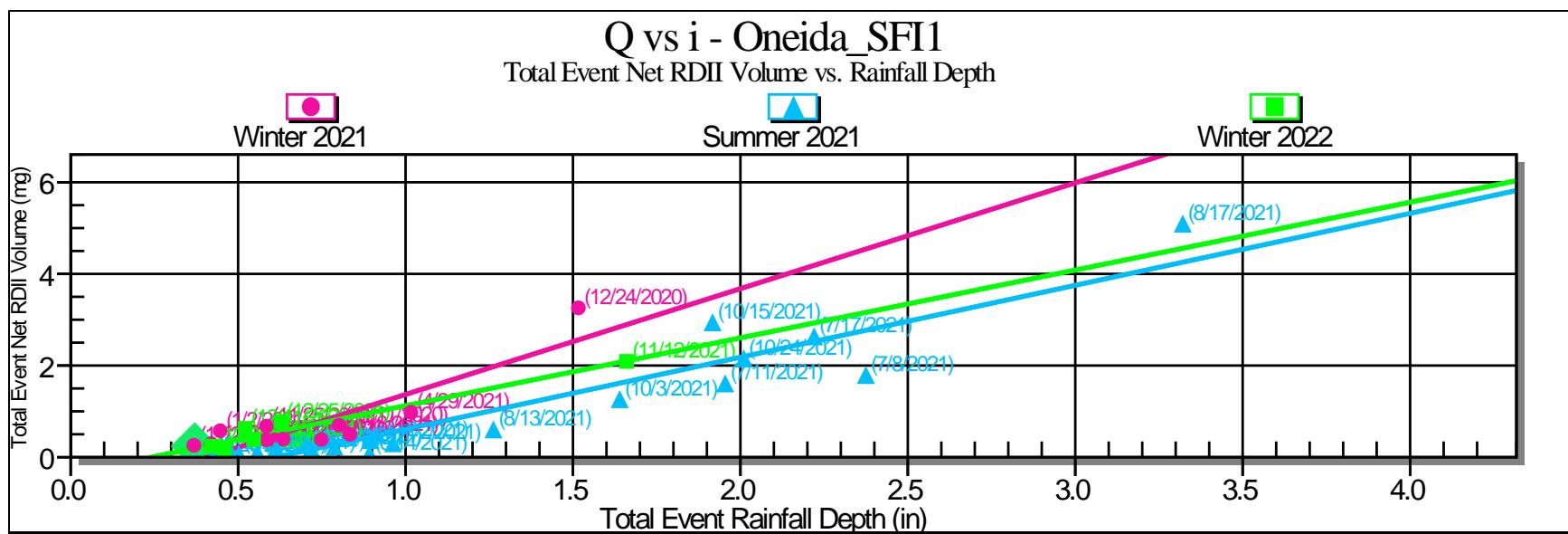
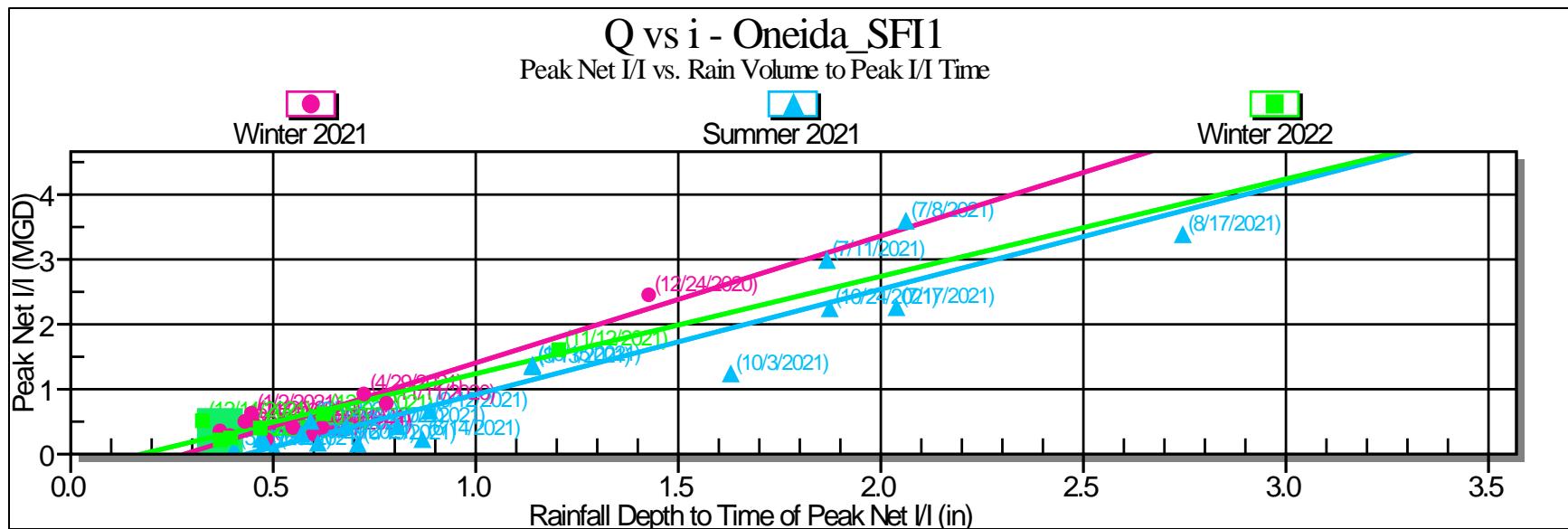


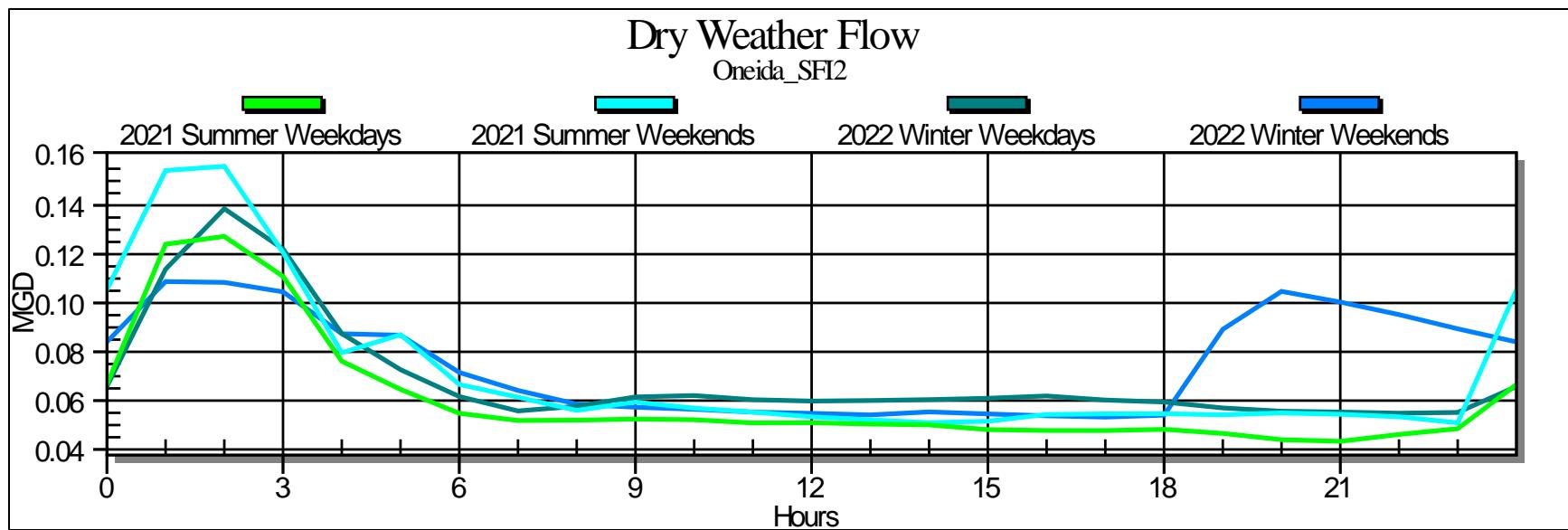
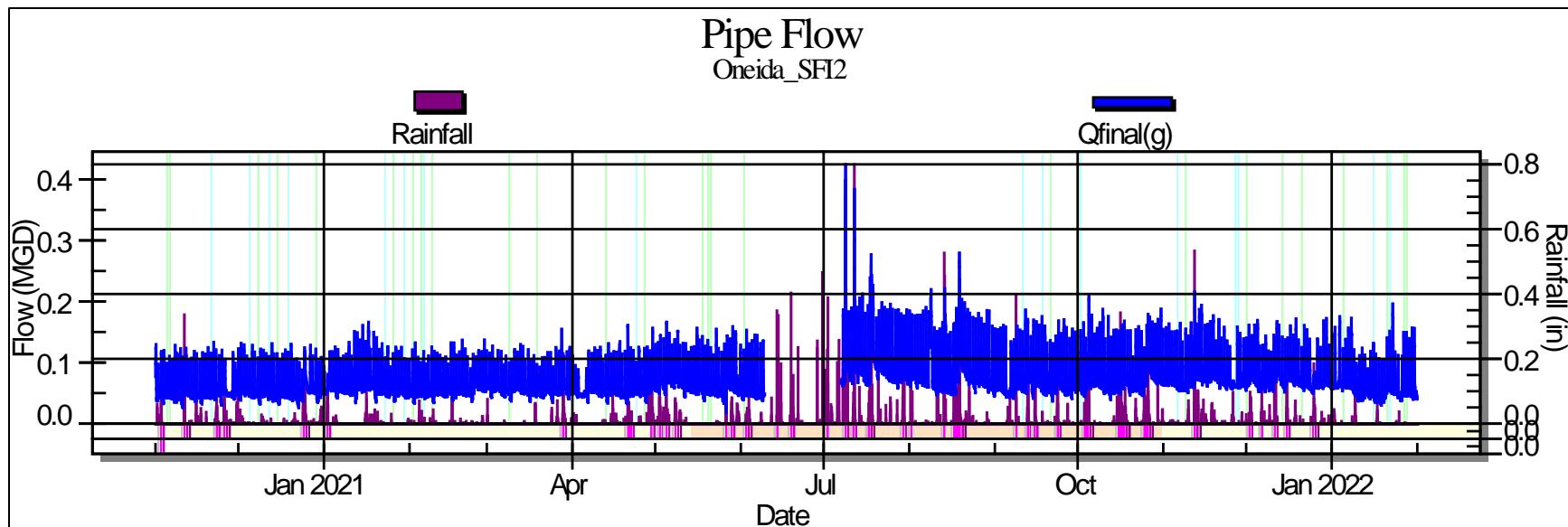


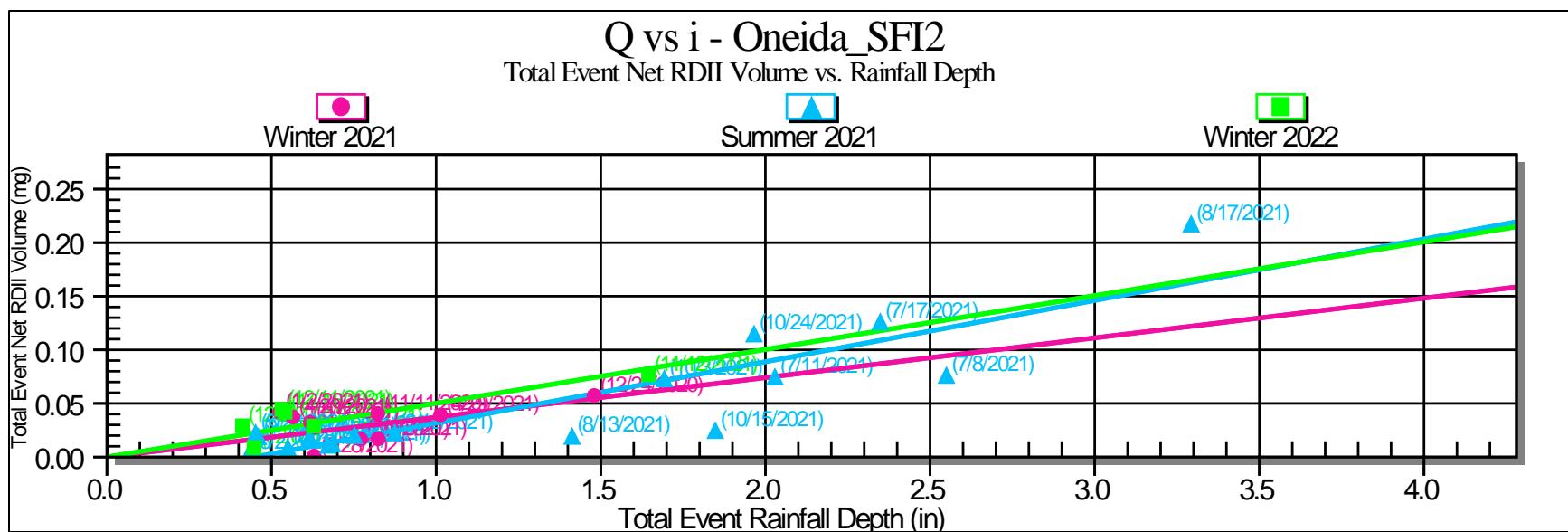
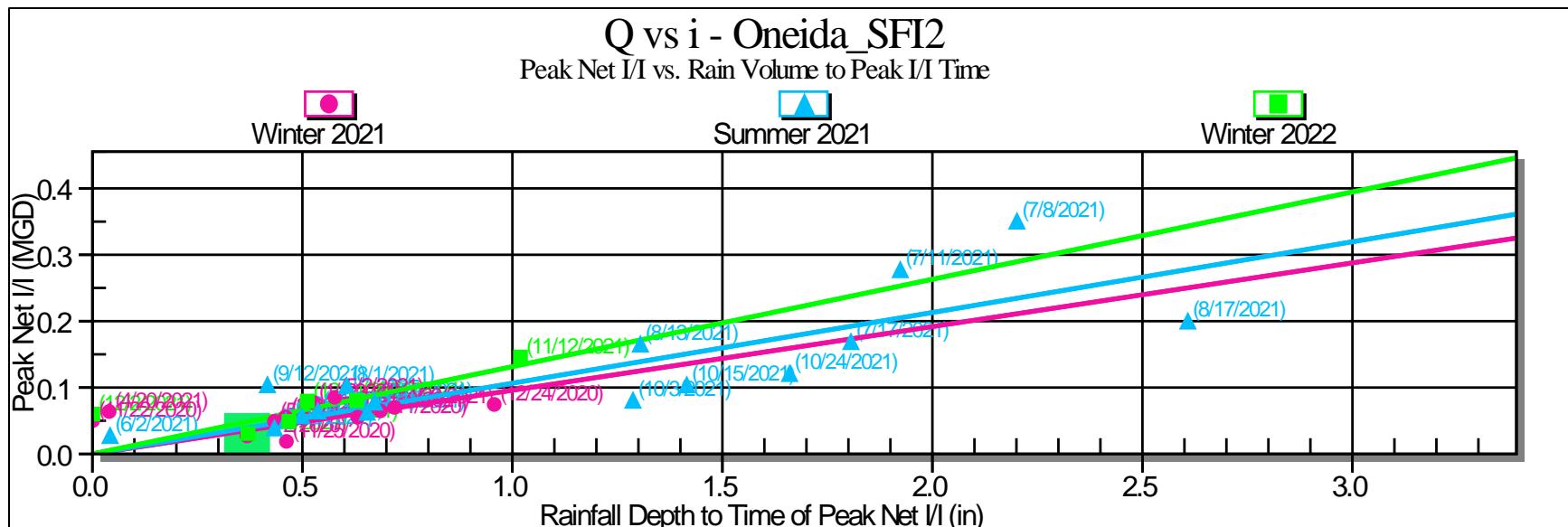


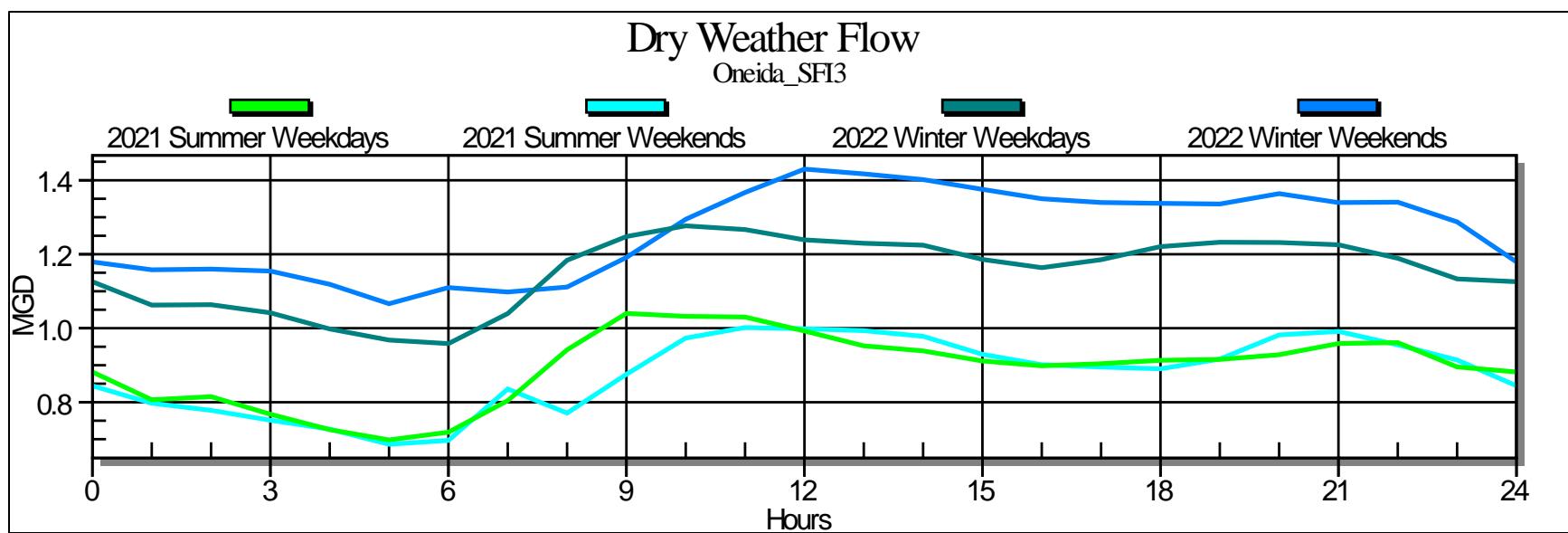
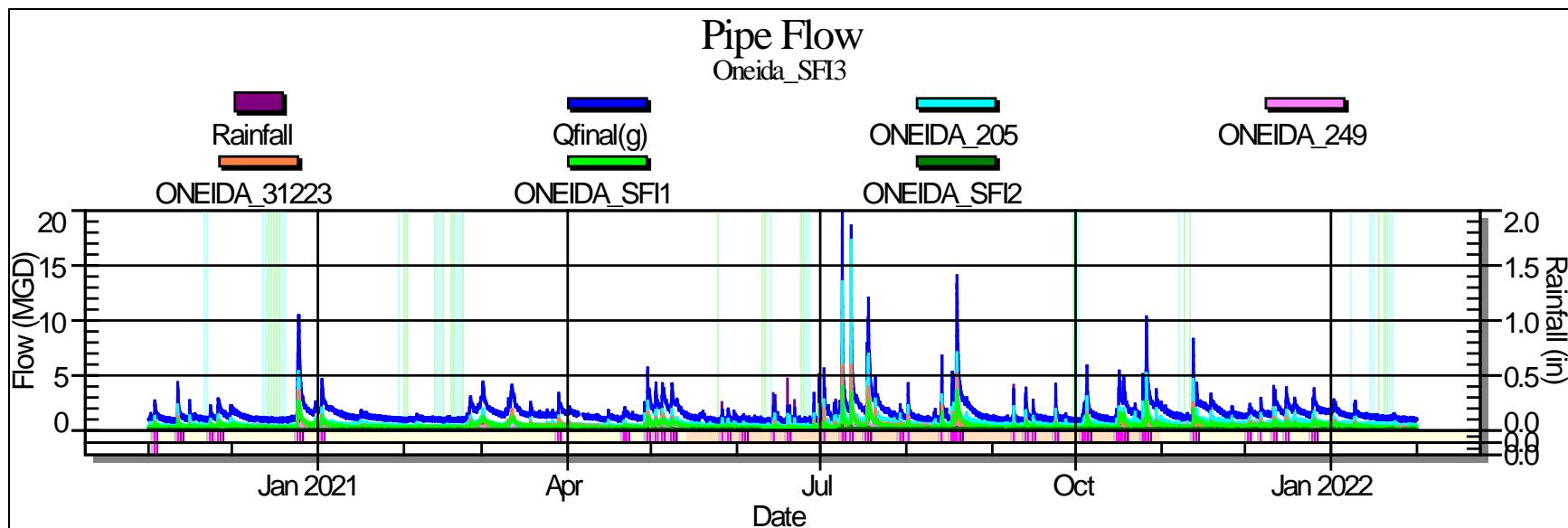


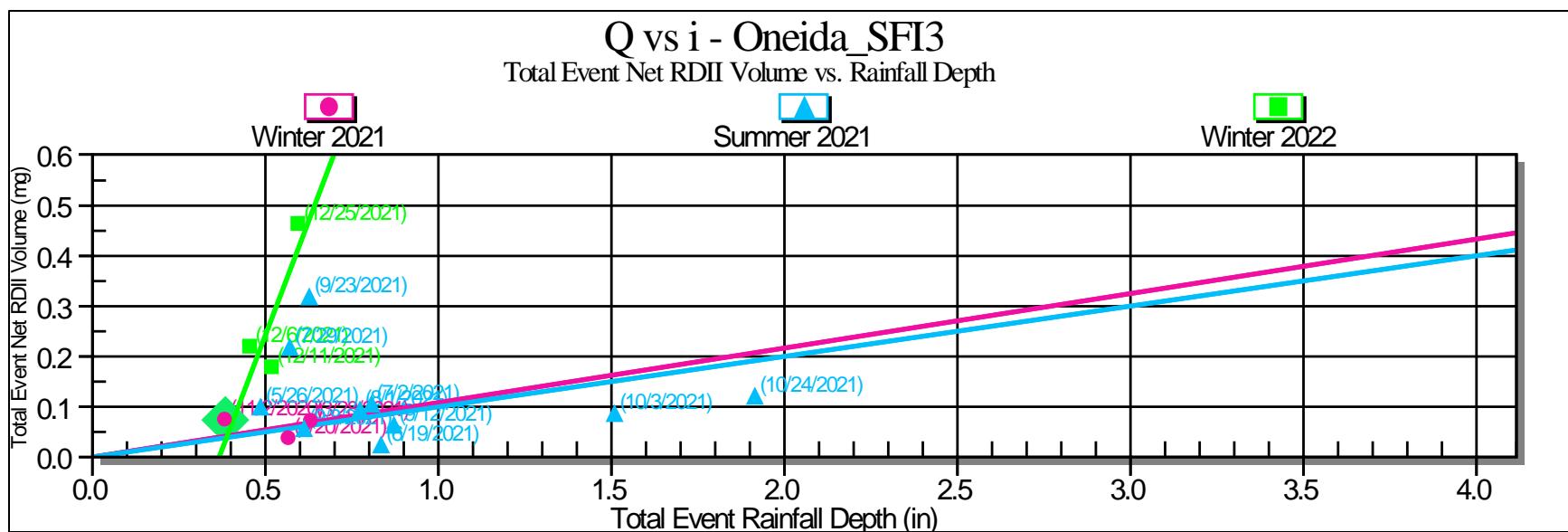
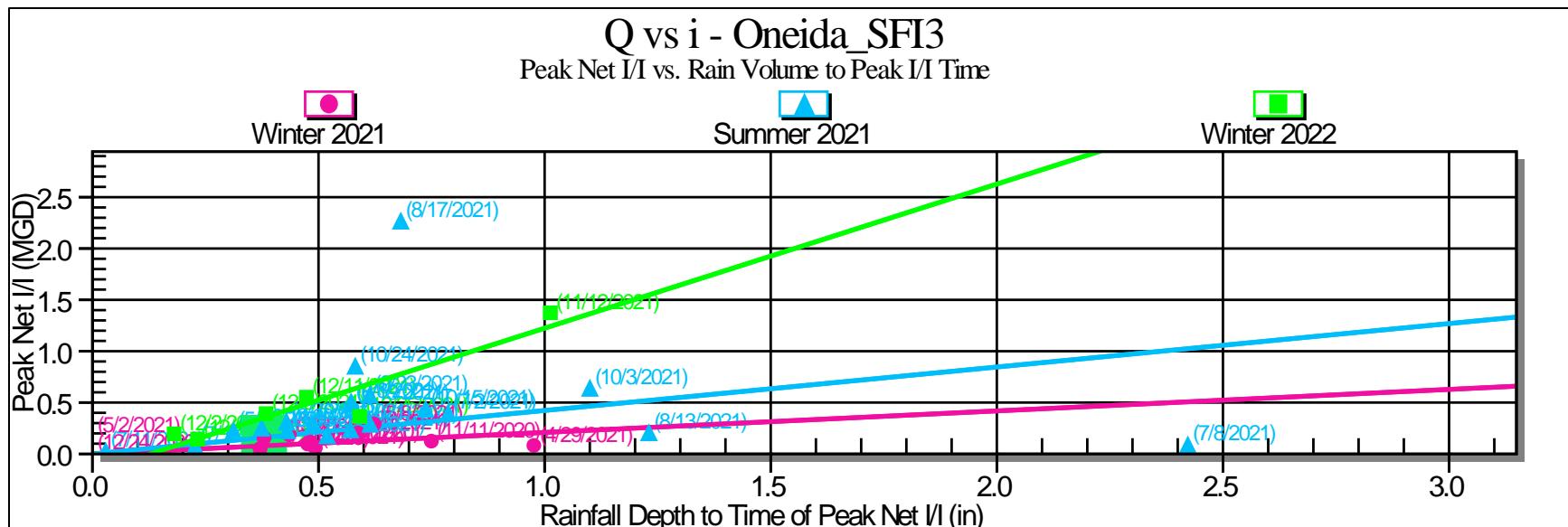


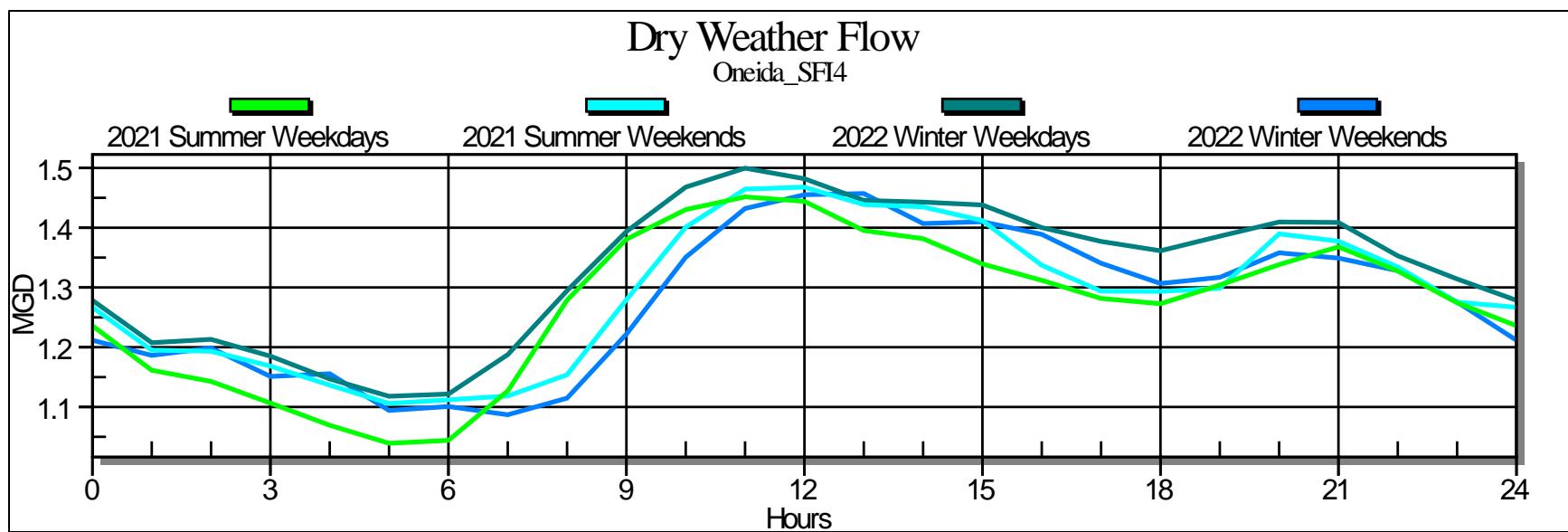
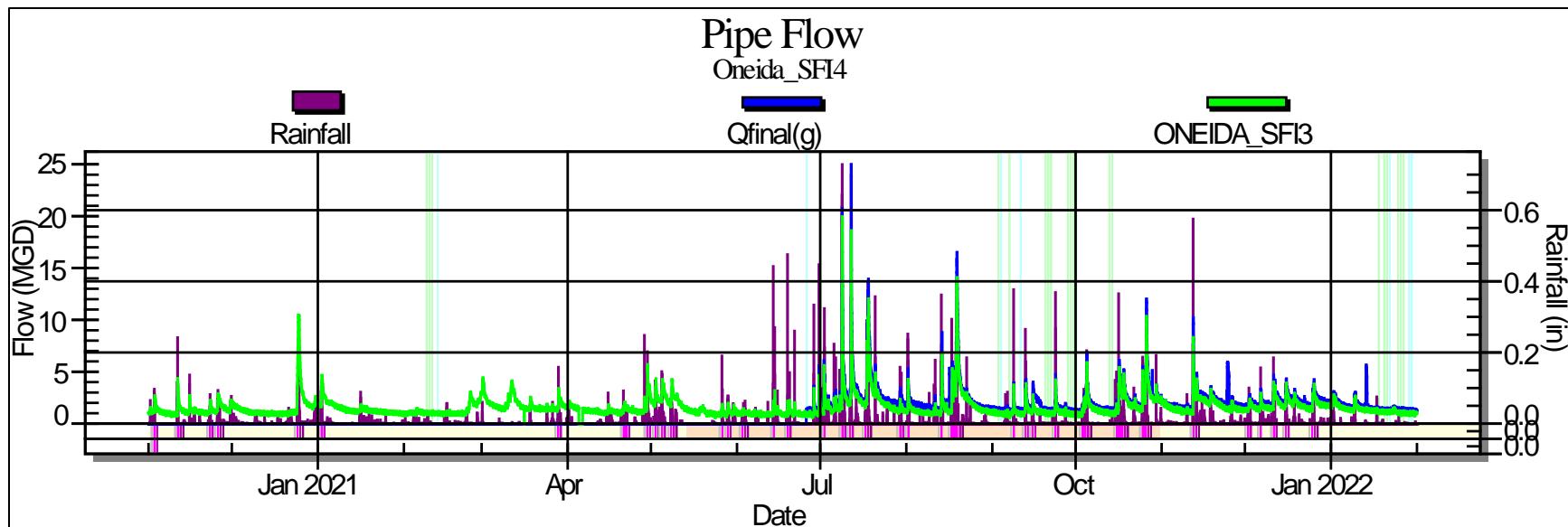


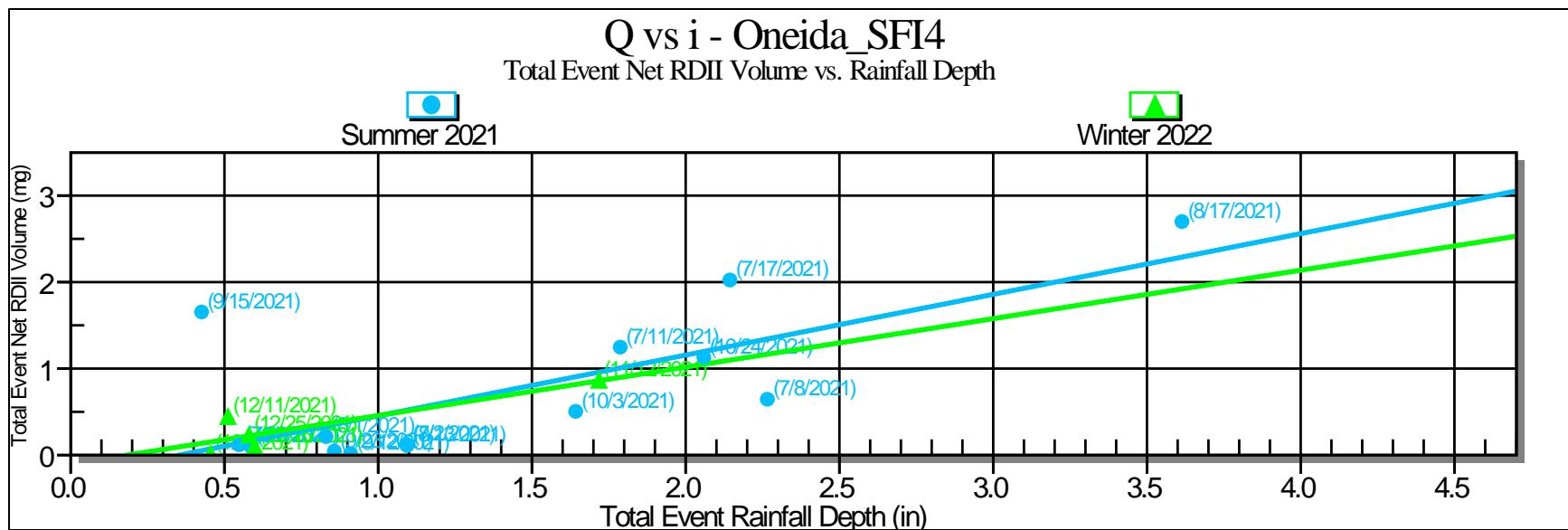
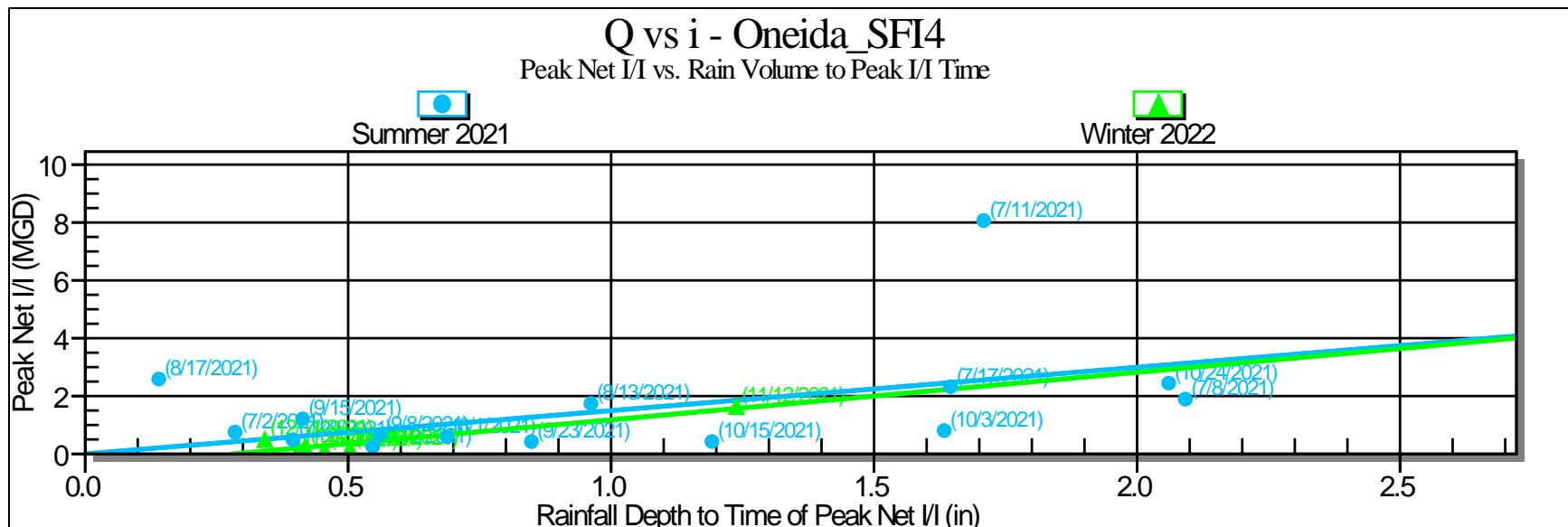


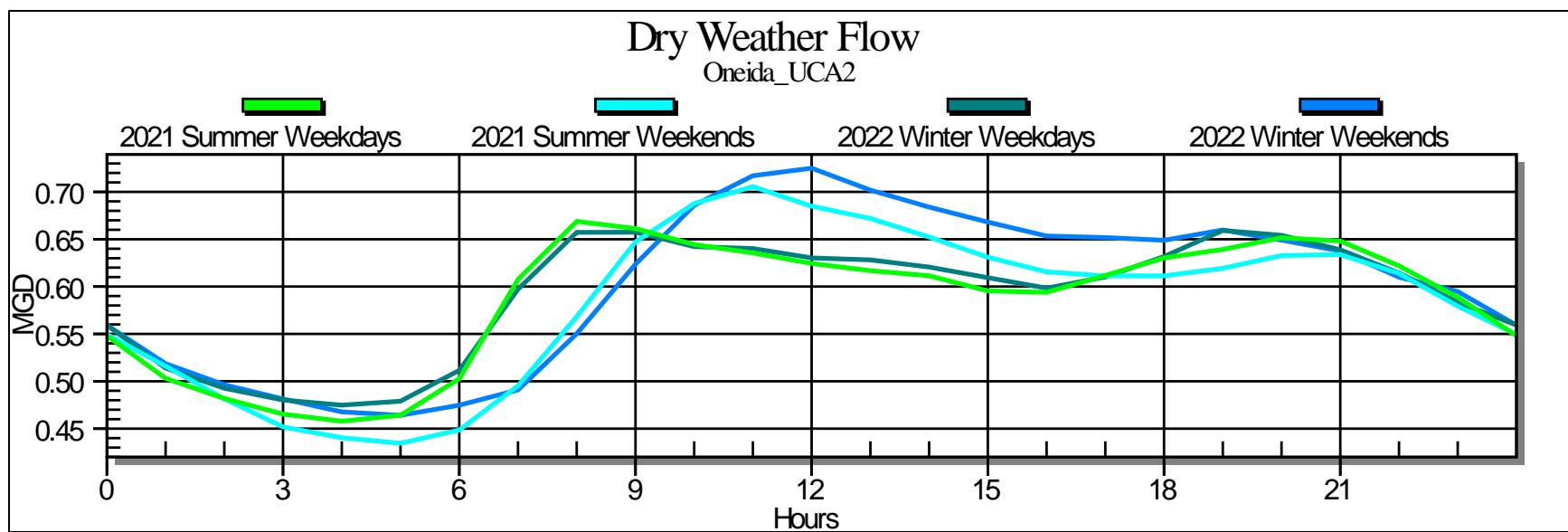
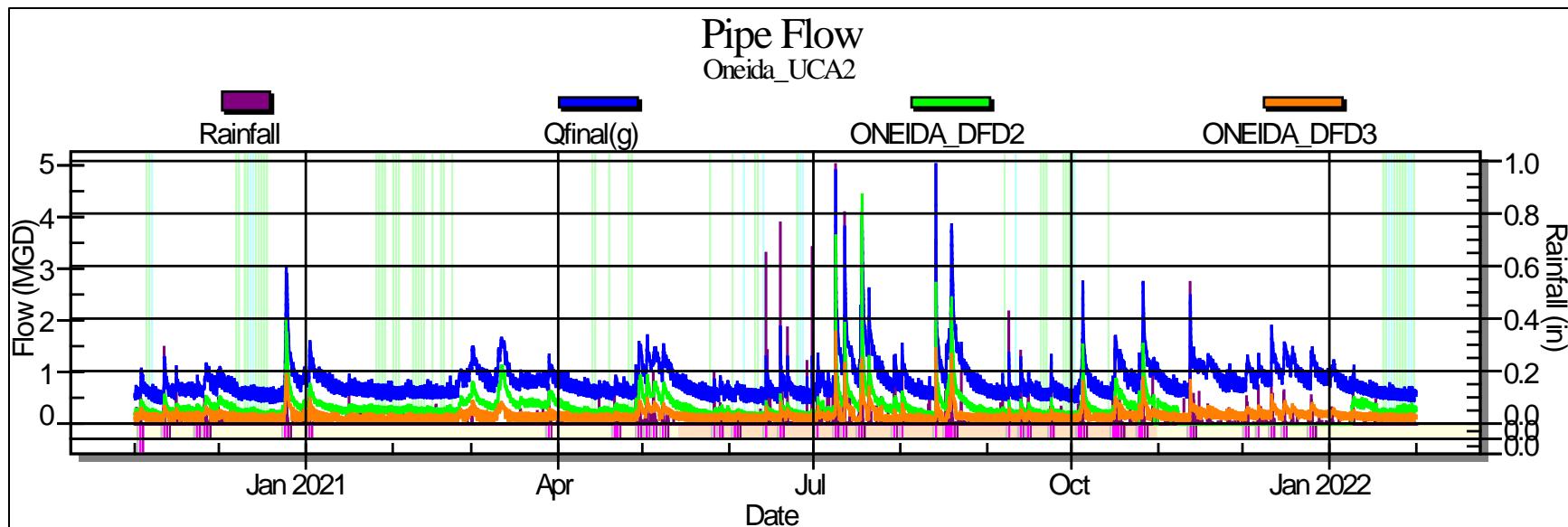


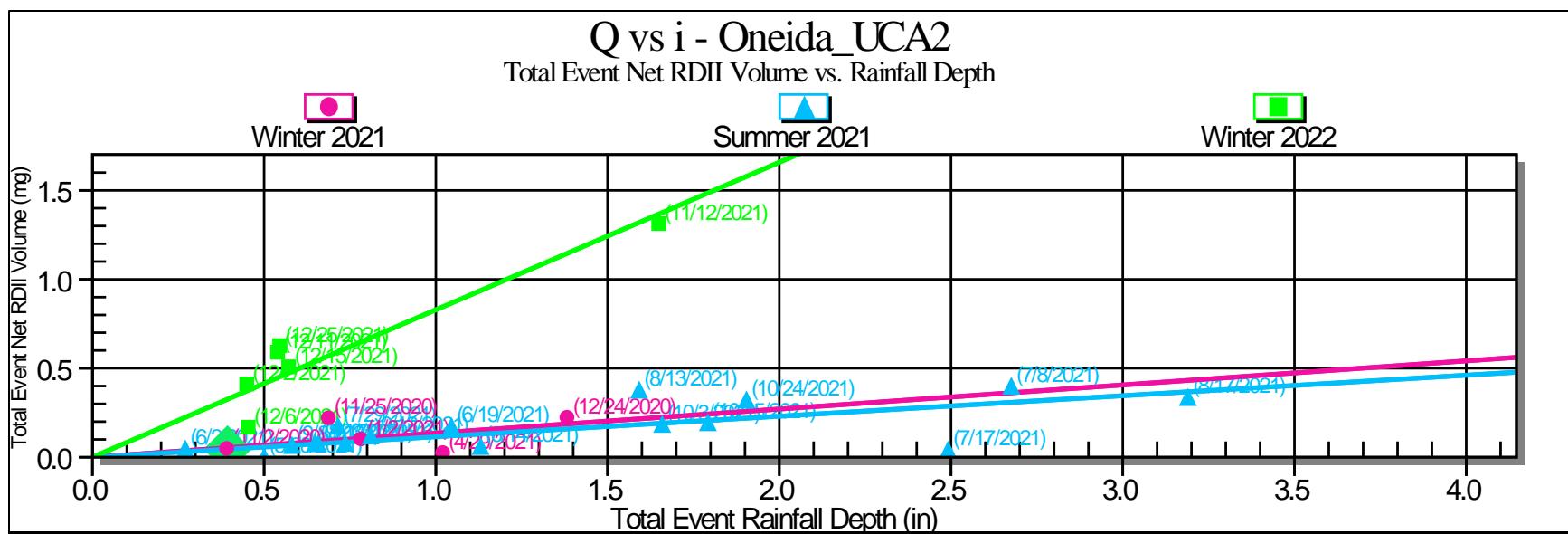
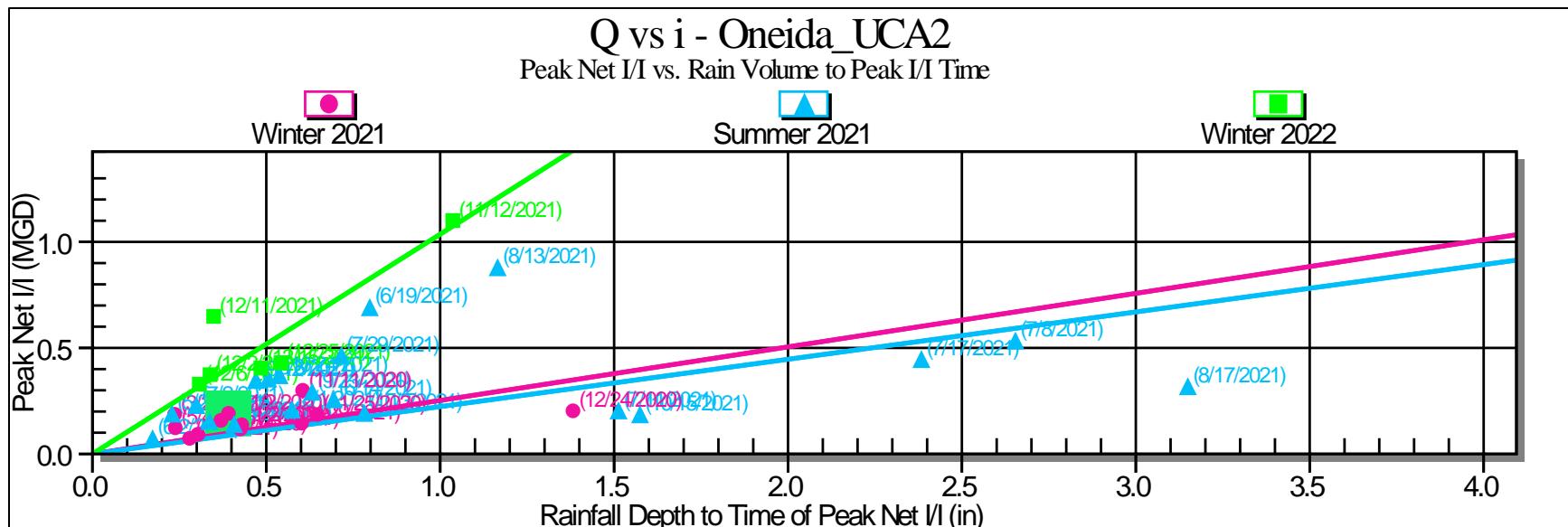


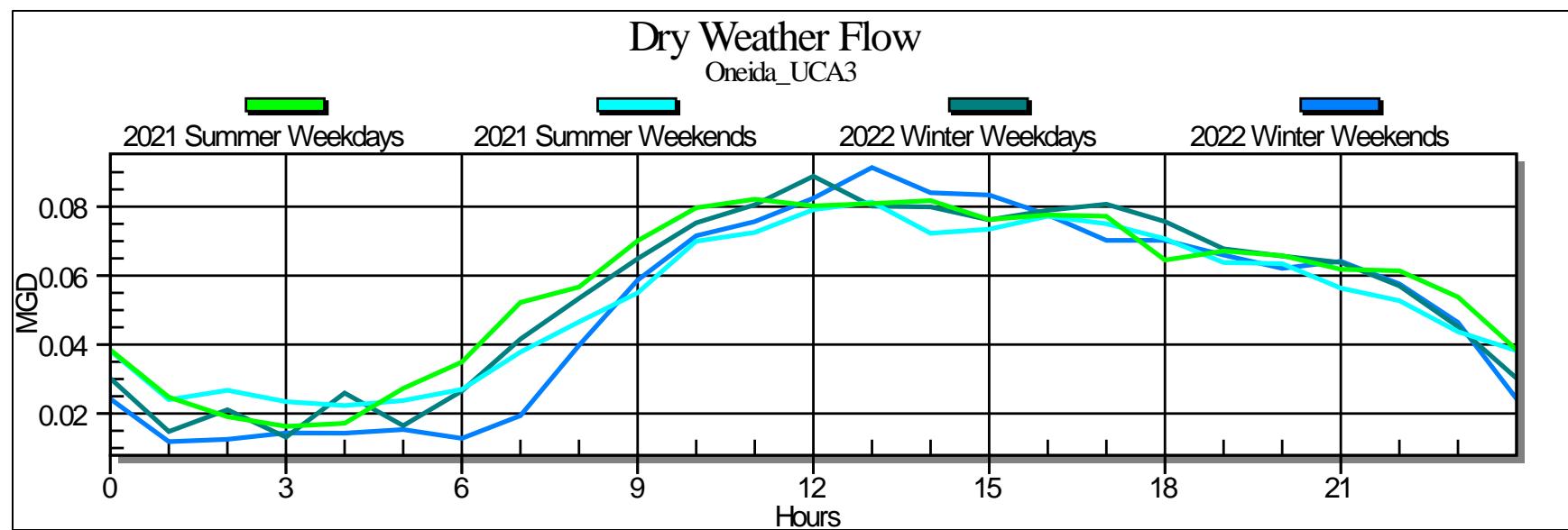
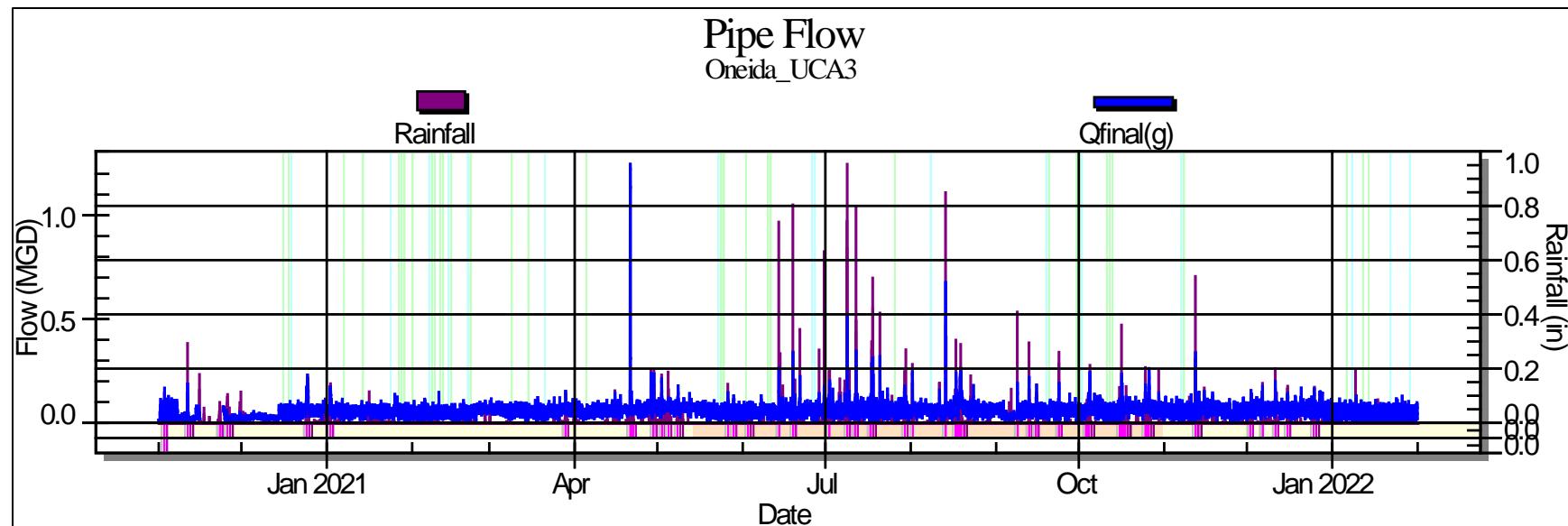


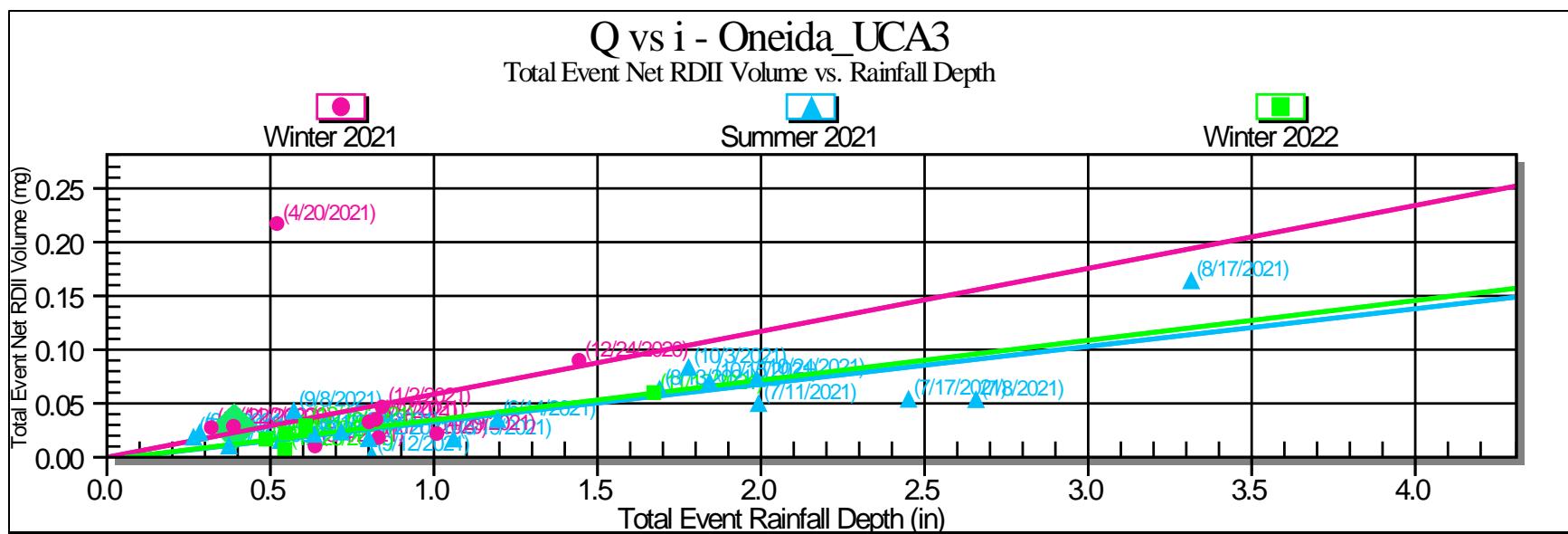
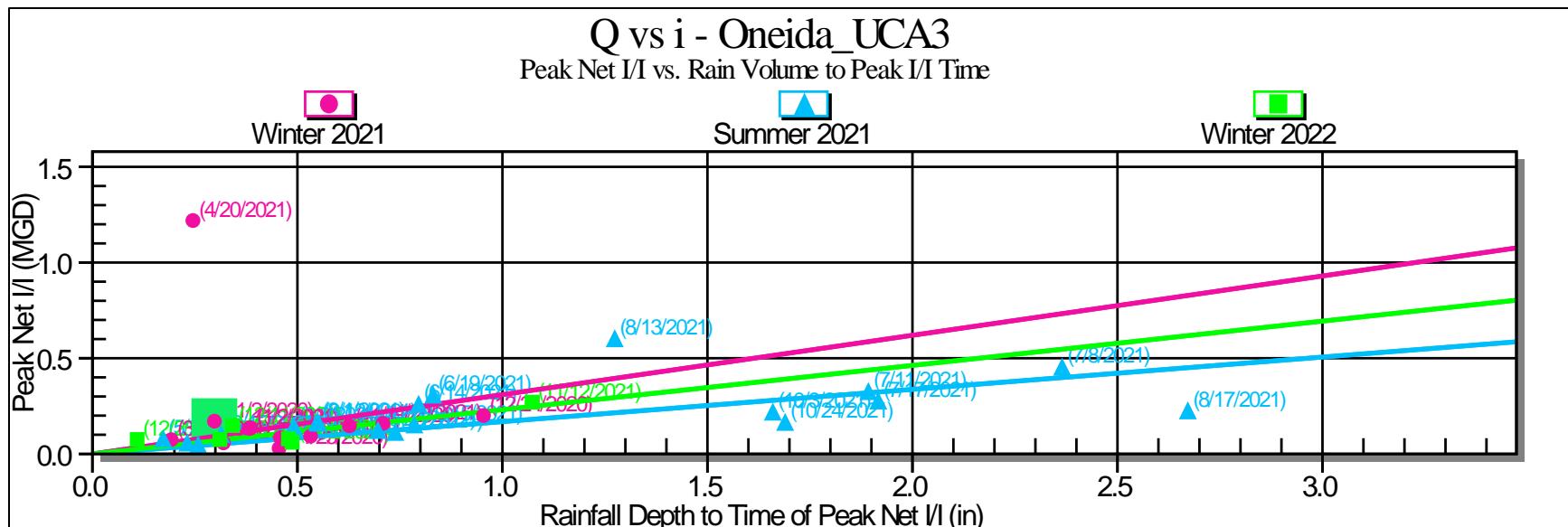


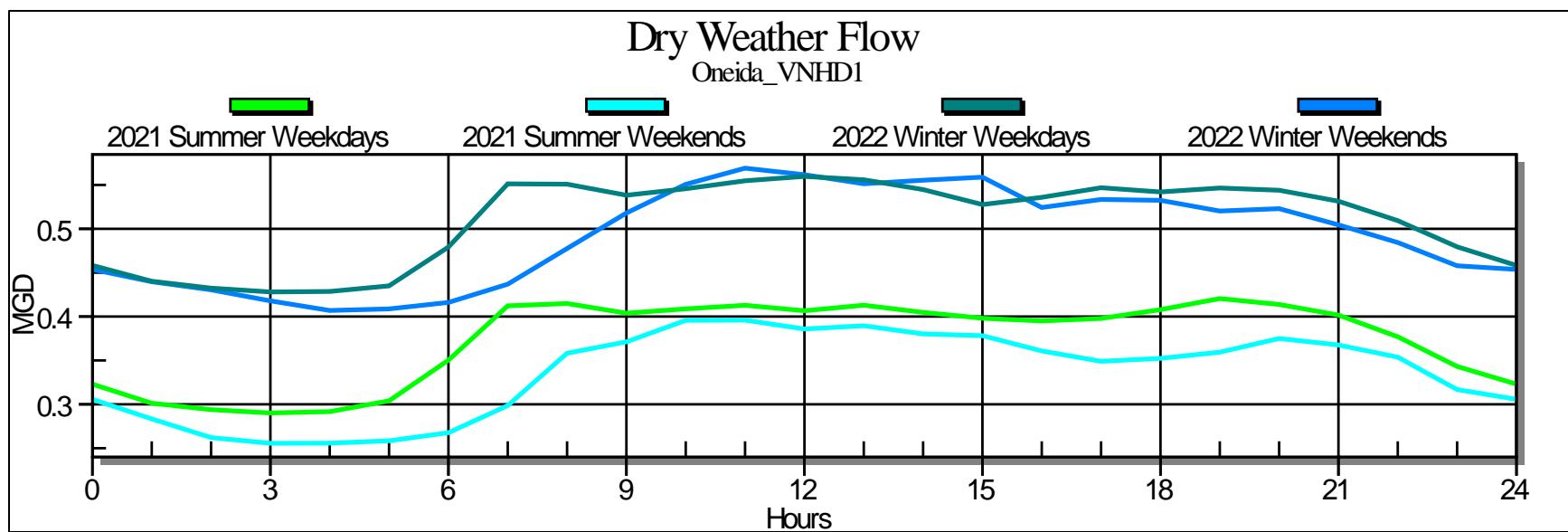
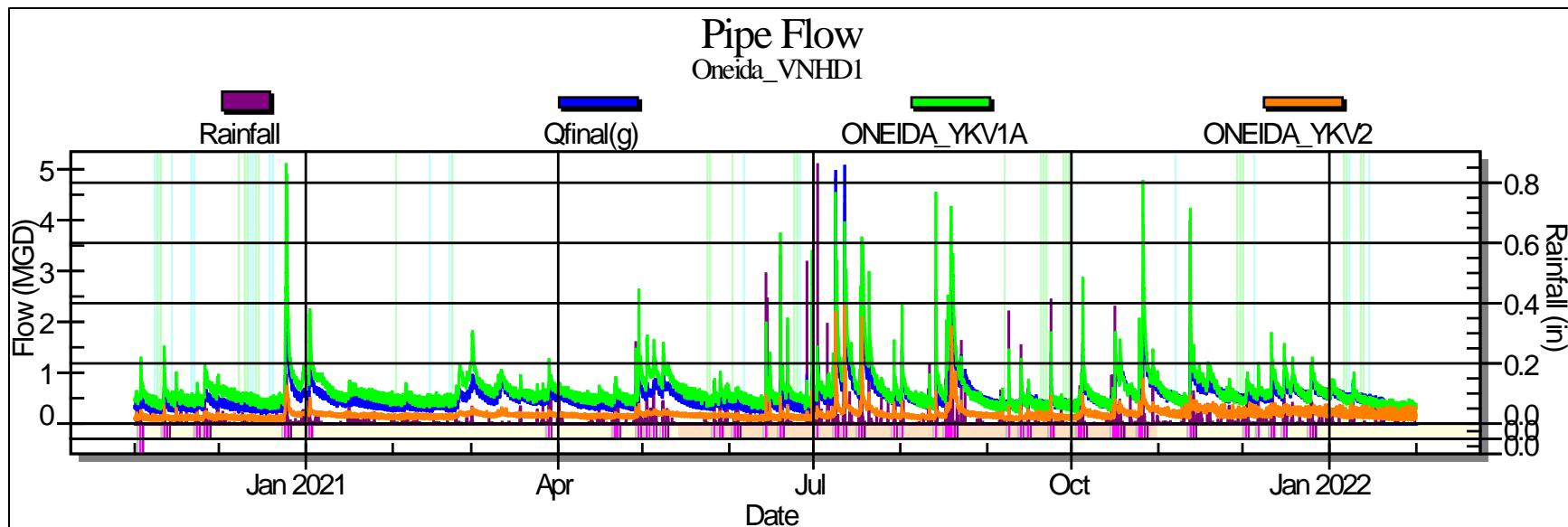


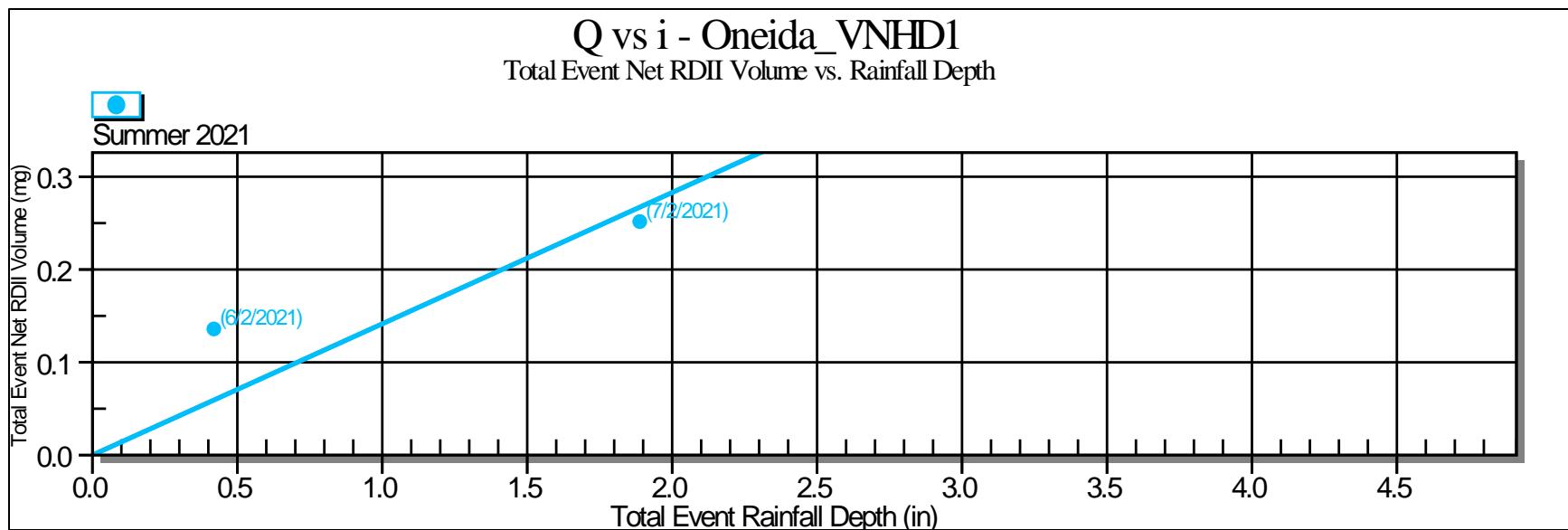
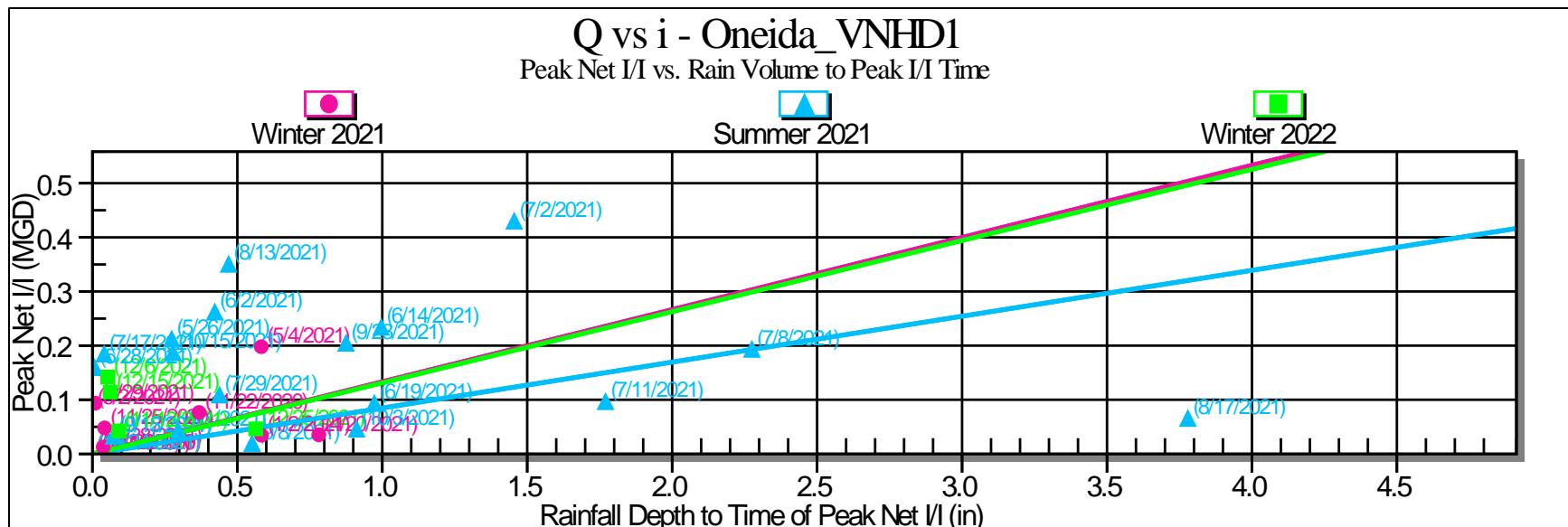


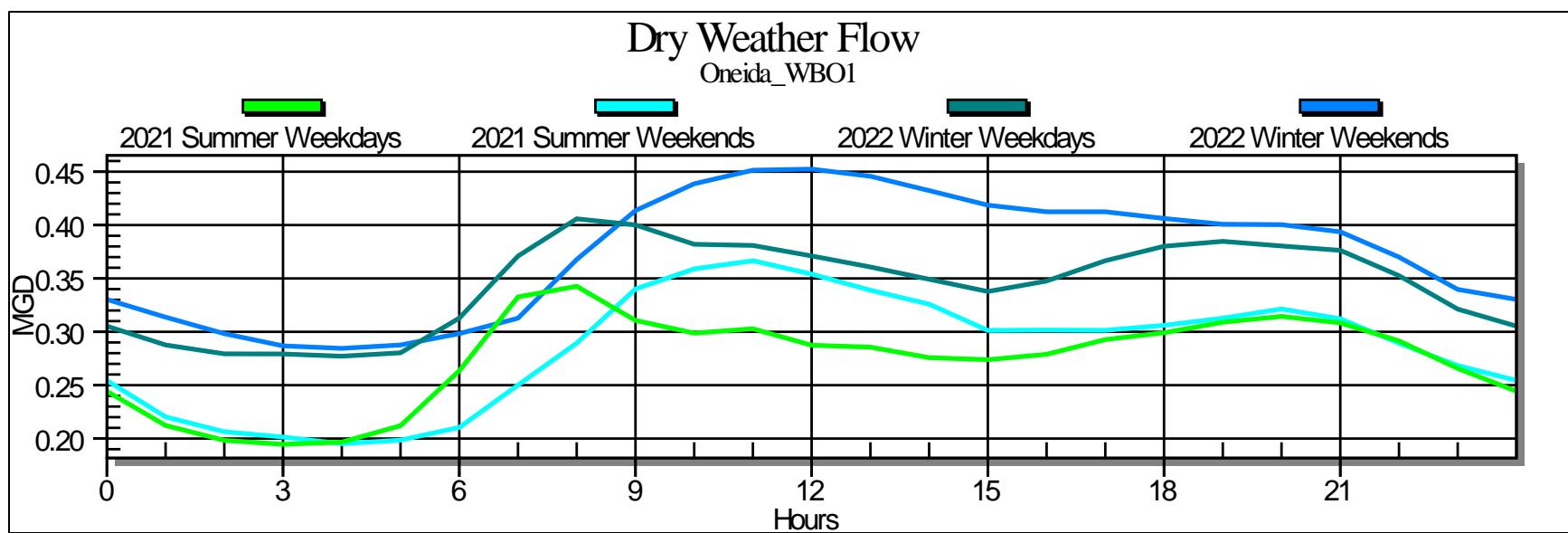
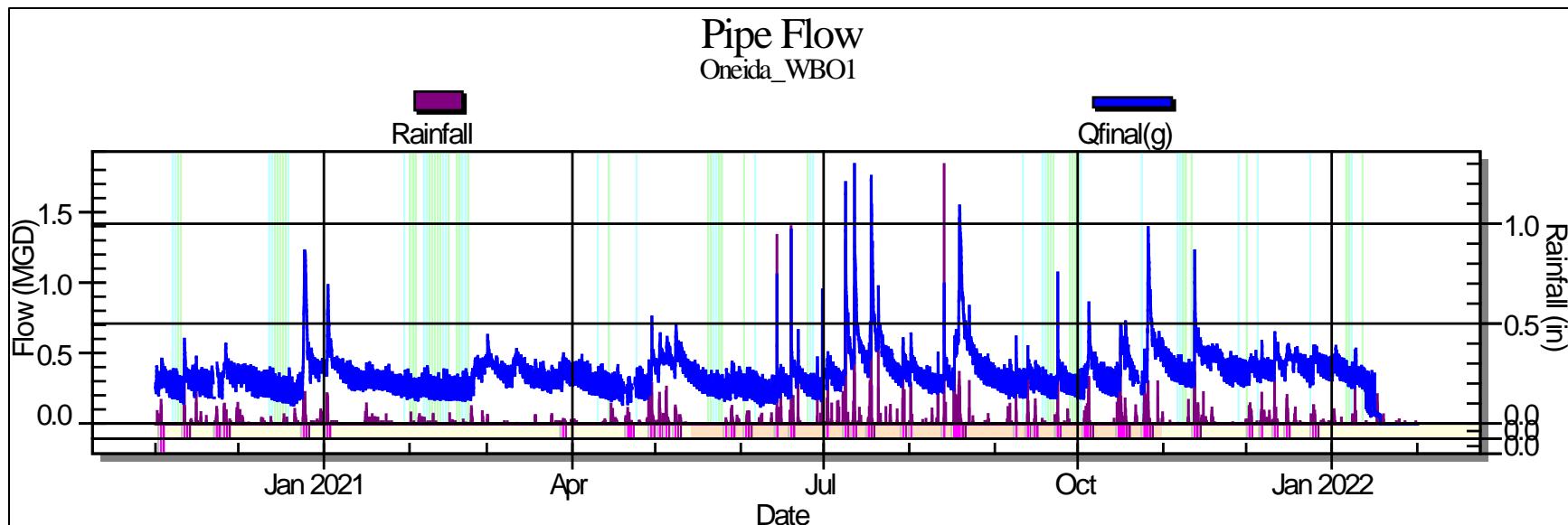


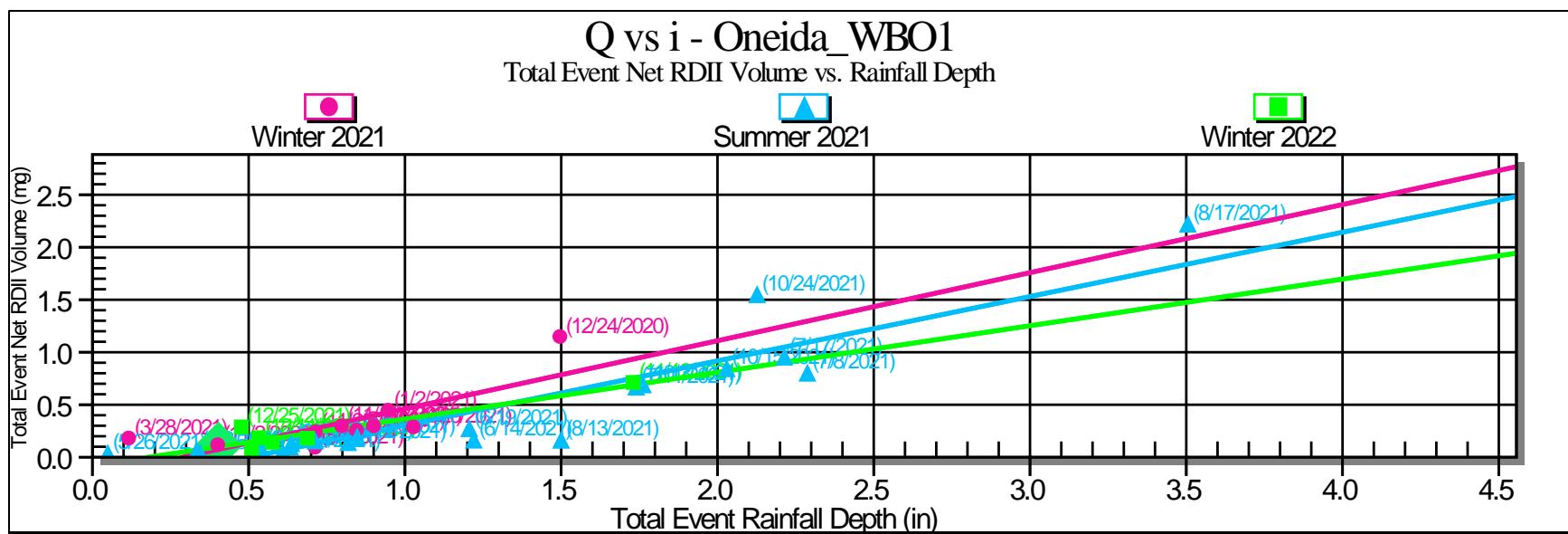
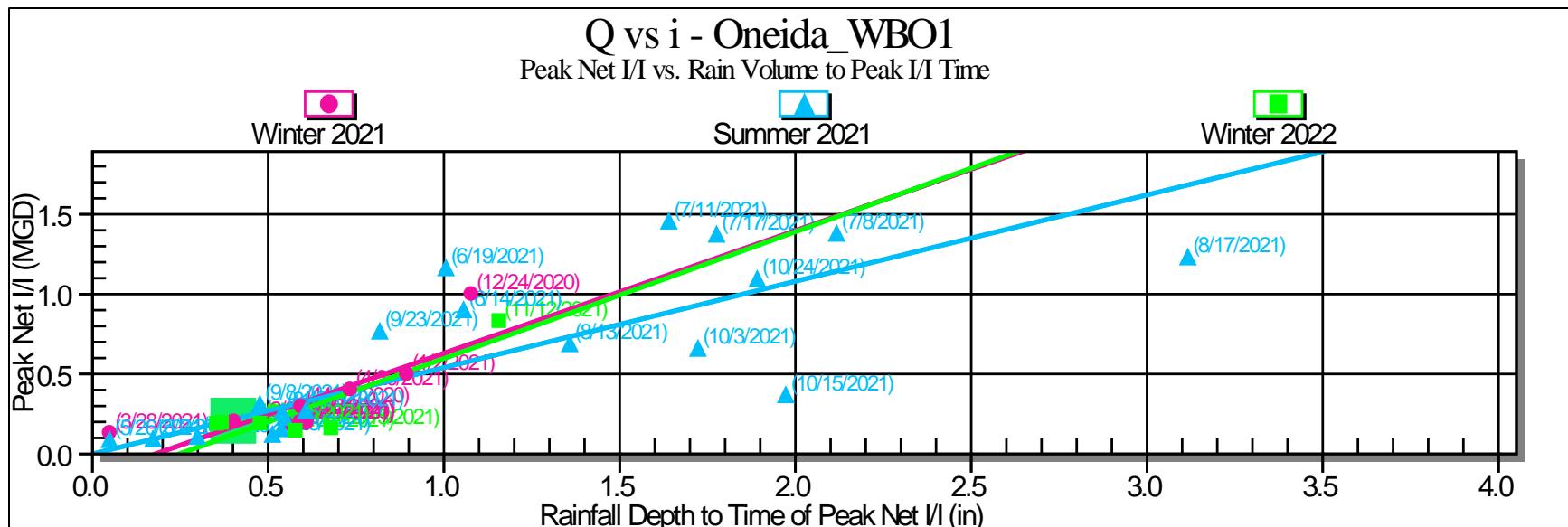


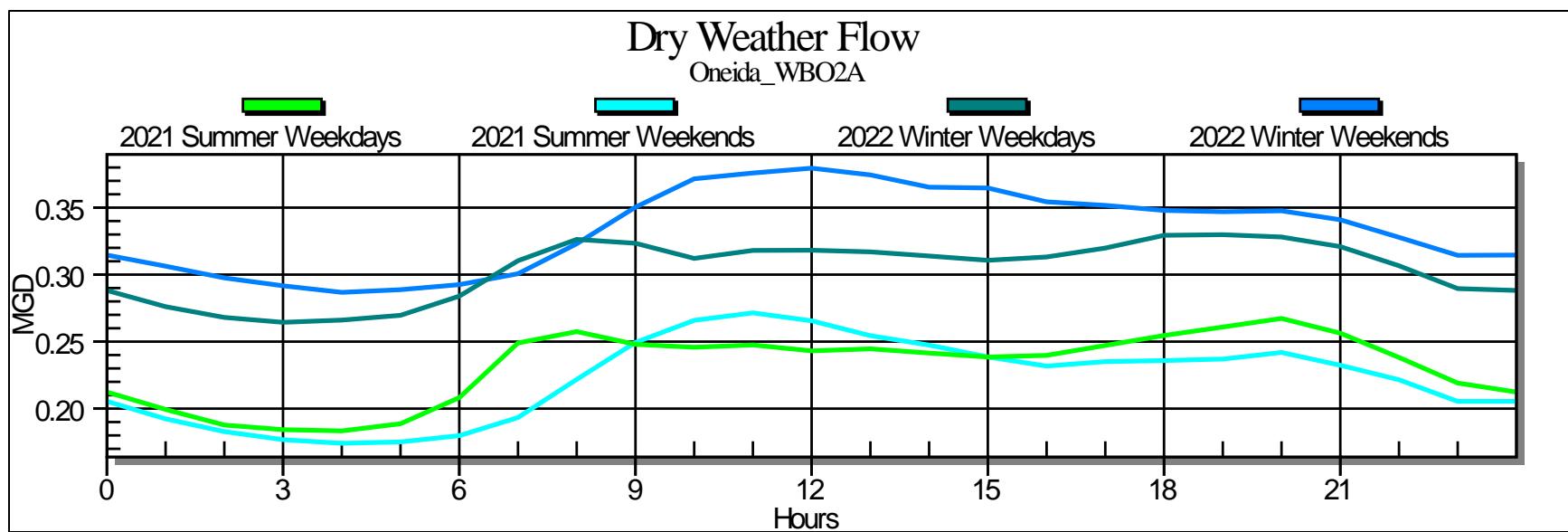
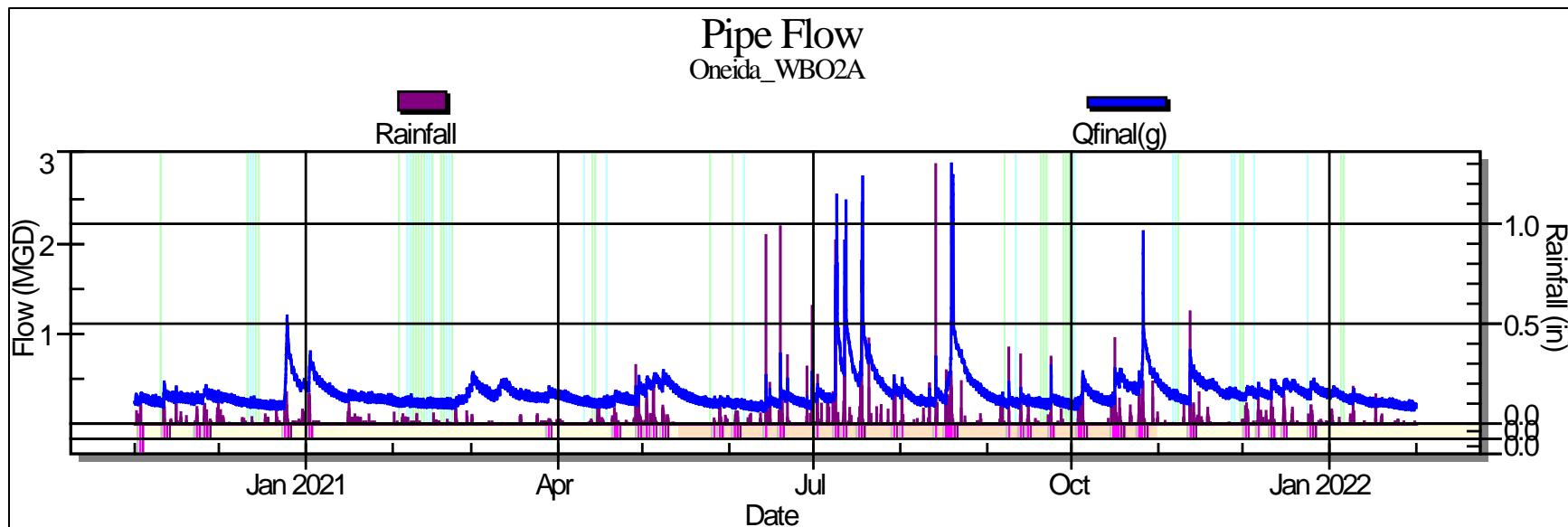


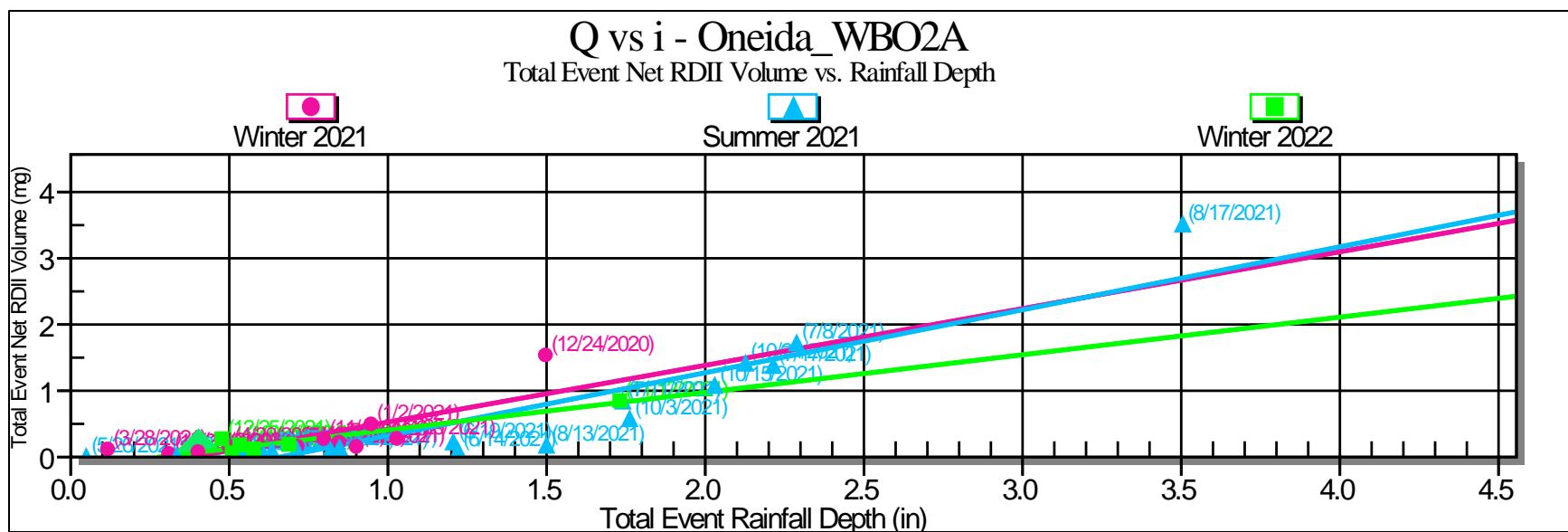
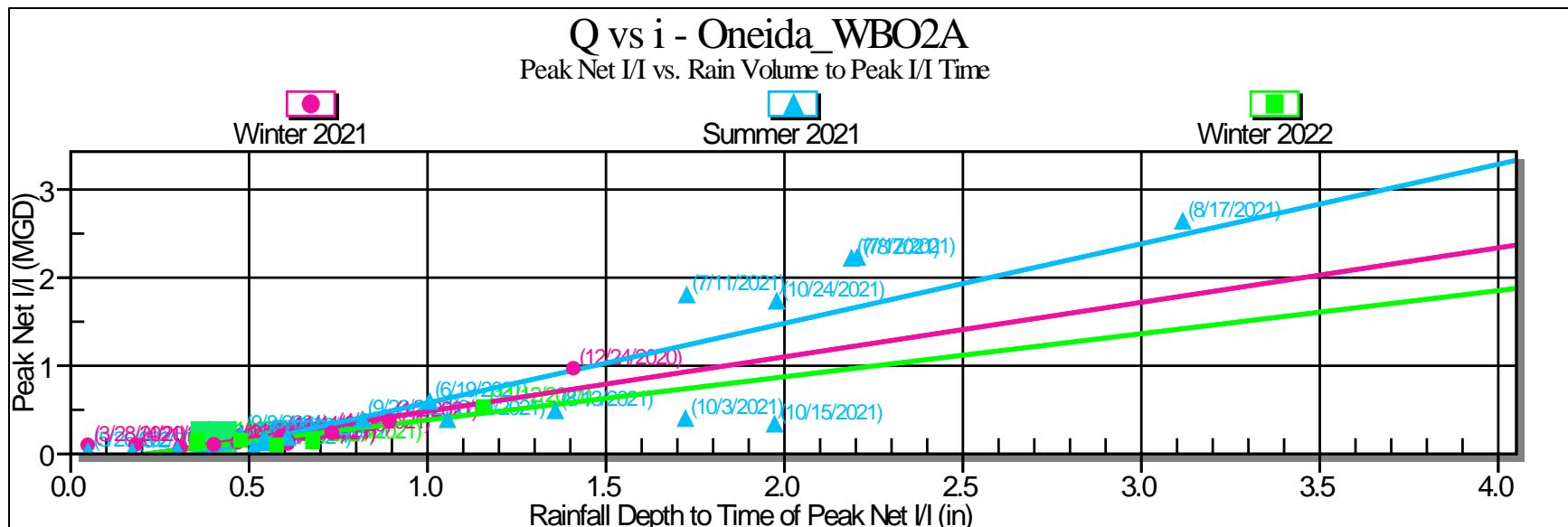


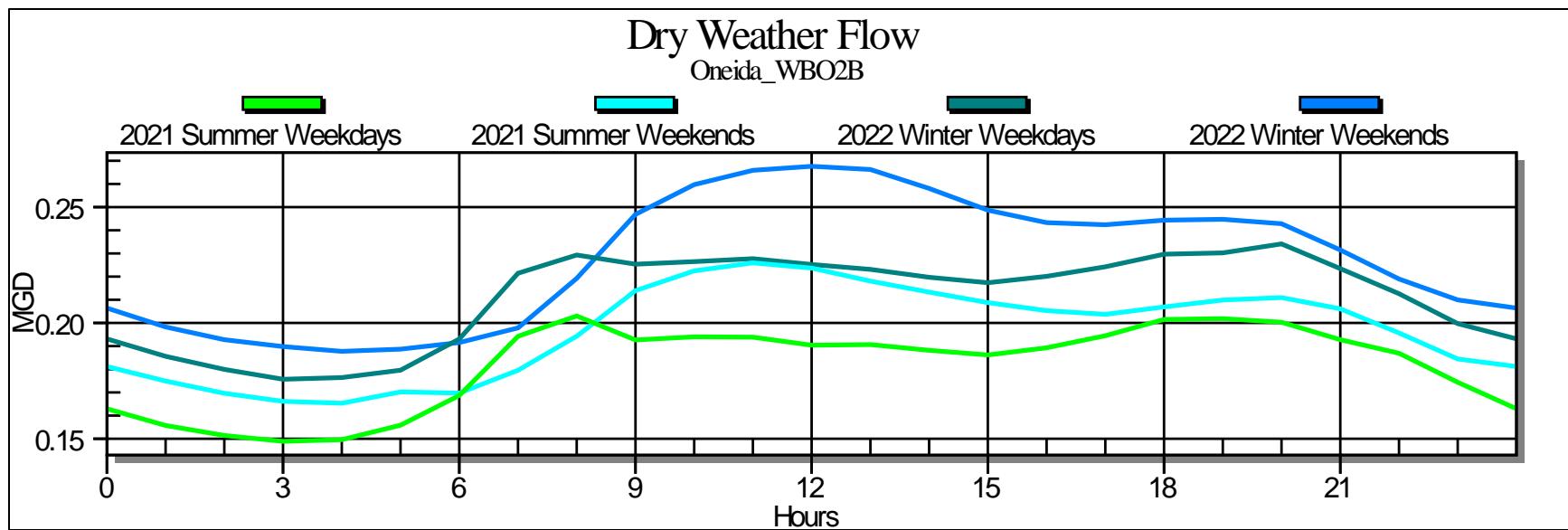
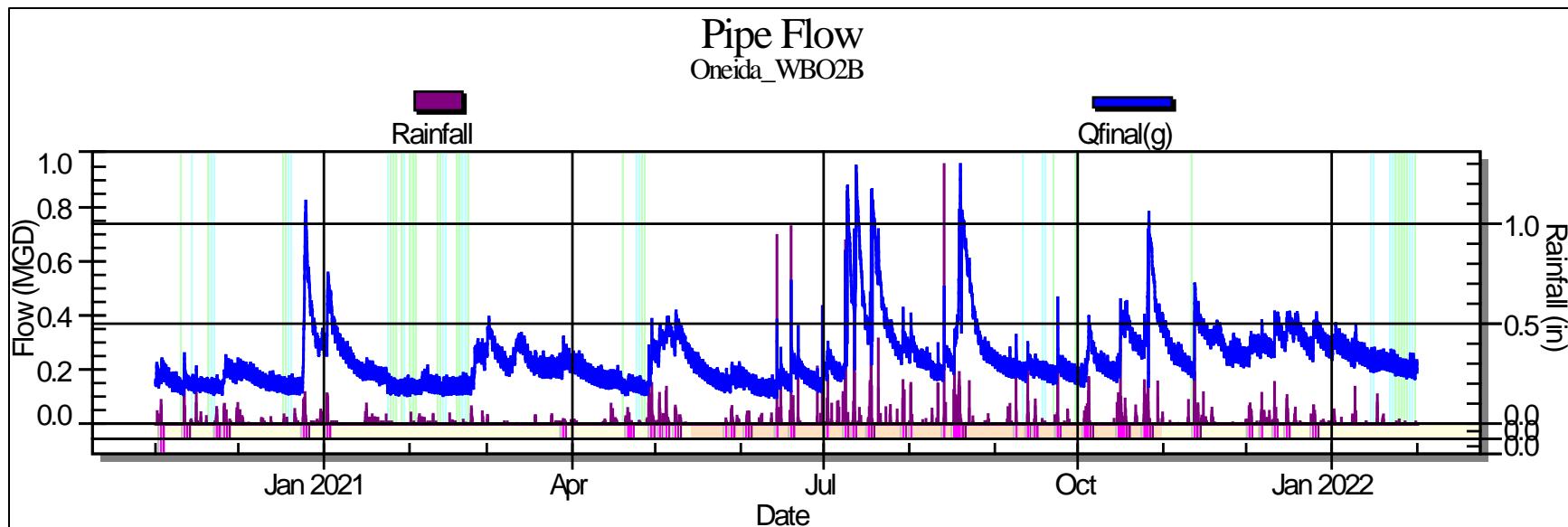


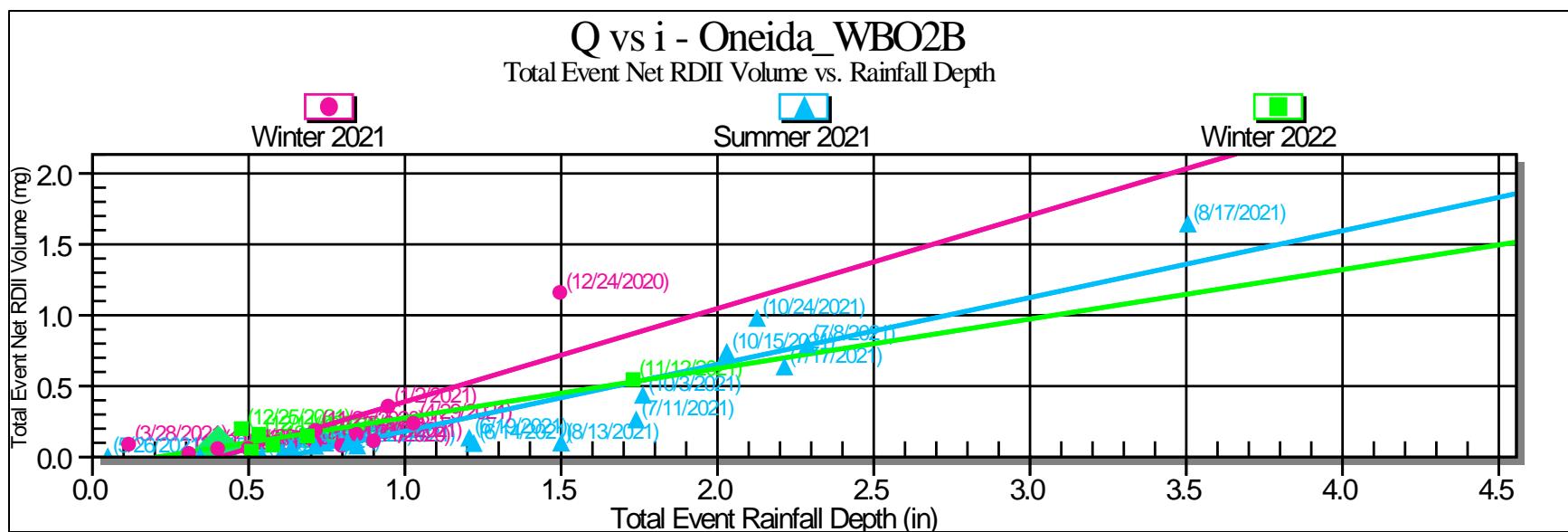
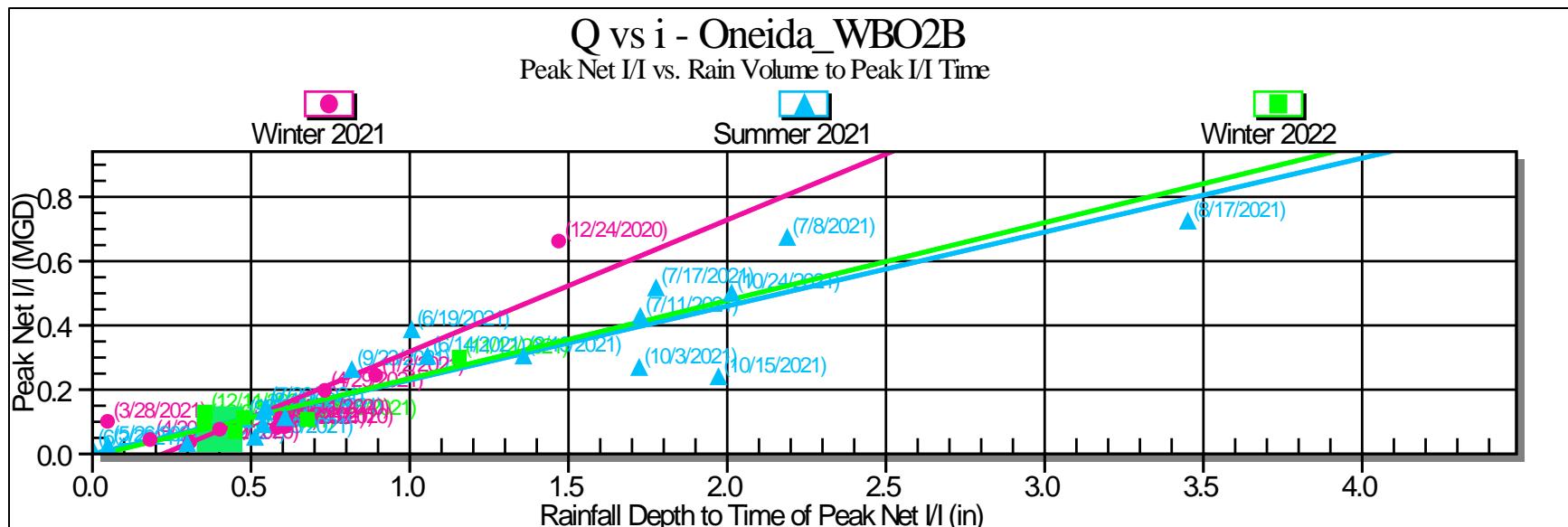


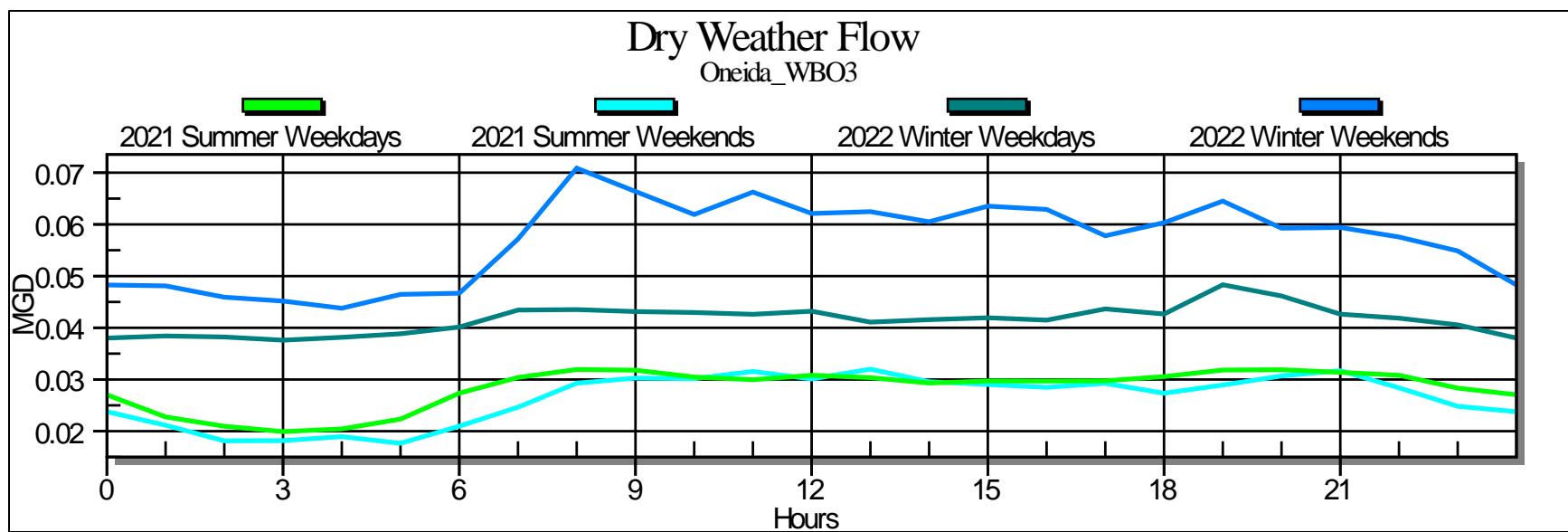
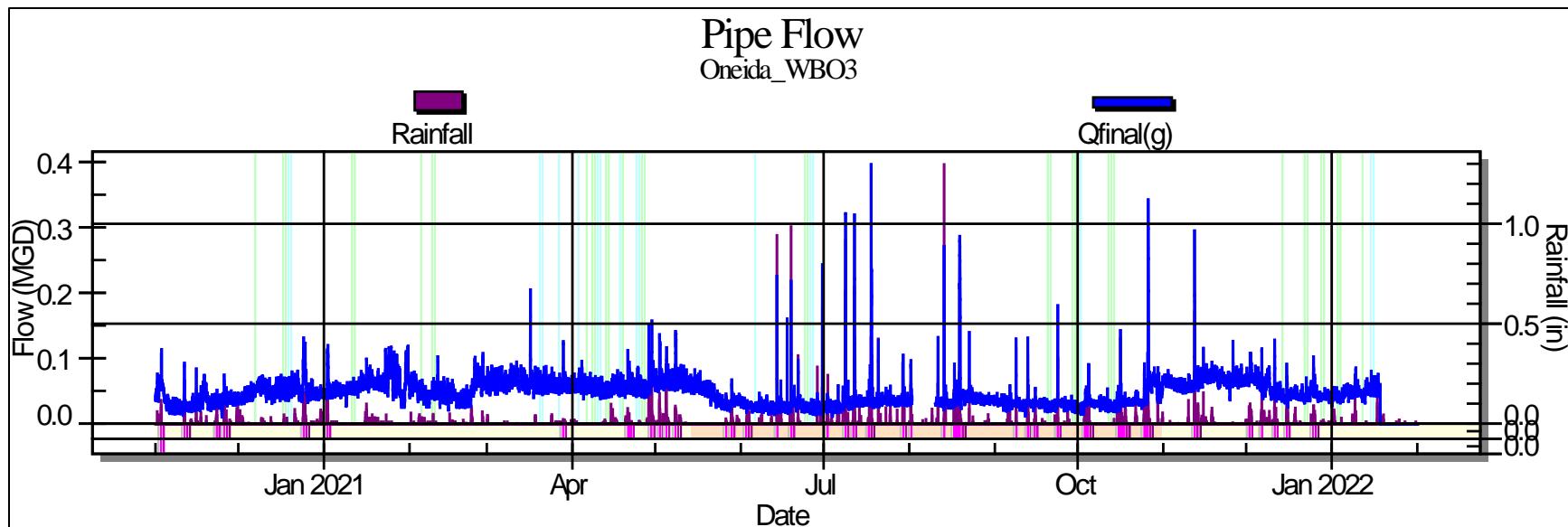


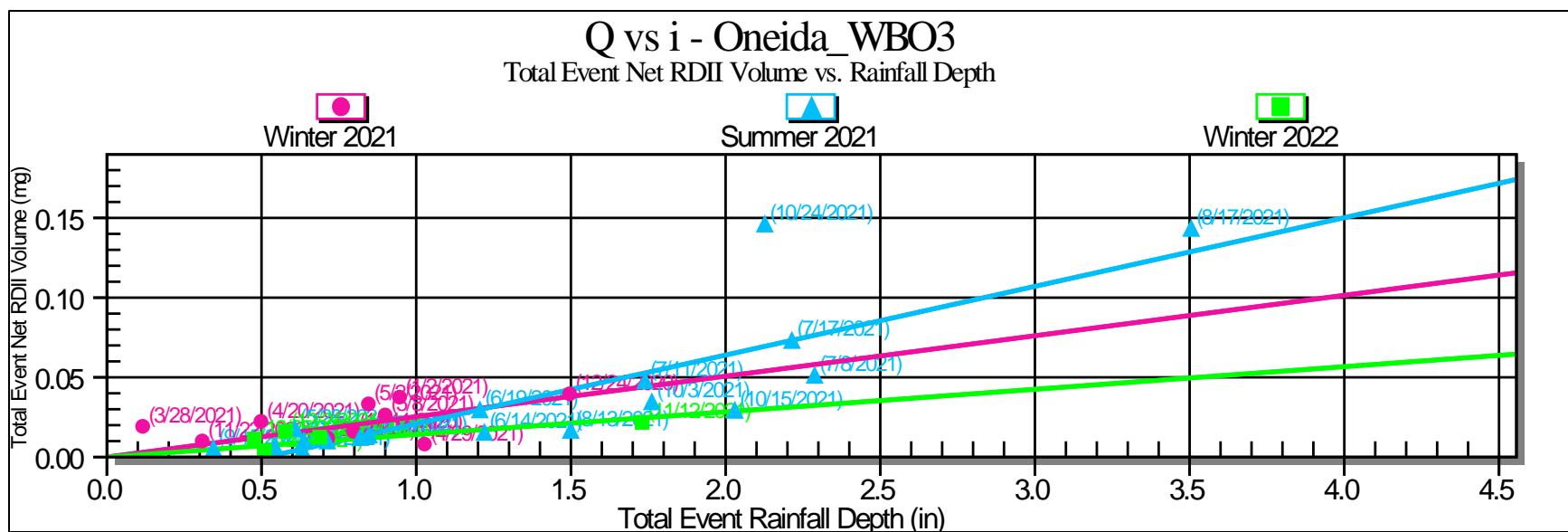
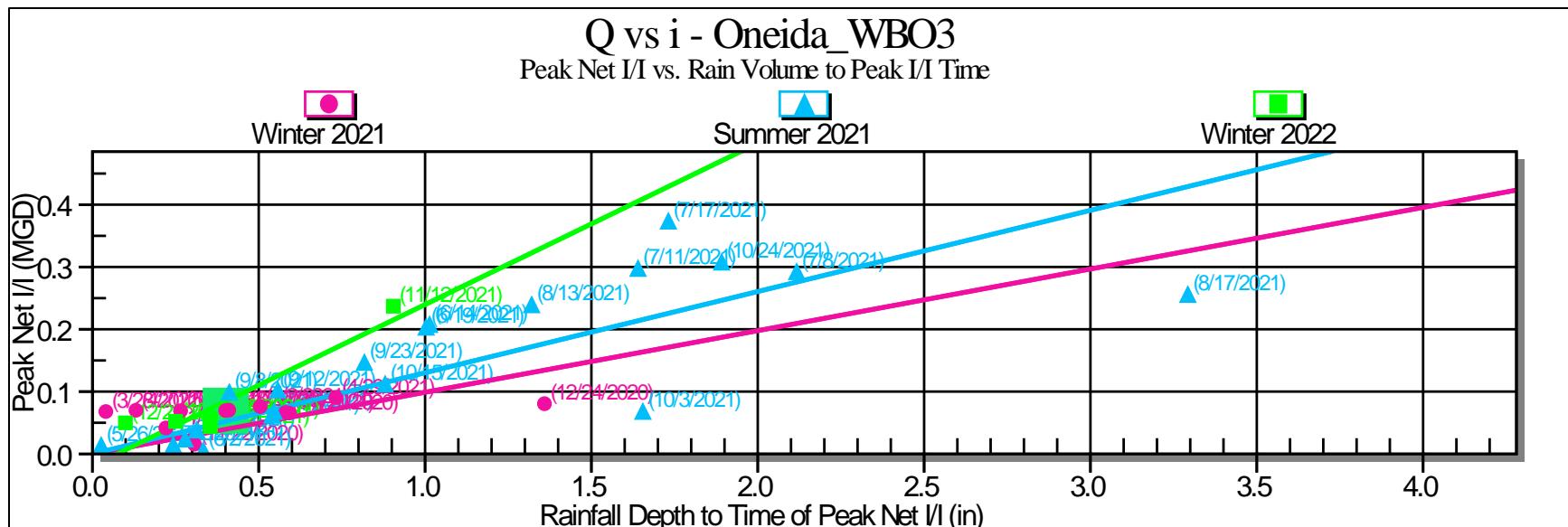


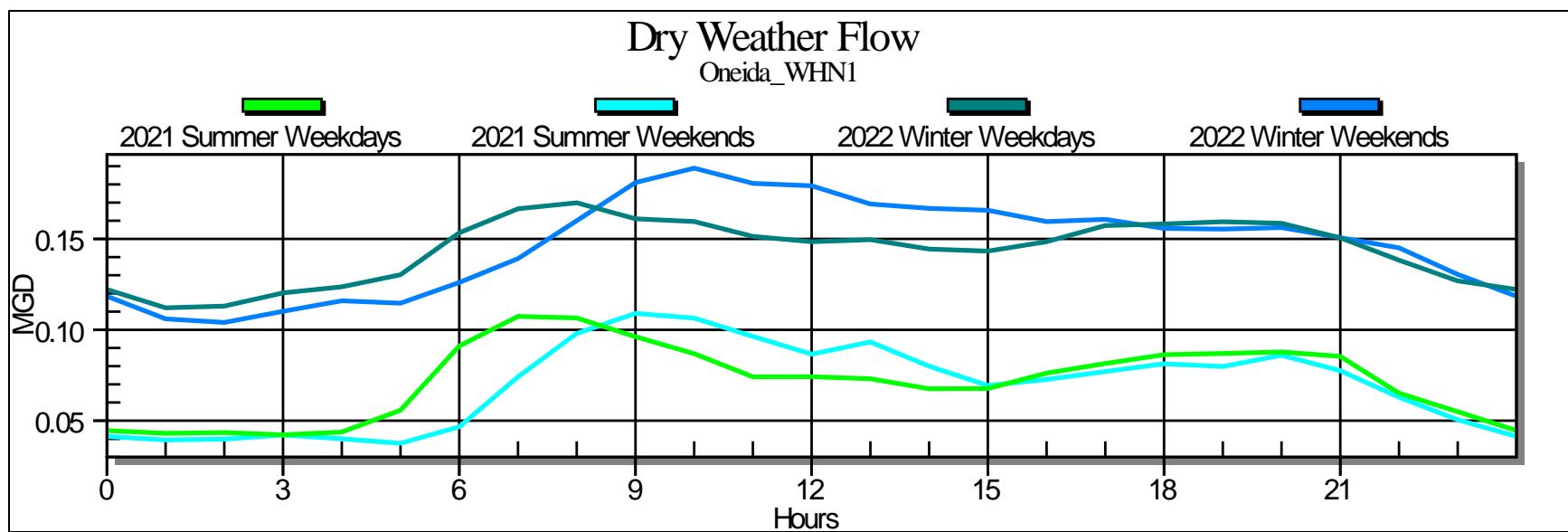
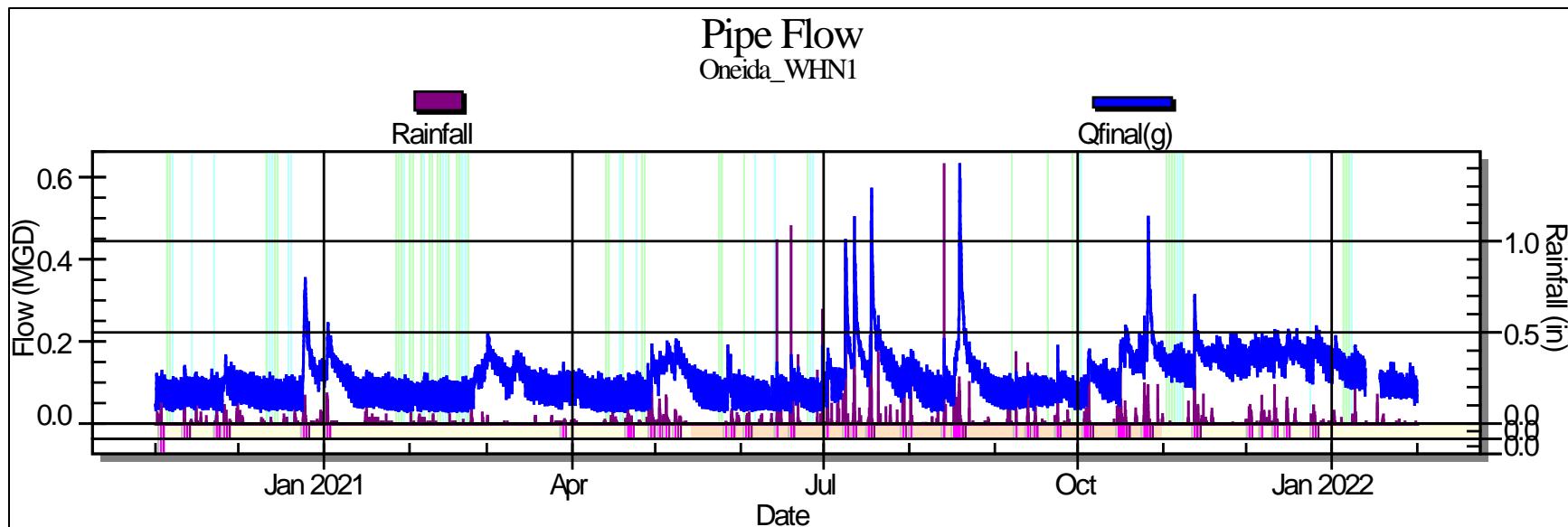


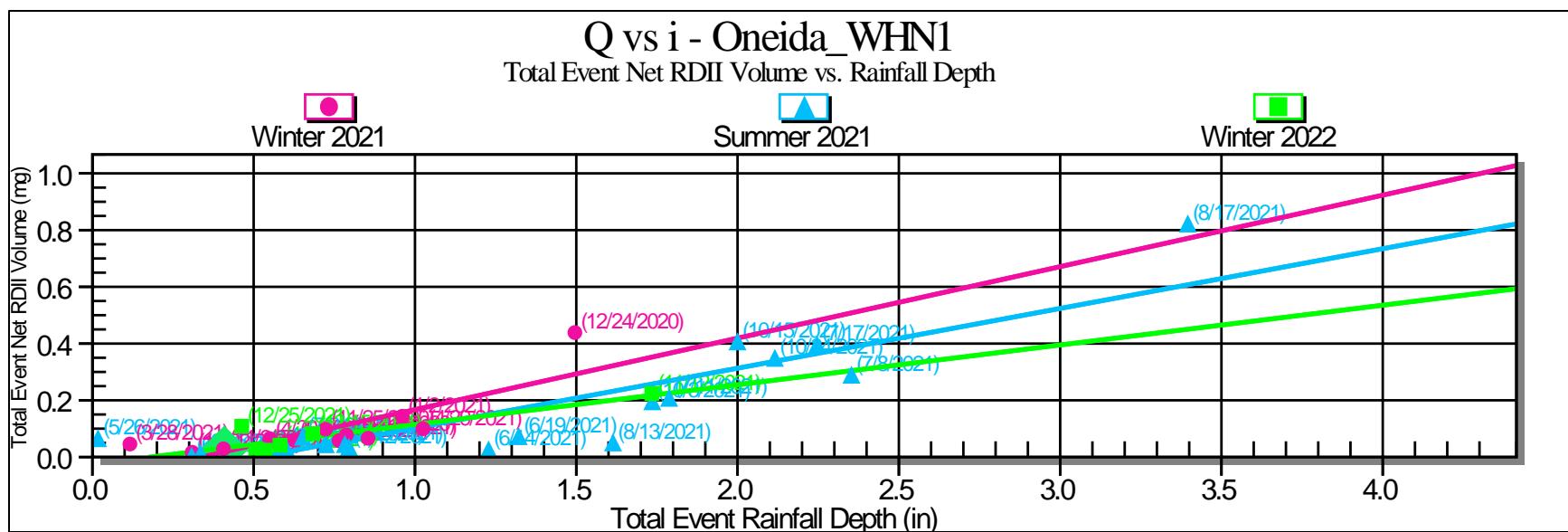
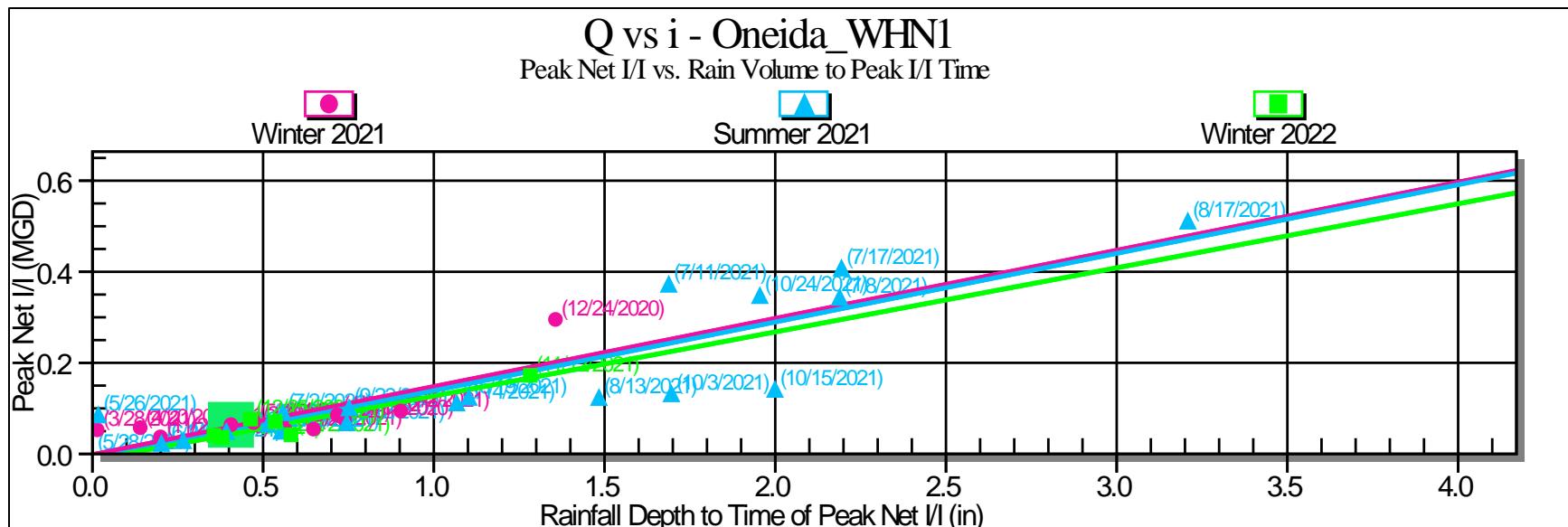


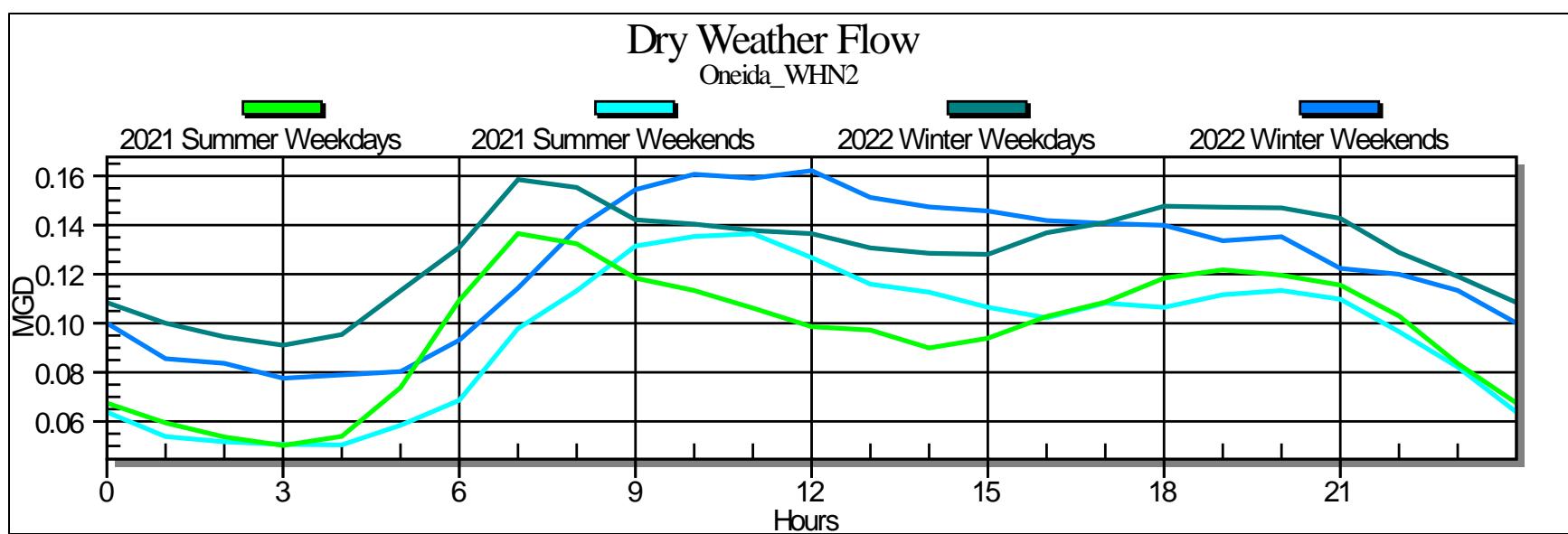
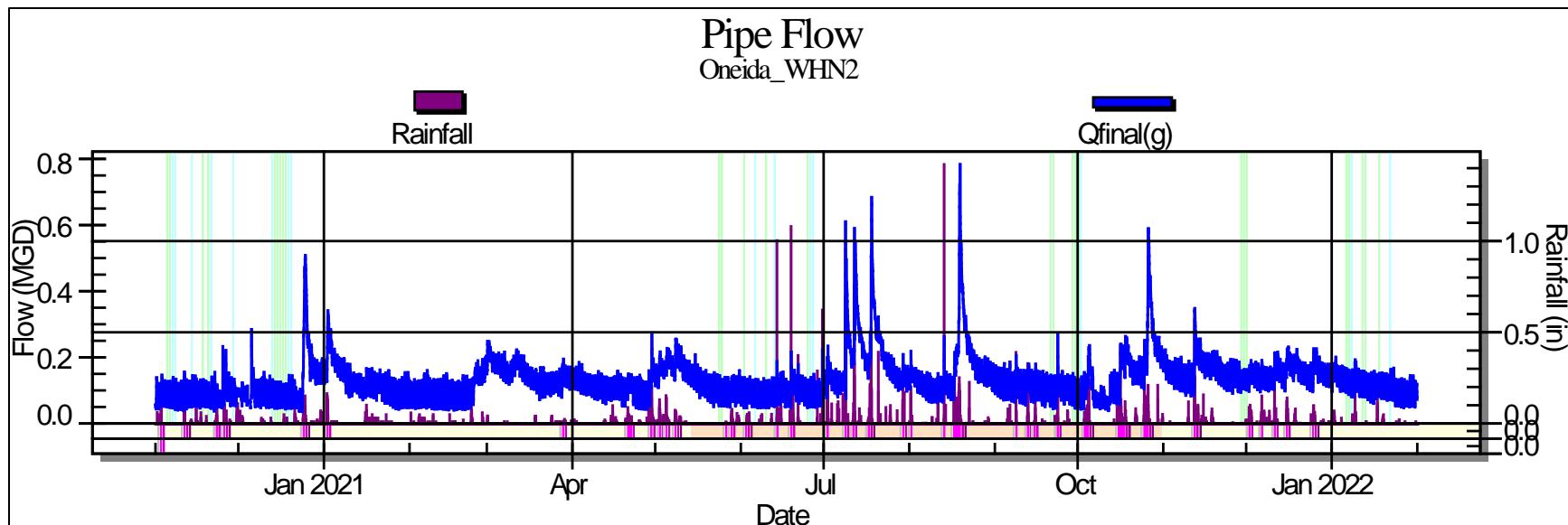


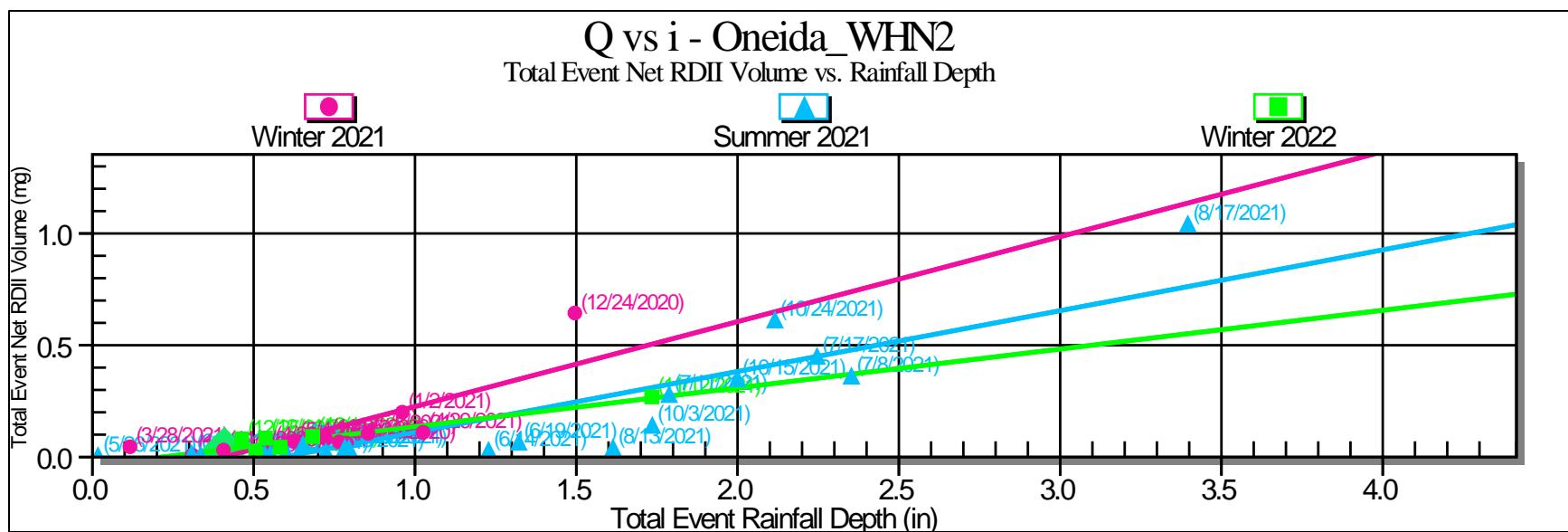
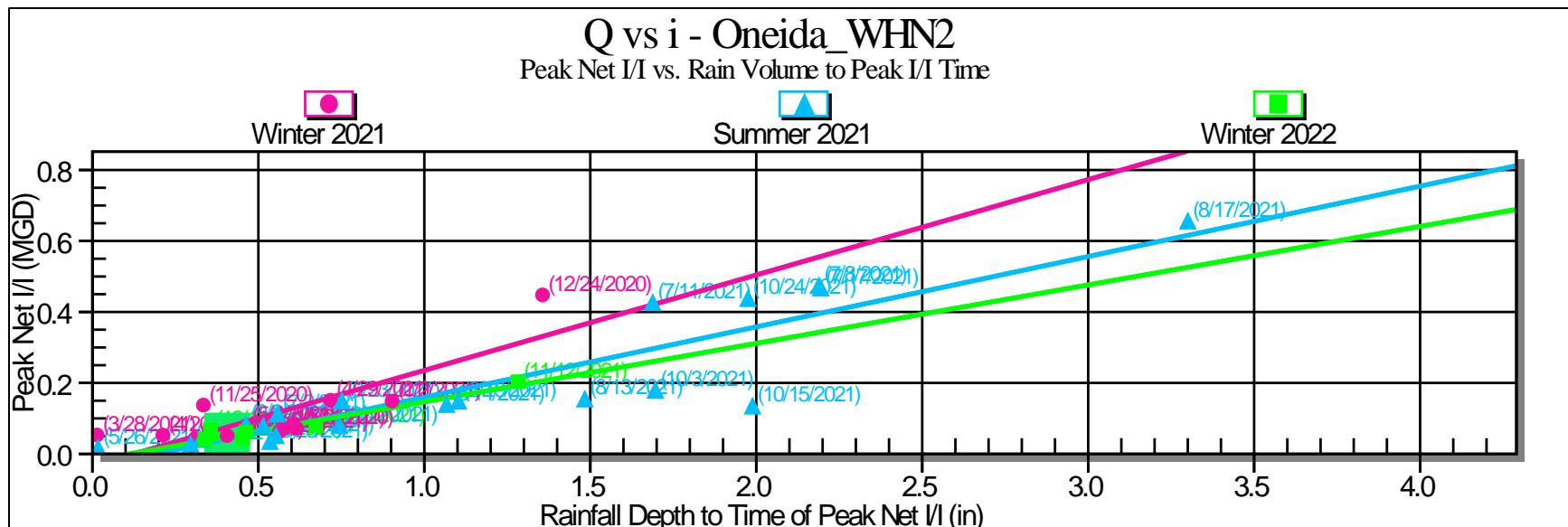


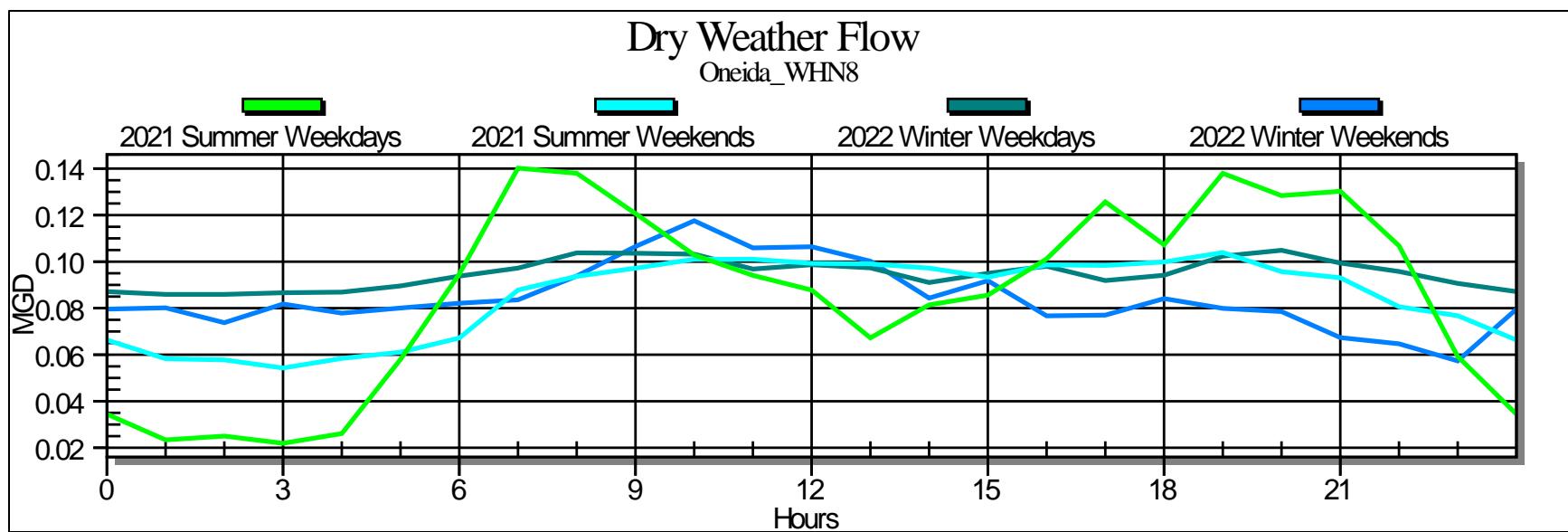
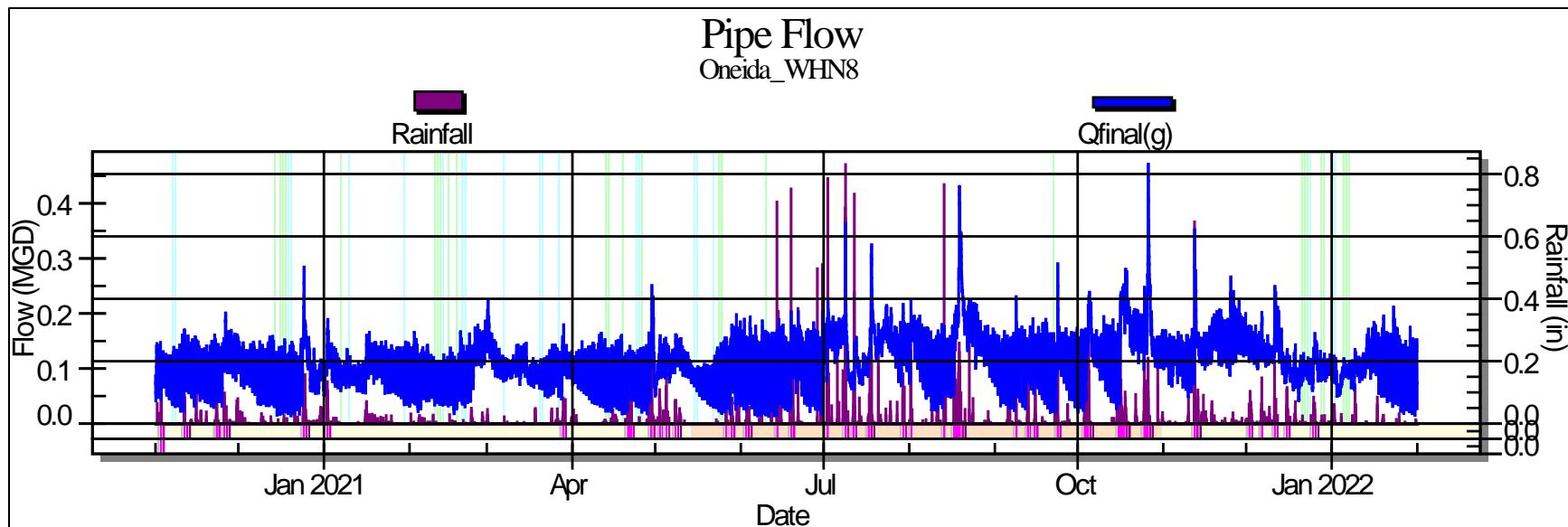


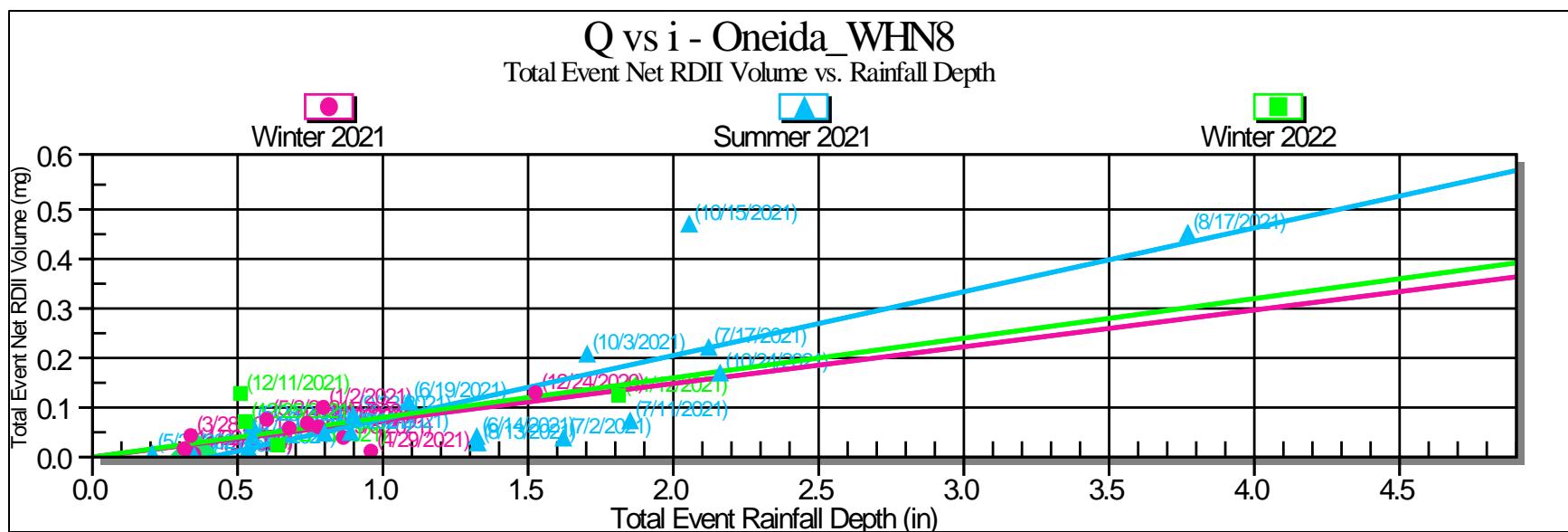
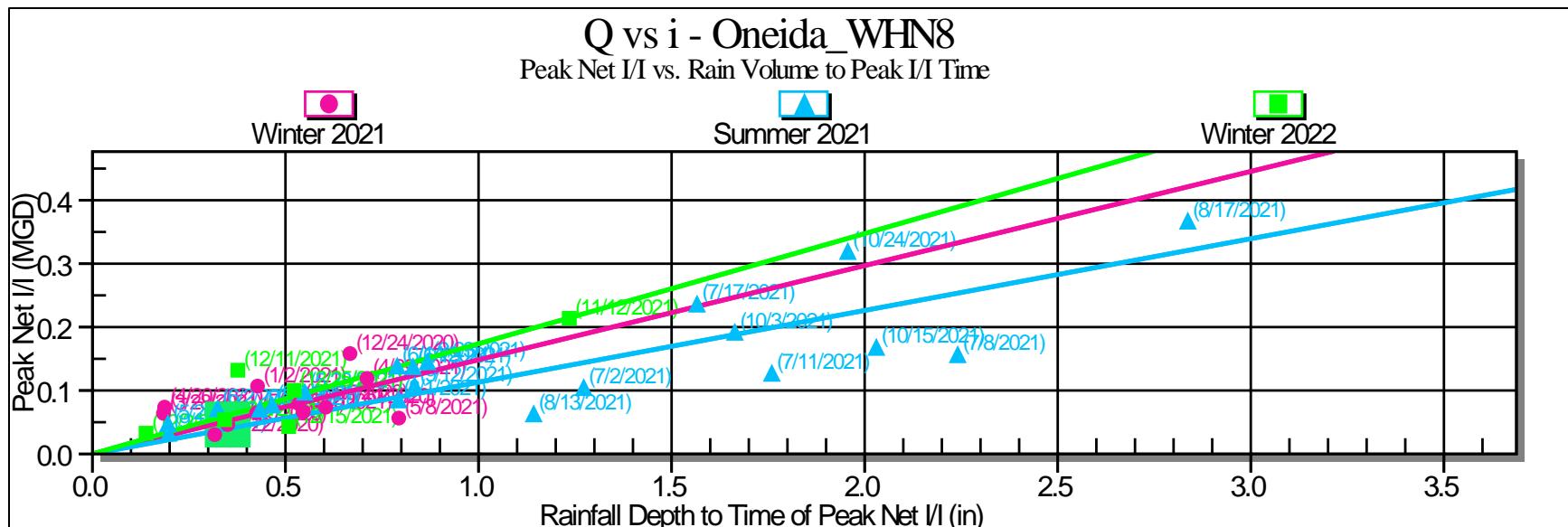


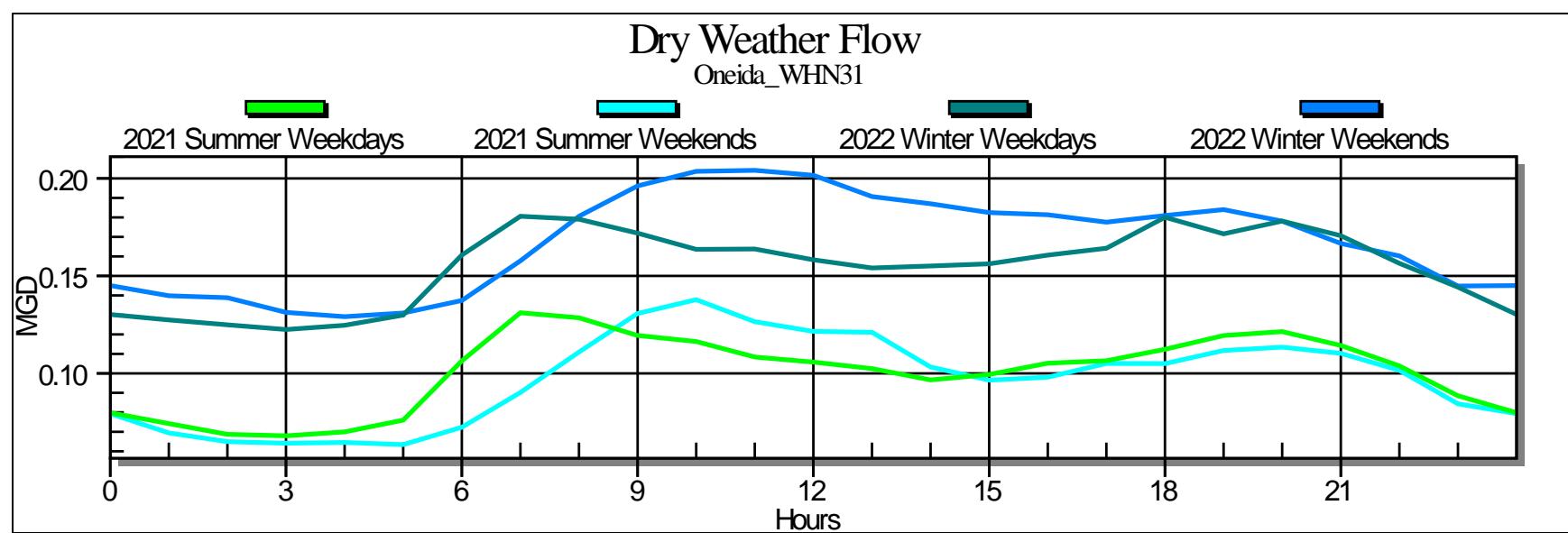
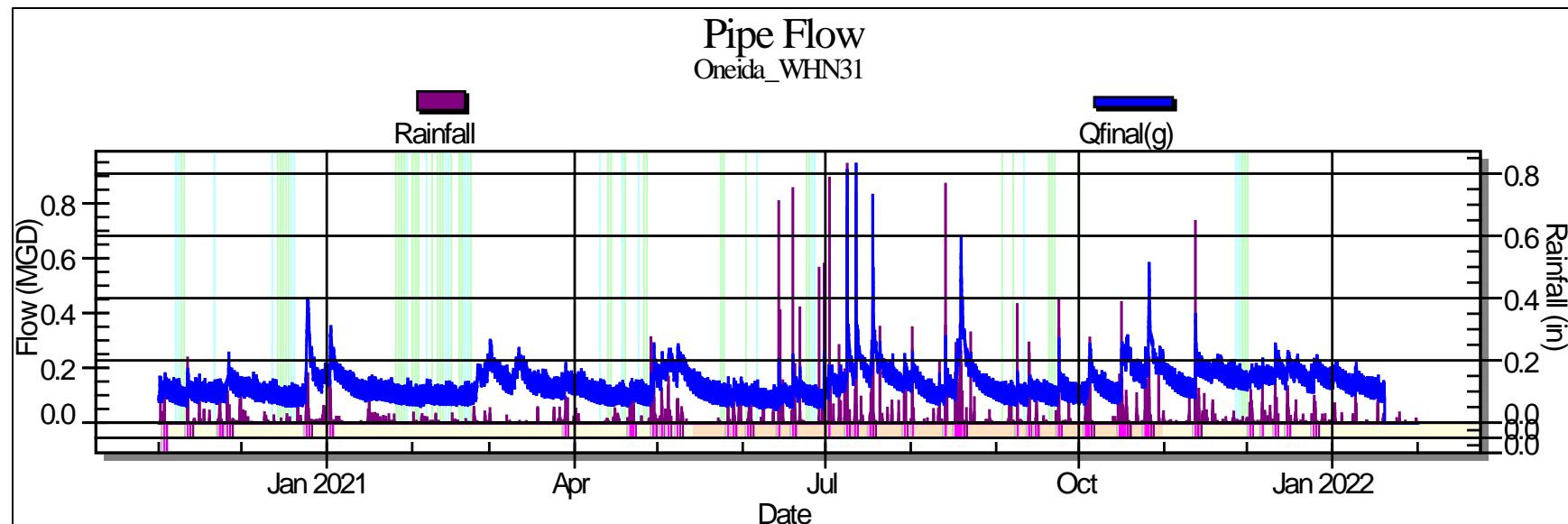


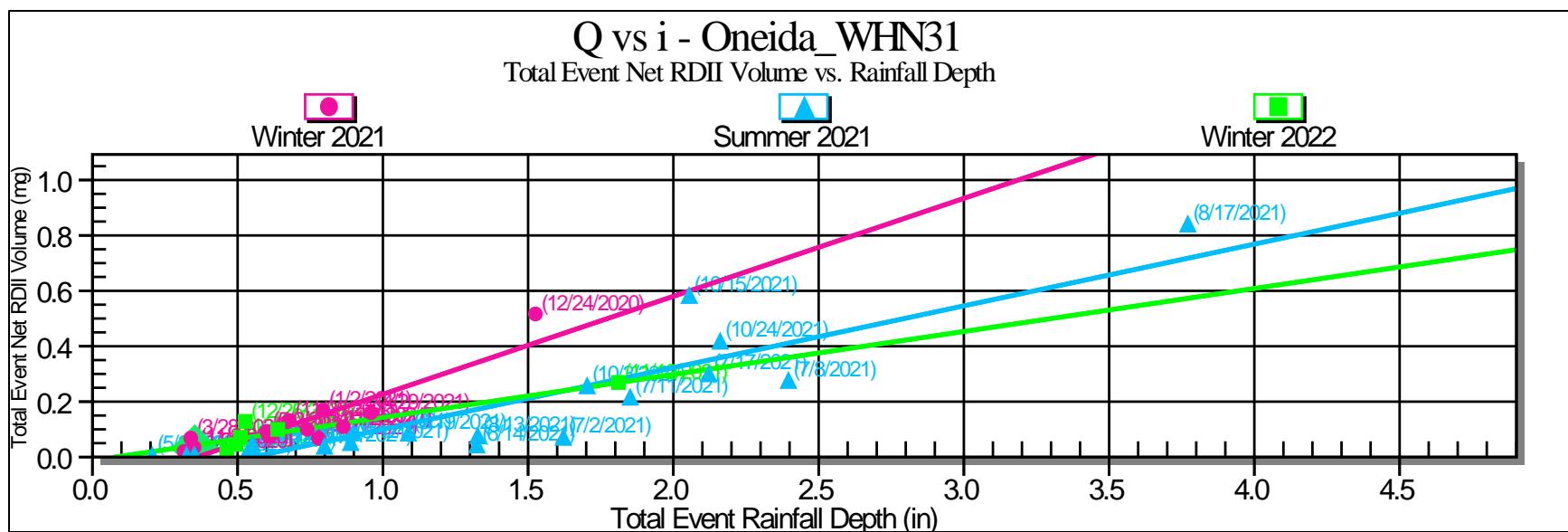
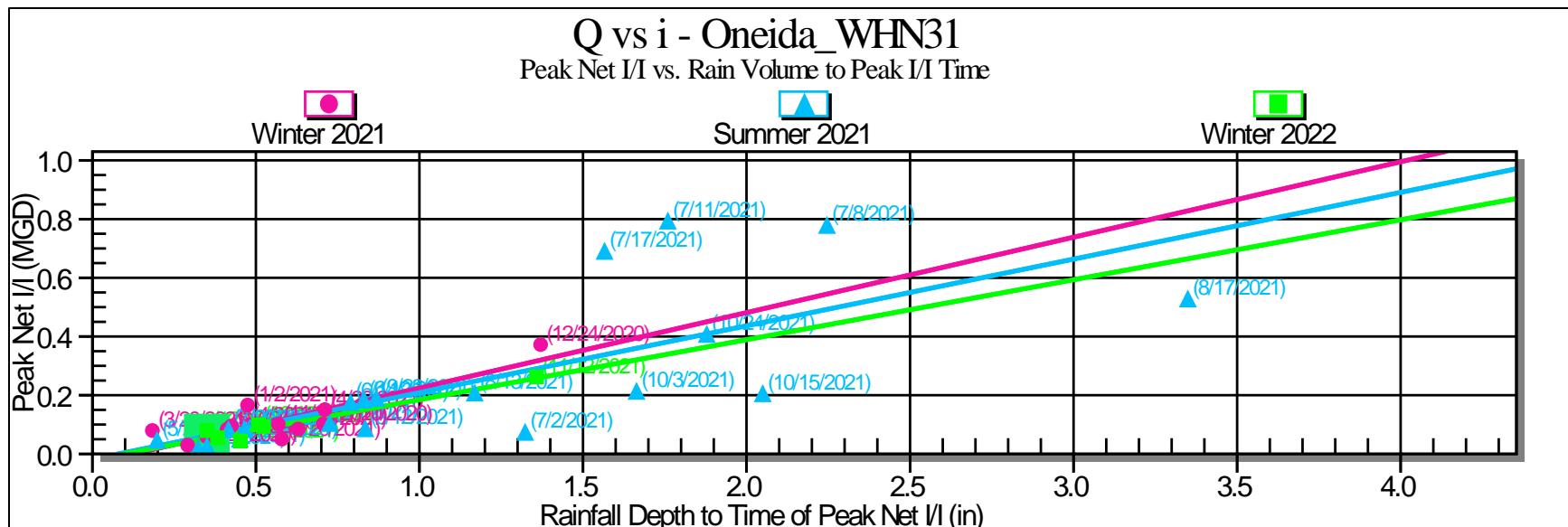


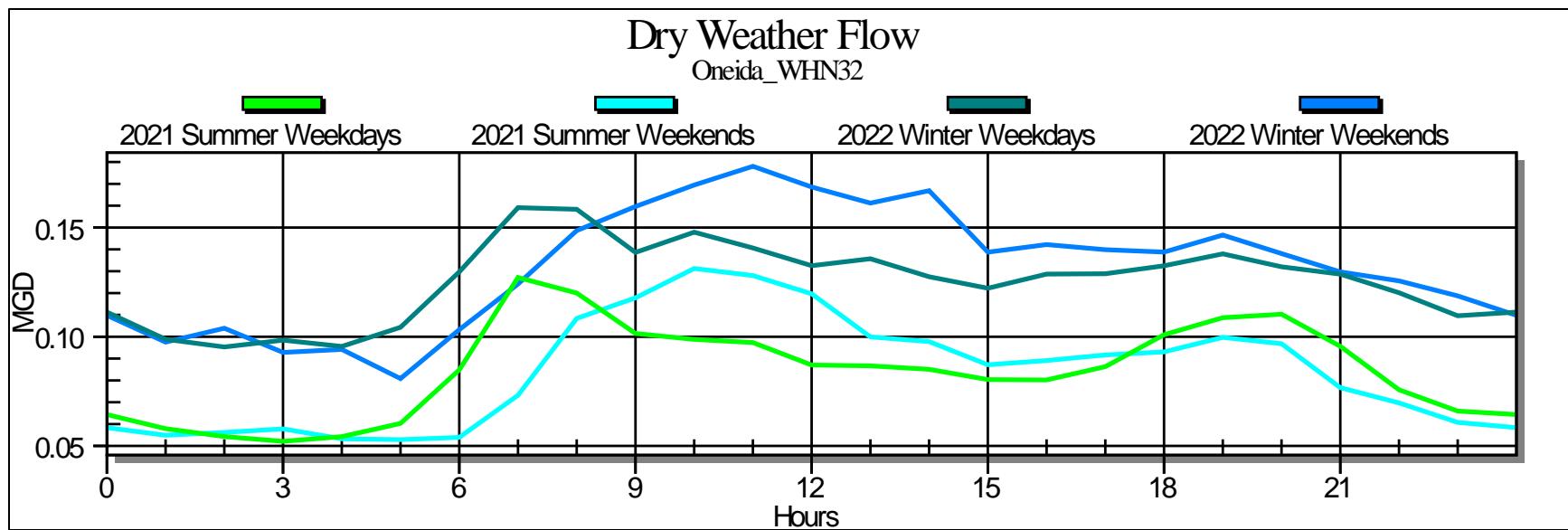
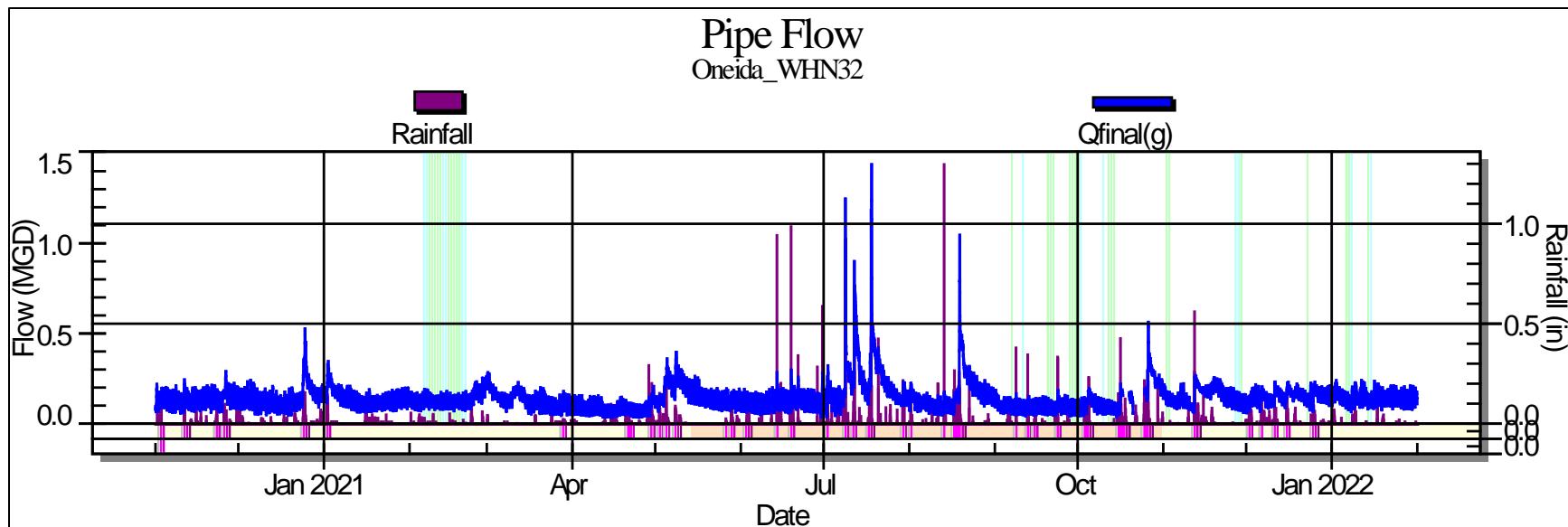


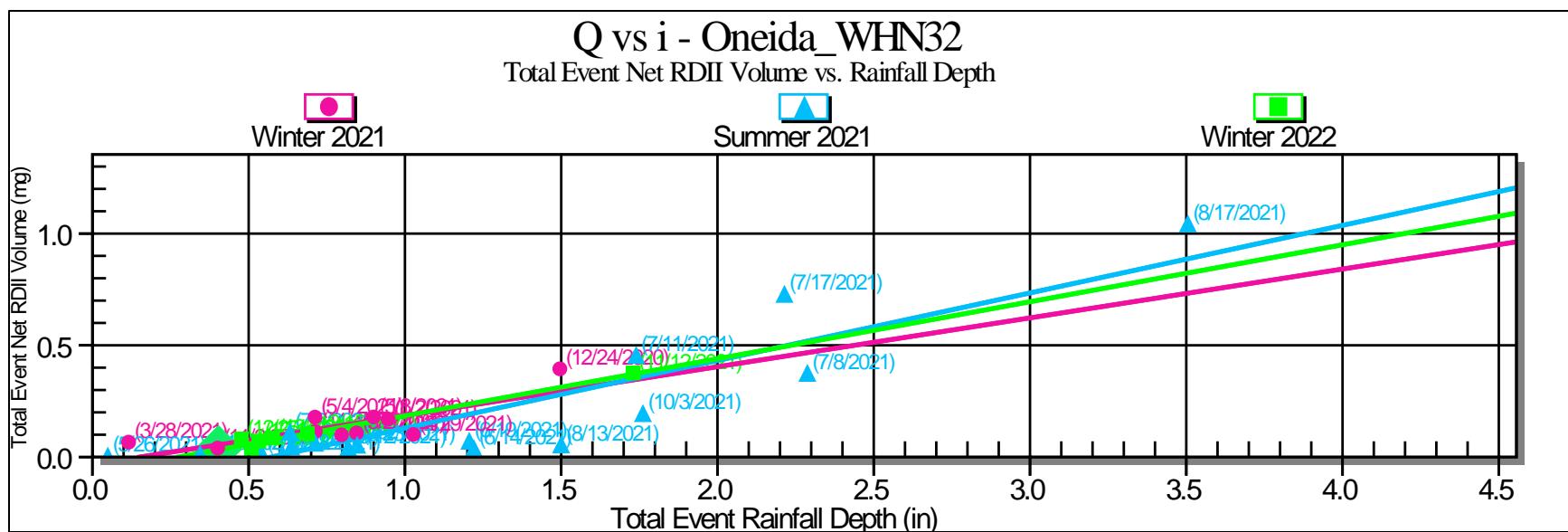
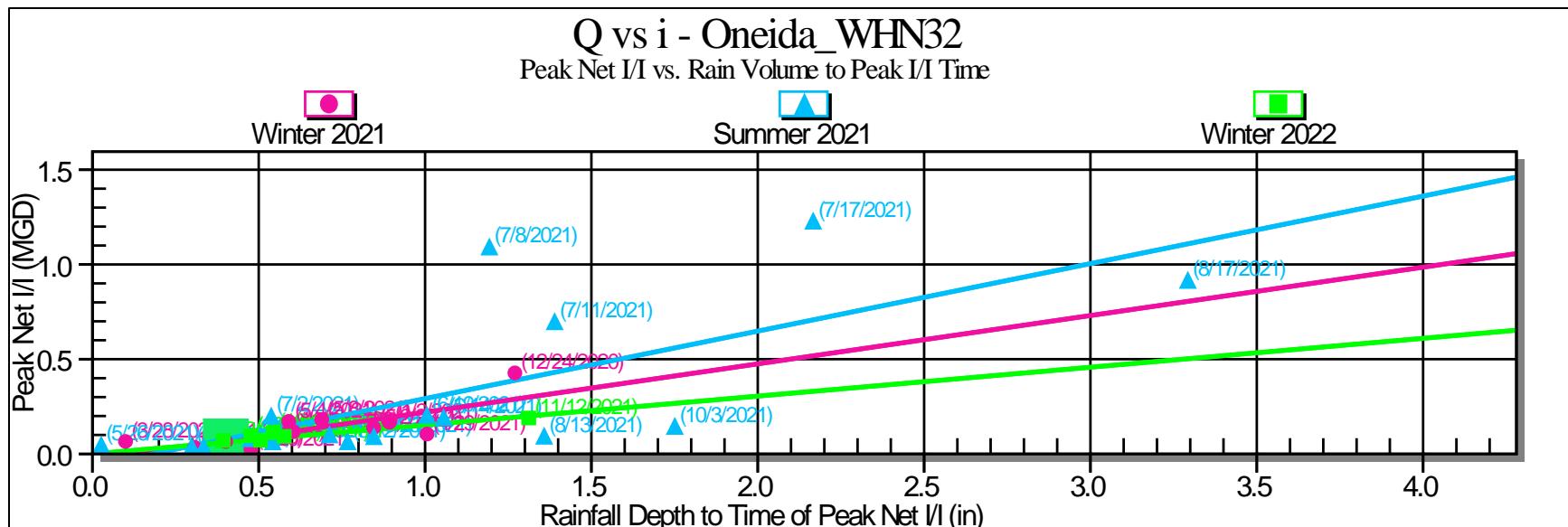


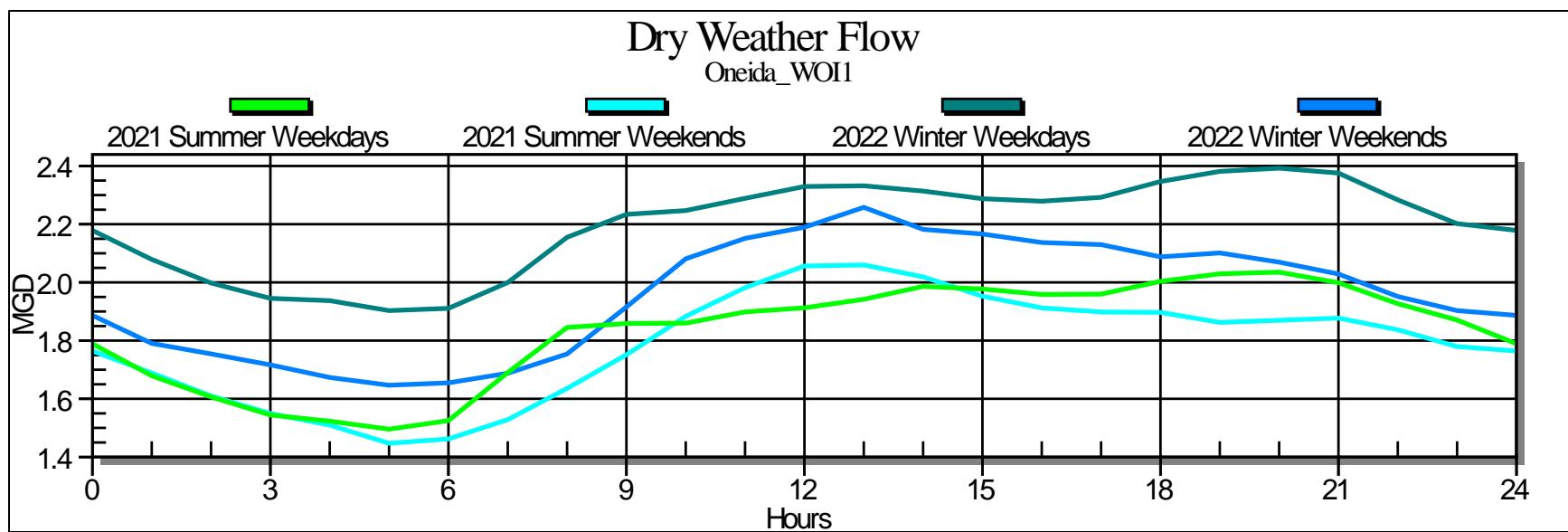
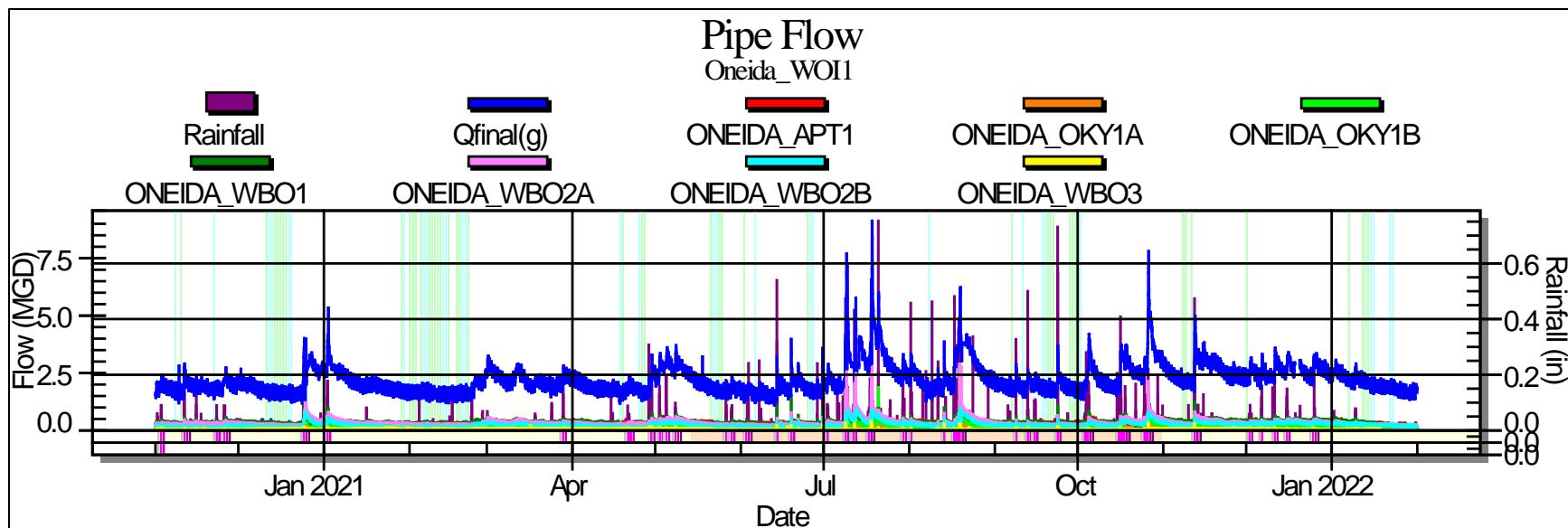


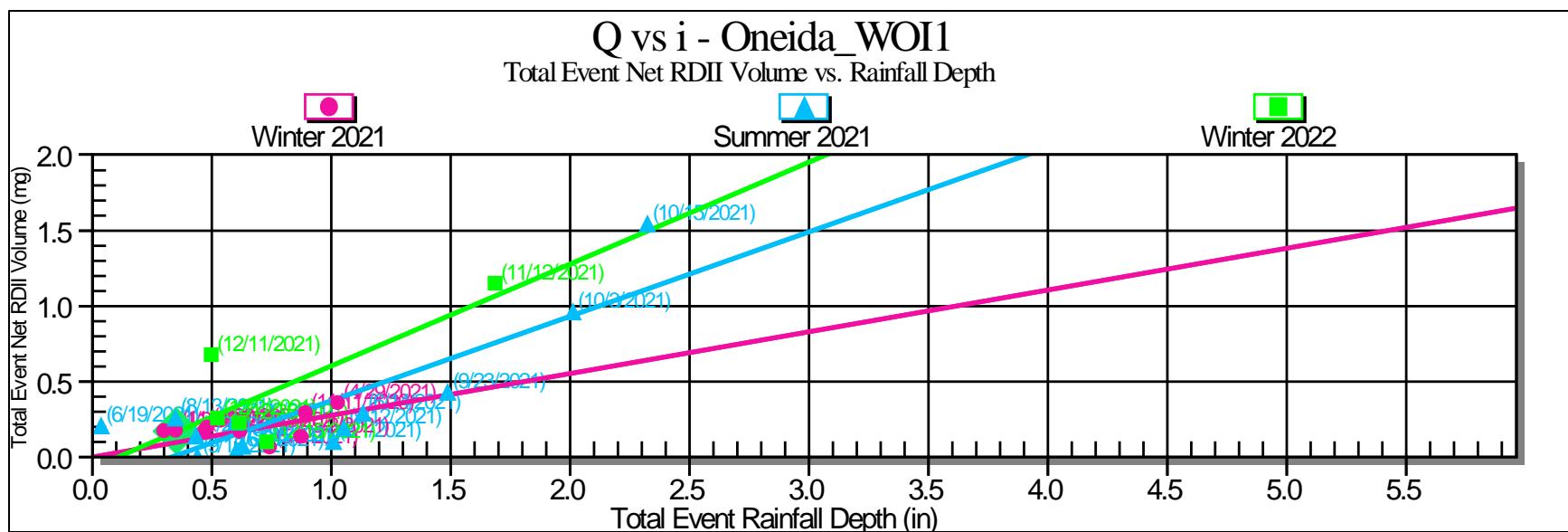
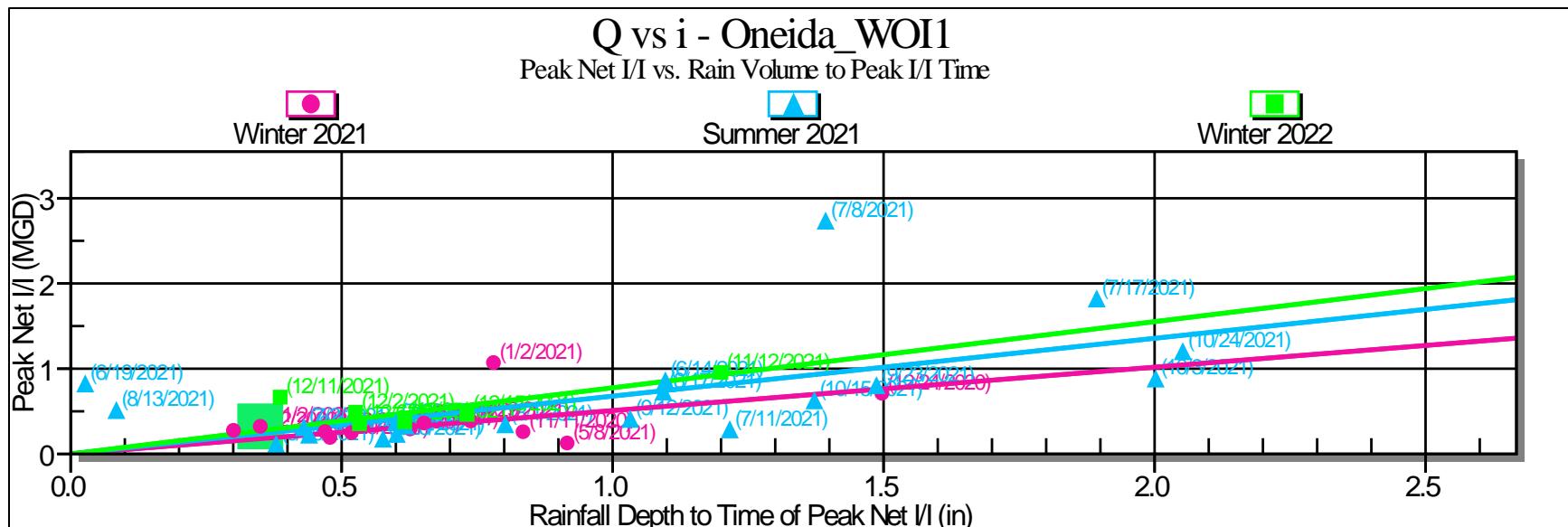


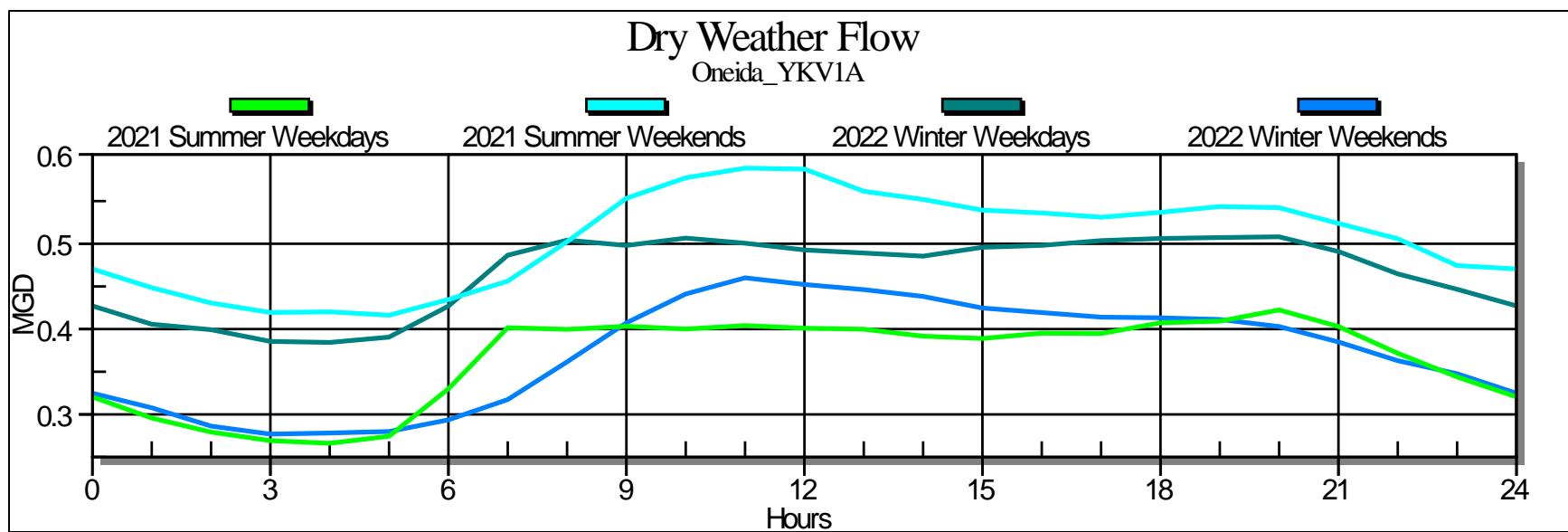
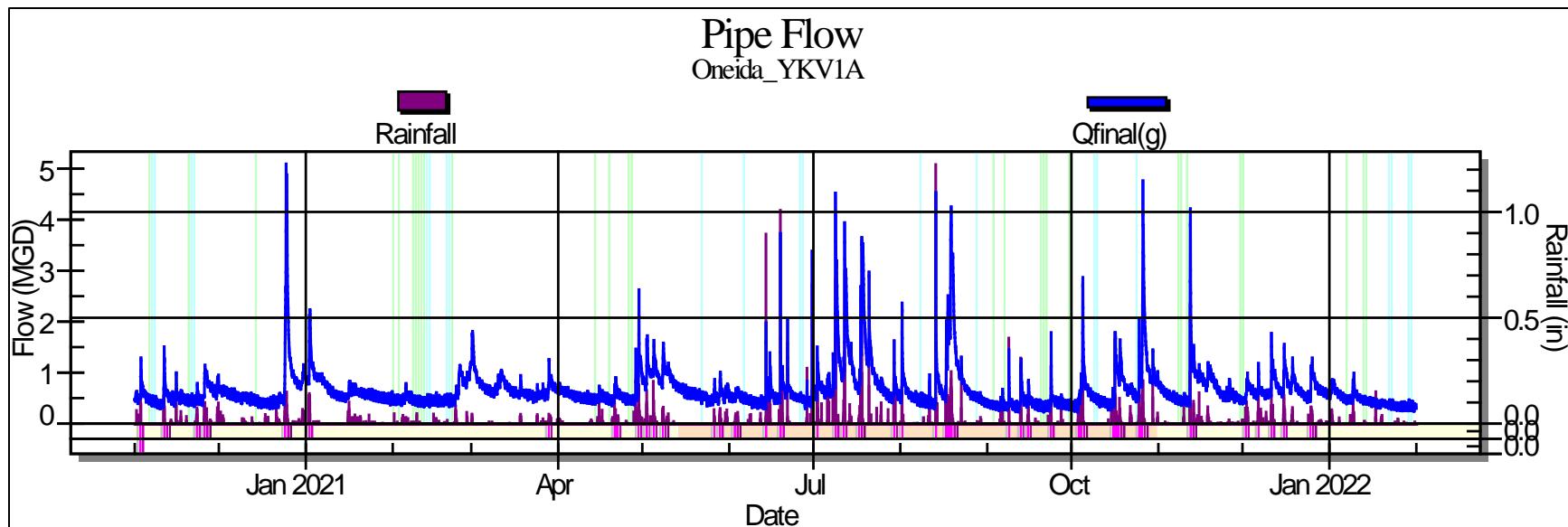


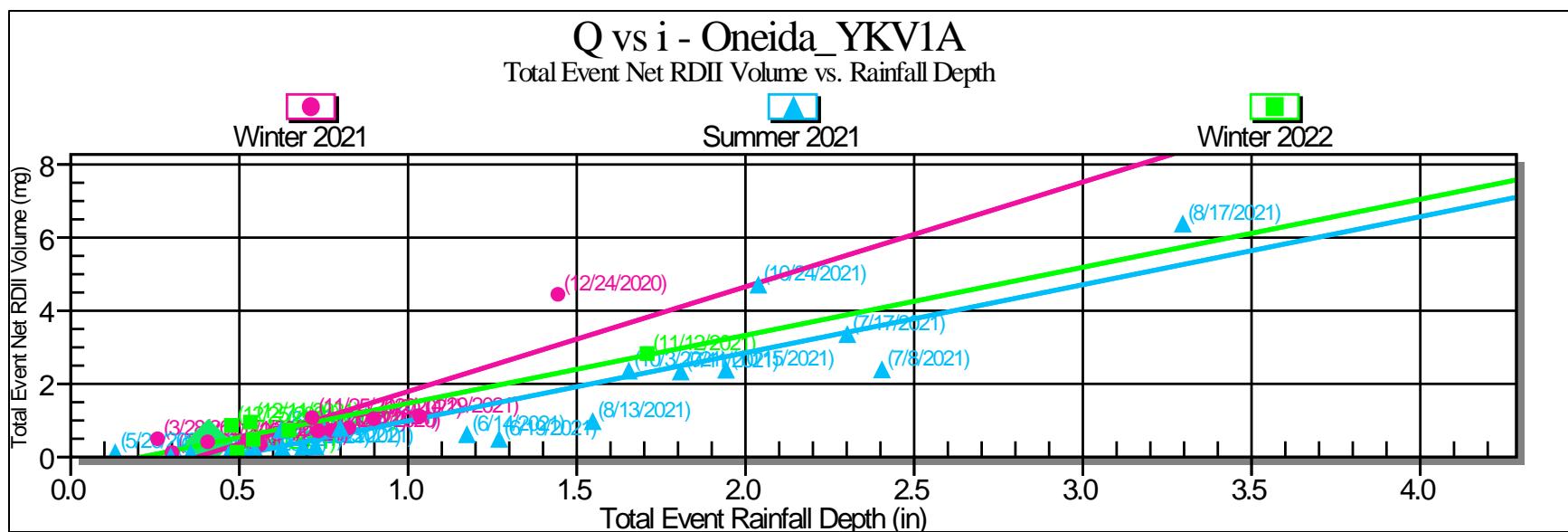
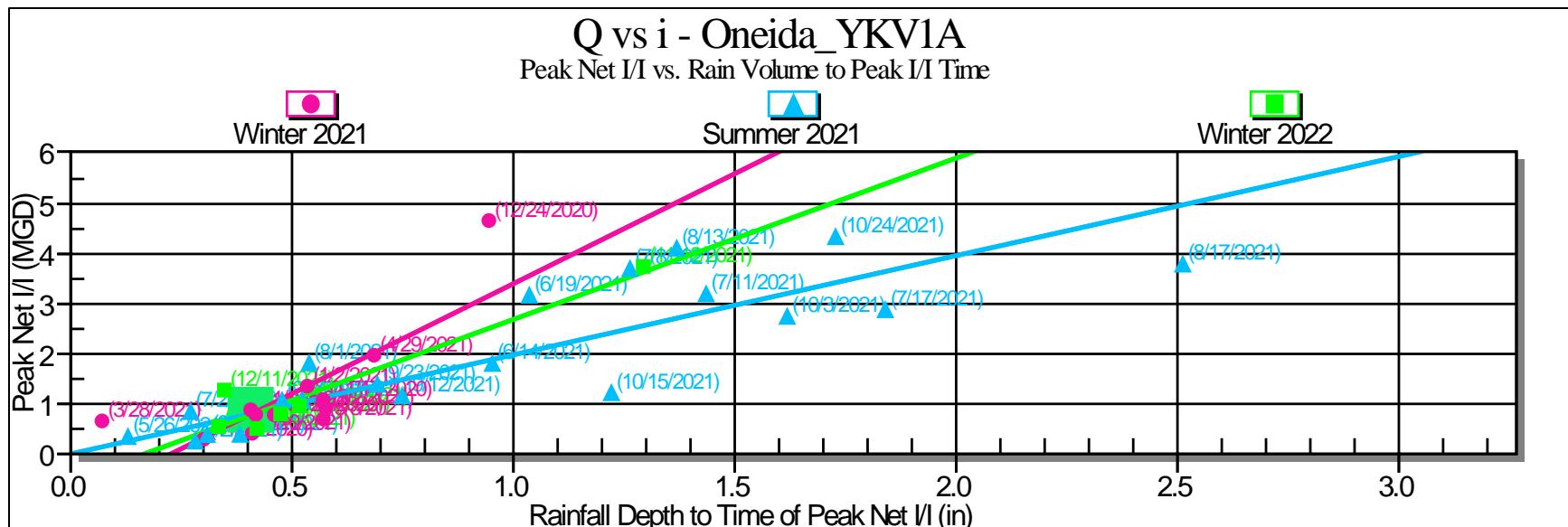


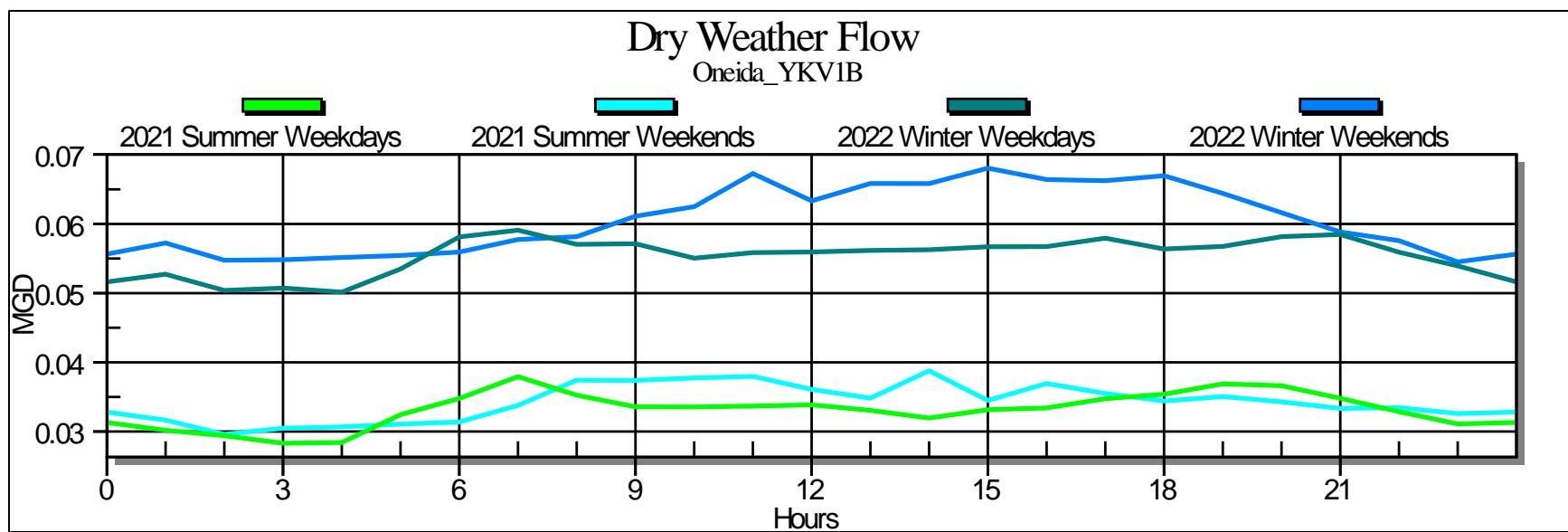
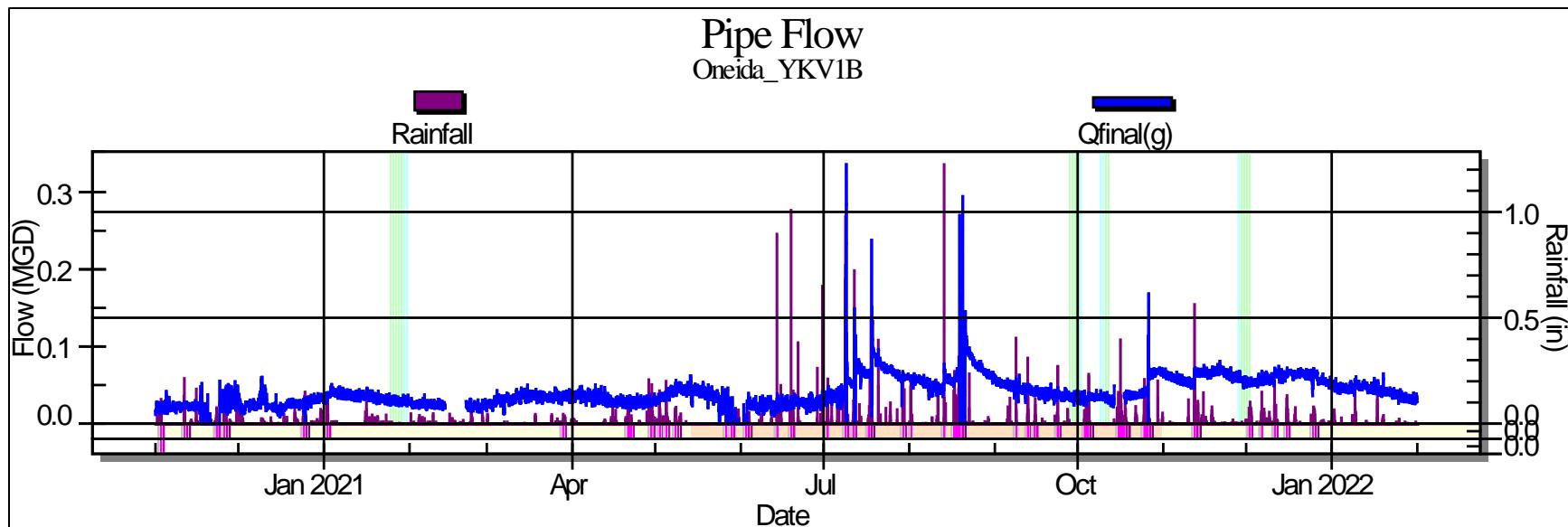


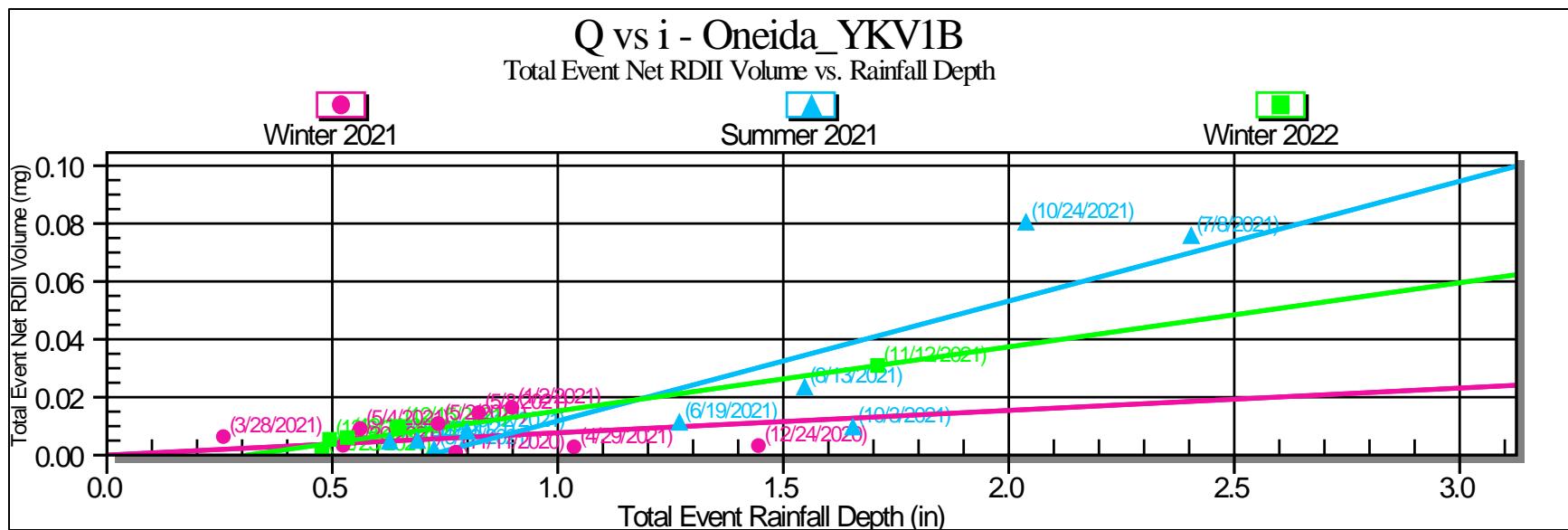
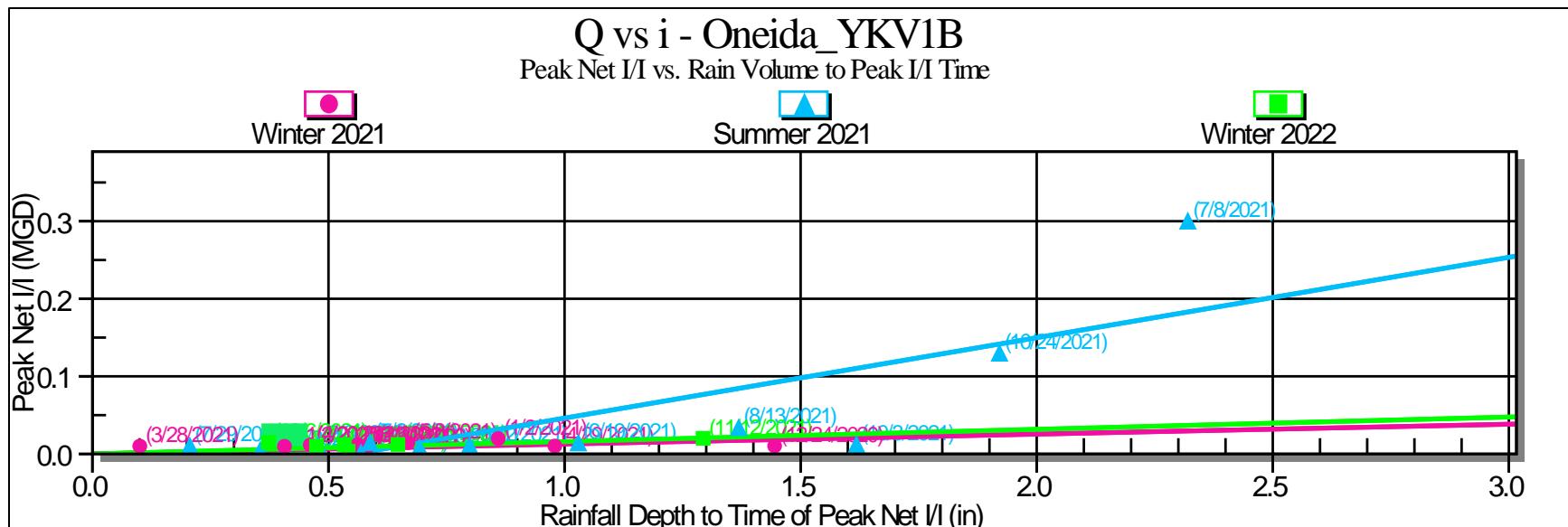


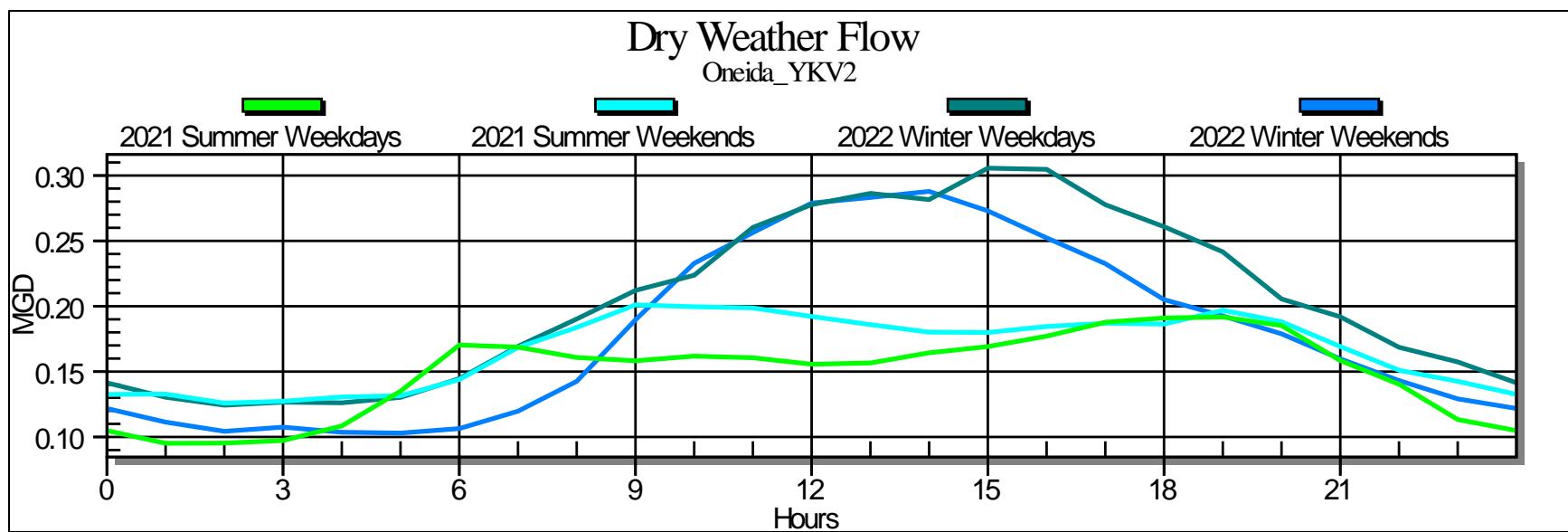
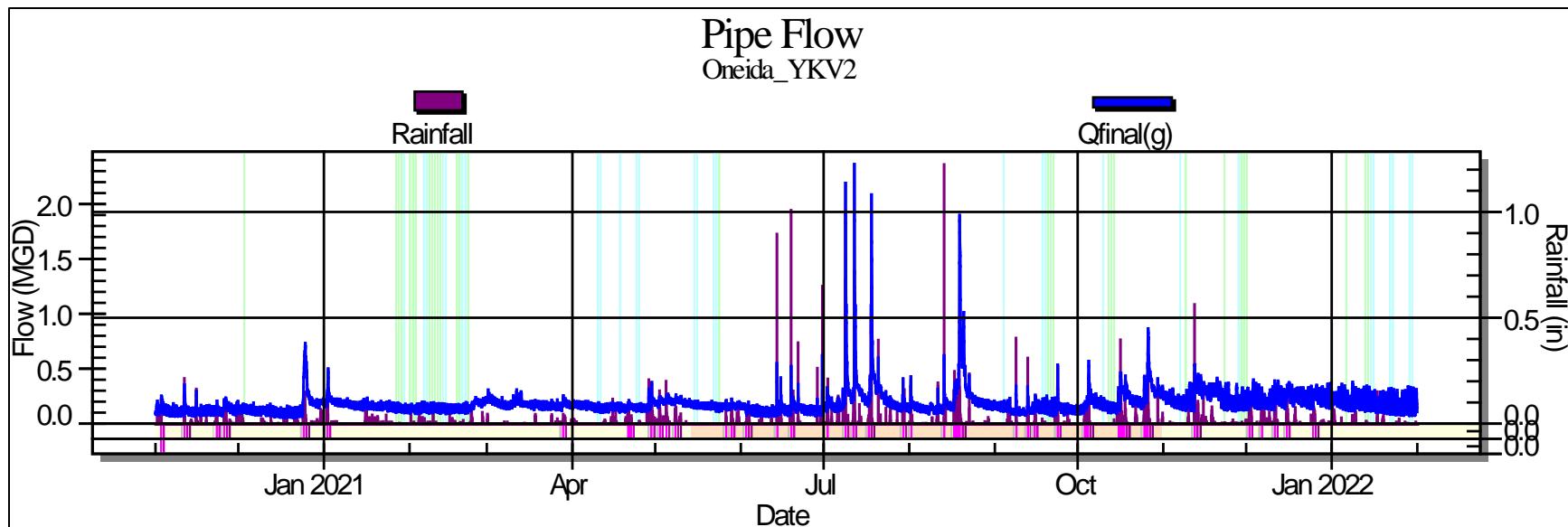


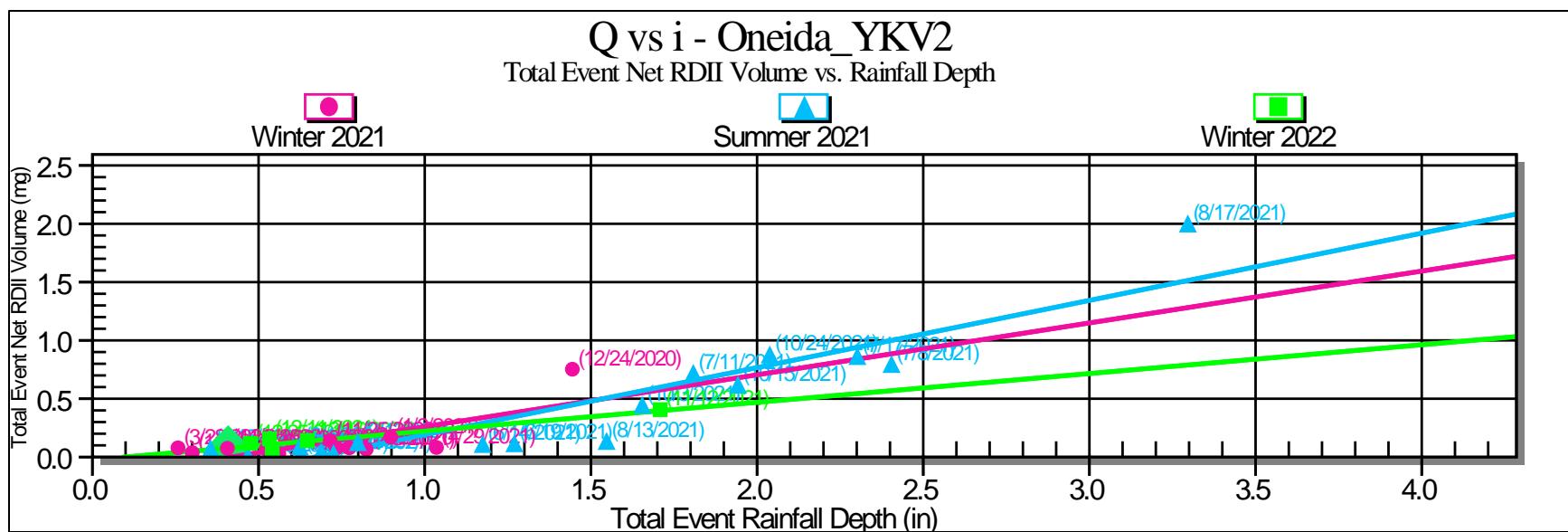
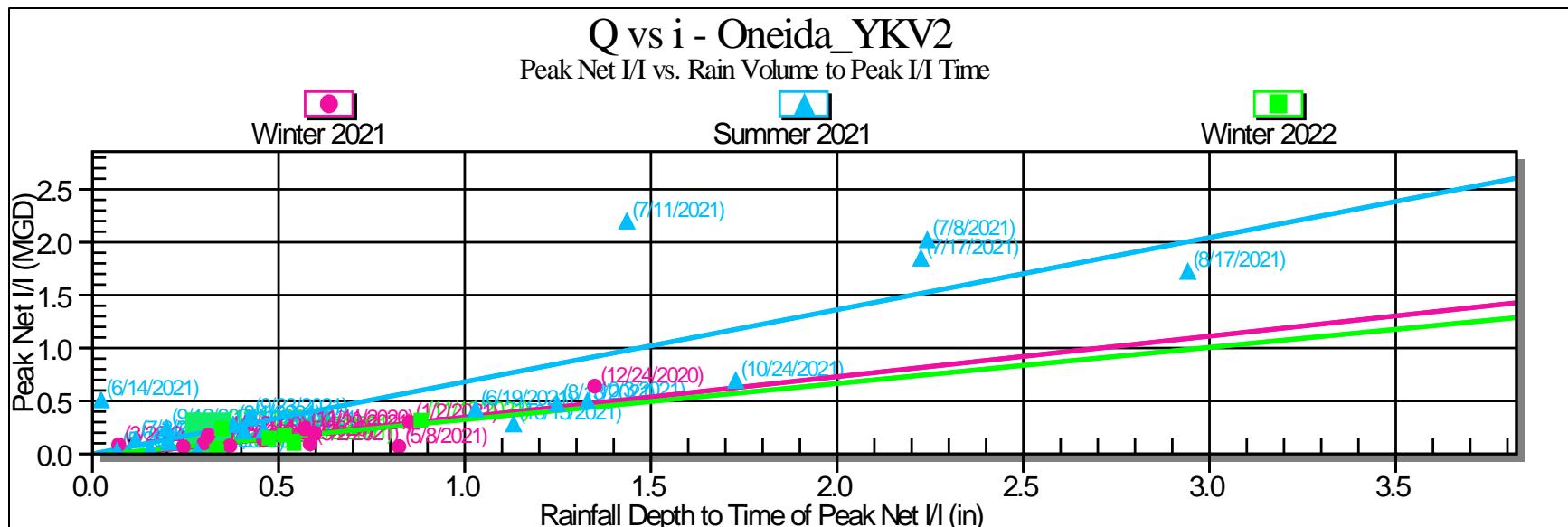


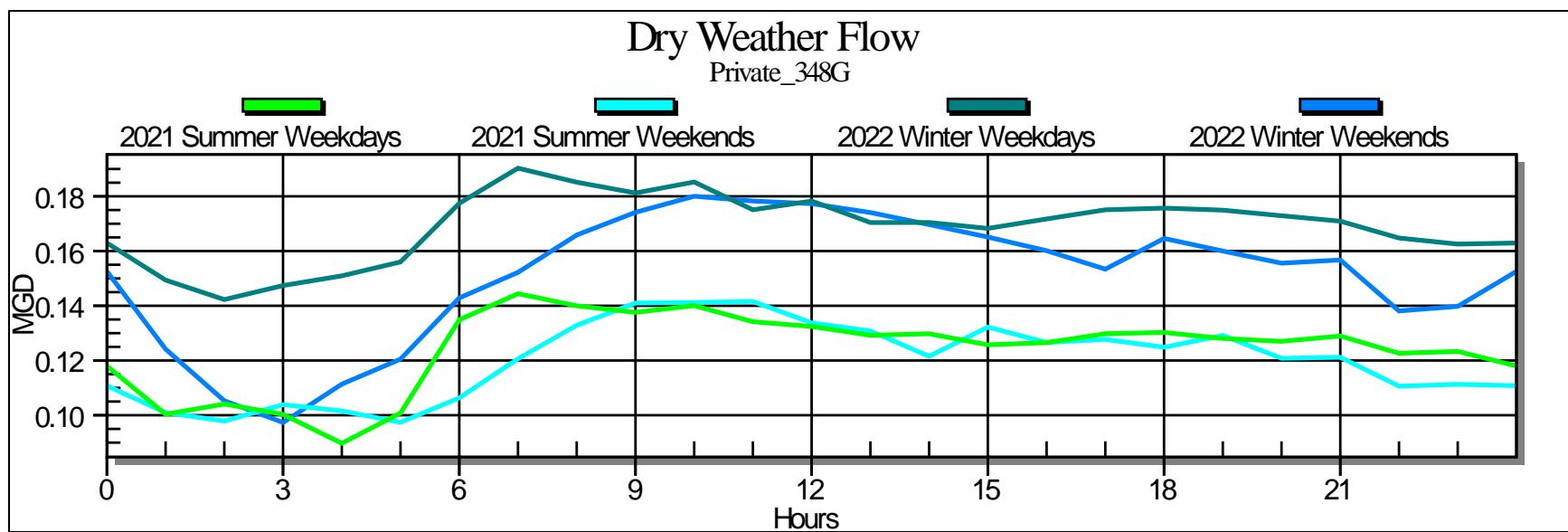
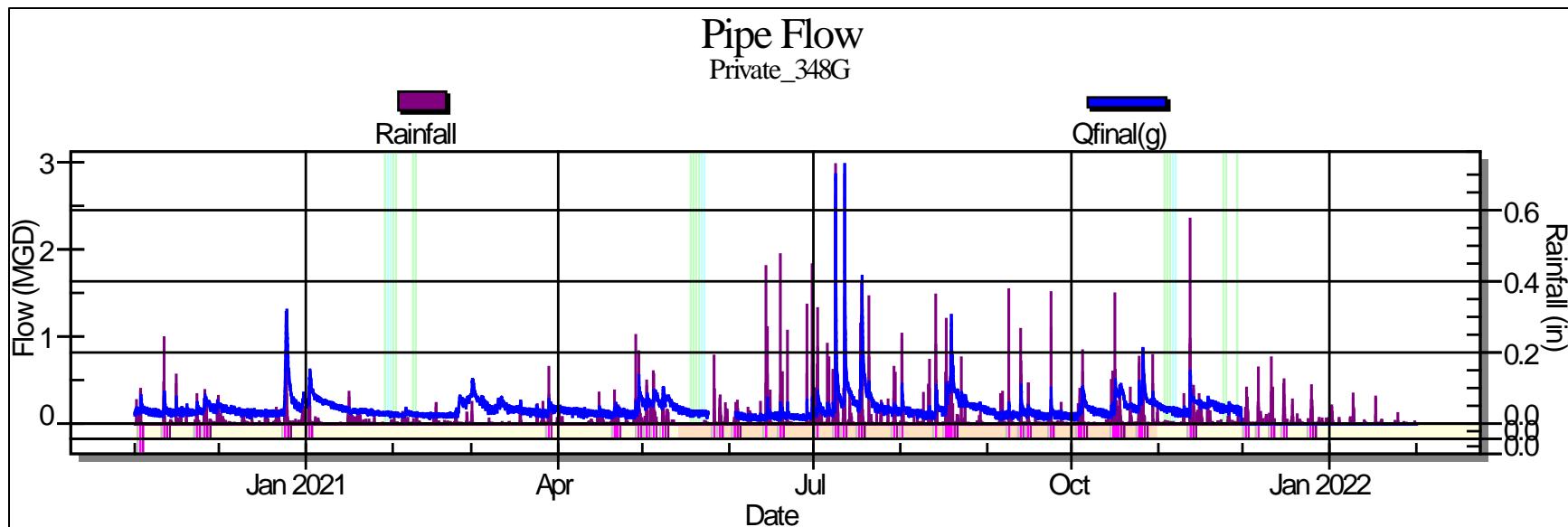


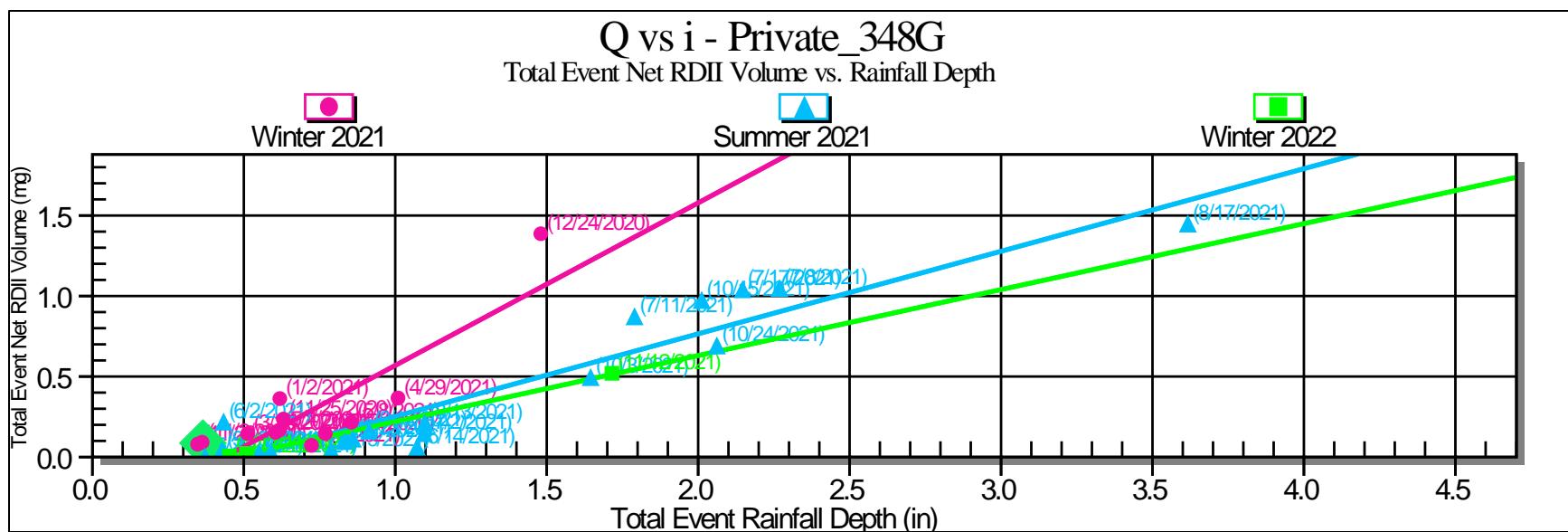
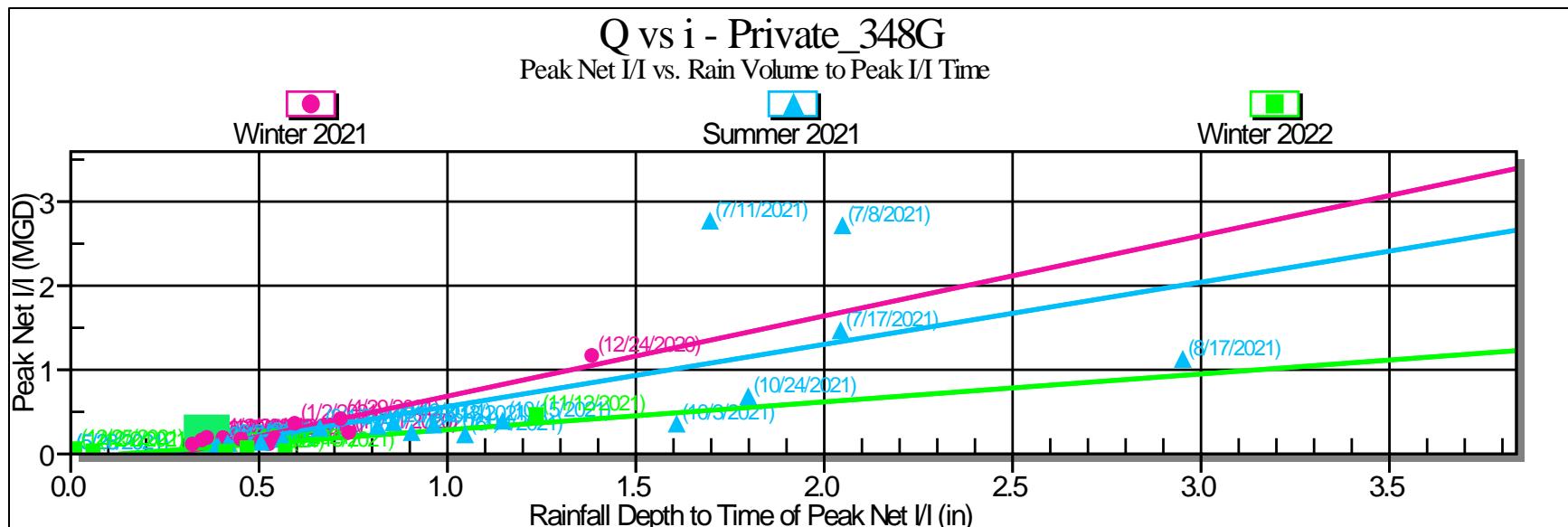


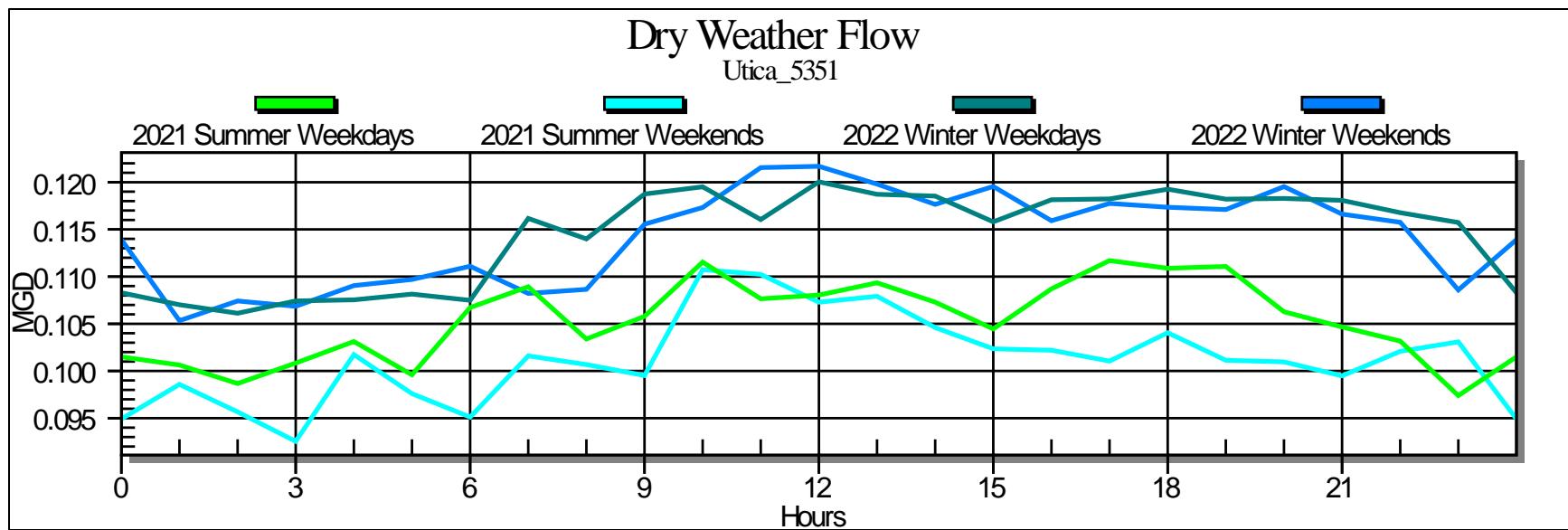
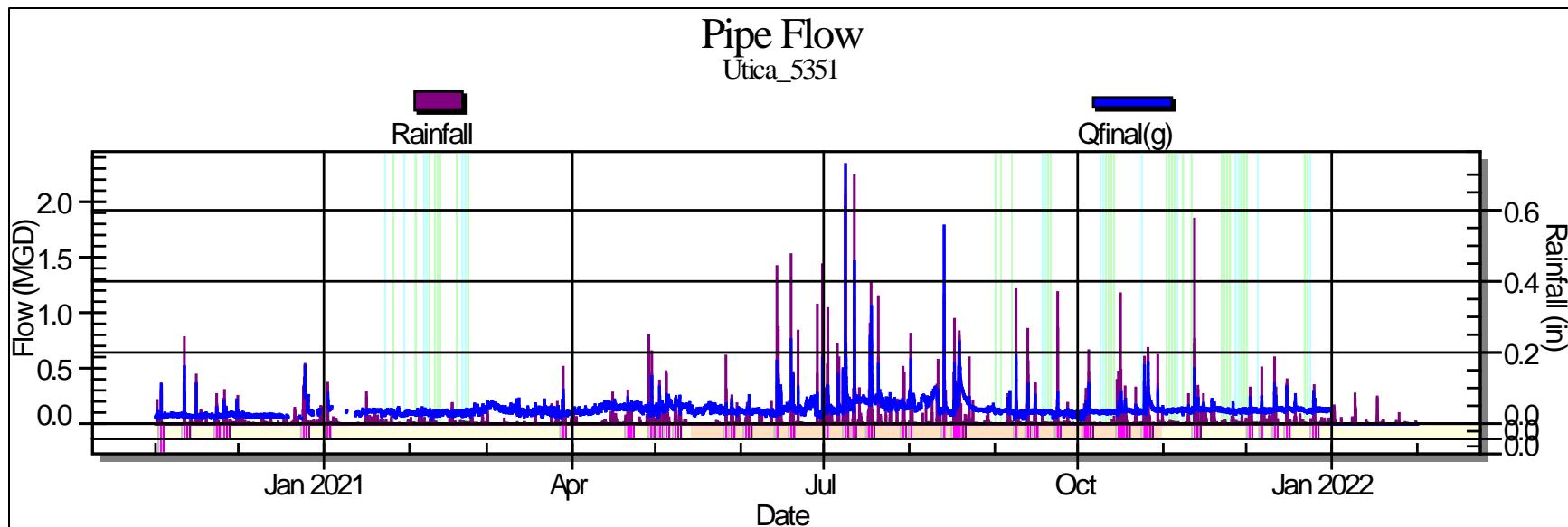


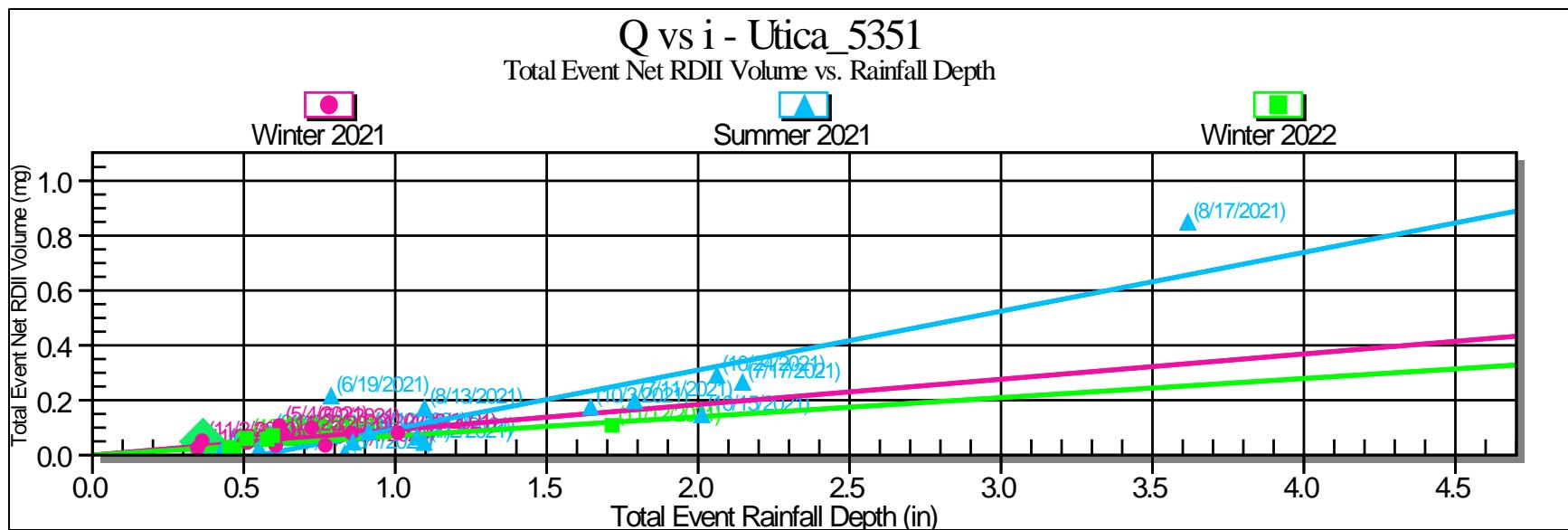
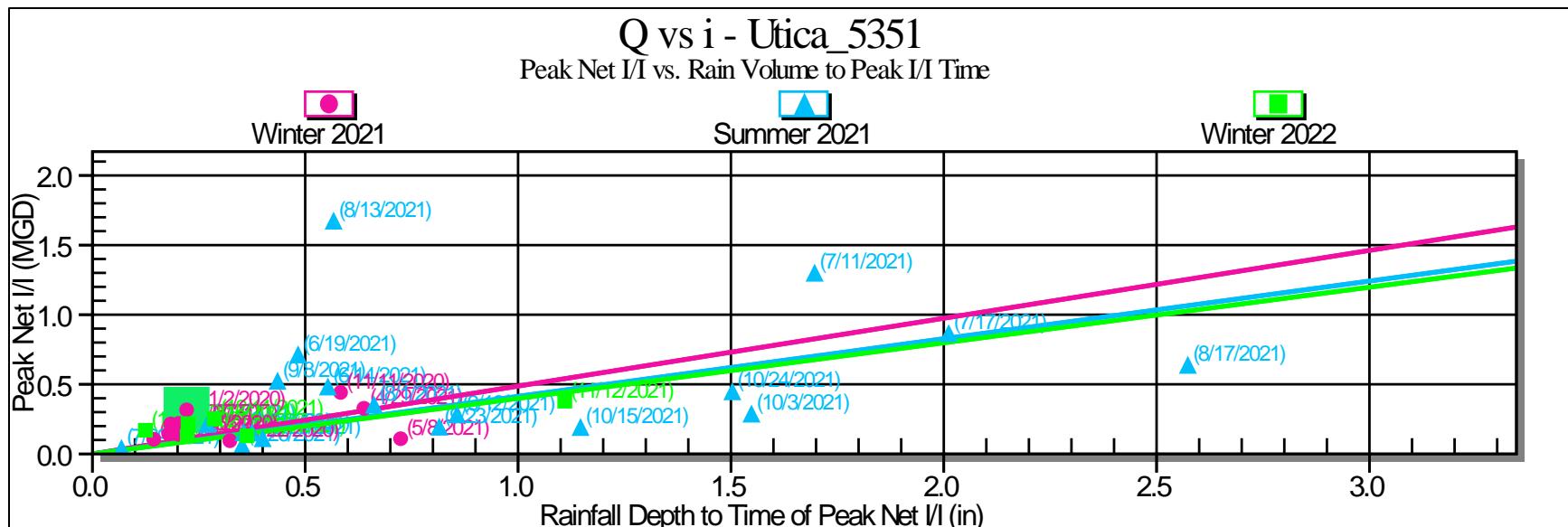












Appendix B - ADS Performance Data

Rainfall total by storm

Storm	RG_Airport	RG_Cityhall	RG_ParisDf	RG_Sauquoit	RG_Sherill	RG_WWTP
11/2/2020	0.35	0.41	0.37	0.41	0.28	0.37
11/11/2020	0.9	0.71	0.69	0.79	0.66	0.88
11/22/2020	0.3	0.26	0.57	0.31	0.33	0.33
11/25/2020	0.62	0.69	0.47	0.73	0.63	0.66
12/24/2020	1.5	1.22	1.72	1.5	1.57	1.39
1/2/2021	0.8	0.64	0	0.98	0.58	0.73
3/28/2021	0.47	0.62	0.68	0.54	0.6	0.62
4/20/2021	0.48	0.52	0.69	0.69	0.83	0.52
4/29/2021	1.03	1.04	1.03	0	0.95	1.01
5/2/2021	0.88	0.73	0.63	0	0.56	0.83
5/4/2021	0.75	0.55	0.57	0	0.59	0.64
5/8/2021	0.92	0.82	0.89	0	0.86	0.8
5/26/2021	0.38	0.62	0.29	0	0.42	0.52
5/28/2021	0.63	0.45	0.6	0	0.54	0.53
6/2/2021	0.61	0.24	0.89	0.3	0.31	0.25
6/14/2021	1.14	1.27	0.88	1.61	1.83	1.64
6/19/2021	0	1.07	0.59	1.35	0.92	0.8
7/1/2021	0.42	0.49	1.49	0.61	3.02	0.88
7/8/2021	1.61	2.64	1.45	2.36	2.55	3
7/11/2021	1.24	1.9	1.58	1.79	2.01	2.22
7/17/2021	1.88	2.55	1.53	2.25	1.99	2.68
7/29/2021	0.6	0.54	0.28	0.73	0.32	0.83
8/1/2021	1.02	0.72	0.98	0.59	1.03	0.66
8/13/2021	0.31	1.28	0.47	1.64	1.08	1.8
8/17/2021	4.64	2.85	3.45	3.39	4.15	3.22
9/8/2021	0.63	0.6	0.63	0.53	0.53	0.61
9/12/2021	1.06	0.81	1.01	0.79	0.99	0.82
9/15/2021	0.44	0.44	0.59	0.33	0.36	0.41
9/23/2021	1.52	0.47	0.78	0.78	0.96	0.64
10/3/2021	2.03	1.3	1.35	1.74	1.62	1.83
10/15/2021	2.34	1.69	2.28	2	2.09	1.67
10/24/2021	2.24	1.7	2.25	2.12	2.21	1.85
11/12/2021	1.69	1.6	1.74	1.74	1.93	1.61
12/2/2021	0.53	0.37	0.47	0.59	0.38	0.39
12/6/2021	0.54	0.44	0.52	0.51	0.4	0.42
12/11/2021	0.5	0.52	0.47	0.54	0.48	0.56
12/15/2021	0.74	0.49	0.57	0.69	0.57	0.53
12/25/2021	0.62	0.53	0.64	0.46	0.6	0.63

Storm	RG_Airport	RG_Cityhall	RG_ParisDPW	RG_SauquoitPS	RG_Sherillpark	RG_WWTP
11/2/2020	0.8-mo;3-hr;0.3-in	0.9-mo;3-hr;0.3-in	0.9-mo;1-hr;0.2-in	1.0-mo;3-hr;0.4-in	0.6-mo;6-hr;0.3-in	0.8-mo;3-hr;0.3-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
11/22/2020	0.6-mo;6-hr;0.2-in	0.5-mo;6-hr;0.2-in	1.0-mo;6-hr;0.4-in	0.6-mo;6-hr;0.3-in	0.6-mo;6-hr;0.2-in	0.6-mo;12-hr;0.3-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
3/28/2021	1.0-mo;2-hr;0.3-in	1.0-mo;1-hr;0.2-in	1.1-mo;2-hr;0.4-in	0.5-mo;2-hr;0.2-in	1.0-mo;15-min;0.2-in	1.2-mo;1-hr;0.3-in
4/20/2021	0.8-mo;12-hr;0.4-in	0.7-mo;12-hr;0.4-in	1.0-mo;48-hr;0.7-in	1.4-mo;6-hr;0.6-in	1.2-mo;48-hr;0.8-in	0.8-mo;12-hr;0.4-in
4/29/2021	1.6-mo;24-hr;1.0-in	1.6-mo;24-hr;1.0-in	1.5-mo;6-hr;0.7-in	0.0-mo;15-min;0.0-in	1.5-mo;24-hr;0.9-in	1.6-mo;24-hr;1.0-in
5/2/2021	1.2-mo;6-hr;0.5-in	1.2-mo;6-hr;0.5-in	0.9-mo;6-hr;0.4-in	0.0-mo;15-min;0.0-in	0.9-mo;6-hr;0.4-in	1.3-mo;6-hr;0.6-in
5/4/2021	1.4-mo;6-hr;0.6-in	1.0-mo;1-hr;0.2-in	0.8-mo;24-hr;0.5-in	0.0-mo;15-min;0.0-in	0.9-mo;6-hr;0.4-in	1.1-mo;6-hr;0.5-in
5/8/2021	1.2-mo;48-hr;0.9-in	1.1-mo;12-hr;0.6-in	1.2-mo;12-hr;0.7-in	0.0-mo;15-min;0.0-in	1.2-mo;48-hr;0.8-in	1.0-mo;48-hr;0.7-in
5/26/2021	0.9-mo;15-min;0.1-in	1.5-mo;15-min;0.2-in	1.0-mo;1-hr;0.2-in	0.0-mo;15-min;0.0-in	1.0-mo;1-hr;0.2-in	1.5-mo;1-hr;0.3-in
5/28/2021	1.1-mo;12-hr;0.6-in	0.8-mo;12-hr;0.4-in	1.0-mo;12-hr;0.5-in	0.0-mo;15-min;0.0-in	1.0-mo;12-hr;0.5-in	0.9-mo;12-hr;0.5-in
6/2/2021	1.6-mo;15-min;0.3-in	0.3-mo;48-hr;0.2-in	1.9-mo;15-min;0.3-in	0.5-mo;24-hr;0.3-in	0.5-mo;30-min;0.1-in	0.3-mo;48-hr;0.2-in
6/14/2021	1.3-yr;1-hr;0.9-in	2.1-mo;1-hr;0.4-in	1.6-mo;15-min;0.2-in	2.4-yr;1-hr;1.1-in	2.7-yr;15-min;0.7-in	3.3-mo;30-min;0.4-in
6/19/2021	0.0-mo;15-min;0.0-in	8.2-mo;1-hr;0.7-in	1.9-mo;15-min;0.3-in	3.3-yr;30-min;1.0-in	6.9-mo;30-min;0.6-in	3.3-mo;1-hr;0.5-in
7/2/2021	0.7-mo;12-hr;0.4-in	0.9-mo;12-hr;0.5-in	3.0-mo;30-min;0.4-in	1.7-mo;15-min;0.3-in	11.3-yr;1-hr;1.6-in	2.4-mo;1-hr;0.5-in
7/8/2021	6.7-mo;3-hr;1.1-in	12.7-yr;3-hr;2.5-in	1.0-yr;3-hr;1.3-in	6.5-yr;3-hr;2.2-in	10.6-yr;3-hr;2.4-in	14.5-yr;3-hr;2.5-in
7/11/2021	2.8-mo;3-hr;0.8-in	2.0-yr;2-hr;1.4-in	6.5-mo;2-hr;0.9-in	1.1-yr;3-hr;1.4-in	1.9-yr;2-hr;1.4-in	3.4-yr;2-hr;1.6-in
7/17/2021	5.1-mo;24-hr;1.7-in	1.4-yr;1-hr;0.9-in	2.7-mo;48-hr;1.5-in	1.9-yr;1-hr;1.0-in	5.7-mo;24-hr;1.8-in	1.2-yr;24-hr;2.5-in
7/29/2021	1.1-mo;6-hr;0.5-in	1.0-mo;1-hr;0.2-in	0.6-mo;6-hr;0.3-in	1.3-mo;6-hr;0.6-in	0.6-mo;6-hr;0.2-in	2.8-mo;15-min;0.4-in
8/1/2021	4.9-mo;15-min;0.4-in	1.8-mo;3-hr;0.7-in	1.8-mo;30-min;0.3-in	1.5-mo;2-hr;0.5-in	4.6-mo;1-hr;0.6-in	1.7-mo;3-hr;0.6-in
8/13/2021	1.2-mo;30-min;0.2-in	11.1-mo;1-hr;0.8-in	1.2-mo;15-min;0.2-in	7.0-yr;1-hr;1.5-in	2.3-yr;15-min;0.7-in	1.3-yr;6-hr;1.6-in
8/17/2021	4.8-yr;48-hr;4.0-in	8.8-mo;48-hr;2.5-in	1.2-yr;48-hr;2.8-in	1.6-yr;48-hr;3.0-in	2.5-yr;72-hr;4.0-in	1.3-yr;48-hr;2.9-in
9/8/2021	3.8-mo;1-hr;0.5-in	2.6-mo;1-hr;0.5-in	1.9-mo;1-hr;0.4-in	1.8-mo;1-hr;0.4-in	1.8-mo;1-hr;0.4-in	2.5-mo;1-hr;0.5-in
9/12/2021	3.7-mo;1-hr;0.5-in	1.6-mo;6-hr;0.7-in	1.9-mo;6-hr;0.8-in	1.7-mo;1-hr;0.4-in	2.5-mo;1-hr;0.5-in	1.6-mo;6-hr;0.7-in
9/15/2021	0.8-mo;12-hr;0.4-in	1.0-mo;15-min;0.1-in	1.4-mo;15-min;0.2-in	0.8-mo;2-hr;0.2-in	0.8-mo;2-hr;0.2-in	0.9-mo;6-hr;0.4-in
9/23/2021	3.4-yr;1-hr;1.2-in	1.0-mo;6-hr;0.4-in	2.0-mo;1-hr;0.4-in	3.8-mo;1-hr;0.5-in	7.5-mo;1-hr;0.7-in	1.4-mo;6-hr;0.6-in
10/3/2021	5.0-mo;48-hr;2.0-in	1.8-mo;48-hr;1.3-in	1.9-mo;48-hr;1.3-in	3.5-mo;48-hr;1.7-in	3.1-mo;48-hr;1.6-in	3.8-mo;48-hr;1.8-in
10/15/2021	4.8-mo;48-hr;2.0-in	2.0-mo;72-hr;1.7-in	4.4-mo;72-hr;2.3-in	3.2-mo;72-hr;2.0-in	3.5-mo;72-hr;2.1-in	2.0-mo;72-hr;1.6-in
10/24/2021	5.9-mo;48-hr;2.1-in	3.4-mo;48-hr;1.7-in	5.9-mo;48-hr;2.1-in	5.4-mo;48-hr;2.1-in	5.7-mo;48-hr;2.1-in	3.9-mo;48-hr;1.8-in
11/12/2021	5.1-mo;6-hr;1.2-in	4.8-mo;6-hr;1.2-in	5.8-mo;6-hr;1.3-in	6.9-mo;6-hr;1.3-in	1.0-yr;6-hr;1.5-in	4.8-mo;6-hr;1.2-in
12/2/2021	0.8-mo;24-hr;0.5-in	0.6-mo;24-hr;0.4-in	0.7-mo;24-hr;0.5-in	0.9-mo;24-hr;0.6-in	0.6-mo;24-hr;0.4-in	0.6-mo;24-hr;0.4-in
12/6/2021	1.2-mo;6-hr;0.5-in	0.8-mo;6-hr;0.3-in	1.1-mo;6-hr;0.5-in	0.9-mo;6-hr;0.4-in	0.9-mo;6-hr;0.4-in	0.7-mo;6-hr;0.3-in
12/11/2021	0.9-mo;6-hr;0.4-in	0.9-mo;2-hr;0.3-in	0.8-mo;2-hr;0.3-in	1.0-mo;1-hr;0.2-in	0.9-mo;2-hr;0.3-in	0.9-mo;2-hr;0.3-in
12/15/2021	1.3-mo;12-hr;0.7-in	0.9-mo;12-hr;0.5-in	1.0-mo;12-hr;0.5-in	1.2-mo;12-hr;0.7-in	0.9-mo;12-hr;0.5-in	0.9-mo;12-hr;0.5-in
12/25/2021	1.6-mo;15-min;0.3-in	1.5-mo;15-min;0.2-in	1.0-mo;24-hr;0.6-in	0.8-mo;1-hr;0.2-in	1.1-mo;12-hr;0.6-in	1.3-mo;1-hr;0.3-in

Basin Size							
Meter	StartDate	EndDate		Basin	Area	Length	InchMiles
ONEIDA_205	10/1/2020	2/1/2022		ONEIDA_205	99	41,980.00	0
ONEIDA_249	10/1/2020	12/29/2021		ONEIDA_249	99	2,650.00	0
ONEIDA_31223	10/1/2020	2/1/2022		ONEIDA_31223	99	33,299.00	0
Oneida_APT1	10/1/2020	2/1/2022		Oneida_APT1	532	26,391.00	0
Oneida_DFD1	10/1/2020	2/1/2022		Oneida_DFD1	123	15,574.00	0
Oneida_DFD2	10/1/2020	2/1/2022		Oneida_DFD2	344	47,017.00	0
Oneida_DFD3	10/1/2020	2/1/2022		Oneida_DFD3	228	34,577.00	0
Oneida_HHI1	10/1/2020	1/18/2022		Oneida_HHI1	216	35,910.00	0
Oneida_MAR1A	10/1/2020	2/1/2022		Oneida_MAR1A	5,082.00	429,838.00	0
Oneida_MAR2	10/1/2020	2/1/2022		Oneida_MAR2	232	40,894.00	0
Oneida_MCI2	10/1/2020	2/1/2022		Oneida_MCI2	244	32,223.00	0
Oneida_MCI3	10/1/2020	2/1/2022		Oneida_MCI3	90	7,090.00	0
Oneida_NHD1	10/1/2020	2/1/2022		Oneida_NHD1	225	30,579.00	0
Oneida_NHD11	10/1/2020	2/1/2022		Oneida_NHD11	106	14,198.00	0
Oneida_NHD18	10/1/2020	1/19/2022		Oneida_NHD18	344	34,903.00	0
Oneida_NHD2	10/1/2020	2/1/2022		Oneida_NHD2	61	5,250.00	0
Oneida_NHD20	10/1/2020	2/1/2022		Oneida_NHD20	426	37,856.00	0
Oneida_NHD21	10/1/2020	2/1/2022		Oneida_NHD21	394	45,742.00	0
Oneida_NHD22	10/1/2020	2/1/2022		Oneida_NHD22	532	57,479.00	0
Oneida_NHD23	10/1/2020	2/1/2022		Oneida_NHD23	701	74,255.00	0
Oneida_NHD24	10/1/2020	2/1/2022		Oneida_NHD24	330	34,200.00	0
Oneida_NHD46	10/1/2020	2/1/2022		Oneida_NHD46	254	17,714.00	0
Oneida_NHD5	10/1/2020	2/1/2022		Oneida_NHD5	294	30,229.00	0
Oneida_NHD6	10/1/2020	2/1/2022		Oneida_NHD6	237	26,097.00	0
Oneida_NHD9	10/1/2020	2/1/2022		Oneida_NHD9	241	31,169.00	0
Oneida_NUI1	10/1/2020	2/1/2022		Oneida_NUI1	24	9,011.00	0
Oneida_NUI1A	10/1/2020	2/1/2022		Oneida_NUI1A	99	9,999.00	0
Oneida_NUI2	10/1/2020	2/1/2022		Oneida_NUI2	1,070.00	122,183.00	0
Oneida_NYM1	10/1/2020	2/1/2022		Oneida_NYM1	62	5,808.00	0
Oneida_NYM2	10/1/2020	2/1/2022		Oneida_NYM2	162	19,741.00	0
Oneida_NYM3A	10/1/2020	2/1/2022		Oneida_NYM3A	212	23,789.00	0
Oneida_NYM3B	10/1/2020	1/20/2022		Oneida_NYM3B	263	27,395.00	0
Oneida_OKY1A	10/1/2020	1/19/2022		Oneida_OKY1A	105	12,946.00	0
Oneida_OKY1B	10/1/2020	2/1/2022		Oneida_OKY1B	126	22,096.00	0
Oneida_PRS4	10/1/2020	1/19/2022		Oneida_PRS4	193	23,423.00	0
Oneida_PRS5	10/1/2020	2/1/2022		Oneida_PRS5	138	16,953.00	0
Oneida_PRS6A	10/1/2020	2/1/2022		Oneida_PRS6A	122	13,369.00	0
Oneida_SCI1	10/1/2020	1/19/2022		Oneida_SCI1	92	19,791.00	0
Oneida_SCI2	10/1/2020	1/19/2022		Oneida_SCI2	172	39,878.00	0
Oneida_SCI3	10/1/2020	2/1/2022		Oneida_SCI3	575	75,360.00	0
Oneida_SCI4	10/1/2020	2/1/2022		Oneida_SCI4	138	53,220.00	0
Oneida_SCY1A	10/1/2020	2/1/2022		Oneida_SCY1A	129	19,503.00	0
Oneida_SFI1	10/1/2020	2/1/2022		Oneida_SFI1	767	81,909.00	0
Oneida_SFI2	10/1/2020	2/1/2022		Oneida_SFI2	142	8,115.00	0
Oneida_SFI3	10/1/2020	2/1/2022		Oneida_SFI3	9,999.00	99,999.00	0
Oneida_SFI4	6/25/2021	2/1/2022		Oneida_SFI4	99	3,022.00	0
Oneida_UCA2	10/1/2020	2/1/2022		Oneida_UCA2	231	33,284.00	0
Oneida_UCA3	10/1/2020	2/1/2022		Oneida_UCA3	177	13,964.00	0

Basin Size							
Meter	StartDate	EndDate		Basin	Area	Length	InchMiles
Oneida_VNHD1	10/1/2020	1/20/2022		Oneida_VNHD1	405	46,012.00	0
Oneida_WBO1	10/1/2020	1/18/2022		Oneida_WBO1	504	64,665.00	0
Oneida_WBO2A	10/1/2020	2/1/2022		Oneida_WBO2A	145	26,427.00	0
Oneida_WBO2B	10/1/2020	2/1/2022		Oneida_WBO2B	176	26,529.00	0
Oneida_WBO3	10/1/2020	1/18/2022		Oneida_WBO3	32	1,978.00	0
Oneida_WHN1	10/1/2020	2/1/2022		Oneida_WHN1	116	15,156.00	0
Oneida_WHN2	10/1/2020	2/1/2022		Oneida_WHN2	117	15,592.00	0
Oneida_WHN31	10/1/2020	1/20/2022		Oneida_WHN31	148	16,758.00	0
Oneida_WHN32	10/1/2020	2/1/2022		Oneida_WHN32	360	37,125.00	0
Oneida_WHN8	10/1/2020	2/1/2022		Oneida_WHN8	53	6,724.00	0
Oneida_WOI1	10/1/2020	2/1/2022		Oneida_WOI1	147	54,242.00	0
Oneida_YKV1A	10/1/2020	2/1/2022		Oneida_YKV1A	292	50,475.00	0
Oneida_YKV1B	10/1/2020	2/1/2022		Oneida_YKV1B	12	2,325.00	0
Oneida_YKV2	10/1/2020	2/1/2022		Oneida_YKV2	173	23,130.00	0
Private_348G	10/1/2020	11/30/2021		Private_348G	9,999.00	99,999.00	0
Utica_5351	10/1/2020	12/31/2021		Utica_5351	9,999.00	99,999.00	0

Meter	GrossPeak	GrossMin	GrossAvg	GrossWW	GrossBI	NetPeak	NetMin	NetAvg	NetWW	NetBI		Net Base Infiltration in GPD/LF		
											Meter	NetAvg	NetWW	NetBI
ONEIDA_205	0.506	0.359	0.452	0.149	0.303	0.506	0.359	0.452	0.149	0.303	Oneida_SFI4	125.172	29.381	95.791
ONEIDA_249	0.229	0.162	0.207	0.061	0.146	0.229	0.162	0.207	0.061	0.146	ONEIDA_249	78.074	23.124	54.95
ONEIDA_31223	0.191	0.117	0.163	0.059	0.104	0.191	0.117	0.163	0.059	0.104	Oneida_NHD2	34.44	6.641	27.799
Oneida_APT1	0.323	0.168	0.223	0.075	0.147	0.323	0.168	0.223	0.075	0.147	Oneida_MCI3	43.38	27.667	15.713
Oneida_DFD1	0.072	0.049	0.062	0.015	0.047	0.072	0.049	0.062	0.015	0.047	Oneida_NYM1	19.044	4.31	14.734
Oneida_DFD2	0.221	0.114	0.169	0.071	0.098	0.221	0.114	0.169	0.071	0.098	Oneida_YKV1B	14.277	2.364	11.913
Oneida_DFD3	0.165	0.051	0.114	0.073	0.041	0.165	0.051	0.114	0.073	0.041	Oneida_NYM2	12.949	1.82	11.129
Oneida_HHI1	0.393	0.186	0.287	0.184	0.104	0.168	0.034	0.099	0.073	0.026	Oneida_WBO3	13.747	4.648	9.099
Oneida_MAR1A	1.567	0.708	1.206	0.785	0.42	1.567	0.708	1.206	0.785	0.42	Oneida_NHD46	10.566	2.204	8.362
Oneida_MAR2	1.735	0.887	1.388	0.935	0.454	0.248	0.05	0.183	0.149	0.033	Oneida_NYM3B	9.99	2.256	7.734
Oneida_MCI2	1.251	0.855	1.091	0.34	0.759	0.09	0	0.03	0.03	0	Oneida_PRS6A	9.938	2.584	7.353
Oneida_MCI3	2.083	1.26	1.771	0.758	1.02	0.379	0.155	0.308	0.196	0.111	Oneida_NUI1A	7.288	0.06	7.228
Oneida_NHD1	0.303	0.223	0.263	0.06	0.204	0.303	0.223	0.263	0.06	0.204	ONEIDA_205	10.777	3.557	7.22
Oneida_NHD11	0.071	0.026	0.05	0.027	0.023	0.071	0.026	0.05	0.027	0.023	Oneida_NHD1	8.616	1.955	6.66
Oneida_NHD18	0.102	0.047	0.064	0.019	0.045	0.102	0.047	0.064	0.019	0.045	Oneida_WO1	13.09	6.531	6.558
Oneida_NHD2	0.207	0.156	0.181	0.035	0.146	0.207	0.156	0.181	0.035	0.146	Oneida_WBO2A	8.771	2.583	6.188
Oneida_NHD20	0.305	0.178	0.252	0.102	0.15	0.305	0.178	0.252	0.102	0.15	Oneida_NHD21	8.441	2.853	5.588
Oneida_NHD21	0.339	0.129	0.216	0.113	0.103	0.339	0.129	0.216	0.113	0.103	Oneida_NHD22	7.581	2.103	5.478
Oneida_NHD22	0.354	0.158	0.253	0.126	0.127	0.354	0.158	0.253	0.126	0.127	Oneida_VNHD1	8.137	2.796	5.342
Oneida_NHD23	0.34	0.193	0.264	0.099	0.164	0.34	0.193	0.264	0.099	0.164	Oneida_WBO2B	6.86	1.705	5.155
Oneida_NHD24	0.124	0.054	0.087	0.039	0.048	0.124	0.054	0.087	0.039	0.048	Oneida_SFI2	7.473	2.48	4.994
Oneida_NHD46	0.212	0.159	0.187	0.039	0.148	0.212	0.159	0.187	0.039	0.148	Oneida_UCA2	9.01	4.031	4.979
Oneida_NHD5	0.141	0.093	0.121	0.036	0.086	0.141	0.093	0.121	0.036	0.086	Oneida_SCI3	5.934	1.195	4.74
Oneida_NHD6	0.183	0.099	0.161	0.078	0.083	0.183	0.099	0.161	0.078	0.083	Oneida_YKV1A	7.192	2.906	4.286
Oneida_NHD9	0.123	0.076	0.104	0.035	0.069	0.123	0.076	0.104	0.035	0.069	Oneida_NUI1	2.421	1.319	1.972
Oneida_NUI1	0.074	0.072	0.073	0.001	0.072	0.074	0.072	0.073	0.001	0.072	Oneida_NHD20	6.666	2.694	3.971
Oneida_NUI1A	3.216	1.962	2.715	1.47	1.312	0.734	0.541	0.63	0.162	0.467	Oneida_NUI2	5.152	1.327	3.826
Oneida_NUI2	0.125	0.091	0.111	0.025	0.086	0.125	0.091	0.111	0.025	0.086	Oneida_WHN31	6.023	2.386	3.637
Oneida_NYM1	0.272	0.232	0.256	0.036	0.22	0.272	0.232	0.256	0.036	0.22	Oneida_OKY1A	4.969	1.428	3.54
Oneida_NYM2	0.202	0.143	0.18	0.05	0.13	0.202	0.143	0.18	0.05	0.13	Oneida_YKV2	6.498	2.986	3.513
Oneida_NYM3A	0.043	0.02	0.034	0.016	0.018	0.046	0.075	0.049	0.064	0.018	Oneida_OKY1B	4.721	1.429	3.292
Oneida_NYM3B	0.272	0.232	0.274	0.062	0.212	0.304	0.232	0.274	0.062	0.212	Oneida_NHD6	6.177	2.997	3.18
Oneida_OKY1A	0.075	0.049	0.064	0.018	0.046	0.075	0.049	0.064	0.018	0.046	ONEIDA_31223	4.884	1.768	3.116
Oneida_OKY1B	0.125	0.079	0.104	0.032	0.073	0.125	0.079	0.104	0.032	0.073	Oneida_DFD1	4.013	0.991	3.022
Oneida_PRS4	0.027	0.01	0.019	0.01	0.009	0.027	0.01	0.019	0.01	0.009	Oneida_SCI1	4.616	1.737	2.879
Oneida_PRS5	0.043	0.02	0.034	0.016	0.018	0.043	0.02	0.034	0.016	0.018	Oneida_NHD5	4.014	1.178	2.836
Oneida_PRS6A	0.153	0.106	0.133	0.035	0.098	0.153	0.106	0.133	0.035	0.098	Oneida_WHN2	6.22	3.491	2.728
Oneida_SCI1	0.107	0.063	0.091	0.034	0.057	0.107	0.063	0.091	0.034	0.057	Oneida_WHO1	4.248	1.729	2.518
Oneida_SCI2	0.332	0.199	0.274	0.098	0.182	0.011	0	0.003	0.003	0	Oneida_WHN8	13.002	10.556	2.446
Oneida_SCI3	0.824	0.593	0.721	0.188	0.54	0.5	0.394	0.447	0.09	0.357	Oneida_WHN1	4.599	2.297	2.302
Oneida_SCI4	5.56	3.603	4.776	1.858	3.168	0.247	0	0.022	0.022	0	Oneida_NHD21	4.727	2.465	2.262

Oneida_SCY1A	0.061	0.029	0.05	0.024	0.026	0.061	0.029	0.05	0.024	0.026	Oneida_NHD9	3.344	1.125	2.219
Oneida_SFI1	0.33	0.163	0.247	0.113	0.134	0.33	0.163	0.247	0.113	0.134	Oneida_NHD23	3.55	1.337	2.213
Oneida_SFI2	0.127	0.043	0.061	0.02	0.041	0.127	0.043	0.061	0.02	0.041	Oneida_NHD22	4.41	2.2	2.21
Oneida_SFI3	1.04	0.698	0.893	0	0	0	0	0	0	0	Oneida_DFD2	3.604	1.51	2.093
Oneida_SFI4	1.452	1.039	1.271	0.089	0.289	0.452	0.323	0.378	0.089	0.289	Oneida_SFI1	3.021	1.384	1.637
Oneida_UCA2	0.666	0.455	0.584	0.278	0.305	0.338	0.204	0.3	0.134	0.166	Oneida_NHD11	3.528	1.894	1.633
Oneida_UCA3	0.082	0.016	0.057	0.044	0.013	0.082	0.016	0.057	0.044	0.013	Oneida_NHD24	2.536	1.127	1.41
Oneida_VNHD1	0.421	0.29	0.374	0.129	0.246	0.421	0.29	0.374	0.129	0.246	Oneida_SCY1A	2.555	1.225	1.33
Oneida_WBO1	0.343	0.195	0.275	0.112	0.163	0.343	0.195	0.275	0.112	0.163	Oneida_NHD18	1.827	0.549	1.278
Oneida_WBO2A	0.267	0.183	0.232	0.068	0.164	0.267	0.183	0.232	0.068	0.164	Oneida_WHN32	2.285	1.037	1.248
Oneida_WBO2B	0.203	0.149	0.182	0.045	0.137	0.203	0.149	0.182	0.045	0.137	Oneida_DFD3	3.301	2.116	1.185
Oneida_WBO3	0.031	0.019	0.027	0.009	0.018	0.031	0.019	0.027	0.009	0.018	Oneida_PRS5	2.017	0.941	1.075
Oneida_WHN1	0.104	0.039	0.07	0.035	0.035	0.104	0.039	0.07	0.035	0.035	Oneida_MAR1A	2.805	1.827	0.978
Oneida_WHN2	0.137	0.05	0.097	0.054	0.043	0.137	0.05	0.097	0.054	0.043	Utica_5351	1.055	0.104	0.951
Oneida_WHN31	0.131	0.068	0.101	0.04	0.061	0.131	0.068	0.101	0.04	0.061	Oneida_UCA3	4.079	3.134	0.945
Oneida_WHN32	0.127	0.052	0.085	0.038	0.046	0.127	0.052	0.085	0.038	0.046	Oneida_MAR2	4.467	3.655	0.812
Oneida_WHN8	0.14	0.022	0.087	0.071	0.016	0.14	0.022	0.087	0.071	0.016	Private_348G	1.241	0.431	0.81
Oneida_WOI1	2.022	1.483	1.817	0.714	1.103	0.821	0.49	0.71	0.354	0.356	Oneida_HHI1	2.764	2.036	0.728
Oneida_YKV1A	0.42	0.264	0.363	0.147	0.216	0.42	0.264	0.363	0.147	0.216	Oneida_PRS4	0.827	0.444	0.383
Oneida_YKV1B	0.038	0.028	0.033	0.005	0.028	0.038	0.028	0.033	0.005	0.028	Oneida_MCI2	0.94	0.94	0
Oneida_YKV2	0.192	0.095	0.15	0.069	0.081	0.192	0.095	0.15	0.069	0.081	Oneida_NUI1	1.254	1.254	0
Private_348G	0.144	0.09	0.124	0.043	0.081	0.144	0.09	0.124	0.043	0.081	Oneida_SCI2	0.067	0.067	0
Utica_5351	0.112	0.097	0.105	0.01	0.095	0.112	0.097	0.105	0.01	0.095	Oneida_SCI4	0.422	0.422	0
											Oneida_SFI3	0	0	0

	RDII Volume in Million Gallons					RDII Severity in Gal/LF/In of rain				
	7/8/21	7/11/21	8/17/21	10/24/21	11/12/21	7/8/21	7/11/21	8/17/21	10/24/21	11/12/21
Storm	7/8/21	7/11/21	8/17/21	10/24/21	11/12/21	7/8/21	7/11/21	8/17/21	10/24/21	11/12/21
Oneida_SFI4	0.636	1.238	2.691	1.122	0.862	92.7	228.8	246.2	180.1	166.1
ONEIDA_249	0.321	0.336	0.72	0.38	0.224	81.0	79.7	78.5	64.0	48.6
ONEIDA_205	3.486	3.481	6.381	3.672	2.667	55.5	52.1	43.9	39.1	36.5
ONEIDA_31223	1.878	2.517	4.359	2.54	1.251	37.7	47.5	37.8	34.1	21.6
Oneida_WBO2A	1.719	0.84	3.513	1.413	0.839	28.4	18.3	37.9	25.1	18.3
Oneida_NYM2	1.071	0.864	2.099	1.175	0.82	22.1	23.9	33.3	30.4	24.7
Oneida_VNHD1	2.309	1.663	3.852	2.342	1.663	22.1	19.5	22.2	23.3	19.7
Oneida_NYM3B	1.324	0.708	2.803	1.465	0.778	20.5	14.4	30.2	25.3	16.4
Oneida_NYM1	0.289	0.281	n/a	0.417	0.228	20.2	26.5	n/a	36.7	23.4
Oneida_YKV1A	2.377	2.319	6.365	4.696	2.806	19.6	25.4	38.3	45.6	32.5
Oneida_NHD23	2.717	2.169	5.315	3.338	2.198	18.2	16.3	18.9	20.2	16.2
Oneida_NHD2	0.223	0.184	0.502	0.282	0.111	17.6	18.6	24.5	24.7	11.5
Oneida_DFD1	0.718	0.393	1.159	0.759	0.317	17.1	12.6	23.4	25.8	12.4
Oneida_OKY1B	0.558	0.411	2.623	1.633	0.37	15.4	14.7	25.9	33.1	9.9
Oneida_NHD22	1.894	1.58	4.235	2.324	1.622	15.2	15.5	23.7	21.0	17.0
Oneida_SCI3	1.627	1.281	3.701	2.415	1.572	14.5	10.7	14.2	14.3	12.0
Oneida_YKV2	0.792	0.715	1.996	0.873	0.399	14.2	17.1	26.2	18.5	10.1
Oneida_YKV1B	0.076	n/a	n/a	0.08	0.031	13.6	n/a	n/a	17.0	7.7
Oneida_WBO2B	0.789	0.26	1.642	0.976	0.54	13.0	5.6	17.7	17.3	11.8
Oneida_NHD5	0.918	0.777	2.431	1.502	0.981	12.5	13.7	20.6	22.8	17.6
Oneida_MCI2	0.928	0.437	1.577	0.098	1.013	12.4	4.8	7.8	1.4	17.1
Oneida_NHD24	0.78	0.651	1.713	1.087	0.668	11.9	11.3	14.6	14.6	11.2
Oneida_NYM3A	0.66	n/a	n/a	0.978	n/a	11.8	n/a	n/a	19.4	n/a
Oneida_NHD21	1.104	0.978	2.488	1.534	1.165	11.8	12.3	17.2	17.0	15.2
Oneida_WBO3	0.051	0.048	0.143	0.146	0.021	11.3	13.9	20.7	34.7	6.2
Oneida_PRS6A	0.223	0.15	0.44	0.465	0.339	11.2	7.1	9.5	15.5	14.6
Oneida_NHD18	0.91	0.698	1.776	0.947	0.677	11.0	10.5	13.5	12.8	10.6
Oneida_DFD2	1.353	0.935	2.758	1.387	n/a	10.8	10.1	18.6	15.7	n/a
Oneida_NHD9	0.805	0.606	1.197	0.603	0.359	10.4	10.3	10.4	9.3	6.4
Oneida_OKY1A	0.221	0.149	0.772	0.38	0.127	10.4	9.1	13.0	13.2	5.8
Oneida_NHD20	0.862	0.752	1.945	1.335	0.614	9.9	10.6	14.1	16.9	9.0
Oneida_WHN2	0.361	0.279	1.041	0.612	0.265	9.8	10.0	19.7	18.6	9.8
Oneida_SFI1	1.777	1.595	5.082	2.141	2.074	9.1	10.0	18.7	13.0	15.2
Oneida_NUI1A	0.189	0.097	5.983	0.092	0.024	9.1	6.2	154.7	4.3	1.4
Oneida_NHD1	0.543	0.379	1.481	0.675	0.395	8.4	7.4	12.1	10.1	7.3
Oneida_NHD46	0.356	n/a	n/a	1.311	0.677	8.3	n/a	n/a	34.0	20.7
Oneida_NHD11	0.259	0.161	0.407	0.243	0.204	8.2	6.7	7.3	8.0	8.1
Oneida_WHN1	0.288	0.206	0.821	0.347	0.221	8.1	7.6	15.9	10.8	8.4
Oneida_PRS5	0.196	0.282	0.39	0.4	0.21	7.8	10.5	6.7	10.5	7.1
Oneida_NHD6	0.437	0.456	1.494	0.878	0.54	6.9	9.3	14.7	15.5	11.2
Oneida_WHN31	0.276	0.215	0.84	0.417	0.266	6.9	6.9	13.3	11.5	8.7
Oneida_DFD3	0.587	0.622	1.445	0.778	0.594	6.4	9.1	13.3	12.0	10.4
Oneida_PRS4	0.194	0.206	0.304	0.197	0.213	5.6	5.5	3.8	3.7	5.2
Oneida_WBO1	0.798	0.666	2.218	1.546	0.704	5.4	5.9	9.8	11.2	6.3
Oneida_MAR2	0.498	0.493	1.564	0.772	0.242	5.3	7.0	11.0	9.3	3.5
Oneida_HHI1	0.427	0.345	0.424	0.507	-0.002	5.2	5.4	3.0	6.5	0.0
Oneida_APT1	0.212	0.181	0.96	0.432	0.164	4.9	5.4	7.9	7.3	3.7
Oneida_SCI2	0.291	0.341	0.799	0.81	0.233	4.9	5.4	5.8	9.1	3.4
Oneida_SCY1A	0.237	0.11	0.343	0.178	0.083	4.8	2.8	5.3	4.6	2.6
Private_348G	1.046	0.87	1.446	0.688	0.515	4.6	4.9	4.0	3.3	3.0

Storm	RDII Volume in Million Gallons					RDII Severity in Gal/LF/in of rain				
	7/8/21	7/11/21	8/17/21	10/24/21	11/12/21	7/8/21	7/11/21	8/17/21	10/24/21	11/12/21
Oneida_UCA2	0.398	-0.279	0.334	0.321	1.311	4.5	-4.2	3.1	5.1	9.9
Oneida_WHN32	0.374	0.454	1.042	n/a	0.373	4.4	7.0	8.0	n/a	5.8
Oneida_SCI4	0.446	0.164	3.231	0.986	2.254	3.9	1.2	10.6	8.5	16.2
Oneida_SFI2	0.076	0.075	0.217	0.115	0.076	3.7	4.5	8.1	7.2	5.7
Oneida_NUI2	1.035	-0.704	7.08	-0.064	2.099	3.2	-2.9	17.0	-0.3	10.3
Oneida_MAR1A	2.151	1.075	4.771	2.621	1.785	2.2	1.5	3.2	3.0	2.5
Oneida_SCI1	0.054	0.067	0.096	0.112	0.372	1.8	2.1	1.4	2.5	10.8
Oneida_UCA3	0.053	0.05	0.164	0.073	0.059	1.4	1.8	3.5	2.6	2.5
Oneida_WOI1	-0.316	-2.383	-3.179	-0.323	1.147	-3.6	-34.8	-12.8	-2.7	12.5
Oneida_WHN8	-0.065	0.073	0.452	0.169	0.123	-4.1	5.8	17.8	11.6	10.1
Oneida_SFI3	-1.164	-2.358	-0.922	0.121	-0.663	-4.8	-12.3	-2.9	0.6	-4.0
Oneida_MCI3	-0.198	-0.448	1.478	0.818	0.718	-12.0	-34.8	51.2	8.5	55.1
Oneida_NUI1	-0.262	0.118	0.228	0.218	0.262	-14.1	8.3	6.6	11.2	16.9

	RDII as Capture Coefficient -(% Rainfall as RDII)				
Storm	7/8/21	7/11/21	8/17/21	10/24/21	11/12/21
ONEIDA_205	86.6	81.3	68.6	61.0	57.1
ONEIDA_31223	46.7	58.8	46.9	42.2	26.8
Oneida_WBO2A	19.1	12.3	25.5	16.9	12.3
Oneida_YKV1A	12.5	16.2	24.4	29.1	20.7
Oneida_SFI4	10.4	25.7	27.7	20.2	18.7
Oneida_OKY1B	10.0	9.5	16.7	21.4	6.4
Oneida_NYM2	9.9	10.7	15.0	13.7	11.1
Oneida_YKV1B	9.7	n/a	n/a	12.1	5.5
Oneida_VNHD1	9.2	8.1	9.3	9.7	8.3
ONEIDA_249	8.0	7.9	7.7	6.3	4.8
Oneida_DFD1	8.0	5.9	10.9	12.0	5.8
Oneida_NYM3B	7.9	5.5	11.6	9.7	6.3
Oneida_WBO2B	7.2	3.1	9.8	9.6	6.5
Oneida_NHD23	7.1	6.4	7.4	7.9	6.3
Oneida_SCI3	7.0	5.2	6.9	6.9	5.8
Oneida_YKV2	7.0	8.4	12.9	9.1	5.0
Oneida_NYM1	7.0	9.1	n/a	12.6	8.1
Oneida_NHD22	6.0	6.2	9.4	8.4	6.8
Oneida_MCI2	6.0	1.8	2.9	0.7	8.3
Oneida_NHD2	5.6	5.9	7.8	7.8	3.6
Oneida_SCI4	5.5	1.0	7.9	12.0	13.1
Oneida_DFD2	5.4	5.1	9.4	7.9	n/a
Oneida_NHD21	5.0	5.3	7.3	7.2	6.5
Oneida_NHD9	5.0	4.9	5.0	4.5	3.1
Oneida_NYM3A	4.9	n/a	n/a	8.0	n/a
Oneida_WHN2	4.8	4.9	9.7	9.1	4.8
Oneida_NHD5	4.7	5.2	7.8	8.6	6.7
Oneida_OKY1A	4.7	4.1	5.9	6.0	2.6
Oneida_NHD24	4.6	4.3	5.6	5.6	4.3
Oneida_PRS6A	4.5	2.9	3.8	6.3	5.9
Oneida_NHD1	4.2	3.7	6.1	5.0	3.6
Oneida_SCI2	4.2	4.6	5.0	7.7	2.9
Oneida_NHD18	4.1	3.9	5.0	4.8	4.0
Oneida_NHD11	4.0	3.3	3.6	4.0	4.0
Oneida_WHN1	3.9	3.7	7.7	5.2	4.0
Oneida_SFI1	3.6	3.9	7.3	5.1	6.0
Oneida_DFD3	3.6	5.1	7.4	6.7	5.8
Oneida_PRS5	3.5	4.7	3.0	4.8	3.2
Oneida_MAR2	3.4	4.6	7.1	6.1	2.3
Oneida_NUI1A	3.4	2.3	57.5	1.6	0.5
Oneida_NHD20	3.2	3.5	4.6	5.5	3.0
Oneida_HHI1	3.2	3.3	1.8	4.0	0.0
Oneida_WHN31	2.9	2.9	5.5	4.8	3.6
Oneida_NHD6	2.8	3.8	5.9	6.3	4.6
Oneida_SCY1A	2.7	1.6	3.0	2.6	1.4
Oneida_WBO3	2.6	3.2	4.7	7.9	1.4

	RDII as Capture Coefficient -(% Rainfall as RDII)				
Storm	7/8/21	7/11/21	8/17/21	10/24/21	11/12/21
Oneida_WBO1	2.5	2.8	4.6	5.3	3.0
Oneida_PRS4	2.5	2.5	1.7	1.7	2.3
Oneida_UCA2	2.4	-2.2	1.7	2.7	5.1
Oneida_NHD46	2.1	n/a	n/a	8.7	5.3
Oneida_WHN32	1.7	2.7	3.0	n/a	2.2
Oneida_SCI1	1.5	1.7	1.1	2.0	8.6
Oneida_NUI2	1.4	-1.2	7.1	-0.1	4.3
Oneida_APT1	0.9	1.0	1.4	1.3	0.7
Oneida_SFI2	0.8	1.0	1.7	1.5	1.2
Oneida_MAR1A	0.7	0.5	1.0	0.9	0.8
Oneida_UCA3	0.4	0.5	1.0	0.8	0.7
Private_348G	0.2	0.2	0.1	0.1	0.1
Utica_5351	0.1	0.0	0.1	0.1	0.0
Oneida_SFI3	-0.2	-0.5	-0.1	0.0	-0.1
Oneida_WHN8	-1.9	2.7	8.3	5.4	4.7
Oneida_MCI3	-3.5	-10.1	14.9	3.1	16.0
Oneida_WOI1	-4.8	-47.2	-17.4	-3.6	17.0
Oneida_NUI1	-19.5	11.5	9.1	15.5	23.4

Appendix B

Sauquoit Creek Pumping Station Rain Gauge Summary

Sauquoit Pump Station Rain Gauge Data (inches)

Data Provided by ADS Environmental Services

Monthly Summary	
Date	Rainfall
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	2.4
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
January 2021	1.95
February 2021	1.16
March 2021	1.29
April 2021	1.37
May 2021	3.55
June 2021	5.53
July 2021	9.82
August 2021	6.54
September 2021	2.96
October 2021	6.76
November 2021	2.89
December 2021	3.63

Yearly Summary	
Date	Rainfall
2019	55.71
2020	34.81
2021	47.45

*Data from the month of May
2021 is from the City Hall Rain
Gauge

Date	Rainfall				
1/1/2019	0.05	2/14/2019	0.14	3/31/2019	0.15
1/2/2019		2/15/2019	0.26	4/1/2019	0.03
1/3/2019	0.13	2/16/2019		4/2/2019	
1/4/2019	0.03	2/17/2019		4/3/2019	
1/5/2019		2/18/2019	0.03	4/4/2019	
1/6/2019	0.1	2/19/2019		4/5/2019	0.34
1/7/2019		2/20/2019		4/6/2019	0.22
1/8/2019	0.32	2/21/2019	0.02	4/7/2019	
1/9/2019	0.71	2/22/2019		4/8/2019	0.47
1/10/2019		2/23/2019		4/9/2019	0.24
1/11/2019		2/24/2019	0.34	4/10/2019	
1/12/2019		2/25/2019		4/11/2019	
1/13/2019		2/26/2019		4/12/2019	0.19
1/14/2019		2/27/2019		4/13/2019	
1/15/2019		2/28/2019	0.18	4/14/2019	0.27
1/16/2019		3/1/2019		4/15/2019	0.9
1/17/2019		3/2/2019		4/16/2019	
1/18/2019	0.03	3/3/2019	0.02	4/17/2019	
1/19/2019		3/4/2019	0.12	4/18/2019	0.14
1/20/2019		3/5/2019		4/19/2019	0.77
1/21/2019		3/6/2019	0.05	4/20/2019	0.14
1/22/2019	0.02	3/7/2019	0.06	4/21/2019	
1/23/2019	0.01	3/8/2019		4/22/2019	
1/24/2019	0.79	3/9/2019		4/23/2019	0.38
1/25/2019	0.13	3/10/2019	0.23	4/24/2019	0.01
1/26/2019		3/11/2019		4/25/2019	
1/27/2019	0.05	3/12/2019		4/26/2019	1.25
1/28/2019		3/13/2019	0.04	4/27/2019	0.22
1/29/2019		3/14/2019		4/28/2019	0.04
1/30/2019		3/15/2019	0.12	4/29/2019	0.01
1/31/2019		3/16/2019	0.02	4/30/2019	0.05
2/1/2019	0.08	3/17/2019	0.02	5/1/2019	0.39
2/2/2019	0.01	3/18/2019	0.01	5/2/2019	0.1
2/3/2019	0.02	3/19/2019		5/3/2019	0.28
2/4/2019	0.01	3/20/2019		5/4/2019	
2/5/2019	0.21	3/21/2019	0.16	5/5/2019	0.11
2/6/2019	0.37	3/22/2019	0.56	5/6/2019	0.27
2/7/2019	0.29	3/23/2019	0.02	5/7/2019	0.31
2/8/2019	0.27	3/24/2019		5/8/2019	0.01
2/9/2019	0.04	3/25/2019		5/9/2019	0.03
2/10/2019	0.01	3/26/2019		5/10/2019	1.92
2/11/2019	0.01	3/27/2019		5/11/2019	
2/12/2019		3/28/2019	0.02	5/12/2019	0.47
2/13/2019	0.09	3/29/2019	0.04	5/13/2019	0.6
		3/30/2019		5/14/2019	0.41

5/15/2019	0.08	6/29/2019	0.06	8/13/2019	
5/16/2019	0.03	6/30/2019	0.66	8/14/2019	
5/17/2019	0.12	7/1/2019		8/15/2019	0.1
5/18/2019		7/2/2019	0.1	8/16/2019	0.61
5/19/2019	0.31	7/3/2019		8/17/2019	1.04
5/20/2019	0.3	7/4/2019		8/18/2019	0.02
5/21/2019		7/5/2019		8/19/2019	0.2
5/22/2019		7/6/2019		8/20/2019	
5/23/2019	0.21	7/7/2019		8/21/2019	0.43
5/24/2019		7/8/2019		8/22/2019	
5/25/2019	0.26	7/9/2019		8/23/2019	
5/26/2019	0.05	7/10/2019		8/24/2019	
5/27/2019		7/11/2019	0.17	8/25/2019	
5/28/2019	0.38	7/12/2019	1.41	8/26/2019	
5/29/2019	0.01	7/13/2019		8/27/2019	
5/30/2019		7/14/2019		8/28/2019	1.07
5/31/2019		7/15/2019		8/29/2019	0.01
6/1/2019	0.21	7/16/2019	0.04	8/30/2019	
6/2/2019	0.19	7/17/2019	1.77	8/31/2019	
6/3/2019		7/18/2019		9/1/2019	0.01
6/4/2019	0.14	7/19/2019		9/2/2019	1.02
6/5/2019	0.79	7/20/2019	0.31	9/3/2019	
6/6/2019	0.02	7/21/2019		9/4/2019	0.2
6/7/2019		7/22/2019	0.8	9/5/2019	
6/8/2019		7/23/2019	0.01	9/6/2019	0.01
6/9/2019		7/24/2019		9/7/2019	0.52
6/10/2019	0.3	7/25/2019	0.01	9/8/2019	0.01
6/11/2019	0.14	7/26/2019		9/9/2019	
6/12/2019		7/27/2019		9/10/2019	0.03
6/13/2019	0.45	7/28/2019	0.04	9/11/2019	0.07
6/14/2019	0.06	7/29/2019	0.02	9/12/2019	0.05
6/15/2019	0.15	7/30/2019	0.03	9/13/2019	
6/16/2019	0.54	7/31/2019		9/14/2019	0.08
6/17/2019		8/1/2019		9/15/2019	0.01
6/18/2019		8/2/2019	0.01	9/16/2019	
6/19/2019		8/3/2019	0.39	9/17/2019	0.01
6/20/2019	1.71	8/4/2019		9/18/2019	
6/21/2019	0.17	8/5/2019		9/19/2019	0.01
6/22/2019		8/6/2019	0.18	9/20/2019	
6/23/2019		8/7/2019	0.74	9/21/2019	0.01
6/24/2019		8/8/2019	0.34	9/22/2019	0.01
6/25/2019	0.09	8/9/2019	0.01	9/23/2019	0.5
6/26/2019	0.04	8/10/2019	0.12	9/24/2019	0.17
6/27/2019		8/11/2019		9/25/2019	
6/28/2019		8/12/2019	0.11	9/26/2019	0.29

9/27/2019	0.01
9/28/2019	0.21
9/29/2019	
9/30/2019	
10/1/2019	1.12
10/2/2019	0.52
10/3/2019	0.26
10/4/2019	0.04
10/5/2019	
10/6/2019	0.14
10/7/2019	1.28
10/8/2019	
10/9/2019	
10/10/2019	
10/11/2019	
10/12/2019	0.02
10/13/2019	0.01
10/14/2019	
10/15/2019	
10/16/2019	1.57
10/17/2019	0.96
10/18/2019	0.06
10/19/2019	
10/20/2019	0.04
10/21/2019	
10/22/2019	1.08
10/23/2019	0.04
10/24/2019	
10/25/2019	0.06
10/26/2019	0.02
10/27/2019	0.87
10/28/2019	
10/29/2019	
10/30/2019	
10/31/2019	2.58
11/1/2019	0.45
11/2/2019	
11/3/2019	
11/4/2019	
11/5/2019	0.26
11/6/2019	
11/7/2019	0.02
11/8/2019	0.04
11/9/2019	
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	
11/17/2019	
11/18/2019	0.16
11/19/2019	0.47
11/20/2019	
11/21/2019	0.1
11/22/2019	0.23
11/23/2019	
11/24/2019	0.36
11/25/2019	
11/26/2019	
11/27/2019	0.48
11/28/2019	0.12
11/29/2019	
11/30/2019	
12/1/2019	
12/2/2019	0.23
12/3/2019	0.1
12/4/2019	0.27
12/5/2019	0.28
12/6/2019	
12/7/2019	0.19
12/8/2019	
12/9/2019	0.07
12/10/2019	0.22
12/11/2019	0.01
12/12/2019	
12/13/2019	0.04
12/14/2019	0.69
12/15/2019	0.1
12/16/2019	
12/17/2019	
12/18/2019	0.25
12/19/2019	
12/20/2019	0.01
12/21/2019	
12/22/2019	
12/23/2019	
12/24/2019	
12/25/2019	

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	
1/3/2020	
1/4/2020	0.4
1/5/2020	
1/6/2020	0.11
1/7/2020	0.03
1/8/2020	0.08
1/9/2020	
1/10/2020	0.33
1/11/2020	0.09
1/12/2020	0.11
1/13/2020	
1/14/2020	
1/15/2020	
1/16/2020	0.32
1/17/2020	
1/18/2020	
1/19/2020	0.03
1/20/2020	
1/21/2020	0.01
1/22/2020	0.01
1/23/2020	
1/24/2020	
1/25/2020	0.39
1/26/2020	0.06
1/27/2020	0.07
1/28/2020	
1/29/2020	
1/30/2020	
1/31/2020	
2/1/2020	
2/2/2020	0.01
2/3/2020	0.09
2/4/2020	
2/5/2020	
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	
2/12/2020	0.01
2/13/2020	0.26
2/14/2020	
2/15/2020	
2/16/2020	0.01
2/17/2020	
2/18/2020	0.17
2/19/2020	
2/20/2020	0.04
2/21/2020	
2/22/2020	
2/23/2020	
2/24/2020	
2/25/2020	0.01
2/26/2020	0.05
2/27/2020	0.7
2/28/2020	
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	
3/6/2020	
3/7/2020	
3/8/2020	
3/9/2020	
3/10/2020	0.35
3/11/2020	
3/12/2020	
3/13/2020	0.15
3/14/2020	
3/15/2020	
3/16/2020	
3/17/2020	0.02
3/18/2020	
3/19/2020	0.12
3/20/2020	0.46
3/21/2020	
3/22/2020	
3/23/2020	0.16
3/24/2020	0.23

3/25/2020	
3/26/2020	0.02
3/27/2020	
3/28/2020	0.1
3/29/2020	0.3
3/30/2020	0.39
3/31/2020	0.08
4/1/2020	
4/2/2020	
4/3/2020	0.21
4/4/2020	0.01
4/5/2020	
4/6/2020	
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	
4/13/2020	0.28
4/14/2020	
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	
4/21/2020	0.08
4/22/2020	0.09
4/23/2020	
4/24/2020	0.01
4/25/2020	
4/26/2020	0.65
4/27/2020	0.2
4/28/2020	
4/29/2020	
4/30/2020	0.53
5/1/2020	0.21
5/2/2020	0.03
5/3/2020	
5/4/2020	
5/5/2020	
5/6/2020	
5/7/2020	0.13
5/8/2020	

5/9/2020	0.1
5/10/2020	0.01
5/11/2020	
5/12/2020	0.01
5/13/2020	
5/14/2020	0.02
5/15/2020	1.08
5/16/2020	
5/17/2020	0.09
5/18/2020	0.62
5/19/2020	
5/20/2020	
5/21/2020	
5/22/2020	
5/23/2020	0.05
5/24/2020	
5/25/2020	0.02
5/26/2020	
5/27/2020	
5/28/2020	
5/29/2020	0.68
5/30/2020	0.07
5/31/2020	
6/1/2020	
6/2/2020	0.09
6/3/2020	
6/4/2020	
6/5/2020	0.06
6/6/2020	0.01
6/7/2020	
6/8/2020	
6/9/2020	
6/10/2020	
6/11/2020	0.49
6/12/2020	
6/13/2020	
6/14/2020	
6/15/2020	
6/16/2020	
6/17/2020	
6/18/2020	
6/19/2020	
6/20/2020	0.17
6/21/2020	
6/22/2020	

6/23/2020			
6/24/2020	0.07		
6/25/2020			
6/26/2020			
6/27/2020	0.23		
6/28/2020	0.11		
6/29/2020			
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			
7/6/2020			
7/7/2020			
7/8/2020	0.22		
7/9/2020			
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			
7/16/2020	0.85		
7/17/2020	0.01		
7/18/2020			
7/19/2020			
7/20/2020			
7/21/2020			
7/22/2020	0.17		
7/23/2020	0.79		
7/24/2020			
7/25/2020			
7/26/2020			
7/27/2020	0.01		
7/28/2020	0.96		
7/29/2020	0.12		
7/30/2020			
7/31/2020			
8/1/2020			
8/2/2020	0.15		
8/3/2020			
8/4/2020	1.47		
8/5/2020	0.02		
8/6/2020			
		8/7/2020	0.02
		8/8/2020	
		8/9/2020	
		8/10/2020	0.25
		8/11/2020	0.29
		8/12/2020	
		8/13/2020	
		8/14/2020	
		8/15/2020	
		8/16/2020	
		8/17/2020	0.08
		8/18/2020	0.01
		8/19/2020	
		8/20/2020	
		8/21/2020	
		8/22/2020	0.11
		8/23/2020	
		8/24/2020	
		8/25/2020	0.57
		8/26/2020	
		8/27/2020	0.92
		8/28/2020	
		8/29/2020	0.12
		8/30/2020	
		8/31/2020	
		9/1/2020	0.03
		9/2/2020	
		9/3/2020	
		9/4/2020	
		9/5/2020	
		9/6/2020	
		9/7/2020	
		9/8/2020	
		9/9/2020	
		9/10/2020	
		9/11/2020	
		9/12/2020	
		9/13/2020	0.5
		9/14/2020	
		9/15/2020	
		9/16/2020	0.01
		9/17/2020	0.03
		9/18/2020	
		9/19/2020	
		9/20/2020	
			9/21/2020
			9/22/2020
			9/23/2020
			9/24/2020
			9/25/2020
			9/26/2020
			9/27/2020
			9/28/2020 0.14
			9/29/2020 0.73
			9/30/2020 0.52
			10/1/2020
			10/2/2020
			10/3/2020
			10/4/2020
			10/5/2020
			10/6/2020
			10/7/2020
			10/8/2020
			10/9/2020
			10/10/2020
			10/11/2020
			10/12/2020
			10/13/2020
			10/14/2020
			10/15/2020
			10/16/2020
			10/17/2020
			10/18/2020
			10/19/2020
			10/20/2020
			10/21/2020
			10/22/2020
			10/23/2020
			10/24/2020
			10/25/2020
			10/26/2020
			10/27/2020
			10/28/2020
			10/29/2020
			10/30/2020
			10/31/2020
			11/1/2020 0.08
			11/2/2020 0.19
			11/3/2020 0.38
			11/4/2020

11/5/2020		12/20/2020		2/3/2021	
11/6/2020		12/21/2020	0.32	2/4/2021	0.2
11/7/2020		12/22/2020	0.04	2/5/2021	0.08
11/8/2020		12/23/2020		2/6/2021	0.03
11/9/2020		12/24/2020	0.94	2/7/2021	0.01
11/10/2020		12/25/2020	0.56	2/8/2021	0.01
11/11/2020	0.74	12/26/2020		2/9/2021	0.09
11/12/2020		12/27/2020	0.03	2/10/2021	0.01
11/13/2020	0.03	12/28/2020	0.01	2/11/2021	
11/14/2020	0.02	12/29/2020	0.04	2/12/2021	
11/15/2020	0.31	12/30/2020	0.29	2/13/2021	
11/16/2020	0.02	12/31/2020	0.11	2/14/2021	
11/17/2020	0.12	1/1/2021		2/15/2021	0.05
11/18/2020		1/2/2021	0.92	2/16/2021	0.01
11/19/2020	0.06	1/3/2021	0.04	2/17/2021	0.03
11/20/2020		1/4/2021	0.04	2/18/2021	
11/21/2020		1/5/2021	0.02	2/19/2021	
11/22/2020	0.02	1/6/2021		2/20/2021	0.02
11/23/2020	0.31	1/7/2021		2/21/2021	
11/24/2020		1/8/2021		2/22/2021	
11/25/2020	0.34	1/9/2021		2/23/2021	0.42
11/26/2020	0.36	1/10/2021		2/24/2021	
11/27/2020	0.02	1/11/2021		2/25/2021	
11/28/2020	0.01	1/12/2021		2/26/2021	
11/29/2020		1/13/2021		2/27/2021	0.13
11/30/2020	0.31	1/14/2021		2/28/2021	
12/1/2020	0.11	1/15/2021	0.01	3/1/2021	0.14
12/2/2020	0.14	1/16/2021	0.44	3/2/2021	
12/3/2020		1/17/2021	0.17	3/3/2021	
12/4/2020		1/18/2021	0.09	3/4/2021	
12/5/2020		1/19/2021	0.05	3/5/2021	
12/6/2020		1/20/2021	0.07	3/6/2021	
12/7/2020		1/21/2021	0.01	3/7/2021	0.01
12/8/2020		1/22/2021	0.01	3/8/2021	0.01
12/9/2020	0.17	1/23/2021	0.06	3/9/2021	
12/10/2020	0.03	1/24/2021	0.01	3/10/2021	
12/11/2020		1/25/2021	0.01	3/11/2021	
12/12/2020	0.04	1/26/2021		3/12/2021	
12/13/2020		1/27/2021		3/13/2021	
12/14/2020		1/28/2021		3/14/2021	
12/15/2020		1/29/2021		3/15/2021	
12/16/2020		1/30/2021		3/16/2021	
12/17/2020	0.09	1/31/2021		3/17/2021	
12/18/2020	0.08	2/1/2021	0.06	3/18/2021	0.26
12/19/2020		2/2/2021	0.01	3/19/2021	

3/20/2021		5/4/2021	0.32	6/18/2021	0.09
3/21/2021		5/5/2021	0.3	6/19/2021	1.33
3/22/2021		5/6/2021	0.01	6/20/2021	0.02
3/23/2021		5/7/2021		6/21/2021	0.46
3/24/2021	0.19	5/8/2021	0.61	6/22/2021	0.01
3/25/2021		5/9/2021	0.07	6/23/2021	
3/26/2021	0.09	5/10/2021	0.14	6/24/2021	
3/27/2021	0.02	5/11/2021		6/25/2021	
3/28/2021	0.01	5/12/2021	0.01	6/26/2021	
3/29/2021		5/13/2021		6/27/2021	
3/30/2021	0.53	5/14/2021		6/28/2021	0.33
3/31/2021	0.03	5/15/2021		6/29/2021	0.05
4/1/2021	0.15	5/16/2021		6/30/2021	1.09
4/2/2021	0.03	5/17/2021		7/1/2021	
4/3/2021		5/18/2021		7/2/2021	0.61
4/4/2021		5/19/2021		7/3/2021	0.17
4/5/2021		5/20/2021		7/4/2021	0
4/6/2021		5/21/2021		7/5/2021	0.11
4/7/2021		5/22/2021		7/6/2021	0.22
4/8/2021		5/23/2021		7/7/2021	0.01
4/9/2021		5/24/2021		7/8/2021	2.56
4/10/2021		5/25/2021		7/9/2021	0.15
4/11/2021		5/26/2021	0.62	7/10/2021	
4/12/2021	0.08	5/27/2021		7/11/2021	0.3
4/13/2021	0.01	5/28/2021	0.42	7/12/2021	1.48
4/14/2021		5/29/2021	0.03	7/13/2021	0.09
4/15/2021	0.16	5/30/2021	0.19	7/14/2021	0.11
4/16/2021	0.12	5/31/2021	0.15	7/15/2021	
4/17/2021	0.01	6/1/2021		7/16/2021	
4/18/2021		6/2/2021		7/17/2021	0.78
4/19/2021		6/3/2021	0.2	7/18/2021	1.47
4/20/2021		6/4/2021	0.1	7/19/2021	
4/21/2021	0.01	6/5/2021		7/20/2021	0.56
4/22/2021	0.67	6/6/2021		7/21/2021	0.05
4/23/2021	0.01	6/7/2021	0.02	7/22/2021	
4/24/2021		6/8/2021	0.11	7/23/2021	0.09
4/25/2021	0.01	6/9/2021		7/24/2021	
4/26/2021		6/10/2021		7/25/2021	0.25
4/27/2021	0.01	6/11/2021		7/26/2021	
4/28/2021	0.09	6/12/2021	0.11	7/27/2021	0.08
4/29/2021	0.01	6/13/2021		7/28/2021	
4/30/2021		6/14/2021	1.23	7/29/2021	0.56
5/1/2021	0.03	6/15/2021	0.38	7/30/2021	0.17
5/2/2021	0.59	6/16/2021		7/31/2021	
5/3/2021	0.06	6/17/2021		8/1/2021	0.55

8/2/2021	0.05
8/3/2021	
8/4/2021	
8/5/2021	
8/6/2021	
8/7/2021	
8/8/2021	
8/9/2021	0.06
8/10/2021	0.02
8/11/2021	0.44
8/12/2021	
8/13/2021	1.53
8/14/2021	0.11
8/15/2021	
8/16/2021	
8/17/2021	1.18
8/18/2021	0.87
8/19/2021	1.34
8/20/2021	
8/21/2021	
8/22/2021	0.31
8/23/2021	
8/24/2021	0.01
8/25/2021	
8/26/2021	
8/27/2021	
8/28/2021	0.01
8/29/2021	0.06
8/30/2021	
8/31/2021	
9/1/2021	
9/2/2021	
9/3/2021	
9/4/2021	
9/5/2021	0.11
9/6/2021	0.11
9/7/2021	0.01
9/8/2021	0.53
9/9/2021	
9/10/2021	
9/11/2021	
9/12/2021	0.58
9/13/2021	0.21
9/14/2021	
9/15/2021	0.33

9/16/2021	
9/17/2021	
9/18/2021	0.03
9/19/2021	0.01
9/20/2021	
9/21/2021	
9/22/2021	0.08
9/23/2021	0.78
9/24/2021	
9/25/2021	
9/26/2021	0.01
9/27/2021	0.17
9/28/2021	
9/29/2021	
9/30/2021	
10/1/2021	
10/2/2021	
10/3/2021	0.28
10/4/2021	0.87
10/5/2021	0.59
10/6/2021	
10/7/2021	
10/8/2021	
10/9/2021	
10/10/2021	
10/11/2021	
10/12/2021	
10/13/2021	
10/14/2021	0.02
10/15/2021	0.46
10/16/2021	1.08
10/17/2021	0.15
10/18/2021	0.43
10/19/2021	
10/20/2021	
10/21/2021	0.07
10/22/2021	0.21
10/23/2021	
10/24/2021	0.01
10/25/2021	0.6
10/26/2021	1.47
10/27/2021	0.04
10/28/2021	
10/29/2021	
10/30/2021	0.36

10/31/2021	0.12
11/1/2021	0
11/2/2021	0
11/3/2021	0.01
11/4/2021	0
11/5/2021	0
11/6/2021	0
11/7/2021	0
11/8/2021	0
11/9/2021	0
11/10/2021	0.24
11/11/2021	0
11/12/2021	1.33
11/13/2021	0.27
11/14/2021	0.13
11/15/2021	0.27
11/16/2021	0.08
11/17/2021	0
11/18/2021	0.33
11/19/2021	0.19
11/20/2021	
11/21/2021	
11/22/2021	
11/23/2021	
11/24/2021	
11/25/2021	
11/26/2021	
11/27/2021	
11/28/2021	
11/29/2021	
11/30/2021	0.04
12/1/2021	0.02
12/2/2021	0.59
12/3/2021	0
12/4/2021	0.01
12/5/2021	0
12/6/2021	0.39
12/7/2021	0.15
12/8/2021	0.04
12/9/2021	0.12
12/10/2021	0.01
12/11/2021	0.48
12/12/2021	0.06
12/13/2021	0
12/14/2021	0

12/15/2021	0.54
12/16/2021	0.15
12/17/2021	0
12/18/2021	0.44
12/19/2021	0.01
12/20/2021	0
12/21/2021	0
12/22/2021	0
12/23/2021	0
12/24/2021	0.05
12/25/2021	0.46
12/26/2021	0
12/27/2021	0
12/28/2021	0.07
12/29/2021	0.02
12/30/2021	0.01
12/31/2021	0.01