



ENGINEER'S REPORT FOR INDIVIDUAL SPDES PERMIT

**RIATO STONE, LLC - LIBERTY SAND & GRAVEL
TOWN OF FALLSBURG, SULLIVAN COUNTY**

**NEW YORK STATE DEPARTMENT
OF ENVIRONMENTAL CONSERVATION
MLF # 30217**

SPDES PERMIT NO. TBD

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PROFESSIONAL ENGINEER'S CERTIFICATION

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P.E. License No. 075084

Date: December 17, 2021



WARNING: It is in violation of New York State Education Law, Article 145, Section 7209, Special Provision 2, for any person unless he/she is acting under the direction of a Licensed Professional Engineer or Land Surveyor to alter an item in any way. If an item bearing the seal of an Engineer or Land Surveyor is altered, the altering Engineer or Land Surveyor shall affix to the item his/her seal and notation, "Altered By" followed by his/her signature and date of such alteration, and a specific description of the alteration.



1.0 GENERAL DESCRIPTION AND HISTORY OF PROJECT

This document is being submitted to the New York State Department of Environmental Conservation (NYSDEC) by JMT of New York, Inc., on behalf of Riato Stone, LLC (Riato Stone) for the Liberty Sand & Gravel facility located in the Town of Liberty, Sullivan County, New York. A Site Location Map is attached in Exhibit A.

Per NYSDEC 6 NYCRR 750-1.6(e), due to the proposed use of chemical treatment of process water that may be comingled with stormwater, a NY-2C application (Exhibit B) is being submitted for an Individual Site State Pollutant Discharge Elimination System Permitting Program (SPDES) Permit. This Engineer's Report has been prepared in support of the SPDES Permit Application. Operation of the site has the potential to generate stormwater discharges from mineral mining, processing, stockpiling, hauling and related operations. This report includes a discussion of the proposed stormwater control features that have been or will be implemented for the purpose of minimizing pollution in stormwater discharges.

Water not re-used or recycled by the facility is discharged through the following two outfalls:

SPDES MSGP

Outfall 001: Spring Water and Unaffected Area Runoff Diversion

Individual SPDES Permit

Outfall 002- Stormwater Pond Discharge

A notice of intent has been filed for coverage under the SPDES general permit for industrial activity Sector J for Outfall 001.

A Stormwater Pollution Prevention Plan (SWPPP) was developed for compliance with the MSGP in 2016 in conjunction with and application for a mining permit. This report addresses items identified in the NYSDEC's Notice of Incomplete Application (August 27, 2014) and subsequent Department comments in email dated June 4, 2015.

The stormwater management strategy described in this report supersedes the strategy outlined in the 2016 SWPPP. The 2016 SWPPP is being revised to cover the applicable aspects of the passive stormwater management activity and discharges to Outfall 001.

This Engineer's Report documents the best management practices for stormwater that is potentially comingled with the overflows from the water recycling system, with discharges to Outfall 002.

1.1 ENVIRONMENTAL PERMITS

The following is a list of environmental permits associated with Liberty Sand & Gravel:



- NYSDEC Mined Land Reclamation Permit: #3-4828-00061/00005
- NYSDEC Air Facility Registration: #3-4828-00061/00008

2.0 WATER USE AND SOURCES

The facility extracts sand and stone from the ground and utilizes stormwater runoff for washing the produced stone product. The facility operates a sand washing plant to prepare a marketable sand product, C33 concrete sand. The process also produces washed landscape stone and crushed stone as a byproduct of the primary sand production operation.

Raw material is mined from the face with an excavator and loaded on a haul truck and brought to the plant for processing. A loader is used to run the material across an Extech S7 screener. The screen separates the material into landscape stone of three different sizes and a mixture of sand and 1-inch minus stone. The sand and 1-inch minus material is run through a Commander 510 screener/washer. The washed material is then separated into landscape stone of two different sizes and a sand slurry. The slurry from the Commander then goes to a sand screw. The screw discharges washed C33 sand to a stacking conveyor and the wastewater slurry is discharged into the retention pond. Landscaping stone may be crushed to smaller sizes using an Extec C12 crusher according to market demand. After processing, material is relocated via loader into various piles for storage and sale. The plant has the capacity to produce 300 tons of washed sand per day.

Materials are loaded out in subcontractor owned trucks. The trucks are weighed on the scale on entry and departure. All of the mobile equipment used in the mining activity belongs to a subcontractor. Mobile equipment is swapped out as needed. Under current normal operations the subcontractor uses a haul truck, two loaders, an excavator and a skid steer.

Single phase line power is used on site to run the scale, sump pumps, and other ancillary equipment such as lights. The wash plant equipment is run by individual diesel engines on the individual pieces of equipment. The sand screw is auxiliary powered from the Commander screener/washer through hydraulics.

The normal operating schedule is 8 hours a day, Monday to Saturday, year-round. The facility occasionally operates 10 hours a day during weekdays to meet market demand. The wash plant is operated seasonally, generally April 15 to November 15. Dry screening can be conducted year-round.

Wash water is supplied to the wash plant by a 600 gallon per minute (gpm) skid pump that pulls water from the stormwater settling pond located in the southern part of the site. All of the water demand for plant operations is provided by pond. In periods of very low precipitation an onsite spring can replenish the pond



to offset water losses to retained moisture in the washed product or to evaporation and infiltration. No water is imported for use on site.

The retention of residual moisture in the material produced on site combined with losses to evapotranspiration and infiltration has typically exceeded the volume of stormwater runoff that would otherwise result in stormwater discharges from the pond. However, evapotranspiration and infiltration losses are neglected in the hydrologic and hydraulic analysis presented here. The pond storage capacity, conveyances and outfall structure have been designed to accommodate all of the stormwater runoff that comes in contact with industrial activity on site based on industry standard analytical methods (Soil Conservation Service TR-20 Unit Hydrograph and Curve Number Methodology, standard hydrologic soil groups and land cover types).

2.1 PRECIPITATION, DRAINAGE AND SURFACE WATERS

The average yearly precipitation for Sullivan County varies based on location. Liberty NE 1 is the closest station to the mine site (approximately 2 $\frac{3}{4}$ miles east), where data was available. According to The National Weather Service (NOAA), the annual precipitation in Liberty, New York is 51.6 inches. The precipitation data is available for 1981 through 2010 and is provided in the table below.

Local Precipitation

Total precipitation in West Point, New York, 1981-2010 (Source: NWS.NOAA.GOV/climate)

Station	Annual Precipitation (inches)
LIBERTY NE 1, NY US USC00304731	51.6

Although significant amounts of precipitation fall to the land surface on an annual basis, not all of this water recharges surface water and groundwater systems. Precipitation that falls on the land surface is subject to evapotranspiration back to the atmosphere, becomes surface runoff to the drainage system, or infiltrates the ground for potential recharge to the water table. Significant portions of precipitation are consumed by evapotranspiration processes through which water is taken up by plants and/or adsorbed into the soil and is then evaporated to the atmosphere. The amount of evapotranspiration varies during the year because of seasonal climate fluctuations in temperature, humidity, the number of daylight hours, and the amount of leafy vegetation (i.e., the vegetative growing cycle). Runoff is the amount of precipitation that eventually recharges surface water.

Depending upon the regional topography, surface water runoff will eventually drain into a receiving stream or river system. A drainage basin is a definable area in which all of the runoff eventually flows into a common water body. Topographic ridges or high elevation areas that form the boundaries of drainage basins are called



“divides”. Surface water flows away from topographic highs (uplands and hilltops) and towards topographic lows, which often contain major water bodies (rivers, lakes, and ponds). A drainage “subbasin” is a subdivision of a drainage basin. It is defined by the watershed area of a significant tributary to the primary receiving body within the drainage basin.

The site is located within the Delaware River Major Drainage Basin and Middle Delaware-Mongaup-Brodhead sub-basin. According to the NYSDEC, this drainage basin has a watershed area of 12,800 square miles and includes New York, New Jersey, Pennsylvania, and Delaware, with only one-fifth situated within the state of New York. The headwaters are in the Catskill Mountains and eventually drain to the Delaware Bay and Atlantic Ocean.

2.1.1 Middle Delaware-Mongaup-Brodhead Watershed

Liberty Sand & Gravel is located in the Middle Delaware-Mongaup-Brodhead Watershed. The Middle Delaware-Mongaup-Brodhead Watershed is situated in Orange, Sullivan, and Ulster Counties within New York State, with approximately 34% of the watershed located in Sullivan County. According to the U.S. Department of Agriculture Natural Resources Conservation Service (USDA NRCS), Middle Delaware-Mongaup-Brodhead Watershed includes 978,261 acres total, with 331,019 acres in Sullivan County.

2.1.1.1 East Mongaup River / Mongaup River

A small unnamed tributary of the East Mongaup River is located south of NYSDEC wetland LE-20, which borders the site along the southwest side. The unnamed tributary is classified by NYSDEC as a class B(T) stream, and by the United States Fish & Wildlife Service (USFWS) as National Wetland Inventory (NWI) wetland Riverine (R4SBC), approximately 1.2 acres in size. The East Mongaup River is located approximately two miles southwest of the site and eventually drains south to the Delaware River. The portion of the river from the middle to source is referred to as East Mongaup River while the portion of the river from the mouth to the middle is called the Mongaup River.

2.1.2 State Regulated Freshwater Wetland LE-20

The source of the unnamed tributary is a wetland area bordering the facility on the southeast side. This wetland is identified in the New York State inventory as State Regulated Freshwater Wetland LE-20, 31.8 acres in size.

2.1.3 Intermittent Drainage Feature

An unnamed drainage feature crosses the center of the site, conveying runoff from off-site areas northwest of the facility and from roadside ditches along Burnt Ridge Road. This drainage feature flows intermittently in accordance with climactic conditions and discharges to State Wetland LE-20. The intermittent drainage



feature is an extension of tributary of the East Mongaup River, is federally designated NWI R4SBC, and is labeled Intermittent Drainage on the drawings.

2.1.4 Pre-/Post-Development Discharge

HydroCAD was used to model runoff rates from the active areas of the mine and the upland areas that will be diverted away from the active areas. The HydroCAD Model Report and supporting information (USDS Soils Report for the site and NOAA Precipitation Frequency Estimates for Liberty, NY) can be found in Exhibit F. The following table compares the runoff rates from the current and future areas affected by industrial activity (current permit term affected area and the proposed mine expansion area) for the pre-development and post-development conditions.

Storm Event	24-hour Precipitation Inches	Pre-Development Discharge (cfs)	Uncontrolled Post-Development Discharge (cfs)	Controlled Post-Development Discharge (cfs)
90th Percentile	1.4	2.55	41.76	0.42
1-year	2.63	20.19	93.03	2.29
10-year	4.82	65.52	183.31	13.2
25-year	5.84	88.87	224.93	26.82
100-year	7.42	126.09	289.09	65.26

Precipitation data source NOAA Atlas 14 Point Precipitation Frequency Estimates, Liberty, NY, except 90th Percentile event data source New York State Stormwater Management Design Manual Figure 4.1

In the post-development condition runoff from upland areas is diverted around the areas with industrial activity. The post-development discharge includes runoff only from the current mine acreage and the proposed expansion acreage. To make a proper pre/post comparison, the pre-development discharge tabulated above similarly represents runoff only from the current mining area and proposed expansion area, being conveyed by the proposed stormwater management features. The controlled post development rates are achieved through detention in the North and South Bays of the stormwater pond due to the controlled release rates imposed by the outfall structure. Time of concentration and CNs based on cover type are tabulated in the HydroCAD report, attached in Exhibit F.

Stormwater controls for the facility consist of two primary systems. The first is a passive system for stormwater diversion, conveyance, treatment and discharge. The second is an operator-controlled flocculant system for removal of sediment from the water recycling system that supplies water for the wash plant.



2.2 PASSIVE STORMWATER MANAGEMENT SYSTEM

Stormwater that comes in contact with industrial activity in the active mine area is presently captured and conveyed to the facility stormwater pond. Stormwater falling on the expansion area will be captured and conveyed by a drainage ditch leading to the stormwater pond.

The primary strategy for stormwater management is separation of runoff that has come in contact with industrial activity from runoff that has not come in contact with industrial activity (from undisturbed areas). This is accomplished by diversion of runoff from upland areas to prevent contact with industrial activity. Runoff from six subdrainage areas (see Sheet 2) are to be diverted around the areas where facility operations are conducted. Diverted water is converted back to non-erosive sheet flow or discharged into unaffected waterbodies crossing the site. Since it does not come in contact with industrial activity, treatment is not required for the diverted water.

2.2.1 Diversion

The upland areas that contribute runoff to the site consist mostly of rural residential land use with a mix of open meadow and forest cover. One of the upland areas consists of a portion of the mine site that has been reclaimed and consists of open meadow cover. Acreages and time-of-concentration line lengths of the upland areas are shown on Sheet 2 of the drawing set.

The reclaimed area runoff is captured in an existing diversion ditch that conveys water to the top of the facility access road. In the current condition, this water flows along the access road to culverts on McIntosh Road. The culverts discharge to the previously described tributary of the East Mongaup River. In the proposed configuration, the reclaimed area diversion ditch will be conveyed under the access road and will discharge into State Wetland LE-20 on the north side of McIntosh Road.

Under the current site conditions Upland Areas 1, 2 and 3 are not diverted. Presently these areas flow through the active mining area and are captured in the stormwater pond. In the proposed condition, runoff from Upland Area 1 will be diverted to the above-mentioned ditch that diverts runoff from the reclaimed area. Runoff from Upland Area 2 will be diverted to a sump that directly captures runoff from Upland Area 3 and also captures the water from the on-site spring. The sump will have controlled outlets that allow the operator to either use the accumulated water for general fresh water use or convey the water through a pipe under the processing area, discharging to the intermittent drainage feature that crosses the site at Outfall 001. The pipe is sized to accommodate the runoff from Upland Areas 2 and 3 during a flow from a 100-year 24-hr storm without causing the sump to overflow.

Runoff from Upland Area 6 is presently captured by the intermittent drainage feature. Expansion of the mine will convert the lower part of the drainage to active industrial use. In the proposed condition, Runoff from



Upland Area 6 will be diverted into the intermittent drainage feature further up the channel, immediately upstream of the point where the expansion area access road crosses the intermittent drainage channel.

Runoff from Upland Areas 4 and 5 presently flows through an undeveloped portion of the site and are captured by State Wetland LE-20. In the proposed condition, runoff from each area will be diverted around the expanded mine. The diversion ditch for Upland Area 4 will discharge to the intermittent drainage feature. The diversion ditch for Upland Area 5 will convey runoff to a flow spreader (labeled Level Spreader 1 on the drawings). The level spreader will convert the concentrated flow back to sheet flow, and the runoff will continue downslope to be captured in State Wetland LE-20.

Diversion ditches are designed in accordance with the New York State Blue Book Standards and Specifications for Lined Waterways. Diversion ditch dimensions and lining material are tabulated on Sheet 4 of the drawing set. Flows for determining the diversion ditch dimensions were developed using HydroCAD. The HydroCAD Model Report is included as Exhibit F.

2.2.2 Internal Stormwater Flow Management

The internal management of stormwater that has come in contact with industrial activity will consist of capture within the Existing Mine Area and the proposed Expansion Area, conveyance to the stormwater pond and detention prior to discharge. The Existing Mine Area and the stormwater pond are located within the current Permit Term Affected Area. Runoff from the Existing Mine Area flows directly into the stormwater pond. Runoff from the expansion area will be conveyed by temporary ditches to a stormwater basin established at the entrance to the expansion area. Overflow from the stormwater basin will be conveyed in pipe over the intermittent drainage feature. The pipe will discharge into the expansion area stormwater ditch. The pipe and ditch have been conservatively designed to carry the runoff from the 100-year 24-hr storm. The expansion area stormwater ditch is included in the diversion ditch specification table listing dimensions and lining material on Sheet 4 of the drawing set. The ditch conveys expansion area stormwater to the North Bay of the stormwater pond.

The stormwater pond will be divided into three bays separated by earth berms. A Return Bay will be established in the northwest corner of the stormwater pond to receive return flows from the wash plant. The return flow will be treated with flocculant as described below in Section 2.3. The Return Bay will overflow into the main North Bay of the stormwater pond. Since the withdrawal from the North Bay for the wash plant is approximately equal to the return rate, this flow does not affect the hydraulic analysis of the stormwater pond. Runoff from the Existing Mine Area flows directly into the central part of the stormwater pond that will become the North Bay. A flow limiting weir will separate the North Bay from the South Bay.



Under normal operating conditions, the recycling of water through the wash plant gradually reduces the volume of water in the North Bay, due to moisture retained in the finished product. As a result, in the absence of precipitation there is no overflow to the South Bay where the pond outfall structure is located.

Together, the North Bay and the South Bay will provide detention of stormwater runoff through the controlled release rates imposed by the weir between the bays and the outfall structure. The North Bay will serve as the primary treatment feature for runoff that comes in contact with industrial activity.

The discharge from the outfall structure will be conveyed through the pond embankment and under the yard access road in pipes, discharging to an improved ditch on the west side of the facility access road. An anti-seep collar will be placed around the pipes where they pass through the pond embankment. A detail for the anti-seep collar is included on Sheet 4 of the drawing set. The road ditch is included in the diversion ditch specification table listing dimensions and lining material on Sheet 4 of the drawing set.

As noted above, the existing reclaimed area diversion ditch runs along the west side of the access road to culverts on McIntosh Road. A small basin will be constructed at the point where the improved road ditch meets the reclaimed area diversion ditch. Stormwater from the basin will be conveyed under the access road in pipes, discharging to Wetland LE-20 through an outlet with a stone apron energy dissipator on the east side of the access road. This configuration will effectively eliminate site runoff from within the Life of Mine area to the McIntosh Road culverts. The configuration of the stone apron energy dissipator is shown on Sheet 3 of the drawing set. Details for the stone apron energy dissipator are provided on Sheet 4. The stone apron will not cross the 100-foot wetland buffer present at this location. The energy dissipator will reduce the flow velocity to 1 foot per second for the 10-year storm, which can be managed by natural vegetation cover without damage.

The hydrologic and hydraulic analysis of the active mine and expansion areas treats the disturbed areas as newly graded with a CN of 94. The entire area of the stormwater pond (119,784 square feet including all three bays and the berms separating the bays) is treated as an impermeable surface within the main mine area subcatchment. Acreage of subcatchment areas are shown on Sheet 2 of the drawing set and tabulated in the HydroCAD Model Report in Appendix F. The stormwater pond presently has an embankment with a nominal top-of-bank elevation of 1457.0. The water level was measured at 1454+/- on August 24, 2021. The low flow orifices in the outlet structure will establish the static elevation in the South Bay at 1451.5. The low flow orifices in the weir between bays will establish the static elevation in the North Bay at 1452.5.

2.2.2.1 Pond Sizing Parameters

The combined area captured and conveyed to the stormwater pond (the existing mine area and the proposed expansion area) comprises 29 acres. The surface area of the North Bay is 1.9 acres. The pond depth needed in the North Bay to provide 3600 cubic feet per acre of contributing area is 1.26 feet. The existing average



depth of the pond has not been measured but maintenance dredging will ensure that the average depth at the normal water level is greater than 1.26 feet.

The primary outlet invert of the South Bay outfall structure will be set 3 feet above the static water level to provide dewatering zone above sediment storage zone in South Bay.

Receiving drainage basin (Mongaup watershed) is not impaired for sediment. Dewatering duration (time for water level to fall back to the normal static level) after 10-year storm is in excess of 4 days in the larger North Bay and approximately 22 hours in the South Bay.

The water quality volume (WQv) for the controlled area based on a 90th percentile storm of 1.4 inches, 29 total acres of drainage area and no impervious surfaces is 2 acre-feet. The weir of the North Bay provides 1.9 acre-feet of storage below the primary invert. The South Bay outlet structure provides 0.9 acres-ft below the peak storage elevation in the South Bay during the 90th percentile storm, for a total storage of 2.8 acre-feet. The weir between the bays will provide for a plug-flow detention time in the North Bay of 111 hours for the 90th percentile storm. The low flow outlets in the outfall structure of the south bay will provide over 26 hours of plug flow detention time for the 90th percentile storm. The average plug flow detention time for the combined 2.8 acre-feet in both bays is 87 hours.

2.2.2.2 Emergency Spillway and Perimeter Ditch

Although the stormwater pond outfall structure has been sized to pass the 100-year storm, an emergency spillway will be constructed to safely convey the excess from extreme events without compromising the perimeter berm. There will be no discharge through the emergency spillway during the 100-year storm. The invert elevation of the emergency spillway will be established at el. 1456.0. The location of the emergency spill way is shown on Sheet 3 of the drawing set, and the construction details are shown on Sheet 4.

A perimeter ditch captures runoff from the yard areas immediately surrounding the stormwater pond. Runoff is conveyed to sumps on the southeast side of the pond and pumped into the North Bay. A 12-inch diameter pump carries the ditch under the emergency spillway.

2.2.2.3 Intermittent Drainage Stream Continuity

Three diversion ditches will discharge into the intermittent drainage feature. Diversion Ditch 3 for Upland Area 4 has the largest flow, 8 cubic feet per second during a 10-year 24-hour storm. Outlets will be constructed in accordance with the New York State Blue Book Standard and Specification for Rock Outlet Protection, and all will be sized based on the flow from the Upland Area 4 diversion ditch.

The intermittent drainage feature will be conveyed under the expansion area access road in culverts. Continuity of the flow will be provided in accordance with Army Corps guidance for stream crossing best



management practices and applicable permit requirements. This intermittent drainage feature is not a State designated waterway.

2.3 WATER RECYCLING SYSTEM

The facility operator has chosen to implement flocculant treatment for the wash plant water recycling system to reduce sediment in the wash plant water intake in order to obtain greater efficiency in the performance of the wash plant and to reduce turbidity in the stormwater pond.

2.3.1 Flocculent System

The wash plant draws water from the North Bay of the pond. The plant discharges process water into the small Return Bay at the northwest corner of the pond (See Sheet 1 of the drawing set). The Return Bay overflows to the North Bay and the water is thereby recycled by being reused in the wash plant. A flow diagram is attached in Exhibit C. The application of the treatment chemicals is at the point where the wash water discharges from the wash plant into the Return Bay.

The proposed treatment system provided by Clearwater Industries, Inc., will use a polymer flocculant CW53 and a cationic coagulant CW24. The flocculant creates long chain polymers when mixed with water. The coagulant neutralizes the negative charge on inorganic particles in suspension in the wash water, allowing the particles to adhere to form larger particles. The flocculant essentially gathers the particles into larger agglomerations that become progressively heavier as the size increases. The resultant flocs have a specific gravity greater than 1 and therefore sink under the force of gravity. The weight and adhesive properties of the flocculant chains creates a sludge that minimizes resuspension of the solids in the water column that may be caused by turbulence in the settling area.

The system will consist of two LQ50 Emulsion or Cationic Make Down Skids housed in a shed next to the stormwater pond, one skid for each chemical. The LQ50 units use a positive displacement adjustable stroke piston pump to draw neat chemical from a chemical tote, and a centrifugal pump to blend the chemical with supplied water using an in-line static mixer. The supplied water will be drawn from the North Bay of the stormwater pond. Each pump skid has a single point 120V 20A hook up with manual on/off switch for piston pump and booster pump. Product literature for the LQ50 equipment is included in Exhibit D.

2.3.2 Flocculent System Treatment Concentration

Using the flocculant/coagulant system, suspended sediments are rapidly removed by gravity in the Return Bay. Treatment bench tests were performed with a water sample collected from the pond on July 19, 2021. The testing showed that a water clarity of 96.2 nephelometric turbidity units (ntu) can be achieved using 3.75 parts per million (ppm) of the flocculant CW53 and 10 ppm of the coagulant CW24. The nominal water



throughput for the wash plant is 600 gallons per minute. Dosing 600 gpm to obtain the target concentrations of the flocculant and the coagulant results in an estimated hourly use of 3 lbs an hour of CW24 and 1.1 lb an hour of CW53.

When properly dosed, all of the flocculant and coagulant chemicals are bound into the solids settled at the bottom of the settling basin.

2.3.3 Flocculent Chemistry and Toxicity

Acute and chronic toxicity testing was performed by BioAnalytic Corporation in DeWitt, NY, on samples collected on August 31, 2021, from the pond and from the receiving water body Wetland LE-20. The methods used were in accordance with USEPA guidance for Whole Effluent Toxicity (WET) testing. The test results show that the water samples from the pond mixed with the treatment chemicals to reach the target concentration for treatment noted above, do not exceed the acute toxicity standard of 0.3 or the chronic toxicity standard of 1.0. The laboratory chronic and acute toxicity test report is attached as Exhibit G.

Due to the planned use of treatment chemicals the facility is applying for an individual site SPDES Permit. The NY-2C application form is attached in Exhibit B. Calculations for the average and maximum discharge rates from the two outfalls subject to the permit application area included ahead of the application form in Exhibit B. The average day discharge rate estimate is based on the 90th percentile storm and the maximum day discharge rate estimate is based on the 1-year 24-hour storm, both determined using the HydroCAD model results. Retention time for the flocculant treatment system is calculated from the wash plant water flow rate (600 gpm) and the volume of the return bay, 11,640 square feet in area and average depth of 4 feet. The resulting retention time is 9.7 hours in the Retention Bay. Additional retention time may be provided by the North Bay, however Clearwater has advised that the treatment process will be effectively complete within the retention time of the Return Bay.

Safety Data Sheets for the flocculant and coagulant products are included in Exhibit E with the Water Treatment Chemical (WTC) Notification Forms.

The mixing zone for the treatment system is located in the Return Bay of the stormwater pond. Off-site receiving waterbodies will not be used for mixing zone.

2.3.4 Sediment Accumulation and Disposal

To ensure continued effective flocculant treatment, accumulated sediment will be periodically dredged from the Return Bay. The dredged sediment will be deposited at an approved location on the site. The flocculant and coagulant entrained in the sediment is biodegradable. Once dewatered the sediment can be used as ordinary fill material.



3.0 CONCLUSIONS

The design of the stormwater management system reduces peak flow rates to receiving water bodies and provides stormwater sediment removal in accordance with NYSDEC Blue Book Standards and Specifications for Sediment Basins and the New York State Stormwater Management Design Manual. The existing natural drainage channel that crosses the site is protected and the conveyance will provide continuity of the streambed.

Based on bench testing, the flocculent system will control the colloidal sediment and prevent discoloration of discharges to receiving waterbodies.

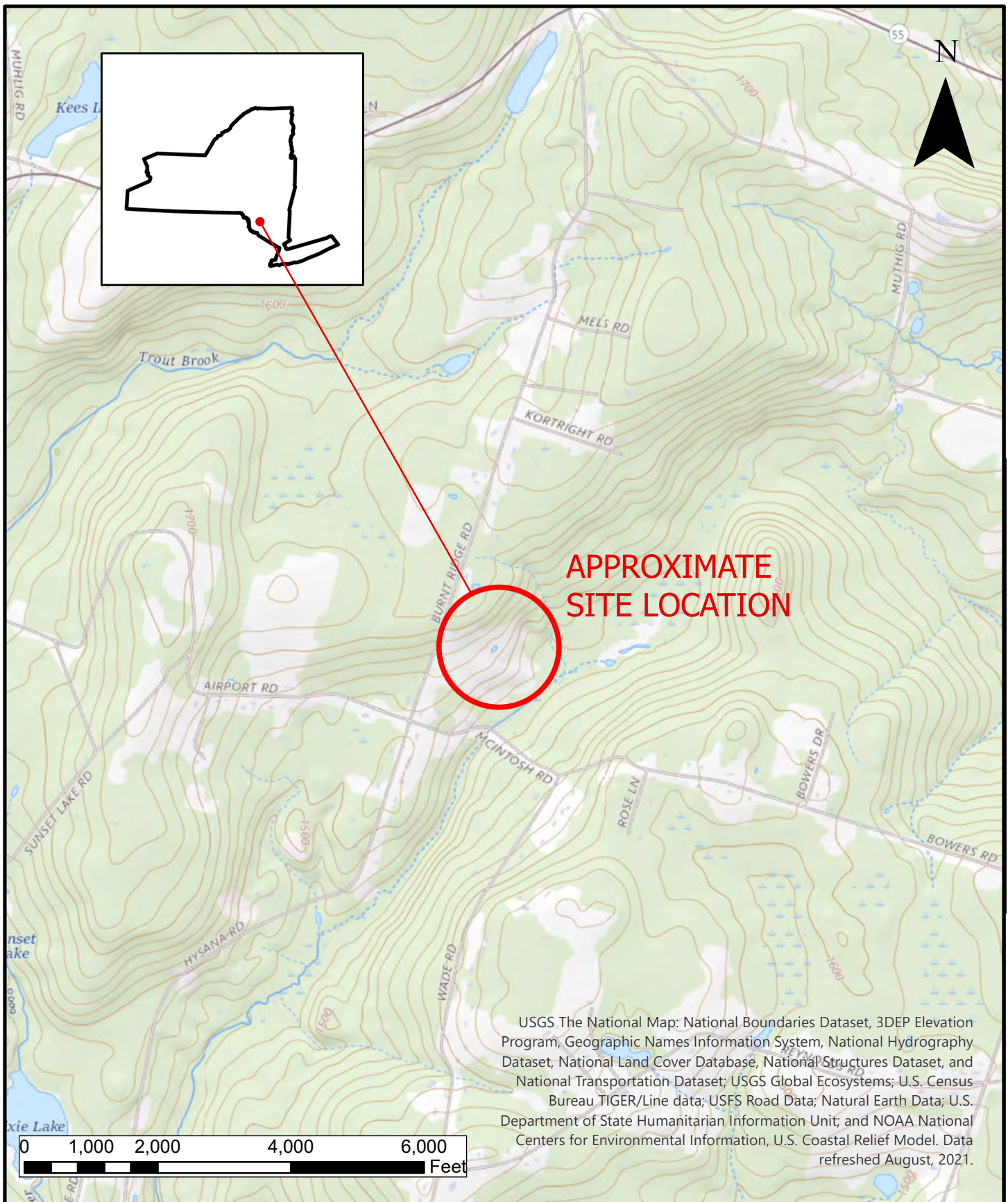
The WET testing results show that the pond water containing the treatment chemicals at the target treatment concentrations do not exceed the EPA acute and chronic toxicity criteria. It should be noted that the outside of the mixing zone in the Return Bay of the pond, the actual concentration of the treatment chemicals is far less than the target treatment concentration because the chemicals are largely bound up in the settled sediment in the Return Bay.

The facility operator is obtaining an individual site SPDES permit because of the use of the chemical flocculant treatment of the wash plant return flow in the Return Bay of the stormwater pond.

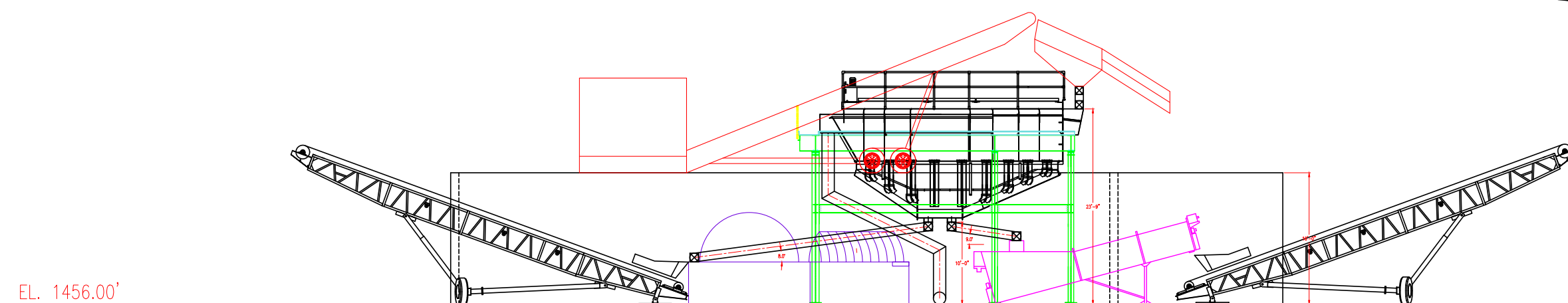
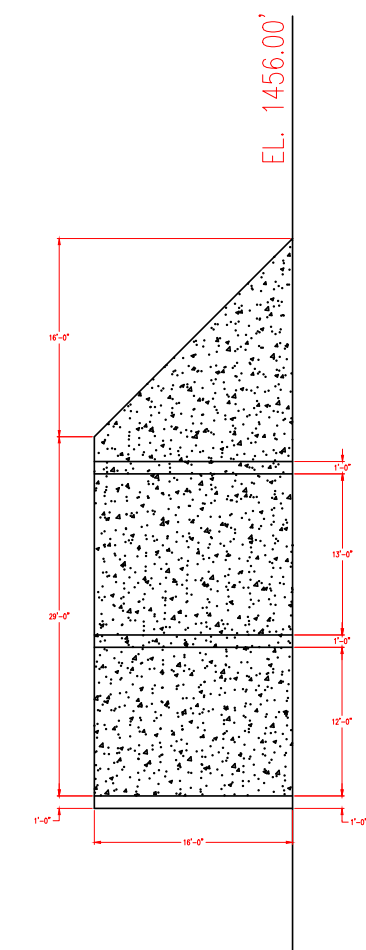
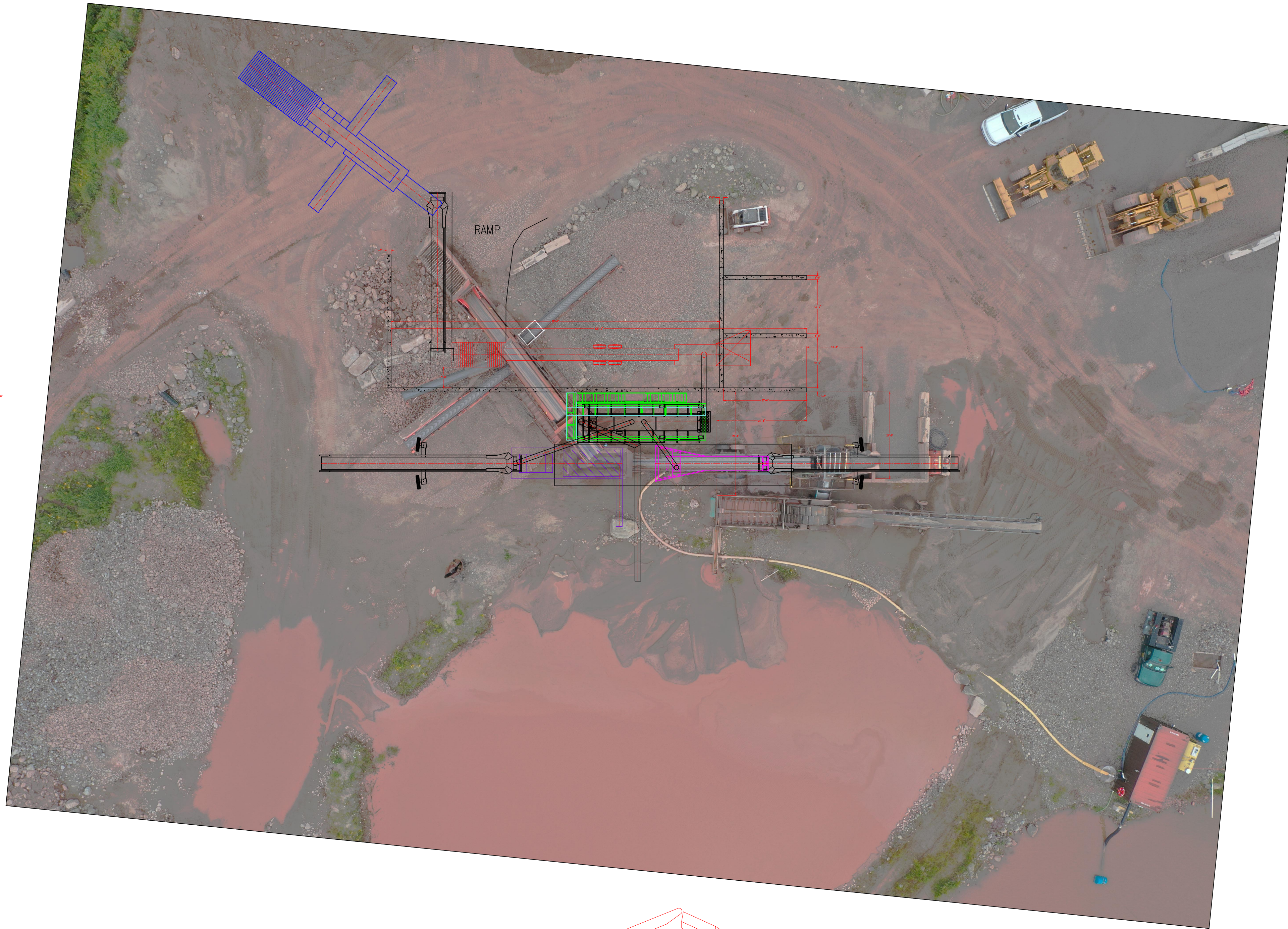


EXHIBIT A

MAPS & DRAWINGS



 19 British American Blvd. W, Latham NY 12110 P: 518-782-0882 F: 518-782-0973 jmt.com		SITE LOCATION MAP RIATO STONE, LLC LIBERTY SAND & GRAVEL FACILITY	
PROJ No.: 20-03617N-001		TOWN OF LIBERTY	SULLIVAN CO., N.Y.
Date: 12/2/2021		SCALE: 1" = 2,000 FT	FIGURE: 1



PROJECT	
PROJ. MGR:	RS
PROJ. NO.:	20-03617-001
PREPARED BY:	PMA
DRAFTED BY:	MG
CHECKED BY:	
APPROVED BY:	
DATUM:	MSL
CONTOUR INTERVAL =	NA FEET

WASH PLANT LAYOUT

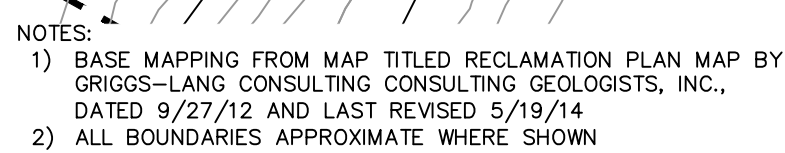
RIATO STONE, LLC

LIBERTY SAND AND GRAVEL

TOWN OF FALLSBURG SULLIVAN CO., NY

19 British American Blvd., Latham, New York 12110
P. (518) 782-0882 F. (518) 782-0973 www.jmt.com

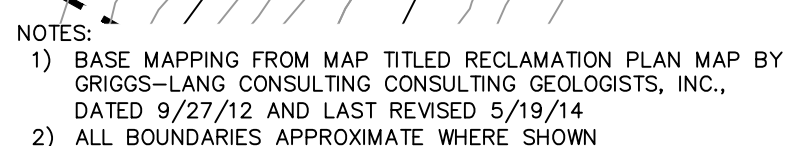
DATE: 12/03/2021	SCALE:	NTS	DWG. NO2003617006A	PLATE 1 OF 2



- - - - - EXISTING LIFE-OF-MINE
 - - - - - PROPOSED EXPANSION
 - - - - - PROPERTY LINE
 - - - - - MINOR CONTOUR
 - - - - - MAJOR CONTOUR
 - - - - - HAUL ROAD

PROJECT	
PROJ. MGR:	RS
PROJ. NO.:	20-03617-001
PREPARED BY:	PMA
DRAFTED BY:	MG
CHECKED BY:	
APPROVED BY:	
DATUM:	MSL
CONTOUR INTERVAL = 5 & 25 FEET	

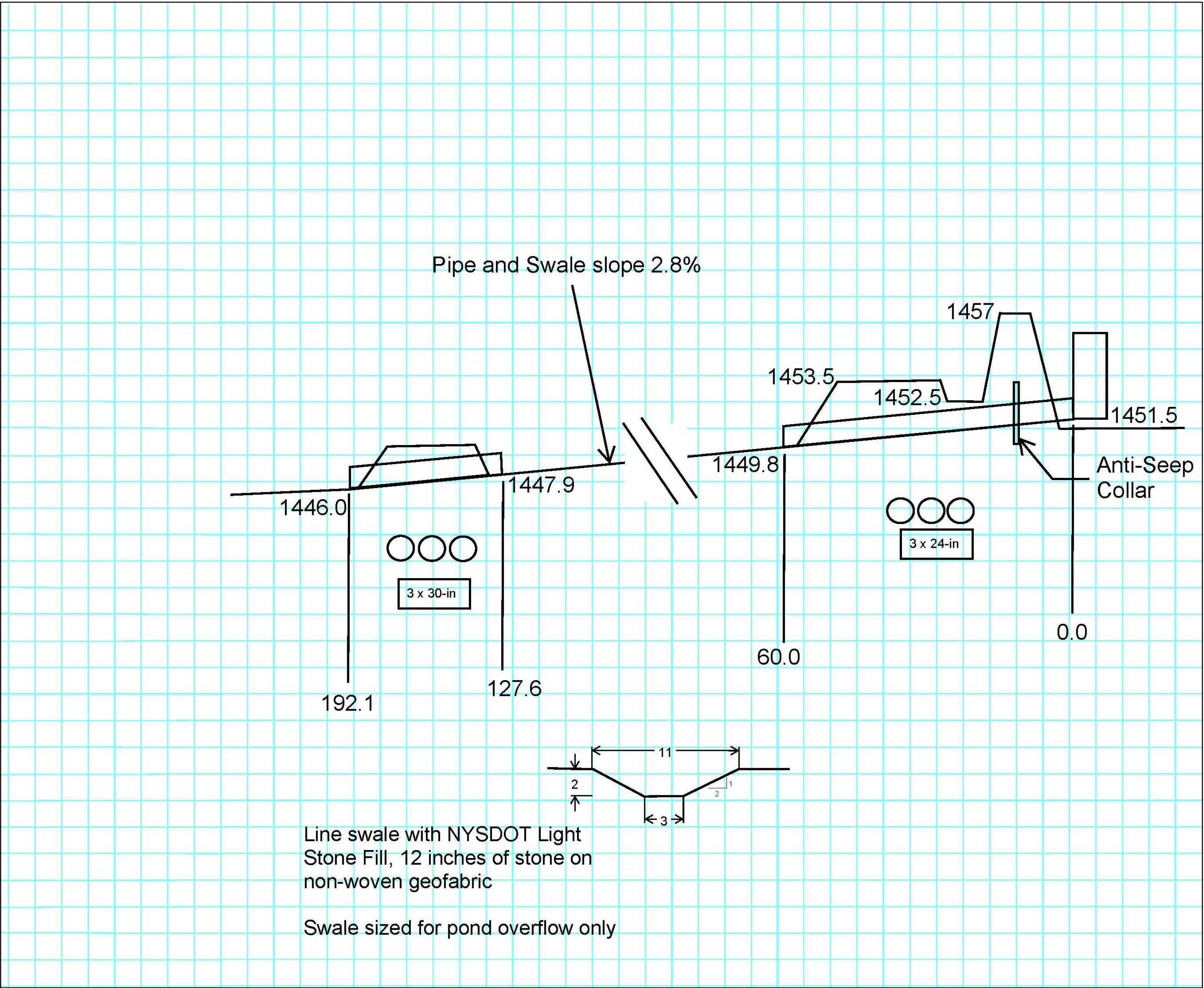
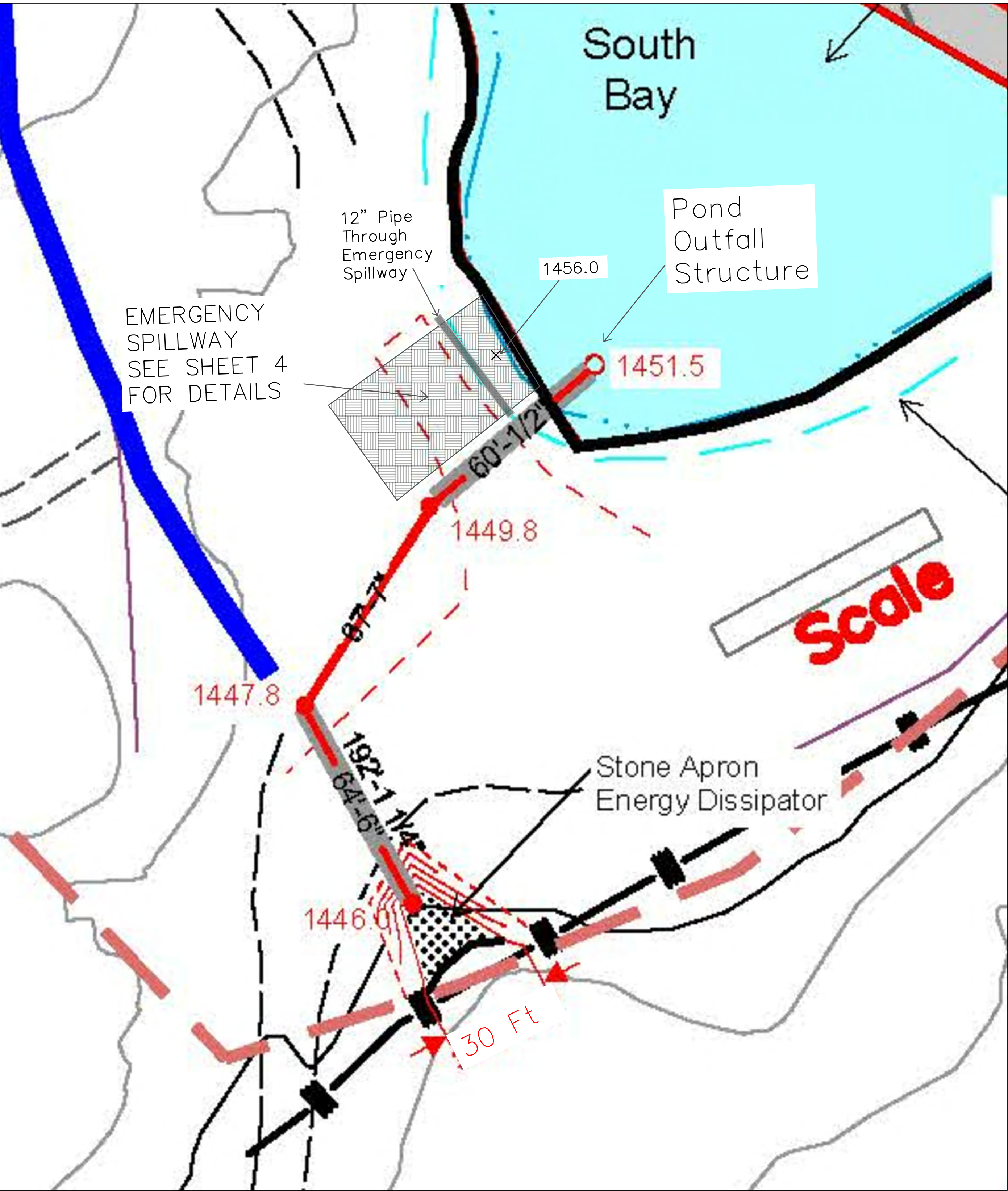
			
19 British American Blvd., Latham, New York 12110 P: (518) 782-0882 F: (518) 782-0973 www.jmt.com			
DATE: 8/26/2021	SCALE: 1"=100'	DWG. NO: 200203617007A	SHEET 1 OF 4



 EXISTING LIFE-OF-MINE
 PROPOSED EXPANSION
 PROPERTY LINE
 MINOR CONTOUR
 MAJOR CONTOUR
 HAUL ROAD

PROJECT	
PROJ. MGR:	RS
PROJ. NO.:	20-03617-001
PREPARED BY:	PMA
DRAFTED BY:	MG
CHECKED BY:	
APPROVED BY:	
DATUM:	MSL
CONTOUR INTERVAL = 5 & 25 FEET	

 19 British American Blvd., Latham, New York 12110 P: (518) 782-0882 F: (518) 782-0973 www.jmt.com									
DATE:	8/26/2021	SCALE:	1"=100'	DWG.	NO200203617007A	SHEET	2	OF	4



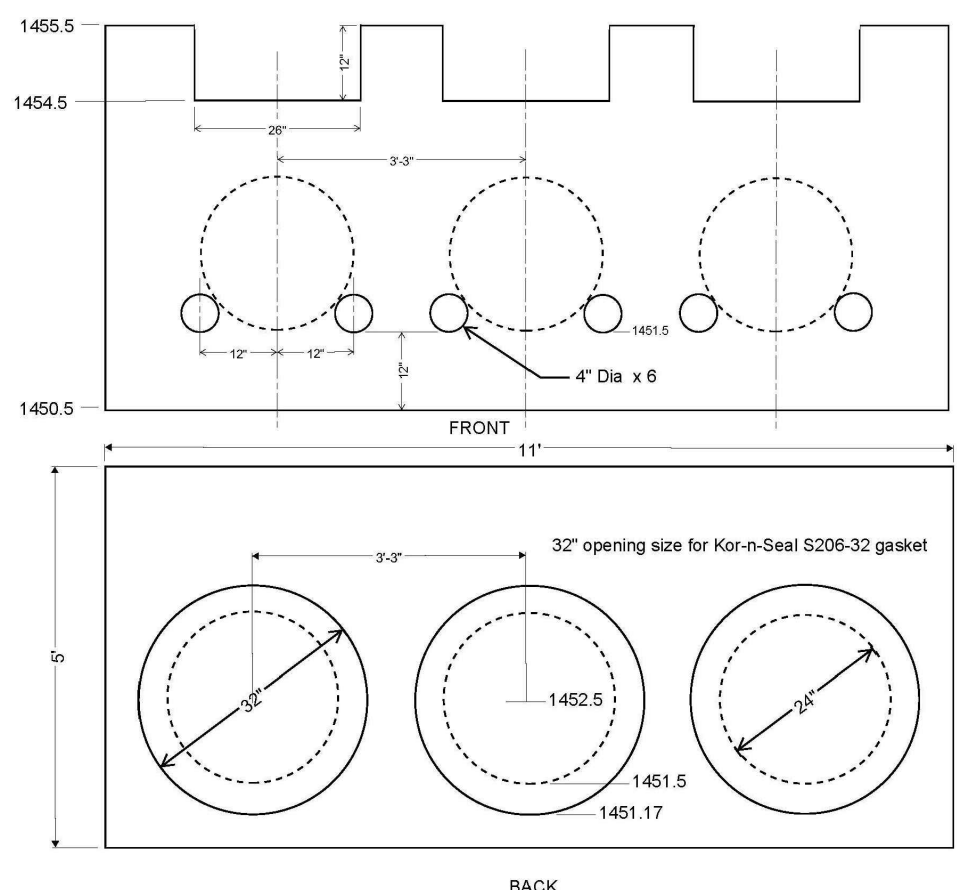
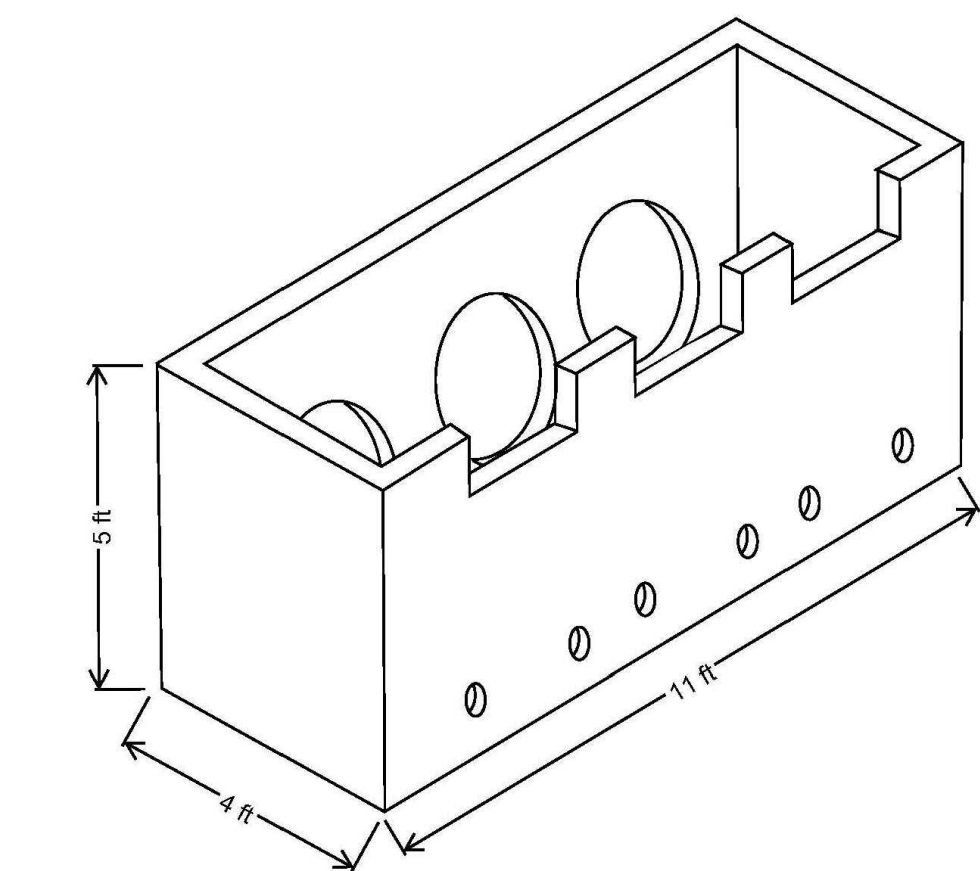
NO.	DATE	RECORD OF WORK	DRN	CKD

PROJECT	
PROJ. MGR:	RS
PROJ. NO.:	20-03617-001
PREPARED BY:	PMA
DRAFTED BY:	MG
CHECKED BY:	
APPROVED BY:	
DATUM:	MSL
CONTOUR INTERVAL =	NA FEET
0 1 2 3 4 5 6 7 8 9 10	
NTS	

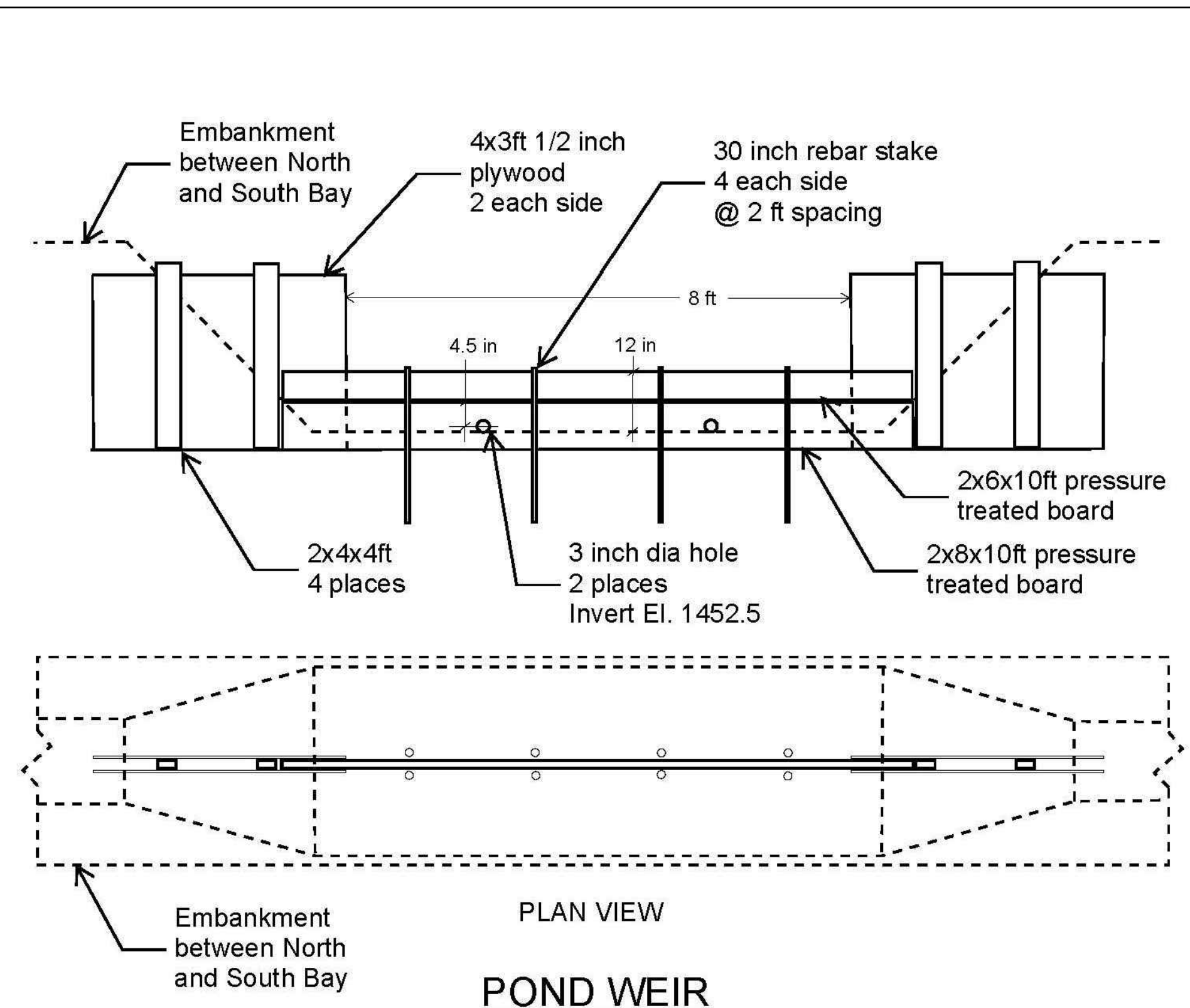
CONSTRUCTION LAYOUTS
RIATO STONE, LLC
LIBERTY SAND AND GRAVEL
TOWN OF FALLSBURG SULLIVAN CO., NY

19 British American Blvd. Latham, New York 12110
P: (518) 782-0882 F: (518) 782-0973 www.jmt.com

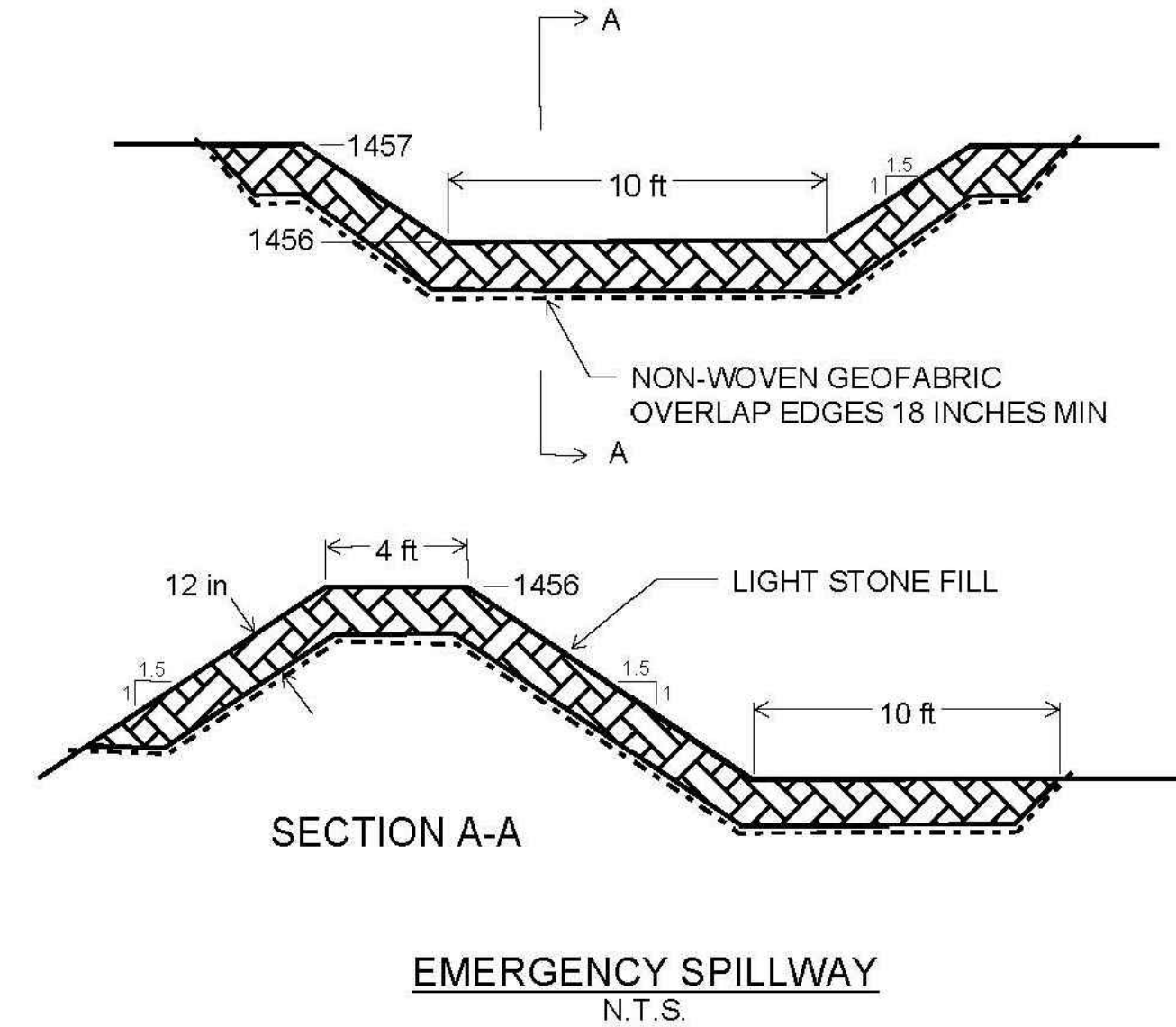
DATE: 10/19/2021 SCALE: NTS DWG. NO2003617006A SHEET 3 OF 4



OUTFALL STRUCTURE

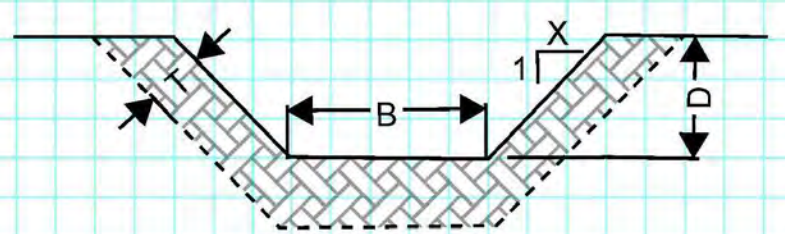


POND WEIR



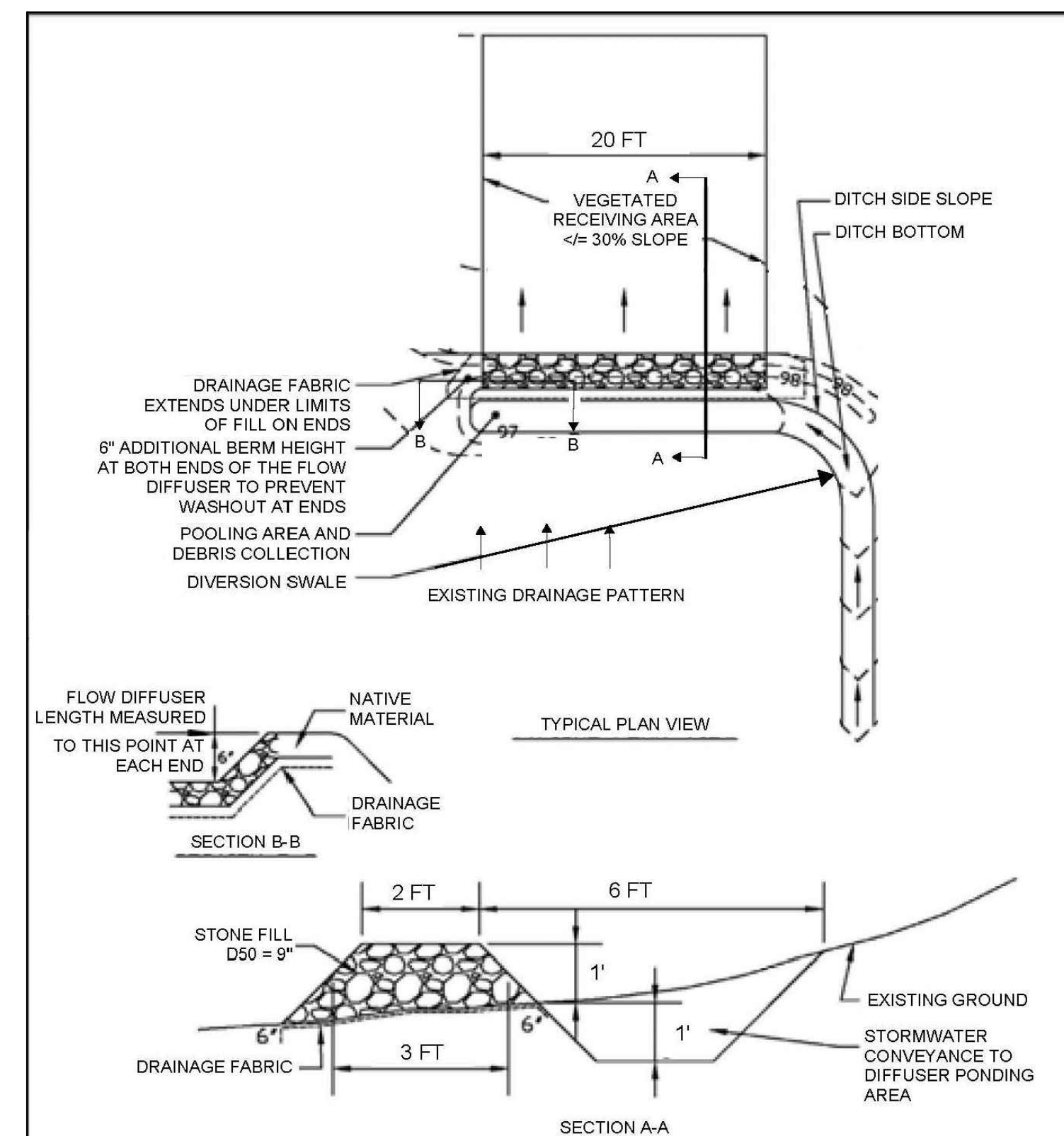
EMERGENCY SPILLWAY
N.T.S.

DIVERSION DITCH SPECIFICATIONS

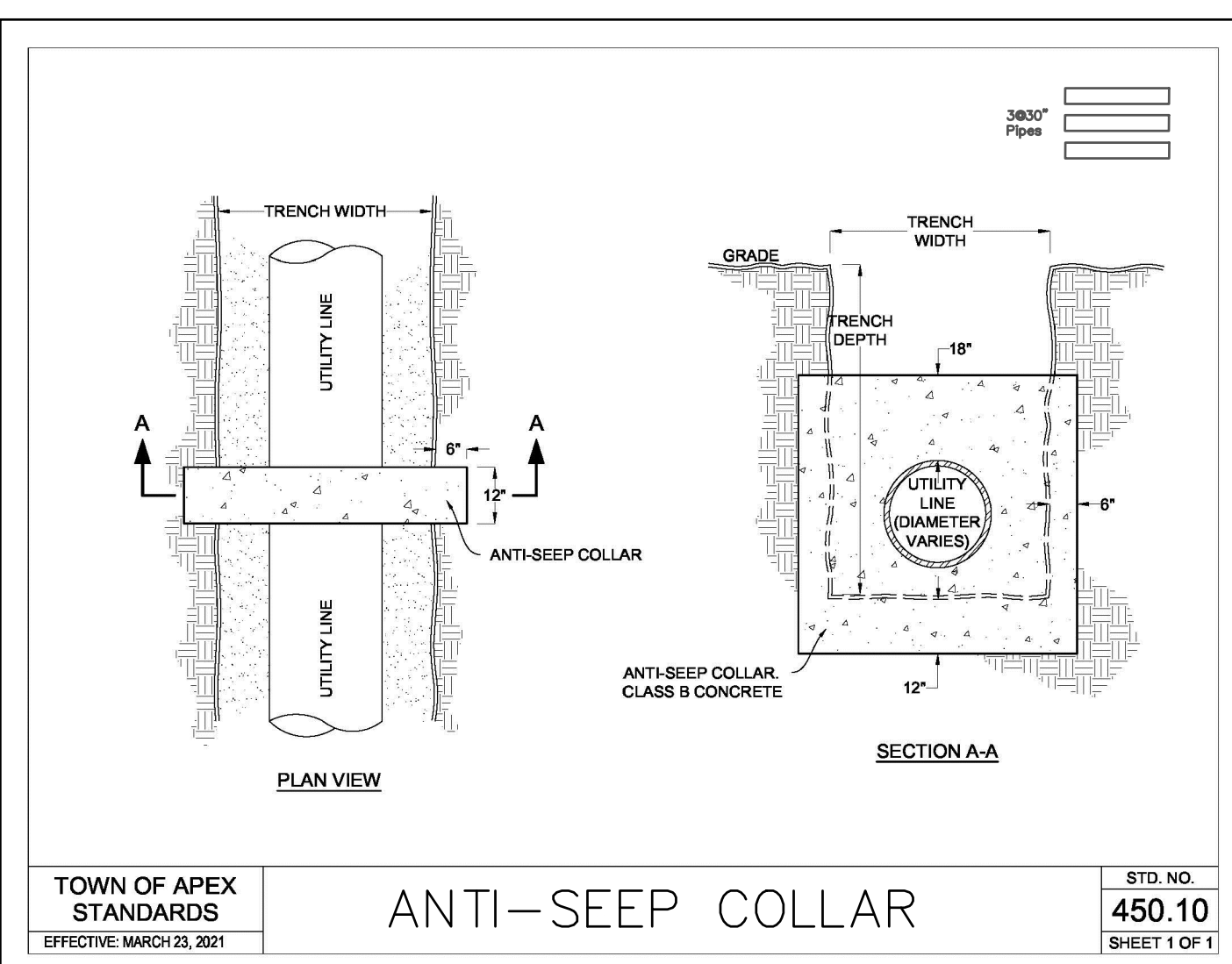


Diversion Ditches					
Ditch	B ft	D ft	T in	X	NYSDOT Fill Stone
Reclaim	2	1	18	2	Medium
1	2	1	12	1	Light
2	2	1	12	1	Light
3	2	1	12	1	Light
4	2	1	12	1	Light
5	2	1	12	1	Light
Spillway	3	2	30	2	Heavy
Expansion Area Ditch	3	3	30	2	Heavy
Road Ditch	3	2	18	2	Medium

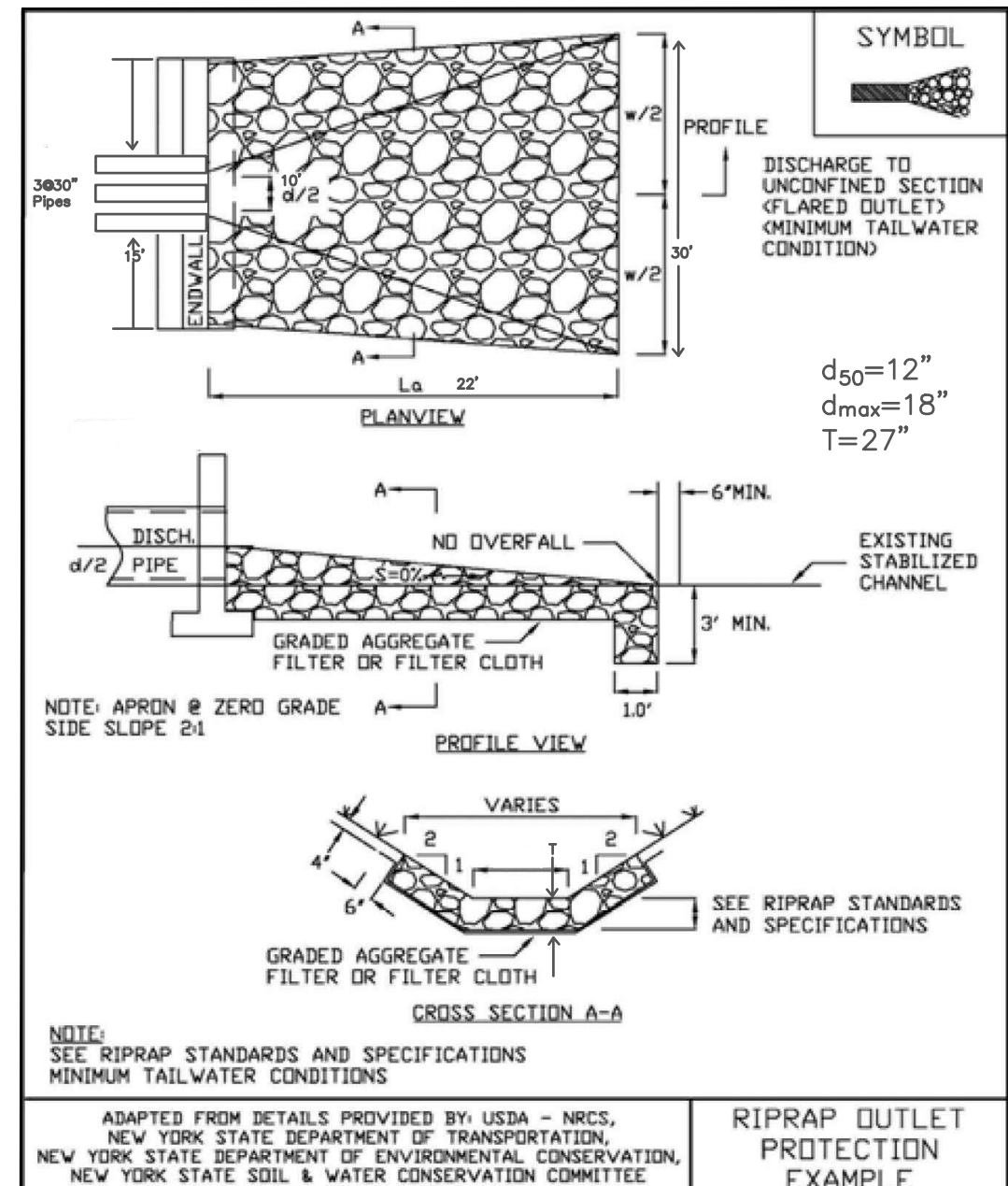
Stone Filling Type	d ₅₀	Minimum Thickness
Stone Filling (Fine)	3 in. (75 mm)	9 in. (225 mm)
Stone Filling (Light)	6 in. (150 mm)	12 in. (300 mm)
Stone Filling (Medium)	13 in. (350 mm)	18 in. (450 mm)
Stone Filling (Heavy)	23 in. (600 mm)	30 in. (750 mm)



Level Spreader 1 FLOW DIFFUSER



ANTI-SEEP COLLAR



RIPRAP OUTLET PROTECTION EXAMPLE

NO.	DATE	RECORD OF WORK	DRN	CKD

PROJECT	
PROJ. MGR:	RS
PROJ. NO.:	20-03617-001
PREPARED BY:	PMA
DRAFTED BY:	MG
CHECKED BY:	
APPROVED BY:	
DATUM:	MSL
CONTOUR INTERVAL =	NA FEET

CONSTRUCTION DETAILS
RIATO STONE, LLC
LIBERTY SAND AND GRAVEL
TOWN OF FALLSBURG SULLIVAN CO., NY

19 British American Blvd. Latham, New York 12110
P: (518) 782-0882 F: (518) 782-0973 www.jmt.com

DATE: 10/19/2021 SCALE: NTS DWG. N02003617005A SHEET 4 OF 4



EXHIBIT B

NY-2C FORM

DEC Identification Number 3-4828-00061	SPDES Permit Number TBD	Facility Name Liberty Sand & Gravel	Form Approved: 9/25/2020

SECTION 3. SIC AND NAICS CODES (40 CFR 122.21(f)(3))

SIC and NAICS Codes	3.1	SIC Code(s)	Description (optional)
		1442	Mining, processing, and selling aggregate material.
		1429	Mining, processing, and selling aggregate material.
	3.2	NAICS Code(s)	Description (optional)

SECTION 4. OPERATOR INFORMATION (40 CFR 122.21(f)(4))

Operator Information	4.1	Name of Operator		
		Riato Stone, LLC		
	4.2	Is the name you listed in Item 4.1 also the owner? ☒ Yes → Skip to Item 5.1 ☐ No		
	4.3	Operator Status ☐ Public—federal ☐ Public—state ☐ Other public (specify) _____ ☐ Private ☐ Other (specify) _____		
Operator Information Continued	4.4	Phone Number of Operator		
	4.5	Operator Address		
		Street or P.O. Box		
		City or town	State	ZIP code
		Email address of operator		

SECTION 5. INDIAN LAND (40 CFR 122.21(f)(5))

Indian Land	5.1	Is the facility located on Indian Land? ☐ Yes ☒ No

SECTION 6. EXISTING ENVIRONMENTAL PERMITS (40 CFR 122.21(f)(6))

Existing Environmental Permits	6.1	Existing Environmental Permits (check all that apply and print or type the corresponding permit number for each)		
		☒ SPDES * MSGP- NOI submitted 11/5	☐ RCRA (hazardous wastes)	☐ UIC (underground injection)
		☐ PSD (air emissions)	☐ Nonattainment program (CAA)	☐ NESHAPs (CAA)
		☐ Ocean dumping (MPRSA)	☐ Dredge or fill (CWA Section 404)	☒ Other (specify) Mine Permit (Mine ID: 30217);

DEC Identification Number 3-4828-00061	SPDES Permit Number TBD	Facility Name Liberty Sand & Gravel	Form Approved: 9/25/2020

SECTION 7. MAP (40 CFR 122.21(f)(7))

Map	7.1	Have you attached a topographic map containing all required information to this application? (See instructions for specific requirements.) ☒ Yes ☐ No

SECTION 8. NATURE OF BUSINESS (40 CFR 122.21(f)(8))

Nature of Business	8.1	Describe the nature of your business. Liberty Sand & Gravel is an operating mine site. Operations at the site currently entail the extraction of gravel. The extracted stone is crushed, and the gravel is then processed in onsite screening plants, which includes material washing. The screened and washed material is offered for sale. The facility operates a crushing unit and wet processing to produce washed products. Material is processed through an onsite processing plant that separates material by size. Water is used to suppress dust and to wash and separate the products. The facility operates 6 days a week, Monday – Saturday: 7am-5pm.

SECTION 9. WATER SUPPLY & COOLING WATER INTAKE STRUCTURES (40 CFR 122.21(f)(9))

Water Supply Source(s)	9.1	What water supply source(s) does your facility use? Identify the name or owner of each source. (check all that apply) ☐ Municipal ☐ Private Intake ☐ Private Well ☒ Other (specify) Owner: _____ Stormwater _____
	9.2	Provide the amount of water typically consumed from each of these sources. *See Engineer's Report for details. Municipal MGD Private Well MGD Private Intake MGD Other MGD
	9.3	Is the facility located within a sole source aquifer as shown on Exhibit 2C-6? ☐ Yes → Complete Application Supplement B (see SPDES website) ☒ No
Cooling Water Intake Structures	9.4	Does your facility use any of these water sources for cooling water? ☐ Yes ☒ No → SKIP to Item 10.1.
	9.5	Identify the sources used for cooling water. (Note that facilities that use a cooling water intake structure as described at 40 CFR 125, Subparts I and J and NYSDEC Commissioner's Policy 52 (CP-52) may have additional application requirements. Consult with NYSDEC to determine if additional information is needed.)
Thermal Discharges	9.6	If your industry group is listed (see instructions), or the temperature of your discharge exceeds the receiving water temperature by greater than 3°F, provide the following data in (°F): Avg. Temp. Max Temp. Avg. Delta T Max Delta T

SECTION 10. VARIANCE REQUESTS (40 CFR 122.21(f)(10))

Variance Requests	10.1	Do you intend to request or renew one or more variances pursuant to 6 NYCRR 702.17 or authorized at 40 CFR 122.21(m)? (Check all that apply). Consult with NYSDEC to determine what information is needed. ☐ Fundamentally different factors (CWA Section 301(n)) ☐ Water quality related effluent limitations (CWA Section 302(b)(2)) ☐ Non-conventional pollutants (CWA Section 301(c) and (g)) ☐ Thermal discharges (CWA Section 316(a)) ☐ NYS WQBEL (6 NYCRR 702.17) ☒ Not applicable

DEC Identification Number 3-4828-00061	SPDES Permit Number TBD	Facility Name Liberty Sand & Gravel	Form Approved: 9/25/2020

SECTION 11. CHECKLIST AND CERTIFICATION STATEMENT (40 CFR 122.22(a) and (d))

Part I Checklist	11.1	In Column 1 below, mark the sections of Form NY-2C Part I that you have completed and are submitting with your application. For each section, specify in Column 2 any attachments that you are enclosing to alert NYSDEC. Note that not all applicants are required to provide attachments.	
		Column 1	Column 2
		☒ Section 1: Permit Action Requested	☐ w/ attachments
		☒ Section 2: Name, Mailing Address, and Location	☐ w/ attachments
		☒ Section 3: SIC Codes	☐ w/ attachments
		☒ Section 4: Operator Information	☐ w/ attachments
		☒ Section 5: Indian Land	☐ w/ attachments
		☒ Section 6: Existing Environmental Permits	☐ w/ attachments
		☒ Section 7: Map	☒ w/ topographic map ☐ w/ additional attachments
		☒ Section 8: Nature of Business	☐ w/ attachments
		☒ Section 9: Water Supply & CWIS	☐ w/ attachments ☐ w/ Sole Source Aquifer Supplement
		☒ Section 10: Variance Requests	☐ w/ attachments
		☒ Section 11: Checklist	☐ w/ attachments

PART II of Form NY-2C begins on the next page.

DEC Identification Number 3-4828-00061		SPDES Permit Number TBD		Facility Name Liberty Sand & Gravel		Form Approved: 9/25/2020		
Form NY-2C PART II SPDES		 Department of Environmental Conservation		New York State Department of Environmental Conservation Application for SPDES Permit to Discharge Wastewater NEW AND EXISTING INDUSTRIAL OPERATIONS DETAILED INFORMATION				
SECTION 1. OUTFALL LOCATION (40 CFR 122.21(g)(1)) & RECEIVING WATER DESCRIPTION (6 NYCRR 750-1.7(a))								
Outfall Location & Receiving Water Description	1.1	Provide information on each of the facility's outfalls and the receiving waters in the table below.						
		Outfall 001		Outfall 002		Outfall _____		
	Latitude	41 ° 48 ' 14.00 " N		41 ° 48 ' 7.00 " N		" ' "		
	Longitude	74 ° 41 ' 2.40 " W		74 ° 41 ' 10.00 " W		" ' "		
	Receiving Water Name	Trib. East Mongaup River		Trib. East Mongaup River				
	Water Index Number (WIN)	D-10-33		D-10-33				
	Waterbody Inventory/ Priority Waterbodies List (WI/PWL) Segment	1401-0142		1401-0142				
	Water Classification	B(T)		B(T)				
	Groundwater Discharges Only:							
	Soil Type							
Depth to Water Table	ft		ft		ft			
SECTION 2. LINE DRAWING (40 CFR 122.21(g)(2))								
Line Drawing	2.1	Have you attached a line drawing to this application that shows the water flow through your facility with a water balance? (See instructions for drawing requirements. See Exhibit 2C-3 at end of instructions for example.) ☒ Yes ☐ No See Engineer's Report, Exhibit C.						
SECTION 3. AVERAGE FLOWS AND TREATMENT (40 CFR 122.21(g)(3))								
Average Flows and Treatment	3.1	For each outfall identified under Item 1.1, provide average flow and treatment information. Add additional sheets if necessary.						
		Outfall Number 001						
		Operations Contributing to Flow						
		Operation	Average Flow		Maximum Flow			
		Spring Water and Undisturbed Upland Area Runoff	0.03 MGD		0.16 MGD			
			MGD		MGD			
			MGD		MGD			
			MGD		MGD			
		Treatment Units						
		Description (include size, flow rate through each treatment unit, retention time, etc.)	Code from Table 2C-1		Final Disposal of Solid or Liquid Wastes Other Than by Discharge			
	N/A							

DEC Identification Number 3-4828-00061		SPDES Permit Number TBD		Facility Name Liberty Sand & Gravel		Form Approved: 9/25/2020			
Average Flows and Treatment Continued	3.1 cont.	**Outfall Number** 002							
		Operations Contributing to Flow							
		Operation		Average Flow		Maximum Flow			
		Stormwater Pond Discharge		0.68 MGD		1.69 MGD			
				MGD		MGD			
				MGD		MGD			
				MGD		MGD			
		Treatment Units							
		Description (include size, flow rate through each treatment unit, retention time, etc.)		Code from Table 2C-1		Final Disposal of Solid or Liquid Wastes Other Than by Discharge			
		Circulation of 600 gpm through 0.27 acre primary settling		1-G;2-D; I-U		Settling			
		pond and 1.9 acre secondary settling pond. 9.7 hours							
		retention in primary settling pond.							
		Outfall Number							
		Operations Contributing to Flow							
		Operation		Average Flow		Maximum Flow			
				MGD		MGD			
				MGD		MGD			
				MGD		MGD			
				MGD		MGD			
		Treatment Units							
		Description (include size, flow rate through each treatment unit, retention time, etc.)		Code from Table 2C-1		Final Disposal of Solid or Liquid Wastes Other Than by Discharge			
		WTCs	3.2	Does the facility utilize or plan to utilize any water treatment chemicals that can potentially be discharged from one or more outfalls?					
				☒ Yes → Complete Table F ☐ No → SKIP to Section 4.					
Mixing Zone Form	3.3	Has a Mixing Zone Analysis Form been completed and attached? All applicants must complete at least the Simple Form for each wastewater outfall to surface waters. Indicate which form was completed and is attached to this application.							
		☐ Yes → Simple Form *N/A Discharge is not considered wastewater. ☐ Yes → Detailed Form							

SECTION 4. INTERMITTENT FLOWS (40 CFR 122.21(g)(4))

Intermittent Flows	4.1	Except for storm runoff, leaks, or spills, are any discharges described in Sections 1 and 3 intermittent or seasonal? ☐ Yes ☒ No → SKIP to Section 5.						
	4.2	Provide information on intermittent or seasonal flows for each applicable outfall. Attach additional pages, if necessary.						
		Outfall Number	Operation (list)	Frequency		Flow Rate		Duration
				Average Days/Week	Average Months/Year	Long-Term Average	Maximum Daily	
				days/week	months/year	MGD	MGD	days
				days/week	months/year	MGD	MGD	days
				days/week	months/year	MGD	MGD	days
				days/week	months/year	MGD	MGD	days
				days/week	months/year	MGD	MGD	days
				days/week	months/year	MGD	MGD	days
				days/week	months/year	MGD	MGD	days
			days/week	months/year	MGD	MGD	days	

SECTION 5. PRODUCTION (40 CFR 122.21(g)(5))

Applicable ELGs	5.1	Do any effluent limitation guidelines (ELGs) promulgated by EPA under Section 304 of the CWA apply to your facility? ☒ Yes ☐ No → SKIP to Item 5.5.			
	5.2	Provide the following information on applicable ELGs.			
		ELG Category	ELG Subcategory	Regulatory Citation	
		Mineral Mining and Processing	Construction Sand and Gravel	40 CFR 436, Subpart C	
Production-Based Limitations	5.3	Are any of the applicable ELGs expressed in terms of production (or other measure of operation)? ☐ Yes ☒ No → SKIP to Item 5.5.			
	5.4	Provide an actual measure of daily production expressed in terms and units of applicable ELGs.			
		Outfall Number	Operation, Product, or Material	Quantity per Day	Unit of Measure
Specific Industry	5.5	Is your industry type listed as a specific industry requiring submission of a supplemental application form (see instructions)? ☐ Yes, supplemental form attached ☒ No → SKIP to Section 6.			

SECTION 6. SCHEDULED IMPROVEMENTS (40 CFR 122.21(g)(6))

Upgrades and Improvements	6.1	Are you presently voluntarily improving or required by any federal, state, or local authority to meet an implementation schedule for constructing, upgrading, or operating wastewater treatment equipment or practices or any other environmental programs that could affect the discharges described in this application?			
	☐ Yes ☒ No → SKIP to Item 6.3.				
	6.2	Briefly identify each applicable project in the table below.			
	Brief Identification and Description of Project	Affected Outfalls (list outfall number)	Source(s) of Discharge	Final Compliance Dates	
				Required	Projected
6.3	Have you attached sheets describing any additional water pollution control programs (or other environmental projects that may affect your discharges) that you now have underway or planned? <i>(optional item)</i>				
☐ Yes ☐ No ☒ Not applicable					

SECTION 7. EFFLUENT AND INTAKE CHARACTERISTICS (40 CFR 122.21(g)(7))

Effluent and Intake Characteristics	See the instructions to determine the pollutants and parameters you are required to monitor and, in turn, the tables you must complete. Not all applicants need to complete each table.				
	Table A. Conventional and Non-Conventional Pollutants				
	7.1	Are you requesting a waiver from NYSDEC for one or more of the Table A pollutants for any of your outfalls?			
	☒ Yes ☐ No → SKIP to Item 7.3.				
	7.2	If yes, indicate the applicable outfalls below. Attach waiver request and other required information to the application.			
	Outfall Number <u>001</u> Outfall Number <u>002</u> Outfall Number _____				
	7.3	Have you completed monitoring for all Table A pollutants at each of your outfalls for which a waiver has not been requested and attached the results to this application package?			
	☐ Yes ^{*See attached Engineer's Report and Table A for details.} ☒ No; a waiver request has been attached for all pollutants at all outfalls.				
	Table B. Toxic Metals, Cyanide, Total Phenols, and Organic Toxic Pollutants				
	7.4	Do any of the facility's processes that contribute wastewater fall into one or more of the primary industry categories listed in Exhibit 2C-3?			
☐ Yes ☒ No → SKIP to Item 7.8.					
7.5	Have you checked "Testing Required" for all toxic metals, cyanide, and total phenols in Section 1 of Table B?				
☐ Yes ☐ No					
7.6	List the applicable primary industry categories and check the boxes indicating the required GC/MS fraction(s) identified in Exhibit 2C-5.				
Primary Industry Category		Required GC/MS Fraction(s) (Check applicable boxes.)			
		☐ Volatile	☐ Acid	☐ Base/Neutral	☐ Pesticide
		☐ Volatile	☐ Acid	☐ Base/Neutral	☐ Pesticide
		☐ Volatile	☐ Acid	☐ Base/Neutral	☐ Pesticide

DEC Identification Number 3-4828-00061	SPDES Permit Number TBD	Facility Name Liberty Sand & Gravel	Form Approved: 9/25/2020

Effluent and Intake Characteristics Continued	7.7	Have you checked "Testing Required" for all required pollutants in Sections 2 through 5 of Table B for each of the GC/MS fractions checked in Item 7.6? ☐ Yes ☐ No	
	7.8	Have you checked "Believed Present" or "Believed Absent" for all pollutants listed in Sections 1 through 5 of Table B where testing is not required? ☒ Yes ☐ No	
	7.9	Have you provided (1) quantitative data for those Section 1, Table B, pollutants for which you have indicated testing is required or (2) quantitative data or other required information for those Section 1, Table B, pollutants that you have indicated are "Believed Present" in your discharge? ☐ Yes ☐ No N/A	
	7.10	Have you provided (1) quantitative data for those Sections 2 through 5, Table B, pollutants for which you have determined testing is required or (2) quantitative data or an explanation for those Sections 2 through 5, Table B, pollutants you have indicated are "Believed Present" in your discharge? ☐ Yes ☐ No N/A	
	Table C. Certain Conventional and Non-Conventional Pollutants		
	7.11	Have you indicated whether pollutants are "Believed Present" or "Believed Absent" for all pollutants listed on Table C for all outfalls? ☒ Yes ☐ No	
	7.12	Have you completed Table C by providing (1) quantitative data for those pollutants that are limited either directly or indirectly in an ELG and/or (2) quantitative data or an explanation for those pollutants for which you have indicated "Believed Present"? ☐ Yes ☐ No N/A	
	Table D. Certain Hazardous Substances and Asbestos		
	7.13	Have you indicated whether pollutants are "Believed Present" or "Believed Absent" for all pollutants listed in Table D for all outfalls? ☒ Yes ☐ No	
	7.14	Have you completed Table D by (1) describing the reasons the applicable pollutants are expected to be discharged and (2) by providing quantitative data, if available? ☐ Yes ☐ No N/A	
	Table E. 2,3,7,8-Tetrachlorodibenzo-p-Dioxin (2,3,7,8-TCDD)		
	7.15	Does the facility use or manufacture one or more of the 2,3,7,8-TCDD congeners listed in the instructions, or do you know or have reason to believe that TCDD is or may be present in the effluent? ☐ Yes → Complete Table E. ☒ No → SKIP to Section 8.	
	7.16	Have you completed Table E by reporting <i>qualitative</i> data for TCDD? ☐ Yes ☐ No	
	SECTION 8. USED OR MANUFACTURED TOXICS (40 CFR 122.21(g)(9))		
Used or Manufactured Toxics	8.1	Are any other pollutants, substances, or components of substances, not already listed in Tables A-E, used or manufactured at your facility as an intermediate or final product or byproduct? ☐ Yes ☒ No → SKIP to Section 9.	
	8.2	List the pollutants below.	
	1.	4.	7.
	2.	5.	8.
	3.	6.	9.

SECTION 9. BIOLOGICAL TOXICITY TESTS (40 CFR 122.21(g)(11))

Biological Toxicity Tests	9.1	Do you have any knowledge or reason to believe that any biological test for acute or chronic toxicity has been made within the last three years on (1) any of your discharges or (2) on a receiving water in relation to your discharge? ☒ Yes ☐ No → SKIP to Section 10.			
	9.2	Identify the tests and their purposes below.			
		Test(s)	Purpose of Test(s)	Submitted to NYSDEC?	Date Submitted
		WET testing (Acute and Chronic Toxicity)	For WTC approval	☒ Yes ☐ No	12/15/2021
				☐ Yes ☐ No	

SECTION 10. CONTRACT ANALYSES (40 CFR 122.21(g)(12))

Contract Analyses	10.1	Were any of the analyses reported in Section 7 performed by a contract laboratory or consulting firm? ☐ Yes ☒ No → SKIP to Section 11.		
	10.2	Provide information for each contract laboratory or consulting firm below.		
		Laboratory Number 1	Laboratory Number 2	Laboratory Number 3
		Name of laboratory/firm		
		ELAP Cert No.		
		Laboratory address		
		Phone number		
		Pollutant(s) analyzed		

SECTION 11. ADDITIONAL INFORMATION (40 CFR 122.21(g)(13))

Additional Information	11.1	Does your facility use, produce, store, distribute, or otherwise dispose of any significant quantity of substances listed in Tables B, C, D, E or those substances identified in Item 8.2? ☐ Yes → Complete Table G. ☒ No → SKIP to Item 11.2.		
	11.2	Does your facility utilize pumping stations to convey wastewaters on the site and/or in wastewater treatment? ☐ Yes → Complete Table H. ☒ No → SKIP to Item 11.3.		
	11.3	Has NYSDEC requested additional information? ☐ Yes ☒ No → SKIP to Section 12.		
	11.4	List the information requested and attach it to this application.		
		1.	3.	
		2.	4.	

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TBD

Facility Name
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SECTION 12. CHECKLIST AND CERTIFICATION STATEMENT (40 CFR 122.22(a) and (d))

Checklist and Certification Statement

12.1	In Column 1 below, mark the sections of Form NY-2C that you have completed and are submitting with your application. For each section, specify in Column 2 any attachments that you are enclosing to alert NYSDEC. Note that not all applicants are required to complete all sections or provide attachments.			
	Column 1	Column 2		
	☒ Section 1: Outfall Location	☐ w/ attachments	See Engineer's Report, Exhibit A	
	☒ Section 2: Line Drawing	☐ w/ line drawing	See Engineer's Report, Exhibit C	☒ w/ additional attachments
	☒ Section 3: Average Flows and Treatment	☐ w/ attachments	☒ w/ Simple MZ Form	☐ w/ Detailed MZ Form
	☒ Section 4: Intermittent Flows	☐ w/ attachments		
	☒ Section 5: Production	☐ w/ attachments		
	☒ Section 6: Improvements	☐ w/ attachments	☐	w/ optional additional sheets describing any additional pollution control plans
	☒ Section 7: Effluent and Intake Characteristics	☒ w/ request for a waiver and supporting information	☐	w/ explanation for identical outfalls
		☐ w/ primary industry supplemental form	☐	w/ additional attachments
		☐ w/ Table A	☐	w/ Table B
		☐ w/ Table C	☐	w/ Table D
		☐ w/ Table E	☐	w/ analytical results as an attachment
	☒ Section 8: Used or Manufactured Toxics	☐ w/ attachments		
	☒ Section 9: Biological Toxicity Tests	☒ w/ attachments		
	☒ Section 10: Contract Analyses	☐ w/ attachments		
	☒ Section 11: Additional Information	☐ w/ attachments	☐ w/ Table G	☐ w/ Table H
	☒ Section 12: Checklist and Certification Statement	☐ w/ attachments		
12.2	Certification Statement <i>I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.</i>			
	Name (print or type first and last name)		Official title	
	James Scandariato		Manager	
	Signature		Date signed	
			12/15/2021	

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DEC Identification Number 3-4828-00061	SPDES Permit Number TBD	Facility Name Liberty Sand & Gravel	Outfall Number Outfall 001

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TABLE A. CONVENTIONAL AND NON CONVENTIONAL POLLUTANTS (40 CFR 122.21(g)(7)(iii))¹

	Pollutant	Waiver Requested (if applicable)	Units (specify)	Effluent				Intake (Optional)	
				Maximum Daily Discharge (required)	Maximum Monthly Discharge (if available)	Long-Term Average Daily Discharge (if available)	Number of Analyses *	Long-Term Average Value	Number of Analyses
☐	Check here if you have attached a request to NYSDEC for a waiver for <i>all</i> of the pollutants listed on this table for the noted outfall.								
1.	Biochemical oxygen demand (BOD ₅)	☒	Concentration						
			Mass						
2.	Chemical oxygen demand (COD)	☒	Concentration						
			Mass						
3.	Total organic carbon (TOC)	☒	Concentration						
			Mass						
4.	Total suspended solids (TSS)	☐	Concentration	mg/L	<100				
			Mass						
5.	Ammonia (as N)	☒	Concentration						
			Mass						
6.	Flow	☐	Rate	GPD	varies				
7.	Temperature (winter)	☐	°C	°C	5.50				
	Temperature (summer)	☐	°C	°C	22.00				
8.	pH (minimum)	☐	Standard units	s.u.	6.5				
	pH (maximum)	☐	Standard units	s.u.	8.5				

¹ Sampling shall be conducted according to sufficiently sensitive test procedures (i.e., methods) approved under 40 CFR 136 for the analysis of pollutants or pollutant parameters or required under 40 CFR chapter I, subchapter N or O. See instructions and 40 CFR 122.21(e)(3).

***Projected/Anticipated results.** Waivers are requested for BOD, COD, TOC, and Ammonia due to the nature of the operations at the site.

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TABLE B. TOXIC METALS, CYANIDE, TOTAL PHENOLS, AND ORGANIC TOXIC POLLUTANTS (40 CFR 122.21(g)(7)(v))¹

	Pollutant/Parameter (and CAS Number, if available)	Testing Required	Presence or Absence (check one)		Units (specify)	Effluent				Intake (optional)			
			Believed Present	Believed Absent		Maximum Daily Discharge (required)	Maximum Monthly Discharge (if available)	Long-Term Average Daily Discharge (if available)	Number of Analyses	Long- Term Average Value	Number of Analyses		
☒	Check here if you believe all pollutants on Table B to be absent in your discharge from the noted outfall. You need not check the "Believed Absent" box for each pollutant.												
Section 1. Toxic Metals, Cyanide, and Total Phenols													
1.1	Antimony, total (7440-36-0)	☐	☐	☐	Concentration								
					Mass								
1.2	Arsenic, total (7440-38-2)	☐	☐	☐	Concentration								
					Mass								
1.3	Beryllium, total (7440-41-7)	☐	☐	☐	Concentration								
					Mass								
1.4	Cadmium, total (7440-43-9)	☐	☐	☐	Concentration								
					Mass								
1.5	Chromium, total (7440-47-3)	☐	☐	☐	Concentration								
					Mass								
1.6	Copper, total (7440-50-8)	☐	☐	☐	Concentration								
					Mass								
1.7	Lead, total (7439-92-1)	☐	☐	☐	Concentration								
					Mass								
1.8	Mercury, total (7439-97-6)	☐	☐	☐	Concentration								
					Mass								
1.9	Nickel, total (7440-02-0)	☐	☐	☐	Concentration								
					Mass								
1.10	Selenium, total (7782-49-2)	☐	☐	☐	Concentration								
					Mass								
1.11	Silver, total (7440-22-4)	☐	☐	☐	Concentration								
					Mass								

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TABLE B. TOXIC METALS, CYANIDE, TOTAL PHENOLS, AND ORGANIC TOXIC POLLUTANTS (40 CFR 122.21(g)(7)(v))¹

	Pollutant/Parameter (and CAS Number, if available)	Testing Required	Presence or Absence (check one)		Units (specify)	Effluent				Intake (optional)	
			Believed Present	Believed Absent		Maximum Daily Discharge (required)	Maximum Monthly Discharge (if available)	Long-Term Average Daily Discharge (if available)	Number of Analyses	Long- Term Average Value	Number of Analyses
1.12	Thallium, total (7440-28-0)	☐	☐	☐	Concentration						
					Mass						
1.13	Zinc, total (7440-66-6)	☐	☐	☐	Concentration						
					Mass						
1.14	Cyanide, total (57-12-5)	☐	☐	☐	Concentration						
					Mass						
1.15	Phenols, total	☐	☐	☐	Concentration						
					Mass						
Section 2. Organic Toxic Pollutants (GC/MS Fraction—Volatile Compounds)											
2.1	Acrolein (107-02-8)	☐	☐	☐	Concentration						
					Mass						
2.2	Acrylonitrile (107-13-1)	☐	☐	☐	Concentration						
					Mass						
2.3	Benzene (71-43-2)	☐	☐	☐	Concentration						
					Mass						
2.4	Bromoform (75-25-2)	☐	☐	☐	Concentration						
					Mass						
2.5	Carbon tetrachloride (56-23-5)	☐	☐	☐	Concentration						
					Mass						
2.6	Chlorobenzene (108-90-7)	☐	☐	☐	Concentration						
					Mass						
2.7	Chlorodibromomethane (124-48-1)	☐	☐	☐	Concentration						
					Mass						
2.8	Chloroethane (75-00-3)	☐	☐	☐	Concentration						
					Mass						

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TABLE B. TOXIC METALS, CYANIDE, TOTAL PHENOLS, AND ORGANIC TOXIC POLLUTANTS (40 CFR 122.21(g)(7)(v))¹

	Pollutant/Parameter (and CAS Number, if available)	Testing Required	Presence or Absence (check one)		Units (specify)	Effluent				Intake (optional)	
			Believed Present	Believed Absent		Maximum Daily Discharge (required)	Maximum Monthly Discharge (if available)	Long-Term Average Daily Discharge (if available)	Number of Analyses	Long- Term Average Value	Number of Analyses
2.9	2-chloroethylvinyl ether (110-75-8)	☐	☐	☐	Concentration						
					Mass						
2.10	Chloroform (67-66-3)	☐	☐	☐	Concentration						
					Mass						
2.11	Dichlorobromomethane (75-27-4)	☐	☐	☐	Concentration						
					Mass						
2.12	1,1-dichloroethane (75-34-3)	☐	☐	☐	Concentration						
					Mass						
2.13	1,2-dichloroethane (107-06-2)	☐	☐	☐	Concentration						
					Mass						
2.14	1,1-dichloroethylene (75-35-4)	☐	☐	☐	Concentration						
					Mass						
2.15	1,2-dichloropropane (78-87-5)	☐	☐	☐	Concentration						
					Mass						
2.16	1,3-dichloropropylene (542-75-6)	☐	☐	☐	Concentration						
					Mass						
2.17	Ethylbenzene (100-41-4)	☐	☐	☐	Concentration						
					Mass						
2.18	Methyl bromide (74-83-9)	☐	☐	☐	Concentration						
					Mass						
2.19	Methyl chloride (74-87-3)	☐	☐	☐	Concentration						
					Mass						
2.20	Methylene chloride (75-09-2)	☐	☐	☐	Concentration						
					Mass						
2.21	1,1,2,2- tetrachloroethane (79-34-5)	☐	☐	☐	Concentration						
					Mass						

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TABLE B. TOXIC METALS, CYANIDE, TOTAL PHENOLS, AND ORGANIC TOXIC POLLUTANTS (40 CFR 122.21(g)(7)(v))¹

	Pollutant/Parameter (and CAS Number, if available)	Testing Required	Presence or Absence (check one)		Units (specify)	Effluent				Intake (optional)	
			Believed Present	Believed Absent		Maximum Daily Discharge (required)	Maximum Monthly Discharge (if available)	Long-Term Average Daily Discharge (if available)	Number of Analyses	Long- Term Average Value	Number of Analyses
2.22	Tetrachloroethylene (127-18-4)	☐	☐	☐	Concentration						
					Mass						
2.23	Toluene (108-88-3)	☐	☐	☐	Concentration						
					Mass						
2.24	1,2-trans-dichloroethylene (156-60-5)	☐	☐	☐	Concentration						
					Mass						
2.25	1,1,1-trichloroethane (71-55-6)	☐	☐	☐	Concentration						
					Mass						
2.26	1,1,2-trichloroethane (79-00-5)	☐	☐	☐	Concentration						
					Mass						
2.27	Trichloroethylene (79-01-6)	☐	☐	☐	Concentration						
					Mass						
2.28	Vinyl chloride (75-01-4)	☐	☐	☐	Concentration						
					Mass						
Section 3. Organic Toxic Pollutants (GC/MS Fraction—Acid Compounds)											
3.1	2-chlorophenol (95-57-8)	☐	☐	☐	Concentration						
					Mass						
3.2	2,4-dichlorophenol (120-83-2)	☐	☐	☐	Concentration						
					Mass						
3.3	2,4-dimethylphenol (105-67-9)	☐	☐	☐	Concentration						
					Mass						
3.4	4,6-dinitro-o-cresol (534-52-1)	☐	☐	☐	Concentration						
					Mass						
3.5	2,4-dinitrophenol (51-28-5)	☐	☐	☐	Concentration						
					Mass						

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TABLE B. TOXIC METALS, CYANIDE, TOTAL PHENOLS, AND ORGANIC TOXIC POLLUTANTS (40 CFR 122.21(g)(7)(v))¹

	Pollutant/Parameter (and CAS Number, if available)	Testing Required	Presence or Absence (check one)		Units (specify)	Effluent				Intake (optional)	
			Believed Present	Believed Absent		Maximum Daily Discharge (required)	Maximum Monthly Discharge (if available)	Long-Term Average Daily Discharge (if available)	Number of Analyses	Long- Term Average Value	Number of Analyses
3.6	2-nitrophenol (88-75-5)	☐	☐	☐	Concentration						
					Mass						
3.7	4-nitrophenol (100-02-7)	☐	☐	☐	Concentration						
					Mass						
3.8	p-chloro-m-cresol (59-50-7)	☐	☐	☐	Concentration						
					Mass						
3.9	Pentachlorophenol (87-86-5)	☐	☐	☐	Concentration						
					Mass						
3.10	Phenol (108-95-2)	☐	☐	☐	Concentration						
					Mass						
3.11	2,4,6-trichlorophenol (88-05-2)	☐	☐	☐	Concentration						
					Mass						
Section 4. Organic Toxic Pollutants (GC/MS Fraction—Base /Neutral Compounds)											
4.1	Acenaphthene (83-32-9)	☐	☐	☐	Concentration						
					Mass						
4.2	Acenaphthylene (208-96-8)	☐	☐	☐	Concentration						
					Mass						
4.3	Anthracene (120-12-7)	☐	☐	☐	Concentration						
					Mass						
4.4	Benzidine (92-87-5)	☐	☐	☐	Concentration						
					Mass						
4.5	Benzo (a) anthracene (56-55-3)	☐	☐	☐	Concentration						
					Mass						
4.6	Benzo (a) pyrene (50-32-8)	☐	☐	☐	Concentration						
					Mass						

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TABLE B. TOXIC METALS, CYANIDE, TOTAL PHENOLS, AND ORGANIC TOXIC POLLUTANTS (40 CFR 122.21(g)(7)(v))¹

	Pollutant/Parameter (and CAS Number, if available)	Testing Required	Presence or Absence (check one)		Units (specify)	Effluent				Intake (optional)	
			Believed Present	Believed Absent		Maximum Daily Discharge (required)	Maximum Monthly Discharge (if available)	Long-Term Average Daily Discharge (if available)	Number of Analyses	Long- Term Average Value	Number of Analyses
4.7	3,4-benzofluoranthene (205-99-2)	☐	☐	☐	Concentration						
					Mass						
4.8	Benzo (ghi) perylene (191-24-2)	☐	☐	☐	Concentration						
					Mass						
4.9	Benzo (k) fluoranthene (207-08-9)	☐	☐	☐	Concentration						
					Mass						
4.10	Bis (2-chloroethoxy) methane (111-91-1)	☐	☐	☐	Concentration						
					Mass						
4.11	Bis (2-chloroethyl) ether (111-44-4)	☐	☐	☐	Concentration						
					Mass						
4.12	Bis (2-chloroisopropyl) ether (102-80-1)	☐	☐	☐	Concentration						
					Mass						
4.13	Bis (2-ethylhexyl) phthalate (117-81-7)	☐	☐	☐	Concentration						
					Mass						
4.14	4-bromophenyl phenyl ether (101-55-3)	☐	☐	☐	Concentration						
					Mass						
4.15	Butyl benzyl phthalate (85-68-7)	☐	☐	☐	Concentration						
					Mass						
4.16	2-chloronaphthalene (91-58-7)	☐	☐	☐	Concentration						
					Mass						
4.17	4-chlorophenyl phenyl ether (7005-72-3)	☐	☐	☐	Concentration						
					Mass						
4.18	Chrysene (218-01-9)	☐	☐	☐	Concentration						
					Mass						
4.19	Dibenzo (a,h) anthracene (53-70-3)	☐	☐	☐	Concentration						
					Mass						

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TABLE B. TOXIC METALS, CYANIDE, TOTAL PHENOLS, AND ORGANIC TOXIC POLLUTANTS (40 CFR 122.21(g)(7)(v))¹

	Pollutant/Parameter (and CAS Number, if available)	Testing Required	Presence or Absence (check one)		Units (specify)	Effluent				Intake (optional)	
			Believed Present	Believed Absent		Maximum Daily Discharge (required)	Maximum Monthly Discharge (if available)	Long-Term Average Daily Discharge (if available)	Number of Analyses	Long- Term Average Value	Number of Analyses
4.20	1,2-dichlorobenzene (95-50-1)	☐	☐	☐	Concentration						
					Mass						
4.21	1,3-dichlorobenzene (541-73-1)	☐	☐	☐	Concentration						
					Mass						
4.22	1,4-dichlorobenzene (106-46-7)	☐	☐	☐	Concentration						
					Mass						
4.23	3,3-dichlorobenzidine (91-94-1)	☐	☐	☐	Concentration						
					Mass						
4.24	Diethyl phthalate (84-66-2)	☐	☐	☐	Concentration						
					Mass						
4.25	Dimethyl phthalate (131-11-3)	☐	☐	☐	Concentration						
					Mass						
4.26	Di-n-butyl phthalate (84-74-2)	☐	☐	☐	Concentration						
					Mass						
4.27	2,4-dinitrotoluene (121-14-2)	☐	☐	☐	Concentration						
					Mass						
4.28	2,6-dinitrotoluene (606-20-2)	☐	☐	☐	Concentration						
					Mass						
4.29	Di-n-octyl phthalate (117-84-0)	☐	☐	☐	Concentration						
					Mass						
4.30	1,2-Diphenylhydrazine (as azobenzene) (122-66-7)	☐	☐	☐	Concentration						
					Mass						
4.31	Fluoranthene (206-44-0)	☐	☐	☐	Concentration						
					Mass						
4.32	Fluorene (86-73-7)	☐	☐	☐	Concentration						
					Mass						

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TABLE B. TOXIC METALS, CYANIDE, TOTAL PHENOLS, AND ORGANIC TOXIC POLLUTANTS (40 CFR 122.21(g)(7)(v))¹

	Pollutant/Parameter (and CAS Number, if available)	Testing Required	Presence or Absence (check one)		Units (specify)	Effluent				Intake (optional)	
			Believed Present	Believed Absent		Maximum Daily Discharge (required)	Maximum Monthly Discharge (if available)	Long-Term Average Daily Discharge (if available)	Number of Analyses	Long- Term Average Value	Number of Analyses
4.33	Hexachlorobenzene (118-74-1)	☐	☐	☐	Concentration						
					Mass						
4.34	Hexachlorobutadiene (87-68-3)	☐	☐	☐	Concentration						
					Mass						
4.35	Hexachlorocyclopentadiene (77-47-4)	☐	☐	☐	Concentration						
					Mass						
4.36	Hexachloroethane (67-72-1)	☐	☐	☐	Concentration						
					Mass						
4.37	Indeno (1,2,3-cd) pyrene (193-39-5)	☐	☐	☐	Concentration						
					Mass						
4.38	Isophorone (78-59-1)	☐	☐	☐	Concentration						
					Mass						
4.39	Naphthalene (91-20-3)	☐	☐	☐	Concentration						
					Mass						
4.40	Nitrobenzene (98-95-3)	☐	☐	☐	Concentration						
					Mass						
4.41	N-nitrosodimethylamine (62-75-9)	☐	☐	☐	Concentration						
					Mass						
4.42	N-nitrosodi-n-propylamine (621-64-7)	☐	☐	☐	Concentration						
					Mass						
4.43	N-nitrosodiphenylamine (86-30-6)	☐	☐	☐	Concentration						
					Mass						
4.44	Phenanthrene (85-01-8)	☐	☐	☐	Concentration						
					Mass						
4.45	Pyrene (129-00-0)	☐	☐	☐	Concentration						
					Mass						

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TABLE B. TOXIC METALS, CYANIDE, TOTAL PHENOLS, AND ORGANIC TOXIC POLLUTANTS (40 CFR 122.21(g)(7)(v))¹

	Pollutant/Parameter (and CAS Number, if available)	Testing Required	Presence or Absence (check one)		Units (specify)	Effluent				Intake (optional)	
			Believed Present	Believed Absent		Maximum Daily Discharge (required)	Maximum Monthly Discharge (if available)	Long-Term Average Daily Discharge (if available)	Number of Analyses	Long- Term Average Value	Number of Analyses
4.46	1,2,4-trichlorobenzene (120-82-1)	☐	☐	☐	Concentration						
					Mass						
Section 5. Organic Toxic Pollutants (GC/MS Fraction—Pesticides)											
5.1	Aldrin (309-00-2)	☐	☐	☐	Concentration						
					Mass						
5.2	α-BHC (319-84-6)	☐	☐	☐	Concentration						
					Mass						
5.3	β-BHC (319-85-7)	☐	☐	☐	Concentration						
					Mass						
5.4	γ-BHC (58-89-9)	☐	☐	☐	Concentration						
					Mass						
5.5	δ-BHC (319-86-8)	☐	☐	☐	Concentration						
					Mass						
5.6	Chlordane (57-74-9)	☐	☐	☐	Concentration						
					Mass						
5.7	4,4'-DDT (50-29-3)	☐	☐	☐	Concentration						
					Mass						
5.8	4,4'-DDE (72-55-9)	☐	☐	☐	Concentration						
					Mass						
5.9	4,4'-DDD (72-54-8)	☐	☐	☐	Concentration						
					Mass						
5.10	Dieldrin (60-57-1)	☐	☐	☐	Concentration						
					Mass						
5.11	α-endosulfan (115-29-7)	☐	☐	☐	Concentration						
					Mass						

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TABLE B. TOXIC METALS, CYANIDE, TOTAL PHENOLS, AND ORGANIC TOXIC POLLUTANTS (40 CFR 122.21(g)(7)(v))¹

	Pollutant/Parameter (and CAS Number, if available)	Testing Required	Presence or Absence (check one)		Units (specify)	Effluent				Intake (optional)	
			Believed Present	Believed Absent		Maximum Daily Discharge (required)	Maximum Monthly Discharge (if available)	Long-Term Average Daily Discharge (if available)	Number of Analyses	Long- Term Average Value	Number of Analyses
5.12	β-endosulfan (115-29-7)	☐	☐	☐	Concentration						
					Mass						
5.13	Endosulfan sulfate (1031-07-8)	☐	☐	☐	Concentration						
					Mass						
5.14	Endrin (72-20-8)	☐	☐	☐	Concentration						
					Mass						
5.15	Endrin aldehyde (7421-93-4)	☐	☐	☐	Concentration						
					Mass						
5.16	Heptachlor (76-44-8)	☐	☐	☐	Concentration						
					Mass						
5.17	Heptachlor epoxide (1024-57-3)	☐	☐	☐	Concentration						
					Mass						
5.18	PCB-1242 (53469-21-9)	☐	☐	☐	Concentration						
					Mass						
5.19	PCB-1254 (11097-69-1)	☐	☐	☐	Concentration						
					Mass						
5.20	PCB-1221 (11104-28-2)	☐	☐	☐	Concentration						
					Mass						
5.21	PCB-1232 (11141-16-5)	☐	☐	☐	Concentration						
					Mass						
5.22	PCB-1248 (12672-29-6)	☐	☐	☐	Concentration						
					Mass						
5.23	PCB-1260 (11096-82-5)	☐	☐	☐	Concentration						
					Mass						
5.24	PCB-1016 (12674-11-2)	☐	☐	☐	Concentration						
					Mass						

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TABLE B. TOXIC METALS, CYANIDE, TOTAL PHENOLS, AND ORGANIC TOXIC POLLUTANTS (40 CFR 122.21(g)(7)(v))¹

	Pollutant/Parameter (and CAS Number, if available)	Testing Required	Presence or Absence (check one)		Units (specify)	Effluent				Intake (optional)	
			Believed Present	Believed Absent		Maximum Daily Discharge (required)	Maximum Monthly Discharge (if available)	Long-Term Average Daily Discharge (if available)	Number of Analyses	Long- Term Average Value	Number of Analyses
5.25	Toxaphene (8001-35-2)	☐	☐	☐	Concentration						
					Mass						

¹ Sampling shall be conducted according to sufficiently sensitive test procedures (i.e., methods) approved under 40 CFR 136 for the analysis of pollutants or pollutant parameters or required under 40 CFR chapter I, subchapter N or O. See instructions and 40 CFR 122.21(e)(3).

² Analysis for Total Recoverable Mercury must be performed utilizing the low-level, USEPA Method 1631E.

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TABLE C. CERTAIN CONVENTIONAL AND NON CONVENTIONAL POLLUTANTS (40 CFR 122.21(g)(7)(vi))¹

	Pollutant (CAS Number, if available)	Presence or Absence (check one)		Units (specify)	Effluent				Intake (Optional)			
		Believed Present	Believed Absent		Maximum Daily Discharge (required)	Maximum Monthly Discharge (if available)	Long-Term Average Daily Discharge (if available)	Number of Analyses	Long-Term Average Value	Number of Analyses		
☐ Check here if you believe all pollutants on Table C to be present in your discharge from the noted outfall. You need <i>not</i> check the "Believed Present" box for each pollutant.												
☒ Check here if you believe all pollutants on Table C to be absent in your discharge from the noted outfall. You need <i>not</i> check the "Believed Absent" box for each pollutant.												
1.	Bromide (24959-67-9)	☐	☐	Concentration								
				Mass								
2.	Chlorine, total residual	☐	☐	Concentration								
				Mass								
3.	Color	☐	☐	Concentration								
				Mass								
4.	Fecal coliform	☐	☐	Concentration								
				Mass								
5.	Fluoride (16984-48-8)	☐	☐	Concentration								
				Mass								
6.	Nitrate-nitrite	☐	☐	Concentration								
				Mass								
7.	Nitrogen, total organic (as N)	☐	☐	Concentration								
				Mass								
8.	Oil and grease	☐	☐	Concentration								
				Mass								
9.	Phosphorus (as P), total (7723-14-0)	☐	☐	Concentration								
				Mass								
10.	Sulfate (as SO ₄) (14808-79-8)	☐	☐	Concentration								
				Mass								
11.	Sulfide (as S)	☐	☐	Concentration								
				Mass								

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TABLE C. CERTAIN CONVENTIONAL AND NON CONVENTIONAL POLLUTANTS (40 CFR 122.21(g)(7)(vi))¹

	Pollutant (CAS Number, if available)	Presence or Absence (check one)		Units (specify)	Effluent				Intake (Optional)	
		Believed Present	Believed Absent		Maximum Daily Discharge (required)	Maximum Monthly Discharge (if available)	Long-Term Average Daily Discharge (if available)	Number of Analyses	Long-Term Average Value	Number of Analyses
12.	Sulfite (as SO ₃) (14265-45-3)	☐	☐	Concentration						
				Mass						
13.	Surfactants	☐	☐	Concentration						
				Mass						
14.	Aluminum, total (7429-90-5)	☐	☐	Concentration						
				Mass						
15.	Barium, total (7440-39-3)	☐	☐	Concentration						
				Mass						
16.	Boron, total (7440-42-8)	☐	☐	Concentration						
				Mass						
17.	Cobalt, total (7440-48-4)	☐	☐	Concentration						
				Mass						
18.	Iron, total (7439-89-6)	☐	☐	Concentration						
				Mass						
19.	Magnesium, total (7439-95-4)	☐	☐	Concentration						
				Mass						
20.	Molybdenum, total (7439-98-7)	☐	☐	Concentration						
				Mass						
21.	Manganese, total (7439-96-5)	☐	☐	Concentration						
				Mass						
22.	Tin, total (7440-31-5)	☐	☐	Concentration						
				Mass						
23.	Titanium, total (7440-32-6)	☐	☐	Concentration						
				Mass						

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TABLE C. CERTAIN CONVENTIONAL AND NON CONVENTIONAL POLLUTANTS (40 CFR 122.21(g)(7)(vi))¹

	Pollutant (CAS Number, if available)	Presence or Absence (check one)		Units (specify)	Effluent				Intake (Optional)		
		Believed Present	Believed Absent		Maximum Daily Discharge (required)	Maximum Monthly Discharge (if available)	Long-Term Average Daily Discharge (if available)	Number of Analyses	Long-Term Average Value	Number of Analyses	
24.	Radioactivity										
	Alpha, total	☐	☐	Concentration							
				Mass							
	Beta, total	☐	☐	Concentration							
				Mass							
	Radium, total	☐	☐	Concentration							
				Mass							
	Radium 226, total	☐	☐	Concentration							
				Mass							

¹ Sampling shall be conducted according to sufficiently sensitive test procedures (i.e., methods) approved under 40 CFR 136 for the analysis of pollutants or pollutant parameters or required under 40 CFR chapter I, subchapter N or O. See instructions and 40 CFR 122.21(e)(3).

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TABLE D. CERTAIN HAZARDOUS SUBSTANCES AND ASBESTOS (40 CFR 122.21(g)(7)(vii))¹

	Pollutant	Presence or Absence (check one)		Reason Pollutant Believed Present in Discharge	Available Quantitative Data (specify units)
		Believed Present	Believed Absent		
1.	Asbestos	☐	☒		
2.	Acetaldehyde	☐	☒		
3.	Allyl alcohol	☐	☒		
4.	Allyl chloride	☐	☒		
5.	Amyl acetate	☐	☒		
6.	Aniline	☐	☒		
7.	Benzonitrile	☐	☒		
8.	Benzyl chloride	☐	☒		
9.	Butyl acetate	☐	☒		
10.	Butylamine	☐	☒		
11.	Captan	☐	☒		
12.	Carbaryl	☐	☒		
13.	Carbofuran	☐	☒		
14.	Carbon disulfide	☐	☒		
15.	Chlorpyrifos	☐	☒		
16.	Coumaphos	☐	☒		
17.	Cresol	☐	☒		
18.	Crotonaldehyde	☐	☒		
19.	Cyclohexane	☐	☒		

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TABLE D. CERTAIN HAZARDOUS SUBSTANCES AND ASBESTOS (40 CFR 122.21(g)(7)(vii))¹

	Pollutant	Presence or Absence (check one)		Reason Pollutant Believed Present in Discharge	Available Quantitative Data (specify units)
		Believed Present	Believed Absent		
20.	2,4-D (2,4-dichlorophenoxyacetic acid)	☐	☒		
21.	Diazinon	☐	☒		
22.	Dicamba	☐	☒		
23.	Dichlobenil	☐	☒		
24.	Dichlone	☐	☒		
25.	2,2-dichloropropionic acid	☐	☒		
26.	Dichlorvos	☐	☒		
27.	Diethyl amine	☐	☒		
28.	Dimethyl amine	☐	☒		
29.	Dinitrobenzene	☐	☒		
30.	Diquat	☐	☒		
31.	Disulfoton	☐	☒		
32.	Diuron	☐	☒		
33.	Epichlorohydrin	☐	☒		
34.	Ethion	☐	☒		
35.	Ethylene diamine	☐	☒		
36.	Ethylene dibromide	☐	☒		
37.	Formaldehyde	☐	☒		
38.	Furfural	☐	☒		

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TABLE D. CERTAIN HAZARDOUS SUBSTANCES AND ASBESTOS (40 CFR 122.21(g)(7)(vii))¹

	Pollutant	Presence or Absence (check one)		Reason Pollutant Believed Present in Discharge	Available Quantitative Data (specify units)
		Believed Present	Believed Absent		
39.	Guthion	☐	☒		
40.	Isoprene	☐	☒		
41.	Isopropanolamine	☐	☒		
42.	Kelthane	☐	☒		
43.	Kepone	☐	☒		
44.	Malathion	☐	☒		
45.	Mercaptodimethur	☐	☒		
46.	Methoxychlor	☐	☒		
47.	Methyl mercaptan	☐	☒		
48.	Methyl methacrylate	☐	☒		
49.	Methyl parathion	☐	☐		
50.	Mevinphos	☐	☒		
51.	Mexacarbate	☐	☒		
52.	Monoethyl amine	☐	☒		
53.	Monomethyl amine	☐	☒		
54.	Naled	☐	☒		
55.	Naphthenic acid	☐	☒		
56.	Nitrotoluene	☐	☒		
57.	Parathion	☐	☒		

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TABLE D. CERTAIN HAZARDOUS SUBSTANCES AND ASBESTOS (40 CFR 122.21(g)(7)(vii))¹

	Pollutant	Presence or Absence (check one)		Reason Pollutant Believed Present in Discharge	Available Quantitative Data (specify units)
		Believed Present	Believed Absent		
58.	Phenolsulfonate	☐	☒		
59.	Phosgene	☐	☒		
60.	Propargite	☐	☒		
61.	Propylene oxide	☐	☒		
62.	Pyrethrins	☐	☒		
63.	Quinoline	☐	☒		
64.	Resorcinol	☐	☒		
65.	Strontium	☐	☒		
66.	Strychnine	☐	☒		
67.	Styrene	☐	☒		
68.	2,4,5-T (2,4,5-trichlorophenoxyacetic acid)	☐	☒		
69.	TDE (tetrachlorodiphenyl ethane)	☐	☒		
70.	2,4,5-TP [2-(2,4,5-trichlorophenoxy) propanoic acid]	☐	☒		
71.	Trichlorofon	☐	☒		
72.	Triethanolamine	☐	☒		
73.	Triethylamine	☐	☒		
74.	Trimethylamine	☐	☒		
75.	Uranium	☐	☒		
76.	Vanadium	☐	☒		

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TABLE D. CERTAIN HAZARDOUS SUBSTANCES AND ASBESTOS (40 CFR 122.21(g)(7)(vii))¹

	Pollutant	Presence or Absence (check one)		Reason Pollutant Believed Present in Discharge	Available Quantitative Data (specify units)
		Believed Present	Believed Absent		
77.	Vinyl acetate	☐	☒		
78.	Xylene	☐	☒		
79.	Xylenol	☐	☐		
80.	Zirconium	☐	☒		

¹ Sampling shall be conducted according to sufficiently sensitive test procedures (i.e., methods) approved under 40 CFR 136 for the analysis of pollutants or pollutant parameters or required under 40 CFR chapter I, subchapter N or O. See instructions and 40 CFR 122.21(e)(3).

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TABLE E. 2,3,7,8 TETRACHLORODIBENZO P DIOXIN (2,3,7,8 TCDD) (40 CFR 122.21(g)(7)(viii))

Pollutant	TCDD Congeners Used or Manufactured	Presence or Absence (check one)		Results of Screening Procedure
		Believed Present	Believed Absent	
2,3,7,8-TCDD	☐	☐	☒	

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TABLE A. CONVENTIONAL AND NON CONVENTIONAL POLLUTANTS (40 CFR 122.21(g)(7)(iii))¹

	Pollutant	Waiver Requested (if applicable)	Units (specify)	Effluent				Intake (Optional)	
				Maximum Daily Discharge (required)	Maximum Monthly Discharge (if available)	Long-Term Average Daily Discharge (if available)	Number of Analyses *	Long-Term Average Value	Number of Analyses
☐	Check here if you have attached a request to NYSDEC for a waiver for <i>all</i> of the pollutants listed on this table for the noted outfall.								
1.	Biochemical oxygen demand (BOD ₅)	☒	Concentration						
			Mass						
2.	Chemical oxygen demand (COD)	☒	Concentration						
			Mass						
3.	Total organic carbon (TOC)	☒	Concentration						
			Mass						
4.	Total suspended solids (TSS)	☐	Concentration	mg/L	<100				
			Mass						
5.	Ammonia (as N)	☒	Concentration						
			Mass						
6.	Flow	☐	Rate	gpm	600.00				
7.	Temperature (winter)	☐	°C	°C	5.50				
	Temperature (summer)	☐	°C	°C	22.00				
8.	pH (minimum)	☐	Standard units	s.u.	6.5				
	pH (maximum)	☐	Standard units	s.u.	8.5				

¹ Sampling shall be conducted according to sufficiently sensitive test procedures (i.e., methods) approved under 40 CFR 136 for the analysis of pollutants or pollutant parameters or required under 40 CFR chapter I, subchapter N or O. See instructions and 40 CFR 122.21(e)(3).

***Projected/Anticipated results.** Waivers are requested for BOD, COD, TOC, and Ammonia due to the nature of the operations at the site.

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TABLE B. TOXIC METALS, CYANIDE, TOTAL PHENOLS, AND ORGANIC TOXIC POLLUTANTS (40 CFR 122.21(g)(7)(v))¹

	Pollutant/Parameter (and CAS Number, if available)	Testing Required	Presence or Absence (check one)		Units (specify)	Effluent				Intake (optional)			
			Believed Present	Believed Absent		Maximum Daily Discharge (required)	Maximum Monthly Discharge (if available)	Long-Term Average Daily Discharge (if available)	Number of Analyses	Long- Term Average Value	Number of Analyses		
☒	Check here if you believe all pollutants on Table B to be absent in your discharge from the noted outfall. You need not check the "Believed Absent" box for each pollutant.												
Section 1. Toxic Metals, Cyanide, and Total Phenols													
1.1	Antimony, total (7440-36-0)	☐	☐	☐	Concentration								
					Mass								
1.2	Arsenic, total (7440-38-2)	☐	☐	☐	Concentration								
					Mass								
1.3	Beryllium, total (7440-41-7)	☐	☐	☐	Concentration								
					Mass								
1.4	Cadmium, total (7440-43-9)	☐	☐	☐	Concentration								
					Mass								
1.5	Chromium, total (7440-47-3)	☐	☐	☐	Concentration								
					Mass								
1.6	Copper, total (7440-50-8)	☐	☐	☐	Concentration								
					Mass								
1.7	Lead, total (7439-92-1)	☐	☐	☐	Concentration								
					Mass								
1.8	Mercury, total (7439-97-6)	☐	☐	☐	Concentration								
					Mass								
1.9	Nickel, total (7440-02-0)	☐	☐	☐	Concentration								
					Mass								
1.10	Selenium, total (7782-49-2)	☐	☐	☐	Concentration								
					Mass								
1.11	Silver, total (7440-22-4)	☐	☐	☐	Concentration								
					Mass								

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TABLE B. TOXIC METALS, CYANIDE, TOTAL PHENOLS, AND ORGANIC TOXIC POLLUTANTS (40 CFR 122.21(g)(7)(v))¹

	Pollutant/Parameter (and CAS Number, if available)	Testing Required	Presence or Absence (check one)		Units (specify)	Effluent				Intake (optional)	
			Believed Present	Believed Absent		Maximum Daily Discharge (required)	Maximum Monthly Discharge (if available)	Long-Term Average Daily Discharge (if available)	Number of Analyses	Long- Term Average Value	Number of Analyses
1.12	Thallium, total (7440-28-0)	☐	☐	☐	Concentration						
					Mass						
1.13	Zinc, total (7440-66-6)	☐	☐	☐	Concentration						
					Mass						
1.14	Cyanide, total (57-12-5)	☐	☐	☐	Concentration						
					Mass						
1.15	Phenols, total	☐	☐	☐	Concentration						
					Mass						
Section 2. Organic Toxic Pollutants (GC/MS Fraction—Volatile Compounds)											
2.1	Acrolein (107-02-8)	☐	☐	☐	Concentration						
					Mass						
2.2	Acrylonitrile (107-13-1)	☐	☐	☐	Concentration						
					Mass						
2.3	Benzene (71-43-2)	☐	☐	☐	Concentration						
					Mass						
2.4	Bromoform (75-25-2)	☐	☐	☐	Concentration						
					Mass						
2.5	Carbon tetrachloride (56-23-5)	☐	☐	☐	Concentration						
					Mass						
2.6	Chlorobenzene (108-90-7)	☐	☐	☐	Concentration						
					Mass						
2.7	Chlorodibromomethane (124-48-1)	☐	☐	☐	Concentration						
					Mass						
2.8	Chloroethane (75-00-3)	☐	☐	☐	Concentration						
					Mass						

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TABLE B. TOXIC METALS, CYANIDE, TOTAL PHENOLS, AND ORGANIC TOXIC POLLUTANTS (40 CFR 122.21(g)(7)(v))¹

	Pollutant/Parameter (and CAS Number, if available)	Testing Required	Presence or Absence (check one)		Units (specify)	Effluent				Intake (optional)	
			Believed Present	Believed Absent		Maximum Daily Discharge (required)	Maximum Monthly Discharge (if available)	Long-Term Average Daily Discharge (if available)	Number of Analyses	Long- Term Average Value	Number of Analyses
2.9	2-chloroethylvinyl ether (110-75-8)	☐	☐	☐	Concentration						
					Mass						
2.10	Chloroform (67-66-3)	☐	☐	☐	Concentration						
					Mass						
2.11	Dichlorobromomethane (75-27-4)	☐	☐	☐	Concentration						
					Mass						
2.12	1,1-dichloroethane (75-34-3)	☐	☐	☐	Concentration						
					Mass						
2.13	1,2-dichloroethane (107-06-2)	☐	☐	☐	Concentration						
					Mass						
2.14	1,1-dichloroethylene (75-35-4)	☐	☐	☐	Concentration						
					Mass						
2.15	1,2-dichloropropane (78-87-5)	☐	☐	☐	Concentration						
					Mass						
2.16	1,3-dichloropropylene (542-75-6)	☐	☐	☐	Concentration						
					Mass						
2.17	Ethylbenzene (100-41-4)	☐	☐	☐	Concentration						
					Mass						
2.18	Methyl bromide (74-83-9)	☐	☐	☐	Concentration						
					Mass						
2.19	Methyl chloride (74-87-3)	☐	☐	☐	Concentration						
					Mass						
2.20	Methylene chloride (75-09-2)	☐	☐	☐	Concentration						
					Mass						
2.21	1,1,2,2- tetrachloroethane (79-34-5)	☐	☐	☐	Concentration						
					Mass						

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TABLE B. TOXIC METALS, CYANIDE, TOTAL PHENOLS, AND ORGANIC TOXIC POLLUTANTS (40 CFR 122.21(g)(7)(v))¹

	Pollutant/Parameter (and CAS Number, if available)	Testing Required	Presence or Absence (check one)		Units (specify)	Effluent				Intake (optional)	
			Believed Present	Believed Absent		Maximum Daily Discharge (required)	Maximum Monthly Discharge (if available)	Long-Term Average Daily Discharge (if available)	Number of Analyses	Long- Term Average Value	Number of Analyses
2.22	Tetrachloroethylene (127-18-4)	☐	☐	☐	Concentration						
					Mass						
2.23	Toluene (108-88-3)	☐	☐	☐	Concentration						
					Mass						
2.24	1,2-trans-dichloroethylene (156-60-5)	☐	☐	☐	Concentration						
					Mass						
2.25	1,1,1-trichloroethane (71-55-6)	☐	☐	☐	Concentration						
					Mass						
2.26	1,1,2-trichloroethane (79-00-5)	☐	☐	☐	Concentration						
					Mass						
2.27	Trichloroethylene (79-01-6)	☐	☐	☐	Concentration						
					Mass						
2.28	Vinyl chloride (75-01-4)	☐	☐	☐	Concentration						
					Mass						
Section 3. Organic Toxic Pollutants (GC/MS Fraction—Acid Compounds)											
3.1	2-chlorophenol (95-57-8)	☐	☐	☐	Concentration						
					Mass						
3.2	2,4-dichlorophenol (120-83-2)	☐	☐	☐	Concentration						
					Mass						
3.3	2,4-dimethylphenol (105-67-9)	☐	☐	☐	Concentration						
					Mass						
3.4	4,6-dinitro-o-cresol (534-52-1)	☐	☐	☐	Concentration						
					Mass						
3.5	2,4-dinitrophenol (51-28-5)	☐	☐	☐	Concentration						
					Mass						

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TABLE B. TOXIC METALS, CYANIDE, TOTAL PHENOLS, AND ORGANIC TOXIC POLLUTANTS (40 CFR 122.21(g)(7)(v))¹

	Pollutant/Parameter (and CAS Number, if available)	Testing Required	Presence or Absence (check one)		Units (specify)	Effluent				Intake (optional)	
			Believed Present	Believed Absent		Maximum Daily Discharge (required)	Maximum Monthly Discharge (if available)	Long-Term Average Daily Discharge (if available)	Number of Analyses	Long- Term Average Value	Number of Analyses
3.6	2-nitrophenol (88-75-5)	☐	☐	☐	Concentration						
					Mass						
3.7	4-nitrophenol (100-02-7)	☐	☐	☐	Concentration						
					Mass						
3.8	p-chloro-m-cresol (59-50-7)	☐	☐	☐	Concentration						
					Mass						
3.9	Pentachlorophenol (87-86-5)	☐	☐	☐	Concentration						
					Mass						
3.10	Phenol (108-95-2)	☐	☐	☐	Concentration						
					Mass						
3.11	2,4,6-trichlorophenol (88-05-2)	☐	☐	☐	Concentration						
					Mass						
Section 4. Organic Toxic Pollutants (GC/MS Fraction—Base /Neutral Compounds)											
4.1	Acenaphthene (83-32-9)	☐	☐	☐	Concentration						
					Mass						
4.2	Acenaphthylene (208-96-8)	☐	☐	☐	Concentration						
					Mass						
4.3	Anthracene (120-12-7)	☐	☐	☐	Concentration						
					Mass						
4.4	Benzidine (92-87-5)	☐	☐	☐	Concentration						
					Mass						
4.5	Benzo (a) anthracene (56-55-3)	☐	☐	☐	Concentration						
					Mass						
4.6	Benzo (a) pyrene (50-32-8)	☐	☐	☐	Concentration						
					Mass						

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TABLE B. TOXIC METALS, CYANIDE, TOTAL PHENOLS, AND ORGANIC TOXIC POLLUTANTS (40 CFR 122.21(g)(7)(v))¹

	Pollutant/Parameter (and CAS Number, if available)	Testing Required	Presence or Absence (check one)		Units (specify)	Effluent				Intake (optional)	
			Believed Present	Believed Absent		Maximum Daily Discharge (required)	Maximum Monthly Discharge (if available)	Long-Term Average Daily Discharge (if available)	Number of Analyses	Long- Term Average Value	Number of Analyses
4.7	3,4-benzofluoranthene (205-99-2)	☐	☐	☐	Concentration						
					Mass						
4.8	Benzo (ghi) perylene (191-24-2)	☐	☐	☐	Concentration						
					Mass						
4.9	Benzo (k) fluoranthene (207-08-9)	☐	☐	☐	Concentration						
					Mass						
4.10	Bis (2-chloroethoxy) methane (111-91-1)	☐	☐	☐	Concentration						
					Mass						
4.11	Bis (2-chloroethyl) ether (111-44-4)	☐	☐	☐	Concentration						
					Mass						
4.12	Bis (2-chloroisopropyl) ether (102-80-1)	☐	☐	☐	Concentration						
					Mass						
4.13	Bis (2-ethylhexyl) phthalate (117-81-7)	☐	☐	☐	Concentration						
					Mass						
4.14	4-bromophenyl phenyl ether (101-55-3)	☐	☐	☐	Concentration						
					Mass						
4.15	Butyl benzyl phthalate (85-68-7)	☐	☐	☐	Concentration						
					Mass						
4.16	2-chloronaphthalene (91-58-7)	☐	☐	☐	Concentration						
					Mass						
4.17	4-chlorophenyl phenyl ether (7005-72-3)	☐	☐	☐	Concentration						
					Mass						
4.18	Chrysene (218-01-9)	☐	☐	☐	Concentration						
					Mass						
4.19	Dibenzo (a,h) anthracene (53-70-3)	☐	☐	☐	Concentration						
					Mass						

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TABLE B. TOXIC METALS, CYANIDE, TOTAL PHENOLS, AND ORGANIC TOXIC POLLUTANTS (40 CFR 122.21(g)(7)(v))¹

	Pollutant/Parameter (and CAS Number, if available)	Testing Required	Presence or Absence (check one)		Units (specify)	Effluent				Intake (optional)	
			Believed Present	Believed Absent		Maximum Daily Discharge (required)	Maximum Monthly Discharge (if available)	Long-Term Average Daily Discharge (if available)	Number of Analyses	Long- Term Average Value	Number of Analyses
4.20	1,2-dichlorobenzene (95-50-1)	☐	☐	☐	Concentration						
					Mass						
4.21	1,3-dichlorobenzene (541-73-1)	☐	☐	☐	Concentration						
					Mass						
4.22	1,4-dichlorobenzene (106-46-7)	☐	☐	☐	Concentration						
					Mass						
4.23	3,3-dichlorobenzidine (91-94-1)	☐	☐	☐	Concentration						
					Mass						
4.24	Diethyl phthalate (84-66-2)	☐	☐	☐	Concentration						
					Mass						
4.25	Dimethyl phthalate (131-11-3)	☐	☐	☐	Concentration						
					Mass						
4.26	Di-n-butyl phthalate (84-74-2)	☐	☐	☐	Concentration						
					Mass						
4.27	2,4-dinitrotoluene (121-14-2)	☐	☐	☐	Concentration						
					Mass						
4.28	2,6-dinitrotoluene (606-20-2)	☐	☐	☐	Concentration						
					Mass						
4.29	Di-n-octyl phthalate (117-84-0)	☐	☐	☐	Concentration						
					Mass						
4.30	1,2-Diphenylhydrazine (as azobenzene) (122-66-7)	☐	☐	☐	Concentration						
					Mass						
4.31	Fluoranthene (206-44-0)	☐	☐	☐	Concentration						
					Mass						
4.32	Fluorene (86-73-7)	☐	☐	☐	Concentration						
					Mass						

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TABLE B. TOXIC METALS, CYANIDE, TOTAL PHENOLS, AND ORGANIC TOXIC POLLUTANTS (40 CFR 122.21(g)(7)(v))¹

	Pollutant/Parameter (and CAS Number, if available)	Testing Required	Presence or Absence (check one)		Units (specify)	Effluent				Intake (optional)	
			Believed Present	Believed Absent		Maximum Daily Discharge (required)	Maximum Monthly Discharge (if available)	Long-Term Average Daily Discharge (if available)	Number of Analyses	Long- Term Average Value	Number of Analyses
4.33	Hexachlorobenzene (118-74-1)	☐	☐	☐	Concentration						
					Mass						
4.34	Hexachlorobutadiene (87-68-3)	☐	☐	☐	Concentration						
					Mass						
4.35	Hexachlorocyclopentadiene (77-47-4)	☐	☐	☐	Concentration						
					Mass						
4.36	Hexachloroethane (67-72-1)	☐	☐	☐	Concentration						
					Mass						
4.37	Indeno (1,2,3-cd) pyrene (193-39-5)	☐	☐	☐	Concentration						
					Mass						
4.38	Isophorone (78-59-1)	☐	☐	☐	Concentration						
					Mass						
4.39	Naphthalene (91-20-3)	☐	☐	☐	Concentration						
					Mass						
4.40	Nitrobenzene (98-95-3)	☐	☐	☐	Concentration						
					Mass						
4.41	N-nitrosodimethylamine (62-75-9)	☐	☐	☐	Concentration						
					Mass						
4.42	N-nitrosodi-n-propylamine (621-64-7)	☐	☐	☐	Concentration						
					Mass						
4.43	N-nitrosodiphenylamine (86-30-6)	☐	☐	☐	Concentration						
					Mass						
4.44	Phenanthrene (85-01-8)	☐	☐	☐	Concentration						
					Mass						
4.45	Pyrene (129-00-0)	☐	☐	☐	Concentration						
					Mass						

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TABLE B. TOXIC METALS, CYANIDE, TOTAL PHENOLS, AND ORGANIC TOXIC POLLUTANTS (40 CFR 122.21(g)(7)(v))¹

	Pollutant/Parameter (and CAS Number, if available)	Testing Required	Presence or Absence (check one)		Units (specify)	Effluent				Intake (optional)	
			Believed Present	Believed Absent		Maximum Daily Discharge (required)	Maximum Monthly Discharge (if available)	Long-Term Average Daily Discharge (if available)	Number of Analyses	Long- Term Average Value	Number of Analyses
4.46	1,2,4-trichlorobenzene (120-82-1)	☐	☐	☐	Concentration						
					Mass						
Section 5. Organic Toxic Pollutants (GC/MS Fraction—Pesticides)											
5.1	Aldrin (309-00-2)	☐	☐	☐	Concentration						
					Mass						
5.2	α-BHC (319-84-6)	☐	☐	☐	Concentration						
					Mass						
5.3	β-BHC (319-85-7)	☐	☐	☐	Concentration						
					Mass						
5.4	γ-BHC (58-89-9)	☐	☐	☐	Concentration						
					Mass						
5.5	δ-BHC (319-86-8)	☐	☐	☐	Concentration						
					Mass						
5.6	Chlordane (57-74-9)	☐	☐	☐	Concentration						
					Mass						
5.7	4,4'-DDT (50-29-3)	☐	☐	☐	Concentration						
					Mass						
5.8	4,4'-DDE (72-55-9)	☐	☐	☐	Concentration						
					Mass						
5.9	4,4'-DDD (72-54-8)	☐	☐	☐	Concentration						
					Mass						
5.10	Dieldrin (60-57-1)	☐	☐	☐	Concentration						
					Mass						
5.11	α-endosulfan (115-29-7)	☐	☐	☐	Concentration						
					Mass						

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TABLE B. TOXIC METALS, CYANIDE, TOTAL PHENOLS, AND ORGANIC TOXIC POLLUTANTS (40 CFR 122.21(g)(7)(v))¹

	Pollutant/Parameter (and CAS Number, if available)	Testing Required	Presence or Absence (check one)		Units (specify)	Effluent				Intake (optional)	
			Believed Present	Believed Absent		Maximum Daily Discharge (required)	Maximum Monthly Discharge (if available)	Long-Term Average Daily Discharge (if available)	Number of Analyses	Long- Term Average Value	Number of Analyses
5.12	β-endosulfan (115-29-7)	☐	☐	☐	Concentration						
					Mass						
5.13	Endosulfan sulfate (1031-07-8)	☐	☐	☐	Concentration						
					Mass						
5.14	Endrin (72-20-8)	☐	☐	☐	Concentration						
					Mass						
5.15	Endrin aldehyde (7421-93-4)	☐	☐	☐	Concentration						
					Mass						
5.16	Heptachlor (76-44-8)	☐	☐	☐	Concentration						
					Mass						
5.17	Heptachlor epoxide (1024-57-3)	☐	☐	☐	Concentration						
					Mass						
5.18	PCB-1242 (53469-21-9)	☐	☐	☐	Concentration						
					Mass						
5.19	PCB-1254 (11097-69-1)	☐	☐	☐	Concentration						
					Mass						
5.20	PCB-1221 (11104-28-2)	☐	☐	☐	Concentration						
					Mass						
5.21	PCB-1232 (11141-16-5)	☐	☐	☐	Concentration						
					Mass						
5.22	PCB-1248 (12672-29-6)	☐	☐	☐	Concentration						
					Mass						
5.23	PCB-1260 (11096-82-5)	☐	☐	☐	Concentration						
					Mass						
5.24	PCB-1016 (12674-11-2)	☐	☐	☐	Concentration						
					Mass						

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TABLE B. TOXIC METALS, CYANIDE, TOTAL PHENOLS, AND ORGANIC TOXIC POLLUTANTS (40 CFR 122.21(g)(7)(v))¹

	Pollutant/Parameter (and CAS Number, if available)	Testing Required	Presence or Absence (check one)		Units (specify)	Effluent				Intake (optional)	
			Believed Present	Believed Absent		Maximum Daily Discharge (required)	Maximum Monthly Discharge (if available)	Long-Term Average Daily Discharge (if available)	Number of Analyses	Long- Term Average Value	Number of Analyses
5.25	Toxaphene (8001-35-2)	☐	☐	☐	Concentration						
					Mass						

¹ Sampling shall be conducted according to sufficiently sensitive test procedures (i.e., methods) approved under 40 CFR 136 for the analysis of pollutants or pollutant parameters or required under 40 CFR chapter I, subchapter N or O. See instructions and 40 CFR 122.21(e)(3).

² Analysis for Total Recoverable Mercury must be performed utilizing the low-level, USEPA Method 1631E.

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TABLE C. CERTAIN CONVENTIONAL AND NON CONVENTIONAL POLLUTANTS (40 CFR 122.21(g)(7)(vi))¹

	Pollutant (CAS Number, if available)	Presence or Absence (check one)		Units (specify)	Effluent				Intake (Optional)			
		Believed Present	Believed Absent		Maximum Daily Discharge (required)	Maximum Monthly Discharge (if available)	Long-Term Average Daily Discharge (if available)	Number of Analyses	Long-Term Average Value	Number of Analyses		
☐ Check here if you believe all pollutants on Table C to be present in your discharge from the noted outfall. You need <i>not</i> check the "Believed Present" box for each pollutant.												
☒ Check here if you believe all pollutants on Table C to be absent in your discharge from the noted outfall. You need <i>not</i> check the "Believed Absent" box for each pollutant.												
1.	Bromide (24959-67-9)	☐	☐	Concentration								
				Mass								
2.	Chlorine, total residual	☐	☐	Concentration								
				Mass								
3.	Color	☐	☐	Concentration								
				Mass								
4.	Fecal coliform	☐	☐	Concentration								
				Mass								
5.	Fluoride (16984-48-8)	☐	☐	Concentration								
				Mass								
6.	Nitrate-nitrite	☐	☐	Concentration								
				Mass								
7.	Nitrogen, total organic (as N)	☐	☐	Concentration								
				Mass								
8.	Oil and grease	☐	☐	Concentration								
				Mass								
9.	Phosphorus (as P), total (7723-14-0)	☐	☐	Concentration								
				Mass								
10.	Sulfate (as SO ₄) (14808-79-8)	☐	☐	Concentration								
				Mass								
11.	Sulfide (as S)	☐	☐	Concentration								
				Mass								

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TABLE C. CERTAIN CONVENTIONAL AND NON CONVENTIONAL POLLUTANTS (40 CFR 122.21(g)(7)(vi))¹

	Pollutant (CAS Number, if available)	Presence or Absence (check one)		Units (specify)	Effluent				Intake (Optional)	
		Believed Present	Believed Absent		Maximum Daily Discharge (required)	Maximum Monthly Discharge (if available)	Long-Term Average Daily Discharge (if available)	Number of Analyses	Long-Term Average Value	Number of Analyses
12.	Sulfite (as SO ₃) (14265-45-3)	☐	☐	Concentration						
				Mass						
13.	Surfactants	☐	☐	Concentration						
				Mass						
14.	Aluminum, total (7429-90-5)	☐	☐	Concentration						
				Mass						
15.	Barium, total (7440-39-3)	☐	☐	Concentration						
				Mass						
16.	Boron, total (7440-42-8)	☐	☐	Concentration						
				Mass						
17.	Cobalt, total (7440-48-4)	☐	☐	Concentration						
				Mass						
18.	Iron, total (7439-89-6)	☐	☐	Concentration						
				Mass						
19.	Magnesium, total (7439-95-4)	☐	☐	Concentration						
				Mass						
20.	Molybdenum, total (7439-98-7)	☐	☐	Concentration						
				Mass						
21.	Manganese, total (7439-96-5)	☐	☐	Concentration						
				Mass						
22.	Tin, total (7440-31-5)	☐	☐	Concentration						
				Mass						
23.	Titanium, total (7440-32-6)	☐	☐	Concentration						
				Mass						

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TABLE C. CERTAIN CONVENTIONAL AND NON CONVENTIONAL POLLUTANTS (40 CFR 122.21(g)(7)(vi))¹

	Pollutant (CAS Number, if available)	Presence or Absence (check one)		Units (specify)	Effluent				Intake (Optional)		
		Believed Present	Believed Absent		Maximum Daily Discharge (required)	Maximum Monthly Discharge (if available)	Long-Term Average Daily Discharge (if available)	Number of Analyses	Long-Term Average Value	Number of Analyses	
24.	Radioactivity										
	Alpha, total	☐	☐	Concentration							
				Mass							
	Beta, total	☐	☐	Concentration							
				Mass							
	Radium, total	☐	☐	Concentration							
				Mass							
	Radium 226, total	☐	☐	Concentration							
				Mass							

¹ Sampling shall be conducted according to sufficiently sensitive test procedures (i.e., methods) approved under 40 CFR 136 for the analysis of pollutants or pollutant parameters or required under 40 CFR chapter I, subchapter N or O. See instructions and 40 CFR 122.21(e)(3).

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TABLE D. CERTAIN HAZARDOUS SUBSTANCES AND ASBESTOS (40 CFR 122.21(g)(7)(vii))¹

	Pollutant	Presence or Absence (check one)		Reason Pollutant Believed Present in Discharge	Available Quantitative Data (specify units)
		Believed Present	Believed Absent		
1.	Asbestos	☐	☒		
2.	Acetaldehyde	☐	☒		
3.	Allyl alcohol	☐	☒		
4.	Allyl chloride	☐	☒		
5.	Amyl acetate	☐	☒		
6.	Aniline	☐	☒		
7.	Benzonitrile	☐	☒		
8.	Benzyl chloride	☐	☒		
9.	Butyl acetate	☐	☒		
10.	Butylamine	☐	☒		
11.	Captan	☐	☒		
12.	Carbaryl	☐	☒		
13.	Carbofuran	☐	☒		
14.	Carbon disulfide	☐	☒		
15.	Chlorpyrifos	☐	☒		
16.	Coumaphos	☐	☒		
17.	Cresol	☐	☒		
18.	Crotonaldehyde	☐	☒		
19.	Cyclohexane	☐	☒		

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TABLE D. CERTAIN HAZARDOUS SUBSTANCES AND ASBESTOS (40 CFR 122.21(g)(7)(vii))¹

	Pollutant	Presence or Absence (check one)		Reason Pollutant Believed Present in Discharge	Available Quantitative Data (specify units)
		Believed Present	Believed Absent		
20.	2,4-D (2,4-dichlorophenoxyacetic acid)	☐	☒		
21.	Diazinon	☐	☒		
22.	Dicamba	☐	☒		
23.	Dichlobenil	☐	☒		
24.	Dichlone	☐	☒		
25.	2,2-dichloropropionic acid	☐	☒		
26.	Dichlorvos	☐	☒		
27.	Diethyl amine	☐	☒		
28.	Dimethyl amine	☐	☒		
29.	Dinitrobenzene	☐	☒		
30.	Diquat	☐	☒		
31.	Disulfoton	☐	☒		
32.	Diuron	☐	☒		
33.	Epichlorohydrin	☐	☒		
34.	Ethion	☐	☒		
35.	Ethylene diamine	☐	☒		
36.	Ethylene dibromide	☐	☒		
37.	Formaldehyde	☐	☒		
38.	Furfural	☐	☒		

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TABLE D. CERTAIN HAZARDOUS SUBSTANCES AND ASBESTOS (40 CFR 122.21(g)(7)(vii))¹

	Pollutant	Presence or Absence (check one)		Reason Pollutant Believed Present in Discharge	Available Quantitative Data (specify units)
		Believed Present	Believed Absent		
39.	Guthion	☐	☒		
40.	Isoprene	☐	☒		
41.	Isopropanolamine	☐	☒		
42.	Kelthane	☐	☒		
43.	Kepone	☐	☒		
44.	Malathion	☐	☒		
45.	Mercaptodimethur	☐	☒		
46.	Methoxychlor	☐	☒		
47.	Methyl mercaptan	☐	☒		
48.	Methyl methacrylate	☐	☒		
49.	Methyl parathion	☐	☒		
50.	Mevinphos	☐	☒		
51.	Mexacarbate	☐	☒		
52.	Monoethyl amine	☐	☒		
53.	Monomethyl amine	☐	☒		
54.	Naled	☐	☒		
55.	Naphthenic acid	☐	☒		
56.	Nitrotoluene	☐	☒		
57.	Parathion	☐	☒		

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TABLE D. CERTAIN HAZARDOUS SUBSTANCES AND ASBESTOS (40 CFR 122.21(g)(7)(vii))¹

	Pollutant	Presence or Absence (check one)		Reason Pollutant Believed Present in Discharge	Available Quantitative Data (specify units)
		Believed Present	Believed Absent		
58.	Phenolsulfonate	☐	☒		
59.	Phosgene	☐	☒		
60.	Propargite	☐	☒		
61.	Propylene oxide	☐	☒		
62.	Pyrethrins	☐	☒		
63.	Quinoline	☐	☒		
64.	Resorcinol	☐	☒		
65.	Strontium	☐	☒		
66.	Strychnine	☐	☒		
67.	Styrene	☐	☒		
68.	2,4,5-T (2,4,5-trichlorophenoxyacetic acid)	☐	☒		
69.	TDE (tetrachlorodiphenyl ethane)	☐	☒		
70.	2,4,5-TP [2-(2,4,5-trichlorophenoxy) propanoic acid]	☐	☒		
71.	Trichlorofon	☐	☒		
72.	Triethanolamine	☐	☒		
73.	Triethylamine	☐	☒		
74.	Trimethylamine	☐	☒		
75.	Uranium	☐	☒		
76.	Vanadium	☐	☒		

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TABLE D. CERTAIN HAZARDOUS SUBSTANCES AND ASBESTOS (40 CFR 122.21(g)(7)(vii))¹

	Pollutant	Presence or Absence (check one)		Reason Pollutant Believed Present in Discharge	Available Quantitative Data (specify units)
		Believed Present	Believed Absent		
77.	Vinyl acetate	☐	☒		
78.	Xylene	☐	☒		
79.	Xylenol	☐	☒		
80.	Zirconium	☐	☒		

¹ Sampling shall be conducted according to sufficiently sensitive test procedures (i.e., methods) approved under 40 CFR 136 for the analysis of pollutants or pollutant parameters or required under 40 CFR chapter I, subchapter N or O. See instructions and 40 CFR 122.21(e)(3).

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TABLE E. 2,3,7,8 TETRACHLORODIBENZO P DIOXIN (2,3,7,8 TCDD) (40 CFR 122.21(g)(7)(viii))

Pollutant	TCDD Congeners Used or Manufactured	Presence or Absence (check one)		Results of Screening Procedure
		Believed Present	Believed Absent	
2,3,7,8-TCDD	☐	☐	☒	

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Form Approved: 9/25/2020

TABLE G. INDUSTRIAL CHEMICAL SURVEY

Substance Name	CAS Number	Purpose of Use Code	Average Annual Usage	Amount On Hand	Presence in Discharge	Discharge Outfall

Complete this table for all substances that have been used, produced, stored, distributed or otherwise disposed of in significant quantity AND for any quantity of BCCs, chemicals for which FDA fish flesh limits exist, or restricted pesticide products listed in Part 326, Section 2 of the ECL. Restricted pesticides also include those products whose labeling bears the statement "Restricted Use Pesticide." Do not include chemicals that are present as *de minimus* concentrations as listed in the SDS for that substance.

For any substance listed that is used in a manner which could cause them to come into contact with a wastewater that is ultimately discharged to the waters of the State through an outfall controlled by this permit application, identify it as "Present" and the Outfall(s) by which it may be discharged. Sampling results for these pollutants should also be included with Tables B-E.

☐ A separate, but equivalent table has been attached as part of this application.

		PRO - Produced	Gal	Gal	☐ Present ☐ Not Present	
		PRO - Produced	Gal	Gal	☐ Present ☐ Not Present	
		PRO - Produced	Gal	Gal	☐ Present ☐ Not Present	
		PRO - Produced	Gal	Gal	☐ Present ☐ Not Present	
		PRO - Produced	Gal	Gal	☐ Present ☐ Not Present	
		PRO - Produced	Gal	Gal	☐ Present ☐ Not Present	
		PRO - Produced	Gal	Gal	☐ Present ☐ Not Present	
		PRO - Produced	Gal	Gal	☐ Present ☐ Not Present	
		PRO - Produced	Gal	Gal	☐ Present ☐ Not Present	
		PRO - Produced	Gal	Gal	☐ Present ☐ Not Present	
		PRO - Produced	Gal	Gal	☐ Present ☐ Not Present	
		PRO - Produced	Gal	Gal	☐ Present ☐ Not Present	
		PRO - Produced	Gal	Gal	☐ Present ☐ Not Present	
		PRO - Produced	Gal	Gal	☐ Present ☐ Not Present	
		PRO - Produced	Gal	Gal	☐ Present ☐ Not Present	

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DEC Identification Number	SPDES Permit Number	Facility Name Liberty Sand & Gravel

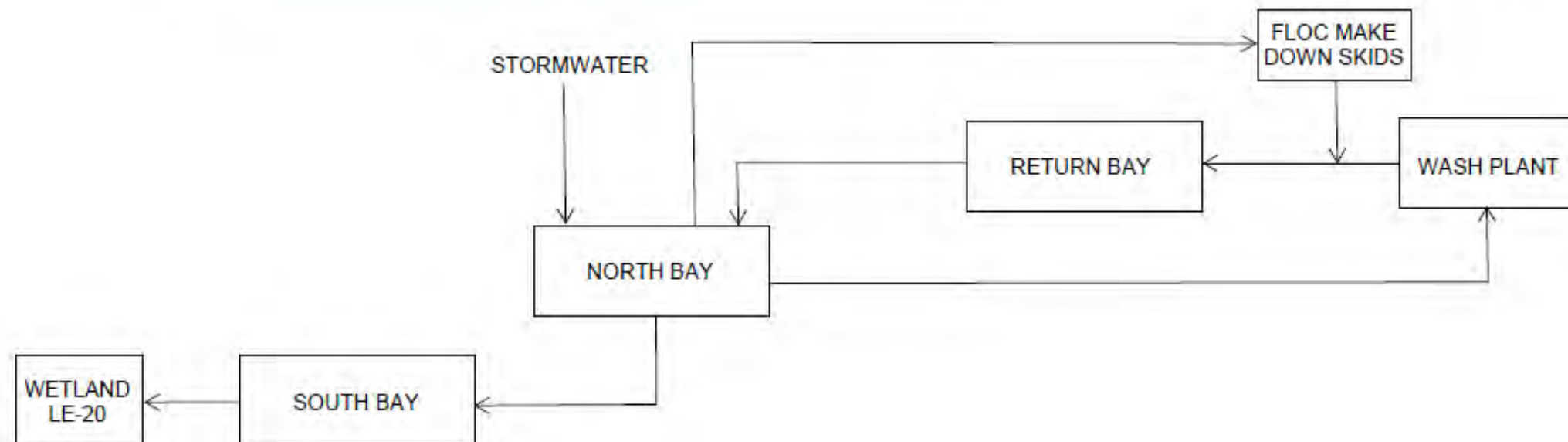
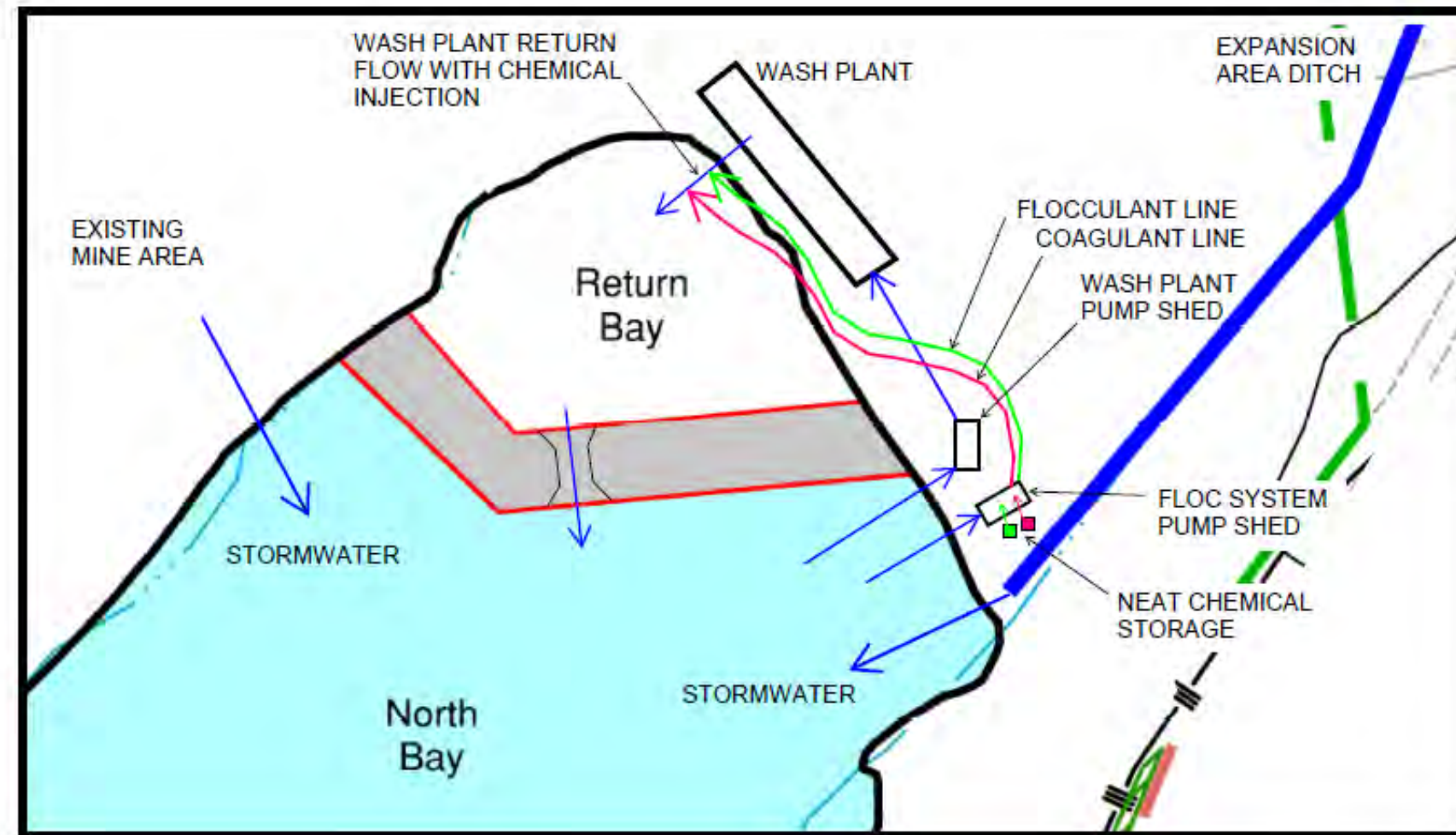
TABLE H. FACILITY & COLLECTION SYSTEM RESILIENCY

Pump Station Name	PS Owner	General Location	Latitude (DMS)	Longitude (DMS)	Floor Elevation (ft, NAVD88)
Complete this table for all pump stations that exist at the wastewater treatment facility and within the collection system. Identify the name of the pump station, the owner of the pump station (if different than the SPDES permittee), the general location of the pump station (e.g. intersection of Green St. & Water St.), the latitude and longitude of the pump station in degrees-minutes-seconds (DMS) format, and the elevation in feet of the pump station floor (per the NAVD88 datum).					
☐ The wastewater treatment facility and collection system do not contain any pump stations.					
			° ' "	° ' "	
			° ' "	° ' "	
			° ' "	° ' "	
			° ' "	° ' "	
			° ' "	° ' "	
			° ' "	° ' "	
			° ' "	° ' "	
			° ' "	° ' "	
			° ' "	° ' "	
			° ' "	° ' "	



EXHIBIT C

FLOW DIAGRAM



19 British American Blvd., Latham, New York 12110
P: (518) 782-0882 F: (518) 782-0973 www.jmt.com

FLOW DIAGRAM
RIATO STONE, LLC
LIBERTY SAND AND GRAVEL

TOWN OF FALLSBURG

SULLIVAN CO., NY

JMT# 20-03617-001

DATE: 12/02/2021

SCALE: NTS

FLOW DIAGRAM.MXD

FIGURE NO.

2



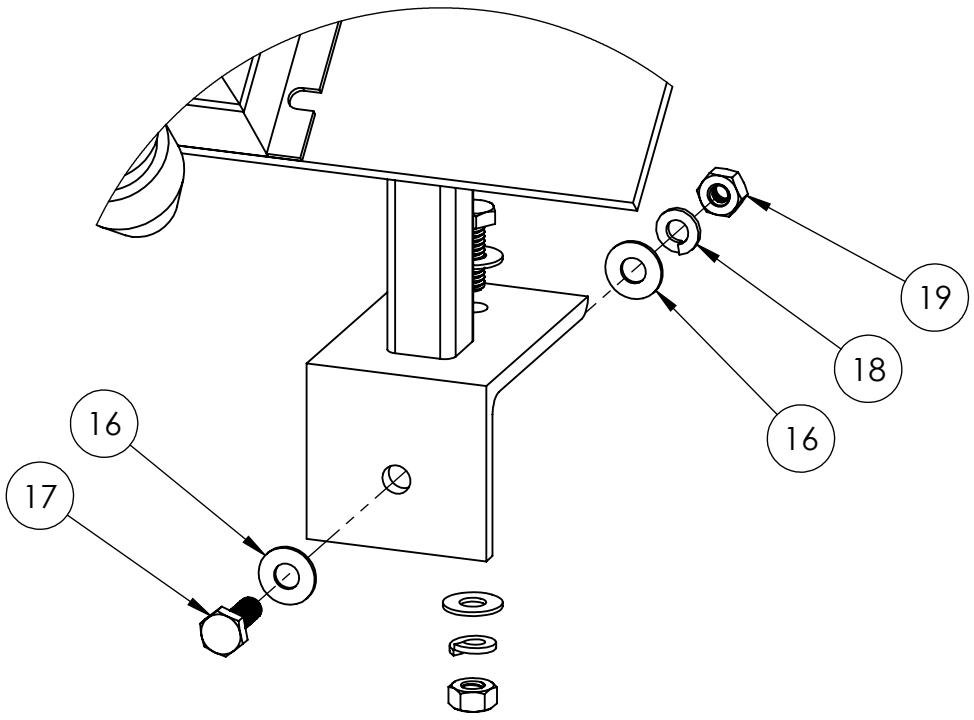
EXHIBIT D

FLOCCULANT SYSTEM

MANUFACTURER'S LITERATURE

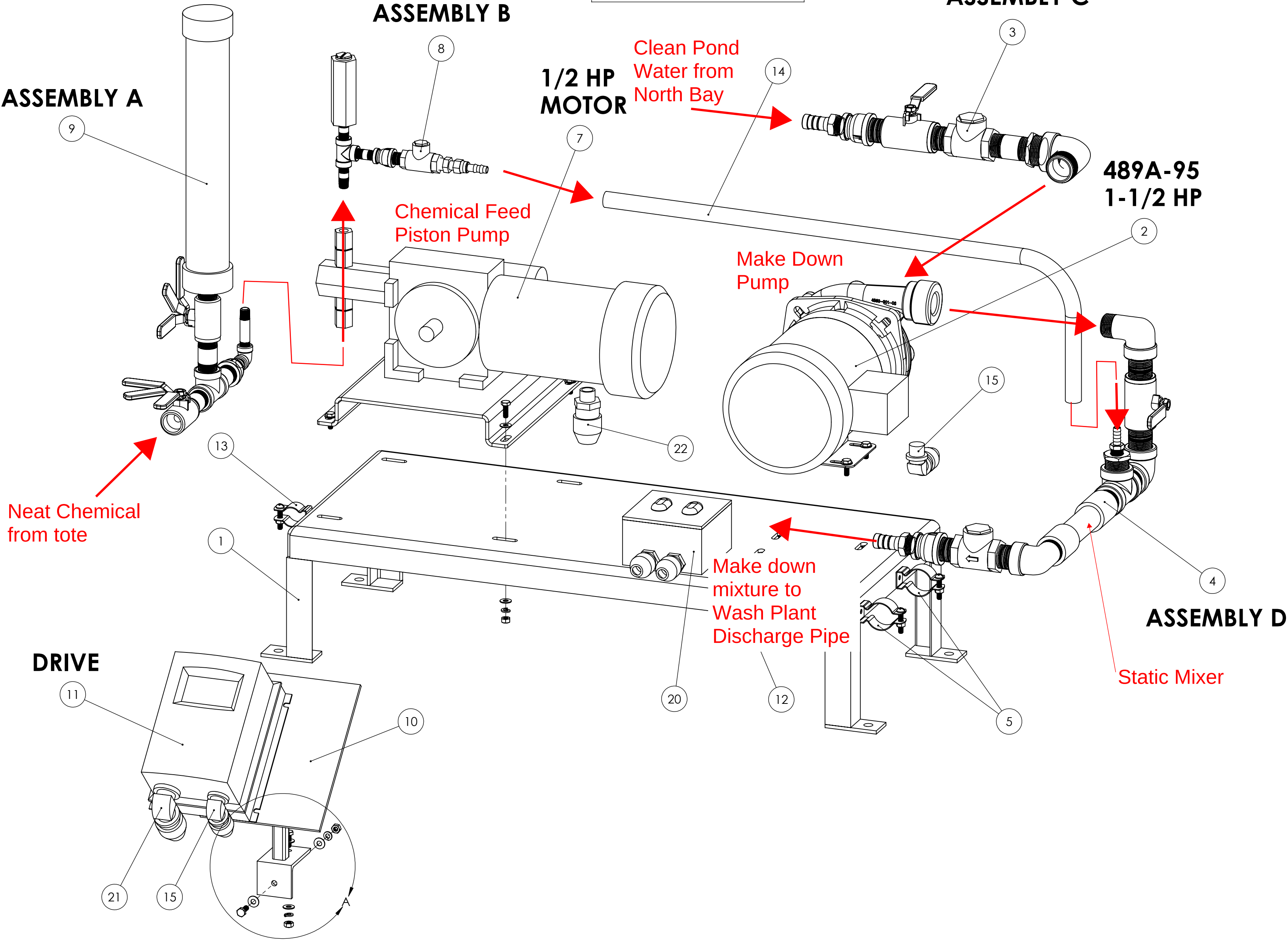
ITEM NO.	QTY.	DESCRIPTION
1	1	PUMP SKID ASSY REV 1
2	1	AMT PUMP ASSY
3	1	BOOSTER PUMP INLET
4	1	BOOSTER PUMP DISCHARGE
5	2	1.5IN THREADED ROD MOUNT CLAMPING HANGER
7	1	V10 PISTON PUMP
8	1	DISCHARGE PIPING FOR .25IN PISTON PUMP
9	1	INLET PIPING FOR .25IN PISTON PUMP
10	1	DRIVE MOUNTING PLATE AND BRACKET ASSY
11	1	DRIVE
12	1	1.25IN THREADED ROD MOUNT CLAMPING HANGER
13	1	1IN THREADED ROD MOUNT CLAMPING HANGER
14	1	.75IN BLUE HOSE
15	2	CORD GRIP, 90DEG (T&B 2681)
16	20	.25IN SS FLAT WASHER
17	10	.25-20 X .75IN SS HEX HEAD CAP SCREW
18	10	.25IN SS LOCK WASHER
19	10	.25-20 SS HEX NUT
20	1	OUTLET BOX ASSEMBLY
21	1	CORD GRIP, 90DEG (T&B 2683)
22	1	CORD GRIP (T&B 2691)

DETAIL A
SCALE 1 : 2
(TYPICAL MOUNTING ARRANGEMENT
FOR PUMP, MOTOR, AND DRIVE)



LQ50 ASSEMBLY
1360
1460
1560

1360
1460
1560
PISTON PER JOB



Clean Pond
Water from
North Bay

Neat
Chemical
from tote

Make down
mixture to
Wash Plant
Discharge Pipe

Neat Chemical
from tote

Make down
mixture to
Wash Plant
Discharge Pipe

ASSEMBLY D
Static Mixer

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	0	INITIAL RELEASE	7/30/2018	MJO

S:\Goldmine\C\Clearwater Industries\Stock Systems\LQ50 (2018)\ASSEMBLY'S\

PROPRIETARY AND CONFIDENTIAL
THE INFORMATION CONTAINED IN THIS
DRAWING IS THE SOLE PROPERTY OF
CLEARWATER INDUSTRIES. ANY
REPRODUCTION IN PART OR AS A WHOLE
WITHOUT THE WRITTEN PERMISSION OF
CLEARWATER INDUSTRIES IS
PROHIBITED.

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL: 1/16
ANGULAR: MACH: ±1° BEND: ±1°
TWO PLACE DECIMAL ±.03
THREE PLACE DECIMAL ±.005
INTERPRET GEOMETRIC
TOLERANCING PER:

MATERIAL

FINISH

DO NOT SCALE DRAWING

NAME	DATE
MJO	7/30/2018
DRAWN	
CHECKED	
ENG APPR.	
MFG APPR.	
Q.A.	
JOB NO:	
COMMENTS:	

CLEARWATER
Industries, INC.

TITLE:
LQ50 ASSEMBLY

SIZE	DWG. NO.	REV
D		0
SCALE: 1:6	WEIGHT: 316.708	SHEET 1 OF 1

Clearwater Model LQ50

The Clearwater Model LQ50 rapidly makes down and injects liquid polymers into waste water streams aiding in the separation of the solids from the water.

Optimal For:

- Minimizing equipment costs
- Administering coagulants and other pre-treating agents equipment costs
- Low quantity polymer consumers
- Providing a simple, inexpensive solution to waste water issues



Equipment Functions:

- Accurately mixes and injects liquid polymer
- Creates a fully inverted creamy polymer solution
- Administers a site specific solution at an adjustable rate

Features:

- Able to be "up and running" 20 minutes after arrival
- Rugged industrial design to withstand harsh conditions
- Very little operator attention required
- Elevated skid for ease of service
- Variable stroke piston pump and calibration column for accurate dosing
- In line static mixer ensures proper mixing of the polymer

CLEARWATER
Industries, INC.

LET US CLEAR THINGS UP

9446 North 107th Street • Milwaukee, Wis. 53224
Phone: (800) 949-1880 • (414) 365-1200 • Fax: (414) 365-0200
john@clearwaterind.com • www.clearwaterind.com

Make Down Pump

- 1/3 HP Centrifugal Pump
- 115/230 Volt Single phase
- 25 GPM at 20' of head

Neat Emulsion Pump

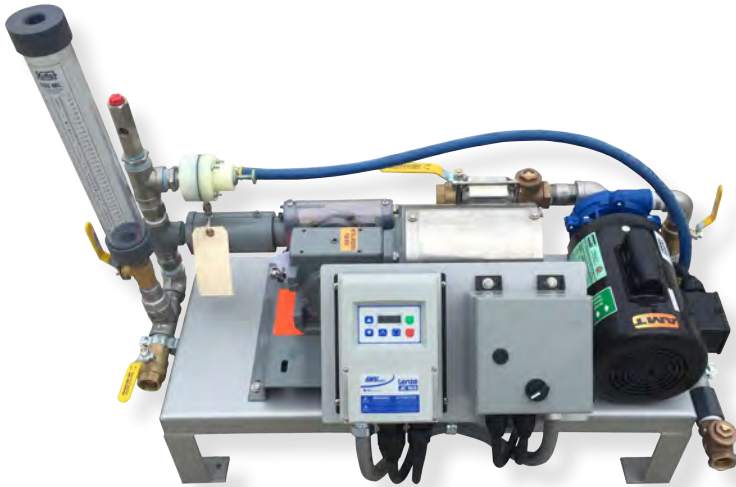
- Simplex piston pump
- 1" diameter piston size
- 14 GPH, 60 strokes per minute
- 1/4" HP 115 VAC
- Stainless Steel wet end

Dimensions

- 48" x 40" x 32" (h)
- 240 lbs

Field Requirements

- 1/4" line from emulsion to skid
- 3/4" NPT clean water hook-up
- Single point electrical hookup
- 110 V Single Phase
- 3/4" solution discharge line



In-Line Flow Meter

- 1-30 GPM Flow measuring range
- Measuring accuracy is $\pm 5\%$ of Full scale
- Repeatability is $\pm 1\%$ of Full scale
- Brass end ports, Buna-N Seals, Stainless steel springs
- 10:1 Turn down ratio
- 325 PSIG (22.4 bar) Max Operating Pressure

Clearwater Model LQ50



LQ50 Liquid Skid Manual (120V)



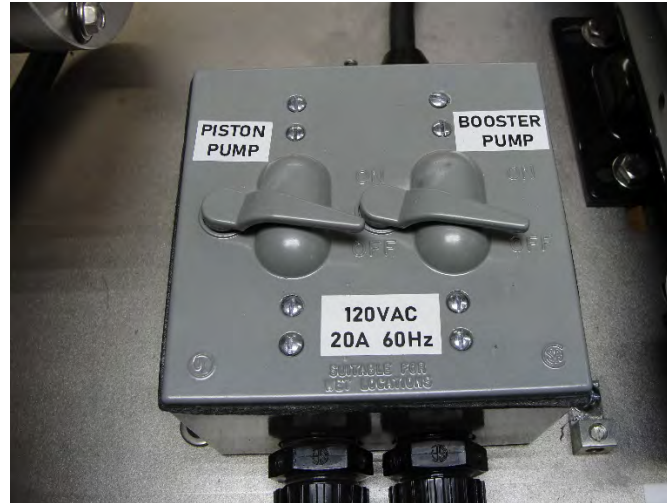
9446 North 107th Street • Milwaukee, Wis. 53224
Phone: (800) 949-1880 Local: (414) 365-1200 Fax: (414) 365-0200
Sales @ • www.clearwaterind.com

1. OVERVIEW

The LQ-50 Emulsion Skid meters chemical in to dilution water. The piston pump draws chemical from the tote, drum, or bulk storage tank. The centrifugal booster pump draws in water from connected source. The two are blended via an inline static mixer where the chemical begins to activate. The blended solution is then passed to the end user process.

1.1 OPERATIONAL OVERVIEW

1. Booster (centrifugal) pump and Piston pump VFD are controlled by two toggle switches.



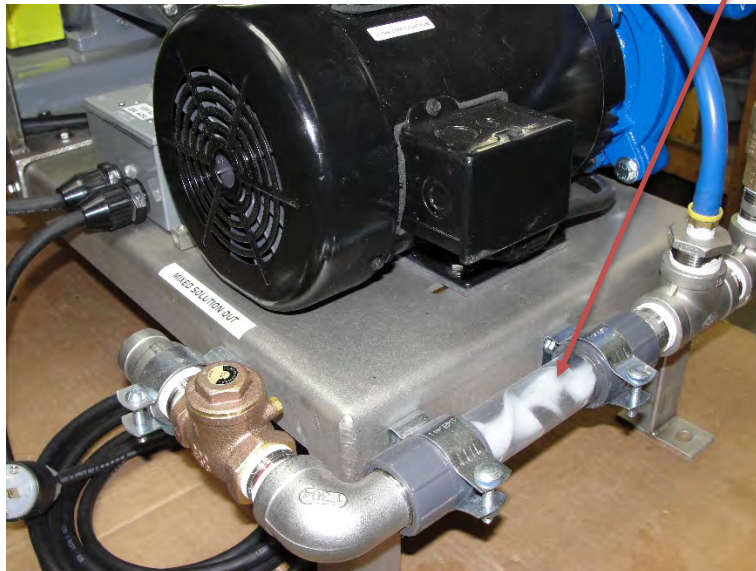
2. Piston pump speed is governed by VFD.



3. Amount of chemical being mixed with water (i.e. dosing rate) is adjusted by speed controls on VFD.

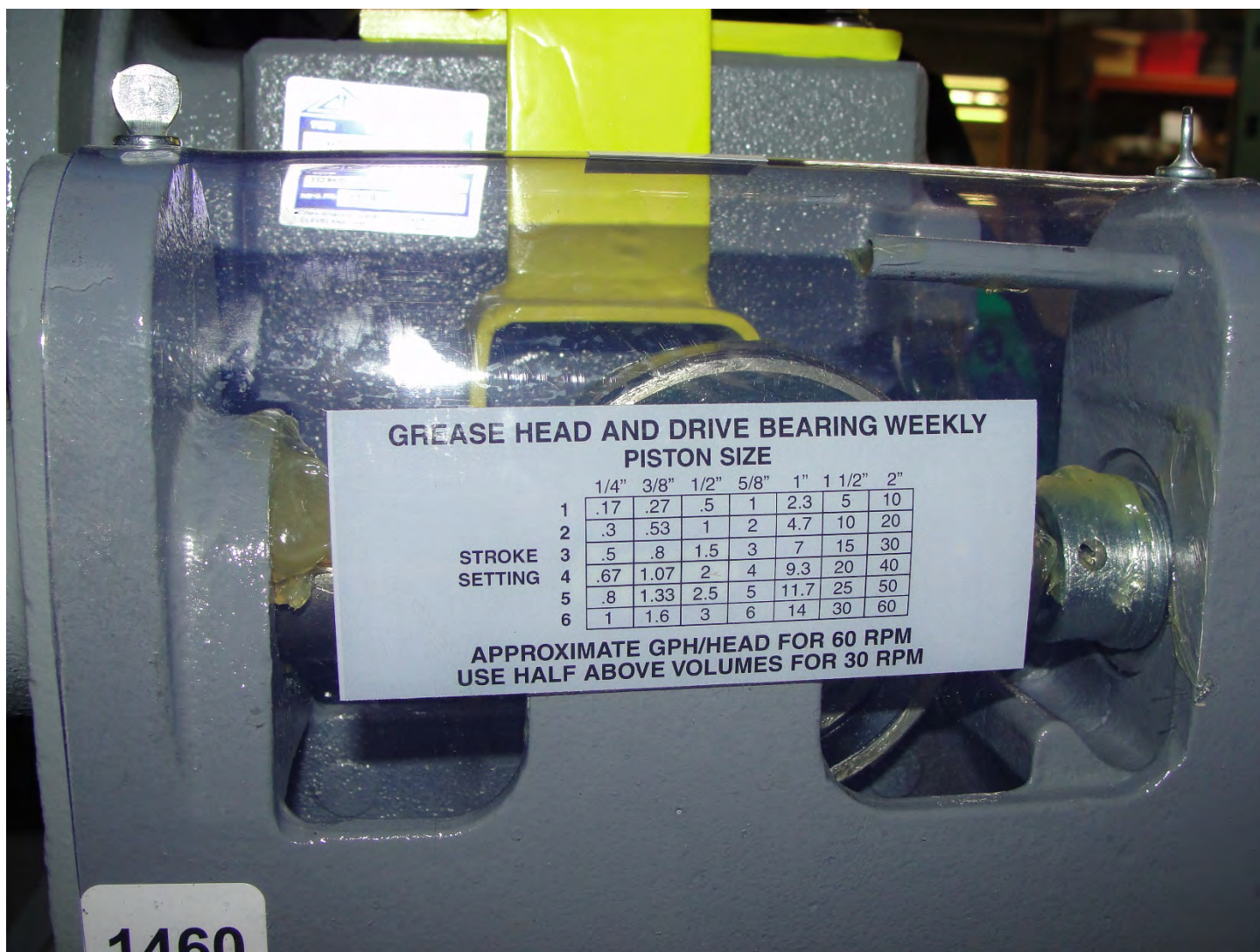
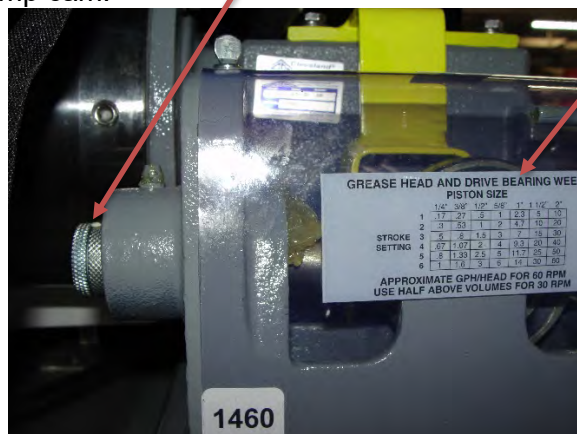


4. Chemical is mixed with clean dilution water by use of static mixer.



5. Solution further ages/agitates in line before being discharged to process.
10 to 30 seconds of aging is recommended.

6. If necessary, further adjustment can be made by adjusting piston stroke length. Stroke length is adjusted by knob on piston pump and determined by label on clear cover over pump cam.



2. OPERATIONAL REQUIREMENTS

1. 120VAC, 20A, 60Hz
2. Neat Chemical
3. Fresh, Clean Water

3. INSTALLATION AND OPERATION

3.1 INSTALLATION

1. Install Calibration Column.



2. Plumb the clean water line to the "Dilution Water In" fitting. ***Note: Must be clean water free of solids.**

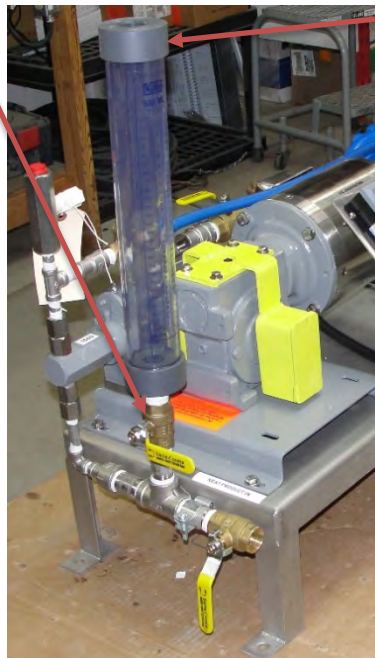
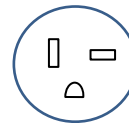


3. Plumb the neat chemical into the suction end of the piston pump. Keep ball valve closed until ready for chemical.



3.2 PISTON PUMP PRIMING

1. Plug in 120VAC cord, 20amp, NEMA 5-20P type plug
2. Open ball valve at bottom of calibration column and pour neat chemical in top of column.



Note: Water in calibration column can prematurely activate and thicken flocculants.

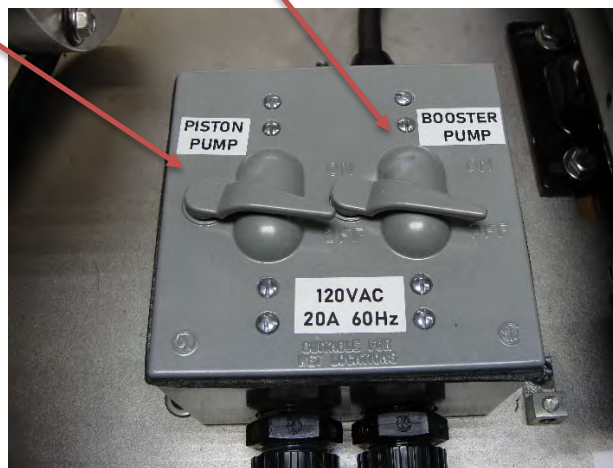
4. Turn on the Piston Pump switch and the “Run” button on the VFD and allow pump to run until water begins to drop in calibration tube.
5. After Piston Pump is primed allow pump to run until all neat chemical is drained from calibration column.
6. With the ball valve on the Neat Product In line closed, open the valve on the tote/drum, so that the neat chemical floods the line to the first valve on the skid.
7. Ensure neat chemical storage tank is properly vented to atmosphere.

8. Close the valve on the bottom of the calibration column and open the valve from the neat chemical tote/drum.



3.3 OPERATION

1. Turn Piston Pump switch and Booster Pump switch to on.

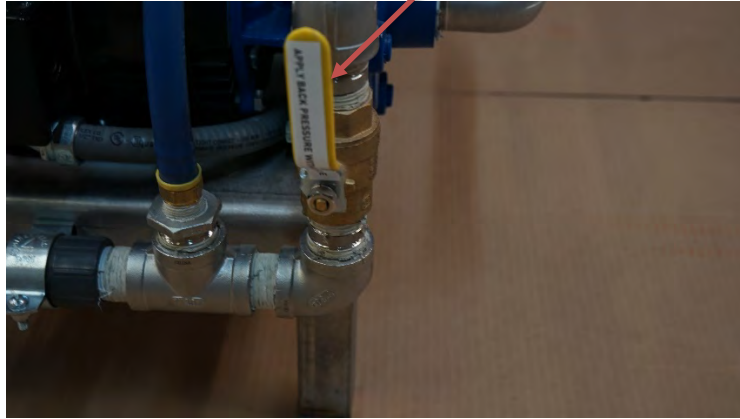


2. Adjust neat chemical output by adjusting speed on VFD.
If necessary, further chemistry dosing adjustments can be made by adjusting the travel of the piston pump.



3. For dosing rates consult your Clearwater Industries salesperson.

4. To control dilution water flow rate additional back pressure can be applied to dilution water feed by partially closing valve on booster pump output.



5. Clear out lines with fresh water at the end of any shift.



EXHIBIT E

WTC NOTIFICATION FORMS AND CHEMICAL SAFETY DATA SHEETS



New York State Department of Environmental Conservation
Division of Water
SPDES Permit - WTC Notification Form Page 1 of 3

(Oct 2013)

For help completing this form refer to instructions page and to <http://www.dec.ny.gov/permits/93245.html> .

1.a. Date Signed by Permittee - 12/15/21		1.b. Date Signed by WTC Manufacturer - N/A	
2.a. Permittee Name - Riato Stone, LLC		2.b. SPDES No. - NY TBD	
2.c. Contact Name - James Scandariato			
3.a. WTC Name - CW24			
3.b. WTC Manufacturer - Clearwater Industries, Inc.			
4.a. WTC Function - Processing aid for industrial applications			
4.b. If WTC is a biocide is it NYS registered? ☐ Yes ☒ No		4.c. Registration Number - N/A	
5. WTC Point of Addition - Settling Pond			
6. Affected Outfall(s) - 002			
7.a. WTC Daily Dosage: average lbs/day = 24 , maximum lbs/day = 30			
7.b. Dosage Frequency: minutes/day = 480 (average) , days/week = 6			
8.a. Outfall Flow Rate: average MGD = 0.68 , maximum MGD = 1.69			
8.b. Outfall WTC Concentration: average mg/l = 0 , maximum mg/l = 0			
9.a. System Blowdown Flow Rate: average gpm = N/A , maximum gpm = N/A			
9.b. System Blowdown Frequency: minutes/day = N/A , days/week = N/A			
10.a. WTC Composition - Ingredients/Impurities (note: ingredients/impurities must total to 100%)	10.b. %	10.c. CAS#	10.d. Outfall Concentration
2-Propen-1-aminium,N,N-dimethyl-N-2-propenyl-,chloride, homopolymer	39-42	26062-79-3	N/A mg/l
Water	58-61	7732-18-5	N/A mg/l
Diallyl dimethyl ammonium chloride	<5	7398-69-8	N/A mg/l
			mg/l
			mg/l
			mg/l
			mg/l
10.e. Intermediate/Final Degradation Products - N/A			
11. WTC BOD and COD (lb/lb) - N/A			



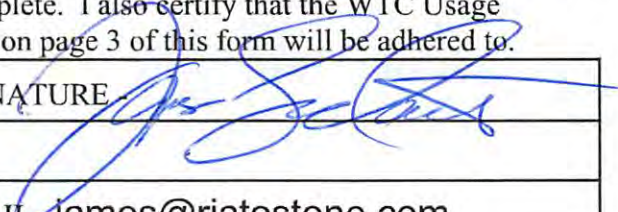
Department of
Environmental
Conservation

New York State Department of Environmental Conservation
Division of Water
SPDES Permit - WTC Notification Form Page 2 of 3

(Oct 2013)

1.a. Date Signed by Permittee - 12/15/21		1.b. Date Signed by WTC Manufacturer - N/A		
2.b. SPDES No. - NY TBD				
3.a.. WTC Name - CW24		7.a. Avg/Max Daily Dosage = 24 / 30 lbs/day		
12. WTC Toxicity Info (most sensitive species) - Attach description of endpoint for each EC50.				
12.a. Vertebrate Species	Acute LC50	Acute EC50	Chronic NOEC	Chronic IC25
See attached report	mg/l	mg/l	mg/l	mg/l
12.b. Vertebrate Species	Acute LC50	Acute EC50	Chronic NOEC	Chronic IC25
See attached report	mg/l	mg/l	mg/l	mg/l
12.c. Invertebrate Species	Acute LC50	Acute EC50	Chronic NOEC	Chronic IC25
See attached report	mg/l	mg/l	mg/l	mg/l
12.d. Invertebrate Species	Acute LC50	Acute EC50	Chronic NOEC	Chronic IC25
See attached report	mg/l	mg/l	mg/l	mg/l
13. Summarize measures in place to ensure that excessive levels of WTC are not used - LQ50 Emulsion Make Down Skid will be implemented to deliver the concentrations necessary.				
14. WTCs to be discontinued when use of this WTC begins – N/A				

15. Permittee Certification - I certify under penalty of law that this notification and all attachments are, to the best of my knowledge and belief, true, accurate and complete. I also certify that the WTC Usage Requirements and any additional requirements specified on page 3 of this form will be adhered to.

PRINT NAME - James Scandariato	SIGNATURE - 
TITLE/COMPANY - Manager/Riato Stone, LLC	
TELEPHONE - (516) 398-5886	EMAIL - james@riatostone.com

16. WTC Manufacturer Certification - I certify under penalty of law that this notification and all attachments are, to the best of my knowledge and belief, true, accurate and complete.

PRINT NAME -	SIGNATURE -
TITLE/COMPANY -	
TELEPHONE -	EMAIL -



New York State Department of Environmental Conservation
Division of Water
SPDES Permit - WTC Notification Form Page 3 of 3

(Oct 2013)

1.a. Date Signed by Permittee - 12/15/21	1.b. Date Signed by WTC Manufacturer - N/A
2.b. SPDES No. - NY TBD	
3.a.. WTC Name - CW24	7.a. Avg/Max Daily Dosage = 24/ 30 lbs/day

WTC Usage Requirements:

- A. WTC use shall not exceed the rate explicitly authorized by the SPDES permit or otherwise authorized in writing (including this form) by the Department.
- B. The permittee shall **maintain a logbook** of all WTC use, noting for each WTC the date, time, exact location, and amount of each dosage, and, the name of the individual applying or measuring the chemical. The logbook must also document that adequate process controls are in place to ensure that excessive levels of WTCs are not used. The permittee shall retain the logbook for a period of at least 5 years.
- C. The permittee shall **submit a completed WTC Annual Report Form each year** that they use and discharge WTCs. This form shall be attached to either the December DMR or the annual monitoring report required by the SPDES permit. Copies of the form can be obtained at <http://www.dec.ny.gov/permits/93245.html> .

Items 17 - 18 must be completed by NYSDEC permit writer.

17. Review Decision - check appropriate box(es).

☐

The proposed WTC usage may proceed without permit modification subject to the WTC Usage Requirements noted above.

☐

Additional requirements are specified below.

☐

The proposed WTC usage may not proceed for one of the following reasons:

☐

As noted below, the information provided is insufficient to complete our review.

☐

As noted below, the SPDES permit must first be modified to add new requirements.

☐

As noted below, the proposed use is prohibited.

18. Permit Writer Information:

PRINT NAME -	SIGNATURE -
TITLE -	DATE -
TELEPHONE -	EMAIL -



New York State Department of Environmental Conservation
Division of Water
SPDES Permit - WTC Notification Form Page 1 of 3

(Oct 2013)

For help completing this form refer to instructions page and to <http://www.dec.ny.gov/permits/93245.html>.

1.a. Date Signed by Permittee - 12/15/21		1.b. Date Signed by WTC Manufacturer - N/A	
2.a. Permittee Name - Riato Stone, LLC		2.b. SPDES No. - NY TBD	
2.c. Contact Name - James Scandariato			
3.a. WTC Name - CW53			
3.b. WTC Manufacturer - Clearwater Industries, Inc.			
4.a. WTC Function - Processing aid for industrial applications			
4.b. If WTC is a biocide is it NYS registered? ☐ Yes ☒ No		4.c. Registration Number - N/A	
5. WTC Point of Addition - Settling Pond			
6. Affected Outfall(s) - 002			
7.a. WTC Daily Dosage: average lbs/day = 9 , maximum lbs/day = 11			
7.b. Dosage Frequency: minutes/day = 480 (average) , days/week = 6			
8.a. Outfall Flow Rate: average MGD = 0.68 , maximum MGD = 1.69			
8.b. Outfall WTC Concentration: average mg/l = 0 , maximum mg/l = 0			
9.a. System Blowdown Flow Rate: average gpm = N/A , maximum gpm = N/A			
9.b. System Blowdown Frequency: minutes/day = N/A , days/week = N/A			
10.a. WTC Composition - Ingredients/Impurities (note: ingredients/impurities must total to 100%)	10.b. %	10.c. CAS#	10.d. Outfall Concentration
Distillates (petroleum), hydrotreated light	20-45	64742-47-8	N/A mg/l
Poly(oxy-1,2-ethanediyl), a-tridecyl-w-hydroxy-, branched	< 3	69011-36-5	N/A mg/l
2-Propenoic acid, polymer with 2-propenamide, sodium salt	32-41	25987-30-8	N/A mg/l
Water	25-35	7732-18-5	N/A mg/l
Sorbitan, mono-oleate	<3	1338-43-8	N/A mg/l
Acrylamide	<0.1	79-06-01	N/A mg/l
			mg/l
10.e. Intermediate/Final Degradation Products - N/A			
11. WTC BOD and COD (lb/lb) - N/A			

New York State Department of Environmental Conservation
Division of Water
SPDES Permit - WTC Notification Form Page 2 of 3

(Oct 2013)

1.a. Date Signed by Permittee - 12/15/21		1.b. Date Signed by WTC Manufacturer - N/A	
2.b. SPDES No. - NY TBD			
3.a.. WTC Name - CW53		7.a. Avg/Max Daily Dosage = 9 / 11 lbs/day	
12. WTC Toxicity Info (most sensitive species) - Attach description of endpoint for each EC50.			
12.a. Vertebrate Species	Acute LC50	Acute EC50	Chronic NOEC
See attached report	mg/l	mg/l	mg/l
12.b. Vertebrate Species	Acute LC50	Acute EC50	Chronic NOEC
See attached report	mg/l	mg/l	mg/l
12.c. Invertebrate Species	Acute LC50	Acute EC50	Chronic NOEC
See attached report	mg/l	mg/l	mg/l
12.d. Invertebrate Species	Acute LC50	Acute EC50	Chronic NOEC
See attached report	mg/l	mg/l	mg/l
13. Summarize measures in place to ensure that excessive levels of WTC are not used - LQ50 Emulsion Make Down Skid will be implemented to deliver the concentrations necessary.			
14. WTCs to be discontinued when use of this WTC begins - N/A			

15. Permittee Certification - I certify under penalty of law that this notification and all attachments are, to the best of my knowledge and belief, true, accurate and complete. I also certify that the WTC Usage Requirements and any additional requirements specified on page 3 of this form will be adhered to.

PRINT NAME - James Scandariato	SIGNATURE - 
TITLE/COMPANY - Manager/Riato Stone, LLC	
TELEPHONE - (516) 398-5886	EMAIL - james@riatostone.com

16. WTC Manufacturer Certification - I certify under penalty of law that this notification and all attachments are, to the best of my knowledge and belief, true, accurate and complete.

PRINT NAME -	SIGNATURE -
TITLE/COMPANY -	
TELEPHONE -	EMAIL -



New York State Department of Environmental Conservation
Division of Water
SPDES Permit - WTC Notification Form Page 3 of 3

(Oct 2013)

1.a. Date Signed by Permittee - 12/15/21	1.b. Date Signed by WTC Manufacturer - N/A
2.b. SPDES No. - NY TBD	
3.a.. WTC Name - CW53	7.a. Avg/Max Daily Dosage = 9/ 11 lbs/day

WTC Usage Requirements:

- A. WTC use shall not exceed the rate explicitly authorized by the SPDES permit or otherwise authorized in writing (including this form) by the Department.
- B. The permittee shall **maintain a logbook** of all WTC use, noting for each WTC the date, time, exact location, and amount of each dosage, and, the name of the individual applying or measuring the chemical. The logbook must also document that adequate process controls are in place to ensure that excessive levels of WTCs are not used. The permittee shall retain the logbook for a period of at least 5 years.
- C. The permittee shall **submit a completed WTC Annual Report Form each year** that they use and discharge WTCs. This form shall be attached to either the December DMR or the annual monitoring report required by the SPDES permit. Copies of the form can be obtained at <http://www.dec.ny.gov/permits/93245.html> .

Items 17 - 18 must be completed by NYSDEC permit writer.

17. Review Decision - check appropriate box(es).

☐

The proposed WTC usage may proceed without permit modification subject to the WTC Usage Requirements noted above.

☐

Additional requirements are specified below.

☐

The proposed WTC usage may not proceed for one of the following reasons:

☐

As noted below, the information provided is insufficient to complete our review.

☐

As noted below, the SPDES permit must first be modified to add new requirements.

☐

As noted below, the proposed use is prohibited.

18. Permit Writer Information:

PRINT NAME -	SIGNATURE -
TITLE -	DATE -
TELEPHONE -	EMAIL -

Product: CW 53

<u>Material</u>	<u>CAS Number</u>	<u>Weight %</u>
2-Propenoic acid, polymer with 2-propenamide, sodium salt	25987-30-8	32 - 41
Water	7732-18-5	25 - 35
Distillates (petroleum), hydrotreated light	64742-47-8	20 - 45
Sorbitan, mono-oleate	1338-43-8	< 3
Poly (oxy-1,2-ethanediyl), a-tridecyl-w-hydroxy-, branched	69011-36-5	< 3
Acrylamide	79-06-1	< 0.1 [< 1000 ppm]

Product: CW 24

<u>Material</u>	<u>CAS Number</u>	<u>Weight %</u>
2-Propen-1-aminium,N,N-dimethyl-N-2-propenyl-,chloride, homopolymer	26062-79-3	39 - 42
Water	7732-18-5	58 - 61
Diallyl dimethyl ammonium chloride	7398-69-8	< 0.5 [< 500 ppm]



SAFETY DATA SHEET

According to U.S. Code of Federal Regulations 29 CFR 1910.1200, Hazard Communication.

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product name: **CW53**

Type of product: Mixture.

1.2. Relevant identified uses of the substance or mixture and uses advised against

Identified uses: Processing aid for industrial applications.

Uses advised against: None.

1.3. Details of the supplier of the safety data sheet

Company: Clearwater Industries, Inc
9446 North 107th St
Milwaukee, WI 53224

Telephone: 414-365-1200

Telefax: 414-365-0200

E-mail address: john@clearwaterind.com

1.4. Emergency telephone number

24-hour emergency number: 800-4724-9300 Chemtrec (CCN 20412), Outside U.S.
703-527-3887

SECTION 2. Hazards identification**2.1. Classification of the substance or mixture**

Classification according to paragraph (d) of Regulation 29 CFR 1910.1200:

Not classified.

2.2. Label elements

Labelling according to paragraph (f) of Regulation 29 CFR 1910.1200:

Hazard symbol(s): None.

Signal word: None.

Hazard statement(s): None.

Precautionary statement(s): None.

2.3. Other hazards

Spills produce extremely slippery surfaces.

SECTION 3. Composition/information on ingredients**3.1 Substances**

Not applicable, this product is a mixture.

3.2 Mixtures

This Product is a mixture

Hazardous components**Distillates (petroleum), hydrotreated light**

Concentration/ -range : 20 – 45%

CAS Number: 64742-47-8

Classification according to paragraph (d)
of Regulation 29 CFR 1910.1200: Asp. Tox. 1;H304

Notes

Does not result in classification of the mixture if the kinematic viscosity is greater than 20.5 mm²/s measured at 40°C.

Poly(oxy-1,2-ethanediyl), a-tridecyl-w-hydroxy-, branched

Concentration/ gamme: < 5%

CAS Number: 69011-36-5

Classification according to paragraph (d) of 29 CFR 1910.1200: Acute Tox. 4;H302, Eye Dam. 1;H318

For explanation of abbreviations see section 16

SECTION 4: First aid measures**4.1. Description of first aid measures***Inhalation:*

Move to fresh air. No hazards which require special first aid measures.

Skin contact:

Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. In case of persistent skin irritation, consult a physician.

Eye contact:

Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Alternatively, rinse immediately with Diphoterine. Get prompt medical attention.

Ingestion:

Rinse mouth with water. Do NOT induce vomiting. Call a physician or poison control center immediately.

4.2. Most important symptoms and effects, both acute and delayed

None under normal use.

4.3. Indication of any immediate medical attention and special treatment needed.

None reasonably foreseeable.

Other information:

None.

SECTION 5. Fire-fighting measures***5.1. Extinguishing media***

Suitable extinguishing media:

Water. Water spray. Foam. Carbon dioxide (CO₂). Dry powder.
Warning! Spills produce extremely slippery surfaces.

Unsuitable extinguishing media:

None known.

5.2. Special hazards arising from the substance or mixture

Hazardous decomposition products:

Carbon oxides (CO_x). Nitrogen oxides (NO_x). Hydrogen cyanide (hydrocyanic acid) may be produced in the event of combustion in an oxygen deficient atmosphere.

5.3. Advice for fire-fighters

Protective measures:

Wear self-contained breathing apparatus and protective suit.

Other information:

Spills produce extremely slippery surfaces.

SECTION 6: Accidental release measures***6.1. Personal precautions, protective equipment and emergency procedures***

Personal precautions:

Do not touch or walk through spilled material. Spills produce extremely slippery surfaces.

Protective equipment:

Wear adequate personal protective equipment (see Section 8 Exposure Controls/Personal Protection).

Emergency procedures:

Keep people away from spill/leak. Prevent further leakage or spillage if safe to do so.

6.2. Environmental precautions

As with all chemical products, do not flush into surface water.

6.3. Methods and material for containment and cleaning up*Small spills:*

Do not flush with water. Soak up with inert absorbent material. Sweep up and shovel into suitable containers for disposal.

Large spills:

Do not flush with water. Dam up. Soak up with inert absorbent material. Clean up promptly by scoop or vacuum.

Residues:

After cleaning, flush away traces with water.

6.4. Reference to other sections

SECTION 7: Handling and storage; SECTION 8: Exposure controls/personal protection; SECTION 13: Disposal considerations;

SECTION 7. Handling and storage**7.1. Precautions for safe handling**

Avoid contact with skin and eyes. Renders surfaces extremely slippery when spilled. When using, do not eat, drink or smoke.

7.2. Conditions for safe storage, including any incompatibilities.

Keep away from heat and sources of ignition. Freezing will affect the physical condition and may damage the material. Incompatible with oxidizing agents.

7.3. Specific end use(s)

This information is not available.

SECTION 8. Exposure controls/personal protection**8.1. Control parameters***Occupational exposure limits:*Distillates (petroleum), hydrotreated light

ACGIH: 200 mg/m³ (8 hours) (vapors)

8.2. Exposure controlsAppropriate engineering controls:

Use local exhaust if misting occurs. Natural ventilation is adequate in absence of mists.

Individual protection measures, such as personal protective equipment:

a) Eye/face protection:

Safety glasses with side-shields.

b) Skin protection:

- i* Hand protection: PVC or other plastic material gloves.
- ii* Other: Ear coveralls and/or chemical apron and rubber footwear where physical contact can occur.

c) Respiratory protection:

No personal respiratory protective equipment normally required.

d) Additional advice:

Wash hands before breaks and at the end of workday. Handle in accordance with good industrial hygiene and safety practices. Wash hands and face before breaks and immediately after handling the product.

Environmental exposure controls:

Do not allow uncontrolled discharge of product into the environment.

SECTION 9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

<i>a) Appearance:</i>	Viscous liquid, Milky.
<i>b) Odour:</i>	Aliphatic.
<i>c) Odour Threshold:</i>	No data available.
<i>d) pH:</i>	5.5 – 8.5 @ 5 g/L
<i>e) Melting point/freezing point:</i>	< 5°C
<i>f) Initial boiling point and boiling range:</i>	> 100°C
<i>g) Flash point:</i>	Does not flash.
<i>h) Evaporation rate:</i>	No data available.
<i>i) Flammability (solid, gas):</i>	Not applicable.
<i>j) Upper/lower flammability or explosive limits:</i>	Not expected to create explosive atmospheres.

k) Vapour pressure:	2.3 kPa @ 20°C
l) Vapour density	0.804 g/liter @ 20°C
m) Relative density:	1.0 - 1.2
n) Solubility(ies):	Completely miscible.
o) Partition coefficient:	Not applicable.
p) Autoignition temperature:	No data applicable.
q) Decomposition temperature:	> 150°C
r) Viscosity:	> 20.5 mm ² /s @ 40°C
s) Explosive properties:	Not expected to be explosive based on the chemical structure.
t) Oxidizing properties:	Not expected to be oxidizing based on the chemical structure.

9.2. Other information

None.

SECTION 10. Stability and reactivity

10.1. Reactivity

Stable under recommended storage conditions.

10.2. Chemical stability

Stable under recommended storage conditions.

10.3. Possibility of hazardous reactions

None known.

10.4. Conditions to avoid

Protect from frost, heat and sunlight.

10.5. Incompatible materials

In Compatible with oxidizing agents.

10.6. Hazardous decomposition products

Thermal decomposition may produce: nitrogen oxides (NO_x), carbon oxides (CO_x). Hydrogen cyanide (hydrocyanic acid) may be produced in the event of combustion in an oxygen deficient atmosphere.

SECTION 11. Toxicological information**11.1. Information on toxicological effects****Information on the product as supplied:**

<i>Acute oral toxicity:</i>	LD50/oral/rat > 5000 mg/kg (Estimated)
<i>Acute dermal toxicity:</i>	LD50/dermal/rat > 5000 mg/kg (Estimated)
<i>Acute inhalation toxicity:</i>	The product is not expected to be toxic by inhalation.
<i>Skin corrosion/irritation:</i>	Non-irritating to skin.
<i>Serious eye damage/eye irritation:</i>	Not irritating. (OCED 437)
<i>Respiratory/skin sensitisation:</i>	Not sensitizing.
<i>Mutagenicity:</i>	Not mutagenic.
<i>Carcinogenicity:</i>	Not carcinogenic.
<i>Reproductive toxicity:</i>	Not toxic for reproduction.
<i>STOT - single exposure:</i>	No known effects.
<i>STOT - repeated exposure:</i>	No known effects.
<i>Aspiration hazard:</i>	Due to the viscosity, this product does not present an aspiration hazard.

Relevant information on the hazardous components:**Distillates (petroleum), hydrotreated light**

<i>Acute oral toxicity:</i>	LD50/oral/rat > 5000 mg/kg (OECD 401)
<i>Acute dermal toxicity:</i>	LD50/dermal/rabbit > 5000 mg/kg (OECD 402)
<i>Acute inhalation toxicity:</i>	LC50/inhalation/4 hours/rat = 4951 mg/m ³ (OECD 403) (Based on results obtained from tests on analogous products.)

<i>Skin corrosion/irritation:</i>	Not irritating. (OECD 404) Repeated exposure may cause skin dryness or cracking.
<i>Serious eye damage/eye irritation:</i>	Not irritating. (OECD 405)
<i>Respiratory/skin sensitisation:</i>	By analogy with similar products, this product is not expected to be sensitizing. (OECD 406)
<i>Mutagenicity:</i>	Not mutagenic. (OECD 471, 473, 474, 476, 478, 479)
<i>Carcinogenicity:</i>	Carcinogenicity study in rats (OECD 451): Negative
<i>Reproductive toxicity:</i>	By analogy with similar substances, this substance is not expected to be toxic for reproduction. NOAEL/rat = 300 ppm (OECD 421)
<i>STOT - single exposure:</i>	No known effects.
<i>STOT - repeated exposure:</i>	NOAEL/oral/rat/90 days $\geq$ 3000 mg/kg/day (OECD 408) (Based on results obtained from tests on analogous products.).
<i>Aspiration hazard:</i>	May be fatal if swallowed and enters airways.

Poly(oxy-1,2-ethanediyl), α -tridecyl- ω -hydroxy branched

<i>Acute oral toxicity:</i>	LD50/oral/rat = 500 - 2000 mg/kg
<i>Acute dermal toxicity:</i>	LD50/dermal/rabbit > 2000 mg/kg
<i>Acute inhalation toxicity:</i>	No data available
<i>Skin corrosion/irritation:</i>	Not irritating. (OECD 404)
<i>Serious eye damage/eye irritation:</i>	Causes serious eye irritation. (OECD 405)
<i>Respiratory/skin sensitisation:</i>	The results of testing on guinea pigs showed this material to be non-sensitizing.
<i>Mutagenicity:</i>	In vitro tests did not show mutagenic effects. In vivo tests did not show mutagenic effects.
<i>Carcinogenicity:</i>	Based on the absence of mutagenicity, it is unlikely that the substance is carcinogenic.
<i>Reproductive toxicity:</i>	Two-Generation Reproduction Toxicity (OECD 416) -NOAEL/rat > 250 mg/kg/day Prenatal Development Toxicity Study (OECD 414) -NOAEL/Maternal toxicity/rat > 50 mg/kg/day -NOAEL/Developmental toxicity/rat > 50 mg/kg/day
<i>STOT - single exposure:</i>	No known effects.
<i>STOT - repeated exposure:</i>	NOAEL/oral/rat/600 days = 50 mg/kg/day

Aspiration hazard: No known effects.

SECTION 12. Ecological information

12.1. Toxicity

Information on the product as supplied:

Acute toxicity to fish:	LC50/Oncorhynchus mykiss/96 hours > 100 mg/L. (Estimated)
Acute toxicity to invertebrates:	EC50/Daphnia magna 48 hours > 100 mg/L. (Estimated)
Acute toxicity to algae:	IC50/Algae/72 hours > 100mg/L (Estimated)
Chronic toxicity to fish:	No data available.
Chronic toxicity to invertebrates:	No data available.
Toxicity to microorganisms:	No data available.
Effects on terrestrial organisms:	No data available.
Sediment toxicity:	No data available.

Relevant information on the hazardous components:

Distillates (petroleum), hydrotreated light

Acute toxicity to fish:	LC0/Oncorhynchus mykiss/96 hours > 1000 mg/L. (OECD 203)
Acute toxicity to invertebrates:	EC0/Daphnia magna/48 hours > 1000 mg/L. (OECD 202)
Acute toxicity to algae:	IC0/Pseudokirchneriella subcapitata/72 hours > 1000mg/L (OECD 201)
Chronic toxicity to fish:	NOEC/Oncorhynchus mykiss/28 days > 1000 mg/L.
Chronic toxicity to invertebrates:	NOEC/Daphnia magna/21 days > 1000 mg/L.
Toxicity to microorganisms:	EC50/Tetrahymena pyriformis/48 hours > 1000 mg/L.
Effects on terrestrial organisms:	No data available.
Sediment toxicity:	No data available. Readily biodegradable, exposure to sediment is unlikely

Poly(oxy-1,2-ethanediyl), a-tridecyl-w-hydroxy branched

<i>Acute toxicity to fish:</i>	LC50/Cyprinus carpio/96 hours = 1-10 mg/L. (OECD 203)
<i>Acute toxicity to invertebrates:</i>	EC50/Daphnia /48 hours = 1-10 mg/L. (OECD 202)
<i>Acute toxicity to algae:</i>	IC50/Desmodesmus subspicatus/72 hours = 1-10 mg/L. (OECD 201)
<i>Chronic toxicity to fish:</i>	No data available.
<i>Chronic toxicity to invertebrates:</i>	NOEC/Daphnia magna/21 days > 1 mg/L (OECD 202)
<i>Toxicity to microorganisms:</i>	EC10/activated sludge/17 hours > 10000 mg/L. (DIN 38412-8)
<i>Effects on terrestrial organisms:</i>	No data available.
<i>Sediment toxicity:</i>	No data available.

12.2. Persistence and degradability

Information on the product as supplied:

<i>Degradation:</i>	Not readily biodegradable.
<i>Photolysis:</i>	No data available.
<i>Hydrolysis:</i>	Does not hydrolyse.

Relevant information on the hazardous components:

Distillates (petroleum), hydrotreated light

<i>Degradation:</i>	Readily biodegradable. 67.6% / 28 days (OECD 301 F) ; 68.8% / 28 days (OECD 306) ; 61.2% / 61 days (OECD 304 A)
<i>Photolysis:</i>	No data available.
<i>Hydrolysis:</i>	Does not hydrolyse.

Poly(oxy-1,2-ethanediyl), α -tridecyl- ω -hydroxy branched

<i>Degradation:</i>	Readily biodegradable. > 60% / 28 days (OECD 301 B).
<i>Photolysis:</i>	No data available.

Hydrolysis: Does not hydrolyse.

12.3. Bioaccumulative potential

Information on the product as supplied:

The product is not expected to bioaccumulate.

Partition co-efficient (Log Pow): Not Applicable.

Bioconcentration (BCF): No data available.

Relevant information on the hazardous components:

Distillates (petroleum), hydrotreated light

Partition co-efficient (Log Pow): 3 - 6

Bioconcentration (BCF): No data available.

Poly(oxy-1,2-ethanediyl), a-tridecyl-w-hydroxy branched

Partition co-efficient (Log Pow): >3

Bioconcentration (BCF): No data available.

12.4. Mobility in soil

Information on the product as supplied:

No data available.

Relevant information on the hazardous components:

Distillates (petroleum), hydrotreated light

Koc: No data available.

Poly(oxy-1,2-ethanediyl), a-tridecyl-w-hydroxy branched

Koc: >5000

12.5. Other adverse effects

None known.

SECTION 13. Disposal considerations**13.1. Waste treatment methods****Waste from residues / unused products:**

Dispose in accordance with local and national regulations.

Contaminated packaging:

Rinse empty containers with water and use the rinse-water to prepare the working solution. If recycling is not practicable, dispose of in compliance with local regulations. Can be landfilled or incinerated, when in compliance with local regulations.

Recycling:

In accordance with the local and national regulations.

SECTION 14. Transport information**Land transport (DOT)**

Not classified.

Sea transport (IMDG)

Not classified.

Air transport (IATA)

Not classified.

SECTION 15. Regulatory information**15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture****Information on the product as supplied:**

TSCA Chemical Substances Inventory:

All components of this product are either listed on the inventory or are exempt from listing.

US SARA Reporting Requirements:

SARA (Section 311/312) hazard class:

Not concerned.

SARA Title III Sections:

Section 302 (TPQ) – Reportable Quantity

Not concerned.

Section 304 – Reportable Quantity:

Not concerned.

Section 313 (De Minimis concentration):

Not concerned.

Clean Water Act

Section 311 Hazardous Substances (40 CFR 117.3) – Reportable Quantity:

Not concerned.

Clean Air Act

Section 112(r) Accidental release prevention requirements (40 CFR 68) – Reportable quantity:

Not concerned.

CERCLA

Hazardous Substances List (40 CFR 302.4) – Reportable Quantity:

Not concerned.

RCRA status:

Not RCRA hazardous.

California Proposition 65 Information:

WARNING! This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm, Acrylamide

SECTION 16. Other information**NFPA and HMIS Ratings:****NFPA:**

Health: 0
Flammability: 1
Instability: 0

**HMIS:**

Health: 0
Flammability: 1
Physical Hazard: 0
PPE Code: B

This data sheet contains changes from the previous version in section(s):

SECTION 8. Exposure controls/personal protection, SECTION 15. Regulatory information, SECTION 16. Other Information.

Key or legend to abbreviations and acronyms used in the safety data sheet:

Acronyms

STOT = Specific target organ toxicity

Abbreviations

Acute Tox. 4 = Acute toxicity Category code 4

Asp. Tox. 1 = aspiration hazard Category Code 1

Eye Dam 1 = Serious eye damage/eye irritation Category Code 1

H-Phrases

H302 - Harmful if swallowed

H304 - May be fatal if swallowed and enters airways

H318 - Causes serious eye damage

Training advice:

Do not handle until all safety precautions have been read and understood.

This SDS was prepared in accordance with the following:

U.S. Code of Federal Regulation 29 CFR 1910.1200

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.



SAFETY DATA SHEET

According to U.S. Code of Federal Regulation 29 CFR 1910.1200, Hazard Communication

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product name: **CW24**

Type of product: Mixture.

1.2. Relevant identified uses of the substance or mixture and uses advised against

Identified uses: Processing aid for industrial applications.

Uses advised against: None.

1.3. Details of the supplier of the safety data sheet

Company: Clearwater Industries, Inc
9446 North 107th St
Milwaukee, WI 53224

Telephone: 414-365-1200

Telefax: 414-365-0200

E-mail address: john@clearwaterind.com

1.4. Emergency telephone number

24-hour emergency number: 800-4724-9300 Chemtrec (CCN 20412),
Outside U.S. 703-527-3887

SECTION 2. Hazards identification**2.1. Classification of the substance or mixture**

Classification according to paragraph (d) of Regulation 29 CFR 1910.1200:

Not classified.

2.2. Label elements

Labelling according to paragraph (f) of Regulation 29 CFR 1910.1200:

Hazard symbol(s): None.

Signal word: None.

Hazard statement(s): None.

Precautionary statement(s): None.

2.3. Other hazards

Spills produce extremely slippery surfaces.

For explanation of abbreviations see section 16.

SECTION 3. Composition/information on ingredients**3.1 Substances**

Not applicable, this product is a mixture.

3.2 Mixtures

This product is a mixture.

Hazardous components

Contains no reported hazardous substances.

SECTION 4: First aid measures**4.1. Description of first aid measures**

Inhalation:

Move to fresh air. No hazards which require special first aid measures.

Skin contact:

Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. In case of persistent skin irritation, consult a physician.

Eye contact:

Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Alternatively, rinse immediately with Diphoterine. Get medical attention immediately.

Ingestion:

Rinse mouth with water. Do NOT induce vomiting. Call a physician or poison control center immediately.

4.2. Most important symptoms and effects, both acute and delayed

None under normal use.

4.3. Indication of any immediate medical attention and special treatment needed.

None reasonably foreseeable.

Other information:

None.

SECTION 5. Fire-fighting measures**5.1. Extinguishing media***Suitable extinguishing media:*

Water. Water spray. Foam. Carbon dioxide (CO₂). Dry powder.

Warning! Spills produce extremely slippery surfaces.

Unsuitable extinguishing media:

None known.

5.2. Special hazards arising from the substance or mixture*Hazardous decomposition products:*

Carbon oxides (CO_x). Nitrogen oxides (NO_x). Hydrogen cyanide (hydrocyanic acid) may be produced in the event of combustion in an oxygen deficient atmosphere.

5.3. Advice for fire-fighters*Protective measures:*

Wear self-contained breathing apparatus and protective suit.

Other information:

Spills produce extremely slippery surfaces. Will not burn until water is evaporated.

SECTION 6: Accidental release measures***6.1. Personal precautions, protective equipment and emergency procedures****Personal precautions:*

Do not touch or walk through spilled material. Spills produce extremely slippery surfaces.

Protective equipment:

Wear adequate personal protective equipment (see Section 8 Exposure Controls/Personal Protection).

Emergency procedures:

Keep people away from spill/leak. Prevent further leakage or spillage if safe to do so.

6.2. Environmental precautions

Do not contaminate water.

6.3. Methods and material for containment and cleaning up*Small spills:*

Do not flush with water. Soak up with inert absorbent material. Sweep up and shovel into suitable containers for disposal.

Large spills:

Do not flush with water. Dam up. Clean up promptly by scoop or vacuum.

Residues:

After cleaning, flush away traces with water.

6.4. Reference to other sections

SECTION 7: Handling and storage; SECTION 8: Exposure controls/personal protection; SECTION 13: Disposal considerations;

SECTION 7. Handling and storage***7.1. Precautions for safe handling***

Avoid contact with skin and eyes. Renders surfaces extremely slippery when spilled. When using, do not eat, drink or smoke.

7.2. Conditions for safe storage, including any incompatibilities.

Keep away from heat and sources of ignition. Freezing will affect the physical condition and may damage the material.

7.3. Specific end use(s)

None.

SECTION 8. Exposure controls/personal protection**8.1. Control parameters**

Occupational exposure limits:

None known.

8.2. Exposure controls

Appropriate engineering controls:

Use local exhaust if misting occurs. Natural ventilation is adequate in absence of mists.

Individual protection measures, such as personal protective equipment:

a) Eye/face protection:

Safety glasses with side-shields.

b) Skin protection:

- i* Hand protection: PVC or other plastic material gloves.
- ii* Other: Ear coveralls and/or chemical apron and rubber footwear where physical contact can occur.

c) Respiratory protection:

No personal respiratory protective equipment normally required.

d) Additional advice:

Wash hands and face before breaks and immediately after handling the product. Wash hands before breaks and at the end of workday. Handle in accordance with good industrial hygiene and safety practices.

Environmental exposure controls:

Do not allow uncontrolled discharge of product into the environment.

SECTION 9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

a) Appearance:	Clear to slightly yellow liquid.
b) Odour:	None.
c) Odour Threshold:	Not applicable.
d) pH:	4 - 8
e) Melting point/freezing point:	< 5°C
f) Initial boiling point and boiling range:	> 100°C
g) Flash point:	Does not flash.
h) Evaporation rate:	No data available.
i) Flammability (solid, gas):	Not applicable.
j) Upper/lower flammability or explosive limits:	Not expected to create explosive atmospheres.
k) Vapour pressure:	2.3 kPa @ 20°C
l) Vapour density	0.804 g/liter @ 20°C
m) Relative density:	1.0 - 1.2
n) Solubility(ies):	Completely miscible.
o) Partition coefficient:	< 0
p) Autoignition temperature:	Does not self-ignite (based on the chemical structure)
q) Decomposition temperature:	> 150°C
r) Viscosity:	See Technical Bulletin
s) Explosive properties:	Not expected to be explosive based on the chemical structure.
t) Oxidizing properties:	Not expected to be oxidizing based on the chemical structure.

9.2. Other information

None.

SECTION 10. Stability and reactivity***10.1. Reactivity***

Stable under recommended storage conditions.

10.2. Chemical stability

Stable under recommended storage conditions.

10.3. Possibility of hazardous reactions

None known.

10.4. Conditions to avoid

Protect from frost, heat and sunlight.

10.5. Incompatible materials

None known.

10.6. Hazardous decomposition products

Thermal decomposition may produce: hydrogen chloride gas, nitrogen oxides (NO_x), carbon oxides (CO_x).
Hydrogen cyanide (hydrocyanic acid).

SECTION 11. Toxicological information***11.1. Information on toxicological effects*****Information on the product as supplied:**

Acute oral toxicity: LD50/oral/rat > 5000 mg/kg

Acute dermal toxicity: LD50/dermal/rat > 5000 mg/kg

Acute inhalation toxicity: Testing by the inhalation route is inappropriate because exposure of human via inhalation is unlikely: the Substance has no vapour pressure and there is practically no exposure to inhalable aerosols

Skin corrosion/irritation: Non-irritating.

<i>Serious eye damage/eye irritation:</i>	Slightly irritating.
<i>Respiratory/skin sensitisation:</i>	Not sensitizing to skin. No respiratory sensitization has been observed in the workplace.
<i>Mutagenicity:</i>	By analogy with similar products, this product is no expected to be mutagenic.
<i>Carcinogenicity:</i>	By analogy with similar products, this product is no expected to be carcinogenic.
<i>Reproductive toxicity:</i>	By analogy with similar products, this product is no expected to be toxic for reproduction.
<i>STOT - single exposure:</i>	No known effects.
<i>STOT - repeated exposure:</i>	No known effects.
<i>Aspiration hazard:</i>	No hazard resulting from the material as supplied

SECTION 12. Ecological information

12.1. Toxicity

Information on the product as supplied:

<i>Acute toxicity to fish:</i>	LC50/Danio rerio/96 hours = 10 - 100 mg/L.
<i>Acute toxicity to invertebrates:</i>	EC50/Daphnia magna 48 hours = 10 - 100 mg/L.
<i>Acute toxicity to algae:</i>	Algal inhibition tests are not appropriate. This flocculation characteristics of the products interfere directly in the test medium preventing homogenous distribution which invalidates the test.
<i>Chronic toxicity to fish:</i>	No data available.
<i>Chronic toxicity to invertebrates:</i>	No data available.
<i>Toxicity to microorganisms:</i>	EC0/activated sludge/0.5 hours = 1000mg/L (OECD 209)
<i>Effects on terrestrial organisms:</i>	Exposure to soil is unlikely.
<i>Sediment toxicity:</i>	Exposure to sediments is unlikely

12.2. Persistence and degradability

Information on the product as supplied:

Degradation: Not readily biodegradable.

Photolysis: No data available.

Hydrolysis: Does not hydrolyse.

12.3. Bioaccumulative potentialInformation on the product as supplied:

The product is not expected to bioaccumulate.

Partition co-efficient (Log Pow): < 0

Bioconcentration (BCF): ~ 0

12.4. Mobility in soilInformation on the product as supplied:

Exposure to soil is not to be expected.

Koc: ~ 0

12.5. Other adverse effects

None.

SECTION 13. Disposal considerations**13.1. Waste treatment methods**Waste from residues / unused products:

Dispose of in accordance with local and national regulations.

Contaminated packaging:

Rinse empty containers with water and use the rinse-water to prepare the working solution. If recycling is not practicable, dispose of in compliance with local regulations.

Recycling:

Store containers and offer for recycling of materials when in accordance with local regulations.

SECTION 14. Transport information**Land transport (DOT)**

Not classified.

Sea transport (IMDG)

Not classified.

Air transport (IATA)

Not classified.

SECTION 15. Regulatory information***15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture***Information on the product as supplied:TSCA Chemical Substances Inventory:

All components of this product are either listed on the inventory or are exempt from listing.

US SARA Reporting Requirements:*SARA (Section 311/312) hazard class:*

Not concerned.

SARA Title III Sections:

Section 302 (TPQ) – Reportable Quantity

Not concerned.

Section 304 – Reportable Quantity:

Not concerned.

Section 313 (De Minimis concentration):
Not concerned.

Clean Water Act

Section 311 Hazardous Substances (40 CFR 117.3) – Reportable Quantity:
Not concerned.

Clean Air Act

Section 112(r) Accidental release prevention requirements (40 CFR 68) – Reportable quantity:
Not concerned.

CERCLA

Hazardous Substances List (40 CFR 302.4) – Reportable Quantity:
Not concerned.

RCRA status:

Not RCRA hazardous.

California Proposition 65 Information:

Not concerned

SECTION 16. Other information

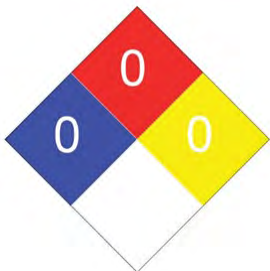
NFPA and HMIS Ratings:

NFPA:

Health: 0

Flammability: 0

Instability: 0



HMIS:

Health:	0
Flammability:	0
Physical Hazard:	0
PPE Code:	B

This data sheet contains changes from the previous version in section(s):

Section 5. Fire-fighting measures, SECTION 8. Exposure controls/personal protection, SECTION 15. Regulatory information, SECTION 16. Other Information.

Key or legend to abbreviations and acronyms used in the safety data sheet:

None.

This SDS was prepared in accordance with the following:

U.S. Code of Federal Regulation 29 CFR 1910.1200

Version Number: 17.01.a

LDCC003A

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.



EXHIBIT F

HYDROCAD MODEL REPORT AND SUPPORTING INFORMATION

Riato V6 Final

Prepared by JMT

HydroCAD® 10.00-20 s/n 02102 © 2017 HydroCAD Software Solutions LLC

Type II 24-hr 90th Pcnt Rainfall=1.40"

Printed 12/3/2021

Summary for Pond 30P: Sump

Inflow Area = 7.316 ac, 0.00% Impervious, Inflow Depth = 0.17" for 90th Pcnt event
 Inflow = 0.50 cfs @ 12.52 hrs, Volume= 0.104 af
 Outflow = 0.50 cfs @ 12.52 hrs, Volume= 0.104 af, Atten= 0%, Lag= 0.0 min
 Primary = 0.50 cfs @ 12.52 hrs, Volume= 0.104 af

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Peak Elev= 1,463.32' @ 12.52 hrs

Flood Elev= 1,468.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,463.00'	24.0" Round Culvert L= 300.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1,463.00' / 1,453.00' S= 0.0333 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Primary	1,463.00'	12.0" Vert. Orifice/Grate X 0.00 C= 0.600

Primary OutFlow Max=0.50 cfs @ 12.52 hrs HW=1,463.32' TW=0.00' (Dynamic Tailwater)

1=Culvert (Inlet Controls 0.50 cfs @ 1.53 fps)
2=Orifice/Grate (Controls 0.00 cfs)Average Discharge from Outfall 001

Average daily discharge over the course of a year is less than the discharge from the 90th percentile storm because the 90th percentile storm does not occur every day of the year. To be conservative, the average discharge has been assumed to be less than the discharge from the 90th percentile storm averaged over 24 hours.

90th Percentile storm runoff from drainage areas

(inflow to node Pond 30P: Sump) = 0.104 acre-feet

0.104 acre feet x 43560 acres = 4530 cubic feet

4530 cubic feet x 7.481 gallons per cubic foot = 33,890 gallons in 24 hours

Average Flow (MGD) = 33,890 gallons per day / 1,000,000 = 0.03 MGD

Riato V6 Final

Prepared by JMT

HydroCAD® 10.00-20 s/n 02102 © 2017 HydroCAD Software Solutions LLC

Type II 24-hr 1-yr Rainfall=2.63"

Printed 12/3/2021

Summary for Pond 30P: Sump

Inflow Area = 7.316 ac, 0.00% Impervious, Inflow Depth = 0.82" for 1-yr event
 Inflow = 3.81 cfs @ 12.42 hrs, Volume= 0.502 af
 Outflow = 3.81 cfs @ 12.42 hrs, Volume= 0.502 af, Atten= 0%, Lag= 0.0 min
 Primary = 3.81 cfs @ 12.42 hrs, Volume= 0.502 af

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Peak Elev= 1,463.94' @ 12.42 hrs

Flood Elev= 1,468.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,463.00'	24.0" Round Culvert L= 300.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1,463.00' / 1,453.00' S= 0.0333 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Primary	1,463.00'	12.0" Vert. Orifice/Grate X 0.00 C= 0.600

Primary OutFlow Max=3.80 cfs @ 12.42 hrs HW=1,463.94' TW=0.00' (Dynamic Tailwater)

1=Culvert (Inlet Controls 3.80 cfs @ 2.61 fps)

2=Orifice/Grate (Controls 0.00 cfs)

Maximum Discharge from Outfall 001

The maximum one day discharge is the discharge from a 1-year, 24-hour storm because the 1-year, 24-hour storm is the largest expected storm that occurs on average once a year. The maximum discharge is the discharge from the 1-year storm averaged over 24 hours.

1-year, 24-hour storm runoff from drainage areas

(inflow to node Pond 30P: Sump) = 0.502 acre-feet

0.502 acre feet x 43560 acres = 21,867 cubic feet

21,867 cubic feet x 7.481 gallons per cubic foot = 163,588 gallons in 24 hours

Maximum Flow (MGD) = 163,588 gallons per day / 1,000,000 = 0.16 MGD

Riata V6 Final

Prepared by JMT

HydroCAD® 10.00-20 s/n 02102 © 2017 HydroCAD Software Solutions LLC

Type II 24-hr 90th Pcnt Rainfall=1.40"

Printed 12/3/2021

Summary for Reach 39R: Culvert Outlet Apron

Inflow Area = 35.631 ac, 7.72% Impervious, Inflow Depth > 0.71" for 90th Pcnt event
Inflow = 0.46 cfs @ 12.58 hrs, Volume= 2.101 af
Outflow = 0.46 cfs @ 12.59 hrs, Volume= 2.101 af, Atten= 0%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Max. Velocity= 0.23 fps, Min. Travel Time= 1.6 min

Avg. Velocity = 0.17 fps, Avg. Travel Time= 2.2 min

Peak Storage= 43 cf @ 12.59 hrs

Average Depth at Peak Storage= 0.07'

Bank-Full Depth= 3.00' Flow Area= 99.0 sf, Capacity= 263.34 cfs

30.00' x 3.00' deep channel, n= 0.050

Side Slope Z-value= 1.0 ' / ' Top Width= 36.00'

Length= 22.0' Slope= 0.0023 ' / '

Inlet Invert= 1,446.00', Outlet Invert= 1,445.95'

Average Discharge from Outfall 002

Average daily discharge over the course of a year is less than the discharge from the 90th percentile storm because the 90th percentile storm does not occur every day of the year. To be conservative, the average discharge has been assumed to be less than the discharge from the 90th percentile storm averaged over 24 hours.

90th Percentile storm runoff from drainage areas

(inflow to node Reach 36R: Culvert Outlet Apron) = 2.101 acre-feet

2.101 acre feet x 43560 acres = 91,519 cubic feet

91,519 cubic feet x 7.481 gallons per cubic foot = 684,658 gallons in 24 hours

Average Flow (MGD) = 684,658 gallons per day / 1,000,000 = 0.68 MGD

Riatio V6 Final

Prepared by JMT

HydroCAD® 10.00-20 s/n 02102 © 2017 HydroCAD Software Solutions LLC

Type II 24-hr 1-yr Rainfall=2.63"

Printed 12/3/2021

Summary for Reach 39R: Culvert Outlet Apron

Inflow Area = 35.631 ac, 7.72% Impervious, Inflow Depth > 1.75" for 1-yr event
Inflow = 3.59 cfs @ 12.46 hrs, Volume= 5.196 af
Outflow = 3.59 cfs @ 12.46 hrs, Volume= 5.195 af, Atten= 0%, Lag= 0.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Max. Velocity= 0.52 fps, Min. Travel Time= 0.7 min

Avg. Velocity = 0.21 fps, Avg. Travel Time= 1.7 min

Peak Storage= 151 cf @ 12.46 hrs

Average Depth at Peak Storage= 0.23'

Bank-Full Depth= 3.00' Flow Area= 99.0 sf, Capacity= 263.34 cfs

30.00' x 3.00' deep channel, n= 0.050

Side Slope Z-value= 1.0 ' ' Top Width= 36.00'

Length= 22.0' Slope= 0.0023 ' '

Inlet Invert= 1,446.00', Outlet Invert= 1,445.95'

Maximum Discharge from Outfall 002

The maximum one day discharge is the discharge from a 1-year, 24-hour storm because the 1-year, 24-hour storm is the largest expected storm that occurs on average once a year. The maximum discharge is the discharge from the 1-year storm averaged over 24 hours.

1-year, 24-hour storm runoff from drainage areas

(inflow to node Reach 39R: Culvert Outlet Apron) = 5.196 acre-feet

5.196 acre feet x 43560 acres = 226,338 cubic feet

226,338 cubic feet x 7.481 gallons per cubic foot = 163,588 gallons in 24 hours

Maximum Flow (MGD) = 1,693,233 gallons per day / 1,000,000 = 1.69 MGD

NOAA ATLAS 14 POINT PRECIPITATION FREQUENCY ESTIMATES: NY

Data description

Data type: Precipitation depth Units: English Time series type: Partial duration

Select location

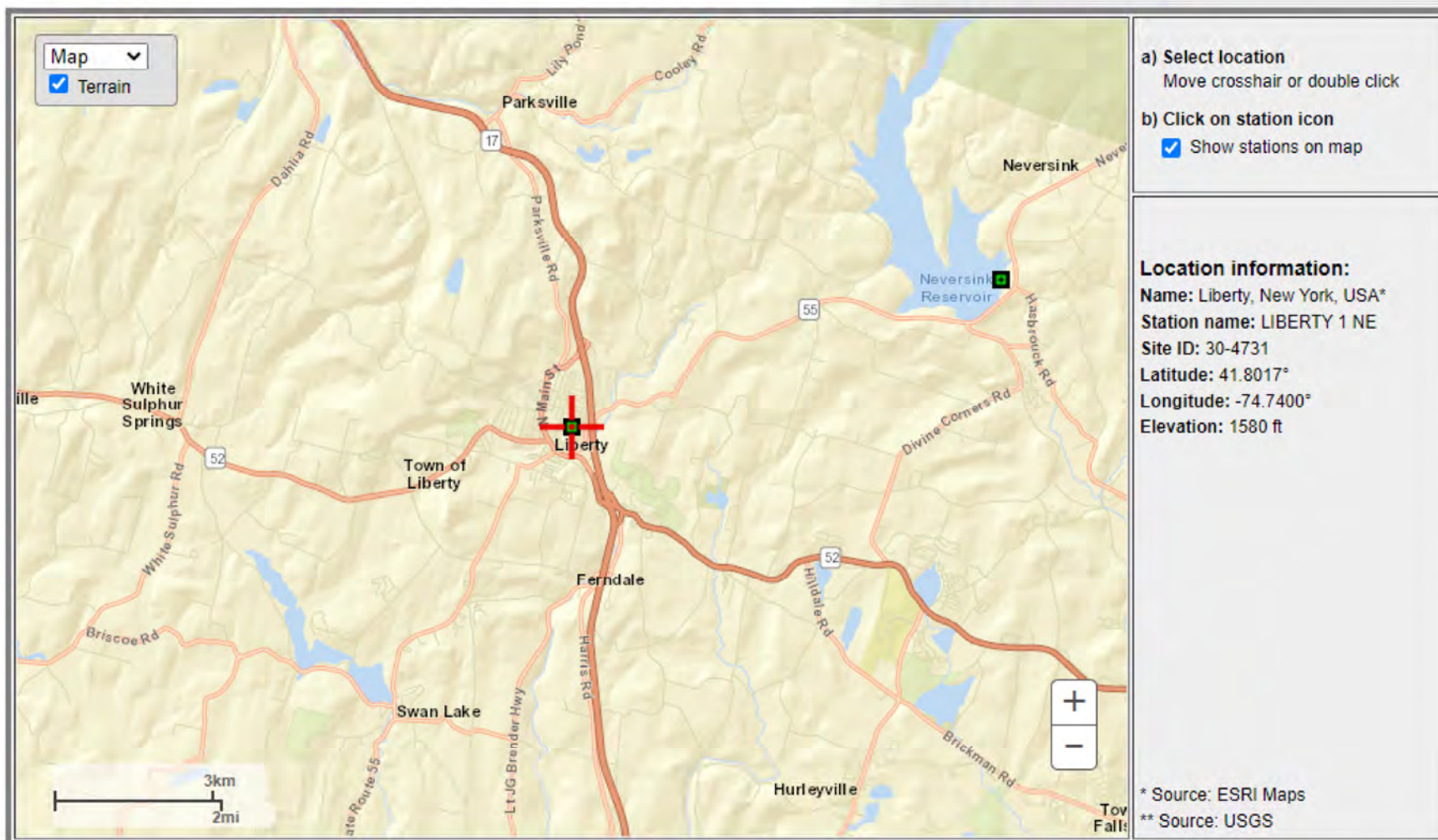
1) Manually:

a) By location (decimal degrees, use "-" for S and W): Latitude: Longitude:

b) By station ([list of NY stations](#)): LIBERTY 1 NE (30-4731)

c) By address

2) Use map (if ESRI interactive map is not loading, try adding the host: <https://js.arcgis.com/> to the firewall, or contact us at hdsc.questions@noaa.gov):



POINT PRECIPITATION FREQUENCY (PF) ESTIMATES

WITH 90% CONFIDENCE INTERVALS AND SUPPLEMENTARY INFORMATION

PDS-based precipitation frequency estimates with 90% confidence intervals (in inches)¹

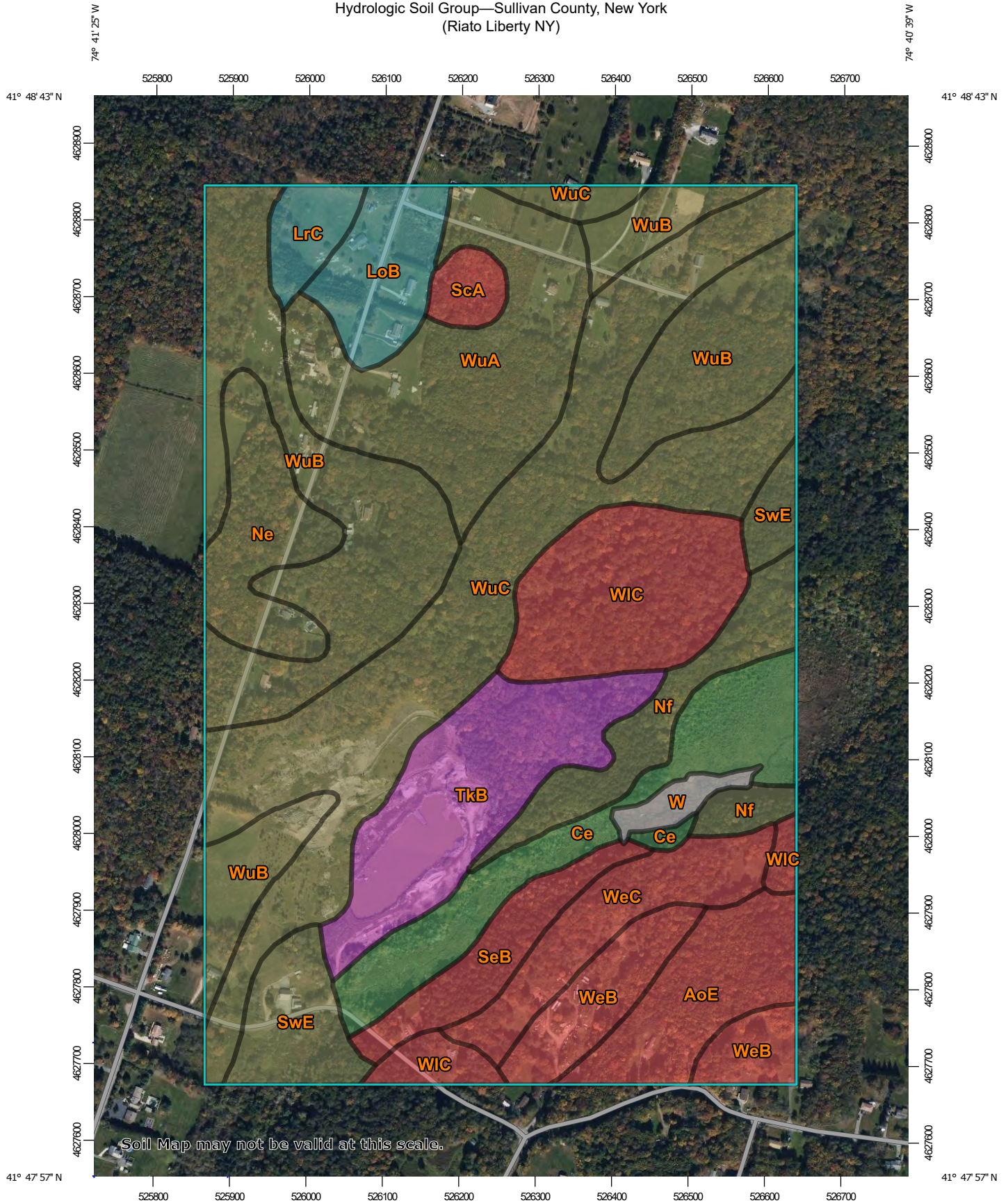
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.325 (0.248-0.420)	0.399 (0.304-0.516)	0.519 (0.394-0.673)	0.618 (0.468-0.806)	0.755 (0.555-1.03)	0.859 (0.619-1.19)	0.967 (0.680-1.39)	1.09 (0.728-1.59)	1.26 (0.814-1.90)	1.40 (0.886-2.15)
10-min	0.461 (0.352-0.595)	0.565 (0.431-0.730)	0.735 (0.559-0.953)	0.876 (0.663-1.14)	1.07 (0.787-1.45)	1.22 (0.878-1.69)	1.37 (0.963-1.96)	1.54 (1.03-2.25)	1.78 (1.15-2.70)	1.98 (1.25-3.05)
15-min	0.542 (0.414-0.700)	0.665 (0.507-0.859)	0.865 (0.657-1.12)	1.03 (0.780-1.34)	1.26 (0.925-1.71)	1.43 (1.03-1.98)	1.61 (1.13-2.31)	1.81 (1.21-2.65)	2.10 (1.36-3.17)	2.33 (1.48-3.59)
30-min	0.721 (0.551-0.931)	0.887 (0.677-1.15)	1.16 (0.881-1.50)	1.38 (1.05-1.80)	1.69 (1.25-2.30)	1.93 (1.39-2.67)	2.17 (1.53-3.12)	2.45 (1.64-3.58)	2.84 (1.84-4.29)	3.16 (2.00-4.86)
60-min	0.900 (0.687-1.16)	1.11 (0.847-1.44)	1.45 (1.11-1.88)	1.74 (1.32-2.27)	2.13 (1.57-2.90)	2.42 (1.75-3.36)	2.73 (1.92-3.92)	3.08 (2.06-4.51)	3.58 (2.31-5.41)	3.99 (2.52-6.14)
2-hr	1.18 (0.911-1.51)	1.43 (1.10-1.84)	1.84 (1.42-2.37)	2.18 (1.67-2.82)	2.65 (1.96-3.57)	3.00 (2.18-4.12)	3.37 (2.38-4.78)	3.78 (2.55-5.47)	4.37 (2.83-6.53)	4.84 (3.07-7.37)
3-hr	1.38 (1.07-1.75)	1.66 (1.28-2.11)	2.11 (1.63-2.70)	2.49 (1.91-3.21)	3.02 (2.24-4.04)	3.41 (2.49-4.65)	3.82 (2.72-5.39)	4.28 (2.89-6.16)	4.94 (3.22-7.34)	5.48 (3.49-8.29)
6-hr	1.75 (1.37-2.21)	2.10 (1.64-2.65)	2.67 (2.07-3.38)	3.14 (2.43-4.00)	3.79 (2.85-5.03)	4.28 (3.15-5.79)	4.80 (3.44-6.72)	5.39 (3.65-7.68)	6.26 (4.09-9.20)	6.99 (4.46-10.5)
12-hr	2.17 (1.71-2.71)	2.61 (2.06-3.27)	3.34 (2.62-4.19)	3.94 (3.08-4.97)	4.77 (3.62-6.29)	5.39 (4.01-7.25)	6.05 (4.39-8.45)	6.85 (4.66-9.65)	8.05 (5.27-11.7)	9.07 (5.80-13.4)
24-hr	2.63 (2.09-3.26)	3.18 (2.53-3.94)	4.08 (3.23-5.07)	4.82 (3.79-6.02)	5.84 (4.46-7.62)	6.60 (4.94-8.79)	7.42 (5.41-10.3)	8.41 (5.75-11.7)	9.91 (6.51-14.2)	11.2 (7.19-16.4)
2-day	3.14 (2.52-3.86)	3.78 (3.03-4.64)	4.81 (3.84-5.92)	5.66 (4.50-7.01)	6.84 (5.26-8.82)	7.71 (5.81-10.2)	8.65 (6.34-11.8)	9.77 (6.71-13.5)	11.5 (7.55-16.3)	12.9 (8.29-18.6)
3-day	3.46 (2.79-4.23)	4.13 (3.33-5.05)	5.22 (4.19-6.40)	6.13 (4.89-7.54)	7.37 (5.69-9.45)	8.30 (6.28-10.8)	9.29 (6.82-12.6)	10.5 (7.21-14.3)	12.2 (8.07-17.2)	13.7 (8.83-19.6)
4-day	3.72 (3.01-4.52)	4.41 (3.57-5.37)	5.55 (4.47-6.77)	6.49 (5.20-7.96)	7.79 (6.03-9.93)	8.75 (6.63-11.4)	9.78 (7.20-13.2)	11.0 (7.59-15.0)	12.8 (8.48-18.0)	14.3 (9.24-20.4)
7-day	4.40 (3.59-5.31)	5.16 (4.21-6.24)	6.41 (5.20-7.76)	7.44 (6.00-9.05)	8.86 (6.90-11.2)	9.92 (7.56-12.8)	11.1 (8.15-14.7)	12.4 (8.57-16.7)	14.3 (9.48-19.8)	15.9 (10.3-22.4)
10-day	5.09 (4.17-6.11)	5.90 (4.83-7.09)	7.23 (5.90-8.71)	8.33 (6.75-10.1)	9.84 (7.69-12.4)	11.0 (8.39-14.0)	12.2 (8.99-16.1)	13.5 (9.42-18.2)	15.5 (10.3-21.4)	17.1 (11.1-24.0)
20-day	7.28 (6.03-8.66)	8.21 (6.79-9.77)	9.72 (8.00-11.6)	11.0 (8.97-13.1)	12.7 (9.99-15.7)	14.0 (10.7-17.6)	15.4 (11.3-19.8)	16.8 (11.7-22.2)	18.7 (12.5-25.5)	20.2 (13.1-28.1)
30-day	9.16 (7.62-10.8)	10.2 (8.46-12.0)	11.8 (9.79-14.0)	13.2 (10.9-15.7)	15.1 (11.9-18.5)	16.5 (12.7-20.6)	18.0 (13.3-23.0)	19.5 (13.7-25.6)	21.4 (14.4-28.9)	22.8 (14.9-31.4)
45-day	11.5 (9.63-13.5)	12.6 (10.6-14.9)	14.5 (12.1-17.1)	16.0 (13.2-19.0)	18.1 (14.4-22.1)	19.8 (15.3-24.4)	21.4 (15.8-27.0)	22.9 (16.2-29.9)	24.8 (16.7-33.4)	26.2 (17.1-35.9)
60-day	13.5 (11.3-15.8)	14.7 (12.3-17.2)	16.7 (14.0-19.6)	18.4 (15.3-21.7)	20.7 (16.5-25.1)	22.5 (17.4-27.7)	24.3 (18.0-30.5)	25.9 (18.3-33.6)	27.9 (18.8-37.3)	29.2 (19.1-39.8)

¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

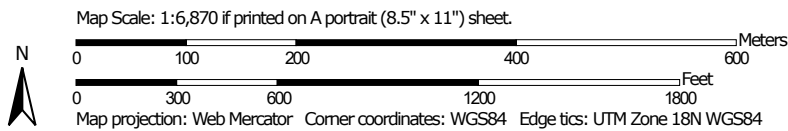
Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

Hydrologic Soil Group—Sullivan County, New York (Riata Liberty NY)



Soil Map may not be valid at this scale.



**Natural Resources
Conservation Service**

Web Soil Survey
National Cooperative Soil Survey

8/3/2021
Page 1 of 4

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

Soil Rating Polygons

 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Lines

 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Points

 A
 A/D
 B
 B/D

 C
 C/D
 D
 Not rated or not available

Water Features

 Streams and Canals

Transportation

 Rails
 Interstate Highways
 US Routes
 Major Roads
 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Sullivan County, New York
Survey Area Data: Version 19, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Data not available.

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
AoE	Arnot-Oquaga complex, 15 to 35 percent slopes, very rocky	D	9.5	4.2%
Ce	Carlisle, Palms, and Alden soils, ponded	A/D	13.4	6.0%
LoB	Lordstown channery silt loam, 3 to 8 percent slopes, very stony	C	7.1	3.2%
LrC	Lordstown-Arnot complex, 8 to 15 percent slopes, very stony	C	3.2	1.4%
Ne	Neversink loam	C/D	9.3	4.1%
Nf	Neversink and Alden soils, very stony	C/D	9.4	4.2%
ScA	Scriba loam, 0 to 3 percent slopes, stony	D	2.2	1.0%
SeB	Scriba and Morris loams, gently sloping, rubbly	D	6.0	2.7%
SwE	Swartswood and Lackawanna soils, steep, extremely stony	C/D	8.1	3.6%
TkB	Tunkhannock gravelly loam, 3 to 8 percent slopes	A	16.5	7.3%
W	Water		1.7	0.8%
WeB	Wellsboro gravelly loam, 3 to 8 percent slopes	D	8.6	3.8%
WeC	Wellsboro gravelly loam, 8 to 15 percent slopes	D	8.7	3.9%
WIC	Wellsboro and Wurtsboro soils, strongly sloping, extremely stony	D	17.2	7.6%
WuA	Wurtsboro loam, 0 to 3 percent slopes, stony	C/D	21.7	9.6%
WuB	Wurtsboro loam, 3 to 8 percent slopes, stony	C/D	41.0	18.2%
WuC	Wurtsboro loam, 8 to 15 percent slopes, stony	C/D	41.6	18.5%
Totals for Area of Interest			225.3	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

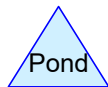
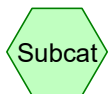
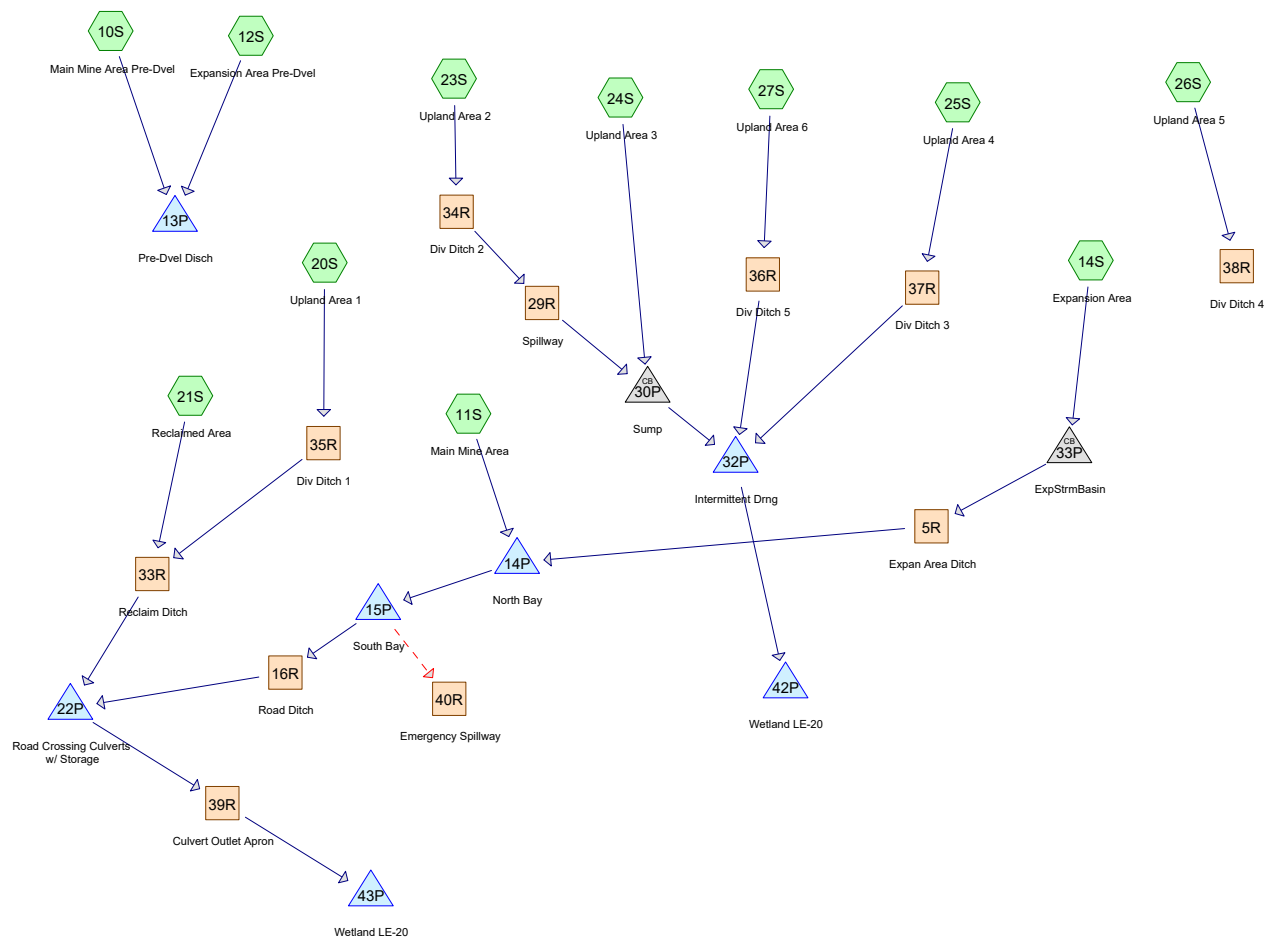
Tie-break Rule: Higher

90th Percentile Storm Output Starts on Page 229

1-year 24-hour Storm Output Starts on Page 7

10-year 24-hour Storm Output Starts on Page 118

100-year 24-hour Storm Output Starts on Page 340



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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
26.263	94	Newly graded area, HSG D (11S, 14S)
2.750	100	Water Surface, HSG A (11S)
58.773	77	Woods, Good, HSG D (10S, 12S, 20S, 21S, 23S, 24S, 25S, 26S, 27S)
87.786	83	TOTAL AREA

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Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
2.750	HSG A	11S
0.000	HSG B	
0.000	HSG C	
85.036	HSG D	10S, 11S, 12S, 14S, 20S, 21S, 23S, 24S, 25S, 26S, 27S
0.000	Other	
87.786		TOTAL AREA

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Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	26.263	0.000	26.263	Newly graded area	11S, 14S
2.750	0.000	0.000	0.000	0.000	2.750	Water Surface	11S
0.000	0.000	0.000	58.773	0.000	58.773	Woods, Good	10S, 12S, 20S, 21S, 23S, 24S, 25S, 26S, 27S
2.750	0.000	0.000	85.036	0.000	87.786	TOTAL AREA	

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Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	15P	1,451.50	1,449.80	60.0	0.0283	0.012	24.0	0.0	0.0
2	22P	1,447.86	1,446.03	64.5	0.0284	0.012	30.0	0.0	0.0
3	30P	1,463.00	1,453.00	300.0	0.0333	0.012	24.0	0.0	0.0
4	33P	1,500.50	1,500.00	100.0	0.0050	0.012	36.0	0.0	0.0

Notes Listing (all nodes)

Line#	Node Number	Notes
1	10S	Includes pond surface area
2	11S	Includes pond surface area
3	20S	Includes pond surface area
4	21S	Includes pond surface area
5	23S	Includes pond surface area
6	24S	Includes pond surface area
7	25S	Includes pond surface area
8	26S	Includes pond surface area
9	27S	Includes pond surface area

1-Year 24-Hour Storm

Time span=0.05-150.00 hrs, dt=0.01 hrs, 14996 points
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment10S: Main Mine Area Runoff Area=667,331 sf 0.00% Impervious Runoff Depth=0.82"
 Flow Length=511' Slope=0.3000 '/' Tc=13.4 min CN=77 Runoff=16.56 cfs 1.051 af

Subcatchment11S: Main Mine Area Runoff Area=667,331 sf 17.95% Impervious Runoff Depth=2.09"
 Flow Length=511' Slope=0.3000 '/' Tc=1.8 min CN=95 Runoff=60.46 cfs 2.667 af

Subcatchment12S: Expansion Area Runoff Area=596,486 sf 0.00% Impervious Runoff Depth=0.82"
 Flow Length=1,245' Tc=34.9 min CN=77 Runoff=8.10 cfs 0.939 af

Subcatchment14S: Expansion Area Runoff Area=596,486 sf 0.00% Impervious Runoff Depth=1.99"
 Flow Length=1,245' Tc=7.2 min CN=94 Runoff=43.98 cfs 2.275 af

Subcatchment20S: Upland Area 1 Runoff Area=127,275 sf 0.00% Impervious Runoff Depth=0.82"
 Flow Length=942' Tc=33.6 min CN=77 Runoff=1.78 cfs 0.200 af

Subcatchment21S: Reclaimed Area Runoff Area=161,004 sf 0.00% Impervious Runoff Depth=0.82"
 Flow Length=1,394' Tc=48.9 min CN=77 Runoff=1.72 cfs 0.254 af

Subcatchment23S: Upland Area 2 Runoff Area=112,373 sf 0.00% Impervious Runoff Depth=0.82"
 Flow Length=832' Tc=33.6 min CN=77 Runoff=1.57 cfs 0.177 af

Subcatchment24S: Upland Area 3 Runoff Area=206,326 sf 0.00% Impervious Runoff Depth=0.82"
 Flow Length=1,145' Tc=44.9 min CN=77 Runoff=2.34 cfs 0.325 af

Subcatchment25S: Upland Area 4 Runoff Area=441,065 sf 0.00% Impervious Runoff Depth=0.82"
 Flow Length=2,165' Tc=113.7 min CN=77 Runoff=2.48 cfs 0.694 af

Subcatchment26S: Upland Area 5 Runoff Area=128,001 sf 0.00% Impervious Runoff Depth=0.82"
 Flow Length=1,630' Tc=63.9 min CN=77 Runoff=1.12 cfs 0.202 af

Subcatchment27S: Upland Area 6 Runoff Area=120,292 sf 0.00% Impervious Runoff Depth=0.82"
 Flow Length=1,012' Tc=36.4 min CN=77 Runoff=1.59 cfs 0.189 af

Reach 5R: Expan Area Ditch Avg. Flow Depth=1.11' Max Vel=7.46 fps Inflow=43.98 cfs 2.275 af
 n=0.044 L=576.0' S=0.0747 '/' Capacity=347.14 cfs Outflow=43.28 cfs 2.275 af

Reach 16R: Road Ditch Avg. Flow Depth=0.27' Max Vel=2.36 fps Inflow=2.29 cfs 4.743 af
 n=0.040 L=67.6' S=0.0286 '/' Capacity=97.69 cfs Outflow=2.29 cfs 4.742 af

Reach 29R: Spillway Avg. Flow Depth=0.11' Max Vel=4.49 fps Inflow=1.57 cfs 0.177 af
 n=0.044 L=211.0' S=0.3791 '/' Capacity=323.65 cfs Outflow=1.56 cfs 0.177 af

Reach 33R: Reclaim Ditch Avg. Flow Depth=0.28' Max Vel=4.62 fps Inflow=3.31 cfs 0.454 af
 n=0.040 L=275.0' S=0.1167 '/' Capacity=36.84 cfs Outflow=3.30 cfs 0.454 af

Reach 34R: Div Ditch 2 Avg. Flow Depth=0.18' Max Vel=4.03 fps Inflow=1.57 cfs 0.177 af
 n=0.035 L=324.0' S=0.1080 '/' Capacity=30.48 cfs Outflow=1.57 cfs 0.177 af

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Type II 24-hr 1-yr Rainfall=2.63"

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Reach 35R: Div Ditch 1	Avg. Flow Depth=0.20' Max Vel=4.13 fps Inflow=1.78 cfs 0.200 af n=0.035 L=442.0' S=0.1018 '/' Capacity=29.59 cfs Outflow=1.77 cfs 0.200 af
Reach 36R: Div Ditch 5	Avg. Flow Depth=0.28' Max Vel=2.48 fps Inflow=1.59 cfs 0.189 af n=0.035 L=206.0' S=0.0243 '/' Capacity=14.45 cfs Outflow=1.58 cfs 0.189 af
Reach 37R: Div Ditch 3	Avg. Flow Depth=0.24' Max Vel=4.63 fps Inflow=2.48 cfs 0.694 af n=0.035 L=592.0' S=0.1014 '/' Capacity=29.53 cfs Outflow=2.48 cfs 0.694 af
Reach 38R: Div Ditch 4	Avg. Flow Depth=0.15' Max Vel=3.53 fps Inflow=1.12 cfs 0.202 af n=0.035 L=336.0' S=0.1042 '/' Capacity=29.93 cfs Outflow=1.12 cfs 0.202 af
Reach 39R: Culvert Outlet Apron	Avg. Flow Depth=0.23' Max Vel=0.52 fps Inflow=3.59 cfs 5.196 af n=0.050 L=22.0' S=0.0023 '/' Capacity=263.34 cfs Outflow=3.59 cfs 5.195 af
Reach 40R: Emergency Spillway	Inflow=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af
Pond 13P: Pre-Dvel Disch	Inflow=20.19 cfs 1.990 af Primary=20.19 cfs 1.990 af
Pond 14P: North Bay	Peak Elev=1,454.24' Storage=5.213 af Inflow=93.03 cfs 4.942 af Outflow=3.73 cfs 4.768 af
Pond 15P: South Bay	Peak Elev=1,452.49' Storage=0.995 af Inflow=3.73 cfs 4.768 af Primary=2.29 cfs 4.743 af Secondary=0.00 cfs 0.000 af Outflow=2.29 cfs 4.743 af
Pond 22P: Road Crossing Culverts w/ 30.0" Round Culvert x 3.00	Peak Elev=1,448.28' Storage=161 cf Inflow=3.59 cfs 5.196 af n=0.012 L=64.5' S=0.0284 '/' Outflow=3.59 cfs 5.196 af
Pond 30P: Sump	Peak Elev=1,463.94' Inflow=3.81 cfs 0.502 af Outflow=3.81 cfs 0.502 af
Pond 32P: Intermittent Drng	Inflow=5.82 cfs 1.386 af Primary=5.82 cfs 1.386 af
Pond 33P: ExpStrmBasin 36.0" Round Culvert x 3.00	Peak Elev=1,502.11' Inflow=43.98 cfs 2.275 af n=0.012 L=100.0' S=0.0050 '/' Outflow=43.98 cfs 2.275 af
Pond 42P: Wetland LE-20	Inflow=5.82 cfs 1.386 af Primary=5.82 cfs 1.386 af
Pond 43P: Wetland LE-20	Inflow=3.59 cfs 5.195 af Primary=3.59 cfs 5.195 af

Total Runoff Area = 87.786 ac Runoff Volume = 8.973 af Average Runoff Depth = 1.23"
96.87% Pervious = 85.036 ac 3.13% Impervious = 2.750 ac

Summary for Subcatchment 10S: Main Mine Area Pre-Dvel

Includes pond surface area

Runoff = 16.56 cfs @ 12.06 hrs, Volume= 1.051 af, Depth= 0.82"

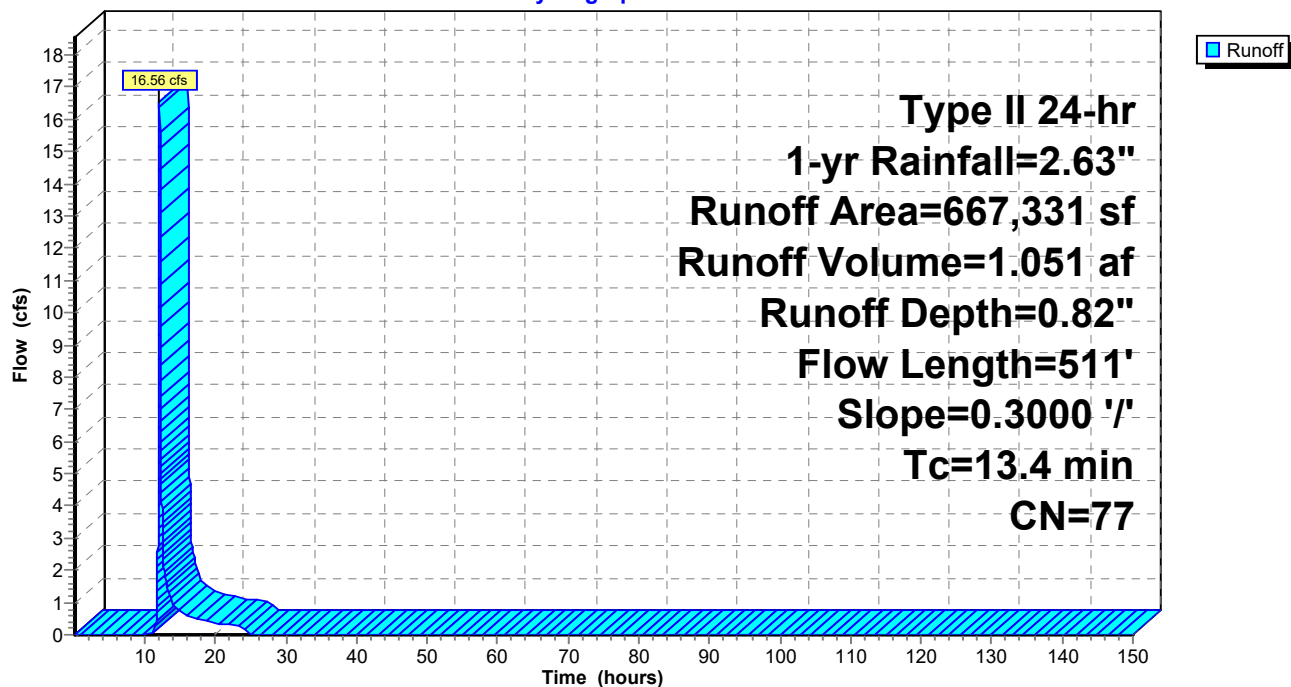
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-yr Rainfall=2.63"

Area (sf)	CN	Description
667,331	77	Woods, Good, HSG D
667,331		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	100	0.3000	0.20		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.40"
5.0	411	0.3000	1.37		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
13.4	511	Total			

Subcatchment 10S: Main Mine Area Pre-Dvel

Hydrograph



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Type II 24-hr 1-yr Rainfall=2.63"

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Hydrograph for Subcatchment 10S: Main Mine Area Pre-Dvel

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.05	0.00	0.00	0.00	104.05	2.63	0.82	0.00
2.05	0.06	0.00	0.00	106.05	2.63	0.82	0.00
4.05	0.13	0.00	0.00	108.05	2.63	0.82	0.00
6.05	0.21	0.00	0.00	110.05	2.63	0.82	0.00
8.05	0.32	0.00	0.00	112.05	2.63	0.82	0.00
10.05	0.48	0.00	0.00	114.05	2.63	0.82	0.00
12.05	1.77	0.33	16.41	116.05	2.63	0.82	0.00
14.05	2.16	0.54	0.92	118.05	2.63	0.82	0.00
16.05	2.32	0.63	0.58	120.05	2.63	0.82	0.00
18.05	2.42	0.69	0.46	122.05	2.63	0.82	0.00
20.05	2.51	0.74	0.34	124.05	2.63	0.82	0.00
22.05	2.57	0.79	0.31	126.05	2.63	0.82	0.00
24.05	2.63	0.82	0.29	128.05	2.63	0.82	0.00
26.05	2.63	0.82	0.00	130.05	2.63	0.82	0.00
28.05	2.63	0.82	0.00	132.05	2.63	0.82	0.00
30.05	2.63	0.82	0.00	134.05	2.63	0.82	0.00
32.05	2.63	0.82	0.00	136.05	2.63	0.82	0.00
34.05	2.63	0.82	0.00	138.05	2.63	0.82	0.00
36.05	2.63	0.82	0.00	140.05	2.63	0.82	0.00
38.05	2.63	0.82	0.00	142.05	2.63	0.82	0.00
40.05	2.63	0.82	0.00	144.05	2.63	0.82	0.00
42.05	2.63	0.82	0.00	146.05	2.63	0.82	0.00
44.05	2.63	0.82	0.00	148.05	2.63	0.82	0.00
46.05	2.63	0.82	0.00				
48.05	2.63	0.82	0.00				
50.05	2.63	0.82	0.00				
52.05	2.63	0.82	0.00				
54.05	2.63	0.82	0.00				
56.05	2.63	0.82	0.00				
58.05	2.63	0.82	0.00				
60.05	2.63	0.82	0.00				
62.05	2.63	0.82	0.00				
64.05	2.63	0.82	0.00				
66.05	2.63	0.82	0.00				
68.05	2.63	0.82	0.00				
70.05	2.63	0.82	0.00				
72.05	2.63	0.82	0.00				
74.05	2.63	0.82	0.00				
76.05	2.63	0.82	0.00				
78.05	2.63	0.82	0.00				
80.05	2.63	0.82	0.00				
82.05	2.63	0.82	0.00				
84.05	2.63	0.82	0.00				
86.05	2.63	0.82	0.00				
88.05	2.63	0.82	0.00				
90.05	2.63	0.82	0.00				
92.05	2.63	0.82	0.00				
94.05	2.63	0.82	0.00				
96.05	2.63	0.82	0.00				
98.05	2.63	0.82	0.00				
100.05	2.63	0.82	0.00				
102.05	2.63	0.82	0.00				

Summary for Subcatchment 11S: Main Mine Area

Includes pond surface area

Runoff = 60.46 cfs @ 11.92 hrs, Volume= 2.667 af, Depth= 2.09"

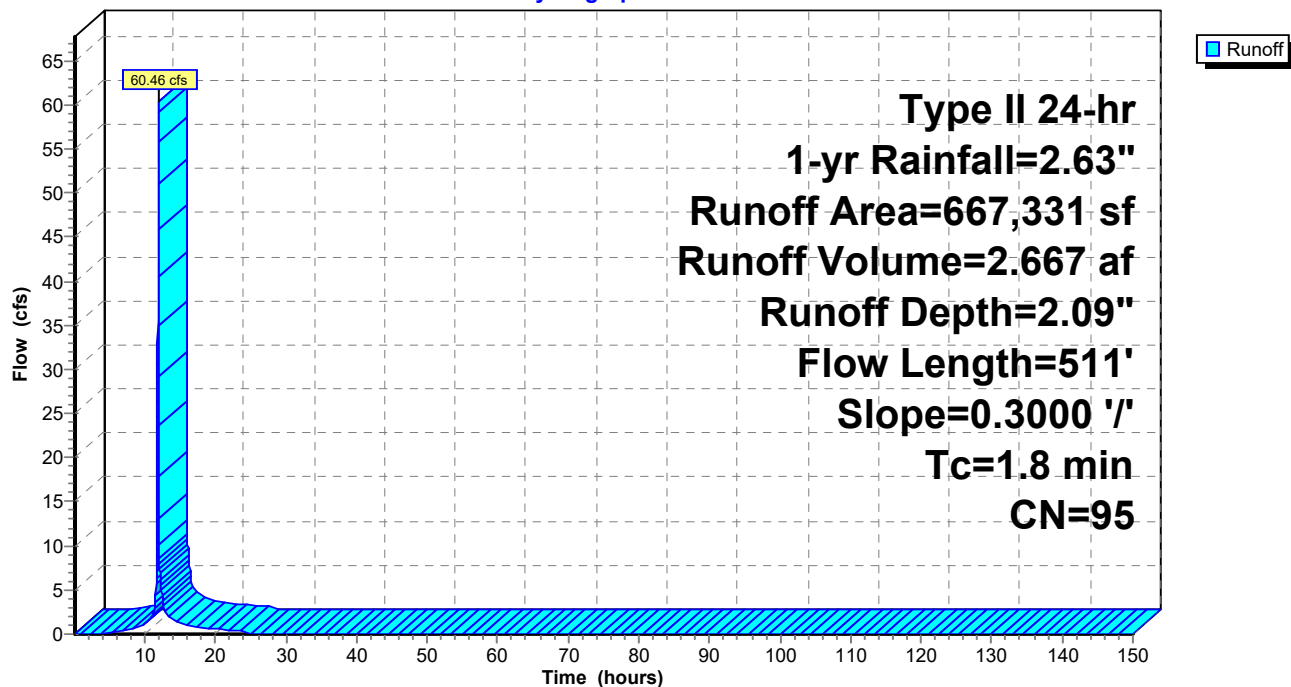
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-yr Rainfall=2.63"

Area (sf)	CN	Description
547,548	94	Newly graded area, HSG D
* 119,783	100	Water Surface, HSG A
667,331	95	Weighted Average
547,548		82.05% Pervious Area
119,783		17.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.3000	3.52		Sheet Flow, Smooth surfaces n= 0.011 P2= 2.40"
1.3	411	0.3000	5.48		Shallow Concentrated Flow, Nearly Bare & Untilled Kv= 10.0 fps
1.8	511	Total			

Subcatchment 11S: Main Mine Area

Hydrograph



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Type II 24-hr 1-yr Rainfall=2.63"

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Hydrograph for Subcatchment 11S: Main Mine Area

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.05	0.00	0.00	0.00	104.05	2.63	2.09	0.00
2.05	0.06	0.00	0.00	106.05	2.63	2.09	0.00
4.05	0.13	0.00	0.04	108.05	2.63	2.09	0.00
6.05	0.21	0.02	0.23	110.05	2.63	2.09	0.00
8.05	0.32	0.06	0.44	112.05	2.63	2.09	0.00
10.05	0.48	0.16	1.08	114.05	2.63	2.09	0.00
12.05	1.77	1.26	7.94	116.05	2.63	2.09	0.00
14.05	2.16	1.64	1.44	118.05	2.63	2.09	0.00
16.05	2.32	1.79	0.90	120.05	2.63	2.09	0.00
18.05	2.42	1.89	0.70	122.05	2.63	2.09	0.00
20.05	2.51	1.97	0.51	124.05	2.63	2.09	0.00
22.05	2.57	2.03	0.47	126.05	2.63	2.09	0.00
24.05	2.63	2.09	0.03	128.05	2.63	2.09	0.00
26.05	2.63	2.09	0.00	130.05	2.63	2.09	0.00
28.05	2.63	2.09	0.00	132.05	2.63	2.09	0.00
30.05	2.63	2.09	0.00	134.05	2.63	2.09	0.00
32.05	2.63	2.09	0.00	136.05	2.63	2.09	0.00
34.05	2.63	2.09	0.00	138.05	2.63	2.09	0.00
36.05	2.63	2.09	0.00	140.05	2.63	2.09	0.00
38.05	2.63	2.09	0.00	142.05	2.63	2.09	0.00
40.05	2.63	2.09	0.00	144.05	2.63	2.09	0.00
42.05	2.63	2.09	0.00	146.05	2.63	2.09	0.00
44.05	2.63	2.09	0.00	148.05	2.63	2.09	0.00
46.05	2.63	2.09	0.00				
48.05	2.63	2.09	0.00				
50.05	2.63	2.09	0.00				
52.05	2.63	2.09	0.00				
54.05	2.63	2.09	0.00				
56.05	2.63	2.09	0.00				
58.05	2.63	2.09	0.00				
60.05	2.63	2.09	0.00				
62.05	2.63	2.09	0.00				
64.05	2.63	2.09	0.00				
66.05	2.63	2.09	0.00				
68.05	2.63	2.09	0.00				
70.05	2.63	2.09	0.00				
72.05	2.63	2.09	0.00				
74.05	2.63	2.09	0.00				
76.05	2.63	2.09	0.00				
78.05	2.63	2.09	0.00				
80.05	2.63	2.09	0.00				
82.05	2.63	2.09	0.00				
84.05	2.63	2.09	0.00				
86.05	2.63	2.09	0.00				
88.05	2.63	2.09	0.00				
90.05	2.63	2.09	0.00				
92.05	2.63	2.09	0.00				
94.05	2.63	2.09	0.00				
96.05	2.63	2.09	0.00				
98.05	2.63	2.09	0.00				
100.05	2.63	2.09	0.00				
102.05	2.63	2.09	0.00				

Summary for Subcatchment 12S: Expansion Area Pre-Dvel

Runoff = 8.10 cfs @ 12.33 hrs, Volume= 0.939 af, Depth= 0.82"

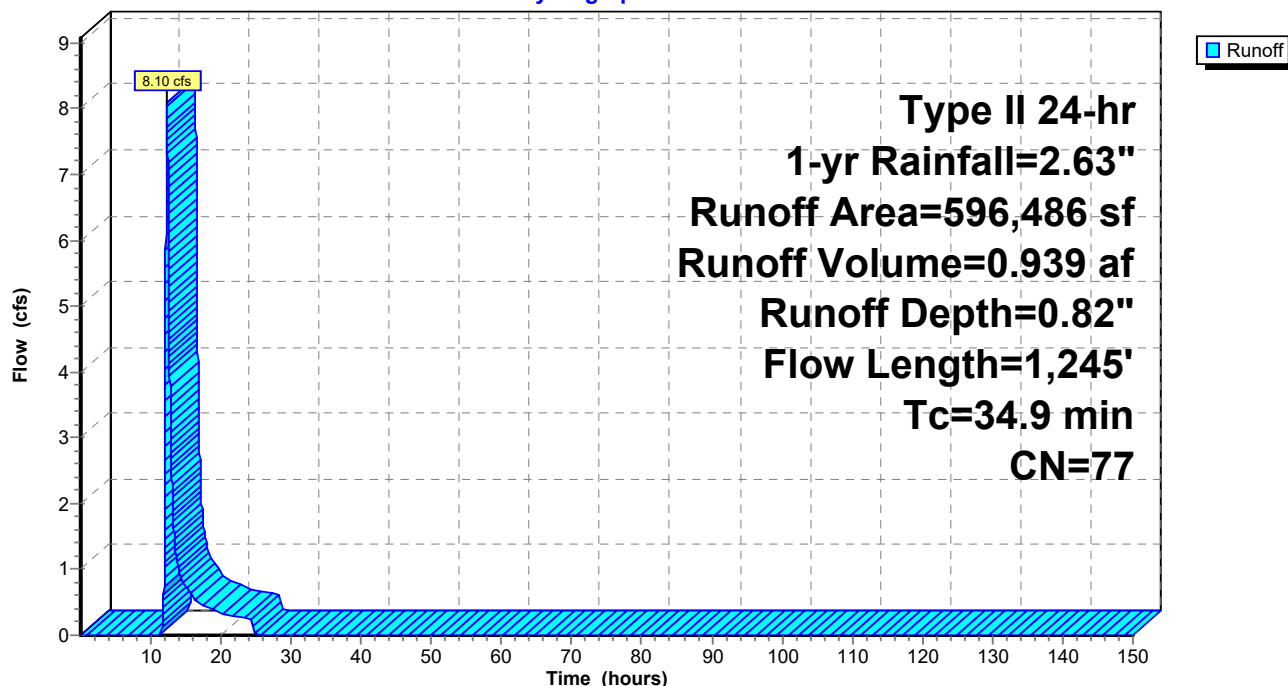
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-yr Rainfall=2.63"

Area (sf)	CN	Description
596,486	77	Woods, Good, HSG D
596,486		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	100	0.3100	0.20		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.40"
1.2	100	0.3100	1.39		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
25.4	1,045	0.0750	0.68		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
34.9	1,245	Total			

Subcatchment 12S: Expansion Area Pre-Dvel

Hydrograph



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Type II 24-hr 1-yr Rainfall=2.63"

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Hydrograph for Subcatchment 12S: Expansion Area Pre-Dvel

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.05	0.00	0.00	0.00	104.05	2.63	0.82	0.00
2.05	0.06	0.00	0.00	106.05	2.63	0.82	0.00
4.05	0.13	0.00	0.00	108.05	2.63	0.82	0.00
6.05	0.21	0.00	0.00	110.05	2.63	0.82	0.00
8.05	0.32	0.00	0.00	112.05	2.63	0.82	0.00
10.05	0.48	0.00	0.00	114.05	2.63	0.82	0.00
12.05	1.77	0.33	3.10	116.05	2.63	0.82	0.00
14.05	2.16	0.54	0.97	118.05	2.63	0.82	0.00
16.05	2.32	0.63	0.57	120.05	2.63	0.82	0.00
18.05	2.42	0.69	0.43	122.05	2.63	0.82	0.00
20.05	2.51	0.74	0.32	124.05	2.63	0.82	0.00
22.05	2.57	0.79	0.28	126.05	2.63	0.82	0.00
24.05	2.63	0.82	0.26	128.05	2.63	0.82	0.00
26.05	2.63	0.82	0.00	130.05	2.63	0.82	0.00
28.05	2.63	0.82	0.00	132.05	2.63	0.82	0.00
30.05	2.63	0.82	0.00	134.05	2.63	0.82	0.00
32.05	2.63	0.82	0.00	136.05	2.63	0.82	0.00
34.05	2.63	0.82	0.00	138.05	2.63	0.82	0.00
36.05	2.63	0.82	0.00	140.05	2.63	0.82	0.00
38.05	2.63	0.82	0.00	142.05	2.63	0.82	0.00
40.05	2.63	0.82	0.00	144.05	2.63	0.82	0.00
42.05	2.63	0.82	0.00	146.05	2.63	0.82	0.00
44.05	2.63	0.82	0.00	148.05	2.63	0.82	0.00
46.05	2.63	0.82	0.00				
48.05	2.63	0.82	0.00				
50.05	2.63	0.82	0.00				
52.05	2.63	0.82	0.00				
54.05	2.63	0.82	0.00				
56.05	2.63	0.82	0.00				
58.05	2.63	0.82	0.00				
60.05	2.63	0.82	0.00				
62.05	2.63	0.82	0.00				
64.05	2.63	0.82	0.00				
66.05	2.63	0.82	0.00				
68.05	2.63	0.82	0.00				
70.05	2.63	0.82	0.00				
72.05	2.63	0.82	0.00				
74.05	2.63	0.82	0.00				
76.05	2.63	0.82	0.00				
78.05	2.63	0.82	0.00				
80.05	2.63	0.82	0.00				
82.05	2.63	0.82	0.00				
84.05	2.63	0.82	0.00				
86.05	2.63	0.82	0.00				
88.05	2.63	0.82	0.00				
90.05	2.63	0.82	0.00				
92.05	2.63	0.82	0.00				
94.05	2.63	0.82	0.00				
96.05	2.63	0.82	0.00				
98.05	2.63	0.82	0.00				
100.05	2.63	0.82	0.00				
102.05	2.63	0.82	0.00				

Summary for Subcatchment 14S: Expansion Area

Runoff = 43.98 cfs @ 11.98 hrs, Volume= 2.275 af, Depth= 1.99"

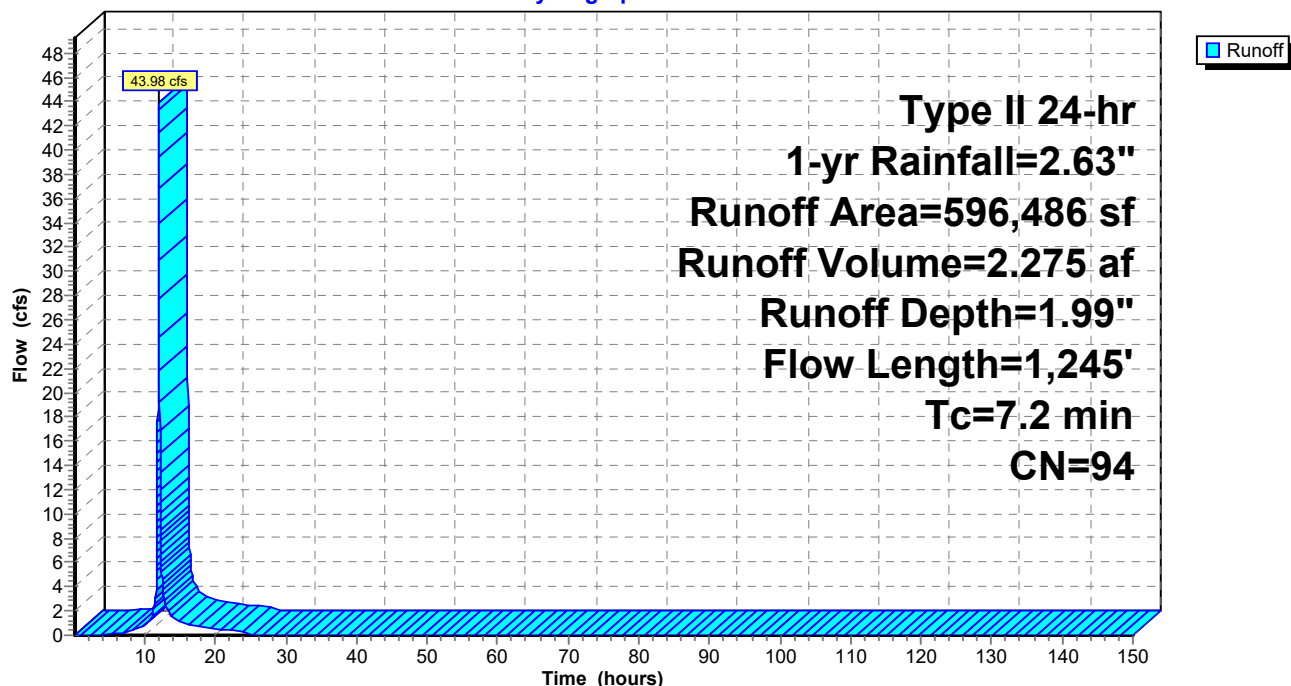
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-yr Rainfall=2.63"

Area (sf)	CN	Description
596,486	94	Newly graded area, HSG D
596,486		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.3100	3.57		Sheet Flow, Smooth surfaces n= 0.011 P2= 2.40"
0.3	100	0.3100	5.57		Shallow Concentrated Flow, Nearly Bare & Untilled Kv= 10.0 fps
6.4	1,045	0.0750	2.74		Shallow Concentrated Flow, Nearly Bare & Untilled Kv= 10.0 fps
7.2	1,245	Total			

Subcatchment 14S: Expansion Area

Hydrograph



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Type II 24-hr 1-yr Rainfall=2.63"

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Hydrograph for Subcatchment 14S: Expansion Area

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.05	0.00	0.00	0.00	104.05	2.63	1.99	0.00
2.05	0.06	0.00	0.00	106.05	2.63	1.99	0.00
4.05	0.13	0.00	0.00	108.05	2.63	1.99	0.00
6.05	0.21	0.01	0.14	110.05	2.63	1.99	0.00
8.05	0.32	0.04	0.32	112.05	2.63	1.99	0.00
10.05	0.48	0.13	0.82	114.05	2.63	1.99	0.00
12.05	1.77	1.18	30.85	116.05	2.63	1.99	0.00
14.05	2.16	1.55	1.31	118.05	2.63	1.99	0.00
16.05	2.32	1.70	0.81	120.05	2.63	1.99	0.00
18.05	2.42	1.80	0.63	122.05	2.63	1.99	0.00
20.05	2.51	1.87	0.46	124.05	2.63	1.99	0.00
22.05	2.57	1.94	0.42	126.05	2.63	1.99	0.00
24.05	2.63	1.99	0.36	128.05	2.63	1.99	0.00
26.05	2.63	1.99	0.00	130.05	2.63	1.99	0.00
28.05	2.63	1.99	0.00	132.05	2.63	1.99	0.00
30.05	2.63	1.99	0.00	134.05	2.63	1.99	0.00
32.05	2.63	1.99	0.00	136.05	2.63	1.99	0.00
34.05	2.63	1.99	0.00	138.05	2.63	1.99	0.00
36.05	2.63	1.99	0.00	140.05	2.63	1.99	0.00
38.05	2.63	1.99	0.00	142.05	2.63	1.99	0.00
40.05	2.63	1.99	0.00	144.05	2.63	1.99	0.00
42.05	2.63	1.99	0.00	146.05	2.63	1.99	0.00
44.05	2.63	1.99	0.00	148.05	2.63	1.99	0.00
46.05	2.63	1.99	0.00				
48.05	2.63	1.99	0.00				
50.05	2.63	1.99	0.00				
52.05	2.63	1.99	0.00				
54.05	2.63	1.99	0.00				
56.05	2.63	1.99	0.00				
58.05	2.63	1.99	0.00				
60.05	2.63	1.99	0.00				
62.05	2.63	1.99	0.00				
64.05	2.63	1.99	0.00				
66.05	2.63	1.99	0.00				
68.05	2.63	1.99	0.00				
70.05	2.63	1.99	0.00				
72.05	2.63	1.99	0.00				
74.05	2.63	1.99	0.00				
76.05	2.63	1.99	0.00				
78.05	2.63	1.99	0.00				
80.05	2.63	1.99	0.00				
82.05	2.63	1.99	0.00				
84.05	2.63	1.99	0.00				
86.05	2.63	1.99	0.00				
88.05	2.63	1.99	0.00				
90.05	2.63	1.99	0.00				
92.05	2.63	1.99	0.00				
94.05	2.63	1.99	0.00				
96.05	2.63	1.99	0.00				
98.05	2.63	1.99	0.00				
100.05	2.63	1.99	0.00				
102.05	2.63	1.99	0.00				

Summary for Subcatchment 20S: Upland Area 1

Includes pond surface area

Runoff = 1.78 cfs @ 12.32 hrs, Volume= 0.200 af, Depth= 0.82"

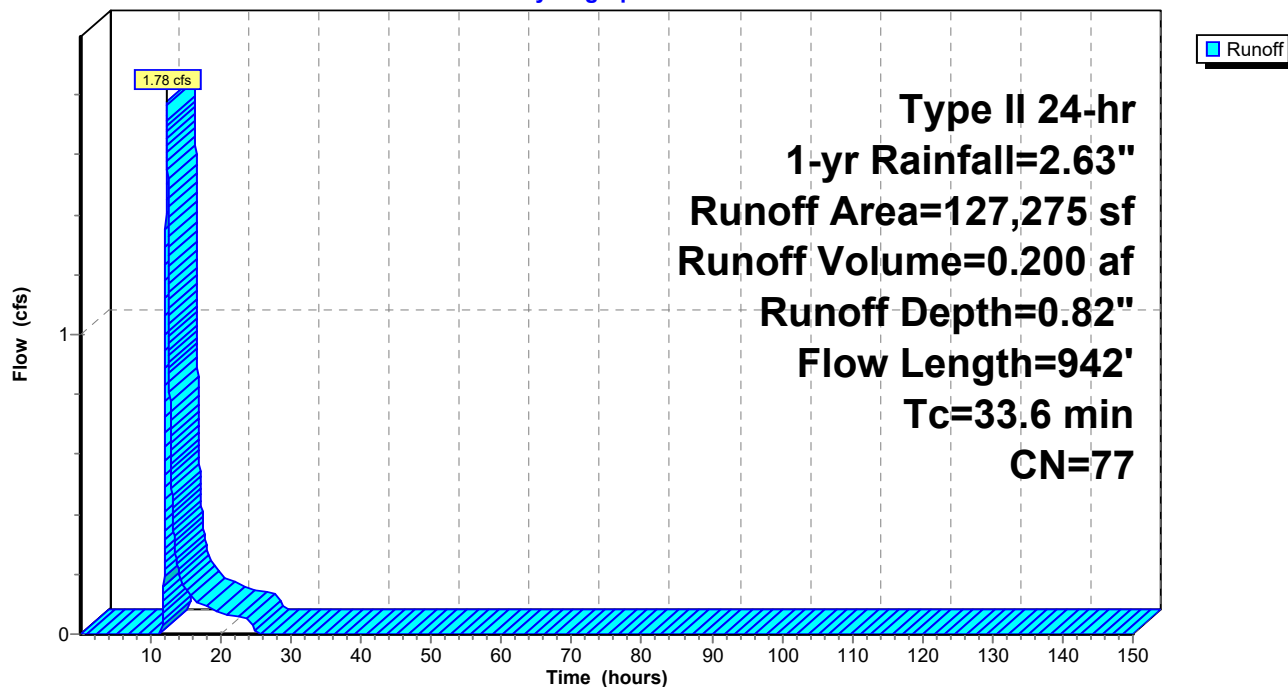
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-yr Rainfall=2.63"

Area (sf)	CN	Description
127,275	77	Woods, Good, HSG D
127,275		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.8	100	0.0200	0.07		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.40"
8.4	399	0.1000	0.79		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
0.4	443	0.1020	16.46	65.85	Channel Flow, Area= 4.0 sf Perim= 6.0' r= 0.67' n= 0.022 Earth, clean & straight
33.6	942	Total			

Subcatchment 20S: Upland Area 1

Hydrograph



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Type II 24-hr 1-yr Rainfall=2.63"

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Hydrograph for Subcatchment 20S: Upland Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.05	0.00	0.00	0.00	104.05	2.63	0.82	0.00
2.05	0.06	0.00	0.00	106.05	2.63	0.82	0.00
4.05	0.13	0.00	0.00	108.05	2.63	0.82	0.00
6.05	0.21	0.00	0.00	110.05	2.63	0.82	0.00
8.05	0.32	0.00	0.00	112.05	2.63	0.82	0.00
10.05	0.48	0.00	0.00	114.05	2.63	0.82	0.00
12.05	1.77	0.33	0.72	116.05	2.63	0.82	0.00
14.05	2.16	0.54	0.20	118.05	2.63	0.82	0.00
16.05	2.32	0.63	0.12	120.05	2.63	0.82	0.00
18.05	2.42	0.69	0.09	122.05	2.63	0.82	0.00
20.05	2.51	0.74	0.07	124.05	2.63	0.82	0.00
22.05	2.57	0.79	0.06	126.05	2.63	0.82	0.00
24.05	2.63	0.82	0.06	128.05	2.63	0.82	0.00
26.05	2.63	0.82	0.00	130.05	2.63	0.82	0.00
28.05	2.63	0.82	0.00	132.05	2.63	0.82	0.00
30.05	2.63	0.82	0.00	134.05	2.63	0.82	0.00
32.05	2.63	0.82	0.00	136.05	2.63	0.82	0.00
34.05	2.63	0.82	0.00	138.05	2.63	0.82	0.00
36.05	2.63	0.82	0.00	140.05	2.63	0.82	0.00
38.05	2.63	0.82	0.00	142.05	2.63	0.82	0.00
40.05	2.63	0.82	0.00	144.05	2.63	0.82	0.00
42.05	2.63	0.82	0.00	146.05	2.63	0.82	0.00
44.05	2.63	0.82	0.00	148.05	2.63	0.82	0.00
46.05	2.63	0.82	0.00				
48.05	2.63	0.82	0.00				
50.05	2.63	0.82	0.00				
52.05	2.63	0.82	0.00				
54.05	2.63	0.82	0.00				
56.05	2.63	0.82	0.00				
58.05	2.63	0.82	0.00				
60.05	2.63	0.82	0.00				
62.05	2.63	0.82	0.00				
64.05	2.63	0.82	0.00				
66.05	2.63	0.82	0.00				
68.05	2.63	0.82	0.00				
70.05	2.63	0.82	0.00				
72.05	2.63	0.82	0.00				
74.05	2.63	0.82	0.00				
76.05	2.63	0.82	0.00				
78.05	2.63	0.82	0.00				
80.05	2.63	0.82	0.00				
82.05	2.63	0.82	0.00				
84.05	2.63	0.82	0.00				
86.05	2.63	0.82	0.00				
88.05	2.63	0.82	0.00				
90.05	2.63	0.82	0.00				
92.05	2.63	0.82	0.00				
94.05	2.63	0.82	0.00				
96.05	2.63	0.82	0.00				
98.05	2.63	0.82	0.00				
100.05	2.63	0.82	0.00				
102.05	2.63	0.82	0.00				

Summary for Subcatchment 21S: Reclaimed Area

Includes pond surface area

Runoff = 1.72 cfs @ 12.55 hrs, Volume= 0.254 af, Depth= 0.82"

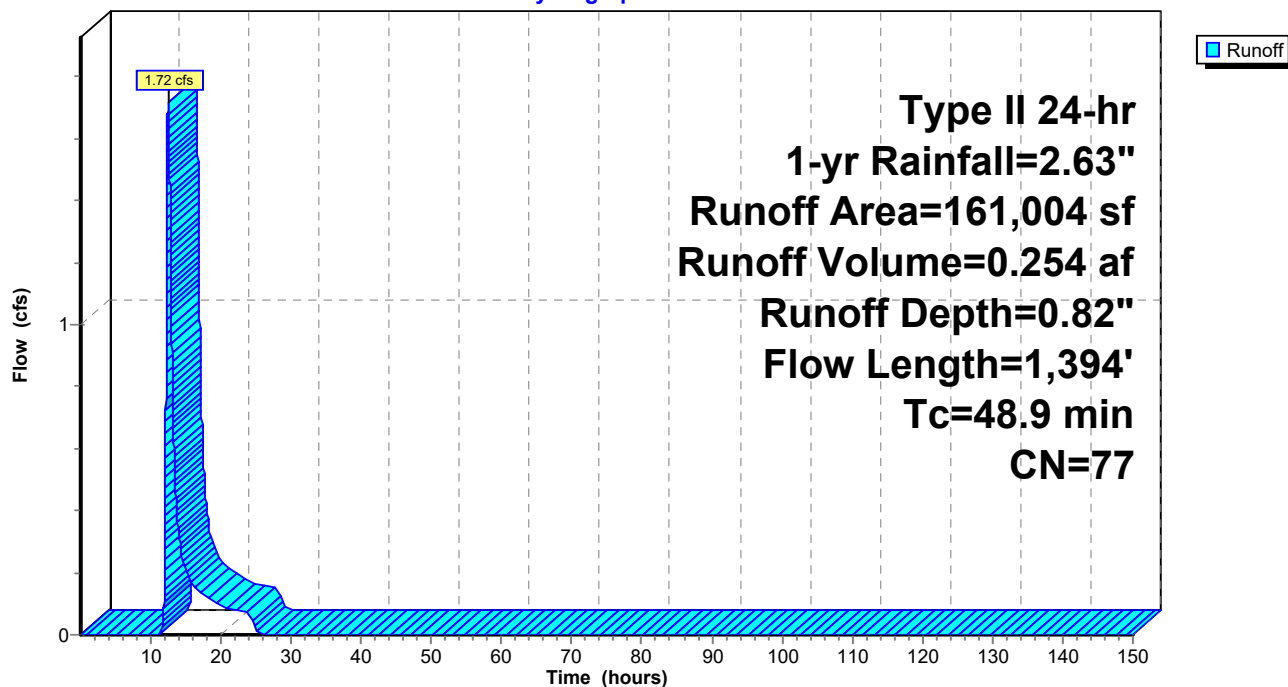
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-yr Rainfall=2.63"

Area (sf)	CN	Description
161,004	77	Woods, Good, HSG D
161,004		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.8	100	0.0200	0.07		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.40"
24.1	1,294	0.1280	0.89		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
48.9	1,394	Total			

Subcatchment 21S: Reclaimed Area

Hydrograph



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Type II 24-hr 1-yr Rainfall=2.63"

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Hydrograph for Subcatchment 21S: Reclaimed Area

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.05	0.00	0.00	0.00	104.05	2.63	0.82	0.00
2.05	0.06	0.00	0.00	106.05	2.63	0.82	0.00
4.05	0.13	0.00	0.00	108.05	2.63	0.82	0.00
6.05	0.21	0.00	0.00	110.05	2.63	0.82	0.00
8.05	0.32	0.00	0.00	112.05	2.63	0.82	0.00
10.05	0.48	0.00	0.00	114.05	2.63	0.82	0.00
12.05	1.77	0.33	0.36	116.05	2.63	0.82	0.00
14.05	2.16	0.54	0.31	118.05	2.63	0.82	0.00
16.05	2.32	0.63	0.16	120.05	2.63	0.82	0.00
18.05	2.42	0.69	0.12	122.05	2.63	0.82	0.00
20.05	2.51	0.74	0.09	124.05	2.63	0.82	0.00
22.05	2.57	0.79	0.08	126.05	2.63	0.82	0.00
24.05	2.63	0.82	0.07	128.05	2.63	0.82	0.00
26.05	2.63	0.82	0.00	130.05	2.63	0.82	0.00
28.05	2.63	0.82	0.00	132.05	2.63	0.82	0.00
30.05	2.63	0.82	0.00	134.05	2.63	0.82	0.00
32.05	2.63	0.82	0.00	136.05	2.63	0.82	0.00
34.05	2.63	0.82	0.00	138.05	2.63	0.82	0.00
36.05	2.63	0.82	0.00	140.05	2.63	0.82	0.00
38.05	2.63	0.82	0.00	142.05	2.63	0.82	0.00
40.05	2.63	0.82	0.00	144.05	2.63	0.82	0.00
42.05	2.63	0.82	0.00	146.05	2.63	0.82	0.00
44.05	2.63	0.82	0.00	148.05	2.63	0.82	0.00
46.05	2.63	0.82	0.00				
48.05	2.63	0.82	0.00				
50.05	2.63	0.82	0.00				
52.05	2.63	0.82	0.00				
54.05	2.63	0.82	0.00				
56.05	2.63	0.82	0.00				
58.05	2.63	0.82	0.00				
60.05	2.63	0.82	0.00				
62.05	2.63	0.82	0.00				
64.05	2.63	0.82	0.00				
66.05	2.63	0.82	0.00				
68.05	2.63	0.82	0.00				
70.05	2.63	0.82	0.00				
72.05	2.63	0.82	0.00				
74.05	2.63	0.82	0.00				
76.05	2.63	0.82	0.00				
78.05	2.63	0.82	0.00				
80.05	2.63	0.82	0.00				
82.05	2.63	0.82	0.00				
84.05	2.63	0.82	0.00				
86.05	2.63	0.82	0.00				
88.05	2.63	0.82	0.00				
90.05	2.63	0.82	0.00				
92.05	2.63	0.82	0.00				
94.05	2.63	0.82	0.00				
96.05	2.63	0.82	0.00				
98.05	2.63	0.82	0.00				
100.05	2.63	0.82	0.00				
102.05	2.63	0.82	0.00				

Summary for Subcatchment 23S: Upland Area 2

Includes pond surface area

Runoff = 1.57 cfs @ 12.32 hrs, Volume= 0.177 af, Depth= 0.82"

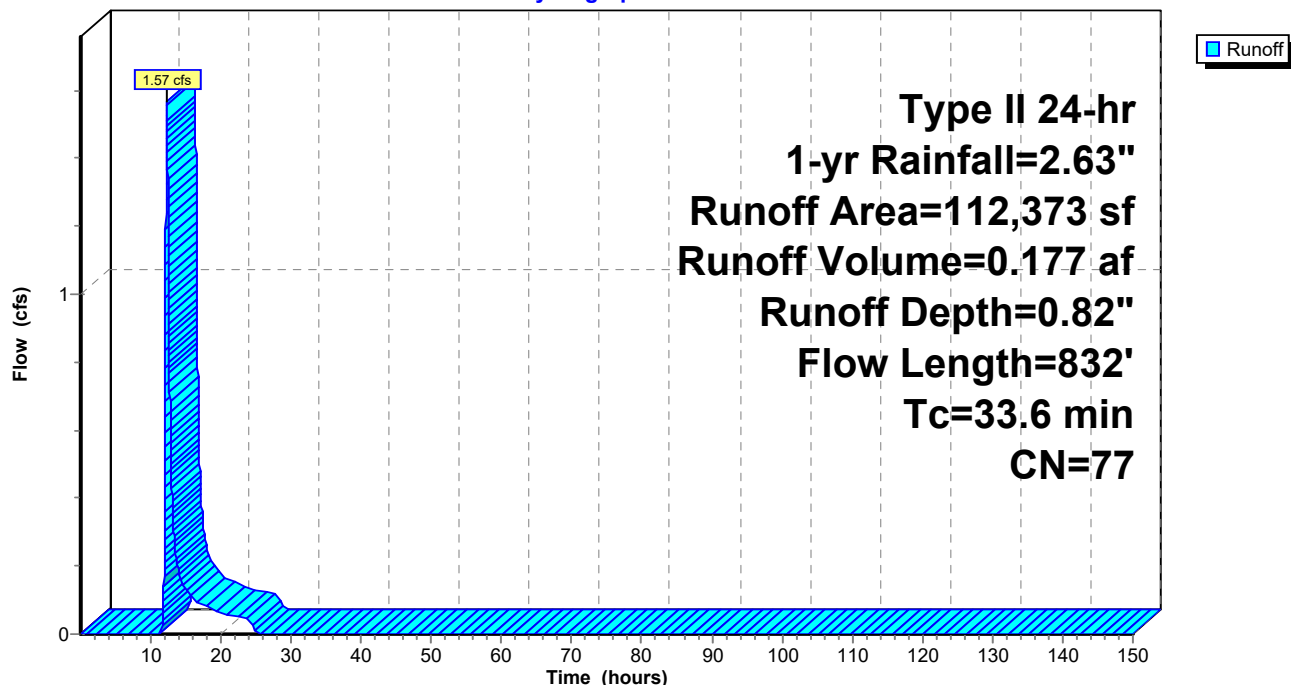
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-yr Rainfall=2.63"

Area (sf)	CN	Description
112,373	77	Woods, Good, HSG D
112,373		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.8	100	0.0200	0.07		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.40"
8.4	399	0.1000	0.79		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
0.4	333	0.0750	14.12	56.47	Channel Flow, Area= 4.0 sf Perim= 6.0' r= 0.67' n= 0.022 Earth, clean & straight
33.6	832	Total			

Subcatchment 23S: Upland Area 2

Hydrograph



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Type II 24-hr 1-yr Rainfall=2.63"

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Hydrograph for Subcatchment 23S: Upland Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.05	0.00	0.00	0.00	104.05	2.63	0.82	0.00
2.05	0.06	0.00	0.00	106.05	2.63	0.82	0.00
4.05	0.13	0.00	0.00	108.05	2.63	0.82	0.00
6.05	0.21	0.00	0.00	110.05	2.63	0.82	0.00
8.05	0.32	0.00	0.00	112.05	2.63	0.82	0.00
10.05	0.48	0.00	0.00	114.05	2.63	0.82	0.00
12.05	1.77	0.33	0.64	116.05	2.63	0.82	0.00
14.05	2.16	0.54	0.18	118.05	2.63	0.82	0.00
16.05	2.32	0.63	0.11	120.05	2.63	0.82	0.00
18.05	2.42	0.69	0.08	122.05	2.63	0.82	0.00
20.05	2.51	0.74	0.06	124.05	2.63	0.82	0.00
22.05	2.57	0.79	0.05	126.05	2.63	0.82	0.00
24.05	2.63	0.82	0.05	128.05	2.63	0.82	0.00
26.05	2.63	0.82	0.00	130.05	2.63	0.82	0.00
28.05	2.63	0.82	0.00	132.05	2.63	0.82	0.00
30.05	2.63	0.82	0.00	134.05	2.63	0.82	0.00
32.05	2.63	0.82	0.00	136.05	2.63	0.82	0.00
34.05	2.63	0.82	0.00	138.05	2.63	0.82	0.00
36.05	2.63	0.82	0.00	140.05	2.63	0.82	0.00
38.05	2.63	0.82	0.00	142.05	2.63	0.82	0.00
40.05	2.63	0.82	0.00	144.05	2.63	0.82	0.00
42.05	2.63	0.82	0.00	146.05	2.63	0.82	0.00
44.05	2.63	0.82	0.00	148.05	2.63	0.82	0.00
46.05	2.63	0.82	0.00				
48.05	2.63	0.82	0.00				
50.05	2.63	0.82	0.00				
52.05	2.63	0.82	0.00				
54.05	2.63	0.82	0.00				
56.05	2.63	0.82	0.00				
58.05	2.63	0.82	0.00				
60.05	2.63	0.82	0.00				
62.05	2.63	0.82	0.00				
64.05	2.63	0.82	0.00				
66.05	2.63	0.82	0.00				
68.05	2.63	0.82	0.00				
70.05	2.63	0.82	0.00				
72.05	2.63	0.82	0.00				
74.05	2.63	0.82	0.00				
76.05	2.63	0.82	0.00				
78.05	2.63	0.82	0.00				
80.05	2.63	0.82	0.00				
82.05	2.63	0.82	0.00				
84.05	2.63	0.82	0.00				
86.05	2.63	0.82	0.00				
88.05	2.63	0.82	0.00				
90.05	2.63	0.82	0.00				
92.05	2.63	0.82	0.00				
94.05	2.63	0.82	0.00				
96.05	2.63	0.82	0.00				
98.05	2.63	0.82	0.00				
100.05	2.63	0.82	0.00				
102.05	2.63	0.82	0.00				

Summary for Subcatchment 24S: Upland Area 3

Includes pond surface area

Runoff = 2.34 cfs @ 12.47 hrs, Volume= 0.325 af, Depth= 0.82"

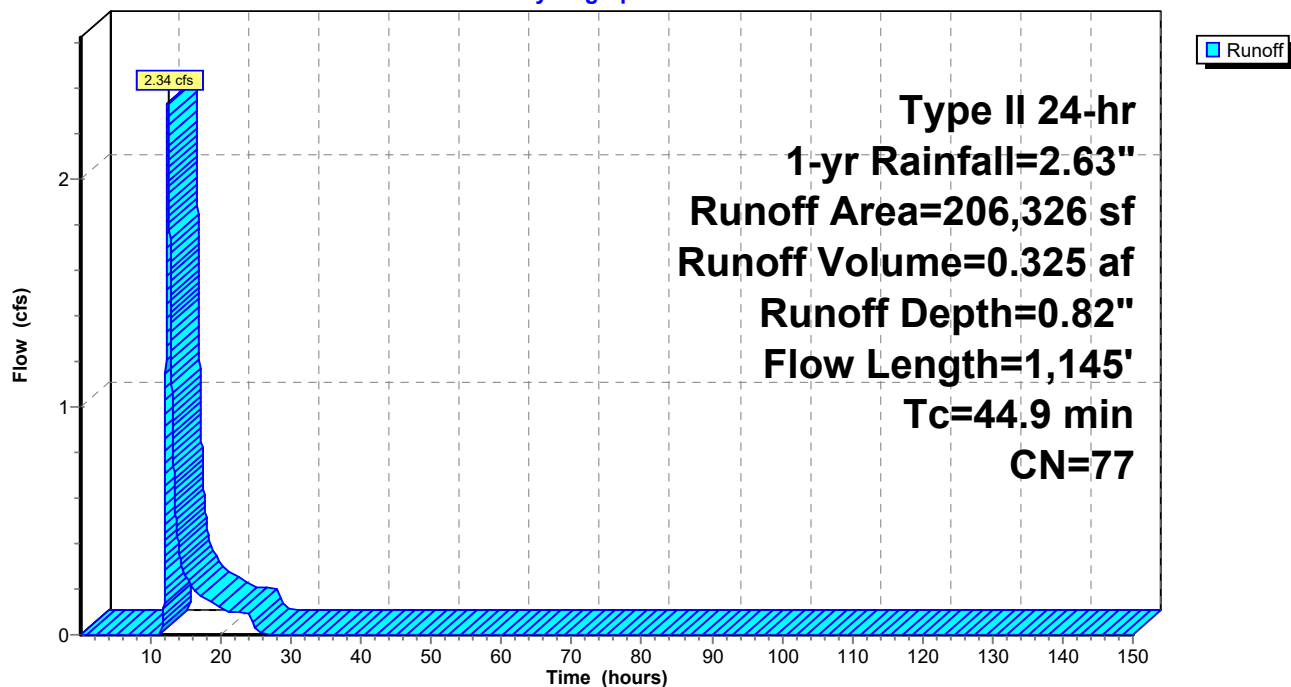
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-yr Rainfall=2.63"

Area (sf)	CN	Description
206,326	77	Woods, Good, HSG D
206,326		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.8	100	0.0200	0.07		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.40"
20.1	1,045	0.1200	0.87		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
44.9	1,145	Total			

Subcatchment 24S: Upland Area 3

Hydrograph



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Type II 24-hr 1-yr Rainfall=2.63"

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Hydrograph for Subcatchment 24S: Upland Area 3

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.05	0.00	0.00	0.00	104.05	2.63	0.82	0.00
2.05	0.06	0.00	0.00	106.05	2.63	0.82	0.00
4.05	0.13	0.00	0.00	108.05	2.63	0.82	0.00
6.05	0.21	0.00	0.00	110.05	2.63	0.82	0.00
8.05	0.32	0.00	0.00	112.05	2.63	0.82	0.00
10.05	0.48	0.00	0.00	114.05	2.63	0.82	0.00
12.05	1.77	0.33	0.57	116.05	2.63	0.82	0.00
14.05	2.16	0.54	0.38	118.05	2.63	0.82	0.00
16.05	2.32	0.63	0.20	120.05	2.63	0.82	0.00
18.05	2.42	0.69	0.15	122.05	2.63	0.82	0.00
20.05	2.51	0.74	0.11	124.05	2.63	0.82	0.00
22.05	2.57	0.79	0.10	126.05	2.63	0.82	0.00
24.05	2.63	0.82	0.09	128.05	2.63	0.82	0.00
26.05	2.63	0.82	0.00	130.05	2.63	0.82	0.00
28.05	2.63	0.82	0.00	132.05	2.63	0.82	0.00
30.05	2.63	0.82	0.00	134.05	2.63	0.82	0.00
32.05	2.63	0.82	0.00	136.05	2.63	0.82	0.00
34.05	2.63	0.82	0.00	138.05	2.63	0.82	0.00
36.05	2.63	0.82	0.00	140.05	2.63	0.82	0.00
38.05	2.63	0.82	0.00	142.05	2.63	0.82	0.00
40.05	2.63	0.82	0.00	144.05	2.63	0.82	0.00
42.05	2.63	0.82	0.00	146.05	2.63	0.82	0.00
44.05	2.63	0.82	0.00	148.05	2.63	0.82	0.00
46.05	2.63	0.82	0.00				
48.05	2.63	0.82	0.00				
50.05	2.63	0.82	0.00				
52.05	2.63	0.82	0.00				
54.05	2.63	0.82	0.00				
56.05	2.63	0.82	0.00				
58.05	2.63	0.82	0.00				
60.05	2.63	0.82	0.00				
62.05	2.63	0.82	0.00				
64.05	2.63	0.82	0.00				
66.05	2.63	0.82	0.00				
68.05	2.63	0.82	0.00				
70.05	2.63	0.82	0.00				
72.05	2.63	0.82	0.00				
74.05	2.63	0.82	0.00				
76.05	2.63	0.82	0.00				
78.05	2.63	0.82	0.00				
80.05	2.63	0.82	0.00				
82.05	2.63	0.82	0.00				
84.05	2.63	0.82	0.00				
86.05	2.63	0.82	0.00				
88.05	2.63	0.82	0.00				
90.05	2.63	0.82	0.00				
92.05	2.63	0.82	0.00				
94.05	2.63	0.82	0.00				
96.05	2.63	0.82	0.00				
98.05	2.63	0.82	0.00				
100.05	2.63	0.82	0.00				
102.05	2.63	0.82	0.00				

Summary for Subcatchment 25S: Upland Area 4

Includes pond surface area

Runoff = 2.48 cfs @ 13.51 hrs, Volume= 0.694 af, Depth= 0.82"

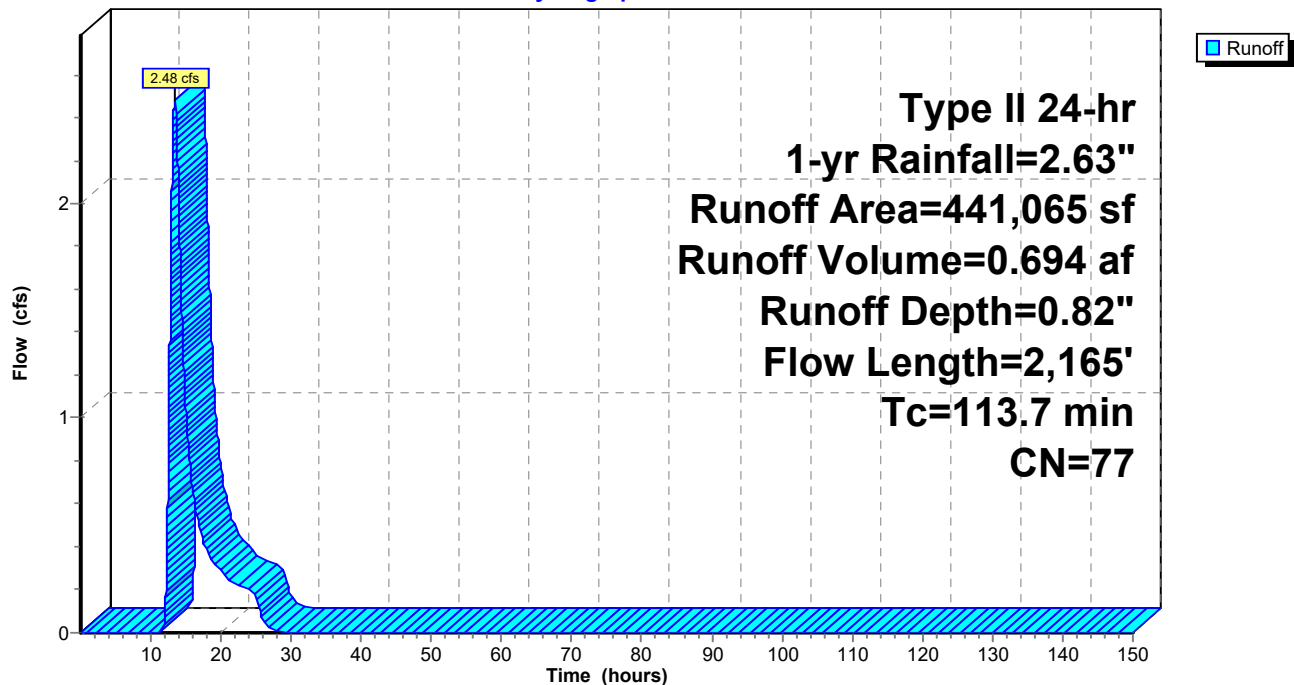
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-yr Rainfall=2.63"

Area (sf)	CN	Description
441,065	77	Woods, Good, HSG D
441,065		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.8	100	0.0200	0.07		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.40"
88.9	2,065	0.0240	0.39		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
113.7	2,165	Total			

Subcatchment 25S: Upland Area 4

Hydrograph



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Type II 24-hr 1-yr Rainfall=2.63"

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Hydrograph for Subcatchment 25S: Upland Area 4

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.05	0.00	0.00	0.00	104.05	2.63	0.82	0.00
2.05	0.06	0.00	0.00	106.05	2.63	0.82	0.00
4.05	0.13	0.00	0.00	108.05	2.63	0.82	0.00
6.05	0.21	0.00	0.00	110.05	2.63	0.82	0.00
8.05	0.32	0.00	0.00	112.05	2.63	0.82	0.00
10.05	0.48	0.00	0.00	114.05	2.63	0.82	0.00
12.05	1.77	0.33	0.08	116.05	2.63	0.82	0.00
14.05	2.16	0.54	1.95	118.05	2.63	0.82	0.00
16.05	2.32	0.63	0.65	120.05	2.63	0.82	0.00
18.05	2.42	0.69	0.38	122.05	2.63	0.82	0.00
20.05	2.51	0.74	0.29	124.05	2.63	0.82	0.00
22.05	2.57	0.79	0.22	126.05	2.63	0.82	0.00
24.05	2.63	0.82	0.20	128.05	2.63	0.82	0.00
26.05	2.63	0.82	0.06	130.05	2.63	0.82	0.00
28.05	2.63	0.82	0.00	132.05	2.63	0.82	0.00
30.05	2.63	0.82	0.00	134.05	2.63	0.82	0.00
32.05	2.63	0.82	0.00	136.05	2.63	0.82	0.00
34.05	2.63	0.82	0.00	138.05	2.63	0.82	0.00
36.05	2.63	0.82	0.00	140.05	2.63	0.82	0.00
38.05	2.63	0.82	0.00	142.05	2.63	0.82	0.00
40.05	2.63	0.82	0.00	144.05	2.63	0.82	0.00
42.05	2.63	0.82	0.00	146.05	2.63	0.82	0.00
44.05	2.63	0.82	0.00	148.05	2.63	0.82	0.00
46.05	2.63	0.82	0.00				
48.05	2.63	0.82	0.00				
50.05	2.63	0.82	0.00				
52.05	2.63	0.82	0.00				
54.05	2.63	0.82	0.00				
56.05	2.63	0.82	0.00				
58.05	2.63	0.82	0.00				
60.05	2.63	0.82	0.00				
62.05	2.63	0.82	0.00				
64.05	2.63	0.82	0.00				
66.05	2.63	0.82	0.00				
68.05	2.63	0.82	0.00				
70.05	2.63	0.82	0.00				
72.05	2.63	0.82	0.00				
74.05	2.63	0.82	0.00				
76.05	2.63	0.82	0.00				
78.05	2.63	0.82	0.00				
80.05	2.63	0.82	0.00				
82.05	2.63	0.82	0.00				
84.05	2.63	0.82	0.00				
86.05	2.63	0.82	0.00				
88.05	2.63	0.82	0.00				
90.05	2.63	0.82	0.00				
92.05	2.63	0.82	0.00				
94.05	2.63	0.82	0.00				
96.05	2.63	0.82	0.00				
98.05	2.63	0.82	0.00				
100.05	2.63	0.82	0.00				
102.05	2.63	0.82	0.00				

Summary for Subcatchment 26S: Upland Area 5

Includes pond surface area

Runoff = 1.12 cfs @ 12.71 hrs, Volume= 0.202 af, Depth= 0.82"

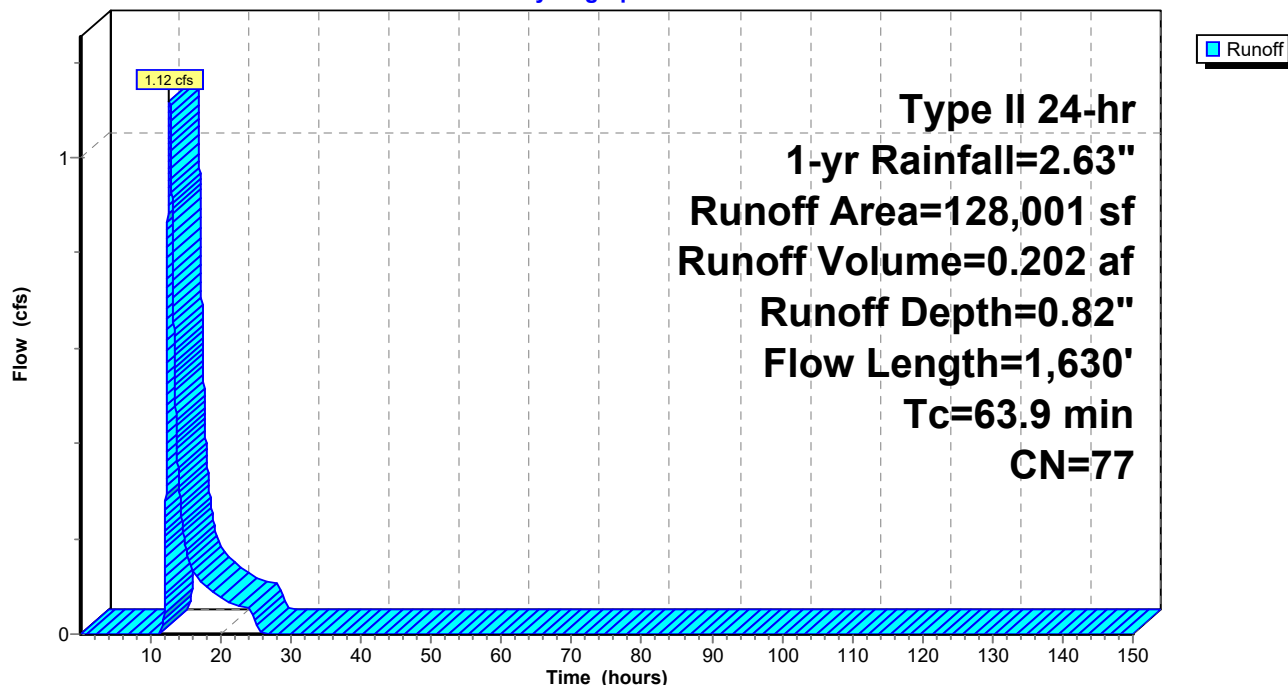
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-yr Rainfall=2.63"

Area (sf)	CN	Description
128,001	77	Woods, Good, HSG D
128,001		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.8	100	0.0200	0.07		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.40"
38.8	1,194	0.0420	0.51		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
0.3	336	0.1190	17.78	71.13	Channel Flow, Area= 4.0 sf Perim= 6.0' r= 0.67' n= 0.022 Earth, clean & straight
63.9	1,630	Total			

Subcatchment 26S: Upland Area 5

Hydrograph



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Type II 24-hr 1-yr Rainfall=2.63"

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Hydrograph for Subcatchment 26S: Upland Area 5

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.05	0.00	0.00	0.00	104.05	2.63	0.82	0.00
2.05	0.06	0.00	0.00	106.05	2.63	0.82	0.00
4.05	0.13	0.00	0.00	108.05	2.63	0.82	0.00
6.05	0.21	0.00	0.00	110.05	2.63	0.82	0.00
8.05	0.32	0.00	0.00	112.05	2.63	0.82	0.00
10.05	0.48	0.00	0.00	114.05	2.63	0.82	0.00
12.05	1.77	0.33	0.14	116.05	2.63	0.82	0.00
14.05	2.16	0.54	0.31	118.05	2.63	0.82	0.00
16.05	2.32	0.63	0.14	120.05	2.63	0.82	0.00
18.05	2.42	0.69	0.10	122.05	2.63	0.82	0.00
20.05	2.51	0.74	0.07	124.05	2.63	0.82	0.00
22.05	2.57	0.79	0.06	126.05	2.63	0.82	0.00
24.05	2.63	0.82	0.06	128.05	2.63	0.82	0.00
26.05	2.63	0.82	0.00	130.05	2.63	0.82	0.00
28.05	2.63	0.82	0.00	132.05	2.63	0.82	0.00
30.05	2.63	0.82	0.00	134.05	2.63	0.82	0.00
32.05	2.63	0.82	0.00	136.05	2.63	0.82	0.00
34.05	2.63	0.82	0.00	138.05	2.63	0.82	0.00
36.05	2.63	0.82	0.00	140.05	2.63	0.82	0.00
38.05	2.63	0.82	0.00	142.05	2.63	0.82	0.00
40.05	2.63	0.82	0.00	144.05	2.63	0.82	0.00
42.05	2.63	0.82	0.00	146.05	2.63	0.82	0.00
44.05	2.63	0.82	0.00	148.05	2.63	0.82	0.00
46.05	2.63	0.82	0.00				
48.05	2.63	0.82	0.00				
50.05	2.63	0.82	0.00				
52.05	2.63	0.82	0.00				
54.05	2.63	0.82	0.00				
56.05	2.63	0.82	0.00				
58.05	2.63	0.82	0.00				
60.05	2.63	0.82	0.00				
62.05	2.63	0.82	0.00				
64.05	2.63	0.82	0.00				
66.05	2.63	0.82	0.00				
68.05	2.63	0.82	0.00				
70.05	2.63	0.82	0.00				
72.05	2.63	0.82	0.00				
74.05	2.63	0.82	0.00				
76.05	2.63	0.82	0.00				
78.05	2.63	0.82	0.00				
80.05	2.63	0.82	0.00				
82.05	2.63	0.82	0.00				
84.05	2.63	0.82	0.00				
86.05	2.63	0.82	0.00				
88.05	2.63	0.82	0.00				
90.05	2.63	0.82	0.00				
92.05	2.63	0.82	0.00				
94.05	2.63	0.82	0.00				
96.05	2.63	0.82	0.00				
98.05	2.63	0.82	0.00				
100.05	2.63	0.82	0.00				
102.05	2.63	0.82	0.00				

Summary for Subcatchment 27S: Upland Area 6

Includes pond surface area

Runoff = 1.59 cfs @ 12.34 hrs, Volume= 0.189 af, Depth= 0.82"

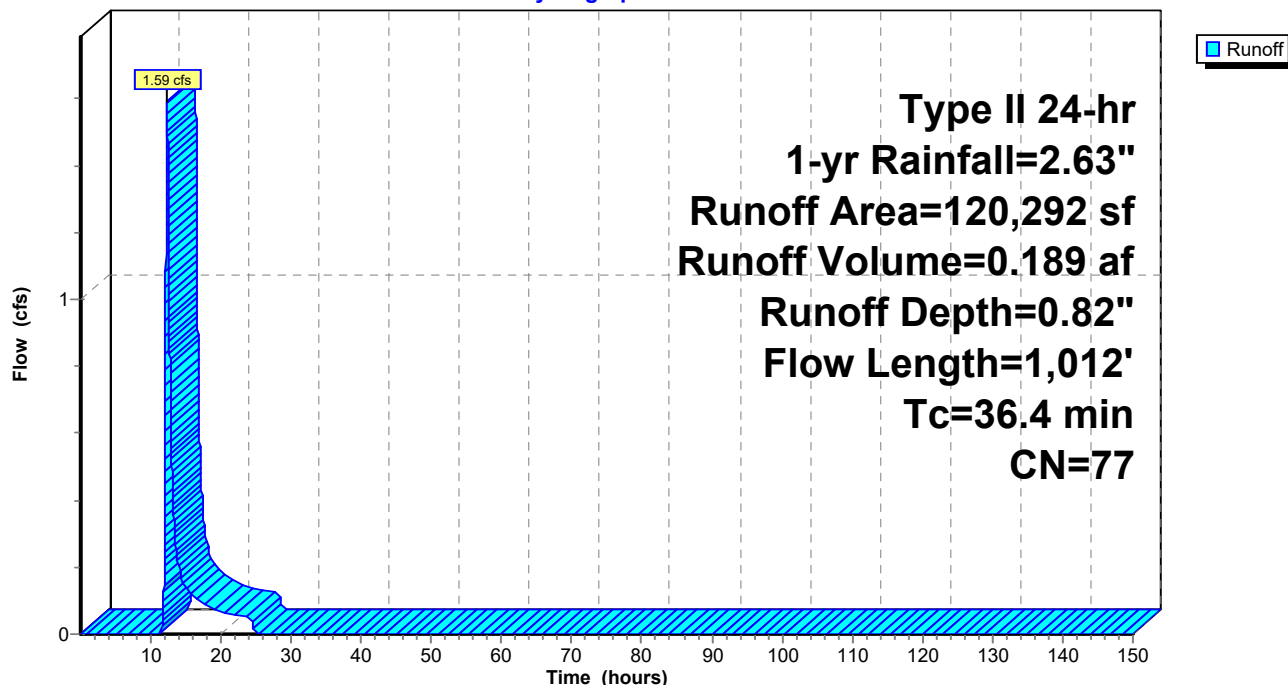
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-yr Rainfall=2.63"

Area (sf)	CN	Description
120,292	77	Woods, Good, HSG D
120,292		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.8	100	0.0200	0.07		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.40"
11.2	706	0.1770	1.05		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
0.4	206	0.0240	7.99	31.94	Channel Flow, Area= 4.0 sf Perim= 6.0' r= 0.67' n= 0.022 Earth, clean & straight
36.4	1,012	Total			

Subcatchment 27S: Upland Area 6

Hydrograph



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Type II 24-hr 1-yr Rainfall=2.63"

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Hydrograph for Subcatchment 27S: Upland Area 6

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.05	0.00	0.00	0.00	104.05	2.63	0.82	0.00
2.05	0.06	0.00	0.00	106.05	2.63	0.82	0.00
4.05	0.13	0.00	0.00	108.05	2.63	0.82	0.00
6.05	0.21	0.00	0.00	110.05	2.63	0.82	0.00
8.05	0.32	0.00	0.00	112.05	2.63	0.82	0.00
10.05	0.48	0.00	0.00	114.05	2.63	0.82	0.00
12.05	1.77	0.33	0.56	116.05	2.63	0.82	0.00
14.05	2.16	0.54	0.20	118.05	2.63	0.82	0.00
16.05	2.32	0.63	0.12	120.05	2.63	0.82	0.00
18.05	2.42	0.69	0.09	122.05	2.63	0.82	0.00
20.05	2.51	0.74	0.07	124.05	2.63	0.82	0.00
22.05	2.57	0.79	0.06	126.05	2.63	0.82	0.00
24.05	2.63	0.82	0.05	128.05	2.63	0.82	0.00
26.05	2.63	0.82	0.00	130.05	2.63	0.82	0.00
28.05	2.63	0.82	0.00	132.05	2.63	0.82	0.00
30.05	2.63	0.82	0.00	134.05	2.63	0.82	0.00
32.05	2.63	0.82	0.00	136.05	2.63	0.82	0.00
34.05	2.63	0.82	0.00	138.05	2.63	0.82	0.00
36.05	2.63	0.82	0.00	140.05	2.63	0.82	0.00
38.05	2.63	0.82	0.00	142.05	2.63	0.82	0.00
40.05	2.63	0.82	0.00	144.05	2.63	0.82	0.00
42.05	2.63	0.82	0.00	146.05	2.63	0.82	0.00
44.05	2.63	0.82	0.00	148.05	2.63	0.82	0.00
46.05	2.63	0.82	0.00				
48.05	2.63	0.82	0.00				
50.05	2.63	0.82	0.00				
52.05	2.63	0.82	0.00				
54.05	2.63	0.82	0.00				
56.05	2.63	0.82	0.00				
58.05	2.63	0.82	0.00				
60.05	2.63	0.82	0.00				
62.05	2.63	0.82	0.00				
64.05	2.63	0.82	0.00				
66.05	2.63	0.82	0.00				
68.05	2.63	0.82	0.00				
70.05	2.63	0.82	0.00				
72.05	2.63	0.82	0.00				
74.05	2.63	0.82	0.00				
76.05	2.63	0.82	0.00				
78.05	2.63	0.82	0.00				
80.05	2.63	0.82	0.00				
82.05	2.63	0.82	0.00				
84.05	2.63	0.82	0.00				
86.05	2.63	0.82	0.00				
88.05	2.63	0.82	0.00				
90.05	2.63	0.82	0.00				
92.05	2.63	0.82	0.00				
94.05	2.63	0.82	0.00				
96.05	2.63	0.82	0.00				
98.05	2.63	0.82	0.00				
100.05	2.63	0.82	0.00				
102.05	2.63	0.82	0.00				

Summary for Reach 5R: Expan Area Ditch

Inflow Area = 13.693 ac, 0.00% Impervious, Inflow Depth = 1.99" for 1-yr event
 Inflow = 43.98 cfs @ 11.98 hrs, Volume= 2.275 af
 Outflow = 43.28 cfs @ 12.00 hrs, Volume= 2.275 af, Atten= 2%, Lag= 0.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Max. Velocity= 7.46 fps, Min. Travel Time= 1.3 min

Avg. Velocity= 1.95 fps, Avg. Travel Time= 4.9 min

Peak Storage= 3,339 cf @ 12.00 hrs

Average Depth at Peak Storage= 1.11'

Bank-Full Depth= 3.00' Flow Area= 27.0 sf, Capacity= 347.14 cfs

3.00' x 3.00' deep channel, n= 0.044

Side Slope Z-value= 2.0 '/' Top Width= 15.00'

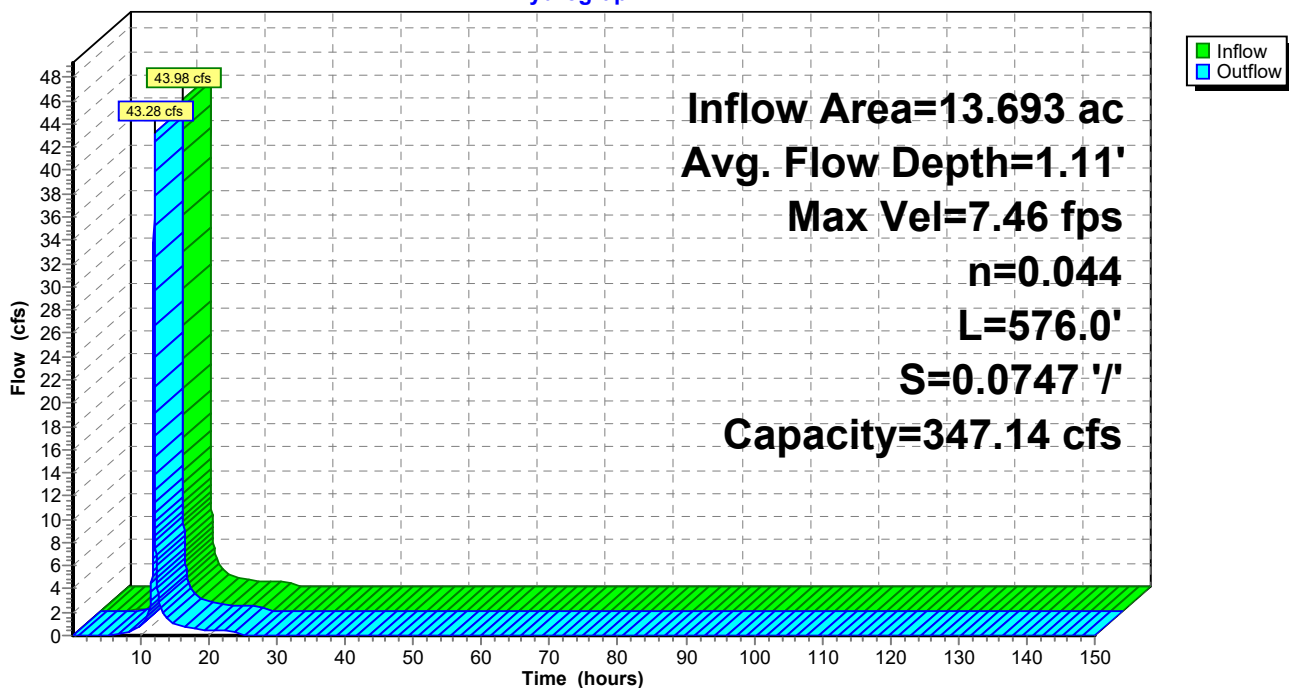
Length= 576.0' Slope= 0.0747 '/'

Inlet Invert= 1,495.00', Outlet Invert= 1,452.00'

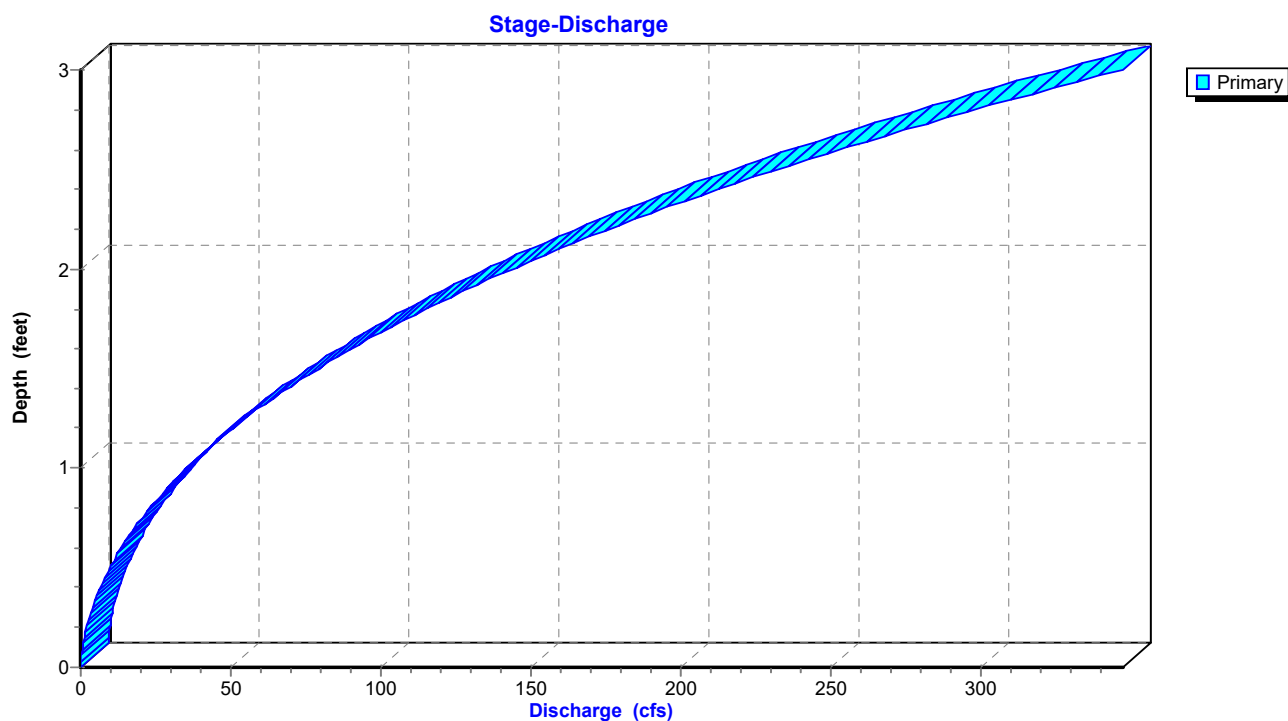


Reach 5R: Expan Area Ditch

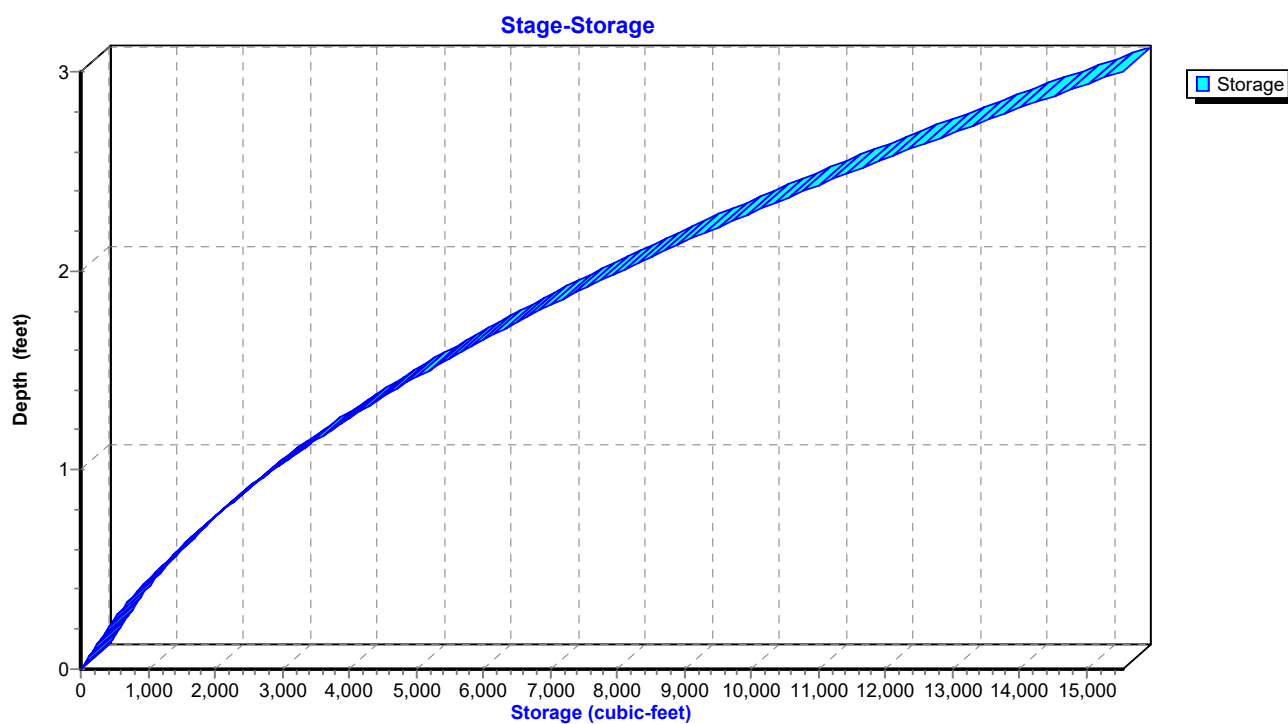
Hydrograph



Reach 5R: Expan Area Ditch



Reach 5R: Expan Area Ditch



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Type II 24-hr 1-yr Rainfall=2.63"

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Hydrograph for Reach 5R: Expan Area Ditch

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
0.05	0.00	0	1,495.00	0.00
5.05	0.06	31	1,495.02	0.05
10.05	0.82	218	1,495.12	0.79
15.05	1.05	262	1,495.14	1.06
20.05	0.46	155	1,495.08	0.46
25.05	0.00	1	1,495.00	0.00
30.05	0.00	0	1,495.00	0.00
35.05	0.00	0	1,495.00	0.00
40.05	0.00	0	1,495.00	0.00
45.05	0.00	0	1,495.00	0.00
50.05	0.00	0	1,495.00	0.00
55.05	0.00	0	1,495.00	0.00
60.05	0.00	0	1,495.00	0.00
65.05	0.00	0	1,495.00	0.00
70.05	0.00	0	1,495.00	0.00
75.05	0.00	0	1,495.00	0.00
80.05	0.00	0	1,495.00	0.00
85.05	0.00	0	1,495.00	0.00
90.05	0.00	0	1,495.00	0.00
95.05	0.00	0	1,495.00	0.00
100.05	0.00	0	1,495.00	0.00
105.05	0.00	0	1,495.00	0.00
110.05	0.00	0	1,495.00	0.00
115.05	0.00	0	1,495.00	0.00
120.05	0.00	0	1,495.00	0.00
125.05	0.00	0	1,495.00	0.00
130.05	0.00	0	1,495.00	0.00
135.05	0.00	0	1,495.00	0.00
140.05	0.00	0	1,495.00	0.00
145.05	0.00	0	1,495.00	0.00

Stage-Discharge for Reach 5R: Expan Area Ditch

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)	Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)	Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
1,495.00	0.00	0.00	1,496.04	7.21	38.09	1,497.08	10.48	156.11
1,495.02	0.58	0.05	1,496.06	7.28	39.53	1,497.10	10.54	159.32
1,495.04	1.04	0.14	1,496.08	7.36	40.99	1,497.12	10.59	162.58
1,495.06	1.37	0.26	1,496.10	7.43	42.50	1,497.14	10.65	165.88
1,495.08	1.64	0.42	1,496.12	7.50	44.03	1,497.16	10.70	169.20
1,495.10	1.89	0.61	1,496.14	7.57	45.58	1,497.18	10.76	172.59
1,495.12	2.12	0.82	1,496.16	7.64	47.17	1,497.20	10.81	176.00
1,495.14	2.32	1.08	1,496.18	7.71	48.79	1,497.22	10.86	179.45
1,495.16	2.52	1.35	1,496.20	7.78	50.43	1,497.24	10.92	182.95
1,495.18	2.71	1.64	1,496.22	7.85	52.12	1,497.26	10.97	186.49
1,495.20	2.88	1.97	1,496.24	7.92	53.83	1,497.28	11.03	190.05
1,495.22	3.05	2.31	1,496.26	7.99	55.56	1,497.30	11.08	193.68
1,495.24	3.21	2.68	1,496.28	8.06	57.34	1,497.32	11.13	197.34
1,495.26	3.36	3.08	1,496.30	8.12	59.15	1,497.34	11.19	201.03
1,495.28	3.51	3.50	1,496.32	8.19	60.97	1,497.36	11.24	204.77
1,495.30	3.65	3.94	1,496.34	8.26	62.85	1,497.38	11.29	208.56
1,495.32	3.79	4.42	1,496.36	8.32	64.75	1,497.40	11.34	212.37
1,495.34	3.92	4.91	1,496.38	8.39	66.68	1,497.42	11.40	216.24
1,495.36	4.05	5.42	1,496.40	8.45	68.65	1,497.44	11.45	220.15
1,495.38	4.17	5.97	1,496.42	8.52	70.65	1,497.46	11.50	224.08
1,495.40	4.29	6.53	1,496.44	8.58	72.67	1,497.48	11.55	228.08
1,495.42	4.41	7.12	1,496.46	8.65	74.74	1,497.50	11.61	232.11
1,495.44	4.53	7.74	1,496.48	8.71	76.84	1,497.52	11.66	236.18
1,495.46	4.64	8.37	1,496.50	8.77	78.96	1,497.54	11.71	240.31
1,495.48	4.75	9.03	1,496.52	8.84	81.13	1,497.56	11.76	244.46
1,495.50	4.86	9.72	1,496.54	8.90	83.33	1,497.58	11.81	248.66
1,495.52	4.96	10.43	1,496.56	8.96	85.55	1,497.60	11.86	252.91
1,495.54	5.07	11.16	1,496.58	9.02	87.83	1,497.62	11.91	257.20
1,495.56	5.17	11.93	1,496.60	9.08	90.13	1,497.64	11.96	261.52
1,495.58	5.27	12.72	1,496.62	9.15	92.45	1,497.66	12.01	265.91
1,495.60	5.37	13.52	1,496.64	9.21	94.83	1,497.68	12.07	270.33
1,495.62	5.46	14.36	1,496.66	9.27	97.23	1,497.70	12.12	274.79
1,495.64	5.56	15.23	1,496.68	9.33	99.67	1,497.72	12.17	279.31
1,495.66	5.65	16.11	1,496.70	9.39	102.15	1,497.74	12.22	283.86
1,495.68	5.74	17.03	1,496.72	9.45	104.66	1,497.76	12.27	288.44
1,495.70	5.83	17.97	1,496.74	9.51	107.20	1,497.78	12.32	293.10
1,495.72	5.92	18.93	1,496.76	9.57	109.79	1,497.80	12.37	297.78
1,495.74	6.01	19.93	1,496.78	9.63	112.40	1,497.82	12.42	302.50
1,495.76	6.09	20.95	1,496.80	9.68	115.05	1,497.84	12.47	307.29
1,495.78	6.18	21.98	1,496.82	9.74	117.75	1,497.86	12.51	312.12
1,495.80	6.26	23.06	1,496.84	9.80	120.47	1,497.88	12.56	316.97
1,495.82	6.35	24.16	1,496.86	9.86	123.23	1,497.90	12.61	321.90
1,495.84	6.43	25.28	1,496.88	9.92	126.04	1,497.92	12.66	326.86
1,495.86	6.51	26.44	1,496.90	9.97	128.87	1,497.94	12.71	331.85
1,495.88	6.59	27.62	1,496.92	10.03	131.74	1,497.96	12.76	336.91
1,495.90	6.67	28.83	1,496.94	10.09	134.66	1,497.98	12.81	342.01
1,495.92	6.75	30.07	1,496.96	10.15	137.61	1,498.00	12.86	347.14
1,495.94	6.83	31.34	1,496.98	10.20	140.59			
1,495.96	6.91	32.62	1,497.00	10.26	143.62			
1,495.98	6.98	33.95	1,497.02	10.31	146.69			
1,496.00	7.06	35.30	1,497.04	10.37	149.78			
1,496.02	7.13	36.68	1,497.06	10.43	152.93			

Stage-Area-Storage for Reach 5R: Expan Area Ditch

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
1,495.00	0.0	0	1,497.60	21.3	12,281
1,495.05	0.2	90	1,497.65	22.0	12,669
1,495.10	0.3	185	1,497.70	22.7	13,064
1,495.15	0.5	285	1,497.75	23.4	13,464
1,495.20	0.7	392	1,497.80	24.1	13,870
1,495.25	0.9	504	1,497.85	24.8	14,282
1,495.30	1.1	622	1,497.90	25.5	14,700
1,495.35	1.3	746	1,497.95	26.3	15,123
1,495.40	1.5	876	1,498.00	27.0	15,552
1,495.45	1.8	1,011			
1,495.50	2.0	1,152			
1,495.55	2.3	1,299			
1,495.60	2.5	1,452			
1,495.65	2.8	1,610			
1,495.70	3.1	1,774			
1,495.75	3.4	1,944			
1,495.80	3.7	2,120			
1,495.85	4.0	2,301			
1,495.90	4.3	2,488			
1,495.95	4.7	2,682			
1,496.00	5.0	2,880			
1,496.05	5.4	3,084			
1,496.10	5.7	3,295			
1,496.15	6.1	3,511			
1,496.20	6.5	3,732			
1,496.25	6.9	3,960			
1,496.30	7.3	4,194			
1,496.35	7.7	4,432			
1,496.40	8.1	4,677			
1,496.45	8.6	4,928			
1,496.50	9.0	5,184			
1,496.55	9.5	5,446			
1,496.60	9.9	5,714			
1,496.65	10.4	5,988			
1,496.70	10.9	6,267			
1,496.75	11.4	6,552			
1,496.80	11.9	6,843			
1,496.85	12.4	7,140			
1,496.90	12.9	7,442			
1,496.95	13.5	7,750			
1,497.00	14.0	8,064			
1,497.05	14.6	8,384			
1,497.10	15.1	8,709			
1,497.15	15.7	9,041			
1,497.20	16.3	9,378			
1,497.25	16.9	9,720			
1,497.30	17.5	10,069			
1,497.35	18.1	10,423			
1,497.40	18.7	10,783			
1,497.45	19.4	11,149			
1,497.50	20.0	11,520			
1,497.55	20.7	11,897			

Summary for Reach 16R: Road Ditch

Inflow Area = 29.013 ac, 9.48% Impervious, Inflow Depth > 1.96" for 1-yr event
 Inflow = 2.29 cfs @ 16.32 hrs, Volume= 4.743 af
 Outflow = 2.29 cfs @ 16.32 hrs, Volume= 4.742 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs
 Max. Velocity= 2.36 fps, Min. Travel Time= 0.5 min
 Avg. Velocity = 1.13 fps, Avg. Travel Time= 1.0 min

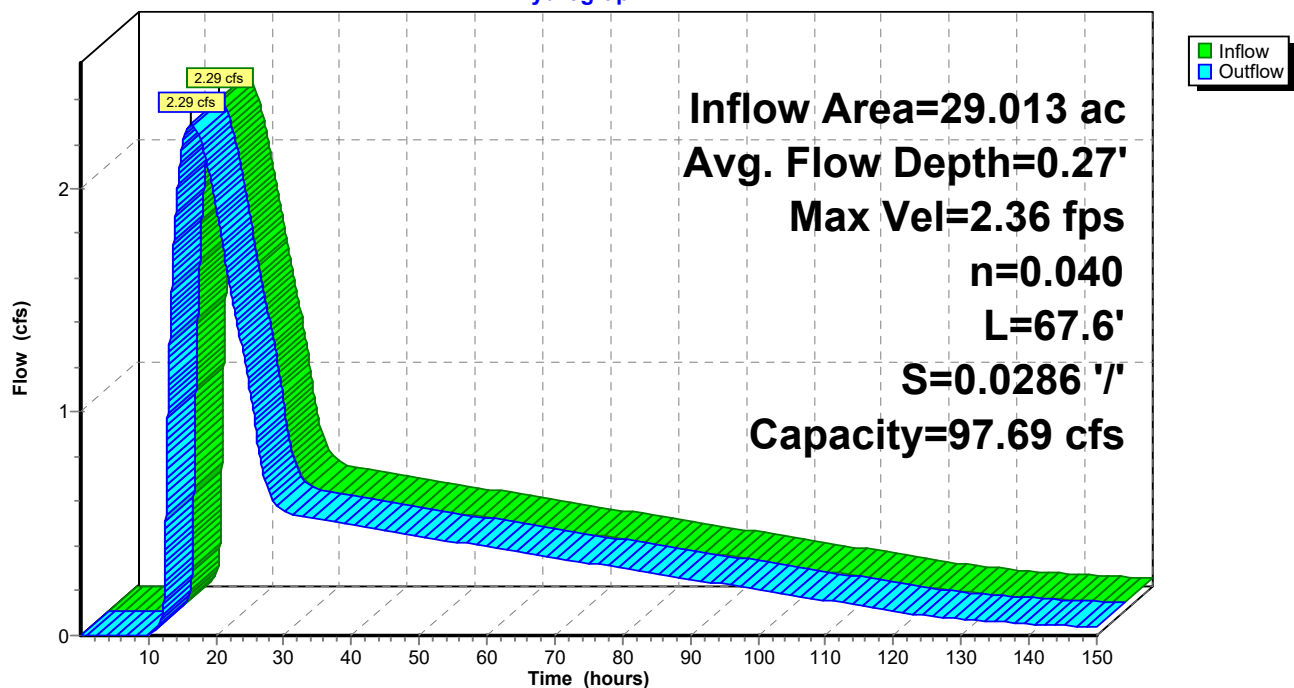
Peak Storage= 66 cf @ 16.32 hrs
 Average Depth at Peak Storage= 0.27'
 Bank-Full Depth= 2.00' Flow Area= 14.0 sf, Capacity= 97.69 cfs

3.00' x 2.00' deep channel, n= 0.040
 Side Slope Z-value= 2.0 ' / ' Top Width= 11.00'
 Length= 67.6' Slope= 0.0286 ' / '
 Inlet Invert= 1,449.79', Outlet Invert= 1,447.86'

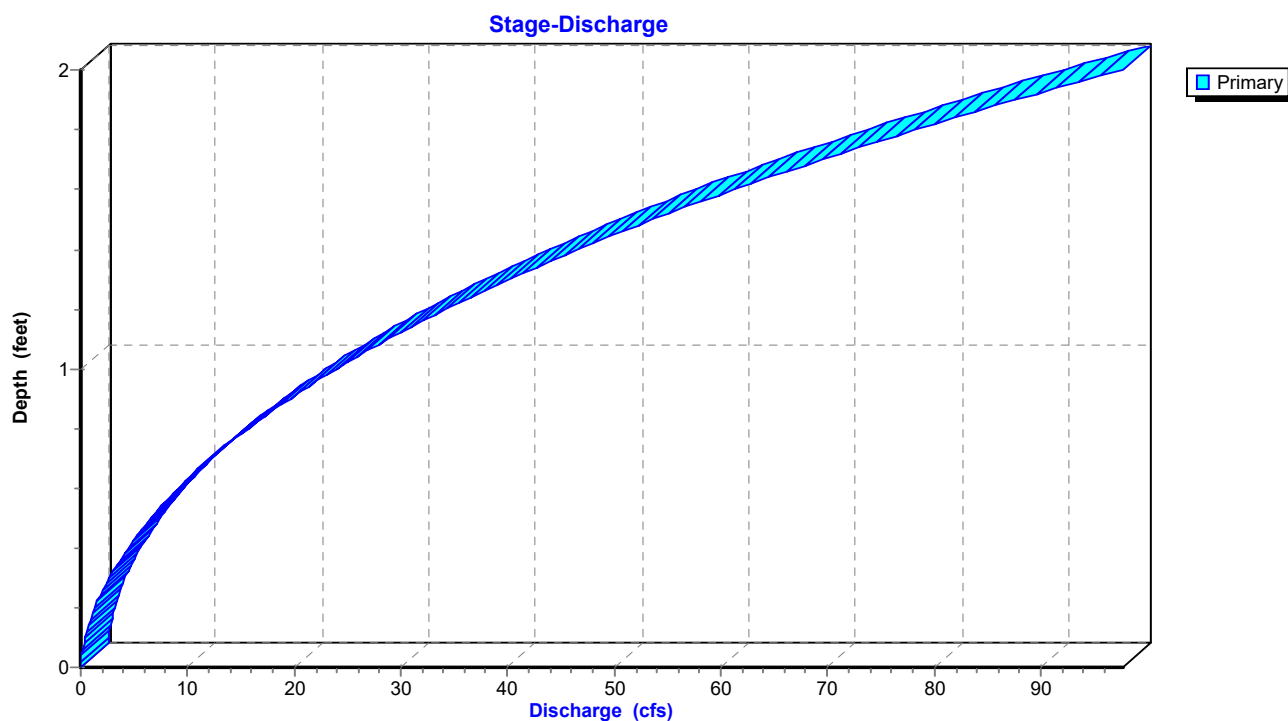


Reach 16R: Road Ditch

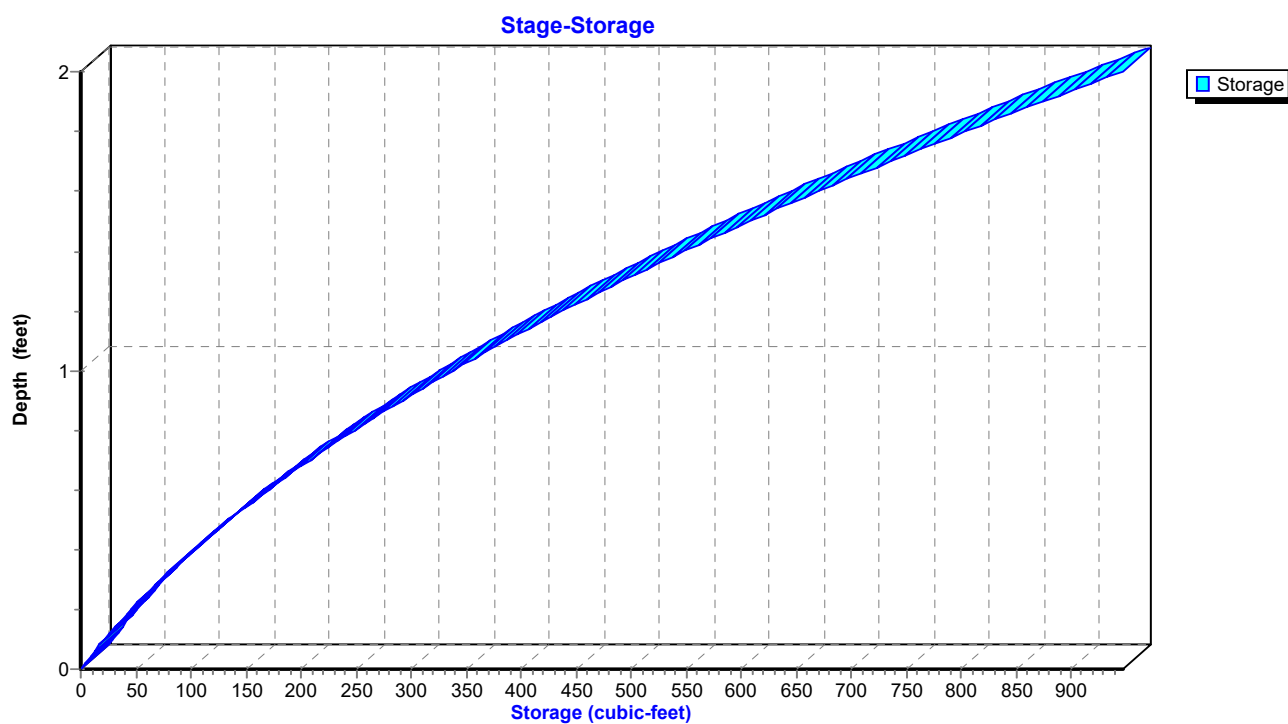
Hydrograph



Reach 16R: Road Ditch



Reach 16R: Road Ditch



Riato V6 Final

Prepared by JMT

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Type II 24-hr 1-yr Rainfall=2.63"

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Hydrograph for Reach 16R: Road Ditch

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
0.05	0.00	0	1,449.79	0.00
5.05	0.00	0	1,449.79	0.00
10.05	0.00	1	1,449.79	0.00
15.05	2.19	64	1,450.06	2.18
20.05	1.91	58	1,450.04	1.91
25.05	1.09	40	1,449.97	1.09
30.05	0.56	26	1,449.91	0.56
35.05	0.52	25	1,449.90	0.52
40.05	0.49	24	1,449.90	0.49
45.05	0.47	23	1,449.90	0.47
50.05	0.44	23	1,449.89	0.44
55.05	0.42	22	1,449.89	0.42
60.05	0.40	21	1,449.89	0.40
65.05	0.37	20	1,449.88	0.37
70.05	0.35	19	1,449.88	0.35
75.05	0.32	19	1,449.88	0.32
80.05	0.30	18	1,449.87	0.30
85.05	0.28	17	1,449.87	0.28
90.05	0.25	16	1,449.86	0.25
95.05	0.23	15	1,449.86	0.23
100.05	0.20	14	1,449.86	0.20
105.05	0.18	13	1,449.85	0.18
110.05	0.16	12	1,449.85	0.16
115.05	0.13	11	1,449.84	0.13
120.05	0.11	9	1,449.83	0.11
125.05	0.09	8	1,449.83	0.09
130.05	0.07	7	1,449.83	0.07
135.05	0.06	6	1,449.82	0.06
140.05	0.05	6	1,449.82	0.05
145.05	0.04	5	1,449.82	0.04

Stage-Discharge for Reach 16R: Road Ditch

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)	Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
1,449.79	0.00	0.00	1,450.83	4.90	25.91
1,449.81	0.46	0.03	1,450.85	4.95	26.89
1,449.83	0.72	0.09	1,450.87	5.00	27.89
1,449.85	0.93	0.17	1,450.89	5.05	28.90
1,449.87	1.12	0.28	1,450.91	5.10	29.94
1,449.89	1.29	0.41	1,450.93	5.15	31.00
1,449.91	1.44	0.56	1,450.95	5.20	32.08
1,449.93	1.58	0.73	1,450.97	5.25	33.18
1,449.95	1.72	0.91	1,450.99	5.29	34.31
1,449.97	1.84	1.11	1,451.01	5.34	35.45
1,449.99	1.96	1.33	1,451.03	5.39	36.61
1,450.01	2.07	1.57	1,451.05	5.43	37.80
1,450.03	2.18	1.82	1,451.07	5.48	39.00
1,450.05	2.29	2.09	1,451.09	5.53	40.23
1,450.07	2.39	2.38	1,451.11	5.57	41.48
1,450.09	2.48	2.68	1,451.13	5.62	42.75
1,450.11	2.58	3.00	1,451.15	5.66	44.04
1,450.13	2.67	3.34	1,451.17	5.71	45.36
1,450.15	2.75	3.69	1,451.19	5.75	46.69
1,450.17	2.84	4.06	1,451.21	5.79	48.05
1,450.19	2.92	4.44	1,451.23	5.84	49.43
1,450.21	3.00	4.84	1,451.25	5.88	50.84
1,450.23	3.08	5.26	1,451.27	5.93	52.26
1,450.25	3.16	5.69	1,451.29	5.97	53.71
1,450.27	3.23	6.14	1,451.31	6.01	55.18
1,450.29	3.30	6.61	1,451.33	6.05	56.68
1,450.31	3.38	7.09	1,451.35	6.10	58.20
1,450.33	3.45	7.59	1,451.37	6.14	59.74
1,450.35	3.52	8.11	1,451.39	6.18	61.30
1,450.37	3.58	8.65	1,451.41	6.22	62.89
1,450.39	3.65	9.20	1,451.43	6.26	64.50
1,450.41	3.72	9.77	1,451.45	6.30	66.14
1,450.43	3.78	10.35	1,451.47	6.35	67.80
1,450.45	3.84	10.96	1,451.49	6.39	69.48
1,450.47	3.91	11.58	1,451.51	6.43	71.19
1,450.49	3.97	12.22	1,451.53	6.47	72.92
1,450.51	4.03	12.88	1,451.55	6.51	74.68
1,450.53	4.09	13.55	1,451.57	6.55	76.46
1,450.55	4.15	14.24	1,451.59	6.59	78.26
1,450.57	4.20	14.95	1,451.61	6.63	80.09
1,450.59	4.26	15.68	1,451.63	6.67	81.95
1,450.61	4.32	16.43	1,451.65	6.71	83.83
1,450.63	4.37	17.20	1,451.67	6.75	85.73
1,450.65	4.43	17.98	1,451.69	6.78	87.66
1,450.67	4.49	18.79	1,451.71	6.82	89.62
1,450.69	4.54	19.61	1,451.73	6.86	91.60
1,450.71	4.59	20.45	1,451.75	6.90	93.60
1,450.73	4.65	21.31	1,451.77	6.94	95.64
1,450.75	4.70	22.19	1,451.79	6.98	97.69
1,450.77	4.75	23.09			
1,450.79	4.80	24.01			
1,450.81	4.85	24.95			

Stage-Area-Storage for Reach 16R: Road Ditch

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
1,449.79	0.0	0	1,450.83	5.3	357
1,449.81	0.1	4	1,450.85	5.4	367
1,449.83	0.1	8	1,450.87	5.6	377
1,449.85	0.2	13	1,450.89	5.7	387
1,449.87	0.3	17	1,450.91	5.9	397
1,449.89	0.3	22	1,450.93	6.0	407
1,449.91	0.4	26	1,450.95	6.2	417
1,449.93	0.5	31	1,450.97	6.3	428
1,449.95	0.5	36	1,450.99	6.5	438
1,449.97	0.6	41	1,451.01	6.6	449
1,449.99	0.7	46	1,451.03	6.8	459
1,450.01	0.8	51	1,451.05	7.0	470
1,450.03	0.8	56	1,451.07	7.1	481
1,450.05	0.9	62	1,451.09	7.3	492
1,450.07	1.0	67	1,451.11	7.4	503
1,450.09	1.1	73	1,451.13	7.6	515
1,450.11	1.2	79	1,451.15	7.8	526
1,450.13	1.3	85	1,451.17	7.9	537
1,450.15	1.3	91	1,451.19	8.1	549
1,450.17	1.4	97	1,451.21	8.3	561
1,450.19	1.5	103	1,451.23	8.5	572
1,450.21	1.6	109	1,451.25	8.6	584
1,450.23	1.7	115	1,451.27	8.8	596
1,450.25	1.8	122	1,451.29	9.0	608
1,450.27	1.9	128	1,451.31	9.2	621
1,450.29	2.0	135	1,451.33	9.4	633
1,450.31	2.1	142	1,451.35	9.5	645
1,450.33	2.2	149	1,451.37	9.7	658
1,450.35	2.3	156	1,451.39	9.9	671
1,450.37	2.4	163	1,451.41	10.1	683
1,450.39	2.5	170	1,451.43	10.3	696
1,450.41	2.6	178	1,451.45	10.5	709
1,450.43	2.7	185	1,451.47	10.7	722
1,450.45	2.9	193	1,451.49	10.9	735
1,450.47	3.0	200	1,451.51	11.1	749
1,450.49	3.1	208	1,451.53	11.3	762
1,450.51	3.2	216	1,451.55	11.5	776
1,450.53	3.3	224	1,451.57	11.7	789
1,450.55	3.4	232	1,451.59	11.9	803
1,450.57	3.6	240	1,451.61	12.1	817
1,450.59	3.7	249	1,451.63	12.3	831
1,450.61	3.8	257	1,451.65	12.5	845
1,450.63	3.9	266	1,451.67	12.7	859
1,450.65	4.1	274	1,451.69	12.9	873
1,450.67	4.2	283	1,451.71	13.1	888
1,450.69	4.3	292	1,451.73	13.3	902
1,450.71	4.5	301	1,451.75	13.6	917
1,450.73	4.6	310	1,451.77	13.8	932
1,450.75	4.7	319	1,451.79	14.0	946
1,450.77	4.9	329			
1,450.79	5.0	338			
1,450.81	5.1	348			

Summary for Reach 29R: Spillway

Inflow Area = 2.580 ac, 0.00% Impervious, Inflow Depth = 0.82" for 1-yr event
 Inflow = 1.57 cfs @ 12.33 hrs, Volume= 0.177 af
 Outflow = 1.56 cfs @ 12.34 hrs, Volume= 0.177 af, Atten= 0%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Max. Velocity= 4.49 fps, Min. Travel Time= 0.8 min

Avg. Velocity = 1.77 fps, Avg. Travel Time= 2.0 min

Peak Storage= 73 cf @ 12.34 hrs

Average Depth at Peak Storage= 0.11'

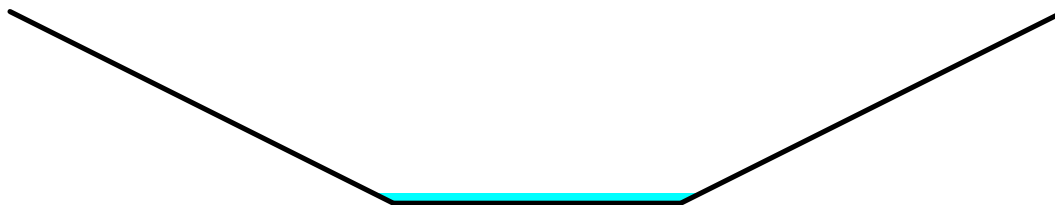
Bank-Full Depth= 2.00' Flow Area= 14.0 sf, Capacity= 323.65 cfs

3.00' x 2.00' deep channel, n= 0.044

Side Slope Z-value= 2.0 '/' Top Width= 11.00'

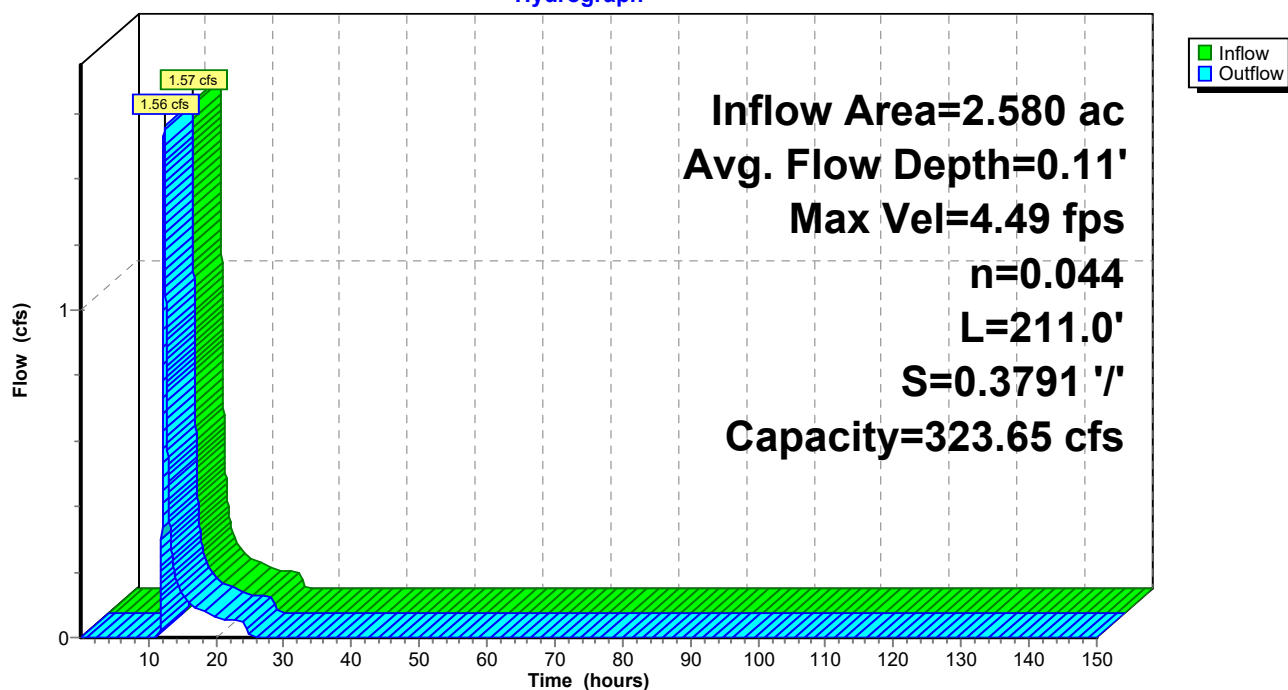
Length= 211.0' Slope= 0.3791 '/'

Inlet Invert= 1,550.00', Outlet Invert= 1,470.00'



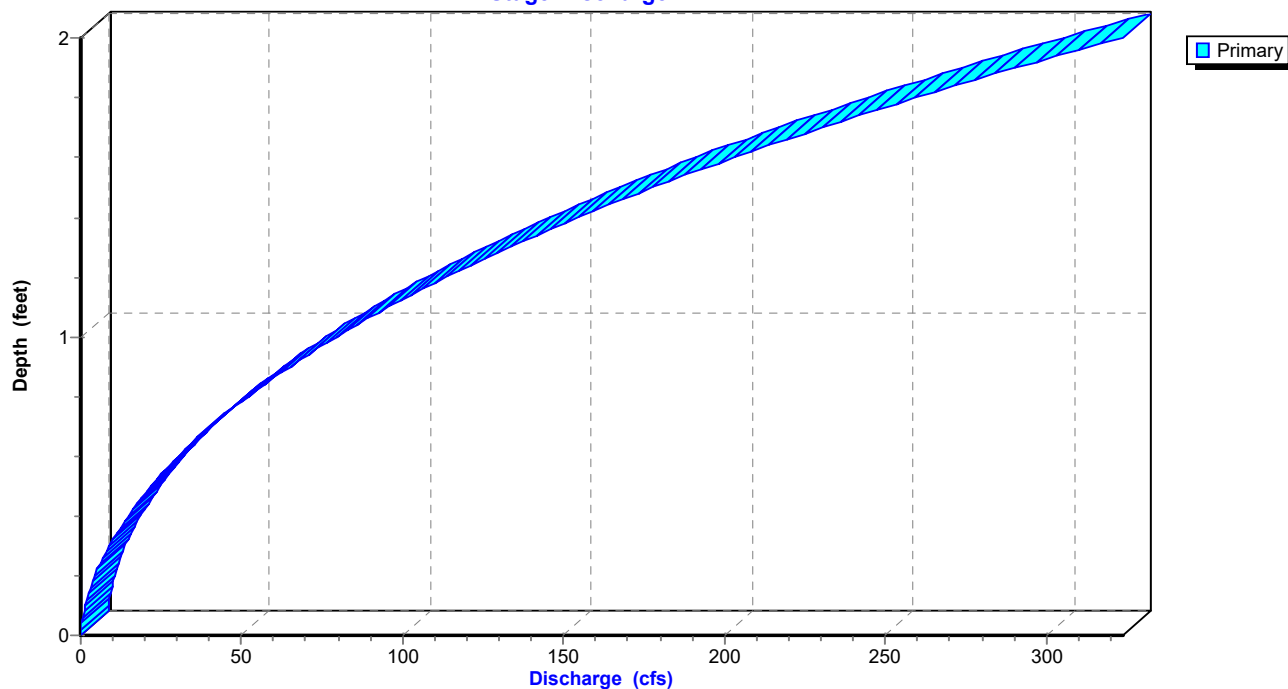
Reach 29R: Spillway

Hydrograph



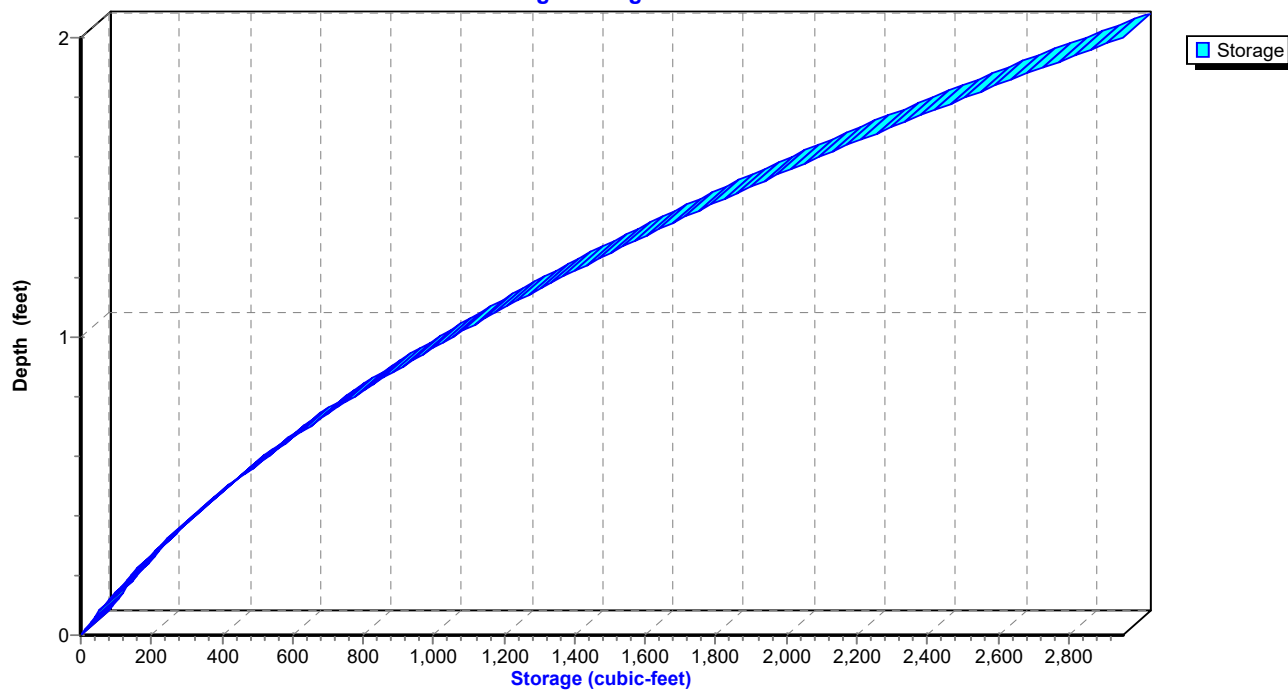
Reach 29R: Spillway

Stage-Discharge



Reach 29R: Spillway

Stage-Storage



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Type II 24-hr 1-yr Rainfall=2.63"

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Hydrograph for Reach 29R: Spillway

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
0.05	0.00	0	1,550.00	0.00
5.05	0.00	0	1,550.00	0.00
10.05	0.00	0	1,550.00	0.00
15.05	0.13	16	1,550.02	0.13
20.05	0.06	9	1,550.01	0.06
25.05	0.00	1	1,550.00	0.00
30.05	0.00	0	1,550.00	0.00
35.05	0.00	0	1,550.00	0.00
40.05	0.00	0	1,550.00	0.00
45.05	0.00	0	1,550.00	0.00
50.05	0.00	0	1,550.00	0.00
55.05	0.00	0	1,550.00	0.00
60.05	0.00	0	1,550.00	0.00
65.05	0.00	0	1,550.00	0.00
70.05	0.00	0	1,550.00	0.00
75.05	0.00	0	1,550.00	0.00
80.05	0.00	0	1,550.00	0.00
85.05	0.00	0	1,550.00	0.00
90.05	0.00	0	1,550.00	0.00
95.05	0.00	0	1,550.00	0.00
100.05	0.00	0	1,550.00	0.00
105.05	0.00	0	1,550.00	0.00
110.05	0.00	0	1,550.00	0.00
115.05	0.00	0	1,550.00	0.00
120.05	0.00	0	1,550.00	0.00
125.05	0.00	0	1,550.00	0.00
130.05	0.00	0	1,550.00	0.00
135.05	0.00	0	1,550.00	0.00
140.05	0.00	0	1,550.00	0.00
145.05	0.00	0	1,550.00	0.00

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Type II 24-hr 1-yr Rainfall=2.63"

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Stage-Discharge for Reach 29R: Spillway

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)	Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
1,550.00	0.00	0.00	1,551.04	16.25	85.83
1,550.02	1.52	0.09	1,551.06	16.41	89.07
1,550.04	2.38	0.29	1,551.08	16.58	92.38
1,550.06	3.09	0.58	1,551.10	16.74	95.76
1,550.08	3.71	0.94	1,551.12	16.90	99.20
1,550.10	4.26	1.36	1,551.14	17.06	102.71
1,550.12	4.77	1.86	1,551.16	17.22	106.29
1,550.14	5.24	2.41	1,551.18	17.38	109.93
1,550.16	5.69	3.02	1,551.20	17.54	113.65
1,550.18	6.10	3.69	1,551.22	17.69	117.43
1,550.20	6.50	4.42	1,551.24	17.85	121.29
1,550.22	6.87	5.20	1,551.26	18.00	125.21
1,550.24	7.23	6.04	1,551.28	18.16	129.21
1,550.26	7.58	6.93	1,551.30	18.31	133.27
1,550.28	7.91	7.88	1,551.32	18.46	137.41
1,550.30	8.23	8.88	1,551.34	18.61	141.62
1,550.32	8.53	9.94	1,551.36	18.76	145.91
1,550.34	8.83	11.05	1,551.38	18.90	150.26
1,550.36	9.12	12.22	1,551.40	19.05	154.69
1,550.38	9.40	13.43	1,551.42	19.20	159.19
1,550.40	9.68	14.71	1,551.44	19.34	163.77
1,550.42	9.94	16.04	1,551.46	19.49	168.42
1,550.44	10.20	17.42	1,551.48	19.63	173.14
1,550.46	10.46	18.86	1,551.50	19.77	177.94
1,550.48	10.70	20.35	1,551.52	19.91	182.82
1,550.50	10.95	21.90	1,551.54	20.05	187.77
1,550.52	11.19	23.50	1,551.56	20.19	192.80
1,550.54	11.42	25.16	1,551.58	20.33	197.91
1,550.56	11.65	26.87	1,551.60	20.47	203.09
1,550.58	11.87	28.64	1,551.62	20.61	208.35
1,550.60	12.09	30.47	1,551.64	20.75	213.69
1,550.62	12.31	32.36	1,551.66	20.89	219.11
1,550.64	12.52	34.30	1,551.68	21.02	224.61
1,550.66	12.73	36.30	1,551.70	21.16	230.18
1,550.68	12.94	38.36	1,551.72	21.29	235.84
1,550.70	13.14	40.48	1,551.74	21.43	241.58
1,550.72	13.34	42.66	1,551.76	21.56	247.40
1,550.74	13.54	44.89	1,551.78	21.69	253.29
1,550.76	13.74	47.19	1,551.80	21.82	259.27
1,550.78	13.93	49.54	1,551.82	21.96	265.34
1,550.80	14.12	51.96	1,551.84	22.09	271.48
1,550.82	14.31	54.44	1,551.86	22.22	277.71
1,550.84	14.49	56.98	1,551.88	22.35	284.02
1,550.86	14.68	59.58	1,551.90	22.48	290.41
1,550.88	14.86	62.24	1,551.92	22.61	296.89
1,550.90	15.04	64.97	1,551.94	22.74	303.45
1,550.92	15.22	67.75	1,551.96	22.86	310.10
1,550.94	15.39	70.61	1,551.98	22.99	316.83
1,550.96	15.57	73.52	1,552.00	23.12	323.65
1,550.98	15.74	76.50			
1,551.00	15.91	79.55			
1,551.02	16.08	82.66			

Stage-Area-Storage for Reach 29R: Spillway

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
1,550.00	0.0	0	1,551.04	5.3	1,115
1,550.02	0.1	13	1,551.06	5.4	1,145
1,550.04	0.1	26	1,551.08	5.6	1,176
1,550.06	0.2	39	1,551.10	5.7	1,207
1,550.08	0.3	53	1,551.12	5.9	1,238
1,550.10	0.3	68	1,551.14	6.0	1,270
1,550.12	0.4	82	1,551.16	6.2	1,302
1,550.14	0.5	97	1,551.18	6.3	1,335
1,550.16	0.5	112	1,551.20	6.5	1,367
1,550.18	0.6	128	1,551.22	6.6	1,400
1,550.20	0.7	143	1,551.24	6.8	1,434
1,550.22	0.8	160	1,551.26	7.0	1,468
1,550.24	0.8	176	1,551.28	7.1	1,502
1,550.26	0.9	193	1,551.30	7.3	1,536
1,550.28	1.0	210	1,551.32	7.4	1,571
1,550.30	1.1	228	1,551.34	7.6	1,606
1,550.32	1.2	246	1,551.36	7.8	1,641
1,550.34	1.3	264	1,551.38	7.9	1,677
1,550.36	1.3	283	1,551.40	8.1	1,713
1,550.38	1.4	301	1,551.42	8.3	1,750
1,550.40	1.5	321	1,551.44	8.5	1,787
1,550.42	1.6	340	1,551.46	8.6	1,824
1,550.44	1.7	360	1,551.48	8.8	1,861
1,550.46	1.8	380	1,551.50	9.0	1,899
1,550.48	1.9	401	1,551.52	9.2	1,937
1,550.50	2.0	422	1,551.54	9.4	1,976
1,550.52	2.1	443	1,551.56	9.5	2,014
1,550.54	2.2	465	1,551.58	9.7	2,054
1,550.56	2.3	487	1,551.60	9.9	2,093
1,550.58	2.4	509	1,551.62	10.1	2,133
1,550.60	2.5	532	1,551.64	10.3	2,173
1,550.62	2.6	555	1,551.66	10.5	2,214
1,550.64	2.7	578	1,551.68	10.7	2,254
1,550.66	2.9	602	1,551.70	10.9	2,296
1,550.68	3.0	626	1,551.72	11.1	2,337
1,550.70	3.1	650	1,551.74	11.3	2,379
1,550.72	3.2	675	1,551.76	11.5	2,421
1,550.74	3.3	700	1,551.78	11.7	2,464
1,550.76	3.4	725	1,551.80	11.9	2,507
1,550.78	3.6	750	1,551.82	12.1	2,550
1,550.80	3.7	776	1,551.84	12.3	2,593
1,550.82	3.8	803	1,551.86	12.5	2,637
1,550.84	3.9	829	1,551.88	12.7	2,682
1,550.86	4.1	856	1,551.90	12.9	2,726
1,550.88	4.2	884	1,551.92	13.1	2,771
1,550.90	4.3	912	1,551.94	13.3	2,816
1,550.92	4.5	940	1,551.96	13.6	2,862
1,550.94	4.6	968	1,551.98	13.8	2,908
1,550.96	4.7	997	1,552.00	14.0	2,954
1,550.98	4.9	1,026			
1,551.00	5.0	1,055			
1,551.02	5.1	1,085			

Summary for Reach 33R: Reclaim Ditch

Inflow Area = 6.618 ac, 0.00% Impervious, Inflow Depth = 0.82" for 1-yr event
 Inflow = 3.31 cfs @ 12.40 hrs, Volume= 0.454 af
 Outflow = 3.30 cfs @ 12.42 hrs, Volume= 0.454 af, Atten= 0%, Lag= 1.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Max. Velocity= 4.62 fps, Min. Travel Time= 1.0 min

Avg. Velocity= 1.78 fps, Avg. Travel Time= 2.6 min

Peak Storage= 196 cf @ 12.42 hrs

Average Depth at Peak Storage= 0.28'

Bank-Full Depth= 1.00' Flow Area= 4.0 sf, Capacity= 36.84 cfs

2.00' x 1.00' deep channel, n= 0.040

Side Slope Z-value= 2.0 '/' Top Width= 6.00'

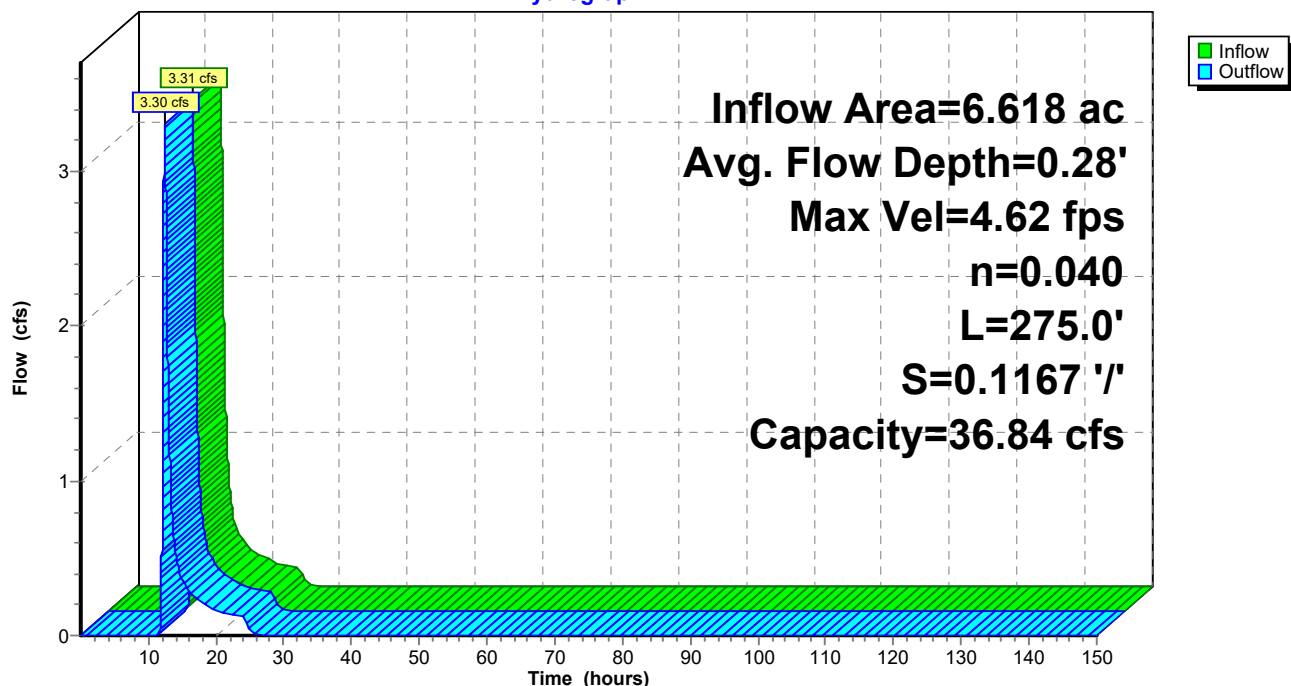
Length= 275.0' Slope= 0.1167 '/'

Inlet Invert= 1,480.00', Outlet Invert= 1,447.90'

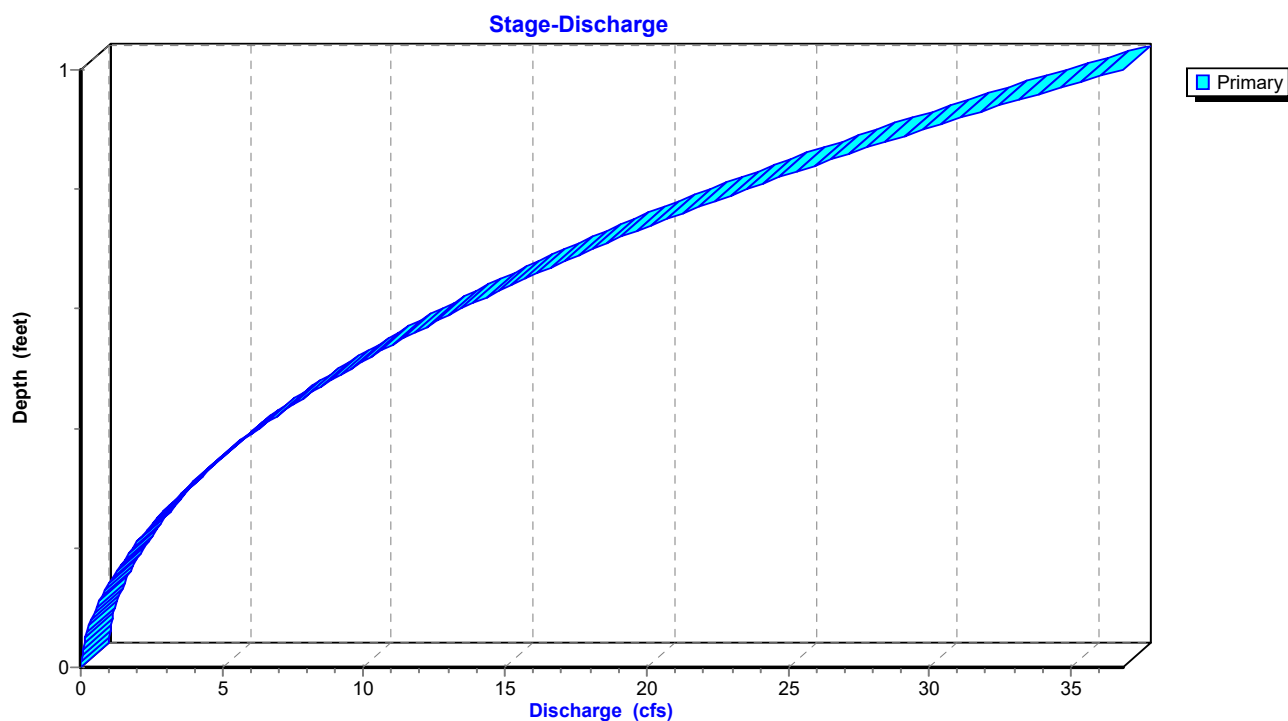


Reach 33R: Reclaim Ditch

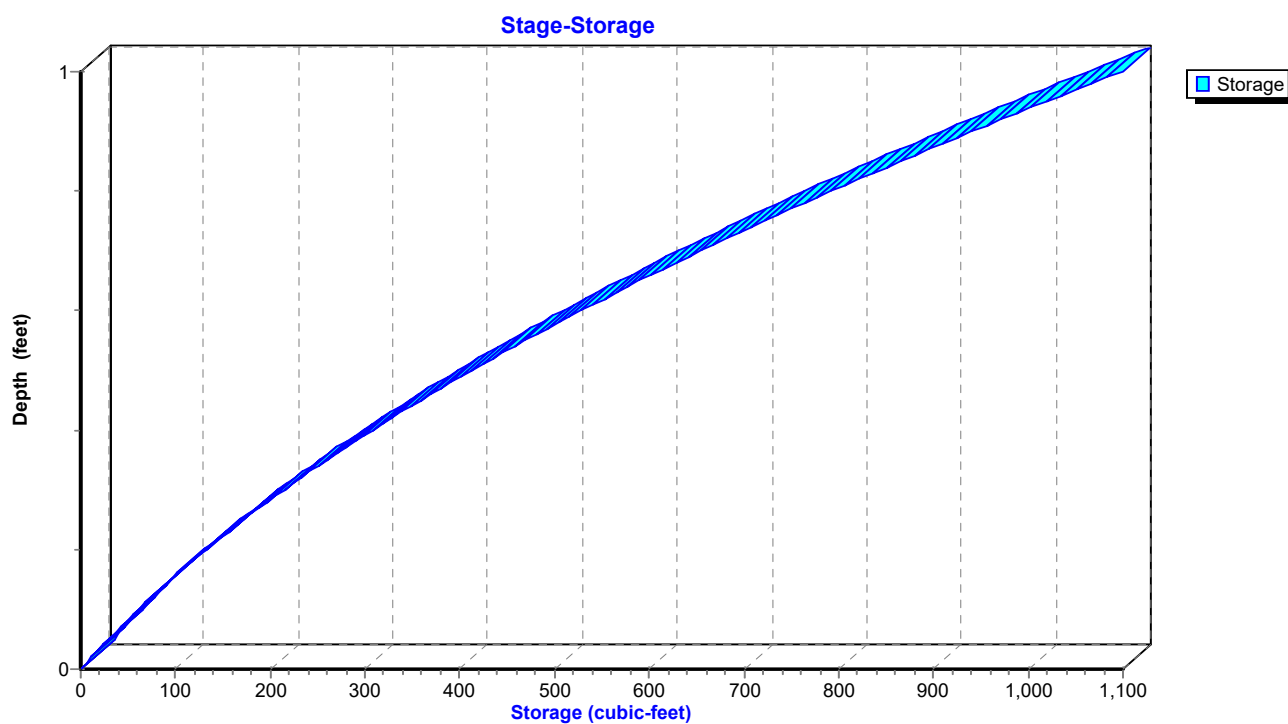
Hydrograph



Reach 33R: Reclaim Ditch



Reach 33R: Reclaim Ditch



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Hydrograph for Reach 33R: Reclaim Ditch

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
0.05	0.00	0	1,480.00	0.00
5.05	0.00	0	1,480.00	0.00
10.05	0.00	0	1,480.00	0.00
15.05	0.35	45	1,480.08	0.35
20.05	0.16	27	1,480.05	0.16
25.05	0.02	8	1,480.01	0.02
30.05	0.00	0	1,480.00	0.00
35.05	0.00	0	1,480.00	0.00
40.05	0.00	0	1,480.00	0.00
45.05	0.00	0	1,480.00	0.00
50.05	0.00	0	1,480.00	0.00
55.05	0.00	0	1,480.00	0.00
60.05	0.00	0	1,480.00	0.00
65.05	0.00	0	1,480.00	0.00
70.05	0.00	0	1,480.00	0.00
75.05	0.00	0	1,480.00	0.00
80.05	0.00	0	1,480.00	0.00
85.05	0.00	0	1,480.00	0.00
90.05	0.00	0	1,480.00	0.00
95.05	0.00	0	1,480.00	0.00
100.05	0.00	0	1,480.00	0.00
105.05	0.00	0	1,480.00	0.00
110.05	0.00	0	1,480.00	0.00
115.05	0.00	0	1,480.00	0.00
120.05	0.00	0	1,480.00	0.00
125.05	0.00	0	1,480.00	0.00
130.05	0.00	0	1,480.00	0.00
135.05	0.00	0	1,480.00	0.00
140.05	0.00	0	1,480.00	0.00
145.05	0.00	0	1,480.00	0.00

Stage-Discharge for Reach 33R: Reclaim Ditch

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)	Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
1,480.00	0.00	0.00	1,480.52	6.49	10.26
1,480.01	0.58	0.01	1,480.53	6.55	10.63
1,480.02	0.92	0.04	1,480.54	6.62	11.01
1,480.03	1.20	0.07	1,480.55	6.69	11.40
1,480.04	1.44	0.12	1,480.56	6.75	11.79
1,480.05	1.66	0.17	1,480.57	6.81	12.20
1,480.06	1.86	0.24	1,480.58	6.88	12.61
1,480.07	2.05	0.31	1,480.59	6.94	13.02
1,480.08	2.22	0.38	1,480.60	7.00	13.45
1,480.09	2.39	0.47	1,480.61	7.07	13.88
1,480.10	2.55	0.56	1,480.62	7.13	14.32
1,480.11	2.70	0.66	1,480.63	7.19	14.77
1,480.12	2.84	0.76	1,480.64	7.25	15.22
1,480.13	2.98	0.88	1,480.65	7.31	15.68
1,480.14	3.11	0.99	1,480.66	7.37	16.15
1,480.15	3.24	1.12	1,480.67	7.43	16.63
1,480.16	3.37	1.25	1,480.68	7.49	17.11
1,480.17	3.49	1.39	1,480.69	7.55	17.60
1,480.18	3.61	1.53	1,480.70	7.61	18.10
1,480.19	3.72	1.68	1,480.71	7.66	18.61
1,480.20	3.83	1.84	1,480.72	7.72	19.12
1,480.21	3.94	2.00	1,480.73	7.78	19.65
1,480.22	4.04	2.17	1,480.74	7.84	20.18
1,480.23	4.15	2.35	1,480.75	7.89	20.72
1,480.24	4.25	2.53	1,480.76	7.95	21.26
1,480.25	4.35	2.72	1,480.77	8.00	21.82
1,480.26	4.44	2.91	1,480.78	8.06	22.38
1,480.27	4.54	3.11	1,480.79	8.11	22.95
1,480.28	4.63	3.32	1,480.80	8.17	23.53
1,480.29	4.72	3.53	1,480.81	8.22	24.11
1,480.30	4.81	3.75	1,480.82	8.28	24.71
1,480.31	4.90	3.98	1,480.83	8.33	25.31
1,480.32	4.99	4.21	1,480.84	8.39	25.92
1,480.33	5.07	4.45	1,480.85	8.44	26.54
1,480.34	5.15	4.70	1,480.86	8.49	27.17
1,480.35	5.24	4.95	1,480.87	8.54	27.80
1,480.36	5.32	5.21	1,480.88	8.60	28.45
1,480.37	5.40	5.47	1,480.89	8.65	29.10
1,480.38	5.48	5.74	1,480.90	8.70	29.76
1,480.39	5.56	6.02	1,480.91	8.75	30.43
1,480.40	5.63	6.31	1,480.92	8.80	31.11
1,480.41	5.71	6.60	1,480.93	8.86	31.79
1,480.42	5.78	6.90	1,480.94	8.91	32.49
1,480.43	5.86	7.20	1,480.95	8.96	33.19
1,480.44	5.93	7.51	1,480.96	9.01	33.90
1,480.45	6.00	7.83	1,480.97	9.06	34.62
1,480.46	6.07	8.16	1,480.98	9.11	35.35
1,480.47	6.14	8.49	1,480.99	9.16	36.09
1,480.48	6.21	8.83	1,481.00	9.21	36.84
1,480.49	6.28	9.18			
1,480.50	6.35	9.53			
1,480.51	6.42	9.89			

Stage-Area-Storage for Reach 33R: Reclaim Ditch

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
1,480.00	0.0	0	1,480.52	1.6	435
1,480.01	0.0	6	1,480.53	1.6	446
1,480.02	0.0	11	1,480.54	1.7	457
1,480.03	0.1	17	1,480.55	1.7	469
1,480.04	0.1	23	1,480.56	1.7	480
1,480.05	0.1	29	1,480.57	1.8	492
1,480.06	0.1	35	1,480.58	1.8	504
1,480.07	0.1	41	1,480.59	1.9	516
1,480.08	0.2	48	1,480.60	1.9	528
1,480.09	0.2	54	1,480.61	2.0	540
1,480.10	0.2	61	1,480.62	2.0	552
1,480.11	0.2	67	1,480.63	2.1	565
1,480.12	0.3	74	1,480.64	2.1	577
1,480.13	0.3	81	1,480.65	2.1	590
1,480.14	0.3	88	1,480.66	2.2	603
1,480.15	0.3	95	1,480.67	2.2	615
1,480.16	0.4	102	1,480.68	2.3	628
1,480.17	0.4	109	1,480.69	2.3	641
1,480.18	0.4	117	1,480.70	2.4	655
1,480.19	0.5	124	1,480.71	2.4	668
1,480.20	0.5	132	1,480.72	2.5	681
1,480.21	0.5	140	1,480.73	2.5	695
1,480.22	0.5	148	1,480.74	2.6	708
1,480.23	0.6	156	1,480.75	2.6	722
1,480.24	0.6	164	1,480.76	2.7	736
1,480.25	0.6	172	1,480.77	2.7	750
1,480.26	0.7	180	1,480.78	2.8	764
1,480.27	0.7	189	1,480.79	2.8	778
1,480.28	0.7	197	1,480.80	2.9	792
1,480.29	0.7	206	1,480.81	2.9	806
1,480.30	0.8	215	1,480.82	3.0	821
1,480.31	0.8	223	1,480.83	3.0	835
1,480.32	0.8	232	1,480.84	3.1	850
1,480.33	0.9	241	1,480.85	3.1	865
1,480.34	0.9	251	1,480.86	3.2	880
1,480.35	0.9	260	1,480.87	3.3	895
1,480.36	1.0	269	1,480.88	3.3	910
1,480.37	1.0	279	1,480.89	3.4	925
1,480.38	1.0	288	1,480.90	3.4	941
1,480.39	1.1	298	1,480.91	3.5	956
1,480.40	1.1	308	1,480.92	3.5	972
1,480.41	1.2	318	1,480.93	3.6	987
1,480.42	1.2	328	1,480.94	3.6	1,003
1,480.43	1.2	338	1,480.95	3.7	1,019
1,480.44	1.3	348	1,480.96	3.8	1,035
1,480.45	1.3	359	1,480.97	3.8	1,051
1,480.46	1.3	369	1,480.98	3.9	1,067
1,480.47	1.4	380	1,480.99	3.9	1,084
1,480.48	1.4	391	1,481.00	4.0	1,100
1,480.49	1.5	402			
1,480.50	1.5	413			
1,480.51	1.5	424			

Summary for Reach 34R: Div Ditch 2

Inflow Area = 2.580 ac, 0.00% Impervious, Inflow Depth = 0.82" for 1-yr event
 Inflow = 1.57 cfs @ 12.32 hrs, Volume= 0.177 af
 Outflow = 1.57 cfs @ 12.33 hrs, Volume= 0.177 af, Atten= 0%, Lag= 0.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Max. Velocity= 4.03 fps, Min. Travel Time= 1.3 min

Avg. Velocity= 1.41 fps, Avg. Travel Time= 3.8 min

Peak Storage= 126 cf @ 12.33 hrs

Average Depth at Peak Storage= 0.18'

Bank-Full Depth= 1.00' Flow Area= 3.0 sf, Capacity= 30.48 cfs

2.00' x 1.00' deep channel, n= 0.035

Side Slope Z-value= 1.0 '/' Top Width= 4.00'

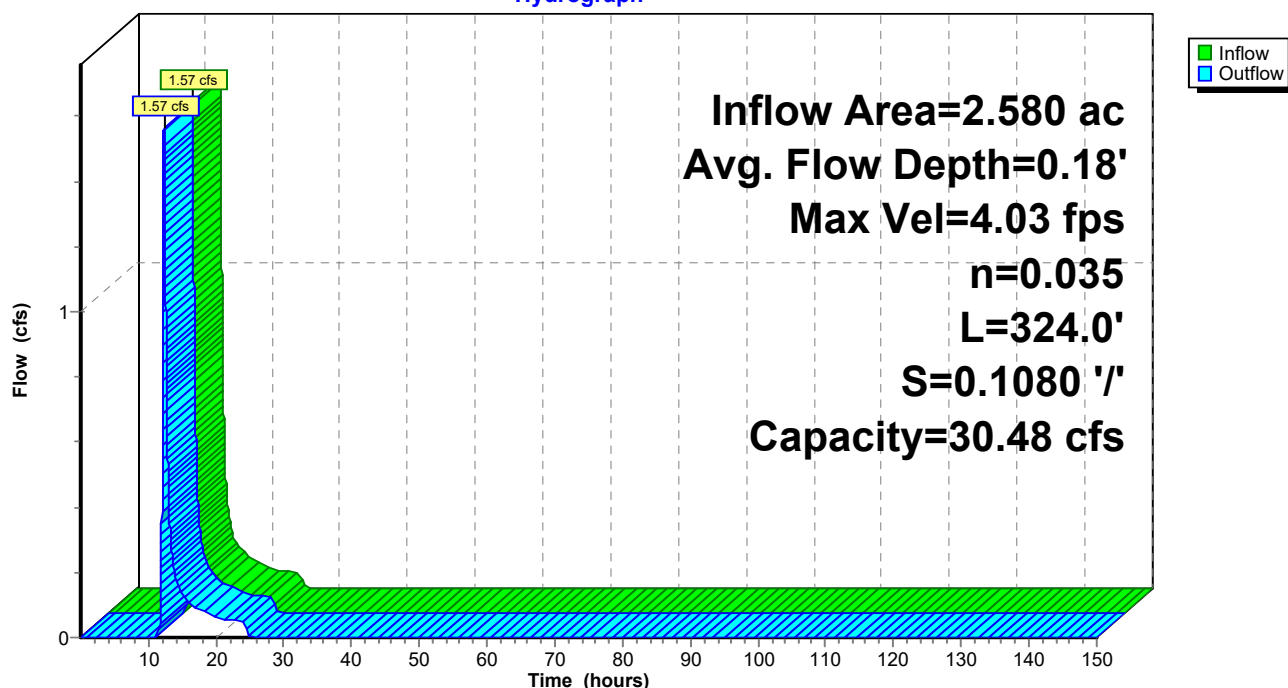
Length= 324.0' Slope= 0.1080 '/'

Inlet Invert= 1,585.00', Outlet Invert= 1,550.00'

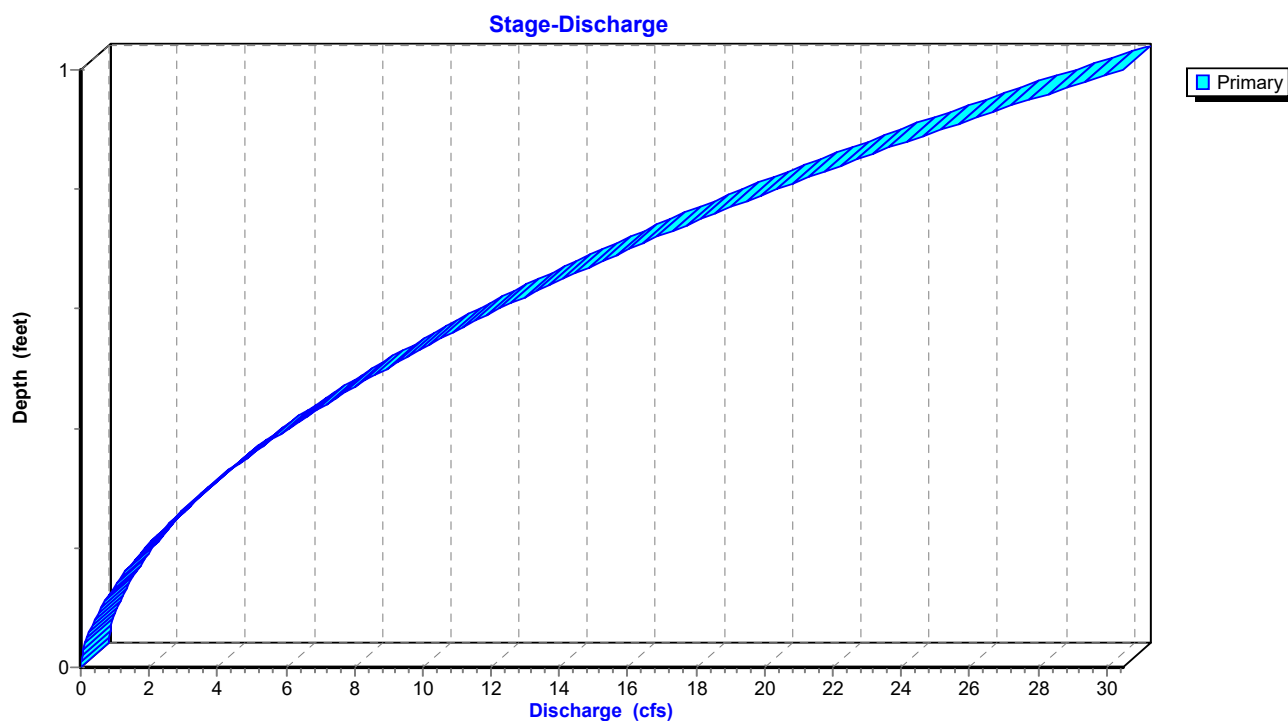


Reach 34R: Div Ditch 2

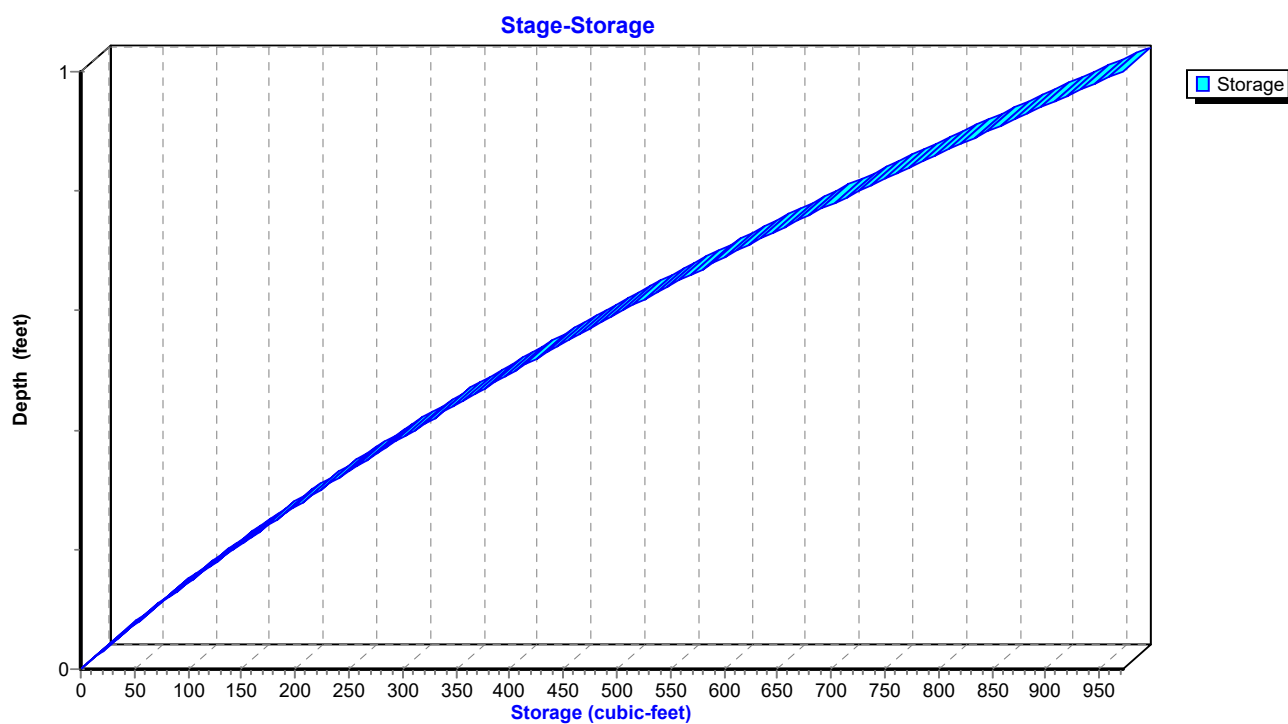
Hydrograph



Reach 34R: Div Ditch 2



Reach 34R: Div Ditch 2



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Hydrograph for Reach 34R: Div Ditch 2

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
0.05	0.00	0	1,585.00	0.00
5.05	0.00	0	1,585.00	0.00
10.05	0.00	0	1,585.00	0.00
15.05	0.13	27	1,585.04	0.13
20.05	0.06	16	1,585.03	0.06
25.05	0.00	2	1,585.00	0.00
30.05	0.00	0	1,585.00	0.00
35.05	0.00	0	1,585.00	0.00
40.05	0.00	0	1,585.00	0.00
45.05	0.00	0	1,585.00	0.00
50.05	0.00	0	1,585.00	0.00
55.05	0.00	0	1,585.00	0.00
60.05	0.00	0	1,585.00	0.00
65.05	0.00	0	1,585.00	0.00
70.05	0.00	0	1,585.00	0.00
75.05	0.00	0	1,585.00	0.00
80.05	0.00	0	1,585.00	0.00
85.05	0.00	0	1,585.00	0.00
90.05	0.00	0	1,585.00	0.00
95.05	0.00	0	1,585.00	0.00
100.05	0.00	0	1,585.00	0.00
105.05	0.00	0	1,585.00	0.00
110.05	0.00	0	1,585.00	0.00
115.05	0.00	0	1,585.00	0.00
120.05	0.00	0	1,585.00	0.00
125.05	0.00	0	1,585.00	0.00
130.05	0.00	0	1,585.00	0.00
135.05	0.00	0	1,585.00	0.00
140.05	0.00	0	1,585.00	0.00
145.05	0.00	0	1,585.00	0.00

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Type II 24-hr 1-yr Rainfall=2.63"

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Stage-Discharge for Reach 34R: Div Ditch 2

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)	Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
1,585.00	0.00	0.00	1,585.52	7.29	9.55
1,585.01	0.64	0.01	1,585.53	7.36	9.87
1,585.02	1.02	0.04	1,585.54	7.43	10.20
1,585.03	1.32	0.08	1,585.55	7.51	10.53
1,585.04	1.59	0.13	1,585.56	7.58	10.86
1,585.05	1.84	0.19	1,585.57	7.65	11.20
1,585.06	2.07	0.26	1,585.58	7.71	11.54
1,585.07	2.28	0.33	1,585.59	7.78	11.89
1,585.08	2.48	0.41	1,585.60	7.85	12.25
1,585.09	2.66	0.50	1,585.61	7.92	12.61
1,585.10	2.84	0.60	1,585.62	7.98	12.97
1,585.11	3.01	0.70	1,585.63	8.05	13.34
1,585.12	3.18	0.81	1,585.64	8.11	13.71
1,585.13	3.34	0.92	1,585.65	8.18	14.09
1,585.14	3.49	1.05	1,585.66	8.24	14.47
1,585.15	3.64	1.17	1,585.67	8.31	14.86
1,585.16	3.78	1.31	1,585.68	8.37	15.25
1,585.17	3.92	1.44	1,585.69	8.43	15.65
1,585.18	4.05	1.59	1,585.70	8.49	16.05
1,585.19	4.18	1.74	1,585.71	8.56	16.46
1,585.20	4.31	1.90	1,585.72	8.62	16.87
1,585.21	4.43	2.06	1,585.73	8.68	17.29
1,585.22	4.55	2.22	1,585.74	8.74	17.71
1,585.23	4.67	2.39	1,585.75	8.80	18.14
1,585.24	4.78	2.57	1,585.76	8.86	18.57
1,585.25	4.90	2.75	1,585.77	8.91	19.01
1,585.26	5.01	2.94	1,585.78	8.97	19.45
1,585.27	5.11	3.13	1,585.79	9.03	19.90
1,585.28	5.22	3.33	1,585.80	9.09	20.35
1,585.29	5.32	3.53	1,585.81	9.14	20.81
1,585.30	5.42	3.74	1,585.82	9.20	21.28
1,585.31	5.52	3.95	1,585.83	9.26	21.74
1,585.32	5.62	4.17	1,585.84	9.31	22.22
1,585.33	5.72	4.39	1,585.85	9.37	22.69
1,585.34	5.81	4.62	1,585.86	9.42	23.18
1,585.35	5.90	4.85	1,585.87	9.48	23.67
1,585.36	5.99	5.09	1,585.88	9.53	24.16
1,585.37	6.08	5.33	1,585.89	9.59	24.66
1,585.38	6.17	5.58	1,585.90	9.64	25.16
1,585.39	6.26	5.83	1,585.91	9.69	25.67
1,585.40	6.34	6.09	1,585.92	9.75	26.18
1,585.41	6.43	6.35	1,585.93	9.80	26.70
1,585.42	6.51	6.62	1,585.94	9.85	27.23
1,585.43	6.59	6.89	1,585.95	9.90	27.76
1,585.44	6.68	7.17	1,585.96	9.96	28.29
1,585.45	6.76	7.45	1,585.97	10.01	28.83
1,585.46	6.83	7.73	1,585.98	10.06	29.38
1,585.47	6.91	8.03	1,585.99	10.11	29.93
1,585.48	6.99	8.32	1,586.00	10.16	30.48
1,585.49	7.07	8.62			
1,585.50	7.14	8.93			
1,585.51	7.22	9.24			

Stage-Area-Storage for Reach 34R: Div Ditch 2

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
1,585.00	0.0	0	1,585.52	1.3	425
1,585.01	0.0	7	1,585.53	1.3	434
1,585.02	0.0	13	1,585.54	1.4	444
1,585.03	0.1	20	1,585.55	1.4	454
1,585.04	0.1	26	1,585.56	1.4	464
1,585.05	0.1	33	1,585.57	1.5	475
1,585.06	0.1	40	1,585.58	1.5	485
1,585.07	0.1	47	1,585.59	1.5	495
1,585.08	0.2	54	1,585.60	1.6	505
1,585.09	0.2	61	1,585.61	1.6	516
1,585.10	0.2	68	1,585.62	1.6	526
1,585.11	0.2	75	1,585.63	1.7	537
1,585.12	0.3	82	1,585.64	1.7	547
1,585.13	0.3	90	1,585.65	1.7	558
1,585.14	0.3	97	1,585.66	1.8	569
1,585.15	0.3	104	1,585.67	1.8	580
1,585.16	0.3	112	1,585.68	1.8	590
1,585.17	0.4	120	1,585.69	1.9	601
1,585.18	0.4	127	1,585.70	1.9	612
1,585.19	0.4	135	1,585.71	1.9	623
1,585.20	0.4	143	1,585.72	2.0	635
1,585.21	0.5	150	1,585.73	2.0	646
1,585.22	0.5	158	1,585.74	2.0	657
1,585.23	0.5	166	1,585.75	2.1	668
1,585.24	0.5	174	1,585.76	2.1	680
1,585.25	0.6	182	1,585.77	2.1	691
1,585.26	0.6	190	1,585.78	2.2	703
1,585.27	0.6	199	1,585.79	2.2	714
1,585.28	0.6	207	1,585.80	2.2	726
1,585.29	0.7	215	1,585.81	2.3	737
1,585.30	0.7	224	1,585.82	2.3	749
1,585.31	0.7	232	1,585.83	2.3	761
1,585.32	0.7	241	1,585.84	2.4	773
1,585.33	0.8	249	1,585.85	2.4	785
1,585.34	0.8	258	1,585.86	2.5	797
1,585.35	0.8	266	1,585.87	2.5	809
1,585.36	0.8	275	1,585.88	2.5	821
1,585.37	0.9	284	1,585.89	2.6	833
1,585.38	0.9	293	1,585.90	2.6	846
1,585.39	0.9	302	1,585.91	2.6	858
1,585.40	1.0	311	1,585.92	2.7	870
1,585.41	1.0	320	1,585.93	2.7	883
1,585.42	1.0	329	1,585.94	2.8	895
1,585.43	1.0	339	1,585.95	2.8	908
1,585.44	1.1	348	1,585.96	2.8	921
1,585.45	1.1	357	1,585.97	2.9	933
1,585.46	1.1	367	1,585.98	2.9	946
1,585.47	1.2	376	1,585.99	3.0	959
1,585.48	1.2	386	1,586.00	3.0	972
1,585.49	1.2	395			
1,585.50	1.3	405			
1,585.51	1.3	415			

Summary for Reach 35R: Div Ditch 1

Inflow Area = 2.922 ac, 0.00% Impervious, Inflow Depth = 0.82" for 1-yr event
 Inflow = 1.78 cfs @ 12.32 hrs, Volume= 0.200 af
 Outflow = 1.77 cfs @ 12.33 hrs, Volume= 0.200 af, Atten= 0%, Lag= 1.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs
 Max. Velocity= 4.13 fps, Min. Travel Time= 1.8 min
 Avg. Velocity= 1.44 fps, Avg. Travel Time= 5.1 min

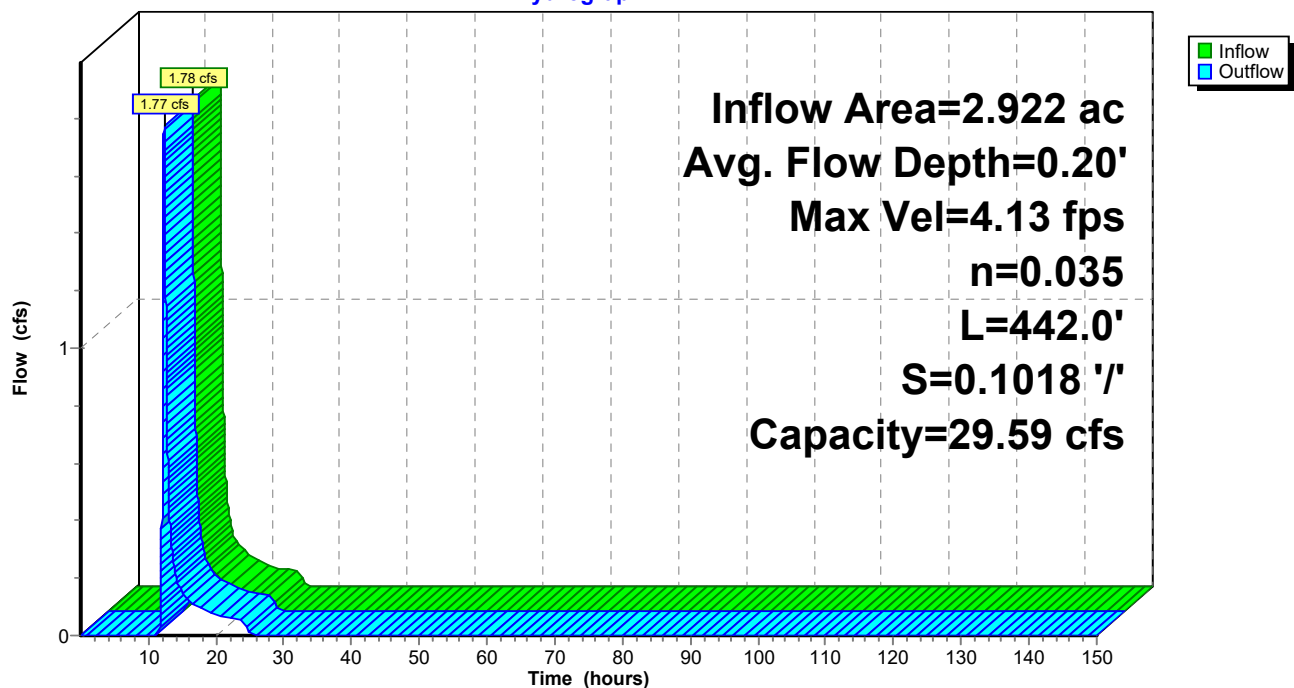
Peak Storage= 190 cf @ 12.33 hrs
 Average Depth at Peak Storage= 0.20'
 Bank-Full Depth= 1.00' Flow Area= 3.0 sf, Capacity= 29.59 cfs

2.00' x 1.00' deep channel, n= 0.035
 Side Slope Z-value= 1.0 '/' Top Width= 4.00'
 Length= 442.0' Slope= 0.1018 '/'
 Inlet Invert= 1,585.00', Outlet Invert= 1,540.00'

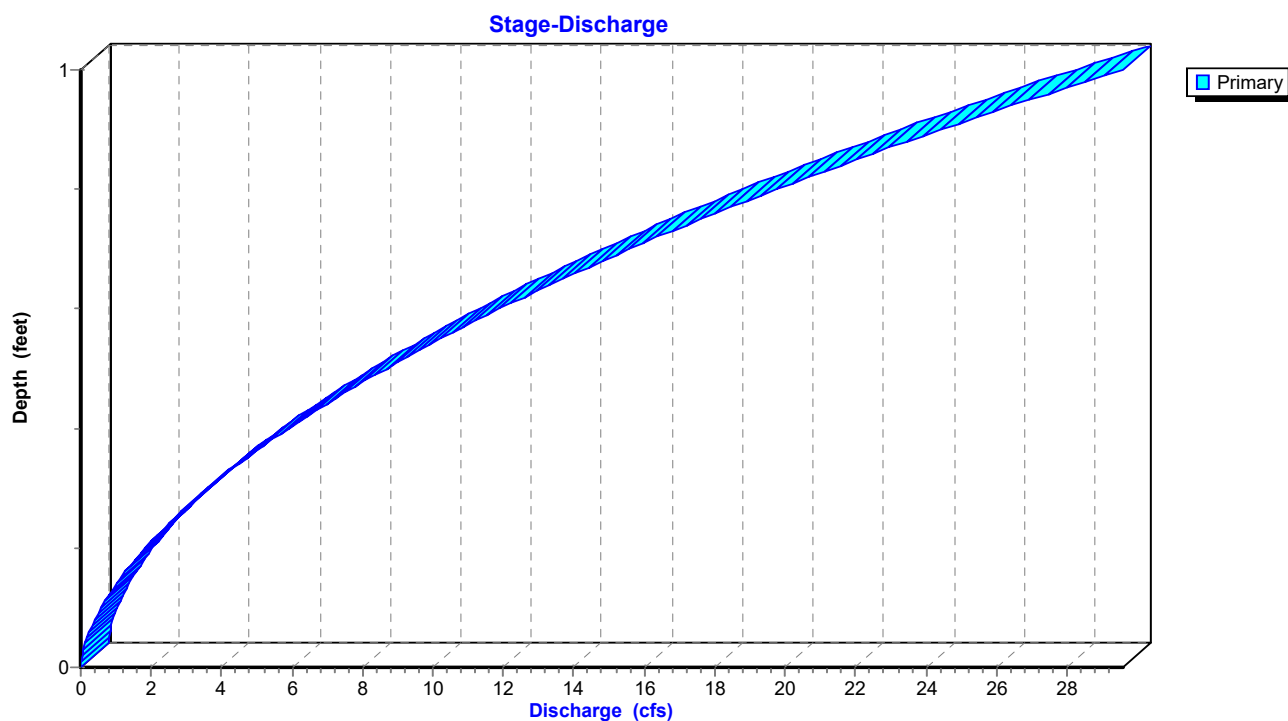


Reach 35R: Div Ditch 1

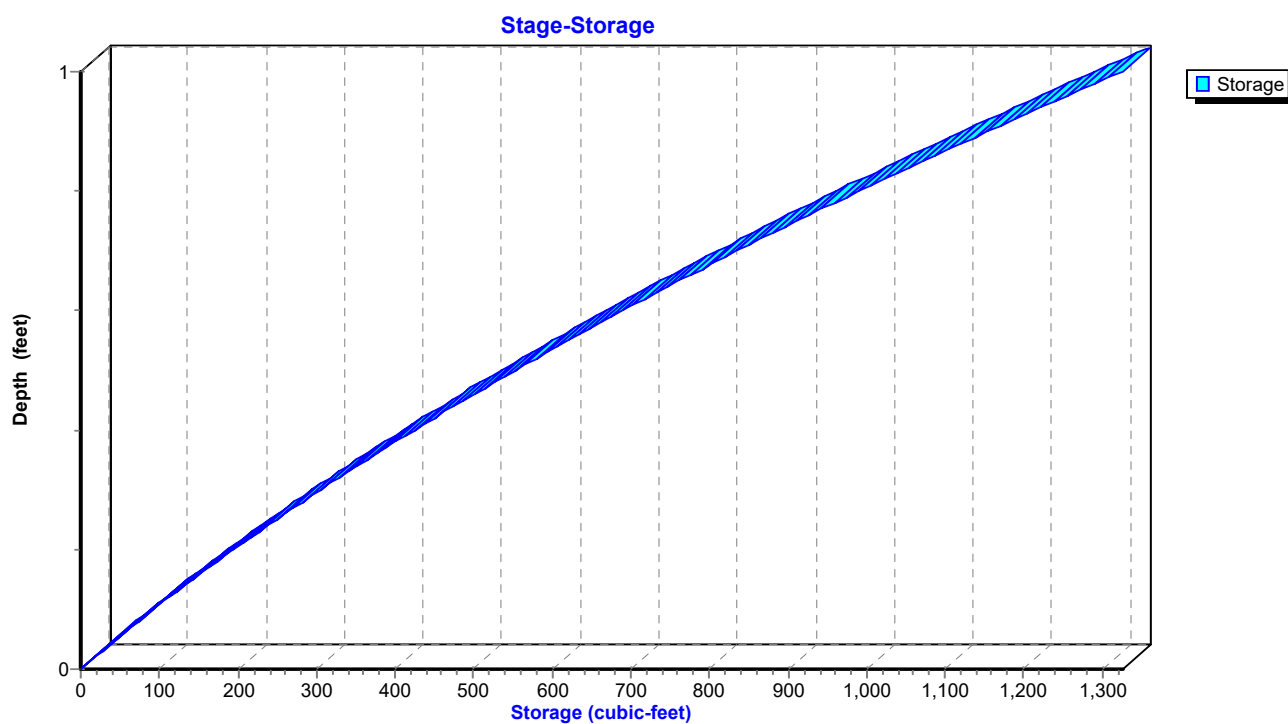
Hydrograph



Reach 35R: Div Ditch 1



Reach 35R: Div Ditch 1



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Hydrograph for Reach 35R: Div Ditch 1

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
0.05	0.00	0	1,585.00	0.00
5.05	0.00	0	1,585.00	0.00
10.05	0.00	0	1,585.00	0.00
15.05	0.15	40	1,585.04	0.15
20.05	0.07	25	1,585.03	0.07
25.05	0.00	4	1,585.00	0.01
30.05	0.00	0	1,585.00	0.00
35.05	0.00	0	1,585.00	0.00
40.05	0.00	0	1,585.00	0.00
45.05	0.00	0	1,585.00	0.00
50.05	0.00	0	1,585.00	0.00
55.05	0.00	0	1,585.00	0.00
60.05	0.00	0	1,585.00	0.00
65.05	0.00	0	1,585.00	0.00
70.05	0.00	0	1,585.00	0.00
75.05	0.00	0	1,585.00	0.00
80.05	0.00	0	1,585.00	0.00
85.05	0.00	0	1,585.00	0.00
90.05	0.00	0	1,585.00	0.00
95.05	0.00	0	1,585.00	0.00
100.05	0.00	0	1,585.00	0.00
105.05	0.00	0	1,585.00	0.00
110.05	0.00	0	1,585.00	0.00
115.05	0.00	0	1,585.00	0.00
120.05	0.00	0	1,585.00	0.00
125.05	0.00	0	1,585.00	0.00
130.05	0.00	0	1,585.00	0.00
135.05	0.00	0	1,585.00	0.00
140.05	0.00	0	1,585.00	0.00
145.05	0.00	0	1,585.00	0.00

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Stage-Discharge for Reach 35R: Div Ditch 1

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)	Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
1,585.00	0.00	0.00	1,585.52	7.08	9.27
1,585.01	0.63	0.01	1,585.53	7.15	9.58
1,585.02	0.99	0.04	1,585.54	7.22	9.90
1,585.03	1.28	0.08	1,585.55	7.29	10.22
1,585.04	1.55	0.13	1,585.56	7.35	10.54
1,585.05	1.79	0.18	1,585.57	7.42	10.87
1,585.06	2.01	0.25	1,585.58	7.49	11.21
1,585.07	2.21	0.32	1,585.59	7.56	11.55
1,585.08	2.40	0.40	1,585.60	7.62	11.89
1,585.09	2.59	0.49	1,585.61	7.69	12.24
1,585.10	2.76	0.58	1,585.62	7.75	12.59
1,585.11	2.93	0.68	1,585.63	7.81	12.95
1,585.12	3.09	0.79	1,585.64	7.88	13.31
1,585.13	3.24	0.90	1,585.65	7.94	13.68
1,585.14	3.39	1.01	1,585.66	8.00	14.05
1,585.15	3.53	1.14	1,585.67	8.06	14.43
1,585.16	3.67	1.27	1,585.68	8.13	14.81
1,585.17	3.80	1.40	1,585.69	8.19	15.19
1,585.18	3.93	1.54	1,585.70	8.25	15.58
1,585.19	4.06	1.69	1,585.71	8.31	15.98
1,585.20	4.18	1.84	1,585.72	8.36	16.38
1,585.21	4.30	2.00	1,585.73	8.42	16.79
1,585.22	4.42	2.16	1,585.74	8.48	17.20
1,585.23	4.53	2.32	1,585.75	8.54	17.61
1,585.24	4.64	2.50	1,585.76	8.60	18.03
1,585.25	4.75	2.67	1,585.77	8.65	18.46
1,585.26	4.86	2.86	1,585.78	8.71	18.89
1,585.27	4.96	3.04	1,585.79	8.77	19.32
1,585.28	5.07	3.23	1,585.80	8.82	19.76
1,585.29	5.17	3.43	1,585.81	8.88	20.20
1,585.30	5.26	3.63	1,585.82	8.93	20.65
1,585.31	5.36	3.84	1,585.83	8.99	21.11
1,585.32	5.46	4.05	1,585.84	9.04	21.57
1,585.33	5.55	4.27	1,585.85	9.09	22.03
1,585.34	5.64	4.49	1,585.86	9.15	22.50
1,585.35	5.73	4.71	1,585.87	9.20	22.97
1,585.36	5.82	4.94	1,585.88	9.25	23.45
1,585.37	5.91	5.18	1,585.89	9.31	23.94
1,585.38	5.99	5.42	1,585.90	9.36	24.43
1,585.39	6.08	5.66	1,585.91	9.41	24.92
1,585.40	6.16	5.91	1,585.92	9.46	25.42
1,585.41	6.24	6.17	1,585.93	9.51	25.92
1,585.42	6.32	6.43	1,585.94	9.56	26.43
1,585.43	6.40	6.69	1,585.95	9.61	26.95
1,585.44	6.48	6.96	1,585.96	9.67	27.46
1,585.45	6.56	7.23	1,585.97	9.72	27.99
1,585.46	6.64	7.51	1,585.98	9.77	28.52
1,585.47	6.71	7.79	1,585.99	9.81	29.05
1,585.48	6.79	8.08	1,586.00	9.86	29.59
1,585.49	6.86	8.37			
1,585.50	6.93	8.67			
1,585.51	7.01	8.97			

Stage-Area-Storage for Reach 35R: Div Ditch 1

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
1,585.00	0.0	0	1,585.52	1.3	579
1,585.01	0.0	9	1,585.53	1.3	593
1,585.02	0.0	18	1,585.54	1.4	606
1,585.03	0.1	27	1,585.55	1.4	620
1,585.04	0.1	36	1,585.56	1.4	634
1,585.05	0.1	45	1,585.57	1.5	647
1,585.06	0.1	55	1,585.58	1.5	661
1,585.07	0.1	64	1,585.59	1.5	675
1,585.08	0.2	74	1,585.60	1.6	690
1,585.09	0.2	83	1,585.61	1.6	704
1,585.10	0.2	93	1,585.62	1.6	718
1,585.11	0.2	103	1,585.63	1.7	732
1,585.12	0.3	112	1,585.64	1.7	747
1,585.13	0.3	122	1,585.65	1.7	761
1,585.14	0.3	132	1,585.66	1.8	776
1,585.15	0.3	143	1,585.67	1.8	791
1,585.16	0.3	153	1,585.68	1.8	806
1,585.17	0.4	163	1,585.69	1.9	820
1,585.18	0.4	173	1,585.70	1.9	835
1,585.19	0.4	184	1,585.71	1.9	850
1,585.20	0.4	194	1,585.72	2.0	866
1,585.21	0.5	205	1,585.73	2.0	881
1,585.22	0.5	216	1,585.74	2.0	896
1,585.23	0.5	227	1,585.75	2.1	912
1,585.24	0.5	238	1,585.76	2.1	927
1,585.25	0.6	249	1,585.77	2.1	943
1,585.26	0.6	260	1,585.78	2.2	958
1,585.27	0.6	271	1,585.79	2.2	974
1,585.28	0.6	282	1,585.80	2.2	990
1,585.29	0.7	294	1,585.81	2.3	1,006
1,585.30	0.7	305	1,585.82	2.3	1,022
1,585.31	0.7	317	1,585.83	2.3	1,038
1,585.32	0.7	328	1,585.84	2.4	1,054
1,585.33	0.8	340	1,585.85	2.4	1,071
1,585.34	0.8	352	1,585.86	2.5	1,087
1,585.35	0.8	364	1,585.87	2.5	1,104
1,585.36	0.8	376	1,585.88	2.5	1,120
1,585.37	0.9	388	1,585.89	2.6	1,137
1,585.38	0.9	400	1,585.90	2.6	1,154
1,585.39	0.9	412	1,585.91	2.6	1,170
1,585.40	1.0	424	1,585.92	2.7	1,187
1,585.41	1.0	437	1,585.93	2.7	1,204
1,585.42	1.0	449	1,585.94	2.8	1,222
1,585.43	1.0	462	1,585.95	2.8	1,239
1,585.44	1.1	475	1,585.96	2.8	1,256
1,585.45	1.1	487	1,585.97	2.9	1,273
1,585.46	1.1	500	1,585.98	2.9	1,291
1,585.47	1.2	513	1,585.99	3.0	1,308
1,585.48	1.2	526	1,586.00	3.0	1,326
1,585.49	1.2	539			
1,585.50	1.3	553			
1,585.51	1.3	566			

Summary for Reach 36R: Div Ditch 5

Inflow Area = 2.762 ac, 0.00% Impervious, Inflow Depth = 0.82" for 1-yr event
 Inflow = 1.59 cfs @ 12.34 hrs, Volume= 0.189 af
 Outflow = 1.58 cfs @ 12.36 hrs, Volume= 0.189 af, Atten= 0%, Lag= 1.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Max. Velocity= 2.48 fps, Min. Travel Time= 1.4 min

Avg. Velocity= 0.88 fps, Avg. Travel Time= 3.9 min

Peak Storage= 132 cf @ 12.36 hrs

Average Depth at Peak Storage= 0.28'

Bank-Full Depth= 1.00' Flow Area= 3.0 sf, Capacity= 14.45 cfs

2.00' x 1.00' deep channel, n= 0.035

Side Slope Z-value= 1.0 '/' Top Width= 4.00'

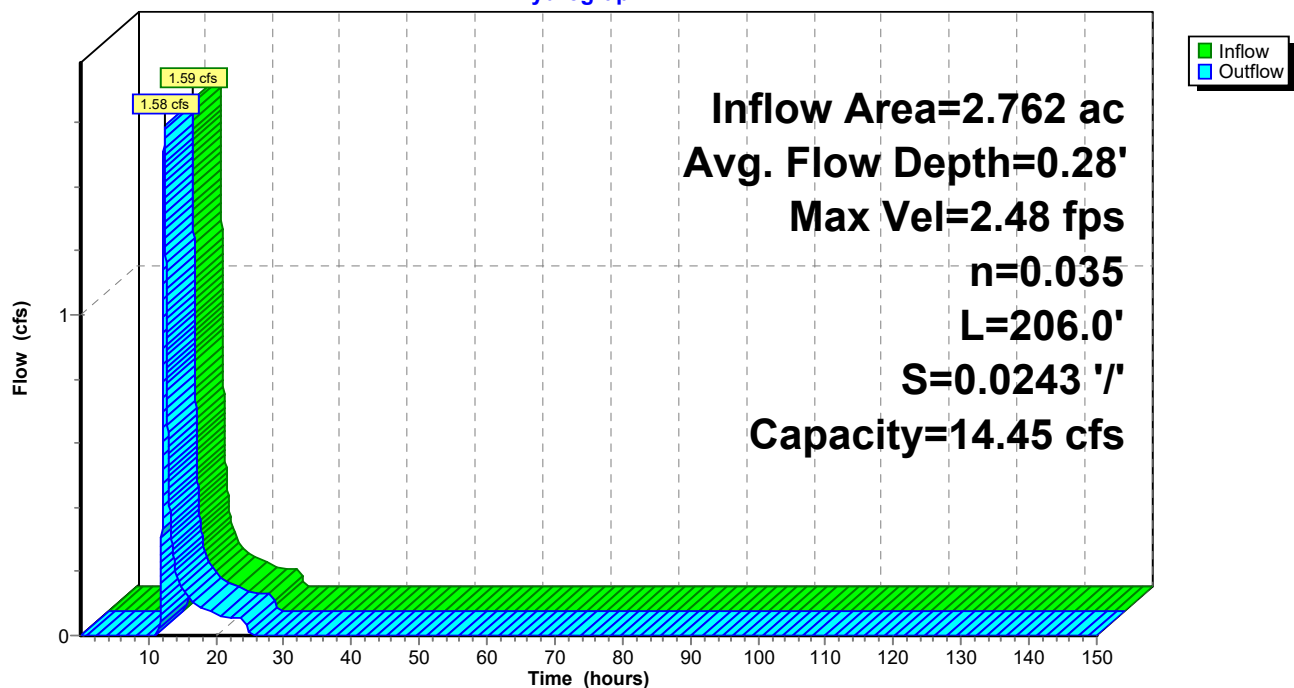
Length= 206.0' Slope= 0.0243 '/'

Inlet Invert= 1,505.00', Outlet Invert= 1,500.00'

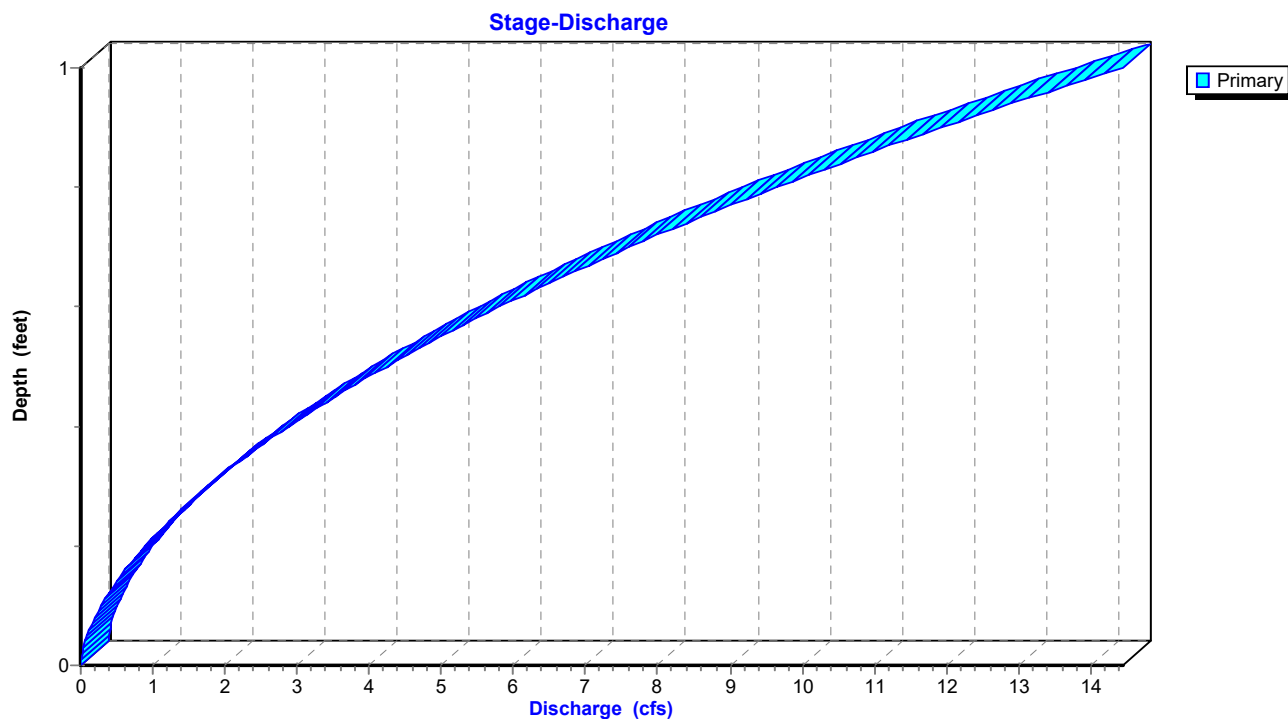


Reach 36R: Div Ditch 5

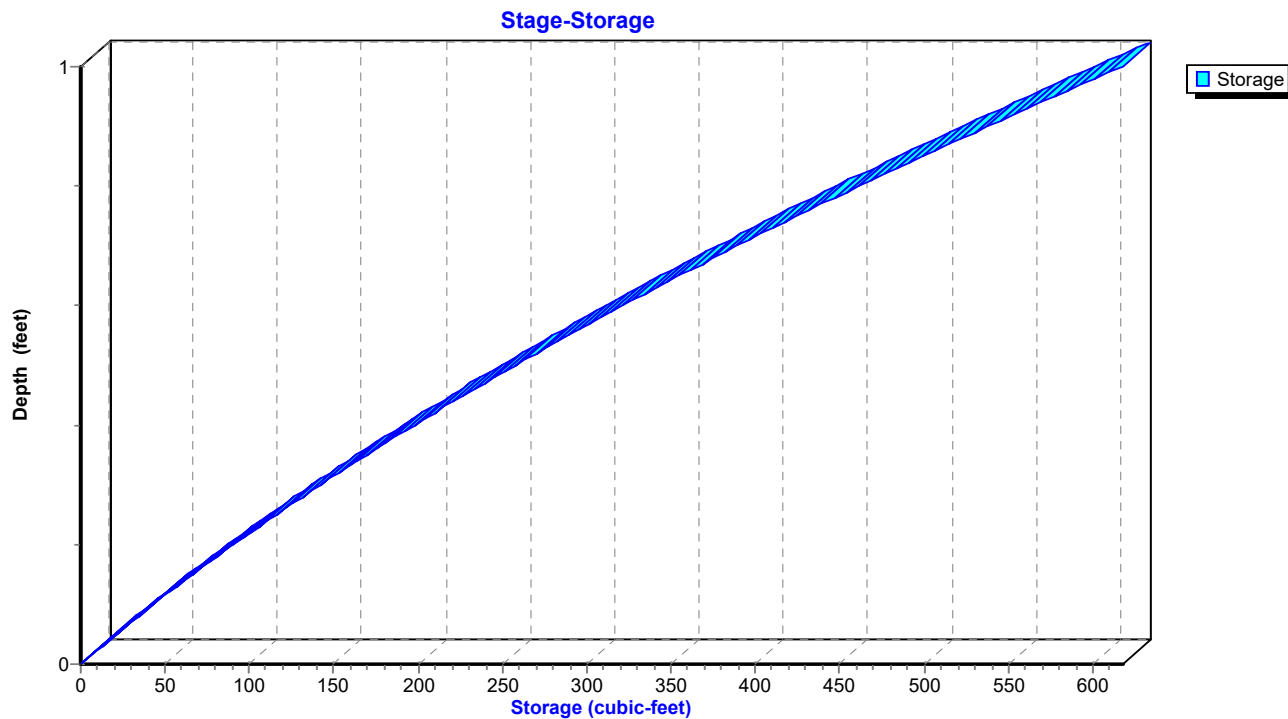
Hydrograph



Reach 36R: Div Ditch 5



Reach 36R: Div Ditch 5



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Type II 24-hr 1-yr Rainfall=2.63"

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Hydrograph for Reach 36R: Div Ditch 5

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
0.05	0.00	0	1,505.00	0.00
5.05	0.00	0	1,505.00	0.00
10.05	0.00	0	1,505.00	0.00
15.05	0.14	28	1,505.07	0.14
20.05	0.07	17	1,505.04	0.07
25.05	0.00	4	1,505.01	0.01
30.05	0.00	0	1,505.00	0.00
35.05	0.00	0	1,505.00	0.00
40.05	0.00	0	1,505.00	0.00
45.05	0.00	0	1,505.00	0.00
50.05	0.00	0	1,505.00	0.00
55.05	0.00	0	1,505.00	0.00
60.05	0.00	0	1,505.00	0.00
65.05	0.00	0	1,505.00	0.00
70.05	0.00	0	1,505.00	0.00
75.05	0.00	0	1,505.00	0.00
80.05	0.00	0	1,505.00	0.00
85.05	0.00	0	1,505.00	0.00
90.05	0.00	0	1,505.00	0.00
95.05	0.00	0	1,505.00	0.00
100.05	0.00	0	1,505.00	0.00
105.05	0.00	0	1,505.00	0.00
110.05	0.00	0	1,505.00	0.00
115.05	0.00	0	1,505.00	0.00
120.05	0.00	0	1,505.00	0.00
125.05	0.00	0	1,505.00	0.00
130.05	0.00	0	1,505.00	0.00
135.05	0.00	0	1,505.00	0.00
140.05	0.00	0	1,505.00	0.00
145.05	0.00	0	1,505.00	0.00

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Type II 24-hr 1-yr Rainfall=2.63"

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Stage-Discharge for Reach 36R: Div Ditch 5

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)	Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
1,505.00	0.00	0.00	1,505.52	3.46	4.53
1,505.01	0.31	0.01	1,505.53	3.49	4.68
1,505.02	0.48	0.02	1,505.54	3.52	4.83
1,505.03	0.63	0.04	1,505.55	3.56	4.99
1,505.04	0.76	0.06	1,505.56	3.59	5.15
1,505.05	0.87	0.09	1,505.57	3.62	5.31
1,505.06	0.98	0.12	1,505.58	3.66	5.47
1,505.07	1.08	0.16	1,505.59	3.69	5.64
1,505.08	1.17	0.20	1,505.60	3.72	5.81
1,505.09	1.26	0.24	1,505.61	3.75	5.98
1,505.10	1.35	0.28	1,505.62	3.78	6.15
1,505.11	1.43	0.33	1,505.63	3.82	6.32
1,505.12	1.51	0.38	1,505.64	3.85	6.50
1,505.13	1.58	0.44	1,505.65	3.88	6.68
1,505.14	1.65	0.50	1,505.66	3.91	6.86
1,505.15	1.72	0.56	1,505.67	3.94	7.04
1,505.16	1.79	0.62	1,505.68	3.97	7.23
1,505.17	1.86	0.68	1,505.69	4.00	7.42
1,505.18	1.92	0.75	1,505.70	4.03	7.61
1,505.19	1.98	0.82	1,505.71	4.06	7.80
1,505.20	2.04	0.90	1,505.72	4.08	8.00
1,505.21	2.10	0.97	1,505.73	4.11	8.20
1,505.22	2.16	1.05	1,505.74	4.14	8.40
1,505.23	2.21	1.14	1,505.75	4.17	8.60
1,505.24	2.27	1.22	1,505.76	4.20	8.80
1,505.25	2.32	1.31	1,505.77	4.23	9.01
1,505.26	2.37	1.39	1,505.78	4.25	9.22
1,505.27	2.42	1.49	1,505.79	4.28	9.43
1,505.28	2.47	1.58	1,505.80	4.31	9.65
1,505.29	2.52	1.68	1,505.81	4.33	9.87
1,505.30	2.57	1.77	1,505.82	4.36	10.08
1,505.31	2.62	1.87	1,505.83	4.39	10.31
1,505.32	2.66	1.98	1,505.84	4.41	10.53
1,505.33	2.71	2.08	1,505.85	4.44	10.76
1,505.34	2.75	2.19	1,505.86	4.47	10.99
1,505.35	2.80	2.30	1,505.87	4.49	11.22
1,505.36	2.84	2.41	1,505.88	4.52	11.45
1,505.37	2.88	2.53	1,505.89	4.54	11.69
1,505.38	2.93	2.65	1,505.90	4.57	11.93
1,505.39	2.97	2.77	1,505.91	4.59	12.17
1,505.40	3.01	2.89	1,505.92	4.62	12.41
1,505.41	3.05	3.01	1,505.93	4.65	12.66
1,505.42	3.09	3.14	1,505.94	4.67	12.91
1,505.43	3.13	3.27	1,505.95	4.69	13.16
1,505.44	3.16	3.40	1,505.96	4.72	13.41
1,505.45	3.20	3.53	1,505.97	4.74	13.67
1,505.46	3.24	3.67	1,505.98	4.77	13.92
1,505.47	3.28	3.80	1,505.99	4.79	14.19
1,505.48	3.31	3.94	1,506.00	4.82	14.45
1,505.49	3.35	4.09			
1,505.50	3.39	4.23			
1,505.51	3.42	4.38			

Stage-Area-Storage for Reach 36R: Div Ditch 5

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
1,505.00	0.0	0	1,505.52	1.3	270
1,505.01	0.0	4	1,505.53	1.3	276
1,505.02	0.0	8	1,505.54	1.4	283
1,505.03	0.1	13	1,505.55	1.4	289
1,505.04	0.1	17	1,505.56	1.4	295
1,505.05	0.1	21	1,505.57	1.5	302
1,505.06	0.1	25	1,505.58	1.5	308
1,505.07	0.1	30	1,505.59	1.5	315
1,505.08	0.2	34	1,505.60	1.6	321
1,505.09	0.2	39	1,505.61	1.6	328
1,505.10	0.2	43	1,505.62	1.6	335
1,505.11	0.2	48	1,505.63	1.7	341
1,505.12	0.3	52	1,505.64	1.7	348
1,505.13	0.3	57	1,505.65	1.7	355
1,505.14	0.3	62	1,505.66	1.8	362
1,505.15	0.3	66	1,505.67	1.8	369
1,505.16	0.3	71	1,505.68	1.8	375
1,505.17	0.4	76	1,505.69	1.9	382
1,505.18	0.4	81	1,505.70	1.9	389
1,505.19	0.4	86	1,505.71	1.9	396
1,505.20	0.4	91	1,505.72	2.0	403
1,505.21	0.5	96	1,505.73	2.0	411
1,505.22	0.5	101	1,505.74	2.0	418
1,505.23	0.5	106	1,505.75	2.1	425
1,505.24	0.5	111	1,505.76	2.1	432
1,505.25	0.6	116	1,505.77	2.1	439
1,505.26	0.6	121	1,505.78	2.2	447
1,505.27	0.6	126	1,505.79	2.2	454
1,505.28	0.6	132	1,505.80	2.2	461
1,505.29	0.7	137	1,505.81	2.3	469
1,505.30	0.7	142	1,505.82	2.3	476
1,505.31	0.7	148	1,505.83	2.3	484
1,505.32	0.7	153	1,505.84	2.4	491
1,505.33	0.8	158	1,505.85	2.4	499
1,505.34	0.8	164	1,505.86	2.5	507
1,505.35	0.8	169	1,505.87	2.5	514
1,505.36	0.8	175	1,505.88	2.5	522
1,505.37	0.9	181	1,505.89	2.6	530
1,505.38	0.9	186	1,505.90	2.6	538
1,505.39	0.9	192	1,505.91	2.6	546
1,505.40	1.0	198	1,505.92	2.7	553
1,505.41	1.0	204	1,505.93	2.7	561
1,505.42	1.0	209	1,505.94	2.8	569
1,505.43	1.0	215	1,505.95	2.8	577
1,505.44	1.1	221	1,505.96	2.8	585
1,505.45	1.1	227	1,505.97	2.9	593
1,505.46	1.1	233	1,505.98	2.9	602
1,505.47	1.2	239	1,505.99	3.0	610
1,505.48	1.2	245	1,506.00	3.0	618
1,505.49	1.2	251			
1,505.50	1.3	258			
1,505.51	1.3	264			

Summary for Reach 37R: Div Ditch 3

Inflow Area = 10.125 ac, 0.00% Impervious, Inflow Depth = 0.82" for 1-yr event
 Inflow = 2.48 cfs @ 13.51 hrs, Volume= 0.694 af
 Outflow = 2.48 cfs @ 13.52 hrs, Volume= 0.694 af, Atten= 0%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs
 Max. Velocity= 4.63 fps, Min. Travel Time= 2.1 min
 Avg. Velocity = 2.02 fps, Avg. Travel Time= 4.9 min

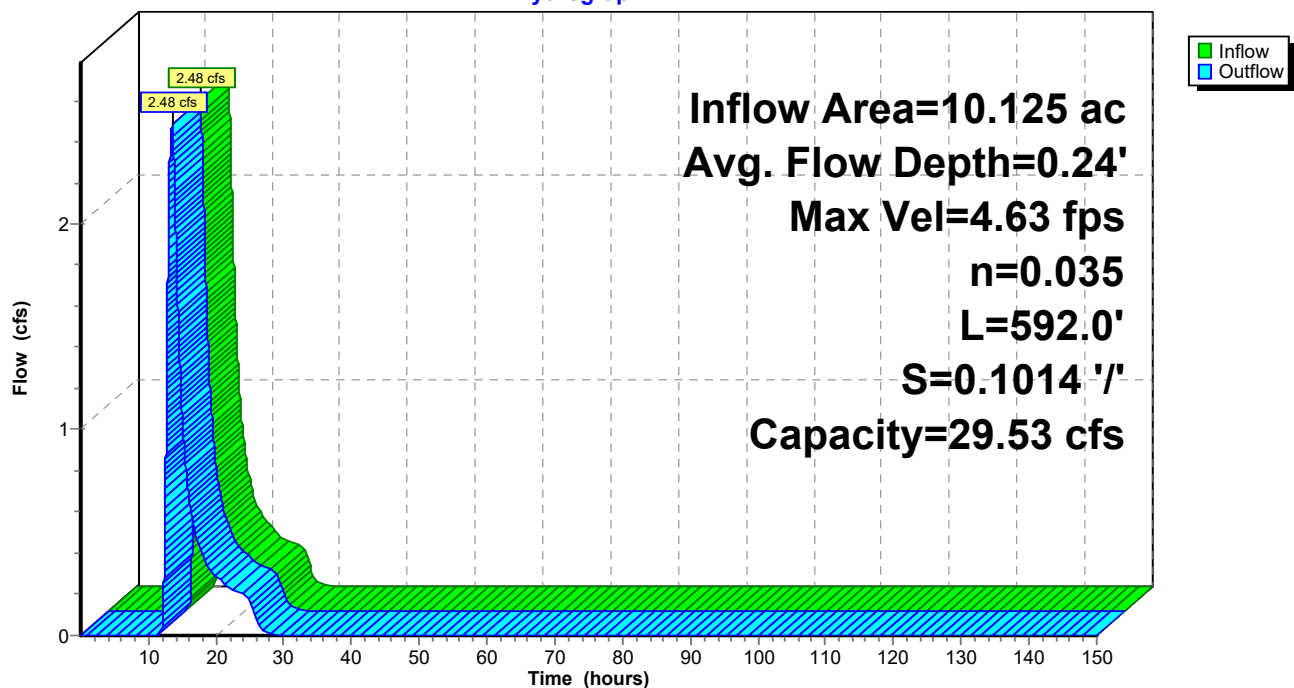
Peak Storage= 317 cf @ 13.52 hrs
 Average Depth at Peak Storage= 0.24'
 Bank-Full Depth= 1.00' Flow Area= 3.0 sf, Capacity= 29.53 cfs

2.00' x 1.00' deep channel, n= 0.035
 Side Slope Z-value= 1.0 '/' Top Width= 4.00'
 Length= 592.0' Slope= 0.1014 '/'
 Inlet Invert= 1,635.00', Outlet Invert= 1,575.00'

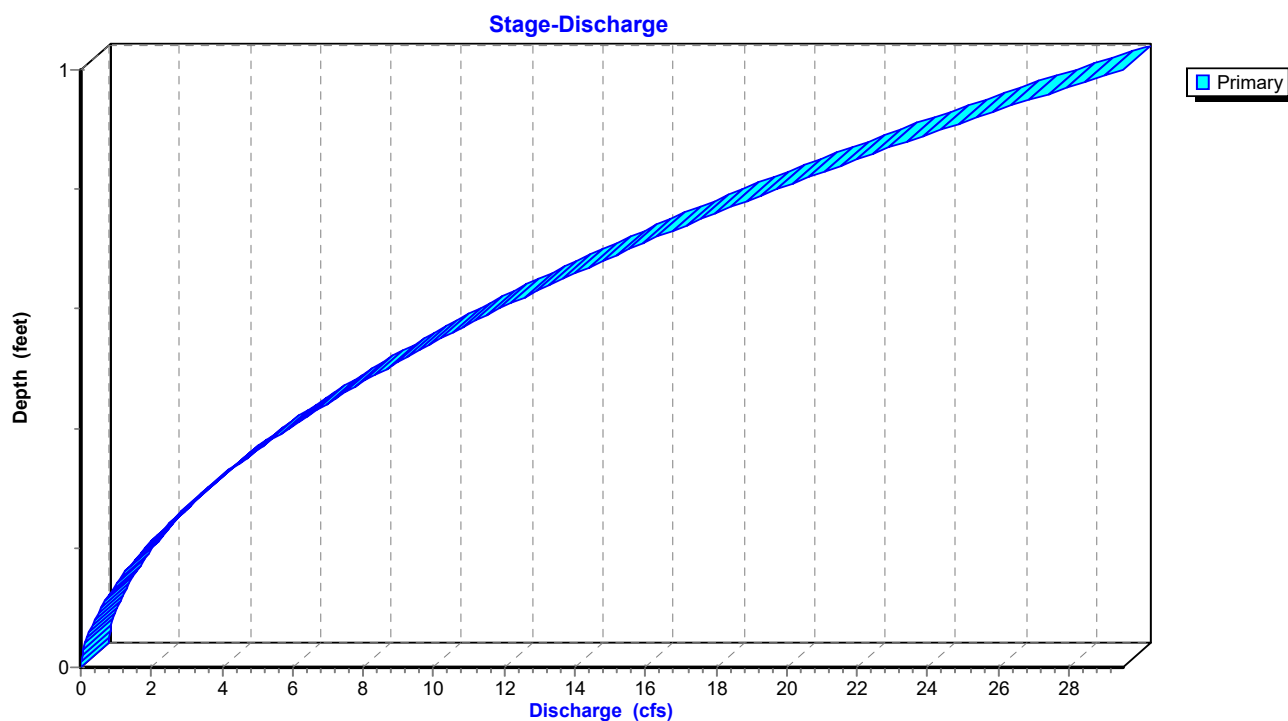


Reach 37R: Div Ditch 3

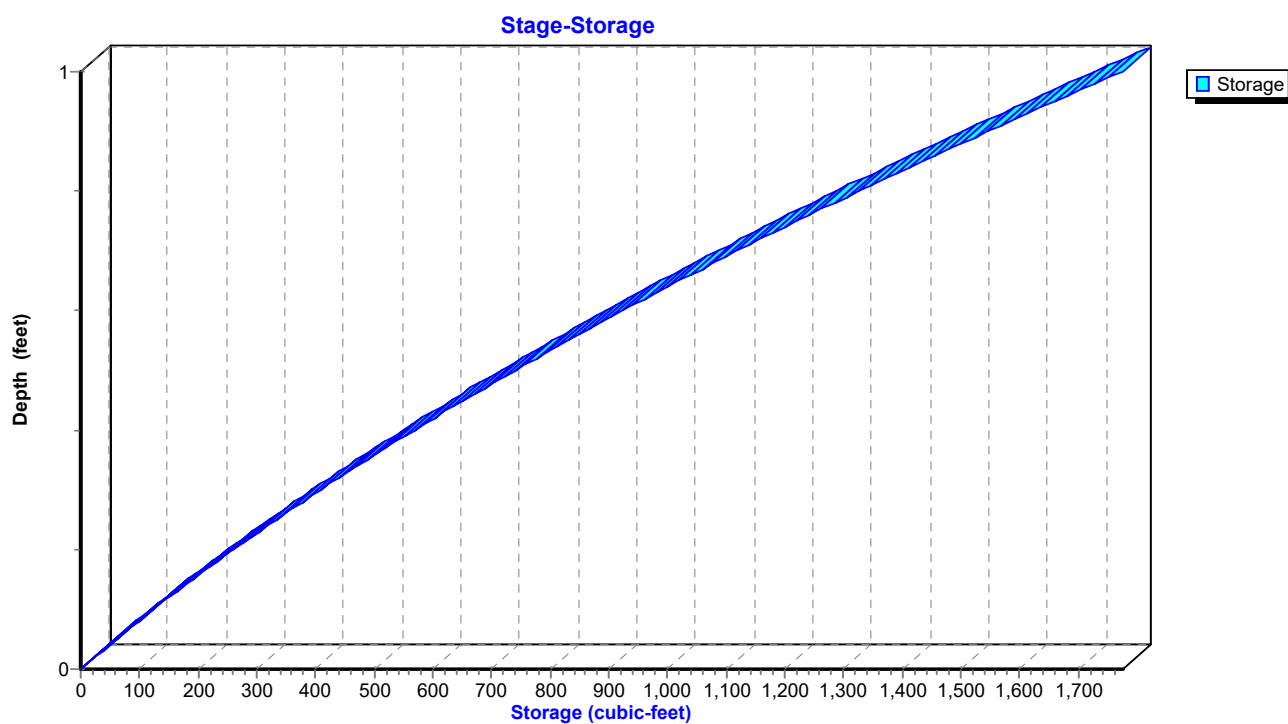
Hydrograph



Reach 37R: Div Ditch 3



Reach 37R: Div Ditch 3



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Hydrograph for Reach 37R: Div Ditch 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
0.05	0.00	0	1,635.00	0.00
5.05	0.00	0	1,635.00	0.00
10.05	0.00	0	1,635.00	0.00
15.05	1.03	181	1,635.14	1.04
20.05	0.29	80	1,635.07	0.29
25.05	0.16	57	1,635.05	0.17
30.05	0.00	0	1,635.00	0.00
35.05	0.00	0	1,635.00	0.00
40.05	0.00	0	1,635.00	0.00
45.05	0.00	0	1,635.00	0.00
50.05	0.00	0	1,635.00	0.00
55.05	0.00	0	1,635.00	0.00
60.05	0.00	0	1,635.00	0.00
65.05	0.00	0	1,635.00	0.00
70.05	0.00	0	1,635.00	0.00
75.05	0.00	0	1,635.00	0.00
80.05	0.00	0	1,635.00	0.00
85.05	0.00	0	1,635.00	0.00
90.05	0.00	0	1,635.00	0.00
95.05	0.00	0	1,635.00	0.00
100.05	0.00	0	1,635.00	0.00
105.05	0.00	0	1,635.00	0.00
110.05	0.00	0	1,635.00	0.00
115.05	0.00	0	1,635.00	0.00
120.05	0.00	0	1,635.00	0.00
125.05	0.00	0	1,635.00	0.00
130.05	0.00	0	1,635.00	0.00
135.05	0.00	0	1,635.00	0.00
140.05	0.00	0	1,635.00	0.00
145.05	0.00	0	1,635.00	0.00

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Stage-Discharge for Reach 37R: Div Ditch 3

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)	Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
1,635.00	0.00	0.00	1,635.52	7.06	9.25
1,635.01	0.62	0.01	1,635.53	7.13	9.56
1,635.02	0.98	0.04	1,635.54	7.20	9.88
1,635.03	1.28	0.08	1,635.55	7.27	10.20
1,635.04	1.54	0.13	1,635.56	7.34	10.52
1,635.05	1.78	0.18	1,635.57	7.41	10.85
1,635.06	2.00	0.25	1,635.58	7.47	11.18
1,635.07	2.21	0.32	1,635.59	7.54	11.52
1,635.08	2.40	0.40	1,635.60	7.60	11.86
1,635.09	2.58	0.49	1,635.61	7.67	12.21
1,635.10	2.75	0.58	1,635.62	7.73	12.56
1,635.11	2.92	0.68	1,635.63	7.80	12.92
1,635.12	3.08	0.78	1,635.64	7.86	13.28
1,635.13	3.23	0.90	1,635.65	7.92	13.65
1,635.14	3.38	1.01	1,635.66	7.98	14.02
1,635.15	3.52	1.14	1,635.67	8.05	14.39
1,635.16	3.66	1.26	1,635.68	8.11	14.77
1,635.17	3.79	1.40	1,635.69	8.17	15.16
1,635.18	3.92	1.54	1,635.70	8.23	15.55
1,635.19	4.05	1.69	1,635.71	8.29	15.94
1,635.20	4.17	1.84	1,635.72	8.35	16.34
1,635.21	4.29	1.99	1,635.73	8.40	16.75
1,635.22	4.41	2.15	1,635.74	8.46	17.16
1,635.23	4.52	2.32	1,635.75	8.52	17.57
1,635.24	4.63	2.49	1,635.76	8.58	17.99
1,635.25	4.74	2.67	1,635.77	8.63	18.42
1,635.26	4.85	2.85	1,635.78	8.69	18.84
1,635.27	4.95	3.04	1,635.79	8.75	19.28
1,635.28	5.05	3.23	1,635.80	8.80	19.72
1,635.29	5.15	3.42	1,635.81	8.86	20.16
1,635.30	5.25	3.62	1,635.82	8.91	20.61
1,635.31	5.35	3.83	1,635.83	8.97	21.06
1,635.32	5.44	4.04	1,635.84	9.02	21.52
1,635.33	5.54	4.26	1,635.85	9.07	21.98
1,635.34	5.63	4.48	1,635.86	9.13	22.45
1,635.35	5.72	4.70	1,635.87	9.18	22.92
1,635.36	5.81	4.93	1,635.88	9.23	23.40
1,635.37	5.89	5.17	1,635.89	9.29	23.88
1,635.38	5.98	5.41	1,635.90	9.34	24.37
1,635.39	6.06	5.65	1,635.91	9.39	24.86
1,635.40	6.15	5.90	1,635.92	9.44	25.36
1,635.41	6.23	6.15	1,635.93	9.49	25.86
1,635.42	6.31	6.41	1,635.94	9.54	26.37
1,635.43	6.39	6.67	1,635.95	9.59	26.89
1,635.44	6.47	6.94	1,635.96	9.64	27.40
1,635.45	6.54	7.21	1,635.97	9.69	27.93
1,635.46	6.62	7.49	1,635.98	9.74	28.45
1,635.47	6.70	7.77	1,635.99	9.79	28.99
1,635.48	6.77	8.06	1,636.00	9.84	29.53
1,635.49	6.84	8.35			
1,635.50	6.92	8.65			
1,635.51	6.99	8.95			

Stage-Area-Storage for Reach 37R: Div Ditch 3

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
1,635.00	0.0	0	1,635.52	1.3	776
1,635.01	0.0	12	1,635.53	1.3	794
1,635.02	0.0	24	1,635.54	1.4	812
1,635.03	0.1	36	1,635.55	1.4	830
1,635.04	0.1	48	1,635.56	1.4	849
1,635.05	0.1	61	1,635.57	1.5	867
1,635.06	0.1	73	1,635.58	1.5	886
1,635.07	0.1	86	1,635.59	1.5	905
1,635.08	0.2	99	1,635.60	1.6	924
1,635.09	0.2	111	1,635.61	1.6	943
1,635.10	0.2	124	1,635.62	1.6	962
1,635.11	0.2	137	1,635.63	1.7	981
1,635.12	0.3	151	1,635.64	1.7	1,000
1,635.13	0.3	164	1,635.65	1.7	1,020
1,635.14	0.3	177	1,635.66	1.8	1,039
1,635.15	0.3	191	1,635.67	1.8	1,059
1,635.16	0.3	205	1,635.68	1.8	1,079
1,635.17	0.4	218	1,635.69	1.9	1,099
1,635.18	0.4	232	1,635.70	1.9	1,119
1,635.19	0.4	246	1,635.71	1.9	1,139
1,635.20	0.4	260	1,635.72	2.0	1,159
1,635.21	0.5	275	1,635.73	2.0	1,180
1,635.22	0.5	289	1,635.74	2.0	1,200
1,635.23	0.5	304	1,635.75	2.1	1,221
1,635.24	0.5	318	1,635.76	2.1	1,242
1,635.25	0.6	333	1,635.77	2.1	1,263
1,635.26	0.6	348	1,635.78	2.2	1,284
1,635.27	0.6	363	1,635.79	2.2	1,305
1,635.28	0.6	378	1,635.80	2.2	1,326
1,635.29	0.7	393	1,635.81	2.3	1,347
1,635.30	0.7	408	1,635.82	2.3	1,369
1,635.31	0.7	424	1,635.83	2.3	1,391
1,635.32	0.7	440	1,635.84	2.4	1,412
1,635.33	0.8	455	1,635.85	2.4	1,434
1,635.34	0.8	471	1,635.86	2.5	1,456
1,635.35	0.8	487	1,635.87	2.5	1,478
1,635.36	0.8	503	1,635.88	2.5	1,500
1,635.37	0.9	519	1,635.89	2.6	1,523
1,635.38	0.9	535	1,635.90	2.6	1,545
1,635.39	0.9	552	1,635.91	2.6	1,568
1,635.40	1.0	568	1,635.92	2.7	1,590
1,635.41	1.0	585	1,635.93	2.7	1,613
1,635.42	1.0	602	1,635.94	2.8	1,636
1,635.43	1.0	619	1,635.95	2.8	1,659
1,635.44	1.1	636	1,635.96	2.8	1,682
1,635.45	1.1	653	1,635.97	2.9	1,705
1,635.46	1.1	670	1,635.98	2.9	1,729
1,635.47	1.2	687	1,635.99	3.0	1,752
1,635.48	1.2	705	1,636.00	3.0	1,776
1,635.49	1.2	722			
1,635.50	1.3	740			
1,635.51	1.3	758			

Summary for Reach 38R: Div Ditch 4

Inflow Area = 2.938 ac, 0.00% Impervious, Inflow Depth = 0.82" for 1-yr event
 Inflow = 1.12 cfs @ 12.71 hrs, Volume= 0.202 af
 Outflow = 1.12 cfs @ 12.73 hrs, Volume= 0.202 af, Atten= 0%, Lag= 1.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Max. Velocity= 3.53 fps, Min. Travel Time= 1.6 min

Avg. Velocity= 1.42 fps, Avg. Travel Time= 3.9 min

Peak Storage= 106 cf @ 12.73 hrs

Average Depth at Peak Storage= 0.15'

Bank-Full Depth= 1.00' Flow Area= 3.0 sf, Capacity= 29.93 cfs

2.00' x 1.00' deep channel, n= 0.035

Side Slope Z-value= 1.0 '/' Top Width= 4.00'

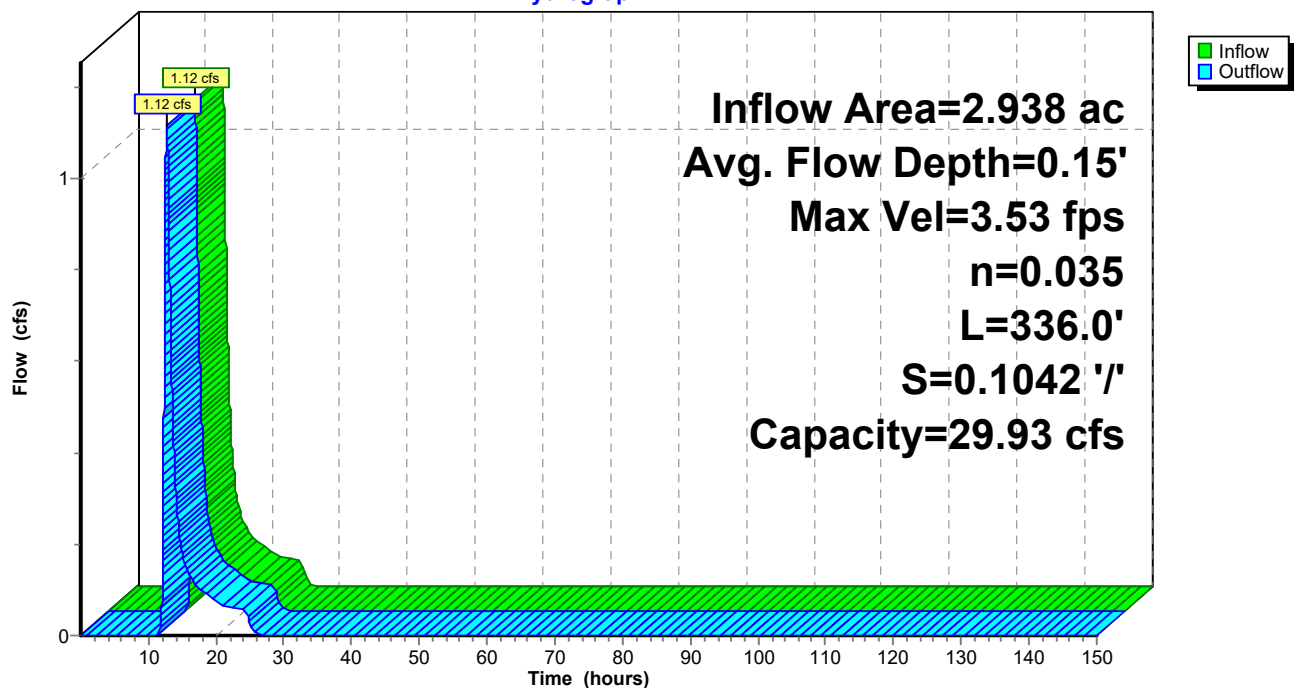
Length= 336.0' Slope= 0.1042 '/'

Inlet Invert= 1,635.00', Outlet Invert= 1,600.00'

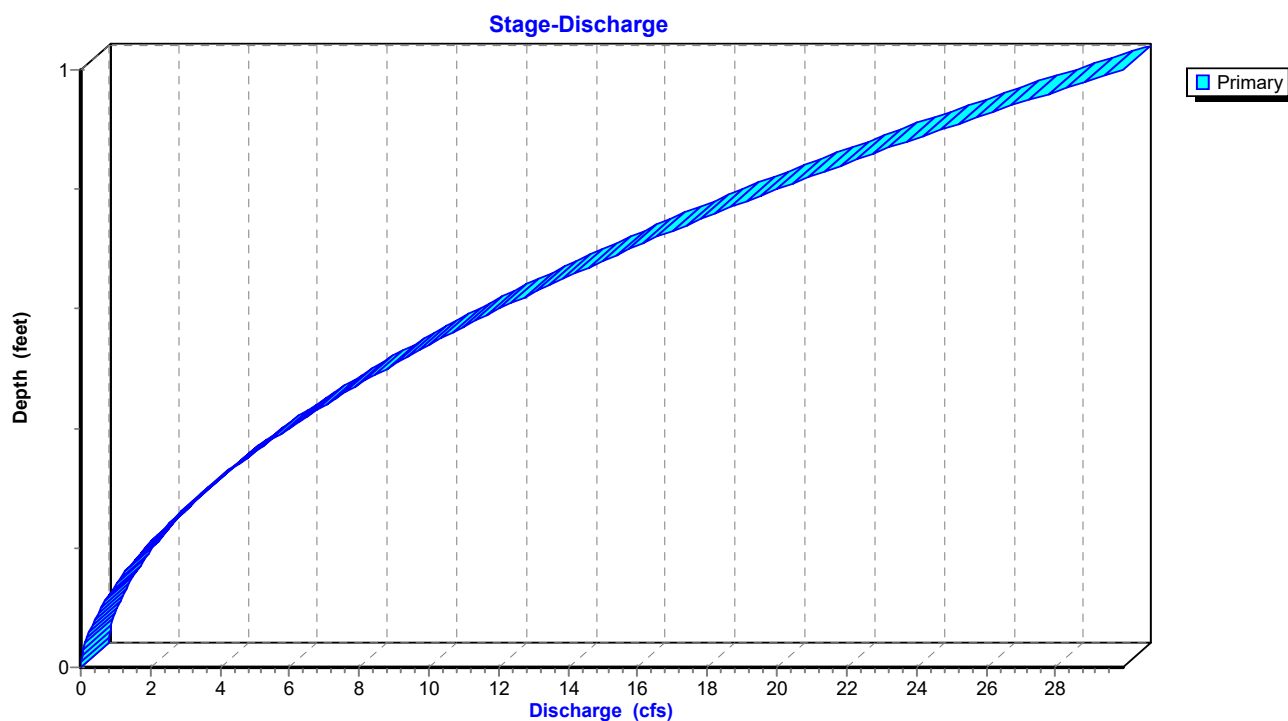


Reach 38R: Div Ditch 4

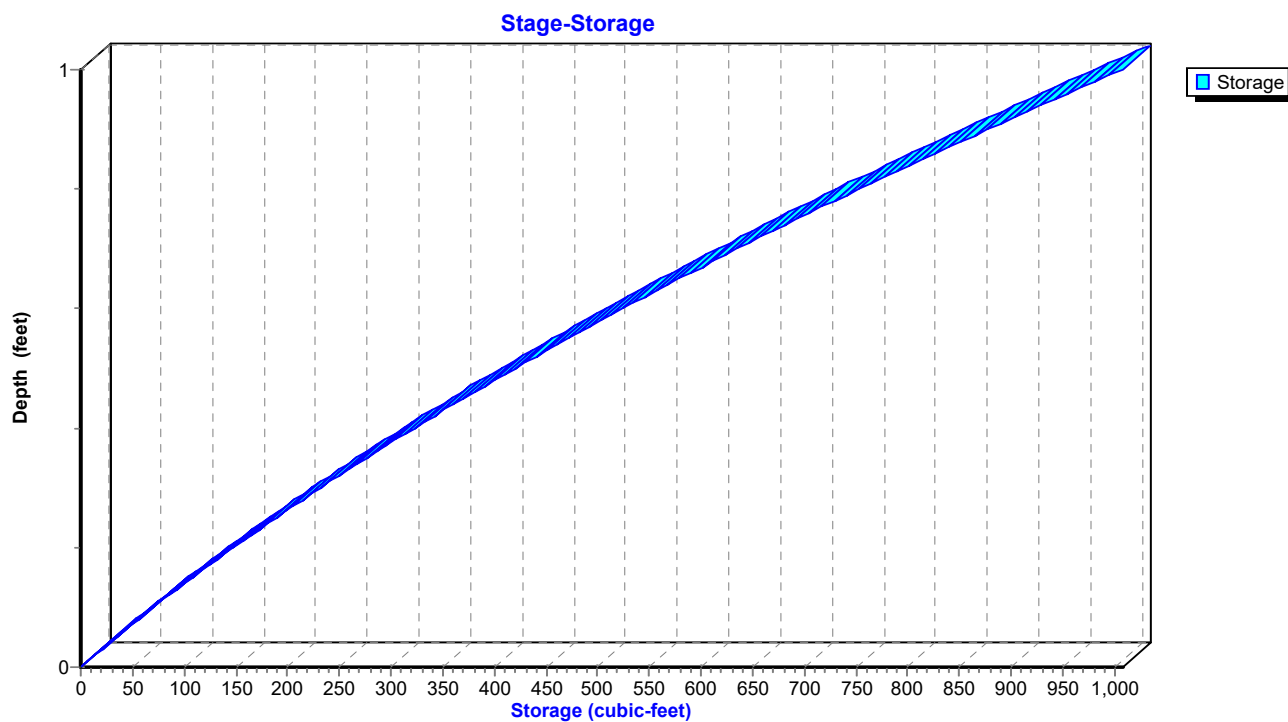
Hydrograph



Reach 38R: Div Ditch 4



Reach 38R: Div Ditch 4



Riato V6 Final

Prepared by JMT

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Type II 24-hr 1-yr Rainfall=2.63"

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Hydrograph for Reach 38R: Div Ditch 4

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
0.05	0.00	0	1,635.00	0.00
5.05	0.00	0	1,635.00	0.00
10.05	0.00	0	1,635.00	0.00
15.05	0.18	34	1,635.05	0.18
20.05	0.07	20	1,635.03	0.07
25.05	0.02	10	1,635.01	0.02
30.05	0.00	0	1,635.00	0.00
35.05	0.00	0	1,635.00	0.00
40.05	0.00	0	1,635.00	0.00
45.05	0.00	0	1,635.00	0.00
50.05	0.00	0	1,635.00	0.00
55.05	0.00	0	1,635.00	0.00
60.05	0.00	0	1,635.00	0.00
65.05	0.00	0	1,635.00	0.00
70.05	0.00	0	1,635.00	0.00
75.05	0.00	0	1,635.00	0.00
80.05	0.00	0	1,635.00	0.00
85.05	0.00	0	1,635.00	0.00
90.05	0.00	0	1,635.00	0.00
95.05	0.00	0	1,635.00	0.00
100.05	0.00	0	1,635.00	0.00
105.05	0.00	0	1,635.00	0.00
110.05	0.00	0	1,635.00	0.00
115.05	0.00	0	1,635.00	0.00
120.05	0.00	0	1,635.00	0.00
125.05	0.00	0	1,635.00	0.00
130.05	0.00	0	1,635.00	0.00
135.05	0.00	0	1,635.00	0.00
140.05	0.00	0	1,635.00	0.00
145.05	0.00	0	1,635.00	0.00

Riato V6 Final

Prepared by JMT

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Type II 24-hr 1-yr Rainfall=2.63"

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Stage-Discharge for Reach 38R: Div Ditch 4

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)	Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
1,635.00	0.00	0.00	1,635.52	7.16	9.38
1,635.01	0.63	0.01	1,635.53	7.23	9.69
1,635.02	1.00	0.04	1,635.54	7.30	10.01
1,635.03	1.30	0.08	1,635.55	7.37	10.34
1,635.04	1.57	0.13	1,635.56	7.44	10.66
1,635.05	1.81	0.19	1,635.57	7.51	11.00
1,635.06	2.03	0.25	1,635.58	7.58	11.34
1,635.07	2.24	0.32	1,635.59	7.64	11.68
1,635.08	2.43	0.40	1,635.60	7.71	12.03
1,635.09	2.62	0.49	1,635.61	7.77	12.38
1,635.10	2.79	0.59	1,635.62	7.84	12.74
1,635.11	2.96	0.69	1,635.63	7.90	13.10
1,635.12	3.12	0.79	1,635.64	7.97	13.46
1,635.13	3.28	0.91	1,635.65	8.03	13.83
1,635.14	3.43	1.03	1,635.66	8.09	14.21
1,635.15	3.57	1.15	1,635.67	8.16	14.59
1,635.16	3.71	1.28	1,635.68	8.22	14.98
1,635.17	3.85	1.42	1,635.69	8.28	15.37
1,635.18	3.98	1.56	1,635.70	8.34	15.76
1,635.19	4.11	1.71	1,635.71	8.40	16.16
1,635.20	4.23	1.86	1,635.72	8.46	16.57
1,635.21	4.35	2.02	1,635.73	8.52	16.98
1,635.22	4.47	2.18	1,635.74	8.58	17.39
1,635.23	4.58	2.35	1,635.75	8.64	17.81
1,635.24	4.70	2.53	1,635.76	8.70	18.24
1,635.25	4.81	2.70	1,635.77	8.75	18.67
1,635.26	4.91	2.89	1,635.78	8.81	19.10
1,635.27	5.02	3.08	1,635.79	8.87	19.54
1,635.28	5.12	3.27	1,635.80	8.92	19.99
1,635.29	5.23	3.47	1,635.81	8.98	20.44
1,635.30	5.32	3.67	1,635.82	9.03	20.89
1,635.31	5.42	3.88	1,635.83	9.09	21.35
1,635.32	5.52	4.10	1,635.84	9.14	21.82
1,635.33	5.61	4.32	1,635.85	9.20	22.28
1,635.34	5.70	4.54	1,635.86	9.25	22.76
1,635.35	5.80	4.77	1,635.87	9.31	23.24
1,635.36	5.89	5.00	1,635.88	9.36	23.72
1,635.37	5.97	5.24	1,635.89	9.41	24.21
1,635.38	6.06	5.48	1,635.90	9.47	24.71
1,635.39	6.15	5.73	1,635.91	9.52	25.21
1,635.40	6.23	5.98	1,635.92	9.57	25.71
1,635.41	6.31	6.24	1,635.93	9.62	26.22
1,635.42	6.40	6.50	1,635.94	9.67	26.74
1,635.43	6.48	6.77	1,635.95	9.73	27.26
1,635.44	6.56	7.04	1,635.96	9.78	27.78
1,635.45	6.63	7.31	1,635.97	9.83	28.31
1,635.46	6.71	7.60	1,635.98	9.88	28.85
1,635.47	6.79	7.88	1,635.99	9.93	29.39
1,635.48	6.86	8.17	1,636.00	9.98	29.93
1,635.49	6.94	8.47			
1,635.50	7.01	8.77			
1,635.51	7.09	9.07			

Stage-Area-Storage for Reach 38R: Div Ditch 4

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
1,635.00	0.0	0	1,635.52	1.3	440
1,635.01	0.0	7	1,635.53	1.3	451
1,635.02	0.0	14	1,635.54	1.4	461
1,635.03	0.1	20	1,635.55	1.4	471
1,635.04	0.1	27	1,635.56	1.4	482
1,635.05	0.1	34	1,635.57	1.5	492
1,635.06	0.1	42	1,635.58	1.5	503
1,635.07	0.1	49	1,635.59	1.5	513
1,635.08	0.2	56	1,635.60	1.6	524
1,635.09	0.2	63	1,635.61	1.6	535
1,635.10	0.2	71	1,635.62	1.6	546
1,635.11	0.2	78	1,635.63	1.7	557
1,635.12	0.3	85	1,635.64	1.7	568
1,635.13	0.3	93	1,635.65	1.7	579
1,635.14	0.3	101	1,635.66	1.8	590
1,635.15	0.3	108	1,635.67	1.8	601
1,635.16	0.3	116	1,635.68	1.8	612
1,635.17	0.4	124	1,635.69	1.9	624
1,635.18	0.4	132	1,635.70	1.9	635
1,635.19	0.4	140	1,635.71	1.9	646
1,635.20	0.4	148	1,635.72	2.0	658
1,635.21	0.5	156	1,635.73	2.0	670
1,635.22	0.5	164	1,635.74	2.0	681
1,635.23	0.5	172	1,635.75	2.1	693
1,635.24	0.5	181	1,635.76	2.1	705
1,635.25	0.6	189	1,635.77	2.1	717
1,635.26	0.6	197	1,635.78	2.2	729
1,635.27	0.6	206	1,635.79	2.2	741
1,635.28	0.6	215	1,635.80	2.2	753
1,635.29	0.7	223	1,635.81	2.3	765
1,635.30	0.7	232	1,635.82	2.3	777
1,635.31	0.7	241	1,635.83	2.3	789
1,635.32	0.7	249	1,635.84	2.4	802
1,635.33	0.8	258	1,635.85	2.4	814
1,635.34	0.8	267	1,635.86	2.5	826
1,635.35	0.8	276	1,635.87	2.5	839
1,635.36	0.8	285	1,635.88	2.5	852
1,635.37	0.9	295	1,635.89	2.6	864
1,635.38	0.9	304	1,635.90	2.6	877
1,635.39	0.9	313	1,635.91	2.6	890
1,635.40	1.0	323	1,635.92	2.7	903
1,635.41	1.0	332	1,635.93	2.7	916
1,635.42	1.0	342	1,635.94	2.8	929
1,635.43	1.0	351	1,635.95	2.8	942
1,635.44	1.1	361	1,635.96	2.8	955
1,635.45	1.1	370	1,635.97	2.9	968
1,635.46	1.1	380	1,635.98	2.9	981
1,635.47	1.2	390	1,635.99	3.0	995
1,635.48	1.2	400	1,636.00	3.0	1,008
1,635.49	1.2	410			
1,635.50	1.3	420			
1,635.51	1.3	430			

Summary for Reach 39R: Culvert Outlet Apron

Inflow Area = 35.631 ac, 7.72% Impervious, Inflow Depth > 1.75" for 1-yr event
 Inflow = 3.59 cfs @ 12.46 hrs, Volume= 5.196 af
 Outflow = 3.59 cfs @ 12.46 hrs, Volume= 5.195 af, Atten= 0%, Lag= 0.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Max. Velocity= 0.52 fps, Min. Travel Time= 0.7 min

Avg. Velocity = 0.21 fps, Avg. Travel Time= 1.7 min

Peak Storage= 151 cf @ 12.46 hrs

Average Depth at Peak Storage= 0.23'

Bank-Full Depth= 3.00' Flow Area= 99.0 sf, Capacity= 263.34 cfs

30.00' x 3.00' deep channel, n= 0.050

Side Slope Z-value= 1.0 '/' Top Width= 36.00'

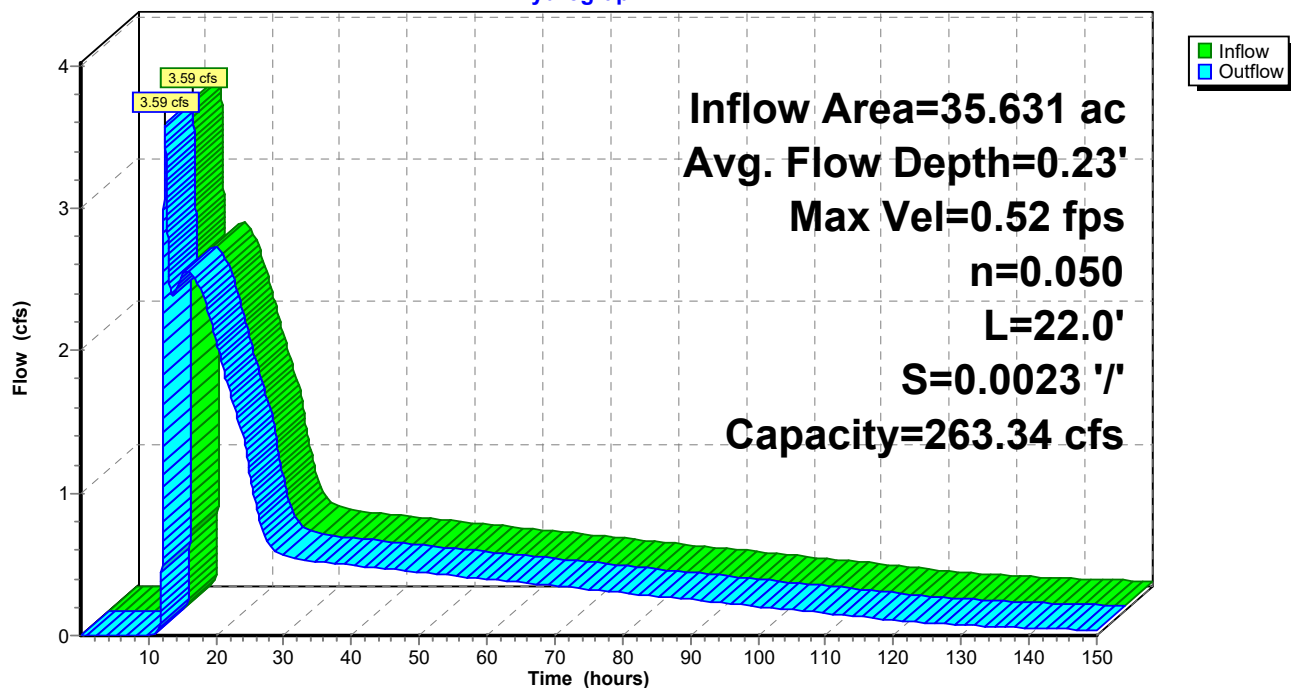
Length= 22.0' Slope= 0.0023 '/'

Inlet Invert= 1,446.00', Outlet Invert= 1,445.95'

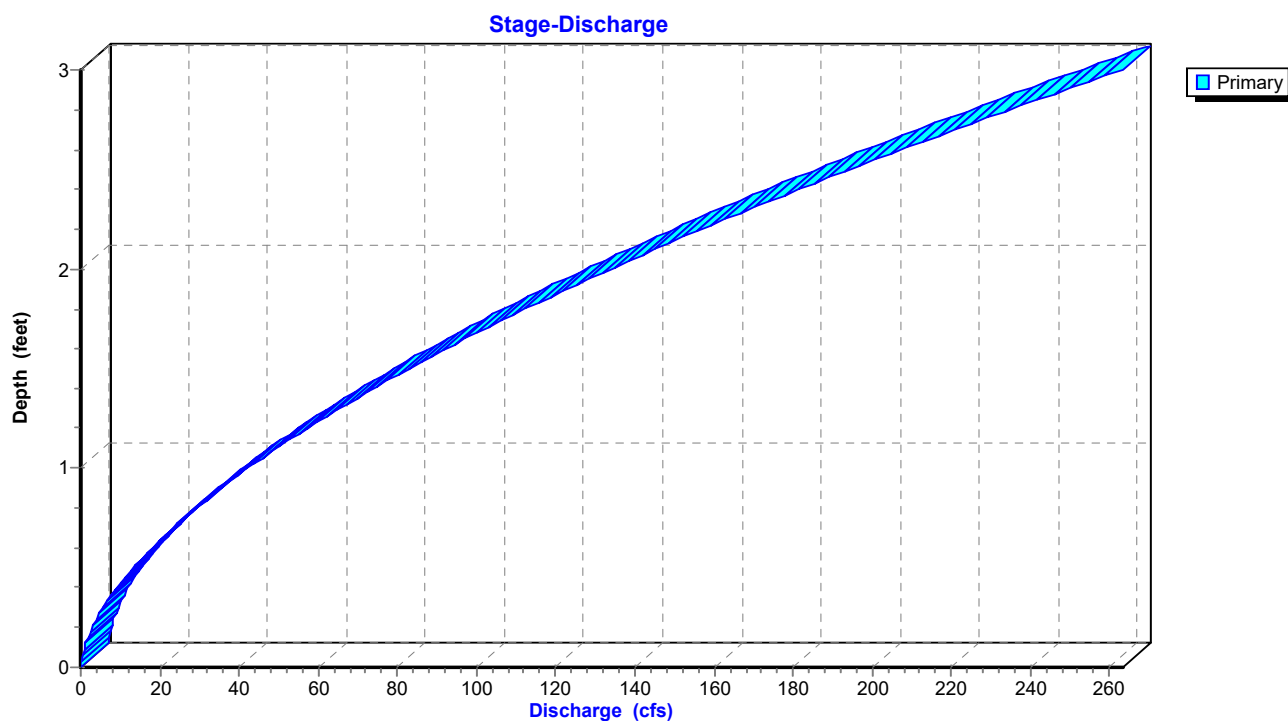


Reach 39R: Culvert Outlet Apron

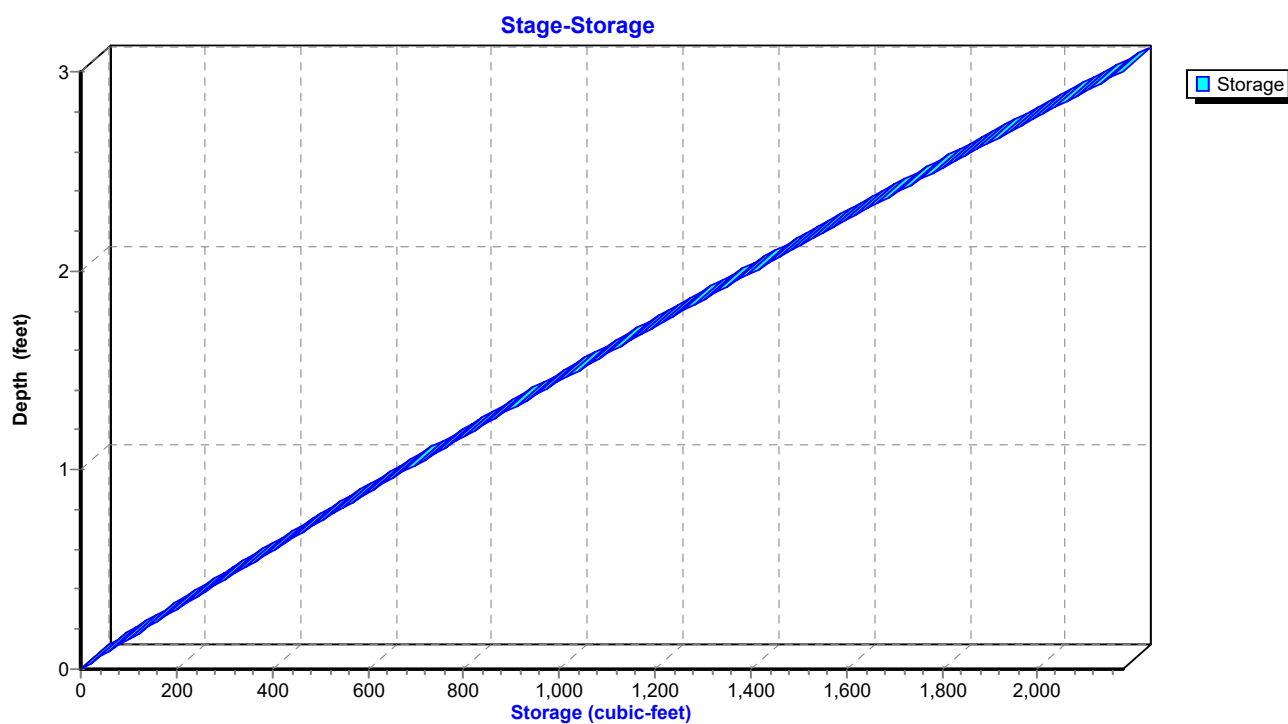
Hydrograph



Reach 39R: Culvert Outlet Apron



Reach 39R: Culvert Outlet Apron



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Hydrograph for Reach 39R: Culvert Outlet Apron

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
0.05	0.00	0	1,446.00	0.00
5.05	0.00	0	1,446.00	0.00
10.05	0.00	0	1,446.00	0.00
15.05	2.54	122	1,446.18	2.54
20.05	2.07	108	1,446.16	2.07
25.05	1.12	74	1,446.11	1.12
30.05	0.56	49	1,446.07	0.56
35.05	0.52	46	1,446.07	0.52
40.05	0.49	45	1,446.07	0.49
45.05	0.47	44	1,446.07	0.47
50.05	0.44	43	1,446.06	0.44
55.05	0.42	41	1,446.06	0.42
60.05	0.40	40	1,446.06	0.40
65.05	0.37	38	1,446.06	0.37
70.05	0.35	37	1,446.06	0.35
75.05	0.32	35	1,446.05	0.32
80.05	0.30	33	1,446.05	0.30
85.05	0.28	31	1,446.05	0.28
90.05	0.25	29	1,446.04	0.25
95.05	0.23	28	1,446.04	0.23
100.05	0.20	26	1,446.04	0.20
105.05	0.18	24	1,446.04	0.18
110.05	0.16	22	1,446.03	0.16
115.05	0.13	21	1,446.03	0.13
120.05	0.11	18	1,446.03	0.11
125.05	0.09	14	1,446.02	0.09
130.05	0.07	12	1,446.02	0.07
135.05	0.06	10	1,446.02	0.06
140.05	0.05	8	1,446.01	0.05
145.05	0.04	7	1,446.01	0.04

Stage-Discharge for Reach 39R: Culvert Outlet Apron

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)	Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)	Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
1,446.00	0.00	0.00	1,447.04	1.40	45.13	1,448.08	2.14	142.97
1,446.02	0.09	0.08	1,447.06	1.41	46.58	1,448.10	2.15	145.26
1,446.04	0.16	0.21	1,447.08	1.43	48.05	1,448.12	2.17	147.58
1,446.06	0.22	0.39	1,447.10	1.45	49.54	1,448.14	2.18	149.90
1,446.08	0.26	0.64	1,447.12	1.46	51.05	1,448.16	2.19	152.24
1,446.10	0.30	0.93	1,447.14	1.48	52.57	1,448.18	2.20	154.60
1,446.12	0.34	1.24	1,447.16	1.50	54.12	1,448.20	2.22	156.97
1,446.14	0.38	1.61	1,447.18	1.51	55.68	1,448.22	2.23	159.35
1,446.16	0.41	2.01	1,447.20	1.53	57.25	1,448.24	2.24	161.75
1,446.18	0.45	2.44	1,447.22	1.54	58.85	1,448.26	2.25	164.17
1,446.20	0.48	2.91	1,447.24	1.56	60.46	1,448.28	2.26	166.59
1,446.22	0.51	3.41	1,447.26	1.58	62.09	1,448.30	2.28	169.04
1,446.24	0.54	3.93	1,447.28	1.59	63.74	1,448.32	2.29	171.49
1,446.26	0.57	4.50	1,447.30	1.61	65.40	1,448.34	2.30	173.96
1,446.28	0.60	5.09	1,447.32	1.62	67.08	1,448.36	2.31	176.45
1,446.30	0.63	5.70	1,447.34	1.64	68.79	1,448.38	2.32	178.95
1,446.32	0.65	6.36	1,447.36	1.65	70.50	1,448.40	2.33	181.46
1,446.34	0.68	7.03	1,447.38	1.67	72.23	1,448.42	2.35	183.99
1,446.36	0.71	7.73	1,447.40	1.68	73.98	1,448.44	2.36	186.53
1,446.38	0.73	8.46	1,447.42	1.70	75.75	1,448.46	2.37	189.08
1,446.40	0.76	9.21	1,447.44	1.71	77.53	1,448.48	2.38	191.66
1,446.42	0.78	9.98	1,447.46	1.73	79.33	1,448.50	2.39	194.24
1,446.44	0.81	10.79	1,447.48	1.74	81.15	1,448.52	2.40	196.84
1,446.46	0.83	11.62	1,447.50	1.76	82.98	1,448.54	2.41	199.45
1,446.48	0.85	12.47	1,447.52	1.77	84.83	1,448.56	2.42	202.08
1,446.50	0.88	13.35	1,447.54	1.78	86.69	1,448.58	2.44	204.72
1,446.52	0.90	14.25	1,447.56	1.80	88.57	1,448.60	2.45	207.38
1,446.54	0.92	15.17	1,447.58	1.81	90.47	1,448.62	2.46	210.04
1,446.56	0.94	16.12	1,447.60	1.83	92.38	1,448.64	2.47	212.72
1,446.58	0.96	17.09	1,447.62	1.84	94.31	1,448.66	2.48	215.42
1,446.60	0.98	18.08	1,447.64	1.85	96.26	1,448.68	2.49	218.13
1,446.62	1.01	19.09	1,447.66	1.87	98.22	1,448.70	2.50	220.85
1,446.64	1.03	20.13	1,447.68	1.88	100.19	1,448.72	2.51	223.59
1,446.66	1.05	21.18	1,447.70	1.90	102.19	1,448.74	2.52	226.34
1,446.68	1.07	22.27	1,447.72	1.91	104.20	1,448.76	2.53	229.10
1,446.70	1.09	23.36	1,447.74	1.92	106.22	1,448.78	2.54	231.89
1,446.72	1.11	24.48	1,447.76	1.94	108.26	1,448.80	2.56	234.68
1,446.74	1.13	25.63	1,447.78	1.95	110.31	1,448.82	2.57	237.48
1,446.76	1.15	26.79	1,447.80	1.96	112.38	1,448.84	2.58	240.30
1,446.78	1.16	27.97	1,447.82	1.98	114.47	1,448.86	2.59	243.14
1,446.80	1.18	29.17	1,447.84	1.99	116.57	1,448.88	2.60	245.98
1,446.82	1.20	30.40	1,447.86	2.00	118.68	1,448.90	2.61	248.84
1,446.84	1.22	31.63	1,447.88	2.02	120.82	1,448.92	2.62	251.72
1,446.86	1.24	32.90	1,447.90	2.03	122.97	1,448.94	2.63	254.60
1,446.88	1.26	34.18	1,447.92	2.04	125.12	1,448.96	2.64	257.50
1,446.90	1.28	35.48	1,447.94	2.05	127.31	1,448.98	2.65	260.42
1,446.92	1.29	36.81	1,447.96	2.07	129.50	1,449.00	2.66	263.34
1,446.94	1.31	38.15	1,447.98	2.08	131.70			
1,446.96	1.33	39.50	1,448.00	2.09	133.93			
1,446.98	1.35	40.88	1,448.02	2.11	136.17			
1,447.00	1.36	42.28	1,448.04	2.12	138.41			
1,447.02	1.38	43.69	1,448.06	2.13	140.69			

Stage-Area-Storage for Reach 39R: Culvert Outlet Apron

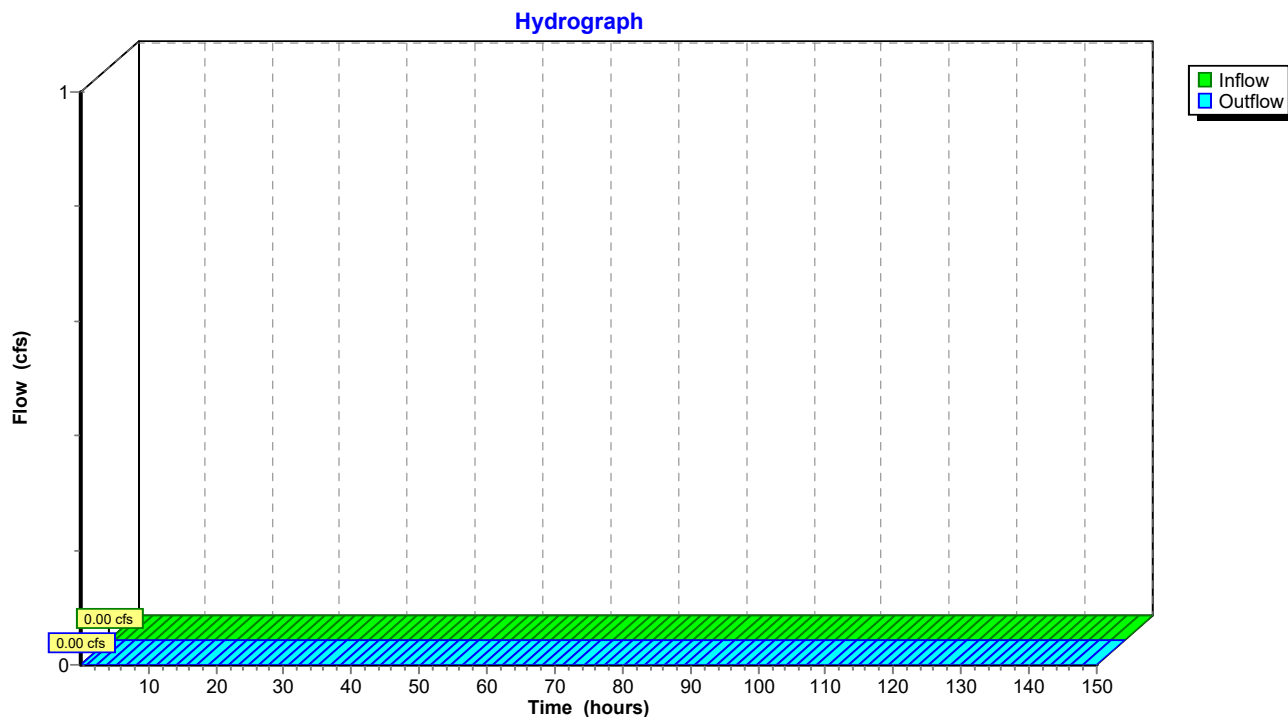
Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
1,446.00	0.0	0	1,448.60	84.8	1,865
1,446.05	1.5	33	1,448.65	86.5	1,903
1,446.10	3.0	66	1,448.70	88.3	1,942
1,446.15	4.5	99	1,448.75	90.1	1,981
1,446.20	6.0	133	1,448.80	91.8	2,020
1,446.25	7.6	166	1,448.85	93.6	2,060
1,446.30	9.1	200	1,448.90	95.4	2,099
1,446.35	10.6	234	1,448.95	97.2	2,138
1,446.40	12.2	268	1,449.00	99.0	2,178
1,446.45	13.7	301			
1,446.50	15.3	336			
1,446.55	16.8	370			
1,446.60	18.4	404			
1,446.65	19.9	438			
1,446.70	21.5	473			
1,446.75	23.1	507			
1,446.80	24.6	542			
1,446.85	26.2	577			
1,446.90	27.8	612			
1,446.95	29.4	647			
1,447.00	31.0	682			
1,447.05	32.6	717			
1,447.10	34.2	753			
1,447.15	35.8	788			
1,447.20	37.4	824			
1,447.25	39.1	859			
1,447.30	40.7	895			
1,447.35	42.3	931			
1,447.40	44.0	967			
1,447.45	45.6	1,003			
1,447.50	47.3	1,040			
1,447.55	48.9	1,076			
1,447.60	50.6	1,112			
1,447.65	52.2	1,149			
1,447.70	53.9	1,186			
1,447.75	55.6	1,222			
1,447.80	57.2	1,259			
1,447.85	58.9	1,296			
1,447.90	60.6	1,333			
1,447.95	62.3	1,371			
1,448.00	64.0	1,408			
1,448.05	65.7	1,445			
1,448.10	67.4	1,483			
1,448.15	69.1	1,521			
1,448.20	70.8	1,558			
1,448.25	72.6	1,596			
1,448.30	74.3	1,634			
1,448.35	76.0	1,672			
1,448.40	77.8	1,711			
1,448.45	79.5	1,749			
1,448.50	81.3	1,788			
1,448.55	83.0	1,826			

Summary for Reach 40R: Emergency Spillway

Inflow = 0.00 cfs @ 0.05 hrs, Volume= 0.000 af
 Outflow = 0.00 cfs @ 0.05 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Reach 40R: Emergency Spillway



Hydrograph for Reach 40R: Emergency Spillway

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
0.05	0.00		0.00	104.05	0.00		0.00
2.05	0.00		0.00	106.05	0.00		0.00
4.05	0.00		0.00	108.05	0.00		0.00
6.05	0.00		0.00	110.05	0.00		0.00
8.05	0.00		0.00	112.05	0.00		0.00
10.05	0.00		0.00	114.05	0.00		0.00
12.05	0.00		0.00	116.05	0.00		0.00
14.05	0.00		0.00	118.05	0.00		0.00
16.05	0.00		0.00	120.05	0.00		0.00
18.05	0.00		0.00	122.05	0.00		0.00
20.05	0.00		0.00	124.05	0.00		0.00
22.05	0.00		0.00	126.05	0.00		0.00
24.05	0.00		0.00	128.05	0.00		0.00
26.05	0.00		0.00	130.05	0.00		0.00
28.05	0.00		0.00	132.05	0.00		0.00
30.05	0.00		0.00	134.05	0.00		0.00
32.05	0.00		0.00	136.05	0.00		0.00
34.05	0.00		0.00	138.05	0.00		0.00
36.05	0.00		0.00	140.05	0.00		0.00
38.05	0.00		0.00	142.05	0.00		0.00
40.05	0.00		0.00	144.05	0.00		0.00
42.05	0.00		0.00	146.05	0.00		0.00
44.05	0.00		0.00	148.05	0.00		0.00
46.05	0.00		0.00				
48.05	0.00		0.00				
50.05	0.00		0.00				
52.05	0.00		0.00				
54.05	0.00		0.00				
56.05	0.00		0.00				
58.05	0.00		0.00				
60.05	0.00		0.00				
62.05	0.00		0.00				
64.05	0.00		0.00				
66.05	0.00		0.00				
68.05	0.00		0.00				
70.05	0.00		0.00				
72.05	0.00		0.00				
74.05	0.00		0.00				
76.05	0.00		0.00				
78.05	0.00		0.00				
80.05	0.00		0.00				
82.05	0.00		0.00				
84.05	0.00		0.00				
86.05	0.00		0.00				
88.05	0.00		0.00				
90.05	0.00		0.00				
92.05	0.00		0.00				
94.05	0.00		0.00				
96.05	0.00		0.00				
98.05	0.00		0.00				
100.05	0.00		0.00				
102.05	0.00		0.00				

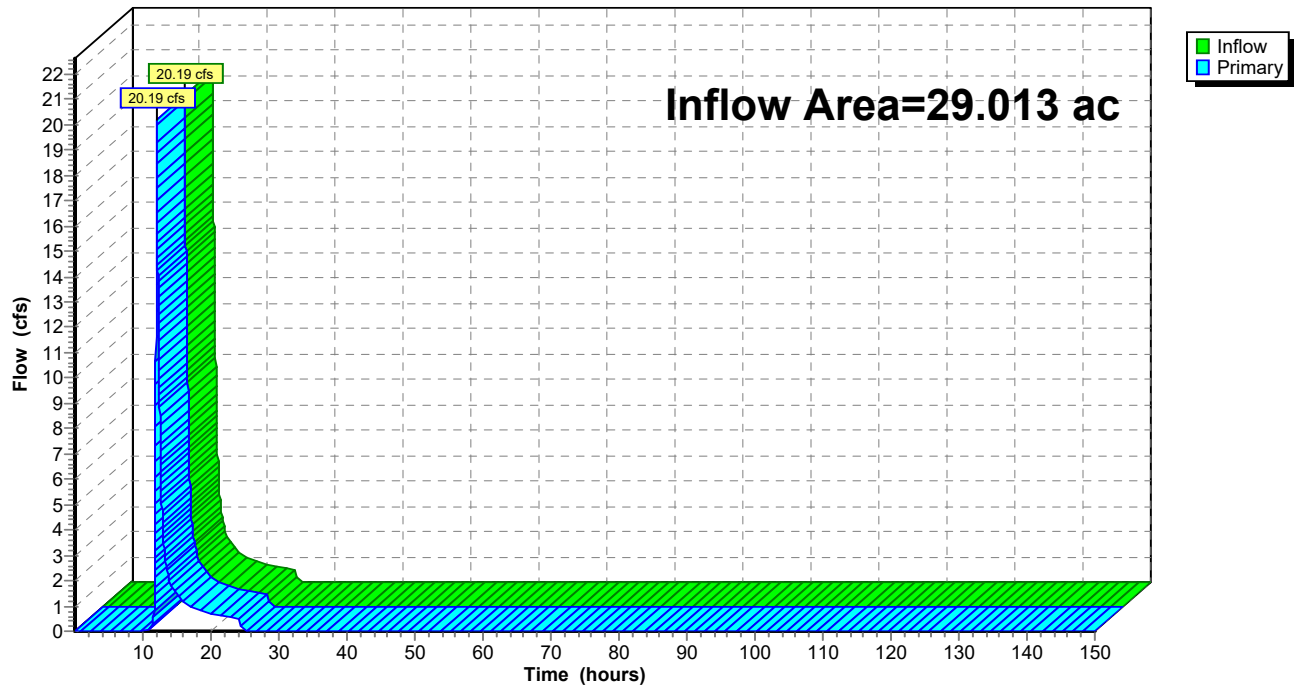
Summary for Pond 13P: Pre-Dvel Disch

Inflow Area = 29.013 ac, 0.00% Impervious, Inflow Depth = 0.82" for 1-yr event
 Inflow = 20.19 cfs @ 12.08 hrs, Volume= 1.990 af
 Primary = 20.19 cfs @ 12.08 hrs, Volume= 1.990 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Pond 13P: Pre-Dvel Disch

Hydrograph



Hydrograph for Pond 13P: Pre-Dvel Disch

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.05	0.00		0.00	104.05	0.00		0.00
2.05	0.00		0.00	106.05	0.00		0.00
4.05	0.00		0.00	108.05	0.00		0.00
6.05	0.00		0.00	110.05	0.00		0.00
8.05	0.00		0.00	112.05	0.00		0.00
10.05	0.00		0.00	114.05	0.00		0.00
12.05	19.51		19.51	116.05	0.00		0.00
14.05	1.89		1.89	118.05	0.00		0.00
16.05	1.15		1.15	120.05	0.00		0.00
18.05	0.88		0.88	122.05	0.00		0.00
20.05	0.66		0.66	124.05	0.00		0.00
22.05	0.59		0.59	126.05	0.00		0.00
24.05	0.55		0.55	128.05	0.00		0.00
26.05	0.00		0.00	130.05	0.00		0.00
28.05	0.00		0.00	132.05	0.00		0.00
30.05	0.00		0.00	134.05	0.00		0.00
32.05	0.00		0.00	136.05	0.00		0.00
34.05	0.00		0.00	138.05	0.00		0.00
36.05	0.00		0.00	140.05	0.00		0.00
38.05	0.00		0.00	142.05	0.00		0.00
40.05	0.00		0.00	144.05	0.00		0.00
42.05	0.00		0.00	146.05	0.00		0.00
44.05	0.00		0.00	148.05	0.00		0.00
46.05	0.00		0.00				
48.05	0.00		0.00				
50.05	0.00		0.00				
52.05	0.00		0.00				
54.05	0.00		0.00				
56.05	0.00		0.00				
58.05	0.00		0.00				
60.05	0.00		0.00				
62.05	0.00		0.00				
64.05	0.00		0.00				
66.05	0.00		0.00				
68.05	0.00		0.00				
70.05	0.00		0.00				
72.05	0.00		0.00				
74.05	0.00		0.00				
76.05	0.00		0.00				
78.05	0.00		0.00				
80.05	0.00		0.00				
82.05	0.00		0.00				
84.05	0.00		0.00				
86.05	0.00		0.00				
88.05	0.00		0.00				
90.05	0.00		0.00				
92.05	0.00		0.00				
94.05	0.00		0.00				
96.05	0.00		0.00				
98.05	0.00		0.00				
100.05	0.00		0.00				
102.05	0.00		0.00				

Summary for Pond 14P: North Bay

Inflow Area = 29.013 ac, 9.48% Impervious, Inflow Depth = 2.04" for 1-yr event
 Inflow = 93.03 cfs @ 11.93 hrs, Volume= 4.942 af
 Outflow = 3.73 cfs @ 13.44 hrs, Volume= 4.768 af, Atten= 96%, Lag= 90.5 min
 Primary = 3.73 cfs @ 13.44 hrs, Volume= 4.768 af

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs
 Starting Elev= 1,452.50' Surf.Area= 1.900 ac Storage= 1.900 af
 Peak Elev= 1,454.24' @ 13.44 hrs Surf.Area= 1.900 ac Storage= 5.213 af (3.313 af above start)

Plug-Flow detention time= 3,107.0 min calculated for 2.868 af (58% of inflow)
 Center-of-Mass det. time= 1,880.3 min (2,667.1 - 786.8)

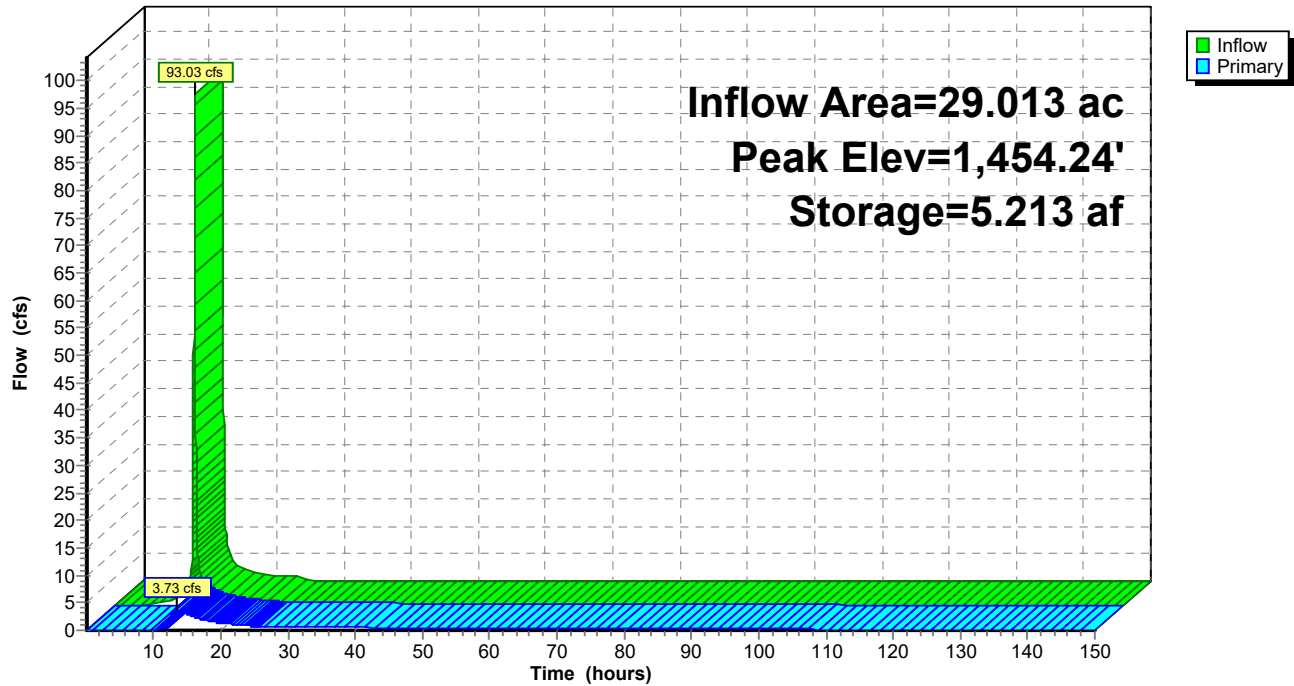
Volume	Invert	Avail.Storage	Storage Description
#1	1,451.50'	96.900 af	Custom Stage Data (Prismatic) Listed below (Recalc) x 1.9
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,451.50	1.000	0.000	0.000
1,452.50	1.000	1.000	1.000
1,453.50	1.000	1.000	2.000
1,454.50	1.000	1.000	3.000
1,458.50	1.000	4.000	7.000
1,502.50	1.000	44.000	51.000

Device	Routing	Invert	Outlet Devices
#1	Primary	1,454.00'	8.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#2	Primary	1,452.50'	3.0" Vert. Orifice/Grate X 2.00 C= 0.600

Primary OutFlow Max=3.73 cfs @ 13.44 hrs HW=1,454.24' TW=1,452.03' (Dynamic Tailwater)
 1=Sharp-Crested Rectangular Weir (Weir Controls 3.13 cfs @ 1.61 fps)
 2=Orifice/Grate (Orifice Controls 0.60 cfs @ 6.13 fps)

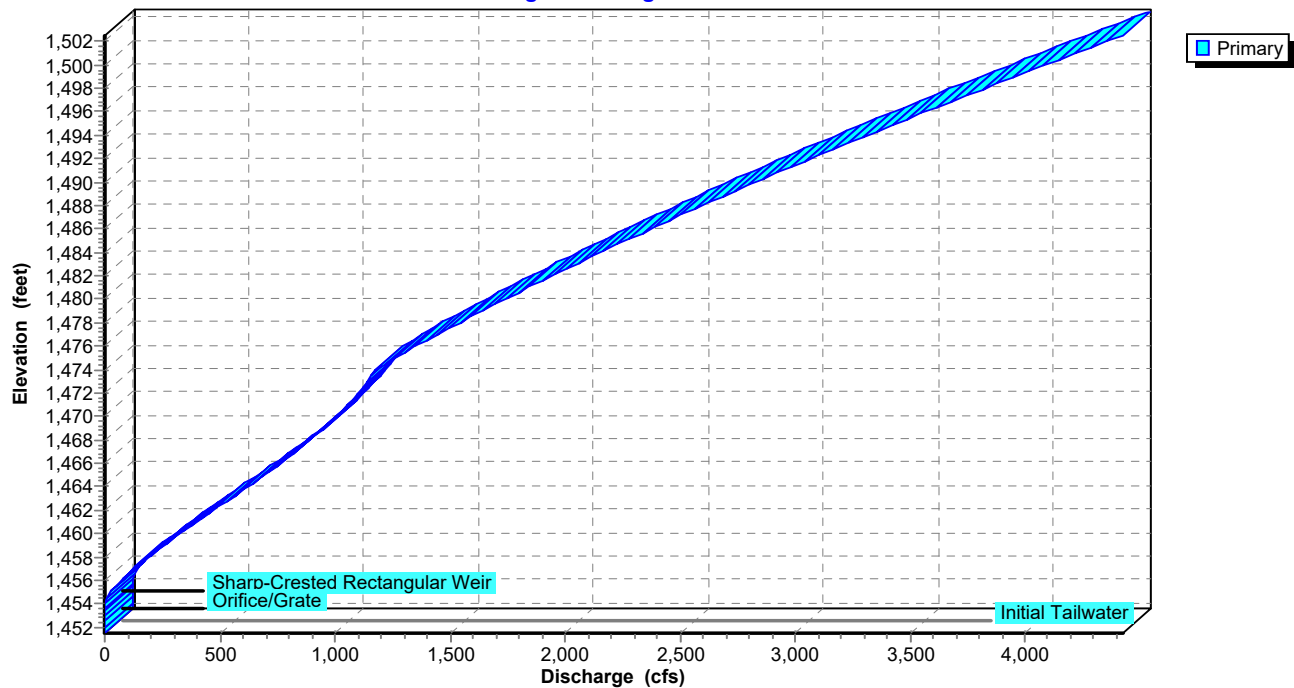
Pond 14P: North Bay

Hydrograph



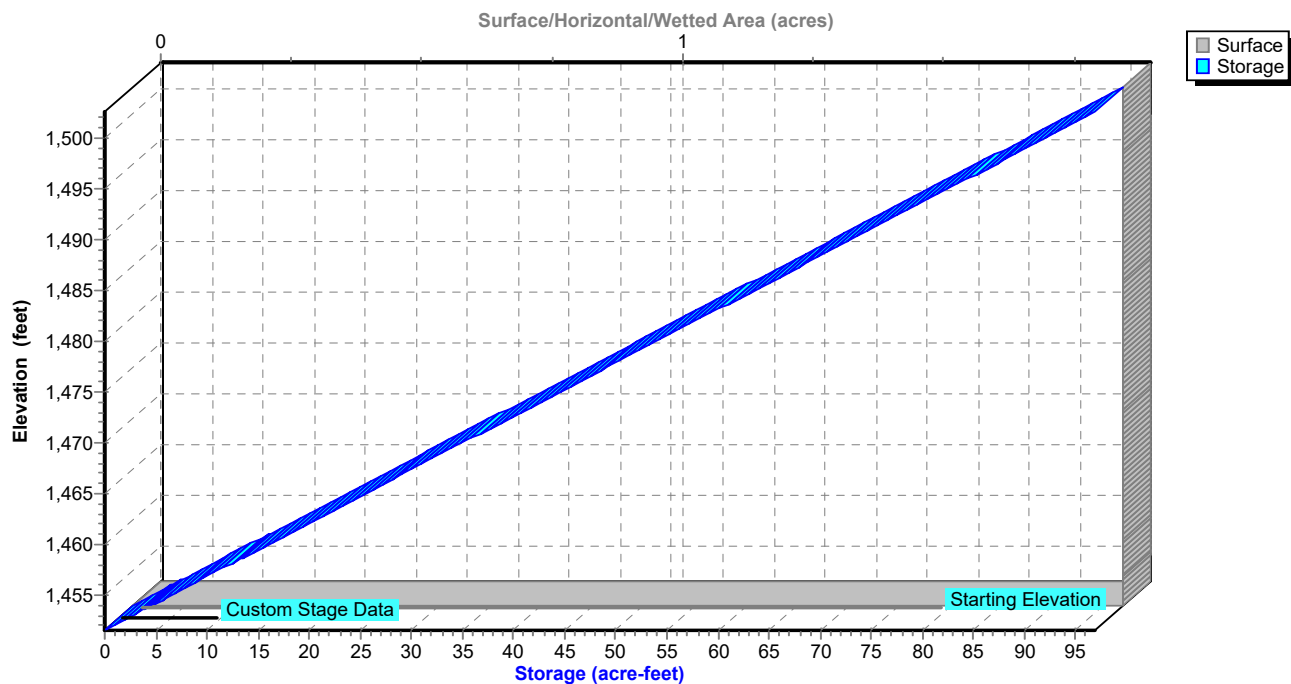
Pond 14P: North Bay

Stage-Discharge



Pond 14P: North Bay

Stage-Area-Storage



Riato V6 Final

Prepared by JMT

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Type II 24-hr 1-yr Rainfall=2.63"

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Hydrograph for Pond 14P: North Bay

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.05	0.00	1.900	1,452.50	0.00
5.05	0.18	1.910	1,452.51	0.00
10.05	1.88	2.220	1,452.67	0.10
15.05	2.22	5.130	1,454.20	2.93
20.05	0.97	4.928	1,454.09	1.32
25.05	0.00	4.801	1,454.03	0.67
30.05	0.00	4.571	1,453.91	0.53
35.05	0.00	4.355	1,453.79	0.51
40.05	0.00	4.149	1,453.68	0.49
45.05	0.00	3.954	1,453.58	0.46
50.05	0.00	3.768	1,453.48	0.44
55.05	0.00	3.592	1,453.39	0.41
60.05	0.00	3.426	1,453.30	0.39
65.05	0.00	3.270	1,453.22	0.37
70.05	0.00	3.125	1,453.14	0.34
75.05	0.00	2.989	1,453.07	0.32
80.05	0.00	2.863	1,453.01	0.29
85.05	0.00	2.748	1,452.95	0.27
90.05	0.00	2.642	1,452.89	0.24
95.05	0.00	2.546	1,452.84	0.22
100.05	0.00	2.461	1,452.80	0.19
105.05	0.00	2.385	1,452.76	0.17
110.05	0.00	2.319	1,452.72	0.15
115.05	0.00	2.264	1,452.69	0.12
120.05	0.00	2.219	1,452.67	0.10
125.05	0.00	2.183	1,452.65	0.08
130.05	0.00	2.153	1,452.63	0.07
135.05	0.00	2.128	1,452.62	0.05
140.05	0.00	2.107	1,452.61	0.05
145.05	0.00	2.089	1,452.60	0.04

Stage-Discharge for Pond 14P: North Bay

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
1,451.50	0.00	1,480.10	1,746.57
1,452.05	0.00	1,480.65	1,802.01
1,452.60	0.04	1,481.20	1,858.03
1,453.15	0.34	1,481.75	1,914.61
1,453.70	0.49	1,482.30	1,971.76
1,454.25	3.85	1,482.85	2,029.47
1,454.80	19.04	1,483.40	2,087.73
1,455.35	40.43	1,483.95	2,146.54
1,455.90	66.11	1,484.50	2,205.89
1,456.45	95.10	1,485.05	2,265.77
1,457.00	126.73	1,485.60	2,326.19
1,457.55	160.50	1,486.15	2,387.14
1,458.10	196.02	1,486.70	2,448.61
1,458.65	232.98	1,487.25	2,510.59
1,459.20	271.09	1,487.80	2,573.10
1,459.75	310.11	1,488.35	2,636.11
1,460.30	349.82	1,488.90	2,699.63
1,460.85	390.04	1,489.45	2,763.65
1,461.40	430.58	1,490.00	2,828.17
1,461.95	471.29	1,490.55	2,893.18
1,462.50	512.01	1,491.10	2,958.69
1,463.05	552.60	1,491.65	3,024.68
1,463.60	592.93	1,492.20	3,091.16
1,464.15	632.88	1,492.75	3,158.11
1,464.70	672.33	1,493.30	3,225.54
1,465.25	711.17	1,493.85	3,293.45
1,465.80	749.28	1,494.40	3,361.82
1,466.35	786.58	1,494.95	3,430.66
1,466.90	822.95	1,495.50	3,499.97
1,467.45	858.32	1,496.05	3,569.73
1,468.00	892.58	1,496.60	3,639.96
1,468.55	925.65	1,497.15	3,710.64
1,469.10	957.44	1,497.70	3,781.76
1,469.65	987.89	1,498.25	3,853.34
1,470.20	1,016.89	1,498.80	3,925.37
1,470.75	1,044.38	1,499.35	3,997.83
1,471.30	1,070.29	1,499.90	4,070.74
1,471.85	1,094.54	1,500.45	4,144.09
1,472.40	1,117.06	1,501.00	4,217.87
1,472.95	1,137.78	1,501.55	4,292.08
1,473.50	1,156.63	1,502.10	4,366.73
1,474.05	1,176.49		
1,474.60	1,225.17		
1,475.15	1,274.50		
1,475.70	1,324.47		
1,476.25	1,375.08		
1,476.80	1,426.32		
1,477.35	1,478.19		
1,477.90	1,530.66		
1,478.45	1,583.75		
1,479.00	1,637.43		
1,479.55	1,691.70		

Stage-Area-Storage for Pond 14P: North Bay

Elevation (feet)	Surface (acres)	Storage (acre-feet)	Elevation (feet)	Surface (acres)	Storage (acre-feet)
1,451.50	1.900	0.000	1,480.10	1.900	54.340
1,452.05	1.900	1.045	1,480.65	1.900	55.385
1,452.60	1.900	2.090	1,481.20	1.900	56.430
1,453.15	1.900	3.135	1,481.75	1.900	57.475
1,453.70	1.900	4.180	1,482.30	1.900	58.520
1,454.25	1.900	5.225	1,482.85	1.900	59.565
1,454.80	1.900	6.270	1,483.40	1.900	60.610
1,455.35	1.900	7.315	1,483.95	1.900	61.655
1,455.90	1.900	8.360	1,484.50	1.900	62.700
1,456.45	1.900	9.405	1,485.05	1.900	63.745
1,457.00	1.900	10.450	1,485.60	1.900	64.790
1,457.55	1.900	11.495	1,486.15	1.900	65.835
1,458.10	1.900	12.540	1,486.70	1.900	66.880
1,458.65	1.900	13.585	1,487.25	1.900	67.925
1,459.20	1.900	14.630	1,487.80	1.900	68.970
1,459.75	1.900	15.675	1,488.35	1.900	70.015
1,460.30	1.900	16.720	1,488.90	1.900	71.060
1,460.85	1.900	17.765	1,489.45	1.900	72.105
1,461.40	1.900	18.810	1,490.00	1.900	73.150
1,461.95	1.900	19.855	1,490.55	1.900	74.195
1,462.50	1.900	20.900	1,491.10	1.900	75.240
1,463.05	1.900	21.945	1,491.65	1.900	76.285
1,463.60	1.900	22.990	1,492.20	1.900	77.330
1,464.15	1.900	24.035	1,492.75	1.900	78.375
1,464.70	1.900	25.080	1,493.30	1.900	79.420
1,465.25	1.900	26.125	1,493.85	1.900	80.465
1,465.80	1.900	27.170	1,494.40	1.900	81.510
1,466.35	1.900	28.215	1,494.95	1.900	82.555
1,466.90	1.900	29.260	1,495.50	1.900	83.600
1,467.45	1.900	30.305	1,496.05	1.900	84.645
1,468.00	1.900	31.350	1,496.60	1.900	85.690
1,468.55	1.900	32.395	1,497.15	1.900	86.735
1,469.10	1.900	33.440	1,497.70	1.900	87.780
1,469.65	1.900	34.485	1,498.25	1.900	88.825
1,470.20	1.900	35.530	1,498.80	1.900	89.870
1,470.75	1.900	36.575	1,499.35	1.900	90.915
1,471.30	1.900	37.620	1,499.90	1.900	91.960
1,471.85	1.900	38.665	1,500.45	1.900	93.005
1,472.40	1.900	39.710	1,501.00	1.900	94.050
1,472.95	1.900	40.755	1,501.55	1.900	95.095
1,473.50	1.900	41.800	1,502.10	1.900	96.140
1,474.05	1.900	42.845			
1,474.60	1.900	43.890			
1,475.15	1.900	44.935			
1,475.70	1.900	45.980			
1,476.25	1.900	47.025			
1,476.80	1.900	48.070			
1,477.35	1.900	49.115			
1,477.90	1.900	50.160			
1,478.45	1.900	51.205			
1,479.00	1.900	52.250			
1,479.55	1.900	53.295			

Summary for Pond 15P: South Bay

Inflow Area = 29.013 ac, 9.48% Impervious, Inflow Depth > 1.97" for 1-yr event
 Inflow = 3.73 cfs @ 13.44 hrs, Volume= 4.768 af
 Outflow = 2.29 cfs @ 16.32 hrs, Volume= 4.743 af, Atten= 39%, Lag= 172.8 min
 Primary = 2.29 cfs @ 16.32 hrs, Volume= 4.743 af
 Secondary = 0.00 cfs @ 0.05 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Starting Elev= 1,451.50' Surf.Area= 0.500 ac Storage= 0.500 af

Peak Elev= 1,452.49' @ 16.32 hrs Surf.Area= 0.500 ac Storage= 0.995 af (0.495 af above start)

Plug-Flow detention time= 860.2 min calculated for 4.243 af (89% of inflow)

Center-of-Mass det. time= 130.6 min (2,797.8 - 2,667.1)

Volume	Invert	Avail.Storage	Storage Description
#1	1,450.50'	25.500 af	Custom Stage Data (Prismatic) Listed below (Recalc) x 0.5

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,450.50	1.000	0.000	0.000
1,451.50	1.000	1.000	1.000
1,452.50	1.000	1.000	2.000
1,453.50	1.000	1.000	3.000
1,457.50	1.000	4.000	7.000
1,501.50	1.000	44.000	51.000

Device	Routing	Invert	Outlet Devices
#1	Secondary	1,456.00'	10.0' long (Profile 7) Broad-Crested Rectangular Weir Head (feet) 0.49 0.98 1.48 Coef. (English) 2.99 3.41 3.62
#2	Device 5	1,455.50'	36.0" x 84.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 5	1,454.50'	26.0" W x 24.0" H Vert. Vertical Square X 3.00 C= 0.600
#4	Device 5	1,451.50'	4.0" Vert. Orifice/Grate X 6.00 C= 0.600
#5	Primary	1,451.50'	24.0" Round Culvert X 3.00 L= 60.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,451.50' / 1,449.80' S= 0.0283 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=2.29 cfs @ 16.32 hrs HW=1,452.49' TW=1,450.06' (Dynamic Tailwater)

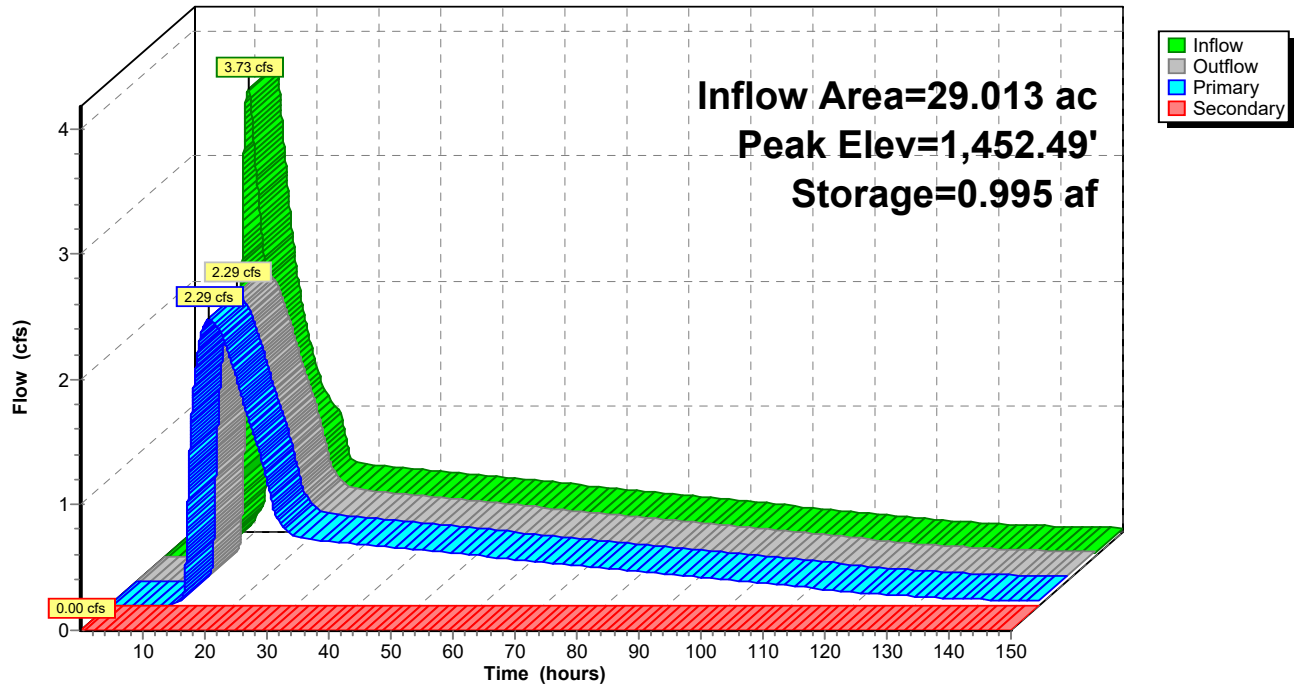
5=Culvert (Passes 2.29 cfs of 15.76 cfs potential flow)
 2=Orifice/Grate (Controls 0.00 cfs)
 3=Vertical Square (Controls 0.00 cfs)
 4=Orifice/Grate (Orifice Controls 2.29 cfs @ 4.37 fps)

Secondary OutFlow Max=0.00 cfs @ 0.05 hrs HW=1,451.50' TW=0.00' (Dynamic Tailwater)

1=Broad-Crested Rectangular Weir(Controls 0.00 cfs)

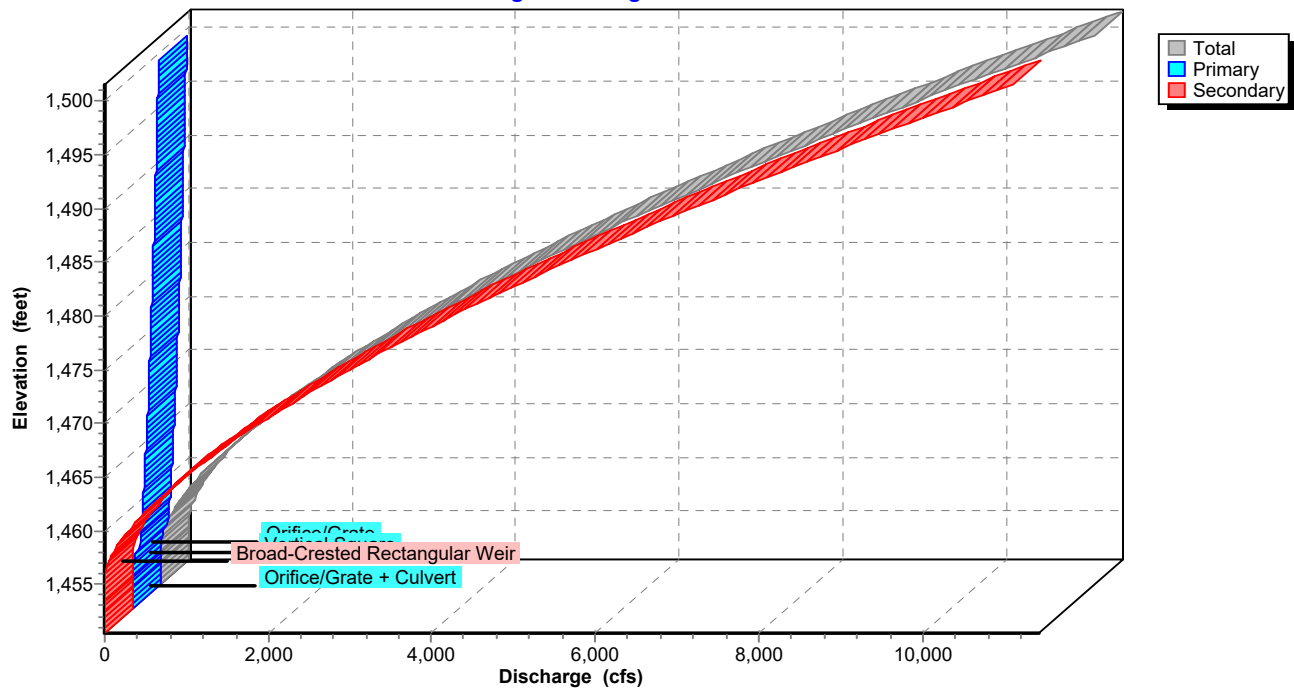
Pond 15P: South Bay

Hydrograph



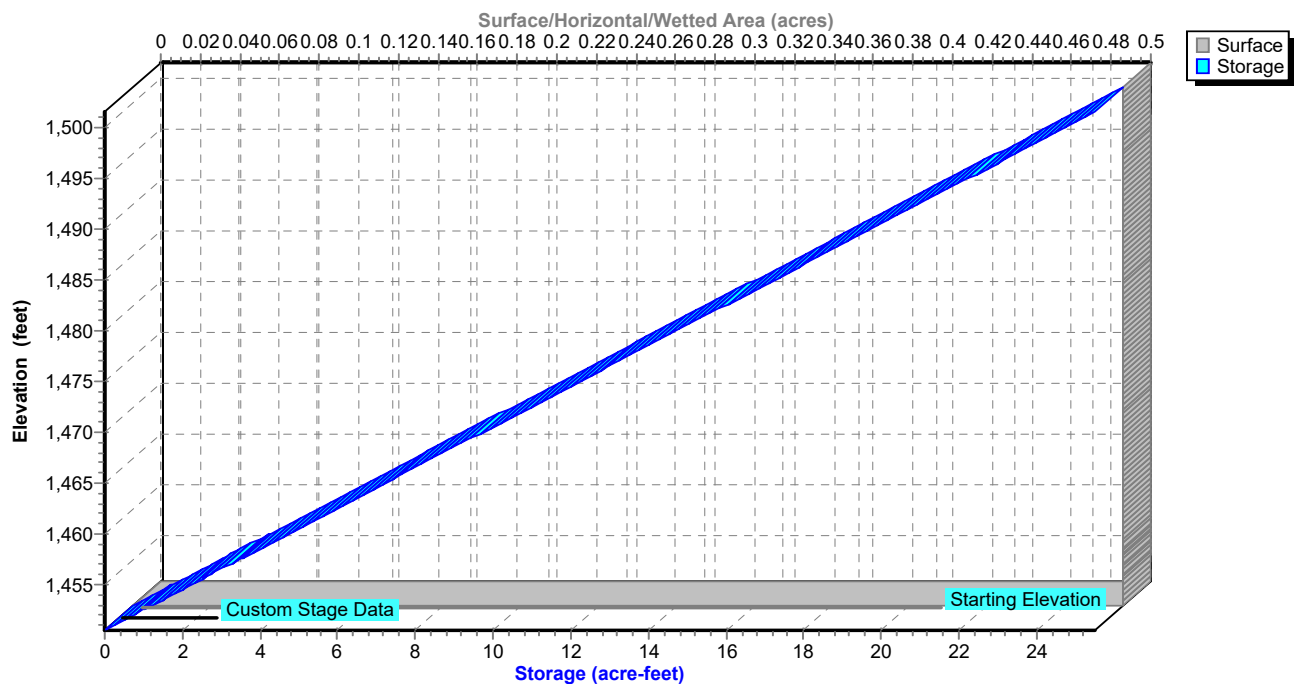
Pond 15P: South Bay

Stage-Discharge



Pond 15P: South Bay

Stage-Area-Storage



Hydrograph for Pond 15P: South Bay

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.05	0.00	0.500	1,451.50	0.00	0.00	0.00
5.05	0.00	0.500	1,451.50	0.00	0.00	0.00
10.05	0.10	0.509	1,451.52	0.00	0.00	0.00
15.05	2.93	0.959	1,452.42	2.19	2.19	0.00
20.05	1.32	0.869	1,452.24	1.91	1.91	0.00
25.05	0.67	0.677	1,451.85	1.09	1.09	0.00
30.05	0.53	0.607	1,451.71	0.56	0.56	0.00
35.05	0.51	0.602	1,451.70	0.52	0.52	0.00
40.05	0.49	0.599	1,451.70	0.49	0.49	0.00
45.05	0.46	0.596	1,451.69	0.47	0.47	0.00
50.05	0.44	0.593	1,451.69	0.44	0.44	0.00
55.05	0.41	0.591	1,451.68	0.42	0.42	0.00
60.05	0.39	0.588	1,451.68	0.40	0.40	0.00
65.05	0.37	0.584	1,451.67	0.37	0.37	0.00
70.05	0.34	0.581	1,451.66	0.35	0.35	0.00
75.05	0.32	0.578	1,451.66	0.32	0.32	0.00
80.05	0.29	0.575	1,451.65	0.30	0.30	0.00
85.05	0.27	0.571	1,451.64	0.28	0.28	0.00
90.05	0.24	0.568	1,451.64	0.25	0.25	0.00
95.05	0.22	0.564	1,451.63	0.23	0.23	0.00
100.05	0.19	0.561	1,451.62	0.20	0.20	0.00
105.05	0.17	0.557	1,451.61	0.18	0.18	0.00
110.05	0.15	0.553	1,451.61	0.16	0.16	0.00
115.05	0.12	0.548	1,451.60	0.13	0.13	0.00
120.05	0.10	0.543	1,451.59	0.11	0.11	0.00
125.05	0.08	0.539	1,451.58	0.09	0.09	0.00
130.05	0.07	0.536	1,451.57	0.07	0.07	0.00
135.05	0.05	0.532	1,451.56	0.06	0.06	0.00
140.05	0.05	0.530	1,451.56	0.05	0.05	0.00
145.05	0.04	0.527	1,451.55	0.04	0.04	0.00

Stage-Discharge for Pond 15P: South Bay

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)	Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
1,450.50	0.00	0.00	0.00	1,479.10	4,253.13	234.05	4,019.08
1,451.05	0.00	0.00	0.00	1,479.65	4,399.92	236.46	4,163.47
1,451.60	0.14	0.14	0.00	1,480.20	4,548.39	238.84	4,309.55
1,452.15	1.75	1.75	0.00	1,480.75	4,698.49	241.20	4,457.29
1,452.70	2.56	2.56	0.00	1,481.30	4,850.23	243.54	4,606.69
1,453.25	3.17	3.17	0.00	1,481.85	5,003.58	245.85	4,757.73
1,453.80	3.68	3.68	0.00	1,482.40	5,158.52	248.14	4,910.37
1,454.35	4.13	4.13	0.00	1,482.95	5,315.03	250.41	5,064.62
1,454.90	9.81	9.81	0.00	1,483.50	5,473.11	252.67	5,220.45
1,455.45	24.22	24.22	0.00	1,484.05	5,632.74	254.90	5,377.84
1,456.00	66.70	66.70	0.00	1,484.60	5,793.89	257.11	5,536.78
1,456.55	103.73	91.33	12.41	1,485.15	5,956.57	259.30	5,697.26
1,457.10	137.25	97.33	39.92	1,485.70	6,120.74	261.48	5,859.27
1,457.65	179.71	102.98	76.72	1,486.25	6,286.41	263.63	6,022.78
1,458.20	226.47	108.34	118.13	1,486.80	6,453.55	265.77	6,187.78
1,458.75	278.54	113.45	165.08	1,487.35	6,622.15	267.90	6,354.26
1,459.30	335.35	118.34	217.01	1,487.90	6,792.21	270.00	6,522.21
1,459.85	396.49	123.03	273.46	1,488.45	6,963.70	272.09	6,691.61
1,460.40	461.66	127.55	334.11	1,489.00	7,136.62	274.16	6,862.45
1,460.95	530.59	131.91	398.67	1,489.55	7,310.95	276.22	7,034.73
1,461.50	603.07	136.14	466.93	1,490.10	7,486.69	278.27	7,208.42
1,462.05	678.93	140.24	538.69	1,490.65	7,663.81	280.29	7,383.52
1,462.60	758.02	144.22	613.80	1,491.20	7,842.32	282.31	7,560.01
1,463.15	840.19	148.09	692.10	1,491.75	8,022.20	284.31	7,737.89
1,463.70	925.34	151.87	773.47	1,492.30	8,203.43	286.29	7,917.14
1,464.25	1,013.36	155.56	857.81	1,492.85	8,386.02	288.26	8,097.76
1,464.80	1,104.16	159.15	945.00	1,493.40	8,569.95	290.22	8,279.73
1,465.35	1,197.64	162.67	1,034.97	1,493.95	8,755.20	292.16	8,463.04
1,465.90	1,293.73	166.12	1,127.62	1,494.50	8,941.78	294.10	8,647.68
1,466.45	1,392.37	169.49	1,222.88	1,495.05	9,129.66	296.02	8,833.65
1,467.00	1,493.48	172.80	1,320.68	1,495.60	9,318.85	297.92	9,020.93
1,467.55	1,597.01	176.05	1,420.96	1,496.15	9,509.34	299.82	9,209.52
1,468.10	1,702.89	179.24	1,523.65	1,496.70	9,701.10	301.70	9,399.40
1,468.65	1,811.08	182.37	1,628.71	1,497.25	9,894.14	303.57	9,590.57
1,469.20	1,921.53	185.45	1,736.08	1,497.80	10,088.45	305.43	9,783.02
1,469.75	2,034.18	188.48	1,845.71	1,498.35	10,284.02	307.28	9,976.74
1,470.30	2,149.01	191.46	1,957.55	1,498.90	10,480.84	309.12	10,171.72
1,470.85	2,265.96	194.39	2,071.56	1,499.45	10,678.90	310.94	10,367.96
1,471.40	2,385.00	197.29	2,187.71	1,500.00	10,878.20	312.76	10,565.44
1,471.95	2,506.08	200.14	2,305.95	1,500.55	11,078.73	314.57	10,764.16
1,472.50	2,629.19	202.95	2,426.24	1,501.10	11,280.47	316.36	10,964.11
1,473.05	2,754.28	205.72	2,548.56				
1,473.60	2,881.32	208.45	2,672.87				
1,474.15	3,010.28	211.15	2,799.13				
1,474.70	3,141.14	213.82	2,927.33				
1,475.25	3,273.87	216.45	3,057.42				
1,475.80	3,408.43	219.05	3,189.38				
1,476.35	3,544.81	221.62	3,323.19				
1,476.90	3,682.98	224.16	3,458.82				
1,477.45	3,822.92	226.67	3,596.25				
1,478.00	3,964.61	229.16	3,735.45				
1,478.55	4,108.01	231.62	3,876.40				

Stage-Area-Storage for Pond 15P: South Bay

Elevation (feet)	Surface (acres)	Storage (acre-feet)	Elevation (feet)	Surface (acres)	Storage (acre-feet)
1,450.50	0.500	0.000	1,479.10	0.500	14.300
1,451.05	0.500	0.275	1,479.65	0.500	14.575
1,451.60	0.500	0.550	1,480.20	0.500	14.850
1,452.15	0.500	0.825	1,480.75	0.500	15.125
1,452.70	0.500	1.100	1,481.30	0.500	15.400
1,453.25	0.500	1.375	1,481.85	0.500	15.675
1,453.80	0.500	1.650	1,482.40	0.500	15.950
1,454.35	0.500	1.925	1,482.95	0.500	16.225
1,454.90	0.500	2.200	1,483.50	0.500	16.500
1,455.45	0.500	2.475	1,484.05	0.500	16.775
1,456.00	0.500	2.750	1,484.60	0.500	17.050
1,456.55	0.500	3.025	1,485.15	0.500	17.325
1,457.10	0.500	3.300	1,485.70	0.500	17.600
1,457.65	0.500	3.575	1,486.25	0.500	17.875
1,458.20	0.500	3.850	1,486.80	0.500	18.150
1,458.75	0.500	4.125	1,487.35	0.500	18.425
1,459.30	0.500	4.400	1,487.90	0.500	18.700
1,459.85	0.500	4.675	1,488.45	0.500	18.975
1,460.40	0.500	4.950	1,489.00	0.500	19.250
1,460.95	0.500	5.225	1,489.55	0.500	19.525
1,461.50	0.500	5.500	1,490.10	0.500	19.800
1,462.05	0.500	5.775	1,490.65	0.500	20.075
1,462.60	0.500	6.050	1,491.20	0.500	20.350
1,463.15	0.500	6.325	1,491.75	0.500	20.625
1,463.70	0.500	6.600	1,492.30	0.500	20.900
1,464.25	0.500	6.875	1,492.85	0.500	21.175
1,464.80	0.500	7.150	1,493.40	0.500	21.450
1,465.35	0.500	7.425	1,493.95	0.500	21.725
1,465.90	0.500	7.700	1,494.50	0.500	22.000
1,466.45	0.500	7.975	1,495.05	0.500	22.275
1,467.00	0.500	8.250	1,495.60	0.500	22.550
1,467.55	0.500	8.525	1,496.15	0.500	22.825
1,468.10	0.500	8.800	1,496.70	0.500	23.100
1,468.65	0.500	9.075	1,497.25	0.500	23.375
1,469.20	0.500	9.350	1,497.80	0.500	23.650
1,469.75	0.500	9.625	1,498.35	0.500	23.925
1,470.30	0.500	9.900	1,498.90	0.500	24.200
1,470.85	0.500	10.175	1,499.45	0.500	24.475
1,471.40	0.500	10.450	1,500.00	0.500	24.750
1,471.95	0.500	10.725	1,500.55	0.500	25.025
1,472.50	0.500	11.000	1,501.10	0.500	25.300
1,473.05	0.500	11.275			
1,473.60	0.500	11.550			
1,474.15	0.500	11.825			
1,474.70	0.500	12.100			
1,475.25	0.500	12.375			
1,475.80	0.500	12.650			
1,476.35	0.500	12.925			
1,476.90	0.500	13.200			
1,477.45	0.500	13.475			
1,478.00	0.500	13.750			
1,478.55	0.500	14.025			

Summary for Pond 22P: Road Crossing Culverts w/ Storage

Inflow Area = 35.631 ac, 7.72% Impervious, Inflow Depth > 1.75" for 1-yr event
 Inflow = 3.59 cfs @ 12.45 hrs, Volume= 5.196 af
 Outflow = 3.59 cfs @ 12.46 hrs, Volume= 5.196 af, Atten= 0%, Lag= 0.4 min
 Primary = 3.59 cfs @ 12.46 hrs, Volume= 5.196 af

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Peak Elev= 1,448.28' @ 12.46 hrs Surf.Area= 346 sf Storage= 161 cf

Flood Elev= 1,453.00' Surf.Area= 716 sf Storage= 2,558 cf

Plug-Flow detention time= 2.3 min calculated for 5.195 af (100% of inflow)

Center-of-Mass det. time= 1.3 min (2,633.7 - 2,632.4)

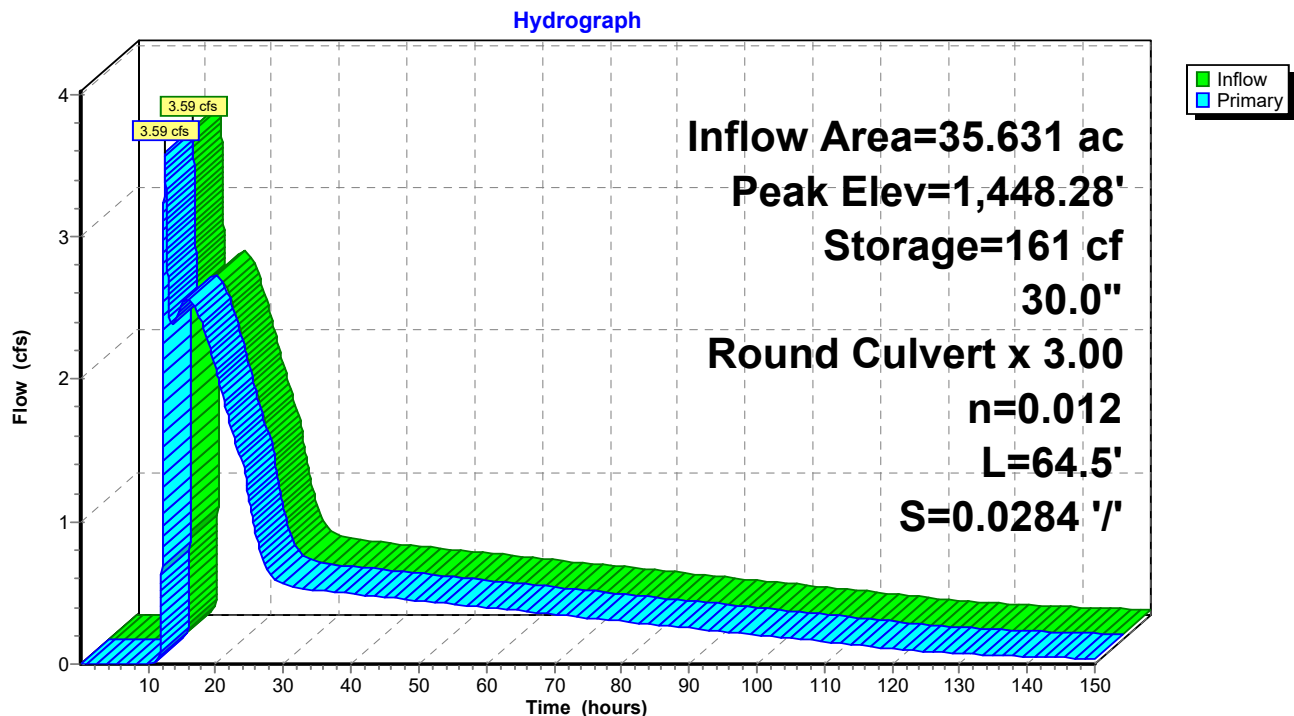
Volume	Invert	Avail.Storage	Storage Description
#1	1,447.79'	2,558 cf	20.00'D x 5.10'H Vertical Cone/Cylinder Z=1.0

Device	Routing	Invert	Outlet Devices
#1	Primary	1,447.86'	30.0" Round Culvert X 3.00 L= 64.5' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,447.86' / 1,446.03' S= 0.0284 '/ Cc= 0.900 n= 0.012, Flow Area= 4.91 sf

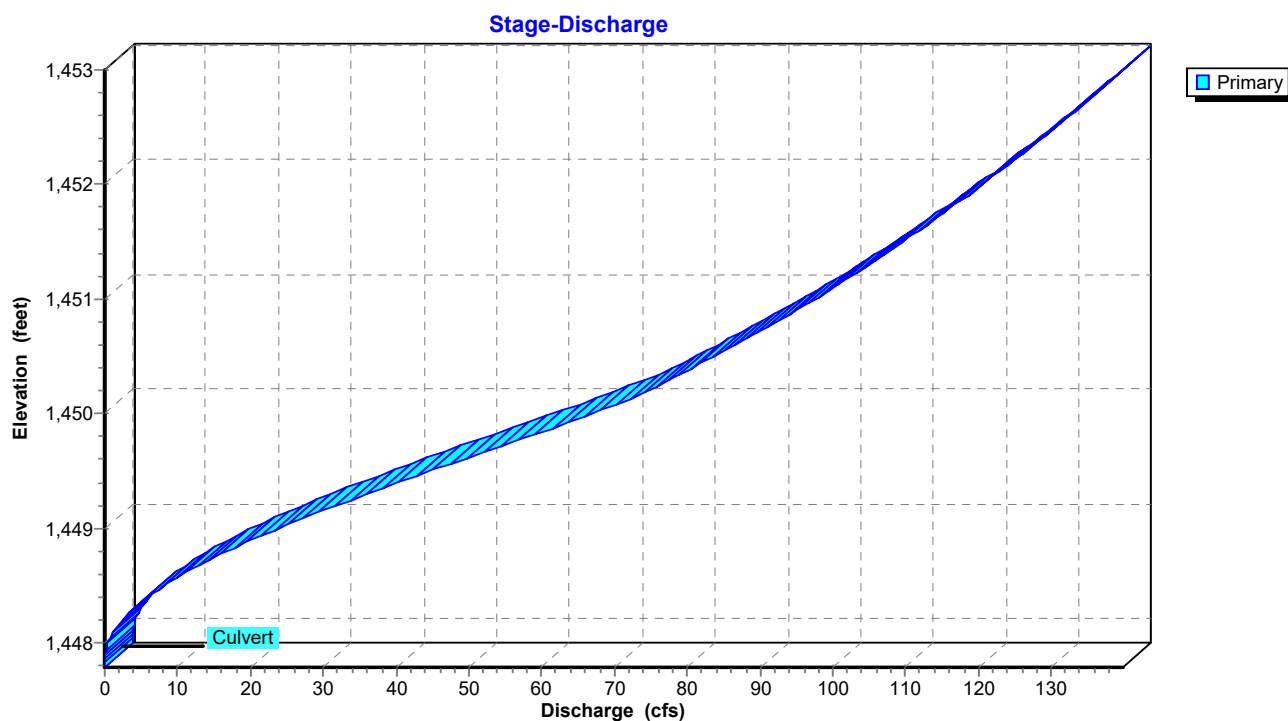
Primary OutFlow Max=3.59 cfs @ 12.46 hrs HW=1,448.28' TW=1,446.23' (Dynamic Tailwater)

←**1=Culvert** (Inlet Controls 3.59 cfs @ 2.20 fps)

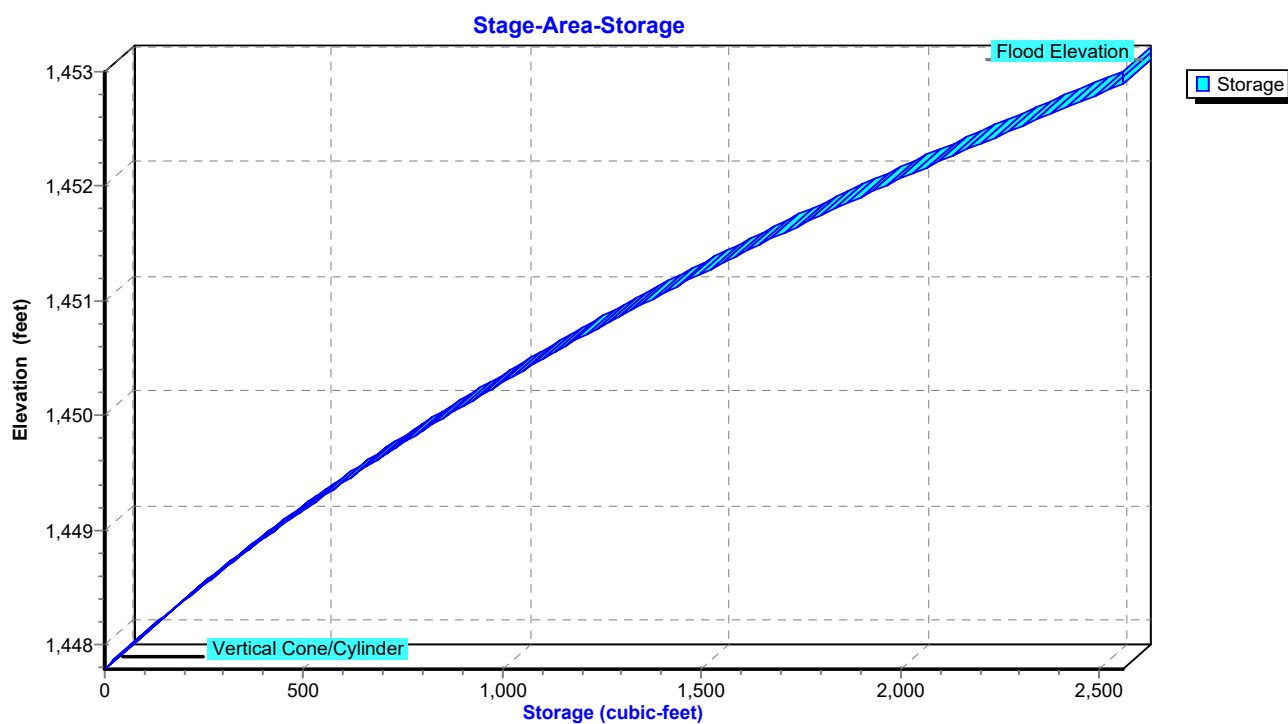
Pond 22P: Road Crossing Culverts w/ Storage



Pond 22P: Road Crossing Culverts w/ Storage



Pond 22P: Road Crossing Culverts w/ Storage



Hydrograph for Pond 22P: Road Crossing Culverts w/ Storage

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.05	0.00	0	1,447.79	0.00
5.05	0.00	0	1,447.79	0.00
10.05	0.00	10	1,447.82	0.00
15.05	2.54	138	1,448.21	2.54
20.05	2.07	126	1,448.18	2.07
25.05	1.11	97	1,448.09	1.12
30.05	0.56	75	1,448.02	0.56
35.05	0.52	73	1,448.02	0.52
40.05	0.49	72	1,448.01	0.49
45.05	0.47	70	1,448.01	0.47
50.05	0.44	69	1,448.01	0.44
55.05	0.42	68	1,448.00	0.42
60.05	0.40	66	1,448.00	0.40
65.05	0.37	65	1,447.99	0.37
70.05	0.35	64	1,447.99	0.35
75.05	0.32	62	1,447.98	0.32
80.05	0.30	60	1,447.98	0.30
85.05	0.28	59	1,447.97	0.28
90.05	0.25	57	1,447.97	0.25
95.05	0.23	55	1,447.96	0.23
100.05	0.20	54	1,447.96	0.20
105.05	0.18	52	1,447.95	0.18
110.05	0.16	50	1,447.95	0.16
115.05	0.13	47	1,447.94	0.13
120.05	0.11	45	1,447.93	0.11
125.05	0.09	43	1,447.92	0.09
130.05	0.07	41	1,447.92	0.07
135.05	0.06	39	1,447.91	0.06
140.05	0.05	38	1,447.91	0.05
145.05	0.04	37	1,447.91	0.04

Stage-Discharge for Pond 22P: Road Crossing Culverts w/ Storage

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
1,447.79	0.00	1,449.87	61.25	1,451.95	119.49
1,447.83	0.00	1,449.91	63.00	1,451.99	120.33
1,447.87	0.00	1,449.95	64.73	1,452.03	121.16
1,447.91	0.05	1,449.99	66.42	1,452.07	121.99
1,447.95	0.17	1,450.03	68.09	1,452.11	122.81
1,447.99	0.36	1,450.07	69.71	1,452.15	123.63
1,448.03	0.61	1,450.11	71.29	1,452.19	124.44
1,448.07	0.93	1,450.15	72.82	1,452.23	125.25
1,448.11	1.30	1,450.19	74.28	1,452.27	126.05
1,448.15	1.75	1,450.23	75.66	1,452.31	126.84
1,448.19	2.25	1,450.27	76.94	1,452.35	127.63
1,448.23	2.81	1,450.31	78.10	1,452.39	128.42
1,448.27	3.44	1,450.35	79.08	1,452.43	129.20
1,448.31	4.12	1,450.39	80.22	1,452.47	129.97
1,448.35	4.85	1,450.43	81.47	1,452.51	130.74
1,448.39	5.65	1,450.47	82.69	1,452.55	131.51
1,448.43	6.50	1,450.51	83.90	1,452.59	132.27
1,448.47	7.40	1,450.55	85.09	1,452.63	133.03
1,448.51	8.35	1,450.59	86.26	1,452.67	133.79
1,448.55	9.36	1,450.63	87.42	1,452.71	134.54
1,448.59	10.41	1,450.67	88.56	1,452.75	135.28
1,448.63	11.51	1,450.71	89.69	1,452.79	136.02
1,448.67	12.66	1,450.75	90.80	1,452.83	136.76
1,448.71	13.86	1,450.79	91.91	1,452.87	137.49
1,448.75	15.10	1,450.83	92.99	1,452.91	138.22
1,448.79	16.38	1,450.87	94.07	1,452.95	138.95
1,448.83	17.71	1,450.91	95.13	1,452.99	139.67
1,448.87	19.07	1,450.95	96.18		
1,448.91	20.48	1,450.99	97.22		
1,448.95	21.92	1,451.03	98.25		
1,448.99	23.40	1,451.07	99.27		
1,449.03	24.91	1,451.11	100.28		
1,449.07	26.45	1,451.15	101.27		
1,449.11	28.03	1,451.19	102.26		
1,449.15	29.63	1,451.23	103.24		
1,449.19	31.27	1,451.27	104.21		
1,449.23	32.92	1,451.31	105.17		
1,449.27	34.61	1,451.35	106.12		
1,449.31	36.31	1,451.39	107.07		
1,449.35	38.04	1,451.43	108.00		
1,449.39	39.78	1,451.47	108.93		
1,449.43	41.54	1,451.51	109.85		
1,449.47	43.31	1,451.55	110.76		
1,449.51	45.09	1,451.59	111.66		
1,449.55	46.89	1,451.63	112.56		
1,449.59	48.69	1,451.67	113.45		
1,449.63	50.49	1,451.71	114.33		
1,449.67	52.30	1,451.75	115.21		
1,449.71	54.11	1,451.79	116.08		
1,449.75	55.91	1,451.83	116.94		
1,449.79	57.70	1,451.87	117.80		
1,449.83	59.48	1,451.91	118.65		

Stage-Area-Storage for Pond 22P: Road Crossing Culverts w/ Storage

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
1,447.79	0	1,449.87	799	1,451.95	1,926
1,447.83	13	1,449.91	817	1,451.99	1,951
1,447.87	25	1,449.95	836	1,452.03	1,977
1,447.91	38	1,449.99	854	1,452.07	2,002
1,447.95	51	1,450.03	873	1,452.11	2,028
1,447.99	64	1,450.07	892	1,452.15	2,054
1,448.03	77	1,450.11	911	1,452.19	2,080
1,448.07	90	1,450.15	930	1,452.23	2,106
1,448.11	104	1,450.19	949	1,452.27	2,132
1,448.15	117	1,450.23	969	1,452.31	2,159
1,448.19	131	1,450.27	988	1,452.35	2,185
1,448.23	144	1,450.31	1,008	1,452.39	2,212
1,448.27	158	1,450.35	1,028	1,452.43	2,239
1,448.31	172	1,450.39	1,048	1,452.47	2,266
1,448.35	186	1,450.43	1,068	1,452.51	2,293
1,448.39	200	1,450.47	1,088	1,452.55	2,320
1,448.43	214	1,450.51	1,108	1,452.59	2,348
1,448.47	228	1,450.55	1,128	1,452.63	2,375
1,448.51	243	1,450.59	1,149	1,452.67	2,403
1,448.55	257	1,450.63	1,170	1,452.71	2,431
1,448.59	272	1,450.67	1,190	1,452.75	2,459
1,448.63	287	1,450.71	1,211	1,452.79	2,487
1,448.67	302	1,450.75	1,232	1,452.83	2,515
1,448.71	316	1,450.79	1,253	1,452.87	2,544
1,448.75	331	1,450.83	1,275	1,452.91	2,558
1,448.79	347	1,450.87	1,296	1,452.95	2,558
1,448.83	362	1,450.91	1,318	1,452.99	2,558
1,448.87	377	1,450.95	1,339		
1,448.91	393	1,450.99	1,361		
1,448.95	408	1,451.03	1,383		
1,448.99	424	1,451.07	1,405		
1,449.03	440	1,451.11	1,428		
1,449.07	456	1,451.15	1,450		
1,449.11	472	1,451.19	1,472		
1,449.15	488	1,451.23	1,495		
1,449.19	504	1,451.27	1,518		
1,449.23	521	1,451.31	1,541		
1,449.27	537	1,451.35	1,564		
1,449.31	554	1,451.39	1,587		
1,449.35	571	1,451.43	1,610		
1,449.39	587	1,451.47	1,634		
1,449.43	604	1,451.51	1,657		
1,449.47	621	1,451.55	1,681		
1,449.51	639	1,451.59	1,705		
1,449.55	656	1,451.63	1,729		
1,449.59	673	1,451.67	1,753		
1,449.63	691	1,451.71	1,777		
1,449.67	709	1,451.75	1,802		
1,449.71	726	1,451.79	1,826		
1,449.75	744	1,451.83	1,851		
1,449.79	762	1,451.87	1,876		
1,449.83	781	1,451.91	1,901		

Summary for Pond 30P: Sump

Inflow Area = 7.316 ac, 0.00% Impervious, Inflow Depth = 0.82" for 1-yr event
 Inflow = 3.81 cfs @ 12.42 hrs, Volume= 0.502 af
 Outflow = 3.81 cfs @ 12.42 hrs, Volume= 0.502 af, Atten= 0%, Lag= 0.0 min
 Primary = 3.81 cfs @ 12.42 hrs, Volume= 0.502 af

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Peak Elev= 1,463.94' @ 12.42 hrs

Flood Elev= 1,468.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,463.00'	24.0" Round Culvert L= 300.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1,463.00' / 1,453.00' S= 0.0333 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Primary	1,463.00'	12.0" Vert. Orifice/Grate X 0.00 C= 0.600

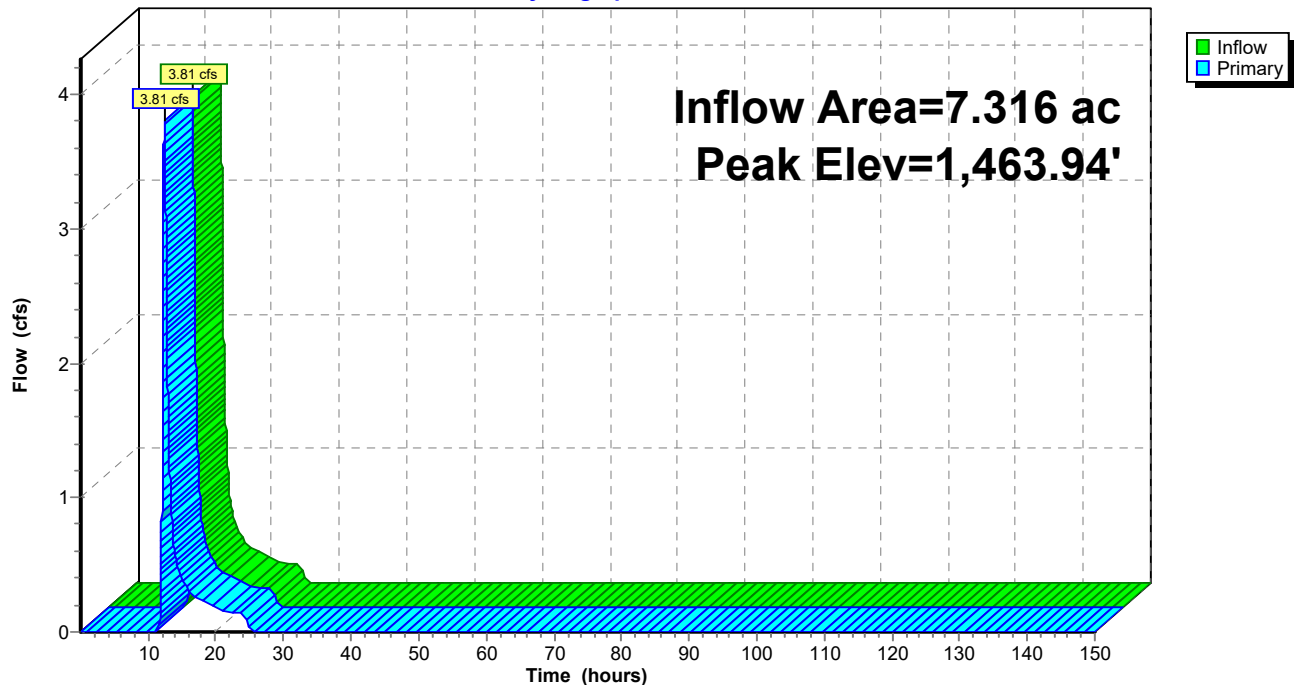
Primary OutFlow Max=3.80 cfs @ 12.42 hrs HW=1,463.94' TW=0.00' (Dynamic Tailwater)

1=Culvert (Inlet Controls 3.80 cfs @ 2.61 fps)

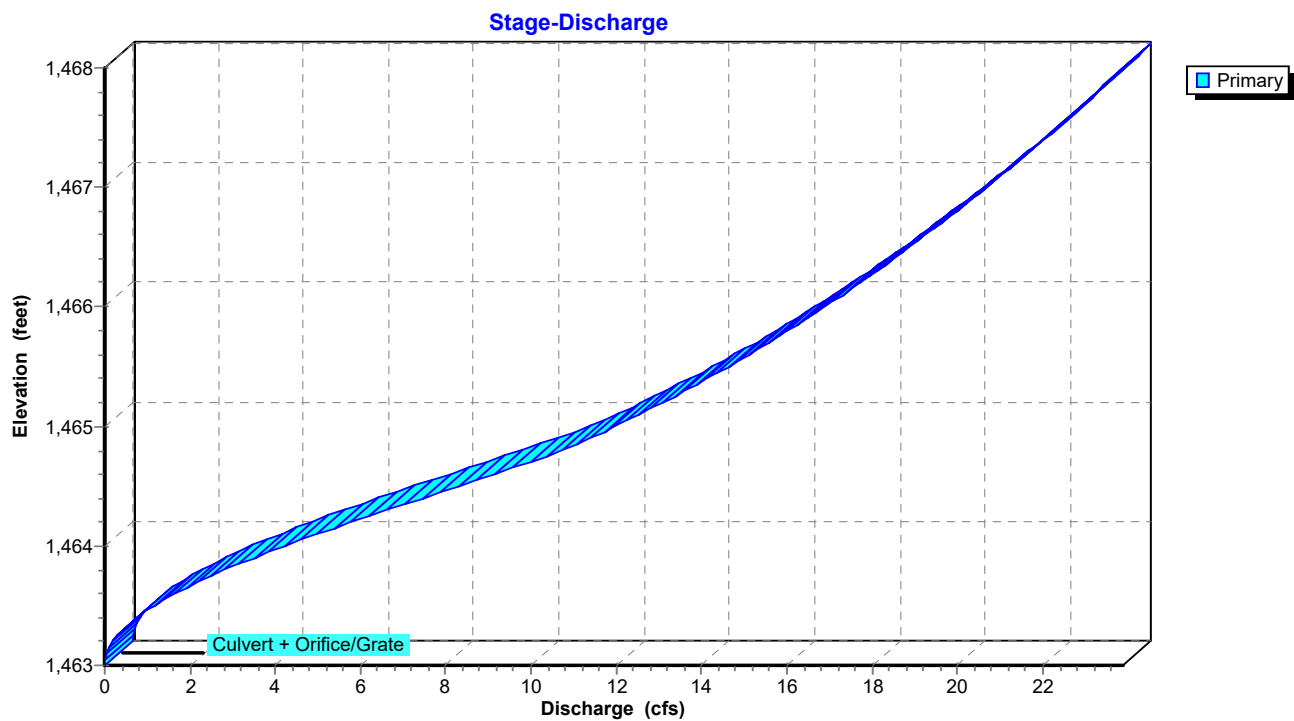
2=Orifice/Grate (Controls 0.00 cfs)

Pond 30P: Sump

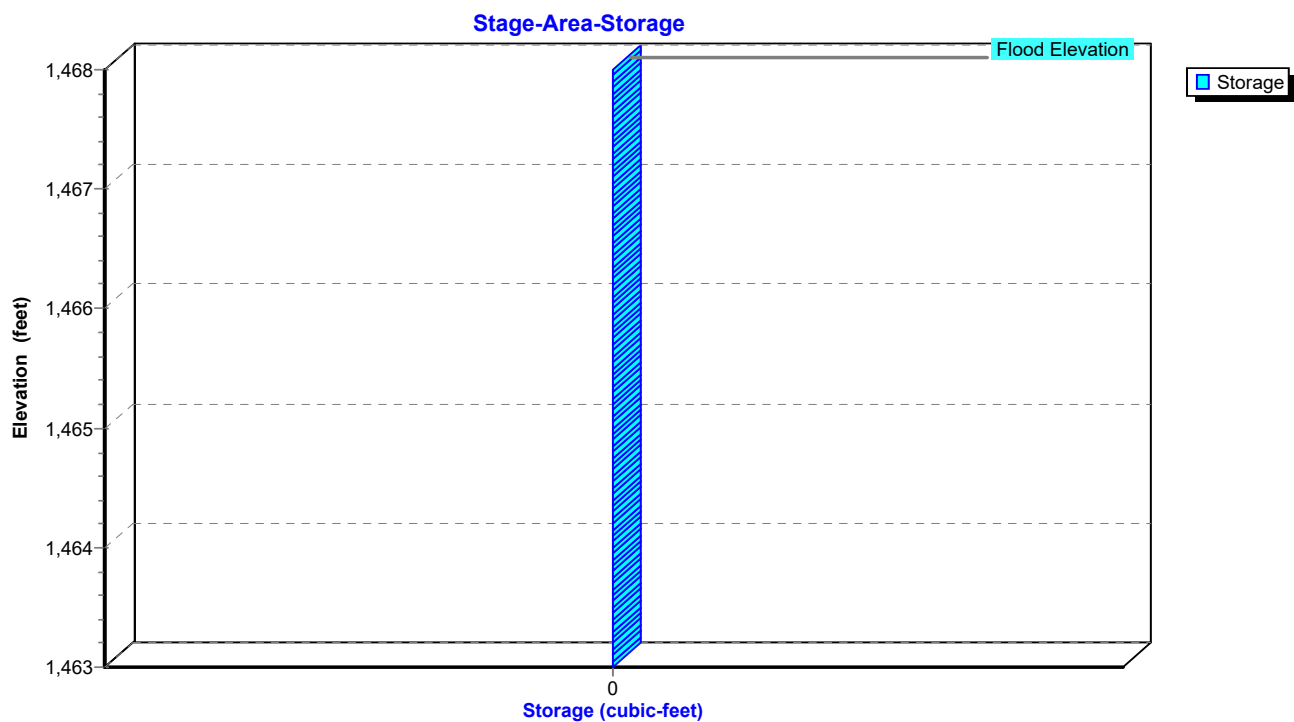
Hydrograph



Pond 30P: Sump



Pond 30P: Sump



Hydrograph for Pond 30P: Sump

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.05	0.00	1,463.00	0.00	104.05	0.00	1,463.00	0.00
2.05	0.00	1,463.00	0.00	106.05	0.00	1,463.00	0.00
4.05	0.00	1,463.00	0.00	108.05	0.00	1,463.00	0.00
6.05	0.00	1,463.00	0.00	110.05	0.00	1,463.00	0.00
8.05	0.00	1,463.00	0.00	112.05	0.00	1,463.00	0.00
10.05	0.00	1,463.00	0.00	114.05	0.00	1,463.00	0.00
12.05	1.06	1,463.48	1.06	116.05	0.00	1,463.00	0.00
14.05	0.56	1,463.34	0.56	118.05	0.00	1,463.00	0.00
16.05	0.31	1,463.25	0.31	120.05	0.00	1,463.00	0.00
18.05	0.23	1,463.22	0.23	122.05	0.00	1,463.00	0.00
20.05	0.18	1,463.19	0.18	124.05	0.00	1,463.00	0.00
22.05	0.15	1,463.18	0.15	126.05	0.00	1,463.00	0.00
24.05	0.14	1,463.17	0.14	128.05	0.00	1,463.00	0.00
26.05	0.00	1,463.01	0.00	130.05	0.00	1,463.00	0.00
28.05	0.00	1,463.00	0.00	132.05	0.00	1,463.00	0.00
30.05	0.00	1,463.00	0.00	134.05	0.00	1,463.00	0.00
32.05	0.00	1,463.00	0.00	136.05	0.00	1,463.00	0.00
34.05	0.00	1,463.00	0.00	138.05	0.00	1,463.00	0.00
36.05	0.00	1,463.00	0.00	140.05	0.00	1,463.00	0.00
38.05	0.00	1,463.00	0.00	142.05	0.00	1,463.00	0.00
40.05	0.00	1,463.00	0.00	144.05	0.00	1,463.00	0.00
42.05	0.00	1,463.00	0.00	146.05	0.00	1,463.00	0.00
44.05	0.00	1,463.00	0.00	148.05	0.00	1,463.00	0.00
46.05	0.00	1,463.00	0.00				
48.05	0.00	1,463.00	0.00				
50.05	0.00	1,463.00	0.00				
52.05	0.00	1,463.00	0.00				
54.05	0.00	1,463.00	0.00				
56.05	0.00	1,463.00	0.00				
58.05	0.00	1,463.00	0.00				
60.05	0.00	1,463.00	0.00				
62.05	0.00	1,463.00	0.00				
64.05	0.00	1,463.00	0.00				
66.05	0.00	1,463.00	0.00				
68.05	0.00	1,463.00	0.00				
70.05	0.00	1,463.00	0.00				
72.05	0.00	1,463.00	0.00				
74.05	0.00	1,463.00	0.00				
76.05	0.00	1,463.00	0.00				
78.05	0.00	1,463.00	0.00				
80.05	0.00	1,463.00	0.00				
82.05	0.00	1,463.00	0.00				
84.05	0.00	1,463.00	0.00				
86.05	0.00	1,463.00	0.00				
88.05	0.00	1,463.00	0.00				
90.05	0.00	1,463.00	0.00				
92.05	0.00	1,463.00	0.00				
94.05	0.00	1,463.00	0.00				
96.05	0.00	1,463.00	0.00				
98.05	0.00	1,463.00	0.00				
100.05	0.00	1,463.00	0.00				
102.05	0.00	1,463.00	0.00				

Stage-Discharge for Pond 30P: Sump

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
1,463.00	0.00	1,465.60	15.11
1,463.05	0.01	1,465.65	15.34
1,463.10	0.05	1,465.70	15.57
1,463.15	0.11	1,465.75	15.80
1,463.20	0.20	1,465.80	16.02
1,463.25	0.30	1,465.85	16.24
1,463.30	0.44	1,465.90	16.46
1,463.35	0.59	1,465.95	16.68
1,463.40	0.76	1,466.00	16.89
1,463.45	0.95	1,466.05	17.10
1,463.50	1.17	1,466.10	17.31
1,463.55	1.40	1,466.15	17.51
1,463.60	1.65	1,466.20	17.71
1,463.65	1.92	1,466.25	17.91
1,463.70	2.20	1,466.30	18.11
1,463.75	2.50	1,466.35	18.31
1,463.80	2.82	1,466.40	18.50
1,463.85	3.15	1,466.45	18.69
1,463.90	3.50	1,466.50	18.88
1,463.95	3.85	1,466.55	19.07
1,464.00	4.22	1,466.60	19.26
1,464.05	4.60	1,466.65	19.44
1,464.10	4.99	1,466.70	19.62
1,464.15	5.39	1,466.75	19.80
1,464.20	5.80	1,466.80	19.98
1,464.25	6.21	1,466.85	20.16
1,464.30	6.62	1,466.90	20.34
1,464.35	7.05	1,466.95	20.51
1,464.40	7.47	1,467.00	20.68
1,464.45	7.90	1,467.05	20.86
1,464.50	8.32	1,467.10	21.03
1,464.55	8.74	1,467.15	21.20
1,464.60	9.16	1,467.20	21.36
1,464.65	9.57	1,467.25	21.53
1,464.70	9.97	1,467.30	21.69
1,464.75	10.36	1,467.35	21.86
1,464.80	10.74	1,467.40	22.02
1,464.85	11.09	1,467.45	22.18
1,464.90	11.42	1,467.50	22.34
1,464.95	11.71	1,467.55	22.50
1,465.00	11.94	1,467.60	22.66
1,465.05	12.24	1,467.65	22.82
1,465.10	12.53	1,467.70	22.97
1,465.15	12.81	1,467.75	23.13
1,465.20	13.08	1,467.80	23.28
1,465.25	13.35	1,467.85	23.43
1,465.30	13.62	1,467.90	23.58
1,465.35	13.88	1,467.95	23.73
1,465.40	14.13	1,468.00	23.88
1,465.45	14.38		
1,465.50	14.63		
1,465.55	14.87		

Stage-Area-Storage for Pond 30P: Sump

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
1,463.00	0	1,465.60	0
1,463.05	0	1,465.65	0
1,463.10	0	1,465.70	0
1,463.15	0	1,465.75	0
1,463.20	0	1,465.80	0
1,463.25	0	1,465.85	0
1,463.30	0	1,465.90	0
1,463.35	0	1,465.95	0
1,463.40	0	1,466.00	0
1,463.45	0	1,466.05	0
1,463.50	0	1,466.10	0
1,463.55	0	1,466.15	0
1,463.60	0	1,466.20	0
1,463.65	0	1,466.25	0
1,463.70	0	1,466.30	0
1,463.75	0	1,466.35	0
1,463.80	0	1,466.40	0
1,463.85	0	1,466.45	0
1,463.90	0	1,466.50	0
1,463.95	0	1,466.55	0
1,464.00	0	1,466.60	0
1,464.05	0	1,466.65	0
1,464.10	0	1,466.70	0
1,464.15	0	1,466.75	0
1,464.20	0	1,466.80	0
1,464.25	0	1,466.85	0
1,464.30	0	1,466.90	0
1,464.35	0	1,466.95	0
1,464.40	0	1,467.00	0
1,464.45	0	1,467.05	0
1,464.50	0	1,467.10	0
1,464.55	0	1,467.15	0
1,464.60	0	1,467.20	0
1,464.65	0	1,467.25	0
1,464.70	0	1,467.30	0
1,464.75	0	1,467.35	0
1,464.80	0	1,467.40	0
1,464.85	0	1,467.45	0
1,464.90	0	1,467.50	0
1,464.95	0	1,467.55	0
1,465.00	0	1,467.60	0
1,465.05	0	1,467.65	0
1,465.10	0	1,467.70	0
1,465.15	0	1,467.75	0
1,465.20	0	1,467.80	0
1,465.25	0	1,467.85	0
1,465.30	0	1,467.90	0
1,465.35	0	1,467.95	0
1,465.40	0	1,468.00	0
1,465.45	0		
1,465.50	0		
1,465.55	0		

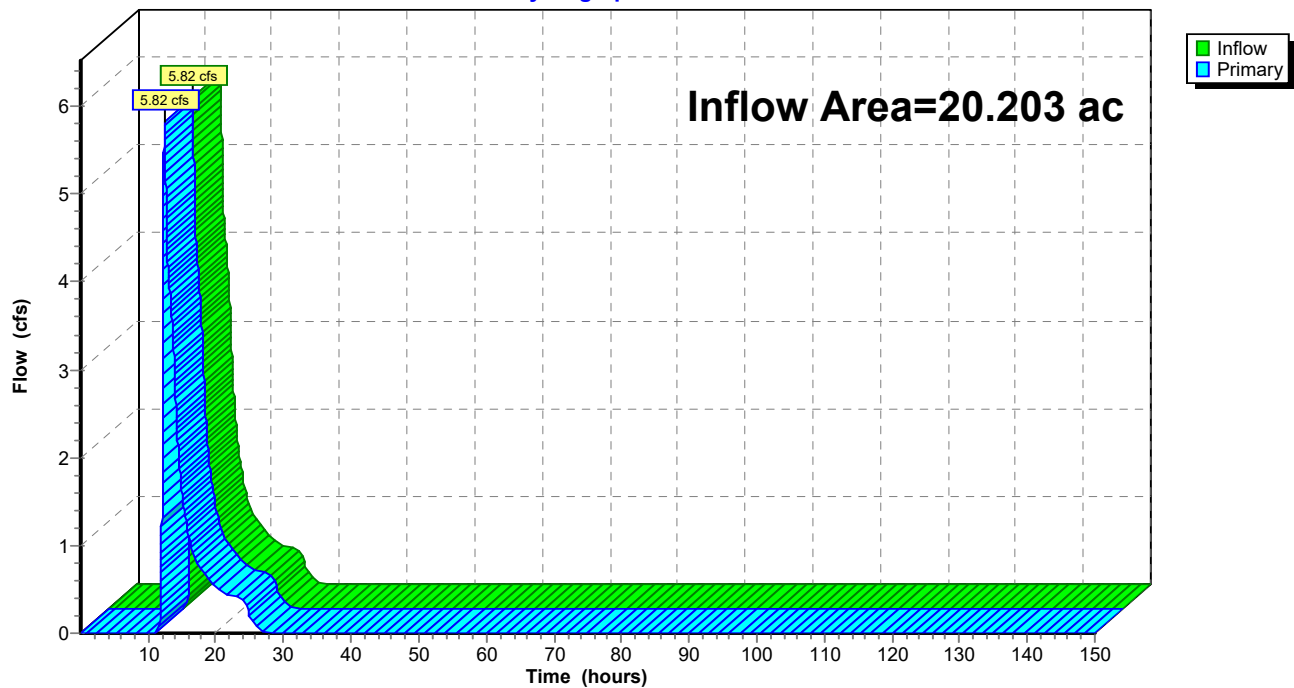
Summary for Pond 32P: Intermittent Drng

Inflow Area = 20.203 ac, 0.00% Impervious, Inflow Depth = 0.82" for 1-yr event
 Inflow = 5.82 cfs @ 12.42 hrs, Volume= 1.386 af
 Primary = 5.82 cfs @ 12.42 hrs, Volume= 1.386 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Pond 32P: Intermittent Drng

Hydrograph



Riato V6 Final

Prepared by JMT

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Type II 24-hr 1-yr Rainfall=2.63"

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Hydrograph for Pond 32P: Intermittent Drng

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.05	0.00		0.00	104.05	0.00		0.00
2.05	0.00		0.00	106.05	0.00		0.00
4.05	0.00		0.00	108.05	0.00		0.00
6.05	0.00		0.00	110.05	0.00		0.00
8.05	0.00		0.00	112.05	0.00		0.00
10.05	0.00		0.00	114.05	0.00		0.00
12.05	1.58		1.58	116.05	0.00		0.00
14.05	2.74		2.74	118.05	0.00		0.00
16.05	1.09		1.09	120.05	0.00		0.00
18.05	0.70		0.70	122.05	0.00		0.00
20.05	0.53		0.53	124.05	0.00		0.00
22.05	0.43		0.43	126.05	0.00		0.00
24.05	0.40		0.40	128.05	0.00		0.00
26.05	0.06		0.06	130.05	0.00		0.00
28.05	0.01		0.01	132.05	0.00		0.00
30.05	0.00		0.00	134.05	0.00		0.00
32.05	0.00		0.00	136.05	0.00		0.00
34.05	0.00		0.00	138.05	0.00		0.00
36.05	0.00		0.00	140.05	0.00		0.00
38.05	0.00		0.00	142.05	0.00		0.00
40.05	0.00		0.00	144.05	0.00		0.00
42.05	0.00		0.00	146.05	0.00		0.00
44.05	0.00		0.00	148.05	0.00		0.00
46.05	0.00		0.00				
48.05	0.00		0.00				
50.05	0.00		0.00				
52.05	0.00		0.00				
54.05	0.00		0.00				
56.05	0.00		0.00				
58.05	0.00		0.00				
60.05	0.00		0.00				
62.05	0.00		0.00				
64.05	0.00		0.00				
66.05	0.00		0.00				
68.05	0.00		0.00				
70.05	0.00		0.00				
72.05	0.00		0.00				
74.05	0.00		0.00				
76.05	0.00		0.00				
78.05	0.00		0.00				
80.05	0.00		0.00				
82.05	0.00		0.00				
84.05	0.00		0.00				
86.05	0.00		0.00				
88.05	0.00		0.00				
90.05	0.00		0.00				
92.05	0.00		0.00				
94.05	0.00		0.00				
96.05	0.00		0.00				
98.05	0.00		0.00				
100.05	0.00		0.00				
102.05	0.00		0.00				

Summary for Pond 33P: ExpStrmBasin

Inflow Area = 13.693 ac, 0.00% Impervious, Inflow Depth = 1.99" for 1-yr event
 Inflow = 43.98 cfs @ 11.98 hrs, Volume= 2.275 af
 Outflow = 43.98 cfs @ 11.98 hrs, Volume= 2.275 af, Atten= 0%, Lag= 0.0 min
 Primary = 43.98 cfs @ 11.98 hrs, Volume= 2.275 af

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

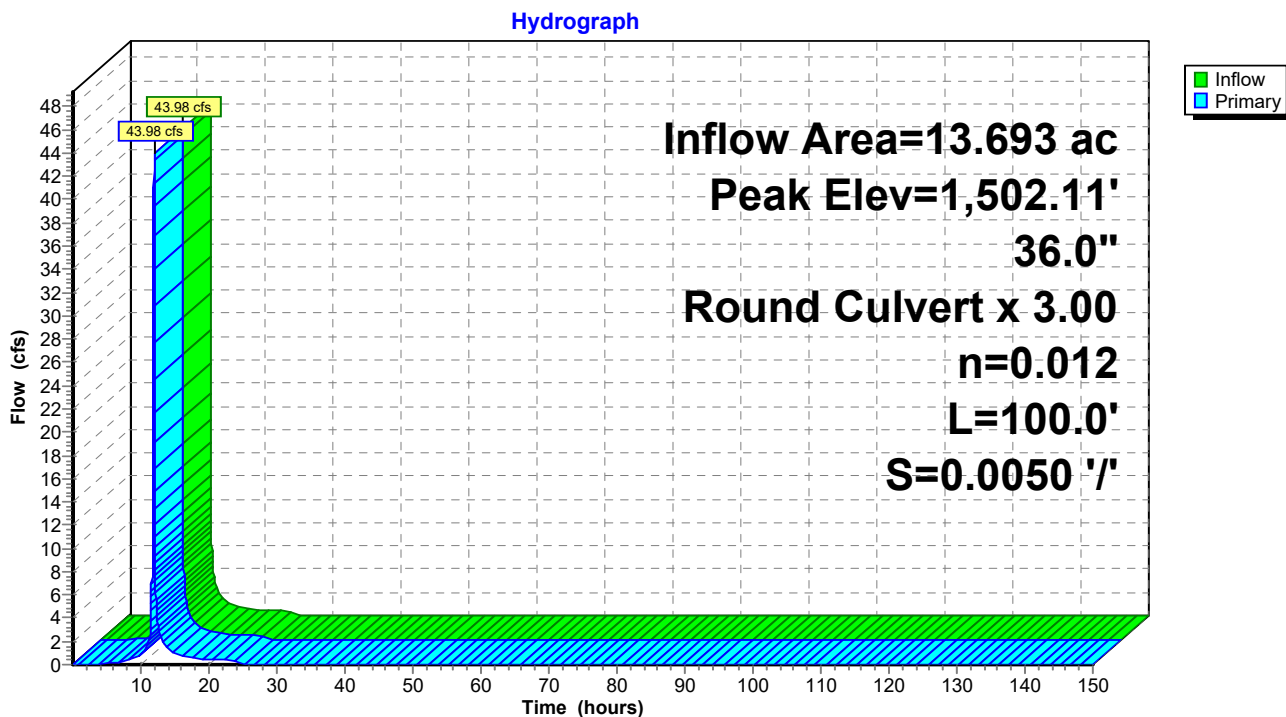
Peak Elev= 1,502.11' @ 11.98 hrs

Flood Elev= 1,504.50'

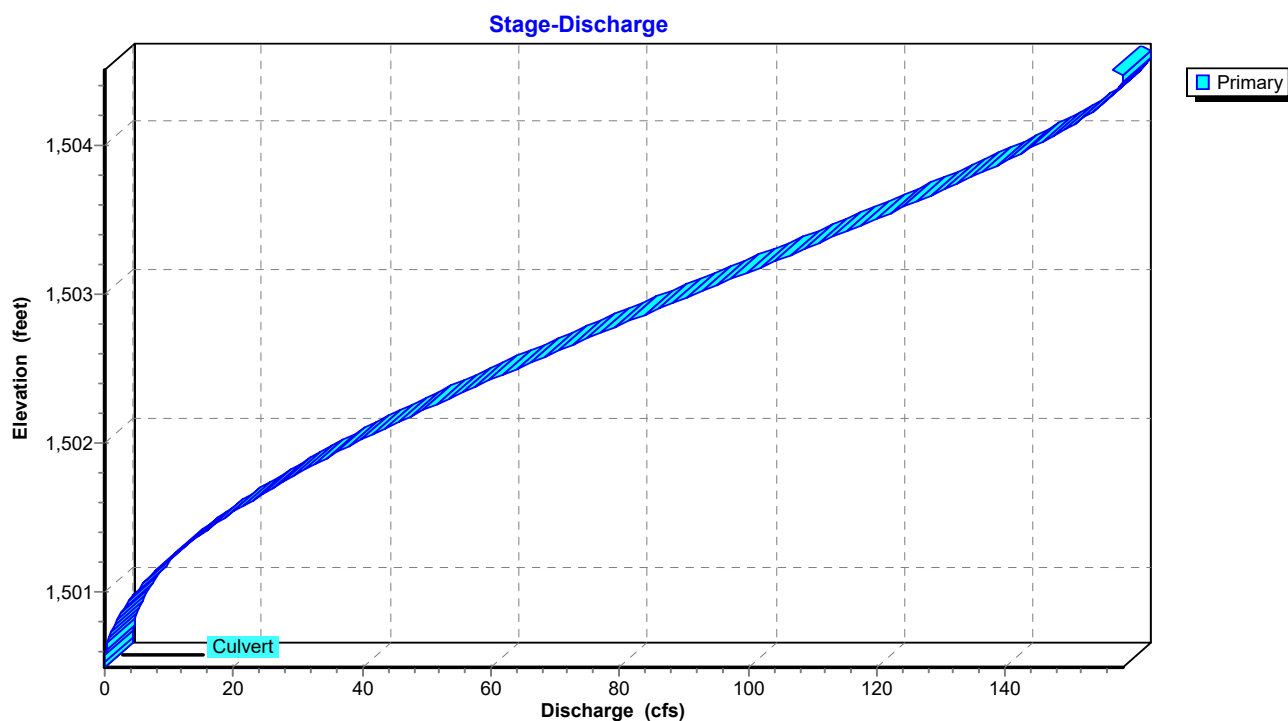
Device	Routing	Invert	Outlet Devices
#1	Primary	1,500.50'	36.0" Round Culvert X 3.00 L= 100.0' Ke= 0.150 Inlet / Outlet Invert= 1,500.50' / 1,500.00' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf

Primary OutFlow Max=43.92 cfs @ 11.98 hrs HW=1,502.11' TW=1,496.10' (Dynamic Tailwater)
 1=Culvert (Barrel Controls 43.92 cfs @ 5.52 fps)

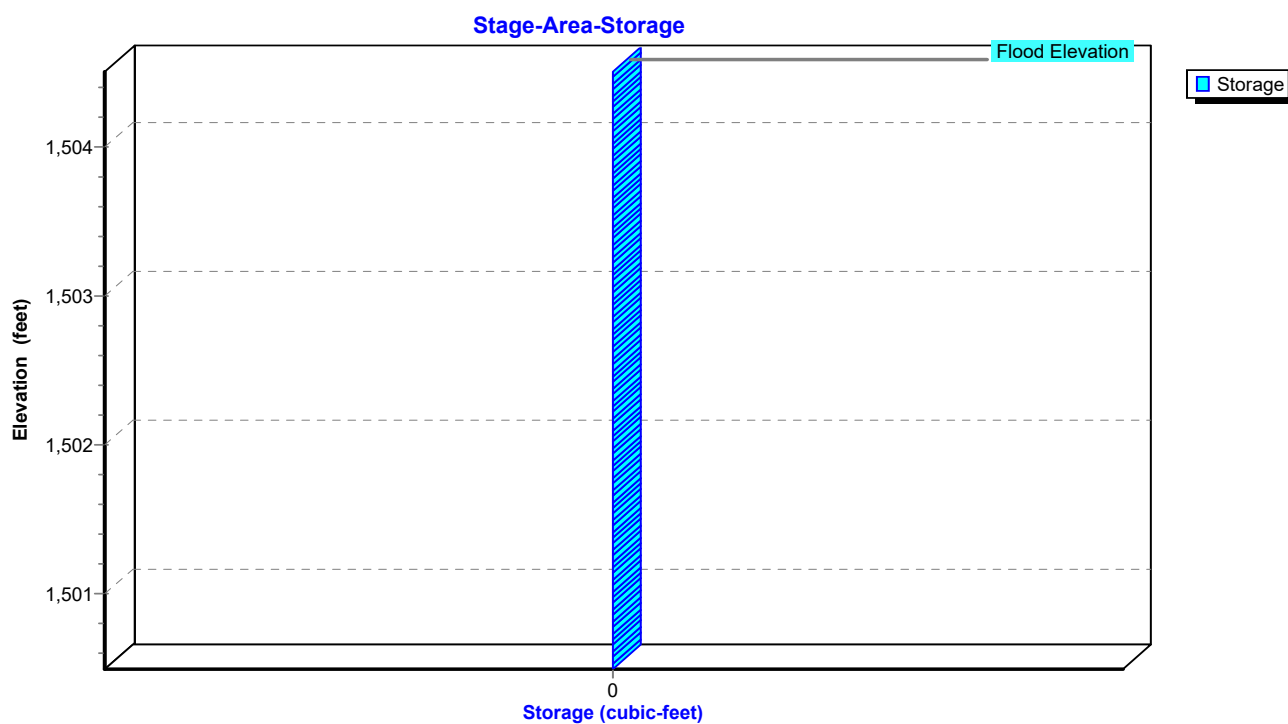
Pond 33P: ExpStrmBasin



Pond 33P: ExpStrmBasin



Pond 33P: ExpStrmBasin



Hydrograph for Pond 33P: ExpStrmBasin

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.05	0.00	1,500.50	0.00	104.05	0.00	1,500.50	0.00
2.05	0.00	1,500.50	0.00	106.05	0.00	1,500.50	0.00
4.05	0.00	1,500.50	0.00	108.05	0.00	1,500.50	0.00
6.05	0.14	1,500.59	0.14	110.05	0.00	1,500.50	0.00
8.05	0.32	1,500.64	0.32	112.05	0.00	1,500.50	0.00
10.05	0.82	1,500.71	0.82	114.05	0.00	1,500.50	0.00
12.05	30.85	1,501.82	30.85	116.05	0.00	1,500.50	0.00
14.05	1.31	1,500.76	1.31	118.05	0.00	1,500.50	0.00
16.05	0.81	1,500.71	0.81	120.05	0.00	1,500.50	0.00
18.05	0.63	1,500.69	0.63	122.05	0.00	1,500.50	0.00
20.05	0.46	1,500.66	0.46	124.05	0.00	1,500.50	0.00
22.05	0.42	1,500.65	0.42	126.05	0.00	1,500.50	0.00
24.05	0.36	1,500.64	0.36	128.05	0.00	1,500.50	0.00
26.05	0.00	1,500.50	0.00	130.05	0.00	1,500.50	0.00
28.05	0.00	1,500.50	0.00	132.05	0.00	1,500.50	0.00
30.05	0.00	1,500.50	0.00	134.05	0.00	1,500.50	0.00
32.05	0.00	1,500.50	0.00	136.05	0.00	1,500.50	0.00
34.05	0.00	1,500.50	0.00	138.05	0.00	1,500.50	0.00
36.05	0.00	1,500.50	0.00	140.05	0.00	1,500.50	0.00
38.05	0.00	1,500.50	0.00	142.05	0.00	1,500.50	0.00
40.05	0.00	1,500.50	0.00	144.05	0.00	1,500.50	0.00
42.05	0.00	1,500.50	0.00	146.05	0.00	1,500.50	0.00
44.05	0.00	1,500.50	0.00	148.05	0.00	1,500.50	0.00
46.05	0.00	1,500.50	0.00				
48.05	0.00	1,500.50	0.00				
50.05	0.00	1,500.50	0.00				
52.05	0.00	1,500.50	0.00				
54.05	0.00	1,500.50	0.00				
56.05	0.00	1,500.50	0.00				
58.05	0.00	1,500.50	0.00				
60.05	0.00	1,500.50	0.00				
62.05	0.00	1,500.50	0.00				
64.05	0.00	1,500.50	0.00				
66.05	0.00	1,500.50	0.00				
68.05	0.00	1,500.50	0.00				
70.05	0.00	1,500.50	0.00				
72.05	0.00	1,500.50	0.00				
74.05	0.00	1,500.50	0.00				
76.05	0.00	1,500.50	0.00				
78.05	0.00	1,500.50	0.00				
80.05	0.00	1,500.50	0.00				
82.05	0.00	1,500.50	0.00				
84.05	0.00	1,500.50	0.00				
86.05	0.00	1,500.50	0.00				
88.05	0.00	1,500.50	0.00				
90.05	0.00	1,500.50	0.00				
92.05	0.00	1,500.50	0.00				
94.05	0.00	1,500.50	0.00				
96.05	0.00	1,500.50	0.00				
98.05	0.00	1,500.50	0.00				
100.05	0.00	1,500.50	0.00				
102.05	0.00	1,500.50	0.00				

Stage-Discharge for Pond 33P: ExpStrmBasin

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
1,500.50	0.00	1,501.54	19.97	1,502.58	68.29	1,503.62	126.30
1,500.52	0.01	1,501.56	20.70	1,502.60	69.38	1,503.64	127.36
1,500.54	0.02	1,501.58	21.43	1,502.62	70.47	1,503.66	128.41
1,500.56	0.06	1,501.60	22.17	1,502.64	71.57	1,503.68	129.45
1,500.58	0.10	1,501.62	22.92	1,502.66	72.67	1,503.70	130.49
1,500.60	0.17	1,501.64	23.69	1,502.68	73.77	1,503.72	131.52
1,500.62	0.25	1,501.66	24.46	1,502.70	74.87	1,503.74	132.54
1,500.64	0.34	1,501.68	25.24	1,502.72	75.98	1,503.76	133.55
1,500.66	0.45	1,501.70	26.03	1,502.74	77.09	1,503.78	134.56
1,500.68	0.58	1,501.72	26.83	1,502.76	78.21	1,503.80	135.56
1,500.70	0.73	1,501.74	27.64	1,502.78	79.32	1,503.82	136.54
1,500.72	0.89	1,501.76	28.46	1,502.80	80.44	1,503.84	137.52
1,500.74	1.07	1,501.78	29.29	1,502.82	81.56	1,503.86	138.48
1,500.76	1.26	1,501.80	30.12	1,502.84	82.68	1,503.88	139.44
1,500.78	1.47	1,501.82	30.97	1,502.86	83.81	1,503.90	140.38
1,500.80	1.70	1,501.84	31.82	1,502.88	84.94	1,503.92	141.32
1,500.82	1.94	1,501.86	32.68	1,502.90	86.07	1,503.94	142.24
1,500.84	2.20	1,501.88	33.55	1,502.92	87.20	1,503.96	143.14
1,500.86	2.48	1,501.90	34.43	1,502.94	88.33	1,503.98	144.04
1,500.88	2.77	1,501.92	35.32	1,502.96	89.46	1,504.00	144.92
1,500.90	3.07	1,501.94	36.21	1,502.98	90.59	1,504.02	145.78
1,500.92	3.39	1,501.96	37.11	1,503.00	91.73	1,504.04	146.63
1,500.94	3.73	1,501.98	38.02	1,503.02	92.86	1,504.06	147.46
1,500.96	4.08	1,502.00	38.94	1,503.04	94.00	1,504.08	148.28
1,500.98	4.44	1,502.02	39.86	1,503.06	95.13	1,504.10	149.08
1,501.00	4.82	1,502.04	40.80	1,503.08	96.27	1,504.12	149.86
1,501.02	5.22	1,502.06	41.74	1,503.10	97.41	1,504.14	150.62
1,501.04	5.62	1,502.08	42.68	1,503.12	98.54	1,504.16	151.35
1,501.06	6.05	1,502.10	43.64	1,503.14	99.68	1,504.18	152.07
1,501.08	6.48	1,502.12	44.60	1,503.16	100.81	1,504.20	152.76
1,501.10	6.93	1,502.14	45.56	1,503.18	101.95	1,504.22	153.43
1,501.12	7.40	1,502.16	46.54	1,503.20	103.08	1,504.24	154.07
1,501.14	7.87	1,502.18	47.52	1,503.22	104.21	1,504.26	154.67
1,501.16	8.36	1,502.20	48.50	1,503.24	105.34	1,504.28	155.25
1,501.18	8.87	1,502.22	49.50	1,503.26	106.47	1,504.30	155.80
1,501.20	9.38	1,502.24	50.49	1,503.28	107.60	1,504.32	156.30
1,501.22	9.91	1,502.26	51.50	1,503.30	108.73	1,504.34	156.77
1,501.24	10.45	1,502.28	52.51	1,503.32	109.85	1,504.36	157.19
1,501.26	11.00	1,502.30	53.53	1,503.34	110.97	1,504.38	157.55
1,501.28	11.57	1,502.32	54.55	1,503.36	112.09	1,504.40	157.86
1,501.30	12.15	1,502.34	55.58	1,503.38	113.21	1,504.42	158.09
1,501.32	12.74	1,502.36	56.61	1,503.40	114.32	1,504.44	158.22
1,501.34	13.34	1,502.38	57.65	1,503.42	115.43	1,504.46	158.22
1,501.36	13.95	1,502.40	58.69	1,503.44	116.54	1,504.48	158.00
1,501.38	14.58	1,502.42	59.74	1,503.46	117.64	1,504.50	156.72
1,501.40	15.21	1,502.44	60.79	1,503.48	118.74		
1,501.42	15.86	1,502.46	61.85	1,503.50	119.84		
1,501.44	16.52	1,502.48	62.91	1,503.52	120.93		
1,501.46	17.19	1,502.50	63.98	1,503.54	122.01		
1,501.48	17.87	1,502.52	65.05	1,503.56	123.09		
1,501.50	18.56	1,502.54	66.13	1,503.58	124.17		
1,501.52	19.26	1,502.56	67.21	1,503.60	125.24		

Stage-Area-Storage for Pond 33P: ExpStrmBasin

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
1,500.50	0	1,503.10	0
1,500.55	0	1,503.15	0
1,500.60	0	1,503.20	0
1,500.65	0	1,503.25	0
1,500.70	0	1,503.30	0
1,500.75	0	1,503.35	0
1,500.80	0	1,503.40	0
1,500.85	0	1,503.45	0
1,500.90	0	1,503.50	0
1,500.95	0	1,503.55	0
1,501.00	0	1,503.60	0
1,501.05	0	1,503.65	0
1,501.10	0	1,503.70	0
1,501.15	0	1,503.75	0
1,501.20	0	1,503.80	0
1,501.25	0	1,503.85	0
1,501.30	0	1,503.90	0
1,501.35	0	1,503.95	0
1,501.40	0	1,504.00	0
1,501.45	0	1,504.05	0
1,501.50	0	1,504.10	0
1,501.55	0	1,504.15	0
1,501.60	0	1,504.20	0
1,501.65	0	1,504.25	0
1,501.70	0	1,504.30	0
1,501.75	0	1,504.35	0
1,501.80	0	1,504.40	0
1,501.85	0	1,504.45	0
1,501.90	0	1,504.50	0
1,501.95	0		
1,502.00	0		
1,502.05	0		
1,502.10	0		
1,502.15	0		
1,502.20	0		
1,502.25	0		
1,502.30	0		
1,502.35	0		
1,502.40	0		
1,502.45	0		
1,502.50	0		
1,502.55	0		
1,502.60	0		
1,502.65	0		
1,502.70	0		
1,502.75	0		
1,502.80	0		
1,502.85	0		
1,502.90	0		
1,502.95	0		
1,503.00	0		
1,503.05	0		

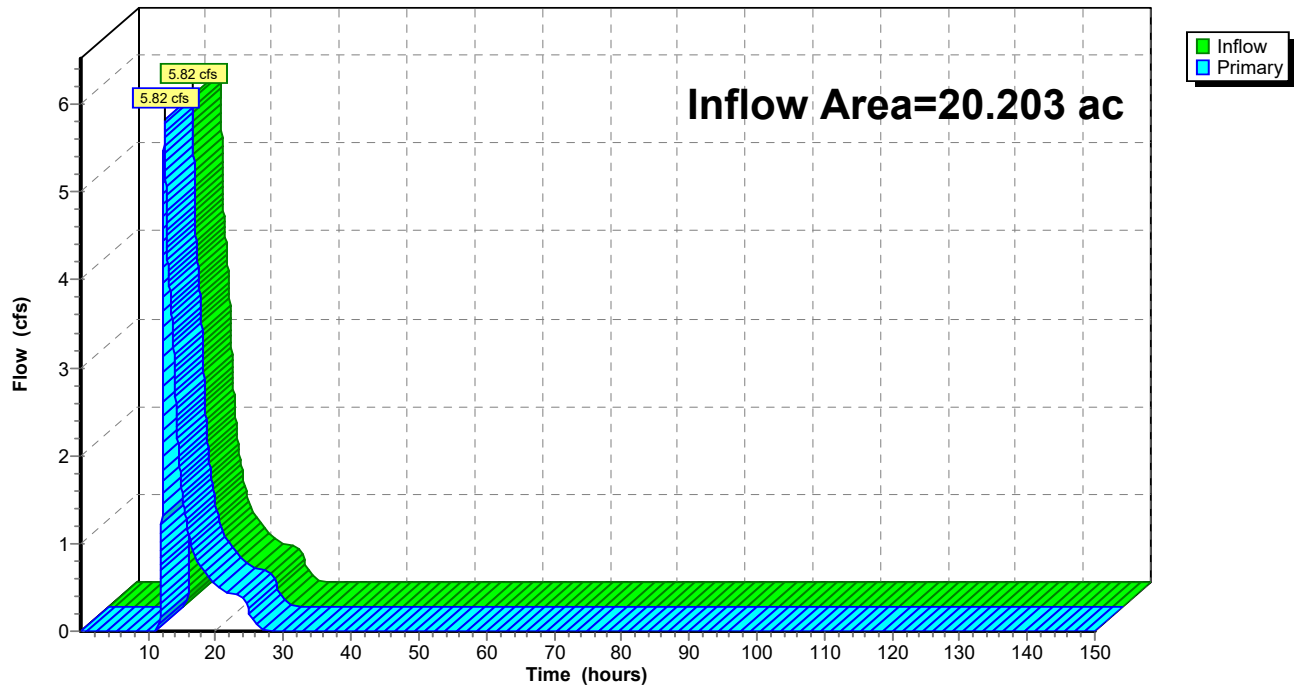
Summary for Pond 42P: Wetland LE-20

Inflow Area = 20.203 ac, 0.00% Impervious, Inflow Depth = 0.82" for 1-yr event
 Inflow = 5.82 cfs @ 12.42 hrs, Volume= 1.386 af
 Primary = 5.82 cfs @ 12.42 hrs, Volume= 1.386 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Pond 42P: Wetland LE-20

Hydrograph



Riato V6 Final

Prepared by JMT

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Type II 24-hr 1-yr Rainfall=2.63"

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Hydrograph for Pond 42P: Wetland LE-20

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.05	0.00		0.00	104.05	0.00		0.00
2.05	0.00		0.00	106.05	0.00		0.00
4.05	0.00		0.00	108.05	0.00		0.00
6.05	0.00		0.00	110.05	0.00		0.00
8.05	0.00		0.00	112.05	0.00		0.00
10.05	0.00		0.00	114.05	0.00		0.00
12.05	1.58		1.58	116.05	0.00		0.00
14.05	2.74		2.74	118.05	0.00		0.00
16.05	1.09		1.09	120.05	0.00		0.00
18.05	0.70		0.70	122.05	0.00		0.00
20.05	0.53		0.53	124.05	0.00		0.00
22.05	0.43		0.43	126.05	0.00		0.00
24.05	0.40		0.40	128.05	0.00		0.00
26.05	0.06		0.06	130.05	0.00		0.00
28.05	0.01		0.01	132.05	0.00		0.00
30.05	0.00		0.00	134.05	0.00		0.00
32.05	0.00		0.00	136.05	0.00		0.00
34.05	0.00		0.00	138.05	0.00		0.00
36.05	0.00		0.00	140.05	0.00		0.00
38.05	0.00		0.00	142.05	0.00		0.00
40.05	0.00		0.00	144.05	0.00		0.00
42.05	0.00		0.00	146.05	0.00		0.00
44.05	0.00		0.00	148.05	0.00		0.00
46.05	0.00		0.00				
48.05	0.00		0.00				
50.05	0.00		0.00				
52.05	0.00		0.00				
54.05	0.00		0.00				
56.05	0.00		0.00				
58.05	0.00		0.00				
60.05	0.00		0.00				
62.05	0.00		0.00				
64.05	0.00		0.00				
66.05	0.00		0.00				
68.05	0.00		0.00				
70.05	0.00		0.00				
72.05	0.00		0.00				
74.05	0.00		0.00				
76.05	0.00		0.00				
78.05	0.00		0.00				
80.05	0.00		0.00				
82.05	0.00		0.00				
84.05	0.00		0.00				
86.05	0.00		0.00				
88.05	0.00		0.00				
90.05	0.00		0.00				
92.05	0.00		0.00				
94.05	0.00		0.00				
96.05	0.00		0.00				
98.05	0.00		0.00				
100.05	0.00		0.00				
102.05	0.00		0.00				

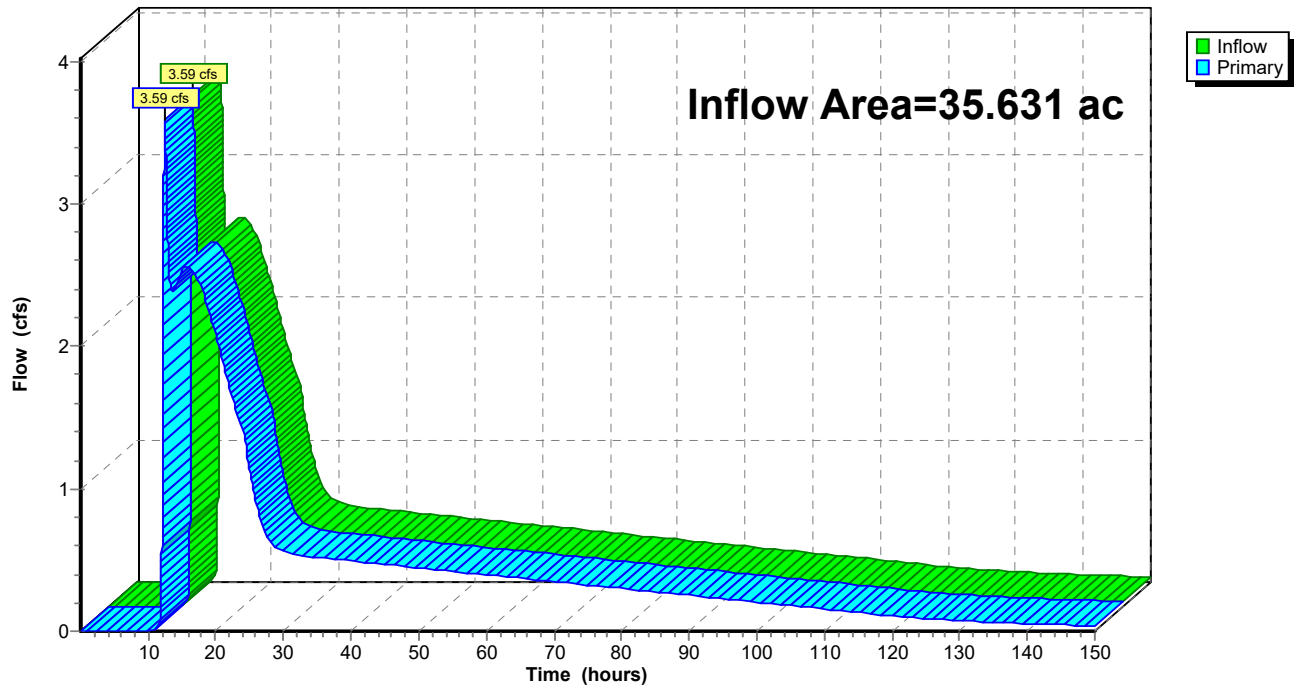
Summary for Pond 43P: Wetland LE-20

Inflow Area = 35.631 ac, 7.72% Impervious, Inflow Depth > 1.75" for 1-yr event
 Inflow = 3.59 cfs @ 12.46 hrs, Volume= 5.195 af
 Primary = 3.59 cfs @ 12.46 hrs, Volume= 5.195 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Pond 43P: Wetland LE-20

Hydrograph



Riato V6 Final

Prepared by JMT

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Type II 24-hr 1-yr Rainfall=2.63"

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Hydrograph for Pond 43P: Wetland LE-20

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.05	0.00		0.00	104.05	0.19		0.19
2.05	0.00		0.00	106.05	0.18		0.18
4.05	0.00		0.00	108.05	0.17		0.17
6.05	0.00		0.00	110.05	0.16		0.16
8.05	0.00		0.00	112.05	0.15		0.15
10.05	0.00		0.00	114.05	0.14		0.14
12.05	0.72		0.72	116.05	0.13		0.13
14.05	2.41		2.41	118.05	0.12		0.12
16.05	2.57		2.57	120.05	0.11		0.11
18.05	2.39		2.39	122.05	0.10		0.10
20.05	2.07		2.07	124.05	0.09		0.09
22.05	1.71		1.71	126.05	0.09		0.09
24.05	1.39		1.39	128.05	0.08		0.08
26.05	0.89		0.89	130.05	0.07		0.07
28.05	0.63		0.63	132.05	0.07		0.07
30.05	0.56		0.56	134.05	0.06		0.06
32.05	0.54		0.54	136.05	0.06		0.06
34.05	0.52		0.52	138.05	0.06		0.06
36.05	0.51		0.51	140.05	0.05		0.05
38.05	0.50		0.50	142.05	0.05		0.05
40.05	0.49		0.49	144.05	0.05		0.05
42.05	0.48		0.48	146.05	0.04		0.04
44.05	0.47		0.47	148.05	0.04		0.04
46.05	0.46		0.46				
48.05	0.45		0.45				
50.05	0.44		0.44				
52.05	0.43		0.43				
54.05	0.43		0.43				
56.05	0.42		0.42				
58.05	0.41		0.41				
60.05	0.40		0.40				
62.05	0.39		0.39				
64.05	0.38		0.38				
66.05	0.37		0.37				
68.05	0.36		0.36				
70.05	0.35		0.35				
72.05	0.34		0.34				
74.05	0.33		0.33				
76.05	0.32		0.32				
78.05	0.31		0.31				
80.05	0.30		0.30				
82.05	0.29		0.29				
84.05	0.28		0.28				
86.05	0.27		0.27				
88.05	0.26		0.26				
90.05	0.25		0.25				
92.05	0.24		0.24				
94.05	0.23		0.23				
96.05	0.22		0.22				
98.05	0.21		0.21				
100.05	0.20		0.20				
102.05	0.19		0.19				

10-Year 24-Hour Storm

Time span=0.05-150.00 hrs, dt=0.01 hrs, 14996 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment10S: Main Mine Area Runoff Area=667,331 sf 0.00% Impervious Runoff Depth=2.47"
Flow Length=511' Slope=0.3000 '/' Tc=13.4 min CN=77 Runoff=51.82 cfs 3.157 af

Subcatchment11S: Main Mine Area Runoff Area=667,331 sf 17.95% Impervious Runoff Depth=4.24"
Flow Length=511' Slope=0.3000 '/' Tc=1.8 min CN=95 Runoff=116.73 cfs 5.415 af

Subcatchment12S: Expansion Area Runoff Area=596,486 sf 0.00% Impervious Runoff Depth=2.47"
Flow Length=1,245' Tc=34.9 min CN=77 Runoff=26.44 cfs 2.822 af

Subcatchment14S: Expansion Area Runoff Area=596,486 sf 0.00% Impervious Runoff Depth=4.13"
Flow Length=1,245' Tc=7.2 min CN=94 Runoff=86.91 cfs 4.713 af

Subcatchment20S: Upland Area 1 Runoff Area=127,275 sf 0.00% Impervious Runoff Depth=2.47"
Flow Length=942' Tc=33.6 min CN=77 Runoff=5.80 cfs 0.602 af

Subcatchment21S: Reclaimed Area Runoff Area=161,004 sf 0.00% Impervious Runoff Depth=2.47"
Flow Length=1,394' Tc=48.9 min CN=77 Runoff=5.62 cfs 0.762 af

Subcatchment23S: Upland Area 2 Runoff Area=112,373 sf 0.00% Impervious Runoff Depth=2.47"
Flow Length=832' Tc=33.6 min CN=77 Runoff=5.12 cfs 0.532 af

Subcatchment24S: Upland Area 3 Runoff Area=206,326 sf 0.00% Impervious Runoff Depth=2.47"
Flow Length=1,145' Tc=44.9 min CN=77 Runoff=7.69 cfs 0.976 af

Subcatchment25S: Upland Area 4 Runoff Area=441,065 sf 0.00% Impervious Runoff Depth=2.47"
Flow Length=2,165' Tc=113.7 min CN=77 Runoff=8.15 cfs 2.087 af

Subcatchment26S: Upland Area 5 Runoff Area=128,001 sf 0.00% Impervious Runoff Depth=2.47"
Flow Length=1,630' Tc=63.9 min CN=77 Runoff=3.68 cfs 0.606 af

Subcatchment27S: Upland Area 6 Runoff Area=120,292 sf 0.00% Impervious Runoff Depth=2.47"
Flow Length=1,012' Tc=36.4 min CN=77 Runoff=5.19 cfs 0.569 af

Reach 5R: Expan Area Ditch Avg. Flow Depth=1.56' Max Vel=8.97 fps Inflow=86.91 cfs 4.713 af
n=0.044 L=576.0' S=0.0747 '/' Capacity=347.14 cfs Outflow=85.93 cfs 4.713 af

Reach 16R: Road Ditch Avg. Flow Depth=0.73' Max Vel=4.06 fps Inflow=13.20 cfs 9.921 af
n=0.040 L=67.6' S=0.0286 '/' Capacity=97.69 cfs Outflow=13.19 cfs 9.921 af

Reach 29R: Spillway Avg. Flow Depth=0.22' Max Vel=6.83 fps Inflow=5.10 cfs 0.532 af
n=0.044 L=211.0' S=0.3791 '/' Capacity=323.65 cfs Outflow=5.10 cfs 0.532 af

Reach 33R: Reclaim Ditch Avg. Flow Depth=0.54' Max Vel=6.59 fps Inflow=10.83 cfs 1.364 af
n=0.040 L=275.0' S=0.1167 '/' Capacity=36.84 cfs Outflow=10.82 cfs 1.364 af

Reach 34R: Div Ditch 2 Avg. Flow Depth=0.36' Max Vel=6.00 fps Inflow=5.12 cfs 0.532 af
n=0.035 L=324.0' S=0.1080 '/' Capacity=30.48 cfs Outflow=5.10 cfs 0.532 af

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Type II 24-hr 10year Rainfall=4.82"

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Reach 35R: Div Ditch 1Avg. Flow Depth=0.39' Max Vel=6.11 fps Inflow=5.80 cfs 0.602 af
n=0.035 L=442.0' S=0.1018 '/' Capacity=29.59 cfs Outflow=5.77 cfs 0.602 af**Reach 36R: Div Ditch 5**Avg. Flow Depth=0.56' Max Vel=3.60 fps Inflow=5.19 cfs 0.569 af
n=0.035 L=206.0' S=0.0243 '/' Capacity=14.45 cfs Outflow=5.18 cfs 0.569 af**Reach 37R: Div Ditch 3**Avg. Flow Depth=0.48' Max Vel=6.79 fps Inflow=8.15 cfs 2.087 af
n=0.035 L=592.0' S=0.1014 '/' Capacity=29.53 cfs Outflow=8.14 cfs 2.087 af**Reach 38R: Div Ditch 4**Avg. Flow Depth=0.30' Max Vel=5.33 fps Inflow=3.68 cfs 0.606 af
n=0.035 L=336.0' S=0.1042 '/' Capacity=29.93 cfs Outflow=3.68 cfs 0.606 af**Reach 39R: Culvert Outlet Apron**Avg. Flow Depth=0.66' Max Vel=1.04 fps Inflow=20.99 cfs 11.284 af
n=0.050 L=22.0' S=0.0023 '/' Capacity=263.34 cfs Outflow=20.99 cfs 11.284 af**Reach 40R: Emergency Spillway**Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af**Pond 13P: Pre-Dvel Disch**Inflow=65.52 cfs 5.979 af
Primary=65.52 cfs 5.979 af**Pond 14P: North Bay**Peak Elev=1,455.41' Storage=7.425 af Inflow=183.31 cfs 10.128 af
Outflow=42.92 cfs 9.947 af**Pond 15P: South Bay**Peak Elev=1,455.05' Storage=2.276 af Inflow=42.92 cfs 9.947 af
Primary=13.20 cfs 9.921 af Secondary=0.00 cfs 0.000 af Outflow=13.20 cfs 9.921 af**Pond 22P: Road Crossing Culverts w/**Peak Elev=1,448.92' Storage=398 cf Inflow=20.99 cfs 11.285 af
30.0" Round Culvert x 3.00 n=0.012 L=64.5' S=0.0284 '/' Outflow=20.99 cfs 11.284 af**Pond 30P: Sump**Peak Elev=1,465.08' Inflow=12.43 cfs 1.508 af
Outflow=12.43 cfs 1.508 af**Pond 32P: Intermittent Drng**Inflow=19.67 cfs 4.164 af
Primary=19.67 cfs 4.164 af**Pond 33P: ExpStrmBasin**Peak Elev=1,502.92' Inflow=86.91 cfs 4.713 af
36.0" Round Culvert x 3.00 n=0.012 L=100.0' S=0.0050 '/' Outflow=86.91 cfs 4.713 af**Pond 42P: Wetland LE-20**Inflow=19.67 cfs 4.164 af
Primary=19.67 cfs 4.164 af**Pond 43P: Wetland LE-20**Inflow=20.99 cfs 11.284 af
Primary=20.99 cfs 11.284 af**Total Runoff Area = 87.786 ac Runoff Volume = 22.241 af Average Runoff Depth = 3.04"**
96.87% Pervious = 85.036 ac 3.13% Impervious = 2.750 ac

Summary for Subcatchment 10S: Main Mine Area Pre-Dvel

Includes pond surface area

Runoff = 51.82 cfs @ 12.05 hrs, Volume= 3.157 af, Depth= 2.47"

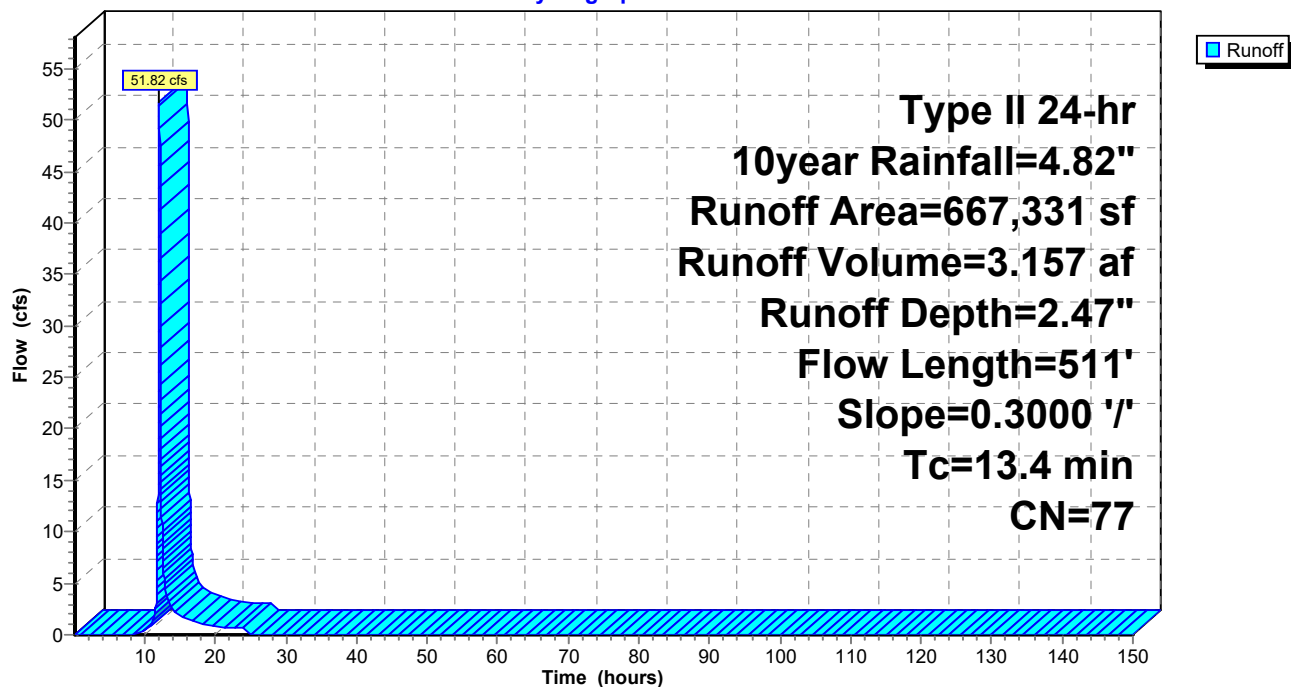
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs
Type II 24-hr 10year Rainfall=4.82"

Area (sf)	CN	Description
667,331	77	Woods, Good, HSG D
667,331		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	100	0.3000	0.20		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.40"
5.0	411	0.3000	1.37		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
13.4	511	Total			

Subcatchment 10S: Main Mine Area Pre-Dvel

Hydrograph



Hydrograph for Subcatchment 10S: Main Mine Area Pre-Dvel

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.05	0.00	0.00	0.00	104.05	4.82	2.47	0.00
2.05	0.11	0.00	0.00	106.05	4.82	2.47	0.00
4.05	0.23	0.00	0.00	108.05	4.82	2.47	0.00
6.05	0.39	0.00	0.00	110.05	4.82	2.47	0.00
8.05	0.58	0.00	0.00	112.05	4.82	2.47	0.00
10.05	0.88	0.02	0.41	114.05	4.82	2.47	0.00
12.05	3.24	1.24	51.78	116.05	4.82	2.47	0.00
14.05	3.96	1.78	2.32	118.05	4.82	2.47	0.00
16.05	4.25	2.01	1.43	120.05	4.82	2.47	0.00
18.05	4.44	2.16	1.11	122.05	4.82	2.47	0.00
20.05	4.59	2.29	0.81	124.05	4.82	2.47	0.00
22.05	4.71	2.38	0.74	126.05	4.82	2.47	0.00
24.05	4.82	2.47	0.68	128.05	4.82	2.47	0.00
26.05	4.82	2.47	0.00	130.05	4.82	2.47	0.00
28.05	4.82	2.47	0.00	132.05	4.82	2.47	0.00
30.05	4.82	2.47	0.00	134.05	4.82	2.47	0.00
32.05	4.82	2.47	0.00	136.05	4.82	2.47	0.00
34.05	4.82	2.47	0.00	138.05	4.82	2.47	0.00
36.05	4.82	2.47	0.00	140.05	4.82	2.47	0.00
38.05	4.82	2.47	0.00	142.05	4.82	2.47	0.00
40.05	4.82	2.47	0.00	144.05	4.82	2.47	0.00
42.05	4.82	2.47	0.00	146.05	4.82	2.47	0.00
44.05	4.82	2.47	0.00	148.05	4.82	2.47	0.00
46.05	4.82	2.47	0.00				
48.05	4.82	2.47	0.00				
50.05	4.82	2.47	0.00				
52.05	4.82	2.47	0.00				
54.05	4.82	2.47	0.00				
56.05	4.82	2.47	0.00				
58.05	4.82	2.47	0.00				
60.05	4.82	2.47	0.00				
62.05	4.82	2.47	0.00				
64.05	4.82	2.47	0.00				
66.05	4.82	2.47	0.00				
68.05	4.82	2.47	0.00				
70.05	4.82	2.47	0.00				
72.05	4.82	2.47	0.00				
74.05	4.82	2.47	0.00				
76.05	4.82	2.47	0.00				
78.05	4.82	2.47	0.00				
80.05	4.82	2.47	0.00				
82.05	4.82	2.47	0.00				
84.05	4.82	2.47	0.00				
86.05	4.82	2.47	0.00				
88.05	4.82	2.47	0.00				
90.05	4.82	2.47	0.00				
92.05	4.82	2.47	0.00				
94.05	4.82	2.47	0.00				
96.05	4.82	2.47	0.00				
98.05	4.82	2.47	0.00				
100.05	4.82	2.47	0.00				
102.05	4.82	2.47	0.00				

Summary for Subcatchment 11S: Main Mine Area

Includes pond surface area

Runoff = 116.73 cfs @ 11.92 hrs, Volume= 5.415 af, Depth= 4.24"

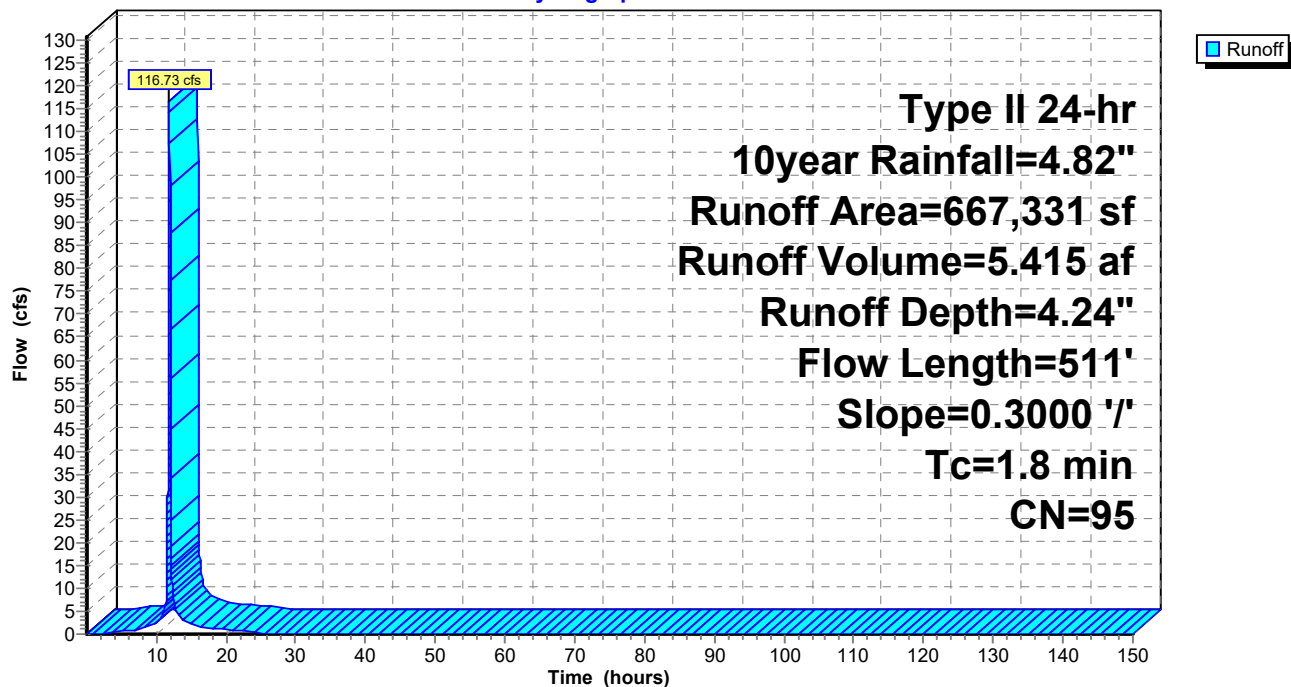
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs
Type II 24-hr 10year Rainfall=4.82"

Area (sf)	CN	Description
547,548	94	Newly graded area, HSG D
* 119,783	100	Water Surface, HSG A
667,331	95	Weighted Average
547,548		82.05% Pervious Area
119,783		17.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.3000	3.52		Sheet Flow, Smooth surfaces n= 0.011 P2= 2.40"
1.3	411	0.3000	5.48		Shallow Concentrated Flow, Nearly Bare & Untilled Kv= 10.0 fps
1.8	511	Total			

Subcatchment 11S: Main Mine Area

Hydrograph



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Type II 24-hr 10year Rainfall=4.82"

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Hydrograph for Subcatchment 11S: Main Mine Area

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.05	0.00	0.00	0.00	104.05	4.82	4.24	0.00
2.05	0.11	0.00	0.01	106.05	4.82	4.24	0.00
4.05	0.23	0.03	0.37	108.05	4.82	4.24	0.00
6.05	0.39	0.10	0.77	110.05	4.82	4.24	0.00
8.05	0.58	0.23	1.20	112.05	4.82	4.24	0.00
10.05	0.88	0.46	2.52	114.05	4.82	4.24	0.00
12.05	3.24	2.69	15.13	116.05	4.82	4.24	0.00
14.05	3.96	3.39	2.70	118.05	4.82	4.24	0.00
16.05	4.25	3.67	1.69	120.05	4.82	4.24	0.00
18.05	4.44	3.87	1.32	122.05	4.82	4.24	0.00
20.05	4.59	4.02	0.96	124.05	4.82	4.24	0.00
22.05	4.71	4.13	0.88	126.05	4.82	4.24	0.00
24.05	4.82	4.24	0.06	128.05	4.82	4.24	0.00
26.05	4.82	4.24	0.00	130.05	4.82	4.24	0.00
28.05	4.82	4.24	0.00	132.05	4.82	4.24	0.00
30.05	4.82	4.24	0.00	134.05	4.82	4.24	0.00
32.05	4.82	4.24	0.00	136.05	4.82	4.24	0.00
34.05	4.82	4.24	0.00	138.05	4.82	4.24	0.00
36.05	4.82	4.24	0.00	140.05	4.82	4.24	0.00
38.05	4.82	4.24	0.00	142.05	4.82	4.24	0.00
40.05	4.82	4.24	0.00	144.05	4.82	4.24	0.00
42.05	4.82	4.24	0.00	146.05	4.82	4.24	0.00
44.05	4.82	4.24	0.00	148.05	4.82	4.24	0.00
46.05	4.82	4.24	0.00				
48.05	4.82	4.24	0.00				
50.05	4.82	4.24	0.00				
52.05	4.82	4.24	0.00				
54.05	4.82	4.24	0.00				
56.05	4.82	4.24	0.00				
58.05	4.82	4.24	0.00				
60.05	4.82	4.24	0.00				
62.05	4.82	4.24	0.00				
64.05	4.82	4.24	0.00				
66.05	4.82	4.24	0.00				
68.05	4.82	4.24	0.00				
70.05	4.82	4.24	0.00				
72.05	4.82	4.24	0.00				
74.05	4.82	4.24	0.00				
76.05	4.82	4.24	0.00				
78.05	4.82	4.24	0.00				
80.05	4.82	4.24	0.00				
82.05	4.82	4.24	0.00				
84.05	4.82	4.24	0.00				
86.05	4.82	4.24	0.00				
88.05	4.82	4.24	0.00				
90.05	4.82	4.24	0.00				
92.05	4.82	4.24	0.00				
94.05	4.82	4.24	0.00				
96.05	4.82	4.24	0.00				
98.05	4.82	4.24	0.00				
100.05	4.82	4.24	0.00				
102.05	4.82	4.24	0.00				

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Type II 24-hr 10year Rainfall=4.82"

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Summary for Subcatchment 12S: Expansion Area Pre-Dvel

Runoff = 26.44 cfs @ 12.30 hrs, Volume= 2.822 af, Depth= 2.47"

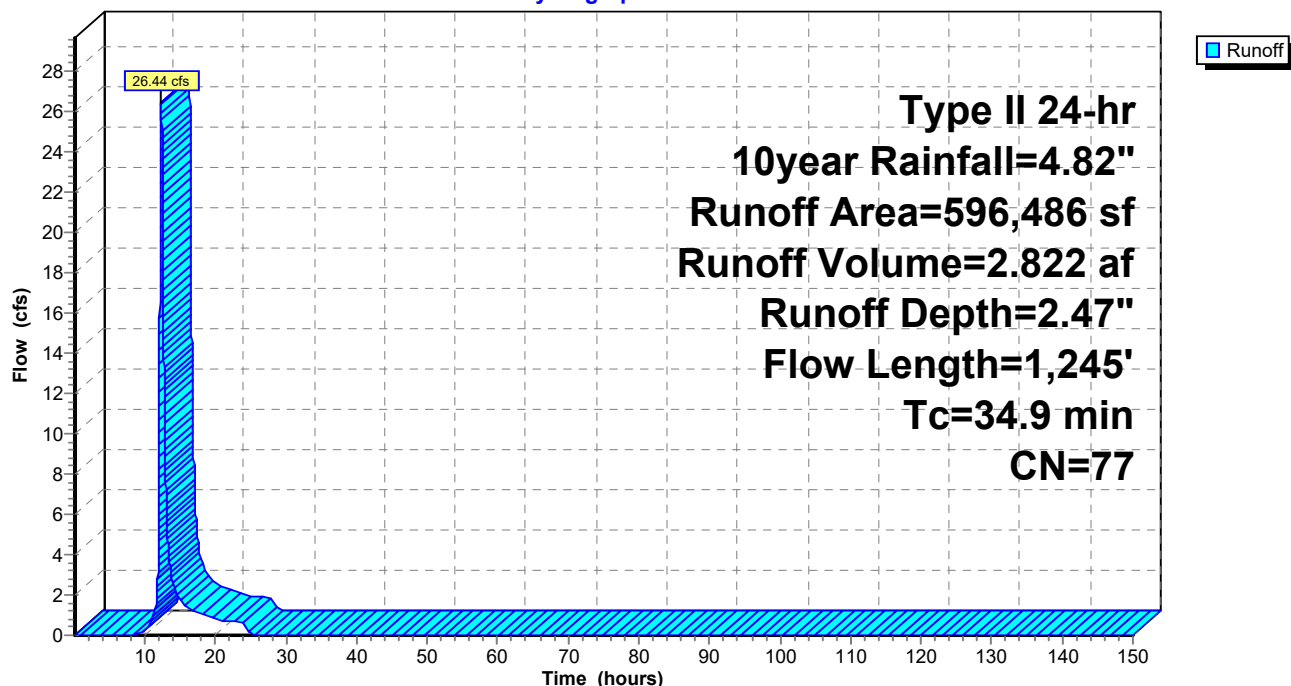
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs
Type II 24-hr 10year Rainfall=4.82"

Area (sf)	CN	Description
596,486	77	Woods, Good, HSG D
596,486		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	100	0.3100	0.20		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.40"
1.2	100	0.3100	1.39		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
25.4	1,045	0.0750	0.68		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
34.9	1,245	Total			

Subcatchment 12S: Expansion Area Pre-Dvel

Hydrograph



Hydrograph for Subcatchment 12S: Expansion Area Pre-Dvel

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.05	0.00	0.00	0.00	104.05	4.82	2.47	0.00
2.05	0.11	0.00	0.00	106.05	4.82	2.47	0.00
4.05	0.23	0.00	0.00	108.05	4.82	2.47	0.00
6.05	0.39	0.00	0.00	110.05	4.82	2.47	0.00
8.05	0.58	0.00	0.00	112.05	4.82	2.47	0.00
10.05	0.88	0.02	0.26	114.05	4.82	2.47	0.00
12.05	3.24	1.24	12.73	116.05	4.82	2.47	0.00
14.05	3.96	1.78	2.45	118.05	4.82	2.47	0.00
16.05	4.25	2.01	1.39	120.05	4.82	2.47	0.00
18.05	4.44	2.16	1.03	122.05	4.82	2.47	0.00
20.05	4.59	2.29	0.77	124.05	4.82	2.47	0.00
22.05	4.71	2.38	0.67	126.05	4.82	2.47	0.00
24.05	4.82	2.47	0.62	128.05	4.82	2.47	0.00
26.05	4.82	2.47	0.00	130.05	4.82	2.47	0.00
28.05	4.82	2.47	0.00	132.05	4.82	2.47	0.00
30.05	4.82	2.47	0.00	134.05	4.82	2.47	0.00
32.05	4.82	2.47	0.00	136.05	4.82	2.47	0.00
34.05	4.82	2.47	0.00	138.05	4.82	2.47	0.00
36.05	4.82	2.47	0.00	140.05	4.82	2.47	0.00
38.05	4.82	2.47	0.00	142.05	4.82	2.47	0.00
40.05	4.82	2.47	0.00	144.05	4.82	2.47	0.00
42.05	4.82	2.47	0.00	146.05	4.82	2.47	0.00
44.05	4.82	2.47	0.00	148.05	4.82	2.47	0.00
46.05	4.82	2.47	0.00				
48.05	4.82	2.47	0.00				
50.05	4.82	2.47	0.00				
52.05	4.82	2.47	0.00				
54.05	4.82	2.47	0.00				
56.05	4.82	2.47	0.00				
58.05	4.82	2.47	0.00				
60.05	4.82	2.47	0.00				
62.05	4.82	2.47	0.00				
64.05	4.82	2.47	0.00				
66.05	4.82	2.47	0.00				
68.05	4.82	2.47	0.00				
70.05	4.82	2.47	0.00				
72.05	4.82	2.47	0.00				
74.05	4.82	2.47	0.00				
76.05	4.82	2.47	0.00				
78.05	4.82	2.47	0.00				
80.05	4.82	2.47	0.00				
82.05	4.82	2.47	0.00				
84.05	4.82	2.47	0.00				
86.05	4.82	2.47	0.00				
88.05	4.82	2.47	0.00				
90.05	4.82	2.47	0.00				
92.05	4.82	2.47	0.00				
94.05	4.82	2.47	0.00				
96.05	4.82	2.47	0.00				
98.05	4.82	2.47	0.00				
100.05	4.82	2.47	0.00				
102.05	4.82	2.47	0.00				

Summary for Subcatchment 14S: Expansion Area

Runoff = 86.91 cfs @ 11.98 hrs, Volume= 4.713 af, Depth= 4.13"

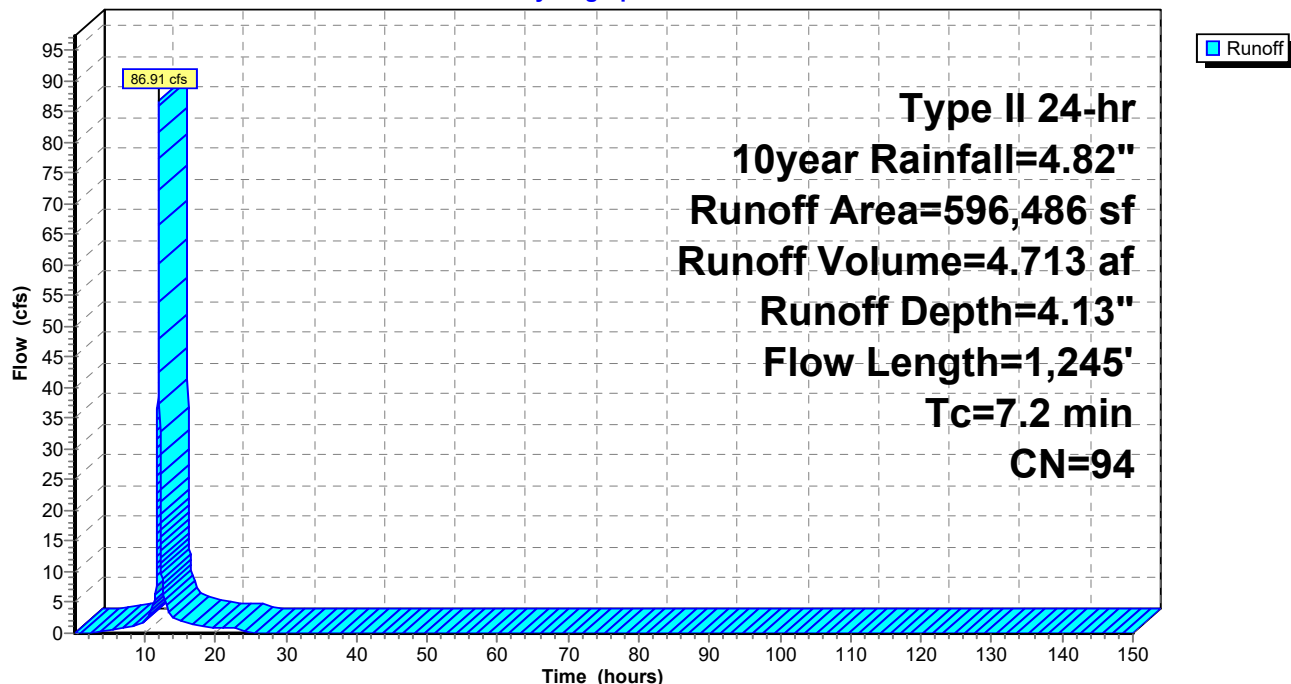
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs
Type II 24-hr 10year Rainfall=4.82"

Area (sf)	CN	Description
596,486	94	Newly graded area, HSG D
596,486		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.3100	3.57		Sheet Flow, Smooth surfaces n= 0.011 P2= 2.40"
0.3	100	0.3100	5.57		Shallow Concentrated Flow, Nearly Bare & Untilled Kv= 10.0 fps
6.4	1,045	0.0750	2.74		Shallow Concentrated Flow, Nearly Bare & Untilled Kv= 10.0 fps
7.2	1,245	Total			

Subcatchment 14S: Expansion Area

Hydrograph



Hydrograph for Subcatchment 14S: Expansion Area

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.05	0.00	0.00	0.00	104.05	4.82	4.13	0.00
2.05	0.11	0.00	0.00	106.05	4.82	4.13	0.00
4.05	0.23	0.02	0.23	108.05	4.82	4.13	0.00
6.05	0.39	0.08	0.58	110.05	4.82	4.13	0.00
8.05	0.58	0.19	0.95	112.05	4.82	4.13	0.00
10.05	0.88	0.41	2.03	114.05	4.82	4.13	0.00
12.05	3.24	2.59	60.32	116.05	4.82	4.13	0.00
14.05	3.96	3.29	2.49	118.05	4.82	4.13	0.00
16.05	4.25	3.57	1.53	120.05	4.82	4.13	0.00
18.05	4.44	3.76	1.19	122.05	4.82	4.13	0.00
20.05	4.59	3.91	0.86	124.05	4.82	4.13	0.00
22.05	4.71	4.02	0.79	126.05	4.82	4.13	0.00
24.05	4.82	4.13	0.67	128.05	4.82	4.13	0.00
26.05	4.82	4.13	0.00	130.05	4.82	4.13	0.00
28.05	4.82	4.13	0.00	132.05	4.82	4.13	0.00
30.05	4.82	4.13	0.00	134.05	4.82	4.13	0.00
32.05	4.82	4.13	0.00	136.05	4.82	4.13	0.00
34.05	4.82	4.13	0.00	138.05	4.82	4.13	0.00
36.05	4.82	4.13	0.00	140.05	4.82	4.13	0.00
38.05	4.82	4.13	0.00	142.05	4.82	4.13	0.00
40.05	4.82	4.13	0.00	144.05	4.82	4.13	0.00
42.05	4.82	4.13	0.00	146.05	4.82	4.13	0.00
44.05	4.82	4.13	0.00	148.05	4.82	4.13	0.00
46.05	4.82	4.13	0.00				
48.05	4.82	4.13	0.00				
50.05	4.82	4.13	0.00				
52.05	4.82	4.13	0.00				
54.05	4.82	4.13	0.00				
56.05	4.82	4.13	0.00				
58.05	4.82	4.13	0.00				
60.05	4.82	4.13	0.00				
62.05	4.82	4.13	0.00				
64.05	4.82	4.13	0.00				
66.05	4.82	4.13	0.00				
68.05	4.82	4.13	0.00				
70.05	4.82	4.13	0.00				
72.05	4.82	4.13	0.00				
74.05	4.82	4.13	0.00				
76.05	4.82	4.13	0.00				
78.05	4.82	4.13	0.00				
80.05	4.82	4.13	0.00				
82.05	4.82	4.13	0.00				
84.05	4.82	4.13	0.00				
86.05	4.82	4.13	0.00				
88.05	4.82	4.13	0.00				
90.05	4.82	4.13	0.00				
92.05	4.82	4.13	0.00				
94.05	4.82	4.13	0.00				
96.05	4.82	4.13	0.00				
98.05	4.82	4.13	0.00				
100.05	4.82	4.13	0.00				
102.05	4.82	4.13	0.00				

Summary for Subcatchment 20S: Upland Area 1

Includes pond surface area

Runoff = 5.80 cfs @ 12.28 hrs, Volume= 0.602 af, Depth= 2.47"

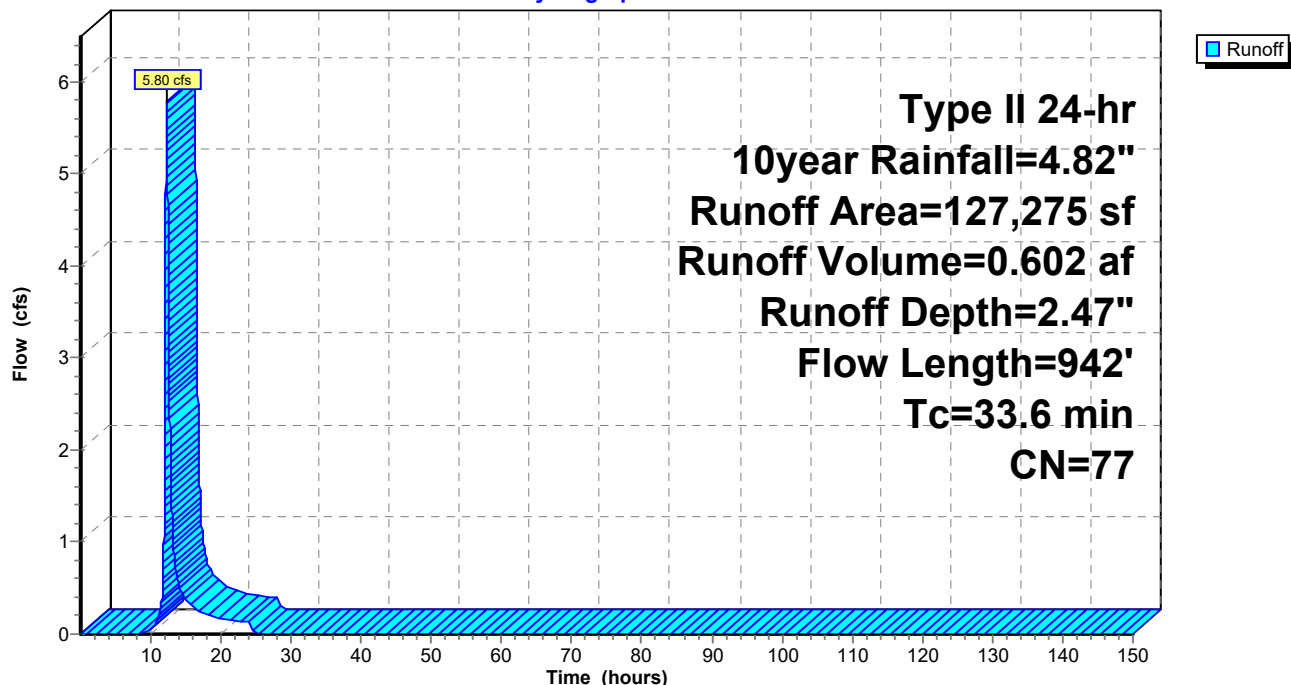
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs
Type II 24-hr 10year Rainfall=4.82"

Area (sf)	CN	Description
127,275	77	Woods, Good, HSG D
127,275		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.8	100	0.0200	0.07		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.40"
8.4	399	0.1000	0.79		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
0.4	443	0.1020	16.46	65.85	Channel Flow, Area= 4.0 sf Perim= 6.0' r= 0.67' n= 0.022 Earth, clean & straight
33.6	942	Total			

Subcatchment 20S: Upland Area 1

Hydrograph



Riato V6 Final

Prepared by JMT

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Type II 24-hr 10year Rainfall=4.82"

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Hydrograph for Subcatchment 20S: Upland Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.05	0.00	0.00	0.00	104.05	4.82	2.47	0.00
2.05	0.11	0.00	0.00	106.05	4.82	2.47	0.00
4.05	0.23	0.00	0.00	108.05	4.82	2.47	0.00
6.05	0.39	0.00	0.00	110.05	4.82	2.47	0.00
8.05	0.58	0.00	0.00	112.05	4.82	2.47	0.00
10.05	0.88	0.02	0.06	114.05	4.82	2.47	0.00
12.05	3.24	1.24	2.93	116.05	4.82	2.47	0.00
14.05	3.96	1.78	0.52	118.05	4.82	2.47	0.00
16.05	4.25	2.01	0.30	120.05	4.82	2.47	0.00
18.05	4.44	2.16	0.22	122.05	4.82	2.47	0.00
20.05	4.59	2.29	0.16	124.05	4.82	2.47	0.00
22.05	4.71	2.38	0.14	126.05	4.82	2.47	0.00
24.05	4.82	2.47	0.13	128.05	4.82	2.47	0.00
26.05	4.82	2.47	0.00	130.05	4.82	2.47	0.00
28.05	4.82	2.47	0.00	132.05	4.82	2.47	0.00
30.05	4.82	2.47	0.00	134.05	4.82	2.47	0.00
32.05	4.82	2.47	0.00	136.05	4.82	2.47	0.00
34.05	4.82	2.47	0.00	138.05	4.82	2.47	0.00
36.05	4.82	2.47	0.00	140.05	4.82	2.47	0.00
38.05	4.82	2.47	0.00	142.05	4.82	2.47	0.00
40.05	4.82	2.47	0.00	144.05	4.82	2.47	0.00
42.05	4.82	2.47	0.00	146.05	4.82	2.47	0.00
44.05	4.82	2.47	0.00	148.05	4.82	2.47	0.00
46.05	4.82	2.47	0.00				
48.05	4.82	2.47	0.00				
50.05	4.82	2.47	0.00				
52.05	4.82	2.47	0.00				
54.05	4.82	2.47	0.00				
56.05	4.82	2.47	0.00				
58.05	4.82	2.47	0.00				
60.05	4.82	2.47	0.00				
62.05	4.82	2.47	0.00				
64.05	4.82	2.47	0.00				
66.05	4.82	2.47	0.00				
68.05	4.82	2.47	0.00				
70.05	4.82	2.47	0.00				
72.05	4.82	2.47	0.00				
74.05	4.82	2.47	0.00				
76.05	4.82	2.47	0.00				
78.05	4.82	2.47	0.00				
80.05	4.82	2.47	0.00				
82.05	4.82	2.47	0.00				
84.05	4.82	2.47	0.00				
86.05	4.82	2.47	0.00				
88.05	4.82	2.47	0.00				
90.05	4.82	2.47	0.00				
92.05	4.82	2.47	0.00				
94.05	4.82	2.47	0.00				
96.05	4.82	2.47	0.00				
98.05	4.82	2.47	0.00				
100.05	4.82	2.47	0.00				
102.05	4.82	2.47	0.00				

Summary for Subcatchment 21S: Reclaimed Area

Includes pond surface area

Runoff = 5.62 cfs @ 12.49 hrs, Volume= 0.762 af, Depth= 2.47"

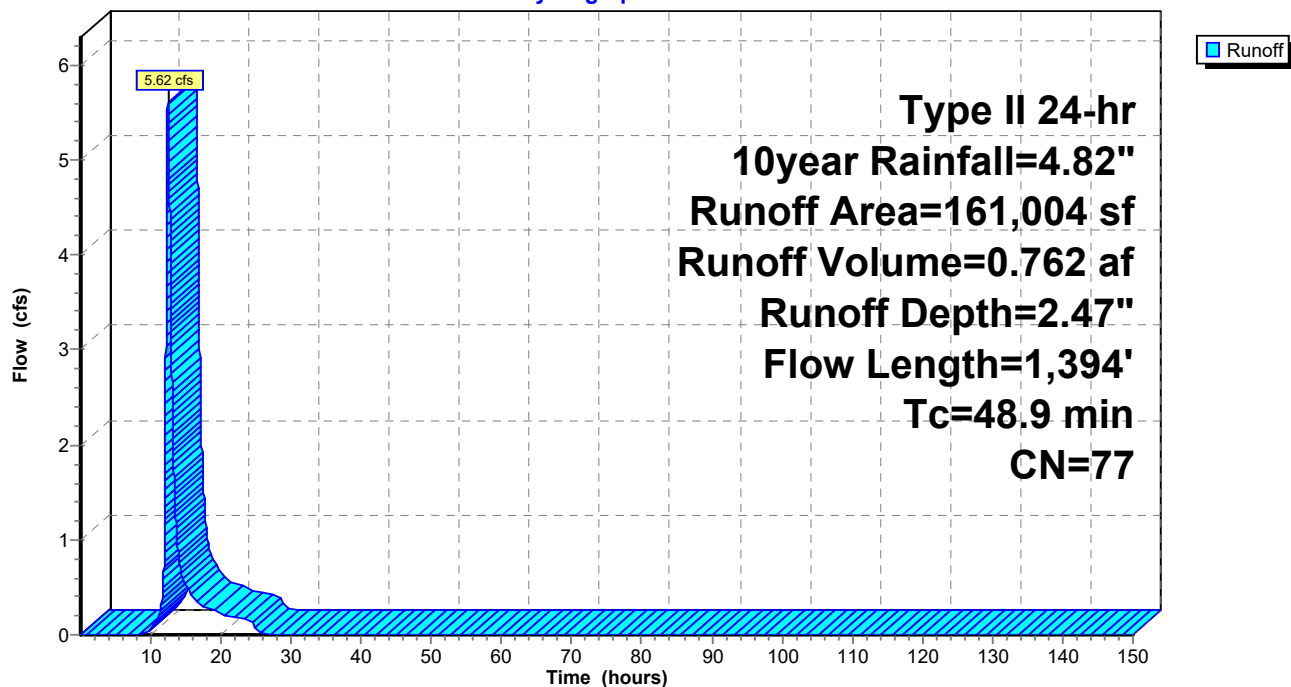
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs
Type II 24-hr 10year Rainfall=4.82"

Area (sf)	CN	Description
161,004	77	Woods, Good, HSG D
161,004		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.8	100	0.0200	0.07		Sheet Flow,
					Woods: Light underbrush n= 0.400 P2= 2.40"
24.1	1,294	0.1280	0.89		Shallow Concentrated Flow,
					Forest w/Heavy Litter Kv= 2.5 fps
48.9	1,394	Total			

Subcatchment 21S: Reclaimed Area

Hydrograph



Hydrograph for Subcatchment 21S: Reclaimed Area

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.05	0.00	0.00	0.00	104.05	4.82	2.47	0.00
2.05	0.11	0.00	0.00	106.05	4.82	2.47	0.00
4.05	0.23	0.00	0.00	108.05	4.82	2.47	0.00
6.05	0.39	0.00	0.00	110.05	4.82	2.47	0.00
8.05	0.58	0.00	0.00	112.05	4.82	2.47	0.00
10.05	0.88	0.02	0.06	114.05	4.82	2.47	0.00
12.05	3.24	1.24	1.70	116.05	4.82	2.47	0.00
14.05	3.96	1.78	0.81	118.05	4.82	2.47	0.00
16.05	4.25	2.01	0.40	120.05	4.82	2.47	0.00
18.05	4.44	2.16	0.29	122.05	4.82	2.47	0.00
20.05	4.59	2.29	0.22	124.05	4.82	2.47	0.00
22.05	4.71	2.38	0.18	126.05	4.82	2.47	0.00
24.05	4.82	2.47	0.17	128.05	4.82	2.47	0.00
26.05	4.82	2.47	0.00	130.05	4.82	2.47	0.00
28.05	4.82	2.47	0.00	132.05	4.82	2.47	0.00
30.05	4.82	2.47	0.00	134.05	4.82	2.47	0.00
32.05	4.82	2.47	0.00	136.05	4.82	2.47	0.00
34.05	4.82	2.47	0.00	138.05	4.82	2.47	0.00
36.05	4.82	2.47	0.00	140.05	4.82	2.47	0.00
38.05	4.82	2.47	0.00	142.05	4.82	2.47	0.00
40.05	4.82	2.47	0.00	144.05	4.82	2.47	0.00
42.05	4.82	2.47	0.00	146.05	4.82	2.47	0.00
44.05	4.82	2.47	0.00	148.05	4.82	2.47	0.00
46.05	4.82	2.47	0.00				
48.05	4.82	2.47	0.00				
50.05	4.82	2.47	0.00				
52.05	4.82	2.47	0.00				
54.05	4.82	2.47	0.00				
56.05	4.82	2.47	0.00				
58.05	4.82	2.47	0.00				
60.05	4.82	2.47	0.00				
62.05	4.82	2.47	0.00				
64.05	4.82	2.47	0.00				
66.05	4.82	2.47	0.00				
68.05	4.82	2.47	0.00				
70.05	4.82	2.47	0.00				
72.05	4.82	2.47	0.00				
74.05	4.82	2.47	0.00				
76.05	4.82	2.47	0.00				
78.05	4.82	2.47	0.00				
80.05	4.82	2.47	0.00				
82.05	4.82	2.47	0.00				
84.05	4.82	2.47	0.00				
86.05	4.82	2.47	0.00				
88.05	4.82	2.47	0.00				
90.05	4.82	2.47	0.00				
92.05	4.82	2.47	0.00				
94.05	4.82	2.47	0.00				
96.05	4.82	2.47	0.00				
98.05	4.82	2.47	0.00				
100.05	4.82	2.47	0.00				
102.05	4.82	2.47	0.00				

Summary for Subcatchment 23S: Upland Area 2

Includes pond surface area

Runoff = 5.12 cfs @ 12.28 hrs, Volume= 0.532 af, Depth= 2.47"

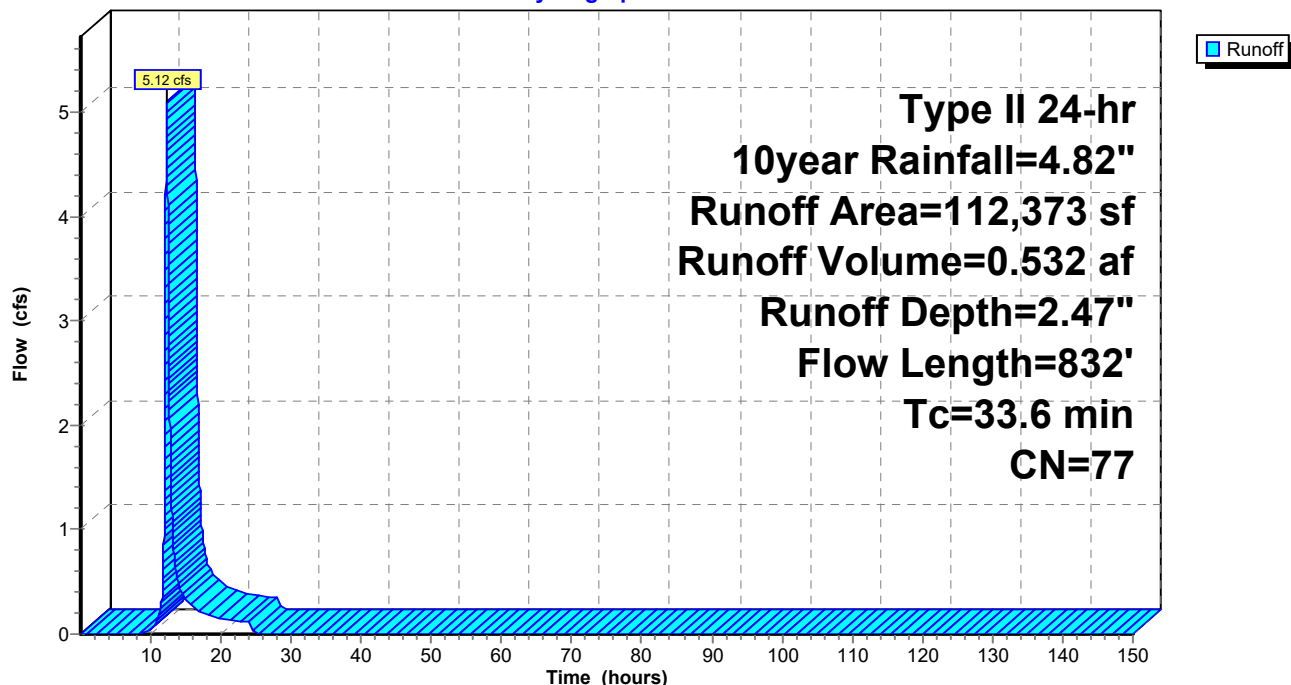
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs
Type II 24-hr 10year Rainfall=4.82"

Area (sf)	CN	Description
112,373	77	Woods, Good, HSG D
112,373		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.8	100	0.0200	0.07		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.40"
8.4	399	0.1000	0.79		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
0.4	333	0.0750	14.12	56.47	Channel Flow, Area= 4.0 sf Perim= 6.0' r= 0.67' n= 0.022 Earth, clean & straight
33.6	832	Total			

Subcatchment 23S: Upland Area 2

Hydrograph



Hydrograph for Subcatchment 23S: Upland Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.05	0.00	0.00	0.00	104.05	4.82	2.47	0.00
2.05	0.11	0.00	0.00	106.05	4.82	2.47	0.00
4.05	0.23	0.00	0.00	108.05	4.82	2.47	0.00
6.05	0.39	0.00	0.00	110.05	4.82	2.47	0.00
8.05	0.58	0.00	0.00	112.05	4.82	2.47	0.00
10.05	0.88	0.02	0.05	114.05	4.82	2.47	0.00
12.05	3.24	1.24	2.58	116.05	4.82	2.47	0.00
14.05	3.96	1.78	0.46	118.05	4.82	2.47	0.00
16.05	4.25	2.01	0.26	120.05	4.82	2.47	0.00
18.05	4.44	2.16	0.19	122.05	4.82	2.47	0.00
20.05	4.59	2.29	0.14	124.05	4.82	2.47	0.00
22.05	4.71	2.38	0.13	126.05	4.82	2.47	0.00
24.05	4.82	2.47	0.12	128.05	4.82	2.47	0.00
26.05	4.82	2.47	0.00	130.05	4.82	2.47	0.00
28.05	4.82	2.47	0.00	132.05	4.82	2.47	0.00
30.05	4.82	2.47	0.00	134.05	4.82	2.47	0.00
32.05	4.82	2.47	0.00	136.05	4.82	2.47	0.00
34.05	4.82	2.47	0.00	138.05	4.82	2.47	0.00
36.05	4.82	2.47	0.00	140.05	4.82	2.47	0.00
38.05	4.82	2.47	0.00	142.05	4.82	2.47	0.00
40.05	4.82	2.47	0.00	144.05	4.82	2.47	0.00
42.05	4.82	2.47	0.00	146.05	4.82	2.47	0.00
44.05	4.82	2.47	0.00	148.05	4.82	2.47	0.00
46.05	4.82	2.47	0.00				
48.05	4.82	2.47	0.00				
50.05	4.82	2.47	0.00				
52.05	4.82	2.47	0.00				
54.05	4.82	2.47	0.00				
56.05	4.82	2.47	0.00				
58.05	4.82	2.47	0.00				
60.05	4.82	2.47	0.00				
62.05	4.82	2.47	0.00				
64.05	4.82	2.47	0.00				
66.05	4.82	2.47	0.00				
68.05	4.82	2.47	0.00				
70.05	4.82	2.47	0.00				
72.05	4.82	2.47	0.00				
74.05	4.82	2.47	0.00				
76.05	4.82	2.47	0.00				
78.05	4.82	2.47	0.00				
80.05	4.82	2.47	0.00				
82.05	4.82	2.47	0.00				
84.05	4.82	2.47	0.00				
86.05	4.82	2.47	0.00				
88.05	4.82	2.47	0.00				
90.05	4.82	2.47	0.00				
92.05	4.82	2.47	0.00				
94.05	4.82	2.47	0.00				
96.05	4.82	2.47	0.00				
98.05	4.82	2.47	0.00				
100.05	4.82	2.47	0.00				
102.05	4.82	2.47	0.00				

Summary for Subcatchment 24S: Upland Area 3

Includes pond surface area

Runoff = 7.69 cfs @ 12.42 hrs, Volume= 0.976 af, Depth= 2.47"

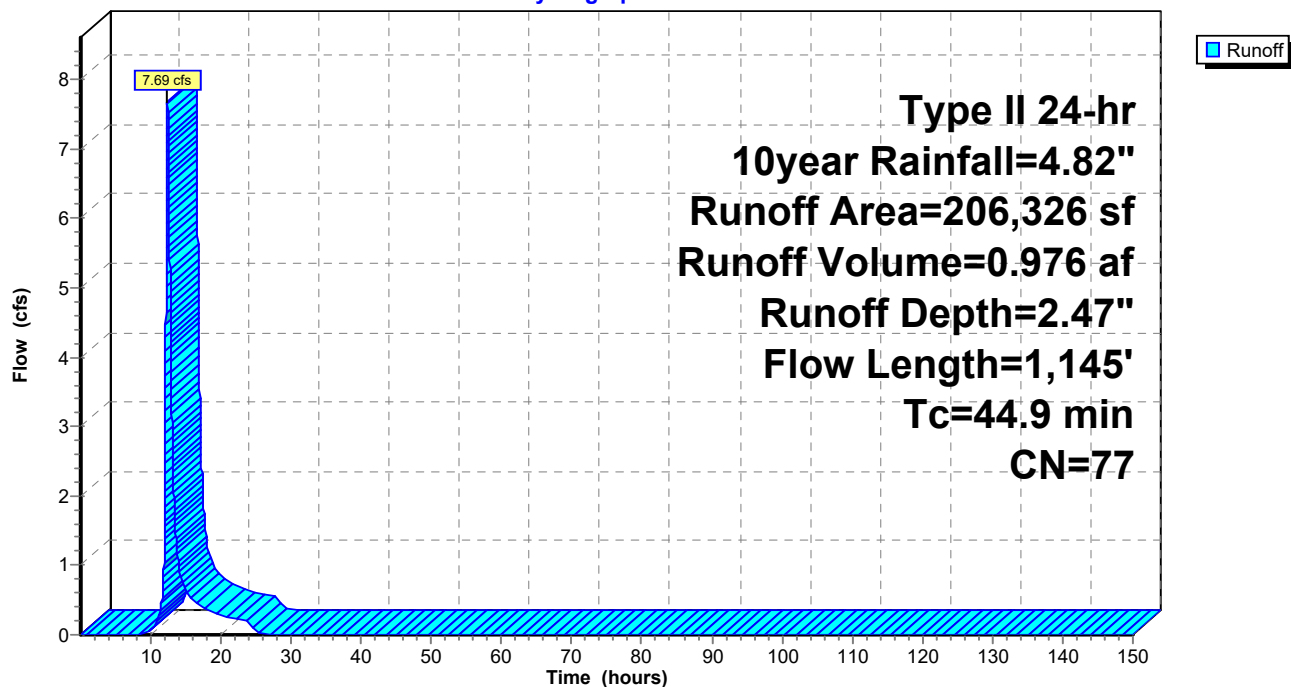
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs
Type II 24-hr 10year Rainfall=4.82"

Area (sf)	CN	Description
206,326	77	Woods, Good, HSG D
206,326		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.8	100	0.0200	0.07		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.40"
20.1	1,045	0.1200	0.87		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
44.9	1,145	Total			

Subcatchment 24S: Upland Area 3

Hydrograph



Hydrograph for Subcatchment 24S: Upland Area 3

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.05	0.00	0.00	0.00	104.05	4.82	2.47	0.00
2.05	0.11	0.00	0.00	106.05	4.82	2.47	0.00
4.05	0.23	0.00	0.00	108.05	4.82	2.47	0.00
6.05	0.39	0.00	0.00	110.05	4.82	2.47	0.00
8.05	0.58	0.00	0.00	112.05	4.82	2.47	0.00
10.05	0.88	0.02	0.08	114.05	4.82	2.47	0.00
12.05	3.24	1.24	2.61	116.05	4.82	2.47	0.00
14.05	3.96	1.78	0.98	118.05	4.82	2.47	0.00
16.05	4.25	2.01	0.50	120.05	4.82	2.47	0.00
18.05	4.44	2.16	0.36	122.05	4.82	2.47	0.00
20.05	4.59	2.29	0.27	124.05	4.82	2.47	0.00
22.05	4.71	2.38	0.23	126.05	4.82	2.47	0.00
24.05	4.82	2.47	0.22	128.05	4.82	2.47	0.00
26.05	4.82	2.47	0.00	130.05	4.82	2.47	0.00
28.05	4.82	2.47	0.00	132.05	4.82	2.47	0.00
30.05	4.82	2.47	0.00	134.05	4.82	2.47	0.00
32.05	4.82	2.47	0.00	136.05	4.82	2.47	0.00
34.05	4.82	2.47	0.00	138.05	4.82	2.47	0.00
36.05	4.82	2.47	0.00	140.05	4.82	2.47	0.00
38.05	4.82	2.47	0.00	142.05	4.82	2.47	0.00
40.05	4.82	2.47	0.00	144.05	4.82	2.47	0.00
42.05	4.82	2.47	0.00	146.05	4.82	2.47	0.00
44.05	4.82	2.47	0.00	148.05	4.82	2.47	0.00
46.05	4.82	2.47	0.00				
48.05	4.82	2.47	0.00				
50.05	4.82	2.47	0.00				
52.05	4.82	2.47	0.00				
54.05	4.82	2.47	0.00				
56.05	4.82	2.47	0.00				
58.05	4.82	2.47	0.00				
60.05	4.82	2.47	0.00				
62.05	4.82	2.47	0.00				
64.05	4.82	2.47	0.00				
66.05	4.82	2.47	0.00				
68.05	4.82	2.47	0.00				
70.05	4.82	2.47	0.00				
72.05	4.82	2.47	0.00				
74.05	4.82	2.47	0.00				
76.05	4.82	2.47	0.00				
78.05	4.82	2.47	0.00				
80.05	4.82	2.47	0.00				
82.05	4.82	2.47	0.00				
84.05	4.82	2.47	0.00				
86.05	4.82	2.47	0.00				
88.05	4.82	2.47	0.00				
90.05	4.82	2.47	0.00				
92.05	4.82	2.47	0.00				
94.05	4.82	2.47	0.00				
96.05	4.82	2.47	0.00				
98.05	4.82	2.47	0.00				
100.05	4.82	2.47	0.00				
102.05	4.82	2.47	0.00				

Riato V6 Final

Prepared by JMT

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Type II 24-hr 10year Rainfall=4.82"

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Summary for Subcatchment 25S: Upland Area 4

Includes pond surface area

Runoff = 8.15 cfs @ 13.27 hrs, Volume= 2.087 af, Depth= 2.47"

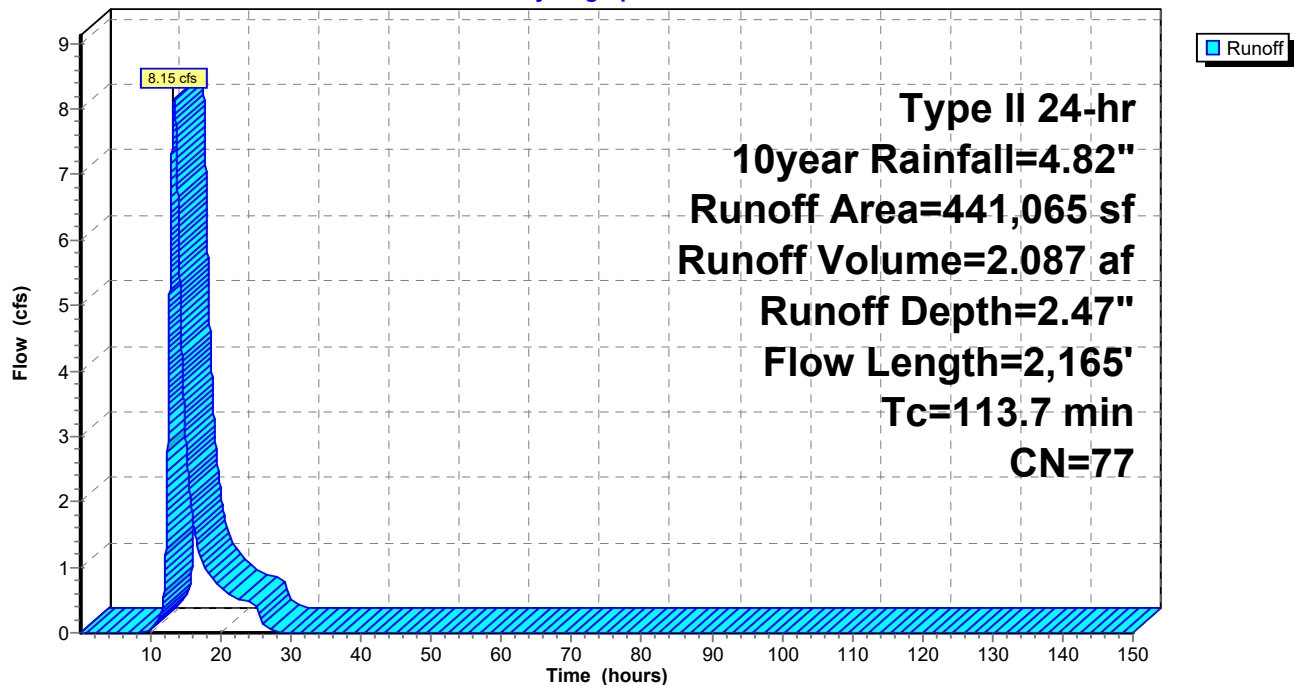
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs
Type II 24-hr 10year Rainfall=4.82"

Area (sf)	CN	Description
441,065	77	Woods, Good, HSG D
441,065		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.8	100	0.0200	0.07		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.40"
88.9	2,065	0.0240	0.39		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
113.7	2,165	Total			

Subcatchment 25S: Upland Area 4

Hydrograph



Hydrograph for Subcatchment 25S: Upland Area 4

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.05	0.00	0.00	0.00	104.05	4.82	2.47	0.00
2.05	0.11	0.00	0.00	106.05	4.82	2.47	0.00
4.05	0.23	0.00	0.00	108.05	4.82	2.47	0.00
6.05	0.39	0.00	0.00	110.05	4.82	2.47	0.00
8.05	0.58	0.00	0.00	112.05	4.82	2.47	0.00
10.05	0.88	0.02	0.05	114.05	4.82	2.47	0.00
12.05	3.24	1.24	0.87	116.05	4.82	2.47	0.00
14.05	3.96	1.78	5.89	118.05	4.82	2.47	0.00
16.05	4.25	2.01	1.70	120.05	4.82	2.47	0.00
18.05	4.44	2.16	0.93	122.05	4.82	2.47	0.00
20.05	4.59	2.29	0.69	124.05	4.82	2.47	0.00
22.05	4.71	2.38	0.53	126.05	4.82	2.47	0.00
24.05	4.82	2.47	0.48	128.05	4.82	2.47	0.00
26.05	4.82	2.47	0.13	130.05	4.82	2.47	0.00
28.05	4.82	2.47	0.01	132.05	4.82	2.47	0.00
30.05	4.82	2.47	0.00	134.05	4.82	2.47	0.00
32.05	4.82	2.47	0.00	136.05	4.82	2.47	0.00
34.05	4.82	2.47	0.00	138.05	4.82	2.47	0.00
36.05	4.82	2.47	0.00	140.05	4.82	2.47	0.00
38.05	4.82	2.47	0.00	142.05	4.82	2.47	0.00
40.05	4.82	2.47	0.00	144.05	4.82	2.47	0.00
42.05	4.82	2.47	0.00	146.05	4.82	2.47	0.00
44.05	4.82	2.47	0.00	148.05	4.82	2.47	0.00
46.05	4.82	2.47	0.00				
48.05	4.82	2.47	0.00				
50.05	4.82	2.47	0.00				
52.05	4.82	2.47	0.00				
54.05	4.82	2.47	0.00				
56.05	4.82	2.47	0.00				
58.05	4.82	2.47	0.00				
60.05	4.82	2.47	0.00				
62.05	4.82	2.47	0.00				
64.05	4.82	2.47	0.00				
66.05	4.82	2.47	0.00				
68.05	4.82	2.47	0.00				
70.05	4.82	2.47	0.00				
72.05	4.82	2.47	0.00				
74.05	4.82	2.47	0.00				
76.05	4.82	2.47	0.00				
78.05	4.82	2.47	0.00				
80.05	4.82	2.47	0.00				
82.05	4.82	2.47	0.00				
84.05	4.82	2.47	0.00				
86.05	4.82	2.47	0.00				
88.05	4.82	2.47	0.00				
90.05	4.82	2.47	0.00				
92.05	4.82	2.47	0.00				
94.05	4.82	2.47	0.00				
96.05	4.82	2.47	0.00				
98.05	4.82	2.47	0.00				
100.05	4.82	2.47	0.00				
102.05	4.82	2.47	0.00				

Summary for Subcatchment 26S: Upland Area 5

Includes pond surface area

Runoff = 3.68 cfs @ 12.71 hrs, Volume= 0.606 af, Depth= 2.47"

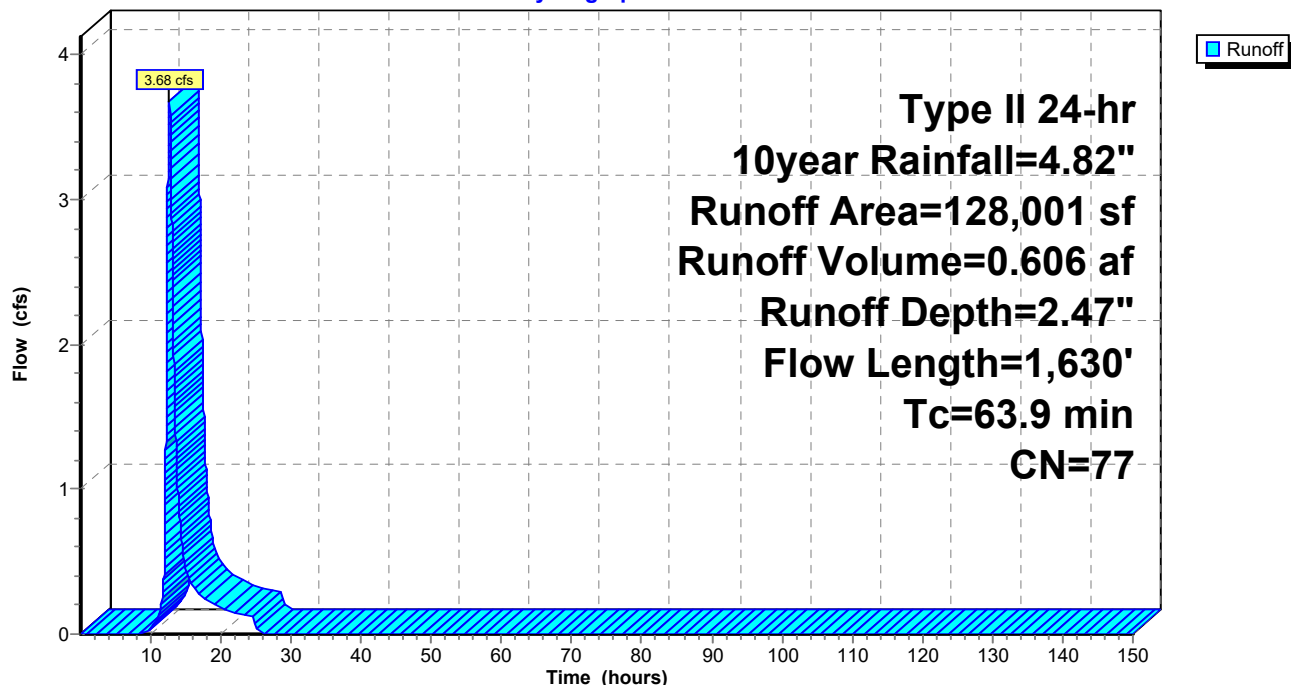
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs
Type II 24-hr 10year Rainfall=4.82"

Area (sf)	CN	Description
128,001	77	Woods, Good, HSG D
128,001		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.8	100	0.0200	0.07		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.40"
38.8	1,194	0.0420	0.51		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
0.3	336	0.1190	17.78	71.13	Channel Flow, Area= 4.0 sf Perim= 6.0' r= 0.67' n= 0.022 Earth, clean & straight
63.9	1,630	Total			

Subcatchment 26S: Upland Area 5

Hydrograph



Hydrograph for Subcatchment 26S: Upland Area 5

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.05	0.00	0.00	0.00	104.05	4.82	2.47	0.00
2.05	0.11	0.00	0.00	106.05	4.82	2.47	0.00
4.05	0.23	0.00	0.00	108.05	4.82	2.47	0.00
6.05	0.39	0.00	0.00	110.05	4.82	2.47	0.00
8.05	0.58	0.00	0.00	112.05	4.82	2.47	0.00
10.05	0.88	0.02	0.04	114.05	4.82	2.47	0.00
12.05	3.24	1.24	0.77	116.05	4.82	2.47	0.00
14.05	3.96	1.78	0.85	118.05	4.82	2.47	0.00
16.05	4.25	2.01	0.34	120.05	4.82	2.47	0.00
18.05	4.44	2.16	0.23	122.05	4.82	2.47	0.00
20.05	4.59	2.29	0.18	124.05	4.82	2.47	0.00
22.05	4.71	2.38	0.15	126.05	4.82	2.47	0.00
24.05	4.82	2.47	0.14	128.05	4.82	2.47	0.00
26.05	4.82	2.47	0.00	130.05	4.82	2.47	0.00
28.05	4.82	2.47	0.00	132.05	4.82	2.47	0.00
30.05	4.82	2.47	0.00	134.05	4.82	2.47	0.00
32.05	4.82	2.47	0.00	136.05	4.82	2.47	0.00
34.05	4.82	2.47	0.00	138.05	4.82	2.47	0.00
36.05	4.82	2.47	0.00	140.05	4.82	2.47	0.00
38.05	4.82	2.47	0.00	142.05	4.82	2.47	0.00
40.05	4.82	2.47	0.00	144.05	4.82	2.47	0.00
42.05	4.82	2.47	0.00	146.05	4.82	2.47	0.00
44.05	4.82	2.47	0.00	148.05	4.82	2.47	0.00
46.05	4.82	2.47	0.00				
48.05	4.82	2.47	0.00				
50.05	4.82	2.47	0.00				
52.05	4.82	2.47	0.00				
54.05	4.82	2.47	0.00				
56.05	4.82	2.47	0.00				
58.05	4.82	2.47	0.00				
60.05	4.82	2.47	0.00				
62.05	4.82	2.47	0.00				
64.05	4.82	2.47	0.00				
66.05	4.82	2.47	0.00				
68.05	4.82	2.47	0.00				
70.05	4.82	2.47	0.00				
72.05	4.82	2.47	0.00				
74.05	4.82	2.47	0.00				
76.05	4.82	2.47	0.00				
78.05	4.82	2.47	0.00				
80.05	4.82	2.47	0.00				
82.05	4.82	2.47	0.00				
84.05	4.82	2.47	0.00				
86.05	4.82	2.47	0.00				
88.05	4.82	2.47	0.00				
90.05	4.82	2.47	0.00				
92.05	4.82	2.47	0.00				
94.05	4.82	2.47	0.00				
96.05	4.82	2.47	0.00				
98.05	4.82	2.47	0.00				
100.05	4.82	2.47	0.00				
102.05	4.82	2.47	0.00				

Summary for Subcatchment 27S: Upland Area 6

Includes pond surface area

Runoff = 5.19 cfs @ 12.33 hrs, Volume= 0.569 af, Depth= 2.47"

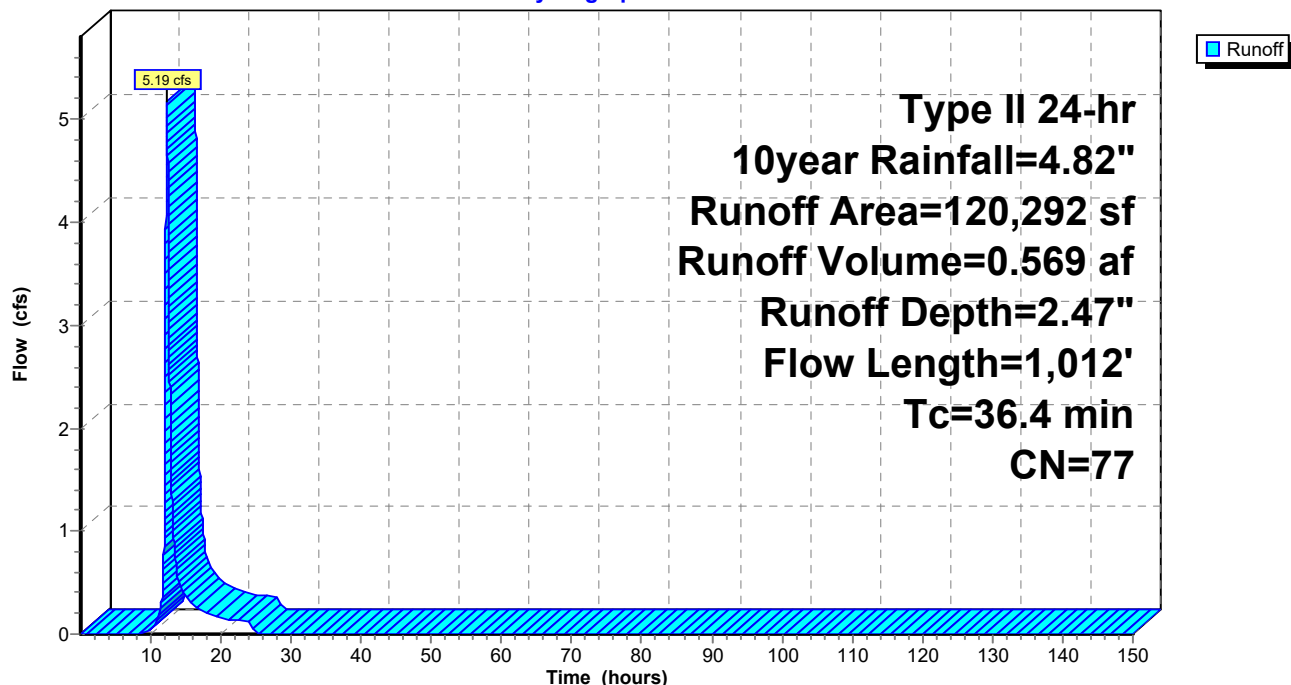
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs
Type II 24-hr 10year Rainfall=4.82"

Area (sf)	CN	Description
120,292	77	Woods, Good, HSG D
120,292		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.8	100	0.0200	0.07		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.40"
11.2	706	0.1770	1.05		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
0.4	206	0.0240	7.99	31.94	Channel Flow, Area= 4.0 sf Perim= 6.0' r= 0.67' n= 0.022 Earth, clean & straight
36.4	1,012	Total			

Subcatchment 27S: Upland Area 6

Hydrograph



Hydrograph for Subcatchment 27S: Upland Area 6

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.05	0.00	0.00	0.00	104.05	4.82	2.47	0.00
2.05	0.11	0.00	0.00	106.05	4.82	2.47	0.00
4.05	0.23	0.00	0.00	108.05	4.82	2.47	0.00
6.05	0.39	0.00	0.00	110.05	4.82	2.47	0.00
8.05	0.58	0.00	0.00	112.05	4.82	2.47	0.00
10.05	0.88	0.02	0.05	114.05	4.82	2.47	0.00
12.05	3.24	1.24	2.36	116.05	4.82	2.47	0.00
14.05	3.96	1.78	0.50	118.05	4.82	2.47	0.00
16.05	4.25	2.01	0.28	120.05	4.82	2.47	0.00
18.05	4.44	2.16	0.21	122.05	4.82	2.47	0.00
20.05	4.59	2.29	0.16	124.05	4.82	2.47	0.00
22.05	4.71	2.38	0.14	126.05	4.82	2.47	0.00
24.05	4.82	2.47	0.12	128.05	4.82	2.47	0.00
26.05	4.82	2.47	0.00	130.05	4.82	2.47	0.00
28.05	4.82	2.47	0.00	132.05	4.82	2.47	0.00
30.05	4.82	2.47	0.00	134.05	4.82	2.47	0.00
32.05	4.82	2.47	0.00	136.05	4.82	2.47	0.00
34.05	4.82	2.47	0.00	138.05	4.82	2.47	0.00
36.05	4.82	2.47	0.00	140.05	4.82	2.47	0.00
38.05	4.82	2.47	0.00	142.05	4.82	2.47	0.00
40.05	4.82	2.47	0.00	144.05	4.82	2.47	0.00
42.05	4.82	2.47	0.00	146.05	4.82	2.47	0.00
44.05	4.82	2.47	0.00	148.05	4.82	2.47	0.00
46.05	4.82	2.47	0.00				
48.05	4.82	2.47	0.00				
50.05	4.82	2.47	0.00				
52.05	4.82	2.47	0.00				
54.05	4.82	2.47	0.00				
56.05	4.82	2.47	0.00				
58.05	4.82	2.47	0.00				
60.05	4.82	2.47	0.00				
62.05	4.82	2.47	0.00				
64.05	4.82	2.47	0.00				
66.05	4.82	2.47	0.00				
68.05	4.82	2.47	0.00				
70.05	4.82	2.47	0.00				
72.05	4.82	2.47	0.00				
74.05	4.82	2.47	0.00				
76.05	4.82	2.47	0.00				
78.05	4.82	2.47	0.00				
80.05	4.82	2.47	0.00				
82.05	4.82	2.47	0.00				
84.05	4.82	2.47	0.00				
86.05	4.82	2.47	0.00				
88.05	4.82	2.47	0.00				
90.05	4.82	2.47	0.00				
92.05	4.82	2.47	0.00				
94.05	4.82	2.47	0.00				
96.05	4.82	2.47	0.00				
98.05	4.82	2.47	0.00				
100.05	4.82	2.47	0.00				
102.05	4.82	2.47	0.00				

Summary for Reach 5R: Expan Area Ditch

Inflow Area = 13.693 ac, 0.00% Impervious, Inflow Depth = 4.13" for 10year event
 Inflow = 86.91 cfs @ 11.98 hrs, Volume= 4.713 af
 Outflow = 85.93 cfs @ 11.99 hrs, Volume= 4.713 af, Atten= 1%, Lag= 0.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs
 Max. Velocity= 8.97 fps, Min. Travel Time= 1.1 min
 Avg. Velocity = 2.43 fps, Avg. Travel Time= 3.9 min

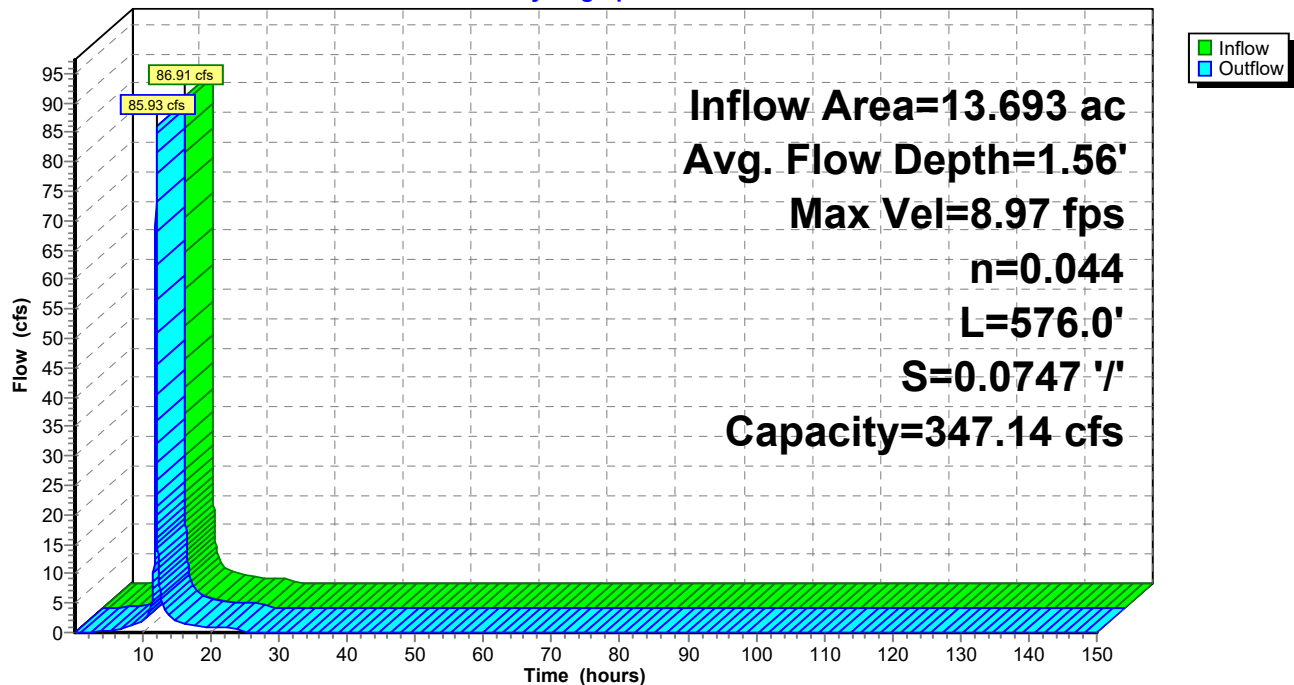
Peak Storage= 5,517 cf @ 11.99 hrs
 Average Depth at Peak Storage= 1.56'
 Bank-Full Depth= 3.00' Flow Area= 27.0 sf, Capacity= 347.14 cfs

3.00' x 3.00' deep channel, n= 0.044
 Side Slope Z-value= 2.0 '/' Top Width= 15.00'
 Length= 576.0' Slope= 0.0747 '/'
 Inlet Invert= 1,495.00', Outlet Invert= 1,452.00'

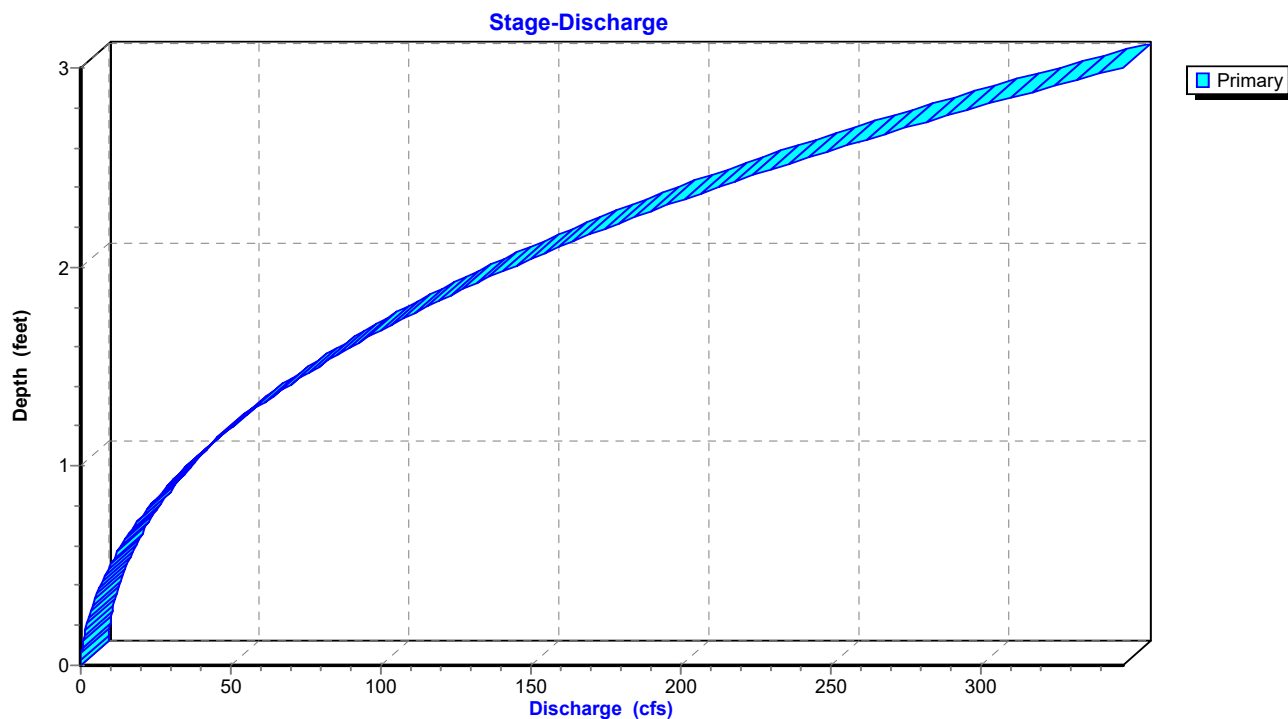


Reach 5R: Expan Area Ditch

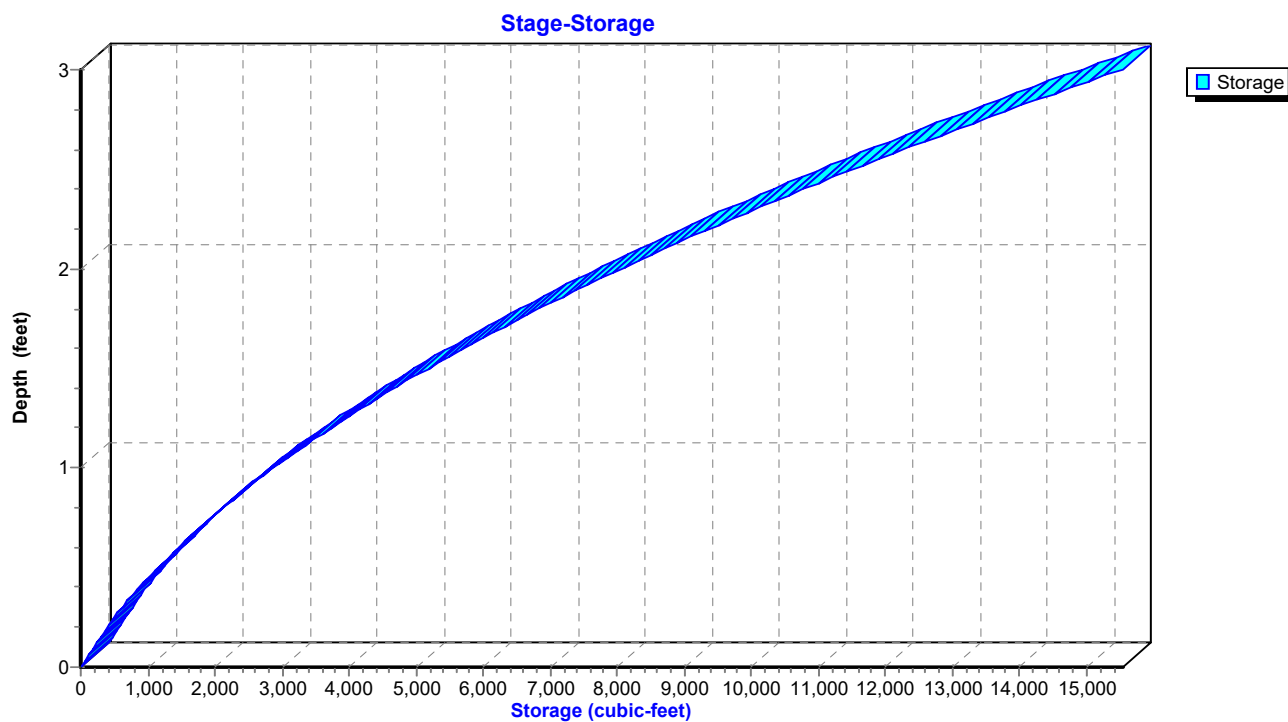
Hydrograph



Reach 5R: Expan Area Ditch



Reach 5R: Expan Area Ditch



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Prepared by JMT

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Type II 24-hr 10year Rainfall=4.82"

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Hydrograph for Reach 5R: Expan Area Ditch

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
0.05	0.00	0	1,495.00	0.00
5.05	0.40	138	1,495.08	0.39
10.05	2.03	396	1,495.20	2.00
15.05	1.99	397	1,495.20	2.00
20.05	0.86	231	1,495.12	0.87
25.05	0.00	1	1,495.00	0.00
30.05	0.00	0	1,495.00	0.00
35.05	0.00	0	1,495.00	0.00
40.05	0.00	0	1,495.00	0.00
45.05	0.00	0	1,495.00	0.00
50.05	0.00	0	1,495.00	0.00
55.05	0.00	0	1,495.00	0.00
60.05	0.00	0	1,495.00	0.00
65.05	0.00	0	1,495.00	0.00
70.05	0.00	0	1,495.00	0.00
75.05	0.00	0	1,495.00	0.00
80.05	0.00	0	1,495.00	0.00
85.05	0.00	0	1,495.00	0.00
90.05	0.00	0	1,495.00	0.00
95.05	0.00	0	1,495.00	0.00
100.05	0.00	0	1,495.00	0.00
105.05	0.00	0	1,495.00	0.00
110.05	0.00	0	1,495.00	0.00
115.05	0.00	0	1,495.00	0.00
120.05	0.00	0	1,495.00	0.00
125.05	0.00	0	1,495.00	0.00
130.05	0.00	0	1,495.00	0.00
135.05	0.00	0	1,495.00	0.00
140.05	0.00	0	1,495.00	0.00
145.05	0.00	0	1,495.00	0.00

Stage-Discharge for Reach 5R: Expan Area Ditch

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)	Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)	Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
1,495.00	0.00	0.00	1,496.04	7.21	38.09	1,497.08	10.48	156.11
1,495.02	0.58	0.05	1,496.06	7.28	39.53	1,497.10	10.54	159.32
1,495.04	1.04	0.14	1,496.08	7.36	40.99	1,497.12	10.59	162.58
1,495.06	1.37	0.26	1,496.10	7.43	42.50	1,497.14	10.65	165.88
1,495.08	1.64	0.42	1,496.12	7.50	44.03	1,497.16	10.70	169.20
1,495.10	1.89	0.61	1,496.14	7.57	45.58	1,497.18	10.76	172.59
1,495.12	2.12	0.82	1,496.16	7.64	47.17	1,497.20	10.81	176.00
1,495.14	2.32	1.08	1,496.18	7.71	48.79	1,497.22	10.86	179.45
1,495.16	2.52	1.35	1,496.20	7.78	50.43	1,497.24	10.92	182.95
1,495.18	2.71	1.64	1,496.22	7.85	52.12	1,497.26	10.97	186.49
1,495.20	2.88	1.97	1,496.24	7.92	53.83	1,497.28	11.03	190.05
1,495.22	3.05	2.31	1,496.26	7.99	55.56	1,497.30	11.08	193.68
1,495.24	3.21	2.68	1,496.28	8.06	57.34	1,497.32	11.13	197.34
1,495.26	3.36	3.08	1,496.30	8.12	59.15	1,497.34	11.19	201.03
1,495.28	3.51	3.50	1,496.32	8.19	60.97	1,497.36	11.24	204.77
1,495.30	3.65	3.94	1,496.34	8.26	62.85	1,497.38	11.29	208.56
1,495.32	3.79	4.42	1,496.36	8.32	64.75	1,497.40	11.34	212.37
1,495.34	3.92	4.91	1,496.38	8.39	66.68	1,497.42	11.40	216.24
1,495.36	4.05	5.42	1,496.40	8.45	68.65	1,497.44	11.45	220.15
1,495.38	4.17	5.97	1,496.42	8.52	70.65	1,497.46	11.50	224.08
1,495.40	4.29	6.53	1,496.44	8.58	72.67	1,497.48	11.55	228.08
1,495.42	4.41	7.12	1,496.46	8.65	74.74	1,497.50	11.61	232.11
1,495.44	4.53	7.74	1,496.48	8.71	76.84	1,497.52	11.66	236.18
1,495.46	4.64	8.37	1,496.50	8.77	78.96	1,497.54	11.71	240.31
1,495.48	4.75	9.03	1,496.52	8.84	81.13	1,497.56	11.76	244.46
1,495.50	4.86	9.72	1,496.54	8.90	83.33	1,497.58	11.81	248.66
1,495.52	4.96	10.43	1,496.56	8.96	85.55	1,497.60	11.86	252.91
1,495.54	5.07	11.16	1,496.58	9.02	87.83	1,497.62	11.91	257.20
1,495.56	5.17	11.93	1,496.60	9.08	90.13	1,497.64	11.96	261.52
1,495.58	5.27	12.72	1,496.62	9.15	92.45	1,497.66	12.01	265.91
1,495.60	5.37	13.52	1,496.64	9.21	94.83	1,497.68	12.07	270.33
1,495.62	5.46	14.36	1,496.66	9.27	97.23	1,497.70	12.12	274.79
1,495.64	5.56	15.23	1,496.68	9.33	99.67	1,497.72	12.17	279.31
1,495.66	5.65	16.11	1,496.70	9.39	102.15	1,497.74	12.22	283.86
1,495.68	5.74	17.03	1,496.72	9.45	104.66	1,497.76	12.27	288.44
1,495.70	5.83	17.97	1,496.74	9.51	107.20	1,497.78	12.32	293.10
1,495.72	5.92	18.93	1,496.76	9.57	109.79	1,497.80	12.37	297.78
1,495.74	6.01	19.93	1,496.78	9.63	112.40	1,497.82	12.42	302.50
1,495.76	6.09	20.95	1,496.80	9.68	115.05	1,497.84	12.47	307.29
1,495.78	6.18	21.98	1,496.82	9.74	117.75	1,497.86	12.51	312.12
1,495.80	6.26	23.06	1,496.84	9.80	120.47	1,497.88	12.56	316.97
1,495.82	6.35	24.16	1,496.86	9.86	123.23	1,497.90	12.61	321.90
1,495.84	6.43	25.28	1,496.88	9.92	126.04	1,497.92	12.66	326.86
1,495.86	6.51	26.44	1,496.90	9.97	128.87	1,497.94	12.71	331.85
1,495.88	6.59	27.62	1,496.92	10.03	131.74	1,497.96	12.76	336.91
1,495.90	6.67	28.83	1,496.94	10.09	134.66	1,497.98	12.81	342.01
1,495.92	6.75	30.07	1,496.96	10.15	137.61	1,498.00	12.86	347.14
1,495.94	6.83	31.34	1,496.98	10.20	140.59			
1,495.96	6.91	32.62	1,497.00	10.26	143.62			
1,495.98	6.98	33.95	1,497.02	10.31	146.69			
1,496.00	7.06	35.30	1,497.04	10.37	149.78			
1,496.02	7.13	36.68	1,497.06	10.43	152.93			

Stage-Area-Storage for Reach 5R: Expan Area Ditch

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
1,495.00	0.0	0	1,497.60	21.3	12,281
1,495.05	0.2	90	1,497.65	22.0	12,669
1,495.10	0.3	185	1,497.70	22.7	13,064
1,495.15	0.5	285	1,497.75	23.4	13,464
1,495.20	0.7	392	1,497.80	24.1	13,870
1,495.25	0.9	504	1,497.85	24.8	14,282
1,495.30	1.1	622	1,497.90	25.5	14,700
1,495.35	1.3	746	1,497.95	26.3	15,123
1,495.40	1.5	876	1,498.00	27.0	15,552
1,495.45	1.8	1,011			
1,495.50	2.0	1,152			
1,495.55	2.3	1,299			
1,495.60	2.5	1,452			
1,495.65	2.8	1,610			
1,495.70	3.1	1,774			
1,495.75	3.4	1,944			
1,495.80	3.7	2,120			
1,495.85	4.0	2,301			
1,495.90	4.3	2,488			
1,495.95	4.7	2,682			
1,496.00	5.0	2,880			
1,496.05	5.4	3,084			
1,496.10	5.7	3,295			
1,496.15	6.1	3,511			
1,496.20	6.5	3,732			
1,496.25	6.9	3,960			
1,496.30	7.3	4,194			
1,496.35	7.7	4,432			
1,496.40	8.1	4,677			
1,496.45	8.6	4,928			
1,496.50	9.0	5,184			
1,496.55	9.5	5,446			
1,496.60	9.9	5,714			
1,496.65	10.4	5,988			
1,496.70	10.9	6,267			
1,496.75	11.4	6,552			
1,496.80	11.9	6,843			
1,496.85	12.4	7,140			
1,496.90	12.9	7,442			
1,496.95	13.5	7,750			
1,497.00	14.0	8,064			
1,497.05	14.6	8,384			
1,497.10	15.1	8,709			
1,497.15	15.7	9,041			
1,497.20	16.3	9,378			
1,497.25	16.9	9,720			
1,497.30	17.5	10,069			
1,497.35	18.1	10,423			
1,497.40	18.7	10,783			
1,497.45	19.4	11,149			
1,497.50	20.0	11,520			
1,497.55	20.7	11,897			

Summary for Reach 16R: Road Ditch

Inflow Area = 29.013 ac, 9.48% Impervious, Inflow Depth > 4.10" for 10year event
 Inflow = 13.20 cfs @ 12.76 hrs, Volume= 9.921 af
 Outflow = 13.19 cfs @ 12.76 hrs, Volume= 9.921 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Max. Velocity= 4.06 fps, Min. Travel Time= 0.3 min

Avg. Velocity= 1.26 fps, Avg. Travel Time= 0.9 min

Peak Storage= 220 cf @ 12.76 hrs

Average Depth at Peak Storage= 0.73'

Bank-Full Depth= 2.00' Flow Area= 14.0 sf, Capacity= 97.69 cfs

3.00' x 2.00' deep channel, n= 0.040

Side Slope Z-value= 2.0 '/' Top Width= 11.00'

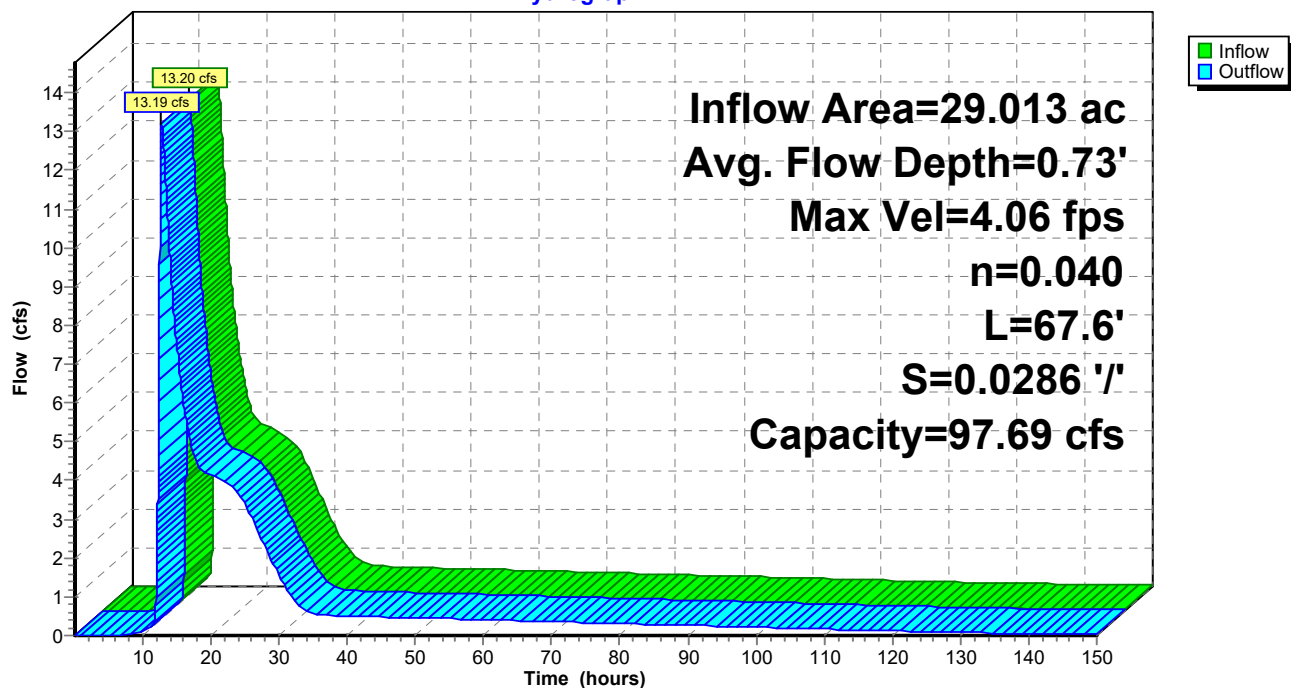
Length= 67.6' Slope= 0.0286 '/'

Inlet Invert= 1,449.79', Outlet Invert= 1,447.86'

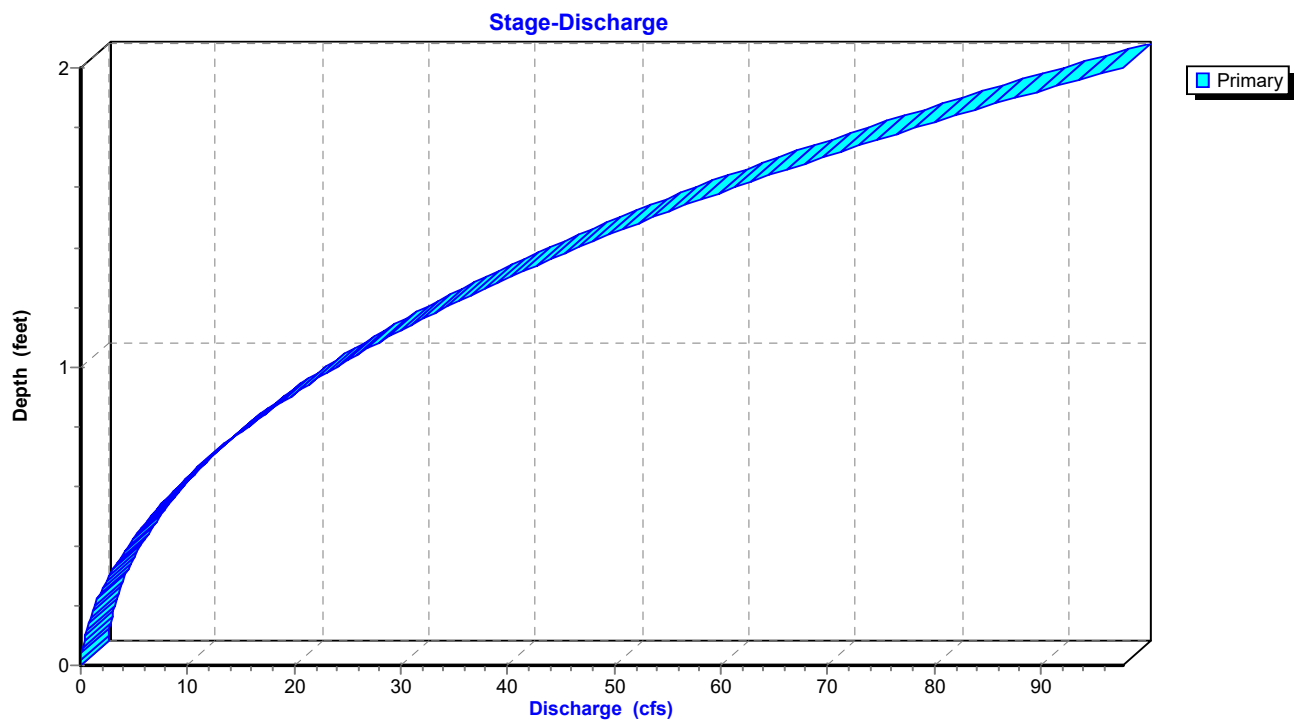


Reach 16R: Road Ditch

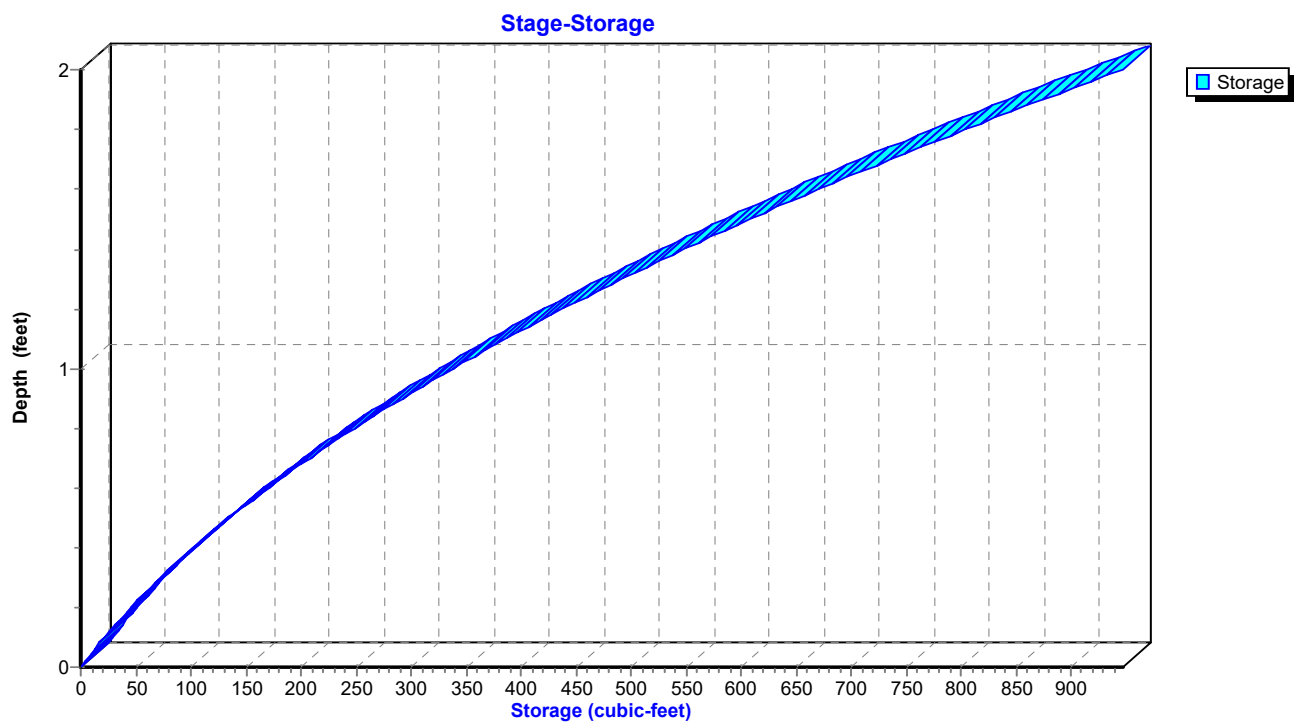
Hydrograph



Reach 16R: Road Ditch



Reach 16R: Road Ditch



Riato V6 Final

Prepared by JMT

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Type II 24-hr 10year Rainfall=4.82"

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Hydrograph for Reach 16R: Road Ditch

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
0.05	0.00	0	1,449.79	0.00
5.05	0.00	0	1,449.79	0.00
10.05	0.12	10	1,449.84	0.12
15.05	7.42	147	1,450.32	7.42
20.05	4.15	98	1,450.17	4.15
25.05	3.40	86	1,450.13	3.41
30.05	1.52	50	1,450.01	1.52
35.05	0.58	27	1,449.91	0.58
40.05	0.50	25	1,449.90	0.50
45.05	0.48	24	1,449.90	0.48
50.05	0.45	23	1,449.90	0.45
55.05	0.43	22	1,449.89	0.43
60.05	0.41	21	1,449.89	0.41
65.05	0.38	21	1,449.89	0.38
70.05	0.36	20	1,449.88	0.36
75.05	0.33	19	1,449.88	0.33
80.05	0.31	18	1,449.87	0.31
85.05	0.29	17	1,449.87	0.29
90.05	0.26	16	1,449.87	0.26
95.05	0.24	15	1,449.86	0.24
100.05	0.21	14	1,449.86	0.21
105.05	0.19	13	1,449.85	0.19
110.05	0.17	12	1,449.85	0.17
115.05	0.14	11	1,449.84	0.14
120.05	0.12	10	1,449.84	0.12
125.05	0.10	9	1,449.83	0.10
130.05	0.08	8	1,449.83	0.08
135.05	0.07	7	1,449.82	0.07
140.05	0.06	6	1,449.82	0.06
145.05	0.05	5	1,449.82	0.05

Stage-Discharge for Reach 16R: Road Ditch

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)	Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
1,449.79	0.00	0.00	1,450.83	4.90	25.91
1,449.81	0.46	0.03	1,450.85	4.95	26.89
1,449.83	0.72	0.09	1,450.87	5.00	27.89
1,449.85	0.93	0.17	1,450.89	5.05	28.90
1,449.87	1.12	0.28	1,450.91	5.10	29.94
1,449.89	1.29	0.41	1,450.93	5.15	31.00
1,449.91	1.44	0.56	1,450.95	5.20	32.08
1,449.93	1.58	0.73	1,450.97	5.25	33.18
1,449.95	1.72	0.91	1,450.99	5.29	34.31
1,449.97	1.84	1.11	1,451.01	5.34	35.45
1,449.99	1.96	1.33	1,451.03	5.39	36.61
1,450.01	2.07	1.57	1,451.05	5.43	37.80
1,450.03	2.18	1.82	1,451.07	5.48	39.00
1,450.05	2.29	2.09	1,451.09	5.53	40.23
1,450.07	2.39	2.38	1,451.11	5.57	41.48
1,450.09	2.48	2.68	1,451.13	5.62	42.75
1,450.11	2.58	3.00	1,451.15	5.66	44.04
1,450.13	2.67	3.34	1,451.17	5.71	45.36
1,450.15	2.75	3.69	1,451.19	5.75	46.69
1,450.17	2.84	4.06	1,451.21	5.79	48.05
1,450.19	2.92	4.44	1,451.23	5.84	49.43
1,450.21	3.00	4.84	1,451.25	5.88	50.84
1,450.23	3.08	5.26	1,451.27	5.93	52.26
1,450.25	3.16	5.69	1,451.29	5.97	53.71
1,450.27	3.23	6.14	1,451.31	6.01	55.18
1,450.29	3.30	6.61	1,451.33	6.05	56.68
1,450.31	3.38	7.09	1,451.35	6.10	58.20
1,450.33	3.45	7.59	1,451.37	6.14	59.74
1,450.35	3.52	8.11	1,451.39	6.18	61.30
1,450.37	3.58	8.65	1,451.41	6.22	62.89
1,450.39	3.65	9.20	1,451.43	6.26	64.50
1,450.41	3.72	9.77	1,451.45	6.30	66.14
1,450.43	3.78	10.35	1,451.47	6.35	67.80
1,450.45	3.84	10.96	1,451.49	6.39	69.48
1,450.47	3.91	11.58	1,451.51	6.43	71.19
1,450.49	3.97	12.22	1,451.53	6.47	72.92
1,450.51	4.03	12.88	1,451.55	6.51	74.68
1,450.53	4.09	13.55	1,451.57	6.55	76.46
1,450.55	4.15	14.24	1,451.59	6.59	78.26
1,450.57	4.20	14.95	1,451.61	6.63	80.09
1,450.59	4.26	15.68	1,451.63	6.67	81.95
1,450.61	4.32	16.43	1,451.65	6.71	83.83
1,450.63	4.37	17.20	1,451.67	6.75	85.73
1,450.65	4.43	17.98	1,451.69	6.78	87.66
1,450.67	4.49	18.79	1,451.71	6.82	89.62
1,450.69	4.54	19.61	1,451.73	6.86	91.60
1,450.71	4.59	20.45	1,451.75	6.90	93.60
1,450.73	4.65	21.31	1,451.77	6.94	95.64
1,450.75	4.70	22.19	1,451.79	6.98	97.69
1,450.77	4.75	23.09			
1,450.79	4.80	24.01			
1,450.81	4.85	24.95			

Stage-Area-Storage for Reach 16R: Road Ditch

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
1,449.79	0.0	0	1,450.83	5.3	357
1,449.81	0.1	4	1,450.85	5.4	367
1,449.83	0.1	8	1,450.87	5.6	377
1,449.85	0.2	13	1,450.89	5.7	387
1,449.87	0.3	17	1,450.91	5.9	397
1,449.89	0.3	22	1,450.93	6.0	407
1,449.91	0.4	26	1,450.95	6.2	417
1,449.93	0.5	31	1,450.97	6.3	428
1,449.95	0.5	36	1,450.99	6.5	438
1,449.97	0.6	41	1,451.01	6.6	449
1,449.99	0.7	46	1,451.03	6.8	459
1,450.01	0.8	51	1,451.05	7.0	470
1,450.03	0.8	56	1,451.07	7.1	481
1,450.05	0.9	62	1,451.09	7.3	492
1,450.07	1.0	67	1,451.11	7.4	503
1,450.09	1.1	73	1,451.13	7.6	515
1,450.11	1.2	79	1,451.15	7.8	526
1,450.13	1.3	85	1,451.17	7.9	537
1,450.15	1.3	91	1,451.19	8.1	549
1,450.17	1.4	97	1,451.21	8.3	561
1,450.19	1.5	103	1,451.23	8.5	572
1,450.21	1.6	109	1,451.25	8.6	584
1,450.23	1.7	115	1,451.27	8.8	596
1,450.25	1.8	122	1,451.29	9.0	608
1,450.27	1.9	128	1,451.31	9.2	621
1,450.29	2.0	135	1,451.33	9.4	633
1,450.31	2.1	142	1,451.35	9.5	645
1,450.33	2.2	149	1,451.37	9.7	658
1,450.35	2.3	156	1,451.39	9.9	671
1,450.37	2.4	163	1,451.41	10.1	683
1,450.39	2.5	170	1,451.43	10.3	696
1,450.41	2.6	178	1,451.45	10.5	709
1,450.43	2.7	185	1,451.47	10.7	722
1,450.45	2.9	193	1,451.49	10.9	735
1,450.47	3.0	200	1,451.51	11.1	749
1,450.49	3.1	208	1,451.53	11.3	762
1,450.51	3.2	216	1,451.55	11.5	776
1,450.53	3.3	224	1,451.57	11.7	789
1,450.55	3.4	232	1,451.59	11.9	803
1,450.57	3.6	240	1,451.61	12.1	817
1,450.59	3.7	249	1,451.63	12.3	831
1,450.61	3.8	257	1,451.65	12.5	845
1,450.63	3.9	266	1,451.67	12.7	859
1,450.65	4.1	274	1,451.69	12.9	873
1,450.67	4.2	283	1,451.71	13.1	888
1,450.69	4.3	292	1,451.73	13.3	902
1,450.71	4.5	301	1,451.75	13.6	917
1,450.73	4.6	310	1,451.77	13.8	932
1,450.75	4.7	319	1,451.79	14.0	946
1,450.77	4.9	329			
1,450.79	5.0	338			
1,450.81	5.1	348			

Summary for Reach 29R: Spillway

Inflow Area = 2.580 ac, 0.00% Impervious, Inflow Depth = 2.47" for 10year event
 Inflow = 5.10 cfs @ 12.30 hrs, Volume= 0.532 af
 Outflow = 5.10 cfs @ 12.30 hrs, Volume= 0.532 af, Atten= 0%, Lag= 0.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs
 Max. Velocity= 6.83 fps, Min. Travel Time= 0.5 min
 Avg. Velocity = 2.24 fps, Avg. Travel Time= 1.6 min

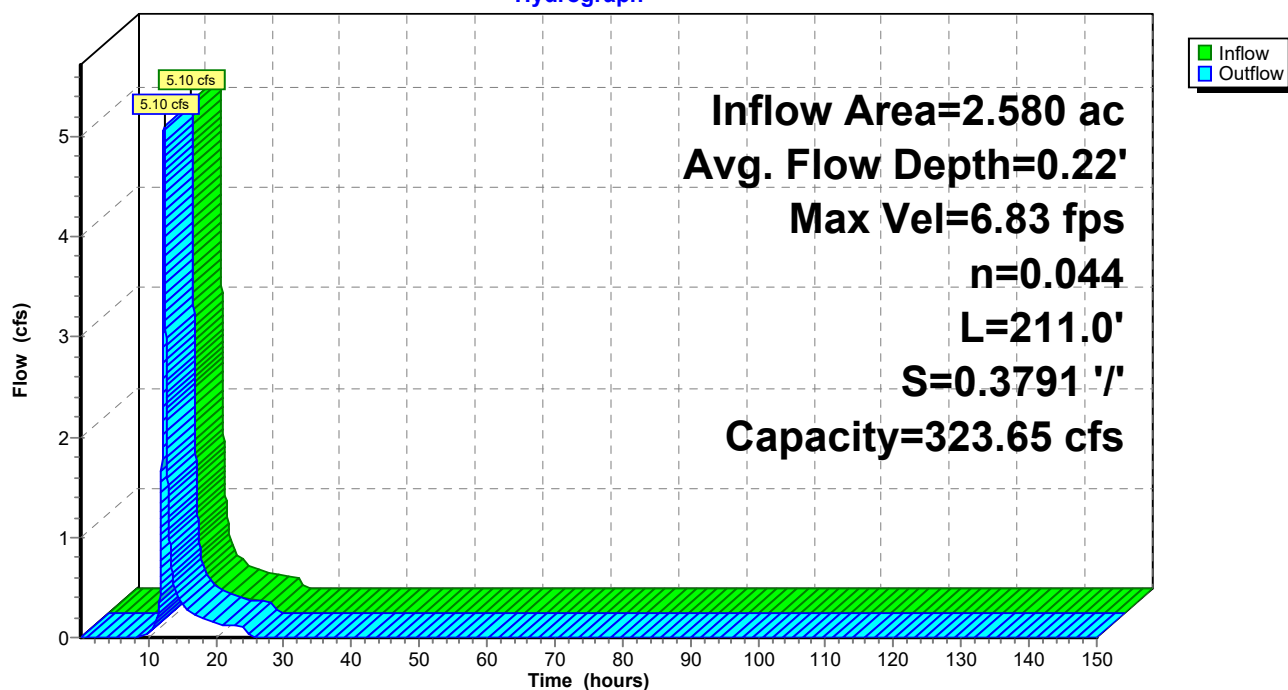
Peak Storage= 158 cf @ 12.30 hrs
 Average Depth at Peak Storage= 0.22'
 Bank-Full Depth= 2.00' Flow Area= 14.0 sf, Capacity= 323.65 cfs

3.00' x 2.00' deep channel, n= 0.044
 Side Slope Z-value= 2.0 '/' Top Width= 11.00'
 Length= 211.0' Slope= 0.3791 '/'
 Inlet Invert= 1,550.00', Outlet Invert= 1,470.00'

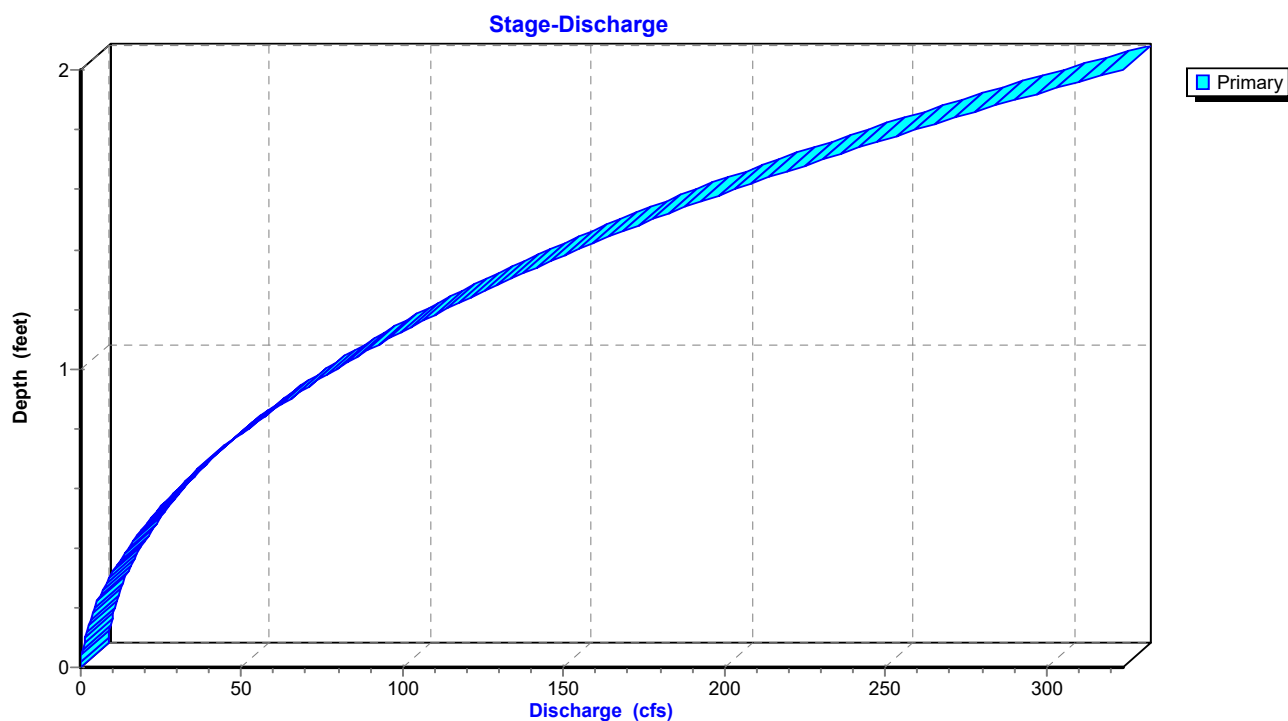


Reach 29R: Spillway

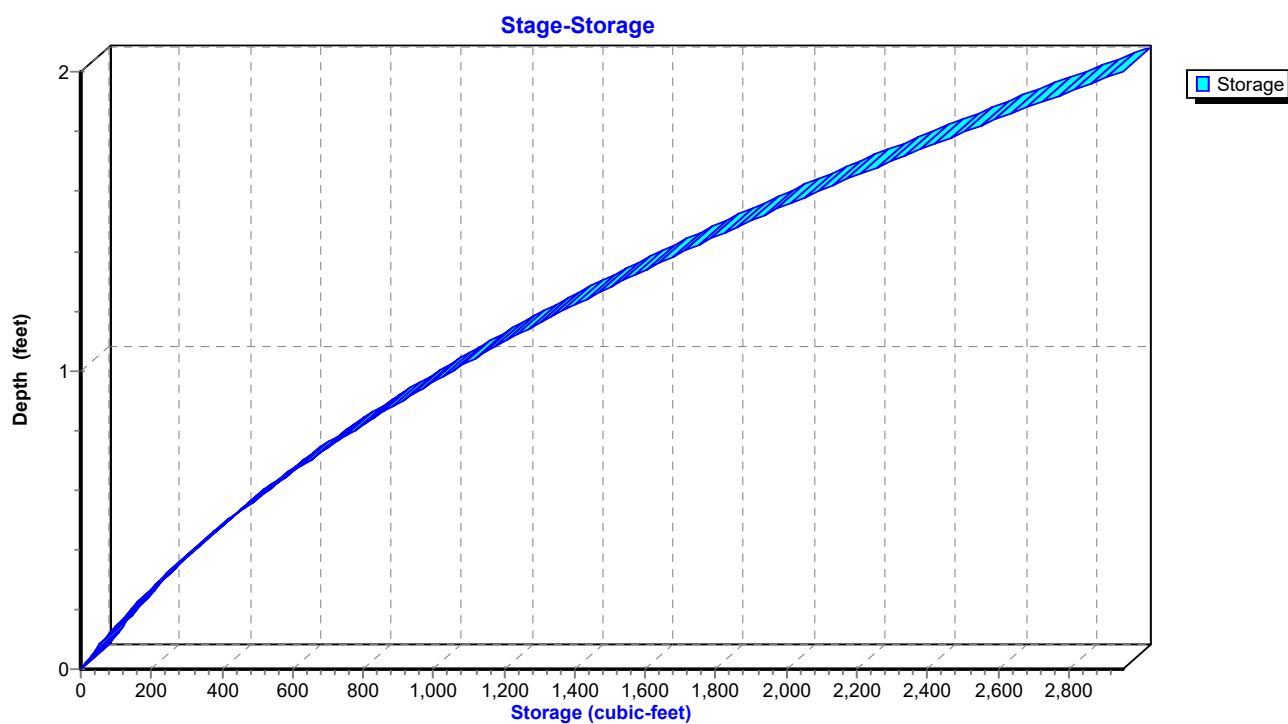
Hydrograph



Reach 29R: Spillway



Reach 29R: Spillway



Riato V6 Final

Prepared by JMT

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Type II 24-hr 10year Rainfall=4.82"

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Hydrograph for Reach 29R: Spillway

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
0.05	0.00	0	1,550.00	0.00
5.05	0.00	0	1,550.00	0.00
10.05	0.05	6	1,550.01	0.05
15.05	0.33	28	1,550.04	0.33
20.05	0.15	16	1,550.03	0.15
25.05	0.01	1	1,550.00	0.01
30.05	0.00	0	1,550.00	0.00
35.05	0.00	0	1,550.00	0.00
40.05	0.00	0	1,550.00	0.00
45.05	0.00	0	1,550.00	0.00
50.05	0.00	0	1,550.00	0.00
55.05	0.00	0	1,550.00	0.00
60.05	0.00	0	1,550.00	0.00
65.05	0.00	0	1,550.00	0.00
70.05	0.00	0	1,550.00	0.00
75.05	0.00	0	1,550.00	0.00
80.05	0.00	0	1,550.00	0.00
85.05	0.00	0	1,550.00	0.00
90.05	0.00	0	1,550.00	0.00
95.05	0.00	0	1,550.00	0.00
100.05	0.00	0	1,550.00	0.00
105.05	0.00	0	1,550.00	0.00
110.05	0.00	0	1,550.00	0.00
115.05	0.00	0	1,550.00	0.00
120.05	0.00	0	1,550.00	0.00
125.05	0.00	0	1,550.00	0.00
130.05	0.00	0	1,550.00	0.00
135.05	0.00	0	1,550.00	0.00
140.05	0.00	0	1,550.00	0.00
145.05	0.00	0	1,550.00	0.00

Stage-Discharge for Reach 29R: Spillway

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)	Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
1,550.00	0.00	0.00	1,551.04	16.25	85.83
1,550.02	1.52	0.09	1,551.06	16.41	89.07
1,550.04	2.38	0.29	1,551.08	16.58	92.38
1,550.06	3.09	0.58	1,551.10	16.74	95.76
1,550.08	3.71	0.94	1,551.12	16.90	99.20
1,550.10	4.26	1.36	1,551.14	17.06	102.71
1,550.12	4.77	1.86	1,551.16	17.22	106.29
1,550.14	5.24	2.41	1,551.18	17.38	109.93
1,550.16	5.69	3.02	1,551.20	17.54	113.65
1,550.18	6.10	3.69	1,551.22	17.69	117.43
1,550.20	6.50	4.42	1,551.24	17.85	121.29
1,550.22	6.87	5.20	1,551.26	18.00	125.21
1,550.24	7.23	6.04	1,551.28	18.16	129.21
1,550.26	7.58	6.93	1,551.30	18.31	133.27
1,550.28	7.91	7.88	1,551.32	18.46	137.41
1,550.30	8.23	8.88	1,551.34	18.61	141.62
1,550.32	8.53	9.94	1,551.36	18.76	145.91
1,550.34	8.83	11.05	1,551.38	18.90	150.26
1,550.36	9.12	12.22	1,551.40	19.05	154.69
1,550.38	9.40	13.43	1,551.42	19.20	159.19
1,550.40	9.68	14.71	1,551.44	19.34	163.77
1,550.42	9.94	16.04	1,551.46	19.49	168.42
1,550.44	10.20	17.42	1,551.48	19.63	173.14
1,550.46	10.46	18.86	1,551.50	19.77	177.94
1,550.48	10.70	20.35	1,551.52	19.91	182.82
1,550.50	10.95	21.90	1,551.54	20.05	187.77
1,550.52	11.19	23.50	1,551.56	20.19	192.80
1,550.54	11.42	25.16	1,551.58	20.33	197.91
1,550.56	11.65	26.87	1,551.60	20.47	203.09
1,550.58	11.87	28.64	1,551.62	20.61	208.35
1,550.60	12.09	30.47	1,551.64	20.75	213.69
1,550.62	12.31	32.36	1,551.66	20.89	219.11
1,550.64	12.52	34.30	1,551.68	21.02	224.61
1,550.66	12.73	36.30	1,551.70	21.16	230.18
1,550.68	12.94	38.36	1,551.72	21.29	235.84
1,550.70	13.14	40.48	1,551.74	21.43	241.58
1,550.72	13.34	42.66	1,551.76	21.56	247.40
1,550.74	13.54	44.89	1,551.78	21.69	253.29
1,550.76	13.74	47.19	1,551.80	21.82	259.27
1,550.78	13.93	49.54	1,551.82	21.96	265.34
1,550.80	14.12	51.96	1,551.84	22.09	271.48
1,550.82	14.31	54.44	1,551.86	22.22	277.71
1,550.84	14.49	56.98	1,551.88	22.35	284.02
1,550.86	14.68	59.58	1,551.90	22.48	290.41
1,550.88	14.86	62.24	1,551.92	22.61	296.89
1,550.90	15.04	64.97	1,551.94	22.74	303.45
1,550.92	15.22	67.75	1,551.96	22.86	310.10
1,550.94	15.39	70.61	1,551.98	22.99	316.83
1,550.96	15.57	73.52	1,552.00	23.12	323.65
1,550.98	15.74	76.50			
1,551.00	15.91	79.55			
1,551.02	16.08	82.66			

Stage-Area-Storage for Reach 29R: Spillway

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
1,550.00	0.0	0	1,551.04	5.3	1,115
1,550.02	0.1	13	1,551.06	5.4	1,145
1,550.04	0.1	26	1,551.08	5.6	1,176
1,550.06	0.2	39	1,551.10	5.7	1,207
1,550.08	0.3	53	1,551.12	5.9	1,238
1,550.10	0.3	68	1,551.14	6.0	1,270
1,550.12	0.4	82	1,551.16	6.2	1,302
1,550.14	0.5	97	1,551.18	6.3	1,335
1,550.16	0.5	112	1,551.20	6.5	1,367
1,550.18	0.6	128	1,551.22	6.6	1,400
1,550.20	0.7	143	1,551.24	6.8	1,434
1,550.22	0.8	160	1,551.26	7.0	1,468
1,550.24	0.8	176	1,551.28	7.1	1,502
1,550.26	0.9	193	1,551.30	7.3	1,536
1,550.28	1.0	210	1,551.32	7.4	1,571
1,550.30	1.1	228	1,551.34	7.6	1,606
1,550.32	1.2	246	1,551.36	7.8	1,641
1,550.34	1.3	264	1,551.38	7.9	1,677
1,550.36	1.3	283	1,551.40	8.1	1,713
1,550.38	1.4	301	1,551.42	8.3	1,750
1,550.40	1.5	321	1,551.44	8.5	1,787
1,550.42	1.6	340	1,551.46	8.6	1,824
1,550.44	1.7	360	1,551.48	8.8	1,861
1,550.46	1.8	380	1,551.50	9.0	1,899
1,550.48	1.9	401	1,551.52	9.2	1,937
1,550.50	2.0	422	1,551.54	9.4	1,976
1,550.52	2.1	443	1,551.56	9.5	2,014
1,550.54	2.2	465	1,551.58	9.7	2,054
1,550.56	2.3	487	1,551.60	9.9	2,093
1,550.58	2.4	509	1,551.62	10.1	2,133
1,550.60	2.5	532	1,551.64	10.3	2,173
1,550.62	2.6	555	1,551.66	10.5	2,214
1,550.64	2.7	578	1,551.68	10.7	2,254
1,550.66	2.9	602	1,551.70	10.9	2,296
1,550.68	3.0	626	1,551.72	11.1	2,337
1,550.70	3.1	650	1,551.74	11.3	2,379
1,550.72	3.2	675	1,551.76	11.5	2,421
1,550.74	3.3	700	1,551.78	11.7	2,464
1,550.76	3.4	725	1,551.80	11.9	2,507
1,550.78	3.6	750	1,551.82	12.1	2,550
1,550.80	3.7	776	1,551.84	12.3	2,593
1,550.82	3.8	803	1,551.86	12.5	2,637
1,550.84	3.9	829	1,551.88	12.7	2,682
1,550.86	4.1	856	1,551.90	12.9	2,726
1,550.88	4.2	884	1,551.92	13.1	2,771
1,550.90	4.3	912	1,551.94	13.3	2,816
1,550.92	4.5	940	1,551.96	13.6	2,862
1,550.94	4.6	968	1,551.98	13.8	2,908
1,550.96	4.7	997	1,552.00	14.0	2,954
1,550.98	4.9	1,026			
1,551.00	5.0	1,055			
1,551.02	5.1	1,085			

Summary for Reach 33R: Reclaim Ditch

Inflow Area = 6.618 ac, 0.00% Impervious, Inflow Depth = 2.47" for 10year event
 Inflow = 10.83 cfs @ 12.38 hrs, Volume= 1.364 af
 Outflow = 10.82 cfs @ 12.39 hrs, Volume= 1.364 af, Atten= 0%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Max. Velocity= 6.59 fps, Min. Travel Time= 0.7 min

Avg. Velocity = 2.34 fps, Avg. Travel Time= 2.0 min

Peak Storage= 452 cf @ 12.39 hrs

Average Depth at Peak Storage= 0.54'

Bank-Full Depth= 1.00' Flow Area= 4.0 sf, Capacity= 36.84 cfs

2.00' x 1.00' deep channel, n= 0.040

Side Slope Z-value= 2.0 '/' Top Width= 6.00'

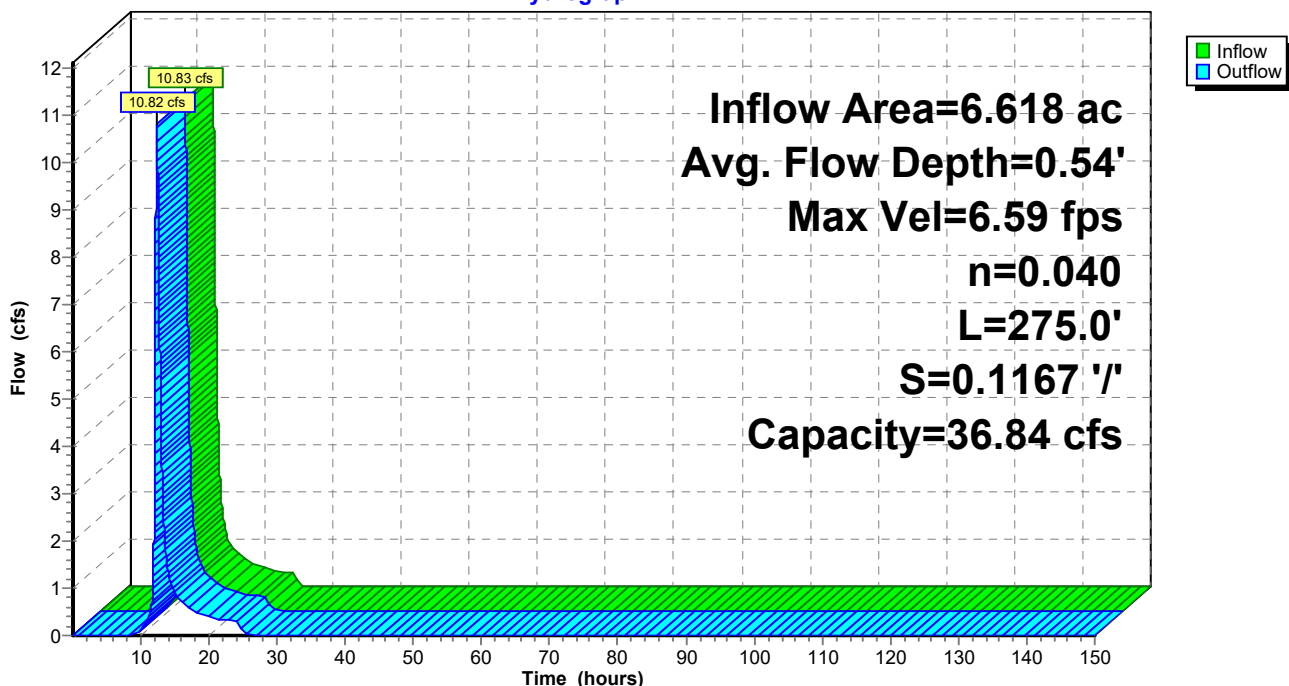
Length= 275.0' Slope= 0.1167 '/'

Inlet Invert= 1,480.00', Outlet Invert= 1,447.90'

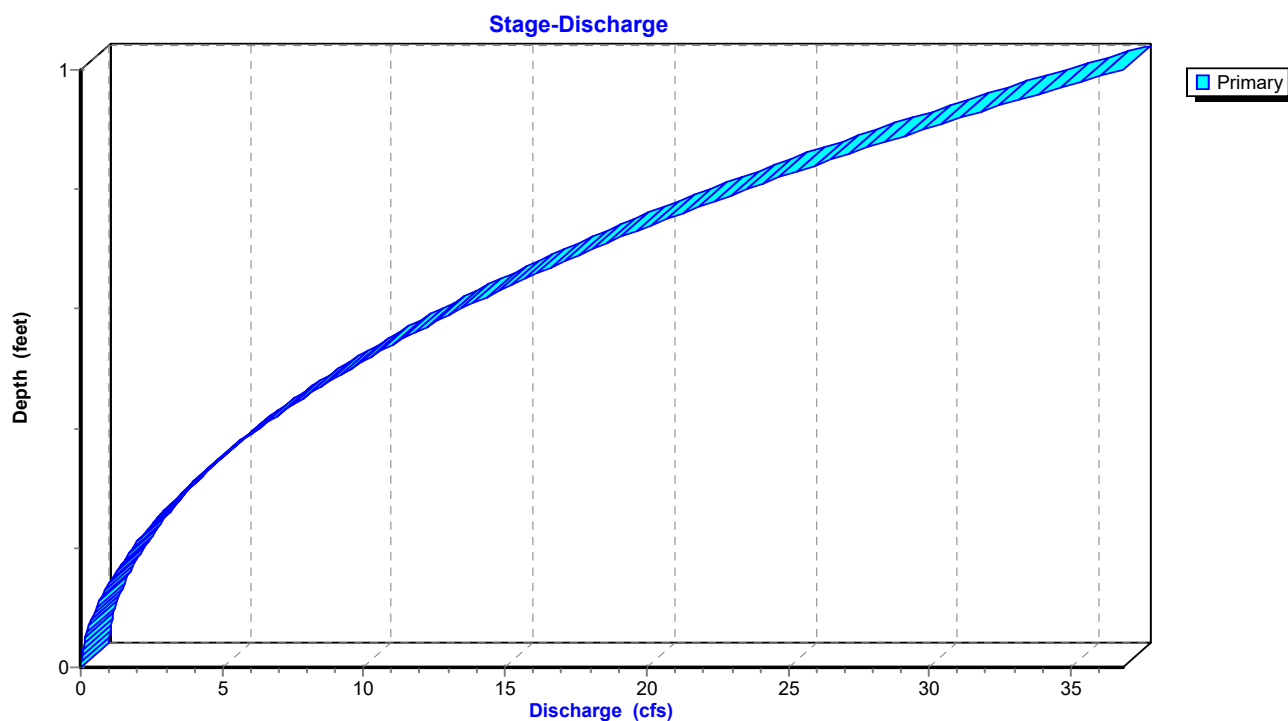


Reach 33R: Reclaim Ditch

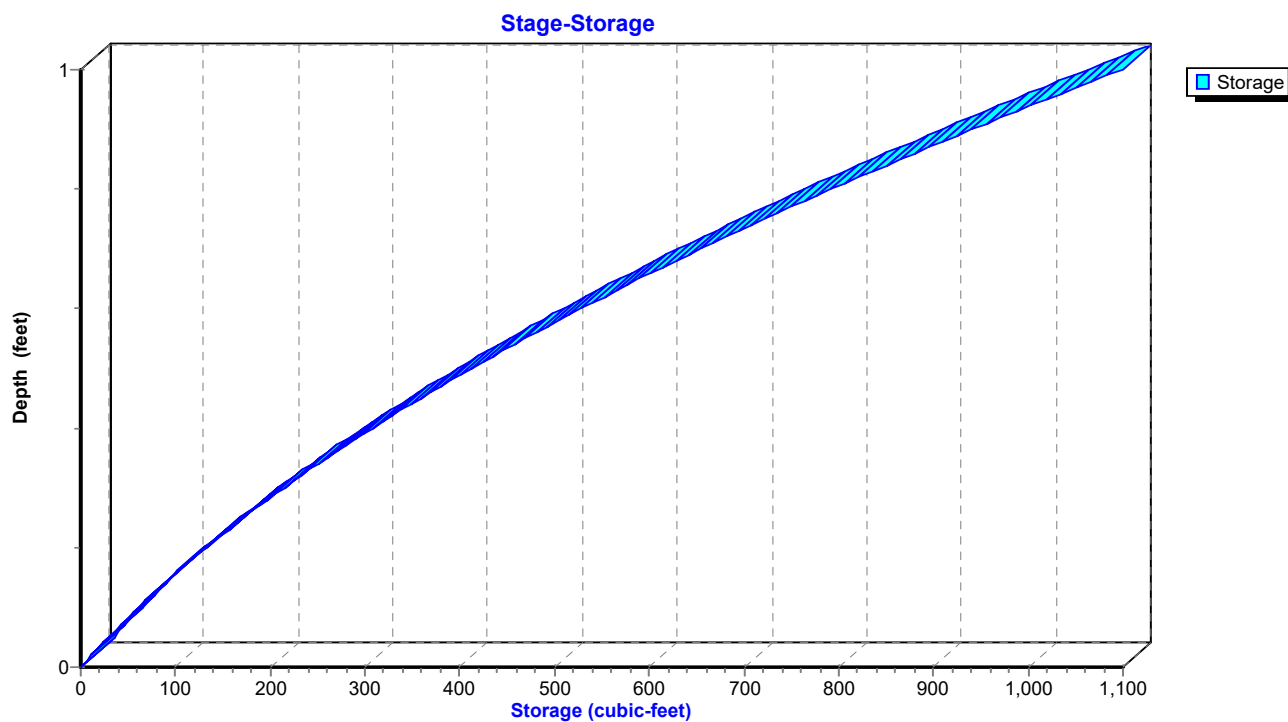
Hydrograph



Reach 33R: Reclaim Ditch



Reach 33R: Reclaim Ditch



Riato V6 Final

Prepared by JMT

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Type II 24-hr 10year Rainfall=4.82"

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Hydrograph for Reach 33R: Reclaim Ditch

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
0.05	0.00	0	1,480.00	0.00
5.05	0.00	0	1,480.00	0.00
10.05	0.11	21	1,480.04	0.11
15.05	0.88	81	1,480.13	0.88
20.05	0.38	47	1,480.08	0.38
25.05	0.04	12	1,480.02	0.04
30.05	0.00	0	1,480.00	0.00
35.05	0.00	0	1,480.00	0.00
40.05	0.00	0	1,480.00	0.00
45.05	0.00	0	1,480.00	0.00
50.05	0.00	0	1,480.00	0.00
55.05	0.00	0	1,480.00	0.00
60.05	0.00	0	1,480.00	0.00
65.05	0.00	0	1,480.00	0.00
70.05	0.00	0	1,480.00	0.00
75.05	0.00	0	1,480.00	0.00
80.05	0.00	0	1,480.00	0.00
85.05	0.00	0	1,480.00	0.00
90.05	0.00	0	1,480.00	0.00
95.05	0.00	0	1,480.00	0.00
100.05	0.00	0	1,480.00	0.00
105.05	0.00	0	1,480.00	0.00
110.05	0.00	0	1,480.00	0.00
115.05	0.00	0	1,480.00	0.00
120.05	0.00	0	1,480.00	0.00
125.05	0.00	0	1,480.00	0.00
130.05	0.00	0	1,480.00	0.00
135.05	0.00	0	1,480.00	0.00
140.05	0.00	0	1,480.00	0.00
145.05	0.00	0	1,480.00	0.00

Stage-Discharge for Reach 33R: Reclaim Ditch

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)	Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
1,480.00	0.00	0.00	1,480.52	6.49	10.26
1,480.01	0.58	0.01	1,480.53	6.55	10.63
1,480.02	0.92	0.04	1,480.54	6.62	11.01
1,480.03	1.20	0.07	1,480.55	6.69	11.40
1,480.04	1.44	0.12	1,480.56	6.75	11.79
1,480.05	1.66	0.17	1,480.57	6.81	12.20
1,480.06	1.86	0.24	1,480.58	6.88	12.61
1,480.07	2.05	0.31	1,480.59	6.94	13.02
1,480.08	2.22	0.38	1,480.60	7.00	13.45
1,480.09	2.39	0.47	1,480.61	7.07	13.88
1,480.10	2.55	0.56	1,480.62	7.13	14.32
1,480.11	2.70	0.66	1,480.63	7.19	14.77
1,480.12	2.84	0.76	1,480.64	7.25	15.22
1,480.13	2.98	0.88	1,480.65	7.31	15.68
1,480.14	3.11	0.99	1,480.66	7.37	16.15
1,480.15	3.24	1.12	1,480.67	7.43	16.63
1,480.16	3.37	1.25	1,480.68	7.49	17.11
1,480.17	3.49	1.39	1,480.69	7.55	17.60
1,480.18	3.61	1.53	1,480.70	7.61	18.10
1,480.19	3.72	1.68	1,480.71	7.66	18.61
1,480.20	3.83	1.84	1,480.72	7.72	19.12
1,480.21	3.94	2.00	1,480.73	7.78	19.65
1,480.22	4.04	2.17	1,480.74	7.84	20.18
1,480.23	4.15	2.35	1,480.75	7.89	20.72
1,480.24	4.25	2.53	1,480.76	7.95	21.26
1,480.25	4.35	2.72	1,480.77	8.00	21.82
1,480.26	4.44	2.91	1,480.78	8.06	22.38
1,480.27	4.54	3.11	1,480.79	8.11	22.95
1,480.28	4.63	3.32	1,480.80	8.17	23.53
1,480.29	4.72	3.53	1,480.81	8.22	24.11
1,480.30	4.81	3.75	1,480.82	8.28	24.71
1,480.31	4.90	3.98	1,480.83	8.33	25.31
1,480.32	4.99	4.21	1,480.84	8.39	25.92
1,480.33	5.07	4.45	1,480.85	8.44	26.54
1,480.34	5.15	4.70	1,480.86	8.49	27.17
1,480.35	5.24	4.95	1,480.87	8.54	27.80
1,480.36	5.32	5.21	1,480.88	8.60	28.45
1,480.37	5.40	5.47	1,480.89	8.65	29.10
1,480.38	5.48	5.74	1,480.90	8.70	29.76
1,480.39	5.56	6.02	1,480.91	8.75	30.43
1,480.40	5.63	6.31	1,480.92	8.80	31.11
1,480.41	5.71	6.60	1,480.93	8.86	31.79
1,480.42	5.78	6.90	1,480.94	8.91	32.49
1,480.43	5.86	7.20	1,480.95	8.96	33.19
1,480.44	5.93	7.51	1,480.96	9.01	33.90
1,480.45	6.00	7.83	1,480.97	9.06	34.62
1,480.46	6.07	8.16	1,480.98	9.11	35.35
1,480.47	6.14	8.49	1,480.99	9.16	36.09
1,480.48	6.21	8.83	1,481.00	9.21	36.84
1,480.49	6.28	9.18			
1,480.50	6.35	9.53			
1,480.51	6.42	9.89			

Stage-Area-Storage for Reach 33R: Reclaim Ditch

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
1,480.00	0.0	0	1,480.52	1.6	435
1,480.01	0.0	6	1,480.53	1.6	446
1,480.02	0.0	11	1,480.54	1.7	457
1,480.03	0.1	17	1,480.55	1.7	469
1,480.04	0.1	23	1,480.56	1.7	480
1,480.05	0.1	29	1,480.57	1.8	492
1,480.06	0.1	35	1,480.58	1.8	504
1,480.07	0.1	41	1,480.59	1.9	516
1,480.08	0.2	48	1,480.60	1.9	528
1,480.09	0.2	54	1,480.61	2.0	540
1,480.10	0.2	61	1,480.62	2.0	552
1,480.11	0.2	67	1,480.63	2.1	565
1,480.12	0.3	74	1,480.64	2.1	577
1,480.13	0.3	81	1,480.65	2.1	590
1,480.14	0.3	88	1,480.66	2.2	603
1,480.15	0.3	95	1,480.67	2.2	615
1,480.16	0.4	102	1,480.68	2.3	628
1,480.17	0.4	109	1,480.69	2.3	641
1,480.18	0.4	117	1,480.70	2.4	655
1,480.19	0.5	124	1,480.71	2.4	668
1,480.20	0.5	132	1,480.72	2.5	681
1,480.21	0.5	140	1,480.73	2.5	695
1,480.22	0.5	148	1,480.74	2.6	708
1,480.23	0.6	156	1,480.75	2.6	722
1,480.24	0.6	164	1,480.76	2.7	736
1,480.25	0.6	172	1,480.77	2.7	750
1,480.26	0.7	180	1,480.78	2.8	764
1,480.27	0.7	189	1,480.79	2.8	778
1,480.28	0.7	197	1,480.80	2.9	792
1,480.29	0.7	206	1,480.81	2.9	806
1,480.30	0.8	215	1,480.82	3.0	821
1,480.31	0.8	223	1,480.83	3.0	835
1,480.32	0.8	232	1,480.84	3.1	850
1,480.33	0.9	241	1,480.85	3.1	865
1,480.34	0.9	251	1,480.86	3.2	880
1,480.35	0.9	260	1,480.87	3.3	895
1,480.36	1.0	269	1,480.88	3.3	910
1,480.37	1.0	279	1,480.89	3.4	925
1,480.38	1.0	288	1,480.90	3.4	941
1,480.39	1.1	298	1,480.91	3.5	956
1,480.40	1.1	308	1,480.92	3.5	972
1,480.41	1.2	318	1,480.93	3.6	987
1,480.42	1.2	328	1,480.94	3.6	1,003
1,480.43	1.2	338	1,480.95	3.7	1,019
1,480.44	1.3	348	1,480.96	3.8	1,035
1,480.45	1.3	359	1,480.97	3.8	1,051
1,480.46	1.3	369	1,480.98	3.9	1,067
1,480.47	1.4	380	1,480.99	3.9	1,084
1,480.48	1.4	391	1,481.00	4.0	1,100
1,480.49	1.5	402			
1,480.50	1.5	413			
1,480.51	1.5	424			

Summary for Reach 34R: Div Ditch 2

Inflow Area = 2.580 ac, 0.00% Impervious, Inflow Depth = 2.47" for 10year event
 Inflow = 5.12 cfs @ 12.28 hrs, Volume= 0.532 af
 Outflow = 5.10 cfs @ 12.30 hrs, Volume= 0.532 af, Atten= 0%, Lag= 0.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs
 Max. Velocity= 6.00 fps, Min. Travel Time= 0.9 min
 Avg. Velocity= 1.88 fps, Avg. Travel Time= 2.9 min

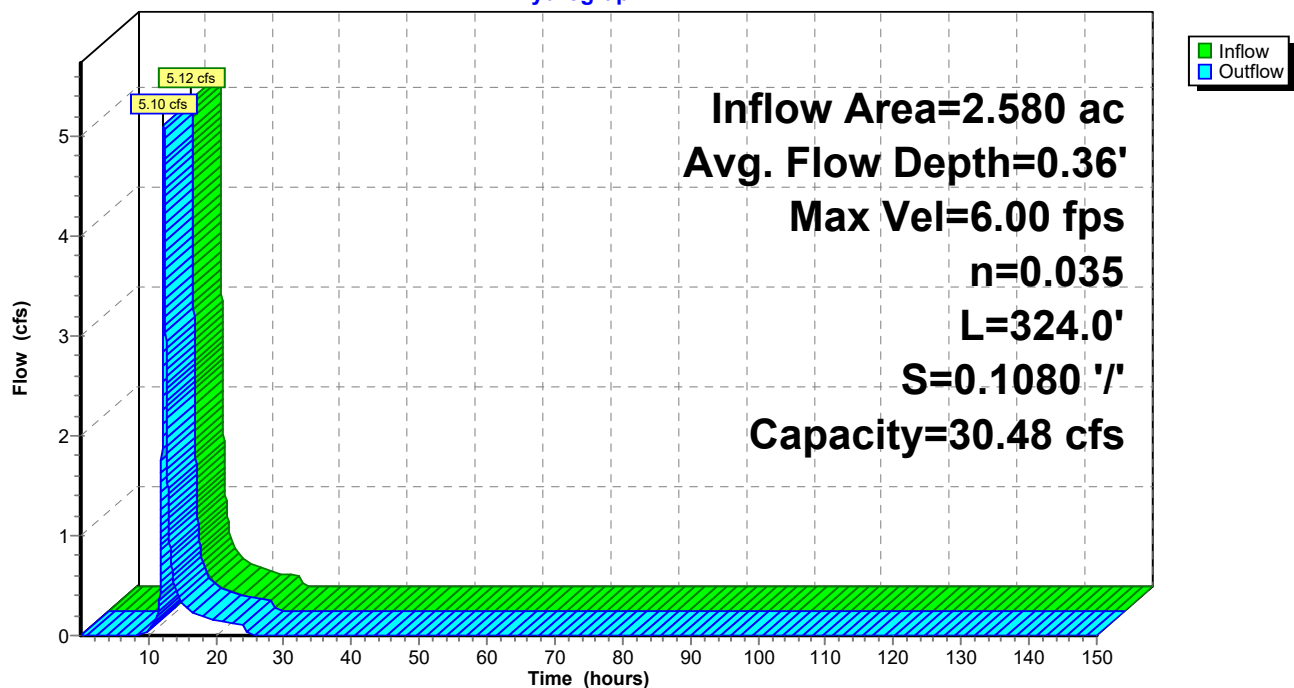
Peak Storage= 276 cf @ 12.30 hrs
 Average Depth at Peak Storage= 0.36'
 Bank-Full Depth= 1.00' Flow Area= 3.0 sf, Capacity= 30.48 cfs

2.00' x 1.00' deep channel, n= 0.035
 Side Slope Z-value= 1.0 '/' Top Width= 4.00'
 Length= 324.0' Slope= 0.1080 '/'
 Inlet Invert= 1,585.00', Outlet Invert= 1,550.00'

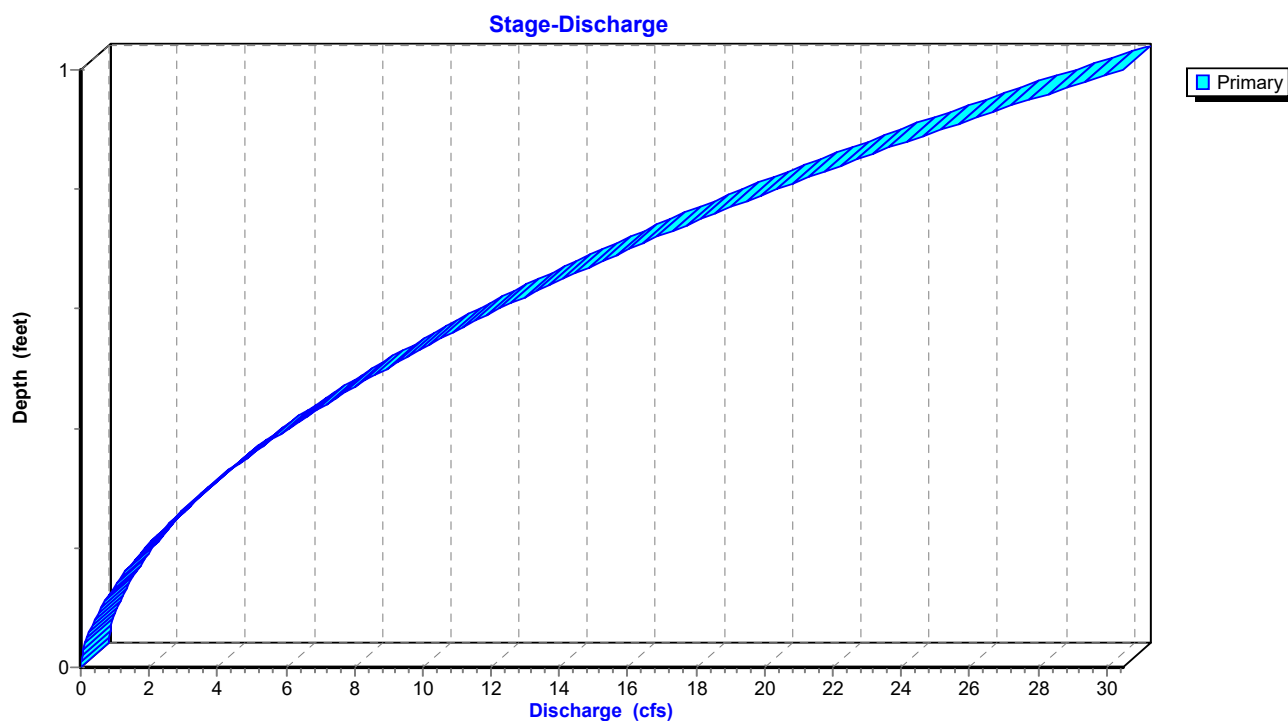


Reach 34R: Div Ditch 2

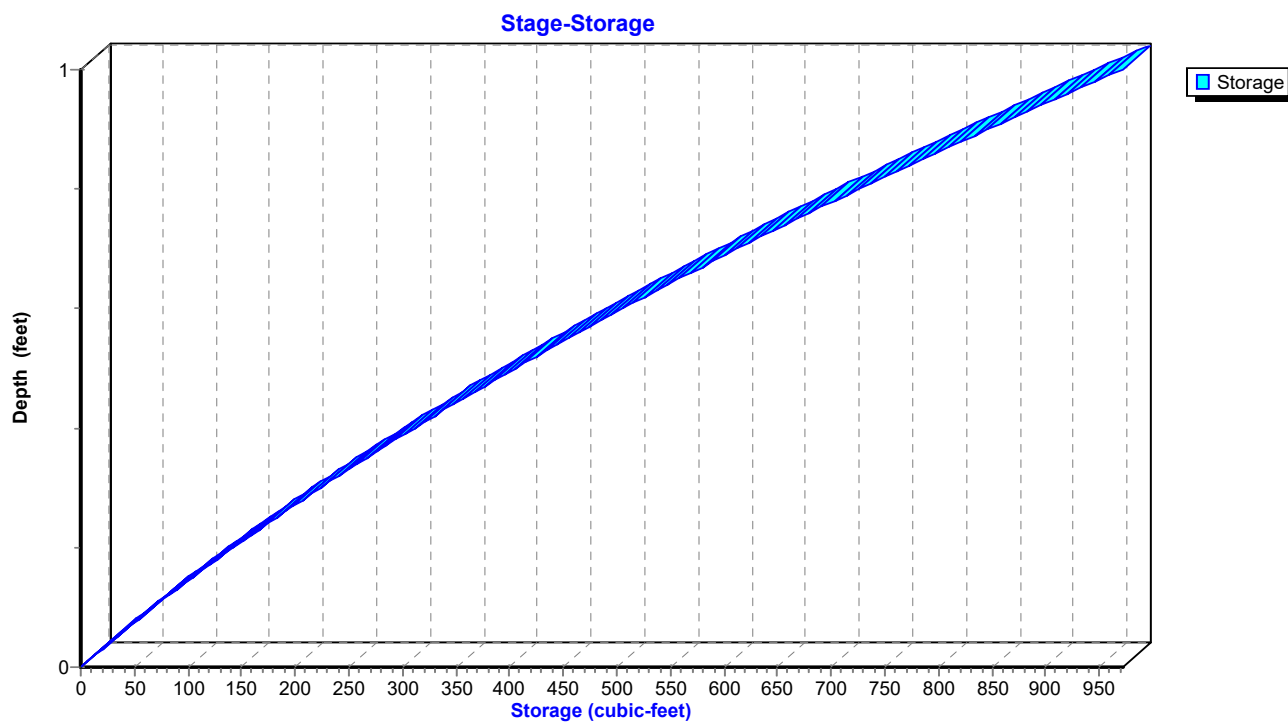
Hydrograph



Reach 34R: Div Ditch 2



Reach 34R: Div Ditch 2



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Prepared by JMT

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Type II 24-hr 10year Rainfall=4.82"

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Hydrograph for Reach 34R: Div Ditch 2

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
0.05	0.00	0	1,585.00	0.00
5.05	0.00	0	1,585.00	0.00
10.05	0.05	14	1,585.02	0.05
15.05	0.33	47	1,585.07	0.33
20.05	0.14	28	1,585.04	0.15
25.05	0.00	4	1,585.01	0.01
30.05	0.00	0	1,585.00	0.00
35.05	0.00	0	1,585.00	0.00
40.05	0.00	0	1,585.00	0.00
45.05	0.00	0	1,585.00	0.00
50.05	0.00	0	1,585.00	0.00
55.05	0.00	0	1,585.00	0.00
60.05	0.00	0	1,585.00	0.00
65.05	0.00	0	1,585.00	0.00
70.05	0.00	0	1,585.00	0.00
75.05	0.00	0	1,585.00	0.00
80.05	0.00	0	1,585.00	0.00
85.05	0.00	0	1,585.00	0.00
90.05	0.00	0	1,585.00	0.00
95.05	0.00	0	1,585.00	0.00
100.05	0.00	0	1,585.00	0.00
105.05	0.00	0	1,585.00	0.00
110.05	0.00	0	1,585.00	0.00
115.05	0.00	0	1,585.00	0.00
120.05	0.00	0	1,585.00	0.00
125.05	0.00	0	1,585.00	0.00
130.05	0.00	0	1,585.00	0.00
135.05	0.00	0	1,585.00	0.00
140.05	0.00	0	1,585.00	0.00
145.05	0.00	0	1,585.00	0.00

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Stage-Discharge for Reach 34R: Div Ditch 2

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)	Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
1,585.00	0.00	0.00	1,585.52	7.29	9.55
1,585.01	0.64	0.01	1,585.53	7.36	9.87
1,585.02	1.02	0.04	1,585.54	7.43	10.20
1,585.03	1.32	0.08	1,585.55	7.51	10.53
1,585.04	1.59	0.13	1,585.56	7.58	10.86
1,585.05	1.84	0.19	1,585.57	7.65	11.20
1,585.06	2.07	0.26	1,585.58	7.71	11.54
1,585.07	2.28	0.33	1,585.59	7.78	11.89
1,585.08	2.48	0.41	1,585.60	7.85	12.25
1,585.09	2.66	0.50	1,585.61	7.92	12.61
1,585.10	2.84	0.60	1,585.62	7.98	12.97
1,585.11	3.01	0.70	1,585.63	8.05	13.34
1,585.12	3.18	0.81	1,585.64	8.11	13.71
1,585.13	3.34	0.92	1,585.65	8.18	14.09
1,585.14	3.49	1.05	1,585.66	8.24	14.47
1,585.15	3.64	1.17	1,585.67	8.31	14.86
1,585.16	3.78	1.31	1,585.68	8.37	15.25
1,585.17	3.92	1.44	1,585.69	8.43	15.65
1,585.18	4.05	1.59	1,585.70	8.49	16.05
1,585.19	4.18	1.74	1,585.71	8.56	16.46
1,585.20	4.31	1.90	1,585.72	8.62	16.87
1,585.21	4.43	2.06	1,585.73	8.68	17.29
1,585.22	4.55	2.22	1,585.74	8.74	17.71
1,585.23	4.67	2.39	1,585.75	8.80	18.14
1,585.24	4.78	2.57	1,585.76	8.86	18.57
1,585.25	4.90	2.75	1,585.77	8.91	19.01
1,585.26	5.01	2.94	1,585.78	8.97	19.45
1,585.27	5.11	3.13	1,585.79	9.03	19.90
1,585.28	5.22	3.33	1,585.80	9.09	20.35
1,585.29	5.32	3.53	1,585.81	9.14	20.81
1,585.30	5.42	3.74	1,585.82	9.20	21.28
1,585.31	5.52	3.95	1,585.83	9.26	21.74
1,585.32	5.62	4.17	1,585.84	9.31	22.22
1,585.33	5.72	4.39	1,585.85	9.37	22.69
1,585.34	5.81	4.62	1,585.86	9.42	23.18
1,585.35	5.90	4.85	1,585.87	9.48	23.67
1,585.36	5.99	5.09	1,585.88	9.53	24.16
1,585.37	6.08	5.33	1,585.89	9.59	24.66
1,585.38	6.17	5.58	1,585.90	9.64	25.16
1,585.39	6.26	5.83	1,585.91	9.69	25.67
1,585.40	6.34	6.09	1,585.92	9.75	26.18
1,585.41	6.43	6.35	1,585.93	9.80	26.70
1,585.42	6.51	6.62	1,585.94	9.85	27.23
1,585.43	6.59	6.89	1,585.95	9.90	27.76
1,585.44	6.68	7.17	1,585.96	9.96	28.29
1,585.45	6.76	7.45	1,585.97	10.01	28.83
1,585.46	6.83	7.73	1,585.98	10.06	29.38
1,585.47	6.91	8.03	1,585.99	10.11	29.93
1,585.48	6.99	8.32	1,586.00	10.16	30.48
1,585.49	7.07	8.62			
1,585.50	7.14	8.93			
1,585.51	7.22	9.24			

Stage-Area-Storage for Reach 34R: Div Ditch 2

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
1,585.00	0.0	0	1,585.52	1.3	425
1,585.01	0.0	7	1,585.53	1.3	434
1,585.02	0.0	13	1,585.54	1.4	444
1,585.03	0.1	20	1,585.55	1.4	454
1,585.04	0.1	26	1,585.56	1.4	464
1,585.05	0.1	33	1,585.57	1.5	475
1,585.06	0.1	40	1,585.58	1.5	485
1,585.07	0.1	47	1,585.59	1.5	495
1,585.08	0.2	54	1,585.60	1.6	505
1,585.09	0.2	61	1,585.61	1.6	516
1,585.10	0.2	68	1,585.62	1.6	526
1,585.11	0.2	75	1,585.63	1.7	537
1,585.12	0.3	82	1,585.64	1.7	547
1,585.13	0.3	90	1,585.65	1.7	558
1,585.14	0.3	97	1,585.66	1.8	569
1,585.15	0.3	104	1,585.67	1.8	580
1,585.16	0.3	112	1,585.68	1.8	590
1,585.17	0.4	120	1,585.69	1.9	601
1,585.18	0.4	127	1,585.70	1.9	612
1,585.19	0.4	135	1,585.71	1.9	623
1,585.20	0.4	143	1,585.72	2.0	635
1,585.21	0.5	150	1,585.73	2.0	646
1,585.22	0.5	158	1,585.74	2.0	657
1,585.23	0.5	166	1,585.75	2.1	668
1,585.24	0.5	174	1,585.76	2.1	680
1,585.25	0.6	182	1,585.77	2.1	691
1,585.26	0.6	190	1,585.78	2.2	703
1,585.27	0.6	199	1,585.79	2.2	714
1,585.28	0.6	207	1,585.80	2.2	726
1,585.29	0.7	215	1,585.81	2.3	737
1,585.30	0.7	224	1,585.82	2.3	749
1,585.31	0.7	232	1,585.83	2.3	761
1,585.32	0.7	241	1,585.84	2.4	773
1,585.33	0.8	249	1,585.85	2.4	785
1,585.34	0.8	258	1,585.86	2.5	797
1,585.35	0.8	266	1,585.87	2.5	809
1,585.36	0.8	275	1,585.88	2.5	821
1,585.37	0.9	284	1,585.89	2.6	833
1,585.38	0.9	293	1,585.90	2.6	846
1,585.39	0.9	302	1,585.91	2.6	858
1,585.40	1.0	311	1,585.92	2.7	870
1,585.41	1.0	320	1,585.93	2.7	883
1,585.42	1.0	329	1,585.94	2.8	895
1,585.43	1.0	339	1,585.95	2.8	908
1,585.44	1.1	348	1,585.96	2.8	921
1,585.45	1.1	357	1,585.97	2.9	933
1,585.46	1.1	367	1,585.98	2.9	946
1,585.47	1.2	376	1,585.99	3.0	959
1,585.48	1.2	386	1,586.00	3.0	972
1,585.49	1.2	395			
1,585.50	1.3	405			
1,585.51	1.3	415			

Summary for Reach 35R: Div Ditch 1

Inflow Area = 2.922 ac, 0.00% Impervious, Inflow Depth = 2.47" for 10year event
 Inflow = 5.80 cfs @ 12.28 hrs, Volume= 0.602 af
 Outflow = 5.77 cfs @ 12.30 hrs, Volume= 0.602 af, Atten= 0%, Lag= 0.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Max. Velocity= 6.11 fps, Min. Travel Time= 1.2 min

Avg. Velocity= 1.92 fps, Avg. Travel Time= 3.8 min

Peak Storage= 417 cf @ 12.30 hrs

Average Depth at Peak Storage= 0.39'

Bank-Full Depth= 1.00' Flow Area= 3.0 sf, Capacity= 29.59 cfs

2.00' x 1.00' deep channel, n= 0.035

Side Slope Z-value= 1.0 '/' Top Width= 4.00'

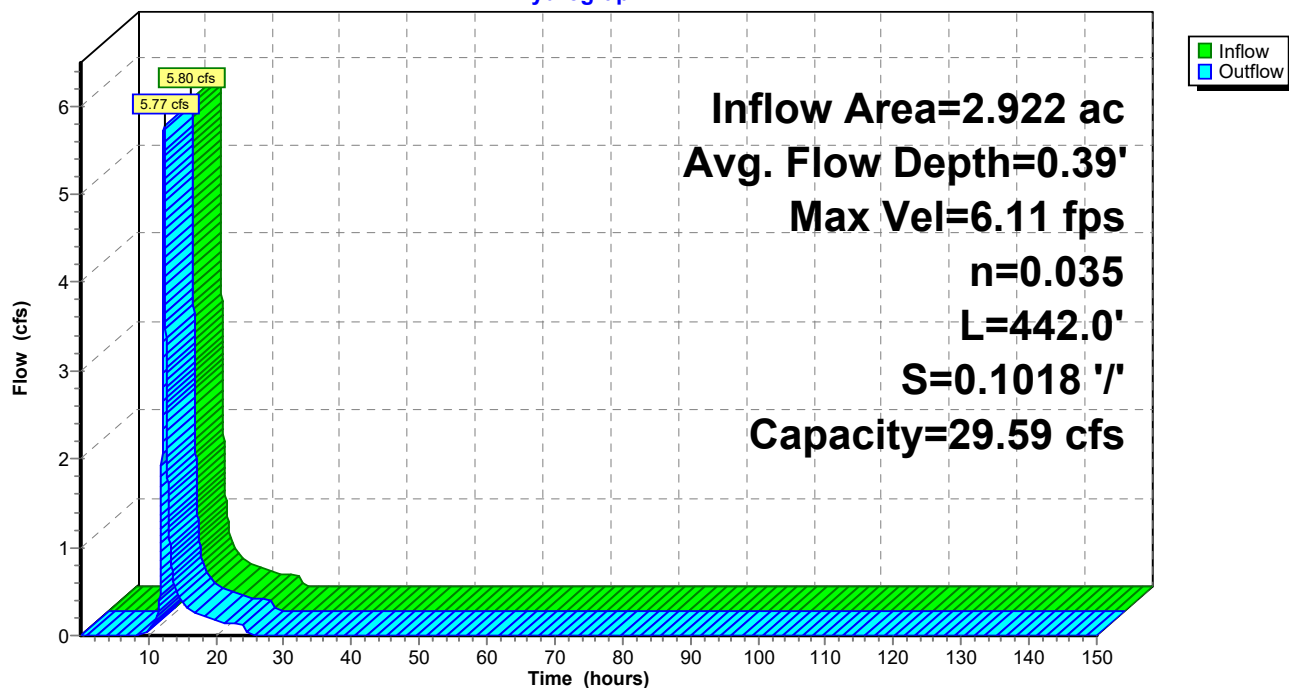
Length= 442.0' Slope= 0.1018 '/'

Inlet Invert= 1,585.00', Outlet Invert= 1,540.00'

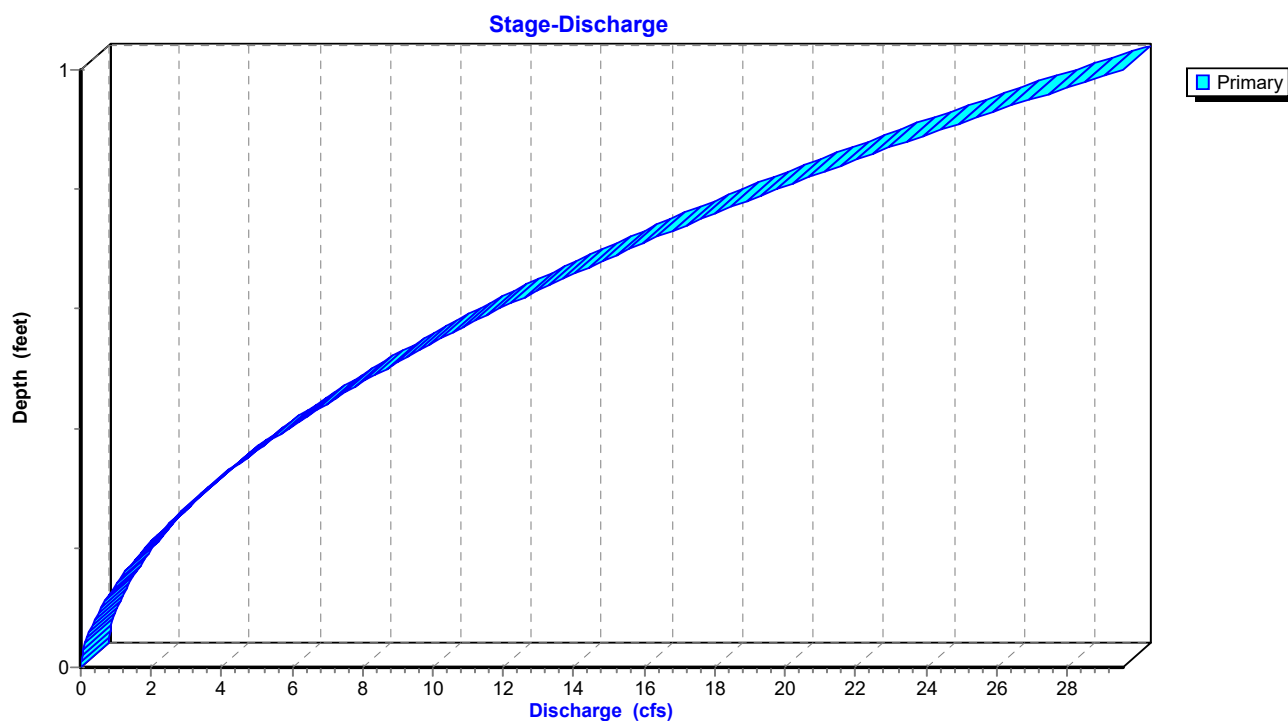


Reach 35R: Div Ditch 1

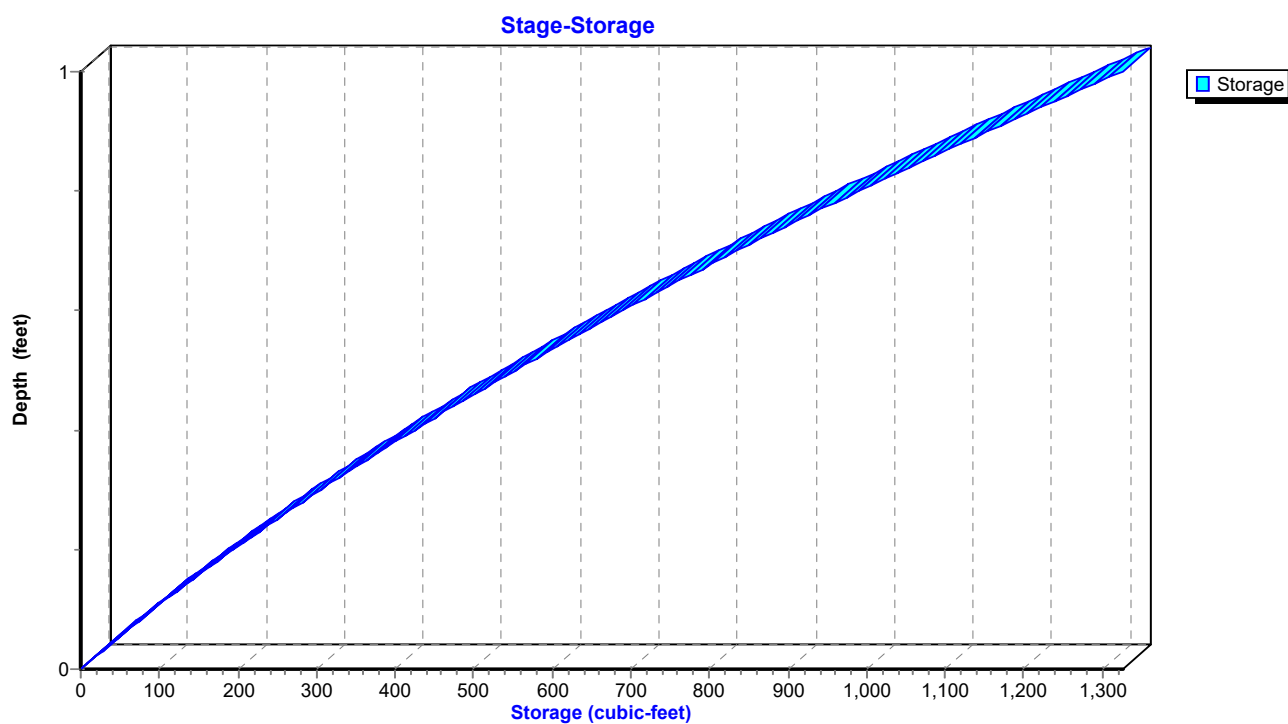
Hydrograph



Reach 35R: Div Ditch 1



Reach 35R: Div Ditch 1



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Hydrograph for Reach 35R: Div Ditch 1

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
0.05	0.00	0	1,585.00	0.00
5.05	0.00	0	1,585.00	0.00
10.05	0.06	21	1,585.02	0.05
15.05	0.37	71	1,585.08	0.37
20.05	0.16	42	1,585.05	0.17
25.05	0.01	7	1,585.01	0.01
30.05	0.00	0	1,585.00	0.00
35.05	0.00	0	1,585.00	0.00
40.05	0.00	0	1,585.00	0.00
45.05	0.00	0	1,585.00	0.00
50.05	0.00	0	1,585.00	0.00
55.05	0.00	0	1,585.00	0.00
60.05	0.00	0	1,585.00	0.00
65.05	0.00	0	1,585.00	0.00
70.05	0.00	0	1,585.00	0.00
75.05	0.00	0	1,585.00	0.00
80.05	0.00	0	1,585.00	0.00
85.05	0.00	0	1,585.00	0.00
90.05	0.00	0	1,585.00	0.00
95.05	0.00	0	1,585.00	0.00
100.05	0.00	0	1,585.00	0.00
105.05	0.00	0	1,585.00	0.00
110.05	0.00	0	1,585.00	0.00
115.05	0.00	0	1,585.00	0.00
120.05	0.00	0	1,585.00	0.00
125.05	0.00	0	1,585.00	0.00
130.05	0.00	0	1,585.00	0.00
135.05	0.00	0	1,585.00	0.00
140.05	0.00	0	1,585.00	0.00
145.05	0.00	0	1,585.00	0.00

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Stage-Discharge for Reach 35R: Div Ditch 1

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)	Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
1,585.00	0.00	0.00	1,585.52	7.08	9.27
1,585.01	0.63	0.01	1,585.53	7.15	9.58
1,585.02	0.99	0.04	1,585.54	7.22	9.90
1,585.03	1.28	0.08	1,585.55	7.29	10.22
1,585.04	1.55	0.13	1,585.56	7.35	10.54
1,585.05	1.79	0.18	1,585.57	7.42	10.87
1,585.06	2.01	0.25	1,585.58	7.49	11.21
1,585.07	2.21	0.32	1,585.59	7.56	11.55
1,585.08	2.40	0.40	1,585.60	7.62	11.89
1,585.09	2.59	0.49	1,585.61	7.69	12.24
1,585.10	2.76	0.58	1,585.62	7.75	12.59
1,585.11	2.93	0.68	1,585.63	7.81	12.95
1,585.12	3.09	0.79	1,585.64	7.88	13.31
1,585.13	3.24	0.90	1,585.65	7.94	13.68
1,585.14	3.39	1.01	1,585.66	8.00	14.05
1,585.15	3.53	1.14	1,585.67	8.06	14.43
1,585.16	3.67	1.27	1,585.68	8.13	14.81
1,585.17	3.80	1.40	1,585.69	8.19	15.19
1,585.18	3.93	1.54	1,585.70	8.25	15.58
1,585.19	4.06	1.69	1,585.71	8.31	15.98
1,585.20	4.18	1.84	1,585.72	8.36	16.38
1,585.21	4.30	2.00	1,585.73	8.42	16.79
1,585.22	4.42	2.16	1,585.74	8.48	17.20
1,585.23	4.53	2.32	1,585.75	8.54	17.61
1,585.24	4.64	2.50	1,585.76	8.60	18.03
1,585.25	4.75	2.67	1,585.77	8.65	18.46
1,585.26	4.86	2.86	1,585.78	8.71	18.89
1,585.27	4.96	3.04	1,585.79	8.77	19.32
1,585.28	5.07	3.23	1,585.80	8.82	19.76
1,585.29	5.17	3.43	1,585.81	8.88	20.20
1,585.30	5.26	3.63	1,585.82	8.93	20.65
1,585.31	5.36	3.84	1,585.83	8.99	21.11
1,585.32	5.46	4.05	1,585.84	9.04	21.57
1,585.33	5.55	4.27	1,585.85	9.09	22.03
1,585.34	5.64	4.49	1,585.86	9.15	22.50
1,585.35	5.73	4.71	1,585.87	9.20	22.97
1,585.36	5.82	4.94	1,585.88	9.25	23.45
1,585.37	5.91	5.18	1,585.89	9.31	23.94
1,585.38	5.99	5.42	1,585.90	9.36	24.43
1,585.39	6.08	5.66	1,585.91	9.41	24.92
1,585.40	6.16	5.91	1,585.92	9.46	25.42
1,585.41	6.24	6.17	1,585.93	9.51	25.92
1,585.42	6.32	6.43	1,585.94	9.56	26.43
1,585.43	6.40	6.69	1,585.95	9.61	26.95
1,585.44	6.48	6.96	1,585.96	9.67	27.46
1,585.45	6.56	7.23	1,585.97	9.72	27.99
1,585.46	6.64	7.51	1,585.98	9.77	28.52
1,585.47	6.71	7.79	1,585.99	9.81	29.05
1,585.48	6.79	8.08	1,586.00	9.86	29.59
1,585.49	6.86	8.37			
1,585.50	6.93	8.67			
1,585.51	7.01	8.97			

Stage-Area-Storage for Reach 35R: Div Ditch 1

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
1,585.00	0.0	0	1,585.52	1.3	579
1,585.01	0.0	9	1,585.53	1.3	593
1,585.02	0.0	18	1,585.54	1.4	606
1,585.03	0.1	27	1,585.55	1.4	620
1,585.04	0.1	36	1,585.56	1.4	634
1,585.05	0.1	45	1,585.57	1.5	647
1,585.06	0.1	55	1,585.58	1.5	661
1,585.07	0.1	64	1,585.59	1.5	675
1,585.08	0.2	74	1,585.60	1.6	690
1,585.09	0.2	83	1,585.61	1.6	704
1,585.10	0.2	93	1,585.62	1.6	718
1,585.11	0.2	103	1,585.63	1.7	732
1,585.12	0.3	112	1,585.64	1.7	747
1,585.13	0.3	122	1,585.65	1.7	761
1,585.14	0.3	132	1,585.66	1.8	776
1,585.15	0.3	143	1,585.67	1.8	791
1,585.16	0.3	153	1,585.68	1.8	806
1,585.17	0.4	163	1,585.69	1.9	820
1,585.18	0.4	173	1,585.70	1.9	835
1,585.19	0.4	184	1,585.71	1.9	850
1,585.20	0.4	194	1,585.72	2.0	866
1,585.21	0.5	205	1,585.73	2.0	881
1,585.22	0.5	216	1,585.74	2.0	896
1,585.23	0.5	227	1,585.75	2.1	912
1,585.24	0.5	238	1,585.76	2.1	927
1,585.25	0.6	249	1,585.77	2.1	943
1,585.26	0.6	260	1,585.78	2.2	958
1,585.27	0.6	271	1,585.79	2.2	974
1,585.28	0.6	282	1,585.80	2.2	990
1,585.29	0.7	294	1,585.81	2.3	1,006
1,585.30	0.7	305	1,585.82	2.3	1,022
1,585.31	0.7	317	1,585.83	2.3	1,038
1,585.32	0.7	328	1,585.84	2.4	1,054
1,585.33	0.8	340	1,585.85	2.4	1,071
1,585.34	0.8	352	1,585.86	2.5	1,087
1,585.35	0.8	364	1,585.87	2.5	1,104
1,585.36	0.8	376	1,585.88	2.5	1,120
1,585.37	0.9	388	1,585.89	2.6	1,137
1,585.38	0.9	400	1,585.90	2.6	1,154
1,585.39	0.9	412	1,585.91	2.6	1,170
1,585.40	1.0	424	1,585.92	2.7	1,187
1,585.41	1.0	437	1,585.93	2.7	1,204
1,585.42	1.0	449	1,585.94	2.8	1,222
1,585.43	1.0	462	1,585.95	2.8	1,239
1,585.44	1.1	475	1,585.96	2.8	1,256
1,585.45	1.1	487	1,585.97	2.9	1,273
1,585.46	1.1	500	1,585.98	2.9	1,291
1,585.47	1.2	513	1,585.99	3.0	1,308
1,585.48	1.2	526	1,586.00	3.0	1,326
1,585.49	1.2	539			
1,585.50	1.3	553			
1,585.51	1.3	566			

Summary for Reach 36R: Div Ditch 5

Inflow Area = 2.762 ac, 0.00% Impervious, Inflow Depth = 2.47" for 10year event
 Inflow = 5.19 cfs @ 12.33 hrs, Volume= 0.569 af
 Outflow = 5.18 cfs @ 12.34 hrs, Volume= 0.569 af, Atten= 0%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Max. Velocity= 3.60 fps, Min. Travel Time= 1.0 min

Avg. Velocity= 1.17 fps, Avg. Travel Time= 2.9 min

Peak Storage= 297 cf @ 12.34 hrs

Average Depth at Peak Storage= 0.56'

Bank-Full Depth= 1.00' Flow Area= 3.0 sf, Capacity= 14.45 cfs

2.00' x 1.00' deep channel, n= 0.035

Side Slope Z-value= 1.0 '/' Top Width= 4.00'

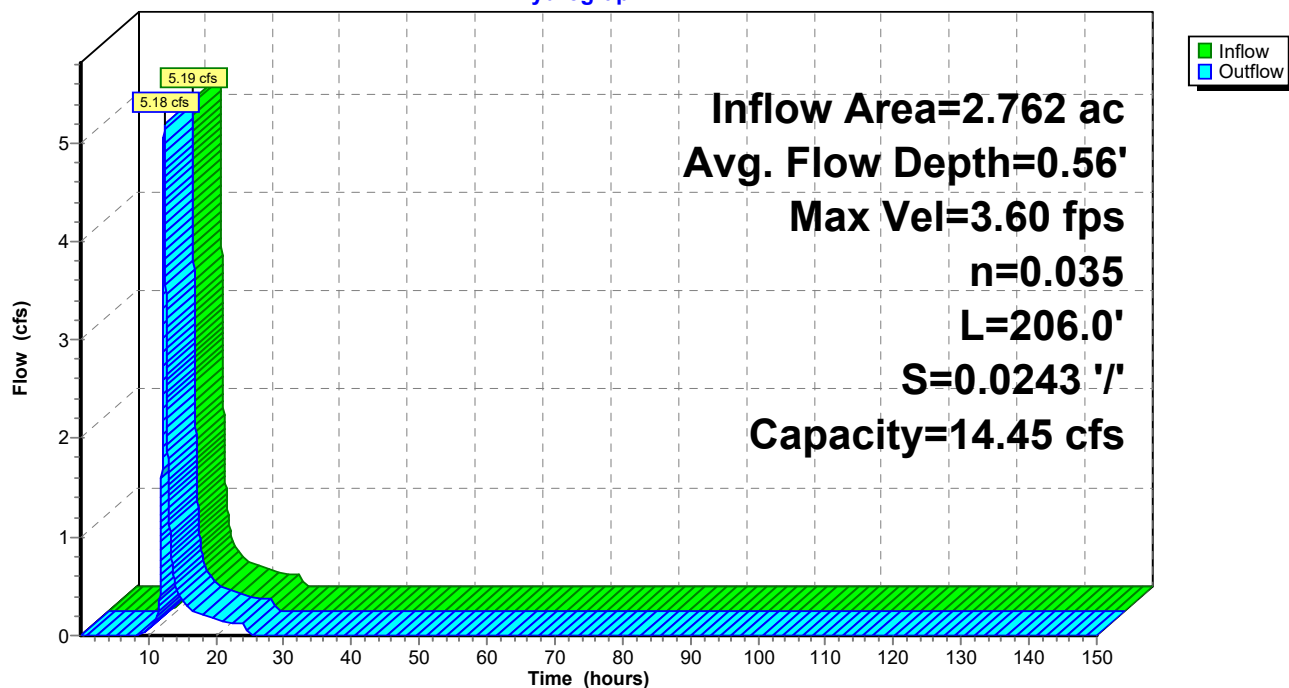
Length= 206.0' Slope= 0.0243 '/'

Inlet Invert= 1,505.00', Outlet Invert= 1,500.00'

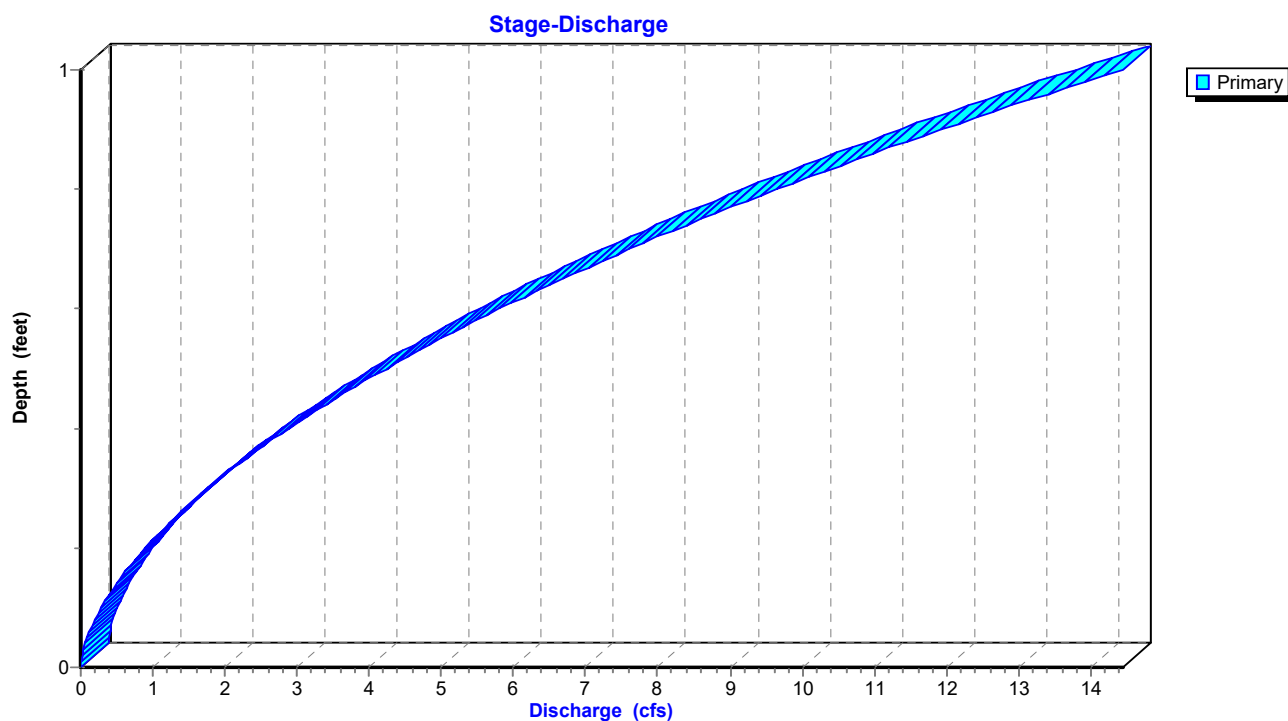


Reach 36R: Div Ditch 5

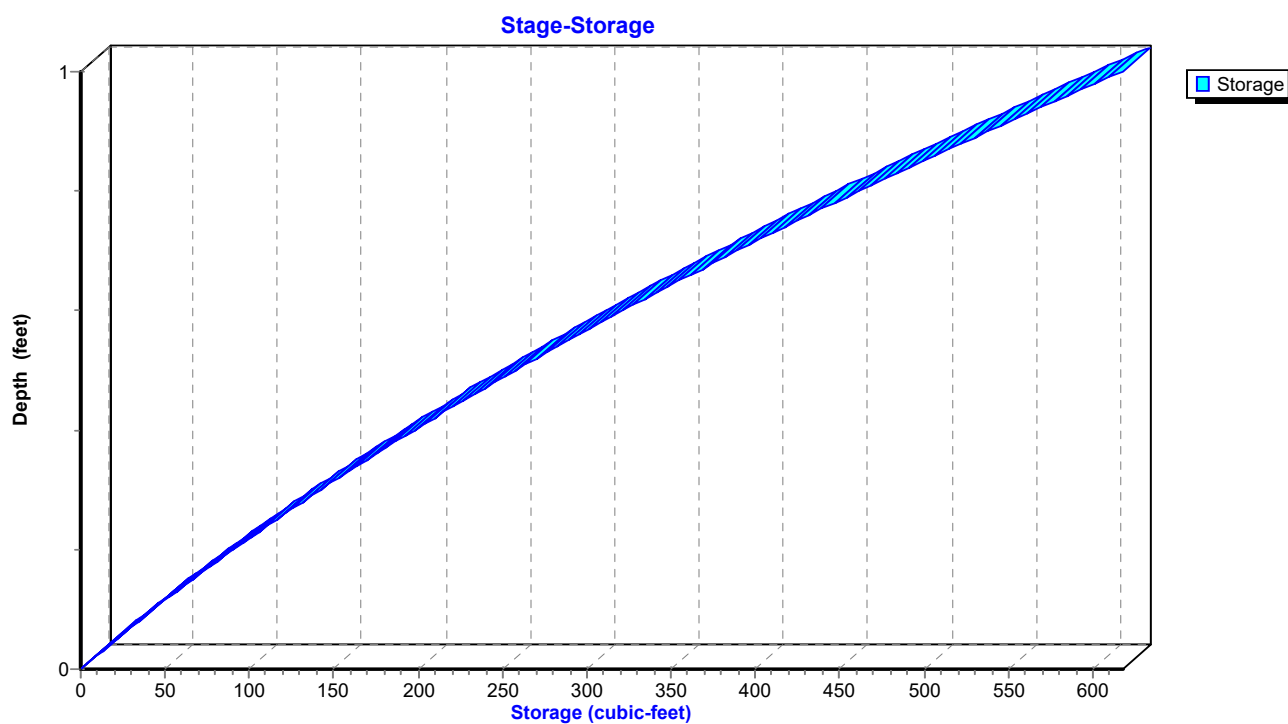
Hydrograph



Reach 36R: Div Ditch 5



Reach 36R: Div Ditch 5



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Type II 24-hr 10year Rainfall=4.82"

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Hydrograph for Reach 36R: Div Ditch 5

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
0.05	0.00	0	1,505.00	0.00
5.05	0.00	0	1,505.00	0.00
10.05	0.05	15	1,505.03	0.05
15.05	0.35	50	1,505.11	0.36
20.05	0.16	30	1,505.07	0.16
25.05	0.01	6	1,505.01	0.01
30.05	0.00	0	1,505.00	0.00
35.05	0.00	0	1,505.00	0.00
40.05	0.00	0	1,505.00	0.00
45.05	0.00	0	1,505.00	0.00
50.05	0.00	0	1,505.00	0.00
55.05	0.00	0	1,505.00	0.00
60.05	0.00	0	1,505.00	0.00
65.05	0.00	0	1,505.00	0.00
70.05	0.00	0	1,505.00	0.00
75.05	0.00	0	1,505.00	0.00
80.05	0.00	0	1,505.00	0.00
85.05	0.00	0	1,505.00	0.00
90.05	0.00	0	1,505.00	0.00
95.05	0.00	0	1,505.00	0.00
100.05	0.00	0	1,505.00	0.00
105.05	0.00	0	1,505.00	0.00
110.05	0.00	0	1,505.00	0.00
115.05	0.00	0	1,505.00	0.00
120.05	0.00	0	1,505.00	0.00
125.05	0.00	0	1,505.00	0.00
130.05	0.00	0	1,505.00	0.00
135.05	0.00	0	1,505.00	0.00
140.05	0.00	0	1,505.00	0.00
145.05	0.00	0	1,505.00	0.00

Stage-Discharge for Reach 36R: Div Ditch 5

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)	Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
1,505.00	0.00	0.00	1,505.52	3.46	4.53
1,505.01	0.31	0.01	1,505.53	3.49	4.68
1,505.02	0.48	0.02	1,505.54	3.52	4.83
1,505.03	0.63	0.04	1,505.55	3.56	4.99
1,505.04	0.76	0.06	1,505.56	3.59	5.15
1,505.05	0.87	0.09	1,505.57	3.62	5.31
1,505.06	0.98	0.12	1,505.58	3.66	5.47
1,505.07	1.08	0.16	1,505.59	3.69	5.64
1,505.08	1.17	0.20	1,505.60	3.72	5.81
1,505.09	1.26	0.24	1,505.61	3.75	5.98
1,505.10	1.35	0.28	1,505.62	3.78	6.15
1,505.11	1.43	0.33	1,505.63	3.82	6.32
1,505.12	1.51	0.38	1,505.64	3.85	6.50
1,505.13	1.58	0.44	1,505.65	3.88	6.68
1,505.14	1.65	0.50	1,505.66	3.91	6.86
1,505.15	1.72	0.56	1,505.67	3.94	7.04
1,505.16	1.79	0.62	1,505.68	3.97	7.23
1,505.17	1.86	0.68	1,505.69	4.00	7.42
1,505.18	1.92	0.75	1,505.70	4.03	7.61
1,505.19	1.98	0.82	1,505.71	4.06	7.80
1,505.20	2.04	0.90	1,505.72	4.08	8.00
1,505.21	2.10	0.97	1,505.73	4.11	8.20
1,505.22	2.16	1.05	1,505.74	4.14	8.40
1,505.23	2.21	1.14	1,505.75	4.17	8.60
1,505.24	2.27	1.22	1,505.76	4.20	8.80
1,505.25	2.32	1.31	1,505.77	4.23	9.01
1,505.26	2.37	1.39	1,505.78	4.25	9.22
1,505.27	2.42	1.49	1,505.79	4.28	9.43
1,505.28	2.47	1.58	1,505.80	4.31	9.65
1,505.29	2.52	1.68	1,505.81	4.33	9.87
1,505.30	2.57	1.77	1,505.82	4.36	10.08
1,505.31	2.62	1.87	1,505.83	4.39	10.31
1,505.32	2.66	1.98	1,505.84	4.41	10.53
1,505.33	2.71	2.08	1,505.85	4.44	10.76
1,505.34	2.75	2.19	1,505.86	4.47	10.99
1,505.35	2.80	2.30	1,505.87	4.49	11.22
1,505.36	2.84	2.41	1,505.88	4.52	11.45
1,505.37	2.88	2.53	1,505.89	4.54	11.69
1,505.38	2.93	2.65	1,505.90	4.57	11.93
1,505.39	2.97	2.77	1,505.91	4.59	12.17
1,505.40	3.01	2.89	1,505.92	4.62	12.41
1,505.41	3.05	3.01	1,505.93	4.65	12.66
1,505.42	3.09	3.14	1,505.94	4.67	12.91
1,505.43	3.13	3.27	1,505.95	4.69	13.16
1,505.44	3.16	3.40	1,505.96	4.72	13.41
1,505.45	3.20	3.53	1,505.97	4.74	13.67
1,505.46	3.24	3.67	1,505.98	4.77	13.92
1,505.47	3.28	3.80	1,505.99	4.79	14.19
1,505.48	3.31	3.94	1,506.00	4.82	14.45
1,505.49	3.35	4.09			
1,505.50	3.39	4.23			
1,505.51	3.42	4.38			

Stage-Area-Storage for Reach 36R: Div Ditch 5

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
1,505.00	0.0	0	1,505.52	1.3	270
1,505.01	0.0	4	1,505.53	1.3	276
1,505.02	0.0	8	1,505.54	1.4	283
1,505.03	0.1	13	1,505.55	1.4	289
1,505.04	0.1	17	1,505.56	1.4	295
1,505.05	0.1	21	1,505.57	1.5	302
1,505.06	0.1	25	1,505.58	1.5	308
1,505.07	0.1	30	1,505.59	1.5	315
1,505.08	0.2	34	1,505.60	1.6	321
1,505.09	0.2	39	1,505.61	1.6	328
1,505.10	0.2	43	1,505.62	1.6	335
1,505.11	0.2	48	1,505.63	1.7	341
1,505.12	0.3	52	1,505.64	1.7	348
1,505.13	0.3	57	1,505.65	1.7	355
1,505.14	0.3	62	1,505.66	1.8	362
1,505.15	0.3	66	1,505.67	1.8	369
1,505.16	0.3	71	1,505.68	1.8	375
1,505.17	0.4	76	1,505.69	1.9	382
1,505.18	0.4	81	1,505.70	1.9	389
1,505.19	0.4	86	1,505.71	1.9	396
1,505.20	0.4	91	1,505.72	2.0	403
1,505.21	0.5	96	1,505.73	2.0	411
1,505.22	0.5	101	1,505.74	2.0	418
1,505.23	0.5	106	1,505.75	2.1	425
1,505.24	0.5	111	1,505.76	2.1	432
1,505.25	0.6	116	1,505.77	2.1	439
1,505.26	0.6	121	1,505.78	2.2	447
1,505.27	0.6	126	1,505.79	2.2	454
1,505.28	0.6	132	1,505.80	2.2	461
1,505.29	0.7	137	1,505.81	2.3	469
1,505.30	0.7	142	1,505.82	2.3	476
1,505.31	0.7	148	1,505.83	2.3	484
1,505.32	0.7	153	1,505.84	2.4	491
1,505.33	0.8	158	1,505.85	2.4	499
1,505.34	0.8	164	1,505.86	2.5	507
1,505.35	0.8	169	1,505.87	2.5	514
1,505.36	0.8	175	1,505.88	2.5	522
1,505.37	0.9	181	1,505.89	2.6	530
1,505.38	0.9	186	1,505.90	2.6	538
1,505.39	0.9	192	1,505.91	2.6	546
1,505.40	1.0	198	1,505.92	2.7	553
1,505.41	1.0	204	1,505.93	2.7	561
1,505.42	1.0	209	1,505.94	2.8	569
1,505.43	1.0	215	1,505.95	2.8	577
1,505.44	1.1	221	1,505.96	2.8	585
1,505.45	1.1	227	1,505.97	2.9	593
1,505.46	1.1	233	1,505.98	2.9	602
1,505.47	1.2	239	1,505.99	3.0	610
1,505.48	1.2	245	1,506.00	3.0	618
1,505.49	1.2	251			
1,505.50	1.3	258			
1,505.51	1.3	264			

Riato V6 Final

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Type II 24-hr 10year Rainfall=4.82"

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Summary for Reach 37R: Div Ditch 3

Inflow Area = 10.125 ac, 0.00% Impervious, Inflow Depth = 2.47" for 10year event
Inflow = 8.15 cfs @ 13.27 hrs, Volume= 2.087 af
Outflow = 8.14 cfs @ 13.33 hrs, Volume= 2.087 af, Atten= 0%, Lag= 3.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Max. Velocity= 6.79 fps, Min. Travel Time= 1.5 min

Avg. Velocity = 2.67 fps, Avg. Travel Time= 3.7 min

Peak Storage= 710 cf @ 13.33 hrs

Average Depth at Peak Storage= 0.48'

Bank-Full Depth= 1.00' Flow Area= 3.0 sf, Capacity= 29.53 cfs

2.00' x 1.00' deep channel, n= 0.035

Side Slope Z-value= 1.0 '/' Top Width= 4.00'

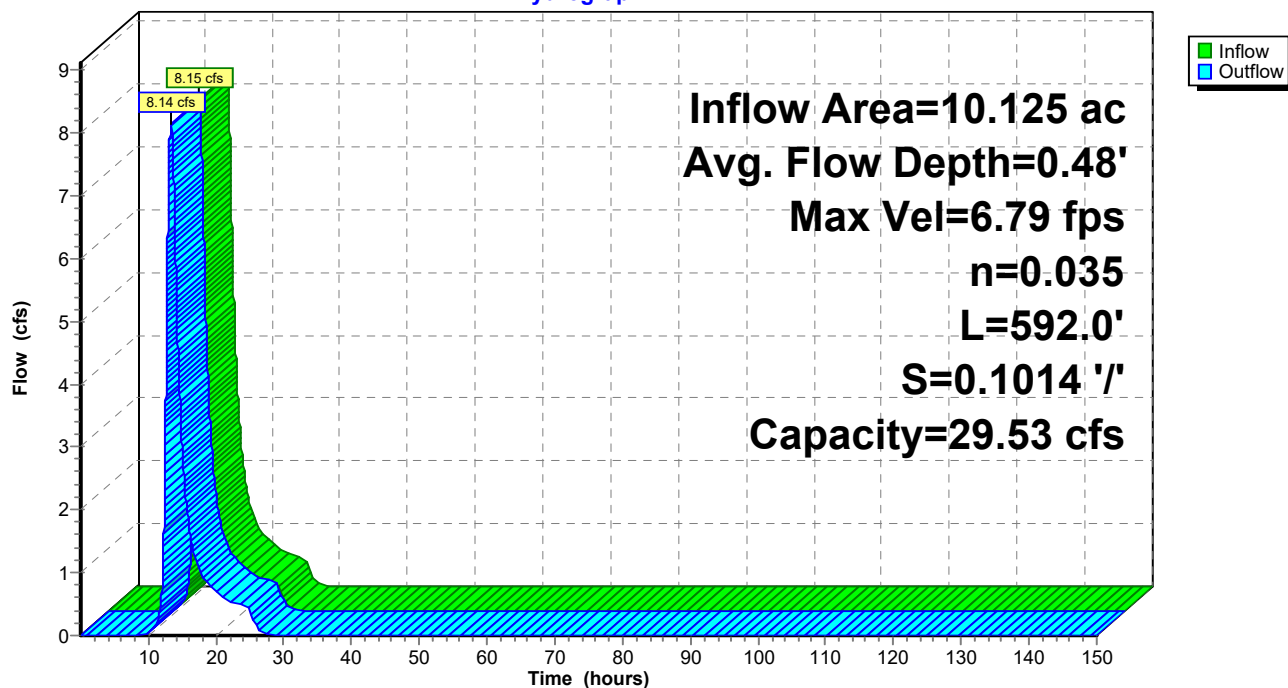
Length= 592.0' Slope= 0.1014 '/'

Inlet Invert= 1,635.00', Outlet Invert= 1,575.00'

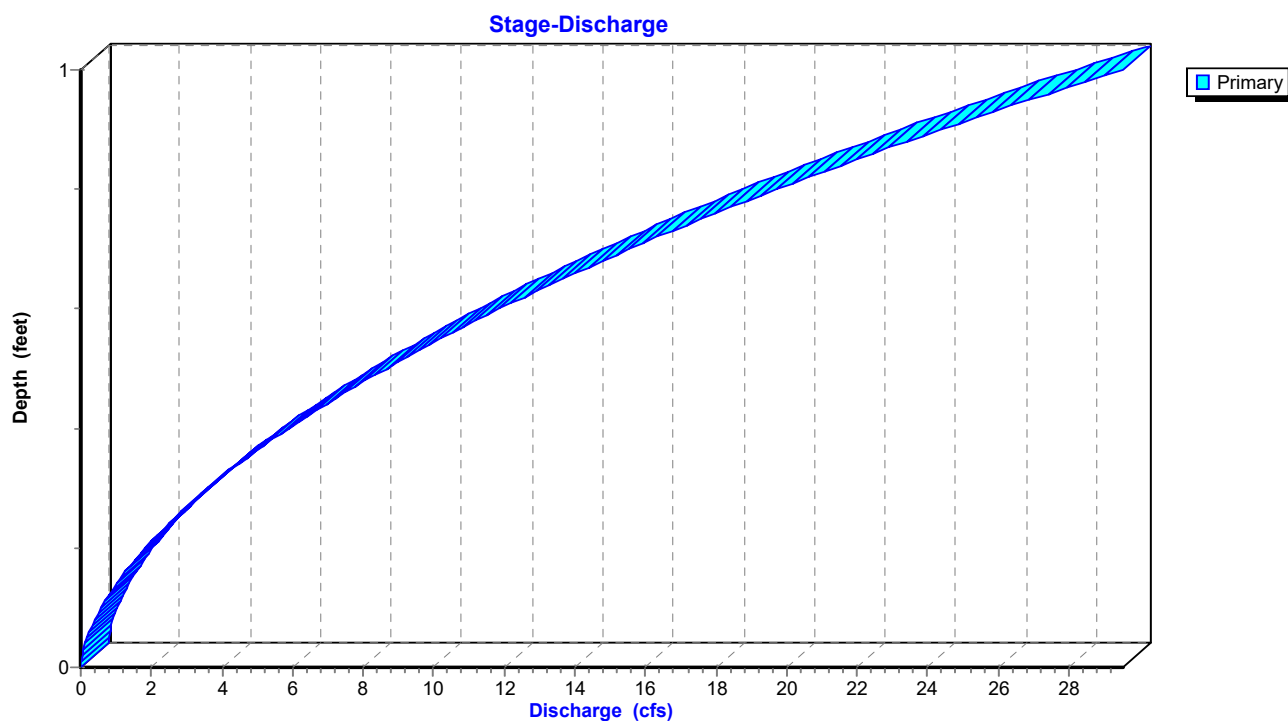


Reach 37R: Div Ditch 3

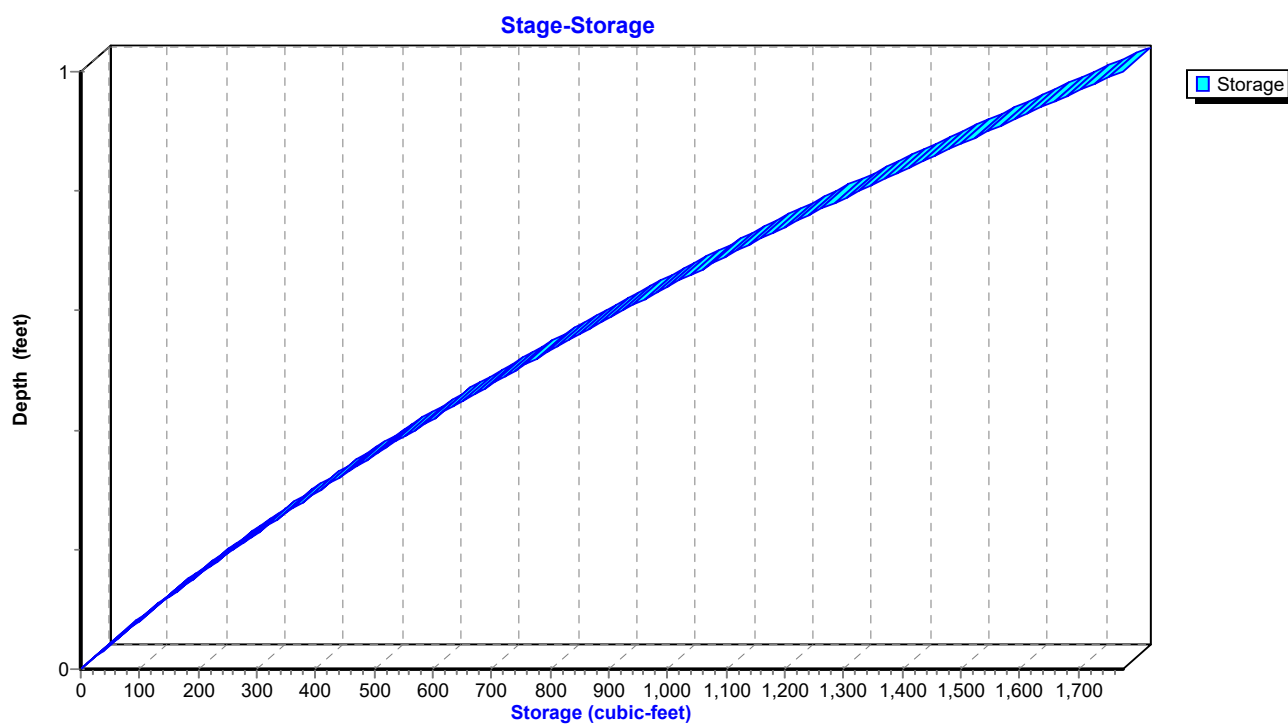
Hydrograph



Reach 37R: Div Ditch 3



Reach 37R: Div Ditch 3



Riato V6 Final

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Type II 24-hr 10year Rainfall=4.82"

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Hydrograph for Reach 37R: Div Ditch 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
0.05	0.00	0	1,635.00	0.00
5.05	0.00	0	1,635.00	0.00
10.05	0.05	24	1,635.02	0.04
15.05	2.87	353	1,635.26	2.91
20.05	0.69	139	1,635.11	0.69
25.05	0.38	97	1,635.08	0.39
30.05	0.00	1	1,635.00	0.00
35.05	0.00	0	1,635.00	0.00
40.05	0.00	0	1,635.00	0.00
45.05	0.00	0	1,635.00	0.00
50.05	0.00	0	1,635.00	0.00
55.05	0.00	0	1,635.00	0.00
60.05	0.00	0	1,635.00	0.00
65.05	0.00	0	1,635.00	0.00
70.05	0.00	0	1,635.00	0.00
75.05	0.00	0	1,635.00	0.00
80.05	0.00	0	1,635.00	0.00
85.05	0.00	0	1,635.00	0.00
90.05	0.00	0	1,635.00	0.00
95.05	0.00	0	1,635.00	0.00
100.05	0.00	0	1,635.00	0.00
105.05	0.00	0	1,635.00	0.00
110.05	0.00	0	1,635.00	0.00
115.05	0.00	0	1,635.00	0.00
120.05	0.00	0	1,635.00	0.00
125.05	0.00	0	1,635.00	0.00
130.05	0.00	0	1,635.00	0.00
135.05	0.00	0	1,635.00	0.00
140.05	0.00	0	1,635.00	0.00
145.05	0.00	0	1,635.00	0.00

Stage-Discharge for Reach 37R: Div Ditch 3

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)	Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
1,635.00	0.00	0.00	1,635.52	7.06	9.25
1,635.01	0.62	0.01	1,635.53	7.13	9.56
1,635.02	0.98	0.04	1,635.54	7.20	9.88
1,635.03	1.28	0.08	1,635.55	7.27	10.20
1,635.04	1.54	0.13	1,635.56	7.34	10.52
1,635.05	1.78	0.18	1,635.57	7.41	10.85
1,635.06	2.00	0.25	1,635.58	7.47	11.18
1,635.07	2.21	0.32	1,635.59	7.54	11.52
1,635.08	2.40	0.40	1,635.60	7.60	11.86
1,635.09	2.58	0.49	1,635.61	7.67	12.21
1,635.10	2.75	0.58	1,635.62	7.73	12.56
1,635.11	2.92	0.68	1,635.63	7.80	12.92
1,635.12	3.08	0.78	1,635.64	7.86	13.28
1,635.13	3.23	0.90	1,635.65	7.92	13.65
1,635.14	3.38	1.01	1,635.66	7.98	14.02
1,635.15	3.52	1.14	1,635.67	8.05	14.39
1,635.16	3.66	1.26	1,635.68	8.11	14.77
1,635.17	3.79	1.40	1,635.69	8.17	15.16
1,635.18	3.92	1.54	1,635.70	8.23	15.55
1,635.19	4.05	1.69	1,635.71	8.29	15.94
1,635.20	4.17	1.84	1,635.72	8.35	16.34
1,635.21	4.29	1.99	1,635.73	8.40	16.75
1,635.22	4.41	2.15	1,635.74	8.46	17.16
1,635.23	4.52	2.32	1,635.75	8.52	17.57
1,635.24	4.63	2.49	1,635.76	8.58	17.99
1,635.25	4.74	2.67	1,635.77	8.63	18.42
1,635.26	4.85	2.85	1,635.78	8.69	18.84
1,635.27	4.95	3.04	1,635.79	8.75	19.28
1,635.28	5.05	3.23	1,635.80	8.80	19.72
1,635.29	5.15	3.42	1,635.81	8.86	20.16
1,635.30	5.25	3.62	1,635.82	8.91	20.61
1,635.31	5.35	3.83	1,635.83	8.97	21.06
1,635.32	5.44	4.04	1,635.84	9.02	21.52
1,635.33	5.54	4.26	1,635.85	9.07	21.98
1,635.34	5.63	4.48	1,635.86	9.13	22.45
1,635.35	5.72	4.70	1,635.87	9.18	22.92
1,635.36	5.81	4.93	1,635.88	9.23	23.40
1,635.37	5.89	5.17	1,635.89	9.29	23.88
1,635.38	5.98	5.41	1,635.90	9.34	24.37
1,635.39	6.06	5.65	1,635.91	9.39	24.86
1,635.40	6.15	5.90	1,635.92	9.44	25.36
1,635.41	6.23	6.15	1,635.93	9.49	25.86
1,635.42	6.31	6.41	1,635.94	9.54	26.37
1,635.43	6.39	6.67	1,635.95	9.59	26.89
1,635.44	6.47	6.94	1,635.96	9.64	27.40
1,635.45	6.54	7.21	1,635.97	9.69	27.93
1,635.46	6.62	7.49	1,635.98	9.74	28.45
1,635.47	6.70	7.77	1,635.99	9.79	28.99
1,635.48	6.77	8.06	1,636.00	9.84	29.53
1,635.49	6.84	8.35			
1,635.50	6.92	8.65			
1,635.51	6.99	8.95			

Stage-Area-Storage for Reach 37R: Div Ditch 3

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
1,635.00	0.0	0	1,635.52	1.3	776
1,635.01	0.0	12	1,635.53	1.3	794
1,635.02	0.0	24	1,635.54	1.4	812
1,635.03	0.1	36	1,635.55	1.4	830
1,635.04	0.1	48	1,635.56	1.4	849
1,635.05	0.1	61	1,635.57	1.5	867
1,635.06	0.1	73	1,635.58	1.5	886
1,635.07	0.1	86	1,635.59	1.5	905
1,635.08	0.2	99	1,635.60	1.6	924
1,635.09	0.2	111	1,635.61	1.6	943
1,635.10	0.2	124	1,635.62	1.6	962
1,635.11	0.2	137	1,635.63	1.7	981
1,635.12	0.3	151	1,635.64	1.7	1,000
1,635.13	0.3	164	1,635.65	1.7	1,020
1,635.14	0.3	177	1,635.66	1.8	1,039
1,635.15	0.3	191	1,635.67	1.8	1,059
1,635.16	0.3	205	1,635.68	1.8	1,079
1,635.17	0.4	218	1,635.69	1.9	1,099
1,635.18	0.4	232	1,635.70	1.9	1,119
1,635.19	0.4	246	1,635.71	1.9	1,139
1,635.20	0.4	260	1,635.72	2.0	1,159
1,635.21	0.5	275	1,635.73	2.0	1,180
1,635.22	0.5	289	1,635.74	2.0	1,200
1,635.23	0.5	304	1,635.75	2.1	1,221
1,635.24	0.5	318	1,635.76	2.1	1,242
1,635.25	0.6	333	1,635.77	2.1	1,263
1,635.26	0.6	348	1,635.78	2.2	1,284
1,635.27	0.6	363	1,635.79	2.2	1,305
1,635.28	0.6	378	1,635.80	2.2	1,326
1,635.29	0.7	393	1,635.81	2.3	1,347
1,635.30	0.7	408	1,635.82	2.3	1,369
1,635.31	0.7	424	1,635.83	2.3	1,391
1,635.32	0.7	440	1,635.84	2.4	1,412
1,635.33	0.8	455	1,635.85	2.4	1,434
1,635.34	0.8	471	1,635.86	2.5	1,456
1,635.35	0.8	487	1,635.87	2.5	1,478
1,635.36	0.8	503	1,635.88	2.5	1,500
1,635.37	0.9	519	1,635.89	2.6	1,523
1,635.38	0.9	535	1,635.90	2.6	1,545
1,635.39	0.9	552	1,635.91	2.6	1,568
1,635.40	1.0	568	1,635.92	2.7	1,590
1,635.41	1.0	585	1,635.93	2.7	1,613
1,635.42	1.0	602	1,635.94	2.8	1,636
1,635.43	1.0	619	1,635.95	2.8	1,659
1,635.44	1.1	636	1,635.96	2.8	1,682
1,635.45	1.1	653	1,635.97	2.9	1,705
1,635.46	1.1	670	1,635.98	2.9	1,729
1,635.47	1.2	687	1,635.99	3.0	1,752
1,635.48	1.2	705	1,636.00	3.0	1,776
1,635.49	1.2	722			
1,635.50	1.3	740			
1,635.51	1.3	758			

Summary for Reach 38R: Div Ditch 4

Inflow Area = 2.938 ac, 0.00% Impervious, Inflow Depth = 2.47" for 10year event
 Inflow = 3.68 cfs @ 12.71 hrs, Volume= 0.606 af
 Outflow = 3.68 cfs @ 12.71 hrs, Volume= 0.606 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Max. Velocity= 5.33 fps, Min. Travel Time= 1.1 min

Avg. Velocity= 1.89 fps, Avg. Travel Time= 3.0 min

Peak Storage= 232 cf @ 12.71 hrs

Average Depth at Peak Storage= 0.30'

Bank-Full Depth= 1.00' Flow Area= 3.0 sf, Capacity= 29.93 cfs

2.00' x 1.00' deep channel, n= 0.035

Side Slope Z-value= 1.0 '/' Top Width= 4.00'

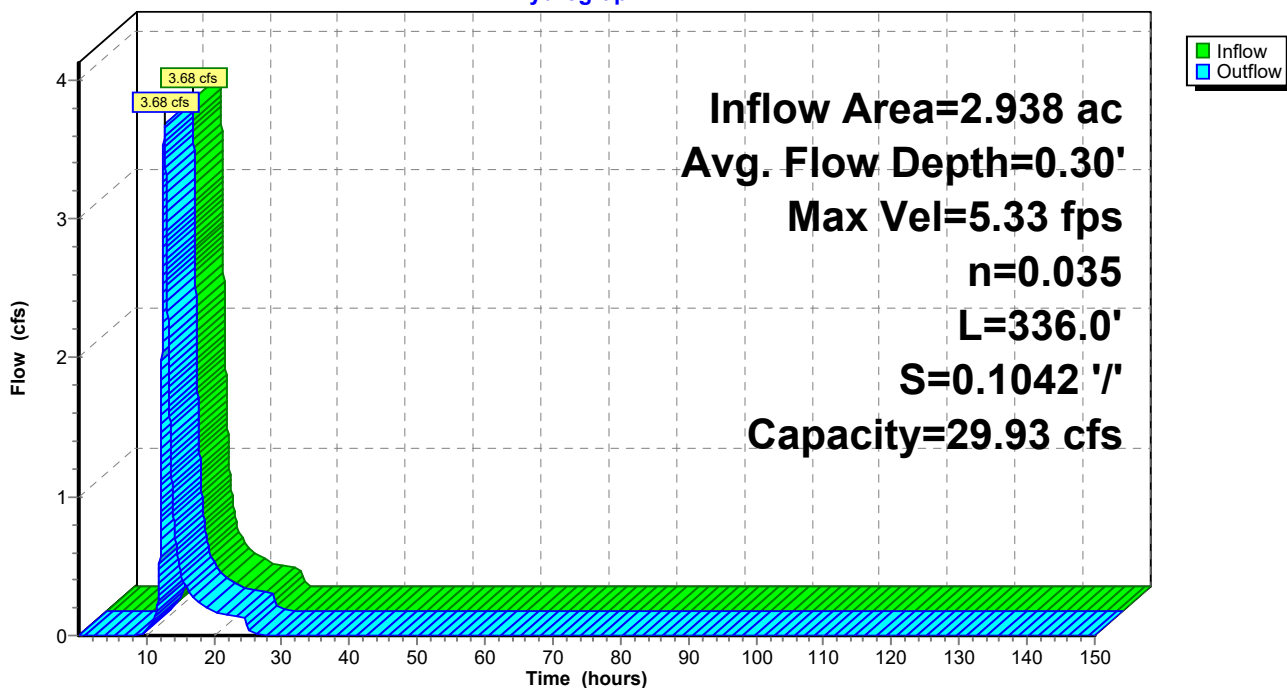
Length= 336.0' Slope= 0.1042 '/'

Inlet Invert= 1,635.00', Outlet Invert= 1,600.00'

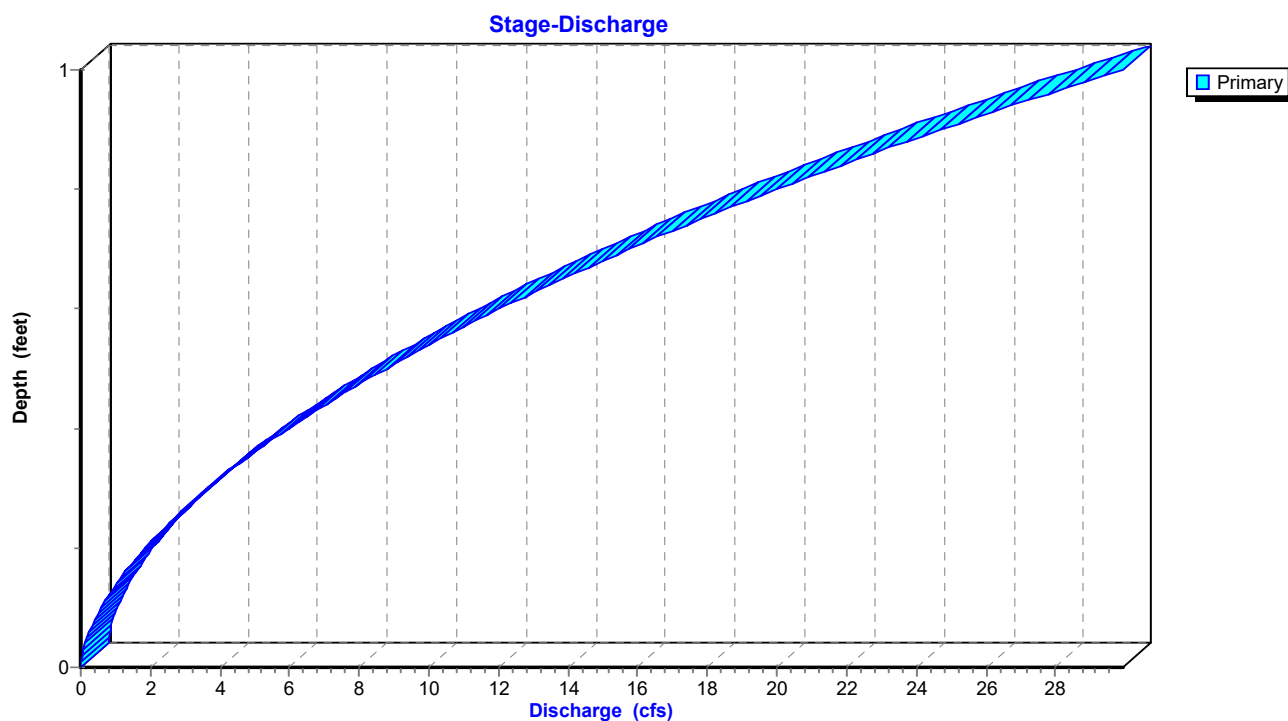


Reach 38R: Div Ditch 4

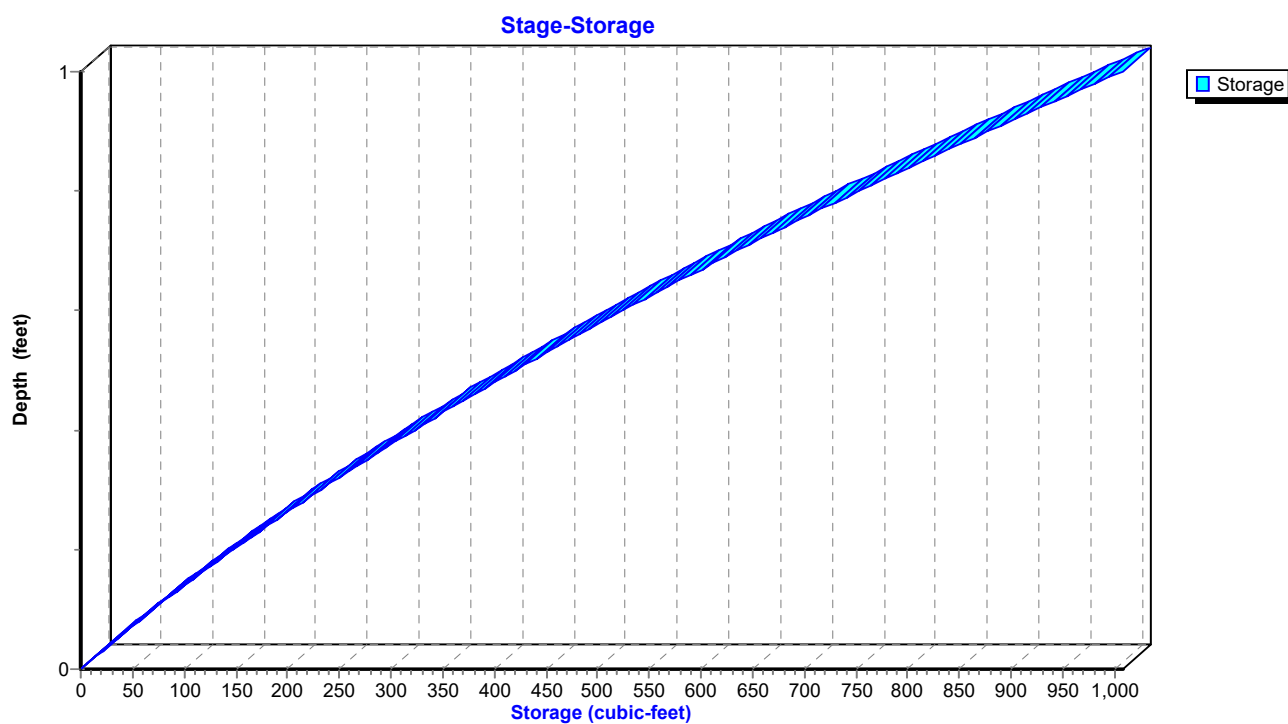
Hydrograph



Reach 38R: Div Ditch 4



Reach 38R: Div Ditch 4



Riato V6 Final

Prepared by JMT

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Type II 24-hr 10year Rainfall=4.82"

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Hydrograph for Reach 38R: Div Ditch 4

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
0.05	0.00	0	1,635.00	0.00
5.05	0.00	0	1,635.00	0.00
10.05	0.04	12	1,635.02	0.03
15.05	0.45	60	1,635.09	0.46
20.05	0.18	34	1,635.05	0.18
25.05	0.05	16	1,635.02	0.05
30.05	0.00	0	1,635.00	0.00
35.05	0.00	0	1,635.00	0.00
40.05	0.00	0	1,635.00	0.00
45.05	0.00	0	1,635.00	0.00
50.05	0.00	0	1,635.00	0.00
55.05	0.00	0	1,635.00	0.00
60.05	0.00	0	1,635.00	0.00
65.05	0.00	0	1,635.00	0.00
70.05	0.00	0	1,635.00	0.00
75.05	0.00	0	1,635.00	0.00
80.05	0.00	0	1,635.00	0.00
85.05	0.00	0	1,635.00	0.00
90.05	0.00	0	1,635.00	0.00
95.05	0.00	0	1,635.00	0.00
100.05	0.00	0	1,635.00	0.00
105.05	0.00	0	1,635.00	0.00
110.05	0.00	0	1,635.00	0.00
115.05	0.00	0	1,635.00	0.00
120.05	0.00	0	1,635.00	0.00
125.05	0.00	0	1,635.00	0.00
130.05	0.00	0	1,635.00	0.00
135.05	0.00	0	1,635.00	0.00
140.05	0.00	0	1,635.00	0.00
145.05	0.00	0	1,635.00	0.00

Stage-Discharge for Reach 38R: Div Ditch 4

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)	Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
1,635.00	0.00	0.00	1,635.52	7.16	9.38
1,635.01	0.63	0.01	1,635.53	7.23	9.69
1,635.02	1.00	0.04	1,635.54	7.30	10.01
1,635.03	1.30	0.08	1,635.55	7.37	10.34
1,635.04	1.57	0.13	1,635.56	7.44	10.66
1,635.05	1.81	0.19	1,635.57	7.51	11.00
1,635.06	2.03	0.25	1,635.58	7.58	11.34
1,635.07	2.24	0.32	1,635.59	7.64	11.68
1,635.08	2.43	0.40	1,635.60	7.71	12.03
1,635.09	2.62	0.49	1,635.61	7.77	12.38
1,635.10	2.79	0.59	1,635.62	7.84	12.74
1,635.11	2.96	0.69	1,635.63	7.90	13.10
1,635.12	3.12	0.79	1,635.64	7.97	13.46
1,635.13	3.28	0.91	1,635.65	8.03	13.83
1,635.14	3.43	1.03	1,635.66	8.09	14.21
1,635.15	3.57	1.15	1,635.67	8.16	14.59
1,635.16	3.71	1.28	1,635.68	8.22	14.98
1,635.17	3.85	1.42	1,635.69	8.28	15.37
1,635.18	3.98	1.56	1,635.70	8.34	15.76
1,635.19	4.11	1.71	1,635.71	8.40	16.16
1,635.20	4.23	1.86	1,635.72	8.46	16.57
1,635.21	4.35	2.02	1,635.73	8.52	16.98
1,635.22	4.47	2.18	1,635.74	8.58	17.39
1,635.23	4.58	2.35	1,635.75	8.64	17.81
1,635.24	4.70	2.53	1,635.76	8.70	18.24
1,635.25	4.81	2.70	1,635.77	8.75	18.67
1,635.26	4.91	2.89	1,635.78	8.81	19.10
1,635.27	5.02	3.08	1,635.79	8.87	19.54
1,635.28	5.12	3.27	1,635.80	8.92	19.99
1,635.29	5.23	3.47	1,635.81	8.98	20.44
1,635.30	5.32	3.67	1,635.82	9.03	20.89
1,635.31	5.42	3.88	1,635.83	9.09	21.35
1,635.32	5.52	4.10	1,635.84	9.14	21.82
1,635.33	5.61	4.32	1,635.85	9.20	22.28
1,635.34	5.70	4.54	1,635.86	9.25	22.76
1,635.35	5.80	4.77	1,635.87	9.31	23.24
1,635.36	5.89	5.00	1,635.88	9.36	23.72
1,635.37	5.97	5.24	1,635.89	9.41	24.21
1,635.38	6.06	5.48	1,635.90	9.47	24.71
1,635.39	6.15	5.73	1,635.91	9.52	25.21
1,635.40	6.23	5.98	1,635.92	9.57	25.71
1,635.41	6.31	6.24	1,635.93	9.62	26.22
1,635.42	6.40	6.50	1,635.94	9.67	26.74
1,635.43	6.48	6.77	1,635.95	9.73	27.26
1,635.44	6.56	7.04	1,635.96	9.78	27.78
1,635.45	6.63	7.31	1,635.97	9.83	28.31
1,635.46	6.71	7.60	1,635.98	9.88	28.85
1,635.47	6.79	7.88	1,635.99	9.93	29.39
1,635.48	6.86	8.17	1,636.00	9.98	29.93
1,635.49	6.94	8.47			
1,635.50	7.01	8.77			
1,635.51	7.09	9.07			

Stage-Area-Storage for Reach 38R: Div Ditch 4

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
1,635.00	0.0	0	1,635.52	1.3	440
1,635.01	0.0	7	1,635.53	1.3	451
1,635.02	0.0	14	1,635.54	1.4	461
1,635.03	0.1	20	1,635.55	1.4	471
1,635.04	0.1	27	1,635.56	1.4	482
1,635.05	0.1	34	1,635.57	1.5	492
1,635.06	0.1	42	1,635.58	1.5	503
1,635.07	0.1	49	1,635.59	1.5	513
1,635.08	0.2	56	1,635.60	1.6	524
1,635.09	0.2	63	1,635.61	1.6	535
1,635.10	0.2	71	1,635.62	1.6	546
1,635.11	0.2	78	1,635.63	1.7	557
1,635.12	0.3	85	1,635.64	1.7	568
1,635.13	0.3	93	1,635.65	1.7	579
1,635.14	0.3	101	1,635.66	1.8	590
1,635.15	0.3	108	1,635.67	1.8	601
1,635.16	0.3	116	1,635.68	1.8	612
1,635.17	0.4	124	1,635.69	1.9	624
1,635.18	0.4	132	1,635.70	1.9	635
1,635.19	0.4	140	1,635.71	1.9	646
1,635.20	0.4	148	1,635.72	2.0	658
1,635.21	0.5	156	1,635.73	2.0	670
1,635.22	0.5	164	1,635.74	2.0	681
1,635.23	0.5	172	1,635.75	2.1	693
1,635.24	0.5	181	1,635.76	2.1	705
1,635.25	0.6	189	1,635.77	2.1	717
1,635.26	0.6	197	1,635.78	2.2	729
1,635.27	0.6	206	1,635.79	2.2	741
1,635.28	0.6	215	1,635.80	2.2	753
1,635.29	0.7	223	1,635.81	2.3	765
1,635.30	0.7	232	1,635.82	2.3	777
1,635.31	0.7	241	1,635.83	2.3	789
1,635.32	0.7	249	1,635.84	2.4	802
1,635.33	0.8	258	1,635.85	2.4	814
1,635.34	0.8	267	1,635.86	2.5	826
1,635.35	0.8	276	1,635.87	2.5	839
1,635.36	0.8	285	1,635.88	2.5	852
1,635.37	0.9	295	1,635.89	2.6	864
1,635.38	0.9	304	1,635.90	2.6	877
1,635.39	0.9	313	1,635.91	2.6	890
1,635.40	1.0	323	1,635.92	2.7	903
1,635.41	1.0	332	1,635.93	2.7	916
1,635.42	1.0	342	1,635.94	2.8	929
1,635.43	1.0	351	1,635.95	2.8	942
1,635.44	1.1	361	1,635.96	2.8	955
1,635.45	1.1	370	1,635.97	2.9	968
1,635.46	1.1	380	1,635.98	2.9	981
1,635.47	1.2	390	1,635.99	3.0	995
1,635.48	1.2	400	1,636.00	3.0	1,008
1,635.49	1.2	410			
1,635.50	1.3	420			
1,635.51	1.3	430			

Summary for Reach 39R: Culvert Outlet Apron

Inflow Area = 35.631 ac, 7.72% Impervious, Inflow Depth > 3.80" for 10year event
 Inflow = 20.99 cfs @ 12.63 hrs, Volume= 11.284 af
 Outflow = 20.99 cfs @ 12.63 hrs, Volume= 11.284 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs
 Max. Velocity= 1.04 fps, Min. Travel Time= 0.4 min
 Avg. Velocity = 0.24 fps, Avg. Travel Time= 1.5 min

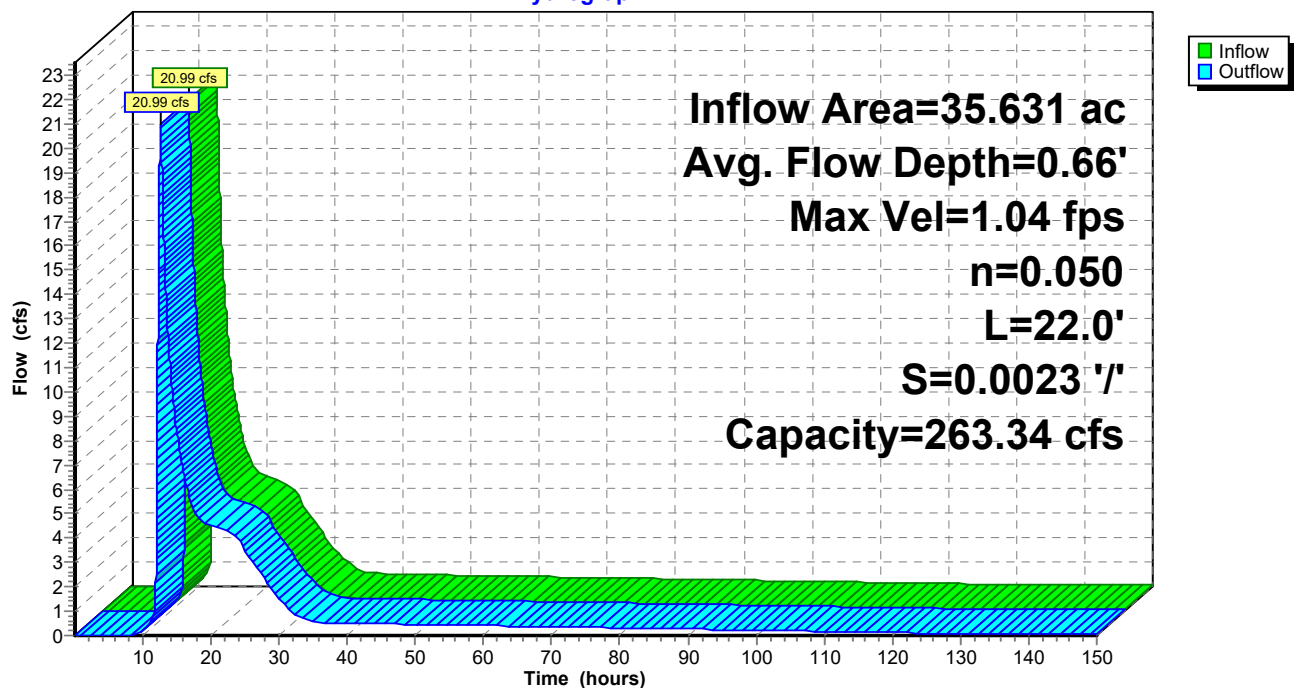
Peak Storage= 443 cf @ 12.63 hrs
 Average Depth at Peak Storage= 0.66'
 Bank-Full Depth= 3.00' Flow Area= 99.0 sf, Capacity= 263.34 cfs

30.00' x 3.00' deep channel, n= 0.050
 Side Slope Z-value= 1.0 '/' Top Width= 36.00'
 Length= 22.0' Slope= 0.0023 '/'
 Inlet Invert= 1,446.00', Outlet Invert= 1,445.95'

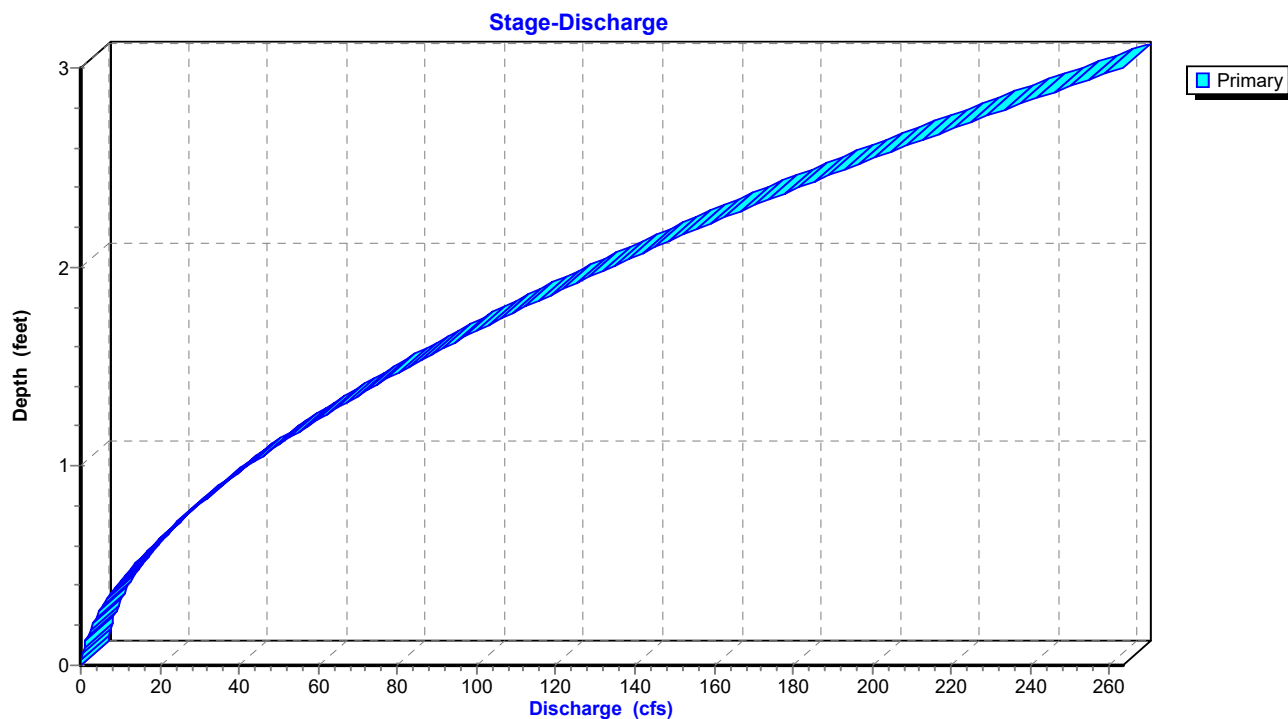


Reach 39R: Culvert Outlet Apron

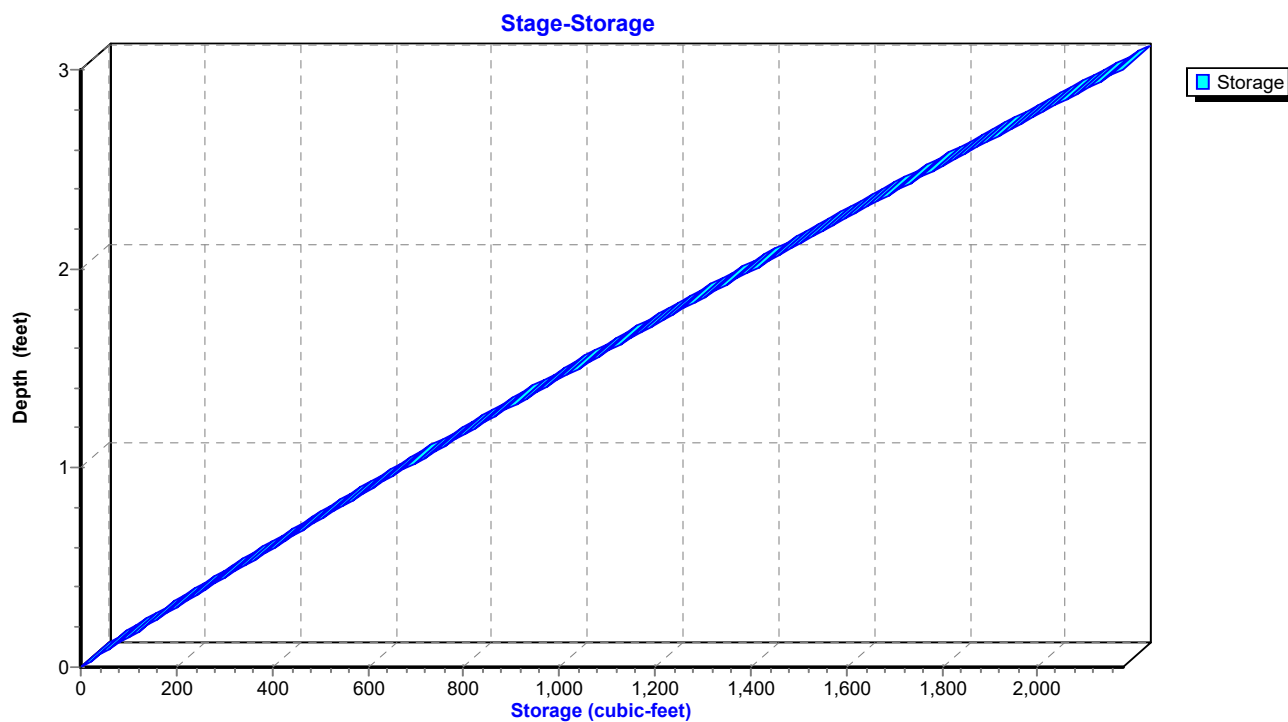
Hydrograph



Reach 39R: Culvert Outlet Apron



Reach 39R: Culvert Outlet Apron



Hydrograph for Reach 39R: Culvert Outlet Apron

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
0.05	0.00	0	1,446.00	0.00
5.05	0.00	0	1,446.00	0.00
10.05	0.22	27	1,446.04	0.22
15.05	8.31	251	1,446.38	8.32
20.05	4.53	174	1,446.26	4.53
25.05	3.45	147	1,446.22	3.46
30.05	1.53	90	1,446.14	1.53
35.05	0.58	49	1,446.07	0.58
40.05	0.51	46	1,446.07	0.51
45.05	0.48	44	1,446.07	0.48
50.05	0.45	43	1,446.07	0.45
55.05	0.43	42	1,446.06	0.43
60.05	0.41	41	1,446.06	0.41
65.05	0.38	39	1,446.06	0.38
70.05	0.36	37	1,446.06	0.36
75.05	0.33	36	1,446.05	0.33
80.05	0.31	34	1,446.05	0.31
85.05	0.29	32	1,446.05	0.29
90.05	0.26	30	1,446.05	0.26
95.05	0.24	28	1,446.04	0.24
100.05	0.21	27	1,446.04	0.21
105.05	0.19	25	1,446.04	0.19
110.05	0.17	23	1,446.03	0.17
115.05	0.14	21	1,446.03	0.14
120.05	0.12	19	1,446.03	0.12
125.05	0.10	16	1,446.02	0.10
130.05	0.08	13	1,446.02	0.08
135.05	0.07	11	1,446.02	0.07
140.05	0.06	9	1,446.01	0.06
145.05	0.05	8	1,446.01	0.05

Stage-Discharge for Reach 39R: Culvert Outlet Apron

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)	Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)	Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
1,446.00	0.00	0.00	1,447.04	1.40	45.13	1,448.08	2.14	142.97
1,446.02	0.09	0.08	1,447.06	1.41	46.58	1,448.10	2.15	145.26
1,446.04	0.16	0.21	1,447.08	1.43	48.05	1,448.12	2.17	147.58
1,446.06	0.22	0.39	1,447.10	1.45	49.54	1,448.14	2.18	149.90
1,446.08	0.26	0.64	1,447.12	1.46	51.05	1,448.16	2.19	152.24
1,446.10	0.30	0.93	1,447.14	1.48	52.57	1,448.18	2.20	154.60
1,446.12	0.34	1.24	1,447.16	1.50	54.12	1,448.20	2.22	156.97
1,446.14	0.38	1.61	1,447.18	1.51	55.68	1,448.22	2.23	159.35
1,446.16	0.41	2.01	1,447.20	1.53	57.25	1,448.24	2.24	161.75
1,446.18	0.45	2.44	1,447.22	1.54	58.85	1,448.26	2.25	164.17
1,446.20	0.48	2.91	1,447.24	1.56	60.46	1,448.28	2.26	166.59
1,446.22	0.51	3.41	1,447.26	1.58	62.09	1,448.30	2.28	169.04
1,446.24	0.54	3.93	1,447.28	1.59	63.74	1,448.32	2.29	171.49
1,446.26	0.57	4.50	1,447.30	1.61	65.40	1,448.34	2.30	173.96
1,446.28	0.60	5.09	1,447.32	1.62	67.08	1,448.36	2.31	176.45
1,446.30	0.63	5.70	1,447.34	1.64	68.79	1,448.38	2.32	178.95
1,446.32	0.65	6.36	1,447.36	1.65	70.50	1,448.40	2.33	181.46
1,446.34	0.68	7.03	1,447.38	1.67	72.23	1,448.42	2.35	183.99
1,446.36	0.71	7.73	1,447.40	1.68	73.98	1,448.44	2.36	186.53
1,446.38	0.73	8.46	1,447.42	1.70	75.75	1,448.46	2.37	189.08
1,446.40	0.76	9.21	1,447.44	1.71	77.53	1,448.48	2.38	191.66
1,446.42	0.78	9.98	1,447.46	1.73	79.33	1,448.50	2.39	194.24
1,446.44	0.81	10.79	1,447.48	1.74	81.15	1,448.52	2.40	196.84
1,446.46	0.83	11.62	1,447.50	1.76	82.98	1,448.54	2.41	199.45
1,446.48	0.85	12.47	1,447.52	1.77	84.83	1,448.56	2.42	202.08
1,446.50	0.88	13.35	1,447.54	1.78	86.69	1,448.58	2.44	204.72
1,446.52	0.90	14.25	1,447.56	1.80	88.57	1,448.60	2.45	207.38
1,446.54	0.92	15.17	1,447.58	1.81	90.47	1,448.62	2.46	210.04
1,446.56	0.94	16.12	1,447.60	1.83	92.38	1,448.64	2.47	212.72
1,446.58	0.96	17.09	1,447.62	1.84	94.31	1,448.66	2.48	215.42
1,446.60	0.98	18.08	1,447.64	1.85	96.26	1,448.68	2.49	218.13
1,446.62	1.01	19.09	1,447.66	1.87	98.22	1,448.70	2.50	220.85
1,446.64	1.03	20.13	1,447.68	1.88	100.19	1,448.72	2.51	223.59
1,446.66	1.05	21.18	1,447.70	1.90	102.19	1,448.74	2.52	226.34
1,446.68	1.07	22.27	1,447.72	1.91	104.20	1,448.76	2.53	229.10
1,446.70	1.09	23.36	1,447.74	1.92	106.22	1,448.78	2.54	231.89
1,446.72	1.11	24.48	1,447.76	1.94	108.26	1,448.80	2.56	234.68
1,446.74	1.13	25.63	1,447.78	1.95	110.31	1,448.82	2.57	237.48
1,446.76	1.15	26.79	1,447.80	1.96	112.38	1,448.84	2.58	240.30
1,446.78	1.16	27.97	1,447.82	1.98	114.47	1,448.86	2.59	243.14
1,446.80	1.18	29.17	1,447.84	1.99	116.57	1,448.88	2.60	245.98
1,446.82	1.20	30.40	1,447.86	2.00	118.68	1,448.90	2.61	248.84
1,446.84	1.22	31.63	1,447.88	2.02	120.82	1,448.92	2.62	251.72
1,446.86	1.24	32.90	1,447.90	2.03	122.97	1,448.94	2.63	254.60
1,446.88	1.26	34.18	1,447.92	2.04	125.12	1,448.96	2.64	257.50
1,446.90	1.28	35.48	1,447.94	2.05	127.31	1,448.98	2.65	260.42
1,446.92	1.29	36.81	1,447.96	2.07	129.50	1,449.00	2.66	263.34
1,446.94	1.31	38.15	1,447.98	2.08	131.70			
1,446.96	1.33	39.50	1,448.00	2.09	133.93			
1,446.98	1.35	40.88	1,448.02	2.11	136.17			
1,447.00	1.36	42.28	1,448.04	2.12	138.41			
1,447.02	1.38	43.69	1,448.06	2.13	140.69			

Stage-Area-Storage for Reach 39R: Culvert Outlet Apron

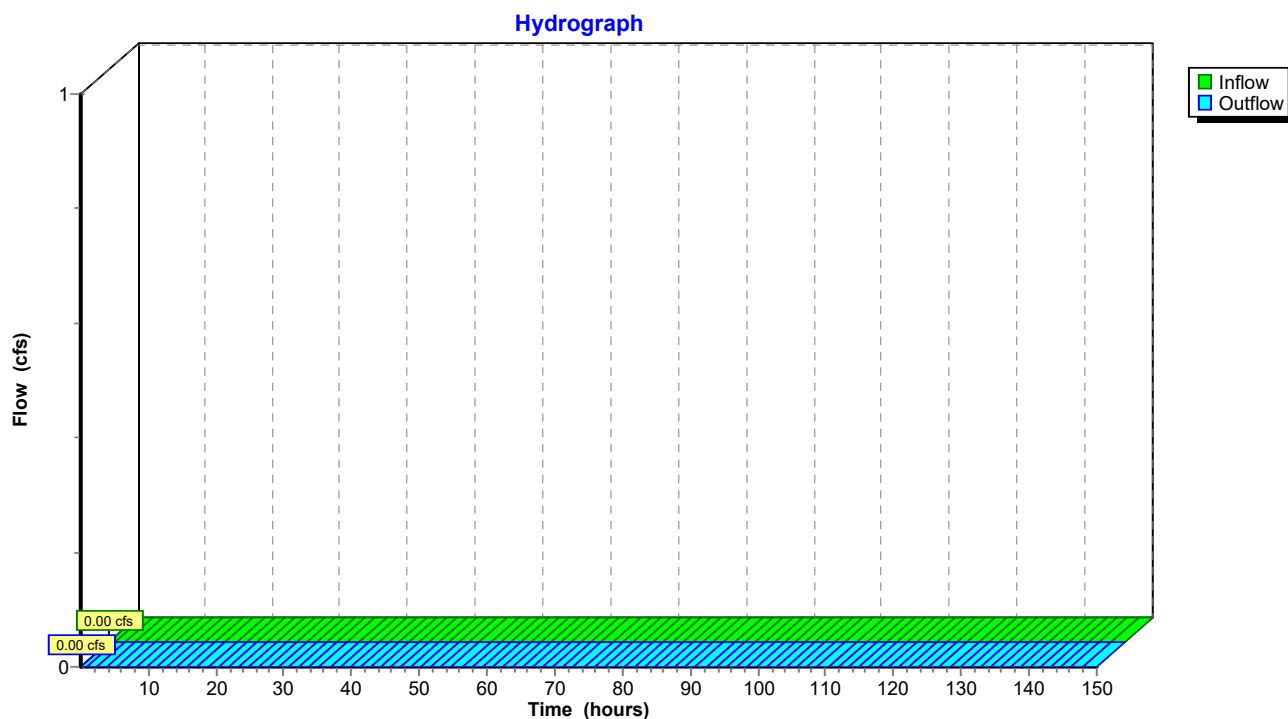
Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
1,446.00	0.0	0	1,448.60	84.8	1,865
1,446.05	1.5	33	1,448.65	86.5	1,903
1,446.10	3.0	66	1,448.70	88.3	1,942
1,446.15	4.5	99	1,448.75	90.1	1,981
1,446.20	6.0	133	1,448.80	91.8	2,020
1,446.25	7.6	166	1,448.85	93.6	2,060
1,446.30	9.1	200	1,448.90	95.4	2,099
1,446.35	10.6	234	1,448.95	97.2	2,138
1,446.40	12.2	268	1,449.00	99.0	2,178
1,446.45	13.7	301			
1,446.50	15.3	336			
1,446.55	16.8	370			
1,446.60	18.4	404			
1,446.65	19.9	438			
1,446.70	21.5	473			
1,446.75	23.1	507			
1,446.80	24.6	542			
1,446.85	26.2	577			
1,446.90	27.8	612			
1,446.95	29.4	647			
1,447.00	31.0	682			
1,447.05	32.6	717			
1,447.10	34.2	753			
1,447.15	35.8	788			
1,447.20	37.4	824			
1,447.25	39.1	859			
1,447.30	40.7	895			
1,447.35	42.3	931			
1,447.40	44.0	967			
1,447.45	45.6	1,003			
1,447.50	47.3	1,040			
1,447.55	48.9	1,076			
1,447.60	50.6	1,112			
1,447.65	52.2	1,149			
1,447.70	53.9	1,186			
1,447.75	55.6	1,222			
1,447.80	57.2	1,259			
1,447.85	58.9	1,296			
1,447.90	60.6	1,333			
1,447.95	62.3	1,371			
1,448.00	64.0	1,408			
1,448.05	65.7	1,445			
1,448.10	67.4	1,483			
1,448.15	69.1	1,521			
1,448.20	70.8	1,558			
1,448.25	72.6	1,596			
1,448.30	74.3	1,634			
1,448.35	76.0	1,672			
1,448.40	77.8	1,711			
1,448.45	79.5	1,749			
1,448.50	81.3	1,788			
1,448.55	83.0	1,826			

Summary for Reach 40R: Emergency Spillway

Inflow = 0.00 cfs @ 0.05 hrs, Volume= 0.000 af
 Outflow = 0.00 cfs @ 0.05 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Reach 40R: Emergency Spillway



Hydrograph for Reach 40R: Emergency Spillway

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
0.05	0.00		0.00	104.05	0.00		0.00
2.05	0.00		0.00	106.05	0.00		0.00
4.05	0.00		0.00	108.05	0.00		0.00
6.05	0.00		0.00	110.05	0.00		0.00
8.05	0.00		0.00	112.05	0.00		0.00
10.05	0.00		0.00	114.05	0.00		0.00
12.05	0.00		0.00	116.05	0.00		0.00
14.05	0.00		0.00	118.05	0.00		0.00
16.05	0.00		0.00	120.05	0.00		0.00
18.05	0.00		0.00	122.05	0.00		0.00
20.05	0.00		0.00	124.05	0.00		0.00
22.05	0.00		0.00	126.05	0.00		0.00
24.05	0.00		0.00	128.05	0.00		0.00
26.05	0.00		0.00	130.05	0.00		0.00
28.05	0.00		0.00	132.05	0.00		0.00
30.05	0.00		0.00	134.05	0.00		0.00
32.05	0.00		0.00	136.05	0.00		0.00
34.05	0.00		0.00	138.05	0.00		0.00
36.05	0.00		0.00	140.05	0.00		0.00
38.05	0.00		0.00	142.05	0.00		0.00
40.05	0.00		0.00	144.05	0.00		0.00
42.05	0.00		0.00	146.05	0.00		0.00
44.05	0.00		0.00	148.05	0.00		0.00
46.05	0.00		0.00				
48.05	0.00		0.00				
50.05	0.00		0.00				
52.05	0.00		0.00				
54.05	0.00		0.00				
56.05	0.00		0.00				
58.05	0.00		0.00				
60.05	0.00		0.00				
62.05	0.00		0.00				
64.05	0.00		0.00				
66.05	0.00		0.00				
68.05	0.00		0.00				
70.05	0.00		0.00				
72.05	0.00		0.00				
74.05	0.00		0.00				
76.05	0.00		0.00				
78.05	0.00		0.00				
80.05	0.00		0.00				
82.05	0.00		0.00				
84.05	0.00		0.00				
86.05	0.00		0.00				
88.05	0.00		0.00				
90.05	0.00		0.00				
92.05	0.00		0.00				
94.05	0.00		0.00				
96.05	0.00		0.00				
98.05	0.00		0.00				
100.05	0.00		0.00				
102.05	0.00		0.00				

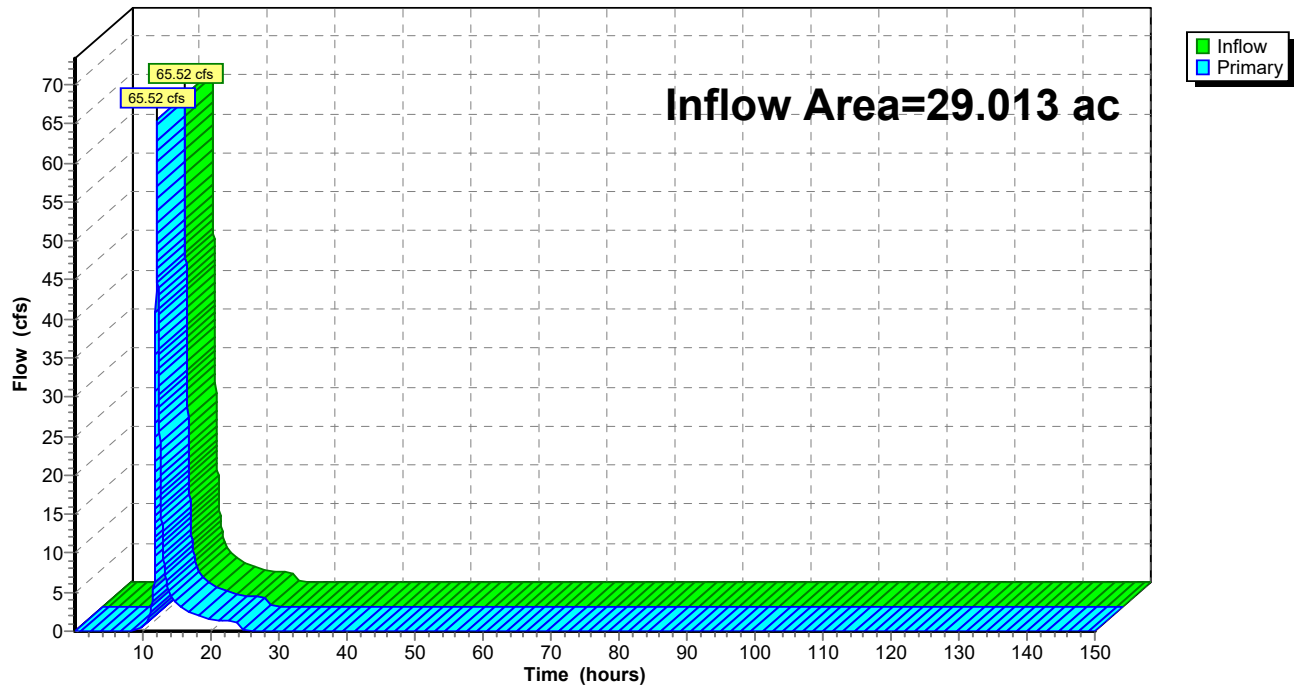
Summary for Pond 13P: Pre-Dvel Disch

Inflow Area = 29.013 ac, 0.00% Impervious, Inflow Depth = 2.47" for 10year event
 Inflow = 65.52 cfs @ 12.07 hrs, Volume= 5.979 af
 Primary = 65.52 cfs @ 12.07 hrs, Volume= 5.979 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Pond 13P: Pre-Dvel Disch

Hydrograph



Hydrograph for Pond 13P: Pre-Dvel Disch

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.05	0.00		0.00	104.05	0.00		0.00
2.05	0.00		0.00	106.05	0.00		0.00
4.05	0.00		0.00	108.05	0.00		0.00
6.05	0.00		0.00	110.05	0.00		0.00
8.05	0.00		0.00	112.05	0.00		0.00
10.05	0.67		0.67	114.05	0.00		0.00
12.05	64.51		64.51	116.05	0.00		0.00
14.05	4.77		4.77	118.05	0.00		0.00
16.05	2.82		2.82	120.05	0.00		0.00
18.05	2.14		2.14	122.05	0.00		0.00
20.05	1.59		1.59	124.05	0.00		0.00
22.05	1.41		1.41	126.05	0.00		0.00
24.05	1.30		1.30	128.05	0.00		0.00
26.05	0.00		0.00	130.05	0.00		0.00
28.05	0.00		0.00	132.05	0.00		0.00
30.05	0.00		0.00	134.05	0.00		0.00
32.05	0.00		0.00	136.05	0.00		0.00
34.05	0.00		0.00	138.05	0.00		0.00
36.05	0.00		0.00	140.05	0.00		0.00
38.05	0.00		0.00	142.05	0.00		0.00
40.05	0.00		0.00	144.05	0.00		0.00
42.05	0.00		0.00	146.05	0.00		0.00
44.05	0.00		0.00	148.05	0.00		0.00
46.05	0.00		0.00				
48.05	0.00		0.00				
50.05	0.00		0.00				
52.05	0.00		0.00				
54.05	0.00		0.00				
56.05	0.00		0.00				
58.05	0.00		0.00				
60.05	0.00		0.00				
62.05	0.00		0.00				
64.05	0.00		0.00				
66.05	0.00		0.00				
68.05	0.00		0.00				
70.05	0.00		0.00				
72.05	0.00		0.00				
74.05	0.00		0.00				
76.05	0.00		0.00				
78.05	0.00		0.00				
80.05	0.00		0.00				
82.05	0.00		0.00				
84.05	0.00		0.00				
86.05	0.00		0.00				
88.05	0.00		0.00				
90.05	0.00		0.00				
92.05	0.00		0.00				
94.05	0.00		0.00				
96.05	0.00		0.00				
98.05	0.00		0.00				
100.05	0.00		0.00				
102.05	0.00		0.00				

Summary for Pond 14P: North Bay

Inflow Area = 29.013 ac, 9.48% Impervious, Inflow Depth = 4.19" for 10year event
 Inflow = 183.31 cfs @ 11.93 hrs, Volume= 10.128 af
 Outflow = 42.92 cfs @ 12.13 hrs, Volume= 9.947 af, Atten= 77%, Lag= 11.8 min
 Primary = 42.92 cfs @ 12.13 hrs, Volume= 9.947 af

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs
 Starting Elev= 1,452.50' Surf.Area= 1.900 ac Storage= 1.900 af
 Peak Elev= 1,455.41' @ 12.13 hrs Surf.Area= 1.900 ac Storage= 7.425 af (5.525 af above start)

Plug-Flow detention time= 1,353.0 min calculated for 8.047 af (79% of inflow)
 Center-of-Mass det. time= 1,020.7 min (1,788.4 - 767.7)

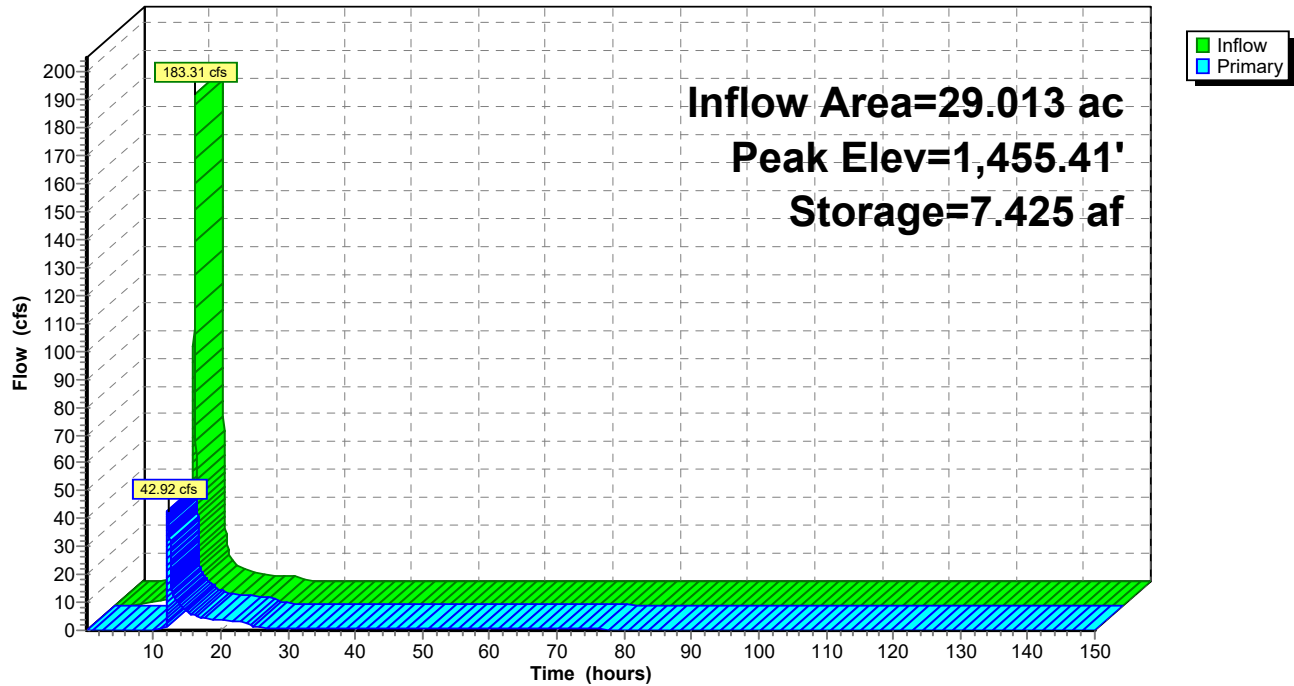
Volume	Invert	Avail.Storage	Storage Description
#1	1,451.50'	96.900 af	Custom Stage Data (Prismatic) Listed below (Recalc) x 1.9
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,451.50	1.000	0.000	0.000
1,452.50	1.000	1.000	1.000
1,453.50	1.000	1.000	2.000
1,454.50	1.000	1.000	3.000
1,458.50	1.000	4.000	7.000
1,502.50	1.000	44.000	51.000

Device	Routing	Invert	Outlet Devices
#1	Primary	1,454.00'	8.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#2	Primary	1,452.50'	3.0" Vert. Orifice/Grate X 2.00 C= 0.600

Primary OutFlow Max=42.90 cfs @ 12.13 hrs HW=1,455.41' TW=1,452.88' (Dynamic Tailwater)
 1=Sharp-Crested Rectangular Weir (Weir Controls 42.15 cfs @ 3.88 fps)
 2=Orifice/Grate (Orifice Controls 0.75 cfs @ 7.66 fps)

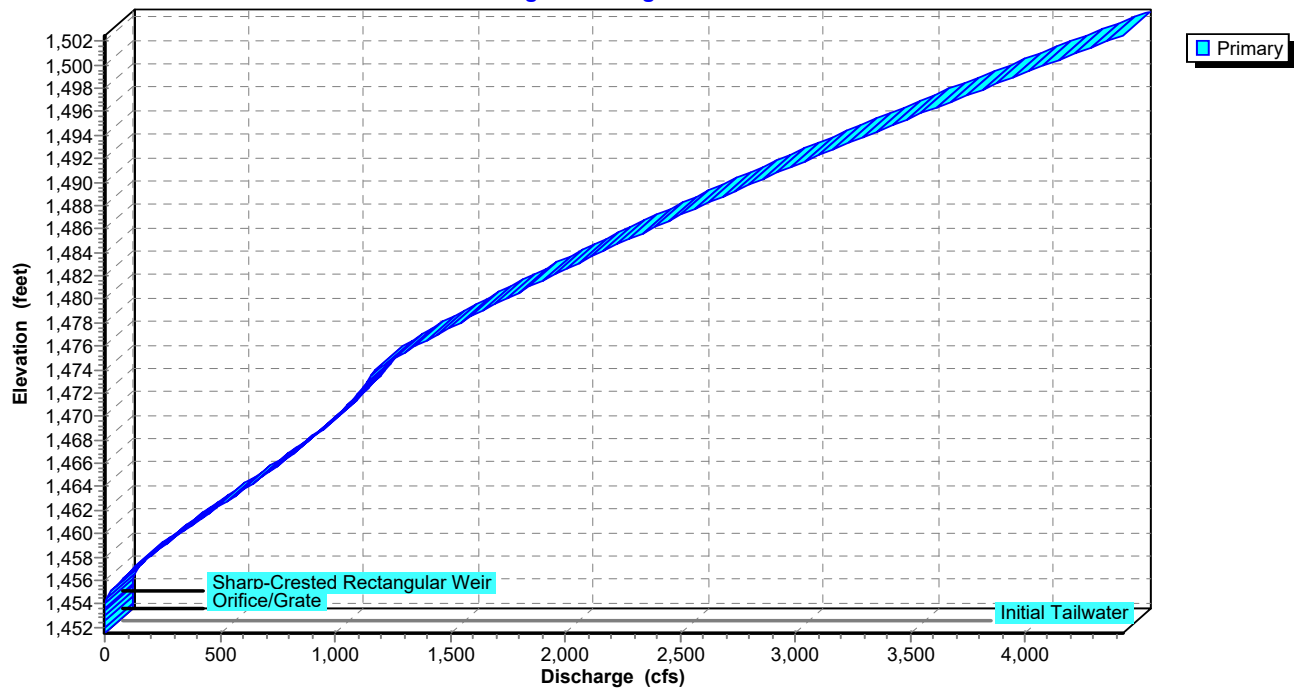
Pond 14P: North Bay

Hydrograph



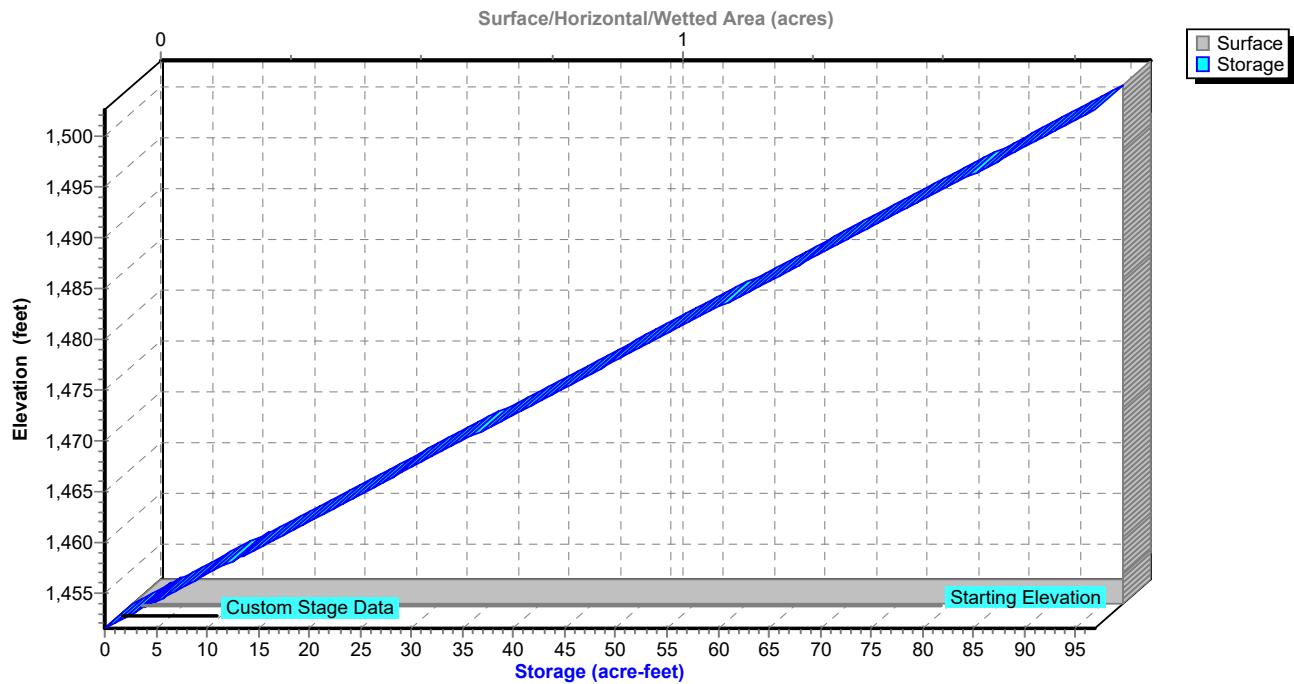
Pond 14P: North Bay

Stage-Discharge



Pond 14P: North Bay

Stage-Area-Storage



Hydrograph for Pond 14P: North Bay

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.05	0.00	1.900	1,452.50	0.00
5.05	0.96	2.008	1,452.56	0.01
10.05	4.52	2.866	1,453.01	0.29
15.05	4.20	6.292	1,454.81	6.79
20.05	1.83	5.551	1,454.42	3.58
25.05	0.00	4.952	1,454.11	1.28
30.05	0.00	4.664	1,453.95	0.54
35.05	0.00	4.445	1,453.84	0.52
40.05	0.00	4.234	1,453.73	0.50
45.05	0.00	4.034	1,453.62	0.47
50.05	0.00	3.845	1,453.52	0.45
55.05	0.00	3.665	1,453.43	0.42
60.05	0.00	3.494	1,453.34	0.40
65.05	0.00	3.334	1,453.25	0.38
70.05	0.00	3.184	1,453.18	0.35
75.05	0.00	3.044	1,453.10	0.33
80.05	0.00	2.915	1,453.03	0.30
85.05	0.00	2.795	1,452.97	0.28
90.05	0.00	2.685	1,452.91	0.25
95.05	0.00	2.585	1,452.86	0.23
100.05	0.00	2.495	1,452.81	0.21
105.05	0.00	2.415	1,452.77	0.18
110.05	0.00	2.346	1,452.73	0.16
115.05	0.00	2.286	1,452.70	0.13
120.05	0.00	2.237	1,452.68	0.11
125.05	0.00	2.197	1,452.66	0.09
130.05	0.00	2.165	1,452.64	0.07
135.05	0.00	2.138	1,452.63	0.06
140.05	0.00	2.115	1,452.61	0.05
145.05	0.00	2.096	1,452.60	0.04

Stage-Discharge for Pond 14P: North Bay

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
1,451.50	0.00	1,480.10	1,746.57
1,452.05	0.00	1,480.65	1,802.01
1,452.60	0.04	1,481.20	1,858.03
1,453.15	0.34	1,481.75	1,914.61
1,453.70	0.49	1,482.30	1,971.76
1,454.25	3.85	1,482.85	2,029.47
1,454.80	19.04	1,483.40	2,087.73
1,455.35	40.43	1,483.95	2,146.54
1,455.90	66.11	1,484.50	2,205.89
1,456.45	95.10	1,485.05	2,265.77
1,457.00	126.73	1,485.60	2,326.19
1,457.55	160.50	1,486.15	2,387.14
1,458.10	196.02	1,486.70	2,448.61
1,458.65	232.98	1,487.25	2,510.59
1,459.20	271.09	1,487.80	2,573.10
1,459.75	310.11	1,488.35	2,636.11
1,460.30	349.82	1,488.90	2,699.63
1,460.85	390.04	1,489.45	2,763.65
1,461.40	430.58	1,490.00	2,828.17
1,461.95	471.29	1,490.55	2,893.18
1,462.50	512.01	1,491.10	2,958.69
1,463.05	552.60	1,491.65	3,024.68
1,463.60	592.93	1,492.20	3,091.16
1,464.15	632.88	1,492.75	3,158.11
1,464.70	672.33	1,493.30	3,225.54
1,465.25	711.17	1,493.85	3,293.45
1,465.80	749.28	1,494.40	3,361.82
1,466.35	786.58	1,494.95	3,430.66
1,466.90	822.95	1,495.50	3,499.97
1,467.45	858.32	1,496.05	3,569.73
1,468.00	892.58	1,496.60	3,639.96
1,468.55	925.65	1,497.15	3,710.64
1,469.10	957.44	1,497.70	3,781.76
1,469.65	987.89	1,498.25	3,853.34
1,470.20	1,016.89	1,498.80	3,925.37
1,470.75	1,044.38	1,499.35	3,997.83
1,471.30	1,070.29	1,499.90	4,070.74
1,471.85	1,094.54	1,500.45	4,144.09
1,472.40	1,117.06	1,501.00	4,217.87
1,472.95	1,137.78	1,501.55	4,292.08
1,473.50	1,156.63	1,502.10	4,366.73
1,474.05	1,176.49		
1,474.60	1,225.17		
1,475.15	1,274.50		
1,475.70	1,324.47		
1,476.25	1,375.08		
1,476.80	1,426.32		
1,477.35	1,478.19		
1,477.90	1,530.66		
1,478.45	1,583.75		
1,479.00	1,637.43		
1,479.55	1,691.70		

Stage-Area-Storage for Pond 14P: North Bay

Elevation (feet)	Surface (acres)	Storage (acre-feet)	Elevation (feet)	Surface (acres)	Storage (acre-feet)
1,451.50	1.900	0.000	1,480.10	1.900	54.340
1,452.05	1.900	1.045	1,480.65	1.900	55.385
1,452.60	1.900	2.090	1,481.20	1.900	56.430
1,453.15	1.900	3.135	1,481.75	1.900	57.475
1,453.70	1.900	4.180	1,482.30	1.900	58.520
1,454.25	1.900	5.225	1,482.85	1.900	59.565
1,454.80	1.900	6.270	1,483.40	1.900	60.610
1,455.35	1.900	7.315	1,483.95	1.900	61.655
1,455.90	1.900	8.360	1,484.50	1.900	62.700
1,456.45	1.900	9.405	1,485.05	1.900	63.745
1,457.00	1.900	10.450	1,485.60	1.900	64.790
1,457.55	1.900	11.495	1,486.15	1.900	65.835
1,458.10	1.900	12.540	1,486.70	1.900	66.880
1,458.65	1.900	13.585	1,487.25	1.900	67.925
1,459.20	1.900	14.630	1,487.80	1.900	68.970
1,459.75	1.900	15.675	1,488.35	1.900	70.015
1,460.30	1.900	16.720	1,488.90	1.900	71.060
1,460.85	1.900	17.765	1,489.45	1.900	72.105
1,461.40	1.900	18.810	1,490.00	1.900	73.150
1,461.95	1.900	19.855	1,490.55	1.900	74.195
1,462.50	1.900	20.900	1,491.10	1.900	75.240
1,463.05	1.900	21.945	1,491.65	1.900	76.285
1,463.60	1.900	22.990	1,492.20	1.900	77.330
1,464.15	1.900	24.035	1,492.75	1.900	78.375
1,464.70	1.900	25.080	1,493.30	1.900	79.420
1,465.25	1.900	26.125	1,493.85	1.900	80.465
1,465.80	1.900	27.170	1,494.40	1.900	81.510
1,466.35	1.900	28.215	1,494.95	1.900	82.555
1,466.90	1.900	29.260	1,495.50	1.900	83.600
1,467.45	1.900	30.305	1,496.05	1.900	84.645
1,468.00	1.900	31.350	1,496.60	1.900	85.690
1,468.55	1.900	32.395	1,497.15	1.900	86.735
1,469.10	1.900	33.440	1,497.70	1.900	87.780
1,469.65	1.900	34.485	1,498.25	1.900	88.825
1,470.20	1.900	35.530	1,498.80	1.900	89.870
1,470.75	1.900	36.575	1,499.35	1.900	90.915
1,471.30	1.900	37.620	1,499.90	1.900	91.960
1,471.85	1.900	38.665	1,500.45	1.900	93.005
1,472.40	1.900	39.710	1,501.00	1.900	94.050
1,472.95	1.900	40.755	1,501.55	1.900	95.095
1,473.50	1.900	41.800	1,502.10	1.900	96.140
1,474.05	1.900	42.845			
1,474.60	1.900	43.890			
1,475.15	1.900	44.935			
1,475.70	1.900	45.980			
1,476.25	1.900	47.025			
1,476.80	1.900	48.070			
1,477.35	1.900	49.115			
1,477.90	1.900	50.160			
1,478.45	1.900	51.205			
1,479.00	1.900	52.250			
1,479.55	1.900	53.295			

Summary for Pond 15P: South Bay

Inflow Area = 29.013 ac, 9.48% Impervious, Inflow Depth > 4.11" for 10year event
 Inflow = 42.92 cfs @ 12.13 hrs, Volume= 9.947 af
 Outflow = 13.20 cfs @ 12.76 hrs, Volume= 9.921 af, Atten= 69%, Lag= 38.0 min
 Primary = 13.20 cfs @ 12.76 hrs, Volume= 9.921 af
 Secondary = 0.00 cfs @ 0.05 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Starting Elev= 1,451.50' Surf.Area= 0.500 ac Storage= 0.500 af

Peak Elev= 1,455.05' @ 12.76 hrs Surf.Area= 0.500 ac Storage= 2.276 af (1.776 af above start)

Plug-Flow detention time= 508.9 min calculated for 9.421 af (95% of inflow)

Center-of-Mass det. time= 164.8 min (1,953.2 - 1,788.4)

Volume	Invert	Avail.Storage	Storage Description
#1	1,450.50'	25.500 af	Custom Stage Data (Prismatic) Listed below (Recalc) x 0.5

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,450.50	1.000	0.000	0.000
1,451.50	1.000	1.000	1.000
1,452.50	1.000	1.000	2.000
1,453.50	1.000	1.000	3.000
1,457.50	1.000	4.000	7.000
1,501.50	1.000	44.000	51.000

Device	Routing	Invert	Outlet Devices
#1	Secondary	1,456.00'	10.0' long (Profile 7) Broad-Crested Rectangular Weir Head (feet) 0.49 0.98 1.48 Coef. (English) 2.99 3.41 3.62
#2	Device 5	1,455.50'	36.0" x 84.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 5	1,454.50'	26.0" W x 24.0" H Vert. Vertical Square X 3.00 C= 0.600
#4	Device 5	1,451.50'	4.0" Vert. Orifice/Grate X 6.00 C= 0.600
#5	Primary	1,451.50'	24.0" Round Culvert X 3.00 L= 60.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,451.50' / 1,449.80' S= 0.0283 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=13.19 cfs @ 12.76 hrs HW=1,455.05' TW=1,450.52' (Dynamic Tailwater)

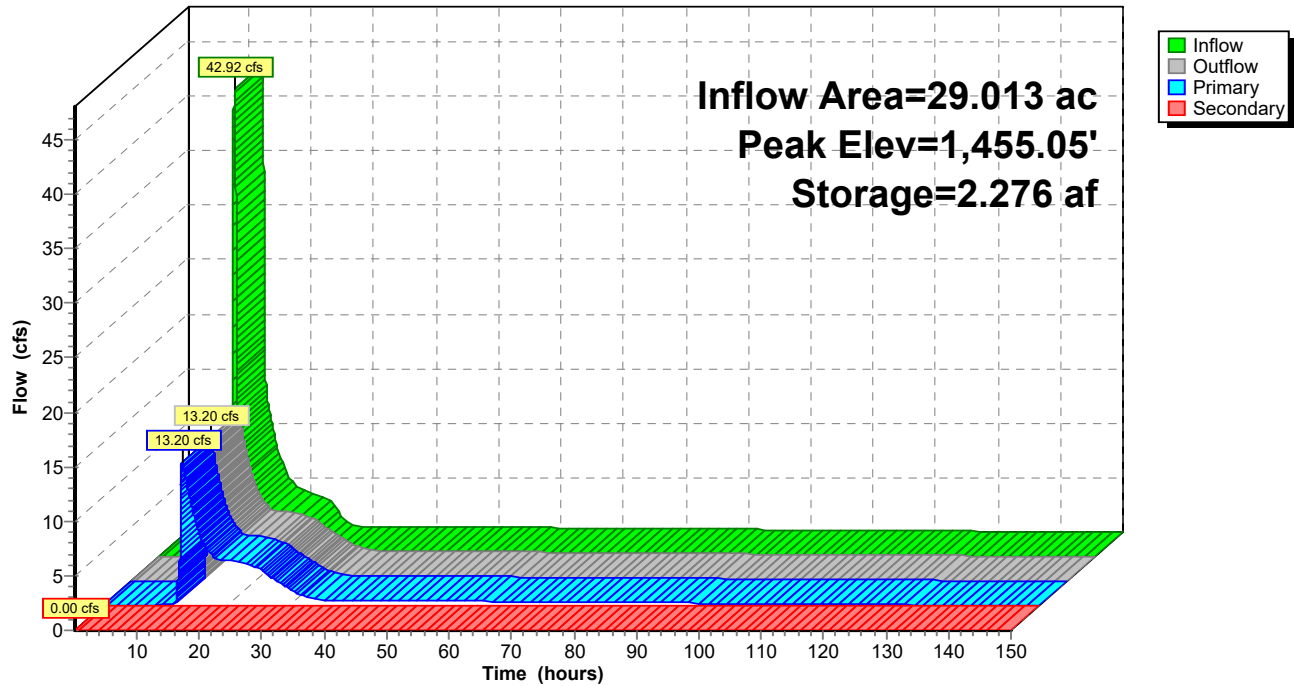
5=Culvert (Passes 13.19 cfs of 72.49 cfs potential flow)
 2=Orifice/Grate (Controls 0.00 cfs)
 3=Vertical Square (Orifice Controls 8.56 cfs @ 2.38 fps)
 4=Orifice/Grate (Orifice Controls 4.64 cfs @ 8.86 fps)

Secondary OutFlow Max=0.00 cfs @ 0.05 hrs HW=1,451.50' TW=0.00' (Dynamic Tailwater)

1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

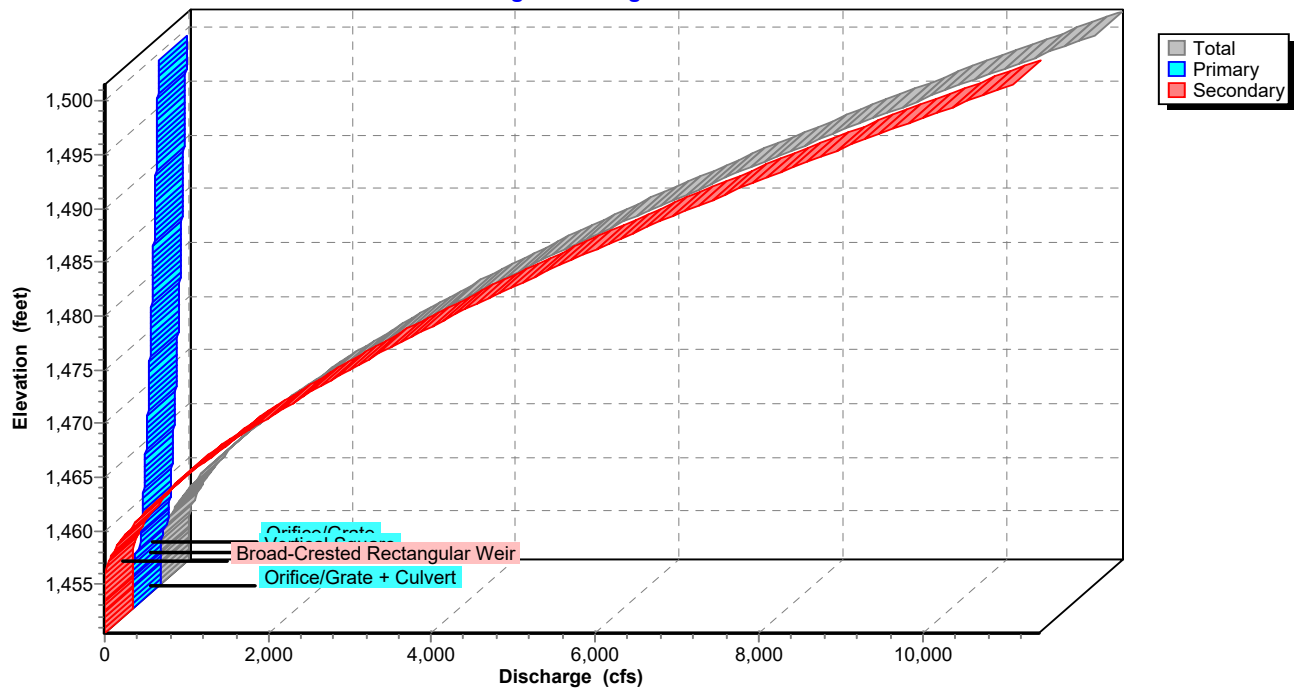
Pond 15P: South Bay

Hydrograph



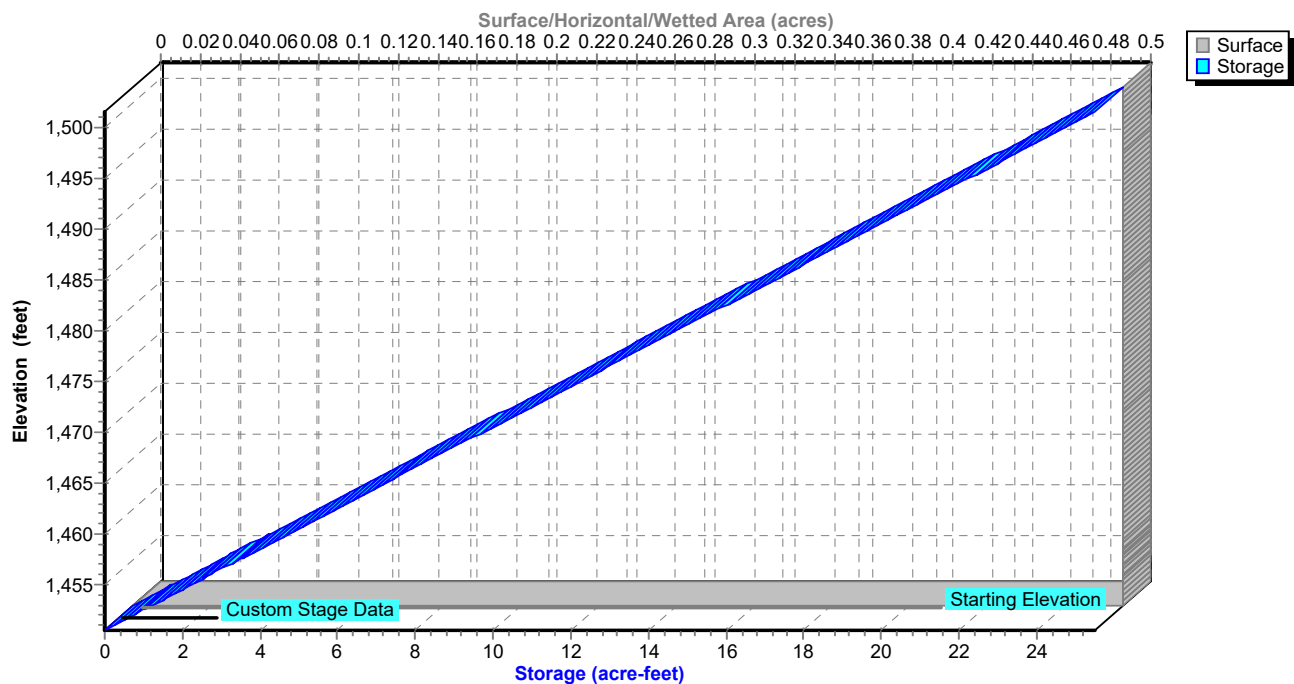
Pond 15P: South Bay

Stage-Discharge



Pond 15P: South Bay

Stage-Area-Storage



Hydrograph for Pond 15P: South Bay

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.05	0.00	0.500	1,451.50	0.00	0.00	0.00
5.05	0.01	0.501	1,451.50	0.00	0.00	0.00
10.05	0.29	0.546	1,451.59	0.12	0.12	0.00
15.05	6.79	2.136	1,454.77	7.42	7.42	0.00
20.05	3.58	1.938	1,454.38	4.15	4.15	0.00
25.05	1.28	1.495	1,453.49	3.40	3.40	0.00
30.05	0.54	0.766	1,452.03	1.52	1.52	0.00
35.05	0.52	0.609	1,451.72	0.58	0.58	0.00
40.05	0.50	0.601	1,451.70	0.50	0.50	0.00
45.05	0.47	0.597	1,451.69	0.48	0.48	0.00
50.05	0.45	0.595	1,451.69	0.45	0.45	0.00
55.05	0.42	0.592	1,451.68	0.43	0.43	0.00
60.05	0.40	0.589	1,451.68	0.41	0.41	0.00
65.05	0.38	0.586	1,451.67	0.38	0.38	0.00
70.05	0.35	0.583	1,451.67	0.36	0.36	0.00
75.05	0.33	0.579	1,451.66	0.33	0.33	0.00
80.05	0.30	0.576	1,451.65	0.31	0.31	0.00
85.05	0.28	0.573	1,451.65	0.29	0.29	0.00
90.05	0.25	0.569	1,451.64	0.26	0.26	0.00
95.05	0.23	0.566	1,451.63	0.24	0.24	0.00
100.05	0.21	0.562	1,451.62	0.21	0.21	0.00
105.05	0.18	0.558	1,451.62	0.19	0.19	0.00
110.05	0.16	0.554	1,451.61	0.17	0.17	0.00
115.05	0.13	0.550	1,451.60	0.14	0.14	0.00
120.05	0.11	0.545	1,451.59	0.12	0.12	0.00
125.05	0.09	0.541	1,451.58	0.10	0.10	0.00
130.05	0.07	0.537	1,451.57	0.08	0.08	0.00
135.05	0.06	0.534	1,451.57	0.07	0.07	0.00
140.05	0.05	0.531	1,451.56	0.06	0.06	0.00
145.05	0.04	0.528	1,451.56	0.05	0.05	0.00

Stage-Discharge for Pond 15P: South Bay

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)	Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
1,450.50	0.00	0.00	0.00	1,479.10	4,253.13	234.05	4,019.08
1,451.05	0.00	0.00	0.00	1,479.65	4,399.92	236.46	4,163.47
1,451.60	0.14	0.14	0.00	1,480.20	4,548.39	238.84	4,309.55
1,452.15	1.75	1.75	0.00	1,480.75	4,698.49	241.20	4,457.29
1,452.70	2.56	2.56	0.00	1,481.30	4,850.23	243.54	4,606.69
1,453.25	3.17	3.17	0.00	1,481.85	5,003.58	245.85	4,757.73
1,453.80	3.68	3.68	0.00	1,482.40	5,158.52	248.14	4,910.37
1,454.35	4.13	4.13	0.00	1,482.95	5,315.03	250.41	5,064.62
1,454.90	9.81	9.81	0.00	1,483.50	5,473.11	252.67	5,220.45
1,455.45	24.22	24.22	0.00	1,484.05	5,632.74	254.90	5,377.84
1,456.00	66.70	66.70	0.00	1,484.60	5,793.89	257.11	5,536.78
1,456.55	103.73	91.33	12.41	1,485.15	5,956.57	259.30	5,697.26
1,457.10	137.25	97.33	39.92	1,485.70	6,120.74	261.48	5,859.27
1,457.65	179.71	102.98	76.72	1,486.25	6,286.41	263.63	6,022.78
1,458.20	226.47	108.34	118.13	1,486.80	6,453.55	265.77	6,187.78
1,458.75	278.54	113.45	165.08	1,487.35	6,622.15	267.90	6,354.26
1,459.30	335.35	118.34	217.01	1,487.90	6,792.21	270.00	6,522.21
1,459.85	396.49	123.03	273.46	1,488.45	6,963.70	272.09	6,691.61
1,460.40	461.66	127.55	334.11	1,489.00	7,136.62	274.16	6,862.45
1,460.95	530.59	131.91	398.67	1,489.55	7,310.95	276.22	7,034.73
1,461.50	603.07	136.14	466.93	1,490.10	7,486.69	278.27	7,208.42
1,462.05	678.93	140.24	538.69	1,490.65	7,663.81	280.29	7,383.52
1,462.60	758.02	144.22	613.80	1,491.20	7,842.32	282.31	7,560.01
1,463.15	840.19	148.09	692.10	1,491.75	8,022.20	284.31	7,737.89
1,463.70	925.34	151.87	773.47	1,492.30	8,203.43	286.29	7,917.14
1,464.25	1,013.36	155.56	857.81	1,492.85	8,386.02	288.26	8,097.76
1,464.80	1,104.16	159.15	945.00	1,493.40	8,569.95	290.22	8,279.73
1,465.35	1,197.64	162.67	1,034.97	1,493.95	8,755.20	292.16	8,463.04
1,465.90	1,293.73	166.12	1,127.62	1,494.50	8,941.78	294.10	8,647.68
1,466.45	1,392.37	169.49	1,222.88	1,495.05	9,129.66	296.02	8,833.65
1,467.00	1,493.48	172.80	1,320.68	1,495.60	9,318.85	297.92	9,020.93
1,467.55	1,597.01	176.05	1,420.96	1,496.15	9,509.34	299.82	9,209.52
1,468.10	1,702.89	179.24	1,523.65	1,496.70	9,701.10	301.70	9,399.40
1,468.65	1,811.08	182.37	1,628.71	1,497.25	9,894.14	303.57	9,590.57
1,469.20	1,921.53	185.45	1,736.08	1,497.80	10,088.45	305.43	9,783.02
1,469.75	2,034.18	188.48	1,845.71	1,498.35	10,284.02	307.28	9,976.74
1,470.30	2,149.01	191.46	1,957.55	1,498.90	10,480.84	309.12	10,171.72
1,470.85	2,265.96	194.39	2,071.56	1,499.45	10,678.90	310.94	10,367.96
1,471.40	2,385.00	197.29	2,187.71	1,500.00	10,878.20	312.76	10,565.44
1,471.95	2,506.08	200.14	2,305.95	1,500.55	11,078.73	314.57	10,764.16
1,472.50	2,629.19	202.95	2,426.24	1,501.10	11,280.47	316.36	10,964.11
1,473.05	2,754.28	205.72	2,548.56				
1,473.60	2,881.32	208.45	2,672.87				
1,474.15	3,010.28	211.15	2,799.13				
1,474.70	3,141.14	213.82	2,927.33				
1,475.25	3,273.87	216.45	3,057.42				
1,475.80	3,408.43	219.05	3,189.38				
1,476.35	3,544.81	221.62	3,323.19				
1,476.90	3,682.98	224.16	3,458.82				
1,477.45	3,822.92	226.67	3,596.25				
1,478.00	3,964.61	229.16	3,735.45				
1,478.55	4,108.01	231.62	3,876.40				

Stage-Area-Storage for Pond 15P: South Bay

Elevation (feet)	Surface (acres)	Storage (acre-feet)	Elevation (feet)	Surface (acres)	Storage (acre-feet)
1,450.50	0.500	0.000	1,479.10	0.500	14.300
1,451.05	0.500	0.275	1,479.65	0.500	14.575
1,451.60	0.500	0.550	1,480.20	0.500	14.850
1,452.15	0.500	0.825	1,480.75	0.500	15.125
1,452.70	0.500	1.100	1,481.30	0.500	15.400
1,453.25	0.500	1.375	1,481.85	0.500	15.675
1,453.80	0.500	1.650	1,482.40	0.500	15.950
1,454.35	0.500	1.925	1,482.95	0.500	16.225
1,454.90	0.500	2.200	1,483.50	0.500	16.500
1,455.45	0.500	2.475	1,484.05	0.500	16.775
1,456.00	0.500	2.750	1,484.60	0.500	17.050
1,456.55	0.500	3.025	1,485.15	0.500	17.325
1,457.10	0.500	3.300	1,485.70	0.500	17.600
1,457.65	0.500	3.575	1,486.25	0.500	17.875
1,458.20	0.500	3.850	1,486.80	0.500	18.150
1,458.75	0.500	4.125	1,487.35	0.500	18.425
1,459.30	0.500	4.400	1,487.90	0.500	18.700
1,459.85	0.500	4.675	1,488.45	0.500	18.975
1,460.40	0.500	4.950	1,489.00	0.500	19.250
1,460.95	0.500	5.225	1,489.55	0.500	19.525
1,461.50	0.500	5.500	1,490.10	0.500	19.800
1,462.05	0.500	5.775	1,490.65	0.500	20.075
1,462.60	0.500	6.050	1,491.20	0.500	20.350
1,463.15	0.500	6.325	1,491.75	0.500	20.625
1,463.70	0.500	6.600	1,492.30	0.500	20.900
1,464.25	0.500	6.875	1,492.85	0.500	21.175
1,464.80	0.500	7.150	1,493.40	0.500	21.450
1,465.35	0.500	7.425	1,493.95	0.500	21.725
1,465.90	0.500	7.700	1,494.50	0.500	22.000
1,466.45	0.500	7.975	1,495.05	0.500	22.275
1,467.00	0.500	8.250	1,495.60	0.500	22.550
1,467.55	0.500	8.525	1,496.15	0.500	22.825
1,468.10	0.500	8.800	1,496.70	0.500	23.100
1,468.65	0.500	9.075	1,497.25	0.500	23.375
1,469.20	0.500	9.350	1,497.80	0.500	23.650
1,469.75	0.500	9.625	1,498.35	0.500	23.925
1,470.30	0.500	9.900	1,498.90	0.500	24.200
1,470.85	0.500	10.175	1,499.45	0.500	24.475
1,471.40	0.500	10.450	1,500.00	0.500	24.750
1,471.95	0.500	10.725	1,500.55	0.500	25.025
1,472.50	0.500	11.000	1,501.10	0.500	25.300
1,473.05	0.500	11.275			
1,473.60	0.500	11.550			
1,474.15	0.500	11.825			
1,474.70	0.500	12.100			
1,475.25	0.500	12.375			
1,475.80	0.500	12.650			
1,476.35	0.500	12.925			
1,476.90	0.500	13.200			
1,477.45	0.500	13.475			
1,478.00	0.500	13.750			
1,478.55	0.500	14.025			

Summary for Pond 22P: Road Crossing Culverts w/ Storage

Inflow Area = 35.631 ac, 7.72% Impervious, Inflow Depth > 3.80" for 10year event
 Inflow = 20.99 cfs @ 12.63 hrs, Volume= 11.285 af
 Outflow = 20.99 cfs @ 12.63 hrs, Volume= 11.284 af, Atten= 0%, Lag= 0.2 min
 Primary = 20.99 cfs @ 12.63 hrs, Volume= 11.284 af

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs
 Peak Elev= 1,448.92' @ 12.63 hrs Surf.Area= 389 sf Storage= 398 cf
 Flood Elev= 1,453.00' Surf.Area= 716 sf Storage= 2,558 cf

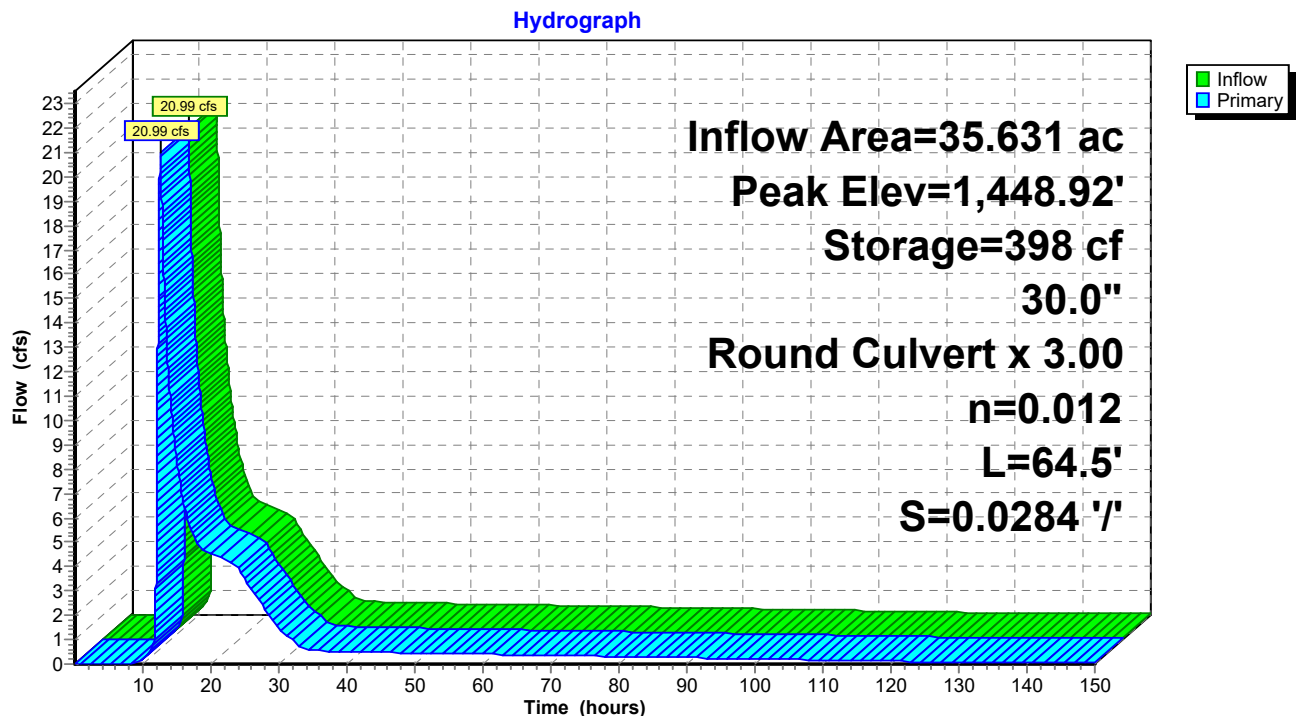
Plug-Flow detention time= 1.3 min calculated for 11.284 af (100% of inflow)
 Center-of-Mass det. time= 0.8 min (1,822.7 - 1,822.0)

Volume	Invert	Avail.Storage	Storage Description
#1	1,447.79'	2,558 cf	20.00'D x 5.10'H Vertical Cone/Cylinder Z=1.0

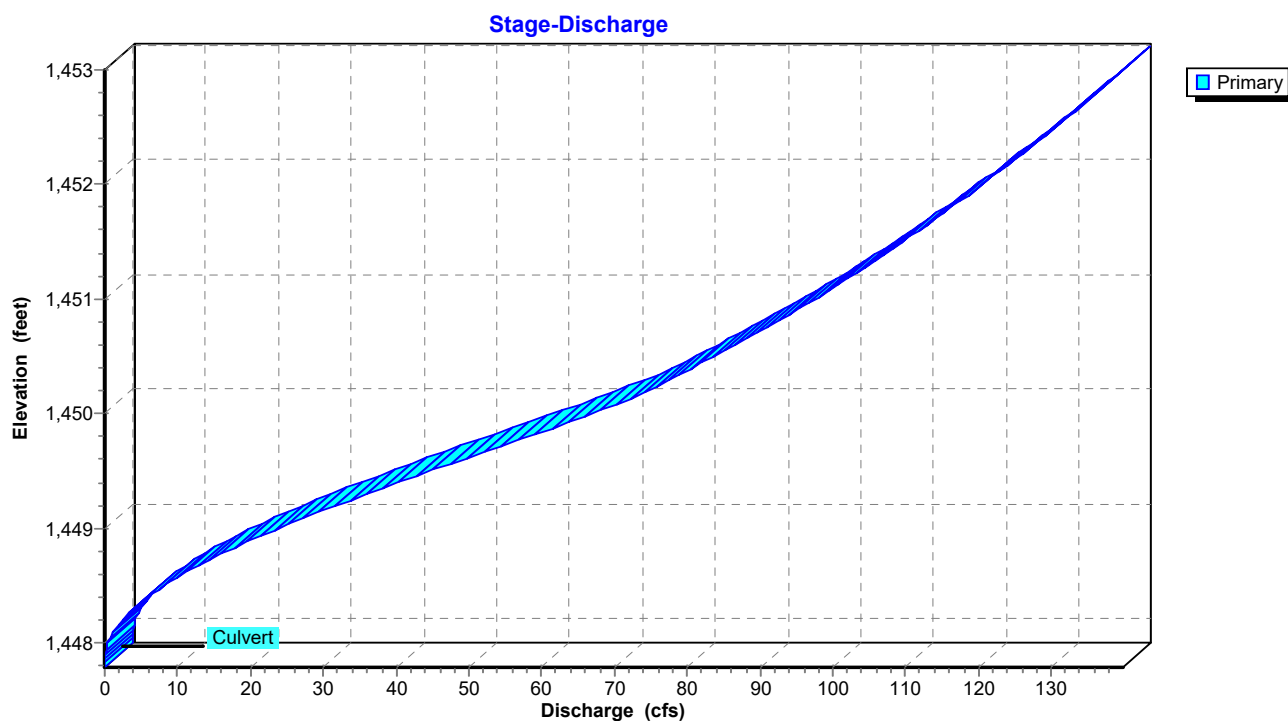
Device	Routing	Invert	Outlet Devices
#1	Primary	1,447.86'	30.0" Round Culvert X 3.00 L= 64.5' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,447.86' / 1,446.03' S= 0.0284 '/ Cc= 0.900 n= 0.012, Flow Area= 4.91 sf

Primary OutFlow Max=20.99 cfs @ 12.63 hrs HW=1,448.92' TW=1,446.66' (Dynamic Tailwater)
 ←**1=Culvert** (Inlet Controls 20.99 cfs @ 3.51 fps)

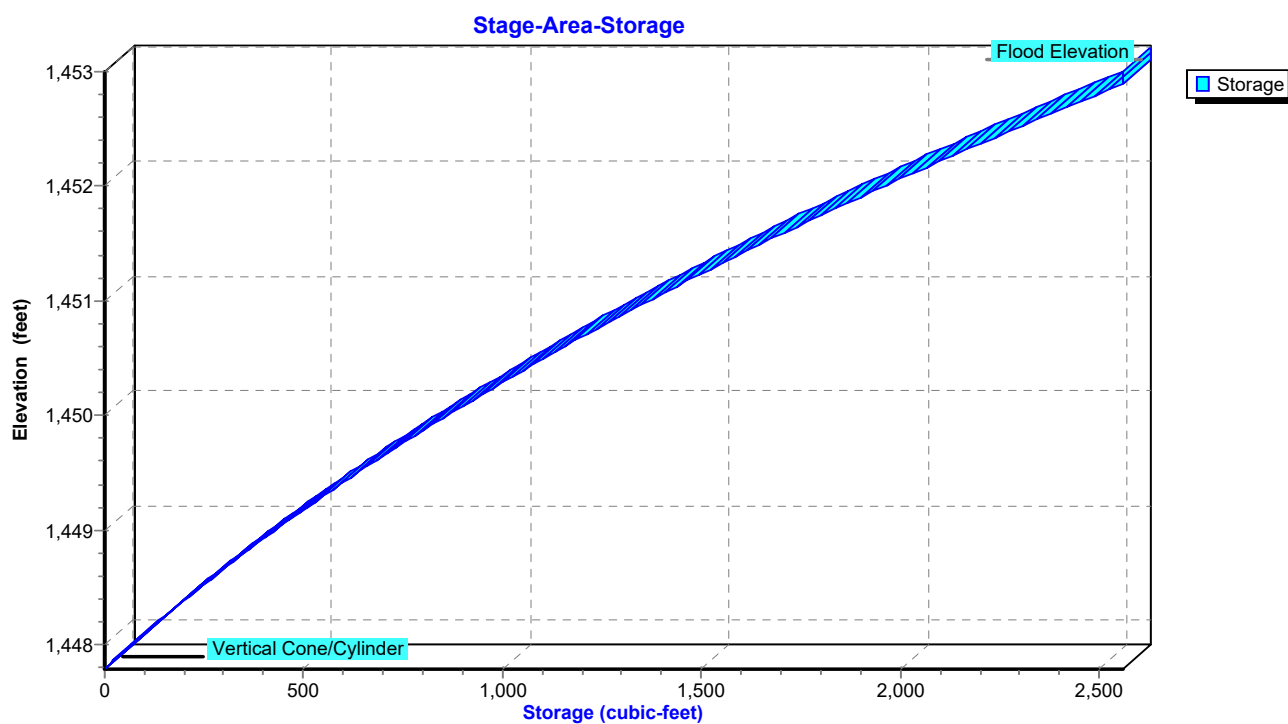
Pond 22P: Road Crossing Culverts w/ Storage



Pond 22P: Road Crossing Culverts w/ Storage



Pond 22P: Road Crossing Culverts w/ Storage



Hydrograph for Pond 22P: Road Crossing Culverts w/ Storage

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.05	0.00	0	1,447.79	0.00
5.05	0.00	0	1,447.79	0.00
10.05	0.23	55	1,447.96	0.22
15.05	8.30	242	1,448.51	8.31
20.05	4.53	180	1,448.33	4.53
25.05	3.45	158	1,448.27	3.45
30.05	1.52	111	1,448.13	1.53
35.05	0.58	76	1,448.03	0.58
40.05	0.50	72	1,448.01	0.51
45.05	0.48	71	1,448.01	0.48
50.05	0.45	70	1,448.01	0.45
55.05	0.43	68	1,448.00	0.43
60.05	0.41	67	1,448.00	0.41
65.05	0.38	66	1,447.99	0.38
70.05	0.36	64	1,447.99	0.36
75.05	0.33	63	1,447.99	0.33
80.05	0.31	61	1,447.98	0.31
85.05	0.29	60	1,447.98	0.29
90.05	0.26	58	1,447.97	0.26
95.05	0.24	56	1,447.97	0.24
100.05	0.21	54	1,447.96	0.21
105.05	0.19	53	1,447.95	0.19
110.05	0.17	51	1,447.95	0.17
115.05	0.14	48	1,447.94	0.14
120.05	0.12	46	1,447.93	0.12
125.05	0.10	44	1,447.93	0.10
130.05	0.08	42	1,447.92	0.08
135.05	0.07	40	1,447.92	0.07
140.05	0.06	39	1,447.91	0.06
145.05	0.05	37	1,447.91	0.05

Stage-Discharge for Pond 22P: Road Crossing Culverts w/ Storage

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
1,447.79	0.00	1,449.87	61.25	1,451.95	119.49
1,447.83	0.00	1,449.91	63.00	1,451.99	120.33
1,447.87	0.00	1,449.95	64.73	1,452.03	121.16
1,447.91	0.05	1,449.99	66.42	1,452.07	121.99
1,447.95	0.17	1,450.03	68.09	1,452.11	122.81
1,447.99	0.36	1,450.07	69.71	1,452.15	123.63
1,448.03	0.61	1,450.11	71.29	1,452.19	124.44
1,448.07	0.93	1,450.15	72.82	1,452.23	125.25
1,448.11	1.30	1,450.19	74.28	1,452.27	126.05
1,448.15	1.75	1,450.23	75.66	1,452.31	126.84
1,448.19	2.25	1,450.27	76.94	1,452.35	127.63
1,448.23	2.81	1,450.31	78.10	1,452.39	128.42
1,448.27	3.44	1,450.35	79.08	1,452.43	129.20
1,448.31	4.12	1,450.39	80.22	1,452.47	129.97
1,448.35	4.85	1,450.43	81.47	1,452.51	130.74
1,448.39	5.65	1,450.47	82.69	1,452.55	131.51
1,448.43	6.50	1,450.51	83.90	1,452.59	132.27
1,448.47	7.40	1,450.55	85.09	1,452.63	133.03
1,448.51	8.35	1,450.59	86.26	1,452.67	133.79
1,448.55	9.36	1,450.63	87.42	1,452.71	134.54
1,448.59	10.41	1,450.67	88.56	1,452.75	135.28
1,448.63	11.51	1,450.71	89.69	1,452.79	136.02
1,448.67	12.66	1,450.75	90.80	1,452.83	136.76
1,448.71	13.86	1,450.79	91.91	1,452.87	137.49
1,448.75	15.10	1,450.83	92.99	1,452.91	138.22
1,448.79	16.38	1,450.87	94.07	1,452.95	138.95
1,448.83	17.71	1,450.91	95.13	1,452.99	139.67
1,448.87	19.07	1,450.95	96.18		
1,448.91	20.48	1,450.99	97.22		
1,448.95	21.92	1,451.03	98.25		
1,448.99	23.40	1,451.07	99.27		
1,449.03	24.91	1,451.11	100.28		
1,449.07	26.45	1,451.15	101.27		
1,449.11	28.03	1,451.19	102.26		
1,449.15	29.63	1,451.23	103.24		
1,449.19	31.27	1,451.27	104.21		
1,449.23	32.92	1,451.31	105.17		
1,449.27	34.61	1,451.35	106.12		
1,449.31	36.31	1,451.39	107.07		
1,449.35	38.04	1,451.43	108.00		
1,449.39	39.78	1,451.47	108.93		
1,449.43	41.54	1,451.51	109.85		
1,449.47	43.31	1,451.55	110.76		
1,449.51	45.09	1,451.59	111.66		
1,449.55	46.89	1,451.63	112.56		
1,449.59	48.69	1,451.67	113.45		
1,449.63	50.49	1,451.71	114.33		
1,449.67	52.30	1,451.75	115.21		
1,449.71	54.11	1,451.79	116.08		
1,449.75	55.91	1,451.83	116.94		
1,449.79	57.70	1,451.87	117.80		
1,449.83	59.48	1,451.91	118.65		

Stage-Area-Storage for Pond 22P: Road Crossing Culverts w/ Storage

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
1,447.79	0	1,449.87	799	1,451.95	1,926
1,447.83	13	1,449.91	817	1,451.99	1,951
1,447.87	25	1,449.95	836	1,452.03	1,977
1,447.91	38	1,449.99	854	1,452.07	2,002
1,447.95	51	1,450.03	873	1,452.11	2,028
1,447.99	64	1,450.07	892	1,452.15	2,054
1,448.03	77	1,450.11	911	1,452.19	2,080
1,448.07	90	1,450.15	930	1,452.23	2,106
1,448.11	104	1,450.19	949	1,452.27	2,132
1,448.15	117	1,450.23	969	1,452.31	2,159
1,448.19	131	1,450.27	988	1,452.35	2,185
1,448.23	144	1,450.31	1,008	1,452.39	2,212
1,448.27	158	1,450.35	1,028	1,452.43	2,239
1,448.31	172	1,450.39	1,048	1,452.47	2,266
1,448.35	186	1,450.43	1,068	1,452.51	2,293
1,448.39	200	1,450.47	1,088	1,452.55	2,320
1,448.43	214	1,450.51	1,108	1,452.59	2,348
1,448.47	228	1,450.55	1,128	1,452.63	2,375
1,448.51	243	1,450.59	1,149	1,452.67	2,403
1,448.55	257	1,450.63	1,170	1,452.71	2,431
1,448.59	272	1,450.67	1,190	1,452.75	2,459
1,448.63	287	1,450.71	1,211	1,452.79	2,487
1,448.67	302	1,450.75	1,232	1,452.83	2,515
1,448.71	316	1,450.79	1,253	1,452.87	2,544
1,448.75	331	1,450.83	1,275	1,452.91	2,558
1,448.79	347	1,450.87	1,296	1,452.95	2,558
1,448.83	362	1,450.91	1,318	1,452.99	2,558
1,448.87	377	1,450.95	1,339		
1,448.91	393	1,450.99	1,361		
1,448.95	408	1,451.03	1,383		
1,448.99	424	1,451.07	1,405		
1,449.03	440	1,451.11	1,428		
1,449.07	456	1,451.15	1,450		
1,449.11	472	1,451.19	1,472		
1,449.15	488	1,451.23	1,495		
1,449.19	504	1,451.27	1,518		
1,449.23	521	1,451.31	1,541		
1,449.27	537	1,451.35	1,564		
1,449.31	554	1,451.39	1,587		
1,449.35	571	1,451.43	1,610		
1,449.39	587	1,451.47	1,634		
1,449.43	604	1,451.51	1,657		
1,449.47	621	1,451.55	1,681		
1,449.51	639	1,451.59	1,705		
1,449.55	656	1,451.63	1,729		
1,449.59	673	1,451.67	1,753		
1,449.63	691	1,451.71	1,777		
1,449.67	709	1,451.75	1,802		
1,449.71	726	1,451.79	1,826		
1,449.75	744	1,451.83	1,851		
1,449.79	762	1,451.87	1,876		
1,449.83	781	1,451.91	1,901		

Summary for Pond 30P: Sump

Inflow Area = 7.316 ac, 0.00% Impervious, Inflow Depth = 2.47" for 10year event
 Inflow = 12.43 cfs @ 12.37 hrs, Volume= 1.508 af
 Outflow = 12.43 cfs @ 12.37 hrs, Volume= 1.508 af, Atten= 0%, Lag= 0.0 min
 Primary = 12.43 cfs @ 12.37 hrs, Volume= 1.508 af

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Peak Elev= 1,465.08' @ 12.37 hrs

Flood Elev= 1,468.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,463.00'	24.0" Round Culvert L= 300.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1,463.00' / 1,453.00' S= 0.0333 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Primary	1,463.00'	12.0" Vert. Orifice/Grate X 0.00 C= 0.600

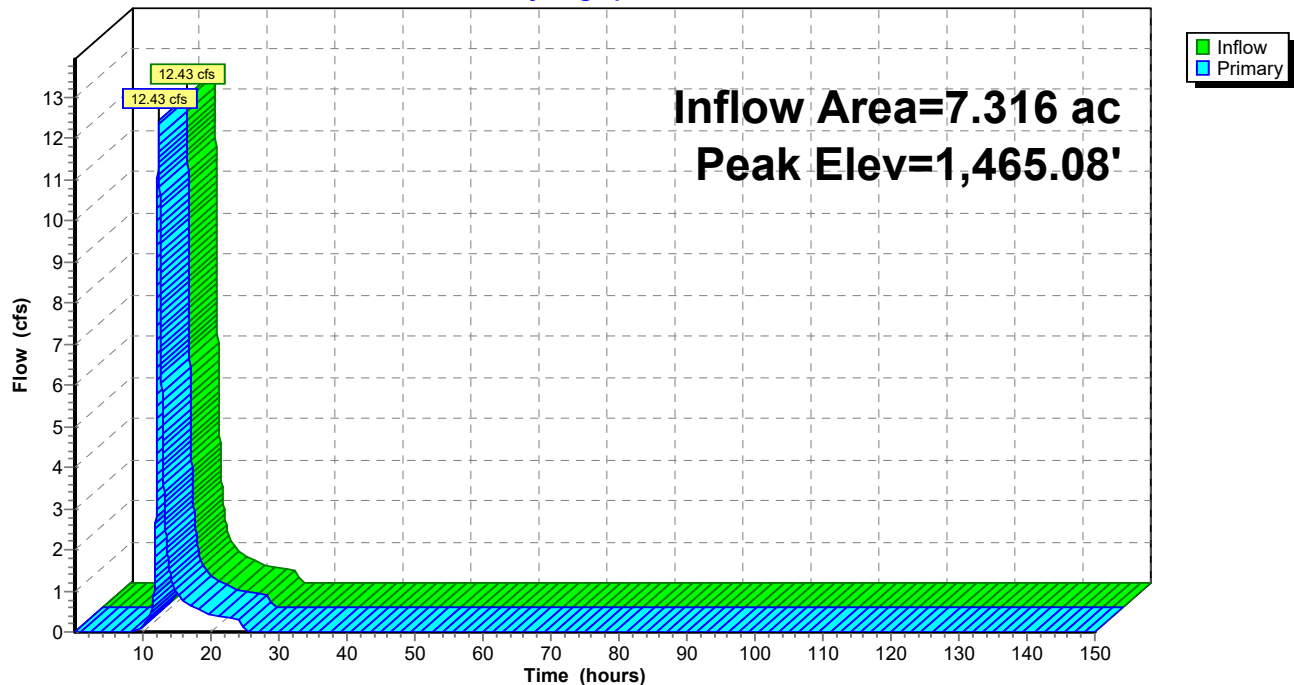
Primary OutFlow Max=12.43 cfs @ 12.37 hrs HW=1,465.08' TW=0.00' (Dynamic Tailwater)

1=Culvert (Inlet Controls 12.43 cfs @ 3.96 fps)

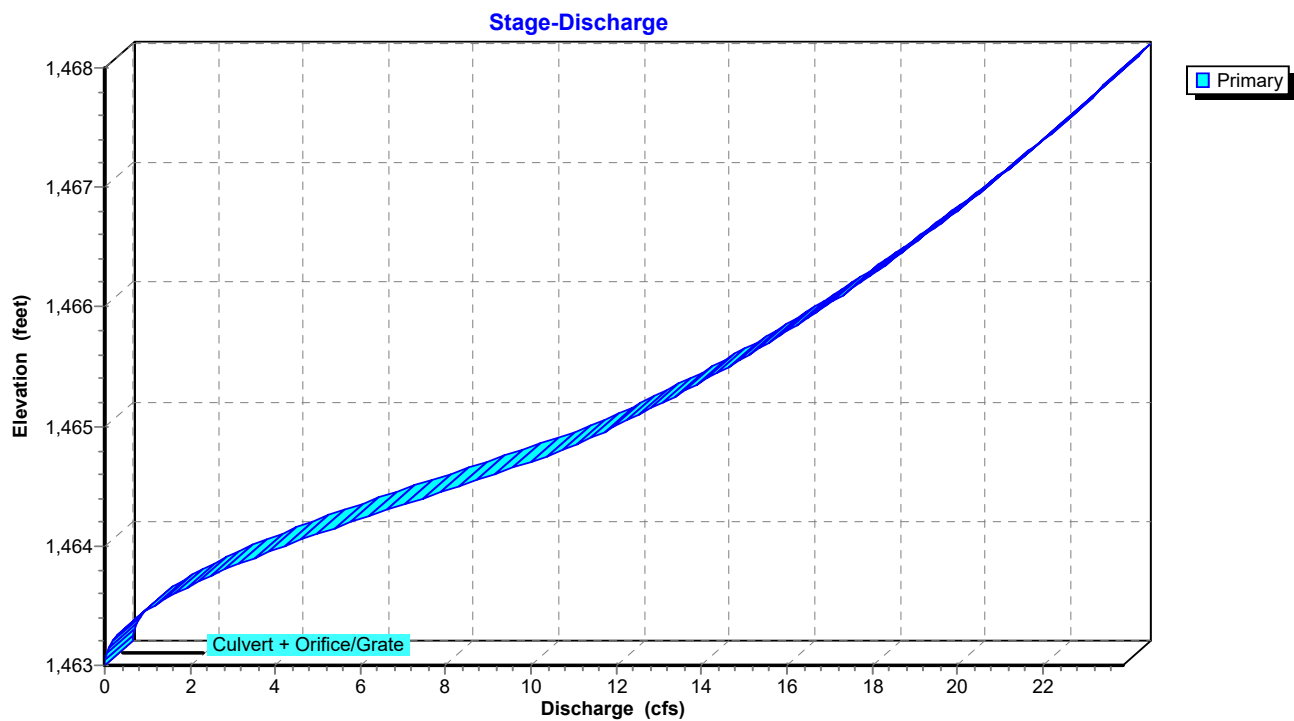
2=Orifice/Grate (Controls 0.00 cfs)

Pond 30P: Sump

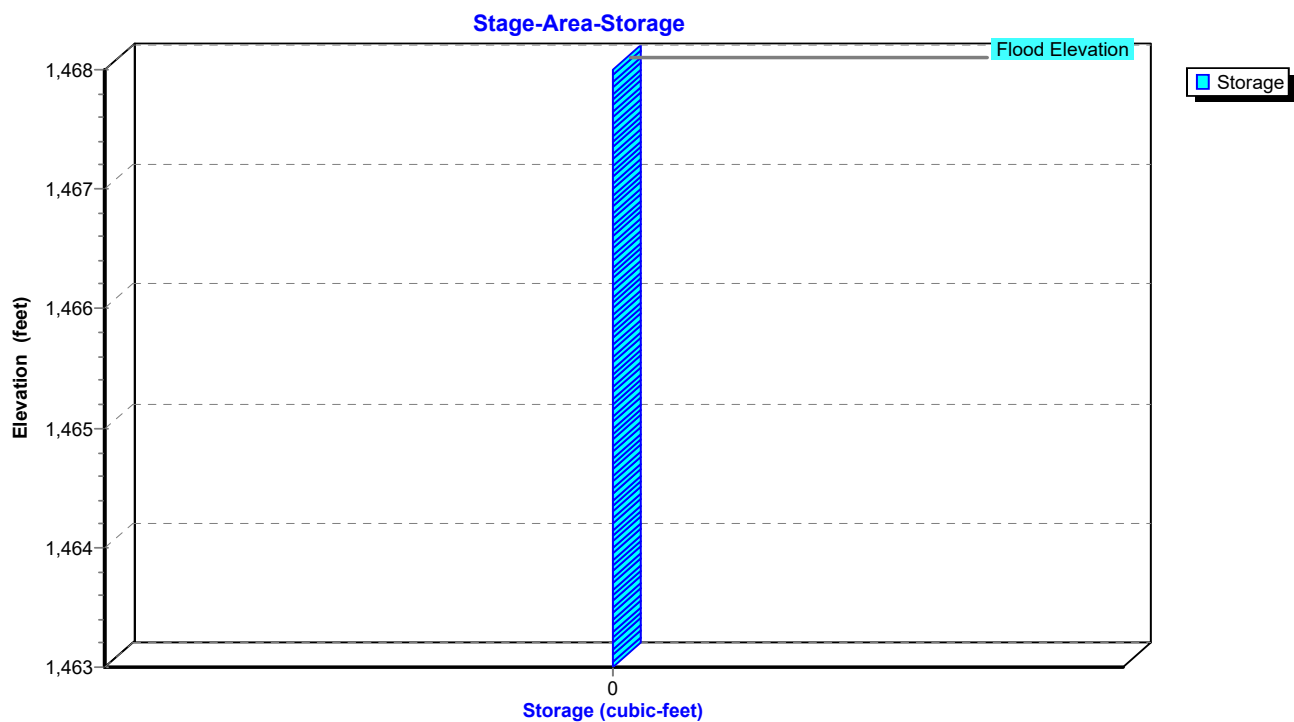
Hydrograph



Pond 30P: Sump



Pond 30P: Sump



Hydrograph for Pond 30P: Sump

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.05	0.00	1,463.00	0.00	104.05	0.00	1,463.00	0.00
2.05	0.00	1,463.00	0.00	106.05	0.00	1,463.00	0.00
4.05	0.00	1,463.00	0.00	108.05	0.00	1,463.00	0.00
6.05	0.00	1,463.00	0.00	110.05	0.00	1,463.00	0.00
8.05	0.00	1,463.00	0.00	112.05	0.00	1,463.00	0.00
10.05	0.12	1,463.16	0.12	114.05	0.00	1,463.00	0.00
12.05	4.91	1,464.09	4.91	116.05	0.00	1,463.00	0.00
14.05	1.44	1,463.56	1.44	118.05	0.00	1,463.00	0.00
16.05	0.77	1,463.40	0.77	120.05	0.00	1,463.00	0.00
18.05	0.56	1,463.34	0.56	122.05	0.00	1,463.00	0.00
20.05	0.42	1,463.29	0.42	124.05	0.00	1,463.00	0.00
22.05	0.36	1,463.27	0.36	126.05	0.00	1,463.00	0.00
24.05	0.33	1,463.26	0.33	128.05	0.00	1,463.00	0.00
26.05	0.00	1,463.01	0.00	130.05	0.00	1,463.00	0.00
28.05	0.00	1,463.00	0.00	132.05	0.00	1,463.00	0.00
30.05	0.00	1,463.00	0.00	134.05	0.00	1,463.00	0.00
32.05	0.00	1,463.00	0.00	136.05	0.00	1,463.00	0.00
34.05	0.00	1,463.00	0.00	138.05	0.00	1,463.00	0.00
36.05	0.00	1,463.00	0.00	140.05	0.00	1,463.00	0.00
38.05	0.00	1,463.00	0.00	142.05	0.00	1,463.00	0.00
40.05	0.00	1,463.00	0.00	144.05	0.00	1,463.00	0.00
42.05	0.00	1,463.00	0.00	146.05	0.00	1,463.00	0.00
44.05	0.00	1,463.00	0.00	148.05	0.00	1,463.00	0.00
46.05	0.00	1,463.00	0.00				
48.05	0.00	1,463.00	0.00				
50.05	0.00	1,463.00	0.00				
52.05	0.00	1,463.00	0.00				
54.05	0.00	1,463.00	0.00				
56.05	0.00	1,463.00	0.00				
58.05	0.00	1,463.00	0.00				
60.05	0.00	1,463.00	0.00				
62.05	0.00	1,463.00	0.00				
64.05	0.00	1,463.00	0.00				
66.05	0.00	1,463.00	0.00				
68.05	0.00	1,463.00	0.00				
70.05	0.00	1,463.00	0.00				
72.05	0.00	1,463.00	0.00				
74.05	0.00	1,463.00	0.00				
76.05	0.00	1,463.00	0.00				
78.05	0.00	1,463.00	0.00				
80.05	0.00	1,463.00	0.00				
82.05	0.00	1,463.00	0.00				
84.05	0.00	1,463.00	0.00				
86.05	0.00	1,463.00	0.00				
88.05	0.00	1,463.00	0.00				
90.05	0.00	1,463.00	0.00				
92.05	0.00	1,463.00	0.00				
94.05	0.00	1,463.00	0.00				
96.05	0.00	1,463.00	0.00				
98.05	0.00	1,463.00	0.00				
100.05	0.00	1,463.00	0.00				
102.05	0.00	1,463.00	0.00				

Stage-Discharge for Pond 30P: Sump

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
1,463.00	0.00	1,465.60	15.11
1,463.05	0.01	1,465.65	15.34
1,463.10	0.05	1,465.70	15.57
1,463.15	0.11	1,465.75	15.80
1,463.20	0.20	1,465.80	16.02
1,463.25	0.30	1,465.85	16.24
1,463.30	0.44	1,465.90	16.46
1,463.35	0.59	1,465.95	16.68
1,463.40	0.76	1,466.00	16.89
1,463.45	0.95	1,466.05	17.10
1,463.50	1.17	1,466.10	17.31
1,463.55	1.40	1,466.15	17.51
1,463.60	1.65	1,466.20	17.71
1,463.65	1.92	1,466.25	17.91
1,463.70	2.20	1,466.30	18.11
1,463.75	2.50	1,466.35	18.31
1,463.80	2.82	1,466.40	18.50
1,463.85	3.15	1,466.45	18.69
1,463.90	3.50	1,466.50	18.88
1,463.95	3.85	1,466.55	19.07
1,464.00	4.22	1,466.60	19.26
1,464.05	4.60	1,466.65	19.44
1,464.10	4.99	1,466.70	19.62
1,464.15	5.39	1,466.75	19.80
1,464.20	5.80	1,466.80	19.98
1,464.25	6.21	1,466.85	20.16
1,464.30	6.62	1,466.90	20.34
1,464.35	7.05	1,466.95	20.51
1,464.40	7.47	1,467.00	20.68
1,464.45	7.90	1,467.05	20.86
1,464.50	8.32	1,467.10	21.03
1,464.55	8.74	1,467.15	21.20
1,464.60	9.16	1,467.20	21.36
1,464.65	9.57	1,467.25	21.53
1,464.70	9.97	1,467.30	21.69
1,464.75	10.36	1,467.35	21.86
1,464.80	10.74	1,467.40	22.02
1,464.85	11.09	1,467.45	22.18
1,464.90	11.42	1,467.50	22.34
1,464.95	11.71	1,467.55	22.50
1,465.00	11.94	1,467.60	22.66
1,465.05	12.24	1,467.65	22.82
1,465.10	12.53	1,467.70	22.97
1,465.15	12.81	1,467.75	23.13
1,465.20	13.08	1,467.80	23.28
1,465.25	13.35	1,467.85	23.43
1,465.30	13.62	1,467.90	23.58
1,465.35	13.88	1,467.95	23.73
1,465.40	14.13	1,468.00	23.88
1,465.45	14.38		
1,465.50	14.63		
1,465.55	14.87		

Stage-Area-Storage for Pond 30P: Sump

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
1,463.00	0	1,465.60	0
1,463.05	0	1,465.65	0
1,463.10	0	1,465.70	0
1,463.15	0	1,465.75	0
1,463.20	0	1,465.80	0
1,463.25	0	1,465.85	0
1,463.30	0	1,465.90	0
1,463.35	0	1,465.95	0
1,463.40	0	1,466.00	0
1,463.45	0	1,466.05	0
1,463.50	0	1,466.10	0
1,463.55	0	1,466.15	0
1,463.60	0	1,466.20	0
1,463.65	0	1,466.25	0
1,463.70	0	1,466.30	0
1,463.75	0	1,466.35	0
1,463.80	0	1,466.40	0
1,463.85	0	1,466.45	0
1,463.90	0	1,466.50	0
1,463.95	0	1,466.55	0
1,464.00	0	1,466.60	0
1,464.05	0	1,466.65	0
1,464.10	0	1,466.70	0
1,464.15	0	1,466.75	0
1,464.20	0	1,466.80	0
1,464.25	0	1,466.85	0
1,464.30	0	1,466.90	0
1,464.35	0	1,466.95	0
1,464.40	0	1,467.00	0
1,464.45	0	1,467.05	0
1,464.50	0	1,467.10	0
1,464.55	0	1,467.15	0
1,464.60	0	1,467.20	0
1,464.65	0	1,467.25	0
1,464.70	0	1,467.30	0
1,464.75	0	1,467.35	0
1,464.80	0	1,467.40	0
1,464.85	0	1,467.45	0
1,464.90	0	1,467.50	0
1,464.95	0	1,467.55	0
1,465.00	0	1,467.60	0
1,465.05	0	1,467.65	0
1,465.10	0	1,467.70	0
1,465.15	0	1,467.75	0
1,465.20	0	1,467.80	0
1,465.25	0	1,467.85	0
1,465.30	0	1,467.90	0
1,465.35	0	1,467.95	0
1,465.40	0	1,468.00	0
1,465.45	0		
1,465.50	0		
1,465.55	0		

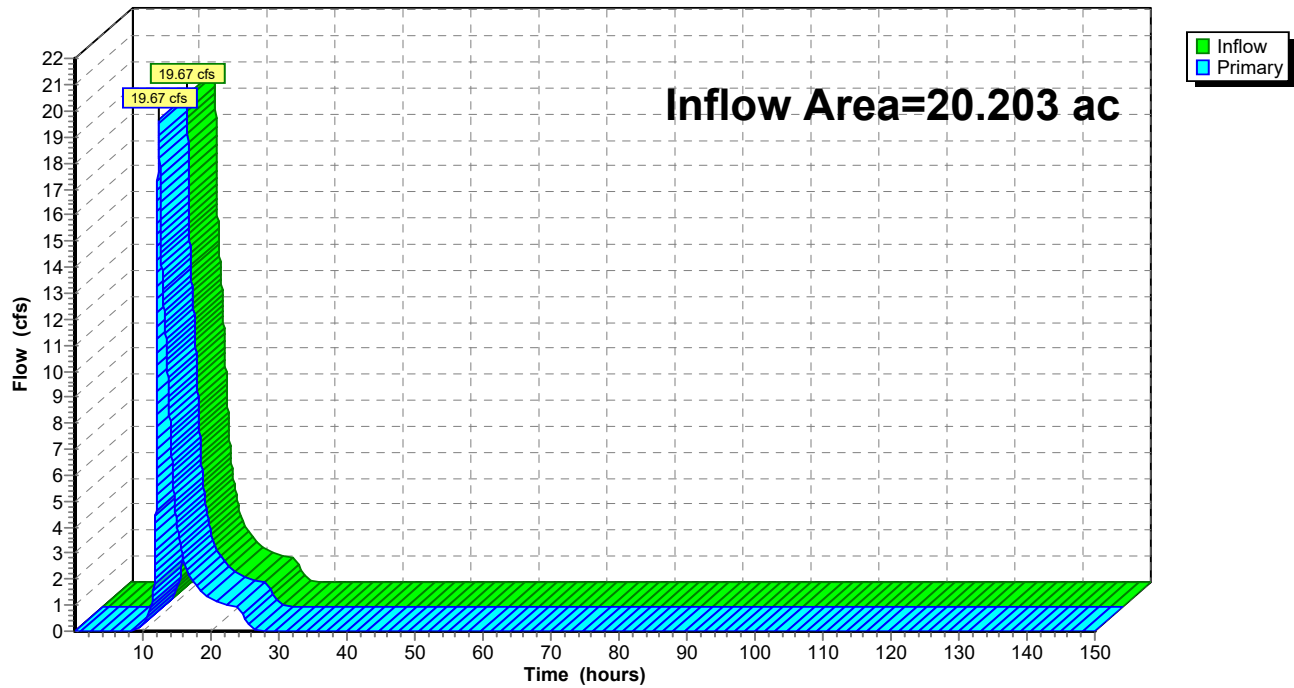
Summary for Pond 32P: Intermittent Drng

Inflow Area = 20.203 ac, 0.00% Impervious, Inflow Depth = 2.47" for 10year event
 Inflow = 19.67 cfs @ 12.38 hrs, Volume= 4.164 af
 Primary = 19.67 cfs @ 12.38 hrs, Volume= 4.164 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Pond 32P: Intermittent Drng

Hydrograph



Hydrograph for Pond 32P: Intermittent Drng

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.05	0.00		0.00	104.05	0.00		0.00
2.05	0.00		0.00	106.05	0.00		0.00
4.05	0.00		0.00	108.05	0.00		0.00
6.05	0.00		0.00	110.05	0.00		0.00
8.05	0.00		0.00	112.05	0.00		0.00
10.05	0.21		0.21	114.05	0.00		0.00
12.05	7.88		7.88	116.05	0.00		0.00
14.05	7.93		7.93	118.05	0.00		0.00
16.05	2.77		2.77	120.05	0.00		0.00
18.05	1.71		1.71	122.05	0.00		0.00
20.05	1.27		1.27	124.05	0.00		0.00
22.05	1.03		1.03	126.05	0.00		0.00
24.05	0.94		0.94	128.05	0.00		0.00
26.05	0.14		0.14	130.05	0.00		0.00
28.05	0.01		0.01	132.05	0.00		0.00
30.05	0.00		0.00	134.05	0.00		0.00
32.05	0.00		0.00	136.05	0.00		0.00
34.05	0.00		0.00	138.05	0.00		0.00
36.05	0.00		0.00	140.05	0.00		0.00
38.05	0.00		0.00	142.05	0.00		0.00
40.05	0.00		0.00	144.05	0.00		0.00
42.05	0.00		0.00	146.05	0.00		0.00
44.05	0.00		0.00	148.05	0.00		0.00
46.05	0.00		0.00				
48.05	0.00		0.00				
50.05	0.00		0.00				
52.05	0.00		0.00				
54.05	0.00		0.00				
56.05	0.00		0.00				
58.05	0.00		0.00				
60.05	0.00		0.00				
62.05	0.00		0.00				
64.05	0.00		0.00				
66.05	0.00		0.00				
68.05	0.00		0.00				
70.05	0.00		0.00				
72.05	0.00		0.00				
74.05	0.00		0.00				
76.05	0.00		0.00				
78.05	0.00		0.00				
80.05	0.00		0.00				
82.05	0.00		0.00				
84.05	0.00		0.00				
86.05	0.00		0.00				
88.05	0.00		0.00				
90.05	0.00		0.00				
92.05	0.00		0.00				
94.05	0.00		0.00				
96.05	0.00		0.00				
98.05	0.00		0.00				
100.05	0.00		0.00				
102.05	0.00		0.00				

Summary for Pond 33P: ExpStrmBasin

Inflow Area = 13.693 ac, 0.00% Impervious, Inflow Depth = 4.13" for 10year event
 Inflow = 86.91 cfs @ 11.98 hrs, Volume= 4.713 af
 Outflow = 86.91 cfs @ 11.98 hrs, Volume= 4.713 af, Atten= 0%, Lag= 0.0 min
 Primary = 86.91 cfs @ 11.98 hrs, Volume= 4.713 af

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

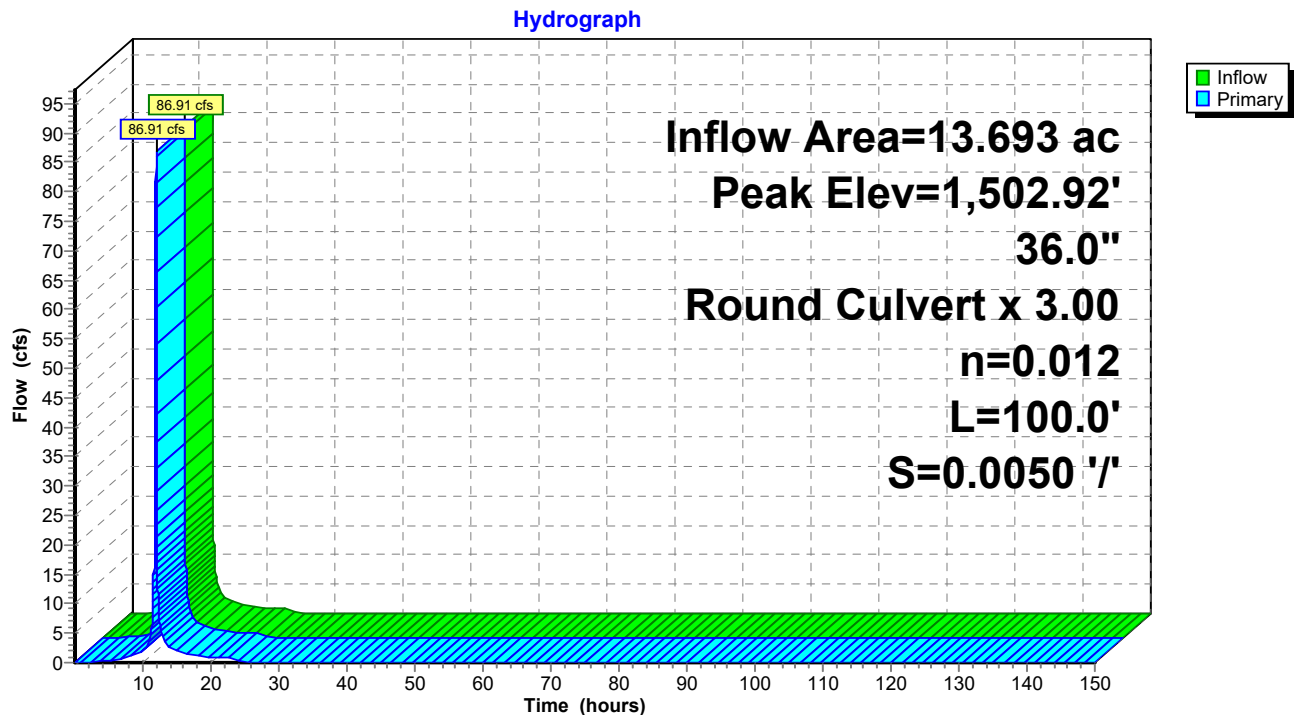
Peak Elev= 1,502.92' @ 11.98 hrs

Flood Elev= 1,504.50'

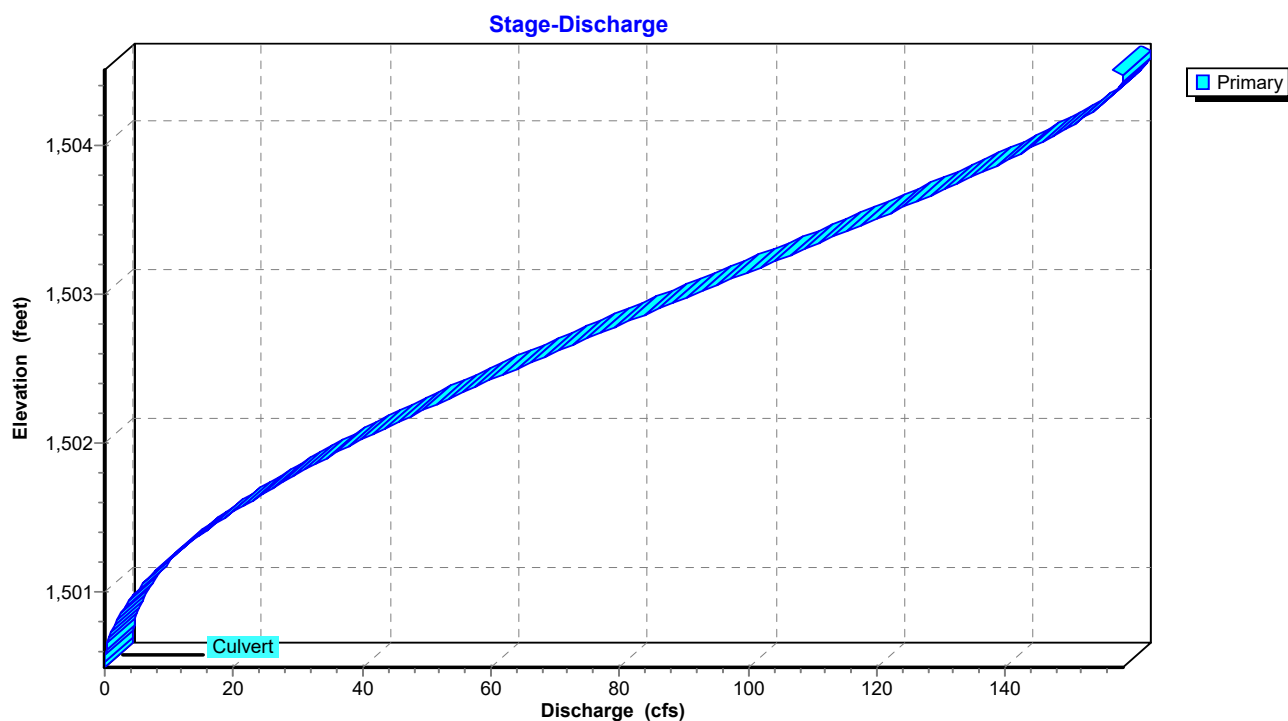
Device	Routing	Invert	Outlet Devices
#1	Primary	1,500.50'	36.0" Round Culvert X 3.00 L= 100.0' Ke= 0.150 Inlet / Outlet Invert= 1,500.50' / 1,500.00' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf

Primary OutFlow Max=86.86 cfs @ 11.98 hrs HW=1,502.91' TW=1,496.55' (Dynamic Tailwater)
 1=Culvert (Barrel Controls 86.86 cfs @ 6.49 fps)

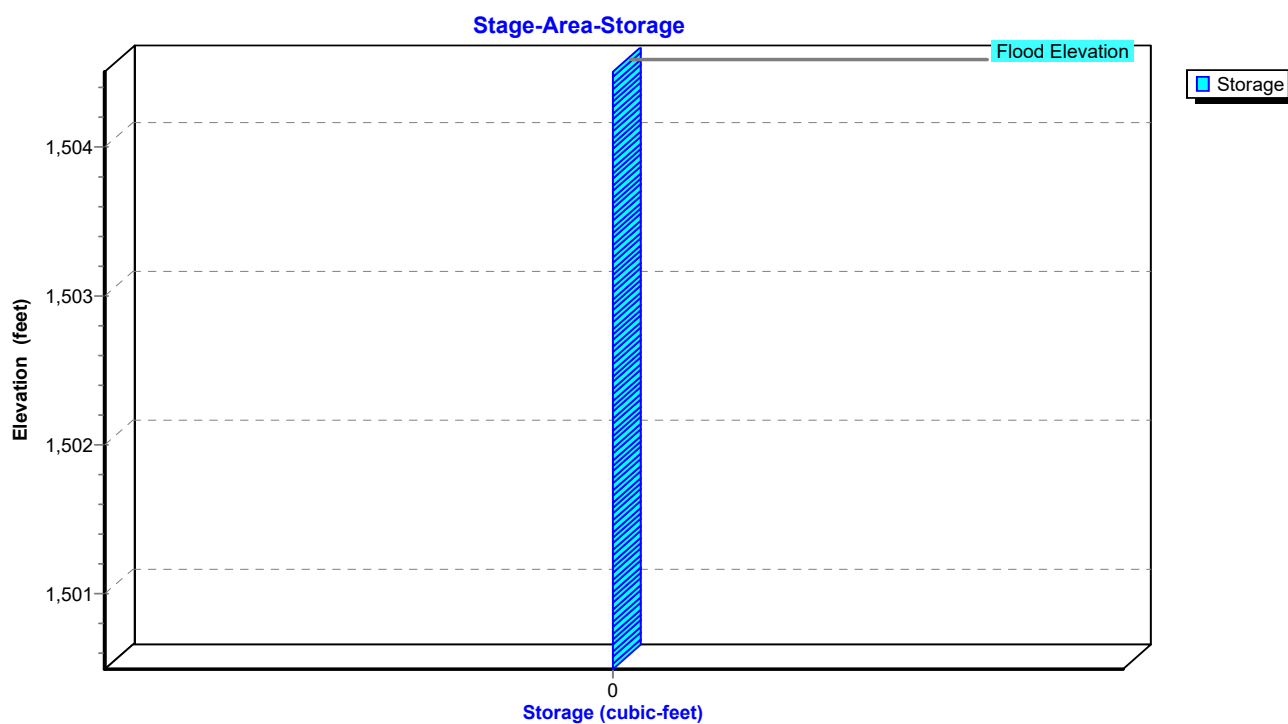
Pond 33P: ExpStrmBasin



Pond 33P: ExpStrmBasin



Pond 33P: ExpStrmBasin



Hydrograph for Pond 33P: ExpStrmBasin

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.05	0.00	1,500.50	0.00	104.05	0.00	1,500.50	0.00
2.05	0.00	1,500.50	0.00	106.05	0.00	1,500.50	0.00
4.05	0.23	1,500.62	0.23	108.05	0.00	1,500.50	0.00
6.05	0.58	1,500.68	0.58	110.05	0.00	1,500.50	0.00
8.05	0.95	1,500.73	0.95	112.05	0.00	1,500.50	0.00
10.05	2.03	1,500.83	2.03	114.05	0.00	1,500.50	0.00
12.05	60.32	1,502.43	60.32	116.05	0.00	1,500.50	0.00
14.05	2.49	1,500.86	2.49	118.05	0.00	1,500.50	0.00
16.05	1.53	1,500.79	1.53	120.05	0.00	1,500.50	0.00
18.05	1.19	1,500.75	1.19	122.05	0.00	1,500.50	0.00
20.05	0.86	1,500.72	0.86	124.05	0.00	1,500.50	0.00
22.05	0.79	1,500.71	0.79	126.05	0.00	1,500.50	0.00
24.05	0.67	1,500.69	0.67	128.05	0.00	1,500.50	0.00
26.05	0.00	1,500.50	0.00	130.05	0.00	1,500.50	0.00
28.05	0.00	1,500.50	0.00	132.05	0.00	1,500.50	0.00
30.05	0.00	1,500.50	0.00	134.05	0.00	1,500.50	0.00
32.05	0.00	1,500.50	0.00	136.05	0.00	1,500.50	0.00
34.05	0.00	1,500.50	0.00	138.05	0.00	1,500.50	0.00
36.05	0.00	1,500.50	0.00	140.05	0.00	1,500.50	0.00
38.05	0.00	1,500.50	0.00	142.05	0.00	1,500.50	0.00
40.05	0.00	1,500.50	0.00	144.05	0.00	1,500.50	0.00
42.05	0.00	1,500.50	0.00	146.05	0.00	1,500.50	0.00
44.05	0.00	1,500.50	0.00	148.05	0.00	1,500.50	0.00
46.05	0.00	1,500.50	0.00				
48.05	0.00	1,500.50	0.00				
50.05	0.00	1,500.50	0.00				
52.05	0.00	1,500.50	0.00				
54.05	0.00	1,500.50	0.00				
56.05	0.00	1,500.50	0.00				
58.05	0.00	1,500.50	0.00				
60.05	0.00	1,500.50	0.00				
62.05	0.00	1,500.50	0.00				
64.05	0.00	1,500.50	0.00				
66.05	0.00	1,500.50	0.00				
68.05	0.00	1,500.50	0.00				
70.05	0.00	1,500.50	0.00				
72.05	0.00	1,500.50	0.00				
74.05	0.00	1,500.50	0.00				
76.05	0.00	1,500.50	0.00				
78.05	0.00	1,500.50	0.00				
80.05	0.00	1,500.50	0.00				
82.05	0.00	1,500.50	0.00				
84.05	0.00	1,500.50	0.00				
86.05	0.00	1,500.50	0.00				
88.05	0.00	1,500.50	0.00				
90.05	0.00	1,500.50	0.00				
92.05	0.00	1,500.50	0.00				
94.05	0.00	1,500.50	0.00				
96.05	0.00	1,500.50	0.00				
98.05	0.00	1,500.50	0.00				
100.05	0.00	1,500.50	0.00				
102.05	0.00	1,500.50	0.00				

Stage-Discharge for Pond 33P: ExpStrmBasin

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
1,500.50	0.00	1,501.54	19.97	1,502.58	68.29	1,503.62	126.30
1,500.52	0.01	1,501.56	20.70	1,502.60	69.38	1,503.64	127.36
1,500.54	0.02	1,501.58	21.43	1,502.62	70.47	1,503.66	128.41
1,500.56	0.06	1,501.60	22.17	1,502.64	71.57	1,503.68	129.45
1,500.58	0.10	1,501.62	22.92	1,502.66	72.67	1,503.70	130.49
1,500.60	0.17	1,501.64	23.69	1,502.68	73.77	1,503.72	131.52
1,500.62	0.25	1,501.66	24.46	1,502.70	74.87	1,503.74	132.54
1,500.64	0.34	1,501.68	25.24	1,502.72	75.98	1,503.76	133.55
1,500.66	0.45	1,501.70	26.03	1,502.74	77.09	1,503.78	134.56
1,500.68	0.58	1,501.72	26.83	1,502.76	78.21	1,503.80	135.56
1,500.70	0.73	1,501.74	27.64	1,502.78	79.32	1,503.82	136.54
1,500.72	0.89	1,501.76	28.46	1,502.80	80.44	1,503.84	137.52
1,500.74	1.07	1,501.78	29.29	1,502.82	81.56	1,503.86	138.48
1,500.76	1.26	1,501.80	30.12	1,502.84	82.68	1,503.88	139.44
1,500.78	1.47	1,501.82	30.97	1,502.86	83.81	1,503.90	140.38
1,500.80	1.70	1,501.84	31.82	1,502.88	84.94	1,503.92	141.32
1,500.82	1.94	1,501.86	32.68	1,502.90	86.07	1,503.94	142.24
1,500.84	2.20	1,501.88	33.55	1,502.92	87.20	1,503.96	143.14
1,500.86	2.48	1,501.90	34.43	1,502.94	88.33	1,503.98	144.04
1,500.88	2.77	1,501.92	35.32	1,502.96	89.46	1,504.00	144.92
1,500.90	3.07	1,501.94	36.21	1,502.98	90.59	1,504.02	145.78
1,500.92	3.39	1,501.96	37.11	1,503.00	91.73	1,504.04	146.63
1,500.94	3.73	1,501.98	38.02	1,503.02	92.86	1,504.06	147.46
1,500.96	4.08	1,502.00	38.94	1,503.04	94.00	1,504.08	148.28
1,500.98	4.44	1,502.02	39.86	1,503.06	95.13	1,504.10	149.08
1,501.00	4.82	1,502.04	40.80	1,503.08	96.27	1,504.12	149.86
1,501.02	5.22	1,502.06	41.74	1,503.10	97.41	1,504.14	150.62
1,501.04	5.62	1,502.08	42.68	1,503.12	98.54	1,504.16	151.35
1,501.06	6.05	1,502.10	43.64	1,503.14	99.68	1,504.18	152.07
1,501.08	6.48	1,502.12	44.60	1,503.16	100.81	1,504.20	152.76
1,501.10	6.93	1,502.14	45.56	1,503.18	101.95	1,504.22	153.43
1,501.12	7.40	1,502.16	46.54	1,503.20	103.08	1,504.24	154.07
1,501.14	7.87	1,502.18	47.52	1,503.22	104.21	1,504.26	154.67
1,501.16	8.36	1,502.20	48.50	1,503.24	105.34	1,504.28	155.25
1,501.18	8.87	1,502.22	49.50	1,503.26	106.47	1,504.30	155.80
1,501.20	9.38	1,502.24	50.49	1,503.28	107.60	1,504.32	156.30
1,501.22	9.91	1,502.26	51.50	1,503.30	108.73	1,504.34	156.77
1,501.24	10.45	1,502.28	52.51	1,503.32	109.85	1,504.36	157.19
1,501.26	11.00	1,502.30	53.53	1,503.34	110.97	1,504.38	157.55
1,501.28	11.57	1,502.32	54.55	1,503.36	112.09	1,504.40	157.86
1,501.30	12.15	1,502.34	55.58	1,503.38	113.21	1,504.42	158.09
1,501.32	12.74	1,502.36	56.61	1,503.40	114.32	1,504.44	158.22
1,501.34	13.34	1,502.38	57.65	1,503.42	115.43	1,504.46	158.22
1,501.36	13.95	1,502.40	58.69	1,503.44	116.54	1,504.48	158.00
1,501.38	14.58	1,502.42	59.74	1,503.46	117.64	1,504.50	156.72
1,501.40	15.21	1,502.44	60.79	1,503.48	118.74		
1,501.42	15.86	1,502.46	61.85	1,503.50	119.84		
1,501.44	16.52	1,502.48	62.91	1,503.52	120.93		
1,501.46	17.19	1,502.50	63.98	1,503.54	122.01		
1,501.48	17.87	1,502.52	65.05	1,503.56	123.09		
1,501.50	18.56	1,502.54	66.13	1,503.58	124.17		
1,501.52	19.26	1,502.56	67.21	1,503.60	125.24		

Stage-Area-Storage for Pond 33P: ExpStrmBasin

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
1,500.50	0	1,503.10	0
1,500.55	0	1,503.15	0
1,500.60	0	1,503.20	0
1,500.65	0	1,503.25	0
1,500.70	0	1,503.30	0
1,500.75	0	1,503.35	0
1,500.80	0	1,503.40	0
1,500.85	0	1,503.45	0
1,500.90	0	1,503.50	0
1,500.95	0	1,503.55	0
1,501.00	0	1,503.60	0
1,501.05	0	1,503.65	0
1,501.10	0	1,503.70	0
1,501.15	0	1,503.75	0
1,501.20	0	1,503.80	0
1,501.25	0	1,503.85	0
1,501.30	0	1,503.90	0
1,501.35	0	1,503.95	0
1,501.40	0	1,504.00	0
1,501.45	0	1,504.05	0
1,501.50	0	1,504.10	0
1,501.55	0	1,504.15	0
1,501.60	0	1,504.20	0
1,501.65	0	1,504.25	0
1,501.70	0	1,504.30	0
1,501.75	0	1,504.35	0
1,501.80	0	1,504.40	0
1,501.85	0	1,504.45	0
1,501.90	0	1,504.50	0
1,501.95	0		
1,502.00	0		
1,502.05	0		
1,502.10	0		
1,502.15	0		
1,502.20	0		
1,502.25	0		
1,502.30	0		
1,502.35	0		
1,502.40	0		
1,502.45	0		
1,502.50	0		
1,502.55	0		
1,502.60	0		
1,502.65	0		
1,502.70	0		
1,502.75	0		
1,502.80	0		
1,502.85	0		
1,502.90	0		
1,502.95	0		
1,503.00	0		
1,503.05	0		

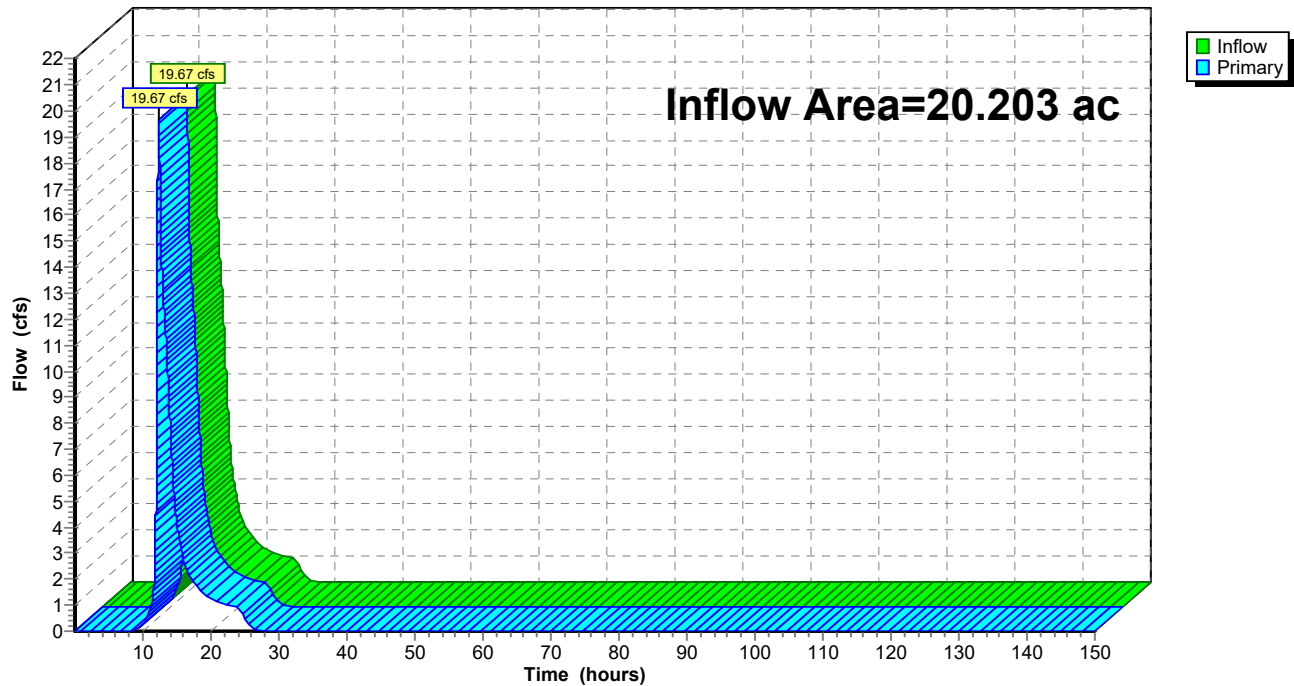
Summary for Pond 42P: Wetland LE-20

Inflow Area = 20.203 ac, 0.00% Impervious, Inflow Depth = 2.47" for 10year event
 Inflow = 19.67 cfs @ 12.38 hrs, Volume= 4.164 af
 Primary = 19.67 cfs @ 12.38 hrs, Volume= 4.164 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Pond 42P: Wetland LE-20

Hydrograph



Riato V6 Final

Prepared by JMT

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Type II 24-hr 10year Rainfall=4.82"

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Hydrograph for Pond 42P: Wetland LE-20

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.05	0.00		0.00	104.05	0.00		0.00
2.05	0.00		0.00	106.05	0.00		0.00
4.05	0.00		0.00	108.05	0.00		0.00
6.05	0.00		0.00	110.05	0.00		0.00
8.05	0.00		0.00	112.05	0.00		0.00
10.05	0.21		0.21	114.05	0.00		0.00
12.05	7.88		7.88	116.05	0.00		0.00
14.05	7.93		7.93	118.05	0.00		0.00
16.05	2.77		2.77	120.05	0.00		0.00
18.05	1.71		1.71	122.05	0.00		0.00
20.05	1.27		1.27	124.05	0.00		0.00
22.05	1.03		1.03	126.05	0.00		0.00
24.05	0.94		0.94	128.05	0.00		0.00
26.05	0.14		0.14	130.05	0.00		0.00
28.05	0.01		0.01	132.05	0.00		0.00
30.05	0.00		0.00	134.05	0.00		0.00
32.05	0.00		0.00	136.05	0.00		0.00
34.05	0.00		0.00	138.05	0.00		0.00
36.05	0.00		0.00	140.05	0.00		0.00
38.05	0.00		0.00	142.05	0.00		0.00
40.05	0.00		0.00	144.05	0.00		0.00
42.05	0.00		0.00	146.05	0.00		0.00
44.05	0.00		0.00	148.05	0.00		0.00
46.05	0.00		0.00				
48.05	0.00		0.00				
50.05	0.00		0.00				
52.05	0.00		0.00				
54.05	0.00		0.00				
56.05	0.00		0.00				
58.05	0.00		0.00				
60.05	0.00		0.00				
62.05	0.00		0.00				
64.05	0.00		0.00				
66.05	0.00		0.00				
68.05	0.00		0.00				
70.05	0.00		0.00				
72.05	0.00		0.00				
74.05	0.00		0.00				
76.05	0.00		0.00				
78.05	0.00		0.00				
80.05	0.00		0.00				
82.05	0.00		0.00				
84.05	0.00		0.00				
86.05	0.00		0.00				
88.05	0.00		0.00				
90.05	0.00		0.00				
92.05	0.00		0.00				
94.05	0.00		0.00				
96.05	0.00		0.00				
98.05	0.00		0.00				
100.05	0.00		0.00				
102.05	0.00		0.00				

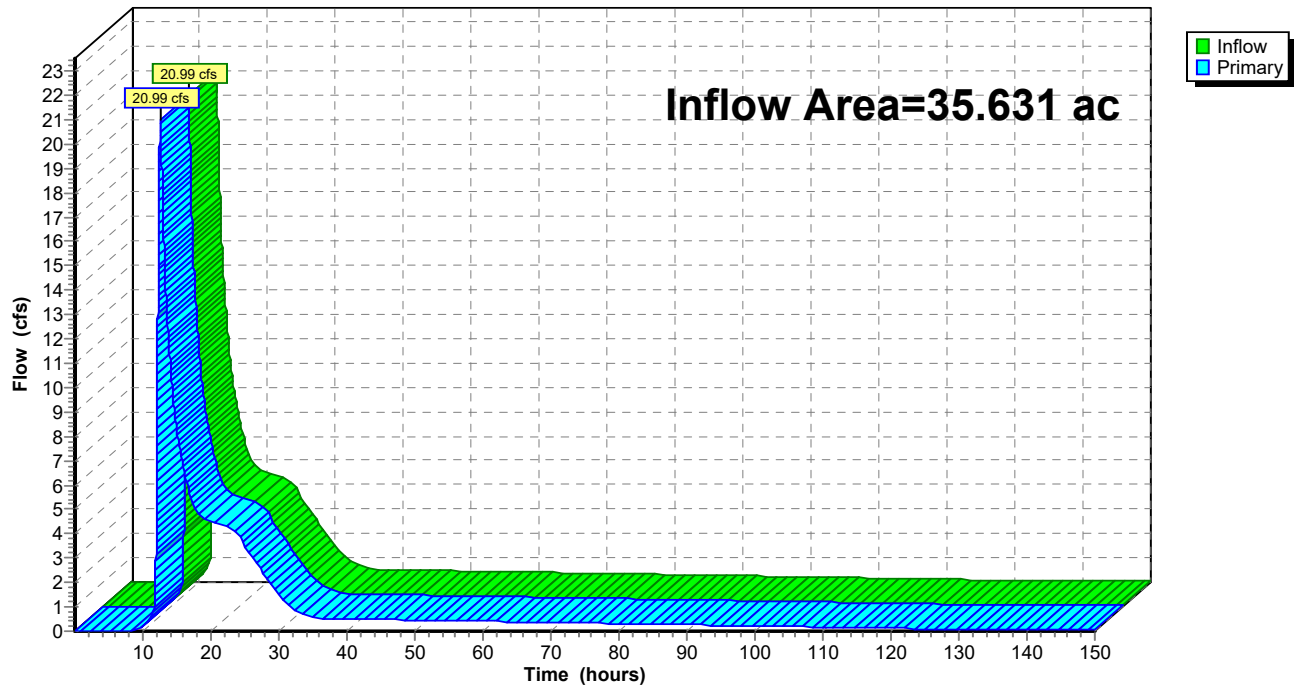
Summary for Pond 43P: Wetland LE-20

Inflow Area = 35.631 ac, 7.72% Impervious, Inflow Depth > 3.80" for 10year event
 Inflow = 20.99 cfs @ 12.63 hrs, Volume= 11.284 af
 Primary = 20.99 cfs @ 12.63 hrs, Volume= 11.284 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Pond 43P: Wetland LE-20

Hydrograph



Riato V6 Final

Prepared by JMT

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Type II 24-hr 10year Rainfall=4.82"

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Hydrograph for Pond 43P: Wetland LE-20

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.05	0.00		0.00	104.05	0.20		0.20
2.05	0.00		0.00	106.05	0.19		0.19
4.05	0.00		0.00	108.05	0.18		0.18
6.05	0.00		0.00	110.05	0.17		0.17
8.05	0.02		0.02	112.05	0.16		0.16
10.05	0.22		0.22	114.05	0.15		0.15
12.05	5.81		5.81	116.05	0.14		0.14
14.05	11.07		11.07	118.05	0.13		0.13
16.05	6.66		6.66	120.05	0.12		0.12
18.05	4.90		4.90	122.05	0.11		0.11
20.05	4.53		4.53	124.05	0.10		0.10
22.05	4.31		4.31	126.05	0.09		0.09
24.05	3.98		3.98	128.05	0.09		0.09
26.05	3.06		3.06	130.05	0.08		0.08
28.05	2.27		2.27	132.05	0.07		0.07
30.05	1.53		1.53	134.05	0.07		0.07
32.05	0.96		0.96	136.05	0.06		0.06
34.05	0.63		0.63	138.05	0.06		0.06
36.05	0.55		0.55	140.05	0.06		0.06
38.05	0.52		0.52	142.05	0.05		0.05
40.05	0.51		0.51	144.05	0.05		0.05
42.05	0.49		0.49	146.05	0.05		0.05
44.05	0.48		0.48	148.05	0.04		0.04
46.05	0.47		0.47				
48.05	0.46		0.46				
50.05	0.45		0.45				
52.05	0.45		0.45				
54.05	0.44		0.44				
56.05	0.43		0.43				
58.05	0.42		0.42				
60.05	0.41		0.41				
62.05	0.40		0.40				
64.05	0.39		0.39				
66.05	0.38		0.38				
68.05	0.37		0.37				
70.05	0.36		0.36				
72.05	0.35		0.35				
74.05	0.34		0.34				
76.05	0.33		0.33				
78.05	0.32		0.32				
80.05	0.31		0.31				
82.05	0.30		0.30				
84.05	0.29		0.29				
86.05	0.28		0.28				
88.05	0.27		0.27				
90.05	0.26		0.26				
92.05	0.25		0.25				
94.05	0.24		0.24				
96.05	0.23		0.23				
98.05	0.22		0.22				
100.05	0.21		0.21				
102.05	0.20		0.20				

90th Percentile Storm

Time span=0.05-150.00 hrs, dt=0.01 hrs, 14996 points
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment10S: Main Mine Area	Runoff Area=667,331 sf 0.00% Impervious Runoff Depth=0.17" Flow Length=511' Slope=0.3000 '/' Tc=13.4 min CN=77 Runoff=2.27 cfs 0.217 af
Subcatchment11S: Main Mine Area	Runoff Area=667,331 sf 17.95% Impervious Runoff Depth=0.92" Flow Length=511' Slope=0.3000 '/' Tc=1.8 min CN=95 Runoff=28.20 cfs 1.175 af
Subcatchment12S: Expansion Area	Runoff Area=596,486 sf 0.00% Impervious Runoff Depth=0.17" Flow Length=1,245' Tc=34.9 min CN=77 Runoff=1.05 cfs 0.194 af
Subcatchment14S: Expansion Area	Runoff Area=596,486 sf 0.00% Impervious Runoff Depth=0.85" Flow Length=1,245' Tc=7.2 min CN=94 Runoff=19.55 cfs 0.967 af
Subcatchment20S: Upland Area 1	Runoff Area=127,275 sf 0.00% Impervious Runoff Depth=0.17" Flow Length=942' Tc=33.6 min CN=77 Runoff=0.23 cfs 0.041 af
Subcatchment21S: Reclaimed Area	Runoff Area=161,004 sf 0.00% Impervious Runoff Depth=0.17" Flow Length=1,394' Tc=48.9 min CN=77 Runoff=0.23 cfs 0.052 af
Subcatchment23S: Upland Area 2	Runoff Area=112,373 sf 0.00% Impervious Runoff Depth=0.17" Flow Length=832' Tc=33.6 min CN=77 Runoff=0.20 cfs 0.037 af
Subcatchment24S: Upland Area 3	Runoff Area=206,326 sf 0.00% Impervious Runoff Depth=0.17" Flow Length=1,145' Tc=44.9 min CN=77 Runoff=0.31 cfs 0.067 af
Subcatchment25S: Upland Area 4	Runoff Area=441,065 sf 0.00% Impervious Runoff Depth=0.17" Flow Length=2,165' Tc=113.7 min CN=77 Runoff=0.37 cfs 0.143 af
Subcatchment26S: Upland Area 5	Runoff Area=128,001 sf 0.00% Impervious Runoff Depth=0.17" Flow Length=1,630' Tc=63.9 min CN=77 Runoff=0.15 cfs 0.042 af
Subcatchment27S: Upland Area 6	Runoff Area=120,292 sf 0.00% Impervious Runoff Depth=0.17" Flow Length=1,012' Tc=36.4 min CN=77 Runoff=0.21 cfs 0.039 af
Reach 5R: Expan Area Ditch	Avg. Flow Depth=0.72' Max Vel=5.93 fps Inflow=19.55 cfs 0.967 af n=0.044 L=576.0' S=0.0747 '/' Capacity=347.14 cfs Outflow=19.07 cfs 0.967 af
Reach 16R: Road Ditch	Avg. Flow Depth=0.10' Max Vel=1.29 fps Inflow=0.42 cfs 2.008 af n=0.040 L=67.6' S=0.0286 '/' Capacity=97.69 cfs Outflow=0.42 cfs 2.008 af
Reach 29R: Spillway	Avg. Flow Depth=0.03' Max Vel=2.13 fps Inflow=0.20 cfs 0.037 af n=0.044 L=211.0' S=0.3791 '/' Capacity=323.65 cfs Outflow=0.20 cfs 0.037 af
Reach 33R: Reclaim Ditch	Avg. Flow Depth=0.09' Max Vel=2.32 fps Inflow=0.43 cfs 0.094 af n=0.040 L=275.0' S=0.1167 '/' Capacity=36.84 cfs Outflow=0.43 cfs 0.094 af
Reach 34R: Div Ditch 2	Avg. Flow Depth=0.05' Max Vel=1.89 fps Inflow=0.20 cfs 0.037 af n=0.035 L=324.0' S=0.1080 '/' Capacity=30.48 cfs Outflow=0.20 cfs 0.037 af

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Type II 24-hr 90th Pcnt Rainfall=1.40"

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Reach 35R: Div Ditch 1	Avg. Flow Depth=0.06' Max Vel=1.94 fps Inflow=0.23 cfs 0.041 af n=0.035 L=442.0' S=0.1018 '/' Capacity=29.59 cfs Outflow=0.23 cfs 0.041 af
Reach 36R: Div Ditch 5	Avg. Flow Depth=0.08' Max Vel=1.20 fps Inflow=0.21 cfs 0.039 af n=0.035 L=206.0' S=0.0243 '/' Capacity=14.45 cfs Outflow=0.20 cfs 0.039 af
Reach 37R: Div Ditch 3	Avg. Flow Depth=0.08' Max Vel=2.32 fps Inflow=0.37 cfs 0.143 af n=0.035 L=592.0' S=0.1014 '/' Capacity=29.53 cfs Outflow=0.37 cfs 0.143 af
Reach 38R: Div Ditch 4	Avg. Flow Depth=0.04' Max Vel=1.68 fps Inflow=0.15 cfs 0.042 af n=0.035 L=336.0' S=0.1042 '/' Capacity=29.93 cfs Outflow=0.15 cfs 0.042 af
Reach 39R: Culvert Outlet Apron	Avg. Flow Depth=0.07' Max Vel=0.23 fps Inflow=0.46 cfs 2.101 af n=0.050 L=22.0' S=0.0023 '/' Capacity=263.34 cfs Outflow=0.46 cfs 2.101 af
Reach 40R: Emergency Spillway	Inflow=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af
Pond 13P: Pre-Dvel Disch	Inflow=2.55 cfs 0.411 af Primary=2.55 cfs 0.411 af
Pond 14P: North Bay	Peak Elev=1,453.41' Storage=3.629 af Inflow=41.76 cfs 2.142 af Outflow=0.42 cfs 2.025 af
Pond 15P: South Bay	Peak Elev=1,451.68' Storage=0.590 af Inflow=0.42 cfs 2.025 af Primary=0.42 cfs 2.008 af Secondary=0.00 cfs 0.000 af Outflow=0.42 cfs 2.008 af
Pond 22P: Road Crossing Culverts w/ Storage	Peak Elev=1,448.01' Storage=70 cf Inflow=0.46 cfs 2.101 af 30.0" Round Culvert x 3.00 n=0.012 L=64.5' S=0.0284 '/' Outflow=0.46 cfs 2.101 af
Pond 30P: Sump	Peak Elev=1,463.32' Inflow=0.50 cfs 0.104 af Outflow=0.50 cfs 0.104 af
Pond 32P: Intermittent Drng	Inflow=0.74 cfs 0.286 af Primary=0.74 cfs 0.286 af
Pond 33P: ExpStrmBasin	Peak Elev=1,501.53' Inflow=19.55 cfs 0.967 af 36.0" Round Culvert x 3.00 n=0.012 L=100.0' S=0.0050 '/' Outflow=19.55 cfs 0.967 af
Pond 42P: Wetland LE-20	Inflow=0.74 cfs 0.286 af Primary=0.74 cfs 0.286 af
Pond 43P: Wetland LE-20	Inflow=0.46 cfs 2.101 af Primary=0.46 cfs 2.101 af

Total Runoff Area = 87.786 ac Runoff Volume = 2.975 af Average Runoff Depth = 0.41"
96.87% Pervious = 85.036 ac 3.13% Impervious = 2.750 ac

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Type II 24-hr 90th Pcnt Rainfall=1.40"

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Summary for Subcatchment 10S: Main Mine Area Pre-Dvel

Includes pond surface area

Runoff = 2.27 cfs @ 12.10 hrs, Volume= 0.217 af, Depth= 0.17"

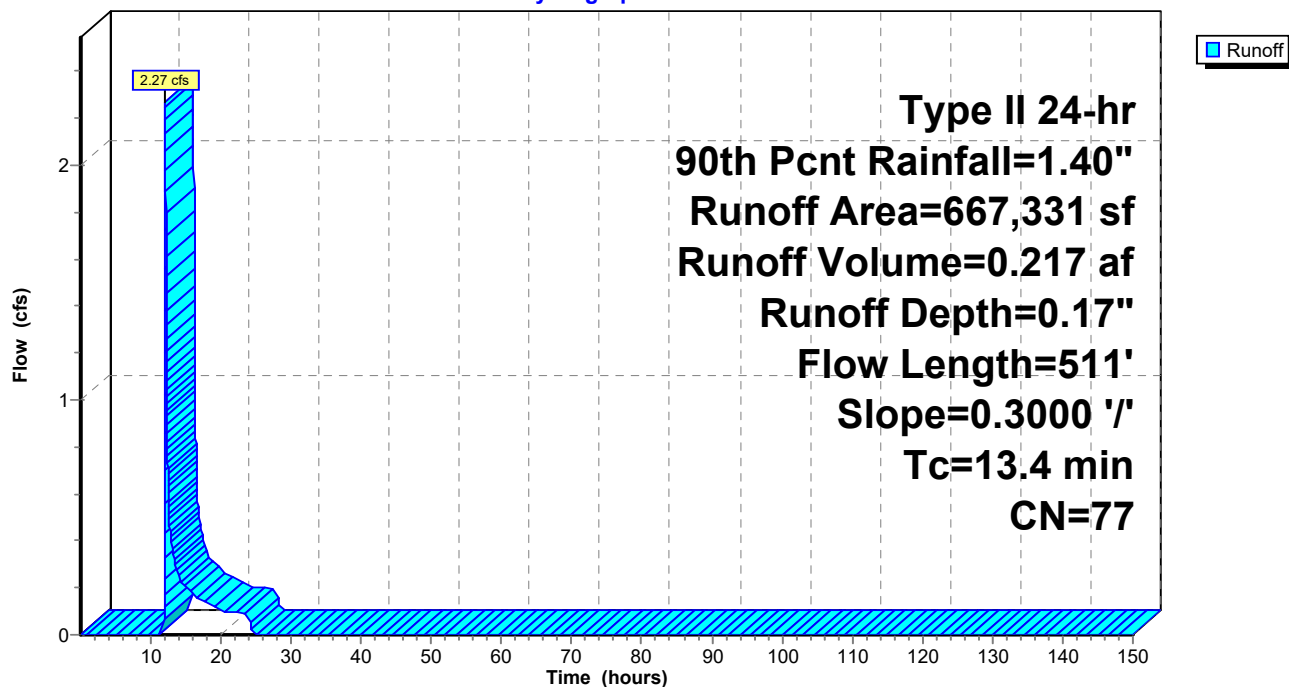
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs
Type II 24-hr 90th Pcnt Rainfall=1.40"

Area (sf)	CN	Description
667,331	77	Woods, Good, HSG D
667,331		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	100	0.3000	0.20		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.40"
5.0	411	0.3000	1.37		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
13.4	511	Total			

Subcatchment 10S: Main Mine Area Pre-Dvel

Hydrograph



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Type II 24-hr 90th Pcnt Rainfall=1.40"

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Hydrograph for Subcatchment 10S: Main Mine Area Pre-Dvel

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.05	0.00	0.00	0.00	104.05	1.40	0.17	0.00
2.05	0.03	0.00	0.00	106.05	1.40	0.17	0.00
4.05	0.07	0.00	0.00	108.05	1.40	0.17	0.00
6.05	0.11	0.00	0.00	110.05	1.40	0.17	0.00
8.05	0.17	0.00	0.00	112.05	1.40	0.17	0.00
10.05	0.26	0.00	0.00	114.05	1.40	0.17	0.00
12.05	0.94	0.04	2.00	116.05	1.40	0.17	0.00
14.05	1.15	0.09	0.25	118.05	1.40	0.17	0.00
16.05	1.23	0.11	0.17	120.05	1.40	0.17	0.00
18.05	1.29	0.13	0.13	122.05	1.40	0.17	0.00
20.05	1.33	0.15	0.10	124.05	1.40	0.17	0.00
22.05	1.37	0.16	0.10	126.05	1.40	0.17	0.00
24.05	1.40	0.17	0.09	128.05	1.40	0.17	0.00
26.05	1.40	0.17	0.00	130.05	1.40	0.17	0.00
28.05	1.40	0.17	0.00	132.05	1.40	0.17	0.00
30.05	1.40	0.17	0.00	134.05	1.40	0.17	0.00
32.05	1.40	0.17	0.00	136.05	1.40	0.17	0.00
34.05	1.40	0.17	0.00	138.05	1.40	0.17	0.00
36.05	1.40	0.17	0.00	140.05	1.40	0.17	0.00
38.05	1.40	0.17	0.00	142.05	1.40	0.17	0.00
40.05	1.40	0.17	0.00	144.05	1.40	0.17	0.00
42.05	1.40	0.17	0.00	146.05	1.40	0.17	0.00
44.05	1.40	0.17	0.00	148.05	1.40	0.17	0.00
46.05	1.40	0.17	0.00				
48.05	1.40	0.17	0.00				
50.05	1.40	0.17	0.00				
52.05	1.40	0.17	0.00				
54.05	1.40	0.17	0.00				
56.05	1.40	0.17	0.00				
58.05	1.40	0.17	0.00				
60.05	1.40	0.17	0.00				
62.05	1.40	0.17	0.00				
64.05	1.40	0.17	0.00				
66.05	1.40	0.17	0.00				
68.05	1.40	0.17	0.00				
70.05	1.40	0.17	0.00				
72.05	1.40	0.17	0.00				
74.05	1.40	0.17	0.00				
76.05	1.40	0.17	0.00				
78.05	1.40	0.17	0.00				
80.05	1.40	0.17	0.00				
82.05	1.40	0.17	0.00				
84.05	1.40	0.17	0.00				
86.05	1.40	0.17	0.00				
88.05	1.40	0.17	0.00				
90.05	1.40	0.17	0.00				
92.05	1.40	0.17	0.00				
94.05	1.40	0.17	0.00				
96.05	1.40	0.17	0.00				
98.05	1.40	0.17	0.00				
100.05	1.40	0.17	0.00				
102.05	1.40	0.17	0.00				

Summary for Subcatchment 11S: Main Mine Area

Includes pond surface area

Runoff = 28.20 cfs @ 11.92 hrs, Volume= 1.175 af, Depth= 0.92"

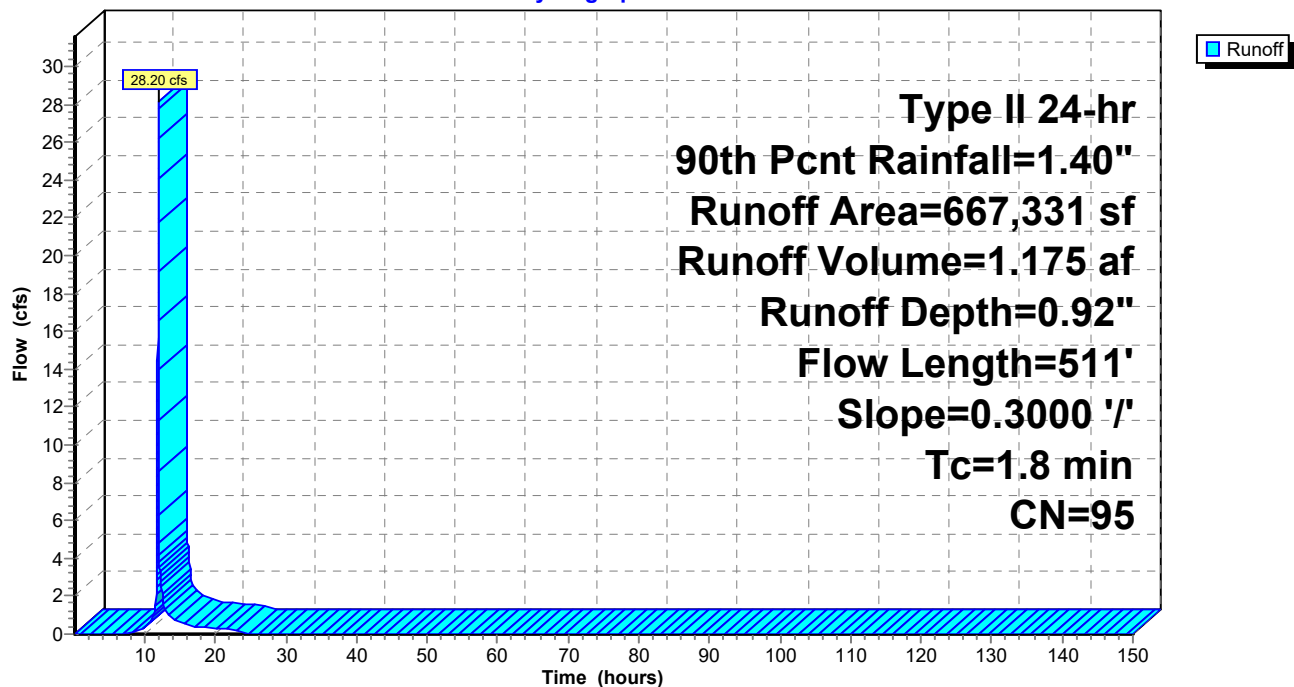
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs
Type II 24-hr 90th Pcnt Rainfall=1.40"

Area (sf)	CN	Description
547,548	94	Newly graded area, HSG D
* 119,783	100	Water Surface, HSG A
667,331	95	Weighted Average
547,548		82.05% Pervious Area
119,783		17.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.3000	3.52		Sheet Flow, Smooth surfaces n= 0.011 P2= 2.40"
1.3	411	0.3000	5.48		Shallow Concentrated Flow, Nearly Bare & Untilled Kv= 10.0 fps
1.8	511	Total			

Subcatchment 11S: Main Mine Area

Hydrograph



Hydrograph for Subcatchment 11S: Main Mine Area

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.05	0.00	0.00	0.00	104.05	1.40	0.92	0.00
2.05	0.03	0.00	0.00	106.05	1.40	0.92	0.00
4.05	0.07	0.00	0.00	108.05	1.40	0.92	0.00
6.05	0.11	0.00	0.01	110.05	1.40	0.92	0.00
8.05	0.17	0.01	0.10	112.05	1.40	0.92	0.00
10.05	0.26	0.03	0.34	114.05	1.40	0.92	0.00
12.05	0.94	0.51	3.81	116.05	1.40	0.92	0.00
14.05	1.15	0.70	0.71	118.05	1.40	0.92	0.00
16.05	1.23	0.77	0.45	120.05	1.40	0.92	0.00
18.05	1.29	0.82	0.35	122.05	1.40	0.92	0.00
20.05	1.33	0.86	0.26	124.05	1.40	0.92	0.00
22.05	1.37	0.89	0.24	126.05	1.40	0.92	0.00
24.05	1.40	0.92	0.01	128.05	1.40	0.92	0.00
26.05	1.40	0.92	0.00	130.05	1.40	0.92	0.00
28.05	1.40	0.92	0.00	132.05	1.40	0.92	0.00
30.05	1.40	0.92	0.00	134.05	1.40	0.92	0.00
32.05	1.40	0.92	0.00	136.05	1.40	0.92	0.00
34.05	1.40	0.92	0.00	138.05	1.40	0.92	0.00
36.05	1.40	0.92	0.00	140.05	1.40	0.92	0.00
38.05	1.40	0.92	0.00	142.05	1.40	0.92	0.00
40.05	1.40	0.92	0.00	144.05	1.40	0.92	0.00
42.05	1.40	0.92	0.00	146.05	1.40	0.92	0.00
44.05	1.40	0.92	0.00	148.05	1.40	0.92	0.00
46.05	1.40	0.92	0.00				
48.05	1.40	0.92	0.00				
50.05	1.40	0.92	0.00				
52.05	1.40	0.92	0.00				
54.05	1.40	0.92	0.00				
56.05	1.40	0.92	0.00				
58.05	1.40	0.92	0.00				
60.05	1.40	0.92	0.00				
62.05	1.40	0.92	0.00				
64.05	1.40	0.92	0.00				
66.05	1.40	0.92	0.00				
68.05	1.40	0.92	0.00				
70.05	1.40	0.92	0.00				
72.05	1.40	0.92	0.00				
74.05	1.40	0.92	0.00				
76.05	1.40	0.92	0.00				
78.05	1.40	0.92	0.00				
80.05	1.40	0.92	0.00				
82.05	1.40	0.92	0.00				
84.05	1.40	0.92	0.00				
86.05	1.40	0.92	0.00				
88.05	1.40	0.92	0.00				
90.05	1.40	0.92	0.00				
92.05	1.40	0.92	0.00				
94.05	1.40	0.92	0.00				
96.05	1.40	0.92	0.00				
98.05	1.40	0.92	0.00				
100.05	1.40	0.92	0.00				
102.05	1.40	0.92	0.00				

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Type II 24-hr 90th Pcnt Rainfall=1.40"

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Summary for Subcatchment 12S: Expansion Area Pre-Dvel

Runoff = 1.05 cfs @ 12.41 hrs, Volume= 0.194 af, Depth= 0.17"

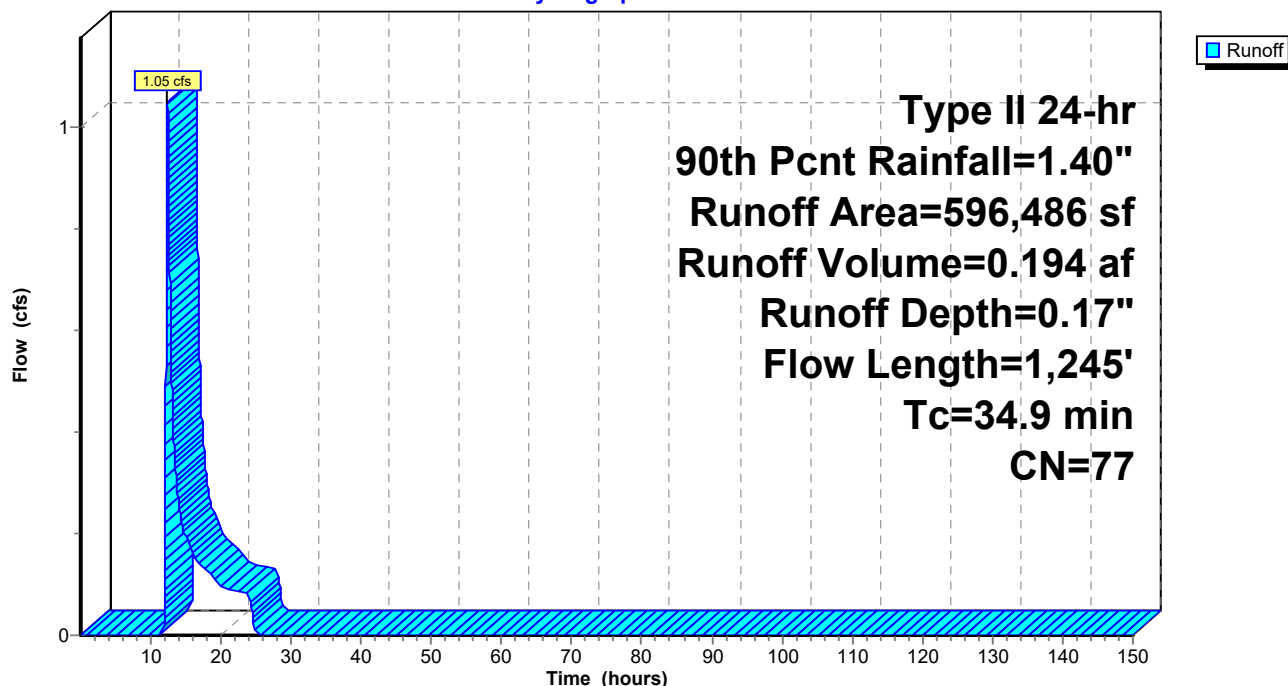
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs
Type II 24-hr 90th Pcnt Rainfall=1.40"

Area (sf)	CN	Description
596,486	77	Woods, Good, HSG D
596,486		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	100	0.3100	0.20		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.40"
1.2	100	0.3100	1.39		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
25.4	1,045	0.0750	0.68		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
34.9	1,245	Total			

Subcatchment 12S: Expansion Area Pre-Dvel

Hydrograph



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Type II 24-hr 90th Pcnt Rainfall=1.40"

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Hydrograph for Subcatchment 12S: Expansion Area Pre-Dvel

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.05	0.00	0.00	0.00	104.05	1.40	0.17	0.00
2.05	0.03	0.00	0.00	106.05	1.40	0.17	0.00
4.05	0.07	0.00	0.00	108.05	1.40	0.17	0.00
6.05	0.11	0.00	0.00	110.05	1.40	0.17	0.00
8.05	0.17	0.00	0.00	112.05	1.40	0.17	0.00
10.05	0.26	0.00	0.00	114.05	1.40	0.17	0.00
12.05	0.94	0.04	0.15	116.05	1.40	0.17	0.00
14.05	1.15	0.09	0.25	118.05	1.40	0.17	0.00
16.05	1.23	0.11	0.16	120.05	1.40	0.17	0.00
18.05	1.29	0.13	0.12	122.05	1.40	0.17	0.00
20.05	1.33	0.15	0.10	124.05	1.40	0.17	0.00
22.05	1.37	0.16	0.09	126.05	1.40	0.17	0.00
24.05	1.40	0.17	0.08	128.05	1.40	0.17	0.00
26.05	1.40	0.17	0.00	130.05	1.40	0.17	0.00
28.05	1.40	0.17	0.00	132.05	1.40	0.17	0.00
30.05	1.40	0.17	0.00	134.05	1.40	0.17	0.00
32.05	1.40	0.17	0.00	136.05	1.40	0.17	0.00
34.05	1.40	0.17	0.00	138.05	1.40	0.17	0.00
36.05	1.40	0.17	0.00	140.05	1.40	0.17	0.00
38.05	1.40	0.17	0.00	142.05	1.40	0.17	0.00
40.05	1.40	0.17	0.00	144.05	1.40	0.17	0.00
42.05	1.40	0.17	0.00	146.05	1.40	0.17	0.00
44.05	1.40	0.17	0.00	148.05	1.40	0.17	0.00
46.05	1.40	0.17	0.00				
48.05	1.40	0.17	0.00				
50.05	1.40	0.17	0.00				
52.05	1.40	0.17	0.00				
54.05	1.40	0.17	0.00				
56.05	1.40	0.17	0.00				
58.05	1.40	0.17	0.00				
60.05	1.40	0.17	0.00				
62.05	1.40	0.17	0.00				
64.05	1.40	0.17	0.00				
66.05	1.40	0.17	0.00				
68.05	1.40	0.17	0.00				
70.05	1.40	0.17	0.00				
72.05	1.40	0.17	0.00				
74.05	1.40	0.17	0.00				
76.05	1.40	0.17	0.00				
78.05	1.40	0.17	0.00				
80.05	1.40	0.17	0.00				
82.05	1.40	0.17	0.00				
84.05	1.40	0.17	0.00				
86.05	1.40	0.17	0.00				
88.05	1.40	0.17	0.00				
90.05	1.40	0.17	0.00				
92.05	1.40	0.17	0.00				
94.05	1.40	0.17	0.00				
96.05	1.40	0.17	0.00				
98.05	1.40	0.17	0.00				
100.05	1.40	0.17	0.00				
102.05	1.40	0.17	0.00				

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Type II 24-hr 90th Pcnt Rainfall=1.40"

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Summary for Subcatchment 14S: Expansion Area

Runoff = 19.55 cfs @ 11.99 hrs, Volume= 0.967 af, Depth= 0.85"

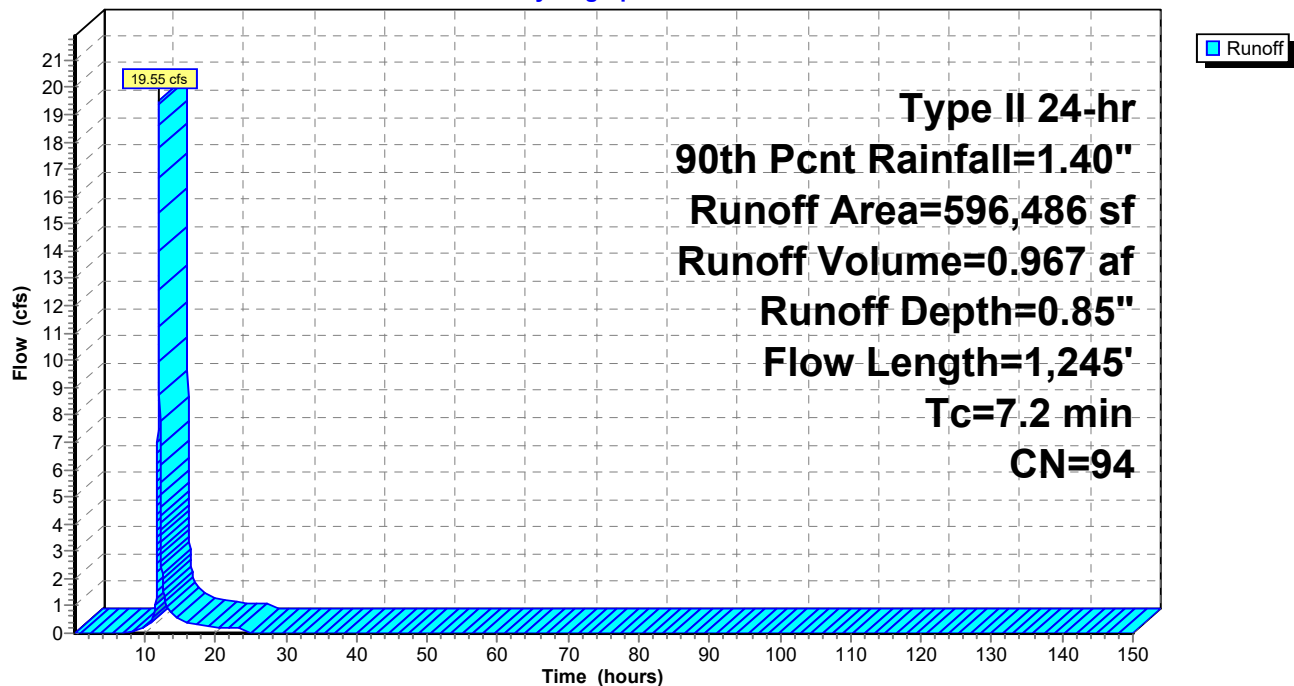
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs
Type II 24-hr 90th Pcnt Rainfall=1.40"

Area (sf)	CN	Description
596,486	94	Newly graded area, HSG D
596,486		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.3100	3.57		Sheet Flow, Smooth surfaces n= 0.011 P2= 2.40"
0.3	100	0.3100	5.57		Shallow Concentrated Flow, Nearly Bare & Untilled Kv= 10.0 fps
6.4	1,045	0.0750	2.74		Shallow Concentrated Flow, Nearly Bare & Untilled Kv= 10.0 fps
7.2	1,245	Total			

Subcatchment 14S: Expansion Area

Hydrograph



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Type II 24-hr 90th Pcnt Rainfall=1.40"

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Hydrograph for Subcatchment 14S: Expansion Area

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.05	0.00	0.00	0.00	104.05	1.40	0.85	0.00
2.05	0.03	0.00	0.00	106.05	1.40	0.85	0.00
4.05	0.07	0.00	0.00	108.05	1.40	0.85	0.00
6.05	0.11	0.00	0.00	110.05	1.40	0.85	0.00
8.05	0.17	0.00	0.05	112.05	1.40	0.85	0.00
10.05	0.26	0.02	0.22	114.05	1.40	0.85	0.00
12.05	0.94	0.46	14.00	116.05	1.40	0.85	0.00
14.05	1.15	0.63	0.63	118.05	1.40	0.85	0.00
16.05	1.23	0.70	0.39	120.05	1.40	0.85	0.00
18.05	1.29	0.75	0.31	122.05	1.40	0.85	0.00
20.05	1.33	0.79	0.22	124.05	1.40	0.85	0.00
22.05	1.37	0.82	0.21	126.05	1.40	0.85	0.00
24.05	1.40	0.85	0.18	128.05	1.40	0.85	0.00
26.05	1.40	0.85	0.00	130.05	1.40	0.85	0.00
28.05	1.40	0.85	0.00	132.05	1.40	0.85	0.00
30.05	1.40	0.85	0.00	134.05	1.40	0.85	0.00
32.05	1.40	0.85	0.00	136.05	1.40	0.85	0.00
34.05	1.40	0.85	0.00	138.05	1.40	0.85	0.00
36.05	1.40	0.85	0.00	140.05	1.40	0.85	0.00
38.05	1.40	0.85	0.00	142.05	1.40	0.85	0.00
40.05	1.40	0.85	0.00	144.05	1.40	0.85	0.00
42.05	1.40	0.85	0.00	146.05	1.40	0.85	0.00
44.05	1.40	0.85	0.00	148.05	1.40	0.85	0.00
46.05	1.40	0.85	0.00				
48.05	1.40	0.85	0.00				
50.05	1.40	0.85	0.00				
52.05	1.40	0.85	0.00				
54.05	1.40	0.85	0.00				
56.05	1.40	0.85	0.00				
58.05	1.40	0.85	0.00				
60.05	1.40	0.85	0.00				
62.05	1.40	0.85	0.00				
64.05	1.40	0.85	0.00				
66.05	1.40	0.85	0.00				
68.05	1.40	0.85	0.00				
70.05	1.40	0.85	0.00				
72.05	1.40	0.85	0.00				
74.05	1.40	0.85	0.00				
76.05	1.40	0.85	0.00				
78.05	1.40	0.85	0.00				
80.05	1.40	0.85	0.00				
82.05	1.40	0.85	0.00				
84.05	1.40	0.85	0.00				
86.05	1.40	0.85	0.00				
88.05	1.40	0.85	0.00				
90.05	1.40	0.85	0.00				
92.05	1.40	0.85	0.00				
94.05	1.40	0.85	0.00				
96.05	1.40	0.85	0.00				
98.05	1.40	0.85	0.00				
100.05	1.40	0.85	0.00				
102.05	1.40	0.85	0.00				

Summary for Subcatchment 20S: Upland Area 1

Includes pond surface area

Runoff = 0.23 cfs @ 12.39 hrs, Volume= 0.041 af, Depth= 0.17"

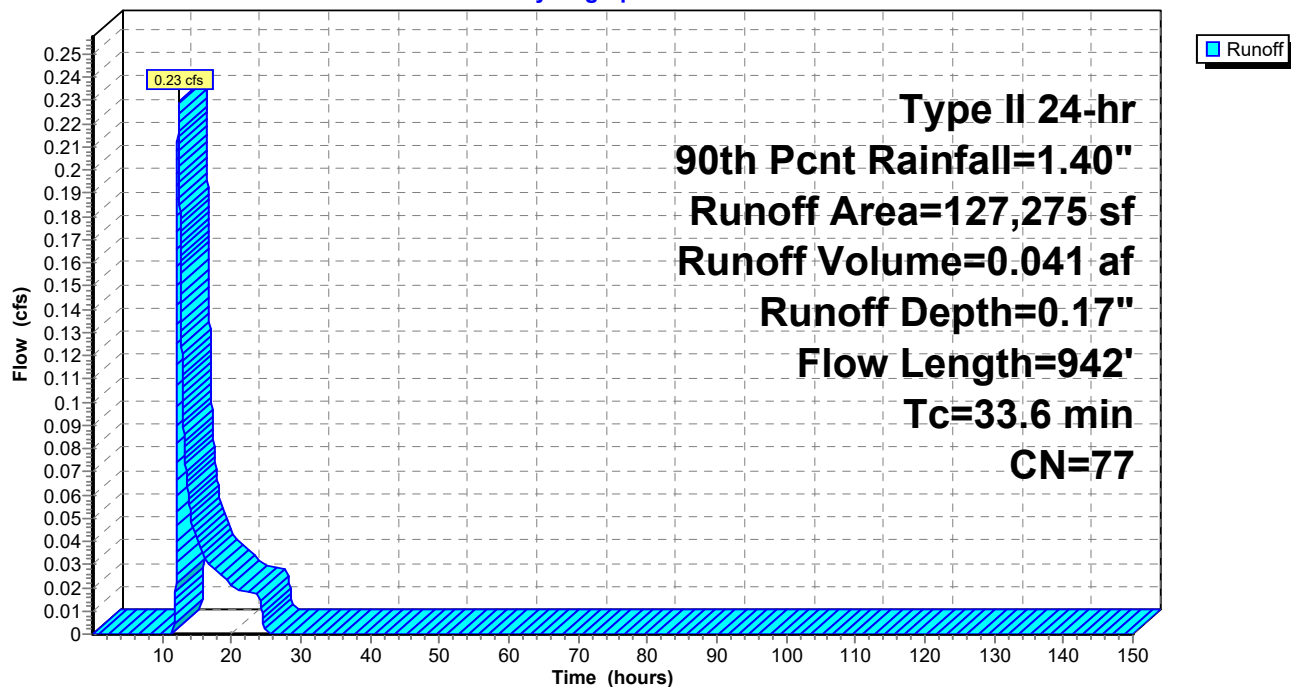
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs
Type II 24-hr 90th Pcnt Rainfall=1.40"

Area (sf)	CN	Description
127,275	77	Woods, Good, HSG D
127,275		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.8	100	0.0200	0.07		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.40"
8.4	399	0.1000	0.79		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
0.4	443	0.1020	16.46	65.85	Channel Flow, Area= 4.0 sf Perim= 6.0' r= 0.67' n= 0.022 Earth, clean & straight
33.6	942	Total			

Subcatchment 20S: Upland Area 1

Hydrograph



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Type II 24-hr 90th Pcnt Rainfall=1.40"

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Hydrograph for Subcatchment 20S: Upland Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.05	0.00	0.00	0.00	104.05	1.40	0.17	0.00
2.05	0.03	0.00	0.00	106.05	1.40	0.17	0.00
4.05	0.07	0.00	0.00	108.05	1.40	0.17	0.00
6.05	0.11	0.00	0.00	110.05	1.40	0.17	0.00
8.05	0.17	0.00	0.00	112.05	1.40	0.17	0.00
10.05	0.26	0.00	0.00	114.05	1.40	0.17	0.00
12.05	0.94	0.04	0.04	116.05	1.40	0.17	0.00
14.05	1.15	0.09	0.05	118.05	1.40	0.17	0.00
16.05	1.23	0.11	0.03	120.05	1.40	0.17	0.00
18.05	1.29	0.13	0.03	122.05	1.40	0.17	0.00
20.05	1.33	0.15	0.02	124.05	1.40	0.17	0.00
22.05	1.37	0.16	0.02	126.05	1.40	0.17	0.00
24.05	1.40	0.17	0.02	128.05	1.40	0.17	0.00
26.05	1.40	0.17	0.00	130.05	1.40	0.17	0.00
28.05	1.40	0.17	0.00	132.05	1.40	0.17	0.00
30.05	1.40	0.17	0.00	134.05	1.40	0.17	0.00
32.05	1.40	0.17	0.00	136.05	1.40	0.17	0.00
34.05	1.40	0.17	0.00	138.05	1.40	0.17	0.00
36.05	1.40	0.17	0.00	140.05	1.40	0.17	0.00
38.05	1.40	0.17	0.00	142.05	1.40	0.17	0.00
40.05	1.40	0.17	0.00	144.05	1.40	0.17	0.00
42.05	1.40	0.17	0.00	146.05	1.40	0.17	0.00
44.05	1.40	0.17	0.00	148.05	1.40	0.17	0.00
46.05	1.40	0.17	0.00				
48.05	1.40	0.17	0.00				
50.05	1.40	0.17	0.00				
52.05	1.40	0.17	0.00				
54.05	1.40	0.17	0.00				
56.05	1.40	0.17	0.00				
58.05	1.40	0.17	0.00				
60.05	1.40	0.17	0.00				
62.05	1.40	0.17	0.00				
64.05	1.40	0.17	0.00				
66.05	1.40	0.17	0.00				
68.05	1.40	0.17	0.00				
70.05	1.40	0.17	0.00				
72.05	1.40	0.17	0.00				
74.05	1.40	0.17	0.00				
76.05	1.40	0.17	0.00				
78.05	1.40	0.17	0.00				
80.05	1.40	0.17	0.00				
82.05	1.40	0.17	0.00				
84.05	1.40	0.17	0.00				
86.05	1.40	0.17	0.00				
88.05	1.40	0.17	0.00				
90.05	1.40	0.17	0.00				
92.05	1.40	0.17	0.00				
94.05	1.40	0.17	0.00				
96.05	1.40	0.17	0.00				
98.05	1.40	0.17	0.00				
100.05	1.40	0.17	0.00				
102.05	1.40	0.17	0.00				

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Type II 24-hr 90th Pcnt Rainfall=1.40"

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Summary for Subcatchment 21S: Reclaimed Area

Includes pond surface area

Runoff = 0.23 cfs @ 12.66 hrs, Volume= 0.052 af, Depth= 0.17"

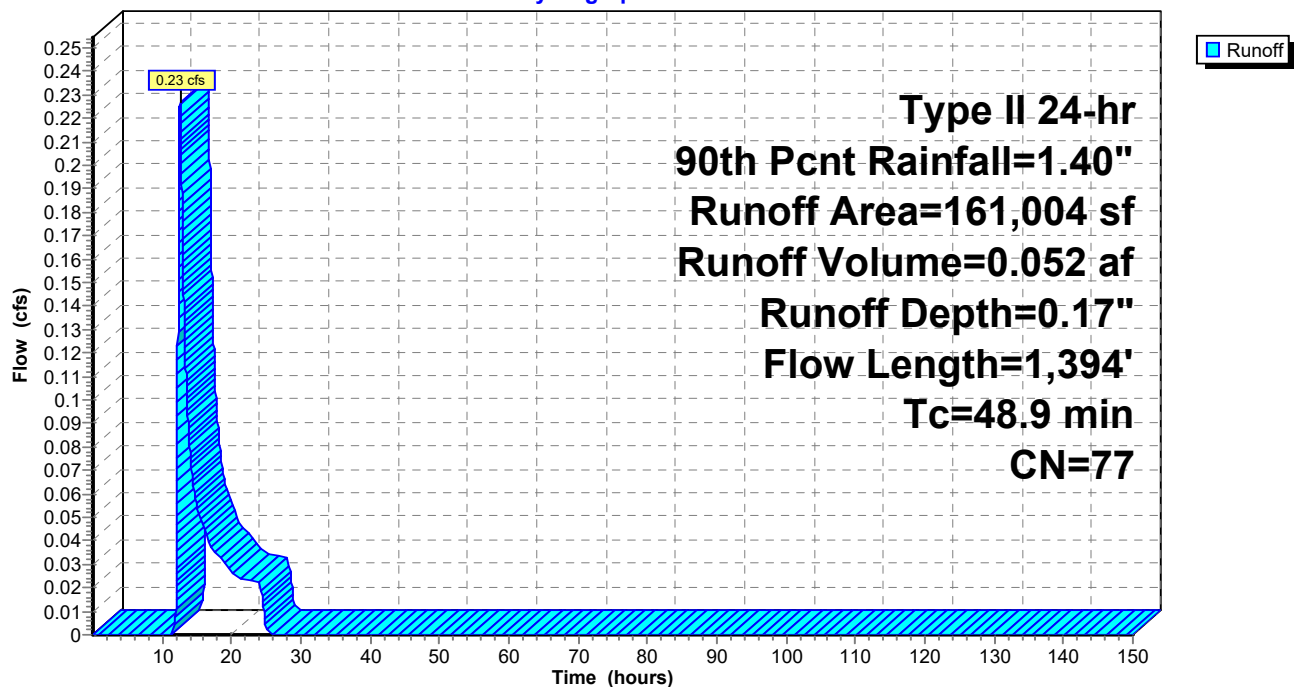
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs
Type II 24-hr 90th Pcnt Rainfall=1.40"

Area (sf)	CN	Description
161,004	77	Woods, Good, HSG D
161,004		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.8	100	0.0200	0.07		Sheet Flow,
					Woods: Light underbrush n= 0.400 P2= 2.40"
24.1	1,294	0.1280	0.89		Shallow Concentrated Flow,
					Forest w/Heavy Litter Kv= 2.5 fps
48.9	1,394	Total			

Subcatchment 21S: Reclaimed Area

Hydrograph



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Type II 24-hr 90th Pcnt Rainfall=1.40"

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Hydrograph for Subcatchment 21S: Reclaimed Area

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.05	0.00	0.00	0.00	104.05	1.40	0.17	0.00
2.05	0.03	0.00	0.00	106.05	1.40	0.17	0.00
4.05	0.07	0.00	0.00	108.05	1.40	0.17	0.00
6.05	0.11	0.00	0.00	110.05	1.40	0.17	0.00
8.05	0.17	0.00	0.00	112.05	1.40	0.17	0.00
10.05	0.26	0.00	0.00	114.05	1.40	0.17	0.00
12.05	0.94	0.04	0.01	116.05	1.40	0.17	0.00
14.05	1.15	0.09	0.08	118.05	1.40	0.17	0.00
16.05	1.23	0.11	0.05	120.05	1.40	0.17	0.00
18.05	1.29	0.13	0.03	122.05	1.40	0.17	0.00
20.05	1.33	0.15	0.03	124.05	1.40	0.17	0.00
22.05	1.37	0.16	0.02	126.05	1.40	0.17	0.00
24.05	1.40	0.17	0.02	128.05	1.40	0.17	0.00
26.05	1.40	0.17	0.00	130.05	1.40	0.17	0.00
28.05	1.40	0.17	0.00	132.05	1.40	0.17	0.00
30.05	1.40	0.17	0.00	134.05	1.40	0.17	0.00
32.05	1.40	0.17	0.00	136.05	1.40	0.17	0.00
34.05	1.40	0.17	0.00	138.05	1.40	0.17	0.00
36.05	1.40	0.17	0.00	140.05	1.40	0.17	0.00
38.05	1.40	0.17	0.00	142.05	1.40	0.17	0.00
40.05	1.40	0.17	0.00	144.05	1.40	0.17	0.00
42.05	1.40	0.17	0.00	146.05	1.40	0.17	0.00
44.05	1.40	0.17	0.00	148.05	1.40	0.17	0.00
46.05	1.40	0.17	0.00				
48.05	1.40	0.17	0.00				
50.05	1.40	0.17	0.00				
52.05	1.40	0.17	0.00				
54.05	1.40	0.17	0.00				
56.05	1.40	0.17	0.00				
58.05	1.40	0.17	0.00				
60.05	1.40	0.17	0.00				
62.05	1.40	0.17	0.00				
64.05	1.40	0.17	0.00				
66.05	1.40	0.17	0.00				
68.05	1.40	0.17	0.00				
70.05	1.40	0.17	0.00				
72.05	1.40	0.17	0.00				
74.05	1.40	0.17	0.00				
76.05	1.40	0.17	0.00				
78.05	1.40	0.17	0.00				
80.05	1.40	0.17	0.00				
82.05	1.40	0.17	0.00				
84.05	1.40	0.17	0.00				
86.05	1.40	0.17	0.00				
88.05	1.40	0.17	0.00				
90.05	1.40	0.17	0.00				
92.05	1.40	0.17	0.00				
94.05	1.40	0.17	0.00				
96.05	1.40	0.17	0.00				
98.05	1.40	0.17	0.00				
100.05	1.40	0.17	0.00				
102.05	1.40	0.17	0.00				

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Type II 24-hr 90th Pcnt Rainfall=1.40"

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Summary for Subcatchment 23S: Upland Area 2

Includes pond surface area

Runoff = 0.20 cfs @ 12.39 hrs, Volume= 0.037 af, Depth= 0.17"

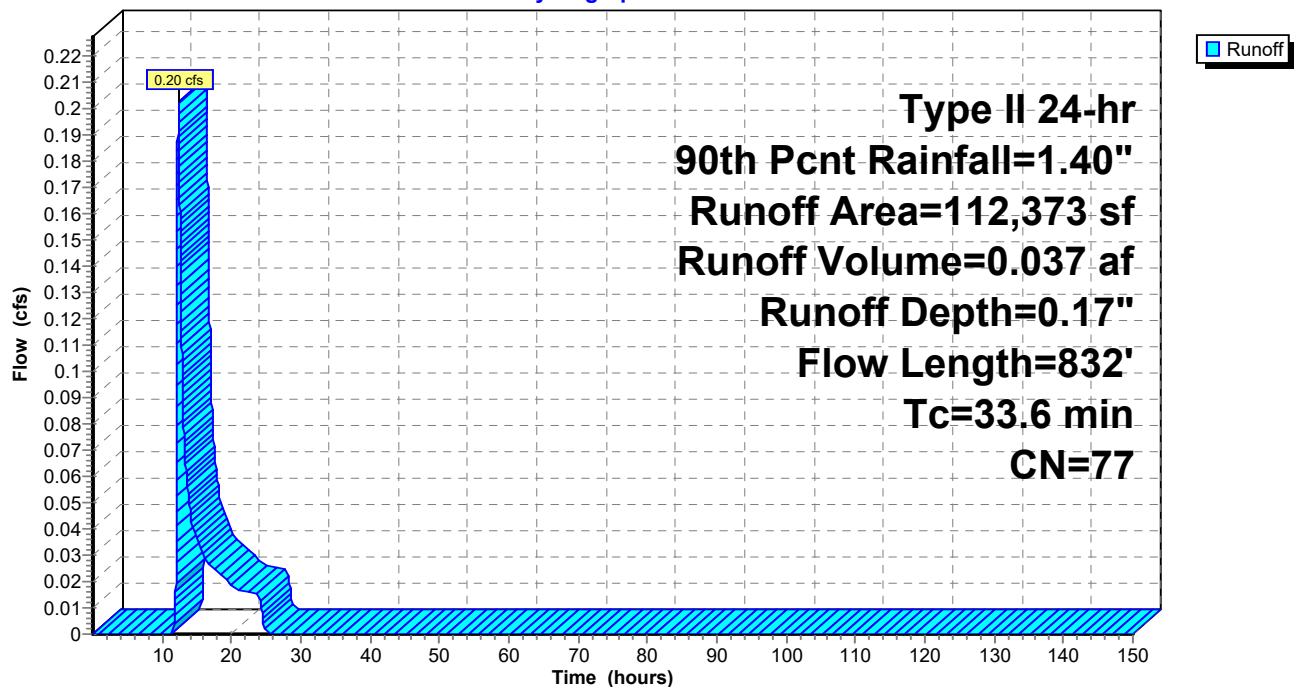
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs
Type II 24-hr 90th Pcnt Rainfall=1.40"

Area (sf)	CN	Description
112,373	77	Woods, Good, HSG D
112,373		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.8	100	0.0200	0.07		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.40"
8.4	399	0.1000	0.79		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
0.4	333	0.0750	14.12	56.47	Channel Flow, Area= 4.0 sf Perim= 6.0' r= 0.67' n= 0.022 Earth, clean & straight
33.6	832	Total			

Subcatchment 23S: Upland Area 2

Hydrograph



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Type II 24-hr 90th Pcnt Rainfall=1.40"

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Hydrograph for Subcatchment 23S: Upland Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.05	0.00	0.00	0.00	104.05	1.40	0.17	0.00
2.05	0.03	0.00	0.00	106.05	1.40	0.17	0.00
4.05	0.07	0.00	0.00	108.05	1.40	0.17	0.00
6.05	0.11	0.00	0.00	110.05	1.40	0.17	0.00
8.05	0.17	0.00	0.00	112.05	1.40	0.17	0.00
10.05	0.26	0.00	0.00	114.05	1.40	0.17	0.00
12.05	0.94	0.04	0.03	116.05	1.40	0.17	0.00
14.05	1.15	0.09	0.05	118.05	1.40	0.17	0.00
16.05	1.23	0.11	0.03	120.05	1.40	0.17	0.00
18.05	1.29	0.13	0.02	122.05	1.40	0.17	0.00
20.05	1.33	0.15	0.02	124.05	1.40	0.17	0.00
22.05	1.37	0.16	0.02	126.05	1.40	0.17	0.00
24.05	1.40	0.17	0.02	128.05	1.40	0.17	0.00
26.05	1.40	0.17	0.00	130.05	1.40	0.17	0.00
28.05	1.40	0.17	0.00	132.05	1.40	0.17	0.00
30.05	1.40	0.17	0.00	134.05	1.40	0.17	0.00
32.05	1.40	0.17	0.00	136.05	1.40	0.17	0.00
34.05	1.40	0.17	0.00	138.05	1.40	0.17	0.00
36.05	1.40	0.17	0.00	140.05	1.40	0.17	0.00
38.05	1.40	0.17	0.00	142.05	1.40	0.17	0.00
40.05	1.40	0.17	0.00	144.05	1.40	0.17	0.00
42.05	1.40	0.17	0.00	146.05	1.40	0.17	0.00
44.05	1.40	0.17	0.00	148.05	1.40	0.17	0.00
46.05	1.40	0.17	0.00				
48.05	1.40	0.17	0.00				
50.05	1.40	0.17	0.00				
52.05	1.40	0.17	0.00				
54.05	1.40	0.17	0.00				
56.05	1.40	0.17	0.00				
58.05	1.40	0.17	0.00				
60.05	1.40	0.17	0.00				
62.05	1.40	0.17	0.00				
64.05	1.40	0.17	0.00				
66.05	1.40	0.17	0.00				
68.05	1.40	0.17	0.00				
70.05	1.40	0.17	0.00				
72.05	1.40	0.17	0.00				
74.05	1.40	0.17	0.00				
76.05	1.40	0.17	0.00				
78.05	1.40	0.17	0.00				
80.05	1.40	0.17	0.00				
82.05	1.40	0.17	0.00				
84.05	1.40	0.17	0.00				
86.05	1.40	0.17	0.00				
88.05	1.40	0.17	0.00				
90.05	1.40	0.17	0.00				
92.05	1.40	0.17	0.00				
94.05	1.40	0.17	0.00				
96.05	1.40	0.17	0.00				
98.05	1.40	0.17	0.00				
100.05	1.40	0.17	0.00				
102.05	1.40	0.17	0.00				

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Type II 24-hr 90th Pcnt Rainfall=1.40"

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Summary for Subcatchment 24S: Upland Area 3

Includes pond surface area

Runoff = 0.31 cfs @ 12.57 hrs, Volume= 0.067 af, Depth= 0.17"

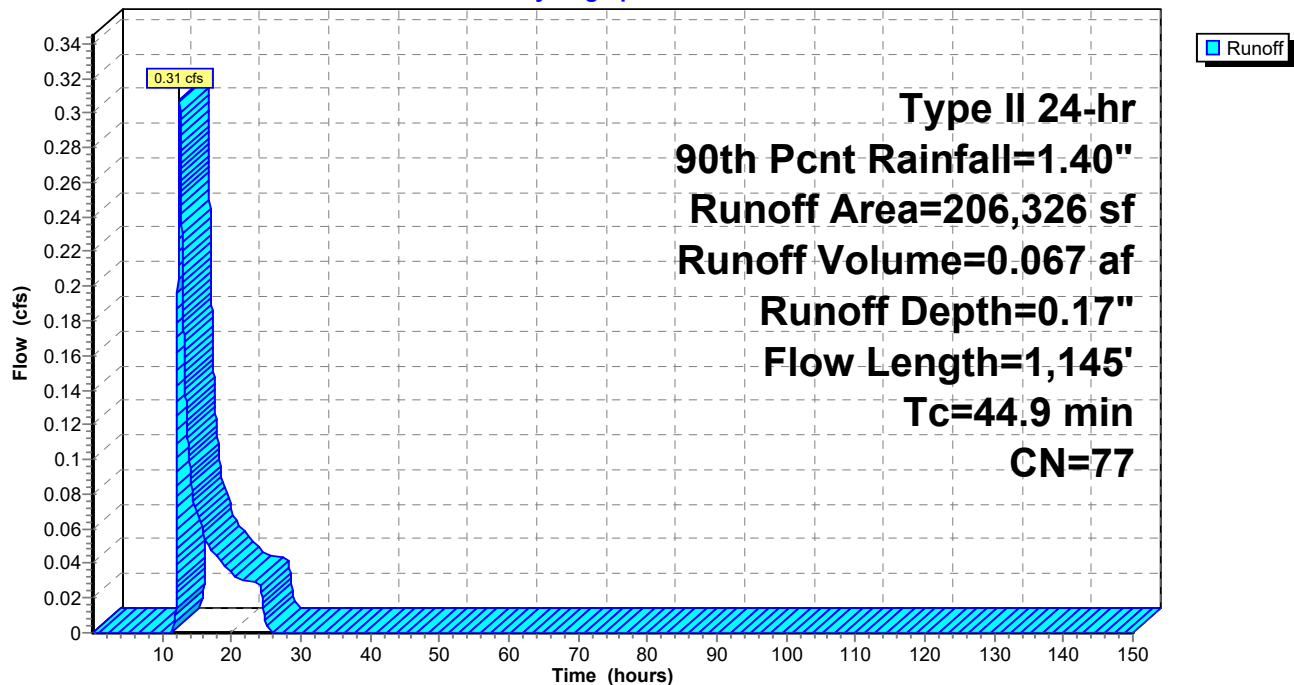
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs
Type II 24-hr 90th Pcnt Rainfall=1.40"

Area (sf)	CN	Description
206,326	77	Woods, Good, HSG D
206,326		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.8	100	0.0200	0.07		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.40"
20.1	1,045	0.1200	0.87		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
44.9	1,145	Total			

Subcatchment 24S: Upland Area 3

Hydrograph



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Type II 24-hr 90th Pcnt Rainfall=1.40"

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Hydrograph for Subcatchment 24S: Upland Area 3

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.05	0.00	0.00	0.00	104.05	1.40	0.17	0.00
2.05	0.03	0.00	0.00	106.05	1.40	0.17	0.00
4.05	0.07	0.00	0.00	108.05	1.40	0.17	0.00
6.05	0.11	0.00	0.00	110.05	1.40	0.17	0.00
8.05	0.17	0.00	0.00	112.05	1.40	0.17	0.00
10.05	0.26	0.00	0.00	114.05	1.40	0.17	0.00
12.05	0.94	0.04	0.02	116.05	1.40	0.17	0.00
14.05	1.15	0.09	0.10	118.05	1.40	0.17	0.00
16.05	1.23	0.11	0.06	120.05	1.40	0.17	0.00
18.05	1.29	0.13	0.04	122.05	1.40	0.17	0.00
20.05	1.33	0.15	0.03	124.05	1.40	0.17	0.00
22.05	1.37	0.16	0.03	126.05	1.40	0.17	0.00
24.05	1.40	0.17	0.03	128.05	1.40	0.17	0.00
26.05	1.40	0.17	0.00	130.05	1.40	0.17	0.00
28.05	1.40	0.17	0.00	132.05	1.40	0.17	0.00
30.05	1.40	0.17	0.00	134.05	1.40	0.17	0.00
32.05	1.40	0.17	0.00	136.05	1.40	0.17	0.00
34.05	1.40	0.17	0.00	138.05	1.40	0.17	0.00
36.05	1.40	0.17	0.00	140.05	1.40	0.17	0.00
38.05	1.40	0.17	0.00	142.05	1.40	0.17	0.00
40.05	1.40	0.17	0.00	144.05	1.40	0.17	0.00
42.05	1.40	0.17	0.00	146.05	1.40	0.17	0.00
44.05	1.40	0.17	0.00	148.05	1.40	0.17	0.00
46.05	1.40	0.17	0.00				
48.05	1.40	0.17	0.00				
50.05	1.40	0.17	0.00				
52.05	1.40	0.17	0.00				
54.05	1.40	0.17	0.00				
56.05	1.40	0.17	0.00				
58.05	1.40	0.17	0.00				
60.05	1.40	0.17	0.00				
62.05	1.40	0.17	0.00				
64.05	1.40	0.17	0.00				
66.05	1.40	0.17	0.00				
68.05	1.40	0.17	0.00				
70.05	1.40	0.17	0.00				
72.05	1.40	0.17	0.00				
74.05	1.40	0.17	0.00				
76.05	1.40	0.17	0.00				
78.05	1.40	0.17	0.00				
80.05	1.40	0.17	0.00				
82.05	1.40	0.17	0.00				
84.05	1.40	0.17	0.00				
86.05	1.40	0.17	0.00				
88.05	1.40	0.17	0.00				
90.05	1.40	0.17	0.00				
92.05	1.40	0.17	0.00				
94.05	1.40	0.17	0.00				
96.05	1.40	0.17	0.00				
98.05	1.40	0.17	0.00				
100.05	1.40	0.17	0.00				
102.05	1.40	0.17	0.00				

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Type II 24-hr 90th Pcnt Rainfall=1.40"

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Summary for Subcatchment 25S: Upland Area 4

Includes pond surface area

Runoff = 0.37 cfs @ 13.65 hrs, Volume= 0.143 af, Depth= 0.17"

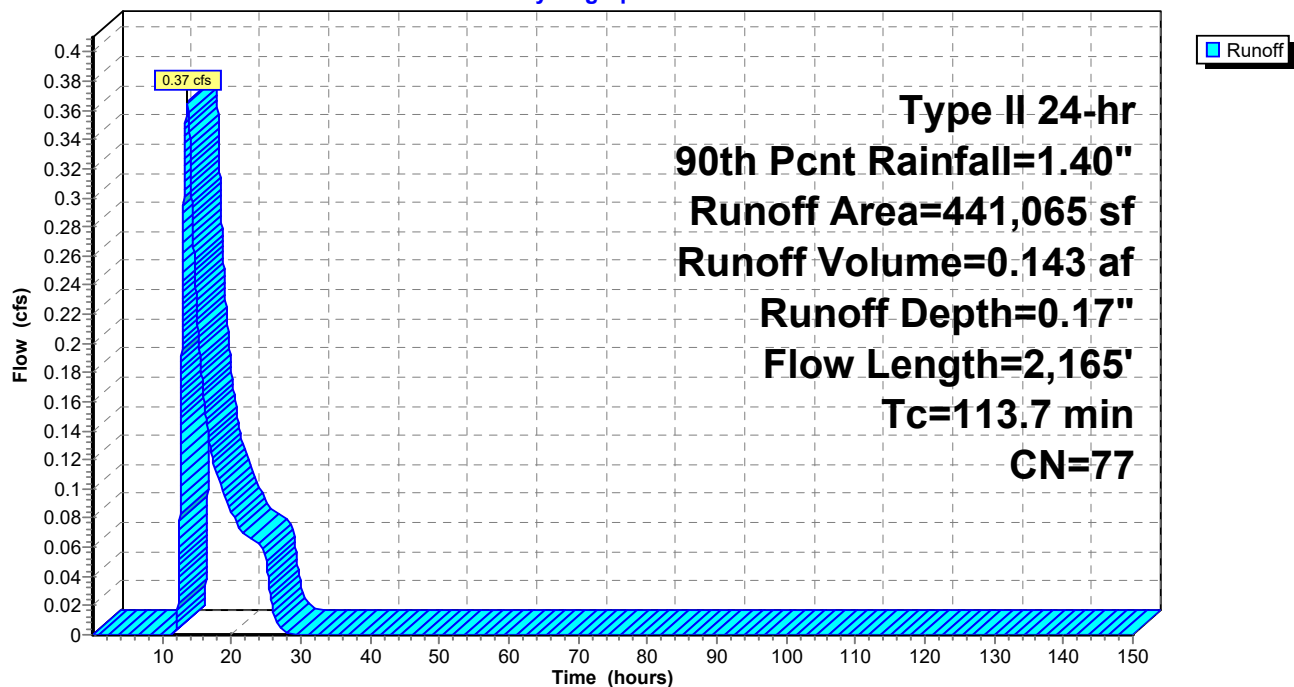
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs
Type II 24-hr 90th Pcnt Rainfall=1.40"

Area (sf)	CN	Description
441,065	77	Woods, Good, HSG D
441,065		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.8	100	0.0200	0.07		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.40"
88.9	2,065	0.0240	0.39		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
113.7	2,165	Total			

Subcatchment 25S: Upland Area 4

Hydrograph



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Type II 24-hr 90th Pcnt Rainfall=1.40"

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Hydrograph for Subcatchment 25S: Upland Area 4

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.05	0.00	0.00	0.00	104.05	1.40	0.17	0.00
2.05	0.03	0.00	0.00	106.05	1.40	0.17	0.00
4.05	0.07	0.00	0.00	108.05	1.40	0.17	0.00
6.05	0.11	0.00	0.00	110.05	1.40	0.17	0.00
8.05	0.17	0.00	0.00	112.05	1.40	0.17	0.00
10.05	0.26	0.00	0.00	114.05	1.40	0.17	0.00
12.05	0.94	0.04	0.00	116.05	1.40	0.17	0.00
14.05	1.15	0.09	0.34	118.05	1.40	0.17	0.00
16.05	1.23	0.11	0.16	120.05	1.40	0.17	0.00
18.05	1.29	0.13	0.11	122.05	1.40	0.17	0.00
20.05	1.33	0.15	0.08	124.05	1.40	0.17	0.00
22.05	1.37	0.16	0.07	126.05	1.40	0.17	0.00
24.05	1.40	0.17	0.06	128.05	1.40	0.17	0.00
26.05	1.40	0.17	0.02	130.05	1.40	0.17	0.00
28.05	1.40	0.17	0.00	132.05	1.40	0.17	0.00
30.05	1.40	0.17	0.00	134.05	1.40	0.17	0.00
32.05	1.40	0.17	0.00	136.05	1.40	0.17	0.00
34.05	1.40	0.17	0.00	138.05	1.40	0.17	0.00
36.05	1.40	0.17	0.00	140.05	1.40	0.17	0.00
38.05	1.40	0.17	0.00	142.05	1.40	0.17	0.00
40.05	1.40	0.17	0.00	144.05	1.40	0.17	0.00
42.05	1.40	0.17	0.00	146.05	1.40	0.17	0.00
44.05	1.40	0.17	0.00	148.05	1.40	0.17	0.00
46.05	1.40	0.17	0.00				
48.05	1.40	0.17	0.00				
50.05	1.40	0.17	0.00				
52.05	1.40	0.17	0.00				
54.05	1.40	0.17	0.00				
56.05	1.40	0.17	0.00				
58.05	1.40	0.17	0.00				
60.05	1.40	0.17	0.00				
62.05	1.40	0.17	0.00				
64.05	1.40	0.17	0.00				
66.05	1.40	0.17	0.00				
68.05	1.40	0.17	0.00				
70.05	1.40	0.17	0.00				
72.05	1.40	0.17	0.00				
74.05	1.40	0.17	0.00				
76.05	1.40	0.17	0.00				
78.05	1.40	0.17	0.00				
80.05	1.40	0.17	0.00				
82.05	1.40	0.17	0.00				
84.05	1.40	0.17	0.00				
86.05	1.40	0.17	0.00				
88.05	1.40	0.17	0.00				
90.05	1.40	0.17	0.00				
92.05	1.40	0.17	0.00				
94.05	1.40	0.17	0.00				
96.05	1.40	0.17	0.00				
98.05	1.40	0.17	0.00				
100.05	1.40	0.17	0.00				
102.05	1.40	0.17	0.00				

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Type II 24-hr 90th Pcnt Rainfall=1.40"

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Summary for Subcatchment 26S: Upland Area 5

Includes pond surface area

Runoff = 0.15 cfs @ 12.86 hrs, Volume= 0.042 af, Depth= 0.17"

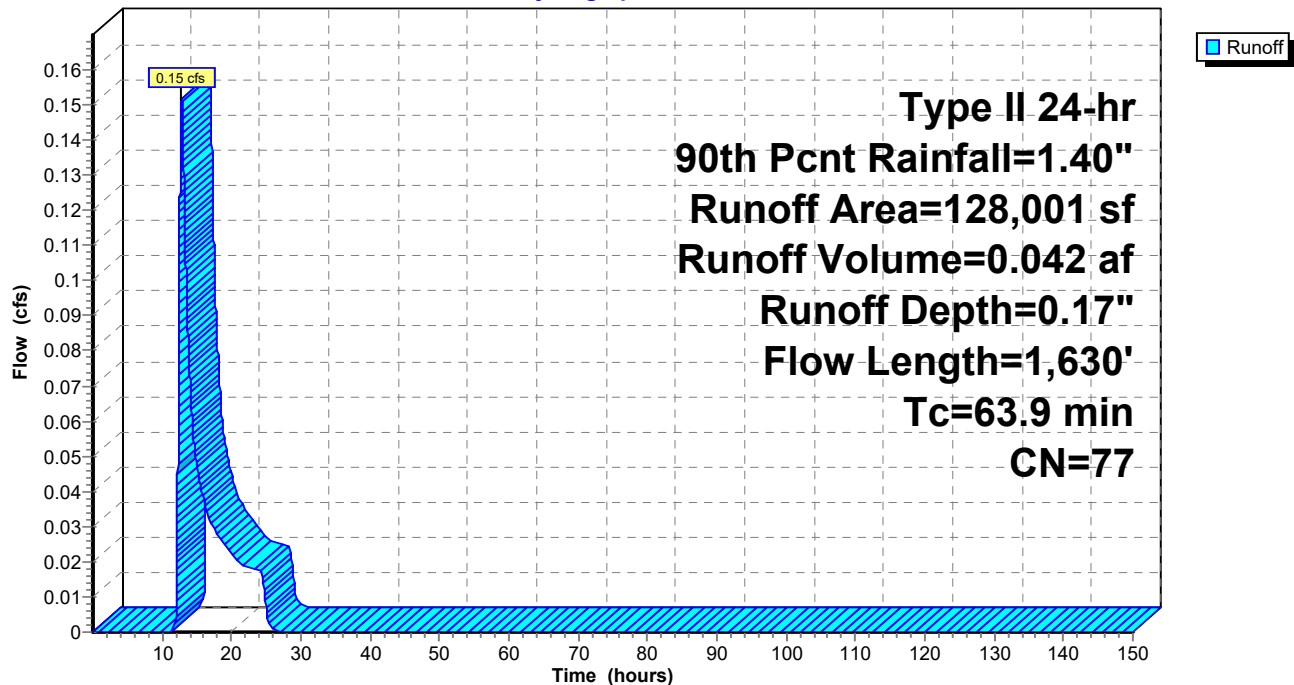
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs
Type II 24-hr 90th Pcnt Rainfall=1.40"

Area (sf)	CN	Description
128,001	77	Woods, Good, HSG D
128,001		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.8	100	0.0200	0.07		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.40"
38.8	1,194	0.0420	0.51		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
0.3	336	0.1190	17.78	71.13	Channel Flow, Area= 4.0 sf Perim= 6.0' r= 0.67' n= 0.022 Earth, clean & straight
63.9	1,630	Total			

Subcatchment 26S: Upland Area 5

Hydrograph



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Hydrograph for Subcatchment 26S: Upland Area 5

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.05	0.00	0.00	0.00	104.05	1.40	0.17	0.00
2.05	0.03	0.00	0.00	106.05	1.40	0.17	0.00
4.05	0.07	0.00	0.00	108.05	1.40	0.17	0.00
6.05	0.11	0.00	0.00	110.05	1.40	0.17	0.00
8.05	0.17	0.00	0.00	112.05	1.40	0.17	0.00
10.05	0.26	0.00	0.00	114.05	1.40	0.17	0.00
12.05	0.94	0.04	0.01	116.05	1.40	0.17	0.00
14.05	1.15	0.09	0.07	118.05	1.40	0.17	0.00
16.05	1.23	0.11	0.04	120.05	1.40	0.17	0.00
18.05	1.29	0.13	0.03	122.05	1.40	0.17	0.00
20.05	1.33	0.15	0.02	124.05	1.40	0.17	0.00
22.05	1.37	0.16	0.02	126.05	1.40	0.17	0.00
24.05	1.40	0.17	0.02	128.05	1.40	0.17	0.00
26.05	1.40	0.17	0.00	130.05	1.40	0.17	0.00
28.05	1.40	0.17	0.00	132.05	1.40	0.17	0.00
30.05	1.40	0.17	0.00	134.05	1.40	0.17	0.00
32.05	1.40	0.17	0.00	136.05	1.40	0.17	0.00
34.05	1.40	0.17	0.00	138.05	1.40	0.17	0.00
36.05	1.40	0.17	0.00	140.05	1.40	0.17	0.00
38.05	1.40	0.17	0.00	142.05	1.40	0.17	0.00
40.05	1.40	0.17	0.00	144.05	1.40	0.17	0.00
42.05	1.40	0.17	0.00	146.05	1.40	0.17	0.00
44.05	1.40	0.17	0.00	148.05	1.40	0.17	0.00
46.05	1.40	0.17	0.00				
48.05	1.40	0.17	0.00				
50.05	1.40	0.17	0.00				
52.05	1.40	0.17	0.00				
54.05	1.40	0.17	0.00				
56.05	1.40	0.17	0.00				
58.05	1.40	0.17	0.00				
60.05	1.40	0.17	0.00				
62.05	1.40	0.17	0.00				
64.05	1.40	0.17	0.00				
66.05	1.40	0.17	0.00				
68.05	1.40	0.17	0.00				
70.05	1.40	0.17	0.00				
72.05	1.40	0.17	0.00				
74.05	1.40	0.17	0.00				
76.05	1.40	0.17	0.00				
78.05	1.40	0.17	0.00				
80.05	1.40	0.17	0.00				
82.05	1.40	0.17	0.00				
84.05	1.40	0.17	0.00				
86.05	1.40	0.17	0.00				
88.05	1.40	0.17	0.00				
90.05	1.40	0.17	0.00				
92.05	1.40	0.17	0.00				
94.05	1.40	0.17	0.00				
96.05	1.40	0.17	0.00				
98.05	1.40	0.17	0.00				
100.05	1.40	0.17	0.00				
102.05	1.40	0.17	0.00				

Summary for Subcatchment 27S: Upland Area 6

Includes pond surface area

Runoff = 0.21 cfs @ 12.42 hrs, Volume= 0.039 af, Depth= 0.17"

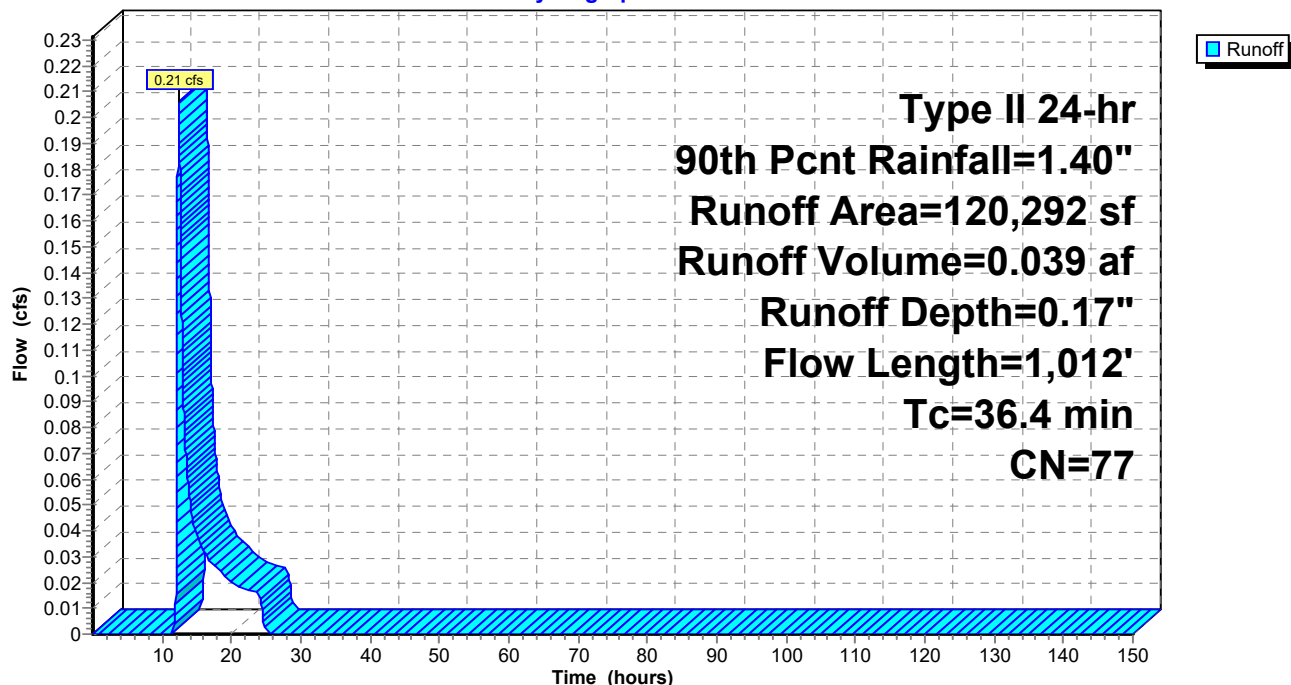
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs
Type II 24-hr 90th Pcnt Rainfall=1.40"

Area (sf)	CN	Description
120,292	77	Woods, Good, HSG D
120,292		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.8	100	0.0200	0.07		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.40"
11.2	706	0.1770	1.05		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
0.4	206	0.0240	7.99	31.94	Channel Flow, Area= 4.0 sf Perim= 6.0' r= 0.67' n= 0.022 Earth, clean & straight
36.4	1,012	Total			

Subcatchment 27S: Upland Area 6

Hydrograph



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Hydrograph for Subcatchment 27S: Upland Area 6

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.05	0.00	0.00	0.00	104.05	1.40	0.17	0.00
2.05	0.03	0.00	0.00	106.05	1.40	0.17	0.00
4.05	0.07	0.00	0.00	108.05	1.40	0.17	0.00
6.05	0.11	0.00	0.00	110.05	1.40	0.17	0.00
8.05	0.17	0.00	0.00	112.05	1.40	0.17	0.00
10.05	0.26	0.00	0.00	114.05	1.40	0.17	0.00
12.05	0.94	0.04	0.03	116.05	1.40	0.17	0.00
14.05	1.15	0.09	0.05	118.05	1.40	0.17	0.00
16.05	1.23	0.11	0.03	120.05	1.40	0.17	0.00
18.05	1.29	0.13	0.03	122.05	1.40	0.17	0.00
20.05	1.33	0.15	0.02	124.05	1.40	0.17	0.00
22.05	1.37	0.16	0.02	126.05	1.40	0.17	0.00
24.05	1.40	0.17	0.02	128.05	1.40	0.17	0.00
26.05	1.40	0.17	0.00	130.05	1.40	0.17	0.00
28.05	1.40	0.17	0.00	132.05	1.40	0.17	0.00
30.05	1.40	0.17	0.00	134.05	1.40	0.17	0.00
32.05	1.40	0.17	0.00	136.05	1.40	0.17	0.00
34.05	1.40	0.17	0.00	138.05	1.40	0.17	0.00
36.05	1.40	0.17	0.00	140.05	1.40	0.17	0.00
38.05	1.40	0.17	0.00	142.05	1.40	0.17	0.00
40.05	1.40	0.17	0.00	144.05	1.40	0.17	0.00
42.05	1.40	0.17	0.00	146.05	1.40	0.17	0.00
44.05	1.40	0.17	0.00	148.05	1.40	0.17	0.00
46.05	1.40	0.17	0.00				
48.05	1.40	0.17	0.00				
50.05	1.40	0.17	0.00				
52.05	1.40	0.17	0.00				
54.05	1.40	0.17	0.00				
56.05	1.40	0.17	0.00				
58.05	1.40	0.17	0.00				
60.05	1.40	0.17	0.00				
62.05	1.40	0.17	0.00				
64.05	1.40	0.17	0.00				
66.05	1.40	0.17	0.00				
68.05	1.40	0.17	0.00				
70.05	1.40	0.17	0.00				
72.05	1.40	0.17	0.00				
74.05	1.40	0.17	0.00				
76.05	1.40	0.17	0.00				
78.05	1.40	0.17	0.00				
80.05	1.40	0.17	0.00				
82.05	1.40	0.17	0.00				
84.05	1.40	0.17	0.00				
86.05	1.40	0.17	0.00				
88.05	1.40	0.17	0.00				
90.05	1.40	0.17	0.00				
92.05	1.40	0.17	0.00				
94.05	1.40	0.17	0.00				
96.05	1.40	0.17	0.00				
98.05	1.40	0.17	0.00				
100.05	1.40	0.17	0.00				
102.05	1.40	0.17	0.00				

Summary for Reach 5R: Expan Area Ditch

Inflow Area = 13.693 ac, 0.00% Impervious, Inflow Depth = 0.85" for 90th Pcnt event
 Inflow = 19.55 cfs @ 11.99 hrs, Volume= 0.967 af
 Outflow = 19.07 cfs @ 12.00 hrs, Volume= 0.967 af, Atten= 2%, Lag= 1.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Max. Velocity= 5.93 fps, Min. Travel Time= 1.6 min

Avg. Velocity = 1.54 fps, Avg. Travel Time= 6.2 min

Peak Storage= 1,851 cf @ 12.00 hrs

Average Depth at Peak Storage= 0.72'

Bank-Full Depth= 3.00' Flow Area= 27.0 sf, Capacity= 347.14 cfs

3.00' x 3.00' deep channel, n= 0.044

Side Slope Z-value= 2.0 '/' Top Width= 15.00'

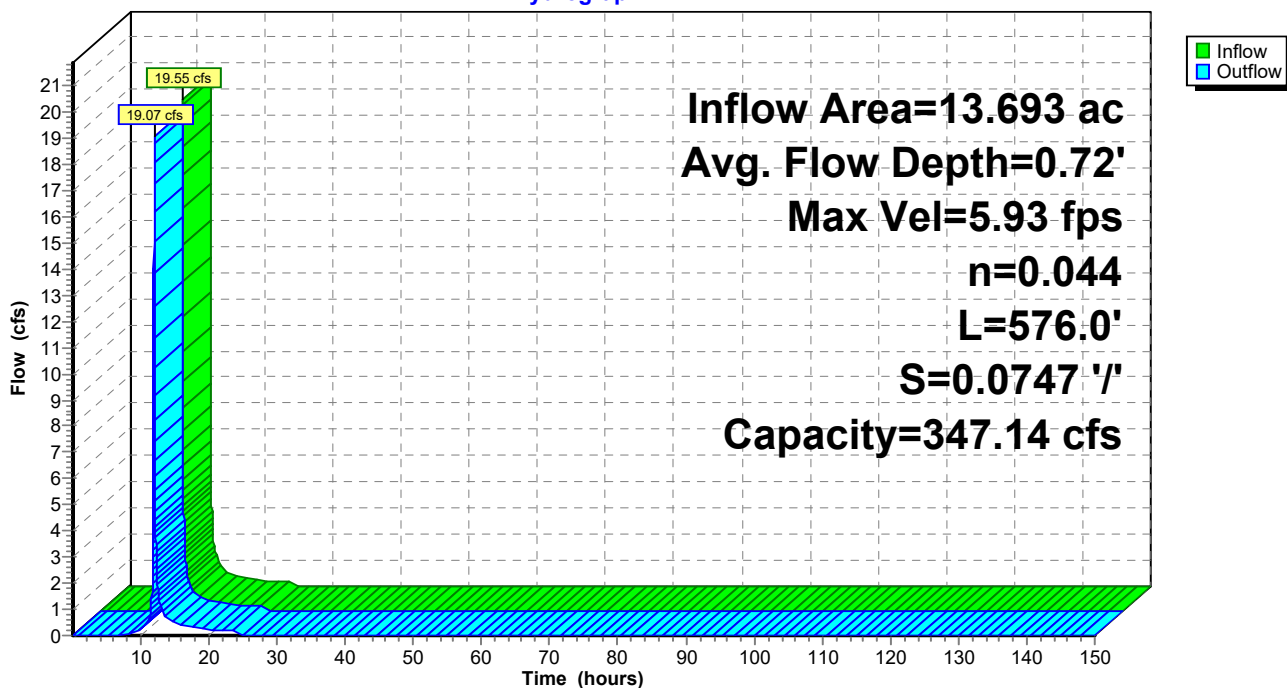
Length= 576.0' Slope= 0.0747 '/'

Inlet Invert= 1,495.00', Outlet Invert= 1,452.00'

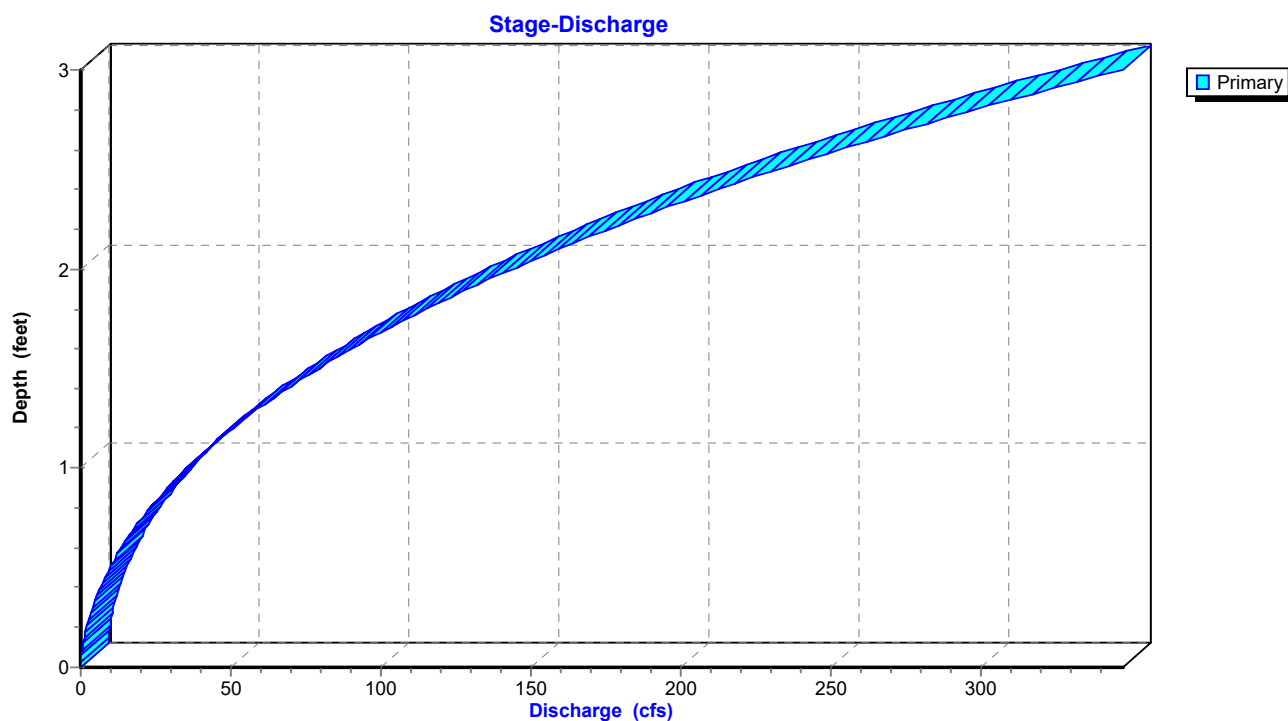


Reach 5R: Expan Area Ditch

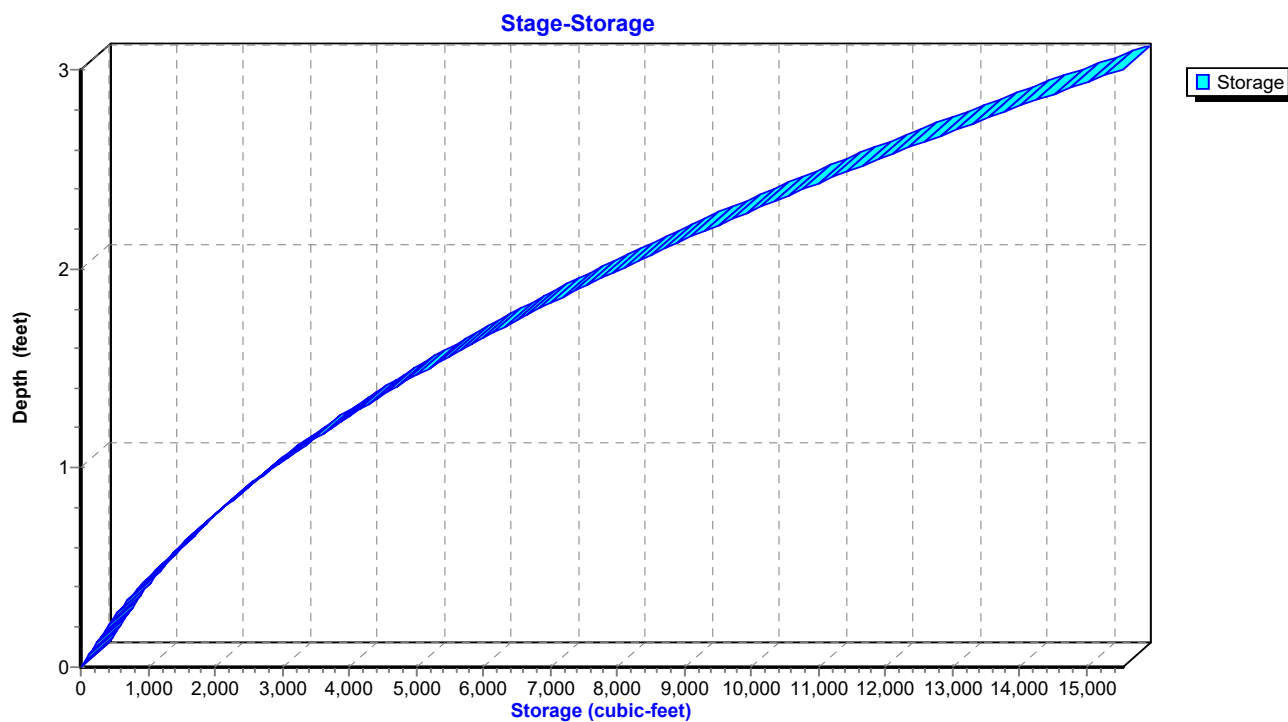
Hydrograph



Reach 5R: Expan Area Ditch



Reach 5R: Expan Area Ditch



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Hydrograph for Reach 5R: Expan Area Ditch

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
0.05	0.00	0	1,495.00	0.00
5.05	0.00	0	1,495.00	0.00
10.05	0.22	93	1,495.05	0.21
15.05	0.51	166	1,495.09	0.51
20.05	0.22	99	1,495.06	0.23
25.05	0.00	1	1,495.00	0.00
30.05	0.00	0	1,495.00	0.00
35.05	0.00	0	1,495.00	0.00
40.05	0.00	0	1,495.00	0.00
45.05	0.00	0	1,495.00	0.00
50.05	0.00	0	1,495.00	0.00
55.05	0.00	0	1,495.00	0.00
60.05	0.00	0	1,495.00	0.00
65.05	0.00	0	1,495.00	0.00
70.05	0.00	0	1,495.00	0.00
75.05	0.00	0	1,495.00	0.00
80.05	0.00	0	1,495.00	0.00
85.05	0.00	0	1,495.00	0.00
90.05	0.00	0	1,495.00	0.00
95.05	0.00	0	1,495.00	0.00
100.05	0.00	0	1,495.00	0.00
105.05	0.00	0	1,495.00	0.00
110.05	0.00	0	1,495.00	0.00
115.05	0.00	0	1,495.00	0.00
120.05	0.00	0	1,495.00	0.00
125.05	0.00	0	1,495.00	0.00
130.05	0.00	0	1,495.00	0.00
135.05	0.00	0	1,495.00	0.00
140.05	0.00	0	1,495.00	0.00
145.05	0.00	0	1,495.00	0.00

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Stage-Discharge for Reach 5R: Expan Area Ditch

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)	Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)	Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
1,495.00	0.00	0.00	1,496.04	7.21	38.09	1,497.08	10.48	156.11
1,495.02	0.58	0.05	1,496.06	7.28	39.53	1,497.10	10.54	159.32
1,495.04	1.04	0.14	1,496.08	7.36	40.99	1,497.12	10.59	162.58
1,495.06	1.37	0.26	1,496.10	7.43	42.50	1,497.14	10.65	165.88
1,495.08	1.64	0.42	1,496.12	7.50	44.03	1,497.16	10.70	169.20
1,495.10	1.89	0.61	1,496.14	7.57	45.58	1,497.18	10.76	172.59
1,495.12	2.12	0.82	1,496.16	7.64	47.17	1,497.20	10.81	176.00
1,495.14	2.32	1.08	1,496.18	7.71	48.79	1,497.22	10.86	179.45
1,495.16	2.52	1.35	1,496.20	7.78	50.43	1,497.24	10.92	182.95
1,495.18	2.71	1.64	1,496.22	7.85	52.12	1,497.26	10.97	186.49
1,495.20	2.88	1.97	1,496.24	7.92	53.83	1,497.28	11.03	190.05
1,495.22	3.05	2.31	1,496.26	7.99	55.56	1,497.30	11.08	193.68
1,495.24	3.21	2.68	1,496.28	8.06	57.34	1,497.32	11.13	197.34
1,495.26	3.36	3.08	1,496.30	8.12	59.15	1,497.34	11.19	201.03
1,495.28	3.51	3.50	1,496.32	8.19	60.97	1,497.36	11.24	204.77
1,495.30	3.65	3.94	1,496.34	8.26	62.85	1,497.38	11.29	208.56
1,495.32	3.79	4.42	1,496.36	8.32	64.75	1,497.40	11.34	212.37
1,495.34	3.92	4.91	1,496.38	8.39	66.68	1,497.42	11.40	216.24
1,495.36	4.05	5.42	1,496.40	8.45	68.65	1,497.44	11.45	220.15
1,495.38	4.17	5.97	1,496.42	8.52	70.65	1,497.46	11.50	224.08
1,495.40	4.29	6.53	1,496.44	8.58	72.67	1,497.48	11.55	228.08
1,495.42	4.41	7.12	1,496.46	8.65	74.74	1,497.50	11.61	232.11
1,495.44	4.53	7.74	1,496.48	8.71	76.84	1,497.52	11.66	236.18
1,495.46	4.64	8.37	1,496.50	8.77	78.96	1,497.54	11.71	240.31
1,495.48	4.75	9.03	1,496.52	8.84	81.13	1,497.56	11.76	244.46
1,495.50	4.86	9.72	1,496.54	8.90	83.33	1,497.58	11.81	248.66
1,495.52	4.96	10.43	1,496.56	8.96	85.55	1,497.60	11.86	252.91
1,495.54	5.07	11.16	1,496.58	9.02	87.83	1,497.62	11.91	257.20
1,495.56	5.17	11.93	1,496.60	9.08	90.13	1,497.64	11.96	261.52
1,495.58	5.27	12.72	1,496.62	9.15	92.45	1,497.66	12.01	265.91
1,495.60	5.37	13.52	1,496.64	9.21	94.83	1,497.68	12.07	270.33
1,495.62	5.46	14.36	1,496.66	9.27	97.23	1,497.70	12.12	274.79
1,495.64	5.56	15.23	1,496.68	9.33	99.67	1,497.72	12.17	279.31
1,495.66	5.65	16.11	1,496.70	9.39	102.15	1,497.74	12.22	283.86
1,495.68	5.74	17.03	1,496.72	9.45	104.66	1,497.76	12.27	288.44
1,495.70	5.83	17.97	1,496.74	9.51	107.20	1,497.78	12.32	293.10
1,495.72	5.92	18.93	1,496.76	9.57	109.79	1,497.80	12.37	297.78
1,495.74	6.01	19.93	1,496.78	9.63	112.40	1,497.82	12.42	302.50
1,495.76	6.09	20.95	1,496.80	9.68	115.05	1,497.84	12.47	307.29
1,495.78	6.18	21.98	1,496.82	9.74	117.75	1,497.86	12.51	312.12
1,495.80	6.26	23.06	1,496.84	9.80	120.47	1,497.88	12.56	316.97
1,495.82	6.35	24.16	1,496.86	9.86	123.23	1,497.90	12.61	321.90
1,495.84	6.43	25.28	1,496.88	9.92	126.04	1,497.92	12.66	326.86
1,495.86	6.51	26.44	1,496.90	9.97	128.87	1,497.94	12.71	331.85
1,495.88	6.59	27.62	1,496.92	10.03	131.74	1,497.96	12.76	336.91
1,495.90	6.67	28.83	1,496.94	10.09	134.66	1,497.98	12.81	342.01
1,495.92	6.75	30.07	1,496.96	10.15	137.61	1,498.00	12.86	347.14
1,495.94	6.83	31.34	1,496.98	10.20	140.59			
1,495.96	6.91	32.62	1,497.00	10.26	143.62			
1,495.98	6.98	33.95	1,497.02	10.31	146.69			
1,496.00	7.06	35.30	1,497.04	10.37	149.78			
1,496.02	7.13	36.68	1,497.06	10.43	152.93			

Stage-Area-Storage for Reach 5R: Expan Area Ditch

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
1,495.00	0.0	0	1,497.60	21.3	12,281
1,495.05	0.2	90	1,497.65	22.0	12,669
1,495.10	0.3	185	1,497.70	22.7	13,064
1,495.15	0.5	285	1,497.75	23.4	13,464
1,495.20	0.7	392	1,497.80	24.1	13,870
1,495.25	0.9	504	1,497.85	24.8	14,282
1,495.30	1.1	622	1,497.90	25.5	14,700
1,495.35	1.3	746	1,497.95	26.3	15,123
1,495.40	1.5	876	1,498.00	27.0	15,552
1,495.45	1.8	1,011			
1,495.50	2.0	1,152			
1,495.55	2.3	1,299			
1,495.60	2.5	1,452			
1,495.65	2.8	1,610			
1,495.70	3.1	1,774			
1,495.75	3.4	1,944			
1,495.80	3.7	2,120			
1,495.85	4.0	2,301			
1,495.90	4.3	2,488			
1,495.95	4.7	2,682			
1,496.00	5.0	2,880			
1,496.05	5.4	3,084			
1,496.10	5.7	3,295			
1,496.15	6.1	3,511			
1,496.20	6.5	3,732			
1,496.25	6.9	3,960			
1,496.30	7.3	4,194			
1,496.35	7.7	4,432			
1,496.40	8.1	4,677			
1,496.45	8.6	4,928			
1,496.50	9.0	5,184			
1,496.55	9.5	5,446			
1,496.60	9.9	5,714			
1,496.65	10.4	5,988			
1,496.70	10.9	6,267			
1,496.75	11.4	6,552			
1,496.80	11.9	6,843			
1,496.85	12.4	7,140			
1,496.90	12.9	7,442			
1,496.95	13.5	7,750			
1,497.00	14.0	8,064			
1,497.05	14.6	8,384			
1,497.10	15.1	8,709			
1,497.15	15.7	9,041			
1,497.20	16.3	9,378			
1,497.25	16.9	9,720			
1,497.30	17.5	10,069			
1,497.35	18.1	10,423			
1,497.40	18.7	10,783			
1,497.45	19.4	11,149			
1,497.50	20.0	11,520			
1,497.55	20.7	11,897			

Summary for Reach 16R: Road Ditch

Inflow Area = 29.013 ac, 9.48% Impervious, Inflow Depth > 0.83" for 90th Pcnt event
 Inflow = 0.42 cfs @ 24.24 hrs, Volume= 2.008 af
 Outflow = 0.42 cfs @ 24.25 hrs, Volume= 2.008 af, Atten= 0%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Max. Velocity= 1.29 fps, Min. Travel Time= 0.9 min

Avg. Velocity = 0.85 fps, Avg. Travel Time= 1.3 min

Peak Storage= 22 cf @ 24.25 hrs

Average Depth at Peak Storage= 0.10'

Bank-Full Depth= 2.00' Flow Area= 14.0 sf, Capacity= 97.69 cfs

3.00' x 2.00' deep channel, n= 0.040

Side Slope Z-value= 2.0 '/' Top Width= 11.00'

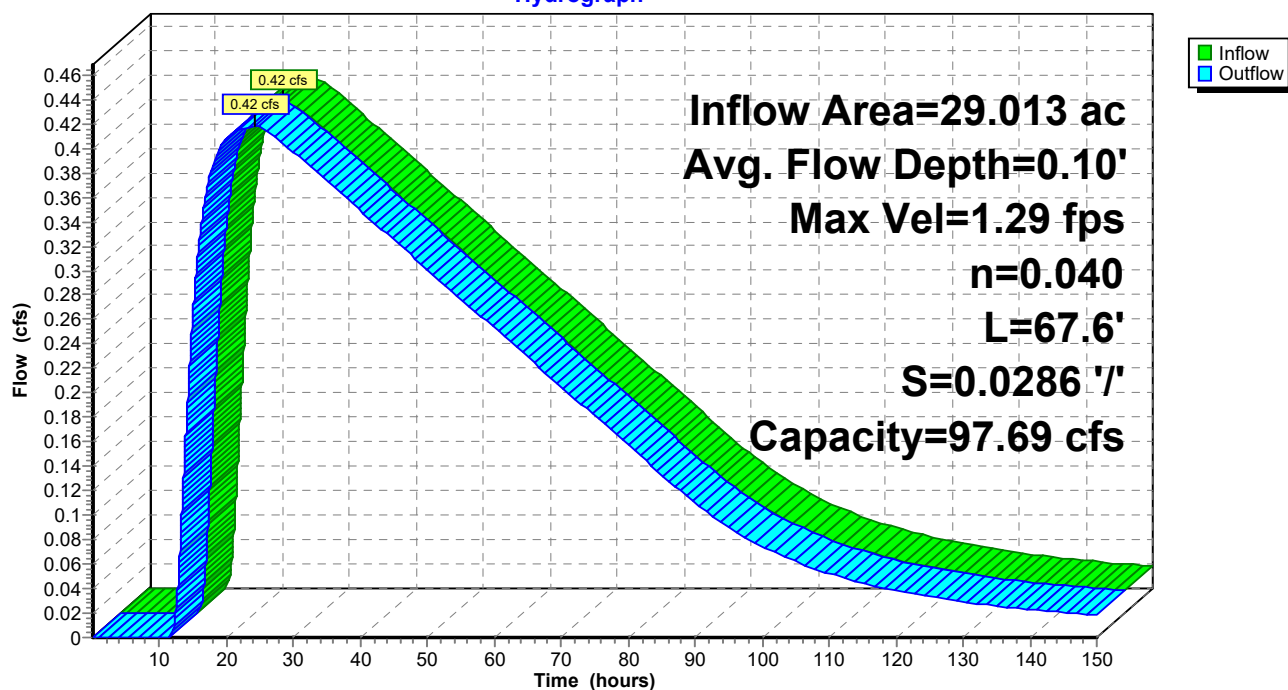
Length= 67.6' Slope= 0.0286 '/'

Inlet Invert= 1,449.79', Outlet Invert= 1,447.86'

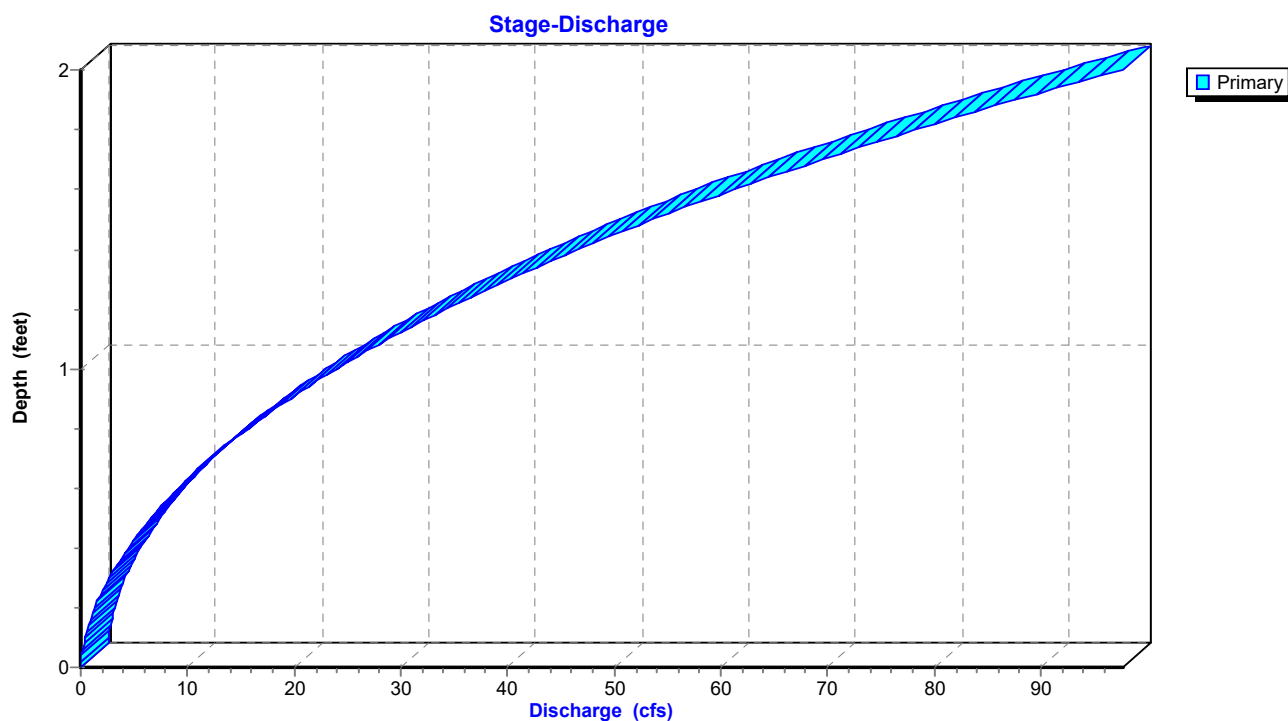


Reach 16R: Road Ditch

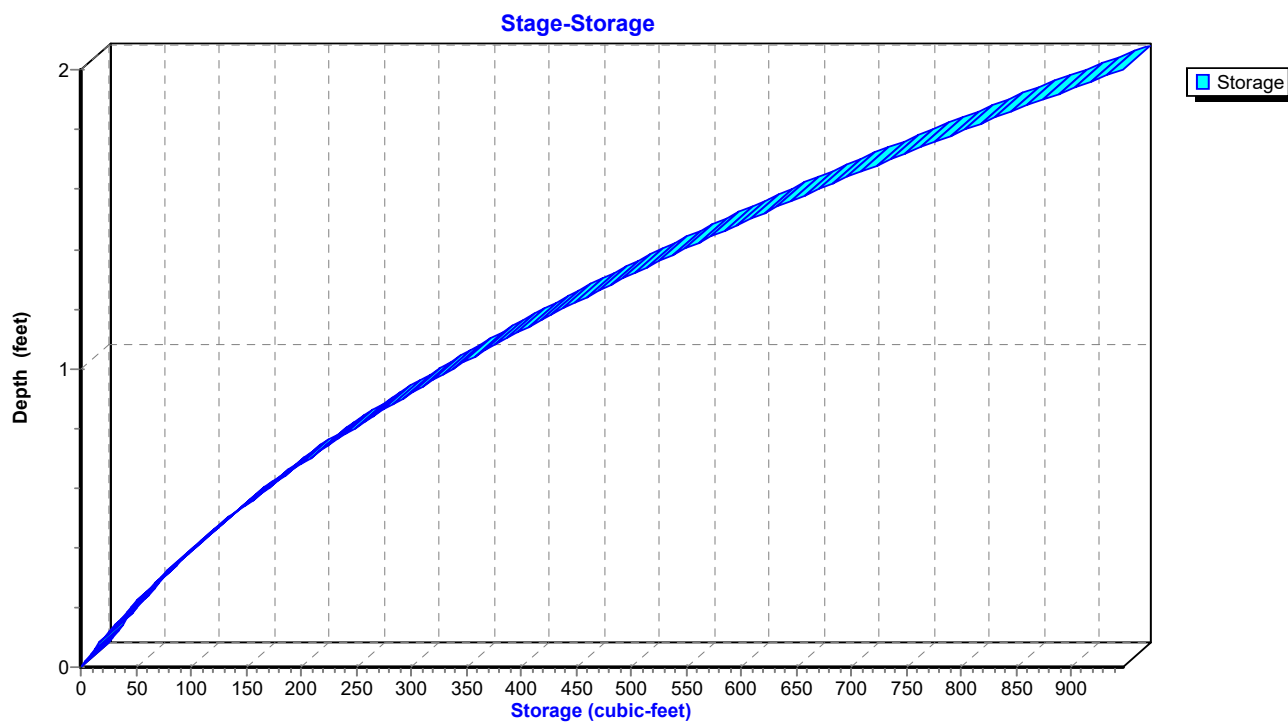
Hydrograph



Reach 16R: Road Ditch



Reach 16R: Road Ditch



Hydrograph for Reach 16R: Road Ditch

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
0.05	0.00	0	1,449.79	0.00
5.05	0.00	0	1,449.79	0.00
10.05	0.00	0	1,449.79	0.00
15.05	0.27	16	1,449.87	0.27
20.05	0.41	22	1,449.89	0.41
25.05	0.42	22	1,449.89	0.42
30.05	0.40	21	1,449.89	0.40
35.05	0.37	20	1,449.88	0.37
40.05	0.35	19	1,449.88	0.35
45.05	0.32	19	1,449.88	0.32
50.05	0.30	18	1,449.87	0.30
55.05	0.28	17	1,449.87	0.28
60.05	0.25	16	1,449.86	0.25
65.05	0.23	15	1,449.86	0.23
70.05	0.20	14	1,449.86	0.20
75.05	0.18	13	1,449.85	0.18
80.05	0.16	12	1,449.85	0.16
85.05	0.13	11	1,449.84	0.13
90.05	0.11	9	1,449.83	0.11
95.05	0.09	8	1,449.83	0.09
100.05	0.07	7	1,449.83	0.07
105.05	0.06	7	1,449.82	0.06
110.05	0.05	6	1,449.82	0.05
115.05	0.04	5	1,449.82	0.04
120.05	0.04	5	1,449.81	0.04
125.05	0.03	4	1,449.81	0.03
130.05	0.03	4	1,449.81	0.03
135.05	0.03	4	1,449.81	0.03
140.05	0.02	3	1,449.81	0.02
145.05	0.02	3	1,449.80	0.02

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Type II 24-hr 90th Pcnt Rainfall=1.40"

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Stage-Discharge for Reach 16R: Road Ditch

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)	Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
1,449.79	0.00	0.00	1,450.83	4.90	25.91
1,449.81	0.46	0.03	1,450.85	4.95	26.89
1,449.83	0.72	0.09	1,450.87	5.00	27.89
1,449.85	0.93	0.17	1,450.89	5.05	28.90
1,449.87	1.12	0.28	1,450.91	5.10	29.94
1,449.89	1.29	0.41	1,450.93	5.15	31.00
1,449.91	1.44	0.56	1,450.95	5.20	32.08
1,449.93	1.58	0.73	1,450.97	5.25	33.18
1,449.95	1.72	0.91	1,450.99	5.29	34.31
1,449.97	1.84	1.11	1,451.01	5.34	35.45
1,449.99	1.96	1.33	1,451.03	5.39	36.61
1,450.01	2.07	1.57	1,451.05	5.43	37.80
1,450.03	2.18	1.82	1,451.07	5.48	39.00
1,450.05	2.29	2.09	1,451.09	5.53	40.23
1,450.07	2.39	2.38	1,451.11	5.57	41.48
1,450.09	2.48	2.68	1,451.13	5.62	42.75
1,450.11	2.58	3.00	1,451.15	5.66	44.04
1,450.13	2.67	3.34	1,451.17	5.71	45.36
1,450.15	2.75	3.69	1,451.19	5.75	46.69
1,450.17	2.84	4.06	1,451.21	5.79	48.05
1,450.19	2.92	4.44	1,451.23	5.84	49.43
1,450.21	3.00	4.84	1,451.25	5.88	50.84
1,450.23	3.08	5.26	1,451.27	5.93	52.26
1,450.25	3.16	5.69	1,451.29	5.97	53.71
1,450.27	3.23	6.14	1,451.31	6.01	55.18
1,450.29	3.30	6.61	1,451.33	6.05	56.68
1,450.31	3.38	7.09	1,451.35	6.10	58.20
1,450.33	3.45	7.59	1,451.37	6.14	59.74
1,450.35	3.52	8.11	1,451.39	6.18	61.30
1,450.37	3.58	8.65	1,451.41	6.22	62.89
1,450.39	3.65	9.20	1,451.43	6.26	64.50
1,450.41	3.72	9.77	1,451.45	6.30	66.14
1,450.43	3.78	10.35	1,451.47	6.35	67.80
1,450.45	3.84	10.96	1,451.49	6.39	69.48
1,450.47	3.91	11.58	1,451.51	6.43	71.19
1,450.49	3.97	12.22	1,451.53	6.47	72.92
1,450.51	4.03	12.88	1,451.55	6.51	74.68
1,450.53	4.09	13.55	1,451.57	6.55	76.46
1,450.55	4.15	14.24	1,451.59	6.59	78.26
1,450.57	4.20	14.95	1,451.61	6.63	80.09
1,450.59	4.26	15.68	1,451.63	6.67	81.95
1,450.61	4.32	16.43	1,451.65	6.71	83.83
1,450.63	4.37	17.20	1,451.67	6.75	85.73
1,450.65	4.43	17.98	1,451.69	6.78	87.66
1,450.67	4.49	18.79	1,451.71	6.82	89.62
1,450.69	4.54	19.61	1,451.73	6.86	91.60
1,450.71	4.59	20.45	1,451.75	6.90	93.60
1,450.73	4.65	21.31	1,451.77	6.94	95.64
1,450.75	4.70	22.19	1,451.79	6.98	97.69
1,450.77	4.75	23.09			
1,450.79	4.80	24.01			
1,450.81	4.85	24.95			

Stage-Area-Storage for Reach 16R: Road Ditch

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
1,449.79	0.0	0	1,450.83	5.3	357
1,449.81	0.1	4	1,450.85	5.4	367
1,449.83	0.1	8	1,450.87	5.6	377
1,449.85	0.2	13	1,450.89	5.7	387
1,449.87	0.3	17	1,450.91	5.9	397
1,449.89	0.3	22	1,450.93	6.0	407
1,449.91	0.4	26	1,450.95	6.2	417
1,449.93	0.5	31	1,450.97	6.3	428
1,449.95	0.5	36	1,450.99	6.5	438
1,449.97	0.6	41	1,451.01	6.6	449
1,449.99	0.7	46	1,451.03	6.8	459
1,450.01	0.8	51	1,451.05	7.0	470
1,450.03	0.8	56	1,451.07	7.1	481
1,450.05	0.9	62	1,451.09	7.3	492
1,450.07	1.0	67	1,451.11	7.4	503
1,450.09	1.1	73	1,451.13	7.6	515
1,450.11	1.2	79	1,451.15	7.8	526
1,450.13	1.3	85	1,451.17	7.9	537
1,450.15	1.3	91	1,451.19	8.1	549
1,450.17	1.4	97	1,451.21	8.3	561
1,450.19	1.5	103	1,451.23	8.5	572
1,450.21	1.6	109	1,451.25	8.6	584
1,450.23	1.7	115	1,451.27	8.8	596
1,450.25	1.8	122	1,451.29	9.0	608
1,450.27	1.9	128	1,451.31	9.2	621
1,450.29	2.0	135	1,451.33	9.4	633
1,450.31	2.1	142	1,451.35	9.5	645
1,450.33	2.2	149	1,451.37	9.7	658
1,450.35	2.3	156	1,451.39	9.9	671
1,450.37	2.4	163	1,451.41	10.1	683
1,450.39	2.5	170	1,451.43	10.3	696
1,450.41	2.6	178	1,451.45	10.5	709
1,450.43	2.7	185	1,451.47	10.7	722
1,450.45	2.9	193	1,451.49	10.9	735
1,450.47	3.0	200	1,451.51	11.1	749
1,450.49	3.1	208	1,451.53	11.3	762
1,450.51	3.2	216	1,451.55	11.5	776
1,450.53	3.3	224	1,451.57	11.7	789
1,450.55	3.4	232	1,451.59	11.9	803
1,450.57	3.6	240	1,451.61	12.1	817
1,450.59	3.7	249	1,451.63	12.3	831
1,450.61	3.8	257	1,451.65	12.5	845
1,450.63	3.9	266	1,451.67	12.7	859
1,450.65	4.1	274	1,451.69	12.9	873
1,450.67	4.2	283	1,451.71	13.1	888
1,450.69	4.3	292	1,451.73	13.3	902
1,450.71	4.5	301	1,451.75	13.6	917
1,450.73	4.6	310	1,451.77	13.8	932
1,450.75	4.7	319	1,451.79	14.0	946
1,450.77	4.9	329			
1,450.79	5.0	338			
1,450.81	5.1	348			

Summary for Reach 29R: Spillway

Inflow Area = 2.580 ac, 0.00% Impervious, Inflow Depth = 0.17" for 90th Pcnt event
 Inflow = 0.20 cfs @ 12.43 hrs, Volume= 0.037 af
 Outflow = 0.20 cfs @ 12.45 hrs, Volume= 0.037 af, Atten= 0%, Lag= 1.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Max. Velocity= 2.13 fps, Min. Travel Time= 1.7 min

Avg. Velocity = 1.54 fps, Avg. Travel Time= 2.3 min

Peak Storage= 20 cf @ 12.45 hrs

Average Depth at Peak Storage= 0.03'

Bank-Full Depth= 2.00' Flow Area= 14.0 sf, Capacity= 323.65 cfs

3.00' x 2.00' deep channel, n= 0.044

Side Slope Z-value= 2.0 '/' Top Width= 11.00'

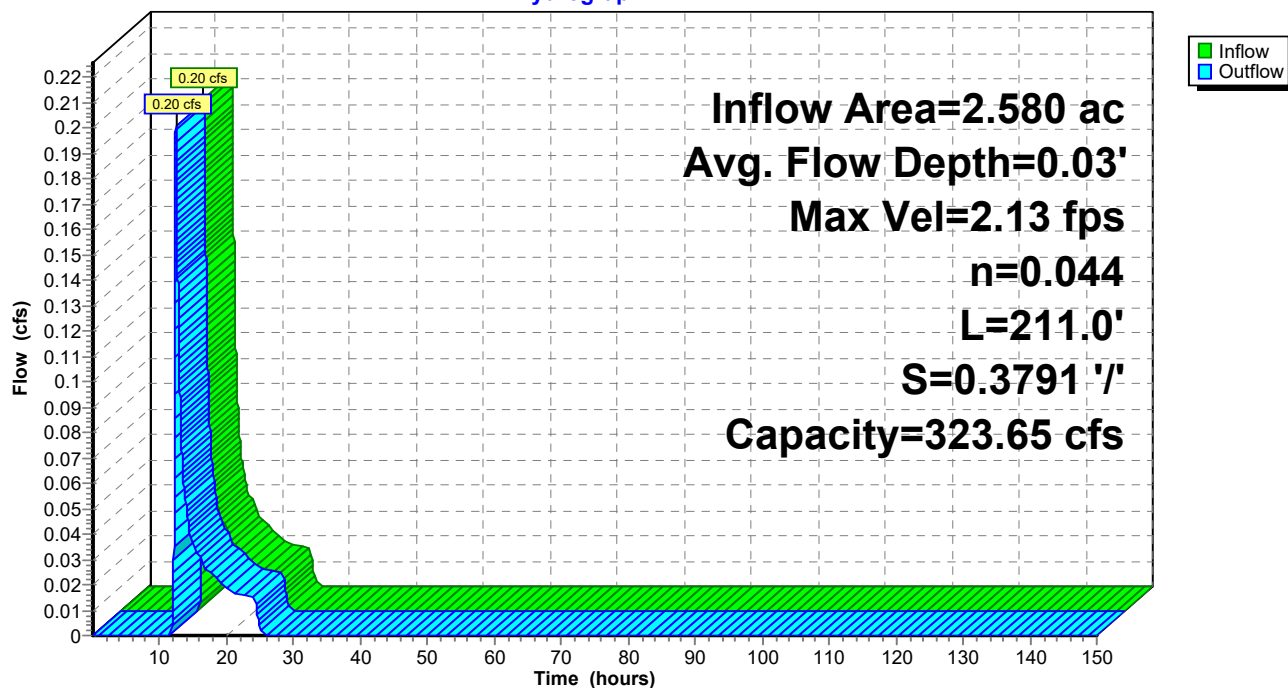
Length= 211.0' Slope= 0.3791 '/'

Inlet Invert= 1,550.00', Outlet Invert= 1,470.00'



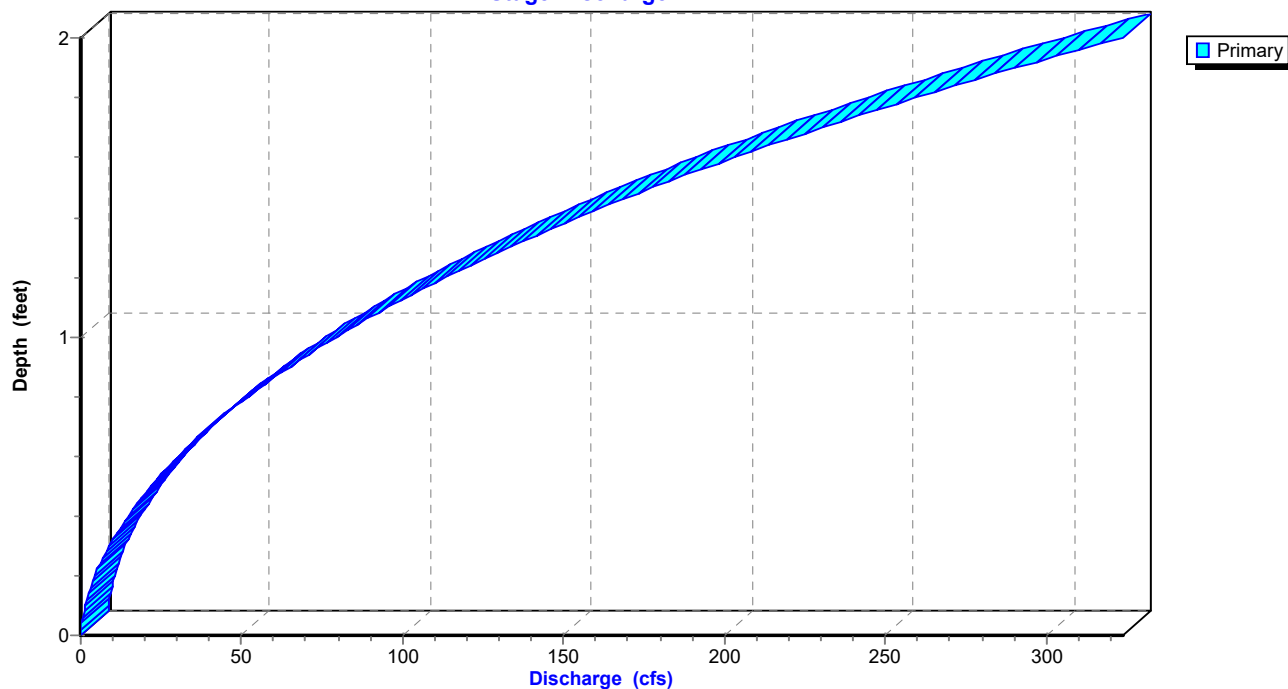
Reach 29R: Spillway

Hydrograph



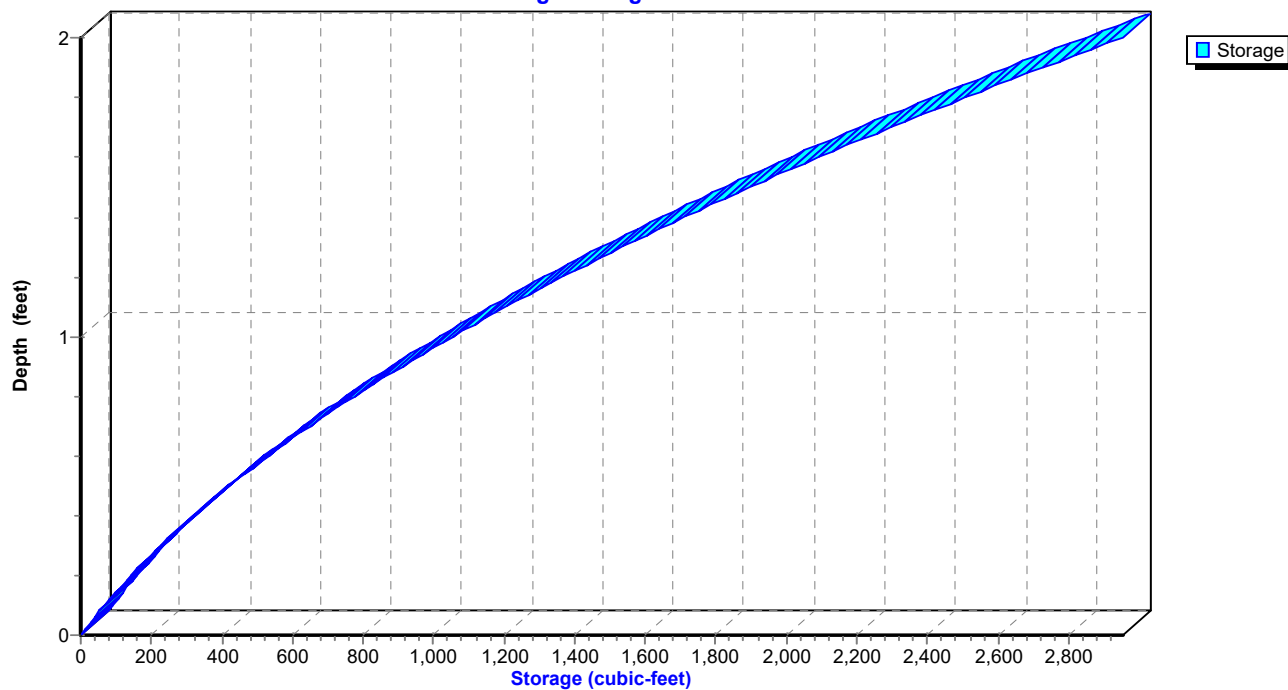
Reach 29R: Spillway

Stage-Discharge



Reach 29R: Spillway

Stage-Storage



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Type II 24-hr 90th Pcnt Rainfall=1.40"

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Hydrograph for Reach 29R: Spillway

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
0.05	0.00	0	1,550.00	0.00
5.05	0.00	0	1,550.00	0.00
10.05	0.00	0	1,550.00	0.00
15.05	0.04	5	1,550.01	0.04
20.05	0.02	3	1,550.00	0.02
25.05	0.00	0	1,550.00	0.00
30.05	0.00	0	1,550.00	0.00
35.05	0.00	0	1,550.00	0.00
40.05	0.00	0	1,550.00	0.00
45.05	0.00	0	1,550.00	0.00
50.05	0.00	0	1,550.00	0.00
55.05	0.00	0	1,550.00	0.00
60.05	0.00	0	1,550.00	0.00
65.05	0.00	0	1,550.00	0.00
70.05	0.00	0	1,550.00	0.00
75.05	0.00	0	1,550.00	0.00
80.05	0.00	0	1,550.00	0.00
85.05	0.00	0	1,550.00	0.00
90.05	0.00	0	1,550.00	0.00
95.05	0.00	0	1,550.00	0.00
100.05	0.00	0	1,550.00	0.00
105.05	0.00	0	1,550.00	0.00
110.05	0.00	0	1,550.00	0.00
115.05	0.00	0	1,550.00	0.00
120.05	0.00	0	1,550.00	0.00
125.05	0.00	0	1,550.00	0.00
130.05	0.00	0	1,550.00	0.00
135.05	0.00	0	1,550.00	0.00
140.05	0.00	0	1,550.00	0.00
145.05	0.00	0	1,550.00	0.00

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Type II 24-hr 90th Pcnt Rainfall=1.40"

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Stage-Discharge for Reach 29R: Spillway

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)	Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
1,550.00	0.00	0.00	1,551.04	16.25	85.83
1,550.02	1.52	0.09	1,551.06	16.41	89.07
1,550.04	2.38	0.29	1,551.08	16.58	92.38
1,550.06	3.09	0.58	1,551.10	16.74	95.76
1,550.08	3.71	0.94	1,551.12	16.90	99.20
1,550.10	4.26	1.36	1,551.14	17.06	102.71
1,550.12	4.77	1.86	1,551.16	17.22	106.29
1,550.14	5.24	2.41	1,551.18	17.38	109.93
1,550.16	5.69	3.02	1,551.20	17.54	113.65
1,550.18	6.10	3.69	1,551.22	17.69	117.43
1,550.20	6.50	4.42	1,551.24	17.85	121.29
1,550.22	6.87	5.20	1,551.26	18.00	125.21
1,550.24	7.23	6.04	1,551.28	18.16	129.21
1,550.26	7.58	6.93	1,551.30	18.31	133.27
1,550.28	7.91	7.88	1,551.32	18.46	137.41
1,550.30	8.23	8.88	1,551.34	18.61	141.62
1,550.32	8.53	9.94	1,551.36	18.76	145.91
1,550.34	8.83	11.05	1,551.38	18.90	150.26
1,550.36	9.12	12.22	1,551.40	19.05	154.69
1,550.38	9.40	13.43	1,551.42	19.20	159.19
1,550.40	9.68	14.71	1,551.44	19.34	163.77
1,550.42	9.94	16.04	1,551.46	19.49	168.42
1,550.44	10.20	17.42	1,551.48	19.63	173.14
1,550.46	10.46	18.86	1,551.50	19.77	177.94
1,550.48	10.70	20.35	1,551.52	19.91	182.82
1,550.50	10.95	21.90	1,551.54	20.05	187.77
1,550.52	11.19	23.50	1,551.56	20.19	192.80
1,550.54	11.42	25.16	1,551.58	20.33	197.91
1,550.56	11.65	26.87	1,551.60	20.47	203.09
1,550.58	11.87	28.64	1,551.62	20.61	208.35
1,550.60	12.09	30.47	1,551.64	20.75	213.69
1,550.62	12.31	32.36	1,551.66	20.89	219.11
1,550.64	12.52	34.30	1,551.68	21.02	224.61
1,550.66	12.73	36.30	1,551.70	21.16	230.18
1,550.68	12.94	38.36	1,551.72	21.29	235.84
1,550.70	13.14	40.48	1,551.74	21.43	241.58
1,550.72	13.34	42.66	1,551.76	21.56	247.40
1,550.74	13.54	44.89	1,551.78	21.69	253.29
1,550.76	13.74	47.19	1,551.80	21.82	259.27
1,550.78	13.93	49.54	1,551.82	21.96	265.34
1,550.80	14.12	51.96	1,551.84	22.09	271.48
1,550.82	14.31	54.44	1,551.86	22.22	277.71
1,550.84	14.49	56.98	1,551.88	22.35	284.02
1,550.86	14.68	59.58	1,551.90	22.48	290.41
1,550.88	14.86	62.24	1,551.92	22.61	296.89
1,550.90	15.04	64.97	1,551.94	22.74	303.45
1,550.92	15.22	67.75	1,551.96	22.86	310.10
1,550.94	15.39	70.61	1,551.98	22.99	316.83
1,550.96	15.57	73.52	1,552.00	23.12	323.65
1,550.98	15.74	76.50			
1,551.00	15.91	79.55			
1,551.02	16.08	82.66			

Stage-Area-Storage for Reach 29R: Spillway

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
1,550.00	0.0	0	1,551.04	5.3	1,115
1,550.02	0.1	13	1,551.06	5.4	1,145
1,550.04	0.1	26	1,551.08	5.6	1,176
1,550.06	0.2	39	1,551.10	5.7	1,207
1,550.08	0.3	53	1,551.12	5.9	1,238
1,550.10	0.3	68	1,551.14	6.0	1,270
1,550.12	0.4	82	1,551.16	6.2	1,302
1,550.14	0.5	97	1,551.18	6.3	1,335
1,550.16	0.5	112	1,551.20	6.5	1,367
1,550.18	0.6	128	1,551.22	6.6	1,400
1,550.20	0.7	143	1,551.24	6.8	1,434
1,550.22	0.8	160	1,551.26	7.0	1,468
1,550.24	0.8	176	1,551.28	7.1	1,502
1,550.26	0.9	193	1,551.30	7.3	1,536
1,550.28	1.0	210	1,551.32	7.4	1,571
1,550.30	1.1	228	1,551.34	7.6	1,606
1,550.32	1.2	246	1,551.36	7.8	1,641
1,550.34	1.3	264	1,551.38	7.9	1,677
1,550.36	1.3	283	1,551.40	8.1	1,713
1,550.38	1.4	301	1,551.42	8.3	1,750
1,550.40	1.5	321	1,551.44	8.5	1,787
1,550.42	1.6	340	1,551.46	8.6	1,824
1,550.44	1.7	360	1,551.48	8.8	1,861
1,550.46	1.8	380	1,551.50	9.0	1,899
1,550.48	1.9	401	1,551.52	9.2	1,937
1,550.50	2.0	422	1,551.54	9.4	1,976
1,550.52	2.1	443	1,551.56	9.5	2,014
1,550.54	2.2	465	1,551.58	9.7	2,054
1,550.56	2.3	487	1,551.60	9.9	2,093
1,550.58	2.4	509	1,551.62	10.1	2,133
1,550.60	2.5	532	1,551.64	10.3	2,173
1,550.62	2.6	555	1,551.66	10.5	2,214
1,550.64	2.7	578	1,551.68	10.7	2,254
1,550.66	2.9	602	1,551.70	10.9	2,296
1,550.68	3.0	626	1,551.72	11.1	2,337
1,550.70	3.1	650	1,551.74	11.3	2,379
1,550.72	3.2	675	1,551.76	11.5	2,421
1,550.74	3.3	700	1,551.78	11.7	2,464
1,550.76	3.4	725	1,551.80	11.9	2,507
1,550.78	3.6	750	1,551.82	12.1	2,550
1,550.80	3.7	776	1,551.84	12.3	2,593
1,550.82	3.8	803	1,551.86	12.5	2,637
1,550.84	3.9	829	1,551.88	12.7	2,682
1,550.86	4.1	856	1,551.90	12.9	2,726
1,550.88	4.2	884	1,551.92	13.1	2,771
1,550.90	4.3	912	1,551.94	13.3	2,816
1,550.92	4.5	940	1,551.96	13.6	2,862
1,550.94	4.6	968	1,551.98	13.8	2,908
1,550.96	4.7	997	1,552.00	14.0	2,954
1,550.98	4.9	1,026			
1,551.00	5.0	1,055			
1,551.02	5.1	1,085			

Summary for Reach 33R: Reclaim Ditch

Inflow Area = 6.618 ac, 0.00% Impervious, Inflow Depth = 0.17" for 90th Pcnt event
 Inflow = 0.43 cfs @ 12.52 hrs, Volume= 0.094 af
 Outflow = 0.43 cfs @ 12.54 hrs, Volume= 0.094 af, Atten= 0%, Lag= 1.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Max. Velocity= 2.32 fps, Min. Travel Time= 2.0 min

Avg. Velocity= 1.13 fps, Avg. Travel Time= 4.1 min

Peak Storage= 51 cf @ 12.54 hrs

Average Depth at Peak Storage= 0.09'

Bank-Full Depth= 1.00' Flow Area= 4.0 sf, Capacity= 36.84 cfs

2.00' x 1.00' deep channel, n= 0.040

Side Slope Z-value= 2.0 '/' Top Width= 6.00'

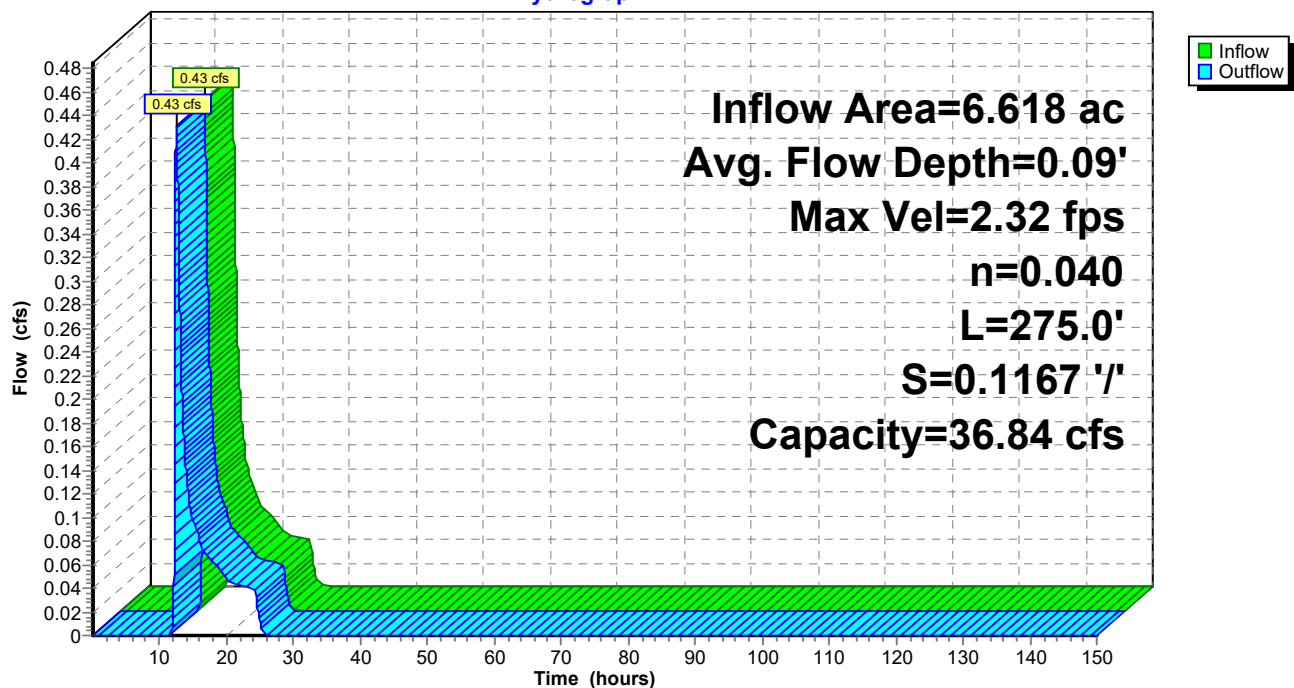
Length= 275.0' Slope= 0.1167 '/'

Inlet Invert= 1,480.00', Outlet Invert= 1,447.90'

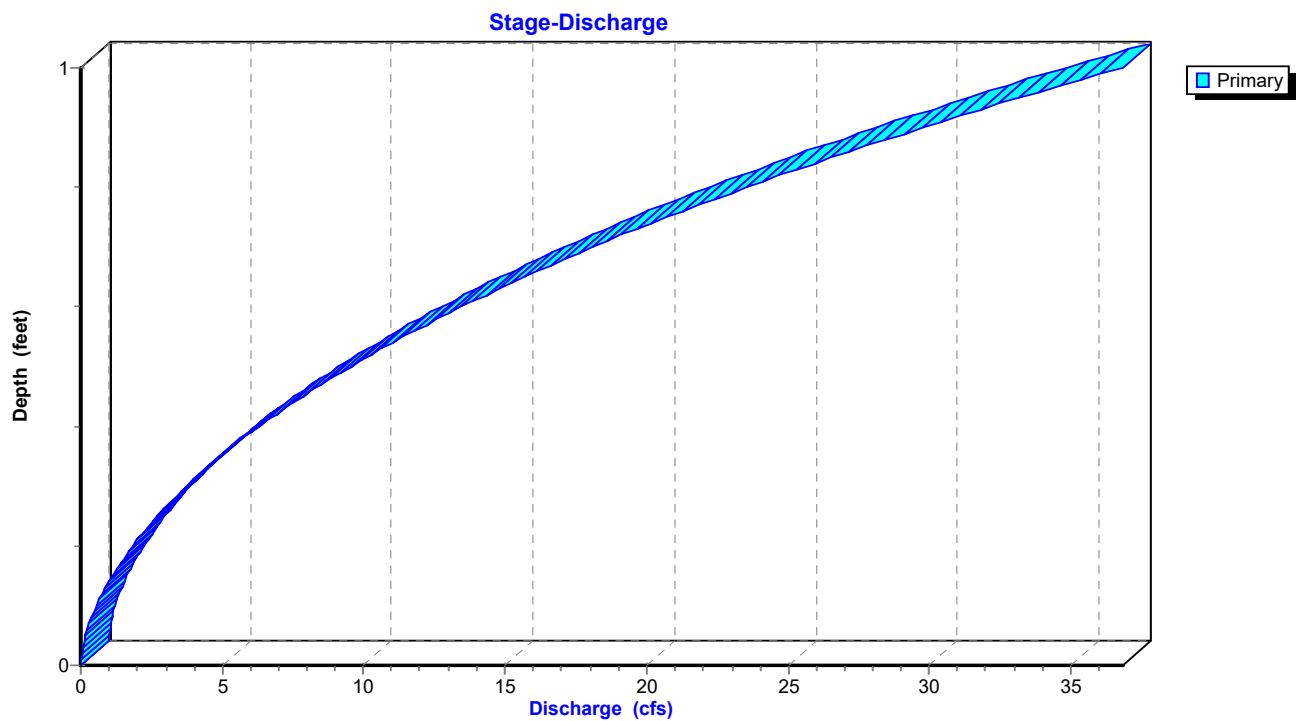


Reach 33R: Reclaim Ditch

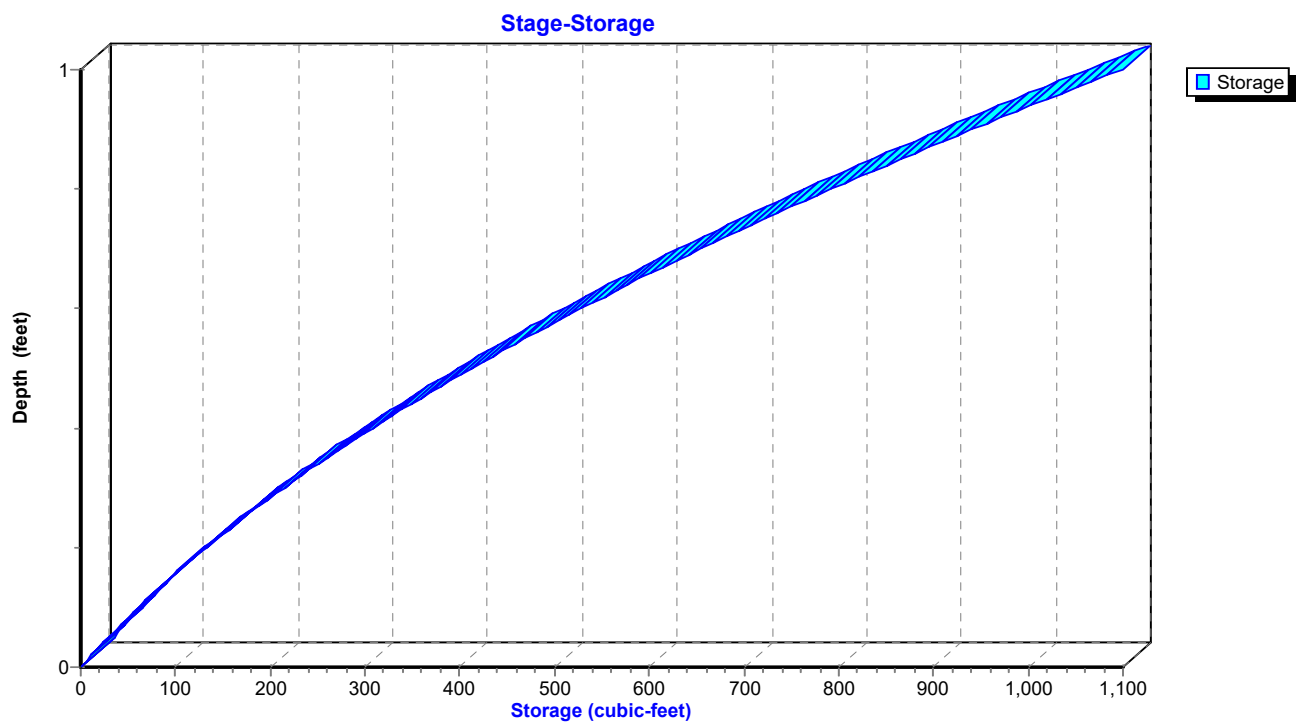
Hydrograph



Reach 33R: Reclaim Ditch



Reach 33R: Reclaim Ditch



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Type II 24-hr 90th Pcnt Rainfall=1.40"

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Hydrograph for Reach 33R: Reclaim Ditch

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
0.05	0.00	0	1,480.00	0.00
5.05	0.00	0	1,480.00	0.00
10.05	0.00	0	1,480.00	0.00
15.05	0.10	20	1,480.03	0.10
20.05	0.05	13	1,480.02	0.05
25.05	0.01	4	1,480.01	0.01
30.05	0.00	0	1,480.00	0.00
35.05	0.00	0	1,480.00	0.00
40.05	0.00	0	1,480.00	0.00
45.05	0.00	0	1,480.00	0.00
50.05	0.00	0	1,480.00	0.00
55.05	0.00	0	1,480.00	0.00
60.05	0.00	0	1,480.00	0.00
65.05	0.00	0	1,480.00	0.00
70.05	0.00	0	1,480.00	0.00
75.05	0.00	0	1,480.00	0.00
80.05	0.00	0	1,480.00	0.00
85.05	0.00	0	1,480.00	0.00
90.05	0.00	0	1,480.00	0.00
95.05	0.00	0	1,480.00	0.00
100.05	0.00	0	1,480.00	0.00
105.05	0.00	0	1,480.00	0.00
110.05	0.00	0	1,480.00	0.00
115.05	0.00	0	1,480.00	0.00
120.05	0.00	0	1,480.00	0.00
125.05	0.00	0	1,480.00	0.00
130.05	0.00	0	1,480.00	0.00
135.05	0.00	0	1,480.00	0.00
140.05	0.00	0	1,480.00	0.00
145.05	0.00	0	1,480.00	0.00

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Type II 24-hr 90th Pcnt Rainfall=1.40"

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Stage-Discharge for Reach 33R: Reclaim Ditch

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)	Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
1,480.00	0.00	0.00	1,480.52	6.49	10.26
1,480.01	0.58	0.01	1,480.53	6.55	10.63
1,480.02	0.92	0.04	1,480.54	6.62	11.01
1,480.03	1.20	0.07	1,480.55	6.69	11.40
1,480.04	1.44	0.12	1,480.56	6.75	11.79
1,480.05	1.66	0.17	1,480.57	6.81	12.20
1,480.06	1.86	0.24	1,480.58	6.88	12.61
1,480.07	2.05	0.31	1,480.59	6.94	13.02
1,480.08	2.22	0.38	1,480.60	7.00	13.45
1,480.09	2.39	0.47	1,480.61	7.07	13.88
1,480.10	2.55	0.56	1,480.62	7.13	14.32
1,480.11	2.70	0.66	1,480.63	7.19	14.77
1,480.12	2.84	0.76	1,480.64	7.25	15.22
1,480.13	2.98	0.88	1,480.65	7.31	15.68
1,480.14	3.11	0.99	1,480.66	7.37	16.15
1,480.15	3.24	1.12	1,480.67	7.43	16.63
1,480.16	3.37	1.25	1,480.68	7.49	17.11
1,480.17	3.49	1.39	1,480.69	7.55	17.60
1,480.18	3.61	1.53	1,480.70	7.61	18.10
1,480.19	3.72	1.68	1,480.71	7.66	18.61
1,480.20	3.83	1.84	1,480.72	7.72	19.12
1,480.21	3.94	2.00	1,480.73	7.78	19.65
1,480.22	4.04	2.17	1,480.74	7.84	20.18
1,480.23	4.15	2.35	1,480.75	7.89	20.72
1,480.24	4.25	2.53	1,480.76	7.95	21.26
1,480.25	4.35	2.72	1,480.77	8.00	21.82
1,480.26	4.44	2.91	1,480.78	8.06	22.38
1,480.27	4.54	3.11	1,480.79	8.11	22.95
1,480.28	4.63	3.32	1,480.80	8.17	23.53
1,480.29	4.72	3.53	1,480.81	8.22	24.11
1,480.30	4.81	3.75	1,480.82	8.28	24.71
1,480.31	4.90	3.98	1,480.83	8.33	25.31
1,480.32	4.99	4.21	1,480.84	8.39	25.92
1,480.33	5.07	4.45	1,480.85	8.44	26.54
1,480.34	5.15	4.70	1,480.86	8.49	27.17
1,480.35	5.24	4.95	1,480.87	8.54	27.80
1,480.36	5.32	5.21	1,480.88	8.60	28.45
1,480.37	5.40	5.47	1,480.89	8.65	29.10
1,480.38	5.48	5.74	1,480.90	8.70	29.76
1,480.39	5.56	6.02	1,480.91	8.75	30.43
1,480.40	5.63	6.31	1,480.92	8.80	31.11
1,480.41	5.71	6.60	1,480.93	8.86	31.79
1,480.42	5.78	6.90	1,480.94	8.91	32.49
1,480.43	5.86	7.20	1,480.95	8.96	33.19
1,480.44	5.93	7.51	1,480.96	9.01	33.90
1,480.45	6.00	7.83	1,480.97	9.06	34.62
1,480.46	6.07	8.16	1,480.98	9.11	35.35
1,480.47	6.14	8.49	1,480.99	9.16	36.09
1,480.48	6.21	8.83	1,481.00	9.21	36.84
1,480.49	6.28	9.18			
1,480.50	6.35	9.53			
1,480.51	6.42	9.89			

Stage-Area-Storage for Reach 33R: Reclaim Ditch

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
1,480.00	0.0	0	1,480.52	1.6	435
1,480.01	0.0	6	1,480.53	1.6	446
1,480.02	0.0	11	1,480.54	1.7	457
1,480.03	0.1	17	1,480.55	1.7	469
1,480.04	0.1	23	1,480.56	1.7	480
1,480.05	0.1	29	1,480.57	1.8	492
1,480.06	0.1	35	1,480.58	1.8	504
1,480.07	0.1	41	1,480.59	1.9	516
1,480.08	0.2	48	1,480.60	1.9	528
1,480.09	0.2	54	1,480.61	2.0	540
1,480.10	0.2	61	1,480.62	2.0	552
1,480.11	0.2	67	1,480.63	2.1	565
1,480.12	0.3	74	1,480.64	2.1	577
1,480.13	0.3	81	1,480.65	2.1	590
1,480.14	0.3	88	1,480.66	2.2	603
1,480.15	0.3	95	1,480.67	2.2	615
1,480.16	0.4	102	1,480.68	2.3	628
1,480.17	0.4	109	1,480.69	2.3	641
1,480.18	0.4	117	1,480.70	2.4	655
1,480.19	0.5	124	1,480.71	2.4	668
1,480.20	0.5	132	1,480.72	2.5	681
1,480.21	0.5	140	1,480.73	2.5	695
1,480.22	0.5	148	1,480.74	2.6	708
1,480.23	0.6	156	1,480.75	2.6	722
1,480.24	0.6	164	1,480.76	2.7	736
1,480.25	0.6	172	1,480.77	2.7	750
1,480.26	0.7	180	1,480.78	2.8	764
1,480.27	0.7	189	1,480.79	2.8	778
1,480.28	0.7	197	1,480.80	2.9	792
1,480.29	0.7	206	1,480.81	2.9	806
1,480.30	0.8	215	1,480.82	3.0	821
1,480.31	0.8	223	1,480.83	3.0	835
1,480.32	0.8	232	1,480.84	3.1	850
1,480.33	0.9	241	1,480.85	3.1	865
1,480.34	0.9	251	1,480.86	3.2	880
1,480.35	0.9	260	1,480.87	3.3	895
1,480.36	1.0	269	1,480.88	3.3	910
1,480.37	1.0	279	1,480.89	3.4	925
1,480.38	1.0	288	1,480.90	3.4	941
1,480.39	1.1	298	1,480.91	3.5	956
1,480.40	1.1	308	1,480.92	3.5	972
1,480.41	1.2	318	1,480.93	3.6	987
1,480.42	1.2	328	1,480.94	3.6	1,003
1,480.43	1.2	338	1,480.95	3.7	1,019
1,480.44	1.3	348	1,480.96	3.8	1,035
1,480.45	1.3	359	1,480.97	3.8	1,051
1,480.46	1.3	369	1,480.98	3.9	1,067
1,480.47	1.4	380	1,480.99	3.9	1,084
1,480.48	1.4	391	1,481.00	4.0	1,100
1,480.49	1.5	402			
1,480.50	1.5	413			
1,480.51	1.5	424			

Summary for Reach 34R: Div Ditch 2

Inflow Area = 2.580 ac, 0.00% Impervious, Inflow Depth = 0.17" for 90th Pcnt event
 Inflow = 0.20 cfs @ 12.39 hrs, Volume= 0.037 af
 Outflow = 0.20 cfs @ 12.43 hrs, Volume= 0.037 af, Atten= 1%, Lag= 2.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Max. Velocity= 1.89 fps, Min. Travel Time= 2.9 min

Avg. Velocity = 0.89 fps, Avg. Travel Time= 6.1 min

Peak Storage= 35 cf @ 12.43 hrs

Average Depth at Peak Storage= 0.05'

Bank-Full Depth= 1.00' Flow Area= 3.0 sf, Capacity= 30.48 cfs

2.00' x 1.00' deep channel, n= 0.035

Side Slope Z-value= 1.0 '/' Top Width= 4.00'

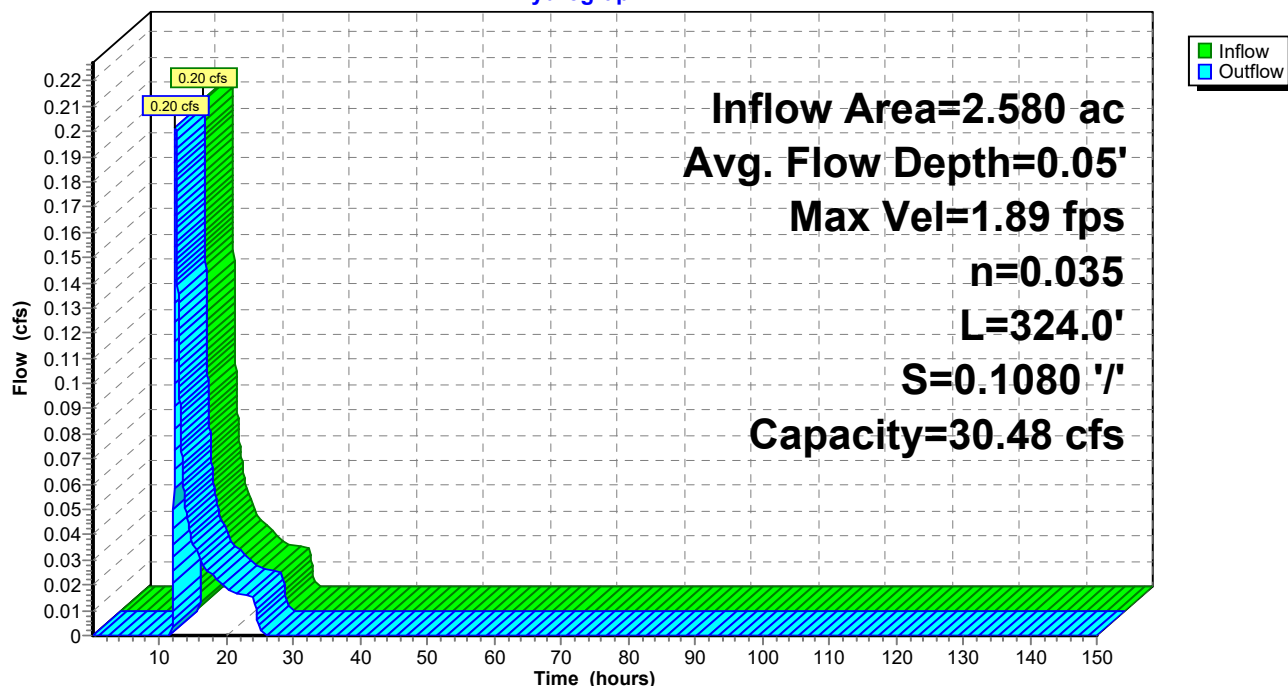
Length= 324.0' Slope= 0.1080 '/'

Inlet Invert= 1,585.00', Outlet Invert= 1,550.00'

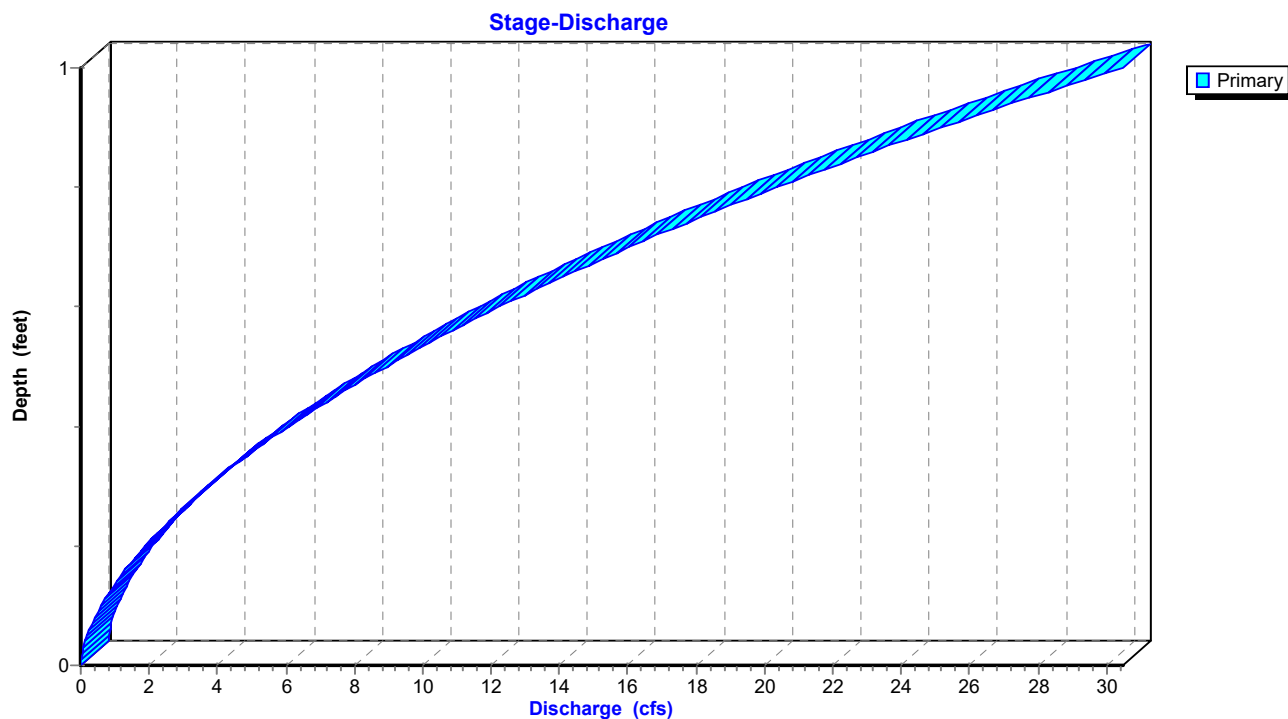


Reach 34R: Div Ditch 2

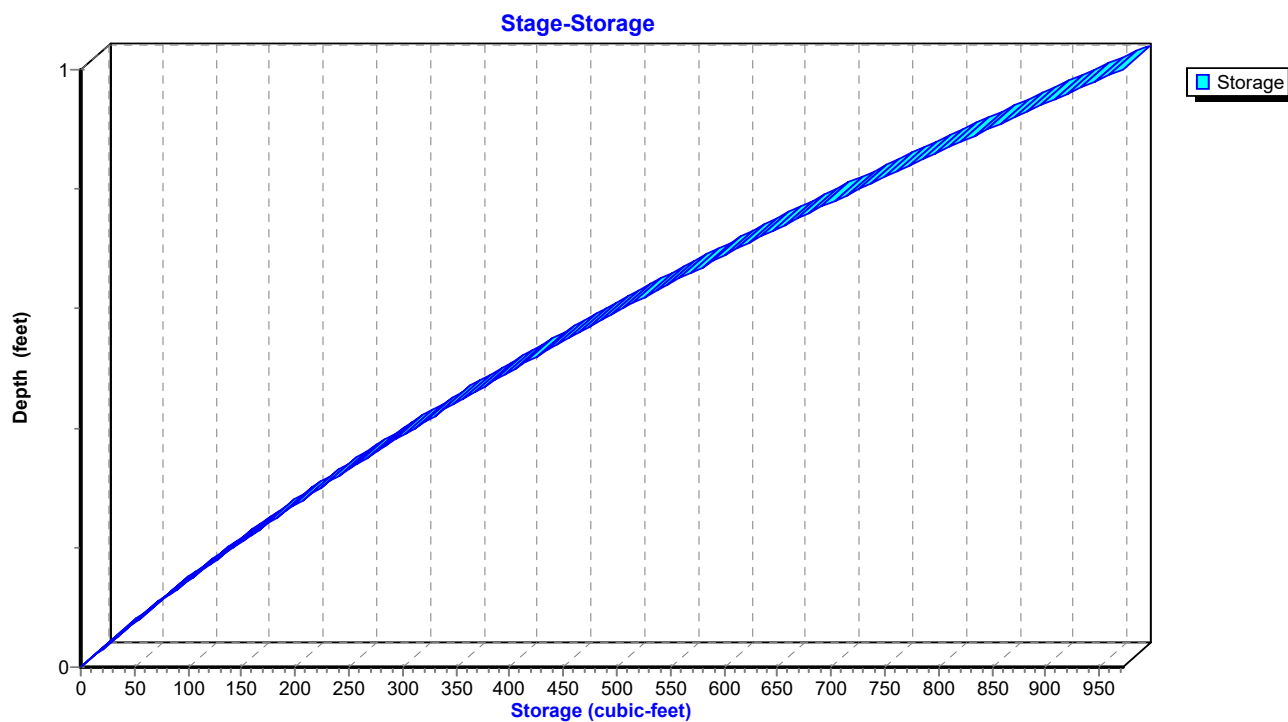
Hydrograph



Reach 34R: Div Ditch 2



Reach 34R: Div Ditch 2



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Type II 24-hr 90th Pcnt Rainfall=1.40"

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Hydrograph for Reach 34R: Div Ditch 2

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
0.05	0.00	0	1,585.00	0.00
5.05	0.00	0	1,585.00	0.00
10.05	0.00	0	1,585.00	0.00
15.05	0.04	12	1,585.02	0.04
20.05	0.02	8	1,585.01	0.02
25.05	0.00	1	1,585.00	0.00
30.05	0.00	0	1,585.00	0.00
35.05	0.00	0	1,585.00	0.00
40.05	0.00	0	1,585.00	0.00
45.05	0.00	0	1,585.00	0.00
50.05	0.00	0	1,585.00	0.00
55.05	0.00	0	1,585.00	0.00
60.05	0.00	0	1,585.00	0.00
65.05	0.00	0	1,585.00	0.00
70.05	0.00	0	1,585.00	0.00
75.05	0.00	0	1,585.00	0.00
80.05	0.00	0	1,585.00	0.00
85.05	0.00	0	1,585.00	0.00
90.05	0.00	0	1,585.00	0.00
95.05	0.00	0	1,585.00	0.00
100.05	0.00	0	1,585.00	0.00
105.05	0.00	0	1,585.00	0.00
110.05	0.00	0	1,585.00	0.00
115.05	0.00	0	1,585.00	0.00
120.05	0.00	0	1,585.00	0.00
125.05	0.00	0	1,585.00	0.00
130.05	0.00	0	1,585.00	0.00
135.05	0.00	0	1,585.00	0.00
140.05	0.00	0	1,585.00	0.00
145.05	0.00	0	1,585.00	0.00

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Type II 24-hr 90th Pcnt Rainfall=1.40"

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Stage-Discharge for Reach 34R: Div Ditch 2

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)	Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
1,585.00	0.00	0.00	1,585.52	7.29	9.55
1,585.01	0.64	0.01	1,585.53	7.36	9.87
1,585.02	1.02	0.04	1,585.54	7.43	10.20
1,585.03	1.32	0.08	1,585.55	7.51	10.53
1,585.04	1.59	0.13	1,585.56	7.58	10.86
1,585.05	1.84	0.19	1,585.57	7.65	11.20
1,585.06	2.07	0.26	1,585.58	7.71	11.54
1,585.07	2.28	0.33	1,585.59	7.78	11.89
1,585.08	2.48	0.41	1,585.60	7.85	12.25
1,585.09	2.66	0.50	1,585.61	7.92	12.61
1,585.10	2.84	0.60	1,585.62	7.98	12.97
1,585.11	3.01	0.70	1,585.63	8.05	13.34
1,585.12	3.18	0.81	1,585.64	8.11	13.71
1,585.13	3.34	0.92	1,585.65	8.18	14.09
1,585.14	3.49	1.05	1,585.66	8.24	14.47
1,585.15	3.64	1.17	1,585.67	8.31	14.86
1,585.16	3.78	1.31	1,585.68	8.37	15.25
1,585.17	3.92	1.44	1,585.69	8.43	15.65
1,585.18	4.05	1.59	1,585.70	8.49	16.05
1,585.19	4.18	1.74	1,585.71	8.56	16.46
1,585.20	4.31	1.90	1,585.72	8.62	16.87
1,585.21	4.43	2.06	1,585.73	8.68	17.29
1,585.22	4.55	2.22	1,585.74	8.74	17.71
1,585.23	4.67	2.39	1,585.75	8.80	18.14
1,585.24	4.78	2.57	1,585.76	8.86	18.57
1,585.25	4.90	2.75	1,585.77	8.91	19.01
1,585.26	5.01	2.94	1,585.78	8.97	19.45
1,585.27	5.11	3.13	1,585.79	9.03	19.90
1,585.28	5.22	3.33	1,585.80	9.09	20.35
1,585.29	5.32	3.53	1,585.81	9.14	20.81
1,585.30	5.42	3.74	1,585.82	9.20	21.28
1,585.31	5.52	3.95	1,585.83	9.26	21.74
1,585.32	5.62	4.17	1,585.84	9.31	22.22
1,585.33	5.72	4.39	1,585.85	9.37	22.69
1,585.34	5.81	4.62	1,585.86	9.42	23.18
1,585.35	5.90	4.85	1,585.87	9.48	23.67
1,585.36	5.99	5.09	1,585.88	9.53	24.16
1,585.37	6.08	5.33	1,585.89	9.59	24.66
1,585.38	6.17	5.58	1,585.90	9.64	25.16
1,585.39	6.26	5.83	1,585.91	9.69	25.67
1,585.40	6.34	6.09	1,585.92	9.75	26.18
1,585.41	6.43	6.35	1,585.93	9.80	26.70
1,585.42	6.51	6.62	1,585.94	9.85	27.23
1,585.43	6.59	6.89	1,585.95	9.90	27.76
1,585.44	6.68	7.17	1,585.96	9.96	28.29
1,585.45	6.76	7.45	1,585.97	10.01	28.83
1,585.46	6.83	7.73	1,585.98	10.06	29.38
1,585.47	6.91	8.03	1,585.99	10.11	29.93
1,585.48	6.99	8.32	1,586.00	10.16	30.48
1,585.49	7.07	8.62			
1,585.50	7.14	8.93			
1,585.51	7.22	9.24			

Stage-Area-Storage for Reach 34R: Div Ditch 2

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
1,585.00	0.0	0	1,585.52	1.3	425
1,585.01	0.0	7	1,585.53	1.3	434
1,585.02	0.0	13	1,585.54	1.4	444
1,585.03	0.1	20	1,585.55	1.4	454
1,585.04	0.1	26	1,585.56	1.4	464
1,585.05	0.1	33	1,585.57	1.5	475
1,585.06	0.1	40	1,585.58	1.5	485
1,585.07	0.1	47	1,585.59	1.5	495
1,585.08	0.2	54	1,585.60	1.6	505
1,585.09	0.2	61	1,585.61	1.6	516
1,585.10	0.2	68	1,585.62	1.6	526
1,585.11	0.2	75	1,585.63	1.7	537
1,585.12	0.3	82	1,585.64	1.7	547
1,585.13	0.3	90	1,585.65	1.7	558
1,585.14	0.3	97	1,585.66	1.8	569
1,585.15	0.3	104	1,585.67	1.8	580
1,585.16	0.3	112	1,585.68	1.8	590
1,585.17	0.4	120	1,585.69	1.9	601
1,585.18	0.4	127	1,585.70	1.9	612
1,585.19	0.4	135	1,585.71	1.9	623
1,585.20	0.4	143	1,585.72	2.0	635
1,585.21	0.5	150	1,585.73	2.0	646
1,585.22	0.5	158	1,585.74	2.0	657
1,585.23	0.5	166	1,585.75	2.1	668
1,585.24	0.5	174	1,585.76	2.1	680
1,585.25	0.6	182	1,585.77	2.1	691
1,585.26	0.6	190	1,585.78	2.2	703
1,585.27	0.6	199	1,585.79	2.2	714
1,585.28	0.6	207	1,585.80	2.2	726
1,585.29	0.7	215	1,585.81	2.3	737
1,585.30	0.7	224	1,585.82	2.3	749
1,585.31	0.7	232	1,585.83	2.3	761
1,585.32	0.7	241	1,585.84	2.4	773
1,585.33	0.8	249	1,585.85	2.4	785
1,585.34	0.8	258	1,585.86	2.5	797
1,585.35	0.8	266	1,585.87	2.5	809
1,585.36	0.8	275	1,585.88	2.5	821
1,585.37	0.9	284	1,585.89	2.6	833
1,585.38	0.9	293	1,585.90	2.6	846
1,585.39	0.9	302	1,585.91	2.6	858
1,585.40	1.0	311	1,585.92	2.7	870
1,585.41	1.0	320	1,585.93	2.7	883
1,585.42	1.0	329	1,585.94	2.8	895
1,585.43	1.0	339	1,585.95	2.8	908
1,585.44	1.1	348	1,585.96	2.8	921
1,585.45	1.1	357	1,585.97	2.9	933
1,585.46	1.1	367	1,585.98	2.9	946
1,585.47	1.2	376	1,585.99	3.0	959
1,585.48	1.2	386	1,586.00	3.0	972
1,585.49	1.2	395			
1,585.50	1.3	405			
1,585.51	1.3	415			

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Type II 24-hr 90th Pcnt Rainfall=1.40"

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Summary for Reach 35R: Div Ditch 1

Inflow Area = 2.922 ac, 0.00% Impervious, Inflow Depth = 0.17" for 90th Pcnt event
Inflow = 0.23 cfs @ 12.39 hrs, Volume= 0.041 af
Outflow = 0.23 cfs @ 12.44 hrs, Volume= 0.041 af, Atten= 1%, Lag= 2.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Max. Velocity= 1.94 fps, Min. Travel Time= 3.8 min

Avg. Velocity= 0.91 fps, Avg. Travel Time= 8.1 min

Peak Storage= 52 cf @ 12.44 hrs

Average Depth at Peak Storage= 0.06'

Bank-Full Depth= 1.00' Flow Area= 3.0 sf, Capacity= 29.59 cfs

2.00' x 1.00' deep channel, n= 0.035

Side Slope Z-value= 1.0 '/' Top Width= 4.00'

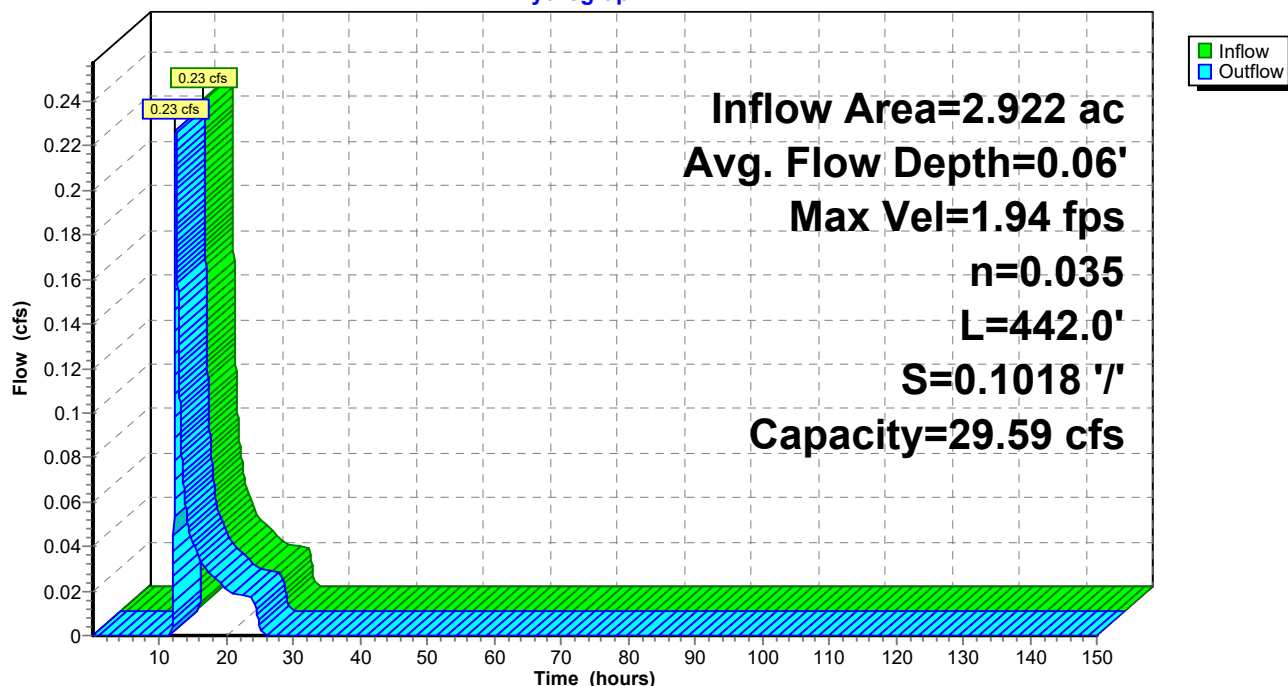
Length= 442.0' Slope= 0.1018 '/'

Inlet Invert= 1,585.00', Outlet Invert= 1,540.00'

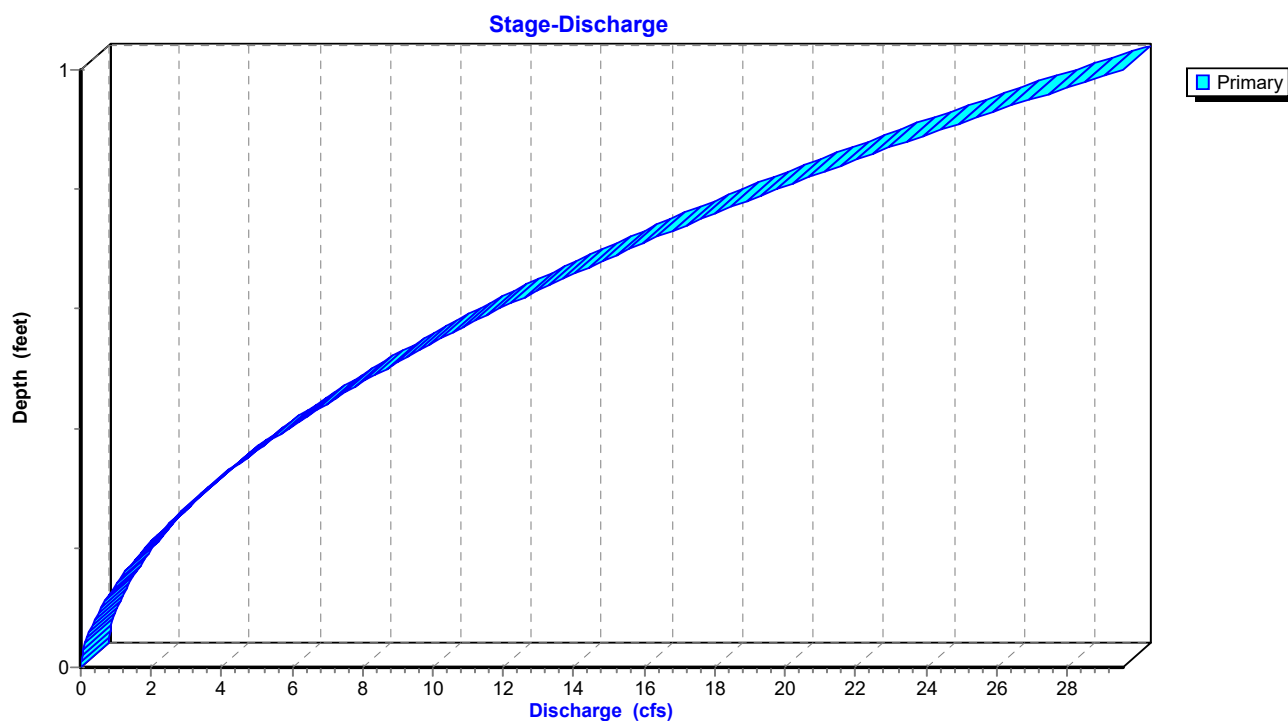


Reach 35R: Div Ditch 1

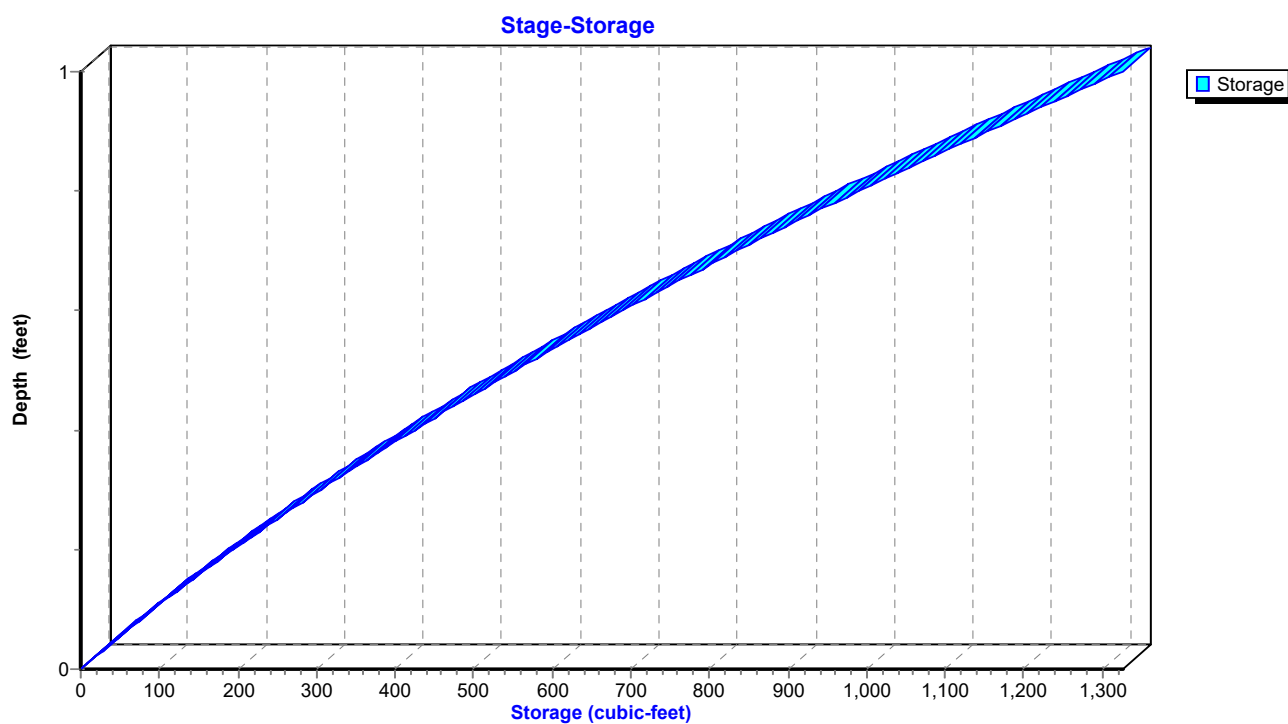
Hydrograph



Reach 35R: Div Ditch 1



Reach 35R: Div Ditch 1



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Type II 24-hr 90th Pcnt Rainfall=1.40"

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Hydrograph for Reach 35R: Div Ditch 1

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
0.05	0.00	0	1,585.00	0.00
5.05	0.00	0	1,585.00	0.00
10.05	0.00	0	1,585.00	0.00
15.05	0.04	18	1,585.02	0.04
20.05	0.02	12	1,585.01	0.02
25.05	0.00	2	1,585.00	0.00
30.05	0.00	0	1,585.00	0.00
35.05	0.00	0	1,585.00	0.00
40.05	0.00	0	1,585.00	0.00
45.05	0.00	0	1,585.00	0.00
50.05	0.00	0	1,585.00	0.00
55.05	0.00	0	1,585.00	0.00
60.05	0.00	0	1,585.00	0.00
65.05	0.00	0	1,585.00	0.00
70.05	0.00	0	1,585.00	0.00
75.05	0.00	0	1,585.00	0.00
80.05	0.00	0	1,585.00	0.00
85.05	0.00	0	1,585.00	0.00
90.05	0.00	0	1,585.00	0.00
95.05	0.00	0	1,585.00	0.00
100.05	0.00	0	1,585.00	0.00
105.05	0.00	0	1,585.00	0.00
110.05	0.00	0	1,585.00	0.00
115.05	0.00	0	1,585.00	0.00
120.05	0.00	0	1,585.00	0.00
125.05	0.00	0	1,585.00	0.00
130.05	0.00	0	1,585.00	0.00
135.05	0.00	0	1,585.00	0.00
140.05	0.00	0	1,585.00	0.00
145.05	0.00	0	1,585.00	0.00

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Type II 24-hr 90th Pcnt Rainfall=1.40"

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Stage-Discharge for Reach 35R: Div Ditch 1

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)	Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
1,585.00	0.00	0.00	1,585.52	7.08	9.27
1,585.01	0.63	0.01	1,585.53	7.15	9.58
1,585.02	0.99	0.04	1,585.54	7.22	9.90
1,585.03	1.28	0.08	1,585.55	7.29	10.22
1,585.04	1.55	0.13	1,585.56	7.35	10.54
1,585.05	1.79	0.18	1,585.57	7.42	10.87
1,585.06	2.01	0.25	1,585.58	7.49	11.21
1,585.07	2.21	0.32	1,585.59	7.56	11.55
1,585.08	2.40	0.40	1,585.60	7.62	11.89
1,585.09	2.59	0.49	1,585.61	7.69	12.24
1,585.10	2.76	0.58	1,585.62	7.75	12.59
1,585.11	2.93	0.68	1,585.63	7.81	12.95
1,585.12	3.09	0.79	1,585.64	7.88	13.31
1,585.13	3.24	0.90	1,585.65	7.94	13.68
1,585.14	3.39	1.01	1,585.66	8.00	14.05
1,585.15	3.53	1.14	1,585.67	8.06	14.43
1,585.16	3.67	1.27	1,585.68	8.13	14.81
1,585.17	3.80	1.40	1,585.69	8.19	15.19
1,585.18	3.93	1.54	1,585.70	8.25	15.58
1,585.19	4.06	1.69	1,585.71	8.31	15.98
1,585.20	4.18	1.84	1,585.72	8.36	16.38
1,585.21	4.30	2.00	1,585.73	8.42	16.79
1,585.22	4.42	2.16	1,585.74	8.48	17.20
1,585.23	4.53	2.32	1,585.75	8.54	17.61
1,585.24	4.64	2.50	1,585.76	8.60	18.03
1,585.25	4.75	2.67	1,585.77	8.65	18.46
1,585.26	4.86	2.86	1,585.78	8.71	18.89
1,585.27	4.96	3.04	1,585.79	8.77	19.32
1,585.28	5.07	3.23	1,585.80	8.82	19.76
1,585.29	5.17	3.43	1,585.81	8.88	20.20
1,585.30	5.26	3.63	1,585.82	8.93	20.65
1,585.31	5.36	3.84	1,585.83	8.99	21.11
1,585.32	5.46	4.05	1,585.84	9.04	21.57
1,585.33	5.55	4.27	1,585.85	9.09	22.03
1,585.34	5.64	4.49	1,585.86	9.15	22.50
1,585.35	5.73	4.71	1,585.87	9.20	22.97
1,585.36	5.82	4.94	1,585.88	9.25	23.45
1,585.37	5.91	5.18	1,585.89	9.31	23.94
1,585.38	5.99	5.42	1,585.90	9.36	24.43
1,585.39	6.08	5.66	1,585.91	9.41	24.92
1,585.40	6.16	5.91	1,585.92	9.46	25.42
1,585.41	6.24	6.17	1,585.93	9.51	25.92
1,585.42	6.32	6.43	1,585.94	9.56	26.43
1,585.43	6.40	6.69	1,585.95	9.61	26.95
1,585.44	6.48	6.96	1,585.96	9.67	27.46
1,585.45	6.56	7.23	1,585.97	9.72	27.99
1,585.46	6.64	7.51	1,585.98	9.77	28.52
1,585.47	6.71	7.79	1,585.99	9.81	29.05
1,585.48	6.79	8.08	1,586.00	9.86	29.59
1,585.49	6.86	8.37			
1,585.50	6.93	8.67			
1,585.51	7.01	8.97			

Stage-Area-Storage for Reach 35R: Div Ditch 1

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
1,585.00	0.0	0	1,585.52	1.3	579
1,585.01	0.0	9	1,585.53	1.3	593
1,585.02	0.0	18	1,585.54	1.4	606
1,585.03	0.1	27	1,585.55	1.4	620
1,585.04	0.1	36	1,585.56	1.4	634
1,585.05	0.1	45	1,585.57	1.5	647
1,585.06	0.1	55	1,585.58	1.5	661
1,585.07	0.1	64	1,585.59	1.5	675
1,585.08	0.2	74	1,585.60	1.6	690
1,585.09	0.2	83	1,585.61	1.6	704
1,585.10	0.2	93	1,585.62	1.6	718
1,585.11	0.2	103	1,585.63	1.7	732
1,585.12	0.3	112	1,585.64	1.7	747
1,585.13	0.3	122	1,585.65	1.7	761
1,585.14	0.3	132	1,585.66	1.8	776
1,585.15	0.3	143	1,585.67	1.8	791
1,585.16	0.3	153	1,585.68	1.8	806
1,585.17	0.4	163	1,585.69	1.9	820
1,585.18	0.4	173	1,585.70	1.9	835
1,585.19	0.4	184	1,585.71	1.9	850
1,585.20	0.4	194	1,585.72	2.0	866
1,585.21	0.5	205	1,585.73	2.0	881
1,585.22	0.5	216	1,585.74	2.0	896
1,585.23	0.5	227	1,585.75	2.1	912
1,585.24	0.5	238	1,585.76	2.1	927
1,585.25	0.6	249	1,585.77	2.1	943
1,585.26	0.6	260	1,585.78	2.2	958
1,585.27	0.6	271	1,585.79	2.2	974
1,585.28	0.6	282	1,585.80	2.2	990
1,585.29	0.7	294	1,585.81	2.3	1,006
1,585.30	0.7	305	1,585.82	2.3	1,022
1,585.31	0.7	317	1,585.83	2.3	1,038
1,585.32	0.7	328	1,585.84	2.4	1,054
1,585.33	0.8	340	1,585.85	2.4	1,071
1,585.34	0.8	352	1,585.86	2.5	1,087
1,585.35	0.8	364	1,585.87	2.5	1,104
1,585.36	0.8	376	1,585.88	2.5	1,120
1,585.37	0.9	388	1,585.89	2.6	1,137
1,585.38	0.9	400	1,585.90	2.6	1,154
1,585.39	0.9	412	1,585.91	2.6	1,170
1,585.40	1.0	424	1,585.92	2.7	1,187
1,585.41	1.0	437	1,585.93	2.7	1,204
1,585.42	1.0	449	1,585.94	2.8	1,222
1,585.43	1.0	462	1,585.95	2.8	1,239
1,585.44	1.1	475	1,585.96	2.8	1,256
1,585.45	1.1	487	1,585.97	2.9	1,273
1,585.46	1.1	500	1,585.98	2.9	1,291
1,585.47	1.2	513	1,585.99	3.0	1,308
1,585.48	1.2	526	1,586.00	3.0	1,326
1,585.49	1.2	539			
1,585.50	1.3	553			
1,585.51	1.3	566			

Summary for Reach 36R: Div Ditch 5

Inflow Area = 2.762 ac, 0.00% Impervious, Inflow Depth = 0.17" for 90th Pcnt event
 Inflow = 0.21 cfs @ 12.42 hrs, Volume= 0.039 af
 Outflow = 0.20 cfs @ 12.47 hrs, Volume= 0.039 af, Atten= 1%, Lag= 2.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Max. Velocity= 1.20 fps, Min. Travel Time= 2.9 min

Avg. Velocity = 0.55 fps, Avg. Travel Time= 6.2 min

Peak Storage= 35 cf @ 12.47 hrs

Average Depth at Peak Storage= 0.08'

Bank-Full Depth= 1.00' Flow Area= 3.0 sf, Capacity= 14.45 cfs

2.00' x 1.00' deep channel, n= 0.035

Side Slope Z-value= 1.0 '/' Top Width= 4.00'

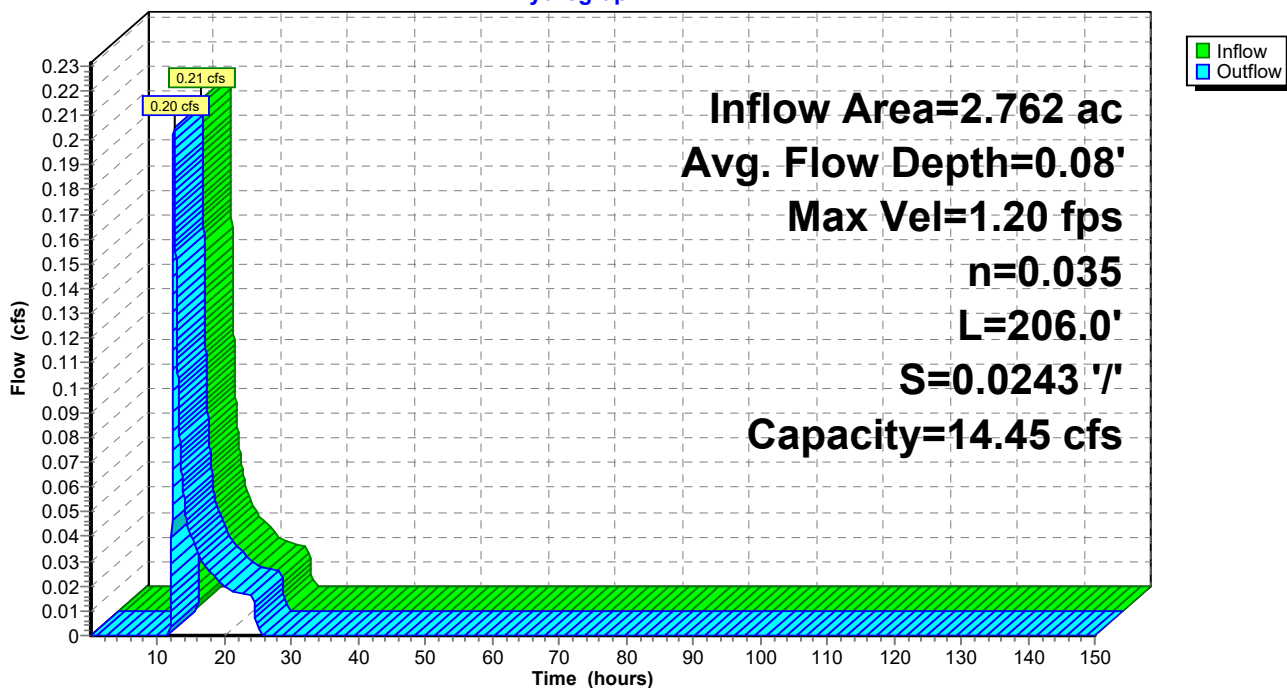
Length= 206.0' Slope= 0.0243 '/'

Inlet Invert= 1,505.00', Outlet Invert= 1,500.00'

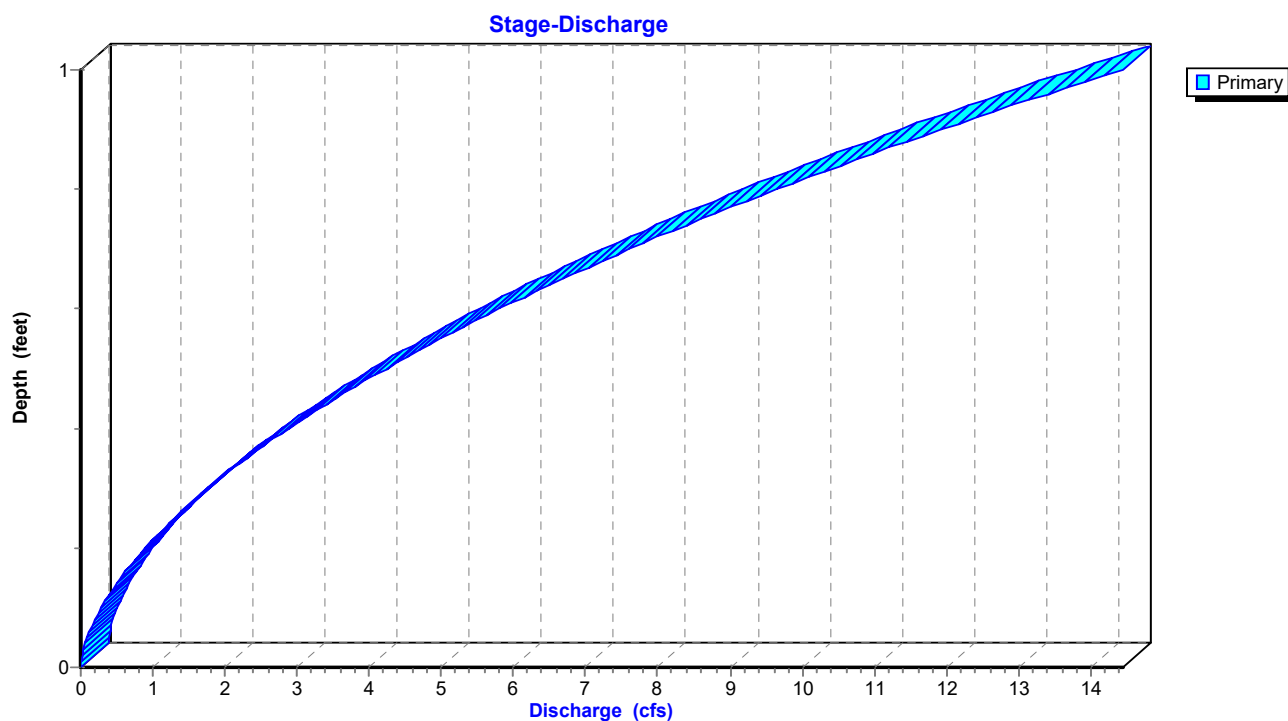


Reach 36R: Div Ditch 5

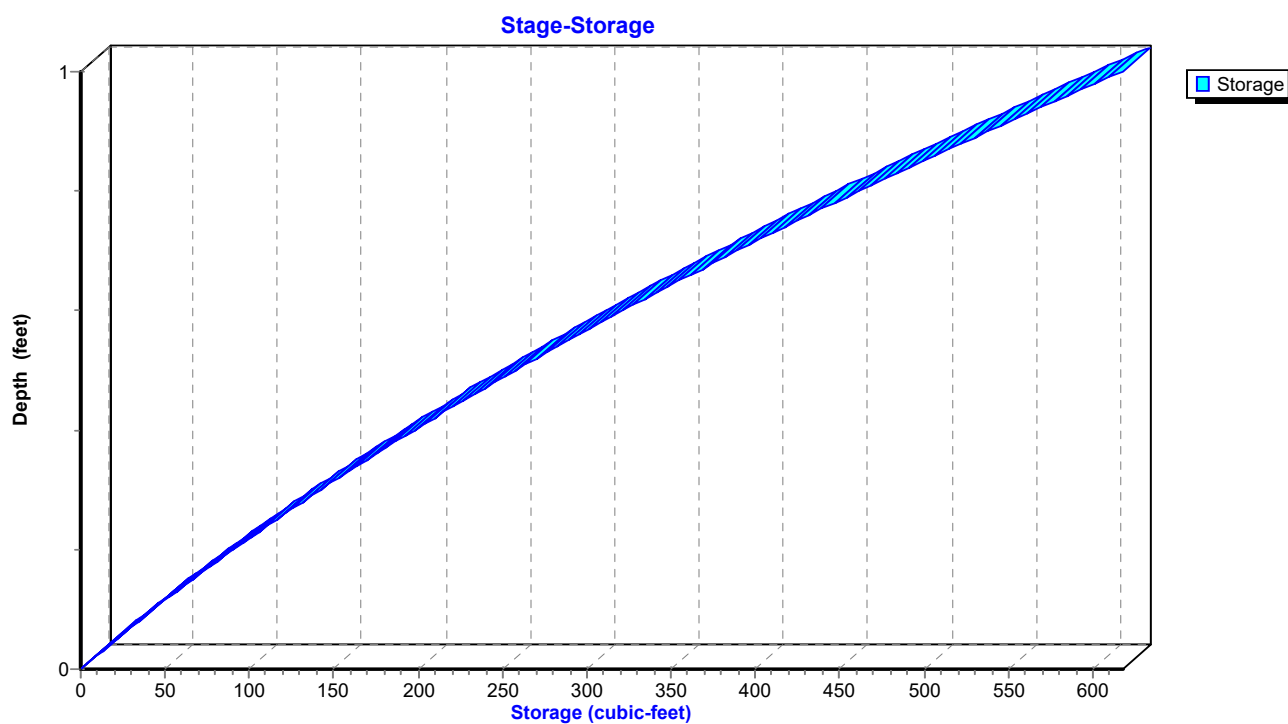
Hydrograph



Reach 36R: Div Ditch 5



Reach 36R: Div Ditch 5



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Hydrograph for Reach 36R: Div Ditch 5

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
0.05	0.00	0	1,505.00	0.00
5.05	0.00	0	1,505.00	0.00
10.05	0.00	0	1,505.00	0.00
15.05	0.04	13	1,505.03	0.04
20.05	0.02	8	1,505.02	0.02
25.05	0.00	2	1,505.00	0.00
30.05	0.00	0	1,505.00	0.00
35.05	0.00	0	1,505.00	0.00
40.05	0.00	0	1,505.00	0.00
45.05	0.00	0	1,505.00	0.00
50.05	0.00	0	1,505.00	0.00
55.05	0.00	0	1,505.00	0.00
60.05	0.00	0	1,505.00	0.00
65.05	0.00	0	1,505.00	0.00
70.05	0.00	0	1,505.00	0.00
75.05	0.00	0	1,505.00	0.00
80.05	0.00	0	1,505.00	0.00
85.05	0.00	0	1,505.00	0.00
90.05	0.00	0	1,505.00	0.00
95.05	0.00	0	1,505.00	0.00
100.05	0.00	0	1,505.00	0.00
105.05	0.00	0	1,505.00	0.00
110.05	0.00	0	1,505.00	0.00
115.05	0.00	0	1,505.00	0.00
120.05	0.00	0	1,505.00	0.00
125.05	0.00	0	1,505.00	0.00
130.05	0.00	0	1,505.00	0.00
135.05	0.00	0	1,505.00	0.00
140.05	0.00	0	1,505.00	0.00
145.05	0.00	0	1,505.00	0.00

Stage-Discharge for Reach 36R: Div Ditch 5

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)	Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
1,505.00	0.00	0.00	1,505.52	3.46	4.53
1,505.01	0.31	0.01	1,505.53	3.49	4.68
1,505.02	0.48	0.02	1,505.54	3.52	4.83
1,505.03	0.63	0.04	1,505.55	3.56	4.99
1,505.04	0.76	0.06	1,505.56	3.59	5.15
1,505.05	0.87	0.09	1,505.57	3.62	5.31
1,505.06	0.98	0.12	1,505.58	3.66	5.47
1,505.07	1.08	0.16	1,505.59	3.69	5.64
1,505.08	1.17	0.20	1,505.60	3.72	5.81
1,505.09	1.26	0.24	1,505.61	3.75	5.98
1,505.10	1.35	0.28	1,505.62	3.78	6.15
1,505.11	1.43	0.33	1,505.63	3.82	6.32
1,505.12	1.51	0.38	1,505.64	3.85	6.50
1,505.13	1.58	0.44	1,505.65	3.88	6.68
1,505.14	1.65	0.50	1,505.66	3.91	6.86
1,505.15	1.72	0.56	1,505.67	3.94	7.04
1,505.16	1.79	0.62	1,505.68	3.97	7.23
1,505.17	1.86	0.68	1,505.69	4.00	7.42
1,505.18	1.92	0.75	1,505.70	4.03	7.61
1,505.19	1.98	0.82	1,505.71	4.06	7.80
1,505.20	2.04	0.90	1,505.72	4.08	8.00
1,505.21	2.10	0.97	1,505.73	4.11	8.20
1,505.22	2.16	1.05	1,505.74	4.14	8.40
1,505.23	2.21	1.14	1,505.75	4.17	8.60
1,505.24	2.27	1.22	1,505.76	4.20	8.80
1,505.25	2.32	1.31	1,505.77	4.23	9.01
1,505.26	2.37	1.39	1,505.78	4.25	9.22
1,505.27	2.42	1.49	1,505.79	4.28	9.43
1,505.28	2.47	1.58	1,505.80	4.31	9.65
1,505.29	2.52	1.68	1,505.81	4.33	9.87
1,505.30	2.57	1.77	1,505.82	4.36	10.08
1,505.31	2.62	1.87	1,505.83	4.39	10.31
1,505.32	2.66	1.98	1,505.84	4.41	10.53
1,505.33	2.71	2.08	1,505.85	4.44	10.76
1,505.34	2.75	2.19	1,505.86	4.47	10.99
1,505.35	2.80	2.30	1,505.87	4.49	11.22
1,505.36	2.84	2.41	1,505.88	4.52	11.45
1,505.37	2.88	2.53	1,505.89	4.54	11.69
1,505.38	2.93	2.65	1,505.90	4.57	11.93
1,505.39	2.97	2.77	1,505.91	4.59	12.17
1,505.40	3.01	2.89	1,505.92	4.62	12.41
1,505.41	3.05	3.01	1,505.93	4.65	12.66
1,505.42	3.09	3.14	1,505.94	4.67	12.91
1,505.43	3.13	3.27	1,505.95	4.69	13.16
1,505.44	3.16	3.40	1,505.96	4.72	13.41
1,505.45	3.20	3.53	1,505.97	4.74	13.67
1,505.46	3.24	3.67	1,505.98	4.77	13.92
1,505.47	3.28	3.80	1,505.99	4.79	14.19
1,505.48	3.31	3.94	1,506.00	4.82	14.45
1,505.49	3.35	4.09			
1,505.50	3.39	4.23			
1,505.51	3.42	4.38			

Stage-Area-Storage for Reach 36R: Div Ditch 5

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
1,505.00	0.0	0	1,505.52	1.3	270
1,505.01	0.0	4	1,505.53	1.3	276
1,505.02	0.0	8	1,505.54	1.4	283
1,505.03	0.1	13	1,505.55	1.4	289
1,505.04	0.1	17	1,505.56	1.4	295
1,505.05	0.1	21	1,505.57	1.5	302
1,505.06	0.1	25	1,505.58	1.5	308
1,505.07	0.1	30	1,505.59	1.5	315
1,505.08	0.2	34	1,505.60	1.6	321
1,505.09	0.2	39	1,505.61	1.6	328
1,505.10	0.2	43	1,505.62	1.6	335
1,505.11	0.2	48	1,505.63	1.7	341
1,505.12	0.3	52	1,505.64	1.7	348
1,505.13	0.3	57	1,505.65	1.7	355
1,505.14	0.3	62	1,505.66	1.8	362
1,505.15	0.3	66	1,505.67	1.8	369
1,505.16	0.3	71	1,505.68	1.8	375
1,505.17	0.4	76	1,505.69	1.9	382
1,505.18	0.4	81	1,505.70	1.9	389
1,505.19	0.4	86	1,505.71	1.9	396
1,505.20	0.4	91	1,505.72	2.0	403
1,505.21	0.5	96	1,505.73	2.0	411
1,505.22	0.5	101	1,505.74	2.0	418
1,505.23	0.5	106	1,505.75	2.1	425
1,505.24	0.5	111	1,505.76	2.1	432
1,505.25	0.6	116	1,505.77	2.1	439
1,505.26	0.6	121	1,505.78	2.2	447
1,505.27	0.6	126	1,505.79	2.2	454
1,505.28	0.6	132	1,505.80	2.2	461
1,505.29	0.7	137	1,505.81	2.3	469
1,505.30	0.7	142	1,505.82	2.3	476
1,505.31	0.7	148	1,505.83	2.3	484
1,505.32	0.7	153	1,505.84	2.4	491
1,505.33	0.8	158	1,505.85	2.4	499
1,505.34	0.8	164	1,505.86	2.5	507
1,505.35	0.8	169	1,505.87	2.5	514
1,505.36	0.8	175	1,505.88	2.5	522
1,505.37	0.9	181	1,505.89	2.6	530
1,505.38	0.9	186	1,505.90	2.6	538
1,505.39	0.9	192	1,505.91	2.6	546
1,505.40	1.0	198	1,505.92	2.7	553
1,505.41	1.0	204	1,505.93	2.7	561
1,505.42	1.0	209	1,505.94	2.8	569
1,505.43	1.0	215	1,505.95	2.8	577
1,505.44	1.1	221	1,505.96	2.8	585
1,505.45	1.1	227	1,505.97	2.9	593
1,505.46	1.1	233	1,505.98	2.9	602
1,505.47	1.2	239	1,505.99	3.0	610
1,505.48	1.2	245	1,506.00	3.0	618
1,505.49	1.2	251			
1,505.50	1.3	258			
1,505.51	1.3	264			

Summary for Reach 37R: Div Ditch 3

Inflow Area = 10.125 ac, 0.00% Impervious, Inflow Depth = 0.17" for 90th Pcnt event
 Inflow = 0.37 cfs @ 13.65 hrs, Volume= 0.143 af
 Outflow = 0.37 cfs @ 13.75 hrs, Volume= 0.143 af, Atten= 0%, Lag= 5.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Max. Velocity= 2.32 fps, Min. Travel Time= 4.2 min

Avg. Velocity= 1.26 fps, Avg. Travel Time= 7.8 min

Peak Storage= 93 cf @ 13.75 hrs

Average Depth at Peak Storage= 0.08'

Bank-Full Depth= 1.00' Flow Area= 3.0 sf, Capacity= 29.53 cfs

2.00' x 1.00' deep channel, n= 0.035

Side Slope Z-value= 1.0 '/' Top Width= 4.00'

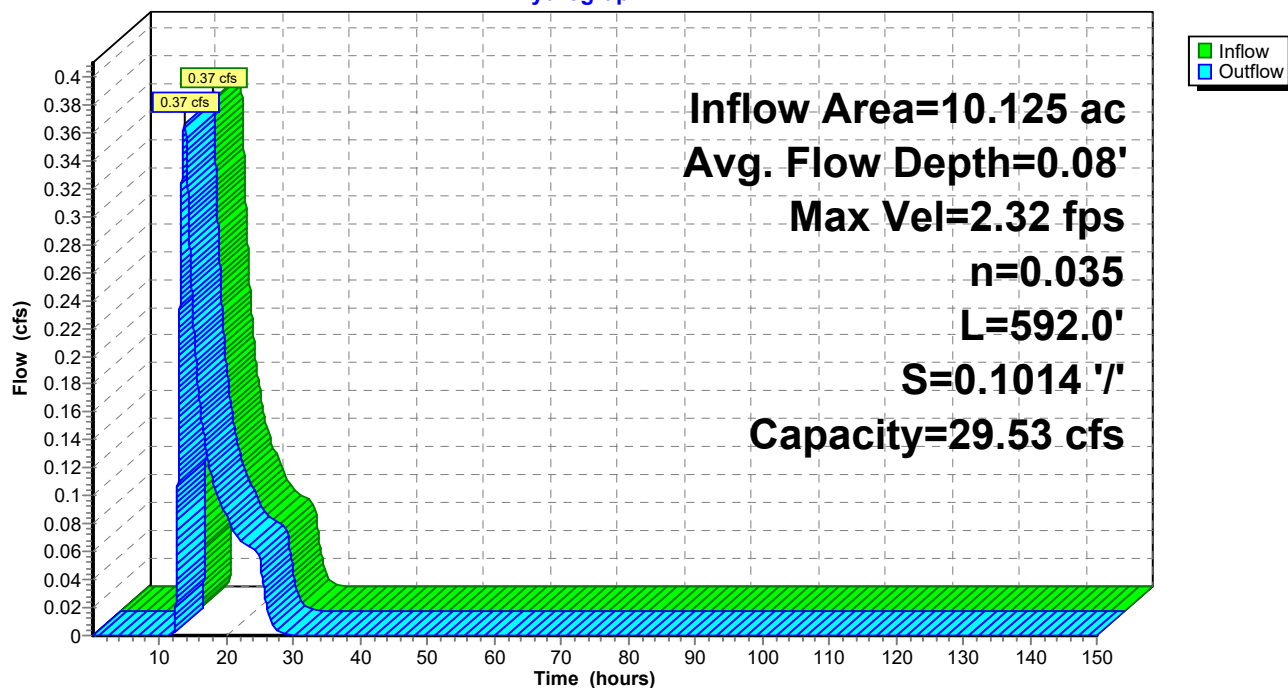
Length= 592.0' Slope= 0.1014 '/'

Inlet Invert= 1,635.00', Outlet Invert= 1,575.00'

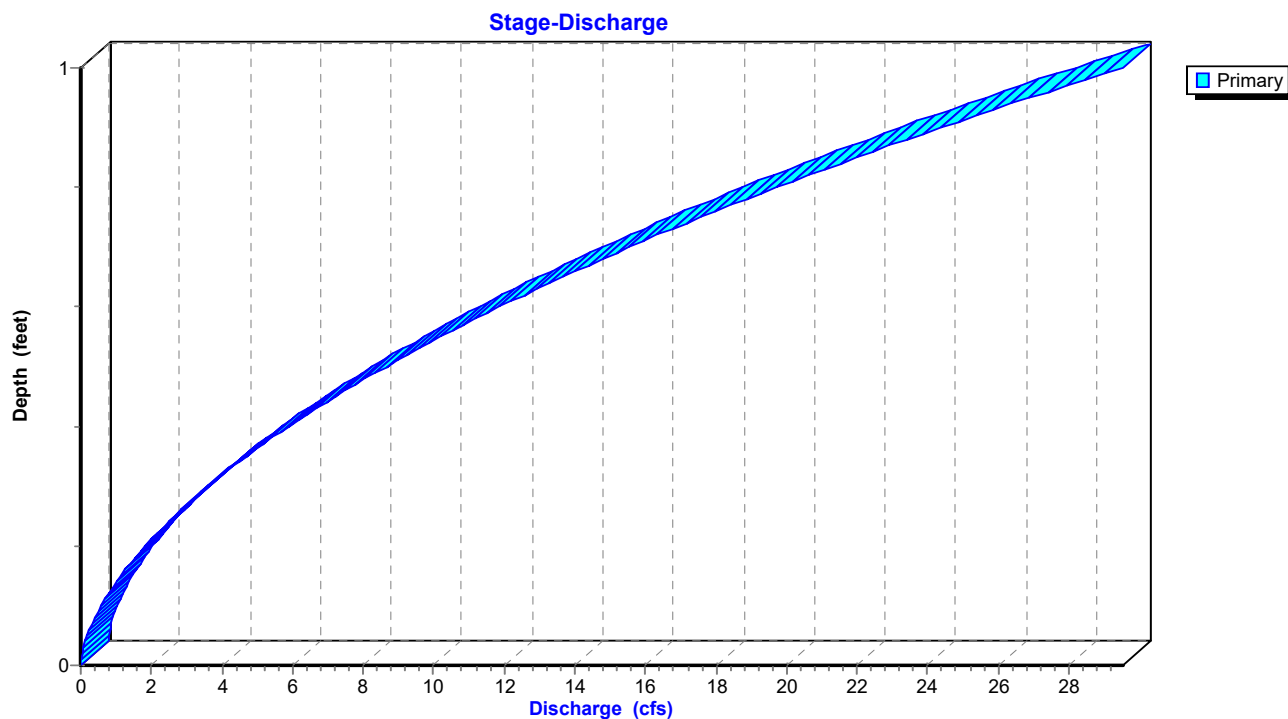


Reach 37R: Div Ditch 3

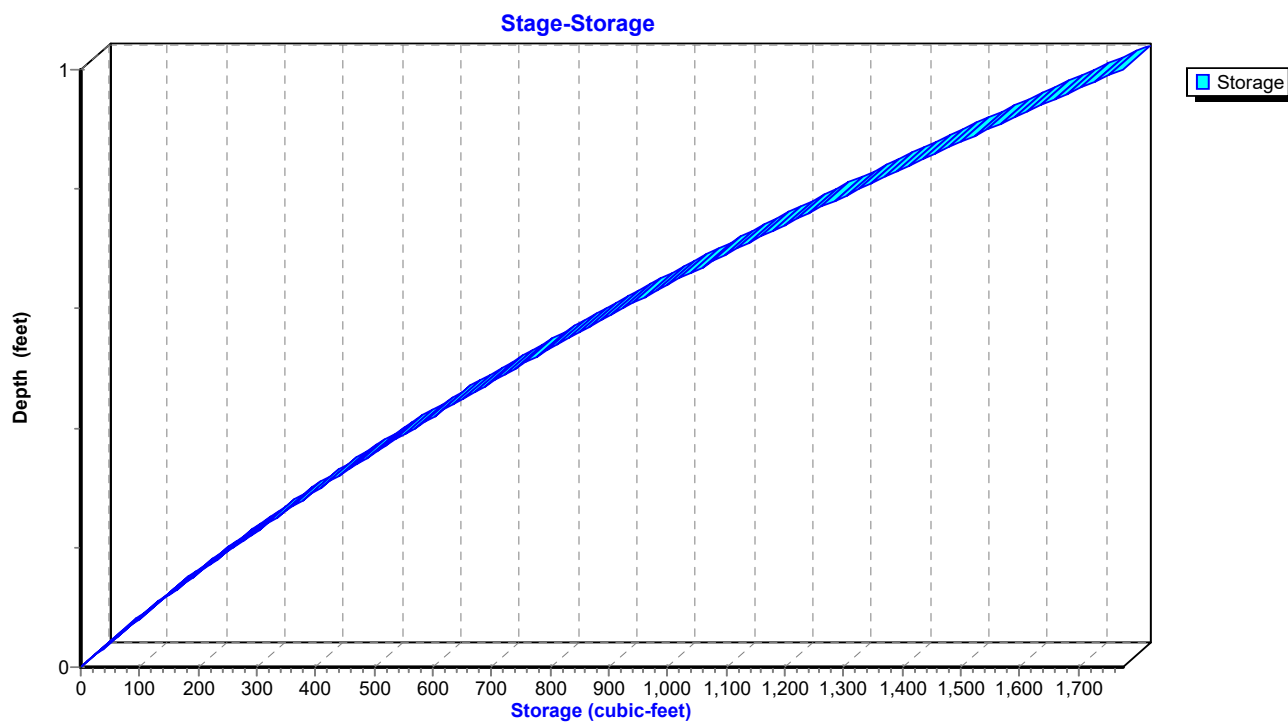
Hydrograph



Reach 37R: Div Ditch 3



Reach 37R: Div Ditch 3



Riato V6 Final

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Type II 24-hr 90th Pcnt Rainfall=1.40"

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Hydrograph for Reach 37R: Div Ditch 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
0.05	0.00	0	1,635.00	0.00
5.05	0.00	0	1,635.00	0.00
10.05	0.00	0	1,635.00	0.00
15.05	0.22	69	1,635.06	0.23
20.05	0.08	38	1,635.03	0.09
25.05	0.05	28	1,635.02	0.05
30.05	0.00	0	1,635.00	0.00
35.05	0.00	0	1,635.00	0.00
40.05	0.00	0	1,635.00	0.00
45.05	0.00	0	1,635.00	0.00
50.05	0.00	0	1,635.00	0.00
55.05	0.00	0	1,635.00	0.00
60.05	0.00	0	1,635.00	0.00
65.05	0.00	0	1,635.00	0.00
70.05	0.00	0	1,635.00	0.00
75.05	0.00	0	1,635.00	0.00
80.05	0.00	0	1,635.00	0.00
85.05	0.00	0	1,635.00	0.00
90.05	0.00	0	1,635.00	0.00
95.05	0.00	0	1,635.00	0.00
100.05	0.00	0	1,635.00	0.00
105.05	0.00	0	1,635.00	0.00
110.05	0.00	0	1,635.00	0.00
115.05	0.00	0	1,635.00	0.00
120.05	0.00	0	1,635.00	0.00
125.05	0.00	0	1,635.00	0.00
130.05	0.00	0	1,635.00	0.00
135.05	0.00	0	1,635.00	0.00
140.05	0.00	0	1,635.00	0.00
145.05	0.00	0	1,635.00	0.00

Riato V6 Final

Prepared by JMT

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Type II 24-hr 90th Pcnt Rainfall=1.40"

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Stage-Discharge for Reach 37R: Div Ditch 3

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)	Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
1,635.00	0.00	0.00	1,635.52	7.06	9.25
1,635.01	0.62	0.01	1,635.53	7.13	9.56
1,635.02	0.98	0.04	1,635.54	7.20	9.88
1,635.03	1.28	0.08	1,635.55	7.27	10.20
1,635.04	1.54	0.13	1,635.56	7.34	10.52
1,635.05	1.78	0.18	1,635.57	7.41	10.85
1,635.06	2.00	0.25	1,635.58	7.47	11.18
1,635.07	2.21	0.32	1,635.59	7.54	11.52
1,635.08	2.40	0.40	1,635.60	7.60	11.86
1,635.09	2.58	0.49	1,635.61	7.67	12.21
1,635.10	2.75	0.58	1,635.62	7.73	12.56
1,635.11	2.92	0.68	1,635.63	7.80	12.92
1,635.12	3.08	0.78	1,635.64	7.86	13.28
1,635.13	3.23	0.90	1,635.65	7.92	13.65
1,635.14	3.38	1.01	1,635.66	7.98	14.02
1,635.15	3.52	1.14	1,635.67	8.05	14.39
1,635.16	3.66	1.26	1,635.68	8.11	14.77
1,635.17	3.79	1.40	1,635.69	8.17	15.16
1,635.18	3.92	1.54	1,635.70	8.23	15.55
1,635.19	4.05	1.69	1,635.71	8.29	15.94
1,635.20	4.17	1.84	1,635.72	8.35	16.34
1,635.21	4.29	1.99	1,635.73	8.40	16.75
1,635.22	4.41	2.15	1,635.74	8.46	17.16
1,635.23	4.52	2.32	1,635.75	8.52	17.57
1,635.24	4.63	2.49	1,635.76	8.58	17.99
1,635.25	4.74	2.67	1,635.77	8.63	18.42
1,635.26	4.85	2.85	1,635.78	8.69	18.84
1,635.27	4.95	3.04	1,635.79	8.75	19.28
1,635.28	5.05	3.23	1,635.80	8.80	19.72
1,635.29	5.15	3.42	1,635.81	8.86	20.16
1,635.30	5.25	3.62	1,635.82	8.91	20.61
1,635.31	5.35	3.83	1,635.83	8.97	21.06
1,635.32	5.44	4.04	1,635.84	9.02	21.52
1,635.33	5.54	4.26	1,635.85	9.07	21.98
1,635.34	5.63	4.48	1,635.86	9.13	22.45
1,635.35	5.72	4.70	1,635.87	9.18	22.92
1,635.36	5.81	4.93	1,635.88	9.23	23.40
1,635.37	5.89	5.17	1,635.89	9.29	23.88
1,635.38	5.98	5.41	1,635.90	9.34	24.37
1,635.39	6.06	5.65	1,635.91	9.39	24.86
1,635.40	6.15	5.90	1,635.92	9.44	25.36
1,635.41	6.23	6.15	1,635.93	9.49	25.86
1,635.42	6.31	6.41	1,635.94	9.54	26.37
1,635.43	6.39	6.67	1,635.95	9.59	26.89
1,635.44	6.47	6.94	1,635.96	9.64	27.40
1,635.45	6.54	7.21	1,635.97	9.69	27.93
1,635.46	6.62	7.49	1,635.98	9.74	28.45
1,635.47	6.70	7.77	1,635.99	9.79	28.99
1,635.48	6.77	8.06	1,636.00	9.84	29.53
1,635.49	6.84	8.35			
1,635.50	6.92	8.65			
1,635.51	6.99	8.95			

Stage-Area-Storage for Reach 37R: Div Ditch 3

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
1,635.00	0.0	0	1,635.52	1.3	776
1,635.01	0.0	12	1,635.53	1.3	794
1,635.02	0.0	24	1,635.54	1.4	812
1,635.03	0.1	36	1,635.55	1.4	830
1,635.04	0.1	48	1,635.56	1.4	849
1,635.05	0.1	61	1,635.57	1.5	867
1,635.06	0.1	73	1,635.58	1.5	886
1,635.07	0.1	86	1,635.59	1.5	905
1,635.08	0.2	99	1,635.60	1.6	924
1,635.09	0.2	111	1,635.61	1.6	943
1,635.10	0.2	124	1,635.62	1.6	962
1,635.11	0.2	137	1,635.63	1.7	981
1,635.12	0.3	151	1,635.64	1.7	1,000
1,635.13	0.3	164	1,635.65	1.7	1,020
1,635.14	0.3	177	1,635.66	1.8	1,039
1,635.15	0.3	191	1,635.67	1.8	1,059
1,635.16	0.3	205	1,635.68	1.8	1,079
1,635.17	0.4	218	1,635.69	1.9	1,099
1,635.18	0.4	232	1,635.70	1.9	1,119
1,635.19	0.4	246	1,635.71	1.9	1,139
1,635.20	0.4	260	1,635.72	2.0	1,159
1,635.21	0.5	275	1,635.73	2.0	1,180
1,635.22	0.5	289	1,635.74	2.0	1,200
1,635.23	0.5	304	1,635.75	2.1	1,221
1,635.24	0.5	318	1,635.76	2.1	1,242
1,635.25	0.6	333	1,635.77	2.1	1,263
1,635.26	0.6	348	1,635.78	2.2	1,284
1,635.27	0.6	363	1,635.79	2.2	1,305
1,635.28	0.6	378	1,635.80	2.2	1,326
1,635.29	0.7	393	1,635.81	2.3	1,347
1,635.30	0.7	408	1,635.82	2.3	1,369
1,635.31	0.7	424	1,635.83	2.3	1,391
1,635.32	0.7	440	1,635.84	2.4	1,412
1,635.33	0.8	455	1,635.85	2.4	1,434
1,635.34	0.8	471	1,635.86	2.5	1,456
1,635.35	0.8	487	1,635.87	2.5	1,478
1,635.36	0.8	503	1,635.88	2.5	1,500
1,635.37	0.9	519	1,635.89	2.6	1,523
1,635.38	0.9	535	1,635.90	2.6	1,545
1,635.39	0.9	552	1,635.91	2.6	1,568
1,635.40	1.0	568	1,635.92	2.7	1,590
1,635.41	1.0	585	1,635.93	2.7	1,613
1,635.42	1.0	602	1,635.94	2.8	1,636
1,635.43	1.0	619	1,635.95	2.8	1,659
1,635.44	1.1	636	1,635.96	2.8	1,682
1,635.45	1.1	653	1,635.97	2.9	1,705
1,635.46	1.1	670	1,635.98	2.9	1,729
1,635.47	1.2	687	1,635.99	3.0	1,752
1,635.48	1.2	705	1,636.00	3.0	1,776
1,635.49	1.2	722			
1,635.50	1.3	740			
1,635.51	1.3	758			

Summary for Reach 38R: Div Ditch 4

Inflow Area = 2.938 ac, 0.00% Impervious, Inflow Depth = 0.17" for 90th Pcnt event
 Inflow = 0.15 cfs @ 12.86 hrs, Volume= 0.042 af
 Outflow = 0.15 cfs @ 12.91 hrs, Volume= 0.042 af, Atten= 0%, Lag= 3.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Max. Velocity= 1.68 fps, Min. Travel Time= 3.3 min

Avg. Velocity = 0.90 fps, Avg. Travel Time= 6.2 min

Peak Storage= 30 cf @ 12.91 hrs

Average Depth at Peak Storage= 0.04'

Bank-Full Depth= 1.00' Flow Area= 3.0 sf, Capacity= 29.93 cfs

2.00' x 1.00' deep channel, n= 0.035

Side Slope Z-value= 1.0 '/' Top Width= 4.00'

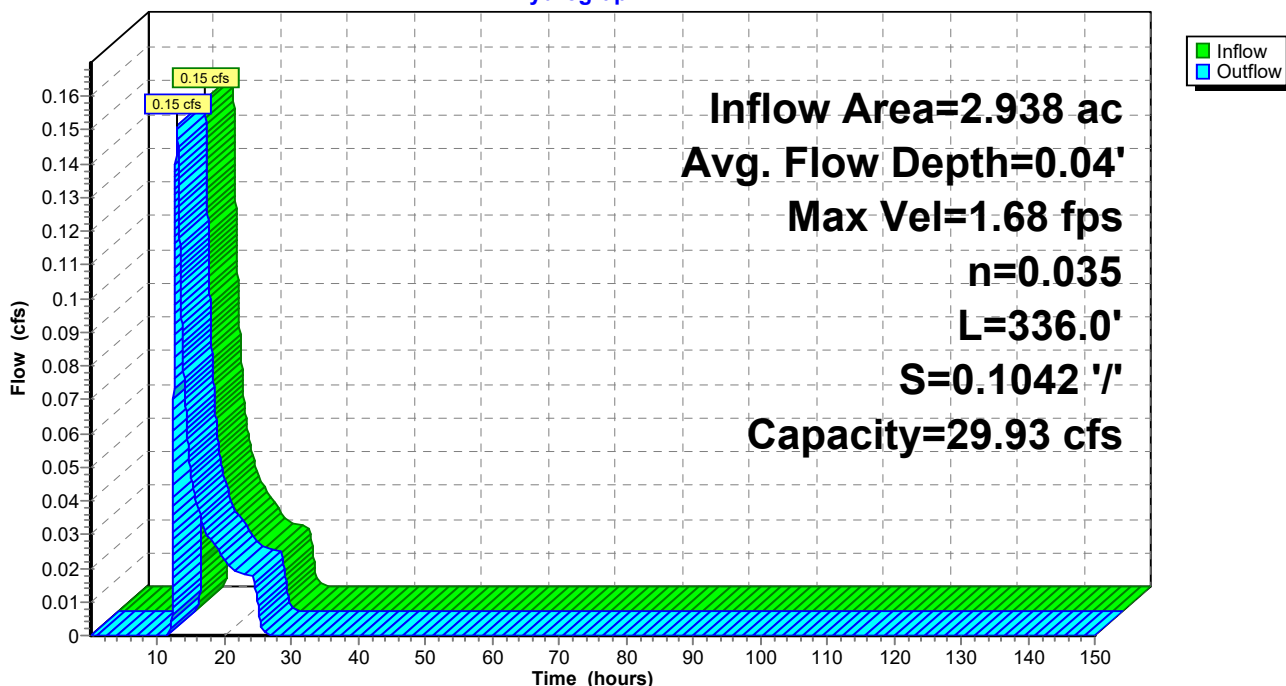
Length= 336.0' Slope= 0.1042 '/'

Inlet Invert= 1,635.00', Outlet Invert= 1,600.00'

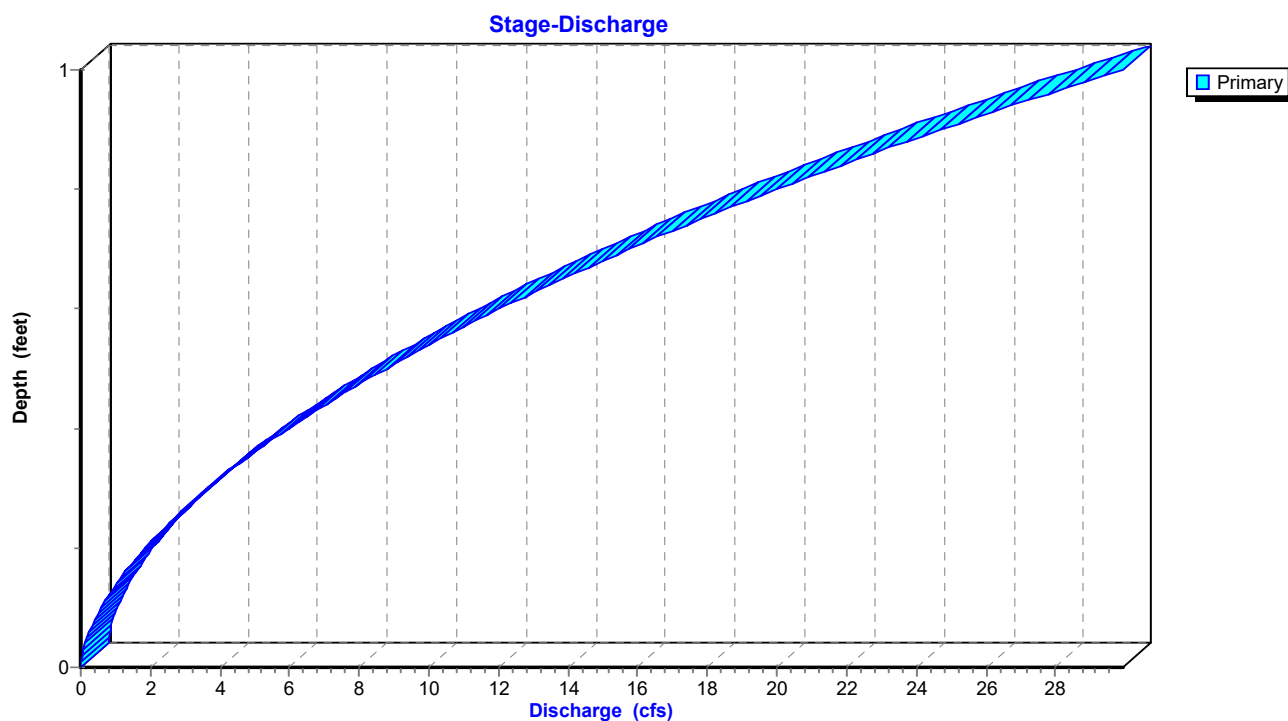


Reach 38R: Div Ditch 4

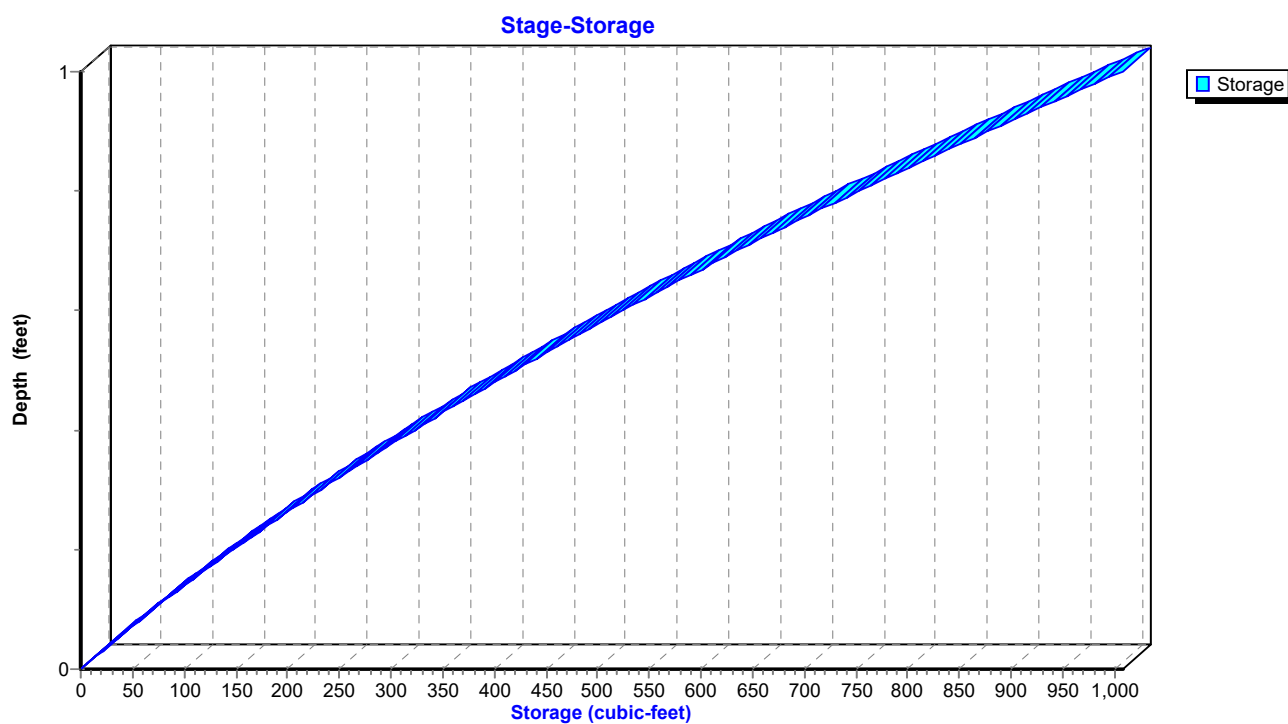
Hydrograph



Reach 38R: Div Ditch 4



Reach 38R: Div Ditch 4



Riato V6 Final

Prepared by JMT

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Type II 24-hr 90th Pcnt Rainfall=1.40"

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Hydrograph for Reach 38R: Div Ditch 4

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
0.05	0.00	0	1,635.00	0.00
5.05	0.00	0	1,635.00	0.00
10.05	0.00	0	1,635.00	0.00
15.05	0.05	15	1,635.02	0.05
20.05	0.02	9	1,635.01	0.02
25.05	0.01	5	1,635.01	0.01
30.05	0.00	0	1,635.00	0.00
35.05	0.00	0	1,635.00	0.00
40.05	0.00	0	1,635.00	0.00
45.05	0.00	0	1,635.00	0.00
50.05	0.00	0	1,635.00	0.00
55.05	0.00	0	1,635.00	0.00
60.05	0.00	0	1,635.00	0.00
65.05	0.00	0	1,635.00	0.00
70.05	0.00	0	1,635.00	0.00
75.05	0.00	0	1,635.00	0.00
80.05	0.00	0	1,635.00	0.00
85.05	0.00	0	1,635.00	0.00
90.05	0.00	0	1,635.00	0.00
95.05	0.00	0	1,635.00	0.00
100.05	0.00	0	1,635.00	0.00
105.05	0.00	0	1,635.00	0.00
110.05	0.00	0	1,635.00	0.00
115.05	0.00	0	1,635.00	0.00
120.05	0.00	0	1,635.00	0.00
125.05	0.00	0	1,635.00	0.00
130.05	0.00	0	1,635.00	0.00
135.05	0.00	0	1,635.00	0.00
140.05	0.00	0	1,635.00	0.00
145.05	0.00	0	1,635.00	0.00

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Type II 24-hr 90th Pcnt Rainfall=1.40"

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Stage-Discharge for Reach 38R: Div Ditch 4

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)	Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
1,635.00	0.00	0.00	1,635.52	7.16	9.38
1,635.01	0.63	0.01	1,635.53	7.23	9.69
1,635.02	1.00	0.04	1,635.54	7.30	10.01
1,635.03	1.30	0.08	1,635.55	7.37	10.34
1,635.04	1.57	0.13	1,635.56	7.44	10.66
1,635.05	1.81	0.19	1,635.57	7.51	11.00
1,635.06	2.03	0.25	1,635.58	7.58	11.34
1,635.07	2.24	0.32	1,635.59	7.64	11.68
1,635.08	2.43	0.40	1,635.60	7.71	12.03
1,635.09	2.62	0.49	1,635.61	7.77	12.38
1,635.10	2.79	0.59	1,635.62	7.84	12.74
1,635.11	2.96	0.69	1,635.63	7.90	13.10
1,635.12	3.12	0.79	1,635.64	7.97	13.46
1,635.13	3.28	0.91	1,635.65	8.03	13.83
1,635.14	3.43	1.03	1,635.66	8.09	14.21
1,635.15	3.57	1.15	1,635.67	8.16	14.59
1,635.16	3.71	1.28	1,635.68	8.22	14.98
1,635.17	3.85	1.42	1,635.69	8.28	15.37
1,635.18	3.98	1.56	1,635.70	8.34	15.76
1,635.19	4.11	1.71	1,635.71	8.40	16.16
1,635.20	4.23	1.86	1,635.72	8.46	16.57
1,635.21	4.35	2.02	1,635.73	8.52	16.98
1,635.22	4.47	2.18	1,635.74	8.58	17.39
1,635.23	4.58	2.35	1,635.75	8.64	17.81
1,635.24	4.70	2.53	1,635.76	8.70	18.24
1,635.25	4.81	2.70	1,635.77	8.75	18.67
1,635.26	4.91	2.89	1,635.78	8.81	19.10
1,635.27	5.02	3.08	1,635.79	8.87	19.54
1,635.28	5.12	3.27	1,635.80	8.92	19.99
1,635.29	5.23	3.47	1,635.81	8.98	20.44
1,635.30	5.32	3.67	1,635.82	9.03	20.89
1,635.31	5.42	3.88	1,635.83	9.09	21.35
1,635.32	5.52	4.10	1,635.84	9.14	21.82
1,635.33	5.61	4.32	1,635.85	9.20	22.28
1,635.34	5.70	4.54	1,635.86	9.25	22.76
1,635.35	5.80	4.77	1,635.87	9.31	23.24
1,635.36	5.89	5.00	1,635.88	9.36	23.72
1,635.37	5.97	5.24	1,635.89	9.41	24.21
1,635.38	6.06	5.48	1,635.90	9.47	24.71
1,635.39	6.15	5.73	1,635.91	9.52	25.21
1,635.40	6.23	5.98	1,635.92	9.57	25.71
1,635.41	6.31	6.24	1,635.93	9.62	26.22
1,635.42	6.40	6.50	1,635.94	9.67	26.74
1,635.43	6.48	6.77	1,635.95	9.73	27.26
1,635.44	6.56	7.04	1,635.96	9.78	27.78
1,635.45	6.63	7.31	1,635.97	9.83	28.31
1,635.46	6.71	7.60	1,635.98	9.88	28.85
1,635.47	6.79	7.88	1,635.99	9.93	29.39
1,635.48	6.86	8.17	1,636.00	9.98	29.93
1,635.49	6.94	8.47			
1,635.50	7.01	8.77			
1,635.51	7.09	9.07			

Stage-Area-Storage for Reach 38R: Div Ditch 4

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
1,635.00	0.0	0	1,635.52	1.3	440
1,635.01	0.0	7	1,635.53	1.3	451
1,635.02	0.0	14	1,635.54	1.4	461
1,635.03	0.1	20	1,635.55	1.4	471
1,635.04	0.1	27	1,635.56	1.4	482
1,635.05	0.1	34	1,635.57	1.5	492
1,635.06	0.1	42	1,635.58	1.5	503
1,635.07	0.1	49	1,635.59	1.5	513
1,635.08	0.2	56	1,635.60	1.6	524
1,635.09	0.2	63	1,635.61	1.6	535
1,635.10	0.2	71	1,635.62	1.6	546
1,635.11	0.2	78	1,635.63	1.7	557
1,635.12	0.3	85	1,635.64	1.7	568
1,635.13	0.3	93	1,635.65	1.7	579
1,635.14	0.3	101	1,635.66	1.8	590
1,635.15	0.3	108	1,635.67	1.8	601
1,635.16	0.3	116	1,635.68	1.8	612
1,635.17	0.4	124	1,635.69	1.9	624
1,635.18	0.4	132	1,635.70	1.9	635
1,635.19	0.4	140	1,635.71	1.9	646
1,635.20	0.4	148	1,635.72	2.0	658
1,635.21	0.5	156	1,635.73	2.0	670
1,635.22	0.5	164	1,635.74	2.0	681
1,635.23	0.5	172	1,635.75	2.1	693
1,635.24	0.5	181	1,635.76	2.1	705
1,635.25	0.6	189	1,635.77	2.1	717
1,635.26	0.6	197	1,635.78	2.2	729
1,635.27	0.6	206	1,635.79	2.2	741
1,635.28	0.6	215	1,635.80	2.2	753
1,635.29	0.7	223	1,635.81	2.3	765
1,635.30	0.7	232	1,635.82	2.3	777
1,635.31	0.7	241	1,635.83	2.3	789
1,635.32	0.7	249	1,635.84	2.4	802
1,635.33	0.8	258	1,635.85	2.4	814
1,635.34	0.8	267	1,635.86	2.5	826
1,635.35	0.8	276	1,635.87	2.5	839
1,635.36	0.8	285	1,635.88	2.5	852
1,635.37	0.9	295	1,635.89	2.6	864
1,635.38	0.9	304	1,635.90	2.6	877
1,635.39	0.9	313	1,635.91	2.6	890
1,635.40	1.0	323	1,635.92	2.7	903
1,635.41	1.0	332	1,635.93	2.7	916
1,635.42	1.0	342	1,635.94	2.8	929
1,635.43	1.0	351	1,635.95	2.8	942
1,635.44	1.1	361	1,635.96	2.8	955
1,635.45	1.1	370	1,635.97	2.9	968
1,635.46	1.1	380	1,635.98	2.9	981
1,635.47	1.2	390	1,635.99	3.0	995
1,635.48	1.2	400	1,636.00	3.0	1,008
1,635.49	1.2	410			
1,635.50	1.3	420			
1,635.51	1.3	430			

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Summary for Reach 39R: Culvert Outlet Apron

Inflow Area = 35.631 ac, 7.72% Impervious, Inflow Depth > 0.71" for 90th Pcnt event
Inflow = 0.46 cfs @ 12.58 hrs, Volume= 2.101 af
Outflow = 0.46 cfs @ 12.59 hrs, Volume= 2.101 af, Atten= 0%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Max. Velocity= 0.23 fps, Min. Travel Time= 1.6 min

Avg. Velocity = 0.17 fps, Avg. Travel Time= 2.2 min

Peak Storage= 43 cf @ 12.59 hrs

Average Depth at Peak Storage= 0.07'

Bank-Full Depth= 3.00' Flow Area= 99.0 sf, Capacity= 263.34 cfs

30.00' x 3.00' deep channel, n= 0.050

Side Slope Z-value= 1.0 '/' Top Width= 36.00'

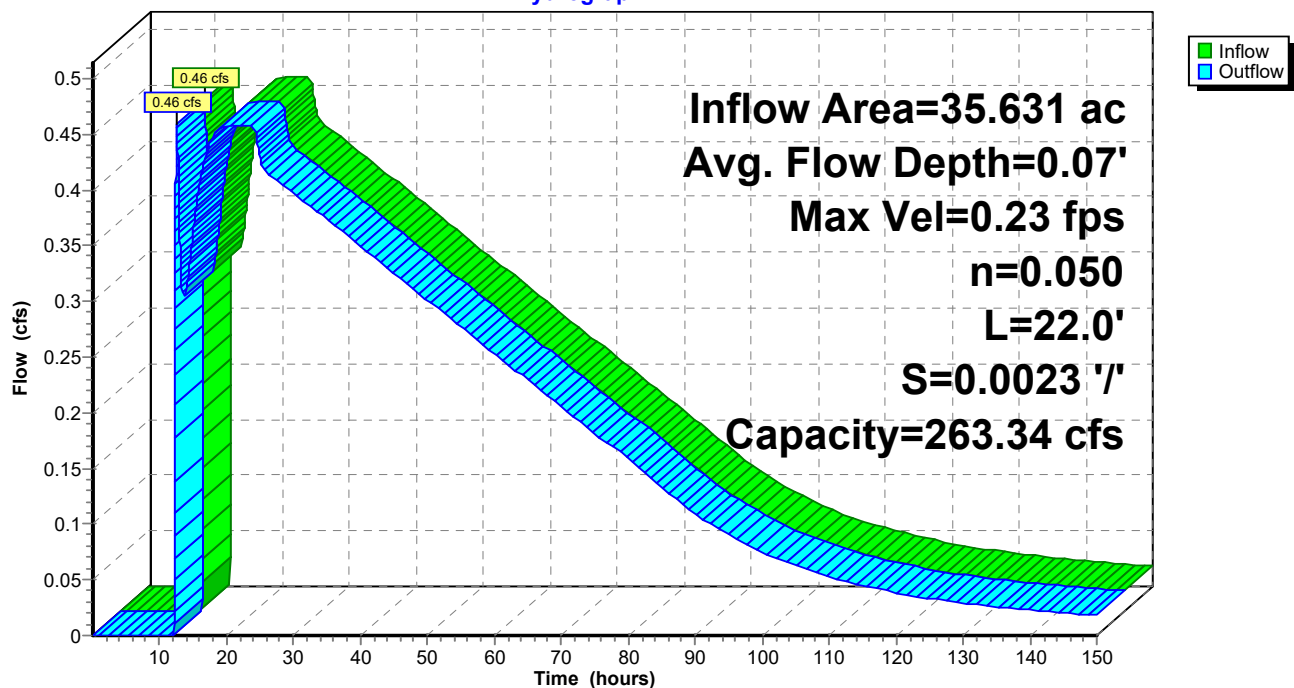
Length= 22.0' Slope= 0.0023 '/'

Inlet Invert= 1,446.00', Outlet Invert= 1,445.95'

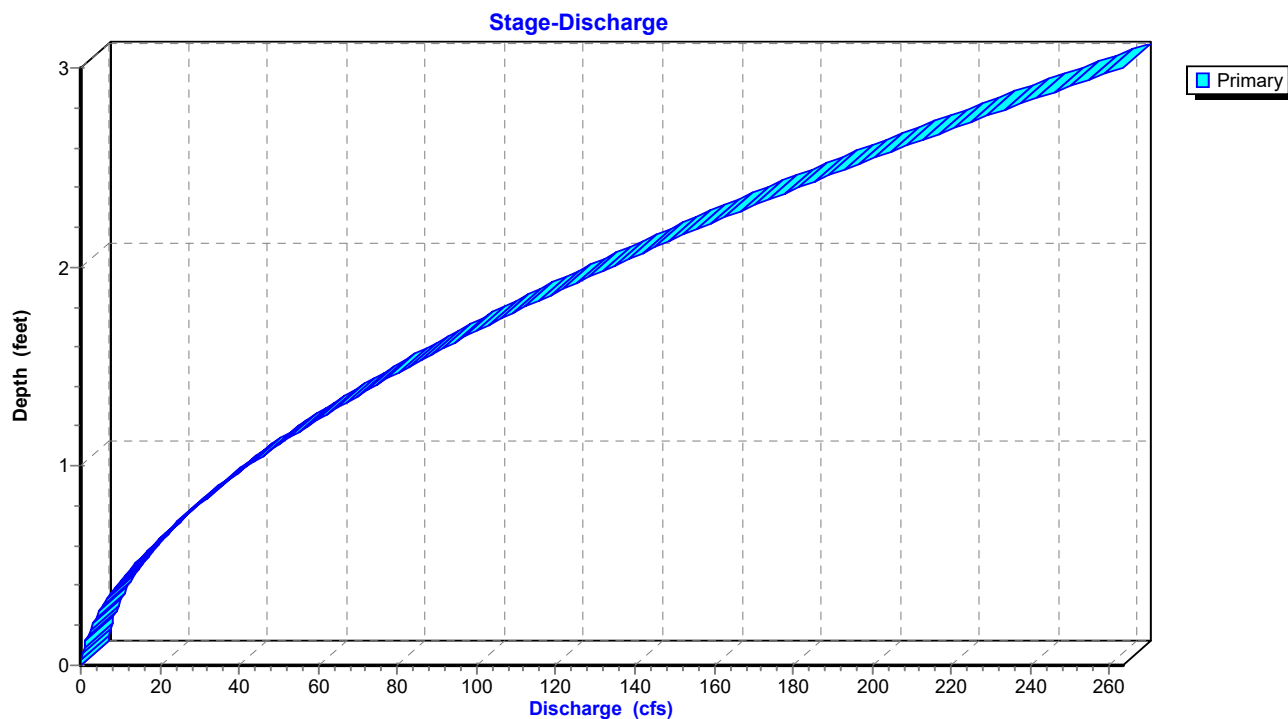


Reach 39R: Culvert Outlet Apron

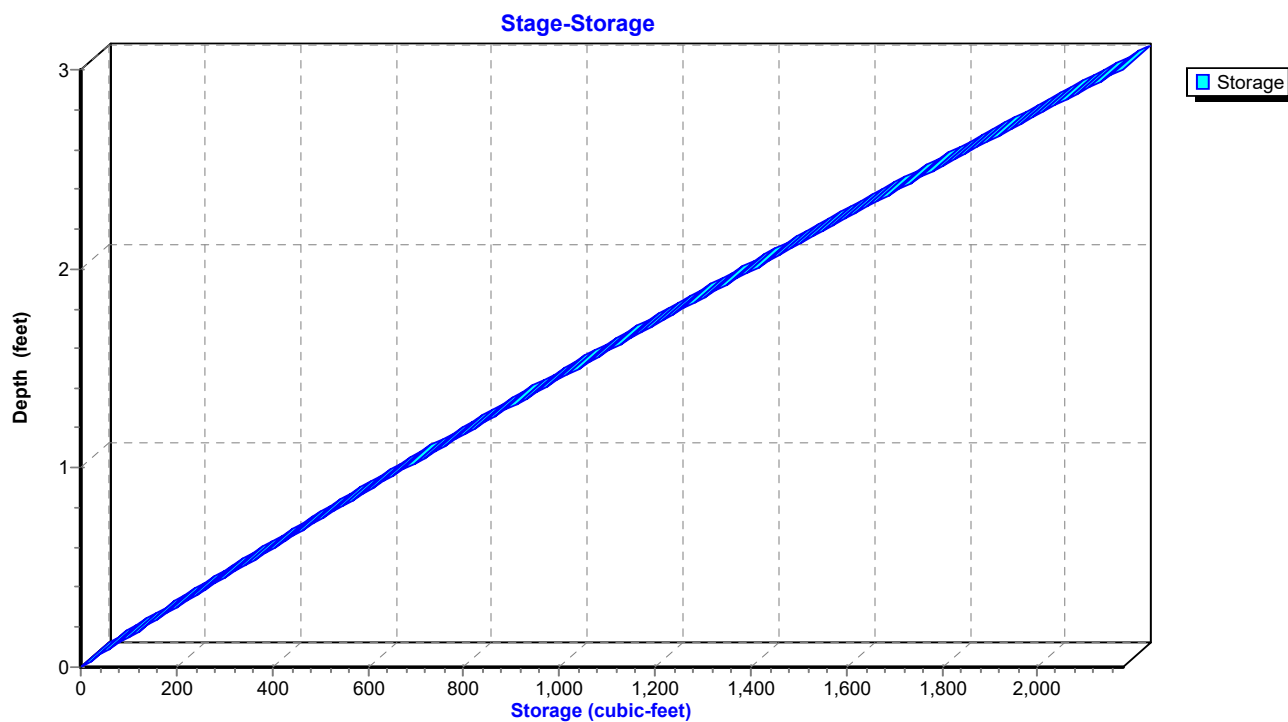
Hydrograph



Reach 39R: Culvert Outlet Apron



Reach 39R: Culvert Outlet Apron



Hydrograph for Reach 39R: Culvert Outlet Apron

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
0.05	0.00	0	1,446.00	0.00
5.05	0.00	0	1,446.00	0.00
10.05	0.00	0	1,446.00	0.00
15.05	0.36	38	1,446.06	0.36
20.05	0.46	43	1,446.07	0.46
25.05	0.43	42	1,446.06	0.43
30.05	0.40	40	1,446.06	0.40
35.05	0.37	38	1,446.06	0.37
40.05	0.35	37	1,446.06	0.35
45.05	0.33	35	1,446.05	0.33
50.05	0.30	33	1,446.05	0.30
55.05	0.28	31	1,446.05	0.28
60.05	0.25	29	1,446.04	0.25
65.05	0.23	28	1,446.04	0.23
70.05	0.21	26	1,446.04	0.21
75.05	0.18	24	1,446.04	0.18
80.05	0.16	22	1,446.03	0.16
85.05	0.13	21	1,446.03	0.13
90.05	0.11	18	1,446.03	0.11
95.05	0.09	15	1,446.02	0.09
100.05	0.07	12	1,446.02	0.07
105.05	0.06	10	1,446.02	0.06
110.05	0.05	8	1,446.01	0.05
115.05	0.04	7	1,446.01	0.04
120.05	0.04	6	1,446.01	0.04
125.05	0.03	5	1,446.01	0.03
130.05	0.03	5	1,446.01	0.03
135.05	0.03	4	1,446.01	0.03
140.05	0.02	4	1,446.01	0.02
145.05	0.02	3	1,446.00	0.02

Stage-Discharge for Reach 39R: Culvert Outlet Apron

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)	Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)	Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
1,446.00	0.00	0.00	1,447.04	1.40	45.13	1,448.08	2.14	142.97
1,446.02	0.09	0.08	1,447.06	1.41	46.58	1,448.10	2.15	145.26
1,446.04	0.16	0.21	1,447.08	1.43	48.05	1,448.12	2.17	147.58
1,446.06	0.22	0.39	1,447.10	1.45	49.54	1,448.14	2.18	149.90
1,446.08	0.26	0.64	1,447.12	1.46	51.05	1,448.16	2.19	152.24
1,446.10	0.30	0.93	1,447.14	1.48	52.57	1,448.18	2.20	154.60
1,446.12	0.34	1.24	1,447.16	1.50	54.12	1,448.20	2.22	156.97
1,446.14	0.38	1.61	1,447.18	1.51	55.68	1,448.22	2.23	159.35
1,446.16	0.41	2.01	1,447.20	1.53	57.25	1,448.24	2.24	161.75
1,446.18	0.45	2.44	1,447.22	1.54	58.85	1,448.26	2.25	164.17
1,446.20	0.48	2.91	1,447.24	1.56	60.46	1,448.28	2.26	166.59
1,446.22	0.51	3.41	1,447.26	1.58	62.09	1,448.30	2.28	169.04
1,446.24	0.54	3.93	1,447.28	1.59	63.74	1,448.32	2.29	171.49
1,446.26	0.57	4.50	1,447.30	1.61	65.40	1,448.34	2.30	173.96
1,446.28	0.60	5.09	1,447.32	1.62	67.08	1,448.36	2.31	176.45
1,446.30	0.63	5.70	1,447.34	1.64	68.79	1,448.38	2.32	178.95
1,446.32	0.65	6.36	1,447.36	1.65	70.50	1,448.40	2.33	181.46
1,446.34	0.68	7.03	1,447.38	1.67	72.23	1,448.42	2.35	183.99
1,446.36	0.71	7.73	1,447.40	1.68	73.98	1,448.44	2.36	186.53
1,446.38	0.73	8.46	1,447.42	1.70	75.75	1,448.46	2.37	189.08
1,446.40	0.76	9.21	1,447.44	1.71	77.53	1,448.48	2.38	191.66
1,446.42	0.78	9.98	1,447.46	1.73	79.33	1,448.50	2.39	194.24
1,446.44	0.81	10.79	1,447.48	1.74	81.15	1,448.52	2.40	196.84
1,446.46	0.83	11.62	1,447.50	1.76	82.98	1,448.54	2.41	199.45
1,446.48	0.85	12.47	1,447.52	1.77	84.83	1,448.56	2.42	202.08
1,446.50	0.88	13.35	1,447.54	1.78	86.69	1,448.58	2.44	204.72
1,446.52	0.90	14.25	1,447.56	1.80	88.57	1,448.60	2.45	207.38
1,446.54	0.92	15.17	1,447.58	1.81	90.47	1,448.62	2.46	210.04
1,446.56	0.94	16.12	1,447.60	1.83	92.38	1,448.64	2.47	212.72
1,446.58	0.96	17.09	1,447.62	1.84	94.31	1,448.66	2.48	215.42
1,446.60	0.98	18.08	1,447.64	1.85	96.26	1,448.68	2.49	218.13
1,446.62	1.01	19.09	1,447.66	1.87	98.22	1,448.70	2.50	220.85
1,446.64	1.03	20.13	1,447.68	1.88	100.19	1,448.72	2.51	223.59
1,446.66	1.05	21.18	1,447.70	1.90	102.19	1,448.74	2.52	226.34
1,446.68	1.07	22.27	1,447.72	1.91	104.20	1,448.76	2.53	229.10
1,446.70	1.09	23.36	1,447.74	1.92	106.22	1,448.78	2.54	231.89
1,446.72	1.11	24.48	1,447.76	1.94	108.26	1,448.80	2.56	234.68
1,446.74	1.13	25.63	1,447.78	1.95	110.31	1,448.82	2.57	237.48
1,446.76	1.15	26.79	1,447.80	1.96	112.38	1,448.84	2.58	240.30
1,446.78	1.16	27.97	1,447.82	1.98	114.47	1,448.86	2.59	243.14
1,446.80	1.18	29.17	1,447.84	1.99	116.57	1,448.88	2.60	245.98
1,446.82	1.20	30.40	1,447.86	2.00	118.68	1,448.90	2.61	248.84
1,446.84	1.22	31.63	1,447.88	2.02	120.82	1,448.92	2.62	251.72
1,446.86	1.24	32.90	1,447.90	2.03	122.97	1,448.94	2.63	254.60
1,446.88	1.26	34.18	1,447.92	2.04	125.12	1,448.96	2.64	257.50
1,446.90	1.28	35.48	1,447.94	2.05	127.31	1,448.98	2.65	260.42
1,446.92	1.29	36.81	1,447.96	2.07	129.50	1,449.00	2.66	263.34
1,446.94	1.31	38.15	1,447.98	2.08	131.70			
1,446.96	1.33	39.50	1,448.00	2.09	133.93			
1,446.98	1.35	40.88	1,448.02	2.11	136.17			
1,447.00	1.36	42.28	1,448.04	2.12	138.41			
1,447.02	1.38	43.69	1,448.06	2.13	140.69			

Stage-Area-Storage for Reach 39R: Culvert Outlet Apron

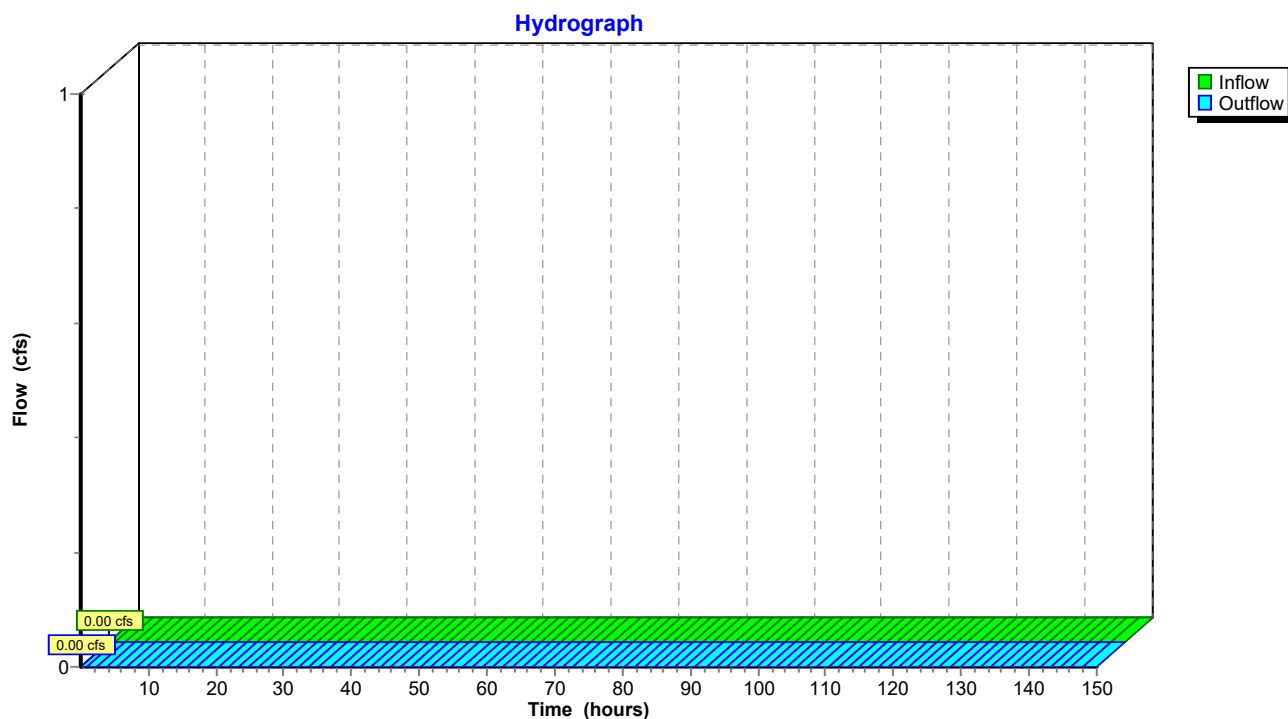
Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
1,446.00	0.0	0	1,448.60	84.8	1,865
1,446.05	1.5	33	1,448.65	86.5	1,903
1,446.10	3.0	66	1,448.70	88.3	1,942
1,446.15	4.5	99	1,448.75	90.1	1,981
1,446.20	6.0	133	1,448.80	91.8	2,020
1,446.25	7.6	166	1,448.85	93.6	2,060
1,446.30	9.1	200	1,448.90	95.4	2,099
1,446.35	10.6	234	1,448.95	97.2	2,138
1,446.40	12.2	268	1,449.00	99.0	2,178
1,446.45	13.7	301			
1,446.50	15.3	336			
1,446.55	16.8	370			
1,446.60	18.4	404			
1,446.65	19.9	438			
1,446.70	21.5	473			
1,446.75	23.1	507			
1,446.80	24.6	542			
1,446.85	26.2	577			
1,446.90	27.8	612			
1,446.95	29.4	647			
1,447.00	31.0	682			
1,447.05	32.6	717			
1,447.10	34.2	753			
1,447.15	35.8	788			
1,447.20	37.4	824			
1,447.25	39.1	859			
1,447.30	40.7	895			
1,447.35	42.3	931			
1,447.40	44.0	967			
1,447.45	45.6	1,003			
1,447.50	47.3	1,040			
1,447.55	48.9	1,076			
1,447.60	50.6	1,112			
1,447.65	52.2	1,149			
1,447.70	53.9	1,186			
1,447.75	55.6	1,222			
1,447.80	57.2	1,259			
1,447.85	58.9	1,296			
1,447.90	60.6	1,333			
1,447.95	62.3	1,371			
1,448.00	64.0	1,408			
1,448.05	65.7	1,445			
1,448.10	67.4	1,483			
1,448.15	69.1	1,521			
1,448.20	70.8	1,558			
1,448.25	72.6	1,596			
1,448.30	74.3	1,634			
1,448.35	76.0	1,672			
1,448.40	77.8	1,711			
1,448.45	79.5	1,749			
1,448.50	81.3	1,788			
1,448.55	83.0	1,826			

Summary for Reach 40R: Emergency Spillway

Inflow = 0.00 cfs @ 0.05 hrs, Volume= 0.000 af
 Outflow = 0.00 cfs @ 0.05 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Reach 40R: Emergency Spillway



Hydrograph for Reach 40R: Emergency Spillway

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
0.05	0.00		0.00	104.05	0.00		0.00
2.05	0.00		0.00	106.05	0.00		0.00
4.05	0.00		0.00	108.05	0.00		0.00
6.05	0.00		0.00	110.05	0.00		0.00
8.05	0.00		0.00	112.05	0.00		0.00
10.05	0.00		0.00	114.05	0.00		0.00
12.05	0.00		0.00	116.05	0.00		0.00
14.05	0.00		0.00	118.05	0.00		0.00
16.05	0.00		0.00	120.05	0.00		0.00
18.05	0.00		0.00	122.05	0.00		0.00
20.05	0.00		0.00	124.05	0.00		0.00
22.05	0.00		0.00	126.05	0.00		0.00
24.05	0.00		0.00	128.05	0.00		0.00
26.05	0.00		0.00	130.05	0.00		0.00
28.05	0.00		0.00	132.05	0.00		0.00
30.05	0.00		0.00	134.05	0.00		0.00
32.05	0.00		0.00	136.05	0.00		0.00
34.05	0.00		0.00	138.05	0.00		0.00
36.05	0.00		0.00	140.05	0.00		0.00
38.05	0.00		0.00	142.05	0.00		0.00
40.05	0.00		0.00	144.05	0.00		0.00
42.05	0.00		0.00	146.05	0.00		0.00
44.05	0.00		0.00	148.05	0.00		0.00
46.05	0.00		0.00				
48.05	0.00		0.00				
50.05	0.00		0.00				
52.05	0.00		0.00				
54.05	0.00		0.00				
56.05	0.00		0.00				
58.05	0.00		0.00				
60.05	0.00		0.00				
62.05	0.00		0.00				
64.05	0.00		0.00				
66.05	0.00		0.00				
68.05	0.00		0.00				
70.05	0.00		0.00				
72.05	0.00		0.00				
74.05	0.00		0.00				
76.05	0.00		0.00				
78.05	0.00		0.00				
80.05	0.00		0.00				
82.05	0.00		0.00				
84.05	0.00		0.00				
86.05	0.00		0.00				
88.05	0.00		0.00				
90.05	0.00		0.00				
92.05	0.00		0.00				
94.05	0.00		0.00				
96.05	0.00		0.00				
98.05	0.00		0.00				
100.05	0.00		0.00				
102.05	0.00		0.00				

Summary for Pond 13P: Pre-Dvel Disch

Inflow Area = 29.013 ac, 0.00% Impervious, Inflow Depth = 0.17" for 90th Pcnt event

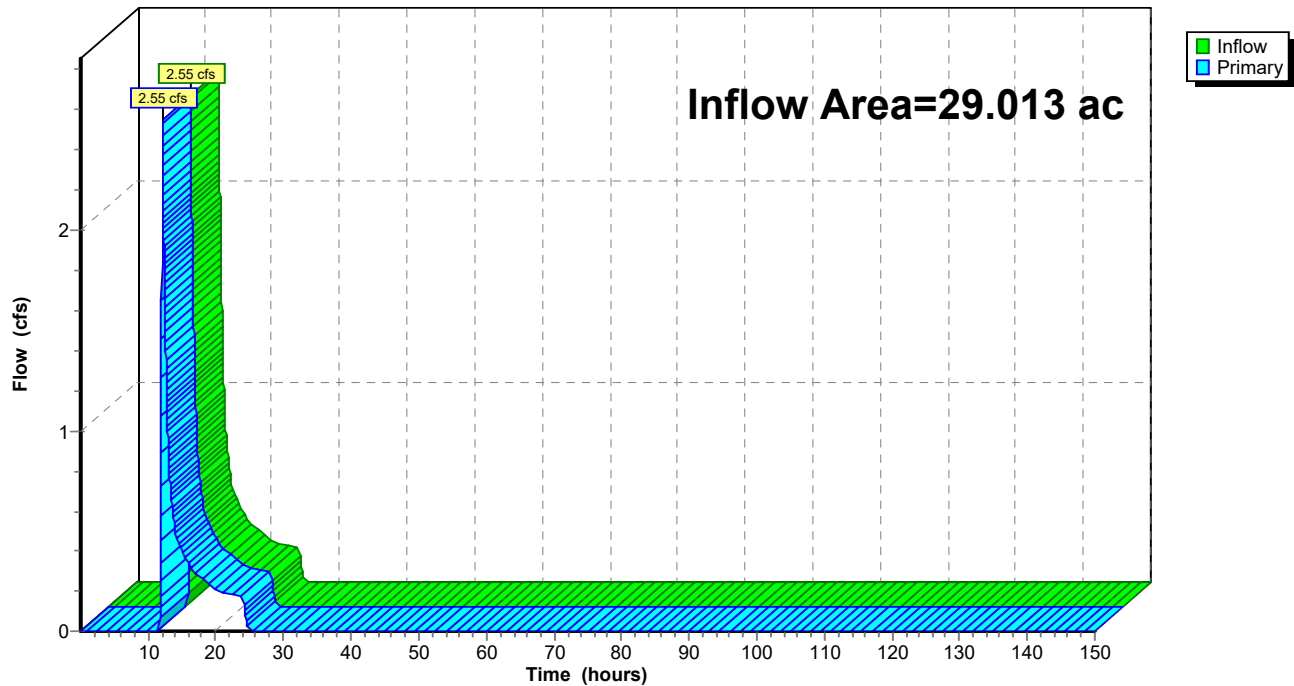
Inflow = 2.55 cfs @ 12.11 hrs, Volume= 0.411 af

Primary = 2.55 cfs @ 12.11 hrs, Volume= 0.411 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Pond 13P: Pre-Dvel Disch

Hydrograph



Riato V6 Final

Prepared by JMT

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Type II 24-hr 90th Pcnt Rainfall=1.40"

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Hydrograph for Pond 13P: Pre-Dvel Disch

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.05	0.00		0.00	104.05	0.00		0.00
2.05	0.00		0.00	106.05	0.00		0.00
4.05	0.00		0.00	108.05	0.00		0.00
6.05	0.00		0.00	110.05	0.00		0.00
8.05	0.00		0.00	112.05	0.00		0.00
10.05	0.00		0.00	114.05	0.00		0.00
12.05	2.15		2.15	116.05	0.00		0.00
14.05	0.50		0.50	118.05	0.00		0.00
16.05	0.33		0.33	120.05	0.00		0.00
18.05	0.26		0.26	122.05	0.00		0.00
20.05	0.20		0.20	124.05	0.00		0.00
22.05	0.18		0.18	126.05	0.00		0.00
24.05	0.17		0.17	128.05	0.00		0.00
26.05	0.00		0.00	130.05	0.00		0.00
28.05	0.00		0.00	132.05	0.00		0.00
30.05	0.00		0.00	134.05	0.00		0.00
32.05	0.00		0.00	136.05	0.00		0.00
34.05	0.00		0.00	138.05	0.00		0.00
36.05	0.00		0.00	140.05	0.00		0.00
38.05	0.00		0.00	142.05	0.00		0.00
40.05	0.00		0.00	144.05	0.00		0.00
42.05	0.00		0.00	146.05	0.00		0.00
44.05	0.00		0.00	148.05	0.00		0.00
46.05	0.00		0.00				
48.05	0.00		0.00				
50.05	0.00		0.00				
52.05	0.00		0.00				
54.05	0.00		0.00				
56.05	0.00		0.00				
58.05	0.00		0.00				
60.05	0.00		0.00				
62.05	0.00		0.00				
64.05	0.00		0.00				
66.05	0.00		0.00				
68.05	0.00		0.00				
70.05	0.00		0.00				
72.05	0.00		0.00				
74.05	0.00		0.00				
76.05	0.00		0.00				
78.05	0.00		0.00				
80.05	0.00		0.00				
82.05	0.00		0.00				
84.05	0.00		0.00				
86.05	0.00		0.00				
88.05	0.00		0.00				
90.05	0.00		0.00				
92.05	0.00		0.00				
94.05	0.00		0.00				
96.05	0.00		0.00				
98.05	0.00		0.00				
100.05	0.00		0.00				
102.05	0.00		0.00				

Summary for Pond 14P: North Bay

Inflow Area = 29.013 ac, 9.48% Impervious, Inflow Depth = 0.89" for 90th Pcnt event
 Inflow = 41.76 cfs @ 11.93 hrs, Volume= 2.142 af
 Outflow = 0.42 cfs @ 23.43 hrs, Volume= 2.025 af, Atten= 99%, Lag= 690.2 min
 Primary = 0.42 cfs @ 23.43 hrs, Volume= 2.025 af

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs
 Starting Elev= 1,452.50' Surf.Area= 1.900 ac Storage= 1.900 af
 Peak Elev= 1,453.41' @ 23.43 hrs Surf.Area= 1.900 ac Storage= 3.629 af (1.729 af above start)

Plug-Flow detention time= 6,664.0 min calculated for 0.125 af (6% of inflow)
 Center-of-Mass det. time= 2,178.1 min (2,988.7 - 810.6)

Volume	Invert	Avail.Storage	Storage Description
#1	1,451.50'	96.900 af	Custom Stage Data (Prismatic) Listed below (Recalc) x 1.9
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,451.50	1.000	0.000	0.000
1,452.50	1.000	1.000	1.000
1,453.50	1.000	1.000	2.000
1,454.50	1.000	1.000	3.000
1,458.50	1.000	4.000	7.000
1,502.50	1.000	44.000	51.000

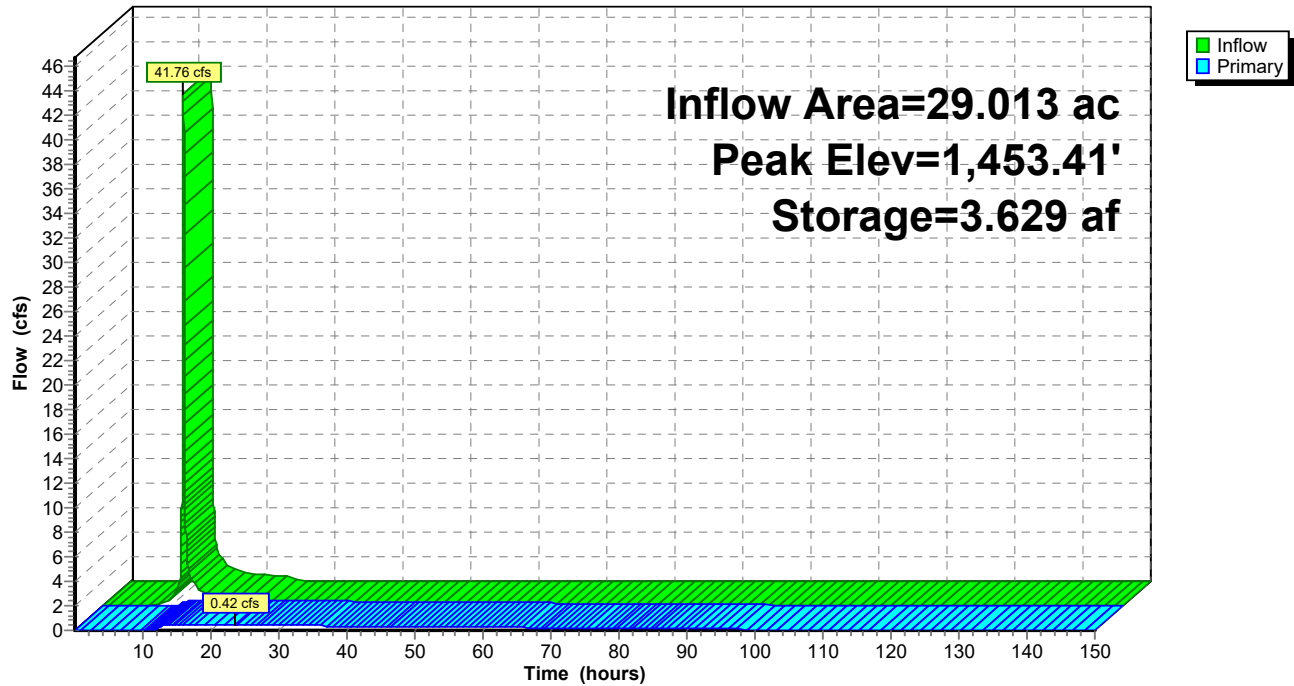
Device	Routing	Invert	Outlet Devices
#1	Primary	1,454.00'	8.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#2	Primary	1,452.50'	3.0" Vert. Orifice/Grate X 2.00 C= 0.600

Primary OutFlow Max=0.42 cfs @ 23.43 hrs HW=1,453.41' TW=1,451.68' (Dynamic Tailwater)

↑ **1=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
 — **2=Orifice/Grate** (Orifice Controls 0.42 cfs @ 4.27 fps)

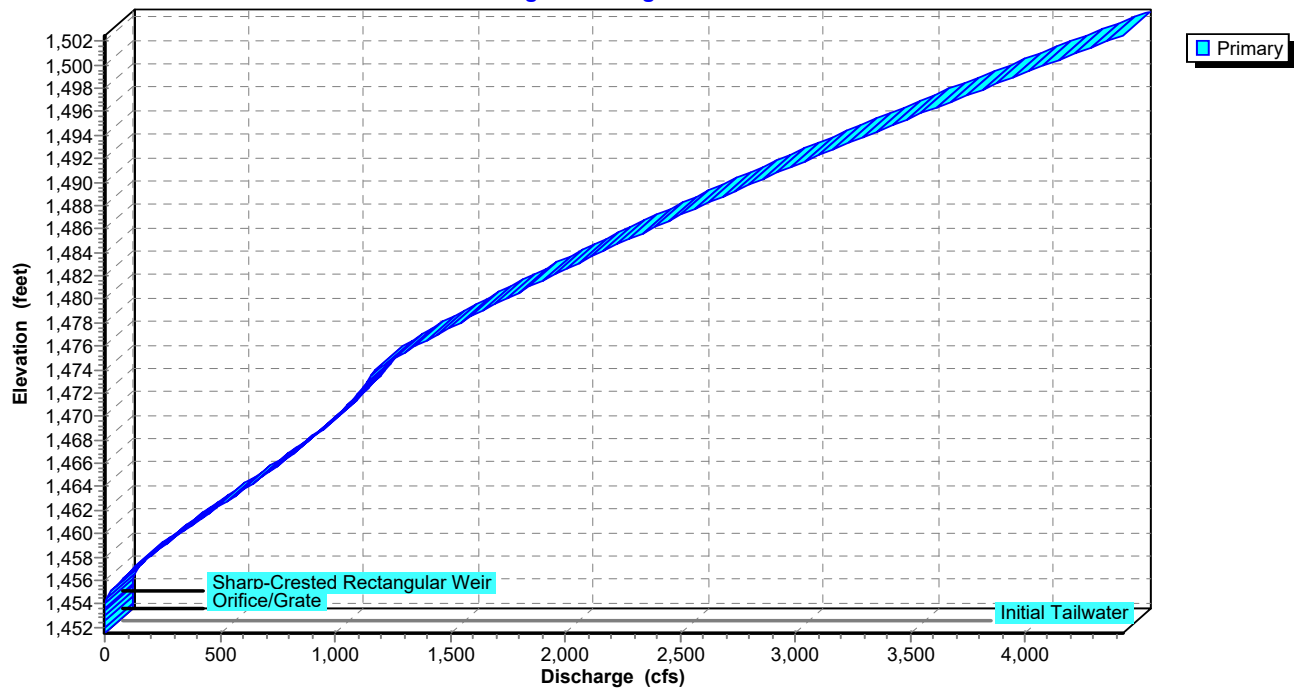
Pond 14P: North Bay

Hydrograph



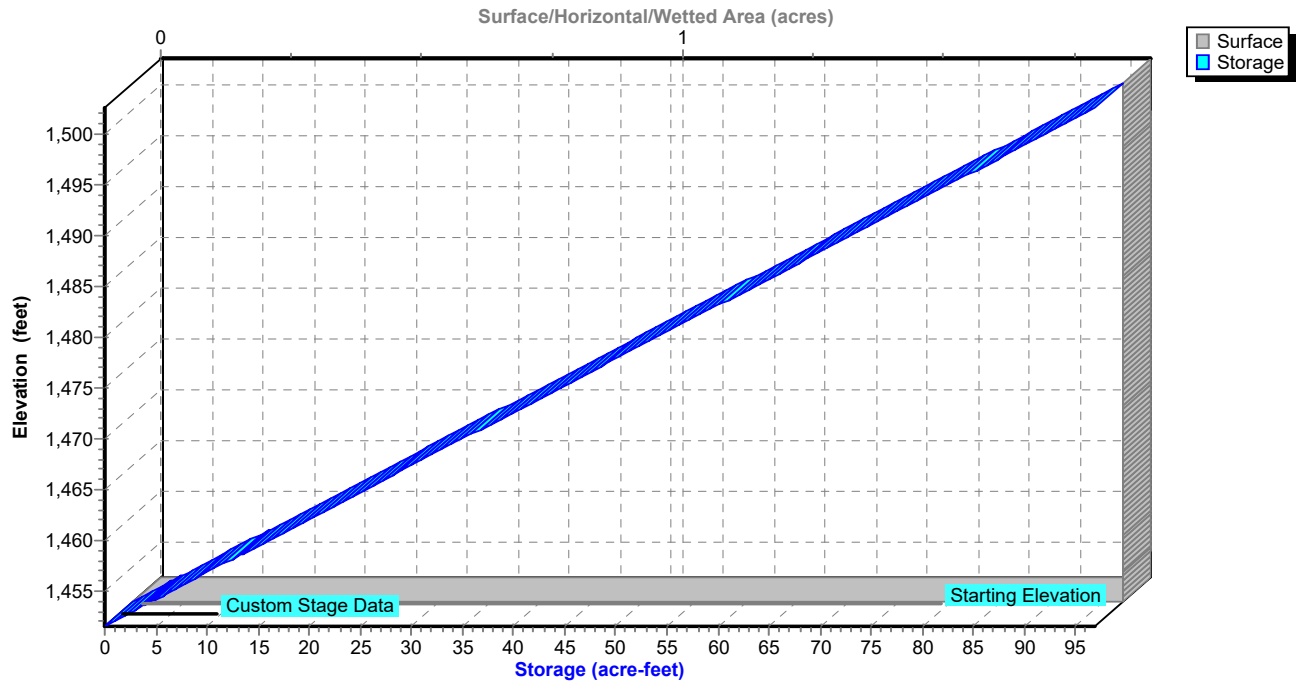
Pond 14P: North Bay

Stage-Discharge



Pond 14P: North Bay

Stage-Area-Storage



Hydrograph for Pond 14P: North Bay

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.05	0.00	1.900	1,452.50	0.00
5.05	0.00	1.900	1,452.50	0.00
10.05	0.55	1.962	1,452.53	0.00
15.05	1.09	3.493	1,453.34	0.40
20.05	0.48	3.621	1,453.41	0.42
25.05	0.00	3.597	1,453.39	0.41
30.05	0.00	3.431	1,453.31	0.39
35.05	0.00	3.275	1,453.22	0.37
40.05	0.00	3.129	1,453.15	0.34
45.05	0.00	2.993	1,453.08	0.32
50.05	0.00	2.867	1,453.01	0.29
55.05	0.00	2.751	1,452.95	0.27
60.05	0.00	2.645	1,452.89	0.24
65.05	0.00	2.549	1,452.84	0.22
70.05	0.00	2.463	1,452.80	0.20
75.05	0.00	2.387	1,452.76	0.17
80.05	0.00	2.321	1,452.72	0.15
85.05	0.00	2.266	1,452.69	0.12
90.05	0.00	2.220	1,452.67	0.10
95.05	0.00	2.184	1,452.65	0.08
100.05	0.00	2.153	1,452.63	0.07
105.05	0.00	2.128	1,452.62	0.06
110.05	0.00	2.108	1,452.61	0.05
115.05	0.00	2.090	1,452.60	0.04
120.05	0.00	2.075	1,452.59	0.03
125.05	0.00	2.062	1,452.59	0.03
130.05	0.00	2.050	1,452.58	0.03
135.05	0.00	2.041	1,452.57	0.02
140.05	0.00	2.032	1,452.57	0.02
145.05	0.00	2.024	1,452.57	0.02

Stage-Discharge for Pond 14P: North Bay

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
1,451.50	0.00	1,480.10	1,746.57
1,452.05	0.00	1,480.65	1,802.01
1,452.60	0.04	1,481.20	1,858.03
1,453.15	0.34	1,481.75	1,914.61
1,453.70	0.49	1,482.30	1,971.76
1,454.25	3.85	1,482.85	2,029.47
1,454.80	19.04	1,483.40	2,087.73
1,455.35	40.43	1,483.95	2,146.54
1,455.90	66.11	1,484.50	2,205.89
1,456.45	95.10	1,485.05	2,265.77
1,457.00	126.73	1,485.60	2,326.19
1,457.55	160.50	1,486.15	2,387.14
1,458.10	196.02	1,486.70	2,448.61
1,458.65	232.98	1,487.25	2,510.59
1,459.20	271.09	1,487.80	2,573.10
1,459.75	310.11	1,488.35	2,636.11
1,460.30	349.82	1,488.90	2,699.63
1,460.85	390.04	1,489.45	2,763.65
1,461.40	430.58	1,490.00	2,828.17
1,461.95	471.29	1,490.55	2,893.18
1,462.50	512.01	1,491.10	2,958.69
1,463.05	552.60	1,491.65	3,024.68
1,463.60	592.93	1,492.20	3,091.16
1,464.15	632.88	1,492.75	3,158.11
1,464.70	672.33	1,493.30	3,225.54
1,465.25	711.17	1,493.85	3,293.45
1,465.80	749.28	1,494.40	3,361.82
1,466.35	786.58	1,494.95	3,430.66
1,466.90	822.95	1,495.50	3,499.97
1,467.45	858.32	1,496.05	3,569.73
1,468.00	892.58	1,496.60	3,639.96
1,468.55	925.65	1,497.15	3,710.64
1,469.10	957.44	1,497.70	3,781.76
1,469.65	987.89	1,498.25	3,853.34
1,470.20	1,016.89	1,498.80	3,925.37
1,470.75	1,044.38	1,499.35	3,997.83
1,471.30	1,070.29	1,499.90	4,070.74
1,471.85	1,094.54	1,500.45	4,144.09
1,472.40	1,117.06	1,501.00	4,217.87
1,472.95	1,137.78	1,501.55	4,292.08
1,473.50	1,156.63	1,502.10	4,366.73
1,474.05	1,176.49		
1,474.60	1,225.17		
1,475.15	1,274.50		
1,475.70	1,324.47		
1,476.25	1,375.08		
1,476.80	1,426.32		
1,477.35	1,478.19		
1,477.90	1,530.66		
1,478.45	1,583.75		
1,479.00	1,637.43		
1,479.55	1,691.70		

Stage-Area-Storage for Pond 14P: North Bay

Elevation (feet)	Surface (acres)	Storage (acre-feet)	Elevation (feet)	Surface (acres)	Storage (acre-feet)
1,451.50	1.900	0.000	1,480.10	1.900	54.340
1,452.05	1.900	1.045	1,480.65	1.900	55.385
1,452.60	1.900	2.090	1,481.20	1.900	56.430
1,453.15	1.900	3.135	1,481.75	1.900	57.475
1,453.70	1.900	4.180	1,482.30	1.900	58.520
1,454.25	1.900	5.225	1,482.85	1.900	59.565
1,454.80	1.900	6.270	1,483.40	1.900	60.610
1,455.35	1.900	7.315	1,483.95	1.900	61.655
1,455.90	1.900	8.360	1,484.50	1.900	62.700
1,456.45	1.900	9.405	1,485.05	1.900	63.745
1,457.00	1.900	10.450	1,485.60	1.900	64.790
1,457.55	1.900	11.495	1,486.15	1.900	65.835
1,458.10	1.900	12.540	1,486.70	1.900	66.880
1,458.65	1.900	13.585	1,487.25	1.900	67.925
1,459.20	1.900	14.630	1,487.80	1.900	68.970
1,459.75	1.900	15.675	1,488.35	1.900	70.015
1,460.30	1.900	16.720	1,488.90	1.900	71.060
1,460.85	1.900	17.765	1,489.45	1.900	72.105
1,461.40	1.900	18.810	1,490.00	1.900	73.150
1,461.95	1.900	19.855	1,490.55	1.900	74.195
1,462.50	1.900	20.900	1,491.10	1.900	75.240
1,463.05	1.900	21.945	1,491.65	1.900	76.285
1,463.60	1.900	22.990	1,492.20	1.900	77.330
1,464.15	1.900	24.035	1,492.75	1.900	78.375
1,464.70	1.900	25.080	1,493.30	1.900	79.420
1,465.25	1.900	26.125	1,493.85	1.900	80.465
1,465.80	1.900	27.170	1,494.40	1.900	81.510
1,466.35	1.900	28.215	1,494.95	1.900	82.555
1,466.90	1.900	29.260	1,495.50	1.900	83.600
1,467.45	1.900	30.305	1,496.05	1.900	84.645
1,468.00	1.900	31.350	1,496.60	1.900	85.690
1,468.55	1.900	32.395	1,497.15	1.900	86.735
1,469.10	1.900	33.440	1,497.70	1.900	87.780
1,469.65	1.900	34.485	1,498.25	1.900	88.825
1,470.20	1.900	35.530	1,498.80	1.900	89.870
1,470.75	1.900	36.575	1,499.35	1.900	90.915
1,471.30	1.900	37.620	1,499.90	1.900	91.960
1,471.85	1.900	38.665	1,500.45	1.900	93.005
1,472.40	1.900	39.710	1,501.00	1.900	94.050
1,472.95	1.900	40.755	1,501.55	1.900	95.095
1,473.50	1.900	41.800	1,502.10	1.900	96.140
1,474.05	1.900	42.845			
1,474.60	1.900	43.890			
1,475.15	1.900	44.935			
1,475.70	1.900	45.980			
1,476.25	1.900	47.025			
1,476.80	1.900	48.070			
1,477.35	1.900	49.115			
1,477.90	1.900	50.160			
1,478.45	1.900	51.205			
1,479.00	1.900	52.250			
1,479.55	1.900	53.295			

Summary for Pond 15P: South Bay

Inflow Area = 29.013 ac, 9.48% Impervious, Inflow Depth > 0.84" for 90th Pcnt event
 Inflow = 0.42 cfs @ 23.43 hrs, Volume= 2.025 af
 Outflow = 0.42 cfs @ 24.24 hrs, Volume= 2.008 af, Atten= 0%, Lag= 48.6 min
 Primary = 0.42 cfs @ 24.24 hrs, Volume= 2.008 af
 Secondary = 0.00 cfs @ 0.05 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Starting Elev= 1,451.50' Surf.Area= 0.500 ac Storage= 0.500 af

Peak Elev= 1,451.68' @ 24.24 hrs Surf.Area= 0.500 ac Storage= 0.590 af (0.090 af above start)

Plug-Flow detention time= 1,597.7 min calculated for 1.508 af (74% of inflow)

Center-of-Mass det. time= 160.6 min (3,149.3 - 2,988.7)

Volume	Invert	Avail.Storage	Storage Description
#1	1,450.50'	25.500 af	Custom Stage Data (Prismatic) Listed below (Recalc) x 0.5

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,450.50	1.000	0.000	0.000
1,451.50	1.000	1.000	1.000
1,452.50	1.000	1.000	2.000
1,453.50	1.000	1.000	3.000
1,457.50	1.000	4.000	7.000
1,501.50	1.000	44.000	51.000

Device	Routing	Invert	Outlet Devices
#1	Secondary	1,456.00'	10.0' long (Profile 7) Broad-Crested Rectangular Weir Head (feet) 0.49 0.98 1.48 Coef. (English) 2.99 3.41 3.62
#2	Device 5	1,455.50'	36.0" x 84.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 5	1,454.50'	26.0" W x 24.0" H Vert. Vertical Square X 3.00 C= 0.600
#4	Device 5	1,451.50'	4.0" Vert. Orifice/Grate X 6.00 C= 0.600
#5	Primary	1,451.50'	24.0" Round Culvert X 3.00 L= 60.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,451.50' / 1,449.80' S= 0.0283 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=0.42 cfs @ 24.24 hrs HW=1,451.68' TW=1,449.89' (Dynamic Tailwater)

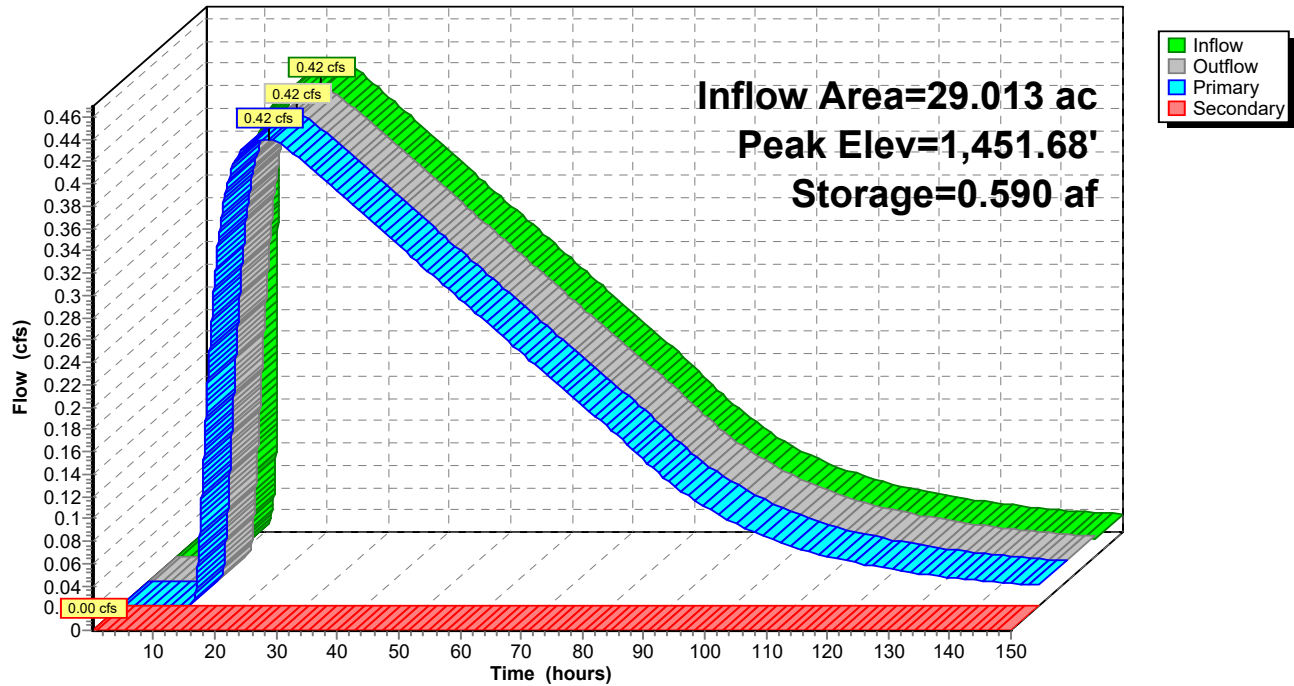
5=Culvert (Passes 0.42 cfs of 0.61 cfs potential flow)
 2=Orifice/Grate (Controls 0.00 cfs)
 3=Vertical Square (Controls 0.00 cfs)
 4=Orifice/Grate (Orifice Controls 0.42 cfs @ 1.45 fps)

Secondary OutFlow Max=0.00 cfs @ 0.05 hrs HW=1,451.50' TW=0.00' (Dynamic Tailwater)

1=Broad-Crested Rectangular Weir(Controls 0.00 cfs)

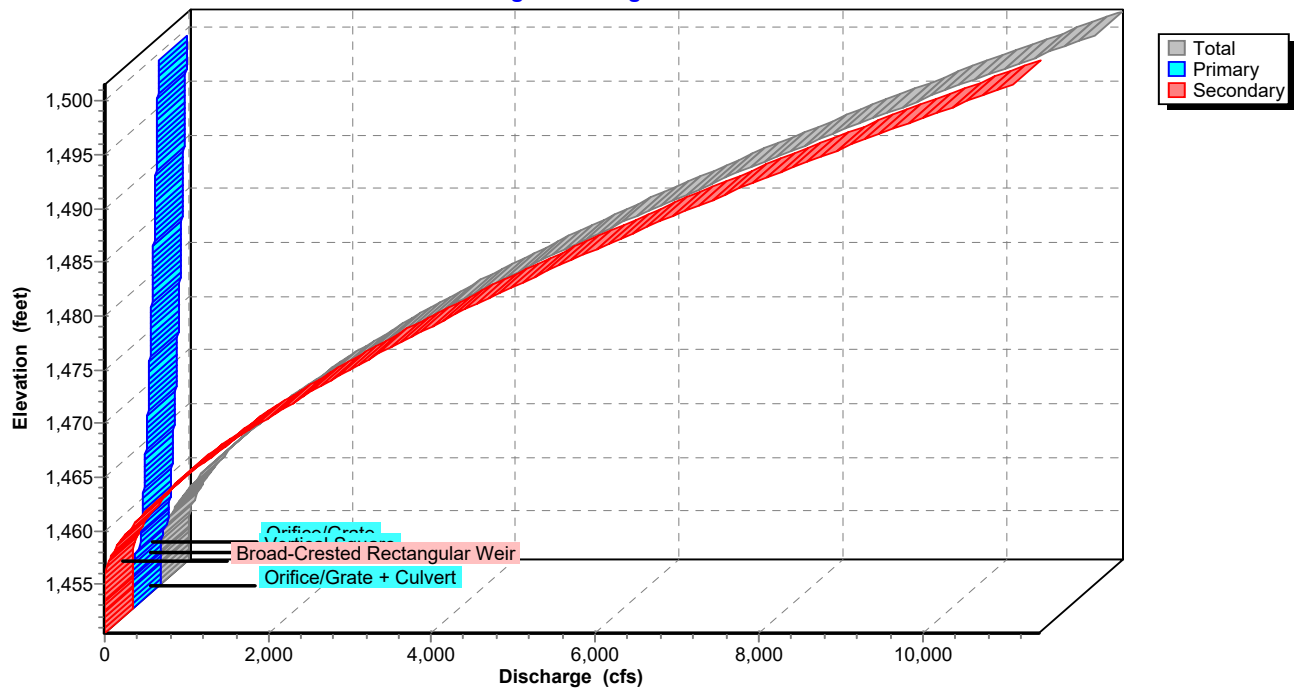
Pond 15P: South Bay

Hydrograph



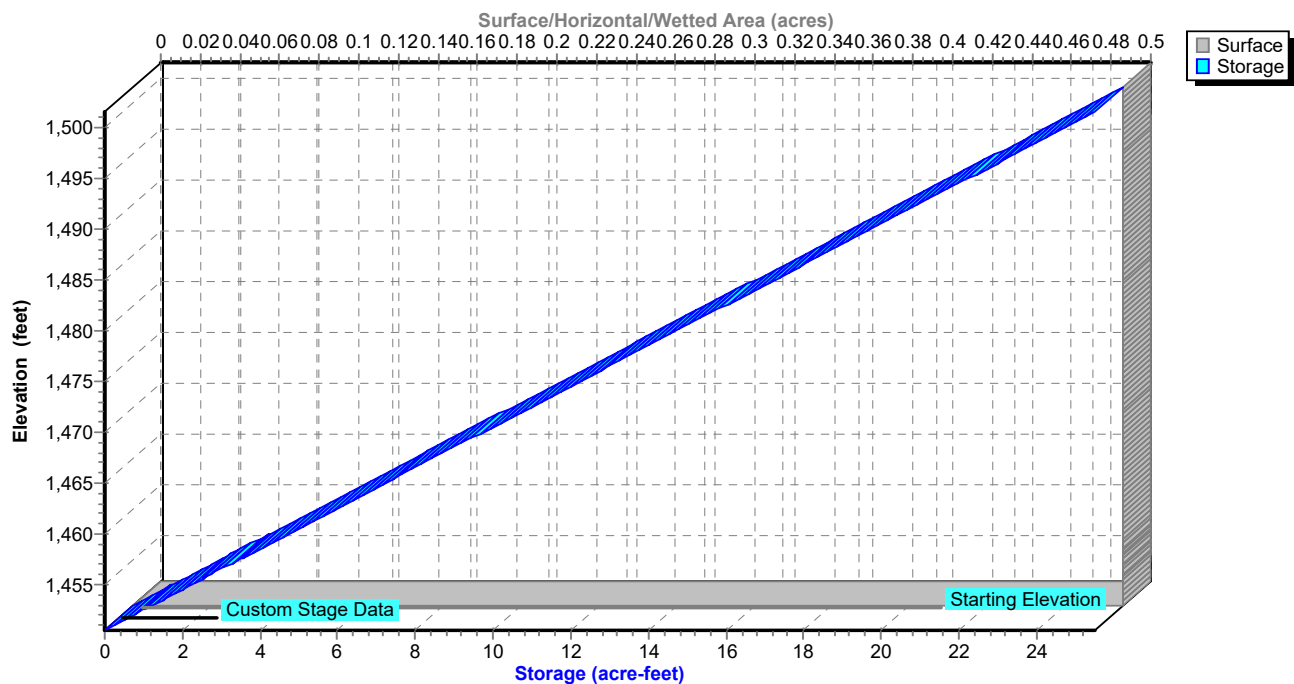
Pond 15P: South Bay

Stage-Discharge



Pond 15P: South Bay

Stage-Area-Storage



Hydrograph for Pond 15P: South Bay

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.05	0.00	0.500	1,451.50	0.00	0.00	0.00
5.05	0.00	0.500	1,451.50	0.00	0.00	0.00
10.05	0.00	0.500	1,451.50	0.00	0.00	0.00
15.05	0.40	0.570	1,451.64	0.27	0.27	0.00
20.05	0.42	0.589	1,451.68	0.41	0.41	0.00
25.05	0.41	0.590	1,451.68	0.42	0.42	0.00
30.05	0.39	0.588	1,451.68	0.40	0.40	0.00
35.05	0.37	0.585	1,451.67	0.37	0.37	0.00
40.05	0.34	0.581	1,451.66	0.35	0.35	0.00
45.05	0.32	0.578	1,451.66	0.32	0.32	0.00
50.05	0.29	0.575	1,451.65	0.30	0.30	0.00
55.05	0.27	0.572	1,451.64	0.28	0.28	0.00
60.05	0.24	0.568	1,451.64	0.25	0.25	0.00
65.05	0.22	0.565	1,451.63	0.23	0.23	0.00
70.05	0.20	0.561	1,451.62	0.20	0.20	0.00
75.05	0.17	0.557	1,451.61	0.18	0.18	0.00
80.05	0.15	0.553	1,451.61	0.16	0.16	0.00
85.05	0.12	0.548	1,451.60	0.13	0.13	0.00
90.05	0.10	0.544	1,451.59	0.11	0.11	0.00
95.05	0.08	0.539	1,451.58	0.09	0.09	0.00
100.05	0.07	0.536	1,451.57	0.07	0.07	0.00
105.05	0.06	0.532	1,451.56	0.06	0.06	0.00
110.05	0.05	0.530	1,451.56	0.05	0.05	0.00
115.05	0.04	0.527	1,451.55	0.04	0.04	0.00
120.05	0.03	0.525	1,451.55	0.04	0.04	0.00
125.05	0.03	0.524	1,451.55	0.03	0.03	0.00
130.05	0.03	0.522	1,451.54	0.03	0.03	0.00
135.05	0.02	0.521	1,451.54	0.03	0.03	0.00
140.05	0.02	0.519	1,451.54	0.02	0.02	0.00
145.05	0.02	0.518	1,451.54	0.02	0.02	0.00

Stage-Discharge for Pond 15P: South Bay

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)	Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
1,450.50	0.00	0.00	0.00	1,479.10	4,253.13	234.05	4,019.08
1,451.05	0.00	0.00	0.00	1,479.65	4,399.92	236.46	4,163.47
1,451.60	0.14	0.14	0.00	1,480.20	4,548.39	238.84	4,309.55
1,452.15	1.75	1.75	0.00	1,480.75	4,698.49	241.20	4,457.29
1,452.70	2.56	2.56	0.00	1,481.30	4,850.23	243.54	4,606.69
1,453.25	3.17	3.17	0.00	1,481.85	5,003.58	245.85	4,757.73
1,453.80	3.68	3.68	0.00	1,482.40	5,158.52	248.14	4,910.37
1,454.35	4.13	4.13	0.00	1,482.95	5,315.03	250.41	5,064.62
1,454.90	9.81	9.81	0.00	1,483.50	5,473.11	252.67	5,220.45
1,455.45	24.22	24.22	0.00	1,484.05	5,632.74	254.90	5,377.84
1,456.00	66.70	66.70	0.00	1,484.60	5,793.89	257.11	5,536.78
1,456.55	103.73	91.33	12.41	1,485.15	5,956.57	259.30	5,697.26
1,457.10	137.25	97.33	39.92	1,485.70	6,120.74	261.48	5,859.27
1,457.65	179.71	102.98	76.72	1,486.25	6,286.41	263.63	6,022.78
1,458.20	226.47	108.34	118.13	1,486.80	6,453.55	265.77	6,187.78
1,458.75	278.54	113.45	165.08	1,487.35	6,622.15	267.90	6,354.26
1,459.30	335.35	118.34	217.01	1,487.90	6,792.21	270.00	6,522.21
1,459.85	396.49	123.03	273.46	1,488.45	6,963.70	272.09	6,691.61
1,460.40	461.66	127.55	334.11	1,489.00	7,136.62	274.16	6,862.45
1,460.95	530.59	131.91	398.67	1,489.55	7,310.95	276.22	7,034.73
1,461.50	603.07	136.14	466.93	1,490.10	7,486.69	278.27	7,208.42
1,462.05	678.93	140.24	538.69	1,490.65	7,663.81	280.29	7,383.52
1,462.60	758.02	144.22	613.80	1,491.20	7,842.32	282.31	7,560.01
1,463.15	840.19	148.09	692.10	1,491.75	8,022.20	284.31	7,737.89
1,463.70	925.34	151.87	773.47	1,492.30	8,203.43	286.29	7,917.14
1,464.25	1,013.36	155.56	857.81	1,492.85	8,386.02	288.26	8,097.76
1,464.80	1,104.16	159.15	945.00	1,493.40	8,569.95	290.22	8,279.73
1,465.35	1,197.64	162.67	1,034.97	1,493.95	8,755.20	292.16	8,463.04
1,465.90	1,293.73	166.12	1,127.62	1,494.50	8,941.78	294.10	8,647.68
1,466.45	1,392.37	169.49	1,222.88	1,495.05	9,129.66	296.02	8,833.65
1,467.00	1,493.48	172.80	1,320.68	1,495.60	9,318.85	297.92	9,020.93
1,467.55	1,597.01	176.05	1,420.96	1,496.15	9,509.34	299.82	9,209.52
1,468.10	1,702.89	179.24	1,523.65	1,496.70	9,701.10	301.70	9,399.40
1,468.65	1,811.08	182.37	1,628.71	1,497.25	9,894.14	303.57	9,590.57
1,469.20	1,921.53	185.45	1,736.08	1,497.80	10,088.45	305.43	9,783.02
1,469.75	2,034.18	188.48	1,845.71	1,498.35	10,284.02	307.28	9,976.74
1,470.30	2,149.01	191.46	1,957.55	1,498.90	10,480.84	309.12	10,171.72
1,470.85	2,265.96	194.39	2,071.56	1,499.45	10,678.90	310.94	10,367.96
1,471.40	2,385.00	197.29	2,187.71	1,500.00	10,878.20	312.76	10,565.44
1,471.95	2,506.08	200.14	2,305.95	1,500.55	11,078.73	314.57	10,764.16
1,472.50	2,629.19	202.95	2,426.24	1,501.10	11,280.47	316.36	10,964.11
1,473.05	2,754.28	205.72	2,548.56				
1,473.60	2,881.32	208.45	2,672.87				
1,474.15	3,010.28	211.15	2,799.13				
1,474.70	3,141.14	213.82	2,927.33				
1,475.25	3,273.87	216.45	3,057.42				
1,475.80	3,408.43	219.05	3,189.38				
1,476.35	3,544.81	221.62	3,323.19				
1,476.90	3,682.98	224.16	3,458.82				
1,477.45	3,822.92	226.67	3,596.25				
1,478.00	3,964.61	229.16	3,735.45				
1,478.55	4,108.01	231.62	3,876.40				

Stage-Area-Storage for Pond 15P: South Bay

Elevation (feet)	Surface (acres)	Storage (acre-feet)	Elevation (feet)	Surface (acres)	Storage (acre-feet)
1,450.50	0.500	0.000	1,479.10	0.500	14.300
1,451.05	0.500	0.275	1,479.65	0.500	14.575
1,451.60	0.500	0.550	1,480.20	0.500	14.850
1,452.15	0.500	0.825	1,480.75	0.500	15.125
1,452.70	0.500	1.100	1,481.30	0.500	15.400
1,453.25	0.500	1.375	1,481.85	0.500	15.675
1,453.80	0.500	1.650	1,482.40	0.500	15.950
1,454.35	0.500	1.925	1,482.95	0.500	16.225
1,454.90	0.500	2.200	1,483.50	0.500	16.500
1,455.45	0.500	2.475	1,484.05	0.500	16.775
1,456.00	0.500	2.750	1,484.60	0.500	17.050
1,456.55	0.500	3.025	1,485.15	0.500	17.325
1,457.10	0.500	3.300	1,485.70	0.500	17.600
1,457.65	0.500	3.575	1,486.25	0.500	17.875
1,458.20	0.500	3.850	1,486.80	0.500	18.150
1,458.75	0.500	4.125	1,487.35	0.500	18.425
1,459.30	0.500	4.400	1,487.90	0.500	18.700
1,459.85	0.500	4.675	1,488.45	0.500	18.975
1,460.40	0.500	4.950	1,489.00	0.500	19.250
1,460.95	0.500	5.225	1,489.55	0.500	19.525
1,461.50	0.500	5.500	1,490.10	0.500	19.800
1,462.05	0.500	5.775	1,490.65	0.500	20.075
1,462.60	0.500	6.050	1,491.20	0.500	20.350
1,463.15	0.500	6.325	1,491.75	0.500	20.625
1,463.70	0.500	6.600	1,492.30	0.500	20.900
1,464.25	0.500	6.875	1,492.85	0.500	21.175
1,464.80	0.500	7.150	1,493.40	0.500	21.450
1,465.35	0.500	7.425	1,493.95	0.500	21.725
1,465.90	0.500	7.700	1,494.50	0.500	22.000
1,466.45	0.500	7.975	1,495.05	0.500	22.275
1,467.00	0.500	8.250	1,495.60	0.500	22.550
1,467.55	0.500	8.525	1,496.15	0.500	22.825
1,468.10	0.500	8.800	1,496.70	0.500	23.100
1,468.65	0.500	9.075	1,497.25	0.500	23.375
1,469.20	0.500	9.350	1,497.80	0.500	23.650
1,469.75	0.500	9.625	1,498.35	0.500	23.925
1,470.30	0.500	9.900	1,498.90	0.500	24.200
1,470.85	0.500	10.175	1,499.45	0.500	24.475
1,471.40	0.500	10.450	1,500.00	0.500	24.750
1,471.95	0.500	10.725	1,500.55	0.500	25.025
1,472.50	0.500	11.000	1,501.10	0.500	25.300
1,473.05	0.500	11.275			
1,473.60	0.500	11.550			
1,474.15	0.500	11.825			
1,474.70	0.500	12.100			
1,475.25	0.500	12.375			
1,475.80	0.500	12.650			
1,476.35	0.500	12.925			
1,476.90	0.500	13.200			
1,477.45	0.500	13.475			
1,478.00	0.500	13.750			
1,478.55	0.500	14.025			

Summary for Pond 22P: Road Crossing Culverts w/ Storage

Inflow Area = 35.631 ac, 7.72% Impervious, Inflow Depth > 0.71" for 90th Pcnt event
 Inflow = 0.46 cfs @ 12.57 hrs, Volume= 2.101 af
 Outflow = 0.46 cfs @ 12.58 hrs, Volume= 2.101 af, Atten= 0%, Lag= 0.7 min
 Primary = 0.46 cfs @ 12.58 hrs, Volume= 2.101 af

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Peak Elev= 1,448.01' @ 12.58 hrs Surf.Area= 328 sf Storage= 70 cf

Flood Elev= 1,453.00' Surf.Area= 716 sf Storage= 2,558 cf

Plug-Flow detention time= 4.5 min calculated for 2.101 af (100% of inflow)

Center-of-Mass det. time= 2.4 min (3,055.1 - 3,052.6)

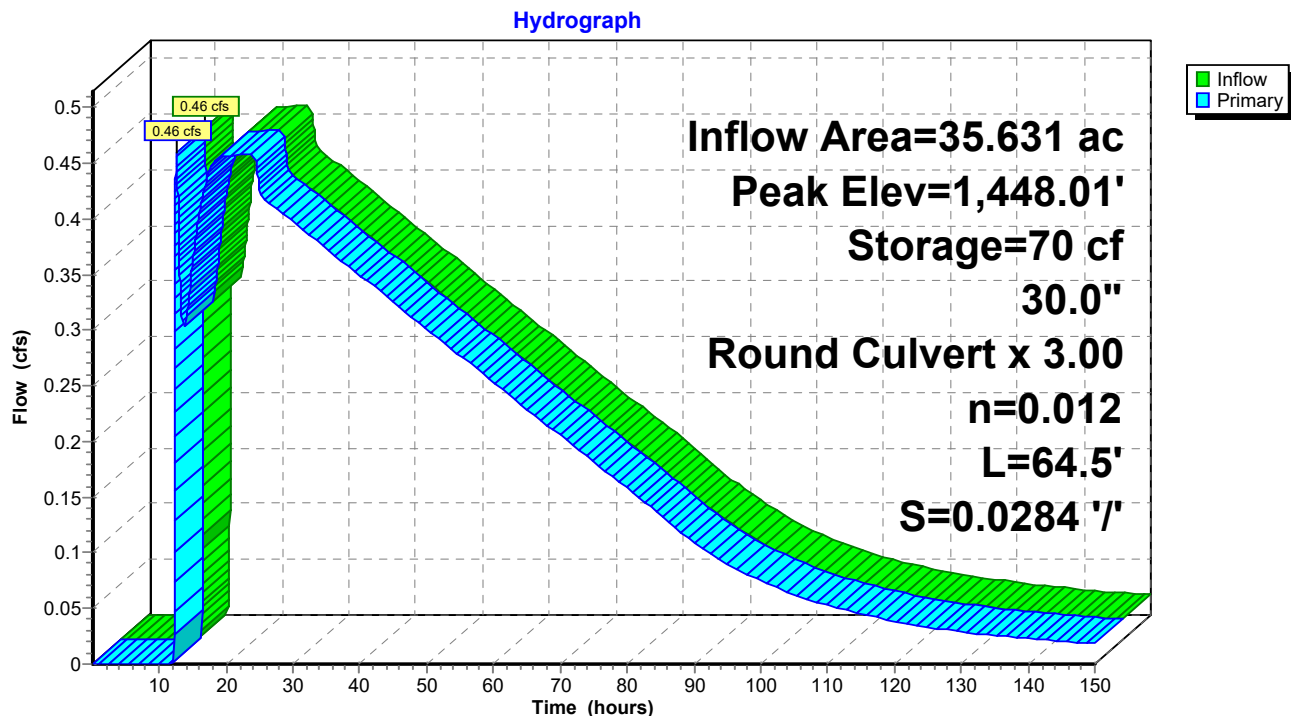
Volume	Invert	Avail.Storage	Storage Description
#1	1,447.79'	2,558 cf	20.00'D x 5.10'H Vertical Cone/Cylinder Z=1.0

Device	Routing	Invert	Outlet Devices
#1	Primary	1,447.86'	30.0" Round Culvert X 3.00 L= 64.5' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,447.86' / 1,446.03' S= 0.0284 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf

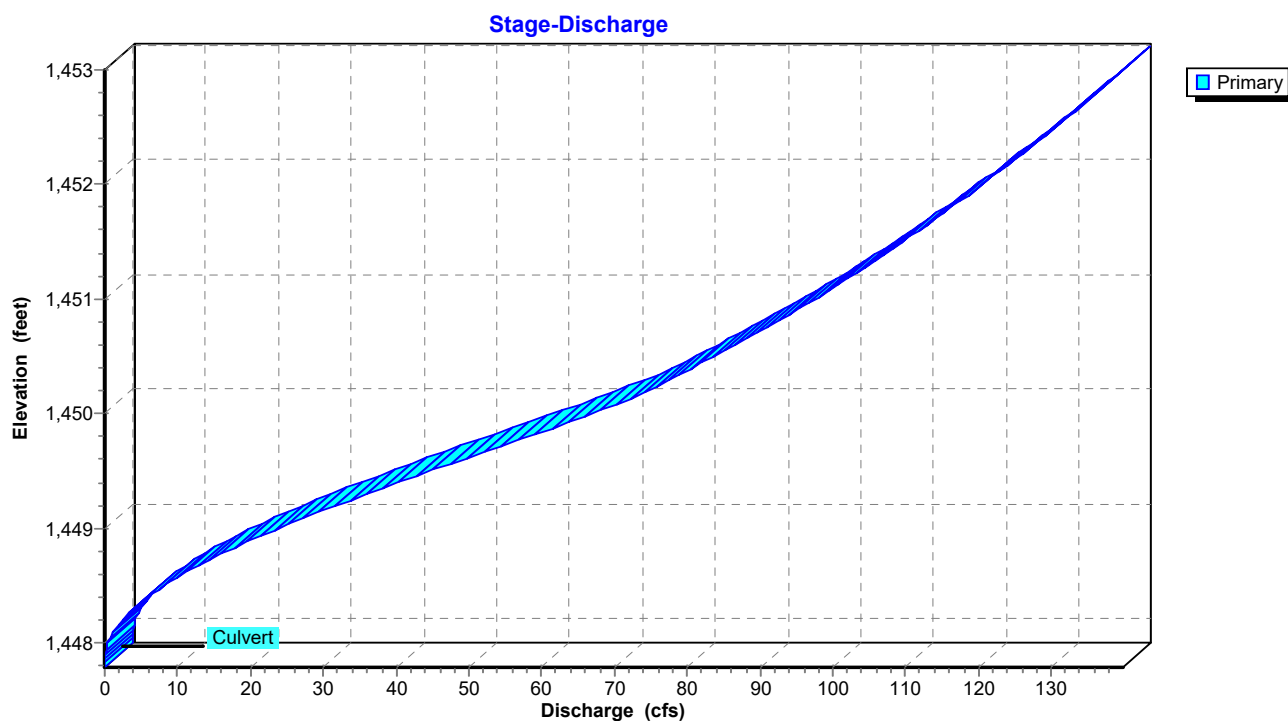
Primary OutFlow Max=0.46 cfs @ 12.58 hrs HW=1,448.01' TW=1,446.07' (Dynamic Tailwater)

←**1=Culvert** (Inlet Controls 0.46 cfs @ 1.31 fps)

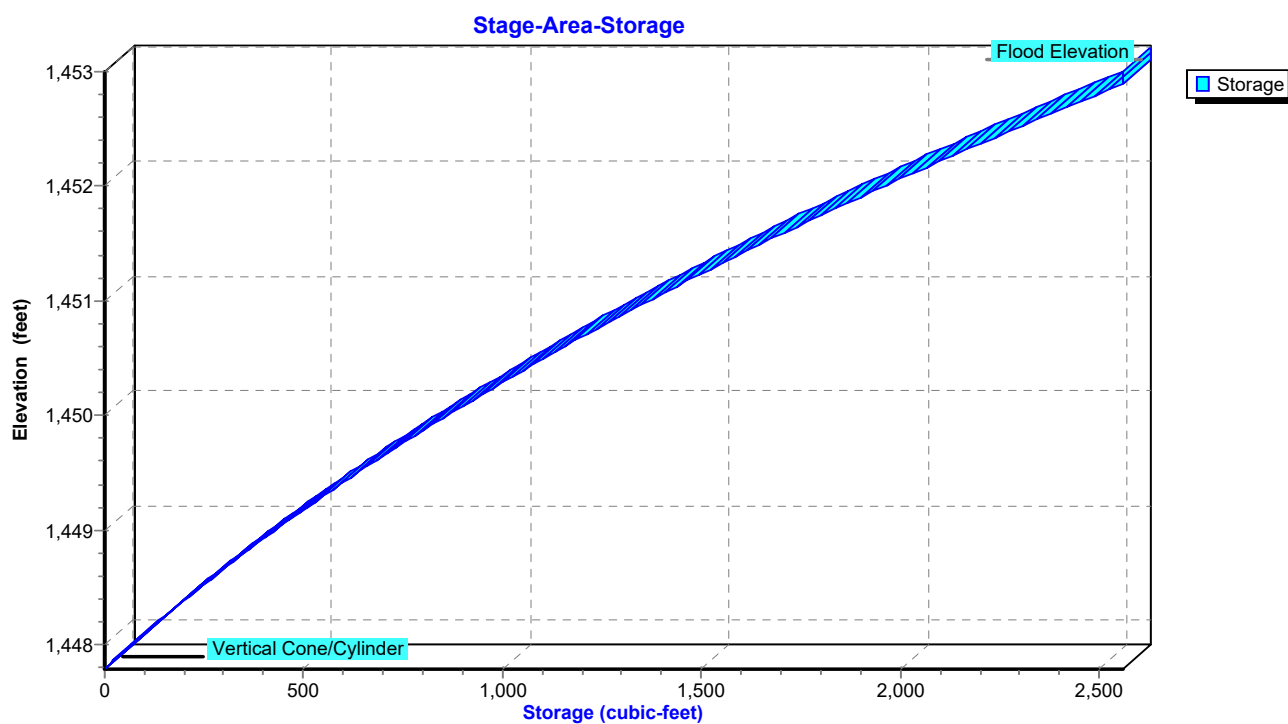
Pond 22P: Road Crossing Culverts w/ Storage



Pond 22P: Road Crossing Culverts w/ Storage



Pond 22P: Road Crossing Culverts w/ Storage



Hydrograph for Pond 22P: Road Crossing Culverts w/ Storage

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.05	0.00	0	1,447.79	0.00
5.05	0.00	0	1,447.79	0.00
10.05	0.00	1	1,447.79	0.00
15.05	0.36	64	1,447.99	0.36
20.05	0.46	70	1,448.01	0.46
25.05	0.43	68	1,448.00	0.43
30.05	0.40	66	1,448.00	0.40
35.05	0.37	65	1,447.99	0.37
40.05	0.35	64	1,447.99	0.35
45.05	0.32	62	1,447.98	0.33
50.05	0.30	61	1,447.98	0.30
55.05	0.28	59	1,447.97	0.28
60.05	0.25	57	1,447.97	0.25
65.05	0.23	56	1,447.96	0.23
70.05	0.20	54	1,447.96	0.21
75.05	0.18	52	1,447.95	0.18
80.05	0.16	50	1,447.95	0.16
85.05	0.13	47	1,447.94	0.13
90.05	0.11	45	1,447.93	0.11
95.05	0.09	43	1,447.92	0.09
100.05	0.07	41	1,447.92	0.07
105.05	0.06	39	1,447.91	0.06
110.05	0.05	38	1,447.91	0.05
115.05	0.04	37	1,447.91	0.04
120.05	0.04	36	1,447.90	0.04
125.05	0.03	35	1,447.90	0.03
130.05	0.03	34	1,447.90	0.03
135.05	0.03	33	1,447.89	0.03
140.05	0.02	33	1,447.89	0.02
145.05	0.02	32	1,447.89	0.02

Stage-Discharge for Pond 22P: Road Crossing Culverts w/ Storage

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
1,447.79	0.00	1,449.87	61.25	1,451.95	119.49
1,447.83	0.00	1,449.91	63.00	1,451.99	120.33
1,447.87	0.00	1,449.95	64.73	1,452.03	121.16
1,447.91	0.05	1,449.99	66.42	1,452.07	121.99
1,447.95	0.17	1,450.03	68.09	1,452.11	122.81
1,447.99	0.36	1,450.07	69.71	1,452.15	123.63
1,448.03	0.61	1,450.11	71.29	1,452.19	124.44
1,448.07	0.93	1,450.15	72.82	1,452.23	125.25
1,448.11	1.30	1,450.19	74.28	1,452.27	126.05
1,448.15	1.75	1,450.23	75.66	1,452.31	126.84
1,448.19	2.25	1,450.27	76.94	1,452.35	127.63
1,448.23	2.81	1,450.31	78.10	1,452.39	128.42
1,448.27	3.44	1,450.35	79.08	1,452.43	129.20
1,448.31	4.12	1,450.39	80.22	1,452.47	129.97
1,448.35	4.85	1,450.43	81.47	1,452.51	130.74
1,448.39	5.65	1,450.47	82.69	1,452.55	131.51
1,448.43	6.50	1,450.51	83.90	1,452.59	132.27
1,448.47	7.40	1,450.55	85.09	1,452.63	133.03
1,448.51	8.35	1,450.59	86.26	1,452.67	133.79
1,448.55	9.36	1,450.63	87.42	1,452.71	134.54
1,448.59	10.41	1,450.67	88.56	1,452.75	135.28
1,448.63	11.51	1,450.71	89.69	1,452.79	136.02
1,448.67	12.66	1,450.75	90.80	1,452.83	136.76
1,448.71	13.86	1,450.79	91.91	1,452.87	137.49
1,448.75	15.10	1,450.83	92.99	1,452.91	138.22
1,448.79	16.38	1,450.87	94.07	1,452.95	138.95
1,448.83	17.71	1,450.91	95.13	1,452.99	139.67
1,448.87	19.07	1,450.95	96.18		
1,448.91	20.48	1,450.99	97.22		
1,448.95	21.92	1,451.03	98.25		
1,448.99	23.40	1,451.07	99.27		
1,449.03	24.91	1,451.11	100.28		
1,449.07	26.45	1,451.15	101.27		
1,449.11	28.03	1,451.19	102.26		
1,449.15	29.63	1,451.23	103.24		
1,449.19	31.27	1,451.27	104.21		
1,449.23	32.92	1,451.31	105.17		
1,449.27	34.61	1,451.35	106.12		
1,449.31	36.31	1,451.39	107.07		
1,449.35	38.04	1,451.43	108.00		
1,449.39	39.78	1,451.47	108.93		
1,449.43	41.54	1,451.51	109.85		
1,449.47	43.31	1,451.55	110.76		
1,449.51	45.09	1,451.59	111.66		
1,449.55	46.89	1,451.63	112.56		
1,449.59	48.69	1,451.67	113.45		
1,449.63	50.49	1,451.71	114.33		
1,449.67	52.30	1,451.75	115.21		
1,449.71	54.11	1,451.79	116.08		
1,449.75	55.91	1,451.83	116.94		
1,449.79	57.70	1,451.87	117.80		
1,449.83	59.48	1,451.91	118.65		

Stage-Area-Storage for Pond 22P: Road Crossing Culverts w/ Storage

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
1,447.79	0	1,449.87	799	1,451.95	1,926
1,447.83	13	1,449.91	817	1,451.99	1,951
1,447.87	25	1,449.95	836	1,452.03	1,977
1,447.91	38	1,449.99	854	1,452.07	2,002
1,447.95	51	1,450.03	873	1,452.11	2,028
1,447.99	64	1,450.07	892	1,452.15	2,054
1,448.03	77	1,450.11	911	1,452.19	2,080
1,448.07	90	1,450.15	930	1,452.23	2,106
1,448.11	104	1,450.19	949	1,452.27	2,132
1,448.15	117	1,450.23	969	1,452.31	2,159
1,448.19	131	1,450.27	988	1,452.35	2,185
1,448.23	144	1,450.31	1,008	1,452.39	2,212
1,448.27	158	1,450.35	1,028	1,452.43	2,239
1,448.31	172	1,450.39	1,048	1,452.47	2,266
1,448.35	186	1,450.43	1,068	1,452.51	2,293
1,448.39	200	1,450.47	1,088	1,452.55	2,320
1,448.43	214	1,450.51	1,108	1,452.59	2,348
1,448.47	228	1,450.55	1,128	1,452.63	2,375
1,448.51	243	1,450.59	1,149	1,452.67	2,403
1,448.55	257	1,450.63	1,170	1,452.71	2,431
1,448.59	272	1,450.67	1,190	1,452.75	2,459
1,448.63	287	1,450.71	1,211	1,452.79	2,487
1,448.67	302	1,450.75	1,232	1,452.83	2,515
1,448.71	316	1,450.79	1,253	1,452.87	2,544
1,448.75	331	1,450.83	1,275	1,452.91	2,558
1,448.79	347	1,450.87	1,296	1,452.95	2,558
1,448.83	362	1,450.91	1,318	1,452.99	2,558
1,448.87	377	1,450.95	1,339		
1,448.91	393	1,450.99	1,361		
1,448.95	408	1,451.03	1,383		
1,448.99	424	1,451.07	1,405		
1,449.03	440	1,451.11	1,428		
1,449.07	456	1,451.15	1,450		
1,449.11	472	1,451.19	1,472		
1,449.15	488	1,451.23	1,495		
1,449.19	504	1,451.27	1,518		
1,449.23	521	1,451.31	1,541		
1,449.27	537	1,451.35	1,564		
1,449.31	554	1,451.39	1,587		
1,449.35	571	1,451.43	1,610		
1,449.39	587	1,451.47	1,634		
1,449.43	604	1,451.51	1,657		
1,449.47	621	1,451.55	1,681		
1,449.51	639	1,451.59	1,705		
1,449.55	656	1,451.63	1,729		
1,449.59	673	1,451.67	1,753		
1,449.63	691	1,451.71	1,777		
1,449.67	709	1,451.75	1,802		
1,449.71	726	1,451.79	1,826		
1,449.75	744	1,451.83	1,851		
1,449.79	762	1,451.87	1,876		
1,449.83	781	1,451.91	1,901		

Summary for Pond 30P: Sump

Inflow Area = 7.316 ac, 0.00% Impervious, Inflow Depth = 0.17" for 90th Pcnt event
 Inflow = 0.50 cfs @ 12.52 hrs, Volume= 0.104 af
 Outflow = 0.50 cfs @ 12.52 hrs, Volume= 0.104 af, Atten= 0%, Lag= 0.0 min
 Primary = 0.50 cfs @ 12.52 hrs, Volume= 0.104 af

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Peak Elev= 1,463.32' @ 12.52 hrs

Flood Elev= 1,468.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,463.00'	24.0" Round Culvert L= 300.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1,463.00' / 1,453.00' S= 0.0333 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Primary	1,463.00'	12.0" Vert. Orifice/Grate X 0.00 C= 0.600

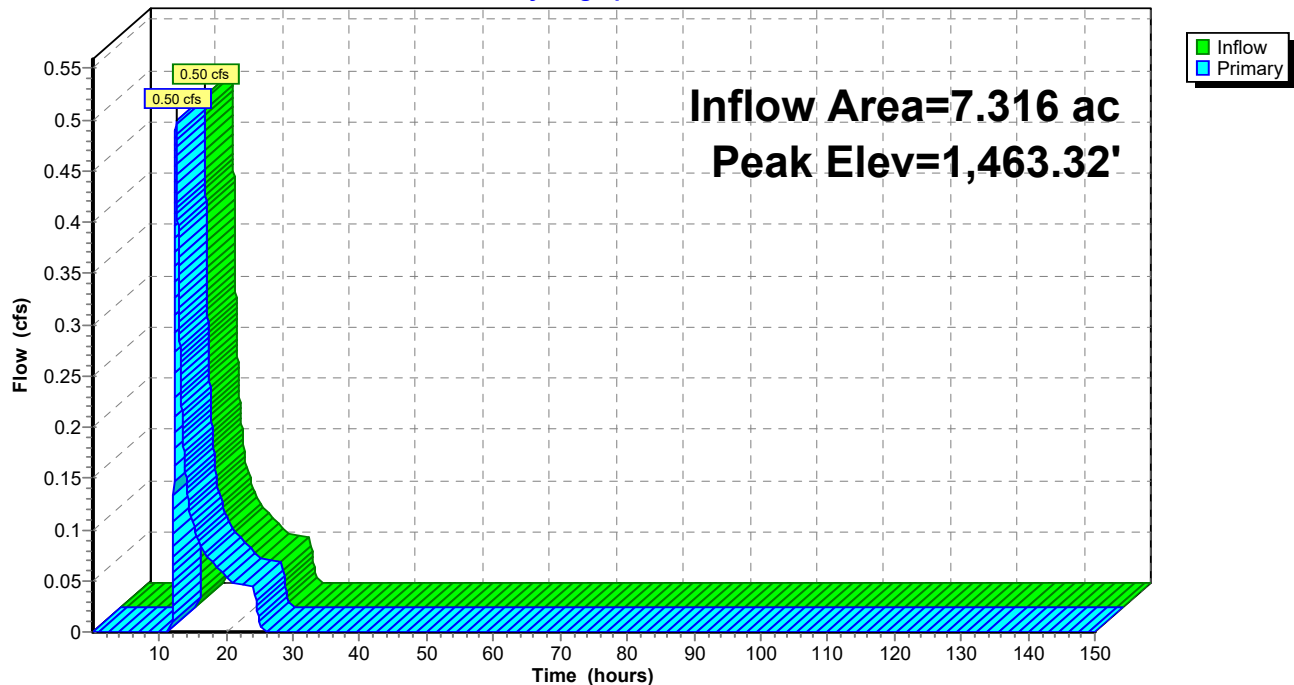
Primary OutFlow Max=0.50 cfs @ 12.52 hrs HW=1,463.32' TW=0.00' (Dynamic Tailwater)

1=Culvert (Inlet Controls 0.50 cfs @ 1.53 fps)

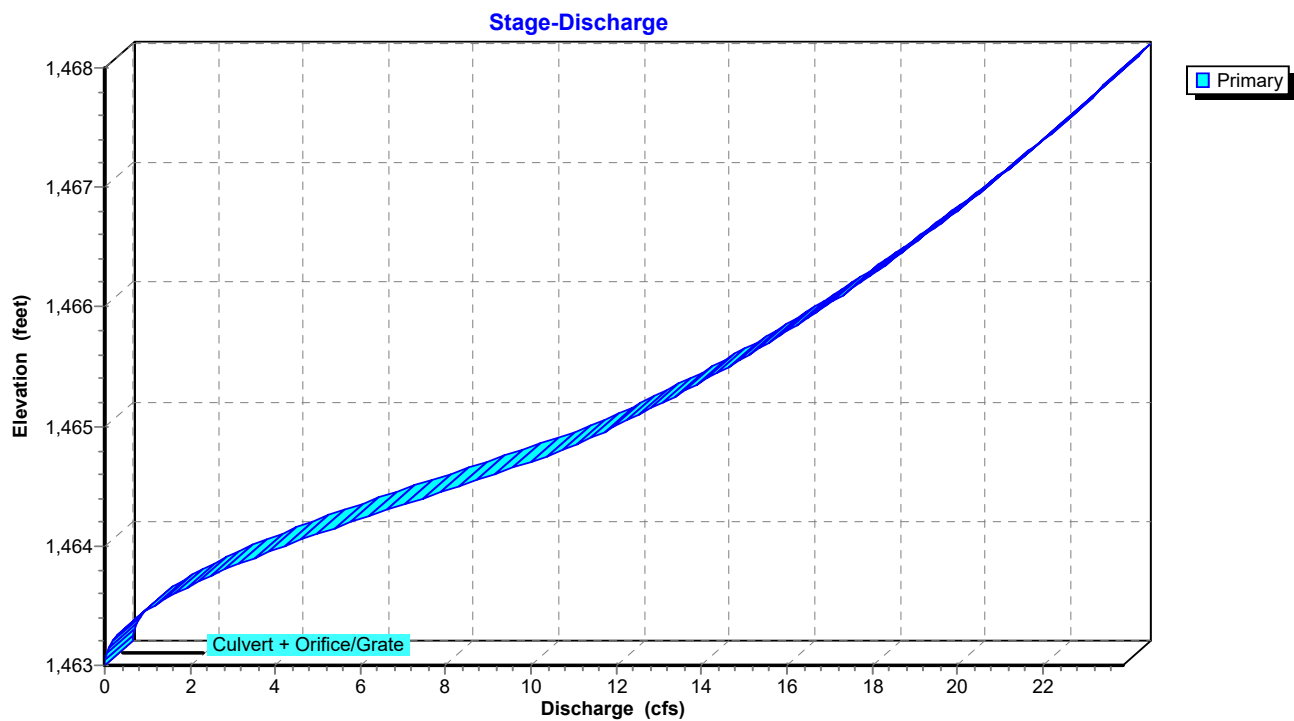
2=Orifice/Grate (Controls 0.00 cfs)

Pond 30P: Sump

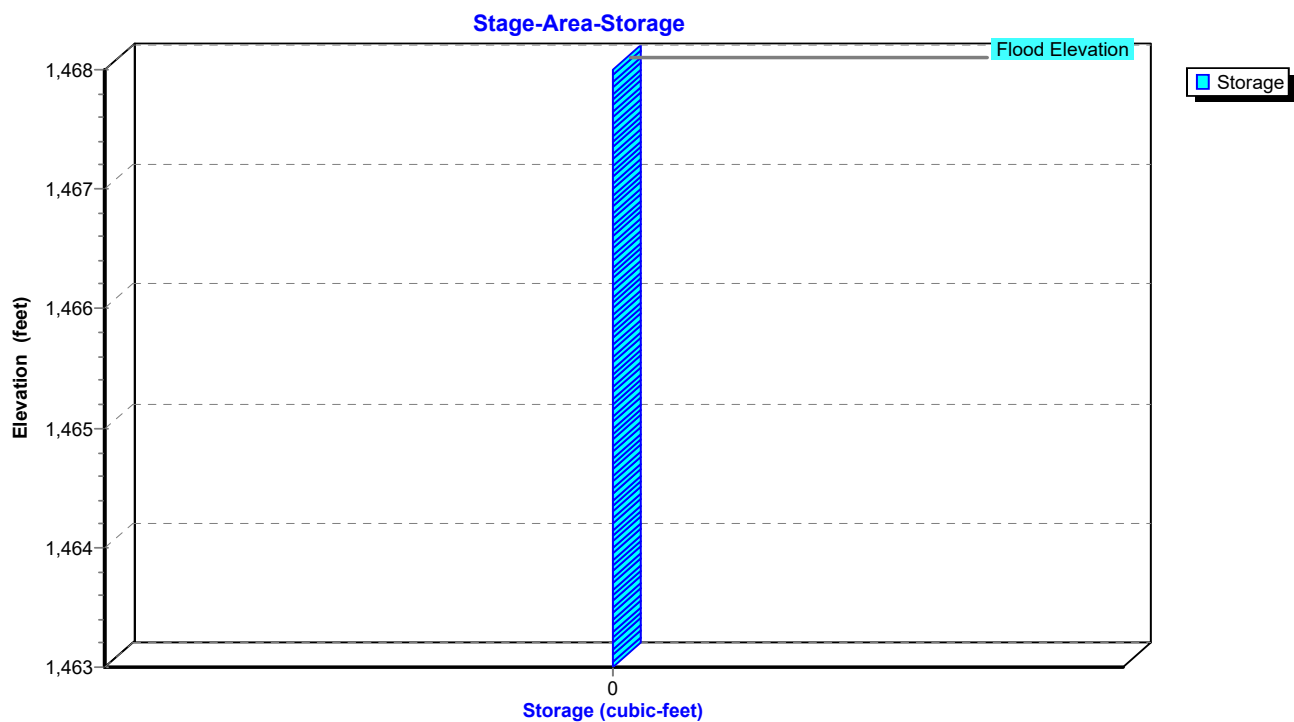
Hydrograph



Pond 30P: Sump



Pond 30P: Sump



Hydrograph for Pond 30P: Sump

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.05	0.00	1,463.00	0.00	104.05	0.00	1,463.00	0.00
2.05	0.00	1,463.00	0.00	106.05	0.00	1,463.00	0.00
4.05	0.00	1,463.00	0.00	108.05	0.00	1,463.00	0.00
6.05	0.00	1,463.00	0.00	110.05	0.00	1,463.00	0.00
8.05	0.00	1,463.00	0.00	112.05	0.00	1,463.00	0.00
10.05	0.00	1,463.00	0.00	114.05	0.00	1,463.00	0.00
12.05	0.03	1,463.07	0.03	116.05	0.00	1,463.00	0.00
14.05	0.14	1,463.17	0.14	118.05	0.00	1,463.00	0.00
16.05	0.09	1,463.13	0.09	120.05	0.00	1,463.00	0.00
18.05	0.07	1,463.12	0.07	122.05	0.00	1,463.00	0.00
20.05	0.05	1,463.10	0.05	124.05	0.00	1,463.00	0.00
22.05	0.05	1,463.10	0.05	126.05	0.00	1,463.00	0.00
24.05	0.04	1,463.09	0.04	128.05	0.00	1,463.00	0.00
26.05	0.00	1,463.00	0.00	130.05	0.00	1,463.00	0.00
28.05	0.00	1,463.00	0.00	132.05	0.00	1,463.00	0.00
30.05	0.00	1,463.00	0.00	134.05	0.00	1,463.00	0.00
32.05	0.00	1,463.00	0.00	136.05	0.00	1,463.00	0.00
34.05	0.00	1,463.00	0.00	138.05	0.00	1,463.00	0.00
36.05	0.00	1,463.00	0.00	140.05	0.00	1,463.00	0.00
38.05	0.00	1,463.00	0.00	142.05	0.00	1,463.00	0.00
40.05	0.00	1,463.00	0.00	144.05	0.00	1,463.00	0.00
42.05	0.00	1,463.00	0.00	146.05	0.00	1,463.00	0.00
44.05	0.00	1,463.00	0.00	148.05	0.00	1,463.00	0.00
46.05	0.00	1,463.00	0.00				
48.05	0.00	1,463.00	0.00				
50.05	0.00	1,463.00	0.00				
52.05	0.00	1,463.00	0.00				
54.05	0.00	1,463.00	0.00				
56.05	0.00	1,463.00	0.00				
58.05	0.00	1,463.00	0.00				
60.05	0.00	1,463.00	0.00				
62.05	0.00	1,463.00	0.00				
64.05	0.00	1,463.00	0.00				
66.05	0.00	1,463.00	0.00				
68.05	0.00	1,463.00	0.00				
70.05	0.00	1,463.00	0.00				
72.05	0.00	1,463.00	0.00				
74.05	0.00	1,463.00	0.00				
76.05	0.00	1,463.00	0.00				
78.05	0.00	1,463.00	0.00				
80.05	0.00	1,463.00	0.00				
82.05	0.00	1,463.00	0.00				
84.05	0.00	1,463.00	0.00				
86.05	0.00	1,463.00	0.00				
88.05	0.00	1,463.00	0.00				
90.05	0.00	1,463.00	0.00				
92.05	0.00	1,463.00	0.00				
94.05	0.00	1,463.00	0.00				
96.05	0.00	1,463.00	0.00				
98.05	0.00	1,463.00	0.00				
100.05	0.00	1,463.00	0.00				
102.05	0.00	1,463.00	0.00				

Stage-Discharge for Pond 30P: Sump

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
1,463.00	0.00	1,465.60	15.11
1,463.05	0.01	1,465.65	15.34
1,463.10	0.05	1,465.70	15.57
1,463.15	0.11	1,465.75	15.80
1,463.20	0.20	1,465.80	16.02
1,463.25	0.30	1,465.85	16.24
1,463.30	0.44	1,465.90	16.46
1,463.35	0.59	1,465.95	16.68
1,463.40	0.76	1,466.00	16.89
1,463.45	0.95	1,466.05	17.10
1,463.50	1.17	1,466.10	17.31
1,463.55	1.40	1,466.15	17.51
1,463.60	1.65	1,466.20	17.71
1,463.65	1.92	1,466.25	17.91
1,463.70	2.20	1,466.30	18.11
1,463.75	2.50	1,466.35	18.31
1,463.80	2.82	1,466.40	18.50
1,463.85	3.15	1,466.45	18.69
1,463.90	3.50	1,466.50	18.88
1,463.95	3.85	1,466.55	19.07
1,464.00	4.22	1,466.60	19.26
1,464.05	4.60	1,466.65	19.44
1,464.10	4.99	1,466.70	19.62
1,464.15	5.39	1,466.75	19.80
1,464.20	5.80	1,466.80	19.98
1,464.25	6.21	1,466.85	20.16
1,464.30	6.62	1,466.90	20.34
1,464.35	7.05	1,466.95	20.51
1,464.40	7.47	1,467.00	20.68
1,464.45	7.90	1,467.05	20.86
1,464.50	8.32	1,467.10	21.03
1,464.55	8.74	1,467.15	21.20
1,464.60	9.16	1,467.20	21.36
1,464.65	9.57	1,467.25	21.53
1,464.70	9.97	1,467.30	21.69
1,464.75	10.36	1,467.35	21.86
1,464.80	10.74	1,467.40	22.02
1,464.85	11.09	1,467.45	22.18
1,464.90	11.42	1,467.50	22.34
1,464.95	11.71	1,467.55	22.50
1,465.00	11.94	1,467.60	22.66
1,465.05	12.24	1,467.65	22.82
1,465.10	12.53	1,467.70	22.97
1,465.15	12.81	1,467.75	23.13
1,465.20	13.08	1,467.80	23.28
1,465.25	13.35	1,467.85	23.43
1,465.30	13.62	1,467.90	23.58
1,465.35	13.88	1,467.95	23.73
1,465.40	14.13	1,468.00	23.88
1,465.45	14.38		
1,465.50	14.63		
1,465.55	14.87		

Stage-Area-Storage for Pond 30P: Sump

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
1,463.00	0	1,465.60	0
1,463.05	0	1,465.65	0
1,463.10	0	1,465.70	0
1,463.15	0	1,465.75	0
1,463.20	0	1,465.80	0
1,463.25	0	1,465.85	0
1,463.30	0	1,465.90	0
1,463.35	0	1,465.95	0
1,463.40	0	1,466.00	0
1,463.45	0	1,466.05	0
1,463.50	0	1,466.10	0
1,463.55	0	1,466.15	0
1,463.60	0	1,466.20	0
1,463.65	0	1,466.25	0
1,463.70	0	1,466.30	0
1,463.75	0	1,466.35	0
1,463.80	0	1,466.40	0
1,463.85	0	1,466.45	0
1,463.90	0	1,466.50	0
1,463.95	0	1,466.55	0
1,464.00	0	1,466.60	0
1,464.05	0	1,466.65	0
1,464.10	0	1,466.70	0
1,464.15	0	1,466.75	0
1,464.20	0	1,466.80	0
1,464.25	0	1,466.85	0
1,464.30	0	1,466.90	0
1,464.35	0	1,466.95	0
1,464.40	0	1,467.00	0
1,464.45	0	1,467.05	0
1,464.50	0	1,467.10	0
1,464.55	0	1,467.15	0
1,464.60	0	1,467.20	0
1,464.65	0	1,467.25	0
1,464.70	0	1,467.30	0
1,464.75	0	1,467.35	0
1,464.80	0	1,467.40	0
1,464.85	0	1,467.45	0
1,464.90	0	1,467.50	0
1,464.95	0	1,467.55	0
1,465.00	0	1,467.60	0
1,465.05	0	1,467.65	0
1,465.10	0	1,467.70	0
1,465.15	0	1,467.75	0
1,465.20	0	1,467.80	0
1,465.25	0	1,467.85	0
1,465.30	0	1,467.90	0
1,465.35	0	1,467.95	0
1,465.40	0	1,468.00	0
1,465.45	0		
1,465.50	0		
1,465.55	0		

Summary for Pond 32P: Intermittent Drng

Inflow Area = 20.203 ac, 0.00% Impervious, Inflow Depth = 0.17" for 90th Pcnt event

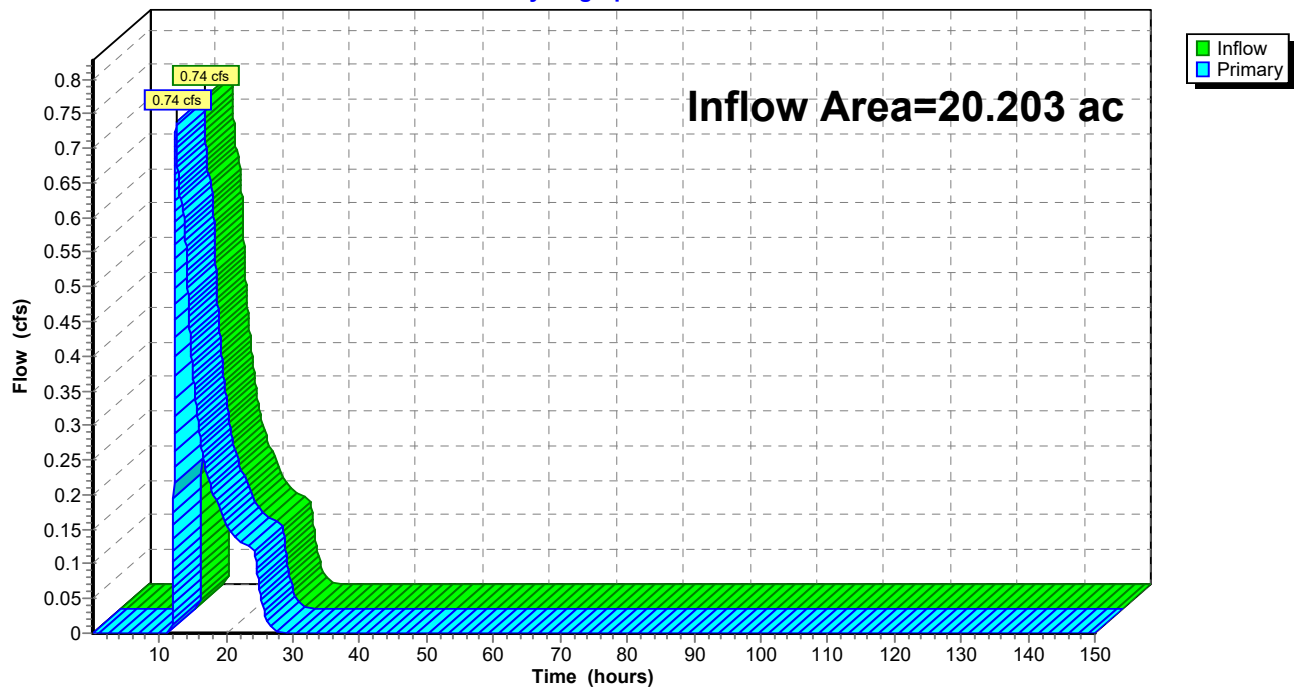
Inflow = 0.74 cfs @ 12.52 hrs, Volume= 0.286 af

Primary = 0.74 cfs @ 12.52 hrs, Volume= 0.286 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Pond 32P: Intermittent Drng

Hydrograph



Riato V6 Final

Prepared by JMT

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Type II 24-hr 90th Pcnt Rainfall=1.40"

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Hydrograph for Pond 32P: Intermittent Drng

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.05	0.00		0.00	104.05	0.00		0.00
2.05	0.00		0.00	106.05	0.00		0.00
4.05	0.00		0.00	108.05	0.00		0.00
6.05	0.00		0.00	110.05	0.00		0.00
8.05	0.00		0.00	112.05	0.00		0.00
10.05	0.00		0.00	114.05	0.00		0.00
12.05	0.03		0.03	116.05	0.00		0.00
14.05	0.54		0.54	118.05	0.00		0.00
16.05	0.29		0.29	120.05	0.00		0.00
18.05	0.20		0.20	122.05	0.00		0.00
20.05	0.16		0.16	124.05	0.00		0.00
22.05	0.13		0.13	126.05	0.00		0.00
24.05	0.12		0.12	128.05	0.00		0.00
26.05	0.02		0.02	130.05	0.00		0.00
28.05	0.00		0.00	132.05	0.00		0.00
30.05	0.00		0.00	134.05	0.00		0.00
32.05	0.00		0.00	136.05	0.00		0.00
34.05	0.00		0.00	138.05	0.00		0.00
36.05	0.00		0.00	140.05	0.00		0.00
38.05	0.00		0.00	142.05	0.00		0.00
40.05	0.00		0.00	144.05	0.00		0.00
42.05	0.00		0.00	146.05	0.00		0.00
44.05	0.00		0.00	148.05	0.00		0.00
46.05	0.00		0.00				
48.05	0.00		0.00				
50.05	0.00		0.00				
52.05	0.00		0.00				
54.05	0.00		0.00				
56.05	0.00		0.00				
58.05	0.00		0.00				
60.05	0.00		0.00				
62.05	0.00		0.00				
64.05	0.00		0.00				
66.05	0.00		0.00				
68.05	0.00		0.00				
70.05	0.00		0.00				
72.05	0.00		0.00				
74.05	0.00		0.00				
76.05	0.00		0.00				
78.05	0.00		0.00				
80.05	0.00		0.00				
82.05	0.00		0.00				
84.05	0.00		0.00				
86.05	0.00		0.00				
88.05	0.00		0.00				
90.05	0.00		0.00				
92.05	0.00		0.00				
94.05	0.00		0.00				
96.05	0.00		0.00				
98.05	0.00		0.00				
100.05	0.00		0.00				
102.05	0.00		0.00				

Summary for Pond 33P: ExpStrmBasin

Inflow Area = 13.693 ac, 0.00% Impervious, Inflow Depth = 0.85" for 90th Pcnt event
 Inflow = 19.55 cfs @ 11.99 hrs, Volume= 0.967 af
 Outflow = 19.55 cfs @ 11.99 hrs, Volume= 0.967 af, Atten= 0%, Lag= 0.0 min
 Primary = 19.55 cfs @ 11.99 hrs, Volume= 0.967 af

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

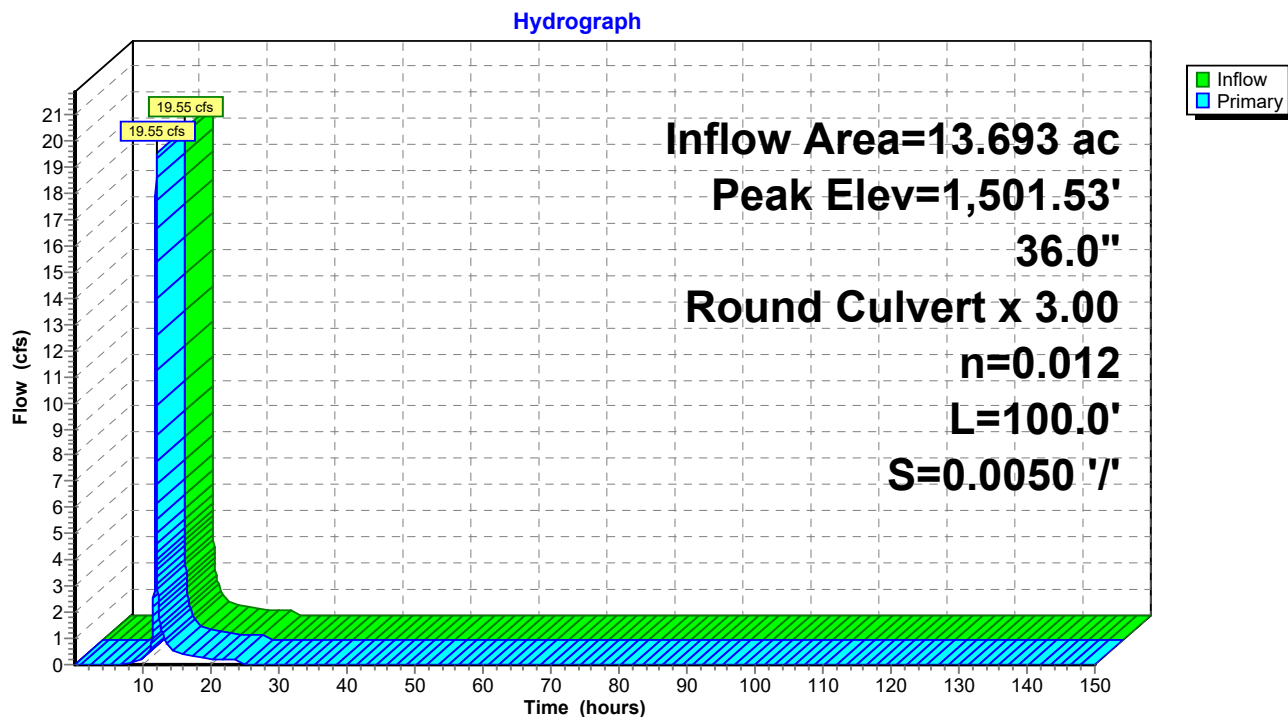
Peak Elev= 1,501.53' @ 11.99 hrs

Flood Elev= 1,504.50'

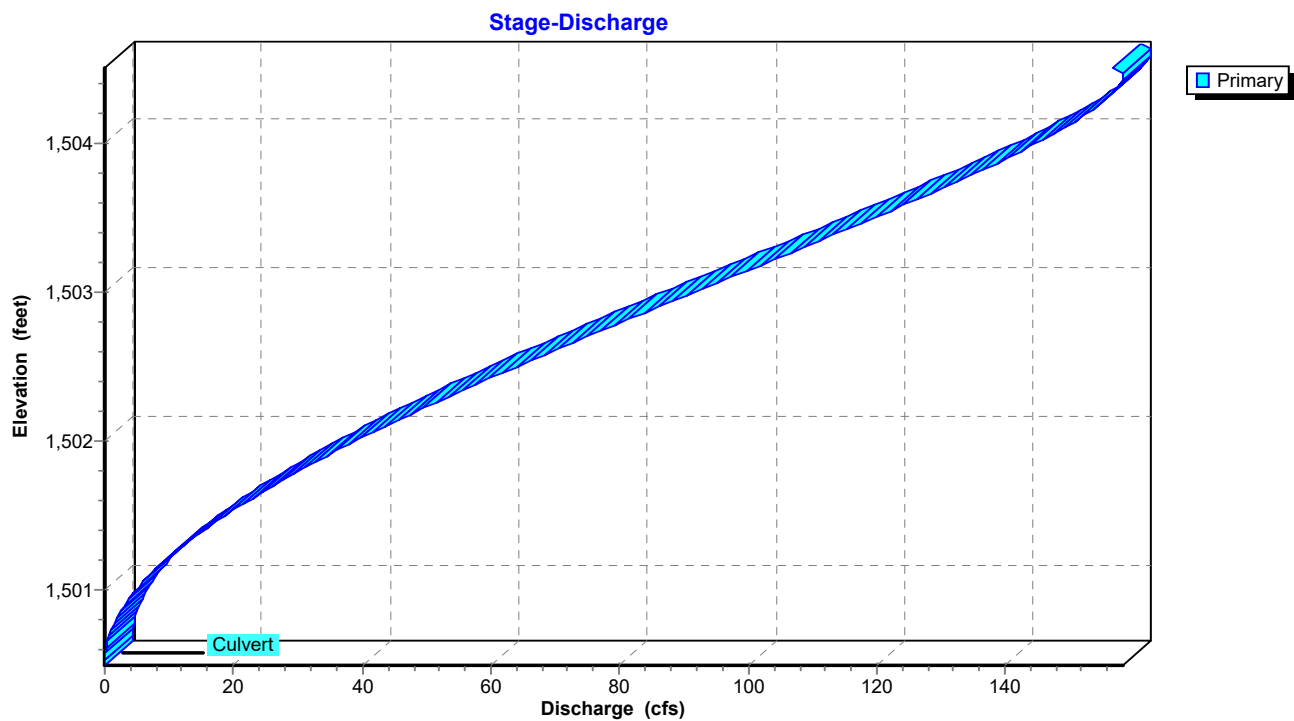
Device	Routing	Invert	Outlet Devices
#1	Primary	1,500.50'	36.0" Round Culvert X 3.00 L= 100.0' Ke= 0.150 Inlet / Outlet Invert= 1,500.50' / 1,500.00' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf

Primary OutFlow Max=19.51 cfs @ 11.99 hrs HW=1,501.53' TW=1,495.71' (Dynamic Tailwater)
 1=Culvert (Barrel Controls 19.51 cfs @ 4.53 fps)

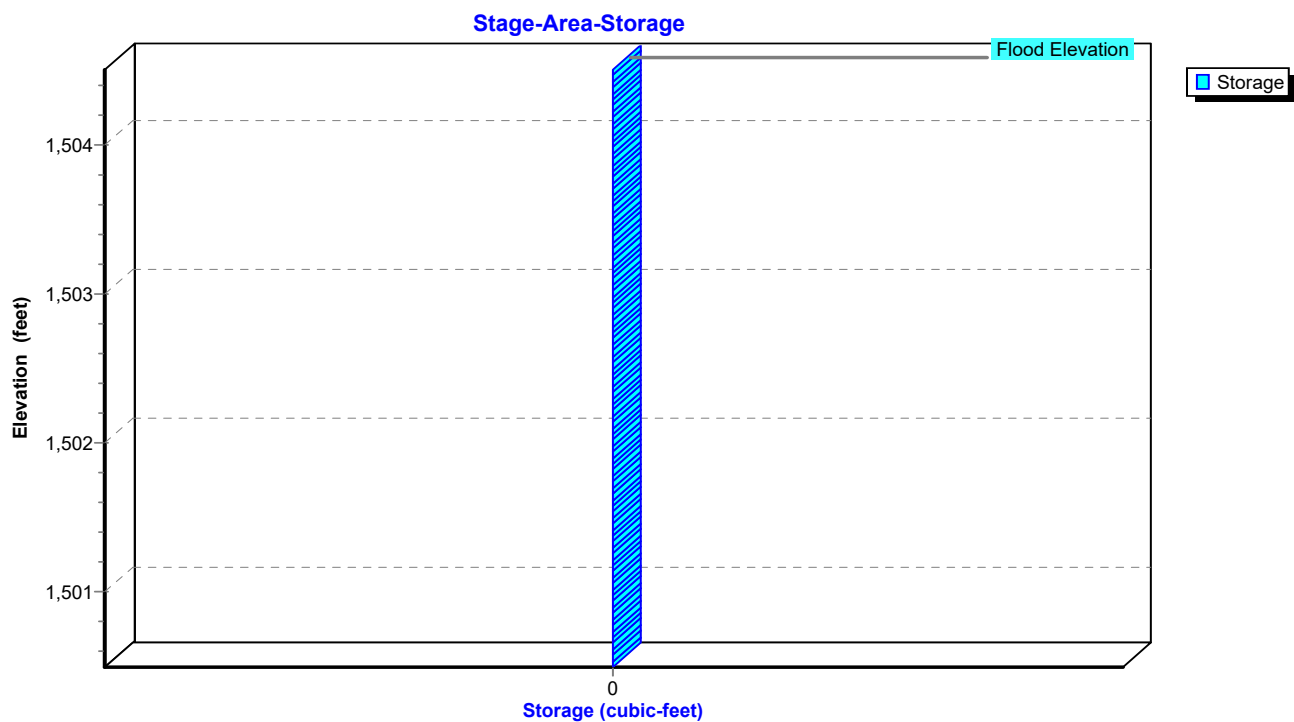
Pond 33P: ExpStrmBasin



Pond 33P: ExpStrmBasin



Pond 33P: ExpStrmBasin



Hydrograph for Pond 33P: ExpStrmBasin

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.05	0.00	1,500.50	0.00	104.05	0.00	1,500.50	0.00
2.05	0.00	1,500.50	0.00	106.05	0.00	1,500.50	0.00
4.05	0.00	1,500.50	0.00	108.05	0.00	1,500.50	0.00
6.05	0.00	1,500.50	0.00	110.05	0.00	1,500.50	0.00
8.05	0.05	1,500.56	0.05	112.05	0.00	1,500.50	0.00
10.05	0.22	1,500.61	0.22	114.05	0.00	1,500.50	0.00
12.05	14.00	1,501.36	14.00	116.05	0.00	1,500.50	0.00
14.05	0.63	1,500.69	0.63	118.05	0.00	1,500.50	0.00
16.05	0.39	1,500.65	0.39	120.05	0.00	1,500.50	0.00
18.05	0.31	1,500.63	0.31	122.05	0.00	1,500.50	0.00
20.05	0.22	1,500.61	0.22	124.05	0.00	1,500.50	0.00
22.05	0.21	1,500.61	0.21	126.05	0.00	1,500.50	0.00
24.05	0.18	1,500.60	0.18	128.05	0.00	1,500.50	0.00
26.05	0.00	1,500.50	0.00	130.05	0.00	1,500.50	0.00
28.05	0.00	1,500.50	0.00	132.05	0.00	1,500.50	0.00
30.05	0.00	1,500.50	0.00	134.05	0.00	1,500.50	0.00
32.05	0.00	1,500.50	0.00	136.05	0.00	1,500.50	0.00
34.05	0.00	1,500.50	0.00	138.05	0.00	1,500.50	0.00
36.05	0.00	1,500.50	0.00	140.05	0.00	1,500.50	0.00
38.05	0.00	1,500.50	0.00	142.05	0.00	1,500.50	0.00
40.05	0.00	1,500.50	0.00	144.05	0.00	1,500.50	0.00
42.05	0.00	1,500.50	0.00	146.05	0.00	1,500.50	0.00
44.05	0.00	1,500.50	0.00	148.05	0.00	1,500.50	0.00
46.05	0.00	1,500.50	0.00				
48.05	0.00	1,500.50	0.00				
50.05	0.00	1,500.50	0.00				
52.05	0.00	1,500.50	0.00				
54.05	0.00	1,500.50	0.00				
56.05	0.00	1,500.50	0.00				
58.05	0.00	1,500.50	0.00				
60.05	0.00	1,500.50	0.00				
62.05	0.00	1,500.50	0.00				
64.05	0.00	1,500.50	0.00				
66.05	0.00	1,500.50	0.00				
68.05	0.00	1,500.50	0.00				
70.05	0.00	1,500.50	0.00				
72.05	0.00	1,500.50	0.00				
74.05	0.00	1,500.50	0.00				
76.05	0.00	1,500.50	0.00				
78.05	0.00	1,500.50	0.00				
80.05	0.00	1,500.50	0.00				
82.05	0.00	1,500.50	0.00				
84.05	0.00	1,500.50	0.00				
86.05	0.00	1,500.50	0.00				
88.05	0.00	1,500.50	0.00				
90.05	0.00	1,500.50	0.00				
92.05	0.00	1,500.50	0.00				
94.05	0.00	1,500.50	0.00				
96.05	0.00	1,500.50	0.00				
98.05	0.00	1,500.50	0.00				
100.05	0.00	1,500.50	0.00				
102.05	0.00	1,500.50	0.00				

Stage-Discharge for Pond 33P: ExpStrmBasin

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
1,500.50	0.00	1,501.54	19.97	1,502.58	68.29	1,503.62	126.30
1,500.52	0.01	1,501.56	20.70	1,502.60	69.38	1,503.64	127.36
1,500.54	0.02	1,501.58	21.43	1,502.62	70.47	1,503.66	128.41
1,500.56	0.06	1,501.60	22.17	1,502.64	71.57	1,503.68	129.45
1,500.58	0.10	1,501.62	22.92	1,502.66	72.67	1,503.70	130.49
1,500.60	0.17	1,501.64	23.69	1,502.68	73.77	1,503.72	131.52
1,500.62	0.25	1,501.66	24.46	1,502.70	74.87	1,503.74	132.54
1,500.64	0.34	1,501.68	25.24	1,502.72	75.98	1,503.76	133.55
1,500.66	0.45	1,501.70	26.03	1,502.74	77.09	1,503.78	134.56
1,500.68	0.58	1,501.72	26.83	1,502.76	78.21	1,503.80	135.56
1,500.70	0.73	1,501.74	27.64	1,502.78	79.32	1,503.82	136.54
1,500.72	0.89	1,501.76	28.46	1,502.80	80.44	1,503.84	137.52
1,500.74	1.07	1,501.78	29.29	1,502.82	81.56	1,503.86	138.48
1,500.76	1.26	1,501.80	30.12	1,502.84	82.68	1,503.88	139.44
1,500.78	1.47	1,501.82	30.97	1,502.86	83.81	1,503.90	140.38
1,500.80	1.70	1,501.84	31.82	1,502.88	84.94	1,503.92	141.32
1,500.82	1.94	1,501.86	32.68	1,502.90	86.07	1,503.94	142.24
1,500.84	2.20	1,501.88	33.55	1,502.92	87.20	1,503.96	143.14
1,500.86	2.48	1,501.90	34.43	1,502.94	88.33	1,503.98	144.04
1,500.88	2.77	1,501.92	35.32	1,502.96	89.46	1,504.00	144.92
1,500.90	3.07	1,501.94	36.21	1,502.98	90.59	1,504.02	145.78
1,500.92	3.39	1,501.96	37.11	1,503.00	91.73	1,504.04	146.63
1,500.94	3.73	1,501.98	38.02	1,503.02	92.86	1,504.06	147.46
1,500.96	4.08	1,502.00	38.94	1,503.04	94.00	1,504.08	148.28
1,500.98	4.44	1,502.02	39.86	1,503.06	95.13	1,504.10	149.08
1,501.00	4.82	1,502.04	40.80	1,503.08	96.27	1,504.12	149.86
1,501.02	5.22	1,502.06	41.74	1,503.10	97.41	1,504.14	150.62
1,501.04	5.62	1,502.08	42.68	1,503.12	98.54	1,504.16	151.35
1,501.06	6.05	1,502.10	43.64	1,503.14	99.68	1,504.18	152.07
1,501.08	6.48	1,502.12	44.60	1,503.16	100.81	1,504.20	152.76
1,501.10	6.93	1,502.14	45.56	1,503.18	101.95	1,504.22	153.43
1,501.12	7.40	1,502.16	46.54	1,503.20	103.08	1,504.24	154.07
1,501.14	7.87	1,502.18	47.52	1,503.22	104.21	1,504.26	154.67
1,501.16	8.36	1,502.20	48.50	1,503.24	105.34	1,504.28	155.25
1,501.18	8.87	1,502.22	49.50	1,503.26	106.47	1,504.30	155.80
1,501.20	9.38	1,502.24	50.49	1,503.28	107.60	1,504.32	156.30
1,501.22	9.91	1,502.26	51.50	1,503.30	108.73	1,504.34	156.77
1,501.24	10.45	1,502.28	52.51	1,503.32	109.85	1,504.36	157.19
1,501.26	11.00	1,502.30	53.53	1,503.34	110.97	1,504.38	157.55
1,501.28	11.57	1,502.32	54.55	1,503.36	112.09	1,504.40	157.86
1,501.30	12.15	1,502.34	55.58	1,503.38	113.21	1,504.42	158.09
1,501.32	12.74	1,502.36	56.61	1,503.40	114.32	1,504.44	158.22
1,501.34	13.34	1,502.38	57.65	1,503.42	115.43	1,504.46	158.22
1,501.36	13.95	1,502.40	58.69	1,503.44	116.54	1,504.48	158.00
1,501.38	14.58	1,502.42	59.74	1,503.46	117.64	1,504.50	156.72
1,501.40	15.21	1,502.44	60.79	1,503.48	118.74		
1,501.42	15.86	1,502.46	61.85	1,503.50	119.84		
1,501.44	16.52	1,502.48	62.91	1,503.52	120.93		
1,501.46	17.19	1,502.50	63.98	1,503.54	122.01		
1,501.48	17.87	1,502.52	65.05	1,503.56	123.09		
1,501.50	18.56	1,502.54	66.13	1,503.58	124.17		
1,501.52	19.26	1,502.56	67.21	1,503.60	125.24		

Stage-Area-Storage for Pond 33P: ExpStrmBasin

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
1,500.50	0	1,503.10	0
1,500.55	0	1,503.15	0
1,500.60	0	1,503.20	0
1,500.65	0	1,503.25	0
1,500.70	0	1,503.30	0
1,500.75	0	1,503.35	0
1,500.80	0	1,503.40	0
1,500.85	0	1,503.45	0
1,500.90	0	1,503.50	0
1,500.95	0	1,503.55	0
1,501.00	0	1,503.60	0
1,501.05	0	1,503.65	0
1,501.10	0	1,503.70	0
1,501.15	0	1,503.75	0
1,501.20	0	1,503.80	0
1,501.25	0	1,503.85	0
1,501.30	0	1,503.90	0
1,501.35	0	1,503.95	0
1,501.40	0	1,504.00	0
1,501.45	0	1,504.05	0
1,501.50	0	1,504.10	0
1,501.55	0	1,504.15	0
1,501.60	0	1,504.20	0
1,501.65	0	1,504.25	0
1,501.70	0	1,504.30	0
1,501.75	0	1,504.35	0
1,501.80	0	1,504.40	0
1,501.85	0	1,504.45	0
1,501.90	0	1,504.50	0
1,501.95	0		
1,502.00	0		
1,502.05	0		
1,502.10	0		
1,502.15	0		
1,502.20	0		
1,502.25	0		
1,502.30	0		
1,502.35	0		
1,502.40	0		
1,502.45	0		
1,502.50	0		
1,502.55	0		
1,502.60	0		
1,502.65	0		
1,502.70	0		
1,502.75	0		
1,502.80	0		
1,502.85	0		
1,502.90	0		
1,502.95	0		
1,503.00	0		
1,503.05	0		

Summary for Pond 42P: Wetland LE-20

Inflow Area = 20.203 ac, 0.00% Impervious, Inflow Depth = 0.17" for 90th Pcnt event

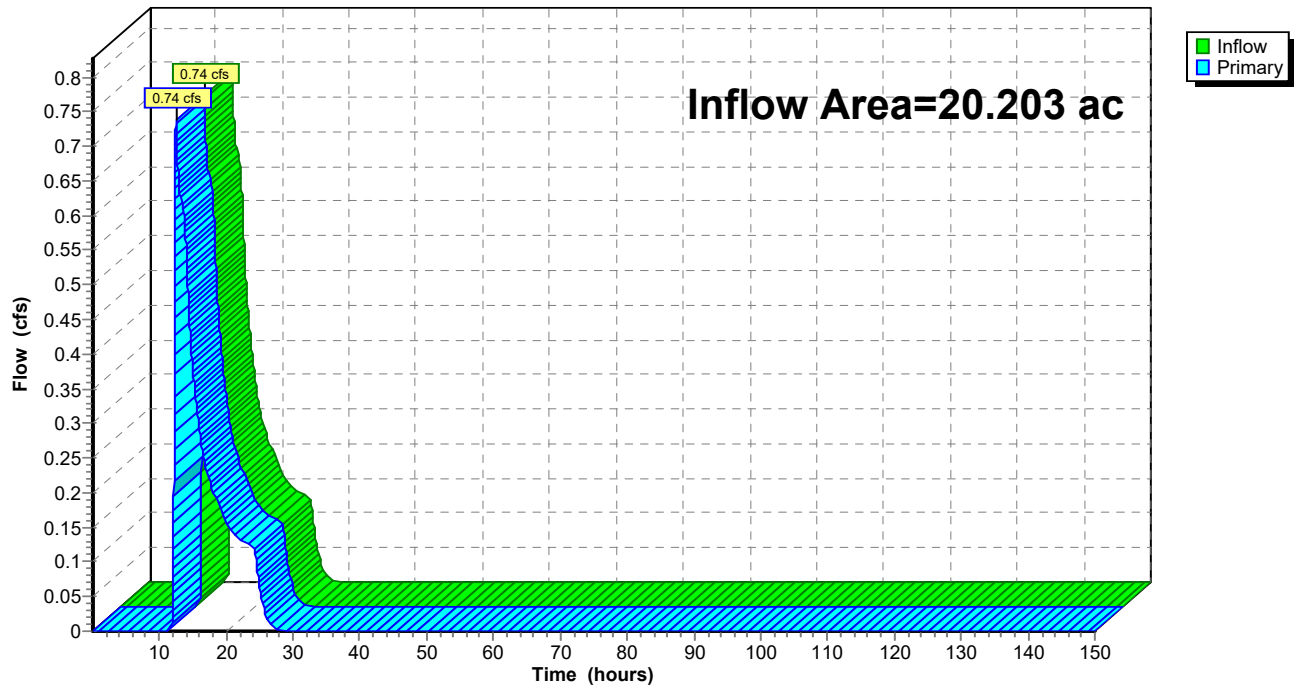
Inflow = 0.74 cfs @ 12.52 hrs, Volume= 0.286 af

Primary = 0.74 cfs @ 12.52 hrs, Volume= 0.286 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Pond 42P: Wetland LE-20

Hydrograph



Riato V6 Final

Prepared by JMT

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Type II 24-hr 90th Pcnt Rainfall=1.40"

Printed 12/3/2021

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Hydrograph for Pond 42P: Wetland LE-20

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.05	0.00		0.00	104.05	0.00		0.00
2.05	0.00		0.00	106.05	0.00		0.00
4.05	0.00		0.00	108.05	0.00		0.00
6.05	0.00		0.00	110.05	0.00		0.00
8.05	0.00		0.00	112.05	0.00		0.00
10.05	0.00		0.00	114.05	0.00		0.00
12.05	0.03		0.03	116.05	0.00		0.00
14.05	0.54		0.54	118.05	0.00		0.00
16.05	0.29		0.29	120.05	0.00		0.00
18.05	0.20		0.20	122.05	0.00		0.00
20.05	0.16		0.16	124.05	0.00		0.00
22.05	0.13		0.13	126.05	0.00		0.00
24.05	0.12		0.12	128.05	0.00		0.00
26.05	0.02		0.02	130.05	0.00		0.00
28.05	0.00		0.00	132.05	0.00		0.00
30.05	0.00		0.00	134.05	0.00		0.00
32.05	0.00		0.00	136.05	0.00		0.00
34.05	0.00		0.00	138.05	0.00		0.00
36.05	0.00		0.00	140.05	0.00		0.00
38.05	0.00		0.00	142.05	0.00		0.00
40.05	0.00		0.00	144.05	0.00		0.00
42.05	0.00		0.00	146.05	0.00		0.00
44.05	0.00		0.00	148.05	0.00		0.00
46.05	0.00		0.00				
48.05	0.00		0.00				
50.05	0.00		0.00				
52.05	0.00		0.00				
54.05	0.00		0.00				
56.05	0.00		0.00				
58.05	0.00		0.00				
60.05	0.00		0.00				
62.05	0.00		0.00				
64.05	0.00		0.00				
66.05	0.00		0.00				
68.05	0.00		0.00				
70.05	0.00		0.00				
72.05	0.00		0.00				
74.05	0.00		0.00				
76.05	0.00		0.00				
78.05	0.00		0.00				
80.05	0.00		0.00				
82.05	0.00		0.00				
84.05	0.00		0.00				
86.05	0.00		0.00				
88.05	0.00		0.00				
90.05	0.00		0.00				
92.05	0.00		0.00				
94.05	0.00		0.00				
96.05	0.00		0.00				
98.05	0.00		0.00				
100.05	0.00		0.00				
102.05	0.00		0.00				

Summary for Pond 43P: Wetland LE-20

Inflow Area = 35.631 ac, 7.72% Impervious, Inflow Depth > 0.71" for 90th Pcnt event

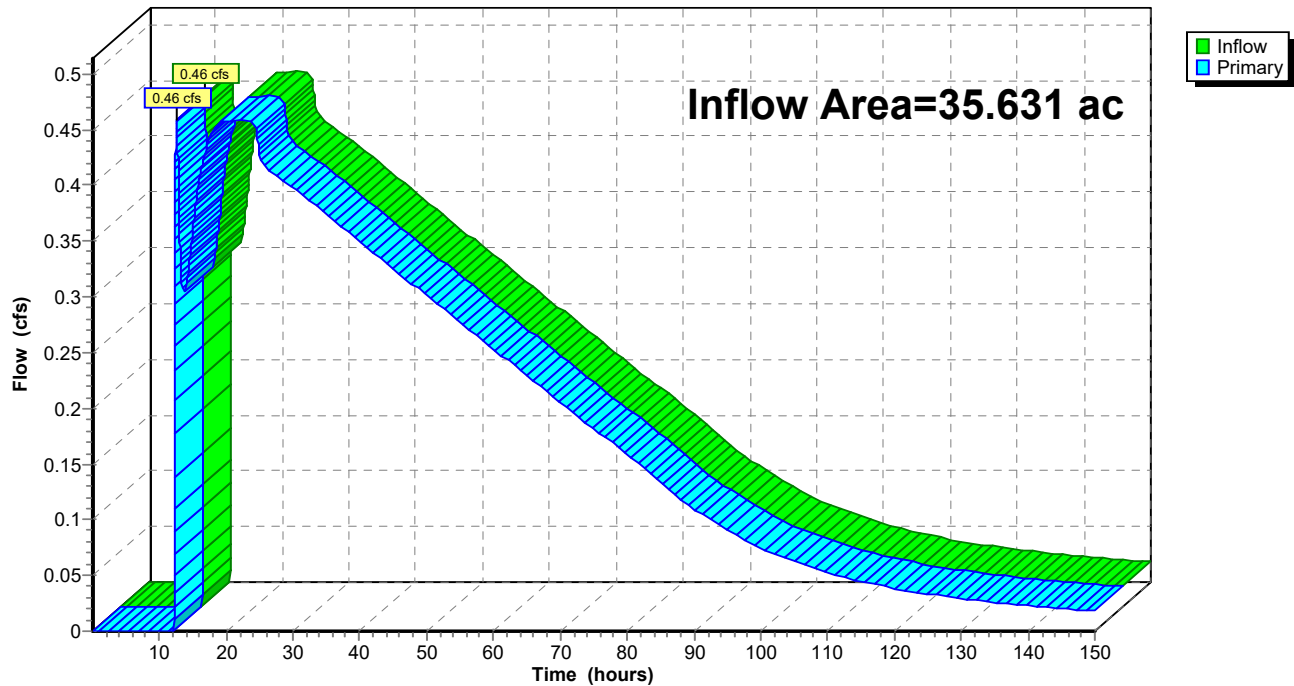
Inflow = 0.46 cfs @ 12.59 hrs, Volume= 2.101 af

Primary = 0.46 cfs @ 12.59 hrs, Volume= 2.101 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Pond 43P: Wetland LE-20

Hydrograph



Riato V6 Final

Prepared by JMT

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Type II 24-hr 90th Pcnt Rainfall=1.40"

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Hydrograph for Pond 43P: Wetland LE-20

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.05	0.00		0.00	104.05	0.06		0.06
2.05	0.00		0.00	106.05	0.06		0.06
4.05	0.00		0.00	108.05	0.06		0.06
6.05	0.00		0.00	110.05	0.05		0.05
8.05	0.00		0.00	112.05	0.05		0.05
10.05	0.00		0.00	114.05	0.05		0.05
12.05	0.00		0.00	116.05	0.04		0.04
14.05	0.31		0.31	118.05	0.04		0.04
16.05	0.41		0.41	120.05	0.04		0.04
18.05	0.45		0.45	122.05	0.04		0.04
20.05	0.46		0.46	124.05	0.03		0.03
22.05	0.46		0.46	126.05	0.03		0.03
24.05	0.46		0.46	128.05	0.03		0.03
26.05	0.42		0.42	130.05	0.03		0.03
28.05	0.41		0.41	132.05	0.03		0.03
30.05	0.40		0.40	134.05	0.03		0.03
32.05	0.39		0.39	136.05	0.03		0.03
34.05	0.38		0.38	138.05	0.02		0.02
36.05	0.37		0.37	140.05	0.02		0.02
38.05	0.36		0.36	142.05	0.02		0.02
40.05	0.35		0.35	144.05	0.02		0.02
42.05	0.34		0.34	146.05	0.02		0.02
44.05	0.33		0.33	148.05	0.02		0.02
46.05	0.32		0.32				
48.05	0.31		0.31				
50.05	0.30		0.30				
52.05	0.29		0.29				
54.05	0.28		0.28				
56.05	0.27		0.27				
58.05	0.26		0.26				
60.05	0.25		0.25				
62.05	0.24		0.24				
64.05	0.23		0.23				
66.05	0.22		0.22				
68.05	0.21		0.21				
70.05	0.21		0.21				
72.05	0.20		0.20				
74.05	0.19		0.19				
76.05	0.18		0.18				
78.05	0.17		0.17				
80.05	0.16		0.16				
82.05	0.15		0.15				
84.05	0.14		0.14				
86.05	0.13		0.13				
88.05	0.12		0.12				
90.05	0.11		0.11				
92.05	0.10		0.10				
94.05	0.09		0.09				
96.05	0.09		0.09				
98.05	0.08		0.08				
100.05	0.07		0.07				
102.05	0.07		0.07				

100-Year 24-Hour Storm

Time span=0.05-150.00 hrs, dt=0.01 hrs, 14996 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment10S: Main Mine Area Runoff Area=667,331 sf 0.00% Impervious Runoff Depth=4.75"
Flow Length=511' Slope=0.3000 '/' Tc=13.4 min CN=77 Runoff=98.40 cfs 6.058 af

Subcatchment11S: Main Mine Area Runoff Area=667,331 sf 17.95% Impervious Runoff Depth=6.82"
Flow Length=511' Slope=0.3000 '/' Tc=1.8 min CN=95 Runoff=182.56 cfs 8.712 af

Subcatchment12S: Expansion Area Runoff Area=596,486 sf 0.00% Impervious Runoff Depth=4.75"
Flow Length=1,245' Tc=34.9 min CN=77 Runoff=51.09 cfs 5.415 af

Subcatchment14S: Expansion Area Runoff Area=596,486 sf 0.00% Impervious Runoff Depth=6.71"
Flow Length=1,245' Tc=7.2 min CN=94 Runoff=137.03 cfs 7.652 af

Subcatchment20S: Upland Area 1 Runoff Area=127,275 sf 0.00% Impervious Runoff Depth=4.75"
Flow Length=942' Tc=33.6 min CN=77 Runoff=11.18 cfs 1.155 af

Subcatchment21S: Reclaimed Area Runoff Area=161,004 sf 0.00% Impervious Runoff Depth=4.75"
Flow Length=1,394' Tc=48.9 min CN=77 Runoff=10.89 cfs 1.462 af

Subcatchment23S: Upland Area 2 Runoff Area=112,373 sf 0.00% Impervious Runoff Depth=4.75"
Flow Length=832' Tc=33.6 min CN=77 Runoff=9.87 cfs 1.020 af

Subcatchment24S: Upland Area 3 Runoff Area=206,326 sf 0.00% Impervious Runoff Depth=4.75"
Flow Length=1,145' Tc=44.9 min CN=77 Runoff=14.88 cfs 1.873 af

Subcatchment25S: Upland Area 4 Runoff Area=441,065 sf 0.00% Impervious Runoff Depth=4.75"
Flow Length=2,165' Tc=113.7 min CN=77 Runoff=15.90 cfs 4.004 af

Subcatchment26S: Upland Area 5 Runoff Area=128,001 sf 0.00% Impervious Runoff Depth=4.75"
Flow Length=1,630' Tc=63.9 min CN=77 Runoff=7.11 cfs 1.162 af

Subcatchment27S: Upland Area 6 Runoff Area=120,292 sf 0.00% Impervious Runoff Depth=4.75"
Flow Length=1,012' Tc=36.4 min CN=77 Runoff=10.00 cfs 1.092 af

Reach 5R: Expan Area Ditch Avg. Flow Depth=1.95' Max Vel=10.11 fps Inflow=137.03 cfs 7.652 af
n=0.044 L=576.0' S=0.0747 '/' Capacity=347.14 cfs Outflow=135.78 cfs 7.652 af

Reach 16R: Road Ditch Avg. Flow Depth=1.65' Max Vel=6.28 fps Inflow=65.26 cfs 16.151 af
n=0.040 L=67.6' S=0.0286 '/' Capacity=97.69 cfs Outflow=65.25 cfs 16.151 af

Reach 29R: Spillway Avg. Flow Depth=0.32' Max Vel=8.51 fps Inflow=9.85 cfs 1.020 af
n=0.044 L=211.0' S=0.3791 '/' Capacity=323.65 cfs Outflow=9.85 cfs 1.020 af

Reach 33R: Reclaim Ditch Avg. Flow Depth=0.75' Max Vel=7.91 fps Inflow=20.93 cfs 2.617 af
n=0.040 L=275.0' S=0.1167 '/' Capacity=36.84 cfs Outflow=20.92 cfs 2.617 af

Reach 34R: Div Ditch 2 Avg. Flow Depth=0.53' Max Vel=7.36 fps Inflow=9.87 cfs 1.020 af
n=0.035 L=324.0' S=0.1080 '/' Capacity=30.48 cfs Outflow=9.85 cfs 1.020 af

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Type II 24-hr 100 year Rainfall=7.42"

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Reach 35R: Div Ditch 1	Avg. Flow Depth=0.58' Max Vel=7.48 fps Inflow=11.18 cfs 1.155 af n=0.035 L=442.0' S=0.1018 '/' Capacity=29.59 cfs Outflow=11.15 cfs 1.155 af
Reach 36R: Div Ditch 5	Avg. Flow Depth=0.82' Max Vel=4.35 fps Inflow=10.00 cfs 1.092 af n=0.035 L=206.0' S=0.0243 '/' Capacity=14.45 cfs Outflow=9.99 cfs 1.092 af
Reach 37R: Div Ditch 3	Avg. Flow Depth=0.71' Max Vel=8.28 fps Inflow=15.90 cfs 4.004 af n=0.035 L=592.0' S=0.1014 '/' Capacity=29.53 cfs Outflow=15.88 cfs 4.004 af
Reach 38R: Div Ditch 4	Avg. Flow Depth=0.44' Max Vel=6.58 fps Inflow=7.11 cfs 1.162 af n=0.035 L=336.0' S=0.1042 '/' Capacity=29.93 cfs Outflow=7.11 cfs 1.162 af
Reach 39R: Culvert Outlet Apron	Avg. Flow Depth=1.51' Max Vel=1.76 fps Inflow=84.01 cfs 18.767 af n=0.050 L=22.0' S=0.0023 '/' Capacity=263.34 cfs Outflow=84.01 cfs 18.767 af
Reach 40R: Emergency Spillway	Inflow=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af
Pond 13P: Pre-Dvel Disch	Inflow=126.09 cfs 11.473 af Primary=126.09 cfs 11.473 af
Pond 14P: North Bay	Peak Elev=1,456.68' Storage=9.851 af Inflow=289.09 cfs 16.363 af Outflow=101.70 cfs 16.178 af
Pond 15P: South Bay	Peak Elev=1,455.99' Storage=2.743 af Inflow=101.70 cfs 16.178 af Primary=65.26 cfs 16.151 af Secondary=0.00 cfs 0.000 af Outflow=65.26 cfs 16.151 af
Pond 22P: Road Crossing Culverts w/	Peak Elev=1,450.51' Storage=1,110 cf Inflow=84.02 cfs 18.768 af 30.0" Round Culvert x 3.00 n=0.012 L=64.5' S=0.0284 '/' Outflow=84.01 cfs 18.767 af
Pond 30P: Sump	Peak Elev=1,468.04' Inflow=24.00 cfs 2.893 af Outflow=24.00 cfs 2.893 af
Pond 32P: Intermittent Drng	Inflow=38.61 cfs 7.989 af Primary=38.61 cfs 7.989 af
Pond 33P: ExpStrmBasin	Peak Elev=1,503.83' Inflow=137.03 cfs 7.652 af 36.0" Round Culvert x 3.00 n=0.012 L=100.0' S=0.0050 '/' Outflow=137.03 cfs 7.652 af
Pond 42P: Wetland LE-20	Inflow=38.61 cfs 7.989 af Primary=38.61 cfs 7.989 af
Pond 43P: Wetland LE-20	Inflow=84.01 cfs 18.767 af Primary=84.01 cfs 18.767 af

Total Runoff Area = 87.786 ac Runoff Volume = 39.604 af Average Runoff Depth = 5.41"
96.87% Pervious = 85.036 ac 3.13% Impervious = 2.750 ac

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Type II 24-hr 100 year Rainfall=7.42"

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Summary for Subcatchment 10S: Main Mine Area Pre-Dvel

Includes pond surface area

Runoff = 98.40 cfs @ 12.05 hrs, Volume= 6.058 af, Depth= 4.75"

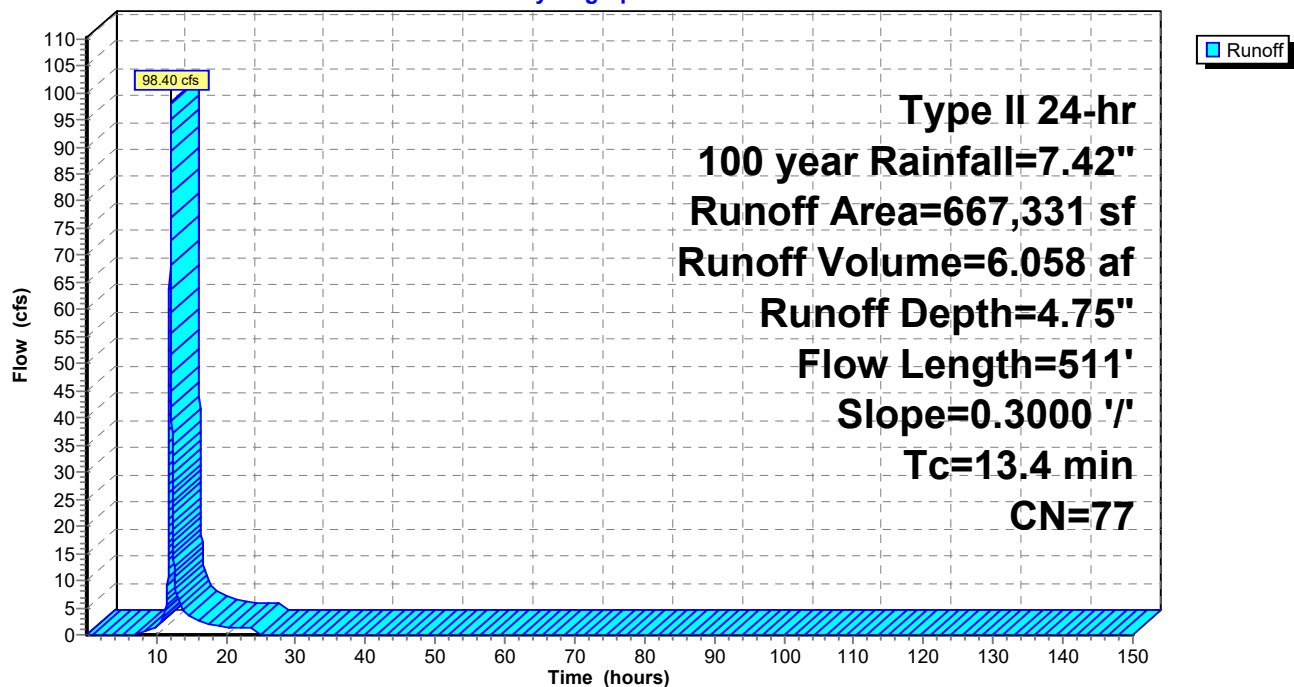
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 year Rainfall=7.42"

Area (sf)	CN	Description
667,331	77	Woods, Good, HSG D
667,331		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	100	0.3000	0.20		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.40"
5.0	411	0.3000	1.37		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
13.4	511	Total			

Subcatchment 10S: Main Mine Area Pre-Dvel

Hydrograph



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Type II 24-hr 100 year Rainfall=7.42"

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Hydrograph for Subcatchment 10S: Main Mine Area Pre-Dvel

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.05	0.00	0.00	0.00	104.05	7.42	4.75	0.00
2.05	0.17	0.00	0.00	106.05	7.42	4.75	0.00
4.05	0.36	0.00	0.00	108.05	7.42	4.75	0.00
6.05	0.60	0.00	0.00	110.05	7.42	4.75	0.00
8.05	0.90	0.03	0.39	112.05	7.42	4.75	0.00
10.05	1.36	0.15	1.48	114.05	7.42	4.75	0.00
12.05	4.99	2.62	98.40	116.05	7.42	4.75	0.00
14.05	6.10	3.56	4.02	118.05	7.42	4.75	0.00
16.05	6.54	3.95	2.45	120.05	7.42	4.75	0.00
18.05	6.84	4.22	1.89	122.05	7.42	4.75	0.00
20.05	7.07	4.43	1.38	124.05	7.42	4.75	0.00
22.05	7.25	4.59	1.25	126.05	7.42	4.75	0.00
24.05	7.42	4.75	1.14	128.05	7.42	4.75	0.00
26.05	7.42	4.75	0.00	130.05	7.42	4.75	0.00
28.05	7.42	4.75	0.00	132.05	7.42	4.75	0.00
30.05	7.42	4.75	0.00	134.05	7.42	4.75	0.00
32.05	7.42	4.75	0.00	136.05	7.42	4.75	0.00
34.05	7.42	4.75	0.00	138.05	7.42	4.75	0.00
36.05	7.42	4.75	0.00	140.05	7.42	4.75	0.00
38.05	7.42	4.75	0.00	142.05	7.42	4.75	0.00
40.05	7.42	4.75	0.00	144.05	7.42	4.75	0.00
42.05	7.42	4.75	0.00	146.05	7.42	4.75	0.00
44.05	7.42	4.75	0.00	148.05	7.42	4.75	0.00
46.05	7.42	4.75	0.00				
48.05	7.42	4.75	0.00				
50.05	7.42	4.75	0.00				
52.05	7.42	4.75	0.00				
54.05	7.42	4.75	0.00				
56.05	7.42	4.75	0.00				
58.05	7.42	4.75	0.00				
60.05	7.42	4.75	0.00				
62.05	7.42	4.75	0.00				
64.05	7.42	4.75	0.00				
66.05	7.42	4.75	0.00				
68.05	7.42	4.75	0.00				
70.05	7.42	4.75	0.00				
72.05	7.42	4.75	0.00				
74.05	7.42	4.75	0.00				
76.05	7.42	4.75	0.00				
78.05	7.42	4.75	0.00				
80.05	7.42	4.75	0.00				
82.05	7.42	4.75	0.00				
84.05	7.42	4.75	0.00				
86.05	7.42	4.75	0.00				
88.05	7.42	4.75	0.00				
90.05	7.42	4.75	0.00				
92.05	7.42	4.75	0.00				
94.05	7.42	4.75	0.00				
96.05	7.42	4.75	0.00				
98.05	7.42	4.75	0.00				
100.05	7.42	4.75	0.00				
102.05	7.42	4.75	0.00				

Summary for Subcatchment 11S: Main Mine Area

Includes pond surface area

Runoff = 182.56 cfs @ 11.92 hrs, Volume= 8.712 af, Depth= 6.82"

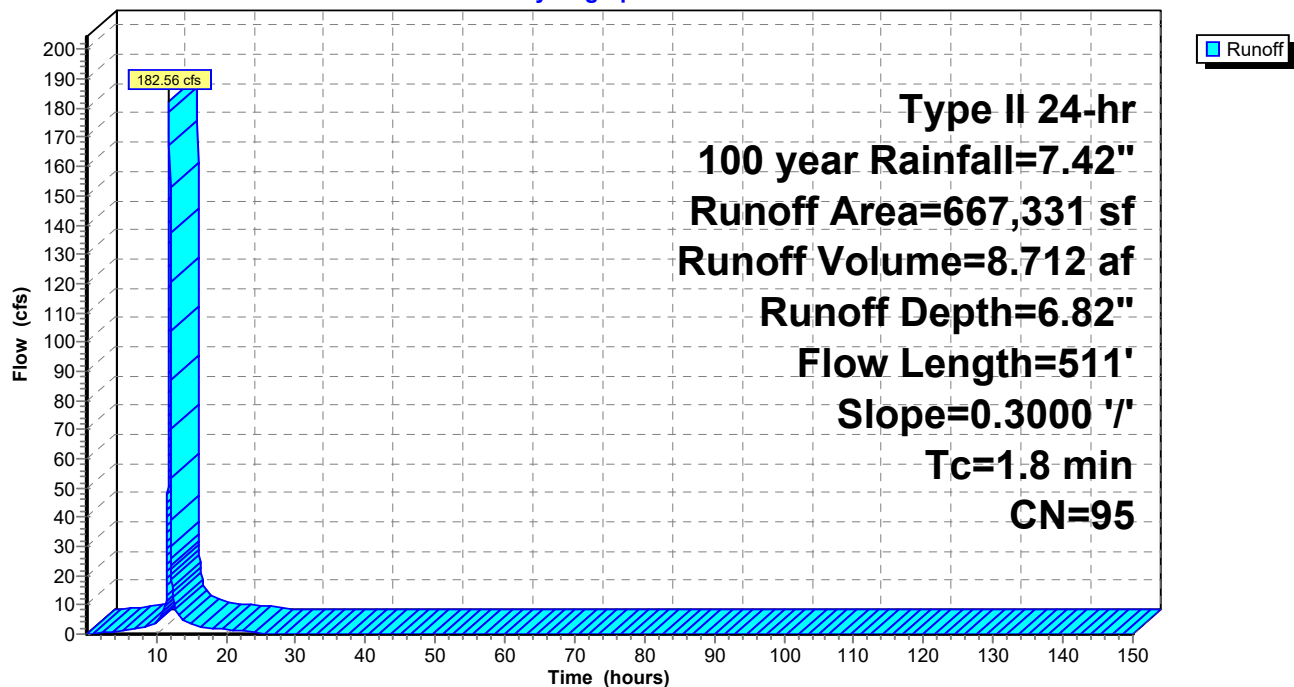
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 year Rainfall=7.42"

Area (sf)	CN	Description
547,548	94	Newly graded area, HSG D
* 119,783	100	Water Surface, HSG A
667,331	95	Weighted Average
547,548		82.05% Pervious Area
119,783		17.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.3000	3.52		Sheet Flow, Smooth surfaces n= 0.011 P2= 2.40"
1.3	411	0.3000	5.48		Shallow Concentrated Flow, Nearly Bare & Untilled Kv= 10.0 fps
1.8	511	Total			

Subcatchment 11S: Main Mine Area

Hydrograph



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Type II 24-hr 100 year Rainfall=7.42"

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Hydrograph for Subcatchment 11S: Main Mine Area

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.05	0.00	0.00	0.00	104.05	7.42	6.82	0.00
2.05	0.17	0.01	0.27	106.05	7.42	6.82	0.00
4.05	0.36	0.08	0.88	108.05	7.42	6.82	0.00
6.05	0.60	0.24	1.52	110.05	7.42	6.82	0.00
8.05	0.90	0.48	2.14	112.05	7.42	6.82	0.00
10.05	1.36	0.88	4.24	114.05	7.42	6.82	0.00
12.05	4.99	4.41	23.57	116.05	7.42	6.82	0.00
14.05	6.10	5.51	4.20	118.05	7.42	6.82	0.00
16.05	6.54	5.95	2.62	120.05	7.42	6.82	0.00
18.05	6.84	6.25	2.05	122.05	7.42	6.82	0.00
20.05	7.07	6.47	1.48	124.05	7.42	6.82	0.00
22.05	7.25	6.66	1.37	126.05	7.42	6.82	0.00
24.05	7.42	6.82	0.09	128.05	7.42	6.82	0.00
26.05	7.42	6.82	0.00	130.05	7.42	6.82	0.00
28.05	7.42	6.82	0.00	132.05	7.42	6.82	0.00
30.05	7.42	6.82	0.00	134.05	7.42	6.82	0.00
32.05	7.42	6.82	0.00	136.05	7.42	6.82	0.00
34.05	7.42	6.82	0.00	138.05	7.42	6.82	0.00
36.05	7.42	6.82	0.00	140.05	7.42	6.82	0.00
38.05	7.42	6.82	0.00	142.05	7.42	6.82	0.00
40.05	7.42	6.82	0.00	144.05	7.42	6.82	0.00
42.05	7.42	6.82	0.00	146.05	7.42	6.82	0.00
44.05	7.42	6.82	0.00	148.05	7.42	6.82	0.00
46.05	7.42	6.82	0.00				
48.05	7.42	6.82	0.00				
50.05	7.42	6.82	0.00				
52.05	7.42	6.82	0.00				
54.05	7.42	6.82	0.00				
56.05	7.42	6.82	0.00				
58.05	7.42	6.82	0.00				
60.05	7.42	6.82	0.00				
62.05	7.42	6.82	0.00				
64.05	7.42	6.82	0.00				
66.05	7.42	6.82	0.00				
68.05	7.42	6.82	0.00				
70.05	7.42	6.82	0.00				
72.05	7.42	6.82	0.00				
74.05	7.42	6.82	0.00				
76.05	7.42	6.82	0.00				
78.05	7.42	6.82	0.00				
80.05	7.42	6.82	0.00				
82.05	7.42	6.82	0.00				
84.05	7.42	6.82	0.00				
86.05	7.42	6.82	0.00				
88.05	7.42	6.82	0.00				
90.05	7.42	6.82	0.00				
92.05	7.42	6.82	0.00				
94.05	7.42	6.82	0.00				
96.05	7.42	6.82	0.00				
98.05	7.42	6.82	0.00				
100.05	7.42	6.82	0.00				
102.05	7.42	6.82	0.00				

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Type II 24-hr 100 year Rainfall=7.42"

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Summary for Subcatchment 12S: Expansion Area Pre-Dvel

Runoff = 51.09 cfs @ 12.29 hrs, Volume= 5.415 af, Depth= 4.75"

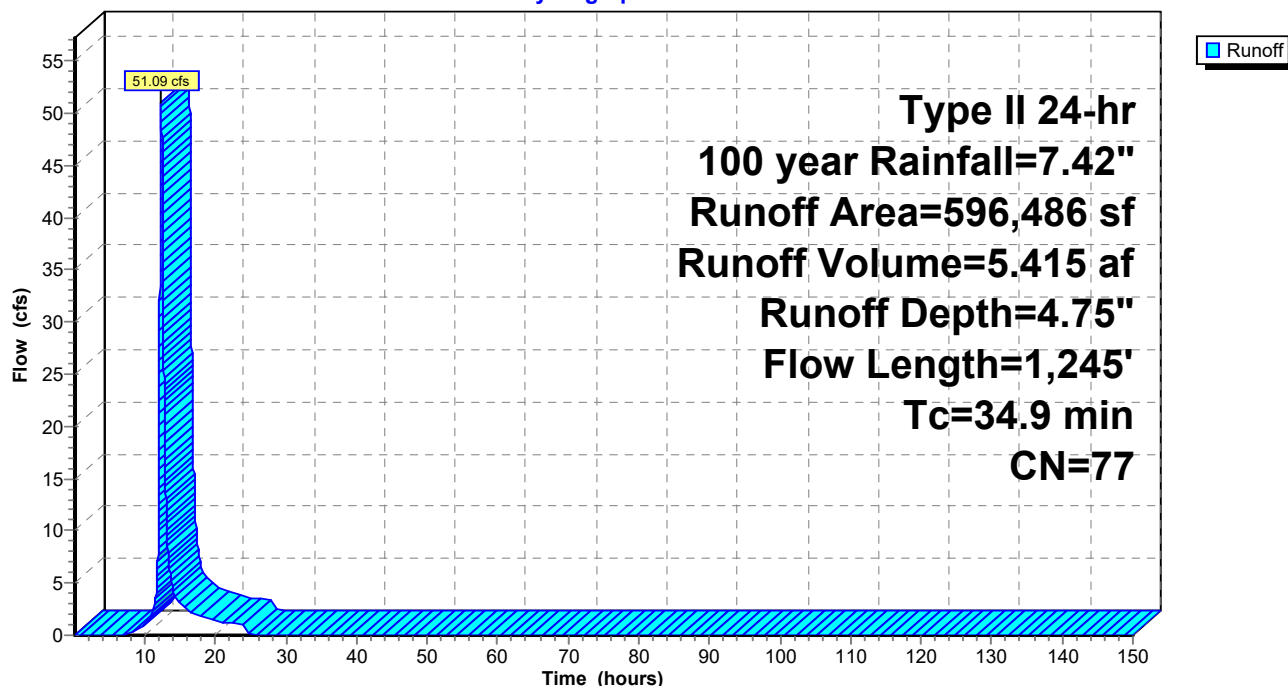
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 year Rainfall=7.42"

Area (sf)	CN	Description
596,486	77	Woods, Good, HSG D
596,486		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	100	0.3100	0.20		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.40"
1.2	100	0.3100	1.39		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
25.4	1,045	0.0750	0.68		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
34.9	1,245	Total			

Subcatchment 12S: Expansion Area Pre-Dvel

Hydrograph



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Type II 24-hr 100 year Rainfall=7.42"

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Hydrograph for Subcatchment 12S: Expansion Area Pre-Dvel

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.05	0.00	0.00	0.00	104.05	7.42	4.75	0.00
2.05	0.17	0.00	0.00	106.05	7.42	4.75	0.00
4.05	0.36	0.00	0.00	108.05	7.42	4.75	0.00
6.05	0.60	0.00	0.00	110.05	7.42	4.75	0.00
8.05	0.90	0.03	0.28	112.05	7.42	4.75	0.00
10.05	1.36	0.15	1.08	114.05	7.42	4.75	0.00
12.05	4.99	2.62	26.42	116.05	7.42	4.75	0.00
14.05	6.10	3.56	4.27	118.05	7.42	4.75	0.00
16.05	6.54	3.95	2.40	120.05	7.42	4.75	0.00
18.05	6.84	4.22	1.76	122.05	7.42	4.75	0.00
20.05	7.07	4.43	1.31	124.05	7.42	4.75	0.00
22.05	7.25	4.59	1.13	126.05	7.42	4.75	0.00
24.05	7.42	4.75	1.04	128.05	7.42	4.75	0.00
26.05	7.42	4.75	0.00	130.05	7.42	4.75	0.00
28.05	7.42	4.75	0.00	132.05	7.42	4.75	0.00
30.05	7.42	4.75	0.00	134.05	7.42	4.75	0.00
32.05	7.42	4.75	0.00	136.05	7.42	4.75	0.00
34.05	7.42	4.75	0.00	138.05	7.42	4.75	0.00
36.05	7.42	4.75	0.00	140.05	7.42	4.75	0.00
38.05	7.42	4.75	0.00	142.05	7.42	4.75	0.00
40.05	7.42	4.75	0.00	144.05	7.42	4.75	0.00
42.05	7.42	4.75	0.00	146.05	7.42	4.75	0.00
44.05	7.42	4.75	0.00	148.05	7.42	4.75	0.00
46.05	7.42	4.75	0.00				
48.05	7.42	4.75	0.00				
50.05	7.42	4.75	0.00				
52.05	7.42	4.75	0.00				
54.05	7.42	4.75	0.00				
56.05	7.42	4.75	0.00				
58.05	7.42	4.75	0.00				
60.05	7.42	4.75	0.00				
62.05	7.42	4.75	0.00				
64.05	7.42	4.75	0.00				
66.05	7.42	4.75	0.00				
68.05	7.42	4.75	0.00				
70.05	7.42	4.75	0.00				
72.05	7.42	4.75	0.00				
74.05	7.42	4.75	0.00				
76.05	7.42	4.75	0.00				
78.05	7.42	4.75	0.00				
80.05	7.42	4.75	0.00				
82.05	7.42	4.75	0.00				
84.05	7.42	4.75	0.00				
86.05	7.42	4.75	0.00				
88.05	7.42	4.75	0.00				
90.05	7.42	4.75	0.00				
92.05	7.42	4.75	0.00				
94.05	7.42	4.75	0.00				
96.05	7.42	4.75	0.00				
98.05	7.42	4.75	0.00				
100.05	7.42	4.75	0.00				
102.05	7.42	4.75	0.00				

Summary for Subcatchment 14S: Expansion Area

Runoff = 137.03 cfs @ 11.98 hrs, Volume= 7.652 af, Depth= 6.71"

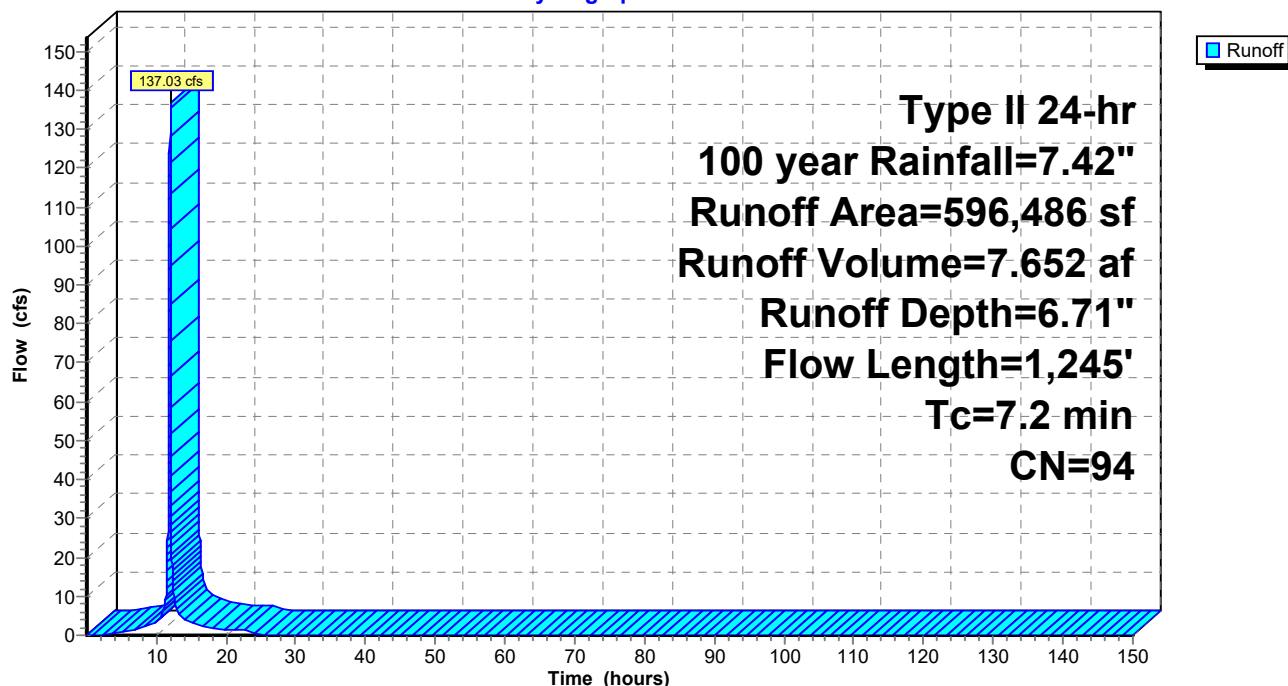
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 year Rainfall=7.42"

Area (sf)	CN	Description
596,486	94	Newly graded area, HSG D
596,486		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.3100	3.57		Sheet Flow, Smooth surfaces n= 0.011 P2= 2.40"
0.3	100	0.3100	5.57		Shallow Concentrated Flow, Nearly Bare & Untilled Kv= 10.0 fps
6.4	1,045	0.0750	2.74		Shallow Concentrated Flow, Nearly Bare & Untilled Kv= 10.0 fps
7.2	1,245	Total			

Subcatchment 14S: Expansion Area

Hydrograph



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Type II 24-hr 100 year Rainfall=7.42"

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Hydrograph for Subcatchment 14S: Expansion Area

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.05	0.00	0.00	0.00	104.05	7.42	6.71	0.00
2.05	0.17	0.00	0.11	106.05	7.42	6.71	0.00
4.05	0.36	0.06	0.64	108.05	7.42	6.71	0.00
6.05	0.60	0.20	1.21	110.05	7.42	6.71	0.00
8.05	0.90	0.42	1.77	112.05	7.42	6.71	0.00
10.05	1.36	0.81	3.51	114.05	7.42	6.71	0.00
12.05	4.99	4.30	94.74	116.05	7.42	6.71	0.00
14.05	6.10	5.39	3.88	118.05	7.42	6.71	0.00
16.05	6.54	5.83	2.38	120.05	7.42	6.71	0.00
18.05	6.84	6.13	1.85	122.05	7.42	6.71	0.00
20.05	7.07	6.36	1.34	124.05	7.42	6.71	0.00
22.05	7.25	6.54	1.22	126.05	7.42	6.71	0.00
24.05	7.42	6.71	1.04	128.05	7.42	6.71	0.00
26.05	7.42	6.71	0.00	130.05	7.42	6.71	0.00
28.05	7.42	6.71	0.00	132.05	7.42	6.71	0.00
30.05	7.42	6.71	0.00	134.05	7.42	6.71	0.00
32.05	7.42	6.71	0.00	136.05	7.42	6.71	0.00
34.05	7.42	6.71	0.00	138.05	7.42	6.71	0.00
36.05	7.42	6.71	0.00	140.05	7.42	6.71	0.00
38.05	7.42	6.71	0.00	142.05	7.42	6.71	0.00
40.05	7.42	6.71	0.00	144.05	7.42	6.71	0.00
42.05	7.42	6.71	0.00	146.05	7.42	6.71	0.00
44.05	7.42	6.71	0.00	148.05	7.42	6.71	0.00
46.05	7.42	6.71	0.00				
48.05	7.42	6.71	0.00				
50.05	7.42	6.71	0.00				
52.05	7.42	6.71	0.00				
54.05	7.42	6.71	0.00				
56.05	7.42	6.71	0.00				
58.05	7.42	6.71	0.00				
60.05	7.42	6.71	0.00				
62.05	7.42	6.71	0.00				
64.05	7.42	6.71	0.00				
66.05	7.42	6.71	0.00				
68.05	7.42	6.71	0.00				
70.05	7.42	6.71	0.00				
72.05	7.42	6.71	0.00				
74.05	7.42	6.71	0.00				
76.05	7.42	6.71	0.00				
78.05	7.42	6.71	0.00				
80.05	7.42	6.71	0.00				
82.05	7.42	6.71	0.00				
84.05	7.42	6.71	0.00				
86.05	7.42	6.71	0.00				
88.05	7.42	6.71	0.00				
90.05	7.42	6.71	0.00				
92.05	7.42	6.71	0.00				
94.05	7.42	6.71	0.00				
96.05	7.42	6.71	0.00				
98.05	7.42	6.71	0.00				
100.05	7.42	6.71	0.00				
102.05	7.42	6.71	0.00				

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Type II 24-hr 100 year Rainfall=7.42"

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Summary for Subcatchment 20S: Upland Area 1

Includes pond surface area

Runoff = 11.18 cfs @ 12.28 hrs, Volume= 1.155 af, Depth= 4.75"

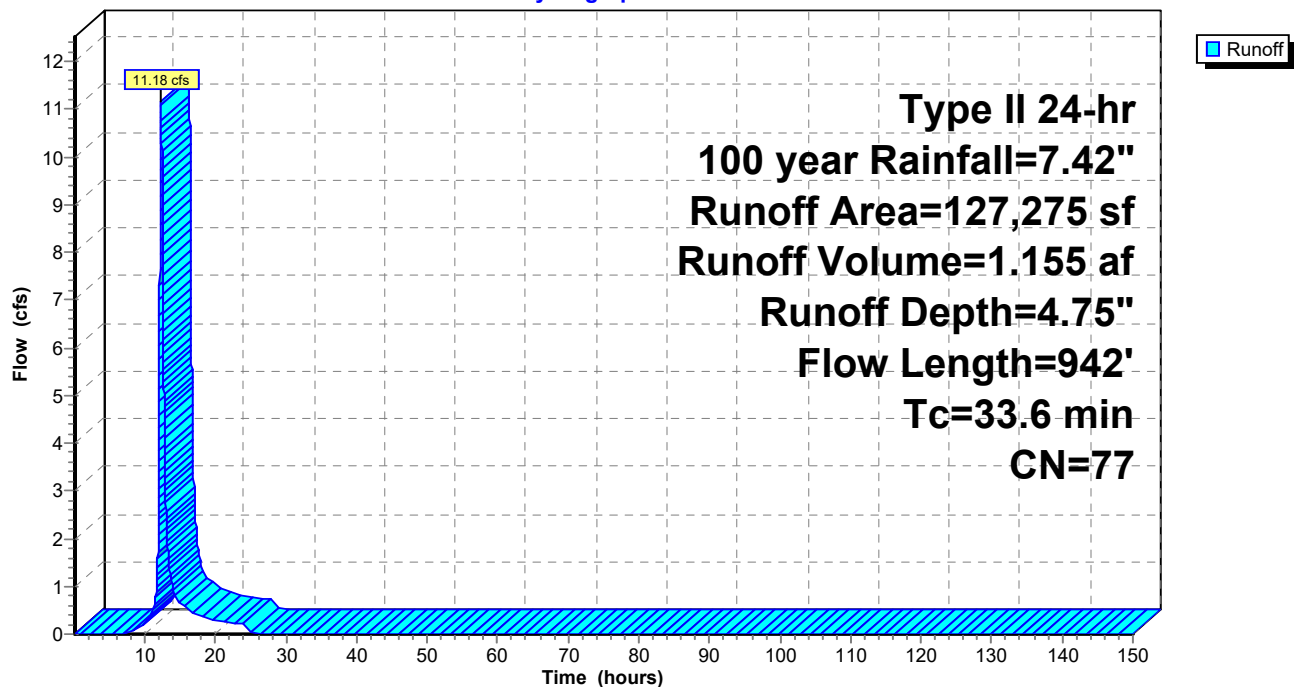
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 year Rainfall=7.42"

Area (sf)	CN	Description
127,275	77	Woods, Good, HSG D
127,275		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.8	100	0.0200	0.07		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.40"
8.4	399	0.1000	0.79		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
0.4	443	0.1020	16.46	65.85	Channel Flow, Area= 4.0 sf Perim= 6.0' r= 0.67' n= 0.022 Earth, clean & straight
33.6	942	Total			

Subcatchment 20S: Upland Area 1

Hydrograph



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Type II 24-hr 100 year Rainfall=7.42"

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Hydrograph for Subcatchment 20S: Upland Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.05	0.00	0.00	0.00	104.05	7.42	4.75	0.00
2.05	0.17	0.00	0.00	106.05	7.42	4.75	0.00
4.05	0.36	0.00	0.00	108.05	7.42	4.75	0.00
6.05	0.60	0.00	0.00	110.05	7.42	4.75	0.00
8.05	0.90	0.03	0.06	112.05	7.42	4.75	0.00
10.05	1.36	0.15	0.23	114.05	7.42	4.75	0.00
12.05	4.99	2.62	6.05	116.05	7.42	4.75	0.00
14.05	6.10	3.56	0.90	118.05	7.42	4.75	0.00
16.05	6.54	3.95	0.51	120.05	7.42	4.75	0.00
18.05	6.84	4.22	0.37	122.05	7.42	4.75	0.00
20.05	7.07	4.43	0.28	124.05	7.42	4.75	0.00
22.05	7.25	4.59	0.24	126.05	7.42	4.75	0.00
24.05	7.42	4.75	0.22	128.05	7.42	4.75	0.00
26.05	7.42	4.75	0.00	130.05	7.42	4.75	0.00
28.05	7.42	4.75	0.00	132.05	7.42	4.75	0.00
30.05	7.42	4.75	0.00	134.05	7.42	4.75	0.00
32.05	7.42	4.75	0.00	136.05	7.42	4.75	0.00
34.05	7.42	4.75	0.00	138.05	7.42	4.75	0.00
36.05	7.42	4.75	0.00	140.05	7.42	4.75	0.00
38.05	7.42	4.75	0.00	142.05	7.42	4.75	0.00
40.05	7.42	4.75	0.00	144.05	7.42	4.75	0.00
42.05	7.42	4.75	0.00	146.05	7.42	4.75	0.00
44.05	7.42	4.75	0.00	148.05	7.42	4.75	0.00
46.05	7.42	4.75	0.00				
48.05	7.42	4.75	0.00				
50.05	7.42	4.75	0.00				
52.05	7.42	4.75	0.00				
54.05	7.42	4.75	0.00				
56.05	7.42	4.75	0.00				
58.05	7.42	4.75	0.00				
60.05	7.42	4.75	0.00				
62.05	7.42	4.75	0.00				
64.05	7.42	4.75	0.00				
66.05	7.42	4.75	0.00				
68.05	7.42	4.75	0.00				
70.05	7.42	4.75	0.00				
72.05	7.42	4.75	0.00				
74.05	7.42	4.75	0.00				
76.05	7.42	4.75	0.00				
78.05	7.42	4.75	0.00				
80.05	7.42	4.75	0.00				
82.05	7.42	4.75	0.00				
84.05	7.42	4.75	0.00				
86.05	7.42	4.75	0.00				
88.05	7.42	4.75	0.00				
90.05	7.42	4.75	0.00				
92.05	7.42	4.75	0.00				
94.05	7.42	4.75	0.00				
96.05	7.42	4.75	0.00				
98.05	7.42	4.75	0.00				
100.05	7.42	4.75	0.00				
102.05	7.42	4.75	0.00				

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Type II 24-hr 100 year Rainfall=7.42"

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Summary for Subcatchment 21S: Reclaimed Area

Includes pond surface area

Runoff = 10.89 cfs @ 12.45 hrs, Volume= 1.462 af, Depth= 4.75"

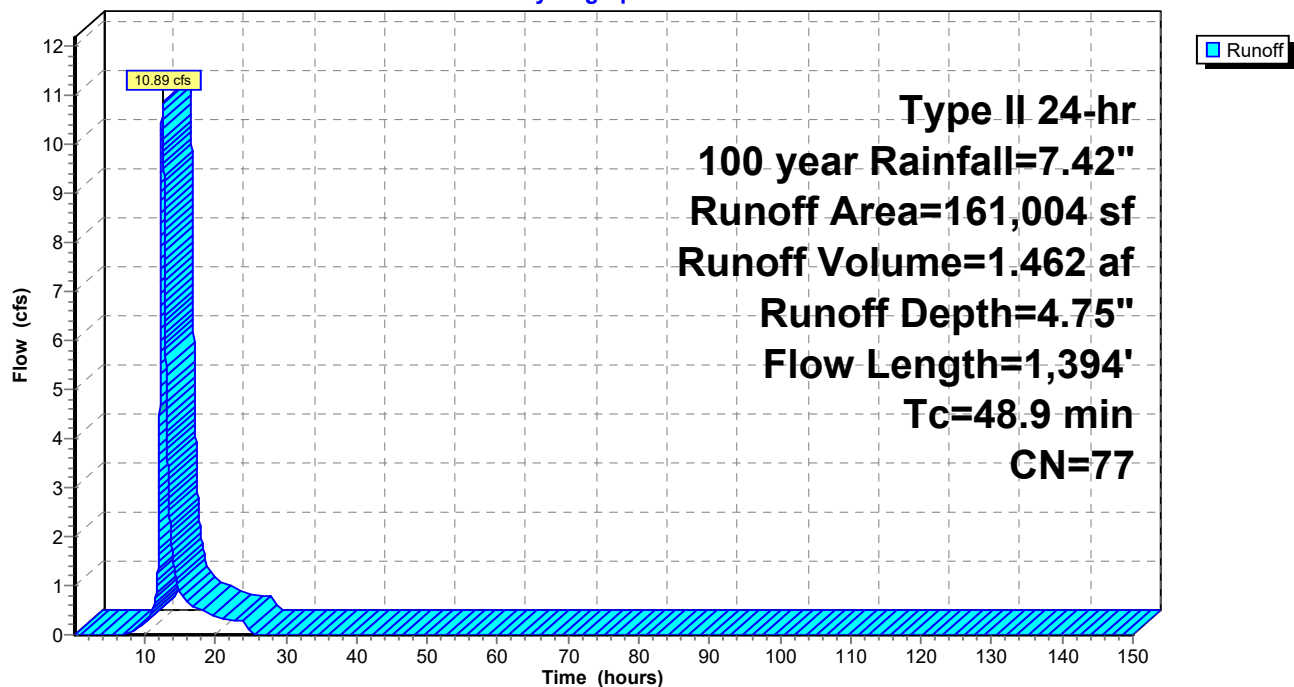
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 year Rainfall=7.42"

Area (sf)	CN	Description
161,004	77	Woods, Good, HSG D
161,004		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.8	100	0.0200	0.07		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.40"
24.1	1,294	0.1280	0.89		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
48.9	1,394	Total			

Subcatchment 21S: Reclaimed Area

Hydrograph



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Type II 24-hr 100 year Rainfall=7.42"

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Hydrograph for Subcatchment 21S: Reclaimed Area

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.05	0.00	0.00	0.00	104.05	7.42	4.75	0.00
2.05	0.17	0.00	0.00	106.05	7.42	4.75	0.00
4.05	0.36	0.00	0.00	108.05	7.42	4.75	0.00
6.05	0.60	0.00	0.00	110.05	7.42	4.75	0.00
8.05	0.90	0.03	0.06	112.05	7.42	4.75	0.00
10.05	1.36	0.15	0.26	114.05	7.42	4.75	0.00
12.05	4.99	2.62	3.69	116.05	7.42	4.75	0.00
14.05	6.10	3.56	1.43	118.05	7.42	4.75	0.00
16.05	6.54	3.95	0.68	120.05	7.42	4.75	0.00
18.05	6.84	4.22	0.49	122.05	7.42	4.75	0.00
20.05	7.07	4.43	0.37	124.05	7.42	4.75	0.00
22.05	7.25	4.59	0.31	126.05	7.42	4.75	0.00
24.05	7.42	4.75	0.28	128.05	7.42	4.75	0.00
26.05	7.42	4.75	0.00	130.05	7.42	4.75	0.00
28.05	7.42	4.75	0.00	132.05	7.42	4.75	0.00
30.05	7.42	4.75	0.00	134.05	7.42	4.75	0.00
32.05	7.42	4.75	0.00	136.05	7.42	4.75	0.00
34.05	7.42	4.75	0.00	138.05	7.42	4.75	0.00
36.05	7.42	4.75	0.00	140.05	7.42	4.75	0.00
38.05	7.42	4.75	0.00	142.05	7.42	4.75	0.00
40.05	7.42	4.75	0.00	144.05	7.42	4.75	0.00
42.05	7.42	4.75	0.00	146.05	7.42	4.75	0.00
44.05	7.42	4.75	0.00	148.05	7.42	4.75	0.00
46.05	7.42	4.75	0.00				
48.05	7.42	4.75	0.00				
50.05	7.42	4.75	0.00				
52.05	7.42	4.75	0.00				
54.05	7.42	4.75	0.00				
56.05	7.42	4.75	0.00				
58.05	7.42	4.75	0.00				
60.05	7.42	4.75	0.00				
62.05	7.42	4.75	0.00				
64.05	7.42	4.75	0.00				
66.05	7.42	4.75	0.00				
68.05	7.42	4.75	0.00				
70.05	7.42	4.75	0.00				
72.05	7.42	4.75	0.00				
74.05	7.42	4.75	0.00				
76.05	7.42	4.75	0.00				
78.05	7.42	4.75	0.00				
80.05	7.42	4.75	0.00				
82.05	7.42	4.75	0.00				
84.05	7.42	4.75	0.00				
86.05	7.42	4.75	0.00				
88.05	7.42	4.75	0.00				
90.05	7.42	4.75	0.00				
92.05	7.42	4.75	0.00				
94.05	7.42	4.75	0.00				
96.05	7.42	4.75	0.00				
98.05	7.42	4.75	0.00				
100.05	7.42	4.75	0.00				
102.05	7.42	4.75	0.00				

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Type II 24-hr 100 year Rainfall=7.42"

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Summary for Subcatchment 23S: Upland Area 2

Includes pond surface area

Runoff = 9.87 cfs @ 12.28 hrs, Volume= 1.020 af, Depth= 4.75"

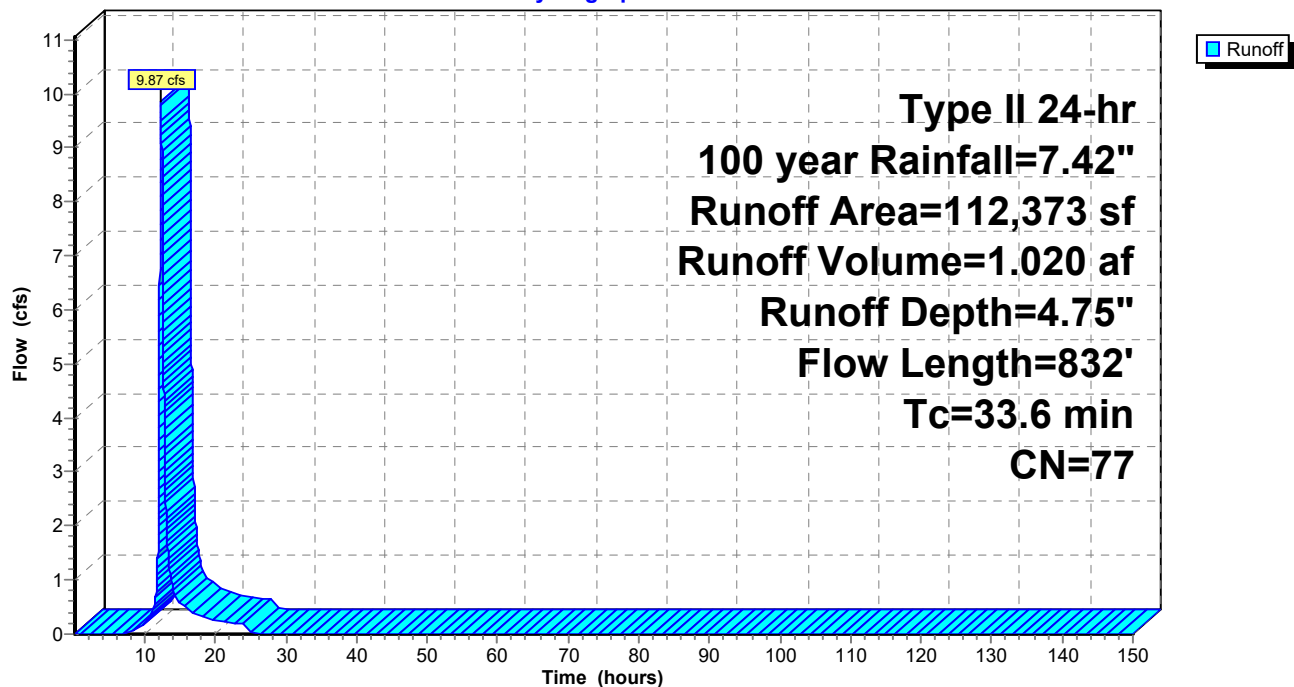
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 year Rainfall=7.42"

Area (sf)	CN	Description
112,373	77	Woods, Good, HSG D
112,373		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.8	100	0.0200	0.07		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.40"
8.4	399	0.1000	0.79		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
0.4	333	0.0750	14.12	56.47	Channel Flow, Area= 4.0 sf Perim= 6.0' r= 0.67' n= 0.022 Earth, clean & straight
33.6	832	Total			

Subcatchment 23S: Upland Area 2

Hydrograph



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Type II 24-hr 100 year Rainfall=7.42"

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Hydrograph for Subcatchment 23S: Upland Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.05	0.00	0.00	0.00	104.05	7.42	4.75	0.00
2.05	0.17	0.00	0.00	106.05	7.42	4.75	0.00
4.05	0.36	0.00	0.00	108.05	7.42	4.75	0.00
6.05	0.60	0.00	0.00	110.05	7.42	4.75	0.00
8.05	0.90	0.03	0.05	112.05	7.42	4.75	0.00
10.05	1.36	0.15	0.21	114.05	7.42	4.75	0.00
12.05	4.99	2.62	5.34	116.05	7.42	4.75	0.00
14.05	6.10	3.56	0.79	118.05	7.42	4.75	0.00
16.05	6.54	3.95	0.45	120.05	7.42	4.75	0.00
18.05	6.84	4.22	0.33	122.05	7.42	4.75	0.00
20.05	7.07	4.43	0.25	124.05	7.42	4.75	0.00
22.05	7.25	4.59	0.21	126.05	7.42	4.75	0.00
24.05	7.42	4.75	0.20	128.05	7.42	4.75	0.00
26.05	7.42	4.75	0.00	130.05	7.42	4.75	0.00
28.05	7.42	4.75	0.00	132.05	7.42	4.75	0.00
30.05	7.42	4.75	0.00	134.05	7.42	4.75	0.00
32.05	7.42	4.75	0.00	136.05	7.42	4.75	0.00
34.05	7.42	4.75	0.00	138.05	7.42	4.75	0.00
36.05	7.42	4.75	0.00	140.05	7.42	4.75	0.00
38.05	7.42	4.75	0.00	142.05	7.42	4.75	0.00
40.05	7.42	4.75	0.00	144.05	7.42	4.75	0.00
42.05	7.42	4.75	0.00	146.05	7.42	4.75	0.00
44.05	7.42	4.75	0.00	148.05	7.42	4.75	0.00
46.05	7.42	4.75	0.00				
48.05	7.42	4.75	0.00				
50.05	7.42	4.75	0.00				
52.05	7.42	4.75	0.00				
54.05	7.42	4.75	0.00				
56.05	7.42	4.75	0.00				
58.05	7.42	4.75	0.00				
60.05	7.42	4.75	0.00				
62.05	7.42	4.75	0.00				
64.05	7.42	4.75	0.00				
66.05	7.42	4.75	0.00				
68.05	7.42	4.75	0.00				
70.05	7.42	4.75	0.00				
72.05	7.42	4.75	0.00				
74.05	7.42	4.75	0.00				
76.05	7.42	4.75	0.00				
78.05	7.42	4.75	0.00				
80.05	7.42	4.75	0.00				
82.05	7.42	4.75	0.00				
84.05	7.42	4.75	0.00				
86.05	7.42	4.75	0.00				
88.05	7.42	4.75	0.00				
90.05	7.42	4.75	0.00				
92.05	7.42	4.75	0.00				
94.05	7.42	4.75	0.00				
96.05	7.42	4.75	0.00				
98.05	7.42	4.75	0.00				
100.05	7.42	4.75	0.00				
102.05	7.42	4.75	0.00				

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Type II 24-hr 100 year Rainfall=7.42"

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Summary for Subcatchment 24S: Upland Area 3

Includes pond surface area

Runoff = 14.88 cfs @ 12.42 hrs, Volume= 1.873 af, Depth= 4.75"

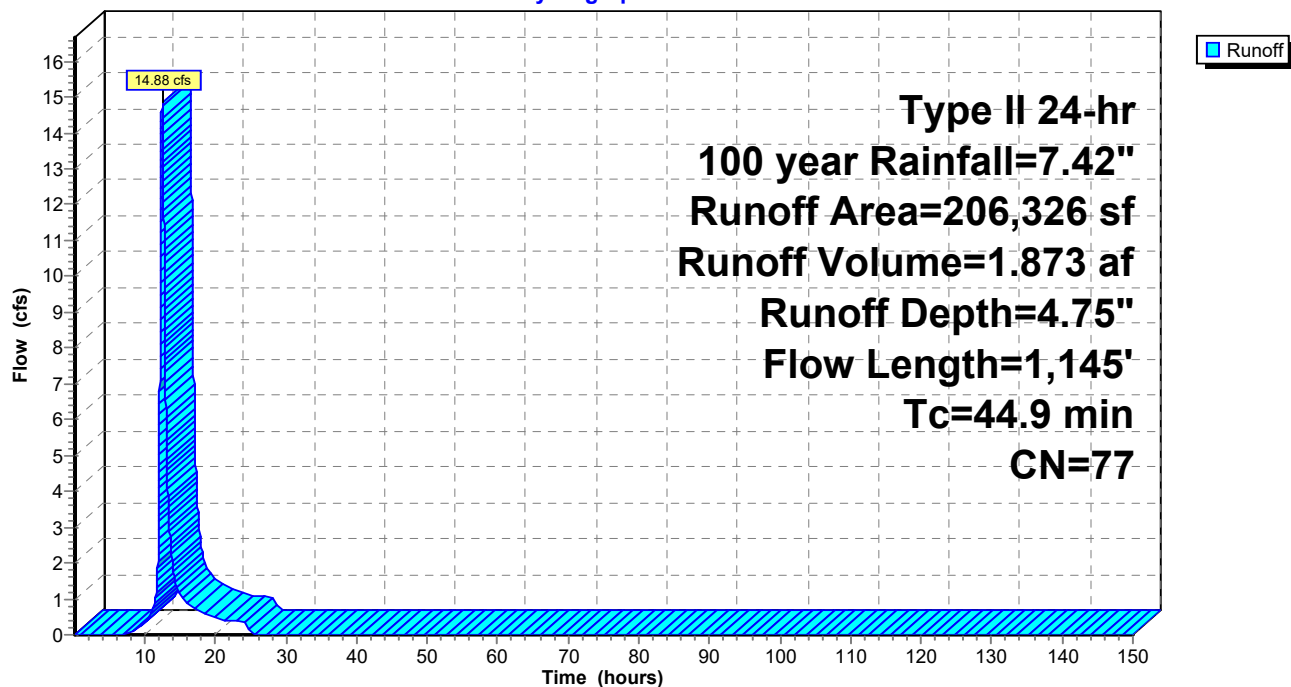
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 year Rainfall=7.42"

Area (sf)	CN	Description
206,326	77	Woods, Good, HSG D
206,326		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.8	100	0.0200	0.07		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.40"
20.1	1,045	0.1200	0.87		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
44.9	1,145	Total			

Subcatchment 24S: Upland Area 3

Hydrograph



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Type II 24-hr 100 year Rainfall=7.42"

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Hydrograph for Subcatchment 24S: Upland Area 3

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.05	0.00	0.00	0.00	104.05	7.42	4.75	0.00
2.05	0.17	0.00	0.00	106.05	7.42	4.75	0.00
4.05	0.36	0.00	0.00	108.05	7.42	4.75	0.00
6.05	0.60	0.00	0.00	110.05	7.42	4.75	0.00
8.05	0.90	0.03	0.09	112.05	7.42	4.75	0.00
10.05	1.36	0.15	0.35	114.05	7.42	4.75	0.00
12.05	4.99	2.62	5.58	116.05	7.42	4.75	0.00
14.05	6.10	3.56	1.71	118.05	7.42	4.75	0.00
16.05	6.54	3.95	0.86	120.05	7.42	4.75	0.00
18.05	6.84	4.22	0.62	122.05	7.42	4.75	0.00
20.05	7.07	4.43	0.46	124.05	7.42	4.75	0.00
22.05	7.25	4.59	0.39	126.05	7.42	4.75	0.00
24.05	7.42	4.75	0.36	128.05	7.42	4.75	0.00
26.05	7.42	4.75	0.00	130.05	7.42	4.75	0.00
28.05	7.42	4.75	0.00	132.05	7.42	4.75	0.00
30.05	7.42	4.75	0.00	134.05	7.42	4.75	0.00
32.05	7.42	4.75	0.00	136.05	7.42	4.75	0.00
34.05	7.42	4.75	0.00	138.05	7.42	4.75	0.00
36.05	7.42	4.75	0.00	140.05	7.42	4.75	0.00
38.05	7.42	4.75	0.00	142.05	7.42	4.75	0.00
40.05	7.42	4.75	0.00	144.05	7.42	4.75	0.00
42.05	7.42	4.75	0.00	146.05	7.42	4.75	0.00
44.05	7.42	4.75	0.00	148.05	7.42	4.75	0.00
46.05	7.42	4.75	0.00				
48.05	7.42	4.75	0.00				
50.05	7.42	4.75	0.00				
52.05	7.42	4.75	0.00				
54.05	7.42	4.75	0.00				
56.05	7.42	4.75	0.00				
58.05	7.42	4.75	0.00				
60.05	7.42	4.75	0.00				
62.05	7.42	4.75	0.00				
64.05	7.42	4.75	0.00				
66.05	7.42	4.75	0.00				
68.05	7.42	4.75	0.00				
70.05	7.42	4.75	0.00				
72.05	7.42	4.75	0.00				
74.05	7.42	4.75	0.00				
76.05	7.42	4.75	0.00				
78.05	7.42	4.75	0.00				
80.05	7.42	4.75	0.00				
82.05	7.42	4.75	0.00				
84.05	7.42	4.75	0.00				
86.05	7.42	4.75	0.00				
88.05	7.42	4.75	0.00				
90.05	7.42	4.75	0.00				
92.05	7.42	4.75	0.00				
94.05	7.42	4.75	0.00				
96.05	7.42	4.75	0.00				
98.05	7.42	4.75	0.00				
100.05	7.42	4.75	0.00				
102.05	7.42	4.75	0.00				

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Type II 24-hr 100 year Rainfall=7.42"

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Summary for Subcatchment 25S: Upland Area 4

Includes pond surface area

Runoff = 15.90 cfs @ 13.27 hrs, Volume= 4.004 af, Depth= 4.75"

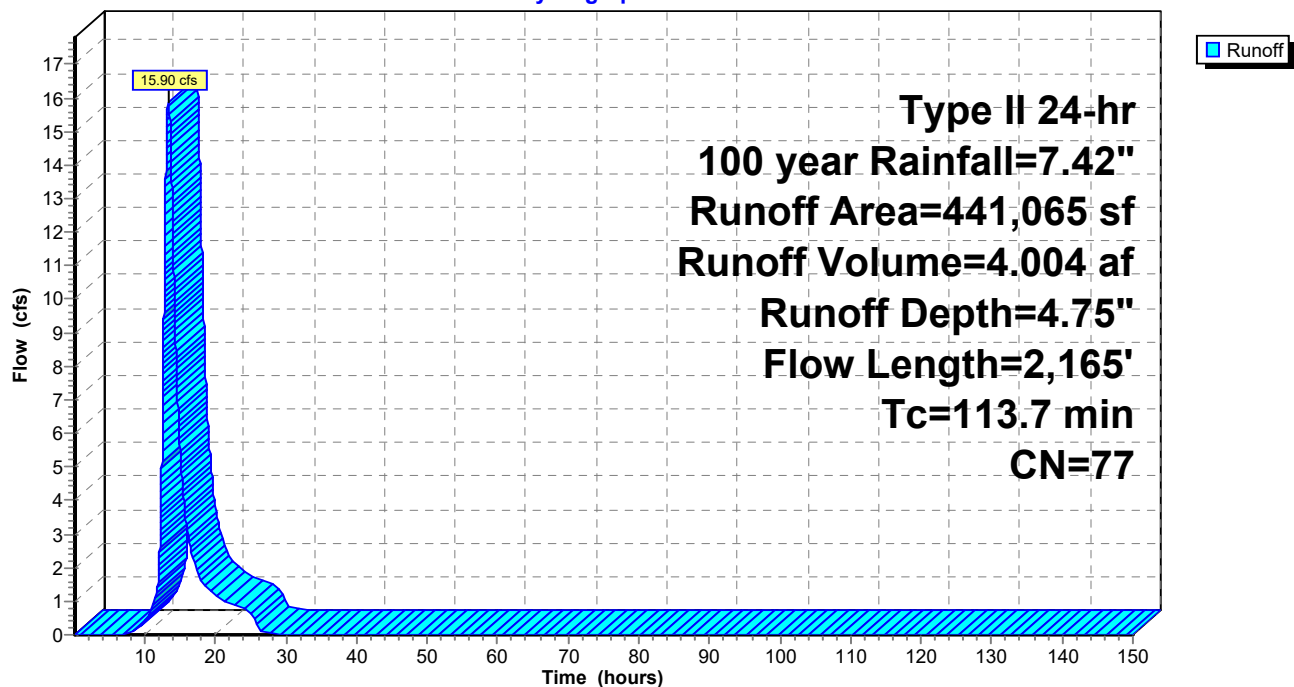
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 year Rainfall=7.42"

Area (sf)	CN	Description
441,065	77	Woods, Good, HSG D
441,065		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.8	100	0.0200	0.07		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.40"
88.9	2,065	0.0240	0.39		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
113.7	2,165	Total			

Subcatchment 25S: Upland Area 4

Hydrograph



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Type II 24-hr 100 year Rainfall=7.42"

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Hydrograph for Subcatchment 25S: Upland Area 4

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.05	0.00	0.00	0.00	104.05	7.42	4.75	0.00
2.05	0.17	0.00	0.00	106.05	7.42	4.75	0.00
4.05	0.36	0.00	0.00	108.05	7.42	4.75	0.00
6.05	0.60	0.00	0.00	110.05	7.42	4.75	0.00
8.05	0.90	0.03	0.07	112.05	7.42	4.75	0.00
10.05	1.36	0.15	0.42	114.05	7.42	4.75	0.00
12.05	4.99	2.62	2.28	116.05	7.42	4.75	0.00
14.05	6.10	3.56	11.07	118.05	7.42	4.75	0.00
16.05	6.54	3.95	3.01	120.05	7.42	4.75	0.00
18.05	6.84	4.22	1.60	122.05	7.42	4.75	0.00
20.05	7.07	4.43	1.18	124.05	7.42	4.75	0.00
22.05	7.25	4.59	0.91	126.05	7.42	4.75	0.00
24.05	7.42	4.75	0.81	128.05	7.42	4.75	0.00
26.05	7.42	4.75	0.22	130.05	7.42	4.75	0.00
28.05	7.42	4.75	0.02	132.05	7.42	4.75	0.00
30.05	7.42	4.75	0.00	134.05	7.42	4.75	0.00
32.05	7.42	4.75	0.00	136.05	7.42	4.75	0.00
34.05	7.42	4.75	0.00	138.05	7.42	4.75	0.00
36.05	7.42	4.75	0.00	140.05	7.42	4.75	0.00
38.05	7.42	4.75	0.00	142.05	7.42	4.75	0.00
40.05	7.42	4.75	0.00	144.05	7.42	4.75	0.00
42.05	7.42	4.75	0.00	146.05	7.42	4.75	0.00
44.05	7.42	4.75	0.00	148.05	7.42	4.75	0.00
46.05	7.42	4.75	0.00				
48.05	7.42	4.75	0.00				
50.05	7.42	4.75	0.00				
52.05	7.42	4.75	0.00				
54.05	7.42	4.75	0.00				
56.05	7.42	4.75	0.00				
58.05	7.42	4.75	0.00				
60.05	7.42	4.75	0.00				
62.05	7.42	4.75	0.00				
64.05	7.42	4.75	0.00				
66.05	7.42	4.75	0.00				
68.05	7.42	4.75	0.00				
70.05	7.42	4.75	0.00				
72.05	7.42	4.75	0.00				
74.05	7.42	4.75	0.00				
76.05	7.42	4.75	0.00				
78.05	7.42	4.75	0.00				
80.05	7.42	4.75	0.00				
82.05	7.42	4.75	0.00				
84.05	7.42	4.75	0.00				
86.05	7.42	4.75	0.00				
88.05	7.42	4.75	0.00				
90.05	7.42	4.75	0.00				
92.05	7.42	4.75	0.00				
94.05	7.42	4.75	0.00				
96.05	7.42	4.75	0.00				
98.05	7.42	4.75	0.00				
100.05	7.42	4.75	0.00				
102.05	7.42	4.75	0.00				

Summary for Subcatchment 26S: Upland Area 5

Includes pond surface area

Runoff = 7.11 cfs @ 12.70 hrs, Volume= 1.162 af, Depth= 4.75"

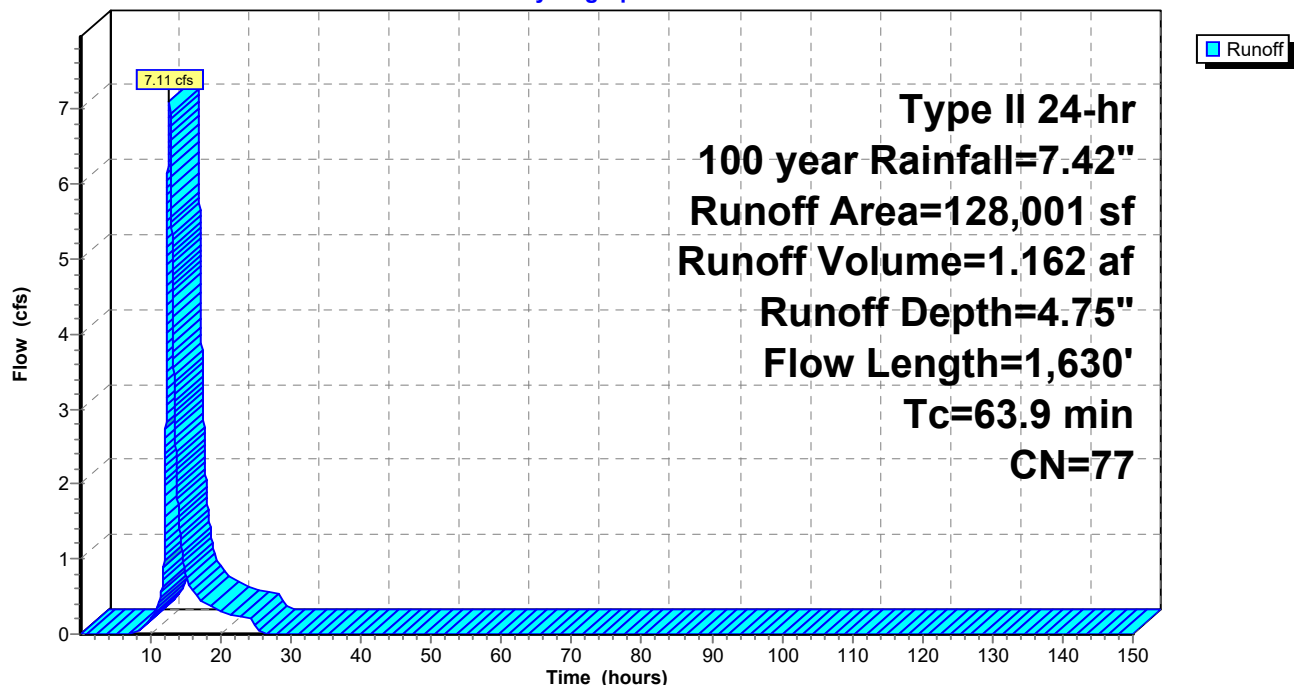
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 year Rainfall=7.42"

Area (sf)	CN	Description
128,001	77	Woods, Good, HSG D
128,001		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.8	100	0.0200	0.07		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.40"
38.8	1,194	0.0420	0.51		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
0.3	336	0.1190	17.78	71.13	Channel Flow, Area= 4.0 sf Perim= 6.0' r= 0.67' n= 0.022 Earth, clean & straight
63.9	1,630	Total			

Subcatchment 26S: Upland Area 5

Hydrograph



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Type II 24-hr 100 year Rainfall=7.42"

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Hydrograph for Subcatchment 26S: Upland Area 5

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.05	0.00	0.00	0.00	104.05	7.42	4.75	0.00
2.05	0.17	0.00	0.00	106.05	7.42	4.75	0.00
4.05	0.36	0.00	0.00	108.05	7.42	4.75	0.00
6.05	0.60	0.00	0.00	110.05	7.42	4.75	0.00
8.05	0.90	0.03	0.04	112.05	7.42	4.75	0.00
10.05	1.36	0.15	0.19	114.05	7.42	4.75	0.00
12.05	4.99	2.62	1.75	116.05	7.42	4.75	0.00
14.05	6.10	3.56	1.52	118.05	7.42	4.75	0.00
16.05	6.54	3.95	0.58	120.05	7.42	4.75	0.00
18.05	6.84	4.22	0.40	122.05	7.42	4.75	0.00
20.05	7.07	4.43	0.30	124.05	7.42	4.75	0.00
22.05	7.25	4.59	0.25	126.05	7.42	4.75	0.00
24.05	7.42	4.75	0.23	128.05	7.42	4.75	0.00
26.05	7.42	4.75	0.01	130.05	7.42	4.75	0.00
28.05	7.42	4.75	0.00	132.05	7.42	4.75	0.00
30.05	7.42	4.75	0.00	134.05	7.42	4.75	0.00
32.05	7.42	4.75	0.00	136.05	7.42	4.75	0.00
34.05	7.42	4.75	0.00	138.05	7.42	4.75	0.00
36.05	7.42	4.75	0.00	140.05	7.42	4.75	0.00
38.05	7.42	4.75	0.00	142.05	7.42	4.75	0.00
40.05	7.42	4.75	0.00	144.05	7.42	4.75	0.00
42.05	7.42	4.75	0.00	146.05	7.42	4.75	0.00
44.05	7.42	4.75	0.00	148.05	7.42	4.75	0.00
46.05	7.42	4.75	0.00				
48.05	7.42	4.75	0.00				
50.05	7.42	4.75	0.00				
52.05	7.42	4.75	0.00				
54.05	7.42	4.75	0.00				
56.05	7.42	4.75	0.00				
58.05	7.42	4.75	0.00				
60.05	7.42	4.75	0.00				
62.05	7.42	4.75	0.00				
64.05	7.42	4.75	0.00				
66.05	7.42	4.75	0.00				
68.05	7.42	4.75	0.00				
70.05	7.42	4.75	0.00				
72.05	7.42	4.75	0.00				
74.05	7.42	4.75	0.00				
76.05	7.42	4.75	0.00				
78.05	7.42	4.75	0.00				
80.05	7.42	4.75	0.00				
82.05	7.42	4.75	0.00				
84.05	7.42	4.75	0.00				
86.05	7.42	4.75	0.00				
88.05	7.42	4.75	0.00				
90.05	7.42	4.75	0.00				
92.05	7.42	4.75	0.00				
94.05	7.42	4.75	0.00				
96.05	7.42	4.75	0.00				
98.05	7.42	4.75	0.00				
100.05	7.42	4.75	0.00				
102.05	7.42	4.75	0.00				

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Type II 24-hr 100 year Rainfall=7.42"

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Summary for Subcatchment 27S: Upland Area 6

Includes pond surface area

Runoff = 10.00 cfs @ 12.33 hrs, Volume= 1.092 af, Depth= 4.75"

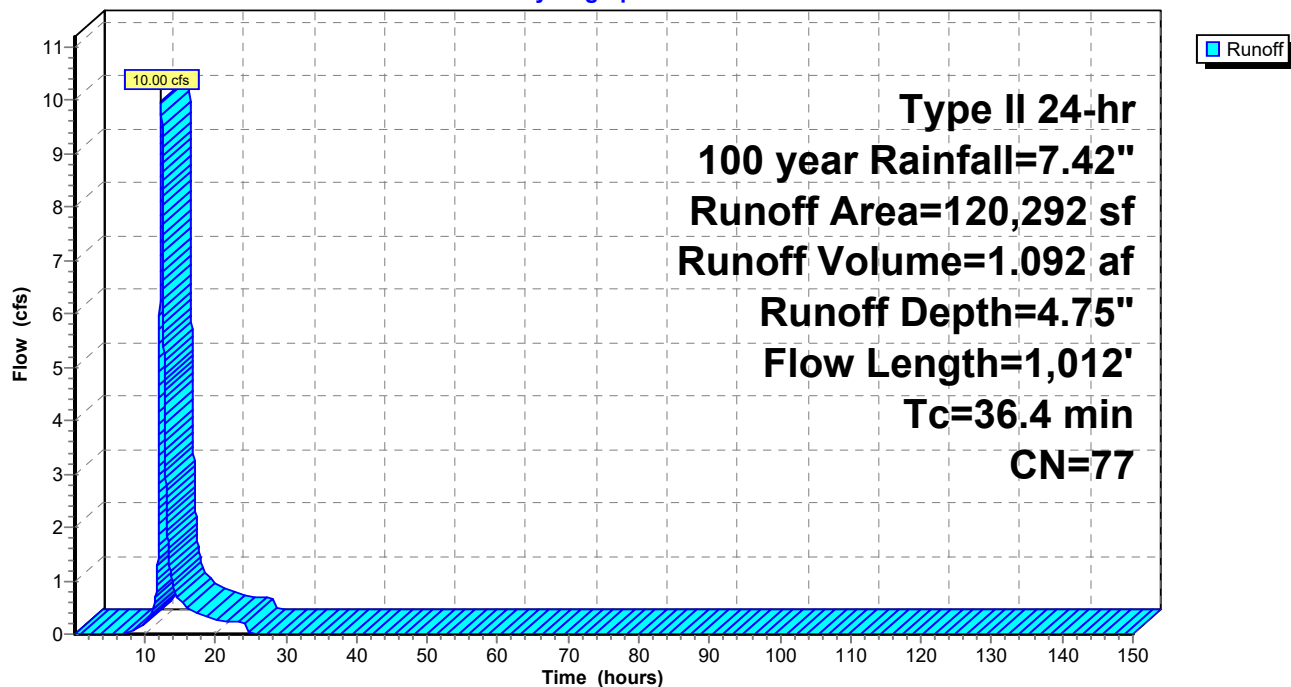
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 year Rainfall=7.42"

Area (sf)	CN	Description
120,292	77	Woods, Good, HSG D
120,292		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.8	100	0.0200	0.07		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.40"
11.2	706	0.1770	1.05		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
0.4	206	0.0240	7.99	31.94	Channel Flow, Area= 4.0 sf Perim= 6.0' r= 0.67' n= 0.022 Earth, clean & straight
36.4	1,012	Total			

Subcatchment 27S: Upland Area 6

Hydrograph



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Type II 24-hr 100 year Rainfall=7.42"

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Hydrograph for Subcatchment 27S: Upland Area 6

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.05	0.00	0.00	0.00	104.05	7.42	4.75	0.00
2.05	0.17	0.00	0.00	106.05	7.42	4.75	0.00
4.05	0.36	0.00	0.00	108.05	7.42	4.75	0.00
6.05	0.60	0.00	0.00	110.05	7.42	4.75	0.00
8.05	0.90	0.03	0.06	112.05	7.42	4.75	0.00
10.05	1.36	0.15	0.21	114.05	7.42	4.75	0.00
12.05	4.99	2.62	4.92	116.05	7.42	4.75	0.00
14.05	6.10	3.56	0.87	118.05	7.42	4.75	0.00
16.05	6.54	3.95	0.49	120.05	7.42	4.75	0.00
18.05	6.84	4.22	0.36	122.05	7.42	4.75	0.00
20.05	7.07	4.43	0.27	124.05	7.42	4.75	0.00
22.05	7.25	4.59	0.23	126.05	7.42	4.75	0.00
24.05	7.42	4.75	0.21	128.05	7.42	4.75	0.00
26.05	7.42	4.75	0.00	130.05	7.42	4.75	0.00
28.05	7.42	4.75	0.00	132.05	7.42	4.75	0.00
30.05	7.42	4.75	0.00	134.05	7.42	4.75	0.00
32.05	7.42	4.75	0.00	136.05	7.42	4.75	0.00
34.05	7.42	4.75	0.00	138.05	7.42	4.75	0.00
36.05	7.42	4.75	0.00	140.05	7.42	4.75	0.00
38.05	7.42	4.75	0.00	142.05	7.42	4.75	0.00
40.05	7.42	4.75	0.00	144.05	7.42	4.75	0.00
42.05	7.42	4.75	0.00	146.05	7.42	4.75	0.00
44.05	7.42	4.75	0.00	148.05	7.42	4.75	0.00
46.05	7.42	4.75	0.00				
48.05	7.42	4.75	0.00				
50.05	7.42	4.75	0.00				
52.05	7.42	4.75	0.00				
54.05	7.42	4.75	0.00				
56.05	7.42	4.75	0.00				
58.05	7.42	4.75	0.00				
60.05	7.42	4.75	0.00				
62.05	7.42	4.75	0.00				
64.05	7.42	4.75	0.00				
66.05	7.42	4.75	0.00				
68.05	7.42	4.75	0.00				
70.05	7.42	4.75	0.00				
72.05	7.42	4.75	0.00				
74.05	7.42	4.75	0.00				
76.05	7.42	4.75	0.00				
78.05	7.42	4.75	0.00				
80.05	7.42	4.75	0.00				
82.05	7.42	4.75	0.00				
84.05	7.42	4.75	0.00				
86.05	7.42	4.75	0.00				
88.05	7.42	4.75	0.00				
90.05	7.42	4.75	0.00				
92.05	7.42	4.75	0.00				
94.05	7.42	4.75	0.00				
96.05	7.42	4.75	0.00				
98.05	7.42	4.75	0.00				
100.05	7.42	4.75	0.00				
102.05	7.42	4.75	0.00				

Summary for Reach 5R: Expan Area Ditch

Inflow Area = 13.693 ac, 0.00% Impervious, Inflow Depth = 6.71" for 100 year event
 Inflow = 137.03 cfs @ 11.98 hrs, Volume= 7.652 af
 Outflow = 135.78 cfs @ 11.99 hrs, Volume= 7.652 af, Atten= 1%, Lag= 0.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs
 Max. Velocity= 10.11 fps, Min. Travel Time= 0.9 min
 Avg. Velocity = 2.85 fps, Avg. Travel Time= 3.4 min

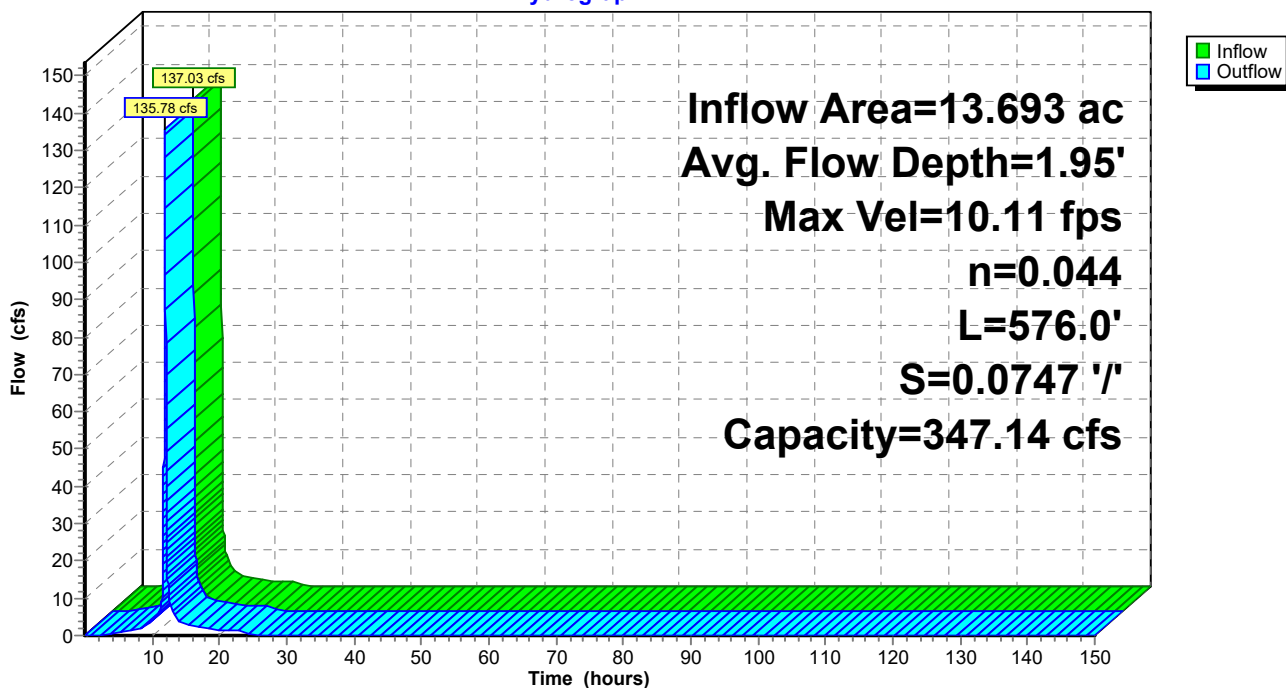
Peak Storage= 7,736 cf @ 11.99 hrs
 Average Depth at Peak Storage= 1.95'
 Bank-Full Depth= 3.00' Flow Area= 27.0 sf, Capacity= 347.14 cfs

3.00' x 3.00' deep channel, n= 0.044
 Side Slope Z-value= 2.0 '/' Top Width= 15.00'
 Length= 576.0' Slope= 0.0747 '/'
 Inlet Invert= 1,495.00', Outlet Invert= 1,452.00'

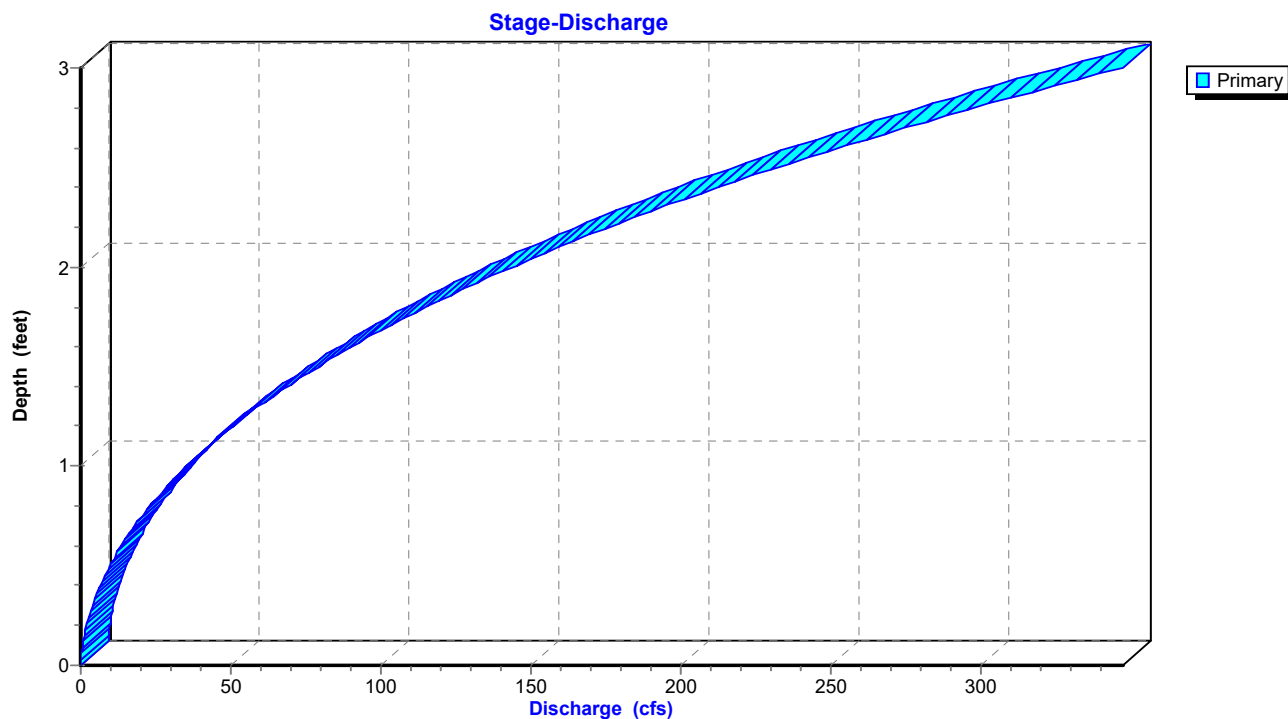


Reach 5R: Expan Area Ditch

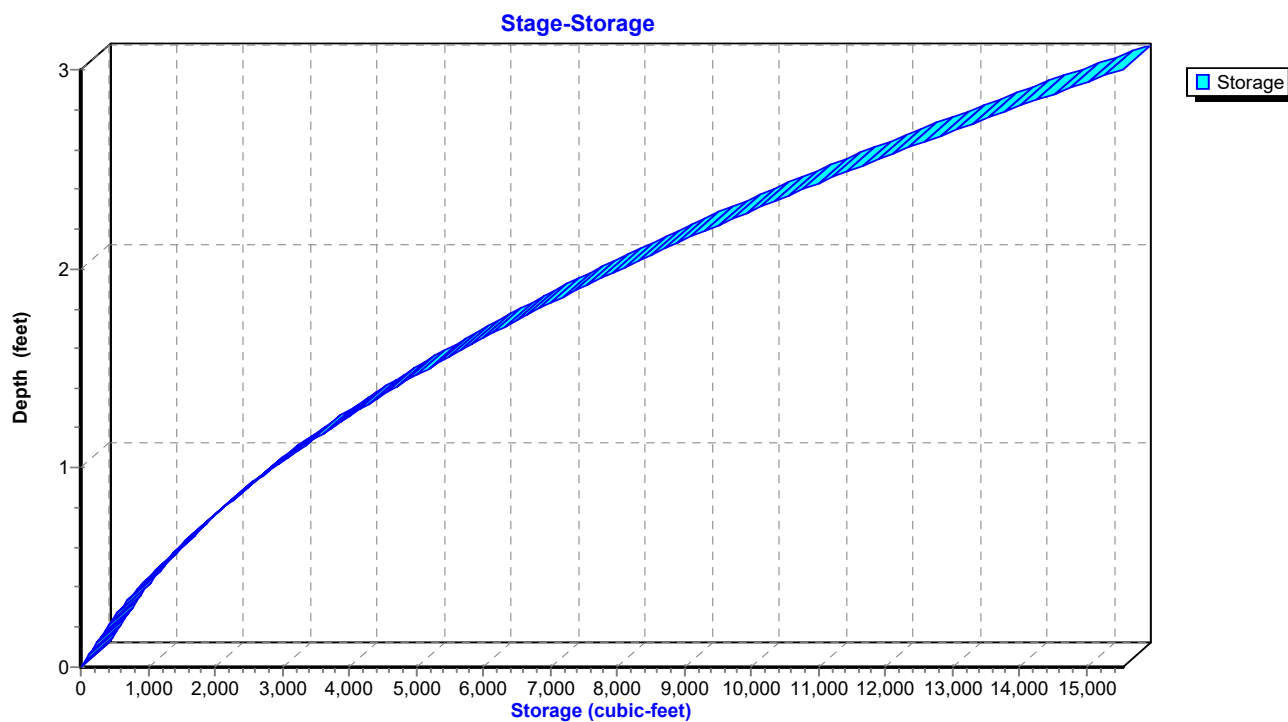
Hydrograph



Reach 5R: Expan Area Ditch



Reach 5R: Expan Area Ditch



Hydrograph for Reach 5R: Expan Area Ditch

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
0.05	0.00	0	1,495.00	0.00
5.05	0.92	238	1,495.13	0.91
10.05	3.51	570	1,495.28	3.47
15.05	3.09	531	1,495.26	3.11
20.05	1.34	306	1,495.16	1.35
25.05	0.00	1	1,495.00	0.00
30.05	0.00	0	1,495.00	0.00
35.05	0.00	0	1,495.00	0.00
40.05	0.00	0	1,495.00	0.00
45.05	0.00	0	1,495.00	0.00
50.05	0.00	0	1,495.00	0.00
55.05	0.00	0	1,495.00	0.00
60.05	0.00	0	1,495.00	0.00
65.05	0.00	0	1,495.00	0.00
70.05	0.00	0	1,495.00	0.00
75.05	0.00	0	1,495.00	0.00
80.05	0.00	0	1,495.00	0.00
85.05	0.00	0	1,495.00	0.00
90.05	0.00	0	1,495.00	0.00
95.05	0.00	0	1,495.00	0.00
100.05	0.00	0	1,495.00	0.00
105.05	0.00	0	1,495.00	0.00
110.05	0.00	0	1,495.00	0.00
115.05	0.00	0	1,495.00	0.00
120.05	0.00	0	1,495.00	0.00
125.05	0.00	0	1,495.00	0.00
130.05	0.00	0	1,495.00	0.00
135.05	0.00	0	1,495.00	0.00
140.05	0.00	0	1,495.00	0.00
145.05	0.00	0	1,495.00	0.00

Stage-Discharge for Reach 5R: Expan Area Ditch

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)	Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)	Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
1,495.00	0.00	0.00	1,496.04	7.21	38.09	1,497.08	10.48	156.11
1,495.02	0.58	0.05	1,496.06	7.28	39.53	1,497.10	10.54	159.32
1,495.04	1.04	0.14	1,496.08	7.36	40.99	1,497.12	10.59	162.58
1,495.06	1.37	0.26	1,496.10	7.43	42.50	1,497.14	10.65	165.88
1,495.08	1.64	0.42	1,496.12	7.50	44.03	1,497.16	10.70	169.20
1,495.10	1.89	0.61	1,496.14	7.57	45.58	1,497.18	10.76	172.59
1,495.12	2.12	0.82	1,496.16	7.64	47.17	1,497.20	10.81	176.00
1,495.14	2.32	1.08	1,496.18	7.71	48.79	1,497.22	10.86	179.45
1,495.16	2.52	1.35	1,496.20	7.78	50.43	1,497.24	10.92	182.95
1,495.18	2.71	1.64	1,496.22	7.85	52.12	1,497.26	10.97	186.49
1,495.20	2.88	1.97	1,496.24	7.92	53.83	1,497.28	11.03	190.05
1,495.22	3.05	2.31	1,496.26	7.99	55.56	1,497.30	11.08	193.68
1,495.24	3.21	2.68	1,496.28	8.06	57.34	1,497.32	11.13	197.34
1,495.26	3.36	3.08	1,496.30	8.12	59.15	1,497.34	11.19	201.03
1,495.28	3.51	3.50	1,496.32	8.19	60.97	1,497.36	11.24	204.77
1,495.30	3.65	3.94	1,496.34	8.26	62.85	1,497.38	11.29	208.56
1,495.32	3.79	4.42	1,496.36	8.32	64.75	1,497.40	11.34	212.37
1,495.34	3.92	4.91	1,496.38	8.39	66.68	1,497.42	11.40	216.24
1,495.36	4.05	5.42	1,496.40	8.45	68.65	1,497.44	11.45	220.15
1,495.38	4.17	5.97	1,496.42	8.52	70.65	1,497.46	11.50	224.08
1,495.40	4.29	6.53	1,496.44	8.58	72.67	1,497.48	11.55	228.08
1,495.42	4.41	7.12	1,496.46	8.65	74.74	1,497.50	11.61	232.11
1,495.44	4.53	7.74	1,496.48	8.71	76.84	1,497.52	11.66	236.18
1,495.46	4.64	8.37	1,496.50	8.77	78.96	1,497.54	11.71	240.31
1,495.48	4.75	9.03	1,496.52	8.84	81.13	1,497.56	11.76	244.46
1,495.50	4.86	9.72	1,496.54	8.90	83.33	1,497.58	11.81	248.66
1,495.52	4.96	10.43	1,496.56	8.96	85.55	1,497.60	11.86	252.91
1,495.54	5.07	11.16	1,496.58	9.02	87.83	1,497.62	11.91	257.20
1,495.56	5.17	11.93	1,496.60	9.08	90.13	1,497.64	11.96	261.52
1,495.58	5.27	12.72	1,496.62	9.15	92.45	1,497.66	12.01	265.91
1,495.60	5.37	13.52	1,496.64	9.21	94.83	1,497.68	12.07	270.33
1,495.62	5.46	14.36	1,496.66	9.27	97.23	1,497.70	12.12	274.79
1,495.64	5.56	15.23	1,496.68	9.33	99.67	1,497.72	12.17	279.31
1,495.66	5.65	16.11	1,496.70	9.39	102.15	1,497.74	12.22	283.86
1,495.68	5.74	17.03	1,496.72	9.45	104.66	1,497.76	12.27	288.44
1,495.70	5.83	17.97	1,496.74	9.51	107.20	1,497.78	12.32	293.10
1,495.72	5.92	18.93	1,496.76	9.57	109.79	1,497.80	12.37	297.78
1,495.74	6.01	19.93	1,496.78	9.63	112.40	1,497.82	12.42	302.50
1,495.76	6.09	20.95	1,496.80	9.68	115.05	1,497.84	12.47	307.29
1,495.78	6.18	21.98	1,496.82	9.74	117.75	1,497.86	12.51	312.12
1,495.80	6.26	23.06	1,496.84	9.80	120.47	1,497.88	12.56	316.97
1,495.82	6.35	24.16	1,496.86	9.86	123.23	1,497.90	12.61	321.90
1,495.84	6.43	25.28	1,496.88	9.92	126.04	1,497.92	12.66	326.86
1,495.86	6.51	26.44	1,496.90	9.97	128.87	1,497.94	12.71	331.85
1,495.88	6.59	27.62	1,496.92	10.03	131.74	1,497.96	12.76	336.91
1,495.90	6.67	28.83	1,496.94	10.09	134.66	1,497.98	12.81	342.01
1,495.92	6.75	30.07	1,496.96	10.15	137.61	1,498.00	12.86	347.14
1,495.94	6.83	31.34	1,496.98	10.20	140.59			
1,495.96	6.91	32.62	1,497.00	10.26	143.62			
1,495.98	6.98	33.95	1,497.02	10.31	146.69			
1,496.00	7.06	35.30	1,497.04	10.37	149.78			
1,496.02	7.13	36.68	1,497.06	10.43	152.93			

Stage-Area-Storage for Reach 5R: Expan Area Ditch

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
1,495.00	0.0	0	1,497.60	21.3	12,281
1,495.05	0.2	90	1,497.65	22.0	12,669
1,495.10	0.3	185	1,497.70	22.7	13,064
1,495.15	0.5	285	1,497.75	23.4	13,464
1,495.20	0.7	392	1,497.80	24.1	13,870
1,495.25	0.9	504	1,497.85	24.8	14,282
1,495.30	1.1	622	1,497.90	25.5	14,700
1,495.35	1.3	746	1,497.95	26.3	15,123
1,495.40	1.5	876	1,498.00	27.0	15,552
1,495.45	1.8	1,011			
1,495.50	2.0	1,152			
1,495.55	2.3	1,299			
1,495.60	2.5	1,452			
1,495.65	2.8	1,610			
1,495.70	3.1	1,774			
1,495.75	3.4	1,944			
1,495.80	3.7	2,120			
1,495.85	4.0	2,301			
1,495.90	4.3	2,488			
1,495.95	4.7	2,682			
1,496.00	5.0	2,880			
1,496.05	5.4	3,084			
1,496.10	5.7	3,295			
1,496.15	6.1	3,511			
1,496.20	6.5	3,732			
1,496.25	6.9	3,960			
1,496.30	7.3	4,194			
1,496.35	7.7	4,432			
1,496.40	8.1	4,677			
1,496.45	8.6	4,928			
1,496.50	9.0	5,184			
1,496.55	9.5	5,446			
1,496.60	9.9	5,714			
1,496.65	10.4	5,988			
1,496.70	10.9	6,267			
1,496.75	11.4	6,552			
1,496.80	11.9	6,843			
1,496.85	12.4	7,140			
1,496.90	12.9	7,442			
1,496.95	13.5	7,750			
1,497.00	14.0	8,064			
1,497.05	14.6	8,384			
1,497.10	15.1	8,709			
1,497.15	15.7	9,041			
1,497.20	16.3	9,378			
1,497.25	16.9	9,720			
1,497.30	17.5	10,069			
1,497.35	18.1	10,423			
1,497.40	18.7	10,783			
1,497.45	19.4	11,149			
1,497.50	20.0	11,520			
1,497.55	20.7	11,897			

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Type II 24-hr 100 year Rainfall=7.42"

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Summary for Reach 16R: Road Ditch

Inflow Area = 29.013 ac, 9.48% Impervious, Inflow Depth > 6.68" for 100 year event
Inflow = 65.26 cfs @ 12.23 hrs, Volume= 16.151 af
Outflow = 65.25 cfs @ 12.23 hrs, Volume= 16.151 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Max. Velocity= 6.28 fps, Min. Travel Time= 0.2 min

Avg. Velocity= 1.34 fps, Avg. Travel Time= 0.8 min

Peak Storage= 702 cf @ 12.23 hrs

Average Depth at Peak Storage= 1.65'

Bank-Full Depth= 2.00' Flow Area= 14.0 sf, Capacity= 97.69 cfs

3.00' x 2.00' deep channel, n= 0.040

Side Slope Z-value= 2.0 '/' Top Width= 11.00'

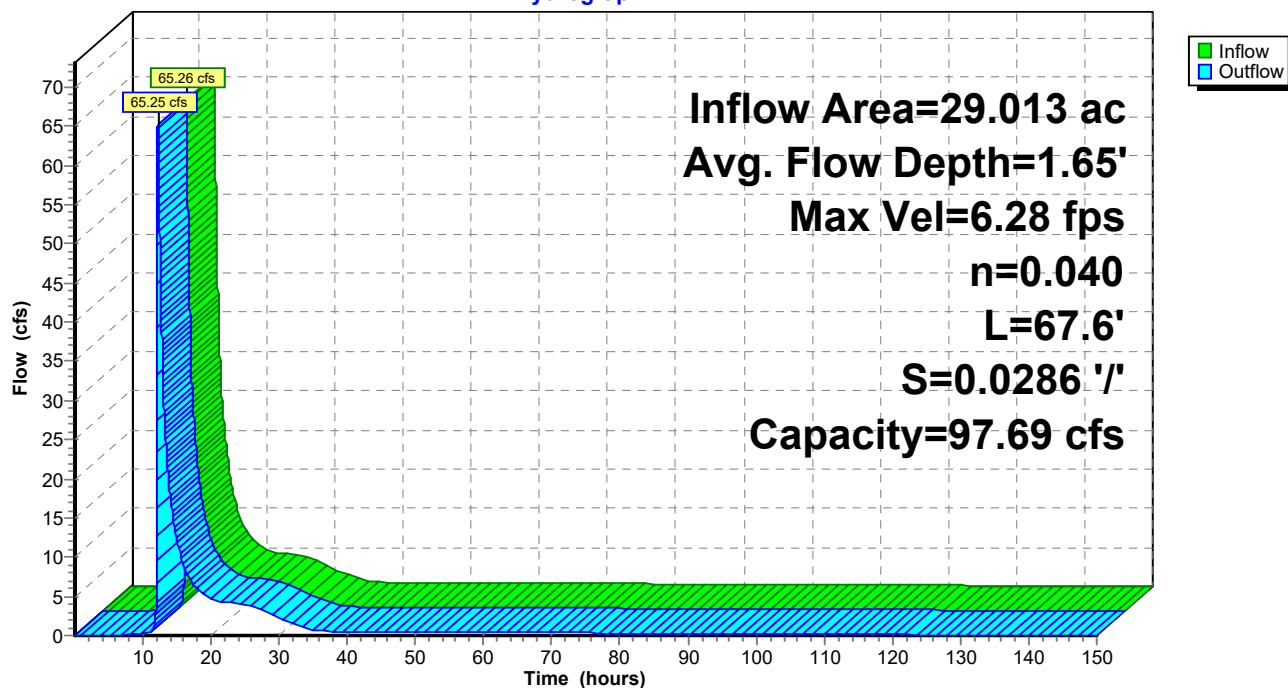
Length= 67.6' Slope= 0.0286 '/'

Inlet Invert= 1,449.79', Outlet Invert= 1,447.86'

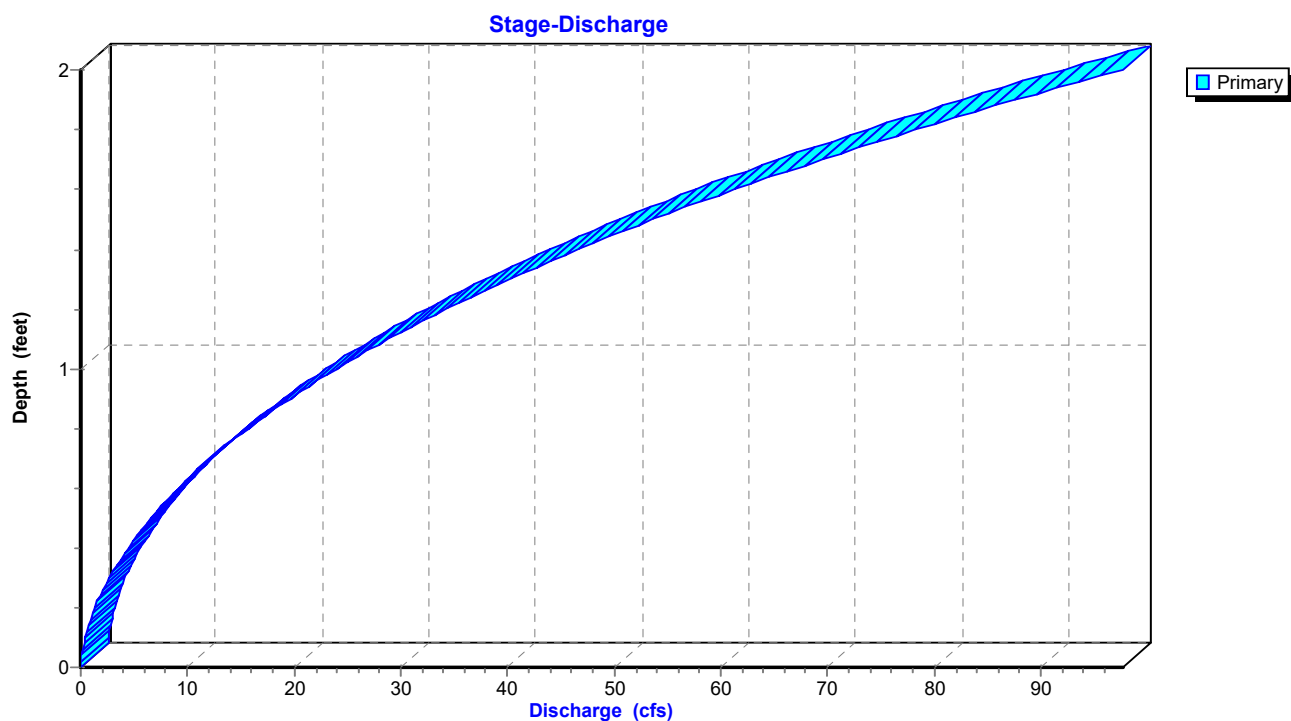


Reach 16R: Road Ditch

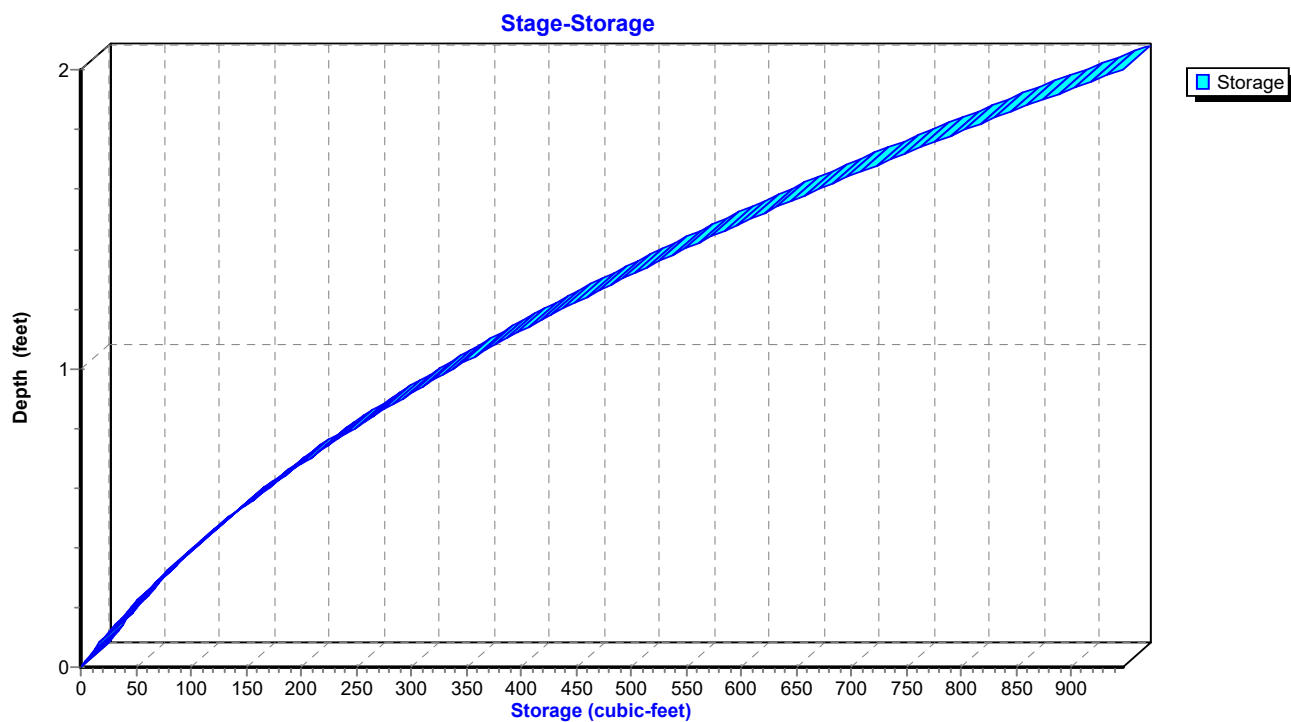
Hydrograph



Reach 16R: Road Ditch



Reach 16R: Road Ditch



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Hydrograph for Reach 16R: Road Ditch

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
0.05	0.00	0	1,449.79	0.00
5.05	0.00	0	1,449.79	0.00
10.05	0.29	17	1,449.87	0.29
15.05	12.02	206	1,450.48	12.04
20.05	4.57	105	1,450.20	4.57
25.05	3.96	95	1,450.16	3.96
30.05	2.22	64	1,450.06	2.22
35.05	0.73	31	1,449.93	0.73
40.05	0.52	25	1,449.90	0.52
45.05	0.49	24	1,449.90	0.49
50.05	0.46	23	1,449.90	0.46
55.05	0.44	22	1,449.89	0.44
60.05	0.41	22	1,449.89	0.42
65.05	0.39	21	1,449.89	0.39
70.05	0.37	20	1,449.88	0.37
75.05	0.34	19	1,449.88	0.34
80.05	0.32	18	1,449.88	0.32
85.05	0.29	17	1,449.87	0.29
90.05	0.27	17	1,449.87	0.27
95.05	0.25	16	1,449.86	0.25
100.05	0.22	15	1,449.86	0.22
105.05	0.20	14	1,449.85	0.20
110.05	0.17	13	1,449.85	0.17
115.05	0.15	11	1,449.84	0.15
120.05	0.13	10	1,449.84	0.13
125.05	0.10	9	1,449.83	0.10
130.05	0.09	8	1,449.83	0.09
135.05	0.07	7	1,449.82	0.07
140.05	0.06	6	1,449.82	0.06
145.05	0.05	6	1,449.82	0.05

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Type II 24-hr 100 year Rainfall=7.42"

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Stage-Discharge for Reach 16R: Road Ditch

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)	Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
1,449.79	0.00	0.00	1,450.83	4.90	25.91
1,449.81	0.46	0.03	1,450.85	4.95	26.89
1,449.83	0.72	0.09	1,450.87	5.00	27.89
1,449.85	0.93	0.17	1,450.89	5.05	28.90
1,449.87	1.12	0.28	1,450.91	5.10	29.94
1,449.89	1.29	0.41	1,450.93	5.15	31.00
1,449.91	1.44	0.56	1,450.95	5.20	32.08
1,449.93	1.58	0.73	1,450.97	5.25	33.18
1,449.95	1.72	0.91	1,450.99	5.29	34.31
1,449.97	1.84	1.11	1,451.01	5.34	35.45
1,449.99	1.96	1.33	1,451.03	5.39	36.61
1,450.01	2.07	1.57	1,451.05	5.43	37.80
1,450.03	2.18	1.82	1,451.07	5.48	39.00
1,450.05	2.29	2.09	1,451.09	5.53	40.23
1,450.07	2.39	2.38	1,451.11	5.57	41.48
1,450.09	2.48	2.68	1,451.13	5.62	42.75
1,450.11	2.58	3.00	1,451.15	5.66	44.04
1,450.13	2.67	3.34	1,451.17	5.71	45.36
1,450.15	2.75	3.69	1,451.19	5.75	46.69
1,450.17	2.84	4.06	1,451.21	5.79	48.05
1,450.19	2.92	4.44	1,451.23	5.84	49.43
1,450.21	3.00	4.84	1,451.25	5.88	50.84
1,450.23	3.08	5.26	1,451.27	5.93	52.26
1,450.25	3.16	5.69	1,451.29	5.97	53.71
1,450.27	3.23	6.14	1,451.31	6.01	55.18
1,450.29	3.30	6.61	1,451.33	6.05	56.68
1,450.31	3.38	7.09	1,451.35	6.10	58.20
1,450.33	3.45	7.59	1,451.37	6.14	59.74
1,450.35	3.52	8.11	1,451.39	6.18	61.30
1,450.37	3.58	8.65	1,451.41	6.22	62.89
1,450.39	3.65	9.20	1,451.43	6.26	64.50
1,450.41	3.72	9.77	1,451.45	6.30	66.14
1,450.43	3.78	10.35	1,451.47	6.35	67.80
1,450.45	3.84	10.96	1,451.49	6.39	69.48
1,450.47	3.91	11.58	1,451.51	6.43	71.19
1,450.49	3.97	12.22	1,451.53	6.47	72.92
1,450.51	4.03	12.88	1,451.55	6.51	74.68
1,450.53	4.09	13.55	1,451.57	6.55	76.46
1,450.55	4.15	14.24	1,451.59	6.59	78.26
1,450.57	4.20	14.95	1,451.61	6.63	80.09
1,450.59	4.26	15.68	1,451.63	6.67	81.95
1,450.61	4.32	16.43	1,451.65	6.71	83.83
1,450.63	4.37	17.20	1,451.67	6.75	85.73
1,450.65	4.43	17.98	1,451.69	6.78	87.66
1,450.67	4.49	18.79	1,451.71	6.82	89.62
1,450.69	4.54	19.61	1,451.73	6.86	91.60
1,450.71	4.59	20.45	1,451.75	6.90	93.60
1,450.73	4.65	21.31	1,451.77	6.94	95.64
1,450.75	4.70	22.19	1,451.79	6.98	97.69
1,450.77	4.75	23.09			
1,450.79	4.80	24.01			
1,450.81	4.85	24.95			

Stage-Area-Storage for Reach 16R: Road Ditch

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
1,449.79	0.0	0	1,450.83	5.3	357
1,449.81	0.1	4	1,450.85	5.4	367
1,449.83	0.1	8	1,450.87	5.6	377
1,449.85	0.2	13	1,450.89	5.7	387
1,449.87	0.3	17	1,450.91	5.9	397
1,449.89	0.3	22	1,450.93	6.0	407
1,449.91	0.4	26	1,450.95	6.2	417
1,449.93	0.5	31	1,450.97	6.3	428
1,449.95	0.5	36	1,450.99	6.5	438
1,449.97	0.6	41	1,451.01	6.6	449
1,449.99	0.7	46	1,451.03	6.8	459
1,450.01	0.8	51	1,451.05	7.0	470
1,450.03	0.8	56	1,451.07	7.1	481
1,450.05	0.9	62	1,451.09	7.3	492
1,450.07	1.0	67	1,451.11	7.4	503
1,450.09	1.1	73	1,451.13	7.6	515
1,450.11	1.2	79	1,451.15	7.8	526
1,450.13	1.3	85	1,451.17	7.9	537
1,450.15	1.3	91	1,451.19	8.1	549
1,450.17	1.4	97	1,451.21	8.3	561
1,450.19	1.5	103	1,451.23	8.5	572
1,450.21	1.6	109	1,451.25	8.6	584
1,450.23	1.7	115	1,451.27	8.8	596
1,450.25	1.8	122	1,451.29	9.0	608
1,450.27	1.9	128	1,451.31	9.2	621
1,450.29	2.0	135	1,451.33	9.4	633
1,450.31	2.1	142	1,451.35	9.5	645
1,450.33	2.2	149	1,451.37	9.7	658
1,450.35	2.3	156	1,451.39	9.9	671
1,450.37	2.4	163	1,451.41	10.1	683
1,450.39	2.5	170	1,451.43	10.3	696
1,450.41	2.6	178	1,451.45	10.5	709
1,450.43	2.7	185	1,451.47	10.7	722
1,450.45	2.9	193	1,451.49	10.9	735
1,450.47	3.0	200	1,451.51	11.1	749
1,450.49	3.1	208	1,451.53	11.3	762
1,450.51	3.2	216	1,451.55	11.5	776
1,450.53	3.3	224	1,451.57	11.7	789
1,450.55	3.4	232	1,451.59	11.9	803
1,450.57	3.6	240	1,451.61	12.1	817
1,450.59	3.7	249	1,451.63	12.3	831
1,450.61	3.8	257	1,451.65	12.5	845
1,450.63	3.9	266	1,451.67	12.7	859
1,450.65	4.1	274	1,451.69	12.9	873
1,450.67	4.2	283	1,451.71	13.1	888
1,450.69	4.3	292	1,451.73	13.3	902
1,450.71	4.5	301	1,451.75	13.6	917
1,450.73	4.6	310	1,451.77	13.8	932
1,450.75	4.7	319	1,451.79	14.0	946
1,450.77	4.9	329			
1,450.79	5.0	338			
1,450.81	5.1	348			

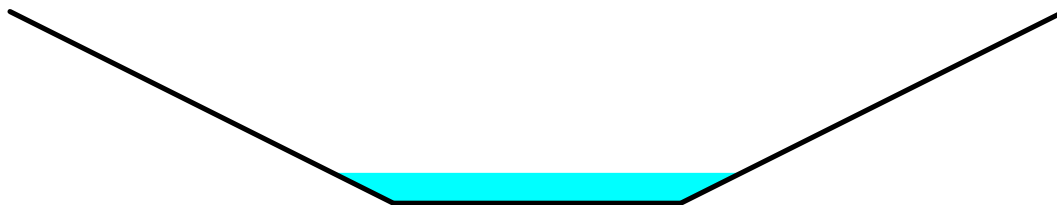
Summary for Reach 29R: Spillway

Inflow Area = 2.580 ac, 0.00% Impervious, Inflow Depth = 4.75" for 100 year event
 Inflow = 9.85 cfs @ 12.29 hrs, Volume= 1.020 af
 Outflow = 9.85 cfs @ 12.29 hrs, Volume= 1.020 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs
 Max. Velocity= 8.51 fps, Min. Travel Time= 0.4 min
 Avg. Velocity = 2.62 fps, Avg. Travel Time= 1.3 min

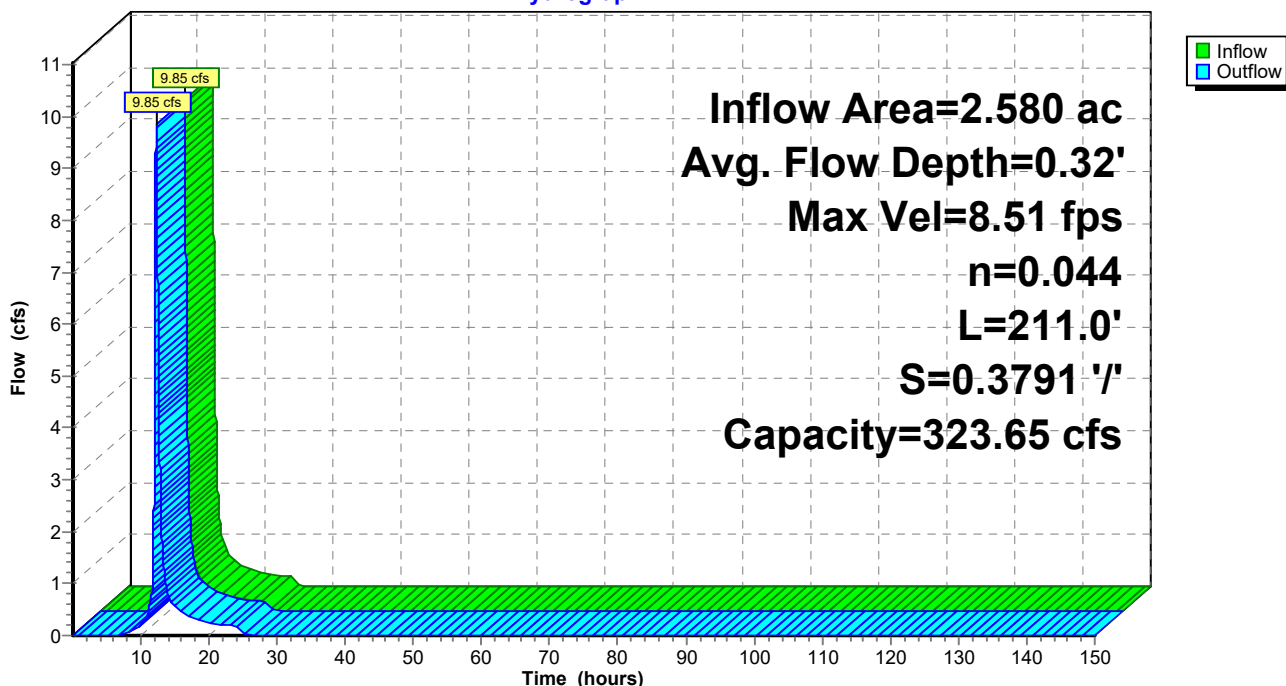
Peak Storage= 244 cf @ 12.29 hrs
 Average Depth at Peak Storage= 0.32'
 Bank-Full Depth= 2.00' Flow Area= 14.0 sf, Capacity= 323.65 cfs

3.00' x 2.00' deep channel, n= 0.044
 Side Slope Z-value= 2.0 '/' Top Width= 11.00'
 Length= 211.0' Slope= 0.3791 '/'
 Inlet Invert= 1,550.00', Outlet Invert= 1,470.00'



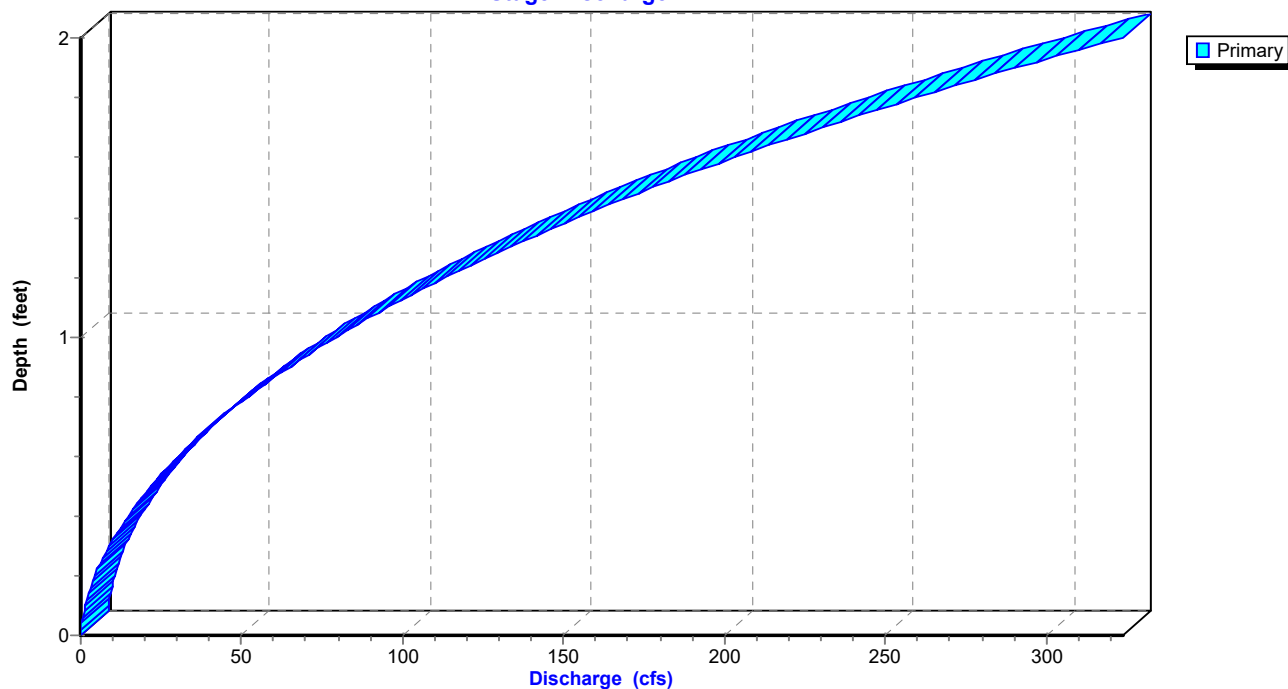
Reach 29R: Spillway

Hydrograph



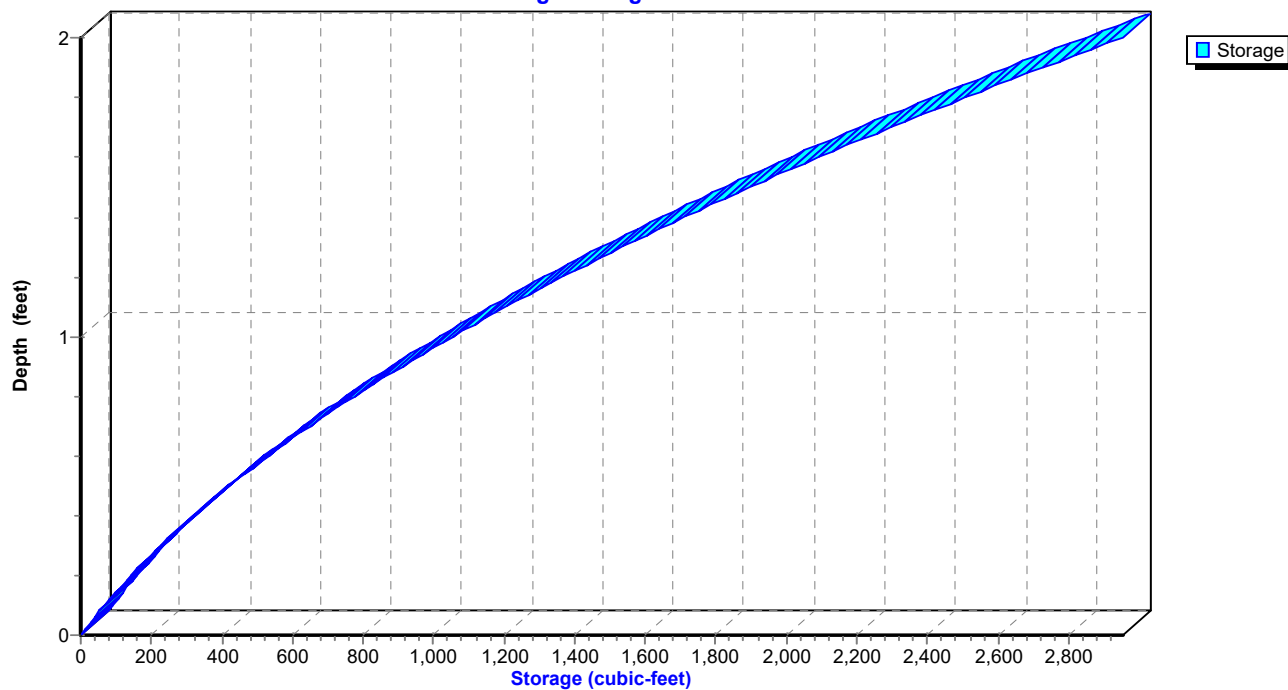
Reach 29R: Spillway

Stage-Discharge



Reach 29R: Spillway

Stage-Storage



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Hydrograph for Reach 29R: Spillway

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
0.05	0.00	0	1,550.00	0.00
5.05	0.00	0	1,550.00	0.00
10.05	0.20	20	1,550.03	0.20
15.05	0.57	39	1,550.06	0.57
20.05	0.25	23	1,550.04	0.25
25.05	0.01	2	1,550.00	0.01
30.05	0.00	0	1,550.00	0.00
35.05	0.00	0	1,550.00	0.00
40.05	0.00	0	1,550.00	0.00
45.05	0.00	0	1,550.00	0.00
50.05	0.00	0	1,550.00	0.00
55.05	0.00	0	1,550.00	0.00
60.05	0.00	0	1,550.00	0.00
65.05	0.00	0	1,550.00	0.00
70.05	0.00	0	1,550.00	0.00
75.05	0.00	0	1,550.00	0.00
80.05	0.00	0	1,550.00	0.00
85.05	0.00	0	1,550.00	0.00
90.05	0.00	0	1,550.00	0.00
95.05	0.00	0	1,550.00	0.00
100.05	0.00	0	1,550.00	0.00
105.05	0.00	0	1,550.00	0.00
110.05	0.00	0	1,550.00	0.00
115.05	0.00	0	1,550.00	0.00
120.05	0.00	0	1,550.00	0.00
125.05	0.00	0	1,550.00	0.00
130.05	0.00	0	1,550.00	0.00
135.05	0.00	0	1,550.00	0.00
140.05	0.00	0	1,550.00	0.00
145.05	0.00	0	1,550.00	0.00

Stage-Discharge for Reach 29R: Spillway

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)	Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
1,550.00	0.00	0.00	1,551.04	16.25	85.83
1,550.02	1.52	0.09	1,551.06	16.41	89.07
1,550.04	2.38	0.29	1,551.08	16.58	92.38
1,550.06	3.09	0.58	1,551.10	16.74	95.76
1,550.08	3.71	0.94	1,551.12	16.90	99.20
1,550.10	4.26	1.36	1,551.14	17.06	102.71
1,550.12	4.77	1.86	1,551.16	17.22	106.29
1,550.14	5.24	2.41	1,551.18	17.38	109.93
1,550.16	5.69	3.02	1,551.20	17.54	113.65
1,550.18	6.10	3.69	1,551.22	17.69	117.43
1,550.20	6.50	4.42	1,551.24	17.85	121.29
1,550.22	6.87	5.20	1,551.26	18.00	125.21
1,550.24	7.23	6.04	1,551.28	18.16	129.21
1,550.26	7.58	6.93	1,551.30	18.31	133.27
1,550.28	7.91	7.88	1,551.32	18.46	137.41
1,550.30	8.23	8.88	1,551.34	18.61	141.62
1,550.32	8.53	9.94	1,551.36	18.76	145.91
1,550.34	8.83	11.05	1,551.38	18.90	150.26
1,550.36	9.12	12.22	1,551.40	19.05	154.69
1,550.38	9.40	13.43	1,551.42	19.20	159.19
1,550.40	9.68	14.71	1,551.44	19.34	163.77
1,550.42	9.94	16.04	1,551.46	19.49	168.42
1,550.44	10.20	17.42	1,551.48	19.63	173.14
1,550.46	10.46	18.86	1,551.50	19.77	177.94
1,550.48	10.70	20.35	1,551.52	19.91	182.82
1,550.50	10.95	21.90	1,551.54	20.05	187.77
1,550.52	11.19	23.50	1,551.56	20.19	192.80
1,550.54	11.42	25.16	1,551.58	20.33	197.91
1,550.56	11.65	26.87	1,551.60	20.47	203.09
1,550.58	11.87	28.64	1,551.62	20.61	208.35
1,550.60	12.09	30.47	1,551.64	20.75	213.69
1,550.62	12.31	32.36	1,551.66	20.89	219.11
1,550.64	12.52	34.30	1,551.68	21.02	224.61
1,550.66	12.73	36.30	1,551.70	21.16	230.18
1,550.68	12.94	38.36	1,551.72	21.29	235.84
1,550.70	13.14	40.48	1,551.74	21.43	241.58
1,550.72	13.34	42.66	1,551.76	21.56	247.40
1,550.74	13.54	44.89	1,551.78	21.69	253.29
1,550.76	13.74	47.19	1,551.80	21.82	259.27
1,550.78	13.93	49.54	1,551.82	21.96	265.34
1,550.80	14.12	51.96	1,551.84	22.09	271.48
1,550.82	14.31	54.44	1,551.86	22.22	277.71
1,550.84	14.49	56.98	1,551.88	22.35	284.02
1,550.86	14.68	59.58	1,551.90	22.48	290.41
1,550.88	14.86	62.24	1,551.92	22.61	296.89
1,550.90	15.04	64.97	1,551.94	22.74	303.45
1,550.92	15.22	67.75	1,551.96	22.86	310.10
1,550.94	15.39	70.61	1,551.98	22.99	316.83
1,550.96	15.57	73.52	1,552.00	23.12	323.65
1,550.98	15.74	76.50			
1,551.00	15.91	79.55			
1,551.02	16.08	82.66			

Stage-Area-Storage for Reach 29R: Spillway

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
1,550.00	0.0	0	1,551.04	5.3	1,115
1,550.02	0.1	13	1,551.06	5.4	1,145
1,550.04	0.1	26	1,551.08	5.6	1,176
1,550.06	0.2	39	1,551.10	5.7	1,207
1,550.08	0.3	53	1,551.12	5.9	1,238
1,550.10	0.3	68	1,551.14	6.0	1,270
1,550.12	0.4	82	1,551.16	6.2	1,302
1,550.14	0.5	97	1,551.18	6.3	1,335
1,550.16	0.5	112	1,551.20	6.5	1,367
1,550.18	0.6	128	1,551.22	6.6	1,400
1,550.20	0.7	143	1,551.24	6.8	1,434
1,550.22	0.8	160	1,551.26	7.0	1,468
1,550.24	0.8	176	1,551.28	7.1	1,502
1,550.26	0.9	193	1,551.30	7.3	1,536
1,550.28	1.0	210	1,551.32	7.4	1,571
1,550.30	1.1	228	1,551.34	7.6	1,606
1,550.32	1.2	246	1,551.36	7.8	1,641
1,550.34	1.3	264	1,551.38	7.9	1,677
1,550.36	1.3	283	1,551.40	8.1	1,713
1,550.38	1.4	301	1,551.42	8.3	1,750
1,550.40	1.5	321	1,551.44	8.5	1,787
1,550.42	1.6	340	1,551.46	8.6	1,824
1,550.44	1.7	360	1,551.48	8.8	1,861
1,550.46	1.8	380	1,551.50	9.0	1,899
1,550.48	1.9	401	1,551.52	9.2	1,937
1,550.50	2.0	422	1,551.54	9.4	1,976
1,550.52	2.1	443	1,551.56	9.5	2,014
1,550.54	2.2	465	1,551.58	9.7	2,054
1,550.56	2.3	487	1,551.60	9.9	2,093
1,550.58	2.4	509	1,551.62	10.1	2,133
1,550.60	2.5	532	1,551.64	10.3	2,173
1,550.62	2.6	555	1,551.66	10.5	2,214
1,550.64	2.7	578	1,551.68	10.7	2,254
1,550.66	2.9	602	1,551.70	10.9	2,296
1,550.68	3.0	626	1,551.72	11.1	2,337
1,550.70	3.1	650	1,551.74	11.3	2,379
1,550.72	3.2	675	1,551.76	11.5	2,421
1,550.74	3.3	700	1,551.78	11.7	2,464
1,550.76	3.4	725	1,551.80	11.9	2,507
1,550.78	3.6	750	1,551.82	12.1	2,550
1,550.80	3.7	776	1,551.84	12.3	2,593
1,550.82	3.8	803	1,551.86	12.5	2,637
1,550.84	3.9	829	1,551.88	12.7	2,682
1,550.86	4.1	856	1,551.90	12.9	2,726
1,550.88	4.2	884	1,551.92	13.1	2,771
1,550.90	4.3	912	1,551.94	13.3	2,816
1,550.92	4.5	940	1,551.96	13.6	2,862
1,550.94	4.6	968	1,551.98	13.8	2,908
1,550.96	4.7	997	1,552.00	14.0	2,954
1,550.98	4.9	1,026			
1,551.00	5.0	1,055			
1,551.02	5.1	1,085			

Riato V6 Final

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Type II 24-hr 100 year Rainfall=7.42"

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Summary for Reach 33R: Reclaim Ditch

Inflow Area = 6.618 ac, 0.00% Impervious, Inflow Depth = 4.75" for 100 year event
Inflow = 20.93 cfs @ 12.37 hrs, Volume= 2.617 af
Outflow = 20.92 cfs @ 12.37 hrs, Volume= 2.617 af, Atten= 0%, Lag= 0.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Max. Velocity= 7.91 fps, Min. Travel Time= 0.6 min

Avg. Velocity = 2.75 fps, Avg. Travel Time= 1.7 min

Peak Storage= 727 cf @ 12.37 hrs

Average Depth at Peak Storage= 0.75'

Bank-Full Depth= 1.00' Flow Area= 4.0 sf, Capacity= 36.84 cfs

2.00' x 1.00' deep channel, n= 0.040

Side Slope Z-value= 2.0 '/' Top Width= 6.00'

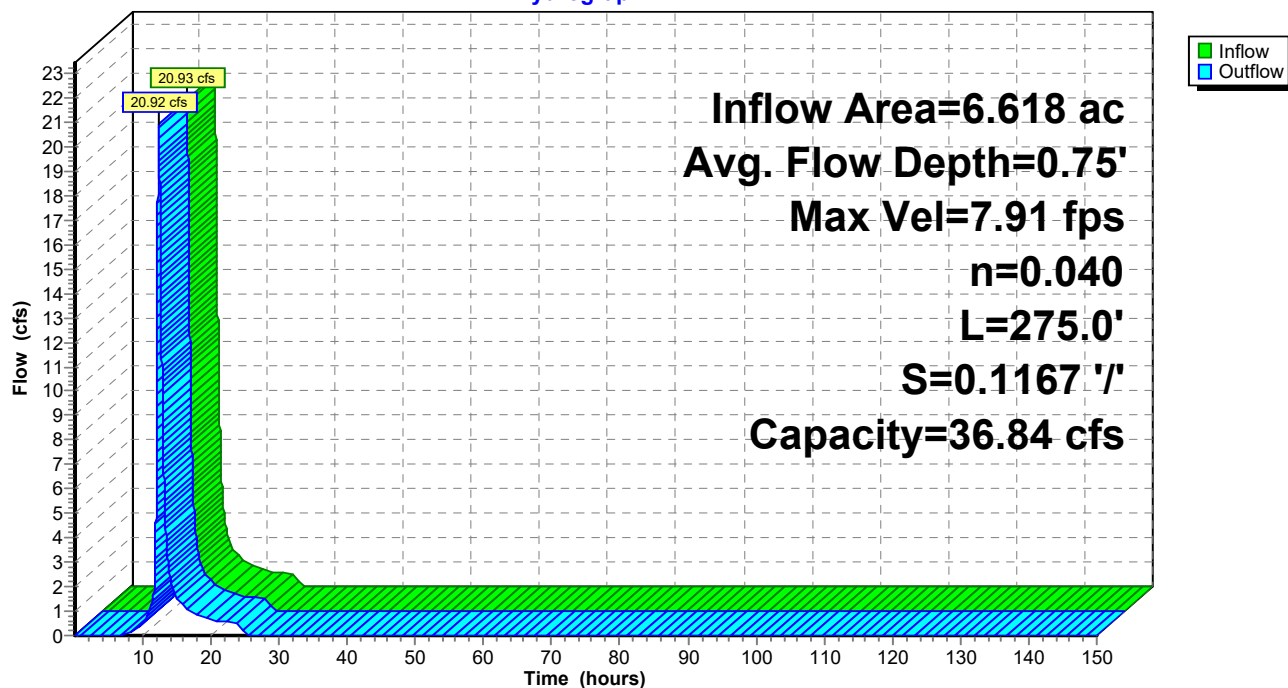
Length= 275.0' Slope= 0.1167 '/'

Inlet Invert= 1,480.00', Outlet Invert= 1,447.90'

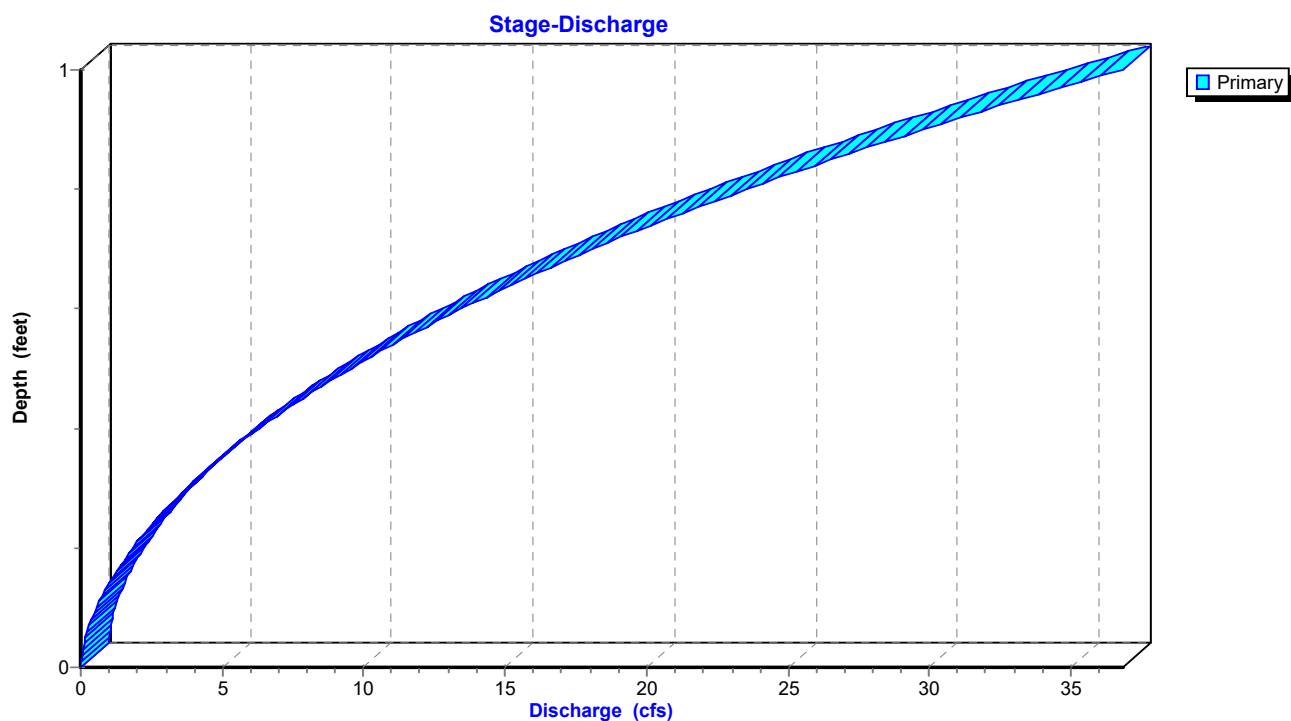


Reach 33R: Reclaim Ditch

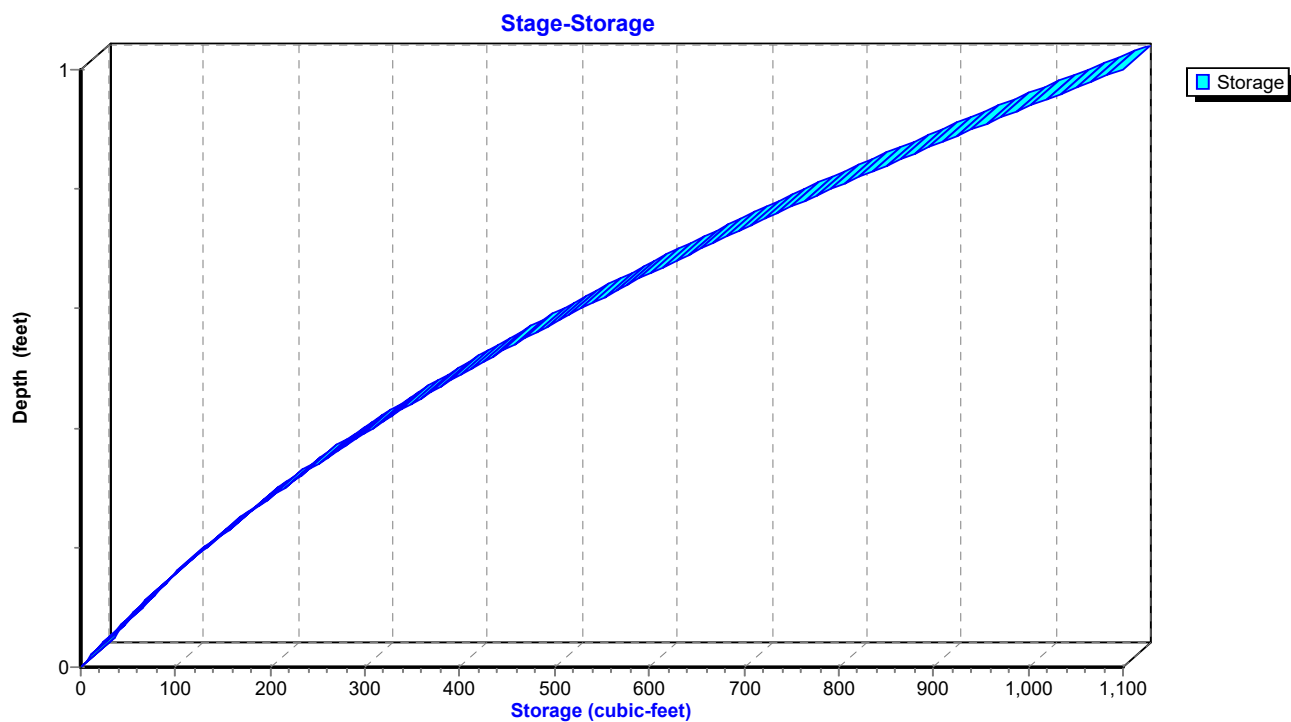
Hydrograph



Reach 33R: Reclaim Ditch



Reach 33R: Reclaim Ditch



Hydrograph for Reach 33R: Reclaim Ditch

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
0.05	0.00	0	1,480.00	0.00
5.05	0.00	0	1,480.00	0.00
10.05	0.49	55	1,480.09	0.48
15.05	1.52	116	1,480.18	1.52
20.05	0.65	67	1,480.11	0.65
25.05	0.06	17	1,480.03	0.07
30.05	0.00	0	1,480.00	0.00
35.05	0.00	0	1,480.00	0.00
40.05	0.00	0	1,480.00	0.00
45.05	0.00	0	1,480.00	0.00
50.05	0.00	0	1,480.00	0.00
55.05	0.00	0	1,480.00	0.00
60.05	0.00	0	1,480.00	0.00
65.05	0.00	0	1,480.00	0.00
70.05	0.00	0	1,480.00	0.00
75.05	0.00	0	1,480.00	0.00
80.05	0.00	0	1,480.00	0.00
85.05	0.00	0	1,480.00	0.00
90.05	0.00	0	1,480.00	0.00
95.05	0.00	0	1,480.00	0.00
100.05	0.00	0	1,480.00	0.00
105.05	0.00	0	1,480.00	0.00
110.05	0.00	0	1,480.00	0.00
115.05	0.00	0	1,480.00	0.00
120.05	0.00	0	1,480.00	0.00
125.05	0.00	0	1,480.00	0.00
130.05	0.00	0	1,480.00	0.00
135.05	0.00	0	1,480.00	0.00
140.05	0.00	0	1,480.00	0.00
145.05	0.00	0	1,480.00	0.00

Stage-Discharge for Reach 33R: Reclaim Ditch

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)	Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
1,480.00	0.00	0.00	1,480.52	6.49	10.26
1,480.01	0.58	0.01	1,480.53	6.55	10.63
1,480.02	0.92	0.04	1,480.54	6.62	11.01
1,480.03	1.20	0.07	1,480.55	6.69	11.40
1,480.04	1.44	0.12	1,480.56	6.75	11.79
1,480.05	1.66	0.17	1,480.57	6.81	12.20
1,480.06	1.86	0.24	1,480.58	6.88	12.61
1,480.07	2.05	0.31	1,480.59	6.94	13.02
1,480.08	2.22	0.38	1,480.60	7.00	13.45
1,480.09	2.39	0.47	1,480.61	7.07	13.88
1,480.10	2.55	0.56	1,480.62	7.13	14.32
1,480.11	2.70	0.66	1,480.63	7.19	14.77
1,480.12	2.84	0.76	1,480.64	7.25	15.22
1,480.13	2.98	0.88	1,480.65	7.31	15.68
1,480.14	3.11	0.99	1,480.66	7.37	16.15
1,480.15	3.24	1.12	1,480.67	7.43	16.63
1,480.16	3.37	1.25	1,480.68	7.49	17.11
1,480.17	3.49	1.39	1,480.69	7.55	17.60
1,480.18	3.61	1.53	1,480.70	7.61	18.10
1,480.19	3.72	1.68	1,480.71	7.66	18.61
1,480.20	3.83	1.84	1,480.72	7.72	19.12
1,480.21	3.94	2.00	1,480.73	7.78	19.65
1,480.22	4.04	2.17	1,480.74	7.84	20.18
1,480.23	4.15	2.35	1,480.75	7.89	20.72
1,480.24	4.25	2.53	1,480.76	7.95	21.26
1,480.25	4.35	2.72	1,480.77	8.00	21.82
1,480.26	4.44	2.91	1,480.78	8.06	22.38
1,480.27	4.54	3.11	1,480.79	8.11	22.95
1,480.28	4.63	3.32	1,480.80	8.17	23.53
1,480.29	4.72	3.53	1,480.81	8.22	24.11
1,480.30	4.81	3.75	1,480.82	8.28	24.71
1,480.31	4.90	3.98	1,480.83	8.33	25.31
1,480.32	4.99	4.21	1,480.84	8.39	25.92
1,480.33	5.07	4.45	1,480.85	8.44	26.54
1,480.34	5.15	4.70	1,480.86	8.49	27.17
1,480.35	5.24	4.95	1,480.87	8.54	27.80
1,480.36	5.32	5.21	1,480.88	8.60	28.45
1,480.37	5.40	5.47	1,480.89	8.65	29.10
1,480.38	5.48	5.74	1,480.90	8.70	29.76
1,480.39	5.56	6.02	1,480.91	8.75	30.43
1,480.40	5.63	6.31	1,480.92	8.80	31.11
1,480.41	5.71	6.60	1,480.93	8.86	31.79
1,480.42	5.78	6.90	1,480.94	8.91	32.49
1,480.43	5.86	7.20	1,480.95	8.96	33.19
1,480.44	5.93	7.51	1,480.96	9.01	33.90
1,480.45	6.00	7.83	1,480.97	9.06	34.62
1,480.46	6.07	8.16	1,480.98	9.11	35.35
1,480.47	6.14	8.49	1,480.99	9.16	36.09
1,480.48	6.21	8.83	1,481.00	9.21	36.84
1,480.49	6.28	9.18			
1,480.50	6.35	9.53			
1,480.51	6.42	9.89			

Stage-Area-Storage for Reach 33R: Reclaim Ditch

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
1,480.00	0.0	0	1,480.52	1.6	435
1,480.01	0.0	6	1,480.53	1.6	446
1,480.02	0.0	11	1,480.54	1.7	457
1,480.03	0.1	17	1,480.55	1.7	469
1,480.04	0.1	23	1,480.56	1.7	480
1,480.05	0.1	29	1,480.57	1.8	492
1,480.06	0.1	35	1,480.58	1.8	504
1,480.07	0.1	41	1,480.59	1.9	516
1,480.08	0.2	48	1,480.60	1.9	528
1,480.09	0.2	54	1,480.61	2.0	540
1,480.10	0.2	61	1,480.62	2.0	552
1,480.11	0.2	67	1,480.63	2.1	565
1,480.12	0.3	74	1,480.64	2.1	577
1,480.13	0.3	81	1,480.65	2.1	590
1,480.14	0.3	88	1,480.66	2.2	603
1,480.15	0.3	95	1,480.67	2.2	615
1,480.16	0.4	102	1,480.68	2.3	628
1,480.17	0.4	109	1,480.69	2.3	641
1,480.18	0.4	117	1,480.70	2.4	655
1,480.19	0.5	124	1,480.71	2.4	668
1,480.20	0.5	132	1,480.72	2.5	681
1,480.21	0.5	140	1,480.73	2.5	695
1,480.22	0.5	148	1,480.74	2.6	708
1,480.23	0.6	156	1,480.75	2.6	722
1,480.24	0.6	164	1,480.76	2.7	736
1,480.25	0.6	172	1,480.77	2.7	750
1,480.26	0.7	180	1,480.78	2.8	764
1,480.27	0.7	189	1,480.79	2.8	778
1,480.28	0.7	197	1,480.80	2.9	792
1,480.29	0.7	206	1,480.81	2.9	806
1,480.30	0.8	215	1,480.82	3.0	821
1,480.31	0.8	223	1,480.83	3.0	835
1,480.32	0.8	232	1,480.84	3.1	850
1,480.33	0.9	241	1,480.85	3.1	865
1,480.34	0.9	251	1,480.86	3.2	880
1,480.35	0.9	260	1,480.87	3.3	895
1,480.36	1.0	269	1,480.88	3.3	910
1,480.37	1.0	279	1,480.89	3.4	925
1,480.38	1.0	288	1,480.90	3.4	941
1,480.39	1.1	298	1,480.91	3.5	956
1,480.40	1.1	308	1,480.92	3.5	972
1,480.41	1.2	318	1,480.93	3.6	987
1,480.42	1.2	328	1,480.94	3.6	1,003
1,480.43	1.2	338	1,480.95	3.7	1,019
1,480.44	1.3	348	1,480.96	3.8	1,035
1,480.45	1.3	359	1,480.97	3.8	1,051
1,480.46	1.3	369	1,480.98	3.9	1,067
1,480.47	1.4	380	1,480.99	3.9	1,084
1,480.48	1.4	391	1,481.00	4.0	1,100
1,480.49	1.5	402			
1,480.50	1.5	413			
1,480.51	1.5	424			

Summary for Reach 34R: Div Ditch 2

Inflow Area = 2.580 ac, 0.00% Impervious, Inflow Depth = 4.75" for 100 year event
 Inflow = 9.87 cfs @ 12.28 hrs, Volume= 1.020 af
 Outflow = 9.85 cfs @ 12.29 hrs, Volume= 1.020 af, Atten= 0%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Max. Velocity= 7.36 fps, Min. Travel Time= 0.7 min

Avg. Velocity = 2.24 fps, Avg. Travel Time= 2.4 min

Peak Storage= 434 cf @ 12.29 hrs

Average Depth at Peak Storage= 0.53'

Bank-Full Depth= 1.00' Flow Area= 3.0 sf, Capacity= 30.48 cfs

2.00' x 1.00' deep channel, n= 0.035

Side Slope Z-value= 1.0 '/' Top Width= 4.00'

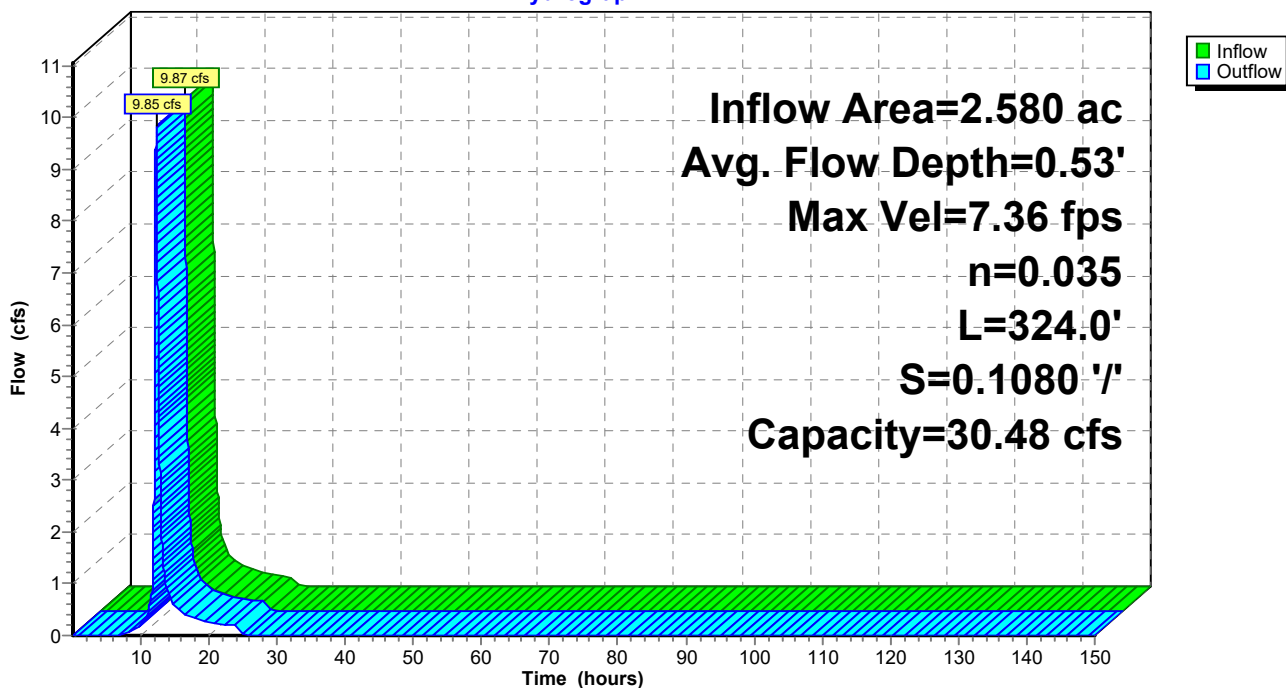
Length= 324.0' Slope= 0.1080 '/'

Inlet Invert= 1,585.00', Outlet Invert= 1,550.00'

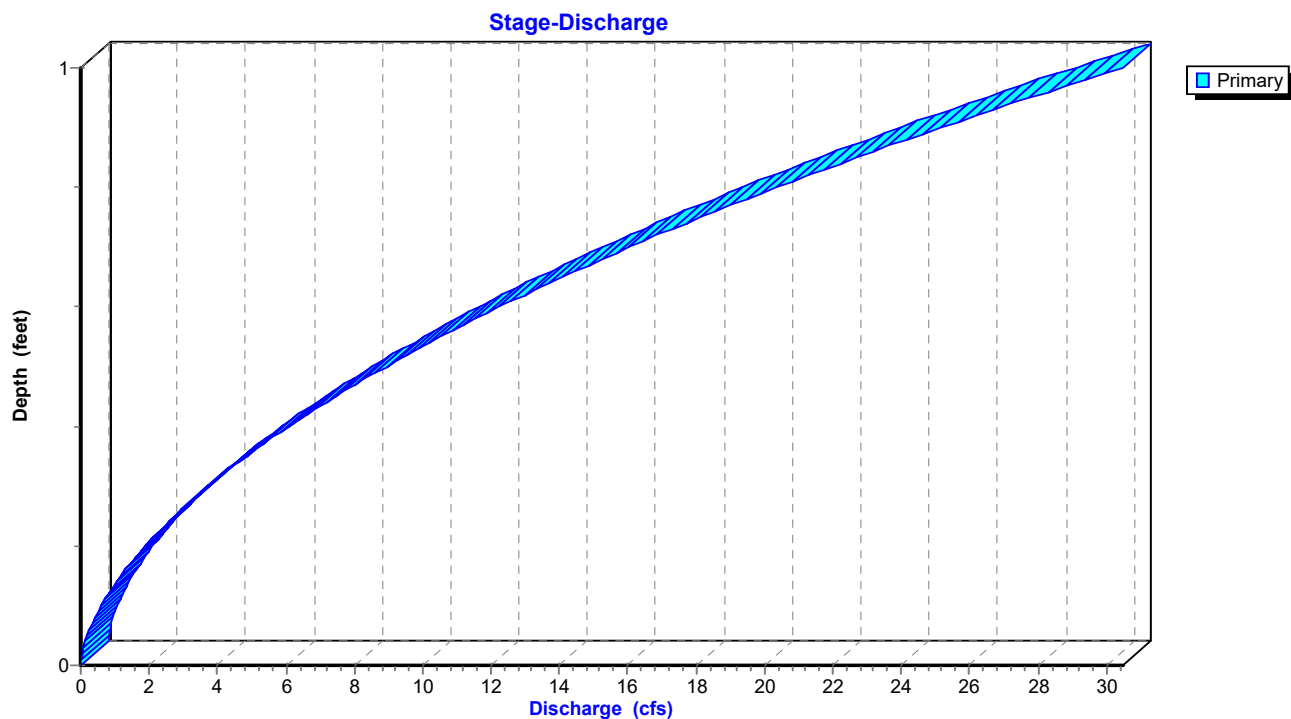


Reach 34R: Div Ditch 2

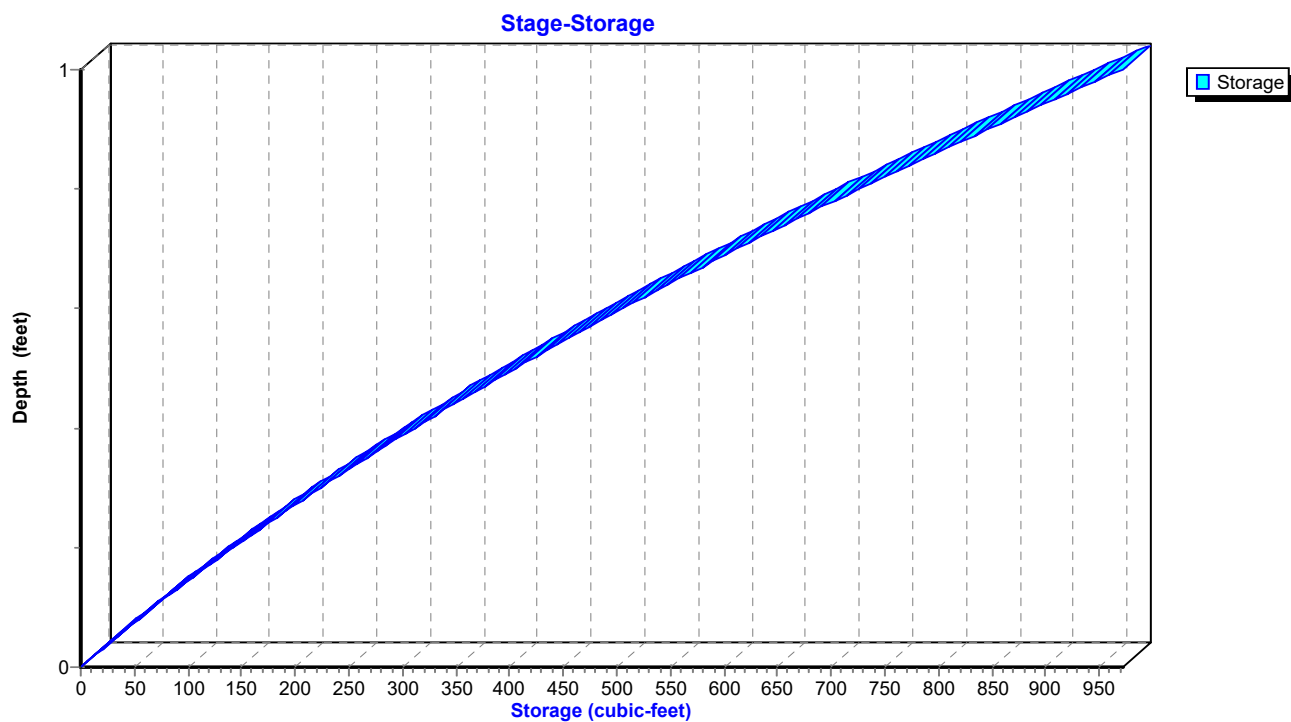
Hydrograph



Reach 34R: Div Ditch 2



Reach 34R: Div Ditch 2



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Hydrograph for Reach 34R: Div Ditch 2

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
0.05	0.00	0	1,585.00	0.00
5.05	0.00	0	1,585.00	0.00
10.05	0.21	35	1,585.05	0.20
15.05	0.57	66	1,585.10	0.57
20.05	0.25	39	1,585.06	0.25
25.05	0.01	6	1,585.01	0.01
30.05	0.00	0	1,585.00	0.00
35.05	0.00	0	1,585.00	0.00
40.05	0.00	0	1,585.00	0.00
45.05	0.00	0	1,585.00	0.00
50.05	0.00	0	1,585.00	0.00
55.05	0.00	0	1,585.00	0.00
60.05	0.00	0	1,585.00	0.00
65.05	0.00	0	1,585.00	0.00
70.05	0.00	0	1,585.00	0.00
75.05	0.00	0	1,585.00	0.00
80.05	0.00	0	1,585.00	0.00
85.05	0.00	0	1,585.00	0.00
90.05	0.00	0	1,585.00	0.00
95.05	0.00	0	1,585.00	0.00
100.05	0.00	0	1,585.00	0.00
105.05	0.00	0	1,585.00	0.00
110.05	0.00	0	1,585.00	0.00
115.05	0.00	0	1,585.00	0.00
120.05	0.00	0	1,585.00	0.00
125.05	0.00	0	1,585.00	0.00
130.05	0.00	0	1,585.00	0.00
135.05	0.00	0	1,585.00	0.00
140.05	0.00	0	1,585.00	0.00
145.05	0.00	0	1,585.00	0.00

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Type II 24-hr 100 year Rainfall=7.42"

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Stage-Discharge for Reach 34R: Div Ditch 2

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)	Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
1,585.00	0.00	0.00	1,585.52	7.29	9.55
1,585.01	0.64	0.01	1,585.53	7.36	9.87
1,585.02	1.02	0.04	1,585.54	7.43	10.20
1,585.03	1.32	0.08	1,585.55	7.51	10.53
1,585.04	1.59	0.13	1,585.56	7.58	10.86
1,585.05	1.84	0.19	1,585.57	7.65	11.20
1,585.06	2.07	0.26	1,585.58	7.71	11.54
1,585.07	2.28	0.33	1,585.59	7.78	11.89
1,585.08	2.48	0.41	1,585.60	7.85	12.25
1,585.09	2.66	0.50	1,585.61	7.92	12.61
1,585.10	2.84	0.60	1,585.62	7.98	12.97
1,585.11	3.01	0.70	1,585.63	8.05	13.34
1,585.12	3.18	0.81	1,585.64	8.11	13.71
1,585.13	3.34	0.92	1,585.65	8.18	14.09
1,585.14	3.49	1.05	1,585.66	8.24	14.47
1,585.15	3.64	1.17	1,585.67	8.31	14.86
1,585.16	3.78	1.31	1,585.68	8.37	15.25
1,585.17	3.92	1.44	1,585.69	8.43	15.65
1,585.18	4.05	1.59	1,585.70	8.49	16.05
1,585.19	4.18	1.74	1,585.71	8.56	16.46
1,585.20	4.31	1.90	1,585.72	8.62	16.87
1,585.21	4.43	2.06	1,585.73	8.68	17.29
1,585.22	4.55	2.22	1,585.74	8.74	17.71
1,585.23	4.67	2.39	1,585.75	8.80	18.14
1,585.24	4.78	2.57	1,585.76	8.86	18.57
1,585.25	4.90	2.75	1,585.77	8.91	19.01
1,585.26	5.01	2.94	1,585.78	8.97	19.45
1,585.27	5.11	3.13	1,585.79	9.03	19.90
1,585.28	5.22	3.33	1,585.80	9.09	20.35
1,585.29	5.32	3.53	1,585.81	9.14	20.81
1,585.30	5.42	3.74	1,585.82	9.20	21.28
1,585.31	5.52	3.95	1,585.83	9.26	21.74
1,585.32	5.62	4.17	1,585.84	9.31	22.22
1,585.33	5.72	4.39	1,585.85	9.37	22.69
1,585.34	5.81	4.62	1,585.86	9.42	23.18
1,585.35	5.90	4.85	1,585.87	9.48	23.67
1,585.36	5.99	5.09	1,585.88	9.53	24.16
1,585.37	6.08	5.33	1,585.89	9.59	24.66
1,585.38	6.17	5.58	1,585.90	9.64	25.16
1,585.39	6.26	5.83	1,585.91	9.69	25.67
1,585.40	6.34	6.09	1,585.92	9.75	26.18
1,585.41	6.43	6.35	1,585.93	9.80	26.70
1,585.42	6.51	6.62	1,585.94	9.85	27.23
1,585.43	6.59	6.89	1,585.95	9.90	27.76
1,585.44	6.68	7.17	1,585.96	9.96	28.29
1,585.45	6.76	7.45	1,585.97	10.01	28.83
1,585.46	6.83	7.73	1,585.98	10.06	29.38
1,585.47	6.91	8.03	1,585.99	10.11	29.93
1,585.48	6.99	8.32	1,586.00	10.16	30.48
1,585.49	7.07	8.62			
1,585.50	7.14	8.93			
1,585.51	7.22	9.24			

Stage-Area-Storage for Reach 34R: Div Ditch 2

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
1,585.00	0.0	0	1,585.52	1.3	425
1,585.01	0.0	7	1,585.53	1.3	434
1,585.02	0.0	13	1,585.54	1.4	444
1,585.03	0.1	20	1,585.55	1.4	454
1,585.04	0.1	26	1,585.56	1.4	464
1,585.05	0.1	33	1,585.57	1.5	475
1,585.06	0.1	40	1,585.58	1.5	485
1,585.07	0.1	47	1,585.59	1.5	495
1,585.08	0.2	54	1,585.60	1.6	505
1,585.09	0.2	61	1,585.61	1.6	516
1,585.10	0.2	68	1,585.62	1.6	526
1,585.11	0.2	75	1,585.63	1.7	537
1,585.12	0.3	82	1,585.64	1.7	547
1,585.13	0.3	90	1,585.65	1.7	558
1,585.14	0.3	97	1,585.66	1.8	569
1,585.15	0.3	104	1,585.67	1.8	580
1,585.16	0.3	112	1,585.68	1.8	590
1,585.17	0.4	120	1,585.69	1.9	601
1,585.18	0.4	127	1,585.70	1.9	612
1,585.19	0.4	135	1,585.71	1.9	623
1,585.20	0.4	143	1,585.72	2.0	635
1,585.21	0.5	150	1,585.73	2.0	646
1,585.22	0.5	158	1,585.74	2.0	657
1,585.23	0.5	166	1,585.75	2.1	668
1,585.24	0.5	174	1,585.76	2.1	680
1,585.25	0.6	182	1,585.77	2.1	691
1,585.26	0.6	190	1,585.78	2.2	703
1,585.27	0.6	199	1,585.79	2.2	714
1,585.28	0.6	207	1,585.80	2.2	726
1,585.29	0.7	215	1,585.81	2.3	737
1,585.30	0.7	224	1,585.82	2.3	749
1,585.31	0.7	232	1,585.83	2.3	761
1,585.32	0.7	241	1,585.84	2.4	773
1,585.33	0.8	249	1,585.85	2.4	785
1,585.34	0.8	258	1,585.86	2.5	797
1,585.35	0.8	266	1,585.87	2.5	809
1,585.36	0.8	275	1,585.88	2.5	821
1,585.37	0.9	284	1,585.89	2.6	833
1,585.38	0.9	293	1,585.90	2.6	846
1,585.39	0.9	302	1,585.91	2.6	858
1,585.40	1.0	311	1,585.92	2.7	870
1,585.41	1.0	320	1,585.93	2.7	883
1,585.42	1.0	329	1,585.94	2.8	895
1,585.43	1.0	339	1,585.95	2.8	908
1,585.44	1.1	348	1,585.96	2.8	921
1,585.45	1.1	357	1,585.97	2.9	933
1,585.46	1.1	367	1,585.98	2.9	946
1,585.47	1.2	376	1,585.99	3.0	959
1,585.48	1.2	386	1,586.00	3.0	972
1,585.49	1.2	395			
1,585.50	1.3	405			
1,585.51	1.3	415			

Summary for Reach 35R: Div Ditch 1

Inflow Area = 2.922 ac, 0.00% Impervious, Inflow Depth = 4.75" for 100 year event
 Inflow = 11.18 cfs @ 12.28 hrs, Volume= 1.155 af
 Outflow = 11.15 cfs @ 12.29 hrs, Volume= 1.155 af, Atten= 0%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs
 Max. Velocity= 7.48 fps, Min. Travel Time= 1.0 min
 Avg. Velocity = 2.27 fps, Avg. Travel Time= 3.2 min

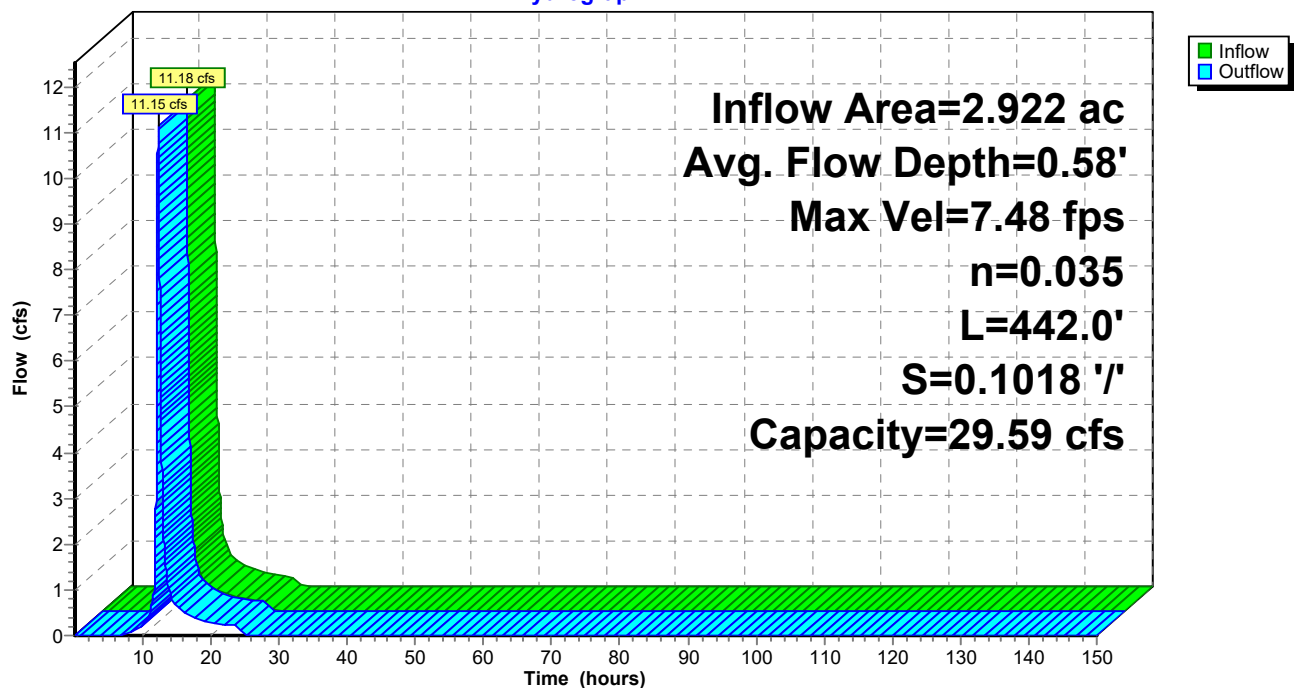
Peak Storage= 659 cf @ 12.29 hrs
 Average Depth at Peak Storage= 0.58'
 Bank-Full Depth= 1.00' Flow Area= 3.0 sf, Capacity= 29.59 cfs

2.00' x 1.00' deep channel, n= 0.035
 Side Slope Z-value= 1.0 '/' Top Width= 4.00'
 Length= 442.0' Slope= 0.1018 '/'
 Inlet Invert= 1,585.00', Outlet Invert= 1,540.00'

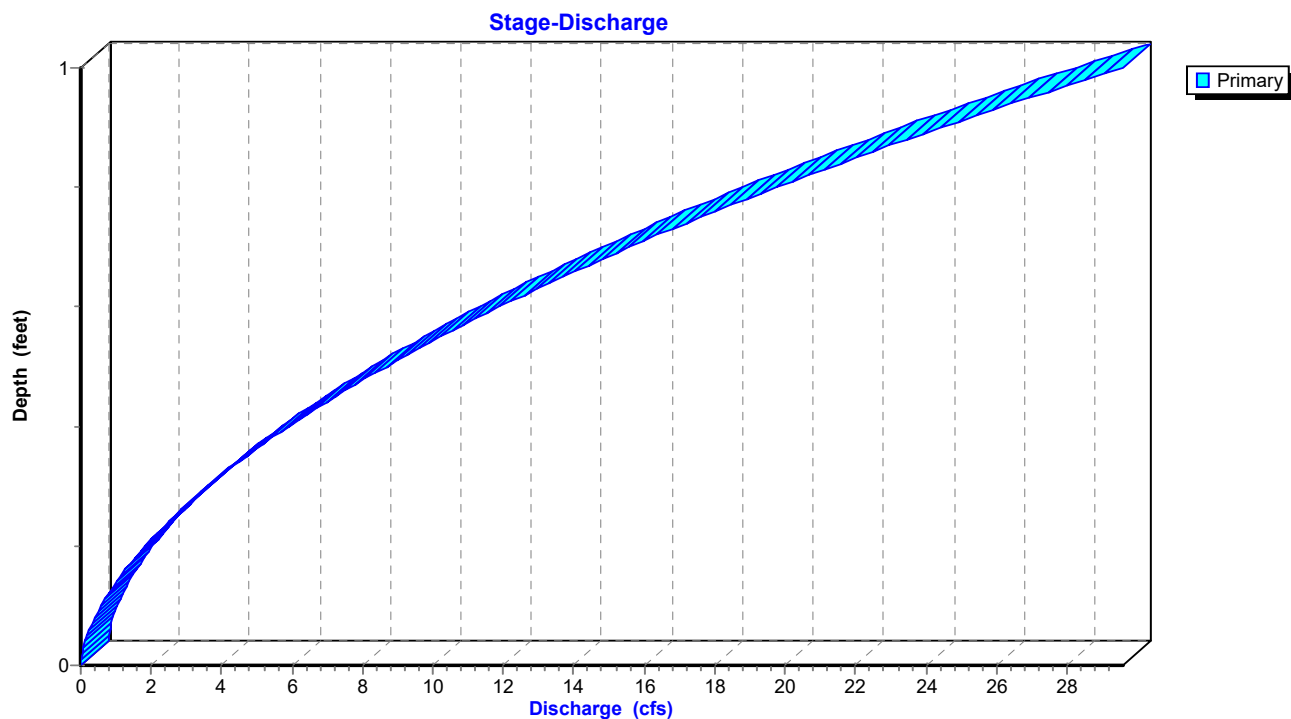


Reach 35R: Div Ditch 1

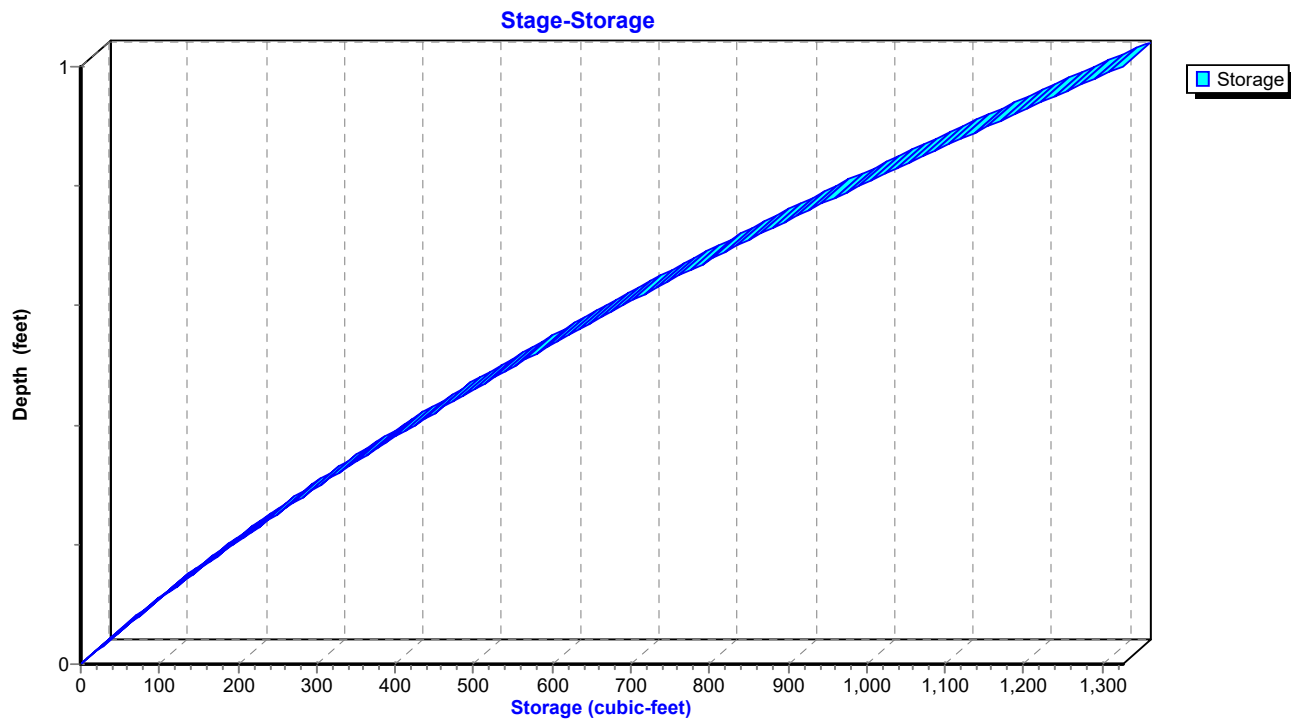
Hydrograph



Reach 35R: Div Ditch 1



Reach 35R: Div Ditch 1



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Hydrograph for Reach 35R: Div Ditch 1

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
0.05	0.00	0	1,585.00	0.00
5.05	0.00	0	1,585.00	0.00
10.05	0.23	52	1,585.06	0.23
15.05	0.64	99	1,585.11	0.65
20.05	0.28	59	1,585.06	0.28
25.05	0.01	9	1,585.01	0.01
30.05	0.00	0	1,585.00	0.00
35.05	0.00	0	1,585.00	0.00
40.05	0.00	0	1,585.00	0.00
45.05	0.00	0	1,585.00	0.00
50.05	0.00	0	1,585.00	0.00
55.05	0.00	0	1,585.00	0.00
60.05	0.00	0	1,585.00	0.00
65.05	0.00	0	1,585.00	0.00
70.05	0.00	0	1,585.00	0.00
75.05	0.00	0	1,585.00	0.00
80.05	0.00	0	1,585.00	0.00
85.05	0.00	0	1,585.00	0.00
90.05	0.00	0	1,585.00	0.00
95.05	0.00	0	1,585.00	0.00
100.05	0.00	0	1,585.00	0.00
105.05	0.00	0	1,585.00	0.00
110.05	0.00	0	1,585.00	0.00
115.05	0.00	0	1,585.00	0.00
120.05	0.00	0	1,585.00	0.00
125.05	0.00	0	1,585.00	0.00
130.05	0.00	0	1,585.00	0.00
135.05	0.00	0	1,585.00	0.00
140.05	0.00	0	1,585.00	0.00
145.05	0.00	0	1,585.00	0.00

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Stage-Discharge for Reach 35R: Div Ditch 1

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)	Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
1,585.00	0.00	0.00	1,585.52	7.08	9.27
1,585.01	0.63	0.01	1,585.53	7.15	9.58
1,585.02	0.99	0.04	1,585.54	7.22	9.90
1,585.03	1.28	0.08	1,585.55	7.29	10.22
1,585.04	1.55	0.13	1,585.56	7.35	10.54
1,585.05	1.79	0.18	1,585.57	7.42	10.87
1,585.06	2.01	0.25	1,585.58	7.49	11.21
1,585.07	2.21	0.32	1,585.59	7.56	11.55
1,585.08	2.40	0.40	1,585.60	7.62	11.89
1,585.09	2.59	0.49	1,585.61	7.69	12.24
1,585.10	2.76	0.58	1,585.62	7.75	12.59
1,585.11	2.93	0.68	1,585.63	7.81	12.95
1,585.12	3.09	0.79	1,585.64	7.88	13.31
1,585.13	3.24	0.90	1,585.65	7.94	13.68
1,585.14	3.39	1.01	1,585.66	8.00	14.05
1,585.15	3.53	1.14	1,585.67	8.06	14.43
1,585.16	3.67	1.27	1,585.68	8.13	14.81
1,585.17	3.80	1.40	1,585.69	8.19	15.19
1,585.18	3.93	1.54	1,585.70	8.25	15.58
1,585.19	4.06	1.69	1,585.71	8.31	15.98
1,585.20	4.18	1.84	1,585.72	8.36	16.38
1,585.21	4.30	2.00	1,585.73	8.42	16.79
1,585.22	4.42	2.16	1,585.74	8.48	17.20
1,585.23	4.53	2.32	1,585.75	8.54	17.61
1,585.24	4.64	2.50	1,585.76	8.60	18.03
1,585.25	4.75	2.67	1,585.77	8.65	18.46
1,585.26	4.86	2.86	1,585.78	8.71	18.89
1,585.27	4.96	3.04	1,585.79	8.77	19.32
1,585.28	5.07	3.23	1,585.80	8.82	19.76
1,585.29	5.17	3.43	1,585.81	8.88	20.20
1,585.30	5.26	3.63	1,585.82	8.93	20.65
1,585.31	5.36	3.84	1,585.83	8.99	21.11
1,585.32	5.46	4.05	1,585.84	9.04	21.57
1,585.33	5.55	4.27	1,585.85	9.09	22.03
1,585.34	5.64	4.49	1,585.86	9.15	22.50
1,585.35	5.73	4.71	1,585.87	9.20	22.97
1,585.36	5.82	4.94	1,585.88	9.25	23.45
1,585.37	5.91	5.18	1,585.89	9.31	23.94
1,585.38	5.99	5.42	1,585.90	9.36	24.43
1,585.39	6.08	5.66	1,585.91	9.41	24.92
1,585.40	6.16	5.91	1,585.92	9.46	25.42
1,585.41	6.24	6.17	1,585.93	9.51	25.92
1,585.42	6.32	6.43	1,585.94	9.56	26.43
1,585.43	6.40	6.69	1,585.95	9.61	26.95
1,585.44	6.48	6.96	1,585.96	9.67	27.46
1,585.45	6.56	7.23	1,585.97	9.72	27.99
1,585.46	6.64	7.51	1,585.98	9.77	28.52
1,585.47	6.71	7.79	1,585.99	9.81	29.05
1,585.48	6.79	8.08	1,586.00	9.86	29.59
1,585.49	6.86	8.37			
1,585.50	6.93	8.67			
1,585.51	7.01	8.97			

Stage-Area-Storage for Reach 35R: Div Ditch 1

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
1,585.00	0.0	0	1,585.52	1.3	579
1,585.01	0.0	9	1,585.53	1.3	593
1,585.02	0.0	18	1,585.54	1.4	606
1,585.03	0.1	27	1,585.55	1.4	620
1,585.04	0.1	36	1,585.56	1.4	634
1,585.05	0.1	45	1,585.57	1.5	647
1,585.06	0.1	55	1,585.58	1.5	661
1,585.07	0.1	64	1,585.59	1.5	675
1,585.08	0.2	74	1,585.60	1.6	690
1,585.09	0.2	83	1,585.61	1.6	704
1,585.10	0.2	93	1,585.62	1.6	718
1,585.11	0.2	103	1,585.63	1.7	732
1,585.12	0.3	112	1,585.64	1.7	747
1,585.13	0.3	122	1,585.65	1.7	761
1,585.14	0.3	132	1,585.66	1.8	776
1,585.15	0.3	143	1,585.67	1.8	791
1,585.16	0.3	153	1,585.68	1.8	806
1,585.17	0.4	163	1,585.69	1.9	820
1,585.18	0.4	173	1,585.70	1.9	835
1,585.19	0.4	184	1,585.71	1.9	850
1,585.20	0.4	194	1,585.72	2.0	866
1,585.21	0.5	205	1,585.73	2.0	881
1,585.22	0.5	216	1,585.74	2.0	896
1,585.23	0.5	227	1,585.75	2.1	912
1,585.24	0.5	238	1,585.76	2.1	927
1,585.25	0.6	249	1,585.77	2.1	943
1,585.26	0.6	260	1,585.78	2.2	958
1,585.27	0.6	271	1,585.79	2.2	974
1,585.28	0.6	282	1,585.80	2.2	990
1,585.29	0.7	294	1,585.81	2.3	1,006
1,585.30	0.7	305	1,585.82	2.3	1,022
1,585.31	0.7	317	1,585.83	2.3	1,038
1,585.32	0.7	328	1,585.84	2.4	1,054
1,585.33	0.8	340	1,585.85	2.4	1,071
1,585.34	0.8	352	1,585.86	2.5	1,087
1,585.35	0.8	364	1,585.87	2.5	1,104
1,585.36	0.8	376	1,585.88	2.5	1,120
1,585.37	0.9	388	1,585.89	2.6	1,137
1,585.38	0.9	400	1,585.90	2.6	1,154
1,585.39	0.9	412	1,585.91	2.6	1,170
1,585.40	1.0	424	1,585.92	2.7	1,187
1,585.41	1.0	437	1,585.93	2.7	1,204
1,585.42	1.0	449	1,585.94	2.8	1,222
1,585.43	1.0	462	1,585.95	2.8	1,239
1,585.44	1.1	475	1,585.96	2.8	1,256
1,585.45	1.1	487	1,585.97	2.9	1,273
1,585.46	1.1	500	1,585.98	2.9	1,291
1,585.47	1.2	513	1,585.99	3.0	1,308
1,585.48	1.2	526	1,586.00	3.0	1,326
1,585.49	1.2	539			
1,585.50	1.3	553			
1,585.51	1.3	566			

Summary for Reach 36R: Div Ditch 5

Inflow Area = 2.762 ac, 0.00% Impervious, Inflow Depth = 4.75" for 100 year event
 Inflow = 10.00 cfs @ 12.33 hrs, Volume= 1.092 af
 Outflow = 9.99 cfs @ 12.33 hrs, Volume= 1.092 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Max. Velocity= 4.35 fps, Min. Travel Time= 0.8 min

Avg. Velocity= 1.39 fps, Avg. Travel Time= 2.5 min

Peak Storage= 473 cf @ 12.33 hrs

Average Depth at Peak Storage= 0.82'

Bank-Full Depth= 1.00' Flow Area= 3.0 sf, Capacity= 14.45 cfs

2.00' x 1.00' deep channel, n= 0.035

Side Slope Z-value= 1.0 '/' Top Width= 4.00'

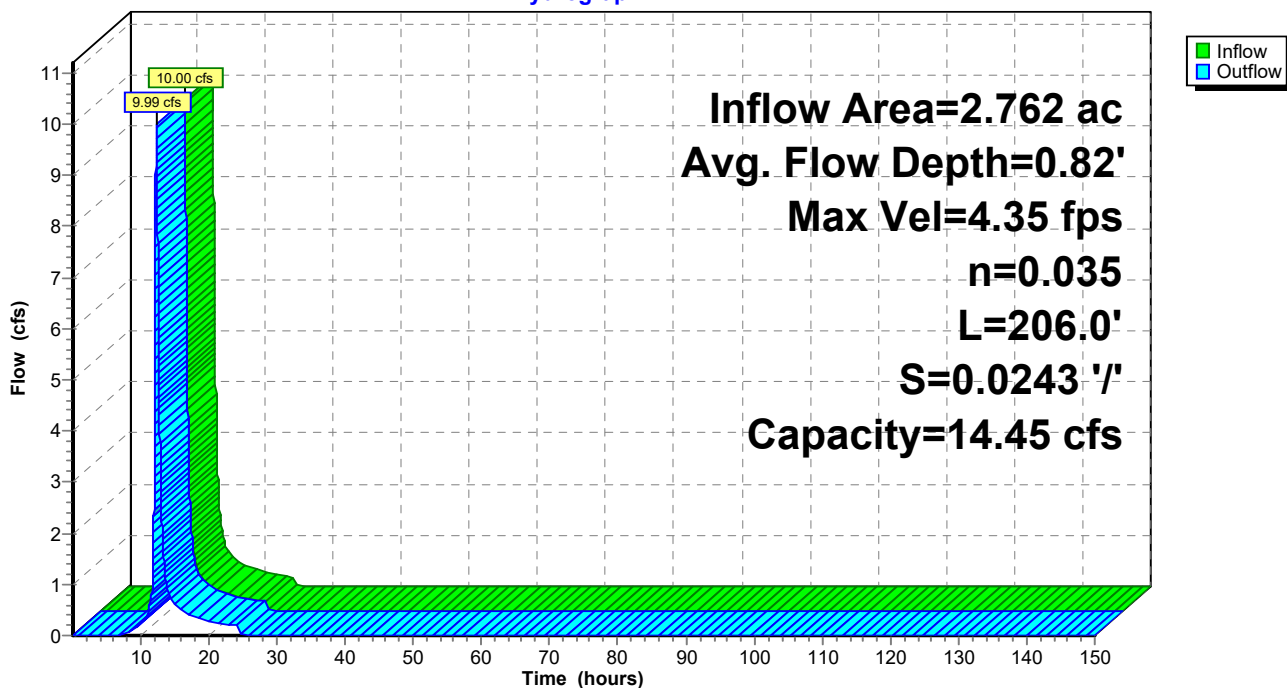
Length= 206.0' Slope= 0.0243 '/'

Inlet Invert= 1,505.00', Outlet Invert= 1,500.00'

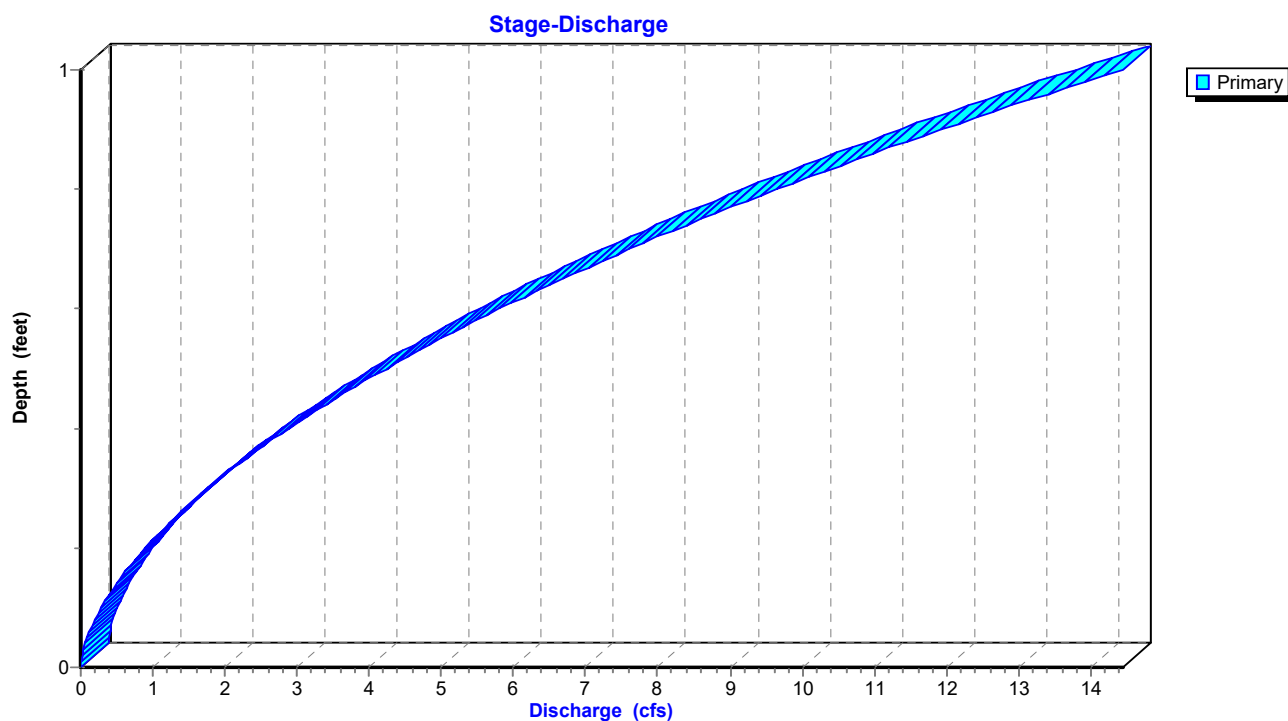


Reach 36R: Div Ditch 5

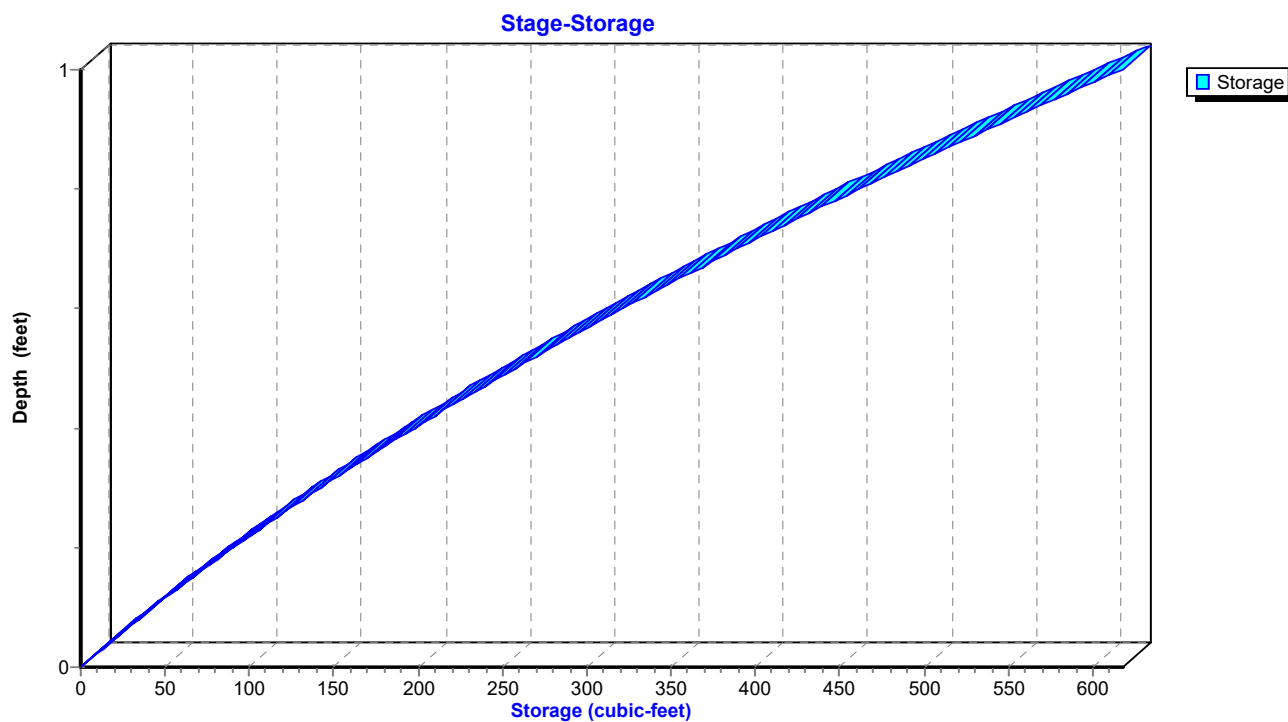
Hydrograph



Reach 36R: Div Ditch 5



Reach 36R: Div Ditch 5



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Hydrograph for Reach 36R: Div Ditch 5

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
0.05	0.00	0	1,505.00	0.00
5.05	0.00	0	1,505.00	0.00
10.05	0.21	36	1,505.08	0.21
15.05	0.61	71	1,505.16	0.62
20.05	0.27	42	1,505.10	0.27
25.05	0.01	7	1,505.02	0.02
30.05	0.00	0	1,505.00	0.00
35.05	0.00	0	1,505.00	0.00
40.05	0.00	0	1,505.00	0.00
45.05	0.00	0	1,505.00	0.00
50.05	0.00	0	1,505.00	0.00
55.05	0.00	0	1,505.00	0.00
60.05	0.00	0	1,505.00	0.00
65.05	0.00	0	1,505.00	0.00
70.05	0.00	0	1,505.00	0.00
75.05	0.00	0	1,505.00	0.00
80.05	0.00	0	1,505.00	0.00
85.05	0.00	0	1,505.00	0.00
90.05	0.00	0	1,505.00	0.00
95.05	0.00	0	1,505.00	0.00
100.05	0.00	0	1,505.00	0.00
105.05	0.00	0	1,505.00	0.00
110.05	0.00	0	1,505.00	0.00
115.05	0.00	0	1,505.00	0.00
120.05	0.00	0	1,505.00	0.00
125.05	0.00	0	1,505.00	0.00
130.05	0.00	0	1,505.00	0.00
135.05	0.00	0	1,505.00	0.00
140.05	0.00	0	1,505.00	0.00
145.05	0.00	0	1,505.00	0.00

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Stage-Discharge for Reach 36R: Div Ditch 5

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)	Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
1,505.00	0.00	0.00	1,505.52	3.46	4.53
1,505.01	0.31	0.01	1,505.53	3.49	4.68
1,505.02	0.48	0.02	1,505.54	3.52	4.83
1,505.03	0.63	0.04	1,505.55	3.56	4.99
1,505.04	0.76	0.06	1,505.56	3.59	5.15
1,505.05	0.87	0.09	1,505.57	3.62	5.31
1,505.06	0.98	0.12	1,505.58	3.66	5.47
1,505.07	1.08	0.16	1,505.59	3.69	5.64
1,505.08	1.17	0.20	1,505.60	3.72	5.81
1,505.09	1.26	0.24	1,505.61	3.75	5.98
1,505.10	1.35	0.28	1,505.62	3.78	6.15
1,505.11	1.43	0.33	1,505.63	3.82	6.32
1,505.12	1.51	0.38	1,505.64	3.85	6.50
1,505.13	1.58	0.44	1,505.65	3.88	6.68
1,505.14	1.65	0.50	1,505.66	3.91	6.86
1,505.15	1.72	0.56	1,505.67	3.94	7.04
1,505.16	1.79	0.62	1,505.68	3.97	7.23
1,505.17	1.86	0.68	1,505.69	4.00	7.42
1,505.18	1.92	0.75	1,505.70	4.03	7.61
1,505.19	1.98	0.82	1,505.71	4.06	7.80
1,505.20	2.04	0.90	1,505.72	4.08	8.00
1,505.21	2.10	0.97	1,505.73	4.11	8.20
1,505.22	2.16	1.05	1,505.74	4.14	8.40
1,505.23	2.21	1.14	1,505.75	4.17	8.60
1,505.24	2.27	1.22	1,505.76	4.20	8.80
1,505.25	2.32	1.31	1,505.77	4.23	9.01
1,505.26	2.37	1.39	1,505.78	4.25	9.22
1,505.27	2.42	1.49	1,505.79	4.28	9.43
1,505.28	2.47	1.58	1,505.80	4.31	9.65
1,505.29	2.52	1.68	1,505.81	4.33	9.87
1,505.30	2.57	1.77	1,505.82	4.36	10.08
1,505.31	2.62	1.87	1,505.83	4.39	10.31
1,505.32	2.66	1.98	1,505.84	4.41	10.53
1,505.33	2.71	2.08	1,505.85	4.44	10.76
1,505.34	2.75	2.19	1,505.86	4.47	10.99
1,505.35	2.80	2.30	1,505.87	4.49	11.22
1,505.36	2.84	2.41	1,505.88	4.52	11.45
1,505.37	2.88	2.53	1,505.89	4.54	11.69
1,505.38	2.93	2.65	1,505.90	4.57	11.93
1,505.39	2.97	2.77	1,505.91	4.59	12.17
1,505.40	3.01	2.89	1,505.92	4.62	12.41
1,505.41	3.05	3.01	1,505.93	4.65	12.66
1,505.42	3.09	3.14	1,505.94	4.67	12.91
1,505.43	3.13	3.27	1,505.95	4.69	13.16
1,505.44	3.16	3.40	1,505.96	4.72	13.41
1,505.45	3.20	3.53	1,505.97	4.74	13.67
1,505.46	3.24	3.67	1,505.98	4.77	13.92
1,505.47	3.28	3.80	1,505.99	4.79	14.19
1,505.48	3.31	3.94	1,506.00	4.82	14.45
1,505.49	3.35	4.09			
1,505.50	3.39	4.23			
1,505.51	3.42	4.38			

Stage-Area-Storage for Reach 36R: Div Ditch 5

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
1,505.00	0.0	0	1,505.52	1.3	270
1,505.01	0.0	4	1,505.53	1.3	276
1,505.02	0.0	8	1,505.54	1.4	283
1,505.03	0.1	13	1,505.55	1.4	289
1,505.04	0.1	17	1,505.56	1.4	295
1,505.05	0.1	21	1,505.57	1.5	302
1,505.06	0.1	25	1,505.58	1.5	308
1,505.07	0.1	30	1,505.59	1.5	315
1,505.08	0.2	34	1,505.60	1.6	321
1,505.09	0.2	39	1,505.61	1.6	328
1,505.10	0.2	43	1,505.62	1.6	335
1,505.11	0.2	48	1,505.63	1.7	341
1,505.12	0.3	52	1,505.64	1.7	348
1,505.13	0.3	57	1,505.65	1.7	355
1,505.14	0.3	62	1,505.66	1.8	362
1,505.15	0.3	66	1,505.67	1.8	369
1,505.16	0.3	71	1,505.68	1.8	375
1,505.17	0.4	76	1,505.69	1.9	382
1,505.18	0.4	81	1,505.70	1.9	389
1,505.19	0.4	86	1,505.71	1.9	396
1,505.20	0.4	91	1,505.72	2.0	403
1,505.21	0.5	96	1,505.73	2.0	411
1,505.22	0.5	101	1,505.74	2.0	418
1,505.23	0.5	106	1,505.75	2.1	425
1,505.24	0.5	111	1,505.76	2.1	432
1,505.25	0.6	116	1,505.77	2.1	439
1,505.26	0.6	121	1,505.78	2.2	447
1,505.27	0.6	126	1,505.79	2.2	454
1,505.28	0.6	132	1,505.80	2.2	461
1,505.29	0.7	137	1,505.81	2.3	469
1,505.30	0.7	142	1,505.82	2.3	476
1,505.31	0.7	148	1,505.83	2.3	484
1,505.32	0.7	153	1,505.84	2.4	491
1,505.33	0.8	158	1,505.85	2.4	499
1,505.34	0.8	164	1,505.86	2.5	507
1,505.35	0.8	169	1,505.87	2.5	514
1,505.36	0.8	175	1,505.88	2.5	522
1,505.37	0.9	181	1,505.89	2.6	530
1,505.38	0.9	186	1,505.90	2.6	538
1,505.39	0.9	192	1,505.91	2.6	546
1,505.40	1.0	198	1,505.92	2.7	553
1,505.41	1.0	204	1,505.93	2.7	561
1,505.42	1.0	209	1,505.94	2.8	569
1,505.43	1.0	215	1,505.95	2.8	577
1,505.44	1.1	221	1,505.96	2.8	585
1,505.45	1.1	227	1,505.97	2.9	593
1,505.46	1.1	233	1,505.98	2.9	602
1,505.47	1.2	239	1,505.99	3.0	610
1,505.48	1.2	245	1,506.00	3.0	618
1,505.49	1.2	251			
1,505.50	1.3	258			
1,505.51	1.3	264			

Summary for Reach 37R: Div Ditch 3

Inflow Area = 10.125 ac, 0.00% Impervious, Inflow Depth = 4.75" for 100 year event
 Inflow = 15.90 cfs @ 13.27 hrs, Volume= 4.004 af
 Outflow = 15.88 cfs @ 13.29 hrs, Volume= 4.004 af, Atten= 0%, Lag= 1.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Max. Velocity= 8.28 fps, Min. Travel Time= 1.2 min

Avg. Velocity= 3.16 fps, Avg. Travel Time= 3.1 min

Peak Storage= 1,136 cf @ 13.29 hrs

Average Depth at Peak Storage= 0.71'

Bank-Full Depth= 1.00' Flow Area= 3.0 sf, Capacity= 29.53 cfs

2.00' x 1.00' deep channel, n= 0.035

Side Slope Z-value= 1.0 '/' Top Width= 4.00'

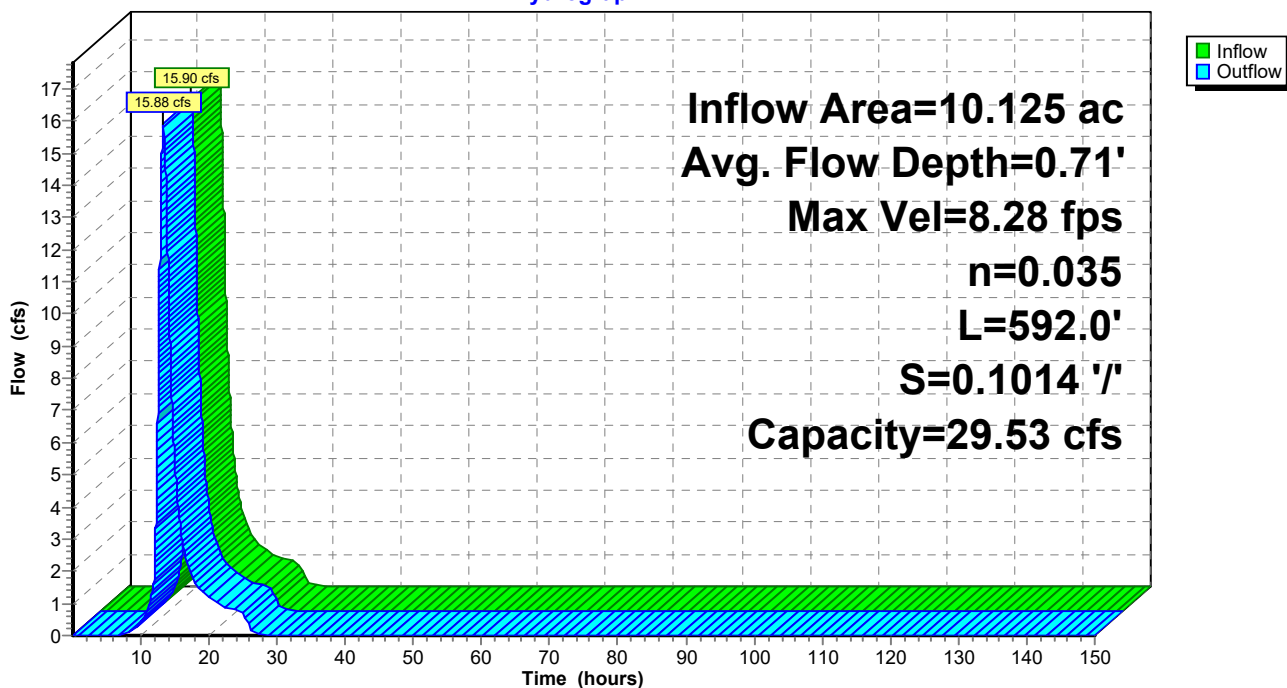
Length= 592.0' Slope= 0.1014 '/'

Inlet Invert= 1,635.00', Outlet Invert= 1,575.00'

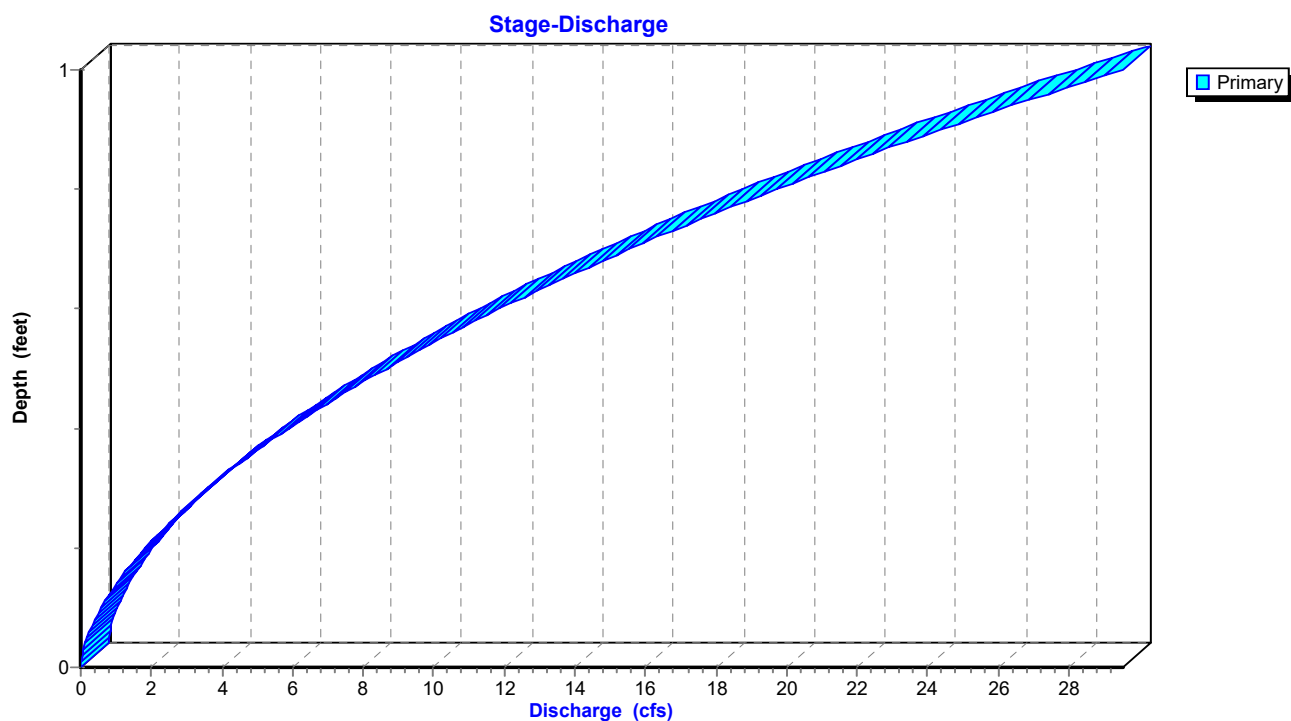


Reach 37R: Div Ditch 3

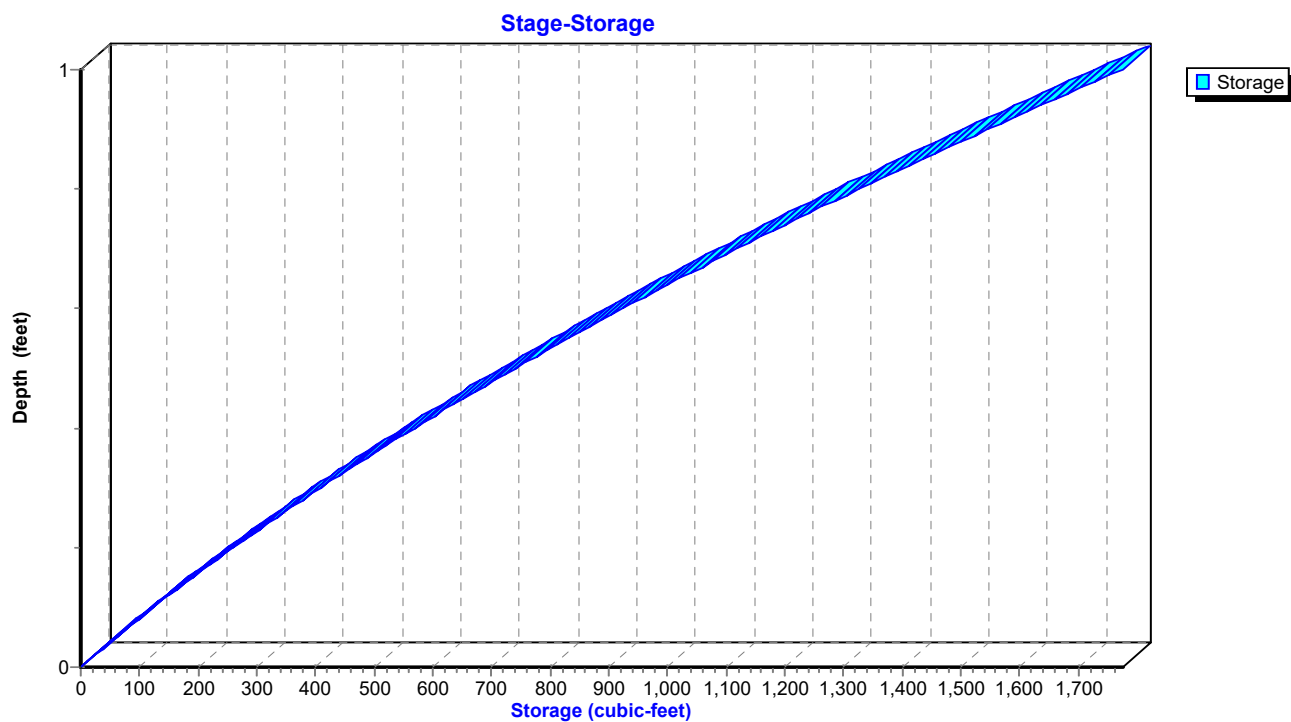
Hydrograph



Reach 37R: Div Ditch 3



Reach 37R: Div Ditch 3



Riato V6 Final

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Type II 24-hr 100 year Rainfall=7.42"

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Hydrograph for Reach 37R: Div Ditch 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
0.05	0.00	0	1,635.00	0.00
5.05	0.00	0	1,635.00	0.00
10.05	0.42	100	1,635.08	0.41
15.05	5.21	527	1,635.37	5.28
20.05	1.18	196	1,635.15	1.18
25.05	0.64	135	1,635.11	0.66
30.05	0.00	1	1,635.00	0.00
35.05	0.00	0	1,635.00	0.00
40.05	0.00	0	1,635.00	0.00
45.05	0.00	0	1,635.00	0.00
50.05	0.00	0	1,635.00	0.00
55.05	0.00	0	1,635.00	0.00
60.05	0.00	0	1,635.00	0.00
65.05	0.00	0	1,635.00	0.00
70.05	0.00	0	1,635.00	0.00
75.05	0.00	0	1,635.00	0.00
80.05	0.00	0	1,635.00	0.00
85.05	0.00	0	1,635.00	0.00
90.05	0.00	0	1,635.00	0.00
95.05	0.00	0	1,635.00	0.00
100.05	0.00	0	1,635.00	0.00
105.05	0.00	0	1,635.00	0.00
110.05	0.00	0	1,635.00	0.00
115.05	0.00	0	1,635.00	0.00
120.05	0.00	0	1,635.00	0.00
125.05	0.00	0	1,635.00	0.00
130.05	0.00	0	1,635.00	0.00
135.05	0.00	0	1,635.00	0.00
140.05	0.00	0	1,635.00	0.00
145.05	0.00	0	1,635.00	0.00

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Type II 24-hr 100 year Rainfall=7.42"

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Stage-Discharge for Reach 37R: Div Ditch 3

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)	Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
1,635.00	0.00	0.00	1,635.52	7.06	9.25
1,635.01	0.62	0.01	1,635.53	7.13	9.56
1,635.02	0.98	0.04	1,635.54	7.20	9.88
1,635.03	1.28	0.08	1,635.55	7.27	10.20
1,635.04	1.54	0.13	1,635.56	7.34	10.52
1,635.05	1.78	0.18	1,635.57	7.41	10.85
1,635.06	2.00	0.25	1,635.58	7.47	11.18
1,635.07	2.21	0.32	1,635.59	7.54	11.52
1,635.08	2.40	0.40	1,635.60	7.60	11.86
1,635.09	2.58	0.49	1,635.61	7.67	12.21
1,635.10	2.75	0.58	1,635.62	7.73	12.56
1,635.11	2.92	0.68	1,635.63	7.80	12.92
1,635.12	3.08	0.78	1,635.64	7.86	13.28
1,635.13	3.23	0.90	1,635.65	7.92	13.65
1,635.14	3.38	1.01	1,635.66	7.98	14.02
1,635.15	3.52	1.14	1,635.67	8.05	14.39
1,635.16	3.66	1.26	1,635.68	8.11	14.77
1,635.17	3.79	1.40	1,635.69	8.17	15.16
1,635.18	3.92	1.54	1,635.70	8.23	15.55
1,635.19	4.05	1.69	1,635.71	8.29	15.94
1,635.20	4.17	1.84	1,635.72	8.35	16.34
1,635.21	4.29	1.99	1,635.73	8.40	16.75
1,635.22	4.41	2.15	1,635.74	8.46	17.16
1,635.23	4.52	2.32	1,635.75	8.52	17.57
1,635.24	4.63	2.49	1,635.76	8.58	17.99
1,635.25	4.74	2.67	1,635.77	8.63	18.42
1,635.26	4.85	2.85	1,635.78	8.69	18.84
1,635.27	4.95	3.04	1,635.79	8.75	19.28
1,635.28	5.05	3.23	1,635.80	8.80	19.72
1,635.29	5.15	3.42	1,635.81	8.86	20.16
1,635.30	5.25	3.62	1,635.82	8.91	20.61
1,635.31	5.35	3.83	1,635.83	8.97	21.06
1,635.32	5.44	4.04	1,635.84	9.02	21.52
1,635.33	5.54	4.26	1,635.85	9.07	21.98
1,635.34	5.63	4.48	1,635.86	9.13	22.45
1,635.35	5.72	4.70	1,635.87	9.18	22.92
1,635.36	5.81	4.93	1,635.88	9.23	23.40
1,635.37	5.89	5.17	1,635.89	9.29	23.88
1,635.38	5.98	5.41	1,635.90	9.34	24.37
1,635.39	6.06	5.65	1,635.91	9.39	24.86
1,635.40	6.15	5.90	1,635.92	9.44	25.36
1,635.41	6.23	6.15	1,635.93	9.49	25.86
1,635.42	6.31	6.41	1,635.94	9.54	26.37
1,635.43	6.39	6.67	1,635.95	9.59	26.89
1,635.44	6.47	6.94	1,635.96	9.64	27.40
1,635.45	6.54	7.21	1,635.97	9.69	27.93
1,635.46	6.62	7.49	1,635.98	9.74	28.45
1,635.47	6.70	7.77	1,635.99	9.79	28.99
1,635.48	6.77	8.06	1,636.00	9.84	29.53
1,635.49	6.84	8.35			
1,635.50	6.92	8.65			
1,635.51	6.99	8.95			

Stage-Area-Storage for Reach 37R: Div Ditch 3

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
1,635.00	0.0	0	1,635.52	1.3	776
1,635.01	0.0	12	1,635.53	1.3	794
1,635.02	0.0	24	1,635.54	1.4	812
1,635.03	0.1	36	1,635.55	1.4	830
1,635.04	0.1	48	1,635.56	1.4	849
1,635.05	0.1	61	1,635.57	1.5	867
1,635.06	0.1	73	1,635.58	1.5	886
1,635.07	0.1	86	1,635.59	1.5	905
1,635.08	0.2	99	1,635.60	1.6	924
1,635.09	0.2	111	1,635.61	1.6	943
1,635.10	0.2	124	1,635.62	1.6	962
1,635.11	0.2	137	1,635.63	1.7	981
1,635.12	0.3	151	1,635.64	1.7	1,000
1,635.13	0.3	164	1,635.65	1.7	1,020
1,635.14	0.3	177	1,635.66	1.8	1,039
1,635.15	0.3	191	1,635.67	1.8	1,059
1,635.16	0.3	205	1,635.68	1.8	1,079
1,635.17	0.4	218	1,635.69	1.9	1,099
1,635.18	0.4	232	1,635.70	1.9	1,119
1,635.19	0.4	246	1,635.71	1.9	1,139
1,635.20	0.4	260	1,635.72	2.0	1,159
1,635.21	0.5	275	1,635.73	2.0	1,180
1,635.22	0.5	289	1,635.74	2.0	1,200
1,635.23	0.5	304	1,635.75	2.1	1,221
1,635.24	0.5	318	1,635.76	2.1	1,242
1,635.25	0.6	333	1,635.77	2.1	1,263
1,635.26	0.6	348	1,635.78	2.2	1,284
1,635.27	0.6	363	1,635.79	2.2	1,305
1,635.28	0.6	378	1,635.80	2.2	1,326
1,635.29	0.7	393	1,635.81	2.3	1,347
1,635.30	0.7	408	1,635.82	2.3	1,369
1,635.31	0.7	424	1,635.83	2.3	1,391
1,635.32	0.7	440	1,635.84	2.4	1,412
1,635.33	0.8	455	1,635.85	2.4	1,434
1,635.34	0.8	471	1,635.86	2.5	1,456
1,635.35	0.8	487	1,635.87	2.5	1,478
1,635.36	0.8	503	1,635.88	2.5	1,500
1,635.37	0.9	519	1,635.89	2.6	1,523
1,635.38	0.9	535	1,635.90	2.6	1,545
1,635.39	0.9	552	1,635.91	2.6	1,568
1,635.40	1.0	568	1,635.92	2.7	1,590
1,635.41	1.0	585	1,635.93	2.7	1,613
1,635.42	1.0	602	1,635.94	2.8	1,636
1,635.43	1.0	619	1,635.95	2.8	1,659
1,635.44	1.1	636	1,635.96	2.8	1,682
1,635.45	1.1	653	1,635.97	2.9	1,705
1,635.46	1.1	670	1,635.98	2.9	1,729
1,635.47	1.2	687	1,635.99	3.0	1,752
1,635.48	1.2	705	1,636.00	3.0	1,776
1,635.49	1.2	722			
1,635.50	1.3	740			
1,635.51	1.3	758			

Summary for Reach 38R: Div Ditch 4

Inflow Area = 2.938 ac, 0.00% Impervious, Inflow Depth = 4.75" for 100 year event
 Inflow = 7.11 cfs @ 12.70 hrs, Volume= 1.162 af
 Outflow = 7.11 cfs @ 12.70 hrs, Volume= 1.162 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Max. Velocity= 6.58 fps, Min. Travel Time= 0.9 min

Avg. Velocity = 2.25 fps, Avg. Travel Time= 2.5 min

Peak Storage= 363 cf @ 12.70 hrs

Average Depth at Peak Storage= 0.44'

Bank-Full Depth= 1.00' Flow Area= 3.0 sf, Capacity= 29.93 cfs

2.00' x 1.00' deep channel, n= 0.035

Side Slope Z-value= 1.0 '/' Top Width= 4.00'

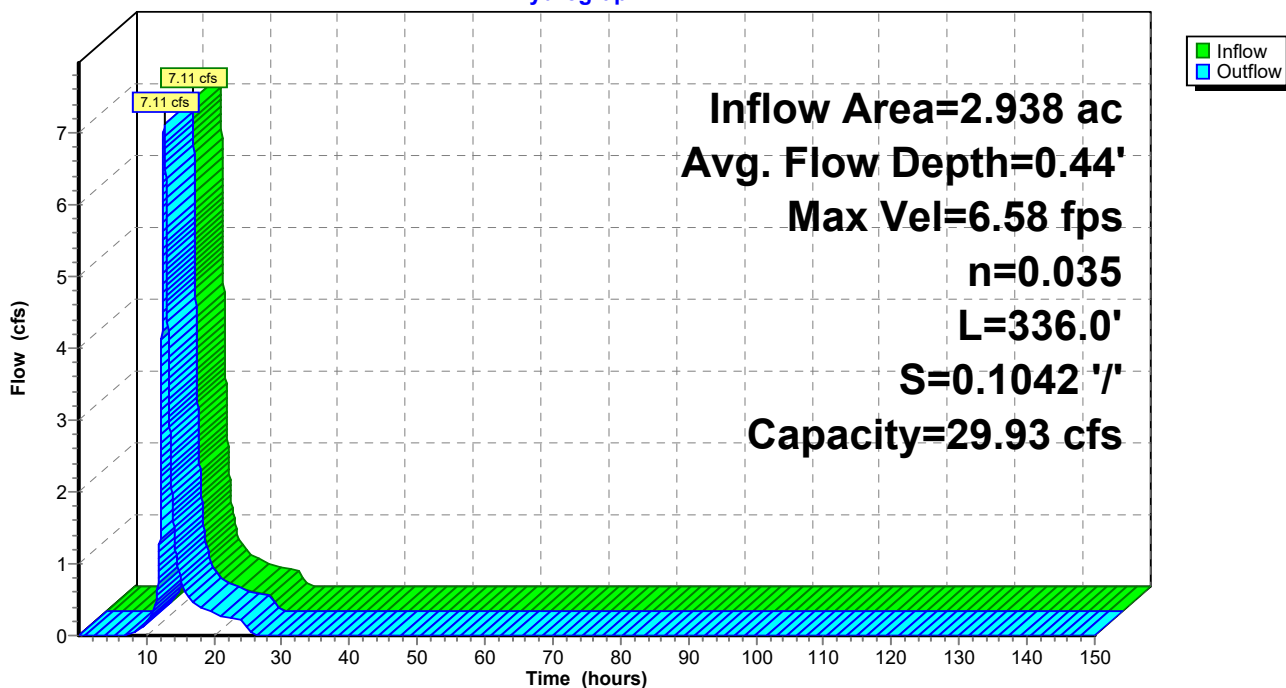
Length= 336.0' Slope= 0.1042 '/'

Inlet Invert= 1,635.00', Outlet Invert= 1,600.00'

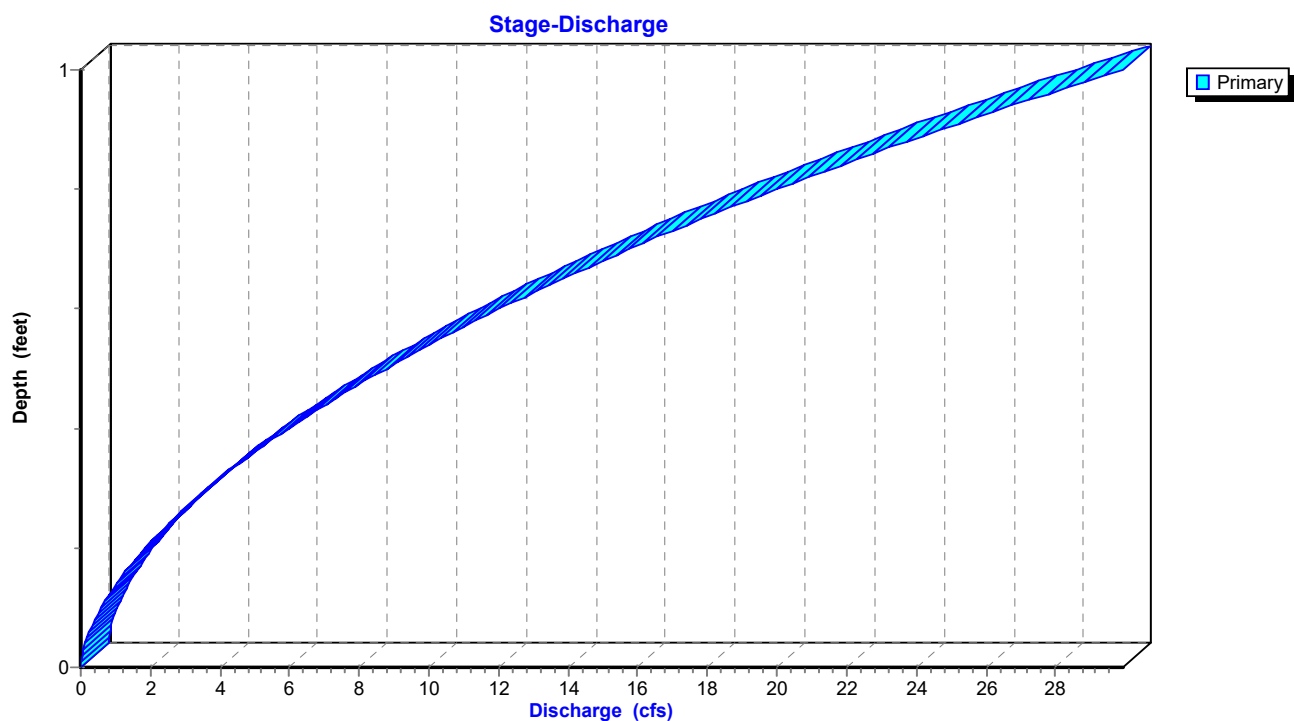


Reach 38R: Div Ditch 4

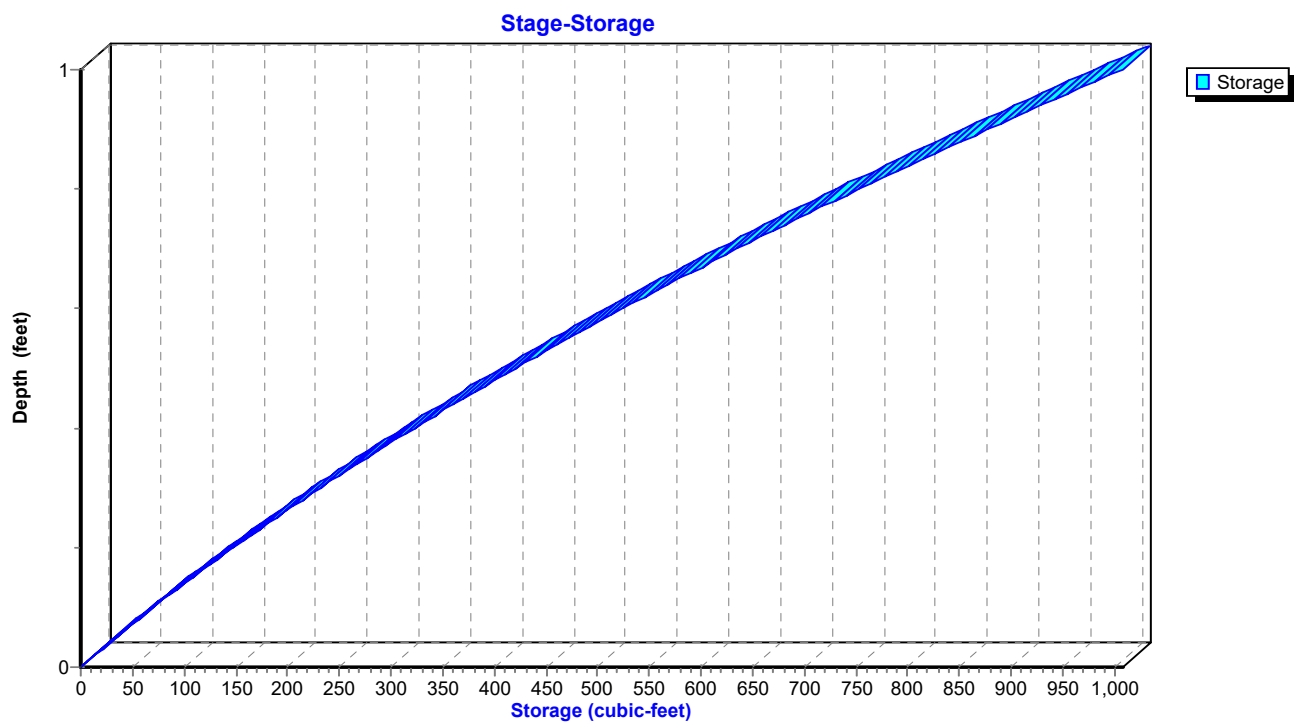
Hydrograph



Reach 38R: Div Ditch 4



Reach 38R: Div Ditch 4



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Hydrograph for Reach 38R: Div Ditch 4

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
0.05	0.00	0	1,635.00	0.00
5.05	0.00	0	1,635.00	0.00
10.05	0.19	34	1,635.05	0.18
15.05	0.79	86	1,635.12	0.80
20.05	0.30	47	1,635.07	0.30
25.05	0.08	22	1,635.03	0.09
30.05	0.00	0	1,635.00	0.00
35.05	0.00	0	1,635.00	0.00
40.05	0.00	0	1,635.00	0.00
45.05	0.00	0	1,635.00	0.00
50.05	0.00	0	1,635.00	0.00
55.05	0.00	0	1,635.00	0.00
60.05	0.00	0	1,635.00	0.00
65.05	0.00	0	1,635.00	0.00
70.05	0.00	0	1,635.00	0.00
75.05	0.00	0	1,635.00	0.00
80.05	0.00	0	1,635.00	0.00
85.05	0.00	0	1,635.00	0.00
90.05	0.00	0	1,635.00	0.00
95.05	0.00	0	1,635.00	0.00
100.05	0.00	0	1,635.00	0.00
105.05	0.00	0	1,635.00	0.00
110.05	0.00	0	1,635.00	0.00
115.05	0.00	0	1,635.00	0.00
120.05	0.00	0	1,635.00	0.00
125.05	0.00	0	1,635.00	0.00
130.05	0.00	0	1,635.00	0.00
135.05	0.00	0	1,635.00	0.00
140.05	0.00	0	1,635.00	0.00
145.05	0.00	0	1,635.00	0.00

Riato V6 Final

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Type II 24-hr 100 year Rainfall=7.42"

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Stage-Discharge for Reach 38R: Div Ditch 4

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)	Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
1,635.00	0.00	0.00	1,635.52	7.16	9.38
1,635.01	0.63	0.01	1,635.53	7.23	9.69
1,635.02	1.00	0.04	1,635.54	7.30	10.01
1,635.03	1.30	0.08	1,635.55	7.37	10.34
1,635.04	1.57	0.13	1,635.56	7.44	10.66
1,635.05	1.81	0.19	1,635.57	7.51	11.00
1,635.06	2.03	0.25	1,635.58	7.58	11.34
1,635.07	2.24	0.32	1,635.59	7.64	11.68
1,635.08	2.43	0.40	1,635.60	7.71	12.03
1,635.09	2.62	0.49	1,635.61	7.77	12.38
1,635.10	2.79	0.59	1,635.62	7.84	12.74
1,635.11	2.96	0.69	1,635.63	7.90	13.10
1,635.12	3.12	0.79	1,635.64	7.97	13.46
1,635.13	3.28	0.91	1,635.65	8.03	13.83
1,635.14	3.43	1.03	1,635.66	8.09	14.21
1,635.15	3.57	1.15	1,635.67	8.16	14.59
1,635.16	3.71	1.28	1,635.68	8.22	14.98
1,635.17	3.85	1.42	1,635.69	8.28	15.37
1,635.18	3.98	1.56	1,635.70	8.34	15.76
1,635.19	4.11	1.71	1,635.71	8.40	16.16
1,635.20	4.23	1.86	1,635.72	8.46	16.57
1,635.21	4.35	2.02	1,635.73	8.52	16.98
1,635.22	4.47	2.18	1,635.74	8.58	17.39
1,635.23	4.58	2.35	1,635.75	8.64	17.81
1,635.24	4.70	2.53	1,635.76	8.70	18.24
1,635.25	4.81	2.70	1,635.77	8.75	18.67
1,635.26	4.91	2.89	1,635.78	8.81	19.10
1,635.27	5.02	3.08	1,635.79	8.87	19.54
1,635.28	5.12	3.27	1,635.80	8.92	19.99
1,635.29	5.23	3.47	1,635.81	8.98	20.44
1,635.30	5.32	3.67	1,635.82	9.03	20.89
1,635.31	5.42	3.88	1,635.83	9.09	21.35
1,635.32	5.52	4.10	1,635.84	9.14	21.82
1,635.33	5.61	4.32	1,635.85	9.20	22.28
1,635.34	5.70	4.54	1,635.86	9.25	22.76
1,635.35	5.80	4.77	1,635.87	9.31	23.24
1,635.36	5.89	5.00	1,635.88	9.36	23.72
1,635.37	5.97	5.24	1,635.89	9.41	24.21
1,635.38	6.06	5.48	1,635.90	9.47	24.71
1,635.39	6.15	5.73	1,635.91	9.52	25.21
1,635.40	6.23	5.98	1,635.92	9.57	25.71
1,635.41	6.31	6.24	1,635.93	9.62	26.22
1,635.42	6.40	6.50	1,635.94	9.67	26.74
1,635.43	6.48	6.77	1,635.95	9.73	27.26
1,635.44	6.56	7.04	1,635.96	9.78	27.78
1,635.45	6.63	7.31	1,635.97	9.83	28.31
1,635.46	6.71	7.60	1,635.98	9.88	28.85
1,635.47	6.79	7.88	1,635.99	9.93	29.39
1,635.48	6.86	8.17	1,636.00	9.98	29.93
1,635.49	6.94	8.47			
1,635.50	7.01	8.77			
1,635.51	7.09	9.07			

Stage-Area-Storage for Reach 38R: Div Ditch 4

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
1,635.00	0.0	0	1,635.52	1.3	440
1,635.01	0.0	7	1,635.53	1.3	451
1,635.02	0.0	14	1,635.54	1.4	461
1,635.03	0.1	20	1,635.55	1.4	471
1,635.04	0.1	27	1,635.56	1.4	482
1,635.05	0.1	34	1,635.57	1.5	492
1,635.06	0.1	42	1,635.58	1.5	503
1,635.07	0.1	49	1,635.59	1.5	513
1,635.08	0.2	56	1,635.60	1.6	524
1,635.09	0.2	63	1,635.61	1.6	535
1,635.10	0.2	71	1,635.62	1.6	546
1,635.11	0.2	78	1,635.63	1.7	557
1,635.12	0.3	85	1,635.64	1.7	568
1,635.13	0.3	93	1,635.65	1.7	579
1,635.14	0.3	101	1,635.66	1.8	590
1,635.15	0.3	108	1,635.67	1.8	601
1,635.16	0.3	116	1,635.68	1.8	612
1,635.17	0.4	124	1,635.69	1.9	624
1,635.18	0.4	132	1,635.70	1.9	635
1,635.19	0.4	140	1,635.71	1.9	646
1,635.20	0.4	148	1,635.72	2.0	658
1,635.21	0.5	156	1,635.73	2.0	670
1,635.22	0.5	164	1,635.74	2.0	681
1,635.23	0.5	172	1,635.75	2.1	693
1,635.24	0.5	181	1,635.76	2.1	705
1,635.25	0.6	189	1,635.77	2.1	717
1,635.26	0.6	197	1,635.78	2.2	729
1,635.27	0.6	206	1,635.79	2.2	741
1,635.28	0.6	215	1,635.80	2.2	753
1,635.29	0.7	223	1,635.81	2.3	765
1,635.30	0.7	232	1,635.82	2.3	777
1,635.31	0.7	241	1,635.83	2.3	789
1,635.32	0.7	249	1,635.84	2.4	802
1,635.33	0.8	258	1,635.85	2.4	814
1,635.34	0.8	267	1,635.86	2.5	826
1,635.35	0.8	276	1,635.87	2.5	839
1,635.36	0.8	285	1,635.88	2.5	852
1,635.37	0.9	295	1,635.89	2.6	864
1,635.38	0.9	304	1,635.90	2.6	877
1,635.39	0.9	313	1,635.91	2.6	890
1,635.40	1.0	323	1,635.92	2.7	903
1,635.41	1.0	332	1,635.93	2.7	916
1,635.42	1.0	342	1,635.94	2.8	929
1,635.43	1.0	351	1,635.95	2.8	942
1,635.44	1.1	361	1,635.96	2.8	955
1,635.45	1.1	370	1,635.97	2.9	968
1,635.46	1.1	380	1,635.98	2.9	981
1,635.47	1.2	390	1,635.99	3.0	995
1,635.48	1.2	400	1,636.00	3.0	1,008
1,635.49	1.2	410			
1,635.50	1.3	420			
1,635.51	1.3	430			

Summary for Reach 39R: Culvert Outlet Apron

Inflow Area = 35.631 ac, 7.72% Impervious, Inflow Depth > 6.32" for 100 year event
 Inflow = 84.01 cfs @ 12.27 hrs, Volume= 18.767 af
 Outflow = 84.01 cfs @ 12.27 hrs, Volume= 18.767 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs
 Max. Velocity= 1.76 fps, Min. Travel Time= 0.2 min
 Avg. Velocity= 0.26 fps, Avg. Travel Time= 1.4 min

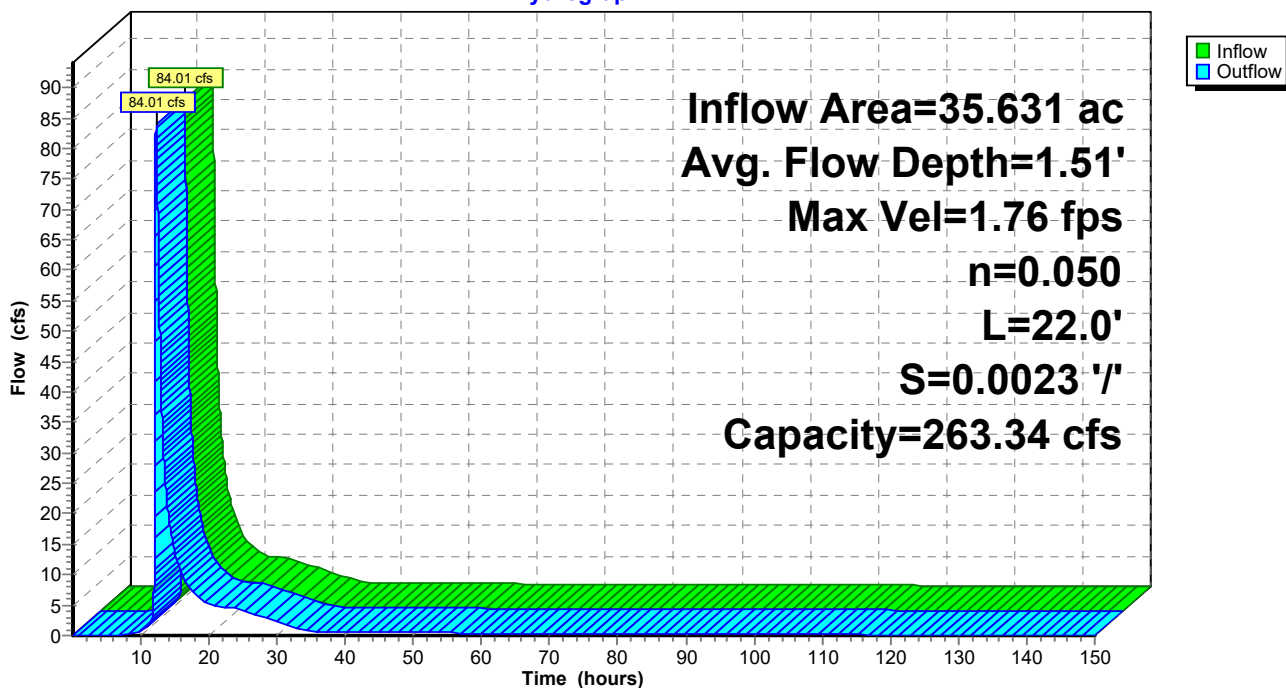
Peak Storage= 1,048 cf @ 12.27 hrs
 Average Depth at Peak Storage= 1.51'
 Bank-Full Depth= 3.00' Flow Area= 99.0 sf, Capacity= 263.34 cfs

30.00' x 3.00' deep channel, n= 0.050
 Side Slope Z-value= 1.0 '/' Top Width= 36.00'
 Length= 22.0' Slope= 0.0023 '/'
 Inlet Invert= 1,446.00', Outlet Invert= 1,445.95'

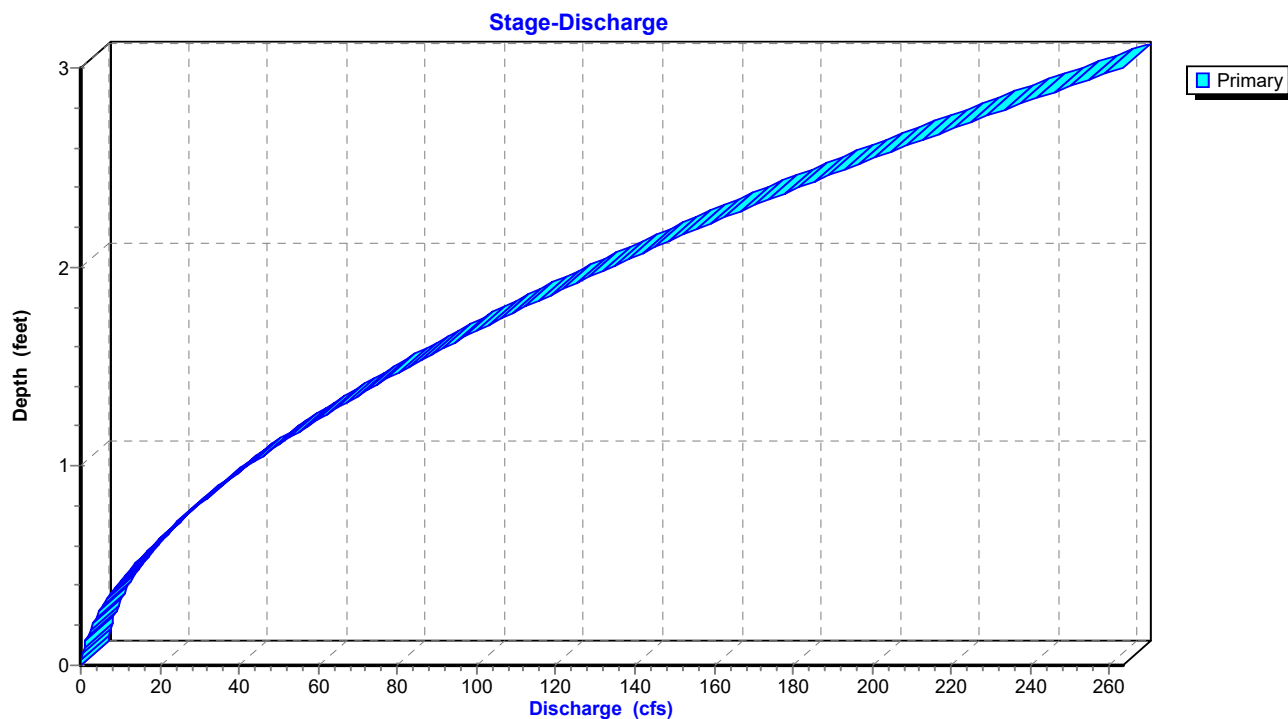


Reach 39R: Culvert Outlet Apron

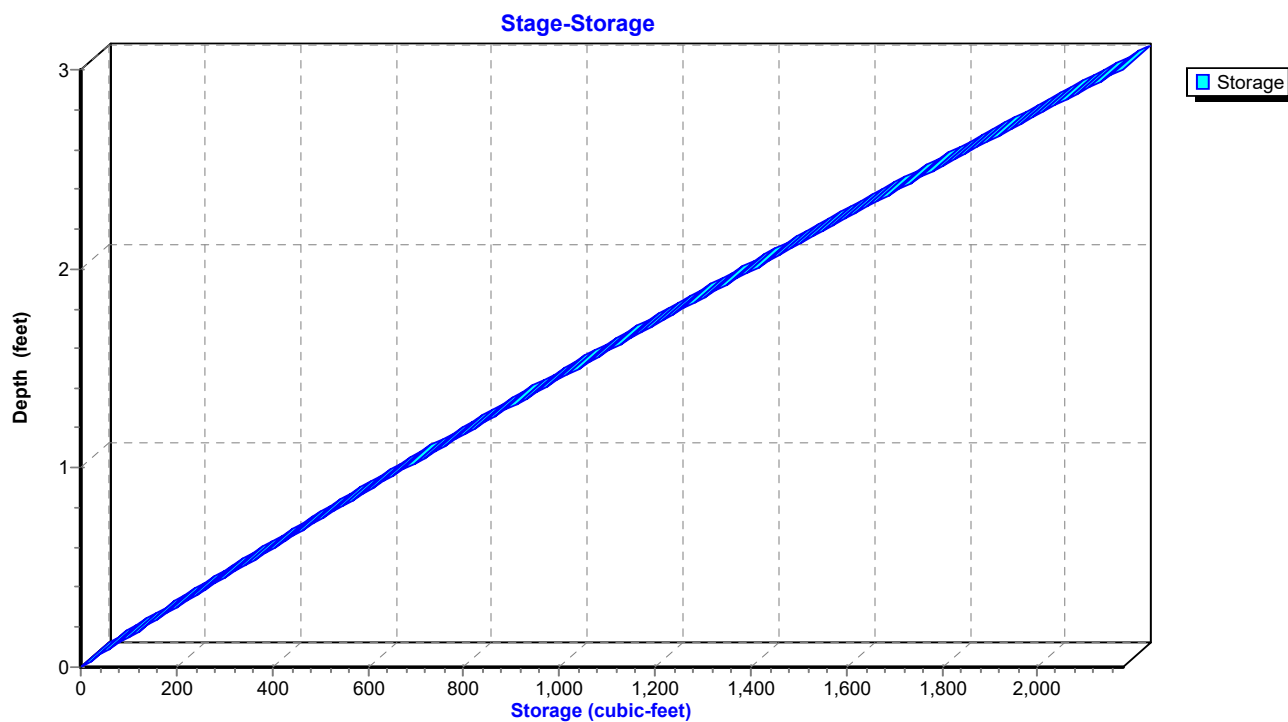
Hydrograph



Reach 39R: Culvert Outlet Apron



Reach 39R: Culvert Outlet Apron



Hydrograph for Reach 39R: Culvert Outlet Apron

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
0.05	0.00	0	1,446.00	0.00
5.05	0.00	0	1,446.00	0.00
10.05	0.77	59	1,446.09	0.76
15.05	13.57	339	1,446.51	13.59
20.05	5.22	189	1,446.28	5.22
25.05	4.03	162	1,446.24	4.04
30.05	2.23	113	1,446.17	2.23
35.05	0.73	58	1,446.09	0.73
40.05	0.52	46	1,446.07	0.52
45.05	0.49	45	1,446.07	0.49
50.05	0.46	43	1,446.07	0.46
55.05	0.44	42	1,446.06	0.44
60.05	0.42	41	1,446.06	0.42
65.05	0.39	40	1,446.06	0.39
70.05	0.37	38	1,446.06	0.37
75.05	0.34	36	1,446.05	0.34
80.05	0.32	34	1,446.05	0.32
85.05	0.29	33	1,446.05	0.29
90.05	0.27	31	1,446.05	0.27
95.05	0.25	29	1,446.04	0.25
100.05	0.22	27	1,446.04	0.22
105.05	0.20	25	1,446.04	0.20
110.05	0.17	24	1,446.04	0.17
115.05	0.15	22	1,446.03	0.15
120.05	0.13	20	1,446.03	0.13
125.05	0.10	17	1,446.03	0.10
130.05	0.09	14	1,446.02	0.09
135.05	0.07	11	1,446.02	0.07
140.05	0.06	10	1,446.01	0.06
145.05	0.05	8	1,446.01	0.05

Stage-Discharge for Reach 39R: Culvert Outlet Apron

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)	Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)	Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
1,446.00	0.00	0.00	1,447.04	1.40	45.13	1,448.08	2.14	142.97
1,446.02	0.09	0.08	1,447.06	1.41	46.58	1,448.10	2.15	145.26
1,446.04	0.16	0.21	1,447.08	1.43	48.05	1,448.12	2.17	147.58
1,446.06	0.22	0.39	1,447.10	1.45	49.54	1,448.14	2.18	149.90
1,446.08	0.26	0.64	1,447.12	1.46	51.05	1,448.16	2.19	152.24
1,446.10	0.30	0.93	1,447.14	1.48	52.57	1,448.18	2.20	154.60
1,446.12	0.34	1.24	1,447.16	1.50	54.12	1,448.20	2.22	156.97
1,446.14	0.38	1.61	1,447.18	1.51	55.68	1,448.22	2.23	159.35
1,446.16	0.41	2.01	1,447.20	1.53	57.25	1,448.24	2.24	161.75
1,446.18	0.45	2.44	1,447.22	1.54	58.85	1,448.26	2.25	164.17
1,446.20	0.48	2.91	1,447.24	1.56	60.46	1,448.28	2.26	166.59
1,446.22	0.51	3.41	1,447.26	1.58	62.09	1,448.30	2.28	169.04
1,446.24	0.54	3.93	1,447.28	1.59	63.74	1,448.32	2.29	171.49
1,446.26	0.57	4.50	1,447.30	1.61	65.40	1,448.34	2.30	173.96
1,446.28	0.60	5.09	1,447.32	1.62	67.08	1,448.36	2.31	176.45
1,446.30	0.63	5.70	1,447.34	1.64	68.79	1,448.38	2.32	178.95
1,446.32	0.65	6.36	1,447.36	1.65	70.50	1,448.40	2.33	181.46
1,446.34	0.68	7.03	1,447.38	1.67	72.23	1,448.42	2.35	183.99
1,446.36	0.71	7.73	1,447.40	1.68	73.98	1,448.44	2.36	186.53
1,446.38	0.73	8.46	1,447.42	1.70	75.75	1,448.46	2.37	189.08
1,446.40	0.76	9.21	1,447.44	1.71	77.53	1,448.48	2.38	191.66
1,446.42	0.78	9.98	1,447.46	1.73	79.33	1,448.50	2.39	194.24
1,446.44	0.81	10.79	1,447.48	1.74	81.15	1,448.52	2.40	196.84
1,446.46	0.83	11.62	1,447.50	1.76	82.98	1,448.54	2.41	199.45
1,446.48	0.85	12.47	1,447.52	1.77	84.83	1,448.56	2.42	202.08
1,446.50	0.88	13.35	1,447.54	1.78	86.69	1,448.58	2.44	204.72
1,446.52	0.90	14.25	1,447.56	1.80	88.57	1,448.60	2.45	207.38
1,446.54	0.92	15.17	1,447.58	1.81	90.47	1,448.62	2.46	210.04
1,446.56	0.94	16.12	1,447.60	1.83	92.38	1,448.64	2.47	212.72
1,446.58	0.96	17.09	1,447.62	1.84	94.31	1,448.66	2.48	215.42
1,446.60	0.98	18.08	1,447.64	1.85	96.26	1,448.68	2.49	218.13
1,446.62	1.01	19.09	1,447.66	1.87	98.22	1,448.70	2.50	220.85
1,446.64	1.03	20.13	1,447.68	1.88	100.19	1,448.72	2.51	223.59
1,446.66	1.05	21.18	1,447.70	1.90	102.19	1,448.74	2.52	226.34
1,446.68	1.07	22.27	1,447.72	1.91	104.20	1,448.76	2.53	229.10
1,446.70	1.09	23.36	1,447.74	1.92	106.22	1,448.78	2.54	231.89
1,446.72	1.11	24.48	1,447.76	1.94	108.26	1,448.80	2.56	234.68
1,446.74	1.13	25.63	1,447.78	1.95	110.31	1,448.82	2.57	237.48
1,446.76	1.15	26.79	1,447.80	1.96	112.38	1,448.84	2.58	240.30
1,446.78	1.16	27.97	1,447.82	1.98	114.47	1,448.86	2.59	243.14
1,446.80	1.18	29.17	1,447.84	1.99	116.57	1,448.88	2.60	245.98
1,446.82	1.20	30.40	1,447.86	2.00	118.68	1,448.90	2.61	248.84
1,446.84	1.22	31.63	1,447.88	2.02	120.82	1,448.92	2.62	251.72
1,446.86	1.24	32.90	1,447.90	2.03	122.97	1,448.94	2.63	254.60
1,446.88	1.26	34.18	1,447.92	2.04	125.12	1,448.96	2.64	257.50
1,446.90	1.28	35.48	1,447.94	2.05	127.31	1,448.98	2.65	260.42
1,446.92	1.29	36.81	1,447.96	2.07	129.50	1,449.00	2.66	263.34
1,446.94	1.31	38.15	1,447.98	2.08	131.70			
1,446.96	1.33	39.50	1,448.00	2.09	133.93			
1,446.98	1.35	40.88	1,448.02	2.11	136.17			
1,447.00	1.36	42.28	1,448.04	2.12	138.41			
1,447.02	1.38	43.69	1,448.06	2.13	140.69			

Stage-Area-Storage for Reach 39R: Culvert Outlet Apron

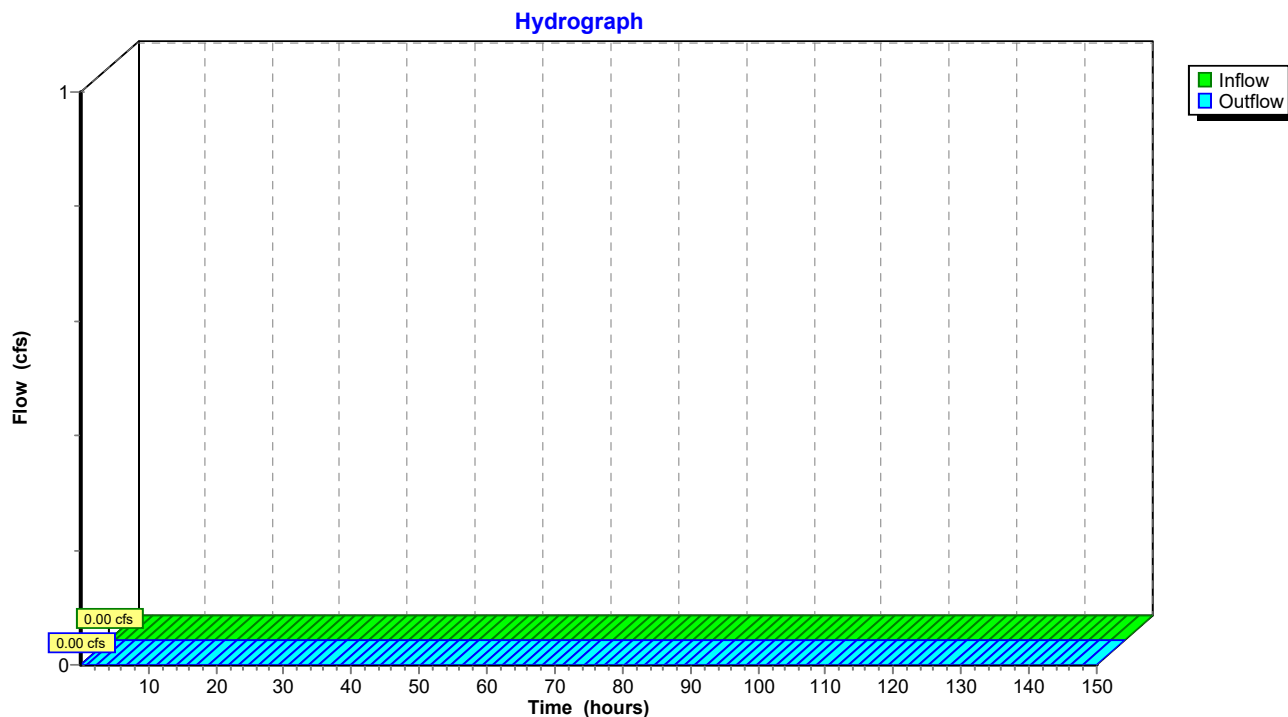
Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
1,446.00	0.0	0	1,448.60	84.8	1,865
1,446.05	1.5	33	1,448.65	86.5	1,903
1,446.10	3.0	66	1,448.70	88.3	1,942
1,446.15	4.5	99	1,448.75	90.1	1,981
1,446.20	6.0	133	1,448.80	91.8	2,020
1,446.25	7.6	166	1,448.85	93.6	2,060
1,446.30	9.1	200	1,448.90	95.4	2,099
1,446.35	10.6	234	1,448.95	97.2	2,138
1,446.40	12.2	268	1,449.00	99.0	2,178
1,446.45	13.7	301			
1,446.50	15.3	336			
1,446.55	16.8	370			
1,446.60	18.4	404			
1,446.65	19.9	438			
1,446.70	21.5	473			
1,446.75	23.1	507			
1,446.80	24.6	542			
1,446.85	26.2	577			
1,446.90	27.8	612			
1,446.95	29.4	647			
1,447.00	31.0	682			
1,447.05	32.6	717			
1,447.10	34.2	753			
1,447.15	35.8	788			
1,447.20	37.4	824			
1,447.25	39.1	859			
1,447.30	40.7	895			
1,447.35	42.3	931			
1,447.40	44.0	967			
1,447.45	45.6	1,003			
1,447.50	47.3	1,040			
1,447.55	48.9	1,076			
1,447.60	50.6	1,112			
1,447.65	52.2	1,149			
1,447.70	53.9	1,186			
1,447.75	55.6	1,222			
1,447.80	57.2	1,259			
1,447.85	58.9	1,296			
1,447.90	60.6	1,333			
1,447.95	62.3	1,371			
1,448.00	64.0	1,408			
1,448.05	65.7	1,445			
1,448.10	67.4	1,483			
1,448.15	69.1	1,521			
1,448.20	70.8	1,558			
1,448.25	72.6	1,596			
1,448.30	74.3	1,634			
1,448.35	76.0	1,672			
1,448.40	77.8	1,711			
1,448.45	79.5	1,749			
1,448.50	81.3	1,788			
1,448.55	83.0	1,826			

Summary for Reach 40R: Emergency Spillway

Inflow = 0.00 cfs @ 0.05 hrs, Volume= 0.000 af
 Outflow = 0.00 cfs @ 0.05 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Reach 40R: Emergency Spillway



Riato V6 Final

Prepared by JMT

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Type II 24-hr 100 year Rainfall=7.42"

Printed 12/3/2021

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Hydrograph for Reach 40R: Emergency Spillway

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
0.05	0.00		0.00	104.05	0.00		0.00
2.05	0.00		0.00	106.05	0.00		0.00
4.05	0.00		0.00	108.05	0.00		0.00
6.05	0.00		0.00	110.05	0.00		0.00
8.05	0.00		0.00	112.05	0.00		0.00
10.05	0.00		0.00	114.05	0.00		0.00
12.05	0.00		0.00	116.05	0.00		0.00
14.05	0.00		0.00	118.05	0.00		0.00
16.05	0.00		0.00	120.05	0.00		0.00
18.05	0.00		0.00	122.05	0.00		0.00
20.05	0.00		0.00	124.05	0.00		0.00
22.05	0.00		0.00	126.05	0.00		0.00
24.05	0.00		0.00	128.05	0.00		0.00
26.05	0.00		0.00	130.05	0.00		0.00
28.05	0.00		0.00	132.05	0.00		0.00
30.05	0.00		0.00	134.05	0.00		0.00
32.05	0.00		0.00	136.05	0.00		0.00
34.05	0.00		0.00	138.05	0.00		0.00
36.05	0.00		0.00	140.05	0.00		0.00
38.05	0.00		0.00	142.05	0.00		0.00
40.05	0.00		0.00	144.05	0.00		0.00
42.05	0.00		0.00	146.05	0.00		0.00
44.05	0.00		0.00	148.05	0.00		0.00
46.05	0.00		0.00				
48.05	0.00		0.00				
50.05	0.00		0.00				
52.05	0.00		0.00				
54.05	0.00		0.00				
56.05	0.00		0.00				
58.05	0.00		0.00				
60.05	0.00		0.00				
62.05	0.00		0.00				
64.05	0.00		0.00				
66.05	0.00		0.00				
68.05	0.00		0.00				
70.05	0.00		0.00				
72.05	0.00		0.00				
74.05	0.00		0.00				
76.05	0.00		0.00				
78.05	0.00		0.00				
80.05	0.00		0.00				
82.05	0.00		0.00				
84.05	0.00		0.00				
86.05	0.00		0.00				
88.05	0.00		0.00				
90.05	0.00		0.00				
92.05	0.00		0.00				
94.05	0.00		0.00				
96.05	0.00		0.00				
98.05	0.00		0.00				
100.05	0.00		0.00				
102.05	0.00		0.00				

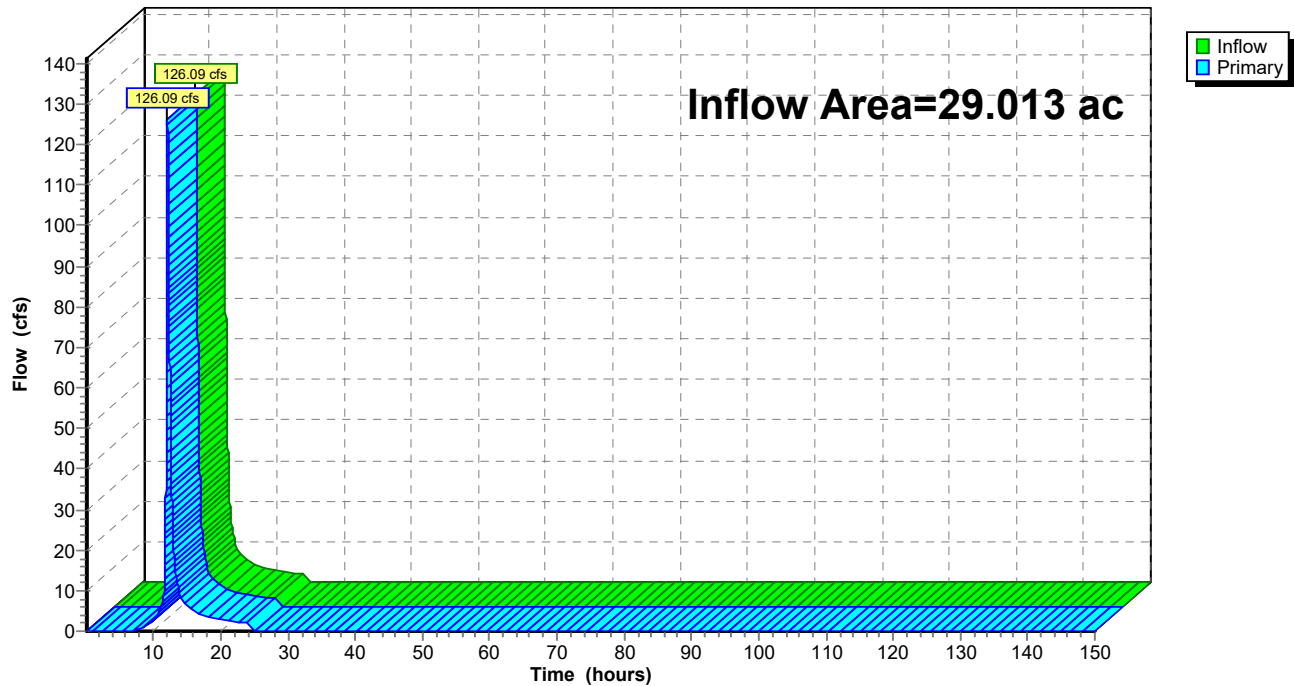
Summary for Pond 13P: Pre-Dvel Disch

Inflow Area = 29.013 ac, 0.00% Impervious, Inflow Depth = 4.75" for 100 year event
 Inflow = 126.09 cfs @ 12.07 hrs, Volume= 11.473 af
 Primary = 126.09 cfs @ 12.07 hrs, Volume= 11.473 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Pond 13P: Pre-Dvel Disch

Hydrograph



Hydrograph for Pond 13P: Pre-Dvel Disch

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.05	0.00		0.00	104.05	0.00		0.00
2.05	0.00		0.00	106.05	0.00		0.00
4.05	0.00		0.00	108.05	0.00		0.00
6.05	0.00		0.00	110.05	0.00		0.00
8.05	0.67		0.67	112.05	0.00		0.00
10.05	2.56		2.56	114.05	0.00		0.00
12.05	124.82		124.82	116.05	0.00		0.00
14.05	8.29		8.29	118.05	0.00		0.00
16.05	4.84		4.84	120.05	0.00		0.00
18.05	3.65		3.65	122.05	0.00		0.00
20.05	2.69		2.69	124.05	0.00		0.00
22.05	2.38		2.38	126.05	0.00		0.00
24.05	2.19		2.19	128.05	0.00		0.00
26.05	0.00		0.00	130.05	0.00		0.00
28.05	0.00		0.00	132.05	0.00		0.00
30.05	0.00		0.00	134.05	0.00		0.00
32.05	0.00		0.00	136.05	0.00		0.00
34.05	0.00		0.00	138.05	0.00		0.00
36.05	0.00		0.00	140.05	0.00		0.00
38.05	0.00		0.00	142.05	0.00		0.00
40.05	0.00		0.00	144.05	0.00		0.00
42.05	0.00		0.00	146.05	0.00		0.00
44.05	0.00		0.00	148.05	0.00		0.00
46.05	0.00		0.00				
48.05	0.00		0.00				
50.05	0.00		0.00				
52.05	0.00		0.00				
54.05	0.00		0.00				
56.05	0.00		0.00				
58.05	0.00		0.00				
60.05	0.00		0.00				
62.05	0.00		0.00				
64.05	0.00		0.00				
66.05	0.00		0.00				
68.05	0.00		0.00				
70.05	0.00		0.00				
72.05	0.00		0.00				
74.05	0.00		0.00				
76.05	0.00		0.00				
78.05	0.00		0.00				
80.05	0.00		0.00				
82.05	0.00		0.00				
84.05	0.00		0.00				
86.05	0.00		0.00				
88.05	0.00		0.00				
90.05	0.00		0.00				
92.05	0.00		0.00				
94.05	0.00		0.00				
96.05	0.00		0.00				
98.05	0.00		0.00				
100.05	0.00		0.00				
102.05	0.00		0.00				

Summary for Pond 14P: North Bay

Inflow Area = 29.013 ac, 9.48% Impervious, Inflow Depth = 6.77" for 100 year event
 Inflow = 289.09 cfs @ 11.93 hrs, Volume= 16.363 af
 Outflow = 101.70 cfs @ 12.02 hrs, Volume= 16.178 af, Atten= 65%, Lag= 5.8 min
 Primary = 101.70 cfs @ 12.02 hrs, Volume= 16.178 af

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs
 Starting Elev= 1,452.50' Surf.Area= 1.900 ac Storage= 1.900 af
 Peak Elev= 1,456.68' @ 12.09 hrs Surf.Area= 1.900 ac Storage= 9.851 af (7.951 af above start)

Plug-Flow detention time= 850.8 min calculated for 14.278 af (87% of inflow)
 Center-of-Mass det. time= 689.3 min (1,445.8 - 756.4)

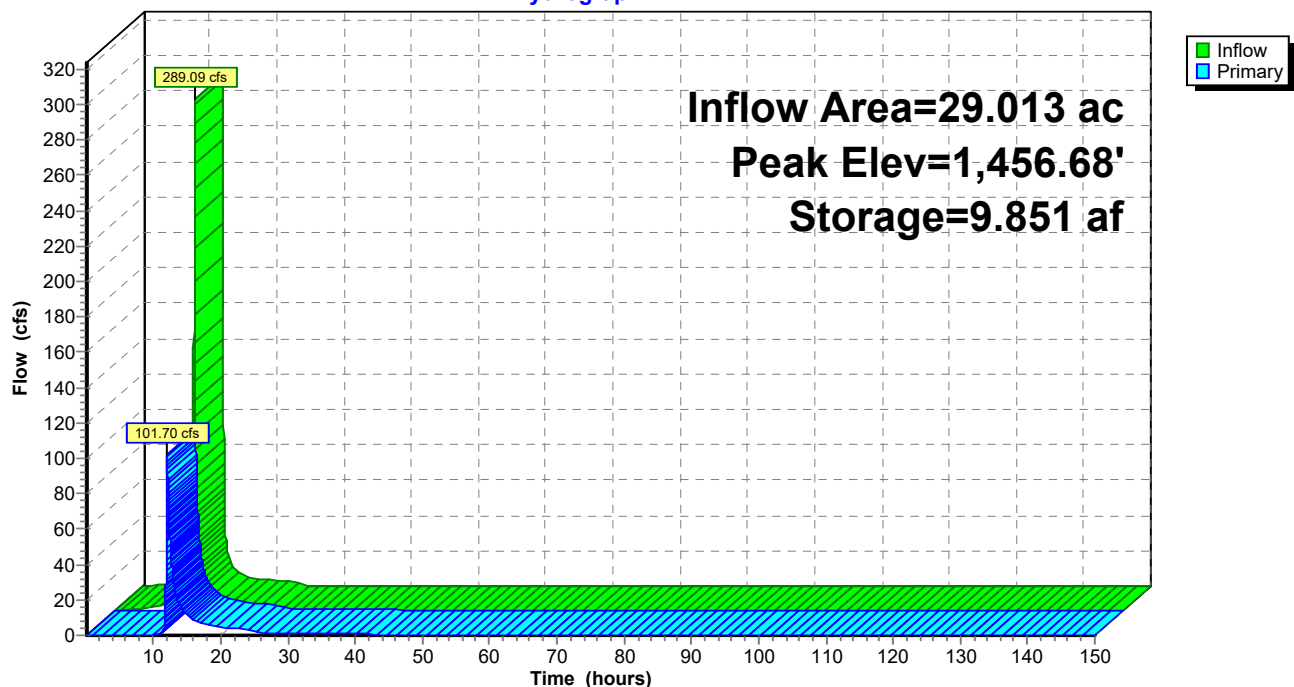
Volume	Invert	Avail.Storage	Storage Description
#1	1,451.50'	96.900 af	Custom Stage Data (Prismatic) Listed below (Recalc) x 1.9
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,451.50	1.000	0.000	0.000
1,452.50	1.000	1.000	1.000
1,453.50	1.000	1.000	2.000
1,454.50	1.000	1.000	3.000
1,458.50	1.000	4.000	7.000
1,502.50	1.000	44.000	51.000

Device	Routing	Invert	Outlet Devices
#1	Primary	1,454.00'	8.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#2	Primary	1,452.50'	3.0" Vert. Orifice/Grate X 2.00 C= 0.600

Primary OutFlow Max=100.01 cfs @ 12.02 hrs HW=1,456.61' TW=1,454.54' (Dynamic Tailwater)
 1=Sharp-Crested Rectangular Weir (Weir Controls 99.33 cfs @ 5.09 fps)
 2=Orifice/Grate (Orifice Controls 0.68 cfs @ 6.93 fps)

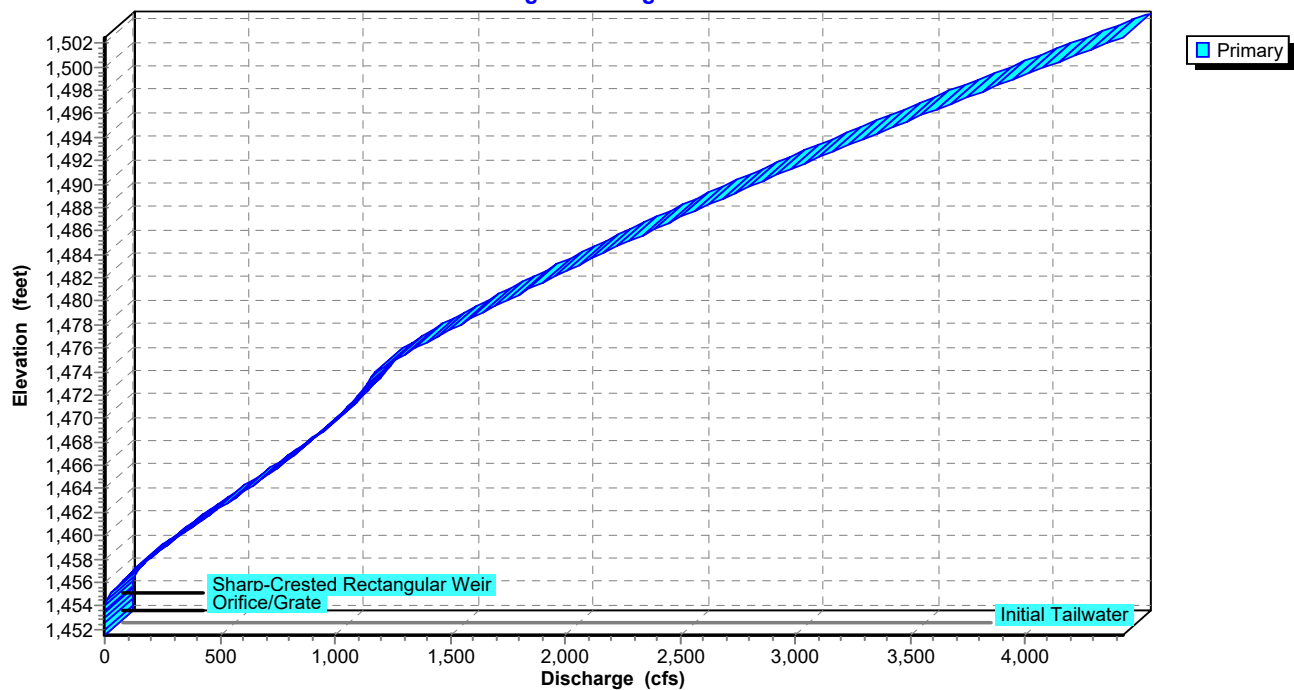
Pond 14P: North Bay

Hydrograph



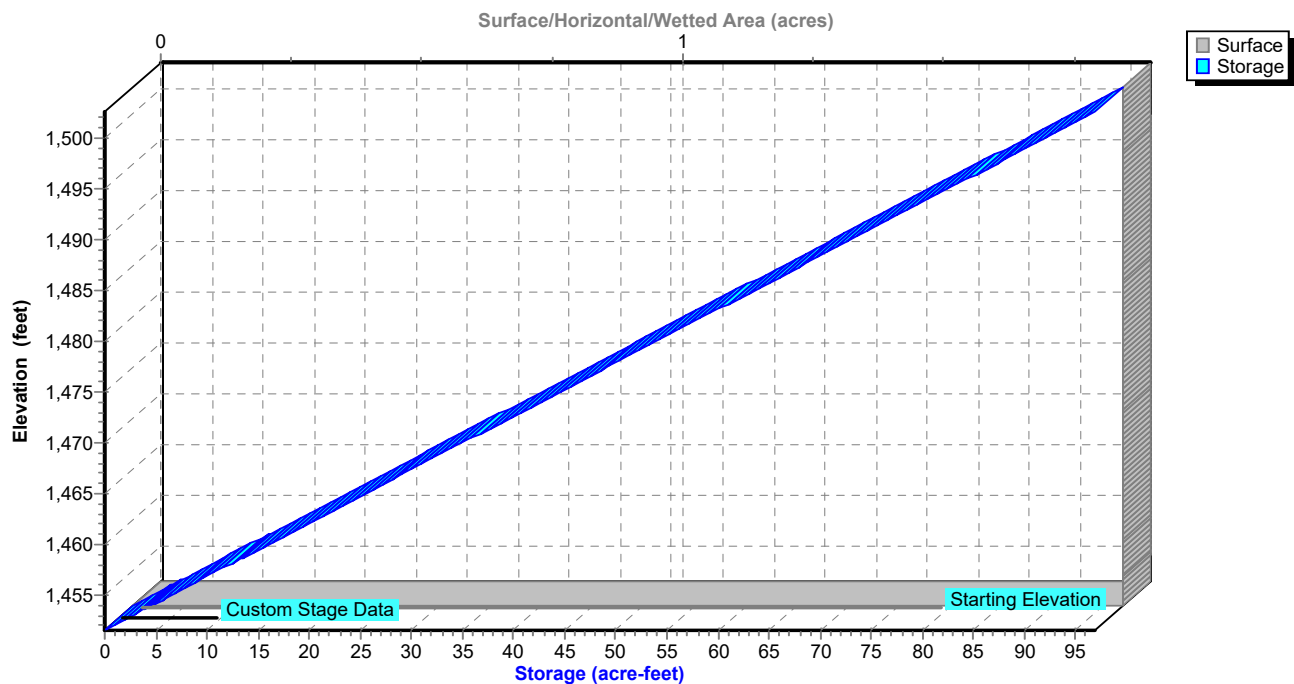
Pond 14P: North Bay

Stage-Discharge



Pond 14P: North Bay

Stage-Area-Storage



Riato V6 Final

Prepared by JMT

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Type II 24-hr 100 year Rainfall=7.42"

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Hydrograph for Pond 14P: North Bay

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.05	0.00	1.900	1,452.50	0.00
5.05	2.11	2.209	1,452.66	0.09
10.05	7.70	3.777	1,453.49	0.44
15.05	6.51	6.774	1,455.07	10.97
20.05	2.83	5.860	1,454.58	4.21
25.05	0.00	5.211	1,454.24	2.68
30.05	0.00	4.741	1,454.00	0.55
35.05	0.00	4.518	1,453.88	0.53
40.05	0.00	4.305	1,453.77	0.50
45.05	0.00	4.101	1,453.66	0.48
50.05	0.00	3.908	1,453.56	0.46
55.05	0.00	3.725	1,453.46	0.43
60.05	0.00	3.551	1,453.37	0.41
65.05	0.00	3.388	1,453.28	0.38
70.05	0.00	3.234	1,453.20	0.36
75.05	0.00	3.091	1,453.13	0.33
80.05	0.00	2.958	1,453.06	0.31
85.05	0.00	2.834	1,452.99	0.29
90.05	0.00	2.721	1,452.93	0.26
95.05	0.00	2.618	1,452.88	0.24
100.05	0.00	2.525	1,452.83	0.21
105.05	0.00	2.441	1,452.78	0.19
110.05	0.00	2.368	1,452.75	0.17
115.05	0.00	2.305	1,452.71	0.14
120.05	0.00	2.252	1,452.69	0.11
125.05	0.00	2.210	1,452.66	0.09
130.05	0.00	2.175	1,452.64	0.08
135.05	0.00	2.146	1,452.63	0.06
140.05	0.00	2.122	1,452.62	0.05
145.05	0.00	2.102	1,452.61	0.04

Stage-Discharge for Pond 14P: North Bay

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
1,451.50	0.00	1,480.10	1,746.57
1,452.05	0.00	1,480.65	1,802.01
1,452.60	0.04	1,481.20	1,858.03
1,453.15	0.34	1,481.75	1,914.61
1,453.70	0.49	1,482.30	1,971.76
1,454.25	3.85	1,482.85	2,029.47
1,454.80	19.04	1,483.40	2,087.73
1,455.35	40.43	1,483.95	2,146.54
1,455.90	66.11	1,484.50	2,205.89
1,456.45	95.10	1,485.05	2,265.77
1,457.00	126.73	1,485.60	2,326.19
1,457.55	160.50	1,486.15	2,387.14
1,458.10	196.02	1,486.70	2,448.61
1,458.65	232.98	1,487.25	2,510.59
1,459.20	271.09	1,487.80	2,573.10
1,459.75	310.11	1,488.35	2,636.11
1,460.30	349.82	1,488.90	2,699.63
1,460.85	390.04	1,489.45	2,763.65
1,461.40	430.58	1,490.00	2,828.17
1,461.95	471.29	1,490.55	2,893.18
1,462.50	512.01	1,491.10	2,958.69
1,463.05	552.60	1,491.65	3,024.68
1,463.60	592.93	1,492.20	3,091.16
1,464.15	632.88	1,492.75	3,158.11
1,464.70	672.33	1,493.30	3,225.54
1,465.25	711.17	1,493.85	3,293.45
1,465.80	749.28	1,494.40	3,361.82
1,466.35	786.58	1,494.95	3,430.66
1,466.90	822.95	1,495.50	3,499.97
1,467.45	858.32	1,496.05	3,569.73
1,468.00	892.58	1,496.60	3,639.96
1,468.55	925.65	1,497.15	3,710.64
1,469.10	957.44	1,497.70	3,781.76
1,469.65	987.89	1,498.25	3,853.34
1,470.20	1,016.89	1,498.80	3,925.37
1,470.75	1,044.38	1,499.35	3,997.83
1,471.30	1,070.29	1,499.90	4,070.74
1,471.85	1,094.54	1,500.45	4,144.09
1,472.40	1,117.06	1,501.00	4,217.87
1,472.95	1,137.78	1,501.55	4,292.08
1,473.50	1,156.63	1,502.10	4,366.73
1,474.05	1,176.49		
1,474.60	1,225.17		
1,475.15	1,274.50		
1,475.70	1,324.47		
1,476.25	1,375.08		
1,476.80	1,426.32		
1,477.35	1,478.19		
1,477.90	1,530.66		
1,478.45	1,583.75		
1,479.00	1,637.43		
1,479.55	1,691.70		

Stage-Area-Storage for Pond 14P: North Bay

Elevation (feet)	Surface (acres)	Storage (acre-feet)	Elevation (feet)	Surface (acres)	Storage (acre-feet)
1,451.50	1.900	0.000	1,480.10	1.900	54.340
1,452.05	1.900	1.045	1,480.65	1.900	55.385
1,452.60	1.900	2.090	1,481.20	1.900	56.430
1,453.15	1.900	3.135	1,481.75	1.900	57.475
1,453.70	1.900	4.180	1,482.30	1.900	58.520
1,454.25	1.900	5.225	1,482.85	1.900	59.565
1,454.80	1.900	6.270	1,483.40	1.900	60.610
1,455.35	1.900	7.315	1,483.95	1.900	61.655
1,455.90	1.900	8.360	1,484.50	1.900	62.700
1,456.45	1.900	9.405	1,485.05	1.900	63.745
1,457.00	1.900	10.450	1,485.60	1.900	64.790
1,457.55	1.900	11.495	1,486.15	1.900	65.835
1,458.10	1.900	12.540	1,486.70	1.900	66.880
1,458.65	1.900	13.585	1,487.25	1.900	67.925
1,459.20	1.900	14.630	1,487.80	1.900	68.970
1,459.75	1.900	15.675	1,488.35	1.900	70.015
1,460.30	1.900	16.720	1,488.90	1.900	71.060
1,460.85	1.900	17.765	1,489.45	1.900	72.105
1,461.40	1.900	18.810	1,490.00	1.900	73.150
1,461.95	1.900	19.855	1,490.55	1.900	74.195
1,462.50	1.900	20.900	1,491.10	1.900	75.240
1,463.05	1.900	21.945	1,491.65	1.900	76.285
1,463.60	1.900	22.990	1,492.20	1.900	77.330
1,464.15	1.900	24.035	1,492.75	1.900	78.375
1,464.70	1.900	25.080	1,493.30	1.900	79.420
1,465.25	1.900	26.125	1,493.85	1.900	80.465
1,465.80	1.900	27.170	1,494.40	1.900	81.510
1,466.35	1.900	28.215	1,494.95	1.900	82.555
1,466.90	1.900	29.260	1,495.50	1.900	83.600
1,467.45	1.900	30.305	1,496.05	1.900	84.645
1,468.00	1.900	31.350	1,496.60	1.900	85.690
1,468.55	1.900	32.395	1,497.15	1.900	86.735
1,469.10	1.900	33.440	1,497.70	1.900	87.780
1,469.65	1.900	34.485	1,498.25	1.900	88.825
1,470.20	1.900	35.530	1,498.80	1.900	89.870
1,470.75	1.900	36.575	1,499.35	1.900	90.915
1,471.30	1.900	37.620	1,499.90	1.900	91.960
1,471.85	1.900	38.665	1,500.45	1.900	93.005
1,472.40	1.900	39.710	1,501.00	1.900	94.050
1,472.95	1.900	40.755	1,501.55	1.900	95.095
1,473.50	1.900	41.800	1,502.10	1.900	96.140
1,474.05	1.900	42.845			
1,474.60	1.900	43.890			
1,475.15	1.900	44.935			
1,475.70	1.900	45.980			
1,476.25	1.900	47.025			
1,476.80	1.900	48.070			
1,477.35	1.900	49.115			
1,477.90	1.900	50.160			
1,478.45	1.900	51.205			
1,479.00	1.900	52.250			
1,479.55	1.900	53.295			

Summary for Pond 15P: South Bay

Inflow Area = 29.013 ac, 9.48% Impervious, Inflow Depth > 6.69" for 100 year event
 Inflow = 101.70 cfs @ 12.02 hrs, Volume= 16.178 af
 Outflow = 65.26 cfs @ 12.23 hrs, Volume= 16.151 af, Atten= 36%, Lag= 12.5 min
 Primary = 65.26 cfs @ 12.23 hrs, Volume= 16.151 af
 Secondary = 0.00 cfs @ 0.05 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Starting Elev= 1,451.50' Surf.Area= 0.500 ac Storage= 0.500 af

Peak Elev= 1,455.99' @ 12.23 hrs Surf.Area= 0.500 ac Storage= 2.743 af (2.243 af above start)

Plug-Flow detention time= 328.7 min calculated for 15.651 af (97% of inflow)

Center-of-Mass det. time= 118.5 min (1,564.3 - 1,445.8)

Volume	Invert	Avail.Storage	Storage Description
#1	1,450.50'	25.500 af	Custom Stage Data (Prismatic) Listed below (Recalc) x 0.5

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,450.50	1.000	0.000	0.000
1,451.50	1.000	1.000	1.000
1,452.50	1.000	1.000	2.000
1,453.50	1.000	1.000	3.000
1,457.50	1.000	4.000	7.000
1,501.50	1.000	44.000	51.000

Device	Routing	Invert	Outlet Devices
#1	Secondary	1,456.00'	10.0' long (Profile 7) Broad-Crested Rectangular Weir Head (feet) 0.49 0.98 1.48 Coef. (English) 2.99 3.41 3.62
#2	Device 5	1,455.50'	36.0" x 84.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 5	1,454.50'	26.0" W x 24.0" H Vert. Vertical Square X 3.00 C= 0.600
#4	Device 5	1,451.50'	4.0" Vert. Orifice/Grate X 6.00 C= 0.600
#5	Primary	1,451.50'	24.0" Round Culvert X 3.00 L= 60.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,451.50' / 1,449.80' S= 0.0283 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=65.24 cfs @ 12.23 hrs HW=1,455.99' TW=1,451.44' (Dynamic Tailwater)

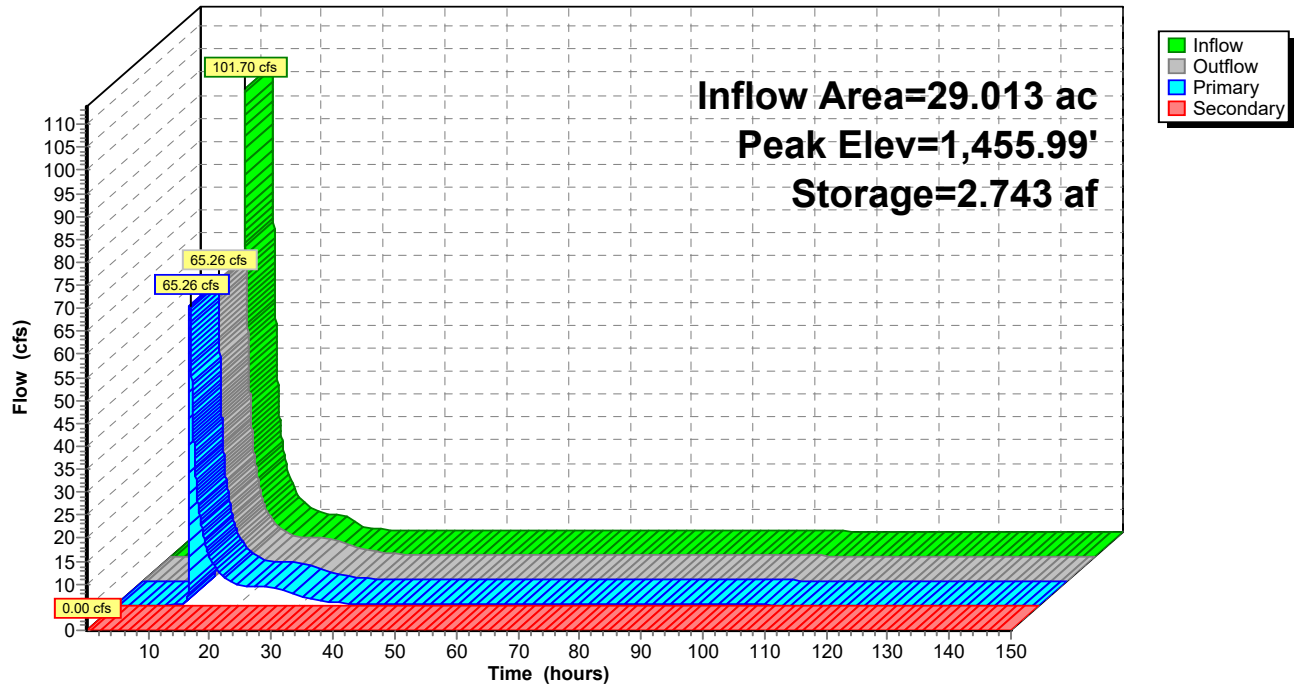
5=Culvert (Passes 65.24 cfs of 84.73 cfs potential flow)
 2=Orifice/Grate (Weir Controls 22.19 cfs @ 2.28 fps)
 3=Vertical Square (Orifice Controls 37.81 cfs @ 3.91 fps)
 4=Orifice/Grate (Orifice Controls 5.24 cfs @ 10.01 fps)

Secondary OutFlow Max=0.00 cfs @ 0.05 hrs HW=1,451.50' TW=0.00' (Dynamic Tailwater)

1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

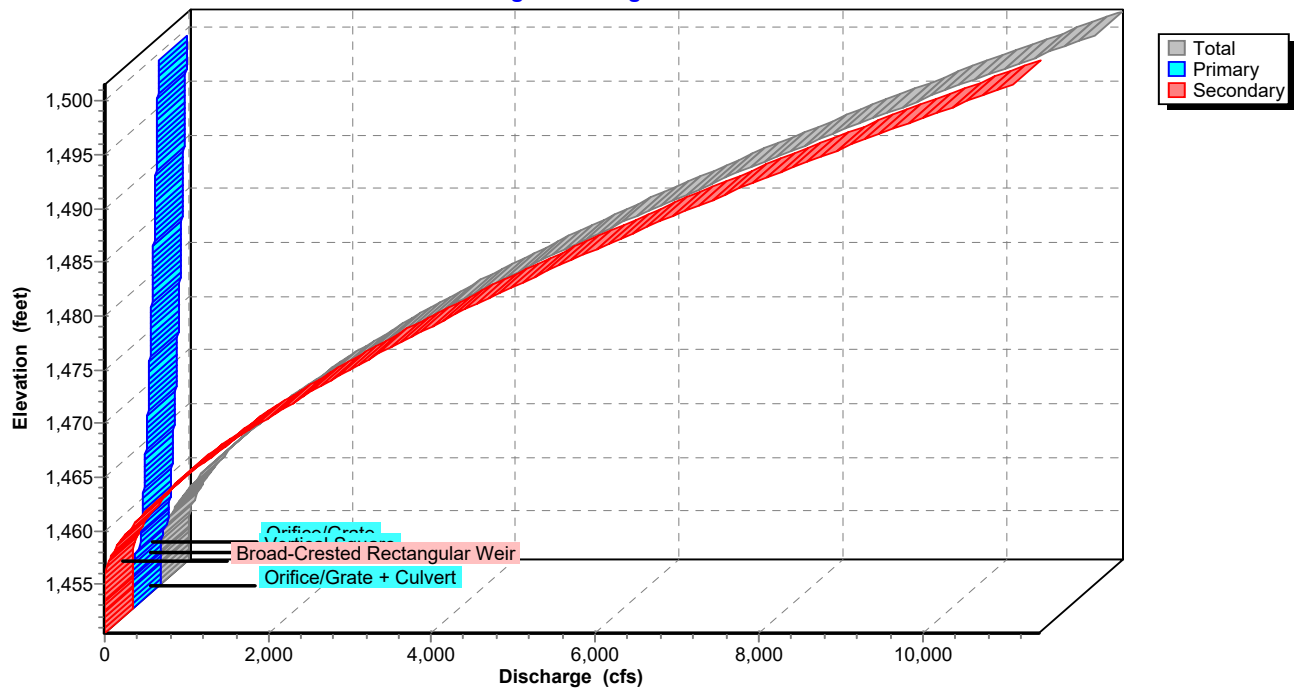
Pond 15P: South Bay

Hydrograph



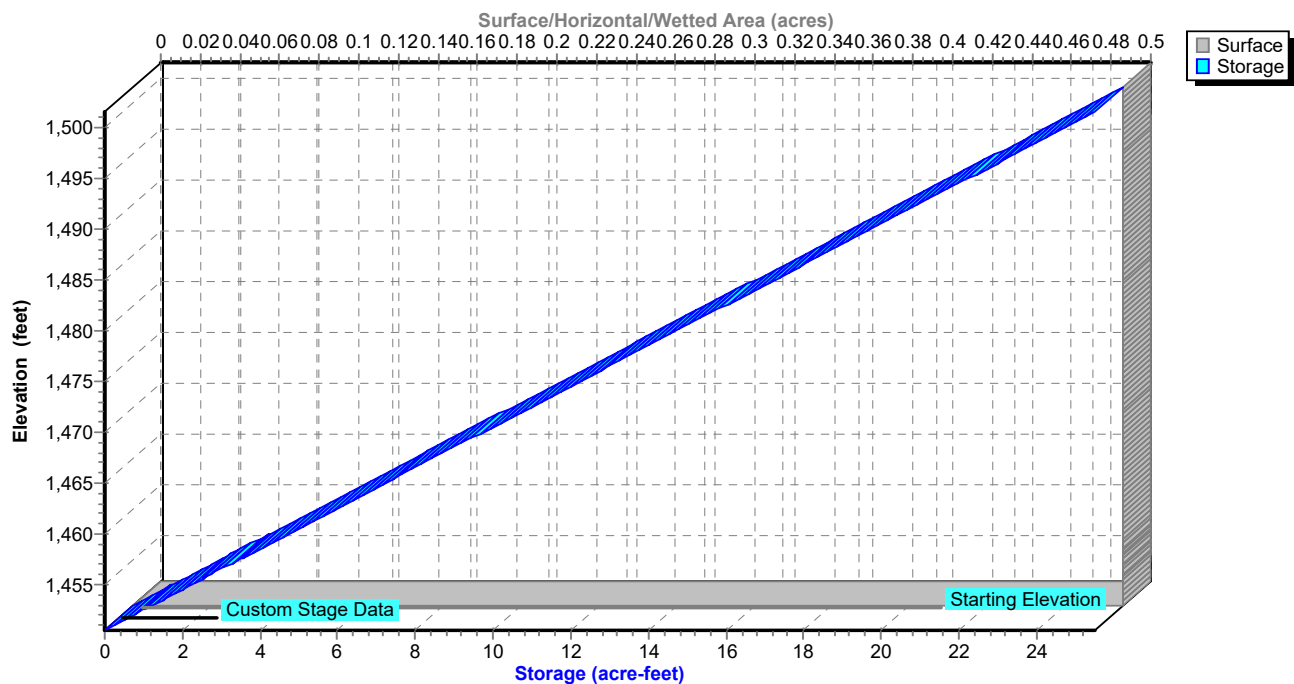
Pond 15P: South Bay

Stage-Discharge



Pond 15P: South Bay

Stage-Area-Storage



Hydrograph for Pond 15P: South Bay

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.05	0.00	0.500	1,451.50	0.00	0.00	0.00
5.05	0.09	0.506	1,451.51	0.00	0.00	0.00
10.05	0.44	0.573	1,451.65	0.29	0.29	0.00
15.05	10.97	2.251	1,455.00	12.02	12.02	0.00
20.05	4.21	2.028	1,454.56	4.57	4.57	0.00
25.05	2.68	1.817	1,454.13	3.96	3.96	0.00
30.05	0.55	0.972	1,452.44	2.22	2.22	0.00
35.05	0.53	0.626	1,451.75	0.73	0.73	0.00
40.05	0.50	0.602	1,451.70	0.52	0.52	0.00
45.05	0.48	0.599	1,451.70	0.49	0.49	0.00
50.05	0.46	0.596	1,451.69	0.46	0.46	0.00
55.05	0.43	0.593	1,451.69	0.44	0.44	0.00
60.05	0.41	0.590	1,451.68	0.41	0.41	0.00
65.05	0.38	0.587	1,451.67	0.39	0.39	0.00
70.05	0.36	0.584	1,451.67	0.37	0.37	0.00
75.05	0.33	0.581	1,451.66	0.34	0.34	0.00
80.05	0.31	0.577	1,451.65	0.32	0.32	0.00
85.05	0.29	0.574	1,451.65	0.29	0.29	0.00
90.05	0.26	0.571	1,451.64	0.27	0.27	0.00
95.05	0.24	0.567	1,451.63	0.25	0.25	0.00
100.05	0.21	0.564	1,451.63	0.22	0.22	0.00
105.05	0.19	0.560	1,451.62	0.20	0.20	0.00
110.05	0.17	0.556	1,451.61	0.17	0.17	0.00
115.05	0.14	0.552	1,451.60	0.15	0.15	0.00
120.05	0.11	0.547	1,451.59	0.13	0.13	0.00
125.05	0.09	0.542	1,451.58	0.10	0.10	0.00
130.05	0.08	0.538	1,451.58	0.09	0.09	0.00
135.05	0.06	0.535	1,451.57	0.07	0.07	0.00
140.05	0.05	0.532	1,451.56	0.06	0.06	0.00
145.05	0.04	0.529	1,451.56	0.05	0.05	0.00

Stage-Discharge for Pond 15P: South Bay

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)	Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
1,450.50	0.00	0.00	0.00	1,479.10	4,253.13	234.05	4,019.08
1,451.05	0.00	0.00	0.00	1,479.65	4,399.92	236.46	4,163.47
1,451.60	0.14	0.14	0.00	1,480.20	4,548.39	238.84	4,309.55
1,452.15	1.75	1.75	0.00	1,480.75	4,698.49	241.20	4,457.29
1,452.70	2.56	2.56	0.00	1,481.30	4,850.23	243.54	4,606.69
1,453.25	3.17	3.17	0.00	1,481.85	5,003.58	245.85	4,757.73
1,453.80	3.68	3.68	0.00	1,482.40	5,158.52	248.14	4,910.37
1,454.35	4.13	4.13	0.00	1,482.95	5,315.03	250.41	5,064.62
1,454.90	9.81	9.81	0.00	1,483.50	5,473.11	252.67	5,220.45
1,455.45	24.22	24.22	0.00	1,484.05	5,632.74	254.90	5,377.84
1,456.00	66.70	66.70	0.00	1,484.60	5,793.89	257.11	5,536.78
1,456.55	103.73	91.33	12.41	1,485.15	5,956.57	259.30	5,697.26
1,457.10	137.25	97.33	39.92	1,485.70	6,120.74	261.48	5,859.27
1,457.65	179.71	102.98	76.72	1,486.25	6,286.41	263.63	6,022.78
1,458.20	226.47	108.34	118.13	1,486.80	6,453.55	265.77	6,187.78
1,458.75	278.54	113.45	165.08	1,487.35	6,622.15	267.90	6,354.26
1,459.30	335.35	118.34	217.01	1,487.90	6,792.21	270.00	6,522.21
1,459.85	396.49	123.03	273.46	1,488.45	6,963.70	272.09	6,691.61
1,460.40	461.66	127.55	334.11	1,489.00	7,136.62	274.16	6,862.45
1,460.95	530.59	131.91	398.67	1,489.55	7,310.95	276.22	7,034.73
1,461.50	603.07	136.14	466.93	1,490.10	7,486.69	278.27	7,208.42
1,462.05	678.93	140.24	538.69	1,490.65	7,663.81	280.29	7,383.52
1,462.60	758.02	144.22	613.80	1,491.20	7,842.32	282.31	7,560.01
1,463.15	840.19	148.09	692.10	1,491.75	8,022.20	284.31	7,737.89
1,463.70	925.34	151.87	773.47	1,492.30	8,203.43	286.29	7,917.14
1,464.25	1,013.36	155.56	857.81	1,492.85	8,386.02	288.26	8,097.76
1,464.80	1,104.16	159.15	945.00	1,493.40	8,569.95	290.22	8,279.73
1,465.35	1,197.64	162.67	1,034.97	1,493.95	8,755.20	292.16	8,463.04
1,465.90	1,293.73	166.12	1,127.62	1,494.50	8,941.78	294.10	8,647.68
1,466.45	1,392.37	169.49	1,222.88	1,495.05	9,129.66	296.02	8,833.65
1,467.00	1,493.48	172.80	1,320.68	1,495.60	9,318.85	297.92	9,020.93
1,467.55	1,597.01	176.05	1,420.96	1,496.15	9,509.34	299.82	9,209.52
1,468.10	1,702.89	179.24	1,523.65	1,496.70	9,701.10	301.70	9,399.40
1,468.65	1,811.08	182.37	1,628.71	1,497.25	9,894.14	303.57	9,590.57
1,469.20	1,921.53	185.45	1,736.08	1,497.80	10,088.45	305.43	9,783.02
1,469.75	2,034.18	188.48	1,845.71	1,498.35	10,284.02	307.28	9,976.74
1,470.30	2,149.01	191.46	1,957.55	1,498.90	10,480.84	309.12	10,171.72
1,470.85	2,265.96	194.39	2,071.56	1,499.45	10,678.90	310.94	10,367.96
1,471.40	2,385.00	197.29	2,187.71	1,500.00	10,878.20	312.76	10,565.44
1,471.95	2,506.08	200.14	2,305.95	1,500.55	11,078.73	314.57	10,764.16
1,472.50	2,629.19	202.95	2,426.24	1,501.10	11,280.47	316.36	10,964.11
1,473.05	2,754.28	205.72	2,548.56				
1,473.60	2,881.32	208.45	2,672.87				
1,474.15	3,010.28	211.15	2,799.13				
1,474.70	3,141.14	213.82	2,927.33				
1,475.25	3,273.87	216.45	3,057.42				
1,475.80	3,408.43	219.05	3,189.38				
1,476.35	3,544.81	221.62	3,323.19				
1,476.90	3,682.98	224.16	3,458.82				
1,477.45	3,822.92	226.67	3,596.25				
1,478.00	3,964.61	229.16	3,735.45				
1,478.55	4,108.01	231.62	3,876.40				

Stage-Area-Storage for Pond 15P: South Bay

Elevation (feet)	Surface (acres)	Storage (acre-feet)	Elevation (feet)	Surface (acres)	Storage (acre-feet)
1,450.50	0.500	0.000	1,479.10	0.500	14.300
1,451.05	0.500	0.275	1,479.65	0.500	14.575
1,451.60	0.500	0.550	1,480.20	0.500	14.850
1,452.15	0.500	0.825	1,480.75	0.500	15.125
1,452.70	0.500	1.100	1,481.30	0.500	15.400
1,453.25	0.500	1.375	1,481.85	0.500	15.675
1,453.80	0.500	1.650	1,482.40	0.500	15.950
1,454.35	0.500	1.925	1,482.95	0.500	16.225
1,454.90	0.500	2.200	1,483.50	0.500	16.500
1,455.45	0.500	2.475	1,484.05	0.500	16.775
1,456.00	0.500	2.750	1,484.60	0.500	17.050
1,456.55	0.500	3.025	1,485.15	0.500	17.325
1,457.10	0.500	3.300	1,485.70	0.500	17.600
1,457.65	0.500	3.575	1,486.25	0.500	17.875
1,458.20	0.500	3.850	1,486.80	0.500	18.150
1,458.75	0.500	4.125	1,487.35	0.500	18.425
1,459.30	0.500	4.400	1,487.90	0.500	18.700
1,459.85	0.500	4.675	1,488.45	0.500	18.975
1,460.40	0.500	4.950	1,489.00	0.500	19.250
1,460.95	0.500	5.225	1,489.55	0.500	19.525
1,461.50	0.500	5.500	1,490.10	0.500	19.800
1,462.05	0.500	5.775	1,490.65	0.500	20.075
1,462.60	0.500	6.050	1,491.20	0.500	20.350
1,463.15	0.500	6.325	1,491.75	0.500	20.625
1,463.70	0.500	6.600	1,492.30	0.500	20.900
1,464.25	0.500	6.875	1,492.85	0.500	21.175
1,464.80	0.500	7.150	1,493.40	0.500	21.450
1,465.35	0.500	7.425	1,493.95	0.500	21.725
1,465.90	0.500	7.700	1,494.50	0.500	22.000
1,466.45	0.500	7.975	1,495.05	0.500	22.275
1,467.00	0.500	8.250	1,495.60	0.500	22.550
1,467.55	0.500	8.525	1,496.15	0.500	22.825
1,468.10	0.500	8.800	1,496.70	0.500	23.100
1,468.65	0.500	9.075	1,497.25	0.500	23.375
1,469.20	0.500	9.350	1,497.80	0.500	23.650
1,469.75	0.500	9.625	1,498.35	0.500	23.925
1,470.30	0.500	9.900	1,498.90	0.500	24.200
1,470.85	0.500	10.175	1,499.45	0.500	24.475
1,471.40	0.500	10.450	1,500.00	0.500	24.750
1,471.95	0.500	10.725	1,500.55	0.500	25.025
1,472.50	0.500	11.000	1,501.10	0.500	25.300
1,473.05	0.500	11.275			
1,473.60	0.500	11.550			
1,474.15	0.500	11.825			
1,474.70	0.500	12.100			
1,475.25	0.500	12.375			
1,475.80	0.500	12.650			
1,476.35	0.500	12.925			
1,476.90	0.500	13.200			
1,477.45	0.500	13.475			
1,478.00	0.500	13.750			
1,478.55	0.500	14.025			

Summary for Pond 22P: Road Crossing Culverts w/ Storage

Inflow Area = 35.631 ac, 7.72% Impervious, Inflow Depth > 6.32" for 100 year event
 Inflow = 84.02 cfs @ 12.26 hrs, Volume= 18.768 af
 Outflow = 84.01 cfs @ 12.27 hrs, Volume= 18.767 af, Atten= 0%, Lag= 0.3 min
 Primary = 84.01 cfs @ 12.27 hrs, Volume= 18.767 af

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Peak Elev= 1,450.51' @ 12.27 hrs Surf.Area= 509 sf Storage= 1,110 cf

Flood Elev= 1,453.00' Surf.Area= 716 sf Storage= 2,558 cf

Plug-Flow detention time= 0.9 min calculated for 18.767 af (100% of inflow)

Center-of-Mass det. time= 0.5 min (1,464.8 - 1,464.3)

Volume	Invert	Avail.Storage	Storage Description
#1	1,447.79'	2,558 cf	20.00'D x 5.10'H Vertical Cone/Cylinder Z=1.0

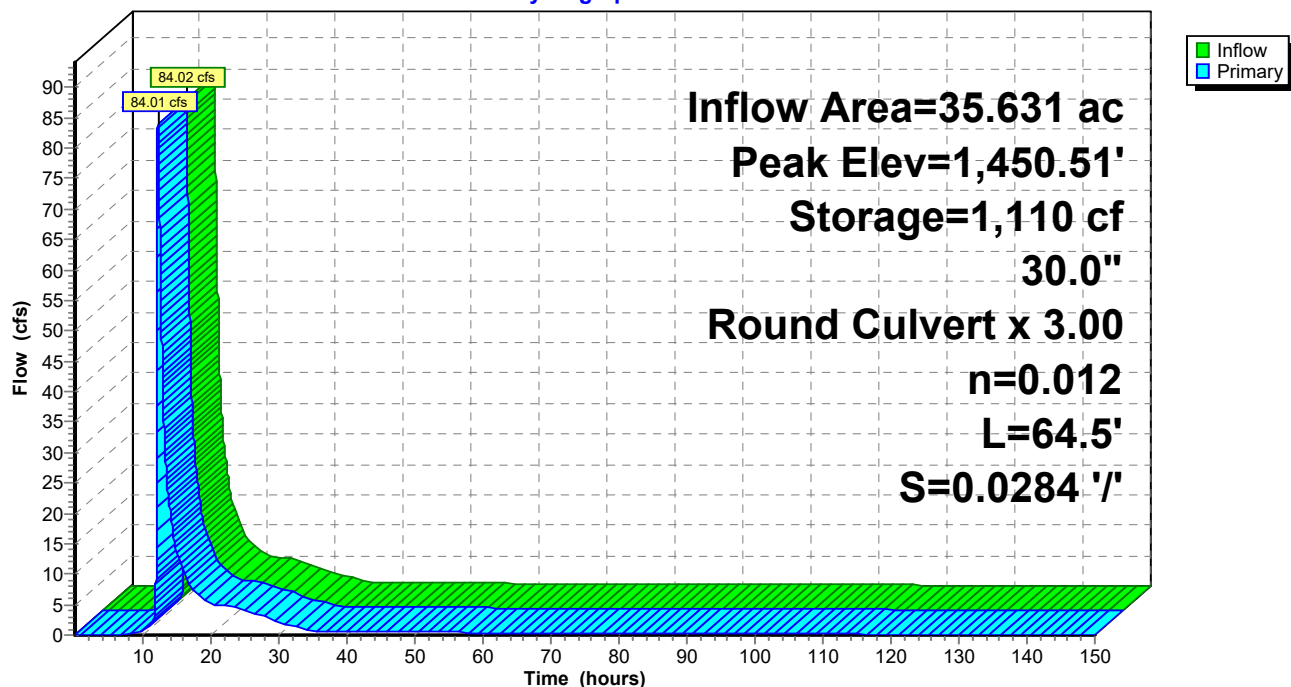
Device	Routing	Invert	Outlet Devices
#1	Primary	1,447.86'	30.0" Round Culvert X 3.00 L= 64.5' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,447.86' / 1,446.03' S= 0.0284 '/ Cc= 0.900 n= 0.012, Flow Area= 4.91 sf

Primary OutFlow Max=84.01 cfs @ 12.27 hrs HW=1,450.51' TW=1,447.51' (Dynamic Tailwater)

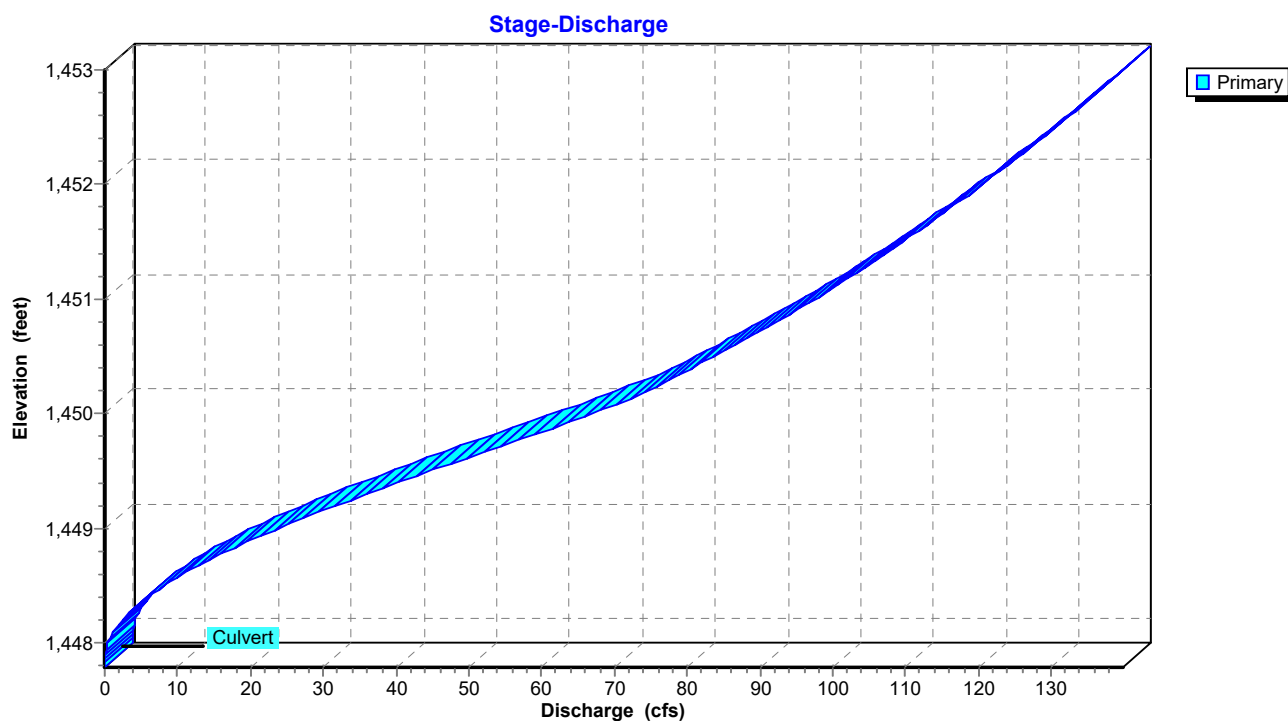
←**1=Culvert** (Inlet Controls 84.01 cfs @ 5.70 fps)

Pond 22P: Road Crossing Culverts w/ Storage

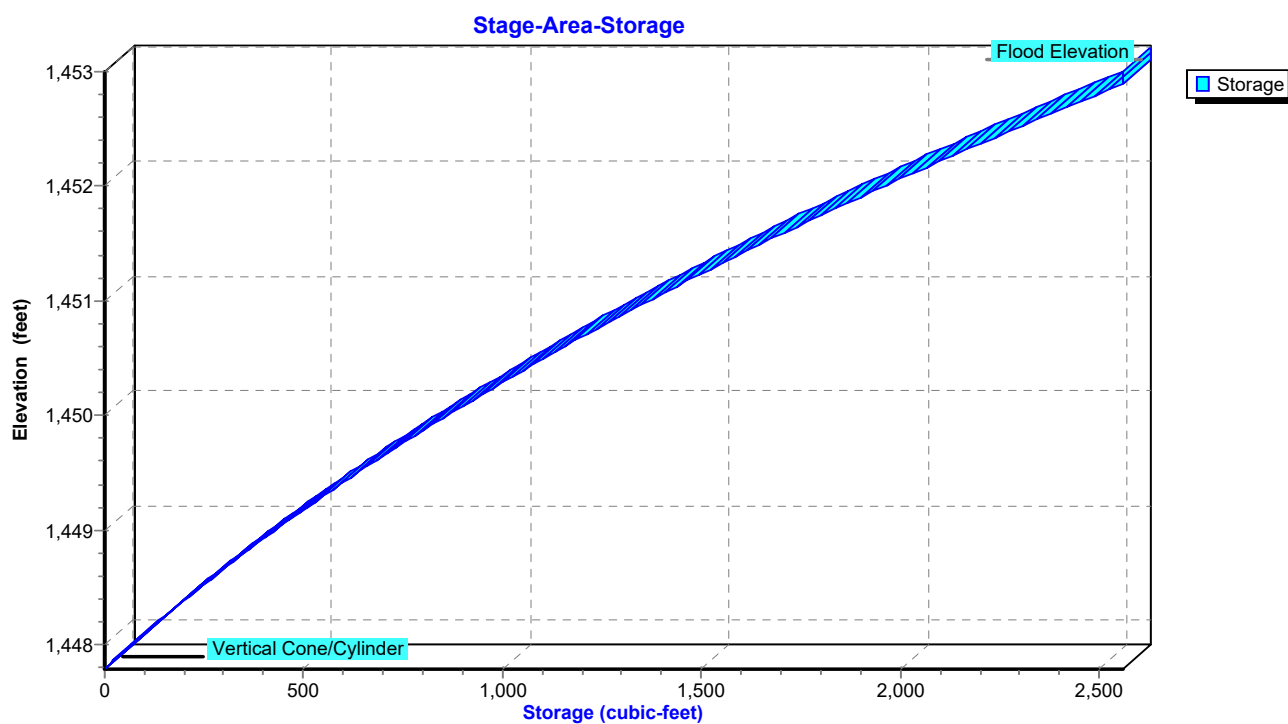
Hydrograph



Pond 22P: Road Crossing Culverts w/ Storage



Pond 22P: Road Crossing Culverts w/ Storage



Hydrograph for Pond 22P: Road Crossing Culverts w/ Storage

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.05	0.00	0	1,447.79	0.00
5.05	0.00	3	1,447.80	0.00
10.05	0.77	84	1,448.05	0.77
15.05	13.56	313	1,448.70	13.57
20.05	5.22	193	1,448.37	5.22
25.05	4.03	170	1,448.31	4.03
30.05	2.22	130	1,448.19	2.23
35.05	0.73	83	1,448.05	0.73
40.05	0.52	73	1,448.02	0.52
45.05	0.49	71	1,448.01	0.49
50.05	0.46	70	1,448.01	0.46
55.05	0.44	69	1,448.00	0.44
60.05	0.42	67	1,448.00	0.42
65.05	0.39	66	1,448.00	0.39
70.05	0.37	65	1,447.99	0.37
75.05	0.34	63	1,447.99	0.34
80.05	0.32	62	1,447.98	0.32
85.05	0.29	60	1,447.98	0.29
90.05	0.27	58	1,447.97	0.27
95.05	0.25	57	1,447.97	0.25
100.05	0.22	55	1,447.96	0.22
105.05	0.20	53	1,447.96	0.20
110.05	0.17	51	1,447.95	0.17
115.05	0.15	49	1,447.94	0.15
120.05	0.13	47	1,447.94	0.13
125.05	0.10	45	1,447.93	0.10
130.05	0.09	42	1,447.92	0.09
135.05	0.07	41	1,447.92	0.07
140.05	0.06	39	1,447.91	0.06
145.05	0.05	38	1,447.91	0.05

Stage-Discharge for Pond 22P: Road Crossing Culverts w/ Storage

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
1,447.79	0.00	1,449.87	61.25	1,451.95	119.49
1,447.83	0.00	1,449.91	63.00	1,451.99	120.33
1,447.87	0.00	1,449.95	64.73	1,452.03	121.16
1,447.91	0.05	1,449.99	66.42	1,452.07	121.99
1,447.95	0.17	1,450.03	68.09	1,452.11	122.81
1,447.99	0.36	1,450.07	69.71	1,452.15	123.63
1,448.03	0.61	1,450.11	71.29	1,452.19	124.44
1,448.07	0.93	1,450.15	72.82	1,452.23	125.25
1,448.11	1.30	1,450.19	74.28	1,452.27	126.05
1,448.15	1.75	1,450.23	75.66	1,452.31	126.84
1,448.19	2.25	1,450.27	76.94	1,452.35	127.63
1,448.23	2.81	1,450.31	78.10	1,452.39	128.42
1,448.27	3.44	1,450.35	79.08	1,452.43	129.20
1,448.31	4.12	1,450.39	80.22	1,452.47	129.97
1,448.35	4.85	1,450.43	81.47	1,452.51	130.74
1,448.39	5.65	1,450.47	82.69	1,452.55	131.51
1,448.43	6.50	1,450.51	83.90	1,452.59	132.27
1,448.47	7.40	1,450.55	85.09	1,452.63	133.03
1,448.51	8.35	1,450.59	86.26	1,452.67	133.79
1,448.55	9.36	1,450.63	87.42	1,452.71	134.54
1,448.59	10.41	1,450.67	88.56	1,452.75	135.28
1,448.63	11.51	1,450.71	89.69	1,452.79	136.02
1,448.67	12.66	1,450.75	90.80	1,452.83	136.76
1,448.71	13.86	1,450.79	91.91	1,452.87	137.49
1,448.75	15.10	1,450.83	92.99	1,452.91	138.22
1,448.79	16.38	1,450.87	94.07	1,452.95	138.95
1,448.83	17.71	1,450.91	95.13	1,452.99	139.67
1,448.87	19.07	1,450.95	96.18		
1,448.91	20.48	1,450.99	97.22		
1,448.95	21.92	1,451.03	98.25		
1,448.99	23.40	1,451.07	99.27		
1,449.03	24.91	1,451.11	100.28		
1,449.07	26.45	1,451.15	101.27		
1,449.11	28.03	1,451.19	102.26		
1,449.15	29.63	1,451.23	103.24		
1,449.19	31.27	1,451.27	104.21		
1,449.23	32.92	1,451.31	105.17		
1,449.27	34.61	1,451.35	106.12		
1,449.31	36.31	1,451.39	107.07		
1,449.35	38.04	1,451.43	108.00		
1,449.39	39.78	1,451.47	108.93		
1,449.43	41.54	1,451.51	109.85		
1,449.47	43.31	1,451.55	110.76		
1,449.51	45.09	1,451.59	111.66		
1,449.55	46.89	1,451.63	112.56		
1,449.59	48.69	1,451.67	113.45		
1,449.63	50.49	1,451.71	114.33		
1,449.67	52.30	1,451.75	115.21		
1,449.71	54.11	1,451.79	116.08		
1,449.75	55.91	1,451.83	116.94		
1,449.79	57.70	1,451.87	117.80		
1,449.83	59.48	1,451.91	118.65		

Stage-Area-Storage for Pond 22P: Road Crossing Culverts w/ Storage

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
1,447.79	0	1,449.87	799	1,451.95	1,926
1,447.83	13	1,449.91	817	1,451.99	1,951
1,447.87	25	1,449.95	836	1,452.03	1,977
1,447.91	38	1,449.99	854	1,452.07	2,002
1,447.95	51	1,450.03	873	1,452.11	2,028
1,447.99	64	1,450.07	892	1,452.15	2,054
1,448.03	77	1,450.11	911	1,452.19	2,080
1,448.07	90	1,450.15	930	1,452.23	2,106
1,448.11	104	1,450.19	949	1,452.27	2,132
1,448.15	117	1,450.23	969	1,452.31	2,159
1,448.19	131	1,450.27	988	1,452.35	2,185
1,448.23	144	1,450.31	1,008	1,452.39	2,212
1,448.27	158	1,450.35	1,028	1,452.43	2,239
1,448.31	172	1,450.39	1,048	1,452.47	2,266
1,448.35	186	1,450.43	1,068	1,452.51	2,293
1,448.39	200	1,450.47	1,088	1,452.55	2,320
1,448.43	214	1,450.51	1,108	1,452.59	2,348
1,448.47	228	1,450.55	1,128	1,452.63	2,375
1,448.51	243	1,450.59	1,149	1,452.67	2,403
1,448.55	257	1,450.63	1,170	1,452.71	2,431
1,448.59	272	1,450.67	1,190	1,452.75	2,459
1,448.63	287	1,450.71	1,211	1,452.79	2,487
1,448.67	302	1,450.75	1,232	1,452.83	2,515
1,448.71	316	1,450.79	1,253	1,452.87	2,544
1,448.75	331	1,450.83	1,275	1,452.91	2,558
1,448.79	347	1,450.87	1,296	1,452.95	2,558
1,448.83	362	1,450.91	1,318	1,452.99	2,558
1,448.87	377	1,450.95	1,339		
1,448.91	393	1,450.99	1,361		
1,448.95	408	1,451.03	1,383		
1,448.99	424	1,451.07	1,405		
1,449.03	440	1,451.11	1,428		
1,449.07	456	1,451.15	1,450		
1,449.11	472	1,451.19	1,472		
1,449.15	488	1,451.23	1,495		
1,449.19	504	1,451.27	1,518		
1,449.23	521	1,451.31	1,541		
1,449.27	537	1,451.35	1,564		
1,449.31	554	1,451.39	1,587		
1,449.35	571	1,451.43	1,610		
1,449.39	587	1,451.47	1,634		
1,449.43	604	1,451.51	1,657		
1,449.47	621	1,451.55	1,681		
1,449.51	639	1,451.59	1,705		
1,449.55	656	1,451.63	1,729		
1,449.59	673	1,451.67	1,753		
1,449.63	691	1,451.71	1,777		
1,449.67	709	1,451.75	1,802		
1,449.71	726	1,451.79	1,826		
1,449.75	744	1,451.83	1,851		
1,449.79	762	1,451.87	1,876		
1,449.83	781	1,451.91	1,901		

Summary for Pond 30P: Sump

Inflow Area = 7.316 ac, 0.00% Impervious, Inflow Depth = 4.75" for 100 year event
 Inflow = 24.00 cfs @ 12.37 hrs, Volume= 2.893 af
 Outflow = 24.00 cfs @ 12.37 hrs, Volume= 2.893 af, Atten= 0%, Lag= 0.0 min
 Primary = 24.00 cfs @ 12.37 hrs, Volume= 2.893 af

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Peak Elev= 1,468.04' @ 12.37 hrs

Flood Elev= 1,468.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	1,463.00'	24.0" Round Culvert L= 300.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1,463.00' / 1,453.00' S= 0.0333 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Primary	1,463.00'	12.0" Vert. Orifice/Grate X 0.00 C= 0.600

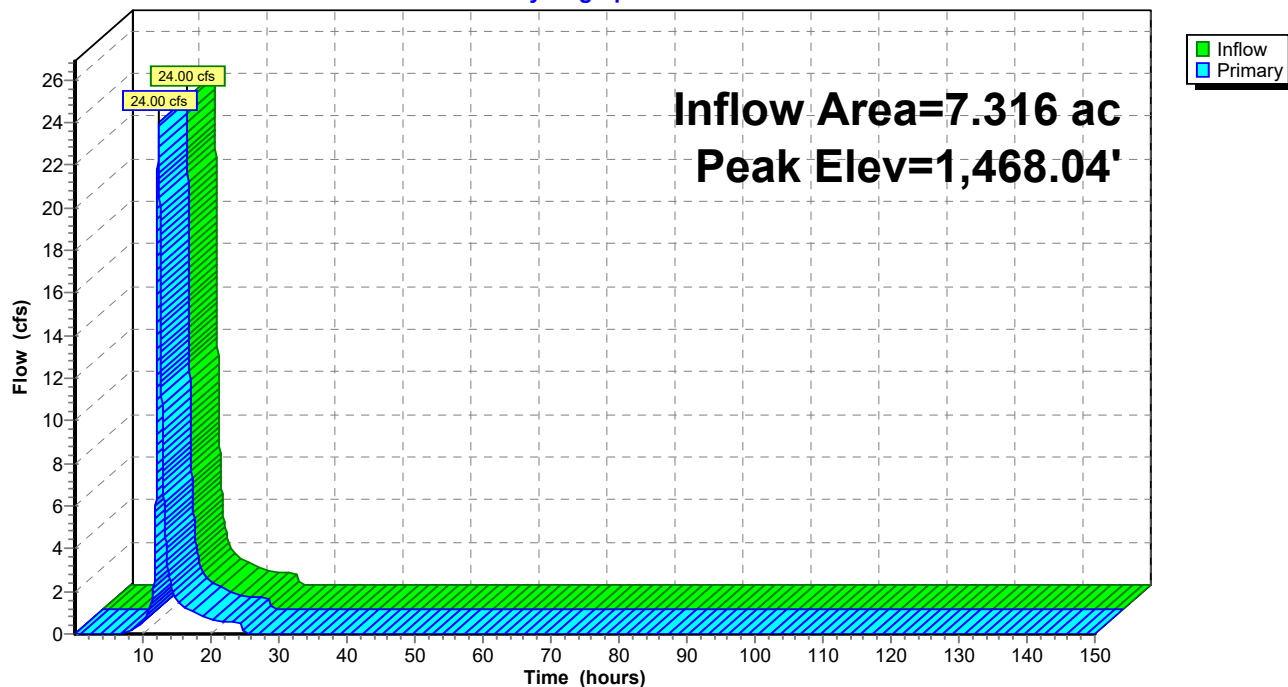
Primary OutFlow Max=24.00 cfs @ 12.37 hrs HW=1,468.04' TW=0.00' (Dynamic Tailwater)

1=Culvert (Inlet Controls 24.00 cfs @ 7.64 fps)

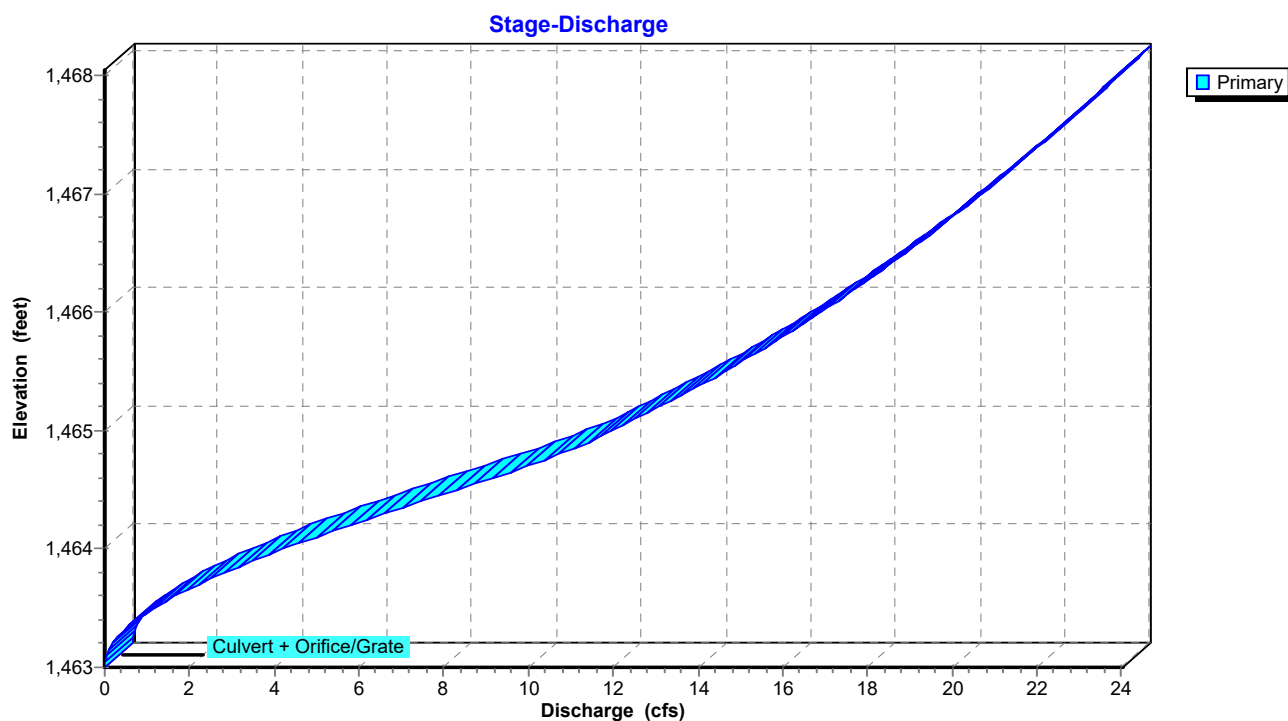
2=Orifice/Grate (Controls 0.00 cfs)

Pond 30P: Sump

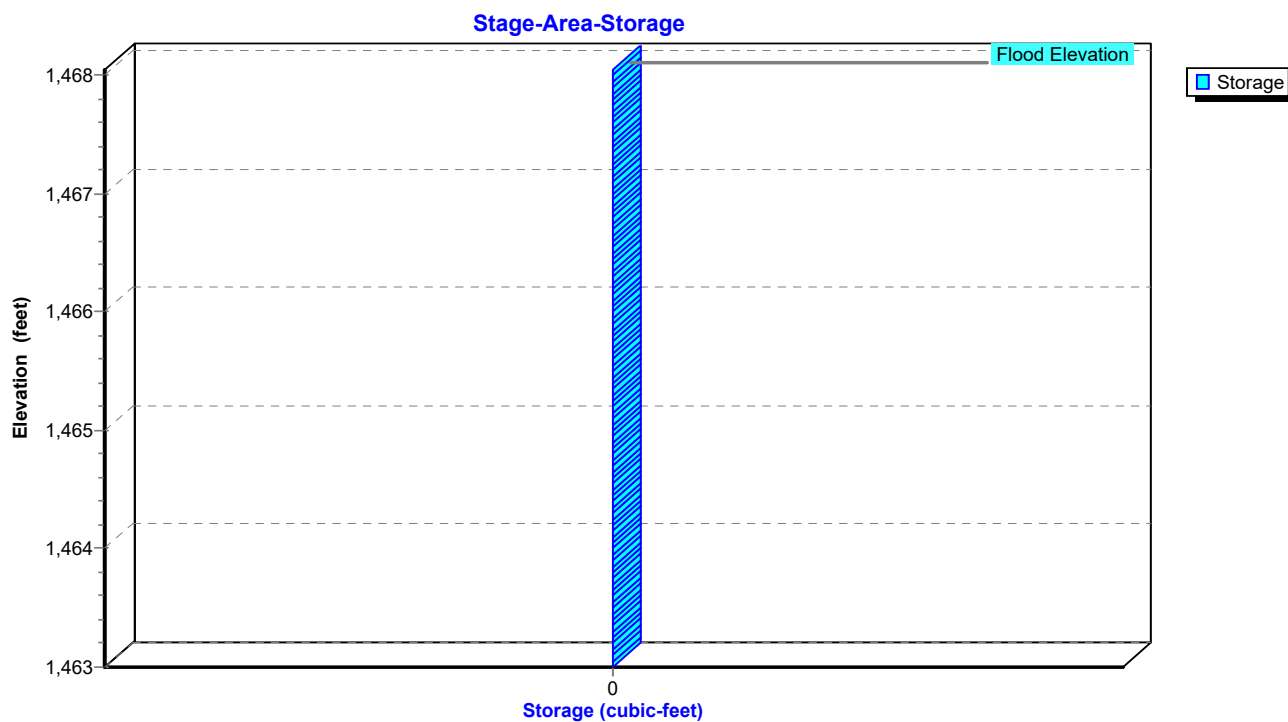
Hydrograph



Pond 30P: Sump



Pond 30P: Sump



Hydrograph for Pond 30P: Sump

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.05	0.00	1,463.00	0.00	104.05	0.00	1,463.00	0.00
2.05	0.00	1,463.00	0.00	106.05	0.00	1,463.00	0.00
4.05	0.00	1,463.00	0.00	108.05	0.00	1,463.00	0.00
6.05	0.00	1,463.00	0.00	110.05	0.00	1,463.00	0.00
8.05	0.14	1,463.17	0.14	112.05	0.00	1,463.00	0.00
10.05	0.54	1,463.34	0.54	114.05	0.00	1,463.00	0.00
12.05	10.50	1,464.77	10.50	116.05	0.00	1,463.00	0.00
14.05	2.52	1,463.75	2.52	118.05	0.00	1,463.00	0.00
16.05	1.32	1,463.53	1.32	120.05	0.00	1,463.00	0.00
18.05	0.95	1,463.45	0.95	122.05	0.00	1,463.00	0.00
20.05	0.71	1,463.39	0.71	124.05	0.00	1,463.00	0.00
22.05	0.61	1,463.36	0.61	126.05	0.00	1,463.00	0.00
24.05	0.56	1,463.34	0.56	128.05	0.00	1,463.00	0.00
26.05	0.00	1,463.02	0.00	130.05	0.00	1,463.00	0.00
28.05	0.00	1,463.00	0.00	132.05	0.00	1,463.00	0.00
30.05	0.00	1,463.00	0.00	134.05	0.00	1,463.00	0.00
32.05	0.00	1,463.00	0.00	136.05	0.00	1,463.00	0.00
34.05	0.00	1,463.00	0.00	138.05	0.00	1,463.00	0.00
36.05	0.00	1,463.00	0.00	140.05	0.00	1,463.00	0.00
38.05	0.00	1,463.00	0.00	142.05	0.00	1,463.00	0.00
40.05	0.00	1,463.00	0.00	144.05	0.00	1,463.00	0.00
42.05	0.00	1,463.00	0.00	146.05	0.00	1,463.00	0.00
44.05	0.00	1,463.00	0.00	148.05	0.00	1,463.00	0.00
46.05	0.00	1,463.00	0.00				
48.05	0.00	1,463.00	0.00				
50.05	0.00	1,463.00	0.00				
52.05	0.00	1,463.00	0.00				
54.05	0.00	1,463.00	0.00				
56.05	0.00	1,463.00	0.00				
58.05	0.00	1,463.00	0.00				
60.05	0.00	1,463.00	0.00				
62.05	0.00	1,463.00	0.00				
64.05	0.00	1,463.00	0.00				
66.05	0.00	1,463.00	0.00				
68.05	0.00	1,463.00	0.00				
70.05	0.00	1,463.00	0.00				
72.05	0.00	1,463.00	0.00				
74.05	0.00	1,463.00	0.00				
76.05	0.00	1,463.00	0.00				
78.05	0.00	1,463.00	0.00				
80.05	0.00	1,463.00	0.00				
82.05	0.00	1,463.00	0.00				
84.05	0.00	1,463.00	0.00				
86.05	0.00	1,463.00	0.00				
88.05	0.00	1,463.00	0.00				
90.05	0.00	1,463.00	0.00				
92.05	0.00	1,463.00	0.00				
94.05	0.00	1,463.00	0.00				
96.05	0.00	1,463.00	0.00				
98.05	0.00	1,463.00	0.00				
100.05	0.00	1,463.00	0.00				
102.05	0.00	1,463.00	0.00				

Stage-Discharge for Pond 30P: Sump

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
1,463.00	0.00	1,465.08	12.41	1,467.16	21.23
1,463.04	0.01	1,465.12	12.64	1,467.20	21.36
1,463.08	0.03	1,465.16	12.86	1,467.24	21.50
1,463.12	0.07	1,465.20	13.08	1,467.28	21.63
1,463.16	0.13	1,465.24	13.30	1,467.32	21.76
1,463.20	0.20	1,465.28	13.51	1,467.36	21.89
1,463.24	0.28	1,465.32	13.72	1,467.40	22.02
1,463.28	0.38	1,465.36	13.93	1,467.44	22.15
1,463.32	0.49	1,465.40	14.13	1,467.48	22.28
1,463.36	0.62	1,465.44	14.33	1,467.52	22.41
1,463.40	0.76	1,465.48	14.53	1,467.56	22.53
1,463.44	0.91	1,465.52	14.72	1,467.60	22.66
1,463.48	1.08	1,465.56	14.92	1,467.64	22.78
1,463.52	1.26	1,465.60	15.11	1,467.68	22.91
1,463.56	1.45	1,465.64	15.29	1,467.72	23.03
1,463.60	1.65	1,465.68	15.48	1,467.76	23.16
1,463.64	1.86	1,465.72	15.66	1,467.80	23.28
1,463.68	2.09	1,465.76	15.84	1,467.84	23.40
1,463.72	2.32	1,465.80	16.02	1,467.88	23.52
1,463.76	2.57	1,465.84	16.20	1,467.92	23.64
1,463.80	2.82	1,465.88	16.37	1,467.96	23.76
1,463.84	3.08	1,465.92	16.55	1,468.00	23.88
1,463.88	3.36	1,465.96	16.72	1,468.04	24.00
1,463.92	3.64	1,466.00	16.89		
1,463.96	3.93	1,466.04	17.06		
1,464.00	4.22	1,466.08	17.22		
1,464.04	4.53	1,466.12	17.39		
1,464.08	4.83	1,466.16	17.55		
1,464.12	5.15	1,466.20	17.71		
1,464.16	5.47	1,466.24	17.87		
1,464.20	5.80	1,466.28	18.03		
1,464.24	6.12	1,466.32	18.19		
1,464.28	6.46	1,466.36	18.35		
1,464.32	6.79	1,466.40	18.50		
1,464.36	7.13	1,466.44	18.65		
1,464.40	7.47	1,466.48	18.81		
1,464.44	7.81	1,466.52	18.96		
1,464.48	8.15	1,466.56	19.11		
1,464.52	8.49	1,466.60	19.26		
1,464.56	8.83	1,466.64	19.40		
1,464.60	9.16	1,466.68	19.55		
1,464.64	9.49	1,466.72	19.70		
1,464.68	9.81	1,466.76	19.84		
1,464.72	10.13	1,466.80	19.98		
1,464.76	10.44	1,466.84	20.13		
1,464.80	10.74	1,466.88	20.27		
1,464.84	11.03	1,466.92	20.41		
1,464.88	11.29	1,466.96	20.55		
1,464.92	11.54	1,467.00	20.68		
1,464.96	11.77	1,467.04	20.82		
1,465.00	11.94	1,467.08	20.96		
1,465.04	12.18	1,467.12	21.09		

Stage-Area-Storage for Pond 30P: Sump

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
1,463.00	0	1,465.08	0	1,467.16	0
1,463.04	0	1,465.12	0	1,467.20	0
1,463.08	0	1,465.16	0	1,467.24	0
1,463.12	0	1,465.20	0	1,467.28	0
1,463.16	0	1,465.24	0	1,467.32	0
1,463.20	0	1,465.28	0	1,467.36	0
1,463.24	0	1,465.32	0	1,467.40	0
1,463.28	0	1,465.36	0	1,467.44	0
1,463.32	0	1,465.40	0	1,467.48	0
1,463.36	0	1,465.44	0	1,467.52	0
1,463.40	0	1,465.48	0	1,467.56	0
1,463.44	0	1,465.52	0	1,467.60	0
1,463.48	0	1,465.56	0	1,467.64	0
1,463.52	0	1,465.60	0	1,467.68	0
1,463.56	0	1,465.64	0	1,467.72	0
1,463.60	0	1,465.68	0	1,467.76	0
1,463.64	0	1,465.72	0	1,467.80	0
1,463.68	0	1,465.76	0	1,467.84	0
1,463.72	0	1,465.80	0	1,467.88	0
1,463.76	0	1,465.84	0	1,467.92	0
1,463.80	0	1,465.88	0	1,467.96	0
1,463.84	0	1,465.92	0	1,468.00	0
1,463.88	0	1,465.96	0	1,468.04	0
1,463.92	0	1,466.00	0		
1,463.96	0	1,466.04	0		
1,464.00	0	1,466.08	0		
1,464.04	0	1,466.12	0		
1,464.08	0	1,466.16	0		
1,464.12	0	1,466.20	0		
1,464.16	0	1,466.24	0		
1,464.20	0	1,466.28	0		
1,464.24	0	1,466.32	0		
1,464.28	0	1,466.36	0		
1,464.32	0	1,466.40	0		
1,464.36	0	1,466.44	0		
1,464.40	0	1,466.48	0		
1,464.44	0	1,466.52	0		
1,464.48	0	1,466.56	0		
1,464.52	0	1,466.60	0		
1,464.56	0	1,466.64	0		
1,464.60	0	1,466.68	0		
1,464.64	0	1,466.72	0		
1,464.68	0	1,466.76	0		
1,464.72	0	1,466.80	0		
1,464.76	0	1,466.84	0		
1,464.80	0	1,466.88	0		
1,464.84	0	1,466.92	0		
1,464.88	0	1,466.96	0		
1,464.92	0	1,467.00	0		
1,464.96	0	1,467.04	0		
1,465.00	0	1,467.08	0		
1,465.04	0	1,467.12	0		

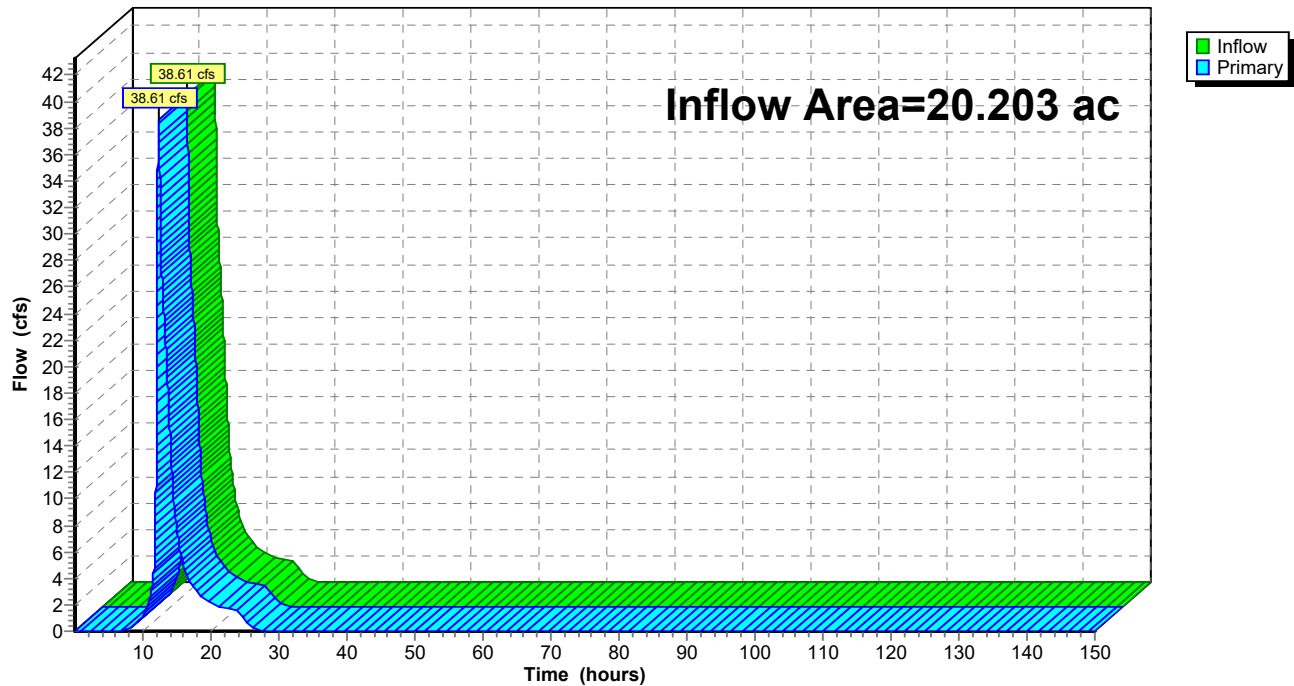
Summary for Pond 32P: Intermittent Drng

Inflow Area = 20.203 ac, 0.00% Impervious, Inflow Depth = 4.75" for 100 year event
 Inflow = 38.61 cfs @ 12.37 hrs, Volume= 7.989 af
 Primary = 38.61 cfs @ 12.37 hrs, Volume= 7.989 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Pond 32P: Intermittent Drng

Hydrograph



Riato V6 Final

Prepared by JMT

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Type II 24-hr 100 year Rainfall=7.42"

Printed 12/3/2021

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Hydrograph for Pond 32P: Intermittent Drng

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.05	0.00		0.00	104.05	0.00		0.00
2.05	0.00		0.00	106.05	0.00		0.00
4.05	0.00		0.00	108.05	0.00		0.00
6.05	0.00		0.00	110.05	0.00		0.00
8.05	0.25		0.25	112.05	0.00		0.00
10.05	1.17		1.17	114.05	0.00		0.00
12.05	17.28		17.28	116.05	0.00		0.00
14.05	14.62		14.62	118.05	0.00		0.00
16.05	4.84		4.84	120.05	0.00		0.00
18.05	2.92		2.92	122.05	0.00		0.00
20.05	2.16		2.16	124.05	0.00		0.00
22.05	1.74		1.74	126.05	0.00		0.00
24.05	1.59		1.59	128.05	0.00		0.00
26.05	0.24		0.24	130.05	0.00		0.00
28.05	0.02		0.02	132.05	0.00		0.00
30.05	0.00		0.00	134.05	0.00		0.00
32.05	0.00		0.00	136.05	0.00		0.00
34.05	0.00		0.00	138.05	0.00		0.00
36.05	0.00		0.00	140.05	0.00		0.00
38.05	0.00		0.00	142.05	0.00		0.00
40.05	0.00		0.00	144.05	0.00		0.00
42.05	0.00		0.00	146.05	0.00		0.00
44.05	0.00		0.00	148.05	0.00		0.00
46.05	0.00		0.00				
48.05	0.00		0.00				
50.05	0.00		0.00				
52.05	0.00		0.00				
54.05	0.00		0.00				
56.05	0.00		0.00				
58.05	0.00		0.00				
60.05	0.00		0.00				
62.05	0.00		0.00				
64.05	0.00		0.00				
66.05	0.00		0.00				
68.05	0.00		0.00				
70.05	0.00		0.00				
72.05	0.00		0.00				
74.05	0.00		0.00				
76.05	0.00		0.00				
78.05	0.00		0.00				
80.05	0.00		0.00				
82.05	0.00		0.00				
84.05	0.00		0.00				
86.05	0.00		0.00				
88.05	0.00		0.00				
90.05	0.00		0.00				
92.05	0.00		0.00				
94.05	0.00		0.00				
96.05	0.00		0.00				
98.05	0.00		0.00				
100.05	0.00		0.00				
102.05	0.00		0.00				

Summary for Pond 33P: ExpStrmBasin

Inflow Area = 13.693 ac, 0.00% Impervious, Inflow Depth = 6.71" for 100 year event
 Inflow = 137.03 cfs @ 11.98 hrs, Volume= 7.652 af
 Outflow = 137.03 cfs @ 11.98 hrs, Volume= 7.652 af, Atten= 0%, Lag= 0.0 min
 Primary = 137.03 cfs @ 11.98 hrs, Volume= 7.652 af

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

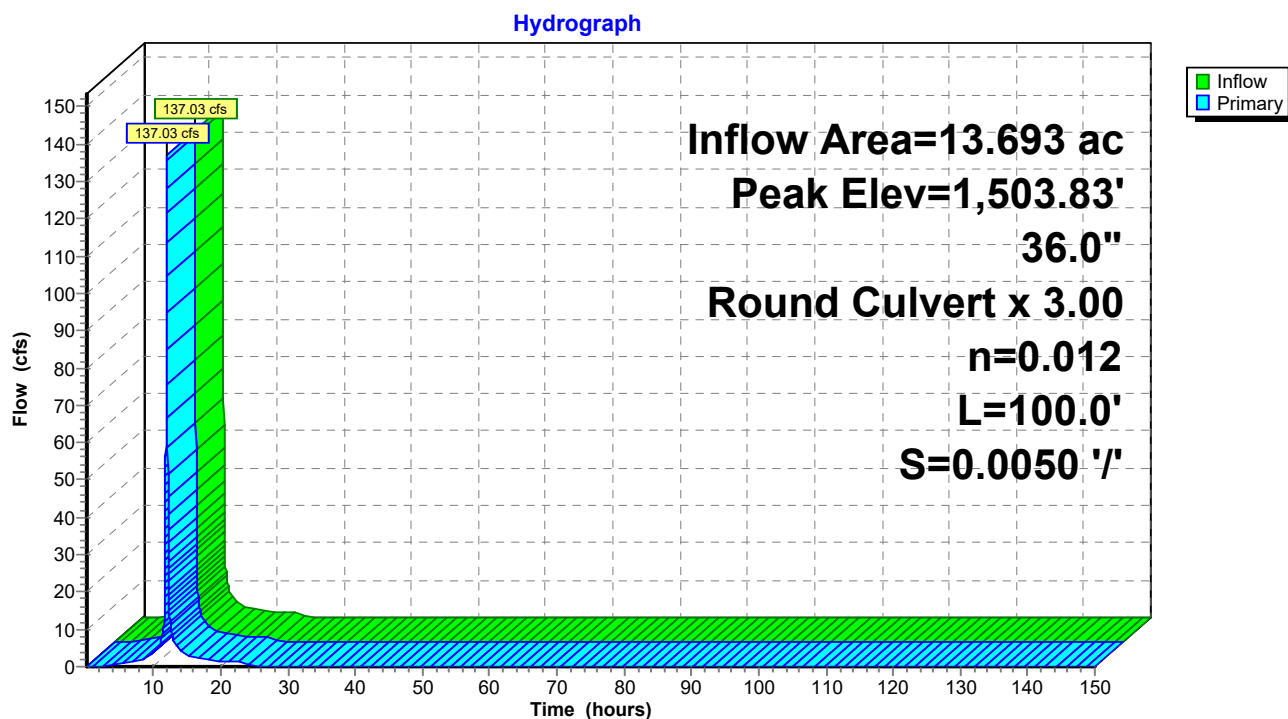
Peak Elev= 1,503.83' @ 11.98 hrs

Flood Elev= 1,504.50'

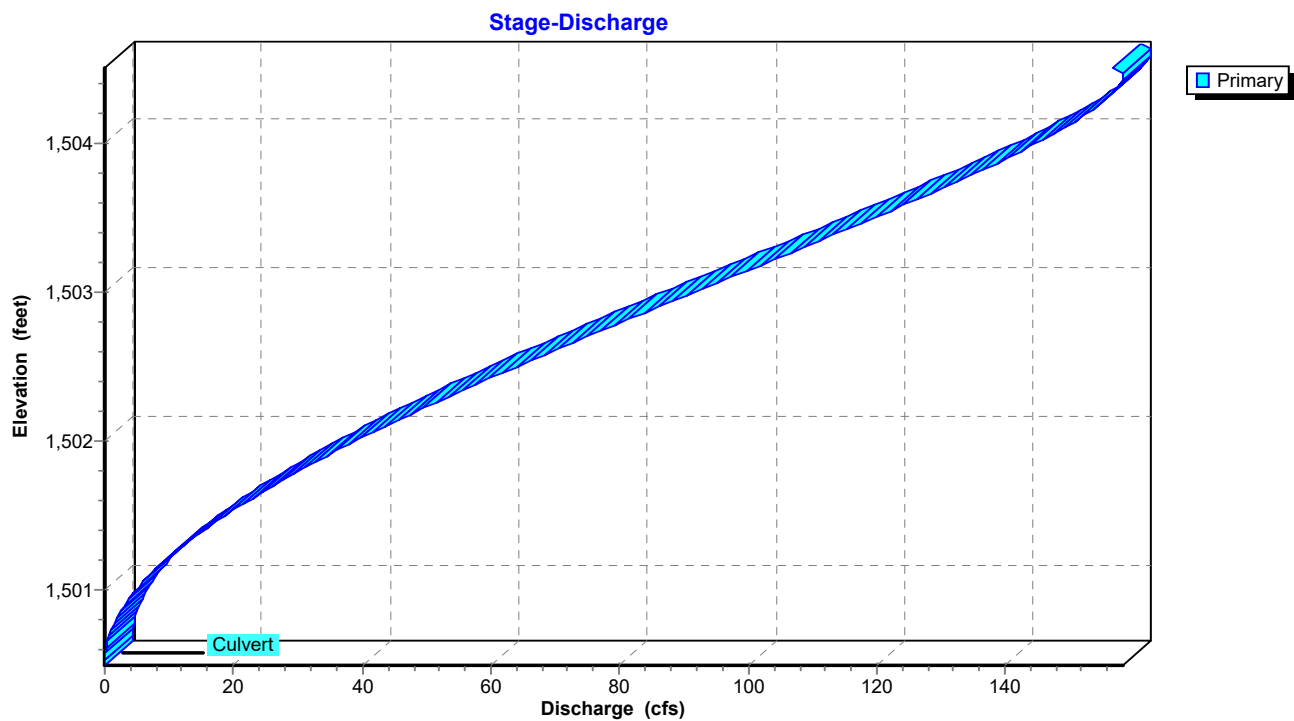
Device	Routing	Invert	Outlet Devices
#1	Primary	1,500.50'	36.0" Round Culvert X 3.00 L= 100.0' Ke= 0.150 Inlet / Outlet Invert= 1,500.50' / 1,500.00' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf

Primary OutFlow Max=136.99 cfs @ 11.98 hrs HW=1,503.83' TW=1,496.94' (Dynamic Tailwater)
 1=Culvert (Barrel Controls 136.99 cfs @ 7.26 fps)

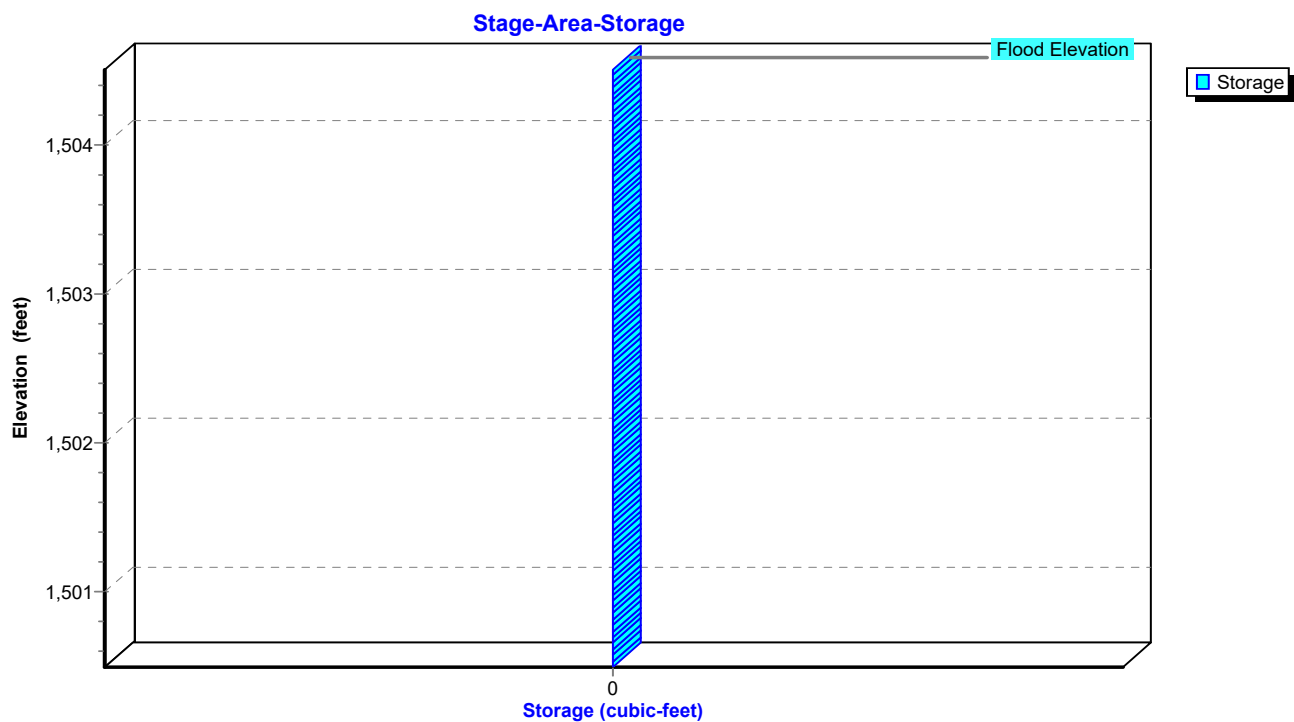
Pond 33P: ExpStrmBasin



Pond 33P: ExpStrmBasin



Pond 33P: ExpStrmBasin



Hydrograph for Pond 33P: ExpStrmBasin

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.05	0.00	1,500.50	0.00	104.05	0.00	1,500.50	0.00
2.05	0.11	1,500.58	0.11	106.05	0.00	1,500.50	0.00
4.05	0.64	1,500.69	0.64	108.05	0.00	1,500.50	0.00
6.05	1.21	1,500.75	1.21	110.05	0.00	1,500.50	0.00
8.05	1.77	1,500.81	1.77	112.05	0.00	1,500.50	0.00
10.05	3.51	1,500.93	3.51	114.05	0.00	1,500.50	0.00
12.05	94.74	1,503.05	94.74	116.05	0.00	1,500.50	0.00
14.05	3.88	1,500.95	3.88	118.05	0.00	1,500.50	0.00
16.05	2.38	1,500.85	2.38	120.05	0.00	1,500.50	0.00
18.05	1.85	1,500.81	1.85	122.05	0.00	1,500.50	0.00
20.05	1.34	1,500.77	1.34	124.05	0.00	1,500.50	0.00
22.05	1.22	1,500.76	1.22	126.05	0.00	1,500.50	0.00
24.05	1.04	1,500.74	1.04	128.05	0.00	1,500.50	0.00
26.05	0.00	1,500.50	0.00	130.05	0.00	1,500.50	0.00
28.05	0.00	1,500.50	0.00	132.05	0.00	1,500.50	0.00
30.05	0.00	1,500.50	0.00	134.05	0.00	1,500.50	0.00
32.05	0.00	1,500.50	0.00	136.05	0.00	1,500.50	0.00
34.05	0.00	1,500.50	0.00	138.05	0.00	1,500.50	0.00
36.05	0.00	1,500.50	0.00	140.05	0.00	1,500.50	0.00
38.05	0.00	1,500.50	0.00	142.05	0.00	1,500.50	0.00
40.05	0.00	1,500.50	0.00	144.05	0.00	1,500.50	0.00
42.05	0.00	1,500.50	0.00	146.05	0.00	1,500.50	0.00
44.05	0.00	1,500.50	0.00	148.05	0.00	1,500.50	0.00
46.05	0.00	1,500.50	0.00				
48.05	0.00	1,500.50	0.00				
50.05	0.00	1,500.50	0.00				
52.05	0.00	1,500.50	0.00				
54.05	0.00	1,500.50	0.00				
56.05	0.00	1,500.50	0.00				
58.05	0.00	1,500.50	0.00				
60.05	0.00	1,500.50	0.00				
62.05	0.00	1,500.50	0.00				
64.05	0.00	1,500.50	0.00				
66.05	0.00	1,500.50	0.00				
68.05	0.00	1,500.50	0.00				
70.05	0.00	1,500.50	0.00				
72.05	0.00	1,500.50	0.00				
74.05	0.00	1,500.50	0.00				
76.05	0.00	1,500.50	0.00				
78.05	0.00	1,500.50	0.00				
80.05	0.00	1,500.50	0.00				
82.05	0.00	1,500.50	0.00				
84.05	0.00	1,500.50	0.00				
86.05	0.00	1,500.50	0.00				
88.05	0.00	1,500.50	0.00				
90.05	0.00	1,500.50	0.00				
92.05	0.00	1,500.50	0.00				
94.05	0.00	1,500.50	0.00				
96.05	0.00	1,500.50	0.00				
98.05	0.00	1,500.50	0.00				
100.05	0.00	1,500.50	0.00				
102.05	0.00	1,500.50	0.00				

Stage-Discharge for Pond 33P: ExpStrmBasin

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
1,500.50	0.00	1,501.54	19.97	1,502.58	68.29	1,503.62	126.30
1,500.52	0.01	1,501.56	20.70	1,502.60	69.38	1,503.64	127.36
1,500.54	0.02	1,501.58	21.43	1,502.62	70.47	1,503.66	128.41
1,500.56	0.06	1,501.60	22.17	1,502.64	71.57	1,503.68	129.45
1,500.58	0.10	1,501.62	22.92	1,502.66	72.67	1,503.70	130.49
1,500.60	0.17	1,501.64	23.69	1,502.68	73.77	1,503.72	131.52
1,500.62	0.25	1,501.66	24.46	1,502.70	74.87	1,503.74	132.54
1,500.64	0.34	1,501.68	25.24	1,502.72	75.98	1,503.76	133.55
1,500.66	0.45	1,501.70	26.03	1,502.74	77.09	1,503.78	134.56
1,500.68	0.58	1,501.72	26.83	1,502.76	78.21	1,503.80	135.56
1,500.70	0.73	1,501.74	27.64	1,502.78	79.32	1,503.82	136.54
1,500.72	0.89	1,501.76	28.46	1,502.80	80.44	1,503.84	137.52
1,500.74	1.07	1,501.78	29.29	1,502.82	81.56	1,503.86	138.48
1,500.76	1.26	1,501.80	30.12	1,502.84	82.68	1,503.88	139.44
1,500.78	1.47	1,501.82	30.97	1,502.86	83.81	1,503.90	140.38
1,500.80	1.70	1,501.84	31.82	1,502.88	84.94	1,503.92	141.32
1,500.82	1.94	1,501.86	32.68	1,502.90	86.07	1,503.94	142.24
1,500.84	2.20	1,501.88	33.55	1,502.92	87.20	1,503.96	143.14
1,500.86	2.48	1,501.90	34.43	1,502.94	88.33	1,503.98	144.04
1,500.88	2.77	1,501.92	35.32	1,502.96	89.46	1,504.00	144.92
1,500.90	3.07	1,501.94	36.21	1,502.98	90.59	1,504.02	145.78
1,500.92	3.39	1,501.96	37.11	1,503.00	91.73	1,504.04	146.63
1,500.94	3.73	1,501.98	38.02	1,503.02	92.86	1,504.06	147.46
1,500.96	4.08	1,502.00	38.94	1,503.04	94.00	1,504.08	148.28
1,500.98	4.44	1,502.02	39.86	1,503.06	95.13	1,504.10	149.08
1,501.00	4.82	1,502.04	40.80	1,503.08	96.27	1,504.12	149.86
1,501.02	5.22	1,502.06	41.74	1,503.10	97.41	1,504.14	150.62
1,501.04	5.62	1,502.08	42.68	1,503.12	98.54	1,504.16	151.35
1,501.06	6.05	1,502.10	43.64	1,503.14	99.68	1,504.18	152.07
1,501.08	6.48	1,502.12	44.60	1,503.16	100.81	1,504.20	152.76
1,501.10	6.93	1,502.14	45.56	1,503.18	101.95	1,504.22	153.43
1,501.12	7.40	1,502.16	46.54	1,503.20	103.08	1,504.24	154.07
1,501.14	7.87	1,502.18	47.52	1,503.22	104.21	1,504.26	154.67
1,501.16	8.36	1,502.20	48.50	1,503.24	105.34	1,504.28	155.25
1,501.18	8.87	1,502.22	49.50	1,503.26	106.47	1,504.30	155.80
1,501.20	9.38	1,502.24	50.49	1,503.28	107.60	1,504.32	156.30
1,501.22	9.91	1,502.26	51.50	1,503.30	108.73	1,504.34	156.77
1,501.24	10.45	1,502.28	52.51	1,503.32	109.85	1,504.36	157.19
1,501.26	11.00	1,502.30	53.53	1,503.34	110.97	1,504.38	157.55
1,501.28	11.57	1,502.32	54.55	1,503.36	112.09	1,504.40	157.86
1,501.30	12.15	1,502.34	55.58	1,503.38	113.21	1,504.42	158.09
1,501.32	12.74	1,502.36	56.61	1,503.40	114.32	1,504.44	158.22
1,501.34	13.34	1,502.38	57.65	1,503.42	115.43	1,504.46	158.22
1,501.36	13.95	1,502.40	58.69	1,503.44	116.54	1,504.48	158.00
1,501.38	14.58	1,502.42	59.74	1,503.46	117.64	1,504.50	156.72
1,501.40	15.21	1,502.44	60.79	1,503.48	118.74		
1,501.42	15.86	1,502.46	61.85	1,503.50	119.84		
1,501.44	16.52	1,502.48	62.91	1,503.52	120.93		
1,501.46	17.19	1,502.50	63.98	1,503.54	122.01		
1,501.48	17.87	1,502.52	65.05	1,503.56	123.09		
1,501.50	18.56	1,502.54	66.13	1,503.58	124.17		
1,501.52	19.26	1,502.56	67.21	1,503.60	125.24		

Stage-Area-Storage for Pond 33P: ExpStrmBasin

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
1,500.50	0	1,503.10	0
1,500.55	0	1,503.15	0
1,500.60	0	1,503.20	0
1,500.65	0	1,503.25	0
1,500.70	0	1,503.30	0
1,500.75	0	1,503.35	0
1,500.80	0	1,503.40	0
1,500.85	0	1,503.45	0
1,500.90	0	1,503.50	0
1,500.95	0	1,503.55	0
1,501.00	0	1,503.60	0
1,501.05	0	1,503.65	0
1,501.10	0	1,503.70	0
1,501.15	0	1,503.75	0
1,501.20	0	1,503.80	0
1,501.25	0	1,503.85	0
1,501.30	0	1,503.90	0
1,501.35	0	1,503.95	0
1,501.40	0	1,504.00	0
1,501.45	0	1,504.05	0
1,501.50	0	1,504.10	0
1,501.55	0	1,504.15	0
1,501.60	0	1,504.20	0
1,501.65	0	1,504.25	0
1,501.70	0	1,504.30	0
1,501.75	0	1,504.35	0
1,501.80	0	1,504.40	0
1,501.85	0	1,504.45	0
1,501.90	0	1,504.50	0
1,501.95	0		
1,502.00	0		
1,502.05	0		
1,502.10	0		
1,502.15	0		
1,502.20	0		
1,502.25	0		
1,502.30	0		
1,502.35	0		
1,502.40	0		
1,502.45	0		
1,502.50	0		
1,502.55	0		
1,502.60	0		
1,502.65	0		
1,502.70	0		
1,502.75	0		
1,502.80	0		
1,502.85	0		
1,502.90	0		
1,502.95	0		
1,503.00	0		
1,503.05	0		

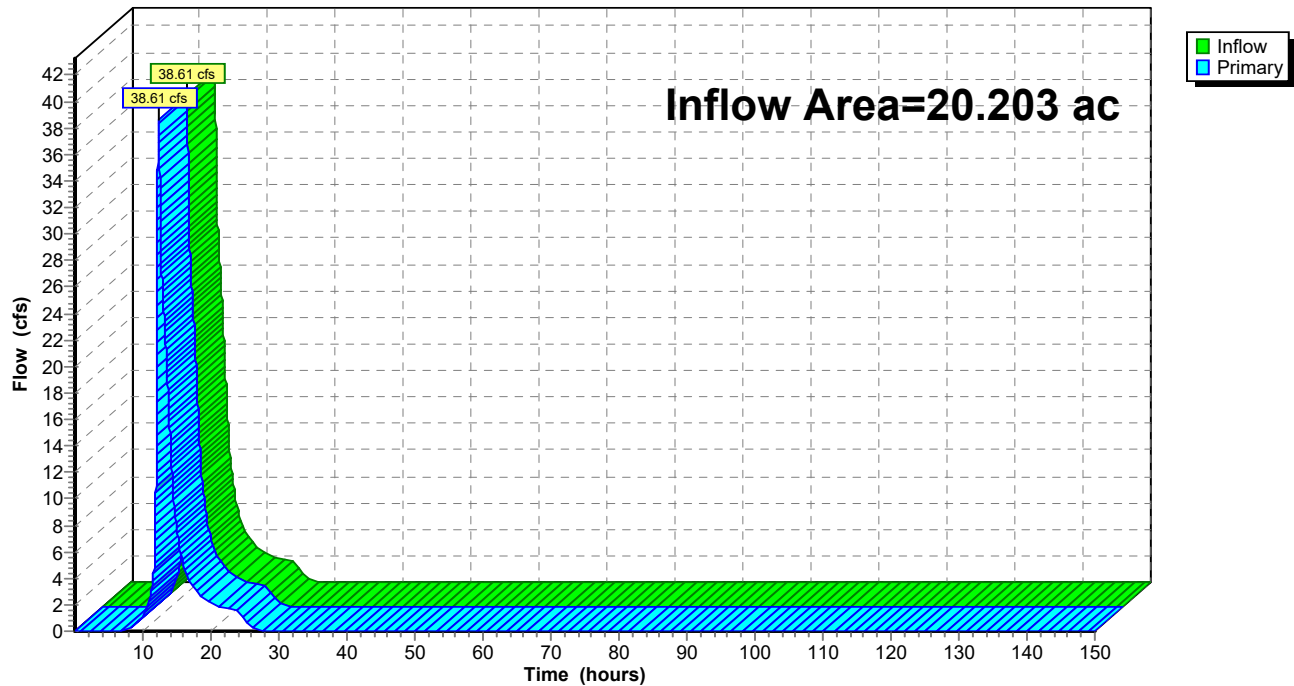
Summary for Pond 42P: Wetland LE-20

Inflow Area = 20.203 ac, 0.00% Impervious, Inflow Depth = 4.75" for 100 year event
 Inflow = 38.61 cfs @ 12.37 hrs, Volume= 7.989 af
 Primary = 38.61 cfs @ 12.37 hrs, Volume= 7.989 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Pond 42P: Wetland LE-20

Hydrograph



Hydrograph for Pond 42P: Wetland LE-20

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.05	0.00		0.00	104.05	0.00		0.00
2.05	0.00		0.00	106.05	0.00		0.00
4.05	0.00		0.00	108.05	0.00		0.00
6.05	0.00		0.00	110.05	0.00		0.00
8.05	0.25		0.25	112.05	0.00		0.00
10.05	1.17		1.17	114.05	0.00		0.00
12.05	17.28		17.28	116.05	0.00		0.00
14.05	14.62		14.62	118.05	0.00		0.00
16.05	4.84		4.84	120.05	0.00		0.00
18.05	2.92		2.92	122.05	0.00		0.00
20.05	2.16		2.16	124.05	0.00		0.00
22.05	1.74		1.74	126.05	0.00		0.00
24.05	1.59		1.59	128.05	0.00		0.00
26.05	0.24		0.24	130.05	0.00		0.00
28.05	0.02		0.02	132.05	0.00		0.00
30.05	0.00		0.00	134.05	0.00		0.00
32.05	0.00		0.00	136.05	0.00		0.00
34.05	0.00		0.00	138.05	0.00		0.00
36.05	0.00		0.00	140.05	0.00		0.00
38.05	0.00		0.00	142.05	0.00		0.00
40.05	0.00		0.00	144.05	0.00		0.00
42.05	0.00		0.00	146.05	0.00		0.00
44.05	0.00		0.00	148.05	0.00		0.00
46.05	0.00		0.00				
48.05	0.00		0.00				
50.05	0.00		0.00				
52.05	0.00		0.00				
54.05	0.00		0.00				
56.05	0.00		0.00				
58.05	0.00		0.00				
60.05	0.00		0.00				
62.05	0.00		0.00				
64.05	0.00		0.00				
66.05	0.00		0.00				
68.05	0.00		0.00				
70.05	0.00		0.00				
72.05	0.00		0.00				
74.05	0.00		0.00				
76.05	0.00		0.00				
78.05	0.00		0.00				
80.05	0.00		0.00				
82.05	0.00		0.00				
84.05	0.00		0.00				
86.05	0.00		0.00				
88.05	0.00		0.00				
90.05	0.00		0.00				
92.05	0.00		0.00				
94.05	0.00		0.00				
96.05	0.00		0.00				
98.05	0.00		0.00				
100.05	0.00		0.00				
102.05	0.00		0.00				

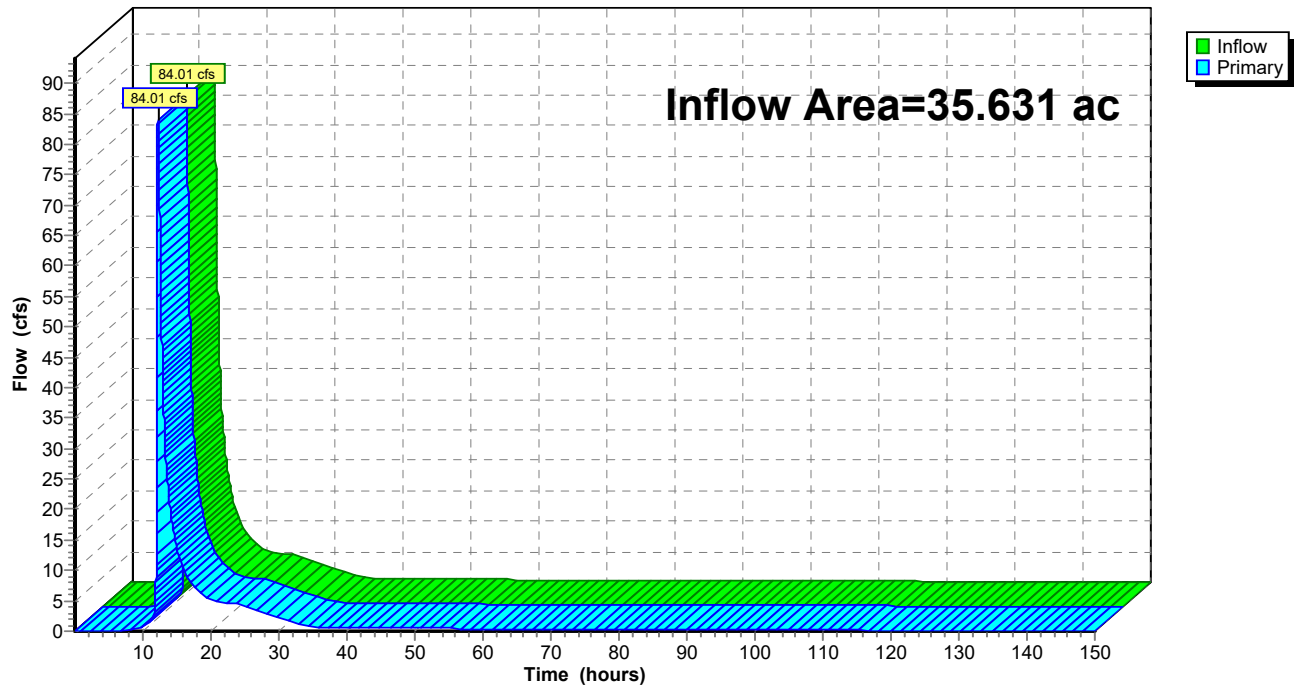
Summary for Pond 43P: Wetland LE-20

Inflow Area = 35.631 ac, 7.72% Impervious, Inflow Depth > 6.32" for 100 year event
 Inflow = 84.01 cfs @ 12.27 hrs, Volume= 18.767 af
 Primary = 84.01 cfs @ 12.27 hrs, Volume= 18.767 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.05-150.00 hrs, dt= 0.01 hrs

Pond 43P: Wetland LE-20

Hydrograph



Riato V6 Final

Prepared by JMT

HydroCAD® 10.00-20 s/n 02102 © 2017 HydroCAD Software Solutions LLC

Type II 24-hr 100 year Rainfall=7.42"

Printed 12/3/2021

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Hydrograph for Pond 43P: Wetland LE-20

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.05	0.00		0.00	104.05	0.20		0.20
2.05	0.00		0.00	106.05	0.19		0.19
4.05	0.00		0.00	108.05	0.18		0.18
6.05	0.00		0.00	110.05	0.17		0.17
8.05	0.23		0.23	112.05	0.17		0.17
10.05	0.76		0.76	114.05	0.16		0.16
12.05	16.02		16.02	116.05	0.15		0.15
14.05	20.20		20.20	118.05	0.14		0.14
16.05	10.18		10.18	120.05	0.13		0.13
18.05	6.82		6.82	122.05	0.12		0.12
20.05	5.22		5.22	124.05	0.11		0.11
22.05	4.75		4.75	126.05	0.10		0.10
24.05	4.60		4.60	128.05	0.09		0.09
26.05	3.75		3.75	130.05	0.09		0.09
28.05	3.03		3.03	132.05	0.08		0.08
30.05	2.23		2.23	134.05	0.07		0.07
32.05	1.50		1.50	136.05	0.07		0.07
34.05	0.93		0.93	138.05	0.06		0.06
36.05	0.63		0.63	140.05	0.06		0.06
38.05	0.54		0.54	142.05	0.06		0.06
40.05	0.52		0.52	144.05	0.05		0.05
42.05	0.50		0.50	146.05	0.05		0.05
44.05	0.49		0.49	148.05	0.05		0.05
46.05	0.48		0.48				
48.05	0.47		0.47				
50.05	0.46		0.46				
52.05	0.45		0.45				
54.05	0.44		0.44				
56.05	0.43		0.43				
58.05	0.42		0.42				
60.05	0.42		0.42				
62.05	0.41		0.41				
64.05	0.40		0.40				
66.05	0.39		0.39				
68.05	0.38		0.38				
70.05	0.37		0.37				
72.05	0.36		0.36				
74.05	0.35		0.35				
76.05	0.34		0.34				
78.05	0.33		0.33				
80.05	0.32		0.32				
82.05	0.31		0.31				
84.05	0.30		0.30				
86.05	0.29		0.29				
88.05	0.28		0.28				
90.05	0.27		0.27				
92.05	0.26		0.26				
94.05	0.25		0.25				
96.05	0.24		0.24				
98.05	0.23		0.23				
100.05	0.22		0.22				
102.05	0.21		0.21				



EXHIBIT G

ACUTE AND CHRONIC TOXICITY TEST LABORATORY REPORT



**THE ACUTE AND CHRONIC TOXICITY OF RIATO STONE LLC'S
SIMULATED EFFLUENT
TO THE
FRESHWATER CRUSTACEAN, CERIODAPHNIA DUBIA
AND THE
FRESHWATER FISH, PIMEPHALES PROMELAS**

Report No. 2115602

Facility Name: Riato Stone LLC
Facility Location: 46 McIntosh Road
Liberty, New York 12754

Test Dates: September 1 - 8, 2021

Receiving Water: Tributary of the Mongaup or East Mongaup River

Conducted By: BioAnalytic Corporation
4 Northridge Drive
DeWitt, NY 13214

Report Date: September 23, 2021

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EXECUTIVE SUMMARY
THE ACUTE AND CHRONIC TOXICITY OF RIATO STONE LLC'S
SIMULATED EFFLUENT TO THE
FRESHWATER CRUSTACEAN, CERIODAPHNIA DUBIA
AND THE
FRESHWATER FISH, PIMEPHALES PROMELAS
Test start date: 9/1/2021

Effluent Concentrations tested (%): 6.25, 12.5, 25, 50, 100

Summary of Acute and Chronic Results *Ceriodaphnia dubia*

ENDPOINT	RESULT	METHOD USED
<u>ACUTE SURVIVAL</u>		
24 HOUR LC50	>100% EFFLUENT	NONE
48 HOUR LC50	>100% EFFLUENT	NONE
TUa	<0.3	CALCULATION
<u>CHRONIC SURVIVAL</u>		
LOEC	>100% EFFLUENT	FISHER'S
NOEC	≥100% EFFLUENT	FISHER'S
<u>CHRONIC REPRODUCTION</u>		
LOEC	>100% EFFLUENT	DUNNETT'S
NOEC	>100% EFFLUENT	DUNNETT'S
IC25	>100% EFFLUENT	LINEAR INTER.
TUc	1.0	CALCULATION

Summary of Acute and Chronic Results *Pimephales promelas*

ENDPOINT	RESULT	METHOD USED
<u>ACUTE SURVIVAL</u>		
24 HOUR LC50	>100% EFFLUENT	NONE
48 HOUR LC50	>100% EFFLUENT	NONE
TUa	<0.3	CALCULATION
<u>CHRONIC SURVIVAL</u>		
LOEC	>100% EFFLUENT	STEEL'S
NOEC	≥100% EFFLUENT	STEEL'S
<u>CHRONIC GROWTH</u>		
LOEC	>100% EFFLUENT	DUNNETT'S
NOEC	>100% EFFLUENT	DUNNETT'S
IC25	>100% EFFLUENT	LINEAR INTER.
TUc	1.0	CALCULATION

1. INTRODUCTION

This report presents the results of chronic toxicity tests, reporting acute values, performed by BioAnalytic Corporation on behalf of Riato Stone LLC. The tests were performed in support of a SPDES permit and a Water Treatment Chemical application. The test results contained in this report relate to samples provided in late August and early September, 2021. The samples provided were collected from the intended receiving stream and wastewater collecting in a lagoon that is not actively being discharged. The results of two bioassay's are included: (1) a seven-day, chronic, static renewal, survival and reproduction bioassay using the freshwater crustacean, Ceriodaphnia dubia (reporting acute values) and (2) a seven-day, sub-chronic, static renewal, larval survival and growth bioassay using the freshwater fish, Pimephales promelas (reporting acute values).

2. DILUTION WATER AND EFFLUENT SAMPLE INFORMATION

2.1 ACCLIMATION AND DILUTION WATER

Receiving water used for organism acclimation, and dilution water during the tests was water collected from a tributary of the Mongaup or East Mongaup River (NYS DEC 815-243) upstream of the intended discharge. A grab sample was collected on August 24, 2021 by facility personnel. The water was filtered through a 60 micron mesh net to remove foreign organisms and immediately screened for acute toxicity. The results were favorable and the sample was used for organism acclimation and culture. A second grab sample was collected on 8/31/2021 by facility personnel. This sample was also filtered through a 60 micron mesh net and was used as dilution water throughout the tests.

The results of chemical analyses performed on fresh dilution water used for the toxicity tests were as follows: dissolved oxygen concentration was 7.6 ppm; pH was 7.4; the conductivity was 280 uS; alkalinity was 80 ppm (as CaCO_3); and the hardness was 103 ppm (as CaCO_3). A summary of receiving water chemistry is presented in Appendix A.

2.2 EFFLUENT

One grab sample was collected from the lagoon on August 31, 2021 at 0900 by facility personnel. The sample was shipped on ice by overnight courier to BioAnalytic. The sample was warmed to room temperature, homogenized, filtered through a 60 micron mesh net to remove foreign organisms and then treated with the water treatment chemicals as specified by the WTC's manufacturer (Clearwater Industries. Manufacturer instructions are presented in Appendix B). This simulated effluent was used throughout the test. The sample was stored in the dark at 4°C when not in use.

Summarized chemical data on the simulated effluent sample measured at the start of each daily renewal during the toxicity test are as follows: dissolved oxygen levels ranged from 7.2 to 7.6 ppm; pH ranged from 7.1 to 7.2; conductivity ranged from 460 to 470 umhos/cm (ave. 460); alkalinity ranged from 87 to 89 ppm (as CaCO_3 , ave. 87); and the hardness ranged from 113 to 115 ppm (as CaCO_3 , ave. 114).

A summary of effluent chemistry is presented in Appendix A. Copies of Chain of Custody documents relating to effluent sampling and transport appear in Appendix B.

3. TEST METHODS

3.1 Ceriodaphnia Dubia

The method followed for this toxicity test, the Cladoceran (Ceriodaphnia dubia) Survival and Reproduction Test, was that described in Short-Term Methods For Estimating The Chronic Toxicity of Effluents and Receiving Water to Freshwater Organisms, Fourth Edition (USEPA, 2002).

A combination of acute and chronic endpoints was used. The acute endpoint was death, and the median lethal concentration (LC50) after 24 and 48 hours was determined. The chronic endpoints were the Chronic-No Observed Effect Concentration (C-NOEC) and the Lowest Observed Effect Concentration (LOEC) for both survival and reproduction. The Inhibition Concentration 25% (IC25), based on reproduction, was also calculated.

The test consisted of seven treatments: five effluent concentrations, one control using receiving water and one control using standard laboratory water. Ten replicates of each treatment with one test organism in each replicate were used. Test chambers used were 30 mL. borosilicate glass beakers each filled with 15 mL. of test solution. The toxicity test was conducted in an incubator under wide spectrum fluorescent lighting. Test temperature ranged from 24.4 to 25.8 ° C (mean value- 25.2 ° C).

The test start, end and daily renewal information is presented in Table 3.1.1.

Table 3.1.1 *C.dubia* Chronic Test Daily Renewal Information

Action	Day	Date	Time	Sample Used
Test Start	0	9/1	1330	Effluent # 1
Renewal	1	9/2	1255	Effluent # 1
Renewal	2	9/3	1310	Effluent # 2
Renewal	3	9/4	1320	Effluent # 2
Renewal	4	9/5	1300	Effluent # 3
Renewal	5	9/6	1315	Effluent # 3
Renewal	6	9/7	1330	Effluent # 3
Test End	7	9/8	1315	N/A

3.2 Pimephales Promelas

The method followed for this toxicity test, the Fathead Minnow (*Pimephales promelas*) Larval Survival and Growth Test, was that described in Short-Term Methods For Estimating The Chronic Toxicity of Effluents and Receiving Water to Freshwater Organisms, Fourth Edition (USEPA, 2002).

A combination of acute and chronic endpoints was used. The acute endpoint was death, and the 24 and 48 hour median lethal concentration (LC50) was determined. The chronic endpoints were the C-NOEC and LOEC for both survival and growth. The IC25, based on minnow growth, was also calculated.

The test consisted of seven treatments: five effluent concentrations, one control using receiving water and one control using standard laboratory water. Four replicates of each treatment with ten test organisms in each replicate were used. Test chambers used were 250 mL. borosilicate glass beakers filled with 200 mL. of test solution. The toxicity test was conducted in an incubator under

wide spectrum fluorescent lighting. Test temperature ranged from 24.4 to 25.8 ° C (mean value- 25.2 ° C). Test start, end and renewal information is presented in Table 3.2.1.

Table 3.2.1 *P. promelas* Chronic Test Daily Renewal Information

Action	Day	Date	Time	Sample Used
Test Start	0	9/1	1230	Effluent # 1
Renewal	1	9/2	1200	Effluent # 1
Renewal	2	9/3	1210	Effluent # 2
Renewal	3	9/4	1215	Effluent # 2
Renewal	4	9/5	1200	Effluent # 3
Renewal	5	9/6	1210	Effluent # 3
Renewal	6	9/7	1220	Effluent # 3
Test End	7	9/8	1215	N/A

4. TEST ORGANISMS

4.1 Ceriodaphnia dubia

Mass cultures of Ceriodaphnia dubia are maintained in-house. The test animals are cultured at approximately 24 ° C in laboratory water and are fed a unicellular green alga, Selenastrum capricornutum, and a digested combination of yeast, cereal leaves, and trout chow (YCT) daily. The light regimen is 16 hours light and 8 hours dark under wide spectrum fluorescent bulbs. Test organisms were obtained from adults raised in laboratory water. The neonates were taken from 10 adults that had at least 8 young in their third and subsequent broods.

4.2 Pimephales promelas

Test organisms used in these toxicity tests were cultured in-house at BioAnalytic. The animals were cultured at approximately 23 ° C in laboratory water and are fed live Artemia naupali and salmon starter. The light regimen is 16 hours light and 8 hours dark under wide spectrum fluorescent bulbs. Test organisms were obtained from adults spawned in laboratory water.

5. QUALITY CONTROL

The results of chronic reference toxicity tests performed in conjunction with this study are as follows:

<u>Date</u>	<u>Organism</u>	<u>Toxicant</u>	<u>Chronic IC₂₅ (ug/L)</u>	<u>Acute LC or EC₅₀ (ug/L)</u>
8/10/21	<u>C. dubia</u>	CuSO ₄	39.2	45
8/10/21	<u>P. promelas</u>	CuSO ₄	240	3,850

Standard laboratory water was used as dilution water in the reference toxicity tests. Cumulative reference control charts are presented in Appendix C and D.

6. RESULTS

The receiving water treatment was used as the control treatment in determining the endpoints for both the Ceriodaphnia dubia and Pimephales promelas tests.

6.1 Ceriodaphnia dubia

Table 6.1.1 summarizes the results of the Ceriodaphnia chronic test. The raw data relating to the test are presented in Appendix C - "*Ceriodaphnia dubia* Supporting Documents".

Table 6.1.1 Summary Of Acute and Chronic Results *Ceriodaphnia dubia*

ENDPOINT	RESULT	METHOD USED
<u>ACUTE SURVIVAL</u>		
24 HOUR LC50	>100% EFFLUENT	NONE
48 HOUR LC50	>100% EFFLUENT	NONE
TUa	<0.3	CALCULATION
<u>CHRONIC SURVIVAL</u>		
LOEC	>100% EFFLUENT	FISHER'S
NOEC	>100% EFFLUENT	FISHER'S
<u>CHRONIC REPRODUCTION</u>		
LOEC	>100% EFFLUENT	DUNNETT'S
NOEC	>100% EFFLUENT	DUNNETT'S
IC25	>100% EFFLUENT	LINEAR INTER.
TUc	1.0	CALCULATION

6.2 Pimephales promelas

Table 6.2.1 summarizes the results of the fathead minnow chronic test. The raw data relating to the test are presented in Appendix D - "*Pimephales promelas* Supporting Documents".

Table 6.2.1 Summary Of Acute And Chronic Results *P. promelas*

ENDPOINT	RESULT	METHOD USED
<u>ACUTE SURVIVAL</u>		
24 HOUR LC50	>100% EFFLUENT	NONE
48 HOUR LC50	>100% EFFLUENT	NONE
TUa	<0.3	CALCULATION
<u>CHRONIC SURVIVAL</u>		
LOEC	>100% EFFLUENT	STEEL'S
NOEC	≥100% EFFLUENT	STEEL'S
<u>CHRONIC GROWTH</u>		
LOEC	>100% EFFLUENT	DUNNETT'S
NOEC	>100% EFFLUENT	DUNNETT'S
IC25	>100% EFFLUENT	LINEAR INTER.
TUc	1.0	CALCULATION

7. REFERENCES

N.Y.S. D.E.C., 1996. Technical and Operational Guidance Series: Toxicity Testing in the SPDES Permit Program. (TOGS 1.3.2)

U.S.E.P.A., 2002. Short-term methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms. Fourth Edition. U.S. Environmental Protection Agency, Cincinnati, Ohio. (EPA-821-R-02-013).

APPENDIX A
EFFLUENT AND DILUENT CHEMISTRY

RIATO STONE LLC
RESULTS OF CHEMICAL ANALYSES OF FRESH EFFLUENT AND DILUENT
9/1/2021

Parameter	Effluent (1)	Diluent (2)	Units
Alkalinity	87	80	mg/L
Hardness	114	103	mg/L
pH	7.1	7.4	
Conductivity	460	280	uS
Unionized ammonia	<0.03	<0.03	mg/L
Residual Chlorine	<0.01	<0.01	mg/L

- (1) Average of 7 values
(2) Average of 7 values

APPENDIX B

CHAIN OF CUSTODY DOCUMENTS

Celebrating 25 years of providing aquatic toxicity testing to business, industry and municipalities.

4 Northridge Road, DeWitt, New York 13214

Voice: 315.415.7036

Email: dogrady@twcny.rr.com

Internet: bioanalytic.com[illegible]

Celebrating 25 years of providing aquatic toxicity testing to business, industry and municipalities.

4 Northridge Road, DeWitt, New York 13214

Voice: 315.415.7036

Email: dogrady@twcny.rr.com

Internet: bioanalytic.com

Name: JAMES SCANDARIATO	Telephone #: (516) 398-5886
Company: RIATO STONE, LLC	EMAIL: James@riatostone.com
Address: 46 MCINTOSH ROAD	E results? ☒ Y N
City: LIBERTY State: NY Zip: 12754	P.O. #: 2115602

BioAnalytic No.	Client Description	Date Sampled	Time Sampled	Sample Type Grab	Type Comp.	Matrix	Type	Container Preservative	Analysis Requested and Special Instructions
2115602-02A	REC WATER	8/31/21	9:00 AM	X		W	P	COLD	DILUTION WATER FOR:
-02B	↓	↓	↓	X			↓	↓	
-03A	EFFLUENT	↓	↓	X		WW	↓	↓	CHRONIC WET TESTS
-03B	↓								

Sampled by: JAMES SCANDARIATO

Relinquished: James Scandariato	Received:	Date:	Time:
Relinquished:	Received:	Date:	Time:
Relinquished: by fed E	Received: Dan Poches	Date: 9/1/21	Time: 1110

Riato Stone

7-29-21

CW24 Liquid Coagulant

Made down to 0.5% neat chemistry 99.5% water

Jar testing showed 10 ppm is necessary

10 ppm in 400 ml = 0.8 ml of solution

10 ppm in 1 gallon = 7.6 ml of solution

CW53 Liquid Flocculant

Made down to 1% neat chemistry 99% water

Jar testing showed 3.75 ppm is necessary

3.75 ppm in 400 ml = 0.15 ml of solution

3.75 ppm in 1 gallon = 1.42 ml of solution

Inject coagulant (CW24) first, shake/stir vigorously

Next inject floc (CW53) shake/stir for a second or two

Take samples for testing

Let me know of questions/comments

Andy Gralton

262-424-6167

agralton@clearwaterind.com

APPENDIX C

SUPPORTING DOCUMENTS - CERIODAPHNIA DUBIA

BIOANALYTIC CORPORATION

CLIENT/ID: 2115602cd

TOXICITY TEST DATE: 9/1/21

TOXICITY TEST RAW DATA

CERIODAPHNIA CHRONIC TOXICITY TEST

SCIENTIFIC NAME OF TEST ANIMAL: CERIODAPHNIA DUBIA

AGE OF TEST ANIMALS: <24 hrs

TOTAL NUMBER OF YOUNG PRODUCED BY PARENTS OF TEST ANIMALS IN THE
LAST 2 BROODS: 14 12 15 10 13 X
3rd Subsequent 10 14 13 12 14 X

CULTURE WATER USED: Lab water + Rec. water

FEEDING:

TYPE(S) OF FOOD USED: 0.1ml enriched Selenastrum + 0.1ml YCT 1x/day

AMOUNT(S) USED DURING TEST:

	START/FEEDING DATE/TIME	FEEDING DATE/TIME
DAY 0: Prepared off	9/1/21 1330	9/1/21 1340
DAY 1:	9/2 1255	9/2 1305
DAY 2:	9/3 1310	9/3 1320
DAY 3:	9/4 1320	9/4 1335
DAY 4:	9/5 1300	9/5 1310
DAY 5:	9/6 1315	9/6 1330
DAY 6:	9/7 1330	9/7 1340
TEST END:	9/8 1315	

COMMENTS: _____

C10617

Test: CD-Ceriodaphnia Survival and Reproduction Test

Species: CD-Ceriodaphnia dubia

Sample ID: RIATO STONE

Start Date: 9/1/2021

End Date: 9/8/2021

Test ID: 2115602cd

Protocol: EPAF 94-EPA/600/4-91/002

Sample Type: EFF2-Industrial

Lab ID: BIOA

Pos	ID	Rep	Group	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Sex	Number of Young	Notes
	1	1	Lab Control	1	1	1	1	1	1	1	1	1 f	22	
	2	2	Lab Control	1	1	1	1	1	1	1	1	1 f	14	
	3	3	Lab Control	1	1	1	1	1	1	1	1	1 f	21	
	4	4	Lab Control	1	1	1	1	1	1	1	1	1 f	21	
	5	5	Lab Control	1	1	1	1	1	1	1	1	1 f	16	
	6	6	Lab Control	1	1	1	1	1	1	1	1	1 f	19	
	7	7	Lab Control	1	1	1	1	1	1	1	1	1 f	20	
	8	8	Lab Control	1	1	1	1	1	1	1	1	1 f	14	
	9	9	Lab Control	1	1	1	1	1	1	1	1	1 f	25	
	10	10	Lab Control	1	1	1	1	1	1	1	1	1 f	20	
	11	1	Rec. Control	1	1	1	1	1	1	1	1	1 f	26	
	12	2	Rec. Control	1	1	1	1	1	1	1	1	1 f	20	
	13	3	Rec. Control	1	1	1	1	1	1	1	1	1 f	20	
	14	4	Rec. Control	1	1	1	1	1	1	1	1	1 f	14	
	15	5	Rec. Control	1	1	1	1	1	1	1	1	1 f	29	
	16	6	Rec. Control	1	1	1	1	1	1	1	1	1 f	25	
	17	7	Rec. Control	1	1	1	1	1	1	1	1	1 f	21	
	18	8	Rec. Control	1	1	1	1	1	1	1	1	1 f	26	
	19	9	Rec. Control	1	1	1	1	1	1	1	1	1 f	19	
	20	10	Rec. Control	1	1	1	1	1	1	1	1	1 f	15	
	21	1	6.25	1	1	1	1	1	1	1	1	1 f	16	
	22	2	6.25	1	1	1	1	1	1	1	1	1 f	24	
	23	3	6.25	1	1	1	1	1	1	1	1	1 f	24	
	24	4	6.25	1	1	1	1	1	1	1	1	1 f	17	
	25	5	6.25	1	1	1	1	1	1	1	1	1 f	23	
	26	6	6.25	1	1	1	1	1	1	1	1	1 f	17	
	27	7	6.25	1	1	1	1	1	1	1	1	1 f	29	
	28	8	6.25	1	1	1	1	1	1	1	1	1 f	15	
	29	9	6.25	1	1	1	1	1	1	1	1	1 f	23	
	30	10	6.25	1	1	1	1	1	1	1	1	1 f	17	
	31	1	12.5	1	1	1	1	1	1	1	1	1 f	25	
	32	2	12.5	1	1	1	1	1	1	1	1	1 f	21	
	33	3	12.5	1	1	1	1	1	1	1	1	1 f	16	
	34	4	12.5	1	1	1	1	1	1	1	1	1 f	26	
	35	5	12.5	1	1	1	1	1	1	1	1	1 f	23	
	36	6	12.5	1	1	1	1	1	1	1	1	1 f	16	
	37	7	12.5	1	1	1	1	1	1	1	1	1 f	17	
	38	8	12.5	1	1	1	1	1	1	1	1	1 f	30	
	39	9	12.5	1	1	1	1	1	1	1	1	1 f	26	
	40	10	12.5	1	1	1	1	1	1	1	1	1 f	30	
	41	1	25	1	1	1	1	1	1	1	1	1 f	26	
	42	2	25	1	1	1	1	1	1	1	1	1 f	17	
	43	3	25	1	1	1	1	1	1	1	1	1 f	18	
	44	4	25	1	1	1	1	1	1	1	1	1 f	17	
	45	5	25	1	1	1	1	1	1	1	1	1 f	27	
	46	6	25	1	1	1	1	1	1	1	1	1 f	20	
	47	7	25	1	1	1	1	1	1	1	1	1 f	17	
	48	8	25	1	1	1	1	1	1	1	1	1 f	24	
	49	9	25	1	1	1	1	1	1	1	1	1 f	21	
	50	10	25	1	1	1	1	1	1	1	1	1 f	14	
	51	1	50	1	1	1	1	1	1	1	1	1 f	19	
	52	2	50	1	1	1	1	1	1	1	1	1 f	16	
	53	3	50	1	1	1	1	1	1	1	1	1 f	29	

Test: CD-Ceriodaphnia Survival and Reproduction Test

Test ID: 2115602cd

Species: CD-Ceriodaphnia dubia

Protocol: EPAF 94-EPA/600/4-91/002

Sample ID: RIATO STONE

Sample Type: EFF2-Industrial

Start Date: 9/1/2021

End Date: 9/8/2021

Lab ID: BIOA

Pos	ID	Rep	Group	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Sex	Number of Young	Notes
	54	4	50	1	1	1	1	1	1	1	1	f	30	
	55	5	50	1	1	1	1	1	1	1	1	f	20	
	56	6	50	1	1	1	1	1	1	1	1	f	17	
	57	7	50	1	1	1	1	1	1	1	1	f	19	
	58	8	50	1	1	1	1	1	1	1	1	f	26	
	59	9	50	1	1	1	1	1	1	1	1	f	18	
	60	10	50	1	1	1	1	1	1	1	1	f	25	
	61	1	100	1	1	1	1	1	1	1	1	f	26	
	62	2	100	1	1	1	1	1	1	1	1	f	23	
	63	3	100	1	1	1	1	1	1	1	1	f	16	
	64	4	100	1	1	1	1	1	1	1	1	f	16	
	65	5	100	1	1	1	1	1	1	1	1	f	20	
	66	6	100	1	1	1	1	1	1	1	1	f	30	
	67	7	100	1	1	1	1	1	1	1	1	f	24	
	68	8	100	1	1	1	1	1	1	1	1	f	25	
	69	9	100	1	1	1	1	1	1	1	1	f	26	
	70	10	100	1	1	1	1	1	1	1	1	f	28	

Comments:

BIOANALYTIC CORPORATION

CLIENT/ID: 215602cd

PERIODOPHNSIA CHRONIC TOXICITY TEST RAW DATA

CONCENTRATION: LAB WATER CONTROL

		PEAKER ID									
DAY 1: 9/2		1	2	3	4	5	6	7	8	9	10
ALIVE (Y/N)	Y										
STRESS (Y/N)	N										
ALIVE	0										
* YOUNG											
DEAD											
DAY 2: 9/3											
ALIVE (Y/N)	Y										
STRESS (Y/N)	N										
ALIVE											
* YOUNG											
DEAD											
DAY 3: 9/4											
ALIVE (Y/N)	Y										
STRESS (Y/N)	N										
ALIVE											
* YOUNG											
DEAD											
DAY 4: 9/5											
ALIVE (Y/N)	Y										
STRESS (Y/N)	N										
ALIVE											
* YOUNG											
DEAD											
DAY 5: 9/6											
ALIVE (Y/N)	Y										
STRESS (Y/N)	N										
ALIVE											
* YOUNG											
DEAD											
DAY 6: 9/7											
ALIVE (Y/N)	Y										
STRESS (Y/N)	N										
ALIVE											
* YOUNG											
DEAD											
DAY 7: 9/8											
ALIVE (Y/N)	Y										
STRESS (Y/N)	N										
ALIVE											
* YOUNG											
DEAD											
DAY 8:											
ALIVE (Y/N)											
STRESS (Y/N)											
ALIVE											
* YOUNG											
DEAD											

TOTAL YOUNG: 22 14 21 21 16 19 20 14 25 20

ADULTS DEAD: 0

COMMENTS:

1/3rd food
= 80

100% survival

C4 617

CLIENT ID: 2115602cd

CERIODAPHNIA CHRONIC TOXICITY TEST RAW DATA

CONCENTRATION: 12% WATER CONTROL

REAKER ID

DAY	1	2	3	4	5	6	7	8	9	10
DAY 1: 9/2										
ALIVE (Y/N)	Y									Y
STRESS (Y/N)	N									Y
ALIVE	0									Y
# YOUNG										
DEAD										
DAY 2: 9/3										
ALIVE (Y/N)	Y									Y
STRESS (Y/N)	N									Y
ALIVE		2					2			2
# YOUNG										
DEAD										
DAY 3: 9/4										
ALIVE (Y/N)	Y									Y
STRESS (Y/N)	N									Y
ALIVE	5	3		5	5		4	3	3	
# YOUNG										
DEAD										
DAY 4: 9/5										
ALIVE (Y/N)	Y									Y
STRESS (Y/N)	N									Y
ALIVE		8	6			9				
# YOUNG										
DEAD										
DAY 5: 9/6										
ALIVE (Y/N)	Y									Y
STRESS (Y/N)	N									Y
ALIVE	9	8	10	8		10	6	10		
# YOUNG										
DEAD										
DAY 6: 9/7										
ALIVE (Y/N)	Y									Y
STRESS (Y/N)	N									Y
ALIVE		10				10				
# YOUNG										
DEAD										
DAY 7: 9/8										
ALIVE (Y/N)	Y									Y
STRESS (Y/N)	N									Y
ALIVE	12	9	8	14	12		12	10	12	
# YOUNG										
DEAD										
DAY 8:										
ALIVE (Y/N)										
STRESS (Y/N)										
ALIVE										
# YOUNG										
DEAD										

TOTAL YOUNG: 26 20 20 14 29 25 21 26 19 15

ADULTS DEAD: 0

COMMENTS: * 1st brood - not counted

20 3rd brood
= 90

100% survival

C5017

BIOANALYTIC CORPORATION

CLIENT/ID: 2115602cd

CERIODAPHNIA CHRONIC TOXICITY TEST RAW DATA

CONCENTRATION: 6.25%

BEAKER ID

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
ALIVE (Y/N)	Y																													
STRESS (Y/N)	N																													
ALIVE	0																													
# YOUNG																														
DEAD																														
DAY 2	9/13																													
ALIVE (Y/N)	Y																													
STRESS (Y/N)	N																													
ALIVE	2																													
# YOUNG																														
DEAD																														
DAY 3	9/14																													
ALIVE (Y/N)	Y																													
STRESS (Y/N)	N																													
ALIVE																														
# YOUNG																														
DEAD																														
DAY 4	9/15																													
ALIVE (Y/N)	Y																													
STRESS (Y/N)	N																													
ALIVE	5																													
# YOUNG																														
DEAD																														
DAY 5	9/16																													
ALIVE (Y/N)	Y																													
STRESS (Y/N)	N																													
ALIVE																														
# YOUNG																														
DEAD																														
DAY 6	9/17																													
ALIVE (Y/N)	Y																													
STRESS (Y/N)	N																													
ALIVE	9																													
# YOUNG																														
DEAD																														
DAY 7	9/18																													
ALIVE (Y/N)	Y																													
STRESS (Y/N)	N																													
ALIVE																														
# YOUNG																														
DEAD																														
DAY 8																														
ALIVE (Y/N)																														
STRESS (Y/N)																														
ALIVE																														
# YOUNG																														
DEAD																														

TOTAL YOUNG: 16 24 24 17 23 17 29 15 23 17

ADULTS DEAD: 0

COMMENTS:

100% Survival

c6 of 17

BIOANALYTIC CORPORATION

CLIENT/ID: 2115602cd

CERIODAPHNIA CHRONIC TOXICITY TEST RAW DATA

CONCENTRATION: 12.5%

BEAKER ID

DAY	1	2	3	4	5	6	7	8	9	10	11	12
DAY 1: 9/12	31	32	33	34	35	36	37	38	39	40		
ALIVE (Y/N)	Y											
STRESS (Y/N)	N											
ALIVE	0											
# YOUNG												
DEAD												
DAY 2: 9/13												
ALIVE (Y/N)	Y											
STRESS (Y/N)	N											
ALIVE			2									
# YOUNG												
DEAD												
DAY 3: 9/14												
ALIVE (Y/N)	Y											
STRESS (Y/N)	N											
ALIVE	6	4	2	5	3		4	5	5	6		
# YOUNG												
DEAD												
DAY 4: 9/15												
ALIVE (Y/N)	Y											
STRESS (Y/N)	N											
ALIVE						6						
# YOUNG												
DEAD												
DAY 5: 9/16												
ALIVE (Y/N)	Y											
STRESS (Y/N)	N											
ALIVE	9	8		9	9		6	10	9	11		
# YOUNG												
DEAD												
DAY 6: 9/17												
ALIVE (Y/N)	Y											
STRESS (Y/N)	N											
ALIVE			12			10	7					
# YOUNG												
DEAD												
DAY 7: 9/18												
ALIVE (Y/N)	Y											
STRESS (Y/N)	N											
ALIVE	10	9		12	11		15	12	13			
# YOUNG												
DEAD												
DAY 8:												
ALIVE (Y/N)												
STRESS (Y/N)												
ALIVE												
# YOUNG												
DEAD												

TOTAL YOUNG: 25 21 16 26 23 16 17 30 26 30

ADULTS DEAD: 0

COMMENTS: > 100% Survival

C70617

BIOANALYTIC CORPORATION

CLIENT/ID: 2115602cd

PERIODOPHNTA CHRONIC TOXICITY TEST RAW DATA

CONCENTRATION: 25.0%

BEAKER ID

DAY:	9/2	41	42	43	44	45	46	47	48	49	50
ALIVE (Y/N)	Y										
STRESS (Y/N)	N										
ALIVE	0										
* YOUNG											
DEAD											
DAY 2:	9/3										
ALIVE (Y/N)	Y										
STRESS (Y/N)	N										
ALIVE											
* YOUNG		2				2	2				
DEAD											
DAY 3:	9/4										
ALIVE (Y/N)	Y										
STRESS (Y/N)	N										
ALIVE											
* YOUNG		5	4	3	5			5	4		
DEAD											
DAY 4:	9/5										
ALIVE (Y/N)	Y										
STRESS (Y/N)	N										
ALIVE											
* YOUNG		5				8	7			6	
DEAD											
DAY 5:	9/6										
ALIVE (Y/N)	Y										
STRESS (Y/N)	N										
ALIVE											
* YOUNG		10	6	5	10			9	8		
DEAD											
DAY 6:	9/7										
ALIVE (Y/N)	Y										
STRESS (Y/N)	N										
ALIVE											
* YOUNG		10				10	8			8	
DEAD											
DAY 7:	9/8										
ALIVE (Y/N)	Y										
STRESS (Y/N)	N										
ALIVE											
* YOUNG		11	8	9	12			10	9		
DEAD											
DAY 8:											
ALIVE (Y/N)											
STRESS (Y/N)											
ALIVE											
* YOUNG											
DEAD											

TOTAL YOUNG: 26 17 18 17 27 20 17 24 21 14

ADULTS DEAD: 0

100% survival

C80617

CLIENT/ID: 21156021d

PERIODOPHNTA CHRONIC TOXICITY TEST RAW DATA

CONCENTRATION: 50%

REAKER ID

DAY 1: 9/2	5	52	53	54	55	56	57	58	59	60
ALIVE (Y/N)	Y									
STRESS (Y/N)	N									
ALIVE	0									
# YOUNG										
DEAD										
DAY 2: 9/3										
ALIVE (Y/N)	Y									
STRESS (Y/N)	N									
ALIVE		2				2				
# YOUNG										
DEAD										
DAY 3: 9/4										
ALIVE (Y/N)	Y									
STRESS (Y/N)	N									
ALIVE	2	6	5	3		3	5	3	4	
# YOUNG										
DEAD										
DAY 4: 9/5										
ALIVE (Y/N)	Y									
STRESS (Y/N)	N									
ALIVE		3				6				
# YOUNG										
DEAD										
DAY 5: 9/6										
ALIVE (Y/N)	Y									
STRESS (Y/N)	N									
ALIVE	8	10	10	7		7	9	6	9	
# YOUNG										
DEAD										
DAY 6: 9/7										
ALIVE (Y/N)	Y									
STRESS (Y/N)	N									
ALIVE		11				9				
# YOUNG										
DEAD										
DAY 7: 9/8										
ALIVE (Y/N)	Y									
STRESS (Y/N)	N									
ALIVE	9	13	15	10		9	12	9	12	
# YOUNG										
DEAD										
DAY 8:										
ALIVE (Y/N)										
STRESS (Y/N)										
ALIVE										
# YOUNG										
DEAD										

TOTAL YOUNG: 19 16 29 30 20 17 19 26 18 25

ADULTS DEAD: 0

COMMENTS:

100% Survival

C9 of 17

CLIENT/ID: 2115602cd

CERIODAPHTHIA CHRONIC TOXICITY TEST RAW DATA

CONCENTRATION: 100%

REAKER ID

DAY 1: 9/2	61	62	63	64	65	66	67	68	69	70
ALIVE (Y/N)	Y									Y
STRESS (Y/N)	N									Y
# YOUNG ALIVE	0									Y
# YOUNG DEAD										
DAY 2: 9/3										
ALIVE (Y/N)	Y									Y
STRESS (Y/N)	N									Y
# YOUNG ALIVE							2			
# YOUNG DEAD										
DAY 3: 9/4										
ALIVE (Y/N)	Y									Y
STRESS (Y/N)	N									Y
# YOUNG ALIVE	3	4		2	4	5		5	4	5
# YOUNG DEAD										
DAY 4: 9/5										
ALIVE (Y/N)	Y									Y
STRESS (Y/N)	N									Y
# YOUNG ALIVE			5				10			
# YOUNG DEAD										
DAY 5: 9/6										
ALIVE (Y/N)	Y									Y
STRESS (Y/N)	N									Y
# YOUNG ALIVE	9	8	3	6	7	11		10	8	11
# YOUNG DEAD										
DAY 6: 9/7										
ALIVE (Y/N)	Y									Y
STRESS (Y/N)	N									Y
# YOUNG ALIVE							12			
# YOUNG DEAD										
DAY 7: 9/8										
ALIVE (Y/N)	Y									Y
STRESS (Y/N)	N									Y
# YOUNG ALIVE	12	11	8	8	9	14		10	14	12
# YOUNG DEAD										
DAY 8:										
ALIVE (Y/N)										
STRESS (Y/N)										
# YOUNG ALIVE										
# YOUNG DEAD										

TOTAL YOUNG: 26 23 16 16 20 30 24 25 26 28

ADULTS DEAD: 0

>100% survival

COMMENTS:

C100617

STATISTICAL ANALYSIS OF CERIODAPHNIA SURVIVAL AND REPRODUCTION TEST

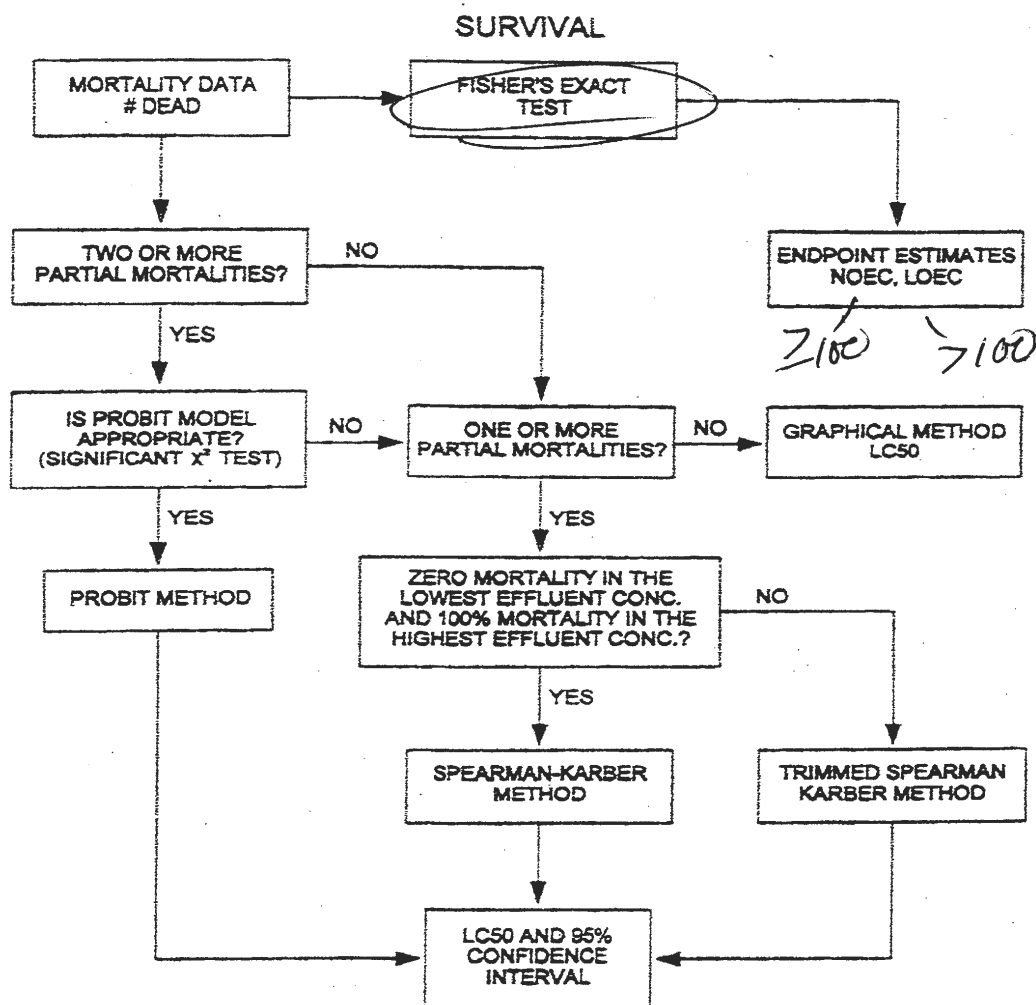


Figure 4. Flowchart for statistical analysis of the daphnid, *Ceriodaphnia dubia*, survival data.

Ceriodaphnia Survival and Reproduction Test-7 Day Survival

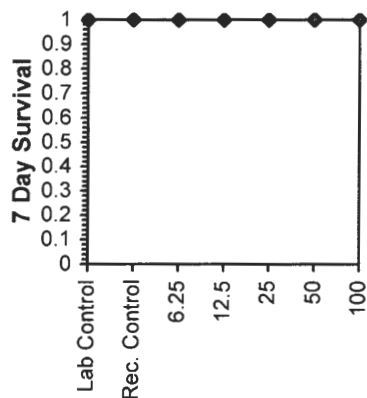
Start Date: 9/1/2021	Test ID: 2115602cd	Sample ID: RIATO STONE
End Date: 9/8/2021	Lab ID: BIOA	Sample Type: EFF2-Industrial
Sample Date: 8/31/2021	Protocol: EPAF 94-EPA/600/4-91/002	Test Species: CD-Ceriodaphnia dubia

Comments:

Conc-%	1	2	3	4	5	6	7	8	9	10
Lab Control	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Rec. Control	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6.25	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
12.5	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
25	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
50	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Conc-%	Mean	N-Mean	Resp	Not Resp	Total	N	Fisher's Exact P	1-Tailed Critical
Lab Control	1.0000	1.0000	0	10	10	10	0.6238	
Rec. Control	1.0000	1.0000	0	10	10	10	*	
6.25	1.0000	1.0000	0	10	10	10	1.0000	0.0500
12.5	1.0000	1.0000	0	10	10	10	1.0000	0.0500
25	1.0000	1.0000	0	10	10	10	1.0000	0.0500
50	1.0000	1.0000	0	10	10	10	1.0000	0.0500
100	1.0000	1.0000	0	10	10	10	1.0000	0.0500

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Fisher's Exact Test	100	>100		1
Treatments vs Rec. Control				



STATISTICAL ANALYSIS OF CERIODAPHNIA SURVIVAL AND REPRODUCTION TEST

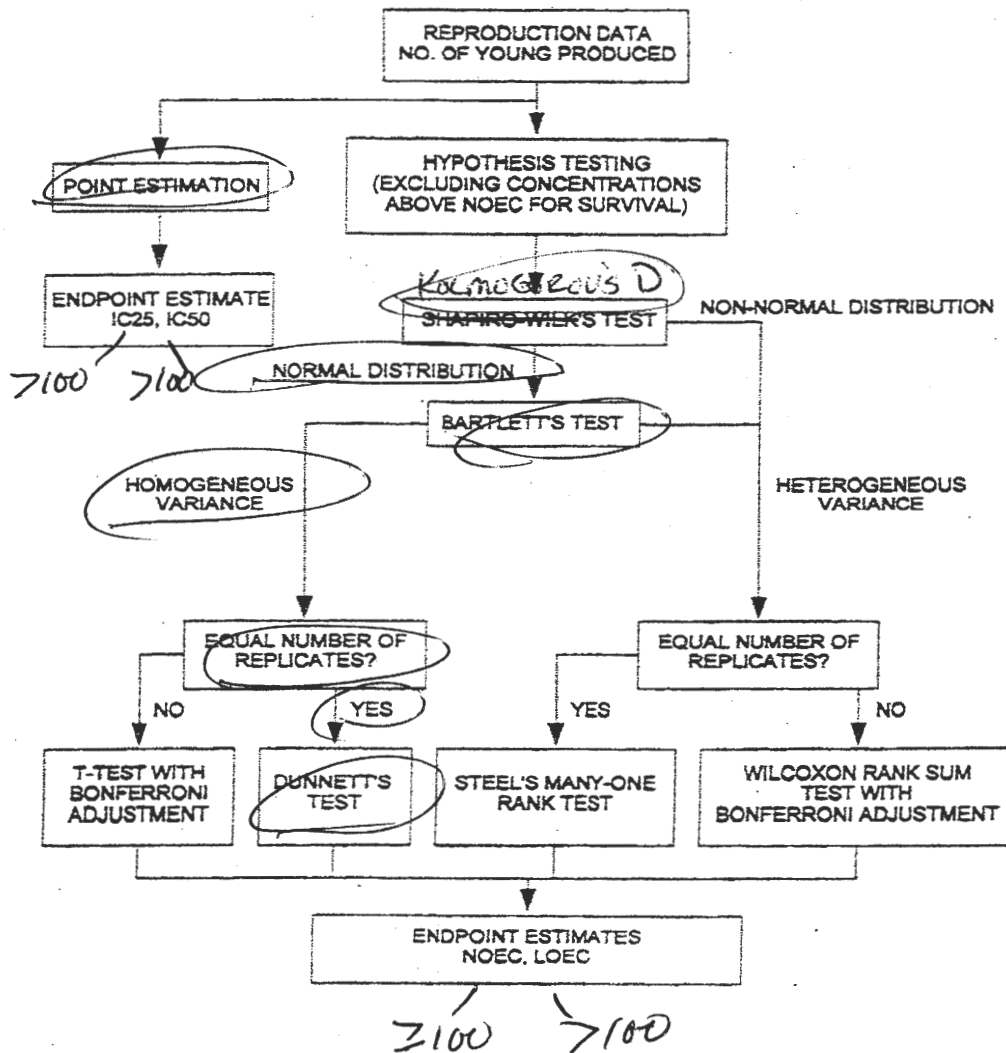


Figure 6.

Flowchart for the statistical analysis of the daphnid, *Ceriodaphnia dubia*, reproduction data.

Ceriodaphnia Survival and Reproduction Test-Reproduction

Start Date: 9/1/2021 Test ID: 2115602cd Sample ID: RIATO STONE
 End Date: 9/8/2021 Lab ID: BIOA Sample Type: EFF2-Industrial
 Sample Date: 8/31/2021 Protocol: EPAF 94-EPA/600/4-91/002 Test Species: CD-Ceriodaphnia dubia
 Comments:

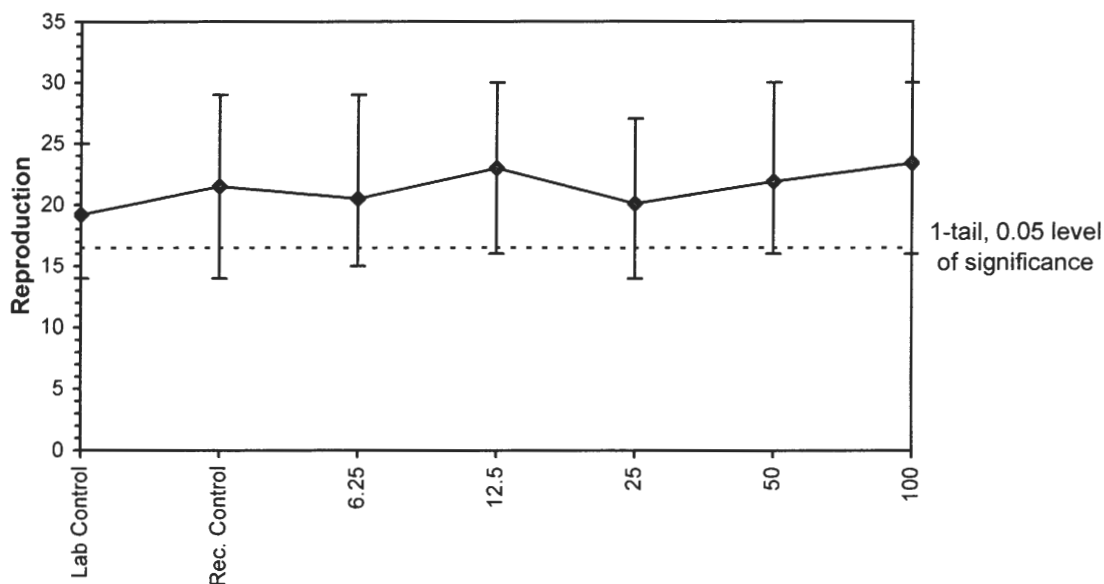
Conc-%	1	2	3	4	5	6	7	8	9	10
Lab Control	22.000	14.000	21.000	21.000	16.000	19.000	20.000	14.000	25.000	20.000
Rec. Control	26.000	20.000	20.000	14.000	29.000	25.000	21.000	26.000	19.000	15.000
6.25	16.000	24.000	24.000	17.000	23.000	17.000	29.000	15.000	23.000	17.000
12.5	25.000	21.000	16.000	26.000	23.000	16.000	17.000	30.000	26.000	30.000
25	26.000	17.000	18.000	17.000	27.000	20.000	17.000	24.000	21.000	14.000
50	19.000	16.000	29.000	30.000	20.000	17.000	19.000	26.000	18.000	25.000
100	26.000	23.000	16.000	16.000	20.000	30.000	24.000	25.000	26.000	28.000

Conc-%	Mean	N-Mean	Transform: Untransformed					t-Stat	1-Tailed	
			Mean	Min	Max	CV%	N		Critical	MSD
Lab Control	19.200	0.8930	19.200	14.000	25.000	18.504	10			
Rec. Control	21.500	1.0000	21.500	14.000	29.000	22.917	10	*		
6.25	20.500	0.9535	20.500	15.000	29.000	22.793	10	0.459	2.287	4.981
12.5	23.000	1.0698	23.000	16.000	30.000	23.279	10	-0.689	2.287	4.981
25	20.100	0.9349	20.100	14.000	27.000	21.552	10	0.643	2.287	4.981
50	21.900	1.0186	21.900	16.000	30.000	23.427	10	-0.184	2.287	4.981
100	23.400	1.0884	23.400	16.000	30.000	20.266	10	-0.872	2.287	4.981

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Kolmogorov D Test indicates normal distribution (p > 0.05)	0.81743	0.895	0.08731	-1.131
Bartlett's Test indicates equal variances (p = 0.99)	0.47587	15.0863		
The control means are not significantly different (p = 0.25)	1.19733	2.10092		

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU	MSDu	MSDp	MSB	MSE	F-Prob	df
Dunnett's Test	100	>100		1	4.98115	0.23168	17.3067	23.7259	0.60445	5, 54
Treatments vs Rec. Control										

Dose-Response Plot



Ceriodaphnia Survival and Reproduction Test-Reproduction

Start Date: 9/1/2021 Test ID: 2115602cd Sample ID: RIATO STONE
 End Date: 9/8/2021 Lab ID: BIOA Sample Type: EFF2-Industrial
 Sample Date: 8/31/2021 Protocol: EPAF 94-EPA/600/4-91/002 Test Species: CD-Ceriodaphnia dubia
 Comments:

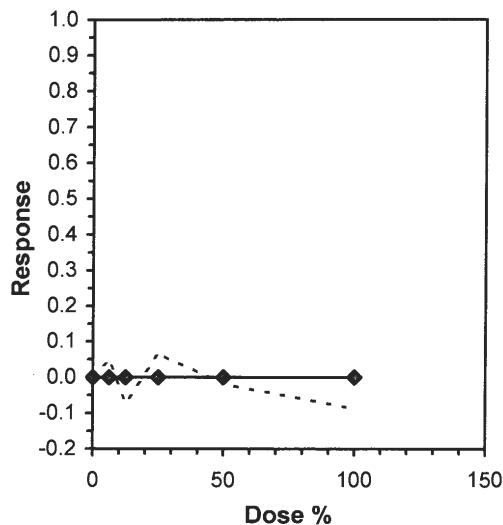
Conc-%	1	2	3	4	5	6	7	8	9	10
Lab Control	22.000	14.000	21.000	21.000	16.000	19.000	20.000	14.000	25.000	20.000
Rec. Control	26.000	20.000	20.000	14.000	29.000	25.000	21.000	26.000	19.000	15.000
6.25	16.000	24.000	24.000	17.000	23.000	17.000	29.000	15.000	23.000	17.000
12.5	25.000	21.000	16.000	26.000	23.000	16.000	17.000	30.000	26.000	30.000
25	26.000	17.000	18.000	17.000	27.000	20.000	17.000	24.000	21.000	14.000
50	19.000	16.000	29.000	30.000	20.000	17.000	19.000	26.000	18.000	25.000
100	26.000	23.000	16.000	16.000	20.000	30.000	24.000	25.000	26.000	28.000

Conc-%	Transform: Untransformed							Isotonic	
	Mean	N-Mean	Mean	Min	Max	CV%	N	Mean	N-Mean
Lab Control	19.200	0.8930	19.200	14.000	25.000	18.504	10		
Rec. Control	21.500	1.0000	21.500	14.000	29.000	22.917	10	21.733	1.0000
6.25	20.500	0.9535	20.500	15.000	29.000	22.793	10	21.733	1.0000
12.5	23.000	1.0698	23.000	16.000	30.000	23.279	10	21.733	1.0000
25	20.100	0.9349	20.100	14.000	27.000	21.552	10	21.733	1.0000
50	21.900	1.0186	21.900	16.000	30.000	23.427	10	21.733	1.0000
100	23.400	1.0884	23.400	16.000	30.000	20.266	10	21.733	1.0000

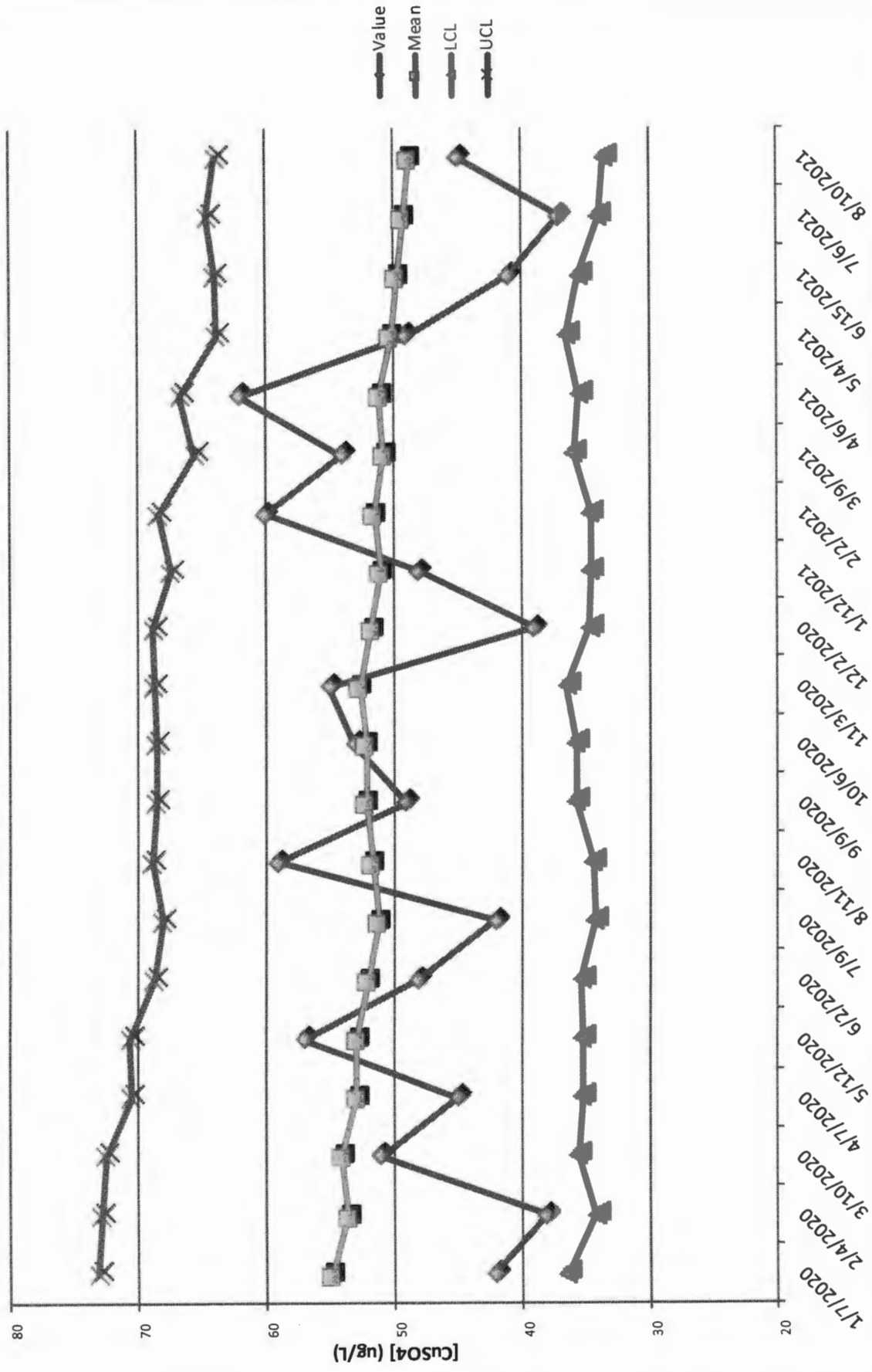
Auxiliary Tests	Statistic	Critical	Skew	Kurt
Kolmogorov D Test indicates normal distribution ($p > 0.05$)	0.81743	0.895	0.08731	-1.131
Bartlett's Test indicates equal variances ($p = 0.99$)	0.47587	15.0863		
The control means are not significantly different ($p = 0.25$)	1.19733	2.10092		

Linear Interpolation (200 Resamples)

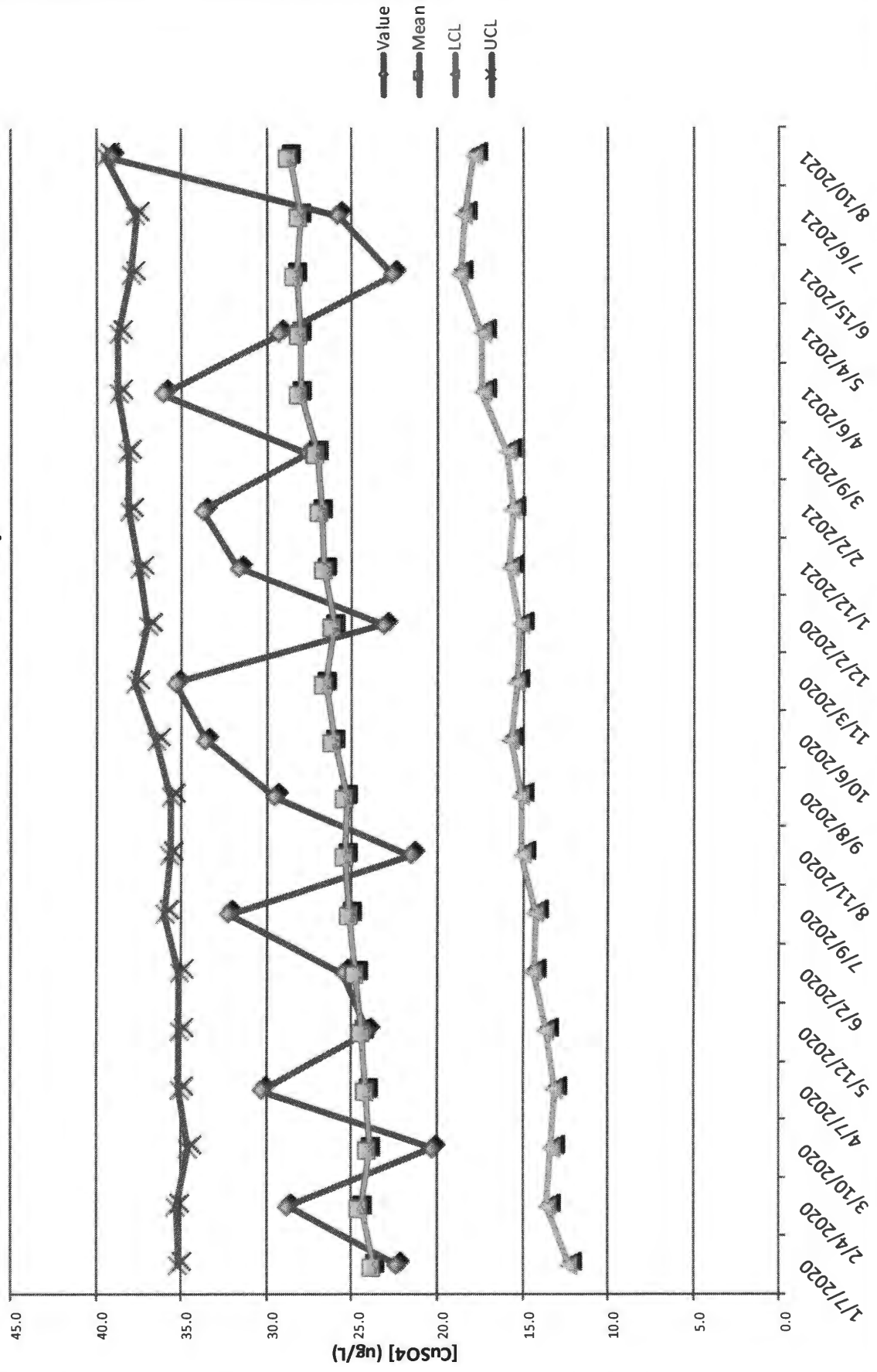
Point	%	SD	95% CL	Skew
IC05	>100			
IC10	>100			
IC15	>100			
IC20	>100			
IC25	>100			
IC40	>100			
IC50	>100			



Cumulative Control Chart - C. dubia 48 hr. EC50



Cumulative Control Chart - C. dubia Reproduction IC25



APPENDIX D

SUPPORTING DOCUMENTS - PIMEPHALES PROMELAS

BIOANALYTIC CORPORATION

CLIENT/ID: 2115602pp

TOXICITY TEST DATE: 9/1/21

TOXICITY TEST RAW DATA

CERIODAPHNIA CHRONIC TOXICITY TEST

SCIENTIFIC NAME OF TEST ANIMAL: P. promelas

AGE OF TEST ANIMALS: 424 ms

CULTURE WATER USED: Lab water + Rec. water

FEEDING:

TYPE(S) OF FOOD USED: 424 hrd Brine shrimp 2x/day

AMOUNT(S) USED DURING TEST:

	START/REUSUAL	DATE/TIME	FEEDING DATE	TIME 1	TIME 2
DAY 0:	<u>Rupar off</u>	<u>9/1/21</u>	<u>1230</u>	<u>9/1/21</u>	<u>1245 & 2030</u>
DAY 1:		<u>9/2</u>	<u>1200</u>	<u>9/2</u>	<u>1210 & 2020</u>
DAY 2:		<u>9/3</u>	<u>1210</u>	<u>9/3</u>	<u>1220 & 2035</u>
DAY 3:		<u>9/4</u>	<u>1215</u>	<u>9/4</u>	<u>1230 & 2030</u>
DAY 4:		<u>9/5</u>	<u>1200</u>	<u>9/5</u>	<u>1210 & 2035</u>
DAY 5:		<u>9/6</u>	<u>1210</u>	<u>9/6</u>	<u>1220 & 2020</u>
DAY 6:	↓	<u>9/7</u>	<u>1220</u>	<u>9/7</u>	<u>1240 & 2035</u>
TEST END:		<u>9/8</u>	<u>1215</u>		

COMMENTS:

D10611

Test: LF-Larval Fish Growth and Survival Test

Species: PP-Pimephales promelas

Sample ID: RIATO STONE

Start Date: 9/1/2021

End Date: 9/8/2021

Test ID: 2115602pp

Protocol: EPAFW02-EPA/821/R-02-013

Sample Type: EFF2-Industrial

Lab ID: BIOA

Pos	ID	Rep	Group	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Total Wgt	Tare Wgt	Wgt Count
	1	1	Lab water	10	10	10	10	10	10	10	10	1413	1407.9	10
	2	2	Lab water	10	10	10	10	10	10	10	10	1543.4	1537.9	10
	3	3	Lab water	10	9	9	9	9	9	9	9	1474.9	1470.9	10
	4	4	Lab water	10	10	10	10	10	10	10	10	1364.3	1359.6	10
	5	1	Receiving	10	10	10	10	10	10	10	10	1376.6	1371.2	10
	6	2	Receiving	10	10	10	10	10	10	10	10	1387.6	1382.6	10
	7	3	Receiving	10	10	10	10	10	10	10	10	1366.2	1361.1	10
	8	4	Receiving	10	10	10	10	10	10	10	10	1453.1	1447.6	10
	9	1	6.25	10	10	10	10	10	10	10	10	1391.5	1387.4	10
	10	2	6.25	10	10	10	10	10	10	10	10	1453.4	1448.3	10
	11	3	6.25	10	10	10	10	10	10	10	10	1421.6	1416	10
	12	4	6.25	10	10	10	10	10	10	10	10	1511.2	1506.7	10
	13	1	12.5	10	10	10	10	10	10	10	10	1371.4	1365.9	10
	14	2	12.5	10	10	10	10	10	10	10	10	1427.4	1422.3	10
	15	3	12.5	10	10	10	10	10	10	10	10	1529.3	1524.8	10
	16	4	12.5	10	10	10	10	10	10	10	10	1530.6	1526.1	10
	17	1	25	10	10	10	10	10	10	10	10	1541.9	1536.4	10
	18	2	25	10	10	10	10	10	10	10	10	1357.3	1352.2	10
	19	3	25	10	10	10	10	10	10	10	10	1463.2	1459	10
	20	4	25	10	10	10	10	10	10	10	10	1402.8	1398.1	10
	21	1	50	10	10	10	10	10	10	10	10	1370.6	1365.4	10
	22	2	50	10	10	10	10	10	10	10	10	1484.8	1480.1	10
	23	3	50	10	10	10	10	10	10	10	10	1441.4	1435.9	10
	24	4	50	10	10	10	10	10	10	10	10	1487	1481.9	10
	25	1	100	10	10	10	10	10	10	10	10	1393.3	1387.8	10
	26	2	100	10	10	10	10	10	10	10	10	1543	1538.9	10
	27	3	100	10	10	10	10	10	10	10	10	1509.6	1504.3	10
	28	4	100	10	10	10	10	10	10	10	10	1450.3	1444.9	10

Comments:

Survival data for fathead minnow larval survival and growth test.

Discharger: Piate Stone Test Dates: 9/1-8/21
Location: Simulated Effluent Analyst: _____

		No. Survivors (obs or less)							
Conc:	Rep. No.	Day							Remarks
		1	2	3	4	5	6	7	
Control	1	10	10	10	10	10	10	10	{ 39/40
Lab	2	10	10	10	10	10	10	10	
	3	9	9	9	9	9	9	9	
	4	10	10	10	10	10	10	10	
Bc. Control	1								{ 40/40
	2								
	3								
	4								
Conc:	1								{ 40/40
6.25	2								
	3								
	4								
Conc:	1								{ 40/40
12.5	2								
	3								
	4								
Conc:	1								{ 10/40
25.0	2								
	3								
	4								
Conc:	1								{ 40/40
50.0	2								
	3								
	4								
Conc:	1								{ 40/40
100	2								
	3								
	4								
Conc:	1								
	2								
	3								
	4								
Conc:	1								
	2								
	3								
	4								

Comments:

DS 06/1

Weight data for fathead minnow larval survival and growth test.

Discharge: Photo Stone
Location: Simulated Effluent

Test Date(s): 9/1-8/21
Weighing Date: 9/10/21

Drying Temperature (°C): 60°C
Drying Time (h): 72 hrs

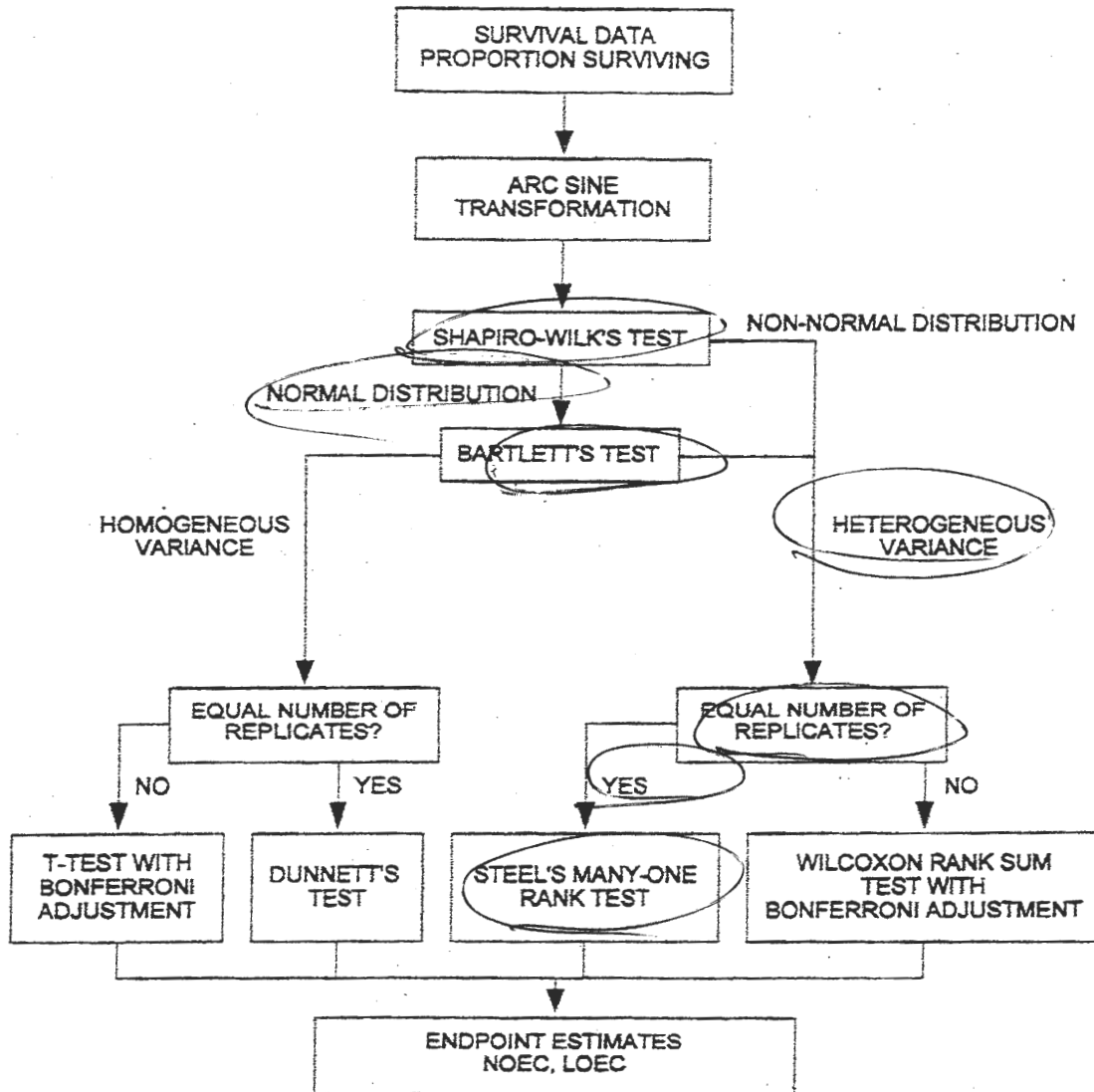
Conc:	Rep. No.	A Wgt. of boat (mg)	B Dry wgt: foil and larvae (mg)	B-A Total dry wgt of larvae (mg)	C No. of larvae	(B-A)/C Mean dry wgt of larvae (mg)	Remarks
					ON	A	*CONTROL MEANS ARE ALSO CALCULATED BY SURVIVING # TO DETERMINE TEST ACCEPTABILITY. ALL OTHERS ARE CALCULATED BASED ON ORIGINAL # (10 UNLESS OTHERWISE NOTED)
Control	1	1407.9	1413.0	5.1	10	0.51	SN Means
	2	1537.9	1543.4	5.5		0.55	
Lab	3	1470.9	1474.9	4.0		0.40	
	4	1359.6	1364.3	4.7		0.47	0.49
Control	1	1371.2	1376.6	5.4		0.54	
Be	2	1382.6	1387.6	5.0		0.50	
	3	1361.7	1366.2	5.1		0.51	0.53
	4	1447.6	1453.1	5.5		0.55	
Conc:	1	1387.4	1391.5				
625	2	1448.3	1453.4				
	3	1416.0	1421.6				
	4	1506.7	1511.2				
Conc:	1	1365.9	1371.4				
125	2	1422.3	1427.4				
	3	1524.8	1529.3				
	4	1526.1	1530.6				
Conc:	1	1536.4	1541.9				
250	2	1352.2	1357.3				
	3	1459.0	1463.2				
	4	1398.1	1402.8				
Conc:	1	1365.4	1370.6				
500	2	1480.1	1484.8				
	3	1435.9	1441.4				
	4	1481.9	1487.0				
Conc:	1	1387.8	1393.3				
100	2	1538.9	1543.0				
	3	1504.3	1509.6				
	4	1444.9	1450.3				
Conc:	1						
	2						
	3						
	4						

BIO ANALYTIC CORP.
4 NORTHBRIDGE DRIVE
DEWITT, NY 13214

119034

STATISTICAL ANALYSIS OF FATHEAD MINNOW LARVAL SURVIVAL AND GROWTH TEST

SURVIVAL HYPOTHESIS TESTING



≥ 100 > 100

Figure 5. Flowchart for statistical analysis of the fathead minnow, *Pimephales promelas*, larval survival data by hypothesis testing.

Larval Fish Growth and Survival Test-7 Day Survival

Start Date: 9/1/2021	Test ID: 2115602pp	Sample ID: RIATO STONE
End Date: 9/8/2021	Lab ID: BIOA	Sample Type: EFF2-Industrial
Sample Date: 8/31/2021	Protocol: EPAFW02-EPA/821/R-02-01	Test Species: PP-Pimephales promelas

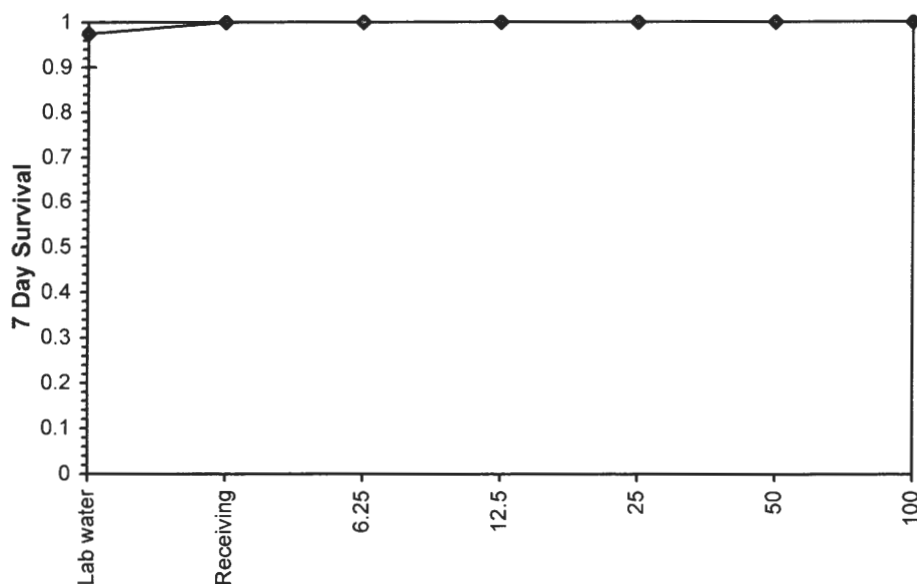
Comments:

Conc-%	1	2	3	4
Lab water	1.0000	1.0000	0.9000	1.0000
Receiving	1.0000	1.0000	1.0000	1.0000
6.25	1.0000	1.0000	1.0000	1.0000
12.5	1.0000	1.0000	1.0000	1.0000
25	1.0000	1.0000	1.0000	1.0000
50	1.0000	1.0000	1.0000	1.0000
100	1.0000	1.0000	1.0000	1.0000

Conc-%	Mean	N-Mean	Transform: Arcsin Square Root					Rank Sum	1-Tailed Critical
			Mean	Min	Max	CV%	N		
Lab water	0.9750	0.9750	1.3713	1.2490	1.4120	5.942	4		
Receiving	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	4	*	
6.25	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	4	18.00	10.00
12.5	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	4	18.00	10.00
25	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	4	18.00	10.00
50	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	4	18.00	10.00
100	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	4	18.00	10.00

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution ($p > 0.05$)	1	0.916		
Equality of variance cannot be confirmed				
The control means are not significantly different ($p = 0.36$)	1	2.44691		
Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Steel's Many-One Rank Test	100	>100		1
Treatments vs Receiving				

Dose-Response Plot



STATISTICAL ANALYSIS OF FATHEAD MINNOW LARVAL SURVIVAL AND GROWTH TEST

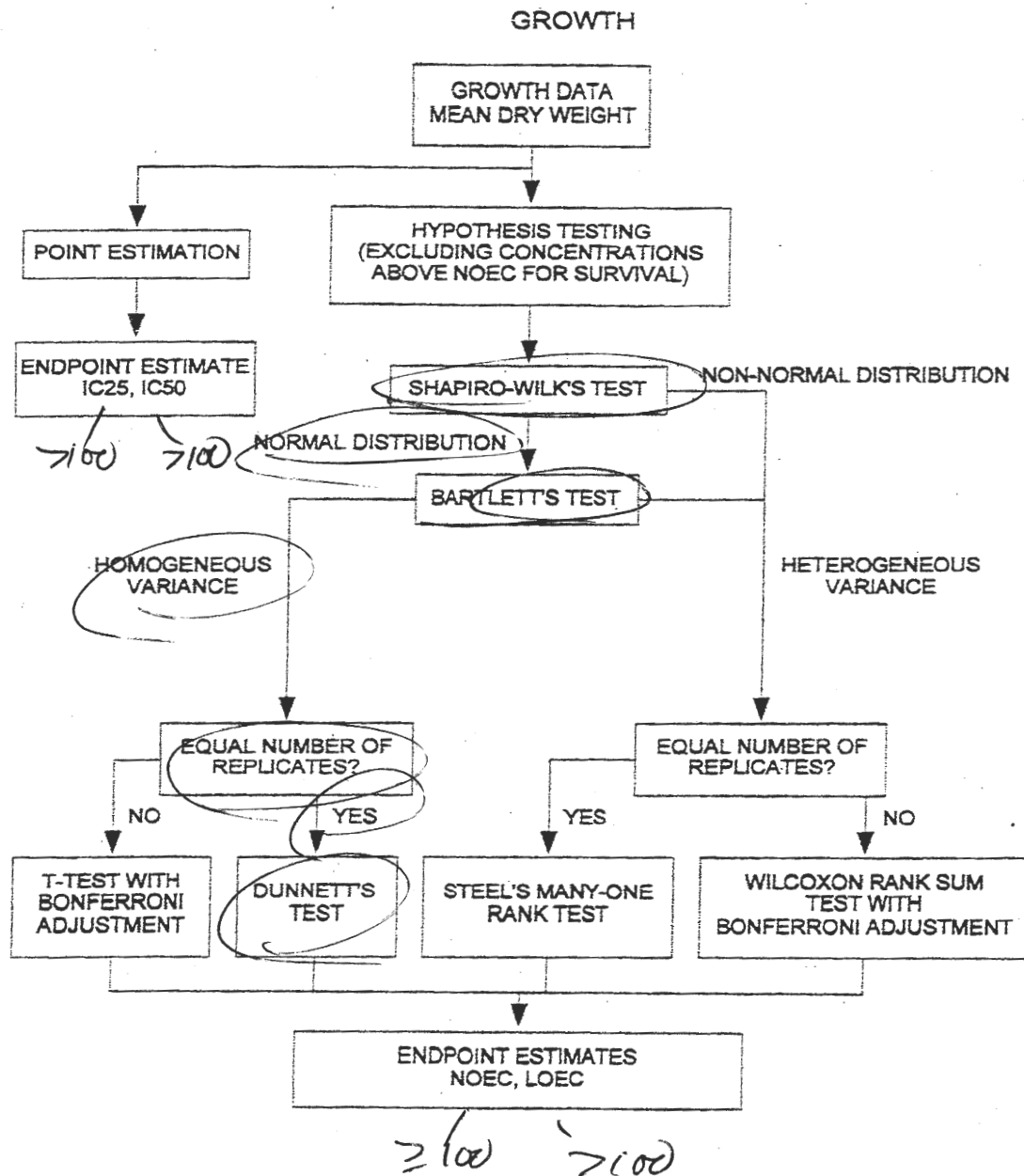


Figure 9. Flowchart for statistical analysis of fathead minnow, *Pimephales promelas*, larval growth data.

D70611

Larval Fish Growth and Survival Test-7 Day Growth

Start Date: 9/1/2021	Test ID: 2115602pp	Sample ID: RIATO STONE
End Date: 9/8/2021	Lab ID: BIOA	Sample Type: EFF2-Industrial
Sample Date: 8/31/2021	Protocol: EPAFW02-EPA/821/R-02-01	Test Species: PP-Pimephales promelas
Comments:		

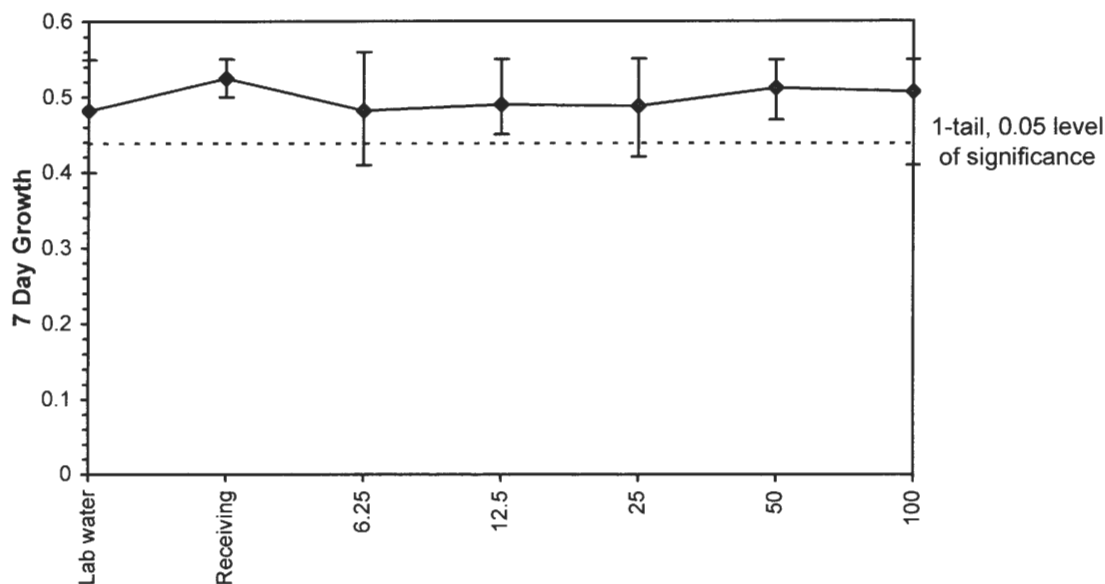
Conc-%	1	2	3	4
Lab water	0.5100	0.5500	0.4000	0.4700
Receiving	0.5400	0.5000	0.5100	0.5500
6.25	0.4100	0.5100	0.5600	0.4500
12.5	0.5500	0.5100	0.4500	0.4500
25	0.5500	0.5100	0.4200	0.4700
50	0.5200	0.4700	0.5500	0.5100
100	0.5500	0.4100	0.5300	0.5400

Conc-%	Mean	N-Mean	Transform: Untransformed					t-Stat	1-Tailed	
			Mean	Min	Max	CV%	N		Critical	MSD
Lab water	0.4825	0.9190	0.4825	0.4000	0.5500	13.257	4			
Receiving	0.5250	1.0000	0.5250	0.5000	0.5500	4.534	4	*		
6.25	0.4825	0.9190	0.4825	0.4100	0.5600	13.682	4	1.171	2.410	0.0874
12.5	0.4900	0.9333	0.4900	0.4500	0.5500	9.998	4	0.965	2.410	0.0874
25	0.4875	0.9286	0.4875	0.4200	0.5500	11.406	4	1.033	2.410	0.0874
50	0.5125	0.9762	0.5125	0.4700	0.5500	6.447	4	0.344	2.410	0.0874
100	0.5075	0.9667	0.5075	0.4100	0.5500	12.909	4	0.482	2.410	0.0874

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution ($p > 0.05$)	0.97111	0.916	-0.3643	-0.4952
Bartlett's Test indicates equal variances ($p = 0.61$)	3.6034	15.0863		
The control means are not significantly different ($p = 0.26$)	1.24539	2.44691		

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU	MSDu	MSDp	MSB	MSE	F-Prob	df
Dunnett's Test	100	>100		1	0.08745	0.16657	0.00112	0.00263	0.82589	5, 18
Treatments vs Receiving										

Dose-Response Plot



Larval Fish Growth and Survival Test-7 Day Growth

Start Date: 9/1/2021	Test ID: 2115602pp	Sample ID: RIATO STONE
End Date: 9/8/2021	Lab ID: BIOA	Sample Type: EFF2-Industrial
Sample Date: 8/31/2021	Protocol: EPAFW02-EPA/821/R-02-01	Test Species: PP-Pimephales promelas

Comments:

Conc-%	1	2	3	4
Lab water	0.5100	0.5500	0.4000	0.4700
Receiving	0.5400	0.5000	0.5100	0.5500
6.25	0.4100	0.5100	0.5600	0.4500
12.5	0.5500	0.5100	0.4500	0.4500
25	0.5500	0.5100	0.4200	0.4700
50	0.5200	0.4700	0.5500	0.5100
100	0.5500	0.4100	0.5300	0.5400

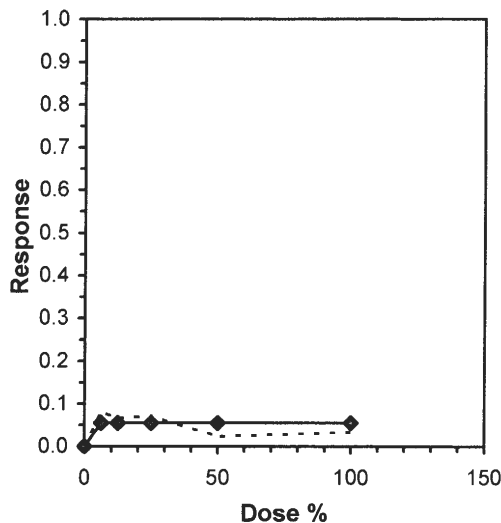
Conc-%	Mean	N-Mean	Transform: Untransformed					Isotonic	
			Mean	Min	Max	CV%	N	Mean	N-Mean
Lab water	0.4825	0.9190	0.4825	0.4000	0.5500	13.257	4		
Receiving	0.5250	1.0000	0.5250	0.5000	0.5500	4.534	4	0.5250	1.0000
6.25	0.4825	0.9190	0.4825	0.4100	0.5600	13.682	4	0.4960	0.9448
12.5	0.4900	0.9333	0.4900	0.4500	0.5500	9.998	4	0.4960	0.9448
25	0.4875	0.9286	0.4875	0.4200	0.5500	11.406	4	0.4960	0.9448
50	0.5125	0.9762	0.5125	0.4700	0.5500	6.447	4	0.4960	0.9448
100	0.5075	0.9667	0.5075	0.4100	0.5500	12.909	4	0.4960	0.9448

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution ($p > 0.05$)	0.97111	0.916	-0.3643	-0.4952
Bartlett's Test indicates equal variances ($p = 0.61$)	3.6034	15.0863		
The control means are not significantly different ($p = 0.26$)	1.24539	2.44691		

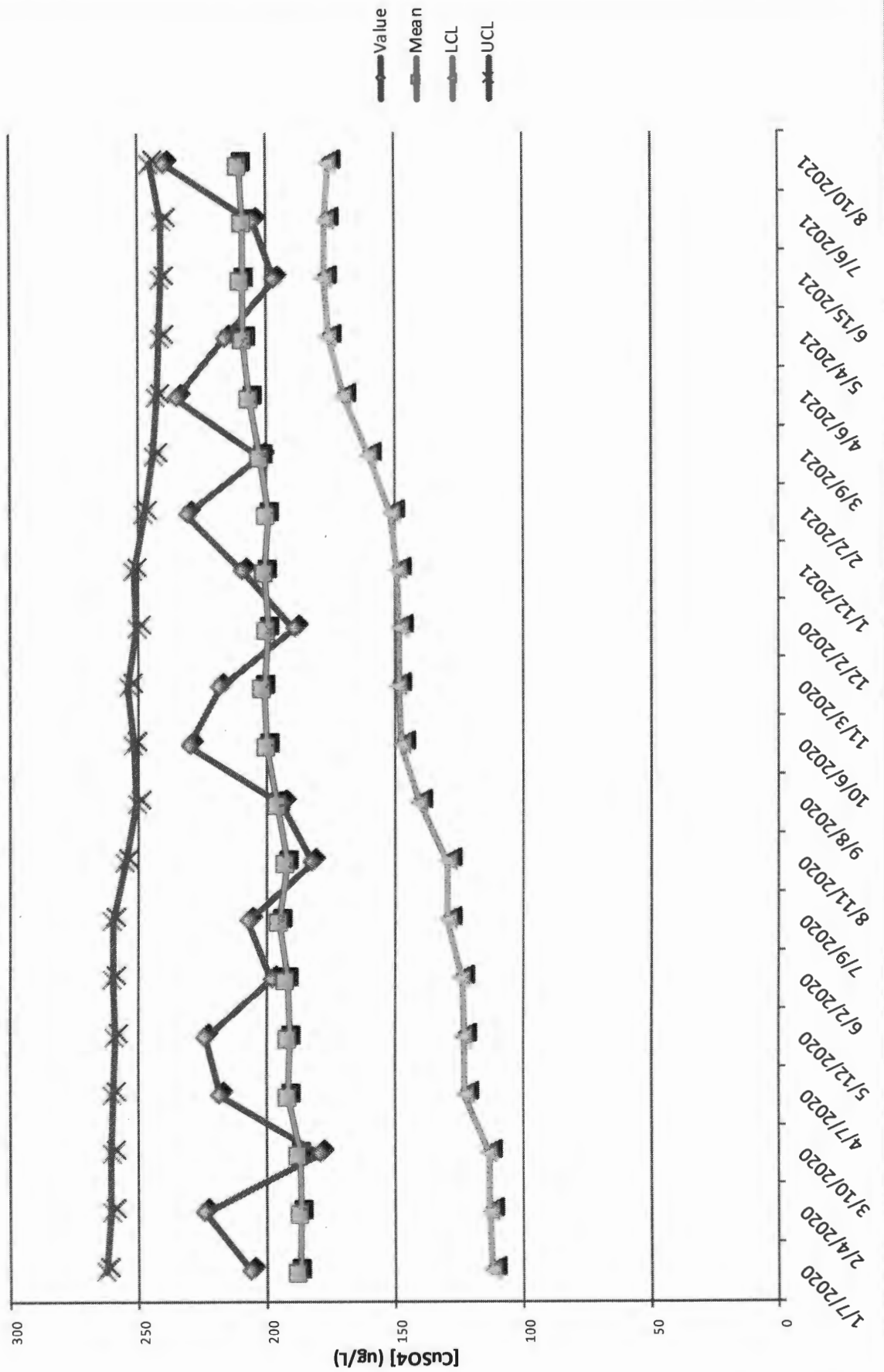
Linear Interpolation (200 Resamples)

Point	%	SD	95% CL(Exp)	Skew
IC05*	5.6573			
IC10	>100			
IC15	>100			
IC20	>100			
IC25	>100			
IC40	>100			
IC50	>100			

* indicates IC estimate less than the lowest concentration



Cumulative Control Chart - Minnow Growth IC25



Cumulative Control Chart -P. promelas LC50

