Stormwater Report
Cedar Street Reconstruction

City of Sandpoint
1123 Lake Street
Sandpoint, ID 83864

Prepared by:

1/2/25

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Introduction

The Cedar Street Reconstruction project includes complete reconstruction of Cedar Street from Lincoln Avenue to Division Avenue including:

- curb,
- gutter,
- sidewalk,
- water main replacement, and
- stormwater improvements.

Anticipating future Municipal Separate Storm Sewer System (MS4) requirements, the City desires to provide treatment of roadway stormwater runoff via shallow streetside bioinfiltration swales located between the curb and sidewalk. The swales are designed with low maintenance vegetation and perforated pipe underdrains to allow for bioinfiltration during typical rain events.

Curb cuts will allow runoff to bypass the swales during larger storm events, with gutter flow transmitting stormwater to curb inlet catch basins connecting to a new piped storm main within Cedar Street. Elevated catch basins within swales will connect to the new piped storm main providing another means for stormwater relief during larger storm events. The new storm main will connect to the Pine Street storm drain system which ultimately outfalls to Chuck Slough.

Existing Conditions

Stormwater along this stretch of Cedar Street, west of Monroe Avenue, is primarily transmitted via open ditch flow with catch basins located at road intersections. Cross culverts carry runoff south, through private properties, before conveying runoff to Pine Street storm system.

Stormwater east of Monroe Avenue finds its way to catch basins within the Cedar Street and Division Avenue intersection which flow down Division to Pine Street.

The City desires to minimize flow of stormwater through private property as part of this project. Existing drainage basin maps including existing storm drain system elements are provided in Appendix C. Modeling outputs of the existing system are presented in the following section.

Proposed Conditions

Two alternatives were evaluated for proposed stormwater along Cedar Street. Each alternative will consist of shallow streetside bioinfiltration swales that collect and treat runoff. The swales then convey runoff to a piped storm main along the centerline of Cedar Street. The storm main will route runoff through the Avista property or along Lincoln Avenue as follows:

Alternative 1: Avista Property

- Route stormwater toward Willow Avenue,
- then south through Avista Utilities property,
- outfalling to Pine Street connecting to the existing 36-inch stormwater main.

Alternative 2: Lincoln Avenue

- Route stormwater west to Lincoln Avenue,

- then south along Lincoln Avenue,
- outfalling to Pine Street connecting to the existing 36-inch stormwater main.

Storm System Modeling and Design

The Cedar Street storm drain system was sized to accommodate stormwater runoff for a 10-year design event in accordance with the ITD Roadway Design Manual (2013 Section 645.00). Based on traffic counts provided by the city, average daily traffic (ADT) for this portion of Cedar is estimated to be well below 20,000 within a 20-year planning period as shown in the following table. The projected ADT is calculated from the growth rate of 2.6% experienced by the City according to the United States Census Bureau's 2023 Population Estimates Program.

Average Daily Traffic: Current and Projected

Year	ADT
2024	3,720
2030	5,061
2040	8,456

The project is located in the Idaho Storm Designation Area C per ITD. Rainfall intensities were calculated from the 10-year, Zone C, Intensity-Duration-Frequency Curve. The ITD Area Classification Map, associated rainfall intensity curve, and design storm frequency table can be found in Appendix A.

Autodesk Storm and Sanitary Analysis (SSA) was used for this analysis and design. Time of concentration was estimated using the SCS TR-55 method. Curve numbers for each basin were estimated by SSA after determining pervious and impervious areas for pre- and post-development conditions. Civil3D was used to find longest flow paths and slopes from the surveyed topographic surface.

Pre- and post-development basin hydrology summaries are presented in the following tables.

Pre-Development Land Cover: See Appendix C, EX-001.

Subbasin	Area, Acres	Curve Number, CN	Time of Concentration, Min (5.00 Minimum)	Peak Runoff Rate, CFS
Basin 1	0.6	93	16.7	1.4
Basin 2	11.4	87	11.6	21.3
Basin 3	5.1	87	17.8	8.2
Basin 4	5.4	87	14.7	9.4
Basin 5	10.5	87	56.6	8.5
Basin 6	5.0	87	12.9	9.1
Basin 7	3.3	87	14.6	5.8
Basin 8	4.8	87	12.0	8.8
Basin 9	2.4	87	45.5	2.2
Basin 10	0.2	93	0.9 (5.0)	0.5
Basin 11	0.3	93	4.3 (5.0)	0.8
Basin 12	0.1	93	4.0 (5.0)	0.2
Basin 13	0.4	93	2.7 (5.0)	1.0
Basin 14	0.1	93	0.6 (5.0)	0.2
Basin 15	0.3	98	4.3 (5.0)	1.0

Post-Development Land Cover: See Appendix C, EX-002.

Subbasin	Area, Acres	Curve Number, CN	Time of Concentration, Min (5.00 Minimum)	Peak Runoff Rate, CFS
Basin 1A	0.7	93	16.7	1.4
Basin 2A	11.2	87	11.6	20.9
Basin 3A	4.9	87	19.8	7.5
Basin 4A	5.9	87	14.6	10.4
Basin 5A	11.1	87	67.7	7.8
Basin 6A	4.1	87	12.8	7.5
Basin 7A	3.5	87	14.5	6.1
Basin 8A	4.4	87	12.0	8.1
Basin 9A	1.6	87	26.1	2.1
Basin 10A	0.2	98	2.0 (5.0)	0.8
Basin 11A	0.2	98	1.6 (5.0)	0.7
Basin 12A	0.2	98	3.4 (5.0)	0.7
Basin 13A	0.2	98	3.2 (5.0)	0.7
Basin 14A	0.3	98	2.1 (5.0)	0.8
Basin 15A	0.3	98	2.1 (5.0)	0.8
Basin 16A	0.3	98	3.1 (5.0)	0.9
Basin 17A	0.3	98	4.8 (5.0)	0.9
Basin 18A	0.3	98	3.2 (5.0)	0.9
Basin 19A	0.1	98	1.9 (5.0)	0.4
Basin 20A	0.2	98	1.6 (5.0)	0.5

SSA was also used to evaluate the existing and proposed storm drain systems. The stormwater routing was performed using the hydrodynamic method and Hazen-Williams equations. This software allows for the evaluation of pre- and post-development pipe sizing and routing.

The existing Cedar Street storm drain system is undersized for the 10-year runoff event. The model indicates areas of localized flooding during this event due to undersized pipes and generally slight pipe slopes. The Division Avenue storm drain system does not have the capacity to receive runoff from Cedar Street by itself with no other incoming flows. The model indicates the system is over capacity by 26%.

We understand the City is negotiating with Avista Utilities to possibly obtain rights for routing stormwater through their property. The two proposed alternatives present viable solutions for the Cedar Street storm drain system.

- Both proposed alternatives require 30-inch stormwater main in Cedar Street connecting to a 36-inch main between Cedar Street and Pine Street. The most upstream storm main connection between manholes can accommodate a 24-inch stormwater pipe due to cover limitations. The catch basins to the storm main system will have 18-inch connection pipes.
- Both proposed alternatives direct all runoff to the west from Division Avenue.
- Both alternatives show a significant reduction of flooding and surcharging between the existing and proposed Cedar Street storm drain system.

Pre- and post-development hydraulic summaries are presented in the following tables.

Existing Hydraulics (Storm Culverts): See Plan for locations.

Pipe STA.	Pipe Size, IN	Flow Capacity, CFS	Peak Flow, CFS
09+89, OFF 13.1' RT – 10+13, OFF 13.2' RT	8	1.6	1.6*
10+13, OFF 13.2' RT – 10+40, OFF 22.8' RT	8	0.2	1.6*
11+37, OFF 15.6' LT – 11+68, OFF 12.8' RT	6	0.5	15.3*
13+36, OFF 49.2' LT – 13+69, OFF 48.9' LT	6	0.4	7.0*
13+36, OFF 49.2' LT – 13+44, OFF 16.6' RT	12	2.9	6.9*
17+74, OFF 17.2' LT – 18+32, OFF 16.5' LT	12	2.3	4.9
18+55, OFF 29.0' RT – 18+57, OFF 15.8' LT	12	4.8	4.7
18+85, OFF 31.8' RT – 19+15, OFF 30.1' RT	12	3.0	8.3*
19+61, OFF 28.6' RT – 20+18, OFF 24.0' RT	12	2.8	8.3*
20+21, OFF 19.4' RT – 20+38, OFF 18.2' LT	12	2.9	8.3*
20+38, OFF 18.2' LT – 20+77, OFF 37.1' LT	12	2.9	8.4*
24+02, OFF 34.2' LT – 24+25, OFF 24.6' LT	4	0.1	4.6*
24+25, OFF 24.6' LT – 24+53, OFF 28.8' LT	4	0.5	3.5*
24+53, OFF 28.8' LT – 28.5' RT	12	1.9	7.8*
27+57, OFF 21.2' RT – 15.4' LT	12	0.8	0.9*
27+57, OFF 15.4' LT – 27+96, OFF 0.4' LT	12	7.0	8.8*
27+96, OFF 0.4' LT – 356' RT	15	7.2	8.4
27+96, OFF 356' RT – 745' RT	18	7.3	8.4

*Localized flooding during 10-year storm event

Proposed Hydraulics (Storm Mains): See Plan for locations.

Pipe STA.	Pipe Size, IN	Alternative 1		Alternative 2	
		Capacity, CFS	Peak, CFS	Capacity, CFS	Peak, CFS
09+89 – 10+13	18	10.6	1.4	14.5	1.4
10+13, OFF 2.0' RT - 13.1' RT	30	33.9	1.4*	24.0	40.7*
10+13, OFF 13.1' RT – 1069' RT	36	-	-	35.6	40.5*
10+13 – 11+70	30	28.4	1.4*	23.1	40.7*
11+70 – 13+44	30	24.6	14.8*	23.1	26.3*
13+44 – 14+01	30	23.1	29.1*	23.1	25.5*
13+44, OFF 0.0' – 1085' RT	36	37.5	41.3*	-	-
14+01 – 16+96	30	22.9	22.5*	22.9	21.5*
16+96 – 18+56	30	22.6	18.8*	22.6	18.1*
18+56 – 20+29	30	23.4	16.5*	23.4	15.6*
20+29 – 20+77	30	23.0	16.2*	23.0	15.6*
20+77 – 22+51	30	22.9	16.1*	22.9	15.2*
22+51 – 24+38	30	23.4	15.0*	23.4	14.8*
24+38 – 27+57	24	12.3	8.5*	12.3	9.1*

*Pipe is surcharged but not overflowing. Pipe crown is submerged but runoff flow is not exceeding elevations of catch basin or manhole lids.

For the proposed storm main, the hydraulic grade of incoming flow is greater than the downstream top of pipe, but it is not above the rim elevation of the manholes or catch basins.

Outfall Comparison Hydraulics (Storm Mains): See Appendix C for locations.

Outfall Location	Existing Flow, CFS	Alternative 1 Flow, CFS	Alternative 2 Flow, CFS
Pine (A)	32.0	40.4	40.3
Division (B)	8.4	0.0	0.0
South of Madison (C)	13.1	0.0	0.0
Private property (D)	0.2	0.0	0.0
South of Monroe (E)	7.8	0.0	0.0

Stormwater System Operation and Maintenance

The City intends to apply a clover seed mix to the bioinfiltration swales to minimize required mowing which is inconsistently completed by adjacent property owners. The City is also planning to install street trees within the swale along the corridor. At this time, it is uncertain whether the City or adjacent property owners will be responsible for tree care and maintenance. A city-owned and maintained irrigation system is a possibility. Operations and maintenance associated with the overall storm drain system includes, but are not limited to:

1. Mow and remove sediment and debris from swales.
2. Repair any areas damaged by excessive erosion by re-seeding as necessary.
3. Remove sediment from catch basins, curb cuts, and manhole sumps.

Appendix

Appendix A: Idaho Rainfall Zone and Intensity Curve

Figure B-7

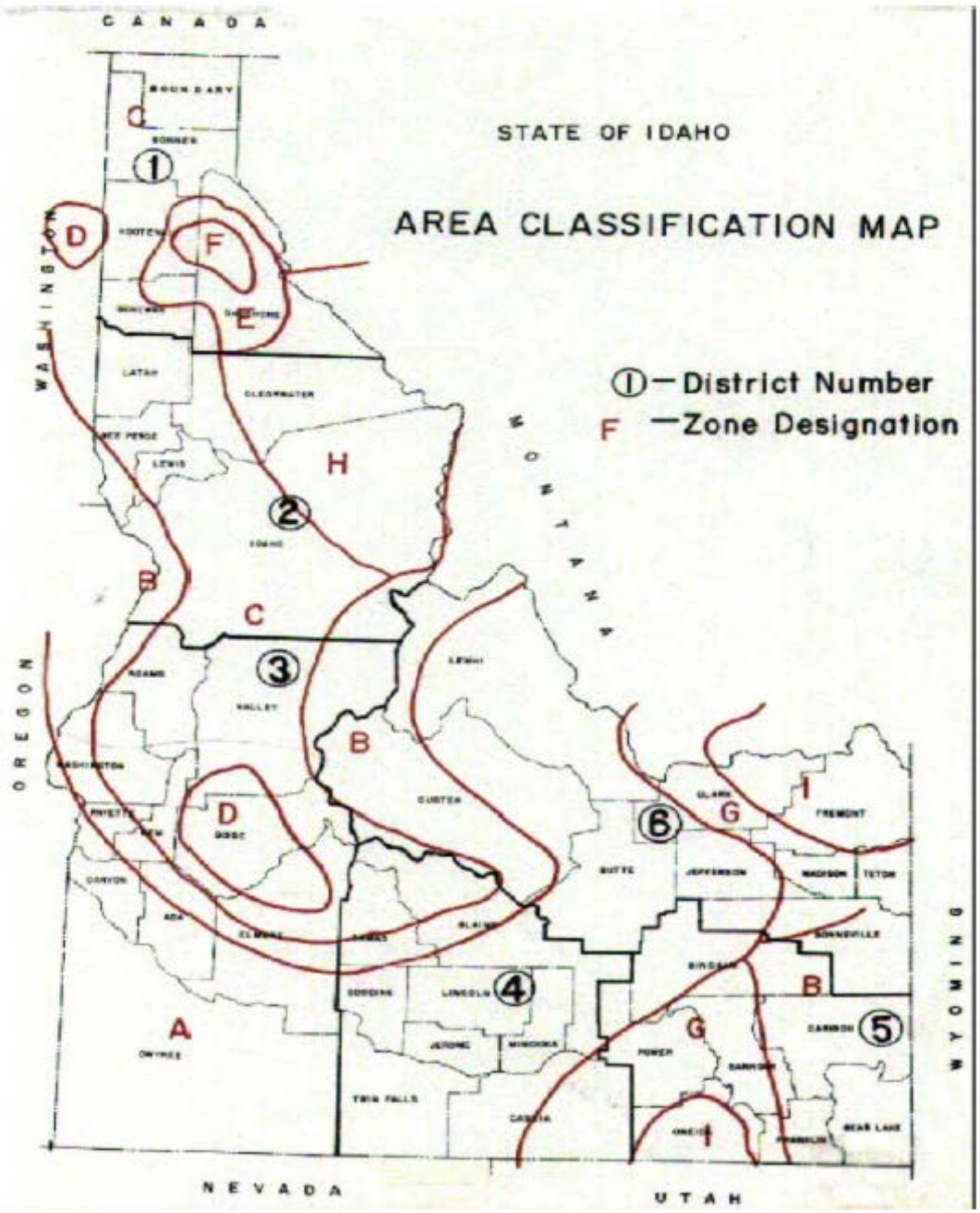
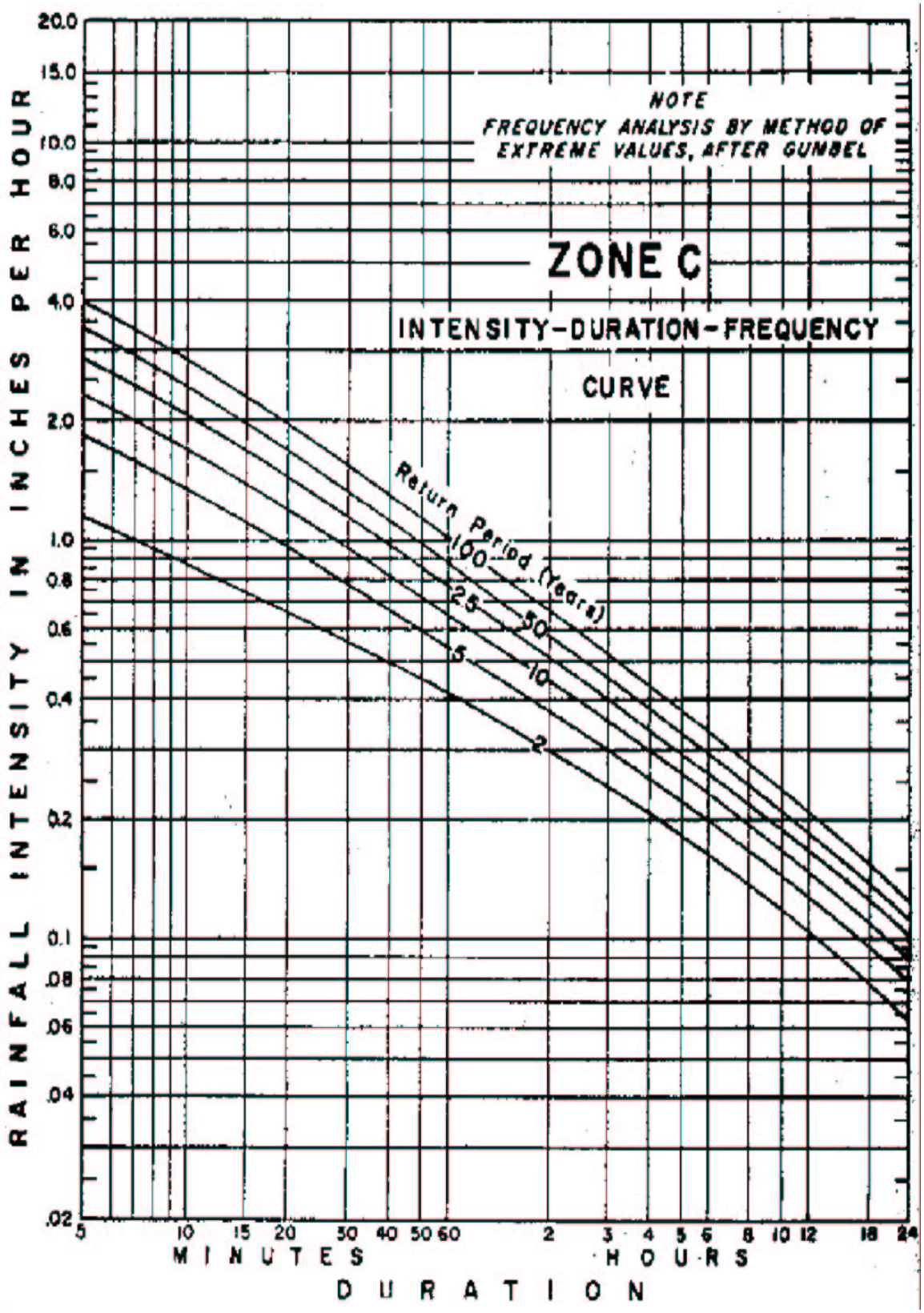

CANADA
STATE OF IDAHO
AREA CLASSIFICATION MAP
①—District Number
F —Zone Designation
WASHINGTON
OREGON
NEVADA
UTAH
WYOMING

Figure B-8
Sheet 3 of 9



Appendix B: Soil Survey Map and Soil Description

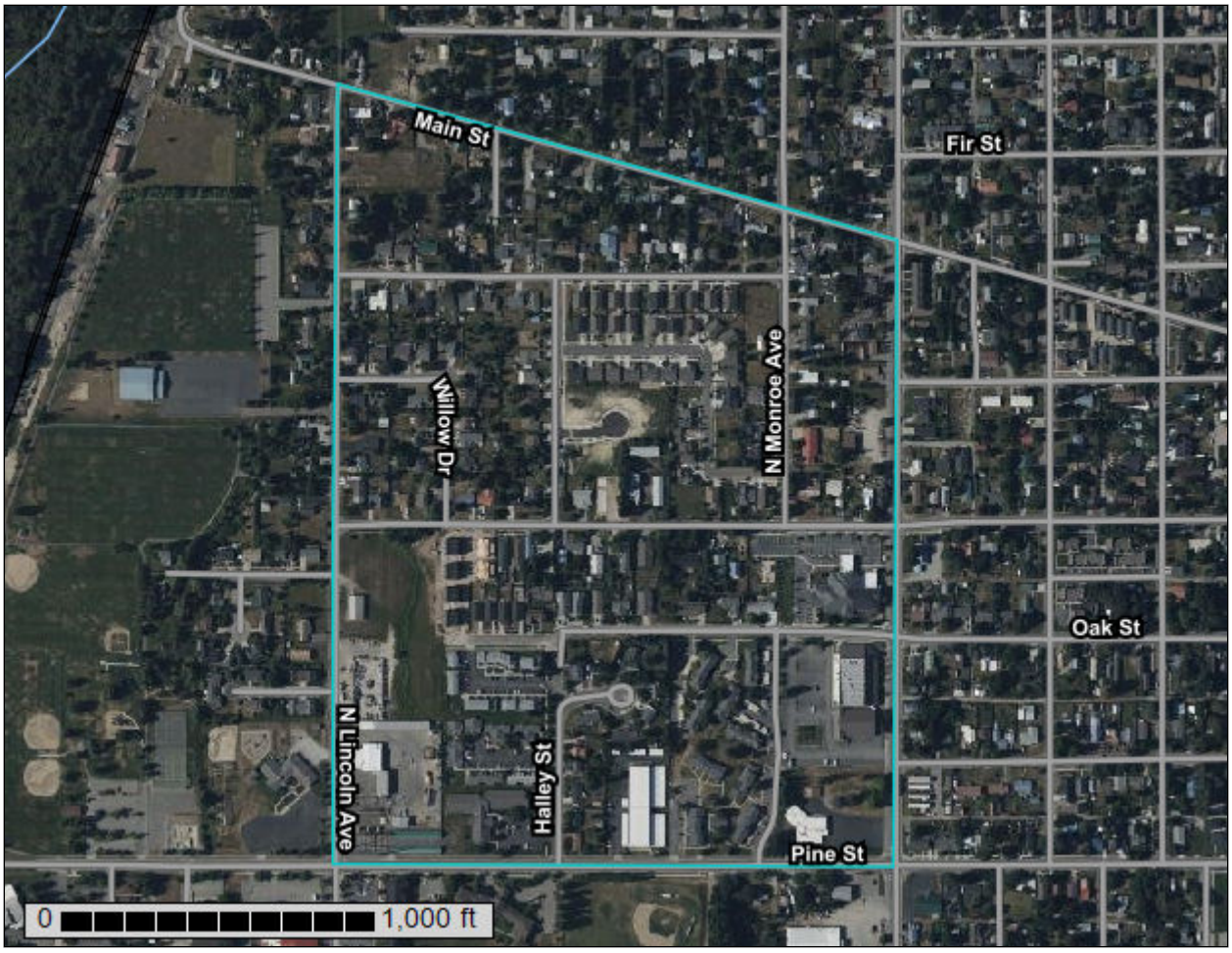
United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Bonner County Area, Idaho, Parts of Bonner and Boundary Counties



June 26, 2024

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

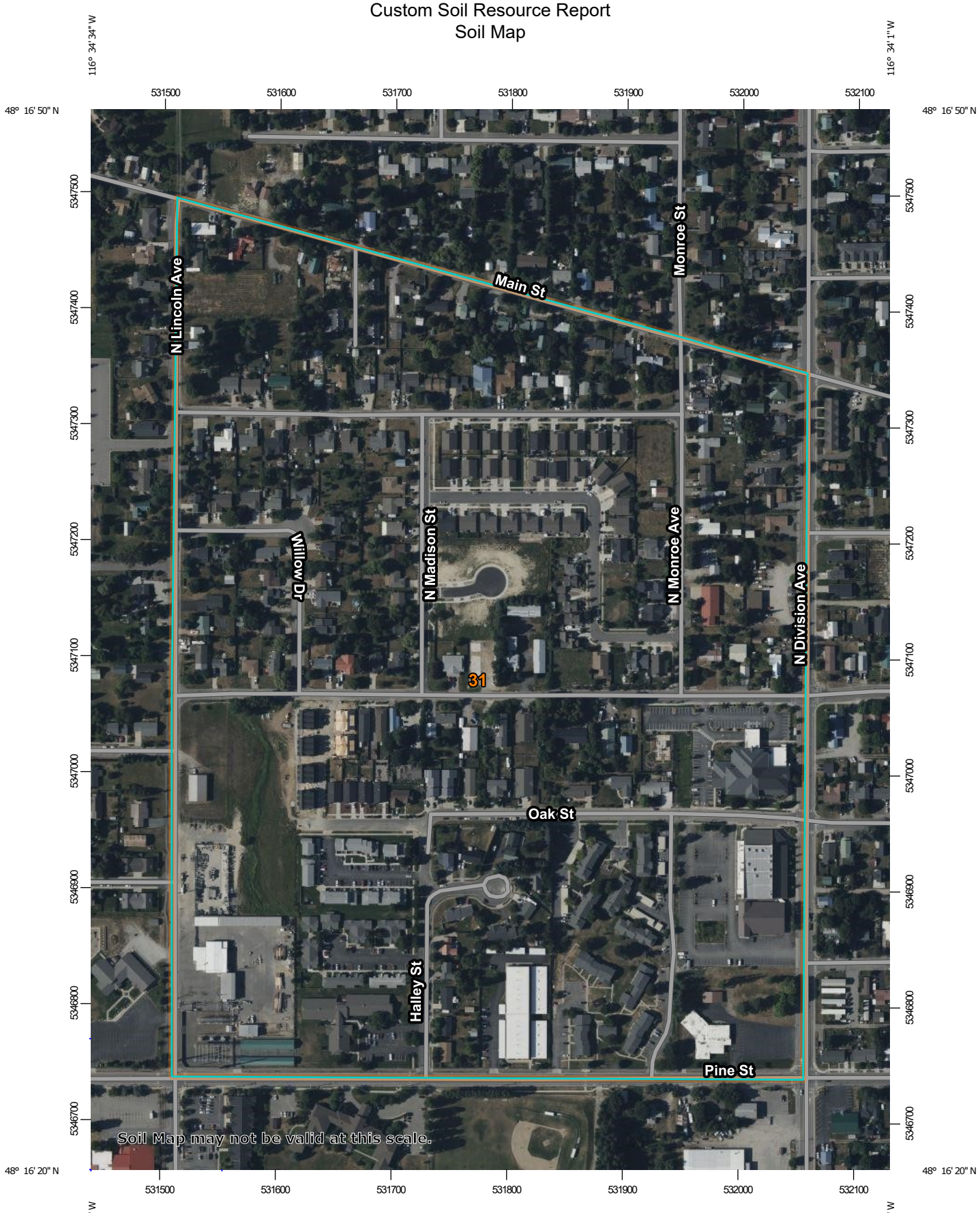
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:4,450 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 50 100 200 300

Feet
0 200 400 800 1200

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

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 1:24,000.

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: Bonner County Area, Idaho, Parts of Bonner and Boundary Counties
Survey Area Data: Version 19, Aug 31, 2023

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

Date(s) aerial images were photographed: Jul 14, 2023—Aug 13, 2023

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND

MAP INFORMATION

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
31	Mission silt loam, 0 to 2 percent slopes	92.8	100.0%
Totals for Area of Interest		**92.8**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Bonner County Area, Idaho, Parts of Bonner and Boundary Counties

31—Mission silt loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 5462
Elevation: 2,000 to 2,800 feet
Mean annual precipitation: 25 to 38 inches
Mean annual air temperature: 43 to 45 degrees F
Frost-free period: 90 to 120 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Mission and similar soils: 75 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mission

Setting

Landform: Lake terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Volcanic ash and loess over silty glaciolacustrine deposits

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 3 inches: silt loam
Bw - 3 to 12 inches: silt loam
2Btx - 12 to 21 inches: silt loam
2E - 21 to 33 inches: silt
2Bt - 33 to 48 inches: silt loam
3C - 48 to 67 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 10 to 20 inches to fragipan
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Available water supply, 0 to 60 inches: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): 6e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Ecological site: F043AY527WA - Warm-Frigid, Udic, Loamy Foothills/Valleys, high water table (western redcedar, moist herb) Thuja plicata / Clintonia uniflora
Other vegetative classification: western redcedar/queencup beadlily (CN530)
Hydric soil rating: No

Minor Components

Hoodoo

Percent of map unit: 3 percent
Landform: Drainageways, flood plains
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: Yes

Odenson

Percent of map unit: 2 percent
Landform: Depressions
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

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U.S. Fish and Wildlife Service

National Wetlands Inventory

Wetlands Map

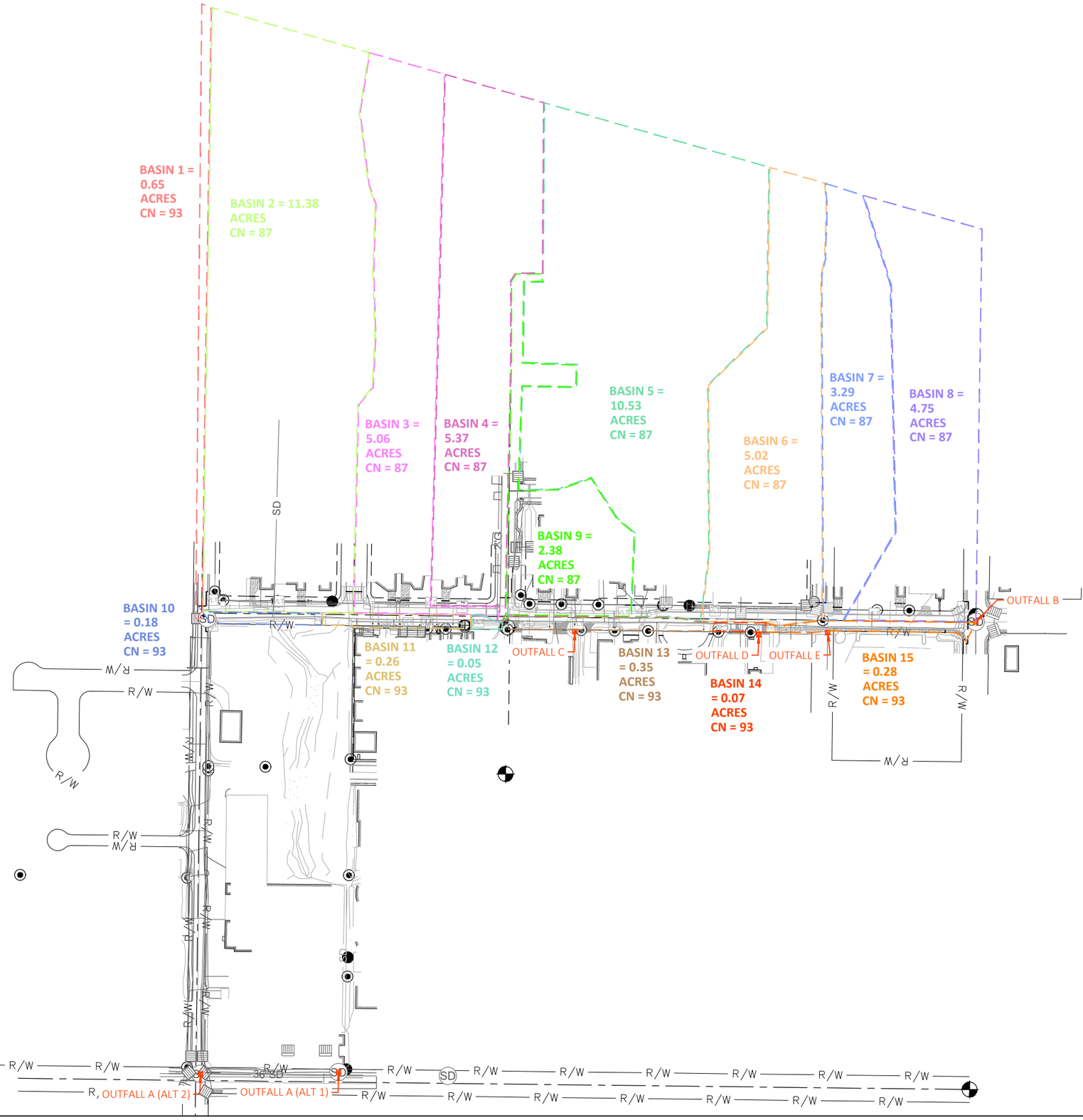
June 26, 2024

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

Appendix C: Drainage Basin Maps



Know what's below. Call before you dig.

Plot Date:12/11/2024 9:59 AM Plotted By: Brandt Souvenir
Path: Z:\DOCUMENTS\PROJECTS\2024\M24005 CEDAR STREET RECONSTRUCTION\CAD\EXHIBITS\M24005 BASIN MAP.DWG

HMH engineering
476864 Highway 95, Suite 3
Ponderay, ID 83852
(208) 635-5825

CEDAR STREET RECONSTRUCTION

CITY OF SANDPOINT

PRE DEVELOPMENT STORMWATER BASIN MAP

NOT APPROVED PRELIMINARY FOR CONSTRUCTION

STORMWATER REPORT EXHIBITS

1"
SCALE: (11X17 ONLY)

DWG: m24005 basin map.dwg
PROJECT NO: M24005
DRAWN BY: BGS
CHECKED BY: DMT
DATE: 2024/12/11

REVISIONS

NO.	DATE	BY	DESCRIPTION

DRAWING:

SHEET: 1 OF 2

HMH engineering
476864 Highway 95, Suite 3
Ponderay, ID 83852
(208) 635-5825

CEDAR STREET RECONSTRUCTION
CITY OF SANDPOINT
POST DEVELOPMENT STORMWATER BASIN MAP

NOT APPROVED
PRELIMINARY
FOR CONSTRUCTION

STORMWATER REPORT EXHIBITS

1"
SCALE: (11X17 ONLY)

DWG: m24005 basin map.dwg
PROJECT NO: M24005
DRAWN BY: BGS
CHECKED BY: DMT
DATE: 2024/12/11

REVISIONS

NO.	DATE	BY	DESCRIPTION

DRAWING:

SHEET: 2 OF 2

Plot Date:12/11/2024 9:59 AM Plotted By: Brandt Souvenir
Path: Z:\DOCUMENTS\PROJECTS\2024\M24005 CEDAR STREET RECONSTRUCTION\CAD\EXHIBITS\M24005 BASIN MAP.DWG

Appendix D: ITD Design Manual Reference

645.00 – STORM SEWERS

Procedures for designing storm sewers are outlined in FHWA publication "Urban Drainage Design Manual", Hydraulic Engineering Circular No. 22.

The Hydraulic Grade Line (HGL) will be calculated and documented in the Hydraulics Report and the HGL profile will be shown on the roadway plans. The minimum diameter of pipe for storm sewers, siphons, and irrigation systems shall be 12 inches. Pipe carrying drainage from irrigated lands shall be considered as culverts and the appropriate minimum size used.

Design storm frequency will be in accordance with the table shown below.

RECOMMENDED STORM FREQUENCIES TO BE USED IN DESIGN OF STORM SEWERS	
Design Average Daily Traffic	**Storm Frequency**
Up to 20,000	10 years
20,000 and over, depressed underpasses, and interstate	25 years

Project life for the purpose of selecting storm sewer material will be 100 years. The limits of flooding for a Design Storm will not encroach on the traveled way beyond one-half of the adjacent travel lane.

The design flood for encroachments by through lanes of Interstate highways shall not be less than the flood with a 2 percent chance (50 year flood) of being exceeded in any given year.

The design data for storm sewers (over 24 inches) in diameter will be submitted to the Resource Center and Environmental for review.

Appendix E: Storm and Sanitary Reports

Autodesk® Storm and Sanitary Analysis 2016 - Version 13.4.304 (Build 0)

****
Project Description
****
File Name ..... M24005 Existing V.3.SPF

****
Analysis Options
****
Flow Units ..... cfs
Subbasin Hydrograph Method. SCS TR-55
Time of Concentration..... SCS TR-55
Link Routing Method ..... Hydrodynamic
Storage Node Exfiltration.. Constant flow
Starting Date JUN-24-2024 00:00:00
Ending Date JUN-25-2024 00:00:00
Report Time Step 00:05:00

****
Element Count
****
Number of rain gages 1
Number of subbasins 15
Number of nodes 41
Number of links 35

****
Raingage Summary
****

Gage ID	Data Source	Data Type	Recording Interval min
Rain Gage-01	TS-10	CUMULATIVE	6.00

****
Subbasin Summary
****

Subbasin ID	Total Area acres	Peak Rate Factor
01	0.65	484.00
02	11.38	484.00
03	5.06	484.00
04	5.37	484.00
05	10.53	484.00
06	5.02	484.00
07	3.29	484.00
08	4.75	484.00
09	2.38	484.00
10	0.18	484.00
11	0.26	484.00
12	0.05	484.00
13	0.35	484.00
14	0.07	484.00
15	0.28	484.00

****

Node Summary

Node ID	Element Type	Invert Elevation ft	Maximum Elev. ft	Ponded Area ft²	External Inflow
Jun-01	JUNCTION	2092.65	2098.79	10.00	
Jun-06	JUNCTION	2104.54	2106.13	10.00	
Jun-07	JUNCTION	2102.70	2105.56	10.00	
Jun-08	JUNCTION	2103.58	2106.56	10.00	
Jun-10	JUNCTION	2103.43	2105.43	10.00	
Jun-13	JUNCTION	2103.64	2107.03	10.00	
Jun-16	JUNCTION	2100.82	2102.82	10.00	
Jun-17	JUNCTION	2096.87	2103.65	10.00	
Jun-18	JUNCTION	2099.34	2102.62	10.00	
Jun-19	JUNCTION	2099.44	2102.77	10.00	
Jun-20	JUNCTION	2087.69	2099.82	10.00	
Jun-21	JUNCTION	2104.22	2106.69	10.00	
Jun-22	JUNCTION	2104.23	2106.75	10.00	
Jun-27	JUNCTION	2097.48	2101.50	0.00	
Jun-30	JUNCTION	2088.45	2098.50	0.00	
Jun-31	JUNCTION	2090.98	2097.65	0.00	
Jun-32	JUNCTION	2102.47	2105.77	10.00	
Jun-33	JUNCTION	2087.69	2099.82	10.00	
Jun-34	JUNCTION	2089.06	2098.52	10.00	
Jun-35	JUNCTION	2095.64	2099.26	10.00	
Jun-36	JUNCTION	2096.42	2100.33	10.00	
Jun-37	JUNCTION	2095.96	2099.61	10.00	
Jun-38	JUNCTION	2094.90	2098.72	10.00	
Jun-39	JUNCTION	2096.23	2099.83	10.00	
Jun-40	JUNCTION	2104.77	2106.44	10.00	
Jun-41	JUNCTION	2103.29	2104.98	10.00	
Jun-42	JUNCTION	2102.69	2105.71	10.00	
Jun-43	JUNCTION	2100.65	2102.43	10.00	
Jun-44	JUNCTION	2100.67	2102.70	10.00	
Jun-45	JUNCTION	2104.67	2107.23	10.00	
Jun-46	JUNCTION	2103.31	2104.94	10.00	
OUT-A	OUTFALL	2080.00	2083.00	0.00	
OUT-B	OUTFALL	2088.47	2089.97	0.00	
OUT-C	OUTFALL	2100.00	2101.00	0.00	
OUT-D	OUTFALL	2105.74	2105.74	0.00	
OUT-E	OUTFALL	2102.17	2103.17	0.00	
Jun-15	STORAGE	2104.13	2106.91	10.00	
Jun-28	STORAGE	2103.27	2106.79	10.00	
Stor-05	STORAGE	2103.56	2106.69	10.00	
Stor-06	STORAGE	2103.18	2106.40	10.00	
Stor-07	STORAGE	2102.19	2106.70	10.00	

Link Summary

Link ID	From Node	To Node	Element Type	Length ft	Slope %	Manning's Roughness
09+89_OFF13.1RT	-10+13_OFF13.2RT	Jun-40	Jun-21	CONDUIT	23.0	2.3043 0.0150
10+13_OFF13.2RT	-10+40_OFF22.8RT	Jun-21	Jun-22	CONDUIT	32.0	0.0312 0.0150
11+37_OFF15.6LT	-11+68_OFF12.8RT	Jun-41	Jun-07	CONDUIT	53.0	1.1132 0.0150
13+36_OFF49.2LT	-13+44_OFF16.6RT	Jun-32	Jun-10	CONDUIT	33.0	0.8182 0.0150
13+36_OFF49.2LT	-13+69_OFF48.9LT	Jun-06	Jun-10	CONDUIT	62.0	0.8710 0.0150
17+74_OFF17.2LT	-18+32_OFF16.5LT	Jun-15	Jun-28	CONDUIT	58.5	0.5299 0.0150

18+55_OFF29.0RT-18+57_OFF15.8LTJun-28	Stor-07	CONDUIT	45.0	2.4000	0.0150	
18+85_OFF31.8RT-19+15_OFF30.1RTStor-06	Stor-07	CONDUIT	30.0	0.9667	0.0150	
19+61_OFF28.6RT-20+18_OFF24.0RTStor-05	Stor-06	CONDUIT	46.0	0.8261	0.0150	
20+21_OFF19.4RT-20+38_OFF18.2LTJun-45	Stor-05	CONDUIT	41.0	0.8537	0.0150	
20+38_OFF18.2LT-20+77_OFF37.1LTJun-13	Jun-45	CONDUIT	48.0	0.8542	0.0150	
24+02_OFF34.2LT-24+25_OFF24.6LTJun-46	Jun-08	CONDUIT	25.0	0.0400	0.0150	
24+25_OFF24.6LT-24+53_OFF28.8LTJun-08	Jun-42	CONDUIT	28.0	7.9643	0.0150	
24+53_OFF28.8LT-28.5RTJun-42	OUT-E	CONDUIT	144.4	0.3601	0.0150	
27+57_OFF15.4LT-27+96_OFF0.4LTJun-43	Jun-17	CONDUIT	43.9	5.1230	0.0150	
27+57_OFF21.2RT-15.4LTJun-44	Jun-43	CONDUIT	31.9	0.0628	0.0150	
27+96_OFF0.4LT-356RTJun-17	Jun-31	CONDUIT	356.0	1.6545	0.0150	
27+96_OFF356RT-745RTJun-31	OUT-B	CONDUIT	389.0	0.6452	0.0150	
Avista_Pipe1	Jun-27	Jun-01	CONDUIT	538.0	0.7454	0.0150
Avista_Pipe2	Jun-01	Jun-30	CONDUIT	6.5	64.6154	0.0150
Ditch1	Jun-07	Jun-22	CHANNEL	123.0	0.1951	0.0320
Ditch2	Jun-07	Jun-16	CHANNEL	170.9	1.0997	0.0320
Ditch3	Jun-06	Jun-16	CHANNEL	168.5	2.2077	0.0320
Ditch4	Jun-16	Jun-27	CHANNEL	474.5	0.7039	0.0320
Ditch5	Stor-07	OUT-C	CHANNEL	5.0	43.8000	0.0320
Lateral1-Division	Jun-19	Jun-18	CONDUIT	41.7	0.4077	0.0150
Lateral2-Division	Jun-18	Jun-17	CONDUIT	50.0	4.9400	0.0150
Lateral-Pine1	Jun-38	Jun-33	CONDUIT	28.0	27.1041	0.0150
Lateral-Pine2	Jun-37	Jun-38	CONDUIT	38.3	2.7662	0.0150
Lateral-Pine3	Jun-37	Jun-35	CONDUIT	44.8	0.7144	0.0150
Lateral-Pine4	Jun-39	Jun-37	CONDUIT	36.4	0.7414	0.0150
Lateral-Pine5	Jun-36	Jun-39	CONDUIT	39.3	0.4833	0.0150
Pine_Main1	Jun-34	Jun-30	CONDUIT	254.0	0.0236	0.0150
Pine_Main2	Jun-30	Jun-20	CONDUIT	320.0	0.2375	0.0150
Pine_Main3	Jun-20	OUT-A	CONDUIT	200.0	3.8450	0.0150

****
Cross Section Summary
****

Link ID	Shape	Depth/ Diameter ft	Width ft	No. of Barrels	Cross Sectional Area ft²	Full Flow Hydraulic Radius ft	Design Flow Capacity cfs
09+89_OFF13.1RT-10+13_OFF13.2RT	CIRCULAR	0.67	0.67	1	0.35	0.17	1.59
10+13_OFF13.2RT-10+40_OFF22.8RT	CIRCULAR	0.67	0.67	1	0.35	0.17	0.19
11+37_OFF15.6LT-11+68_OFF12.8RT	CIRCULAR	0.50	0.50	1	0.20	0.13	0.51
13+36_OFF49.2LT-13+44_OFF16.6RT	CIRCULAR	0.50	0.50	1	0.20	0.13	0.44
13+36_OFF49.2LT-13+69_OFF48.9LT	CIRCULAR	1.00	1.00	1	0.79	0.25	2.88

17+74_OFF17.2LT-18+32_OFF16.5LT	CIRCULAR	1.00	1.00	1	0.79	0.25	2.25
18+55_OFF29.0RT-18+57_OFF15.8LT	CIRCULAR	1.00	1.00	1	0.79	0.25	4.78
18+85_OFF31.8RT-19+15_OFF30.1RT	CIRCULAR	1.00	1.00	1	0.79	0.25	3.04
19+61_OFF28.6RT-20+18_OFF24.0RT	CIRCULAR	1.00	1.00	1	0.79	0.25	2.81
20+21_OFF19.4RT-20+38_OFF18.2LT	CIRCULAR	1.00	1.00	1	0.79	0.25	2.85
20+38_OFF18.2LT-20+77_OFF37.1LT	CIRCULAR	1.00	1.00	1	0.79	0.25	2.85
24+02_OFF34.2LT-24+25_OFF24.6LT	CIRCULAR	0.33	0.33	1	0.09	0.08	0.03
24+25_OFF24.6LT-24+53_OFF28.8LT	CIRCULAR	0.33	0.33	1	0.09	0.08	0.47
24+53_OFF28.8LT-28.5RT	CIRCULAR	1.00	1.00	1	0.79	0.25	1.85
27+57_OFF15.4LT-27+96_OFF0.4LT	CIRCULAR	1.00	1.00	1	0.79	0.25	6.99
27+57_OFF21.2RT-15.4LT	CIRCULAR	1.00	1.00	1	0.79	0.25	0.77
27+96_OFF0.4LT-356RT	CIRCULAR	1.25	1.25	1	1.23	0.31	7.20
27+96_OFF356RT-745RT	CIRCULAR	1.50	1.50	1	1.77	0.38	7.31
Avista_Pipe1	CIRCULAR	0.67	0.67	1	0.35	0.17	0.90
Avista_Pipe2	CIRCULAR	1.00	1.00	1	0.79	0.25	24.82
Ditch1	TRIANGULAR	0.50	6.00	1	1.50	0.25	1.21
Ditch2	TRIANGULAR	1.00	40.00	1	20.00	0.50	61.30
Ditch3	PARABOLIC	1.50	50.00	1	50.00	1.00	344.44
Ditch4	TRAPEZOIDAL	2.00	72.00	1	92.00	1.28	421.47
Ditch5	TRAPEZOIDAL	1.00	3.00	1	2.00	0.52	39.87
Lateral1-Division	CIRCULAR	1.00	1.00	1	0.79	0.25	1.97
Lateral2-Division	CIRCULAR	1.00	1.00	1	0.79	0.25	6.86
Lateral-Pine1	CIRCULAR	0.67	0.67	1	0.35	0.17	5.45
Lateral-Pine2	CIRCULAR	0.67	0.67	1	0.35	0.17	1.74
Lateral-Pine3	CIRCULAR	1.50	1.50	1	1.77	0.38	7.69
Lateral-Pine4	CIRCULAR	1.50	1.50	1	1.77	0.38	7.84
Lateral-Pine5	CIRCULAR	1.50	1.50	1	1.77	0.38	6.33
Pine_Main1	CIRCULAR	3.00	3.00	1	7.07	0.75	8.88
Pine_Main2	CIRCULAR	3.00	3.00	1	7.07	0.75	28.17
Pine_Main3	CIRCULAR	3.00	3.00	1	7.07	0.75	113.35

**********	Volume	Depth
Runoff Quantity Continuity	acre-ft	inches
**********	---------	-------
Total Precipitation	10.884	2.632
Surface Runoff	0.582	0.141

Continuity Error (%) ..... -0.002

Flow Routing Continuity	Volume acre-ft	Volume Mgallons
External Inflow	0.000	0.000
External Outflow	5.773	1.881
Initial Stored Volume	0.021	0.007
Final Stored Volume	0.380	0.124
Continuity Error (%)	-0.136	

Composite Curve Number Computations Report

Subbasin 01

Soil/Surface Description	Area (acres)	Soil Group	CN
Paved roads with open ditches, 50% imp	0.65	D	93.00
Composite Area & Weighted CN	0.65		93.00

Subbasin 02

Soil/Surface Description	Area (acres)	Soil Group	CN
1/4 acre lots, 38% impervious	11.38	D	87.00
Composite Area & Weighted CN	11.38		87.00

Subbasin 03

Soil/Surface Description	Area (acres)	Soil Group	CN
1/4 acre lots, 38% impervious	5.06	D	87.00
Composite Area & Weighted CN	5.06		87.00

Subbasin 04

Soil/Surface Description	Area (acres)	Soil Group	CN
1/4 acre lots, 38% impervious	5.37	D	87.00
Composite Area & Weighted CN	5.37		87.00

Subbasin 05

Soil/Surface Description	Area (acres)	Soil Group	CN
1/4 acre lots, 38% impervious	10.53	D	87.00
Composite Area & Weighted CN	10.53		87.00

Subbasin 06

Soil/Surface Description	Area (acres)	Soil Group	CN

Soil/Surface Description	Area (acres)	Soil Group	CN
1/4 acre lots, 38% impervious	5.02	D	87.00
Composite Area & Weighted CN	5.02		87.00

Subbasin 07

Soil/Surface Description	Area (acres)	Soil Group	CN
1/4 acre lots, 38% impervious	3.29	D	87.00
Composite Area & Weighted CN	3.29		87.00

Subbasin 08

Soil/Surface Description	Area (acres)	Soil Group	CN
1/4 acre lots, 38% impervious	4.75	D	87.00
Composite Area & Weighted CN	4.75		87.00

Subbasin 09

Soil/Surface Description	Area (acres)	Soil Group	CN
1/4 acre lots, 38% impervious	2.38	D	87.00
Composite Area & Weighted CN	2.38		87.00

Subbasin 10

Soil/Surface Description	Area (acres)	Soil Group	CN
Paved roads with open ditches, 50% imp	0.18	D	93.00
Composite Area & Weighted CN	0.18		93.00

Subbasin 11

Soil/Surface Description	Area (acres)	Soil Group	CN
50 - 75% grass cover, Fair	0.00	D	84.00
Paved roads with open ditches, 50% imp	0.26	D	93.00
Composite Area & Weighted CN	0.26		93.00

Subbasin 12

Soil/Surface Description	Area (acres)	Soil Group	CN
Paved roads with open ditches, 50% imp	0.05	D	93.00
Composite Area & Weighted CN	0.05		93.00

Subbasin 13

Soil/Surface Description	Area (acres)	Soil Group	CN
Paved roads with open ditches, 50% imp	0.35	D	93.00
Composite Area & Weighted CN	0.35		93.00

Subbasin 14

Soil/Surface Description	Area (acres)	Soil Group	CN
Paved roads with open ditches, 50% imp	0.07	D	93.00
Composite Area & Weighted CN	0.07		93.00

Subbasin 15

Soil/Surface Description	Area (acres)	Soil Group	CN
Paved roads with curbs & sewers	0.28	D	98.00
Composite Area & Weighted CN	0.28		98.00

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SCS TR-55 Time of Concentration Computations Report
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Sheet Flow Equation

Tc = (0.007 * ((n * Lf)^0.8)) / ((P^0.5) * (Sf^0.4))

Where:

Tc = Time of Concentration (hrs)
n = Manning's Roughness
Lf = Flow Length (ft)
P = 2 yr, 24 hr Rainfall (inches)
Sf = Slope (ft/ft)

Shallow Concentrated Flow Equation

V = 16.1345 * (Sf^0.5) (unpaved surface)
V = 20.3282 * (Sf^0.5) (paved surface)
V = 15.0 * (Sf^0.5) (grassed waterway surface)
V = 10.0 * (Sf^0.5) (nearly bare & untilled surface)
V = 9.0 * (Sf^0.5) (cultivated straight rows surface)
V = 7.0 * (Sf^0.5) (short grass pasture surface)
V = 5.0 * (Sf^0.5) (woodland surface)
V = 2.5 * (Sf^0.5) (forest w/heavy litter surface)
Tc = (Lf / V) / (3600 sec/hr)

Where:

Tc = Time of Concentration (hrs)
Lf = Flow Length (ft)
V = Velocity (ft/sec)
Sf = Slope (ft/ft)

Channel Flow Equation

V = (1.49 * (R^(2/3)) * (Sf^0.5)) / n
R = Aq / Wp
Tc = (Lf / V) / (3600 sec/hr)

Where:

Tc = Time of Concentration (hrs)

Lf = Flow Length (ft)
R = Hydraulic Radius (ft)
Aq = Flow Area (ft²)
Wp = Wetted Perimeter (ft)
V = Velocity (ft/sec)
Sf = Slope (ft/ft)
n = Manning's Roughness

Subbasin 01

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	100.00	0.00	0.00
Slope (%):	1.46	0.00	0.00
2 yr, 24 hr Rainfall (in):	1.90	1.90	1.90
Velocity (ft/sec):	1.01	0.00	0.00
Computed Flow Time (minutes):	1.65	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	1315.00	0.00	0.00
Slope (%):	0.82	0.00	0.00
Surface Type:	Unpaved	Unpaved	Unpaved
Velocity (ft/sec):	1.46	0.00	0.00
Computed Flow Time (minutes):	15.01	0.00	0.00

Total TOC (minutes):	16.66

Subbasin 02

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	50.00	0.00	0.00
Slope (%):	2.89	0.00	0.00
2 yr, 24 hr Rainfall (in):	1.90	1.90	1.90
Velocity (ft/sec):	1.15	0.00	

0.00

Computed Flow Time (minutes):	0.72	0.00	

0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	1060.00	0.00	0.00
Slope (%):	1.09	0.00	0.00
Surface Type:	Unpaved	Unpaved	Unpaved
Velocity (ft/sec):	1.68	0.00	0.00
Computed Flow Time (minutes):	10.52	0.00	0.00

Channel Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	420.00	0.00	0.00
Channel Slope (%):	0.50	0.00	0.00
Cross Section Area (ft²):	0.79	0.00	0.00
Wetted Perimeter (ft):	0.26	0.00	0.00
Velocity (ft/sec):	22.10	0.00	0.00
Computed Flow Time (minutes):	0.32	0.00	0.00

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Total TOC (minutes):	11.55

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Subbasin 03

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	50.00	0.00	0.00
Slope (%):	1.42	0.00	0.00
2 yr, 24 hr Rainfall (in):	1.90	1.90	1.90
Velocity (ft/sec):	0.87	0.00	0.00
Computed Flow Time (minutes):	0.96	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	1446.00	0.00	0.00
Slope (%):	0.91	0.00	0.00
Surface Type:	Grassed waterway	Unpaved	Unpaved
Velocity (ft/sec):	1.43	0.00	0.00
Computed Flow Time (minutes):	16.85	0.00	0.00

Total TOC (minutes): 17.81

Subbasin 04

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	160.00	0.00	0.00
Slope (%):	0.59	0.00	0.00
2 yr, 24 hr Rainfall (in):	1.90	1.90	1.90
Velocity (ft/sec):	0.77	0.00	0.00
Computed Flow Time (minutes):	3.46	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	1243.00	0.00	0.00
Slope (%):	0.82	0.00	0.00
Surface Type:	Paved	Unpaved	Unpaved
Velocity (ft/sec):	1.84	0.00	0.00
Computed Flow Time (minutes):	11.26	0.00	0.00

Total TOC (minutes): 14.72

Subbasin 05

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	160.00	0.00	0.00
Slope (%):	0.52	0.00	0.00
2 yr, 24 hr Rainfall (in):	1.90	1.90	1.90
Velocity (ft/sec):	0.73	0.00	0.00
Computed Flow Time (minutes):	3.64	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	428.00	0.00	0.00
Slope (%):	2.17	0.00	0.00
Surface Type:	Grassed waterway	Unpaved	Unpaved
Velocity (ft/sec):	2.21	0.00	0.00
Computed Flow Time (minutes):	3.23	0.00	0.00

Channel Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.27	0.00	0.00
Flow Length (ft):	1155.00	0.00	0.00
Channel Slope (%):	0.13	0.00	0.00
Cross Section Area (ft²):	85.00	0.00	0.00
Wetted Perimeter (ft):	31.30	0.00	0.00
Velocity (ft/sec):	0.39	0.00	0.00
Computed Flow Time (minutes):	49.70	0.00	0.00

Total TOC (minutes):	56.57

Subbasin 06

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	120.00	0.00	0.00

Slope (%):	0.61	0.00	0.00
2 yr, 24 hr Rainfall (in):	1.90	1.90	1.90
Velocity (ft/sec):	0.74	0.00	0.00
Computed Flow Time (minutes):	2.71	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	977.00	0.00	0.00
Slope (%):	0.62	0.00	0.00
Surface Type:	Paved	Unpaved	Unpaved
Velocity (ft/sec):	1.60	0.00	0.00
Computed Flow Time (minutes):	10.18	0.00	0.00

Total TOC (minutes):	12.89

Subbasin 07

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	50.00	0.00	0.00
Slope (%):	4.64	0.00	0.00
2 yr, 24 hr Rainfall (in):	1.90	1.90	1.90
Velocity (ft/sec):	1.39	0.00	0.00
Computed Flow Time (minutes):	0.60	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	942.00	0.00	0.00
Slope (%):	0.48	0.00	0.00
Surface Type:	Unpaved	Unpaved	Unpaved
Velocity (ft/sec):	1.12	0.00	0.00
Computed Flow Time (minutes):	14.02	0.00	0.00

Total TOC (minutes):	14.62		

Subbasin 08

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	257.00	0.00	0.00
Slope (%):	1.32	0.00	0.00
2 yr, 24 hr Rainfall (in):	1.90	1.90	1.90
Velocity (ft/sec):	1.17	0.00	0.00
Computed Flow Time (minutes):	3.66	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	896.00	0.00	0.00
Slope (%):	0.78	0.00	0.00
Surface Type:	Paved	Unpaved	Unpaved
Velocity (ft/sec):	1.80	0.00	0.00
Computed Flow Time (minutes):	8.30	0.00	0.00

Total TOC (minutes):	11.96

Subbasin 09

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	74.00	0.00	0.00
Slope (%):	1.16	0.00	0.00
2 yr, 24 hr Rainfall (in):	1.90	1.90	1.90
Velocity (ft/sec):	0.87	0.00	0.00
Computed Flow Time (minutes):	1.42	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	326.00	0.00	0.00
Slope (%):	1.15	0.00	0.00
Surface Type:	Paved	Unpaved	Unpaved
Velocity (ft/sec):	2.18	0.00	0.00
Computed Flow Time (minutes):	2.49	0.00	0.00

Channel Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.27	0.00	0.00
Flow Length (ft):	410.00	0.00	0.00
Channel Slope (%):	0.61	0.00	0.00
Cross Section Area (ft²):	2.00	0.00	0.00
Wetted Perimeter (ft):	8.50	0.00	0.00
Velocity (ft/sec):	0.16	0.00	0.00
Computed Flow Time (minutes):	41.60	0.00	0.00

Total TOC (minutes):	45.51

Subbasin 10

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	39.00	0.00	0.00
Slope (%):	1.45	0.00	0.00
2 yr, 24 hr Rainfall (in):	1.90	1.90	1.90
Velocity (ft/sec):	0.83	0.00	0.00
Computed Flow Time (minutes):	0.78	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	12.00	0.00	

0.00			
Slope (%):	2.47	0.00	
0.00			
Surface Type:	Unpaved	Unpaved	
Unpaved			
Velocity (ft/sec):	2.54	0.00	
0.00			
Computed Flow Time (minutes):	0.08	0.00	
0.00			

Total TOC (minutes):	0.86

Subbasin 11

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	80.00	0.00	0.00
Slope (%):	1.48	0.00	0.00
2 yr, 24 hr Rainfall (in):	1.90	1.90	1.90
Velocity (ft/sec):	0.97	0.00	0.00
Computed Flow Time (minutes):	1.37	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	206.00	0.00	0.00
Slope (%):	0.46	0.00	0.00
Surface Type:	Paved	Unpaved	Unpaved
Velocity (ft/sec):	1.38	0.00	0.00
Computed Flow Time (minutes):	2.49	0.00	0.00

Channel Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.27	0.00	0.00
Flow Length (ft):	9.00	0.00	0.00
Channel Slope (%):	0.57	0.00	0.00
Cross Section Area (ft²):	5.80	0.00	0.00
Wetted Perimeter (ft):	6.80	0.00	0.00
Velocity (ft/sec):	0.37	0.00	

0.00

Computed Flow Time (minutes):	0.40	0.00	

0.00

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Total TOC (minutes): 4.26

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Subbasin 12

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	28.00	0.00	0.00
Slope (%):	1.31	0.00	0.00
2 yr, 24 hr Rainfall (in):	1.90	1.90	1.90
Velocity (ft/sec):	0.75	0.00	0.00
Computed Flow Time (minutes):	0.62	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	4.00	0.00	0.00
Slope (%):	9.15	0.00	0.00
Surface Type:	Unpaved	Unpaved	Unpaved
Velocity (ft/sec):	4.88	0.00	0.00
Computed Flow Time (minutes):	0.01	0.00	0.00

Channel Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.27	0.00	0.00
Flow Length (ft):	55.50	0.00	0.00
Channel Slope (%):	0.51	0.00	0.00
Cross Section Area (ft²):	4.50	0.00	0.00
Wetted Perimeter (ft):	7.70	0.00	0.00
Velocity (ft/sec):	0.28	0.00	0.00
Computed Flow Time (minutes):	3.36	0.00	0.00

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Total TOC (minutes): 3.99

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Subbasin 13

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	156.00	0.00	0.00
Slope (%):	1.05	0.00	0.00
2 yr, 24 hr Rainfall (in):	1.90	1.90	1.90
Velocity (ft/sec):	0.97	0.00	0.00
Computed Flow Time (minutes):	2.69	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	18.50	0.00	0.00
Slope (%):	21.70	0.00	0.00
Surface Type:	Unpaved	Unpaved	Unpaved
Velocity (ft/sec):	7.52	0.00	0.00
Computed Flow Time (minutes):	0.04	0.00	0.00

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Total TOC (minutes): 2.73

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Subbasin 14

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	14.00	0.00	0.00
Slope (%):	0.64	0.00	0.00
2 yr, 24 hr Rainfall (in):	1.90	1.90	1.90
Velocity (ft/sec):	0.49	0.00	0.00
Computed Flow Time (minutes):	0.48	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	22.00	0.00	0.00
Slope (%):	7.00	0.00	0.00
Surface Type:	Unpaved	Unpaved	Unpaved
Velocity (ft/sec):	4.27	0.00	0.00
Computed Flow Time (minutes):	0.09	0.00	0.00
Total TOC (minutes):	0.56		

Subbasin 15

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	25.50	0.00	0.00
Slope (%):	2.54	0.00	0.00
2 yr, 24 hr Rainfall (in):	1.90	1.90	1.90
Velocity (ft/sec):	0.96	0.00	0.00
Computed Flow Time (minutes):	0.44	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	414.00	0.00	0.00
Slope (%):	1.20	0.00	0.00
Surface Type:	Unpaved	Unpaved	Unpaved
Velocity (ft/sec):	1.77	0.00	0.00
Computed Flow Time (minutes):	3.90	0.00	0.00
Total TOC (minutes):	4.34		

Subbasin Runoff Summary

Subbasin ID	Total Precip in	Total Runoff in	Peak Runoff cfs	Weighted Curve Number	Time of Concentration days	Time of Concentration hh:mm:ss
01	2.60	1.87	1.42	93.000	0	00:16:39
02	2.60	1.40	21.32	87.000	0	00:11:33
03	2.60	1.40	8.19	87.000	0	00:17:48
04	2.60	1.40	9.37	87.000	0	00:14:43
05	2.60	1.40	8.47	87.000	0	00:56:34
06	2.60	1.40	9.13	87.000	0	00:12:53
07	2.60	1.40	5.75	87.000	0	00:14:37
08	2.60	1.40	8.82	87.000	0	00:11:57
09	2.60	1.40	2.23	87.000	0	00:45:30
10	2.60	1.87	0.52	93.000	0	00:05:00
11	2.60	1.87	0.76	93.000	0	00:05:00
12	2.60	1.84	0.15	93.000	0	00:05:00
13	2.60	1.87	1.02	93.000	0	00:05:00
14	2.60	1.86	0.20	93.000	0	00:05:00
15	2.60	2.37	0.95	98.000	0	00:05:00

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Node Depth Summary
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Node ID	Average Depth Attained ft	Maximum Depth Attained ft	Maximum HGL Attained ft	Time of Max Occurrence days	Time of Max Occurrence hh:mm	Total Flooded Volume acre-in	Total Time Flooded minutes	Retention Time hh:mm:ss
Jun-01	0.14	1.33	2093.98	0	00:18	0	0	0:00:00
Jun-06	0.08	0.25	2104.79	0	12:15	0	0	0:00:00
Jun-07	0.25	2.44	2105.14	0	00:00	0	0	0:00:00
Jun-08	28.03	155.75	2259.33	0	12:27	0.67	141	0:00:00
Jun-10	2.31	13.25	2116.68	0	12:15	0.11	67	0:00:00
Jun-13	4.14	20.25	2123.89	0	12:35	0.10	79	0:00:00
Jun-16	0.47	0.77	2101.59	0	12:18	0	0	0:00:00
Jun-17	0.38	5.61	2102.48	0	12:06	0	0	0:00:00
Jun-18	0.06	3.29	2102.63	0	12:06	0.00	0	0:00:00
Jun-19	0.90	3.34	2102.78	0	12:06	0.00	0	0:00:00
Jun-20	0.21	1.26	2088.95	0	01:07	0	0	0:00:00
Jun-21	0.51	2.49	2106.71	0	12:07	0.00	2	0:00:00
Jun-22	0.46	2.52	2106.75	0	12:04	0.01	3	0:00:00
Jun-27	3.07	4.02	2101.50	0	12:13	6.70	155	0:00:00
Jun-30	0.43	5.86	2094.31	0	00:05	0	0	0:00:00
Jun-31	0.35	6.67	2097.65	0	12:05	0.00	0	0:00:00
Jun-32	9.55	101.53	2204.00	0	12:13	0.43	101	0:00:00
Jun-33	0.00	0.00	2087.69	0	00:00	0	0	0:00:00
Jun-34	0.01	4.34	2093.40	0	00:10	0	0	0:00:00
Jun-35	0.00	0.00	2095.64	0	00:00	0	0	0:00:00
Jun-36	0.00	0.00	2096.42	0	00:00	0	0	0:00:00
Jun-37	0.00	0.00	2095.96	0	00:00	0	0	0:00:00
Jun-38	0.00	0.00	2094.90	0	00:00	0	0	0:00:00
Jun-39	0.00	0.00	2096.23	0	00:00	0	0	0:00:00
Jun-40	0.20	2.18	2106.95	0	12:07	0.02	14	0:00:00
Jun-41	38.20	432.07	2535.36	0	12:11	2.14	139	0:00:00
Jun-42	1.47	11.30	2113.99	0	12:10	0.10	49	0:00:00
Jun-43	0.40	6.87	2107.52	0	12:08	0.04	16	0:00:00
Jun-44	0.40	6.85	2107.52	0	12:08	0.03	15	0:00:00
Jun-45	2.18	13.99	2118.66	0	12:36	0.09	68	0:00:00
Jun-46	54.84	350.93	2454.24	0	12:16	1.37	908	0:00:00
OUT-A	0.21	1.09	2081.09	0	01:07	0	0	0:00:00
OUT-B	0.32	1.50	2089.97	0	12:04	0	0	0:00:00
OUT-C	0.23	0.56	2100.56	0	12:39	0	0	0:00:00

OUT-D	0.00	0.00	2105.74	0	00:00	0	0	0:00:00
OUT-E	0.54	1.00	2103.17	0	11:49	0	0	0:00:00
Jun-15	0.79	2.63	2106.76	0	12:24	0	0	0:00:00
Jun-28	0.46	1.43	2104.70	0	12:35	0	0	0:00:00
Stor-05	2.37	10.40	2113.96	0	12:37	0.06	63	0:00:00
Stor-06	2.00	5.73	2108.91	0	12:37	0.02	41	0:00:00
Stor-07	0.30	0.80	2102.99	0	12:39	0	0	0:00:00

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Node Flow Summary
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Node ID	Element Type	Maximum Lateral Inflow cfs	Peak Inflow cfs	Time of Peak Inflow Occurrence days	hh:mm	Maximum Flooding Overflow cfs	Time of Peak Flooding Occurrence days	hh:mm
Jun-01	JUNCTION	0.00	1.24	0	14:28	0.00		
Jun-06	JUNCTION	0.00	6.93	0	12:15	0.00		
Jun-07	JUNCTION	0.00	17.00	0	12:11	0.00		
Jun-08	JUNCTION	0.00	4.61	0	12:13	1.82	0	12:11
Jun-10	JUNCTION	0.00	6.97	0	12:13	0.46	0	12:05
Jun-13	JUNCTION	8.42	8.42	0	12:30	0.35	0	12:23
Jun-16	JUNCTION	0.76	46.51	0	00:02	0.00		
Jun-17	JUNCTION	0.00	8.83	0	12:06	0.00		
Jun-18	JUNCTION	0.00	0.97	0	12:05	0.22	0	12:06
Jun-19	JUNCTION	0.00	0.74	0	12:06	0.26	0	12:06
Jun-20	JUNCTION	0.00	35.82	0	01:07	0.00		
Jun-21	JUNCTION	0.00	1.60	0	12:07	0.18	0	12:07
Jun-22	JUNCTION	0.52	1.95	0	12:05	1.29	0	12:05
Jun-27	JUNCTION	0.00	27.38	0	12:19	26.14	0	12:19
Jun-30	JUNCTION	0.00	70.46	0	00:05	0.00		
Jun-31	JUNCTION	0.00	8.43	0	12:08	1.34	0	12:05
Jun-32	JUNCTION	8.16	8.16	0	12:10	1.99	0	12:05
Jun-33	JUNCTION	0.00	0.00	0	00:00	0.00		
Jun-34	JUNCTION	0.00	20.11	0	00:37	0.00		
Jun-35	JUNCTION	0.00	0.00	0	00:00	0.00		
Jun-36	JUNCTION	0.00	0.00	0	00:00	0.00		
Jun-37	JUNCTION	0.00	0.00	0	00:00	0.00		
Jun-38	JUNCTION	0.00	0.00	0	00:00	0.00		
Jun-39	JUNCTION	0.00	0.00	0	00:00	0.00		
Jun-40	JUNCTION	1.39	1.39	0	12:10	0.58	0	12:03
Jun-41	JUNCTION	21.27	21.27	0	12:05	9.10	0	12:02
Jun-42	JUNCTION	5.51	7.99	0	12:10	0.69	0	12:05
Jun-43	JUNCTION	8.76	9.17	0	12:04	0.96	0	12:04
Jun-44	JUNCTION	0.95	0.95	0	12:00	0.41	0	12:05
Jun-45	JUNCTION	0.00	8.35	0	12:35	0.39	0	12:22
Jun-46	JUNCTION	8.97	8.97	0	12:05	5.31	0	12:05
OUT-A	OUTFALL	0.00	32.00	0	01:07	0.00		
OUT-B	OUTFALL	0.00	8.43	0	12:08	0.00		
OUT-C	OUTFALL	0.00	13.05	0	12:39	0.00		
OUT-D	OUTFALL	0.20	0.20	0	12:00	0.00		
OUT-E	OUTFALL	0.00	7.83	0	12:10	0.00		
Jun-15	STORAGE	10.24	10.24	0	12:10	0.00		
Jun-28	STORAGE	0.00	4.87	0	12:24	0.00		
Stor-05	STORAGE	0.00	8.31	0	12:35	0.42	0	12:21
Stor-06	STORAGE	0.00	8.30	0	12:36	1.44	0	12:21
Stor-07	STORAGE	1.17	13.09	0	12:36	0.00		

****
Storage Node Summary
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Storage Node ID	Maximum Ponded Volume 1000 ft³	Maximum Ponded (%)	Time of Max Ponded days hh:mm	Average Ponded Volume 1000 ft³	Average Ponded (%)	Maximum Storage Node Outflow cfs	Maximum Exfiltration Rate cfm	Total Exfiltrated Volume 1000 ft³
Jun-15	8.857	95	0 12:24	2.647	28	4.87	0.00	0.000
Jun-28	1.144	41	0 12:35	0.366	13	4.71	0.00	0.000
Stor-05	0.316	100	0 12:12	0.186	59	8.30	0.00	0.000
Stor-06	2.257	100	0 12:21	1.262	56	8.29	0.00	0.000
Stor-07	2.550	18	0 12:39	0.966	7	13.05	0.00	0.000

****
Outfall Loading Summary
****

Outfall Node ID	Flow Frequency (%)	Average Flow cfs	Peak Inflow cfs
OUT-A	99.94	1.15	32.00
OUT-B	98.79	1.00	8.43
OUT-C	97.08	3.78	13.05
OUT-D	97.05	0.02	0.20
OUT-E	96.66	1.66	7.83
System	97.90	7.61	32.00

****
Link Flow Summary
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Link ID	Element Type	Time of Peak Flow Occurrence days hh:mm	Maximum Velocity Attained ft/sec	Length Factor	Peak Flow during Analysis cfs	Design Flow Capacity cfs	Ratio of Maximum /Design Flow	Total Reported Time Condition	Maximum Depth	Surcharged minutes
09+89_OFF13.1RT-10+13_OFF13.2RT	CONDUIT	0 12:07	4.58	1.00	1.60	1.59	1.01	1.00	21 SURCHARGED	
10+13_OFF13.2RT-10+40_OFF22.8RT	CONDUIT	0 12:07	4.59	1.00	1.60	0.19	8.65	1.00	35 SURCHARGED	
11+37_OFF15.6LT-11+68_OFF12.8RT	CONDUIT	0 12:11	>50.00	1.00	15.33	0.51	29.88	1.00	30 SURCHARGED	

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  13+36_OFF49.2LT-13+44_OFF16.6RT CONDUIT      0  12:13     35.52    1.00        6.97        0.44
15.85      1.00          261  SURCHARGED
  13+36_OFF49.2LT-13+69_OFF48.9LT CONDUIT      0  12:15     13.45    1.00        6.93        2.88
2.40      0.62           0  > CAPACITY
  17+74_OFF17.2LT-18+32_OFF16.5LT CONDUIT      0  12:24      6.31    1.00        4.87        2.25
2.17      0.95           0  > CAPACITY
  18+55_OFF29.0RT-18+57_OFF15.8LT CONDUIT      0  12:35      6.72    1.00        4.71        4.78
0.98      0.90           0  Calculated
  18+85_OFF31.8RT-19+15_OFF30.1RT CONDUIT      0  12:37     10.56    1.00        8.29        3.04
2.73      1.00          34  SURCHARGED
  19+61_OFF28.6RT-20+18_OFF24.0RT CONDUIT      0  12:36     10.56    1.00        8.30        2.81
2.96      1.00         513  SURCHARGED
  20+21_OFF19.4RT-20+38_OFF18.2LT CONDUIT      0  12:35     10.58    1.00        8.31        2.85
2.91      1.00          96  SURCHARGED
  20+38_OFF18.2LT-20+77_OFF37.1LT CONDUIT      0  12:35     10.64    1.00        8.35        2.85
2.93      1.00          94  SURCHARGED
  24+02_OFF34.2LT-24+25_OFF24.6LT CONDUIT      0  12:13    >50.00    1.00        4.61        0.03
139.89      1.00         925  SURCHARGED
  24+25_OFF24.6LT-24+53_OFF28.8LT CONDUIT      0  12:27     40.21    1.00        3.51        0.47
7.54      1.00          162  SURCHARGED
  24+53_OFF28.8LT-28.5RT CONDUIT      0  12:10      9.97    1.00        7.83        1.85
4.22      1.00          94  SURCHARGED
  27+57_OFF15.4LT-27+96_OFF0.4LT CONDUIT      0  12:06     11.25    1.00        8.83        6.99
1.26      1.00          14  SURCHARGED
  27+57_OFF21.2RT-15.4LT CONDUIT      0  11:57      1.17    1.00        0.92        0.77
1.18      1.00          16  SURCHARGED
  27+96_OFF0.4LT-356RT CONDUIT      0  12:08      6.87    1.00        8.43        7.20      1.17
1.00          13  SURCHARGED
  27+96_OFF356RT-745RT CONDUIT      0  12:08      4.77    1.00        8.43        7.31      1.15
1.00           9  SURCHARGED
  Avista_Pipe1          CONDUIT      0  14:28      3.77    1.00        1.24        0.90      1.37
0.90           0  > CAPACITY
  Avista_Pipe2          CONDUIT      0  00:05    >50.00    1.00       70.46       24.82      2.84
0.84           0  > CAPACITY
  Ditch1                CHANNEL      0  12:04      1.76    1.00        1.99        1.21      1.64
0.87           0  > CAPACITY
  Ditch2                CHANNEL      0  00:02      5.79    1.00       46.51       61.30      0.76
0.69           0  Calculated
  Ditch3                CHANNEL      0  12:15      1.25    1.00        6.92      344.44      0.02
0.34           0  Calculated
  Ditch4                CHANNEL      0  12:19      1.98    1.00       27.38      421.47      0.06
0.69           0  Calculated
  Ditch5                CHANNEL      0  12:39     11.46    1.00       13.05       39.87      0.33
0.68           0  Calculated
  Lateral1-Division     CONDUIT      0  12:06      1.63    1.00        0.74        1.97      0.37
1.00           5  SURCHARGED
  Lateral2-Division     CONDUIT      0  12:05      1.62    1.00        0.97        6.86      0.14
1.00           8  SURCHARGED
  Lateral-Pine1         CONDUIT      0  00:00      0.00    1.00        0.00        5.45      0.00
0.00           0  Calculated
  Lateral-Pine2         CONDUIT      0  00:00      0.00    1.00        0.00        1.74      0.00
0.00           0  Calculated
  Lateral-Pine3         CONDUIT      0  00:00      0.00    1.00        0.00        7.69      0.00
0.00           0  Calculated
  Lateral-Pine4         CONDUIT      0  00:00      0.00    1.00        0.00        7.84      0.00
0.00           0  Calculated
  Lateral-Pine5         CONDUIT      0  00:00      0.00    1.00        0.00        6.33      0.00
0.00           0  Calculated
  Pine_Main1            CONDUIT      0  00:37      3.89    1.00       20.11        8.88      2.26
1.00           1  SURCHARGED
  Pine_Main2            CONDUIT      0  01:07      8.33    1.00       35.82       28.17      1.27
0.67           0  > CAPACITY
  Pine_Main3            CONDUIT      0  01:07     12.76    1.00       32.00      113.35      0.28
0.39           0  Calculated


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Highest Flow Instability Indexes
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Link Avista_Pipe2 (3)
Link 10+13_OFF13.2RT-10+40_OFF22.8RT (1)

Analysis began on: Wed Dec 11 08:13:59 2024
Analysis ended on: Wed Dec 11 08:14:03 2024
Total elapsed time: 00:00:04

Autodesk® Storm and Sanitary Analysis 2016 - Version 13.4.304 (Build 0)

****
Project Description
****
File Name ..... M24005 Proposed V.6 10-yr (east of Avista).SPF

****
Analysis Options
****
Flow Units ..... cfs
Subbasin Hydrograph Method. SCS TR-55
Time of Concentration..... SCS TR-55
Link Routing Method ..... Hydrodynamic
Storage Node Exfiltration.. Constant flow
Starting Date JUN-24-2024 00:00:00
Ending Date JUN-25-2024 00:00:00
Report Time Step 00:05:00

****
Element Count
****
Number of rain gages 1
Number of subbasins 20
Number of nodes 67
Number of links 64

****
Raingage Summary
****

Gage ID	Data Source	Data Type	Recording Interval min
Rain Gage-01	TS-10	CUMULATIVE	6.00

****
Subbasin Summary
****

Subbasin ID	Total Area acres	Peak Rate Factor
01-A	0.65	484.00
02-A	11.17	484.00
03-A	4.88	484.00
04-A	5.94	484.00
05-A	11.09	484.00
06-A	4.08	484.00
07-A	3.49	484.00
08-A	4.35	484.00
09-A	1.58	484.00
10-A	0.24	484.00
11-A	0.20	484.00
12-A	0.20	484.00
13-A	0.21	484.00
14-A	0.25	484.00
15-A	0.25	484.00
16-A	0.26	484.00
17-A	0.27	484.00
18-A	0.26	484.00

19-A	0.11	484.00
20-A	0.15	484.00

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Node Summary
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Node ID	Element Type	Invert Elevation ft	Maximum Elev. ft	Ponded Area ft²	External Inflow
Inlet-01	JUNCTION	2099.72	2102.70	0.00	
Inlet-02	JUNCTION	2099.72	2102.43	0.00	
Inlet-04	JUNCTION	2102.50	2105.71	0.00	
Inlet-11	JUNCTION	2102.44	2105.62	0.00	
Inlet-12	JUNCTION	2102.71	2106.71	0.00	
Inlet-13	JUNCTION	2096.23	2099.83	0.00	
Inlet-14	JUNCTION	2094.90	2098.72	0.00	
Inlet-15	JUNCTION	2095.96	2099.61	0.00	
Inlet-16	JUNCTION	2096.42	2100.33	0.00	
Inlet-17	JUNCTION	2095.64	2099.26	0.00	
Inlet-18	JUNCTION	2089.06	2098.52	0.00	
Inlet-33	JUNCTION	0.00	0.67	0.00	
Jun-01	JUNCTION	2088.60	2098.79	0.00	
Jun-06	JUNCTION	2093.14	2106.33	0.00	
Jun-07	JUNCTION	2102.44	2105.70	0.00	
Jun-08	JUNCTION	2103.25	2106.56	0.00	
Jun-10	JUNCTION	2103.20	2105.70	0.00	
Jun-13	JUNCTION	2103.01	2107.17	0.00	
Jun-16	JUNCTION	2100.82	2102.82	0.00	
Jun-17	JUNCTION	2096.87	2103.65	0.00	
Jun-18	JUNCTION	2099.34	2102.62	0.00	
Jun-19	JUNCTION	2099.44	2102.77	0.00	
Jun-20	JUNCTION	2087.69	2099.82	0.00	
Jun-21	JUNCTION	2095.00	2106.71	0.00	
Jun-22	JUNCTION	2105.52	2106.52	0.00	
Jun-27	JUNCTION	2097.48	2101.50	0.00	
Jun-30	JUNCTION	2088.45	2098.50	0.00	
Jun-31	JUNCTION	2095.25	2106.69	0.00	
Jun-32	JUNCTION	2102.46	2106.83	0.00	
Jun-33	JUNCTION	2097.80	2106.70	0.00	
Jun-34	JUNCTION	2102.47	2105.97	0.00	
Jun-35	JUNCTION	2090.98	2097.65	0.00	
Jun-37	JUNCTION	2103.65	2104.98	0.00	
Jun-38	JUNCTION	2096.00	2107.00	0.00	
Jun-39	JUNCTION	2103.57	2106.86	0.00	
Jun-40	JUNCTION	2096.92	2106.86	0.00	
Jun-41	JUNCTION	2103.57	2106.57	0.00	
Jun-43	JUNCTION	2094.52	2108.25	0.00	
Jun-44	JUNCTION	2102.90	2107.54	0.00	
Jun-45	JUNCTION	2103.60	2107.12	0.00	
Jun-46	JUNCTION	2104.10	2107.11	0.00	
Jun-47	JUNCTION	2103.77	2106.77	0.00	
Jun-48	JUNCTION	2093.38	2106.99	0.00	
Jun-49	JUNCTION	2103.77	2106.48	0.00	
Jun-50	JUNCTION	2102.50	2106.33	0.00	
Jun-51	JUNCTION	2099.00	2103.15	0.00	
Jun-52	JUNCTION	2102.46	2106.69	0.00	
Jun-53	JUNCTION	2104.81	2105.81	0.00	
Jun-54	JUNCTION	2094.00	2106.71	0.00	
Jun-55	JUNCTION	2090.49	2102.00	0.00	
Jun-63	JUNCTION	2096.00	2107.82	0.00	
Jun-64	JUNCTION	2095.00	2103.43	0.00	
Out-01	OUTFALL	2087.00	2090.45	0.00	
Out-02	OUTFALL	2088.47	2089.97	0.00	
Stor-01	STORAGE	2102.10	2103.35	10.00	
Stor-10	STORAGE	2101.97	2103.22	10.00	

Stor-12	STORAGE	2104.19	2105.44	10.00
Stor-13	STORAGE	2105.82	2106.09	10.00
Stor-14	STORAGE	2106.35	2106.61	10.00
Stor-15	STORAGE	2105.70	2106.43	10.00
Stor-16	STORAGE	2105.69	2106.42	10.00
Stor-17	STORAGE	2106.37	2107.62	10.00
Stor-18	STORAGE	2106.88	2107.22	10.00
Stor-19	STORAGE	2105.73	2106.98	10.00
Stor-20	STORAGE	2105.02	2106.27	10.00
Stor-21	STORAGE	2105.34	2105.60	10.00
Stor-22	STORAGE	2105.35	2105.61	10.00

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Link Summary
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Link ID	From Node	To Node	Element Type	Length ft	Slope %	Manning's Roughness
09+89-10+13	Inlet-12	Jun-64	CONDUIT	24.0	2.5417	0.0150
10+13_OFF2.0RT-13.1RT	Jun-64	Jun-21	CONDUIT	11.0	0.9091	0.0150
10+13-11+70	Jun-21	Jun-54	CONDUIT	157.0	0.6369	0.0150
11+70-13+44	Jun-54	Jun-06	CONDUIT	180.0	0.4778	0.0150
13+44-14+01	Jun-48	Jun-06	CONDUIT	57.0	0.4211	0.0150
14+01-16+96	Jun-43	Jun-48	CONDUIT	275.0	0.4145	0.0150
16+96-18+56	Jun-31	Jun-43	CONDUIT	181.0	0.4033	0.0150
18+56-20+29	Jun-63	Jun-31	CONDUIT	173.0	0.4335	0.0150
20+29-20+77	Jun-38	Jun-63	CONDUIT	48.0	0.4167	0.0150
20+77-22+51	Jun-40	Jun-38	CONDUIT	174.0	0.4138	0.0150
22+51-24+38	Jun-33	Jun-40	CONDUIT	204.0	0.4314	0.0150
24+38-27+57	Jun-51	Jun-33	CONDUIT	303.0	0.3960	0.0150
Ditch1	Jun-22	Jun-53	CHANNEL	123.0	0.5772	0.0320
Ditch2	Jun-53	Jun-16	CHANNEL	170.9	2.3340	0.0320
Ditch3	Jun-50	Jun-16	CHANNEL	168.5	0.9970	0.0320
Ditch4	Jun-16	Jun-27	CHANNEL	474.5	0.7039	0.0320
Ditch5	Jun-27	Jun-55	CONDUIT	84.0	2.9524	0.0150
Division_Main1	Jun-17	Jun-35	CONDUIT	356.0	1.6545	0.0150
Division_Main2	Jun-35	Out-02	CONDUIT	389.0	0.6452	0.0150
Lateral1	Jun-07	Jun-54	CONDUIT	14.0	1.7143	0.0150
Lateral10	Jun-32	Jun-31	CONDUIT	15.0	1.7333	0.0150
Lateral11	Jun-52	Jun-31	CONDUIT	18.0	1.4444	0.0150
Lateral12	Jun-13	Jun-38	CONDUIT	19.9	0.8564	0.0150
Lateral13	Jun-41	Jun-40	CONDUIT	15.0	2.4667	0.0150
Lateral14	Jun-39	Jun-40	CONDUIT	10.0	3.7000	0.0150
Lateral15	Jun-37	Jun-08	CONDUIT	20.0	2.0000	0.0150
Lateral16	Jun-08	Inlet-04	CONDUIT	21.0	3.5714	0.0150
Lateral17	Inlet-04	Jun-33	CONDUIT	17.0	1.4706	0.0150
Lateral18	Inlet-02	Jun-51	CONDUIT	14.0	2.6429	0.0150
Lateral19	Inlet-01	Jun-51	CONDUIT	14.0	2.6429	0.0150
Lateral2	Inlet-11	Jun-54	CONDUIT	14.0	1.7143	0.0150
Lateral3	Jun-34	Jun-10	CONDUIT	33.0	0.8182	0.0150
Lateral4	Jun-10	Jun-06	CONDUIT	52.0	2.3077	0.0150
Lateral5	Jun-47	Jun-48	CONDUIT	14.0	1.9286	0.0150
Lateral6	Jun-49	Jun-48	CONDUIT	14.0	1.9286	0.0150
Lateral7	Jun-46	Jun-45	CONDUIT	25.0	2.0000	0.0150
Lateral8	Jun-45	Jun-44	CONDUIT	32.0	2.1875	0.0150
Lateral9	Jun-44	Jun-43	CONDUIT	14.0	2.8571	0.0150
Lateral-Division1	Jun-19	Jun-18	CONDUIT	41.7	0.4077	0.0150
Lateral-Division2	Jun-18	Jun-17	CONDUIT	50.0	4.9400	0.0150
Lateral-Pine1	Inlet-14	Inlet-33	CONDUIT	28.0	7471.1127	0.0150
Lateral-Pine2	Inlet-15	Inlet-14	CONDUIT	38.3	2.7662	0.0150
Lateral-Pine3	Inlet-15	Inlet-17	CONDUIT	45.0	0.7111	0.0150
Lateral-Pine4	Inlet-13	Inlet-15	CONDUIT	46.0	0.5870	0.0150
Lateral-Pine5	Inlet-16	Inlet-13	CONDUIT	40.0	0.4750	0.0150
Main_EastofAvista1	Jun-06	Jun-55	CONDUIT	631.0	0.4200	0.0150
Main_EastofAvista2	Jun-55	Jun-01	CONDUIT	448.0	0.4219	0.0150

Main_EastofAvista3	Jun-01	Jun-30	CONDUIT	6.5	0.7692	0.0150
Pine_Main1	Inlet-18	Jun-30	CONDUIT	254.0	0.2402	0.0150
Pine_Main2	Jun-30	Jun-20	CONDUIT	320.0	0.2375	0.0150
PineMain3	Jun-20	Out-01	CONDUIT	100.0	0.2400	0.0150
Weir-01	Stor-17	Jun-45	WEIR			
Weir-02	Stor-22	Inlet-11	WEIR			
Weir-03	Stor-21	Jun-07	WEIR			
Weir-04	Stor-20	Jun-34	WEIR			
Weir-05	Stor-18	Jun-47	WEIR			
Weir-06	Stor-19	Jun-49	WEIR			
Weir-07	Stor-15	Jun-32	WEIR			
Weir-08	Stor-16	Jun-52	WEIR			
Weir-09	Stor-13	Jun-41	WEIR			
Weir-10	Stor-14	Jun-39	WEIR			
Weir-11	Stor-12	Jun-37	WEIR			
Weir-12	Stor-10	Inlet-02	WEIR			
Weir-13	Stor-01	Inlet-01	WEIR			

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Cross Section Summary
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Link ID	Shape	Depth/ Diameter ft	Width ft	No. of Barrels	Cross Sectional Area ft²	Full Flow Hydraulic Radius ft	Design Flow Capacity cfs
09+89-10+13	CIRCULAR	1.33	1.33	1	1.40	0.33	10.60
10+13_OFF2.0RT-13.1RT	CIRCULAR	2.50	2.50	1	4.91	0.63	33.89
10+13-11+70	CIRCULAR	2.50	2.50	1	4.91	0.63	28.37
11+70-13+44	CIRCULAR	2.50	2.50	1	4.91	0.63	24.57
13+44-14+01	CIRCULAR	2.50	2.50	1	4.91	0.63	23.07
14+01-16+96	CIRCULAR	2.50	2.50	1	4.91	0.63	22.89
16+96-18+56	CIRCULAR	2.50	2.50	1	4.91	0.63	22.58
18+56-20+29	CIRCULAR	2.50	2.50	1	4.91	0.63	23.41
20+29-20+77	CIRCULAR	2.50	2.50	1	4.91	0.63	22.95
20+77-22+51	CIRCULAR	2.50	2.50	1	4.91	0.63	22.87
22+51-24+38	CIRCULAR	2.50	2.50	1	4.91	0.63	23.35
24+38-27+57	CIRCULAR	2.00	2.00	1	3.14	0.50	12.34
Ditch1	TRIANGULAR	1.00	6.00	1	3.00	0.47	6.44
Ditch2	TRIANGULAR	1.00	40.00	1	20.00	0.50	89.31
Ditch3	PARABOLIC	1.50	50.00	1	50.00	1.00	231.47
Ditch4	TRAPEZOIDAL	2.00	72.00	1	92.00	1.28	421.47
Ditch5	CIRCULAR	1.25	1.25	1	1.23	0.31	9.62

Division_Main1	CIRCULAR	1.50	1.50	1	1.77	0.38	11.71
Division_Main2	CIRCULAR	1.50	1.50	1	1.77	0.38	7.31
Lateral1	CIRCULAR	1.33	1.33	1	1.40	0.33	8.71
Lateral10	CIRCULAR	1.33	1.33	1	1.40	0.33	8.75
Lateral11	CIRCULAR	1.33	1.33	1	1.40	0.33	7.99
Lateral12	CIRCULAR	2.50	2.50	1	4.91	0.63	32.90
Lateral13	CIRCULAR	1.33	1.33	1	1.40	0.33	10.44
Lateral14	CIRCULAR	1.33	1.33	1	1.40	0.33	12.79
Lateral15	CIRCULAR	1.33	1.33	1	1.40	0.33	9.40
Lateral16	CIRCULAR	1.33	1.33	1	1.40	0.33	12.57
Lateral17	CIRCULAR	1.33	1.33	1	1.40	0.33	8.06
Lateral18	CIRCULAR	1.33	1.33	1	1.40	0.33	10.81
Lateral19	CIRCULAR	1.33	1.33	1	1.40	0.33	10.81
Lateral2	CIRCULAR	1.33	1.33	1	1.40	0.33	8.71
Lateral3	CIRCULAR	1.50	1.50	1	1.77	0.38	8.23
Lateral4	CIRCULAR	1.50	1.50	1	1.77	0.38	13.83
Lateral5	CIRCULAR	1.33	1.33	1	1.40	0.33	9.23
Lateral6	CIRCULAR	1.33	1.33	1	1.40	0.33	9.23
Lateral7	CIRCULAR	1.33	1.33	1	1.40	0.33	9.40
Lateral8	CIRCULAR	1.33	1.33	1	1.40	0.33	9.84
Lateral9	CIRCULAR	1.33	1.33	1	1.40	0.33	11.24
Lateral-Division1	CIRCULAR	1.00	1.00	1	0.79	0.25	1.97
Lateral-Division2	CIRCULAR	1.00	1.00	1	0.79	0.25	6.86
Lateral-Pine1	CIRCULAR	0.67	0.67	1	0.35	0.17	90.52
Lateral-Pine2	CIRCULAR	0.67	0.67	1	0.35	0.17	1.74
Lateral-Pine3	CIRCULAR	1.50	1.50	1	1.77	0.38	7.68
Lateral-Pine4	CIRCULAR	1.50	1.50	1	1.77	0.38	6.97
Lateral-Pine5	CIRCULAR	1.50	1.50	1	1.77	0.38	6.27
Main_EastofAvista1	CIRCULAR	3.00	3.00	1	7.07	0.75	37.46
Main_EastofAvista2	CIRCULAR	3.00	3.00	1	7.07	0.75	37.55
Main_EastofAvista3	CIRCULAR	3.00	3.00	1	7.07	0.75	50.70
Pine_Main1	CIRCULAR	3.00	3.00	1	7.07	0.75	28.33
Pine_Main2	CIRCULAR	3.00	3.00	1	7.07	0.75	28.17
PineMain3	CIRCULAR	3.00	3.00	1	7.07	0.75	

Runoff Quantity Continuity	Volume acre-ft	Depth inches
Total Precipitation	10.886	2.632
Surface Runoff	0.595	0.144
Continuity Error (%)	-0.002	

Flow Routing Continuity	Volume acre-ft	Volume Mgallons
External Inflow	0.000	0.000
External Outflow	5.651	1.842
Initial Stored Volume	0.012	0.004
Final Stored Volume	0.038	0.012
Continuity Error (%)	-0.000	

Composite Curve Number Computations Report

Subbasin 01-A

Soil/Surface Description	Area (acres)	Soil Group	CN
Paved roads with open ditches, 50% imp	0.65	D	93.00
Composite Area & Weighted CN	0.65		93.00

Subbasin 02-A

Soil/Surface Description	Area (acres)	Soil Group	CN
1/4 acre lots, 38% impervious	11.17	D	87.00
Composite Area & Weighted CN	11.17		87.00

Subbasin 03-A

Soil/Surface Description	Area (acres)	Soil Group	CN
1/4 acre lots, 38% impervious	4.88	D	87.00
Composite Area & Weighted CN	4.88		87.00

Subbasin 04-A

Soil/Surface Description	Area (acres)	Soil Group	CN
1/4 acre lots, 38% impervious	5.94	D	87.00
Composite Area & Weighted CN	5.94		87.00

Subbasin 05-A

Soil/Surface Description	Area (acres)	Soil Group	CN

1/4 acre lots, 38% impervious	11.09	D	87.00
Paved roads with curbs & sewers	0.00	D	98.00
Composite Area & Weighted CN	11.09		87.00

Subbasin 06-A

Soil/Surface Description	Area (acres)	Soil Group	CN
1/4 acre lots, 38% impervious	4.08	D	87.00
Paved roads with curbs & sewers	0.00	D	98.00
Composite Area & Weighted CN	4.08		87.00

Subbasin 07-A

Soil/Surface Description	Area (acres)	Soil Group	CN
1/4 acre lots, 38% impervious	3.49	D	87.00
-	0.00	-	0.00
Composite Area & Weighted CN	3.49		87.00

Subbasin 08-A

Soil/Surface Description	Area (acres)	Soil Group	CN
1/4 acre lots, 38% impervious	4.35	D	87.00
Paved roads with curbs & sewers	0.00	D	98.00
Composite Area & Weighted CN	4.35		87.00

Subbasin 09-A

Soil/Surface Description	Area (acres)	Soil Group	CN
1/4 acre lots, 38% impervious	1.58	D	87.00
Paved roads with curbs & sewers	0.00	D	98.00
Composite Area & Weighted CN	1.58		87.00

Subbasin 10-A

Soil/Surface Description	Area (acres)	Soil Group	CN
Paved roads with curbs & sewers	0.24	D	98.00
Composite Area & Weighted CN	0.24		98.00

Subbasin 11-A

Soil/Surface Description	Area (acres)	Soil Group	CN
Paved roads with curbs & sewers	0.20	D	98.00
Composite Area & Weighted CN	0.20		98.00

Subbasin 12-A

Soil/Surface Description	Area (acres)	Soil Group	CN

Soil/Surface Description	Area (acres)	Soil Group	CN
Paved roads with curbs & sewers	0.20	D	98.00
Composite Area & Weighted CN	0.20		98.00

Subbasin 13-A

Soil/Surface Description	Area (acres)	Soil Group	CN
Paved roads with curbs & sewers	0.21	D	98.00
Composite Area & Weighted CN	0.21		98.00

Subbasin 14-A

Soil/Surface Description	Area (acres)	Soil Group	CN
Paved roads with curbs & sewers	0.25	D	98.00
Composite Area & Weighted CN	0.25		98.00

Subbasin 15-A

Soil/Surface Description	Area (acres)	Soil Group	CN
Paved roads with curbs & sewers	0.25	D	98.00
Composite Area & Weighted CN	0.25		98.00

Subbasin 16-A

Soil/Surface Description	Area (acres)	Soil Group	CN
Paved roads with curbs & sewers	0.26	D	98.00
Composite Area & Weighted CN	0.26		98.00

Subbasin 17-A

Soil/Surface Description	Area (acres)	Soil Group	CN
Paved roads with curbs & sewers	0.27	D	98.00
Composite Area & Weighted CN	0.27		98.00

Subbasin 18-A

Soil/Surface Description	Area (acres)	Soil Group	CN
Paved roads with curbs & sewers	0.26	D	98.00
Composite Area & Weighted CN	0.26		98.00

Subbasin 19-A

Soil/Surface Description	Area (acres)	Soil Group	CN
Paved roads with curbs & sewers	0.11	D	98.00
Composite Area & Weighted CN	0.11		98.00

Subbasin 20-A

Soil/Surface Description	Area (acres)	Soil Group	CN
Paved roads with curbs & sewers	0.15	D	98.00
Composite Area & Weighted CN	0.15		98.00

****
SCS TR-55 Time of Concentration Computations Report
****

Sheet Flow Equation

Tc = (0.007 * ((n * Lf)^0.8)) / ((P^0.5) * (Sf^0.4))

Where:

Tc = Time of Concentration (hrs)
n = Manning's Roughness
Lf = Flow Length (ft)
P = 2 yr, 24 hr Rainfall (inches)
Sf = Slope (ft/ft)

Shallow Concentrated Flow Equation

V = 16.1345 * (Sf^0.5) (unpaved surface)
V = 20.3282 * (Sf^0.5) (paved surface)
V = 15.0 * (Sf^0.5) (grassed waterway surface)
V = 10.0 * (Sf^0.5) (nearly bare & untilled surface)
V = 9.0 * (Sf^0.5) (cultivated straight rows surface)
V = 7.0 * (Sf^0.5) (short grass pasture surface)
V = 5.0 * (Sf^0.5) (woodland surface)
V = 2.5 * (Sf^0.5) (forest w/heavy litter surface)
Tc = (Lf / V) / (3600 sec/hr)

Where:

Tc = Time of Concentration (hrs)
Lf = Flow Length (ft)
V = Velocity (ft/sec)
Sf = Slope (ft/ft)

Channel Flow Equation

V = (1.49 * (R^(2/3)) * (Sf^0.5)) / n
R = Aq / Wp
Tc = (Lf / V) / (3600 sec/hr)

Where:

Tc = Time of Concentration (hrs)
Lf = Flow Length (ft)
R = Hydraulic Radius (ft)
Aq = Flow Area (ft²)
Wp = Wetted Perimeter (ft)
V = Velocity (ft/sec)
Sf = Slope (ft/ft)
n = Manning's Roughness

Subbasin 01-A

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	100.00	0.00	0.00
Slope (%):	1.46	0.00	0.00
2 yr, 24 hr Rainfall (in):	1.90	1.90	1.90
Velocity (ft/sec):	1.01	0.00	0.00
Computed Flow Time (minutes):	1.65	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	1315.00	0.00	0.00
Slope (%):	0.82	0.00	0.00
Surface Type:	Unpaved	Unpaved	Unpaved
Velocity (ft/sec):	1.46	0.00	0.00
Computed Flow Time (minutes):	15.01	0.00	0.00

Total TOC (minutes):	16.66

Subbasin 02-A

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	50.00	0.00	0.00
Slope (%):	2.89	0.00	0.00
2 yr, 24 hr Rainfall (in):	1.90	1.90	1.90
Velocity (ft/sec):	1.15	0.00	0.00
Computed Flow Time (minutes):	0.72	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	1060.00	0.00	0.00

Slope (%):	1.09	0.00	0.00
Surface Type:	Unpaved	Unpaved	Unpaved
Velocity (ft/sec):	1.68	0.00	0.00
Computed Flow Time (minutes):	10.52	0.00	0.00

Channel Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	430.00	0.00	0.00
Channel Slope (%):	0.50	0.00	0.00
Cross Section Area (ft²):	0.79	0.00	0.00
Wetted Perimeter (ft):	0.26	0.00	0.00
Velocity (ft/sec):	22.10	0.00	0.00
Computed Flow Time (minutes):	0.32	0.00	0.00

Total TOC (minutes):	11.56

Subbasin 03-A

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	200.00	0.00	0.00
Slope (%):	1.40	0.00	0.00
2 yr, 24 hr Rainfall (in):	1.90	1.90	1.90
Velocity (ft/sec):	1.14	0.00	0.00
Computed Flow Time (minutes):	2.93	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	1446.00	0.00	0.00
Slope (%):	0.91	0.00	0.00
Surface Type:	Grassed waterway	Unpaved	Unpaved
Velocity (ft/sec):	1.43	0.00	0.00

Computed Flow Time (minutes):	16.85	0.00	0.00

Total TOC (minutes):	19.78

Subbasin 04-A

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	160.00	0.00	0.00
Slope (%):	0.59	0.00	0.00
2 yr, 24 hr Rainfall (in):	1.90	1.90	1.90
Velocity (ft/sec):	0.77	0.00	0.00
Computed Flow Time (minutes):	3.46	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	1232.00	0.00	0.00
Slope (%):	0.82	0.00	0.00
Surface Type:	Paved	Unpaved	Unpaved
Velocity (ft/sec):	1.84	0.00	0.00
Computed Flow Time (minutes):	11.16	0.00	0.00

Total TOC (minutes):	14.62

Subbasin 05-A

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	160.00	0.00	0.00
Slope (%):	0.35	0.00	0.00
2 yr, 24 hr Rainfall (in):	1.90	1.90	1.90

Velocity (ft/sec):	0.63	0.00	0.00
Computed Flow Time (minutes):	4.26	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	35.00	0.00	0.00
Slope (%):	12.20	0.00	0.00
Surface Type:	Grassed waterway	Unpaved	Unpaved
Velocity (ft/sec):	5.24	0.00	0.00
Computed Flow Time (minutes):	0.11	0.00	0.00

Channel Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.27	0.00	0.00
Flow Length (ft):	1155.00	0.00	0.00
Channel Slope (%):	0.08	0.00	0.00
Cross Section Area (ft²):	85.00	0.00	0.00
Wetted Perimeter (ft):	31.30	0.00	0.00
Velocity (ft/sec):	0.30	0.00	0.00
Computed Flow Time (minutes):	63.36	0.00	0.00

Total TOC (minutes):	67.73

Subbasin 06-A

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	120.00	0.00	0.00
Slope (%):	0.61	0.00	0.00
2 yr, 24 hr Rainfall (in):	1.90	1.90	1.90
Velocity (ft/sec):	0.74	0.00	0.00
Computed Flow Time (minutes):	2.71	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	968.00	0.00	0.00
Slope (%):	0.62	0.00	0.00
Surface Type:	Paved	Unpaved	Unpaved
Velocity (ft/sec):	1.60	0.00	0.00
Computed Flow Time (minutes):	10.08	0.00	0.00

Total TOC (minutes): 12.79

Subbasin 07-A

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	50.00	0.00	0.00
Slope (%):	4.64	0.00	0.00
2 yr, 24 hr Rainfall (in):	1.90	1.90	1.90
Velocity (ft/sec):	1.39	0.00	0.00
Computed Flow Time (minutes):	0.60	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	937.00	0.00	0.00
Slope (%):	0.48	0.00	0.00
Surface Type:	Unpaved	Unpaved	Unpaved
Velocity (ft/sec):	1.12	0.00	0.00
Computed Flow Time (minutes):	13.94	0.00	0.00

Total TOC (minutes): 14.54

Subbasin 08-A

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	257.00	0.00	0.00
Slope (%):	1.32	0.00	0.00
2 yr, 24 hr Rainfall (in):	1.90	1.90	1.90
Velocity (ft/sec):	1.17	0.00	0.00
Computed Flow Time (minutes):	3.66	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	896.00	0.00	0.00
Slope (%):	0.78	0.00	0.00
Surface Type:	Paved	Unpaved	Unpaved
Velocity (ft/sec):	1.80	0.00	0.00
Computed Flow Time (minutes):	8.30	0.00	0.00

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Total TOC (minutes): 11.96

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Subbasin 09-A

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	55.00	0.00	0.00
Slope (%):	1.26	0.00	0.00
2 yr, 24 hr Rainfall (in):	1.90	1.90	1.90
Velocity (ft/sec):	0.84	0.00	0.00
Computed Flow Time (minutes):	1.09	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	305.00	0.00	0.00
Slope (%):	1.60	0.00	0.00
Surface Type:	Unpaved	Unpaved	

Unpaved				
	Velocity (ft/sec):	2.04	0.00	
0.00				
	Computed Flow Time (minutes):	2.49	0.00	
0.00				

Channel Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.27	0.00	0.00
Flow Length (ft):	300.00	0.00	0.00
Channel Slope (%):	1.11	0.00	0.00
Cross Section Area (ft²):	2.00	0.00	0.00
Wetted Perimeter (ft):	8.50	0.00	0.00
Velocity (ft/sec):	0.22	0.00	0.00
Computed Flow Time (minutes):	22.56	0.00	0.00

Total TOC (minutes):	26.14

Subbasin 10-A

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	22.00	0.00	0.00
Slope (%):	1.52	0.00	0.00
2 yr, 24 hr Rainfall (in):	1.90	1.90	1.90
Velocity (ft/sec):	0.76	0.00	0.00
Computed Flow Time (minutes):	0.48	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	173.00	0.00	0.00
Slope (%):	0.83	0.00	0.00
Surface Type:	Paved	Unpaved	Unpaved
Velocity (ft/sec):	1.85	0.00	0.00
Computed Flow Time (minutes):	1.56	0.00	0.00

Total TOC (minutes):	2.04		

Subbasin 11-A

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	25.00	0.00	0.00
Slope (%):	1.50	0.00	0.00
2 yr, 24 hr Rainfall (in):	1.90	1.90	1.90
Velocity (ft/sec):	0.77	0.00	0.00
Computed Flow Time (minutes):	0.54	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	160.50	0.00	0.00
Slope (%):	1.50	0.00	0.00
Surface Type:	Paved	Unpaved	Unpaved
Velocity (ft/sec):	2.49	0.00	0.00
Computed Flow Time (minutes):	1.07	0.00	0.00

Total TOC (minutes):	1.61

Subbasin 12-A

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	20.00	0.00	0.00
Slope (%):	0.70	0.00	0.00
2 yr, 24 hr Rainfall (in):	1.90	1.90	1.90
Velocity (ft/sec):	0.54	0.00	0.00
Computed Flow Time (minutes):	0.61	0.00	

0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	236.50	0.00	0.00
Slope (%):	0.50	0.00	0.00
Surface Type:	Paved	Unpaved	Unpaved
Velocity (ft/sec):	1.44	0.00	0.00
Computed Flow Time (minutes):	2.74	0.00	0.00

Total TOC (minutes): 3.35

Subbasin 13-A

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	20.00	0.00	0.00
Slope (%):	1.01	0.00	0.00
2 yr, 24 hr Rainfall (in):	1.90	1.90	1.90
Velocity (ft/sec):	0.63	0.00	0.00
Computed Flow Time (minutes):	0.53	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	234.00	0.00	0.00
Slope (%):	0.50	0.00	0.00
Surface Type:	Paved	Unpaved	Unpaved
Velocity (ft/sec):	1.44	0.00	0.00
Computed Flow Time (minutes):	2.71	0.00	0.00

Total TOC (minutes): 3.24

Subbasin 14-A

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	28.00	0.00	0.00
Slope (%):	1.27	0.00	0.00
2 yr, 24 hr Rainfall (in):	1.90	1.90	1.90
Velocity (ft/sec):	0.74	0.00	0.00
Computed Flow Time (minutes):	0.63	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	176.00	0.00	0.00
Slope (%):	1.01	0.00	0.00
Surface Type:	Paved	Unpaved	Unpaved
Velocity (ft/sec):	2.04	0.00	0.00
Computed Flow Time (minutes):	1.44	0.00	0.00

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Total TOC (minutes): 2.07

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Subbasin 15-A

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	25.00	0.00	0.00
Slope (%):	1.24	0.00	0.00
2 yr, 24 hr Rainfall (in):	1.90	1.90	1.90
Velocity (ft/sec):	0.72	0.00	0.00
Computed Flow Time (minutes):	0.58	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	181.00	0.00	0.00

Slope (%):	1.00	0.00	0.00
Surface Type:	Paved	Unpaved	Unpaved
Velocity (ft/sec):	2.03	0.00	0.00
Computed Flow Time (minutes):	1.49	0.00	0.00

Total TOC (minutes): 2.07

Subbasin 16-A

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	22.00	0.00	0.00
Slope (%):	1.11	0.00	0.00
2 yr, 24 hr Rainfall (in):	1.90	1.90	1.90
Velocity (ft/sec):	0.67	0.00	0.00
Computed Flow Time (minutes):	0.55	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	207.00	0.00	0.00
Slope (%):	0.43	0.00	0.00
Surface Type:	Paved	Unpaved	Unpaved
Velocity (ft/sec):	1.33	0.00	0.00
Computed Flow Time (minutes):	2.59	0.00	0.00

Total TOC (minutes): 3.14

Subbasin 17-A

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00

Flow Length (ft):	17.00	0.00	0.00
Slope (%):	5.40	0.00	0.00
2 yr, 24 hr Rainfall (in):	1.90	1.90	1.90
Velocity (ft/sec):	1.19	0.00	0.00
Computed Flow Time (minutes):	0.24	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	240.00	0.00	0.00
Slope (%):	0.34	0.00	0.00
Surface Type:	Grassed waterway	Unpaved	Unpaved
Velocity (ft/sec):	0.87	0.00	0.00
Computed Flow Time (minutes):	4.60	0.00	0.00

Total TOC (minutes): 4.83

Subbasin 18-A

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	25.50	0.00	0.00
Slope (%):	1.00	0.00	0.00
2 yr, 24 hr Rainfall (in):	1.90	1.90	1.90
Velocity (ft/sec):	0.66	0.00	0.00
Computed Flow Time (minutes):	0.64	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	348.00	0.00	0.00
Slope (%):	1.24	0.00	0.00
Surface Type:	Paved	Unpaved	Unpaved
Velocity (ft/sec):	2.26	0.00	0.00
Computed Flow Time (minutes):	2.57	0.00	0.00

Total TOC (minutes):	3.21		

Subbasin 19-A

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	25.00	0.00	0.00
Slope (%):	1.01	0.00	0.00
2 yr, 24 hr Rainfall (in):	1.90	1.90	1.90
Velocity (ft/sec):	0.66	0.00	0.00
Computed Flow Time (minutes):	0.63	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	173.00	0.00	0.00
Slope (%):	1.19	0.00	0.00
Surface Type:	Paved	Unpaved	Unpaved
Velocity (ft/sec):	2.22	0.00	0.00
Computed Flow Time (minutes):	1.30	0.00	0.00

Total TOC (minutes):	1.93

Subbasin 20-A

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	20.00	0.00	0.00
Slope (%):	2.23	0.00	0.00
2 yr, 24 hr Rainfall (in):	1.90	1.90	1.90
Velocity (ft/sec):	0.87	0.00	0.00

```
          Computed Flow Time (minutes):                0.38                0.00
0.00

  Shallow Concentrated Flow Computations
  --------------------------------------
                                                   Subarea A           Subarea B           Subarea
C
          Flow Length (ft):                          161.00                0.00
0.00
          Slope (%):                                   1.29                0.00
0.00
          Surface Type:                               Paved              Unpaved
Unpaved
          Velocity (ft/sec):                           2.31                0.00
0.00
          Computed Flow Time (minutes):                1.16                0.00
0.00

================================================================================================================
          Total TOC (minutes):                         1.55

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****
Subbasin Runoff Summary
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Subbasin ID	Total Precip in	Total Runoff in	Peak Runoff cfs	Weighted Curve Number	Time of Concentration days	Time of Concentration hh:mm:ss
01-A	2.60	1.87	1.42	93.000	0	00:16:39
02-A	2.60	1.40	20.90	87.000	0	00:11:33
03-A	2.60	1.40	7.53	87.000	0	00:19:46
04-A	2.60	1.40	10.39	87.000	0	00:14:37
05-A	2.60	1.40	7.80	87.000	0	01:07:43
06-A	2.60	1.40	7.45	87.000	0	00:12:47
07-A	2.60	1.40	6.11	87.000	0	00:14:32
08-A	2.60	1.40	8.08	87.000	0	00:11:57
09-A	2.60	1.40	2.11	87.000	0	00:26:08
10-A	2.60	2.37	0.82	98.000	0	00:05:00
11-A	2.60	2.37	0.67	98.000	0	00:05:00
12-A	2.60	2.37	0.67	98.000	0	00:05:00
13-A	2.60	2.37	0.71	98.000	0	00:05:00
14-A	2.60	2.37	0.84	98.000	0	00:05:00
15-A	2.60	2.37	0.84	98.000	0	00:05:00
16-A	2.60	2.37	0.88	98.000	0	00:05:00
17-A	2.60	2.37	0.90	98.000	0	00:05:00
18-A	2.60	2.37	0.88	98.000	0	00:05:00
19-A	2.60	2.36	0.37	98.000	0	00:05:00
20-A	2.60	2.37	0.49	98.000	0	00:05:00

****
Node Depth Summary
****

Node ID	Average Depth Attained ft	Maximum Depth Attained ft	Maximum HGL Attained ft	Time of Max Occurrence days	Time of Max Occurrence hh:mm	Total Flooded Volume acre-in	Total Time Flooded minutes	Retention Time hh:mm:ss
Inlet-01	0.19	2.86	2102.58	0	12:15	0	0	0:00:00

Inlet-02	0.35	2.71	2102.43	0	12:06	1.35	16	0:00:00
Inlet-04	0.39	1.67	2104.17	0	12:10	0	0	0:00:00
Inlet-11	0.54	3.18	2105.62	0	11:59	1.04	14	0:00:00
Inlet-12	0.10	0.38	2103.09	0	12:10	0	0	0:00:00
Inlet-13	0.00	0.00	2096.23	0	00:00	0	0	0:00:00
Inlet-14	0.00	0.00	2094.90	0	00:00	0	0	0:00:00
Inlet-15	0.00	0.00	2095.96	0	00:00	0	0	0:00:00
Inlet-16	0.00	0.00	2096.42	0	00:00	0	0	0:00:00
Inlet-17	0.00	0.00	2095.64	0	00:00	0	0	0:00:00
Inlet-18	0.58	3.90	2092.96	0	12:15	0	0	0:00:00
Inlet-33	0.00	0.00	0.00	0	00:00	0	0	0:00:00
Jun-01	1.22	4.89	2093.49	0	12:15	0	0	0:00:00
Jun-06	1.08	6.69	2099.83	0	12:13	0	0	0:00:00
Jun-07	0.07	0.27	2102.71	0	12:03	0	0	0:00:00
Jun-08	0.31	1.69	2104.94	0	12:08	0	0	0:00:00
Jun-10	0.00	0.00	2103.20	0	00:00	0	0	0:00:00
Jun-13	0.00	0.00	2103.01	0	00:00	0	0	0:00:00
Jun-16	0.00	0.02	2100.84	0	00:08	0	0	0:00:00
Jun-17	0.00	0.00	2096.87	0	00:00	0	0	0:00:00
Jun-18	0.00	0.00	2099.34	0	00:00	0	0	0:00:00
Jun-19	0.00	0.00	2099.44	0	00:00	0	0	0:00:00
Jun-20	1.11	3.20	2090.89	0	12:15	0	0	0:00:00
Jun-21	0.32	5.27	2100.27	0	12:13	0	0	0:00:00
Jun-22	0.01	1.00	2106.52	0	00:00	0	0	0:00:00
Jun-27	0.01	0.03	2097.51	0	01:09	0	0	0:00:00
Jun-30	1.16	4.51	2092.96	0	12:15	0	0	0:00:00
Jun-31	1.00	6.79	2102.04	0	12:13	0	0	0:00:00
Jun-32	0.18	0.58	2103.04	0	12:15	0	0	0:00:00
Jun-33	0.62	4.78	2102.58	0	12:14	0	0	0:00:00
Jun-34	0.00	0.00	2102.47	0	00:00	0	0	0:00:00
Jun-35	0.00	0.00	2090.98	0	00:00	0	0	0:00:00
Jun-37	0.26	1.33	2104.98	0	12:01	0.84	14	0:00:00
Jun-38	1.19	6.33	2102.33	0	12:14	0	0	0:00:00
Jun-39	0.07	0.24	2103.81	0	12:05	0	0	0:00:00
Jun-40	0.90	5.61	2102.53	0	12:14	0	0	0:00:00
Jun-41	0.48	1.36	2104.93	0	12:40	0	0	0:00:00
Jun-43	1.04	7.21	2101.73	0	12:13	0	0	0:00:00
Jun-44	0.30	1.66	2104.56	0	12:04	0	0	0:00:00
Jun-45	0.31	2.31	2105.91	0	12:04	0	0	0:00:00
Jun-46	0.34	3.01	2107.11	0	12:04	0.05	7	0:00:00
Jun-47	0.30	1.52	2105.29	0	12:10	0	0	0:00:00
Jun-48	1.18	7.25	2100.63	0	12:13	0	0	0:00:00
Jun-49	0.07	0.30	2104.07	0	12:00	0	0	0:00:00
Jun-50	0.00	0.00	2102.50	0	00:00	0	0	0:00:00
Jun-51	0.44	3.56	2102.56	0	12:14	0	0	0:00:00
Jun-52	0.08	0.30	2102.76	0	12:04	0	0	0:00:00
Jun-53	0.00	0.26	2105.07	0	00:02	0	0	0:00:00
Jun-54	0.66	6.24	2100.24	0	12:13	0	0	0:00:00
Jun-55	1.05	5.69	2096.18	0	12:15	0	0	0:00:00
Jun-63	0.93	6.26	2102.26	0	12:13	0	0	0:00:00
Jun-64	0.41	5.24	2100.24	0	12:13	0	0	0:00:00
Out-01	0.00	0.00	2087.00	0	00:00	0	0	0:00:00
Out-02	0.00	0.00	2088.47	0	00:00	0	0	0:00:00
Stor-01	0.05	0.43	2102.53	0	12:16	0	0	0:00:00
Stor-10	0.04	0.46	2102.43	0	12:06	0	0	0:00:00
Stor-12	0.05	0.79	2104.98	0	12:13	0	0	0:00:00
Stor-13	0.04	0.17	2105.99	0	12:06	0	0	0:00:00
Stor-14	0.04	0.18	2106.53	0	12:05	0	0	0:00:00
Stor-15	0.11	0.38	2106.08	0	12:15	0	0	0:00:00
Stor-16	0.04	0.19	2105.88	0	12:04	0	0	0:00:00
Stor-17	0.00	0.00	2106.37	0	00:00	0	0	0:00:00
Stor-18	0.03	0.16	2107.04	0	12:05	0	0	0:00:00
Stor-19	0.03	0.20	2105.93	0	12:00	0	0	0:00:00
Stor-20	0.00	0.00	2105.02	0	00:00	0	0	0:00:00
Stor-21	0.03	0.17	2105.51	0	12:03	0	0	0:00:00
Stor-22	0.04	0.31	2105.66	0	12:00	0.00	5	0:00:00

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Node Flow Summary
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Node ID	Element Type	Maximum Lateral Inflow cfs	Peak Inflow cfs	Time of Peak Occurrence days	Time of Peak Occurrence hh:mm	Maximum Flooding Overflow cfs	Time of Peak Flooding Occurrence days	Time of Peak Flooding Occurrence hh:mm
Inlet-01	JUNCTION	0.00	1.03	0	12:04	0.00		
Inlet-02	JUNCTION	8.31	8.47	0	12:04	8.13	0	12:11
Inlet-04	JUNCTION	0.00	7.86	0	12:05	0.00		
Inlet-11	JUNCTION	20.85	21.48	0	12:05	7.79	0	12:05
Inlet-12	JUNCTION	1.39	1.39	0	12:10	0.00		
Inlet-13	JUNCTION	0.00	0.00	0	00:00	0.00		
Inlet-14	JUNCTION	0.00	0.00	0	00:00	0.00		
Inlet-15	JUNCTION	0.00	0.00	0	00:00	0.00		
Inlet-16	JUNCTION	0.00	0.00	0	00:00	0.00		
Inlet-17	JUNCTION	0.00	0.00	0	00:00	0.00		
Inlet-18	JUNCTION	0.00	1.29	0	12:00	0.00		
Inlet-33	JUNCTION	0.00	0.00	0	00:00	0.00		
Jun-01	JUNCTION	0.00	40.36	0	12:15	0.00		
Jun-06	JUNCTION	0.00	43.48	0	12:09	0.00		
Jun-07	JUNCTION	0.00	0.56	0	12:03	0.00		
Jun-08	JUNCTION	5.85	7.86	0	12:04	0.00		
Jun-10	JUNCTION	0.00	0.00	0	00:00	0.00		
Jun-13	JUNCTION	0.00	0.00	0	00:00	0.00		
Jun-16	JUNCTION	0.00	0.74	0	00:03	0.00		
Jun-17	JUNCTION	0.00	0.00	0	00:00	0.00		
Jun-18	JUNCTION	0.00	0.00	0	00:00	0.00		
Jun-19	JUNCTION	0.00	0.00	0	00:00	0.00		
Jun-20	JUNCTION	0.00	40.36	0	12:15	0.00		
Jun-21	JUNCTION	0.00	1.71	0	12:03	0.00		
Jun-22	JUNCTION	0.00	0.00	0	00:00	0.00		
Jun-27	JUNCTION	0.00	0.07	0	00:22	0.00		
Jun-30	JUNCTION	0.00	40.36	0	12:15	0.00		
Jun-31	JUNCTION	0.00	18.04	0	12:25	0.00		
Jun-32	JUNCTION	0.00	2.21	0	12:15	0.00		
Jun-33	JUNCTION	0.00	16.31	0	12:04	0.00		
Jun-34	JUNCTION	0.00	0.00	0	00:00	0.00		
Jun-35	JUNCTION	0.00	0.00	0	00:00	0.00		
Jun-37	JUNCTION	7.35	7.35	0	12:05	5.35	0	12:05
Jun-38	JUNCTION	0.00	16.05	0	12:01	0.00		
Jun-39	JUNCTION	0.00	0.62	0	12:05	0.00		
Jun-40	JUNCTION	0.00	17.76	0	12:01	0.00		
Jun-41	JUNCTION	7.80	7.94	0	12:40	0.00		
Jun-43	JUNCTION	0.00	24.12	0	12:06	0.00		
Jun-44	JUNCTION	0.00	9.40	0	12:04	0.00		
Jun-45	JUNCTION	0.00	9.40	0	12:04	0.00		
Jun-46	JUNCTION	9.96	9.96	0	12:05	0.56	0	12:05
Jun-47	JUNCTION	7.52	7.93	0	12:10	0.00		
Jun-48	JUNCTION	0.00	30.18	0	12:08	0.00		
Jun-49	JUNCTION	0.00	0.71	0	12:00	0.00		
Jun-50	JUNCTION	0.00	0.00	0	00:00	0.00		
Jun-51	JUNCTION	0.00	8.93	0	12:04	0.00		
Jun-52	JUNCTION	0.00	0.68	0	12:04	0.00		
Jun-53	JUNCTION	0.00	2.61	0	00:00	0.00		
Jun-54	JUNCTION	0.00	15.65	0	12:05	0.00		
Jun-55	JUNCTION	0.00	41.32	0	12:12	0.00		
Jun-63	JUNCTION	0.00	16.19	0	12:25	0.00		
Jun-64	JUNCTION	0.00	1.39	0	12:10	0.00		
Out-01	OUTFALL	0.00	40.36	0	12:15	0.00		
Out-02	OUTFALL	0.00	0.00	0	00:00	0.00		
Stor-01	STORAGE	0.88	0.91	0	12:09	0.00		
Stor-10	STORAGE	0.49	2.35	0	12:06	0.00		

Stor-12	STORAGE	0.00	2.53	0	12:01	0.00		
Stor-13	STORAGE	0.90	0.90	0	12:00	0.00		
Stor-14	STORAGE	0.88	0.88	0	12:00	0.00		
Stor-15	STORAGE	2.22	2.22	0	12:15	0.00		
Stor-16	STORAGE	0.84	0.84	0	12:00	0.00		
Stor-17	STORAGE	0.00	0.00	0	00:00	0.00		
Stor-18	STORAGE	0.67	0.67	0	12:00	0.00		
Stor-19	STORAGE	0.71	0.71	0	12:00	0.00		
Stor-20	STORAGE	0.00	0.00	0	00:00	0.00		
Stor-21	STORAGE	0.67	0.67	0	12:00	0.00		
Stor-22	STORAGE	0.82	1.64	0	11:59	0.29	0	12:00

****
Storage Node Summary
****

Storage Node ID	Maximum Ponded Volume 1000 ft³	Maximum Ponded Volume (%)	Time of Max Ponded Volume days hh:mm	Average Ponded Volume 1000 ft³	Average Ponded Volume (%)	Maximum Storage Node Outflow cfs	Maximum Exfiltration Rate cfm	Total Exfiltrated Volume 1000 ft³
Stor-01	0.320	34	0 12:16	0.036	4	0.80	0.00	0.000
Stor-10	0.346	37	0 12:06	0.033	3	1.21	0.00	0.000
Stor-12	0.596	63	0 12:13	0.034	4	1.75	0.00	0.000
Stor-13	0.560	64	0 12:06	0.133	15	0.56	0.00	0.000
Stor-14	0.452	70	0 12:05	0.098	15	0.62	0.00	0.000
Stor-15	0.553	52	0 12:15	0.155	15	2.21	0.00	0.000
Stor-16	0.295	26	0 12:04	0.058	5	0.68	0.00	0.000
Stor-17	0.000	0	0 00:00	0.000	0	0.00	0.00	0.000
Stor-18	0.281	48	0 12:05	0.057	10	0.51	0.00	0.000
Stor-19	0.000	16	0 12:00	0.000	3	0.71	0.00	0.000
Stor-20	0.000	0	0 00:00	0.000	0	0.00	0.00	0.000
Stor-21	0.209	66	0 12:03	0.040	13	0.56	0.00	0.000
Stor-22	0.433	100	0 12:00	0.072	17	1.13	0.00	0.000

****
Outfall Loading Summary
****

Outfall Node ID	Flow Frequency (%)	Average Flow cfs	Peak Inflow cfs

Out-01	99.57	8.57	40.36
Out-02	0.00	0.00	0.00
System	49.78	8.57	40.36

****
Link Flow Summary
****

Link ID	Element Type	Time of Peak Flow Occurrence days hh:mm	Maximum Velocity Attained ft/sec	Length Factor	Peak Flow during Analysis cfs	Design Flow Capacity cfs	Ratio of Maximum /Design Flow	Ratio of Maximum Flow	Total Time minutes	Reported Condition
09+89-10+13	CONDUIT	0 12:10	4.67	1.00	1.39	10.60	0.13	0.27	0	Calculated
10+13_OFF2.0RT-13.1RT	CONDUIT	0 12:05	2.19	1.00	1.40	33.89	0.04	1.00	20	SURCHARGED
10+13-11+70	CONDUIT	0 12:05	0.57	1.00	1.42	28.37	0.05	1.00	20	SURCHARGED
11+70-13+44	CONDUIT	0 12:12	3.17	1.00	14.77	24.57	0.60	1.00	27	SURCHARGED
13+44-14+01	CONDUIT	0 12:09	5.93	1.00	29.11	23.07	1.26	1.00	33	SURCHARGED
14+01-16+96	CONDUIT	0 12:25	4.58	1.00	22.50	22.89	0.98	1.00	36	SURCHARGED
16+96-18+56	CONDUIT	0 12:25	3.93	1.00	18.83	22.58	0.83	1.00	34	SURCHARGED
18+56-20+29	CONDUIT	0 12:34	3.83	1.00	16.50	23.41	0.70	1.00	32	SURCHARGED
20+29-20+77	CONDUIT	0 12:25	3.92	1.00	16.19	22.95	0.71	1.00	32	SURCHARGED
20+77-22+51	CONDUIT	0 12:01	3.93	1.00	16.05	22.87	0.70	1.00	31	SURCHARGED
22+51-24+38	CONDUIT	0 12:01	3.89	1.00	15.01	23.35	0.64	1.00	26	SURCHARGED
24+38-27+57	CONDUIT	0 12:04	3.23	1.00	8.47	12.34	0.69	1.00	23	SURCHARGED
Ditch1	CHANNEL	0 00:00	3.75	1.00	2.61	6.44	0.40	0.51	0	Calculated
Ditch2	CHANNEL	0 00:03	2.84	1.00	0.74	89.31	0.01	0.13	0	Calculated
Ditch3	CHANNEL	0 00:00	0.00	1.00	0.00	231.47	0.00	0.01	0	Calculated
Ditch4	CHANNEL	0 00:22	0.24	1.00	0.07	421.47	0.00	0.01	0	Calculated
Ditch5	CONDUIT	0 01:09	1.27	1.00	0.01	9.62	0.00	0.48	0	Calculated
Division_Main1	CONDUIT	0 00:00	0.00	1.00	0.00	11.71	0.00	0.00	0	Calculated
Division_Main2	CONDUIT	0 00:00	0.00	1.00	0.00	7.31	0.00	0.00	0	Calculated
Lateral1	CONDUIT	0 12:03	3.10	1.00	0.56	8.71	0.06	0.19	0	Calculated
Lateral10	CONDUIT	0 12:15	4.38	1.00	2.21	8.75	0.25	0.39	0	Calculated

Lateral11	CONDUIT	0	12:04	3.14	1.00	0.68	7.99	0.09	0.21
0 Calculated									
Lateral12	CONDUIT	0	00:00	0.00	1.00	0.00	32.90	0.00	0.00
0 Calculated									
Lateral13	CONDUIT	0	12:40	6.44	1.00	7.94	10.44	0.76	0.83
0 Calculated									
Lateral14	CONDUIT	0	12:05	4.07	1.00	0.62	12.79	0.05	0.17
0 Calculated									
Lateral15	CONDUIT	0	12:18	3.61	1.00	4.24	9.40	0.45	1.00
15 SURCHARGED									
Lateral16	CONDUIT	0	12:05	5.63	1.00	7.86	12.57	0.63	1.00
19 SURCHARGED									
Lateral17	CONDUIT	0	12:08	5.94	1.00	7.86	8.06	0.97	0.90
0 Calculated									
Lateral18	CONDUIT	0	12:04	6.44	1.00	8.44	10.81	0.78	1.00
24 SURCHARGED									
Lateral19	CONDUIT	0	12:04	2.77	1.00	0.88	10.81	0.08	1.00
23 SURCHARGED									
Lateral2	CONDUIT	0	12:11	9.81	1.00	13.69	8.71	1.57	1.00
16 SURCHARGED									
Lateral3	CONDUIT	0	00:00	0.00	1.00	0.00	8.23	0.00	0.00
0 Calculated									
Lateral4	CONDUIT	0	00:00	0.00	1.00	0.00	13.83	0.00	0.00
0 Calculated									
Lateral5	CONDUIT	0	12:10	6.23	1.00	7.93	9.23	0.86	0.86
0 Calculated									
Lateral6	CONDUIT	0	12:00	3.44	1.00	0.71	9.23	0.08	0.20
0 Calculated									
Lateral7	CONDUIT	0	12:04	6.73	1.00	9.40	9.40	1.00	1.00
13 SURCHARGED									
Lateral8	CONDUIT	0	12:04	6.73	1.00	9.40	9.84	0.96	1.00
11 SURCHARGED									
Lateral9	CONDUIT	0	12:04	7.43	1.00	9.40	11.24	0.84	0.85
0 Calculated									
Lateral-Division1	CONDUIT	0	00:00	0.00	1.00	0.00	1.97	0.00	0.00
0 Calculated									
Lateral-Division2	CONDUIT	0	00:00	0.00	1.00	0.00	6.86	0.00	0.00
0 Calculated									
Lateral-Pine1	CONDUIT	0	00:00	0.00	1.00	0.00	90.52	0.00	0.00
0 Calculated									
Lateral-Pine2	CONDUIT	0	00:00	0.00	1.00	0.00	1.74	0.00	0.00
0 Calculated									
Lateral-Pine3	CONDUIT	0	00:00	0.00	1.00	0.00	7.68	0.00	0.00
0 Calculated									
Lateral-Pine4	CONDUIT	0	00:00	0.00	1.00	0.00	6.97	0.00	0.00
0 Calculated									
Lateral-Pine5	CONDUIT	0	00:00	0.00	1.00	0.00	6.27	0.00	0.00
0 Calculated									
Main_EastofAvista1	CONDUIT	0	12:12	5.85	1.00	41.32	37.46	1.10	1.00
28 SURCHARGED									
Main_EastofAvista2	CONDUIT	0	12:15	5.71	1.00	40.36	37.55	1.07	1.00
33 SURCHARGED									
Main_EastofAvista3	CONDUIT	0	12:15	5.71	1.00	40.36	50.70	0.80	1.00
32 SURCHARGED									
Pine_Main1	CONDUIT	0	12:00	0.27	1.00	1.29	28.33	0.05	1.00
20 SURCHARGED									
Pine_Main2	CONDUIT	0	12:15	5.71	1.00	40.36	28.17	1.43	1.00
14 SURCHARGED									
PineMain3	CONDUIT	0	12:15	6.34	1.00	40.36	28.32	1.43	0.84
0 > CAPACITY									
Weir-01	WEIR	0	00:00			0.00			0.00
Weir-02	WEIR	0	00:00			1.13			0.62
Weir-03	WEIR	0	12:03			0.56			0.34
Weir-04	WEIR	0	00:00			0.00			

```
0.00
  Weir-05              WEIR         0  12:05                          0.51
0.32
  Weir-06              WEIR         0  12:00                          0.71
0.40
  Weir-07              WEIR         0  12:15                          2.21
0.76
  Weir-08              WEIR         0  12:04                          0.68
0.39
  Weir-09              WEIR         0  12:06                          0.56
0.34
  Weir-10              WEIR         0  12:05                          0.62
0.36
  Weir-11              WEIR         0  12:01                          2.53
1.00
  Weir-12              WEIR         0  12:06                          2.02
0.92
  Weir-13              WEIR         0  12:01                          0.80
0.96


  ********************************
  Highest Flow Instability Indexes
  ********************************
  Link Weir-11 (5)
  Link 10+13_OFF2.0RT-13.1RT (3)
  Link 20+29-20+77 (3)
  Link Lateral18 (3)
  Link Lateral19 (3)
```

```
  WARNING 108 : Surcharge elevation defined for Junction Jun-48 is below junction maximum
elevation. Assumed surcharge elevation equal to maximum elevation.
  WARNING 008 : Elevation drop exceeds length for Conduit Lateral-Pine1.
  WARNING 002 : Max/rim elevation (depth) increased to account for connecting conduit height
dimensions for Node Jun-10.
  WARNING 002 : Max/rim elevation (depth) increased to account for connecting conduit height
dimensions for Node Jun-13.
  WARNING 002 : Max/rim elevation (depth) increased to account for connecting conduit height
dimensions for Node Jun-16.
  WARNING 002 : Max/rim elevation (depth) increased to account for connecting conduit height
dimensions for Node Jun-22.
  WARNING 002 : Max/rim elevation (depth) increased to account for connecting conduit height
dimensions for Node Jun-34.
  WARNING 002 : Max/rim elevation (depth) increased to account for connecting conduit height
dimensions for Node Jun-37.
  WARNING 002 : Max/rim elevation (depth) increased to account for connecting conduit height
dimensions for Node Jun-38.
  WARNING 002 : Max/rim elevation (depth) increased to account for connecting conduit height
dimensions for Node Jun-53.
  WARNING 002 : Max/rim elevation (depth) increased to account for connecting conduit height
dimensions for Node Jun-64.

  Analysis began on:  Wed Dec 11 08:54:11 2024
  Analysis ended on:  Wed Dec 11 08:54:17 2024
```

Total elapsed time: 00:00:06

Autodesk® Storm and Sanitary Analysis 2016 - Version 13.4.304 (Build 0)

****
Project Description
****
File Name ..... M24005 Proposed V.6 10-yr (west of Avista).SPF

****
Analysis Options
****
Flow Units ..... cfs
Subbasin Hydrograph Method. SCS TR-55
Time of Concentration..... SCS TR-55
Link Routing Method ..... Hydrodynamic
Storage Node Exfiltration.. Constant flow
Starting Date JUN-24-2024 00:00:00
Ending Date JUN-25-2024 00:00:00
Report Time Step 00:05:00

****
Element Count
****
Number of rain gages 1
Number of subbasins 20
Number of nodes 66
Number of links 63

****
Raingage Summary
****

Gage ID	Data Source	Data Type	Recording Interval min
Rain Gage-01	TS-10	CUMULATIVE	6.00

****
Subbasin Summary
****

Subbasin ID	Total Area acres	Peak Rate Factor
01-A	0.65	484.00
02-A	11.17	484.00
03-A	4.88	484.00
04-A	5.94	484.00
05-A	11.09	484.00
06-A	4.08	484.00
07-A	3.49	484.00
08-A	4.35	484.00
09-A	1.58	484.00
10-A	0.24	484.00
11-A	0.20	484.00
12-A	0.20	484.00
13-A	0.21	484.00
14-A	0.25	484.00
15-A	0.25	484.00
16-A	0.26	484.00
17-A	0.27	484.00
18-A	0.26	484.00

19-A	0.11	484.00
20-A	0.15	484.00

****
Node Summary
****

Node ID	Element Type	Invert Elevation ft	Maximum Elev. ft	Ponded Area ft²	External Inflow
Inlet-01	JUNCTION	2099.72	2102.70	0.00	
Inlet-02	JUNCTION	2099.72	2102.43	0.00	
Inlet-04	JUNCTION	2102.50	2105.71	0.00	
Inlet-11	JUNCTION	2102.44	2105.62	0.00	
Inlet-12	JUNCTION	2102.71	2106.71	0.00	
Inlet-13	JUNCTION	2096.23	2099.83	0.00	
Inlet-14	JUNCTION	2094.90	2098.72	0.00	
Inlet-15	JUNCTION	2095.96	2099.61	0.00	
Inlet-16	JUNCTION	2096.42	2100.33	0.00	
Inlet-17	JUNCTION	2095.64	2099.26	0.00	
Inlet-18	JUNCTION	2089.06	2098.52	0.00	
Inlet-33	JUNCTION	0.00	0.67	0.00	
Jun-01	JUNCTION	2092.65	2098.79	0.00	
Jun-06	JUNCTION	2093.14	2106.33	0.00	
Jun-07	JUNCTION	2102.44	2105.70	0.00	
Jun-08	JUNCTION	2103.25	2106.56	0.00	
Jun-10	JUNCTION	2103.20	2105.70	0.00	
Jun-13	JUNCTION	2103.01	2107.17	0.00	
Jun-16	JUNCTION	2100.82	2102.82	0.00	
Jun-17	JUNCTION	2096.87	2103.65	0.00	
Jun-18	JUNCTION	2099.34	2102.62	0.00	
Jun-19	JUNCTION	2099.44	2102.77	0.00	
Jun-20	JUNCTION	2087.69	2099.82	0.00	
Jun-21	JUNCTION	2091.72	2106.71	0.00	
Jun-22	JUNCTION	2105.52	2106.52	0.00	
Jun-27	JUNCTION	2097.48	2101.50	0.00	
Jun-30	JUNCTION	2088.45	2098.50	0.00	
Jun-31	JUNCTION	2095.25	2106.69	0.00	
Jun-32	JUNCTION	2102.46	2106.83	0.00	
Jun-33	JUNCTION	2097.80	2106.70	0.00	
Jun-34	JUNCTION	2102.47	2105.77	0.00	
Jun-35	JUNCTION	2090.98	2097.65	0.00	
Jun-37	JUNCTION	2103.65	2105.15	0.00	
Jun-38	JUNCTION	2096.00	2107.00	0.00	
Jun-39	JUNCTION	2103.57	2106.86	0.00	
Jun-40	JUNCTION	2096.92	2106.86	0.00	
Jun-41	JUNCTION	2103.57	2106.57	0.00	
Jun-43	JUNCTION	2094.52	2108.25	0.00	
Jun-44	JUNCTION	2102.90	2107.54	0.00	
Jun-45	JUNCTION	2103.60	2107.12	0.00	
Jun-46	JUNCTION	2104.10	2107.11	0.00	
Jun-47	JUNCTION	2103.77	2106.77	0.00	
Jun-48	JUNCTION	2093.38	2106.99	0.00	
Jun-49	JUNCTION	2103.77	2106.48	0.00	
Jun-50	JUNCTION	2102.50	2106.33	0.00	
Jun-51	JUNCTION	2099.00	2103.15	0.00	
Jun-52	JUNCTION	2102.46	2106.69	0.00	
Jun-53	JUNCTION	2104.81	2105.81	0.00	
Jun-54	JUNCTION	2092.38	2106.71	0.00	
Jun-63	JUNCTION	2096.00	2107.82	0.00	
Jun-64	JUNCTION	2091.67	2103.60	0.00	
Out-01	OUTFALL	2087.00	2090.45	0.00	
Out-02	OUTFALL	2088.47	2089.97	0.00	
Stor-01	STORAGE	2102.10	2103.35	10.00	
Stor-10	STORAGE	2101.97	2103.22	10.00	
Stor-12	STORAGE	2104.19	2105.44	10.00	

Stor-13	STORAGE	2105.82	2106.09	10.00
Stor-14	STORAGE	2106.35	2106.61	10.00
Stor-15	STORAGE	2105.70	2106.43	10.00
Stor-16	STORAGE	2105.69	2106.42	10.00
Stor-17	STORAGE	2106.37	2107.62	10.00
Stor-18	STORAGE	2106.88	2107.22	10.00
Stor-19	STORAGE	2105.73	2106.98	10.00
Stor-20	STORAGE	2105.02	2106.27	10.00
Stor-21	STORAGE	2105.34	2105.60	10.00
Stor-22	STORAGE	2105.35	2105.61	10.00

****
Link Summary
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Link ID	From Node	To Node	Element Type	Length ft	Slope %	Manning's Roughness
09+89-10+13	Inlet-12	Jun-64	CONDUIT	24.0	2.5417	0.0150
10+13_OFF2.0RT-13.1RT	Jun-21	Jun-64	CONDUIT	11.0	0.4545	0.0150
10+131-11+70	Jun-54	Jun-21	CONDUIT	157.0	0.4204	0.0150
11+70-13+44	Jun-06	Jun-54	CONDUIT	180.0	0.4222	0.0150
13+44-14+01	Jun-48	Jun-06	CONDUIT	57.0	0.4211	0.0150
14+01-16+96	Jun-43	Jun-48	CONDUIT	275.0	0.4145	0.0150
16+96-18+56	Jun-31	Jun-43	CONDUIT	181.0	0.4033	0.0150
18+56-20+29	Jun-63	Jun-31	CONDUIT	173.0	0.4335	0.0150
20+29-20+77	Jun-38	Jun-63	CONDUIT	48.0	0.4167	0.0150
20+77-22+51	Jun-40	Jun-38	CONDUIT	174.0	0.4138	0.0150
22+51-24+38	Jun-33	Jun-40	CONDUIT	204.0	0.4314	0.0150
24+38-27+57	Jun-51	Jun-33	CONDUIT	303.0	0.3960	0.0150
Avista_Pipe	Jun-27	Jun-01	CONDUIT	538.0	0.7454	0.0150
Avista_Pipe2	Jun-01	Jun-30	CONDUIT	6.5	64.6154	0.0150
Ditch1	Jun-22	Jun-53	CHANNEL	123.0	0.5772	0.0320
Ditch2	Jun-53	Jun-16	CHANNEL	170.9	2.3340	0.0320
Ditch3	Jun-50	Jun-16	CHANNEL	168.5	0.9970	0.0320
Ditch4	Jun-16	Jun-27	CHANNEL	474.5	0.7039	0.0320
Division_Main1	Jun-17	Jun-35	CONDUIT	356.0	1.6545	0.0150
Division_Main2	Jun-35	Out-02	CONDUIT	389.0	0.6452	0.0150
Lateral1	Jun-07	Jun-54	CONDUIT	14.0	1.7143	0.0150
Lateral10	Jun-32	Jun-31	CONDUIT	15.0	1.7333	0.0150
Lateral11	Jun-52	Jun-31	CONDUIT	18.0	1.4444	0.0150
Lateral12	Jun-13	Jun-38	CONDUIT	19.9	0.8564	0.0150
Lateral13	Jun-41	Jun-40	CONDUIT	15.0	2.4667	0.0150
Lateral14	Jun-39	Jun-40	CONDUIT	10.0	3.7000	0.0150
Lateral15	Jun-37	Jun-08	CONDUIT	20.0	2.0000	0.0150
Lateral16	Jun-08	Inlet-04	CONDUIT	21.0	3.5714	0.0150
Lateral17	Inlet-04	Jun-33	CONDUIT	17.0	1.4706	0.0150
Lateral18	Inlet-02	Jun-51	CONDUIT	14.0	2.6429	0.0150
Lateral19	Inlet-01	Jun-51	CONDUIT	14.0	2.6429	0.0150
Lateral2	Inlet-11	Jun-54	CONDUIT	14.0	1.7143	0.0150
Lateral3	Jun-34	Jun-10	CONDUIT	33.0	0.8182	0.0150
Lateral4	Jun-10	Jun-06	CONDUIT	52.0	2.3077	0.0150
Lateral5	Jun-47	Jun-48	CONDUIT	14.0	1.9286	0.0150
Lateral6	Jun-49	Jun-48	CONDUIT	14.0	1.9286	0.0150
Lateral7	Jun-46	Jun-45	CONDUIT	25.0	2.0000	0.0150
Lateral8	Jun-45	Jun-44	CONDUIT	32.0	2.1875	0.0150
Lateral9	Jun-44	Jun-43	CONDUIT	14.0	2.8571	0.0150
Lateral-Division1	Jun-19	Jun-18	CONDUIT	41.7	0.4077	0.0150
Lateral-Division2	Jun-18	Jun-17	CONDUIT	50.0	4.9400	0.0150
Lateral-Pine1	Inlet-14	Inlet-33	CONDUIT	28.0	7471.1127	0.0150
Lateral-Pine2	Inlet-15	Inlet-14	CONDUIT	38.3	2.7662	0.0150
Lateral-Pine3	Inlet-15	Inlet-17	CONDUIT	45.0	0.7111	0.0150
Lateral-Pine4	Inlet-13	Inlet-15	CONDUIT	46.0	0.5870	0.0150
Lateral-Pine5	Inlet-16	Inlet-13	CONDUIT	40.0	0.4750	0.0150
Main_Lincoln	Jun-64	Jun-20	CONDUIT	1056.0	0.3769	0.0150
Pine_Main1	Inlet-18	Jun-30	CONDUIT	254.0	0.2402	0.0150

Pine_Main2	Jun-30	Jun-20	CONDUIT	320.0	0.2375	0.0150
Pine_Main3	Jun-20	Out-01	CONDUIT	100.0	0.2400	0.0150
Weir-01	Stor-17	Jun-45	WEIR			
Weir-02	Stor-22	Inlet-11	WEIR			
Weir-03	Stor-21	Jun-07	WEIR			
Weir-04	Stor-20	Jun-34	WEIR			
Weir-05	Stor-18	Jun-47	WEIR			
Weir-06	Stor-19	Jun-49	WEIR			
Weir-07	Stor-15	Jun-32	WEIR			
Weir-08	Stor-16	Jun-52	WEIR			
Weir-09	Stor-13	Jun-41	WEIR			
Weir-10	Stor-14	Jun-39	WEIR			
Weir-11	Stor-12	Jun-37	WEIR			
Weir-12	Stor-10	Inlet-02	WEIR			
Weir-13	Stor-01	Inlet-01	WEIR			

****
Cross Section Summary
****

Link ID	Shape	Depth/ Diameter ft	Width ft	No. of Barrels	Cross Sectional Area ft²	Full Flow Hydraulic Radius ft	Design Flow Capacity cfs
09+89-10+13	CIRCULAR	1.50	1.50	1	1.77	0.38	14.51
10+13_OFF2.0RT-13.1RT	CIRCULAR	2.50	2.50	1	4.91	0.63	23.97
10+131-11+70	CIRCULAR	2.50	2.50	1	4.91	0.63	23.05
11+70-13+44	CIRCULAR	2.50	2.50	1	4.91	0.63	23.10
13+44-14+01	CIRCULAR	2.50	2.50	1	4.91	0.63	23.07
14+01-16+96	CIRCULAR	2.50	2.50	1	4.91	0.63	22.89
16+96-18+56	CIRCULAR	2.50	2.50	1	4.91	0.63	22.58
18+56-20+29	CIRCULAR	2.50	2.50	1	4.91	0.63	23.41
20+29-20+77	CIRCULAR	2.50	2.50	1	4.91	0.63	22.95
20+77-22+51	CIRCULAR	2.50	2.50	1	4.91	0.63	22.87
22+51-24+38	CIRCULAR	2.50	2.50	1	4.91	0.63	23.35
24+38-27+57	CIRCULAR	2.00	2.00	1	3.14	0.50	12.34
Avista_Pipe	CIRCULAR	0.67	0.67	1	0.35	0.17	0.90
Avista_Pipe2	CIRCULAR	1.00	1.00	1	0.79	0.25	24.82
Ditch1	TRIANGULAR	1.00	6.00	1	3.00	0.47	6.44
Ditch2	TRIANGULAR	1.00	40.00	1	20.00	0.50	89.31
Ditch3	PARABOLIC	1.50	50.00	1	50.00	1.00	231.47
Ditch4	TRAPEZOIDAL	2.00	72.00	1	92.00	1.28	421.47

Division_Main1	CIRCULAR	1.50	1.50	1	1.77	0.38	11.71
Division_Main2	CIRCULAR	1.50	1.50	1	1.77	0.38	7.31
Lateral1	CIRCULAR	1.50	1.50	1	1.77	0.38	11.92
Lateral10	CIRCULAR	1.50	1.50	1	1.77	0.38	11.99
Lateral11	CIRCULAR	1.50	1.50	1	1.77	0.38	10.94
Lateral12	CIRCULAR	2.50	2.50	1	4.91	0.63	32.90
Lateral13	CIRCULAR	1.50	1.50	1	1.77	0.38	14.30
Lateral14	CIRCULAR	1.50	1.50	1	1.77	0.38	17.51
Lateral15	CIRCULAR	1.50	1.50	1	1.77	0.38	12.87
Lateral16	CIRCULAR	1.50	1.50	1	1.77	0.38	17.20
Lateral17	CIRCULAR	1.50	1.50	1	1.77	0.38	11.04
Lateral18	CIRCULAR	1.50	1.50	1	1.77	0.38	14.80
Lateral19	CIRCULAR	1.50	1.50	1	1.77	0.38	14.80
Lateral2	CIRCULAR	1.50	1.50	1	1.77	0.38	11.92
Lateral3	CIRCULAR	0.50	0.50	1	0.20	0.13	0.44
Lateral4	CIRCULAR	1.50	1.50	1	1.77	0.38	13.83
Lateral5	CIRCULAR	1.50	1.50	1	1.77	0.38	12.64
Lateral6	CIRCULAR	1.50	1.50	1	1.77	0.38	12.64
Lateral7	CIRCULAR	1.50	1.50	1	1.77	0.38	12.87
Lateral8	CIRCULAR	1.50	1.50	1	1.77	0.38	13.46
Lateral9	CIRCULAR	1.50	1.50	1	1.77	0.38	15.39
Lateral-Division1	CIRCULAR	1.00	1.00	1	0.79	0.25	1.97
Lateral-Division2	CIRCULAR	1.00	1.00	1	0.79	0.25	6.86
Lateral-Pine1	CIRCULAR	0.67	0.67	1	0.35	0.17	90.52
Lateral-Pine2	CIRCULAR	0.67	0.67	1	0.35	0.17	1.74
Lateral-Pine3	CIRCULAR	1.50	1.50	1	1.77	0.38	7.68
Lateral-Pine4	CIRCULAR	1.50	1.50	1	1.77	0.38	6.97
Lateral-Pine5	CIRCULAR	1.50	1.50	1	1.77	0.38	6.27
Main_Lincoln	CIRCULAR	3.00	3.00	1	7.07	0.75	35.49
Pine_Main1	CIRCULAR	3.00	3.00	1	7.07	0.75	28.33
Pine_Main2	CIRCULAR	3.00	3.00	1	7.07	0.75	28.17
Pine_Main3	CIRCULAR	3.00	3.00	1	7.07	0.75	28.32

**********	Volume	Depth

Runoff Quantity Continuity	acre-ft	inches
Total Precipitation	10.886	2.632
Surface Runoff	0.595	0.144
Continuity Error (%)	-0.002	

Flow Routing Continuity	Volume acre-ft	Volume Mgallons
External Inflow	0.000	0.000
External Outflow	5.591	1.822
Initial Stored Volume	0.012	0.004
Final Stored Volume	0.038	0.013
Continuity Error (%)	-0.000	

Composite Curve Number Computations Report

Subbasin 01-A

Soil/Surface Description	Area (acres)	Soil Group	CN
Paved roads with open ditches, 50% imp	0.65	D	93.00
Composite Area & Weighted CN	0.65		93.00

Subbasin 02-A

Soil/Surface Description	Area (acres)	Soil Group	CN
1/4 acre lots, 38% impervious	11.17	D	87.00
Composite Area & Weighted CN	11.17		87.00

Subbasin 03-A

Soil/Surface Description	Area (acres)	Soil Group	CN
1/4 acre lots, 38% impervious	4.88	D	87.00
Composite Area & Weighted CN	4.88		87.00

Subbasin 04-A

Soil/Surface Description	Area (acres)	Soil Group	CN
1/4 acre lots, 38% impervious	5.94	D	87.00
Composite Area & Weighted CN	5.94		87.00

Subbasin 05-A

Soil/Surface Description	Area (acres)	Soil Group	CN
1/4 acre lots, 38% impervious	11.09	D	87.00
Paved roads with curbs & sewers	0.00	D	98.00
Composite Area & Weighted CN	11.09		87.00

Subbasin 06-A

Soil/Surface Description	Area (acres)	Soil Group	CN
1/4 acre lots, 38% impervious	4.08	D	87.00
Paved roads with curbs & sewers	0.00	D	98.00
Composite Area & Weighted CN	4.08		87.00

Subbasin 07-A

Soil/Surface Description	Area (acres)	Soil Group	CN
1/4 acre lots, 38% impervious	3.49	D	87.00
-	0.00	-	0.00
Composite Area & Weighted CN	3.49		87.00

Subbasin 08-A

Soil/Surface Description	Area (acres)	Soil Group	CN
1/4 acre lots, 38% impervious	4.35	D	87.00
Paved roads with curbs & sewers	0.00	D	98.00
Composite Area & Weighted CN	4.35		87.00

Subbasin 09-A

Soil/Surface Description	Area (acres)	Soil Group	CN
1/4 acre lots, 38% impervious	1.58	D	87.00
Paved roads with curbs & sewers	0.00	D	98.00
Composite Area & Weighted CN	1.58		87.00

Subbasin 10-A

Soil/Surface Description	Area (acres)	Soil Group	CN
Paved roads with curbs & sewers	0.24	D	98.00
Composite Area & Weighted CN	0.24		98.00

Subbasin 11-A

Soil/Surface Description	Area (acres)	Soil Group	CN
Paved roads with curbs & sewers	0.20	D	98.00
Composite Area & Weighted CN	0.20		98.00

Subbasin 12-A

Soil/Surface Description	Area (acres)	Soil Group	CN
Paved roads with curbs & sewers	0.20	D	98.00
Composite Area & Weighted CN	0.20		98.00

Subbasin 13-A

Soil/Surface Description	Area (acres)	Soil Group	CN
Paved roads with curbs & sewers	0.21	D	98.00
Composite Area & Weighted CN	0.21		98.00

Subbasin 14-A

Soil/Surface Description	Area (acres)	Soil Group	CN
Paved roads with curbs & sewers	0.25	D	98.00
Composite Area & Weighted CN	0.25		98.00

Subbasin 15-A

Soil/Surface Description	Area (acres)	Soil Group	CN
Paved roads with curbs & sewers	0.25	D	98.00
Composite Area & Weighted CN	0.25		98.00

Subbasin 16-A

Soil/Surface Description	Area (acres)	Soil Group	CN
Paved roads with curbs & sewers	0.26	D	98.00
Composite Area & Weighted CN	0.26		98.00

Subbasin 17-A

Soil/Surface Description	Area (acres)	Soil Group	CN
Paved roads with curbs & sewers	0.27	D	98.00
Composite Area & Weighted CN	0.27		98.00

Subbasin 18-A

Soil/Surface Description	Area (acres)	Soil Group	CN
Paved roads with curbs & sewers	0.26	D	98.00
Composite Area & Weighted CN	0.26		98.00

Subbasin 19-A

Soil/Surface Description	Area (acres)	Soil Group	CN
Paved roads with curbs & sewers	0.11	D	98.00
Composite Area & Weighted CN	0.11		98.00

Subbasin 20-A

Soil/Surface Description	Area	Soil

Soil/Surface Description	(acres)	Group	CN
Paved roads with curbs & sewers	0.15	D	98.00
Composite Area & Weighted CN	0.15		98.00

****
SCS TR-55 Time of Concentration Computations Report
****

Sheet Flow Equation

Tc = (0.007 * ((n * Lf)^0.8)) / ((P^0.5) * (Sf^0.4))

Where:

Tc = Time of Concentration (hrs)
n = Manning's Roughness
Lf = Flow Length (ft)
P = 2 yr, 24 hr Rainfall (inches)
Sf = Slope (ft/ft)

Shallow Concentrated Flow Equation

V = 16.1345 * (Sf^0.5) (unpaved surface)
V = 20.3282 * (Sf^0.5) (paved surface)
V = 15.0 * (Sf^0.5) (grassed waterway surface)
V = 10.0 * (Sf^0.5) (nearly bare & untilled surface)
V = 9.0 * (Sf^0.5) (cultivated straight rows surface)
V = 7.0 * (Sf^0.5) (short grass pasture surface)
V = 5.0 * (Sf^0.5) (woodland surface)
V = 2.5 * (Sf^0.5) (forest w/heavy litter surface)
Tc = (Lf / V) / (3600 sec/hr)

Where:

Tc = Time of Concentration (hrs)
Lf = Flow Length (ft)
V = Velocity (ft/sec)
Sf = Slope (ft/ft)

Channel Flow Equation

V = (1.49 * (R^(2/3)) * (Sf^0.5)) / n
R = Aq / Wp
Tc = (Lf / V) / (3600 sec/hr)

Where:

Tc = Time of Concentration (hrs)
Lf = Flow Length (ft)
R = Hydraulic Radius (ft)
Aq = Flow Area (ft²)
Wp = Wetted Perimeter (ft)
V = Velocity (ft/sec)
Sf = Slope (ft/ft)
n = Manning's Roughness

Subbasin 01-A

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	100.00	0.00	0.00
Slope (%):	1.46	0.00	0.00
2 yr, 24 hr Rainfall (in):	1.90	1.90	1.90
Velocity (ft/sec):	1.01	0.00	0.00
Computed Flow Time (minutes):	1.65	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	1315.00	0.00	0.00
Slope (%):	0.82	0.00	0.00
Surface Type:	Unpaved	Unpaved	Unpaved
Velocity (ft/sec):	1.46	0.00	0.00
Computed Flow Time (minutes):	15.01	0.00	0.00

Total TOC (minutes): 16.66

Subbasin 02-A

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	50.00	0.00	0.00
Slope (%):	2.89	0.00	0.00
2 yr, 24 hr Rainfall (in):	1.90	1.90	1.90
Velocity (ft/sec):	1.15	0.00	0.00
Computed Flow Time (minutes):	0.72	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	1060.00	0.00	0.00
Slope (%):	1.09	0.00	0.00
Surface Type:	Unpaved	Unpaved	Unpaved

Velocity (ft/sec):	1.68	0.00	0.00
Computed Flow Time (minutes):	10.52	0.00	0.00

Channel Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	430.00	0.00	0.00
Channel Slope (%):	0.50	0.00	0.00
Cross Section Area (ft²):	0.79	0.00	0.00
Wetted Perimeter (ft):	0.26	0.00	0.00
Velocity (ft/sec):	22.10	0.00	0.00
Computed Flow Time (minutes):	0.32	0.00	0.00

Total TOC (minutes):	11.56

Subbasin 03-A

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	200.00	0.00	0.00
Slope (%):	1.40	0.00	0.00
2 yr, 24 hr Rainfall (in):	1.90	1.90	1.90
Velocity (ft/sec):	1.14	0.00	0.00
Computed Flow Time (minutes):	2.93	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	1446.00	0.00	0.00
Slope (%):	0.91	0.00	0.00
Surface Type:	Grassed waterway	Unpaved	Unpaved
Velocity (ft/sec):	1.43	0.00	0.00
Computed Flow Time (minutes):	16.85	0.00	0.00

Total TOC (minutes):	19.78		

Subbasin 04-A

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	160.00	0.00	0.00
Slope (%):	0.59	0.00	0.00
2 yr, 24 hr Rainfall (in):	1.90	1.90	1.90
Velocity (ft/sec):	0.77	0.00	0.00
Computed Flow Time (minutes):	3.46	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	1232.00	0.00	0.00
Slope (%):	0.82	0.00	0.00
Surface Type:	Paved	Unpaved	Unpaved
Velocity (ft/sec):	1.84	0.00	0.00
Computed Flow Time (minutes):	11.16	0.00	0.00

Total TOC (minutes):	14.62

Subbasin 05-A

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	160.00	0.00	0.00
Slope (%):	0.35	0.00	0.00
2 yr, 24 hr Rainfall (in):	1.90	1.90	1.90
Velocity (ft/sec):	0.63	0.00	0.00
Computed Flow Time (minutes):	4.26	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	35.00	0.00	0.00
Slope (%):	12.20	0.00	0.00
Surface Type:	Grassed waterway	Unpaved	Unpaved
Velocity (ft/sec):	5.24	0.00	0.00
Computed Flow Time (minutes):	0.11	0.00	0.00

Channel Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.27	0.00	0.00
Flow Length (ft):	1155.00	0.00	0.00
Channel Slope (%):	0.08	0.00	0.00
Cross Section Area (ft²):	85.00	0.00	0.00
Wetted Perimeter (ft):	31.30	0.00	0.00
Velocity (ft/sec):	0.30	0.00	0.00
Computed Flow Time (minutes):	63.36	0.00	0.00

Total TOC (minutes):	67.73

Subbasin 06-A

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	120.00	0.00	0.00
Slope (%):	0.61	0.00	0.00
2 yr, 24 hr Rainfall (in):	1.90	1.90	1.90
Velocity (ft/sec):	0.74	0.00	0.00
Computed Flow Time (minutes):	2.71	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	968.00	0.00	

0.00

Slope (%):	0.62	0.00	0.00
Surface Type:	Paved	Unpaved	Unpaved
Velocity (ft/sec):	1.60	0.00	0.00
Computed Flow Time (minutes):	10.08	0.00	0.00

Total TOC (minutes):	12.79

Subbasin 07-A

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	50.00	0.00	0.00
Slope (%):	4.64	0.00	0.00
2 yr, 24 hr Rainfall (in):	1.90	1.90	1.90
Velocity (ft/sec):	1.39	0.00	0.00
Computed Flow Time (minutes):	0.60	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	937.00	0.00	0.00
Slope (%):	0.48	0.00	0.00
Surface Type:	Unpaved	Unpaved	Unpaved
Velocity (ft/sec):	1.12	0.00	0.00
Computed Flow Time (minutes):	13.94	0.00	0.00

Total TOC (minutes):	14.54

Subbasin 08-A

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	

0.00

Flow Length (ft):	257.00	0.00	
0.00			
Slope (%):	1.32	0.00	
0.00			
2 yr, 24 hr Rainfall (in):	1.90	1.90	
1.90			
Velocity (ft/sec):	1.17	0.00	
0.00			
Computed Flow Time (minutes):	3.66	0.00	
0.00			

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea
C			
Flow Length (ft):	896.00	0.00	
0.00			
Slope (%):	0.78	0.00	
0.00			
Surface Type:	Paved	Unpaved	
Unpaved			
Velocity (ft/sec):	1.80	0.00	
0.00			
Computed Flow Time (minutes):	8.30	0.00	
0.00			

Total TOC (minutes):	11.96

Subbasin 09-A

Sheet Flow Computations

	Subarea A	Subarea B	Subarea
C			
Manning's Roughness:	0.01	0.00	
0.00			
Flow Length (ft):	55.00	0.00	
0.00			
Slope (%):	1.26	0.00	
0.00			
2 yr, 24 hr Rainfall (in):	1.90	1.90	
1.90			
Velocity (ft/sec):	0.84	0.00	
0.00			
Computed Flow Time (minutes):	1.09	0.00	
0.00			

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea
C			
Flow Length (ft):	305.00	0.00	
0.00			
Slope (%):	1.60	0.00	
0.00			
Surface Type:	Unpaved	Unpaved	
Unpaved			
Velocity (ft/sec):	2.04	0.00	
0.00			
Computed Flow Time (minutes):	2.49	0.00	

0.00

Channel Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.27	0.00	0.00
Flow Length (ft):	300.00	0.00	0.00
Channel Slope (%):	1.11	0.00	0.00
Cross Section Area (ft²):	2.00	0.00	0.00
Wetted Perimeter (ft):	8.50	0.00	0.00
Velocity (ft/sec):	0.22	0.00	0.00
Computed Flow Time (minutes):	22.56	0.00	0.00
Total TOC (minutes):	26.14		

Subbasin 10-A

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	22.00	0.00	0.00
Slope (%):	1.52	0.00	0.00
2 yr, 24 hr Rainfall (in):	1.90	1.90	1.90
Velocity (ft/sec):	0.76	0.00	0.00
Computed Flow Time (minutes):	0.48	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	173.00	0.00	0.00
Slope (%):	0.83	0.00	0.00
Surface Type:	Paved	Unpaved	Unpaved
Velocity (ft/sec):	1.85	0.00	0.00
Computed Flow Time (minutes):	1.56	0.00	0.00
Total TOC (minutes):	2.04		

Subbasin 11-A

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	25.00	0.00	0.00
Slope (%):	1.50	0.00	0.00
2 yr, 24 hr Rainfall (in):	1.90	1.90	1.90
Velocity (ft/sec):	0.77	0.00	0.00
Computed Flow Time (minutes):	0.54	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	160.50	0.00	0.00
Slope (%):	1.50	0.00	0.00
Surface Type:	Paved	Unpaved	Unpaved
Velocity (ft/sec):	2.49	0.00	0.00
Computed Flow Time (minutes):	1.07	0.00	0.00

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Total TOC (minutes): 1.61

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Subbasin 12-A

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	20.00	0.00	0.00
Slope (%):	0.70	0.00	0.00
2 yr, 24 hr Rainfall (in):	1.90	1.90	1.90
Velocity (ft/sec):	0.54	0.00	0.00
Computed Flow Time (minutes):	0.61	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	236.50	0.00	0.00
Slope (%):	0.50	0.00	0.00
Surface Type:	Paved	Unpaved	Unpaved
Velocity (ft/sec):	1.44	0.00	0.00
Computed Flow Time (minutes):	2.74	0.00	0.00

Total TOC (minutes): 3.35

Subbasin 13-A

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	20.00	0.00	0.00
Slope (%):	1.01	0.00	0.00
2 yr, 24 hr Rainfall (in):	1.90	1.90	1.90
Velocity (ft/sec):	0.63	0.00	0.00
Computed Flow Time (minutes):	0.53	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	234.00	0.00	0.00
Slope (%):	0.50	0.00	0.00
Surface Type:	Paved	Unpaved	Unpaved
Velocity (ft/sec):	1.44	0.00	0.00
Computed Flow Time (minutes):	2.71	0.00	0.00

Total TOC (minutes): 3.24

Subbasin 14-A

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	28.00	0.00	0.00
Slope (%):	1.27	0.00	0.00
2 yr, 24 hr Rainfall (in):	1.90	1.90	1.90
Velocity (ft/sec):	0.74	0.00	0.00
Computed Flow Time (minutes):	0.63	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	176.00	0.00	0.00
Slope (%):	1.01	0.00	0.00
Surface Type:	Paved	Unpaved	Unpaved
Velocity (ft/sec):	2.04	0.00	0.00
Computed Flow Time (minutes):	1.44	0.00	0.00

Total TOC (minutes):	2.07

Subbasin 15-A

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	25.00	0.00	0.00
Slope (%):	1.24	0.00	0.00
2 yr, 24 hr Rainfall (in):	1.90	1.90	1.90
Velocity (ft/sec):	0.72	0.00	0.00
Computed Flow Time (minutes):	0.58	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	181.00	0.00	0.00
Slope (%):	1.00	0.00	0.00
Surface Type:	Paved	Unpaved	Unpaved

Velocity (ft/sec):	2.03	0.00	0.00
Computed Flow Time (minutes):	1.49	0.00	0.00
Total TOC (minutes):	2.07		

Subbasin 16-A

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	22.00	0.00	0.00
Slope (%):	1.11	0.00	0.00
2 yr, 24 hr Rainfall (in):	1.90	1.90	1.90
Velocity (ft/sec):	0.67	0.00	0.00
Computed Flow Time (minutes):	0.55	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	207.00	0.00	0.00
Slope (%):	0.43	0.00	0.00
Surface Type:	Paved	Unpaved	Unpaved
Velocity (ft/sec):	1.33	0.00	0.00
Computed Flow Time (minutes):	2.59	0.00	0.00
Total TOC (minutes):	3.14		

Subbasin 17-A

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	17.00	0.00	0.00
Slope (%):	5.40	0.00	0.00

2 yr, 24 hr Rainfall (in):	1.90	1.90	1.90
Velocity (ft/sec):	1.19	0.00	0.00
Computed Flow Time (minutes):	0.24	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	240.00	0.00	0.00
Slope (%):	0.34	0.00	0.00
Surface Type:	Grassed waterway	Unpaved	Unpaved
Velocity (ft/sec):	0.87	0.00	0.00
Computed Flow Time (minutes):	4.60	0.00	0.00

Total TOC (minutes):	4.83

Subbasin 18-A

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	25.50	0.00	0.00
Slope (%):	1.00	0.00	0.00
2 yr, 24 hr Rainfall (in):	1.90	1.90	1.90
Velocity (ft/sec):	0.66	0.00	0.00
Computed Flow Time (minutes):	0.64	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	348.00	0.00	0.00
Slope (%):	1.24	0.00	0.00
Surface Type:	Paved	Unpaved	Unpaved
Velocity (ft/sec):	2.26	0.00	0.00
Computed Flow Time (minutes):	2.57	0.00	0.00

Total TOC (minutes):	3.21

Subbasin 19-A

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	25.00	0.00	0.00
Slope (%):	1.01	0.00	0.00
2 yr, 24 hr Rainfall (in):	1.90	1.90	1.90
Velocity (ft/sec):	0.66	0.00	0.00
Computed Flow Time (minutes):	0.63	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	173.00	0.00	0.00
Slope (%):	1.19	0.00	0.00
Surface Type:	Paved	Unpaved	Unpaved
Velocity (ft/sec):	2.22	0.00	0.00
Computed Flow Time (minutes):	1.30	0.00	0.00

Total TOC (minutes): 1.93

Subbasin 20-A

Sheet Flow Computations

	Subarea A	Subarea B	Subarea C
Manning's Roughness:	0.01	0.00	0.00
Flow Length (ft):	20.00	0.00	0.00
Slope (%):	2.23	0.00	0.00
2 yr, 24 hr Rainfall (in):	1.90	1.90	1.90
Velocity (ft/sec):	0.87	0.00	0.00
Computed Flow Time (minutes):	0.38	0.00	0.00

Shallow Concentrated Flow Computations

	Subarea A	Subarea B	Subarea C
Flow Length (ft):	161.00	0.00	0.00
Slope (%):	1.29	0.00	0.00
Surface Type:	Paved	Unpaved	Unpaved
Velocity (ft/sec):	2.31	0.00	0.00
Computed Flow Time (minutes):	1.16	0.00	0.00

Total TOC (minutes): 1.55

Subbasin Runoff Summary

Subbasin ID	Total Precip in	Total Runoff in	Peak Runoff cfs	Weighted Curve Number	Time of Concentration days	Time of Concentration hh:mm:ss
01-A	2.60	1.87	1.42	93.000	0	00:16:39
02-A	2.60	1.40	20.90	87.000	0	00:11:33
03-A	2.60	1.40	7.53	87.000	0	00:19:46
04-A	2.60	1.40	10.39	87.000	0	00:14:37
05-A	2.60	1.40	7.80	87.000	0	01:07:43
06-A	2.60	1.40	7.45	87.000	0	00:12:47
07-A	2.60	1.40	6.11	87.000	0	00:14:32
08-A	2.60	1.40	8.08	87.000	0	00:11:57
09-A	2.60	1.40	2.11	87.000	0	00:26:08
10-A	2.60	2.37	0.82	98.000	0	00:05:00
11-A	2.60	2.37	0.67	98.000	0	00:05:00
12-A	2.60	2.37	0.67	98.000	0	00:05:00
13-A	2.60	2.37	0.71	98.000	0	00:05:00
14-A	2.60	2.37	0.84	98.000	0	00:05:00
15-A	2.60	2.37	0.84	98.000	0	00:05:00
16-A	2.60	2.37	0.88	98.000	0	00:05:00
17-A	2.60	2.37	0.90	98.000	0	00:05:00
18-A	2.60	2.37	0.88	98.000	0	00:05:00
19-A	2.60	2.36	0.37	98.000	0	00:05:00
20-A	2.60	2.37	0.49	98.000	0	00:05:00

Node Depth Summary

Node ID	Average Depth Attained ft	Maximum Depth Attained ft	Maximum HGL Attained ft	Time of Max Occurrence days	Time of Max Occurrence hh:mm	Total Flooded Volume acre-in	Total Flooded Time minutes	Retention Time hh:mm:ss
Inlet-01	0.21	2.98	2102.70	0	12:08	0.26	9	0:00:00
Inlet-02	0.32	2.71	2102.43	0	12:03	3.06	19	0:00:00
Inlet-04	0.32	1.77	2104.27	0	12:07	0	0	0:00:00
Inlet-11	0.44	3.18	2105.62	0	12:01	0.35	9	0:00:00
Inlet-12	0.08	0.37	2103.08	0	12:10	0	0	0:00:00

Inlet-13	0.00	0.00	2096.23	0	00:00	0	0	0:00:00
Inlet-14	0.00	0.00	2094.90	0	00:00	0	0	0:00:00
Inlet-15	0.00	0.00	2095.96	0	00:00	0	0	0:00:00
Inlet-16	0.00	0.00	2096.42	0	00:00	0	0	0:00:00
Inlet-17	0.00	0.00	2095.64	0	00:00	0	0	0:00:00
Inlet-18	0.16	1.83	2090.89	0	12:14	0	0	0:00:00
Inlet-33	0.00	0.00	0.00	0	00:00	0	0	0:00:00
Jun-01	0.00	0.01	2092.66	0	01:40	0	0	0:00:00
Jun-06	1.09	8.75	2101.89	0	12:11	0	0	0:00:00
Jun-07	0.06	0.26	2102.70	0	12:03	0	0	0:00:00
Jun-08	0.26	1.80	2105.05	0	12:07	0	0	0:00:00
Jun-10	0.00	0.00	2103.20	0	00:00	0	0	0:00:00
Jun-13	0.00	0.00	2103.01	0	00:00	0	0	0:00:00
Jun-16	0.00	0.02	2100.84	0	00:08	0	0	0:00:00
Jun-17	0.00	0.00	2096.87	0	00:00	0	0	0:00:00
Jun-18	0.00	0.00	2099.34	0	00:00	0	0	0:00:00
Jun-19	0.00	0.00	2099.44	0	00:00	0	0	0:00:00
Jun-20	0.94	3.20	2090.89	0	12:14	0	0	0:00:00
Jun-21	1.07	5.98	2097.70	0	12:12	0	0	0:00:00
Jun-22	0.01	1.00	2106.52	0	00:00	0	0	0:00:00
Jun-27	0.02	0.03	2097.51	0	01:39	0	0	0:00:00
Jun-30	0.32	2.44	2090.89	0	12:13	0	0	0:00:00
Jun-31	0.98	8.13	2103.38	0	12:12	0	0	0:00:00
Jun-32	0.15	0.95	2103.41	0	12:12	0	0	0:00:00
Jun-33	0.64	5.72	2103.52	0	12:13	0	0	0:00:00
Jun-34	0.00	0.00	2102.47	0	00:00	0	0	0:00:00
Jun-35	0.00	0.00	2090.98	0	00:00	0	0	0:00:00
Jun-37	0.22	1.50	2105.15	0	12:03	0.30	9	0:00:00
Jun-38	1.15	7.46	2103.46	0	12:12	0	0	0:00:00
Jun-39	0.05	0.23	2103.80	0	12:05	0	0	0:00:00
Jun-40	0.86	6.60	2103.52	0	12:12	0	0	0:00:00
Jun-41	0.37	1.16	2104.73	0	12:40	0	0	0:00:00
Jun-43	1.05	8.73	2103.25	0	12:12	0	0	0:00:00
Jun-44	0.24	1.35	2104.25	0	12:05	0	0	0:00:00
Jun-45	0.24	1.55	2105.15	0	12:05	0	0	0:00:00
Jun-46	0.26	1.84	2105.94	0	12:05	0	0	0:00:00
Jun-47	0.24	1.22	2104.99	0	12:10	0	0	0:00:00
Jun-48	1.17	9.14	2102.52	0	12:11	0	0	0:00:00
Jun-49	0.06	0.29	2104.06	0	12:00	0	0	0:00:00
Jun-50	0.00	0.00	2102.50	0	00:00	0	0	0:00:00
Jun-51	0.43	3.74	2102.74	0	12:13	0	0	0:00:00
Jun-52	0.08	0.92	2103.38	0	12:12	0	0	0:00:00
Jun-53	0.00	0.25	2105.06	0	00:02	0	0	0:00:00
Jun-54	1.14	8.34	2100.72	0	12:11	0	0	0:00:00
Jun-63	0.91	7.44	2103.44	0	12:12	0	0	0:00:00
Jun-64	0.85	4.89	2096.56	0	12:12	0	0	0:00:00
Out-01	0.00	0.00	2087.00	0	00:00	0	0	0:00:00
Out-02	0.00	0.00	2088.47	0	00:00	0	0	0:00:00
Stor-01	0.05	0.60	2102.70	0	12:09	0	0	0:00:00
Stor-10	0.04	0.46	2102.43	0	12:04	0	0	0:00:00
Stor-12	0.04	0.96	2105.15	0	12:04	0	0	0:00:00
Stor-13	0.03	0.17	2105.99	0	12:06	0	0	0:00:00
Stor-14	0.03	0.18	2106.53	0	12:05	0	0	0:00:00
Stor-15	0.09	0.38	2106.08	0	12:15	0	0	0:00:00
Stor-16	0.03	0.19	2105.88	0	12:04	0	0	0:00:00
Stor-17	0.00	0.00	2106.37	0	00:00	0	0	0:00:00
Stor-18	0.03	0.16	2107.04	0	12:05	0	0	0:00:00
Stor-19	0.03	0.20	2105.93	0	12:00	0	0	0:00:00
Stor-20	0.00	0.00	2105.02	0	00:00	0	0	0:00:00
Stor-21	0.03	0.17	2105.51	0	12:03	0	0	0:00:00
Stor-22	0.04	0.31	2105.66	0	12:02	0.00	3	0:00:00

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Node Flow Summary
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Node ID	Element Type	Maximum Lateral Inflow cfs	Peak Inflow cfs	Time of Peak Inflow Occurrence days	Time of Peak Inflow Occurrence hh:mm	Maximum Flooding Overflow cfs	Time of Peak Flooding Occurrence days	Time of Peak Flooding Occurrence hh:mm
Inlet-01	JUNCTION	0.00	3.80	0	12:02	2.51	0	12:13
Inlet-02	JUNCTION	8.31	13.92	0	12:09	13.92	0	12:09
Inlet-04	JUNCTION	0.00	10.15	0	12:07	0.00		
Inlet-11	JUNCTION	20.85	21.48	0	12:05	4.43	0	12:05
Inlet-12	JUNCTION	1.39	1.39	0	12:10	0.00		
Inlet-13	JUNCTION	0.00	0.00	0	00:00	0.00		
Inlet-14	JUNCTION	0.00	0.00	0	00:00	0.00		
Inlet-15	JUNCTION	0.00	0.00	0	00:00	0.00		
Inlet-16	JUNCTION	0.00	0.00	0	00:00	0.00		
Inlet-17	JUNCTION	0.00	0.00	0	00:00	0.00		
Inlet-18	JUNCTION	0.00	0.90	0	12:03	0.00		
Inlet-33	JUNCTION	0.00	0.00	0	00:00	0.00		
Jun-01	JUNCTION	0.00	0.00	0	01:40	0.00		
Jun-06	JUNCTION	0.00	25.54	0	12:18	0.00		
Jun-07	JUNCTION	0.00	0.56	0	12:03	0.00		
Jun-08	JUNCTION	5.85	10.13	0	12:06	0.00		
Jun-10	JUNCTION	0.00	0.00	0	00:00	0.00		
Jun-13	JUNCTION	0.00	0.00	0	00:00	0.00		
Jun-16	JUNCTION	0.00	0.70	0	00:03	0.00		
Jun-17	JUNCTION	0.00	0.00	0	00:00	0.00		
Jun-18	JUNCTION	0.00	0.00	0	00:00	0.00		
Jun-19	JUNCTION	0.00	0.00	0	00:00	0.00		
Jun-20	JUNCTION	0.00	40.50	0	12:12	0.00		
Jun-21	JUNCTION	0.00	40.72	0	12:07	0.00		
Jun-22	JUNCTION	0.00	0.00	0	00:00	0.00		
Jun-27	JUNCTION	0.00	0.07	0	00:20	0.00		
Jun-30	JUNCTION	0.00	2.83	0	12:02	0.00		
Jun-31	JUNCTION	0.00	17.37	0	12:26	0.00		
Jun-32	JUNCTION	0.00	2.21	0	12:15	0.00		
Jun-33	JUNCTION	0.00	17.32	0	12:02	0.00		
Jun-34	JUNCTION	0.00	0.00	0	00:00	0.00		
Jun-35	JUNCTION	0.00	0.00	0	00:00	0.00		
Jun-37	JUNCTION	7.35	7.36	0	12:04	3.09	0	12:05
Jun-38	JUNCTION	0.00	15.16	0	12:26	0.00		
Jun-39	JUNCTION	0.00	0.62	0	12:05	0.00		
Jun-40	JUNCTION	0.00	17.27	0	12:00	0.00		
Jun-41	JUNCTION	7.80	7.94	0	12:40	0.00		
Jun-43	JUNCTION	0.00	21.74	0	12:05	0.00		
Jun-44	JUNCTION	0.00	9.96	0	12:05	0.00		
Jun-45	JUNCTION	0.00	9.96	0	12:05	0.00		
Jun-46	JUNCTION	9.96	9.96	0	12:05	0.00		
Jun-47	JUNCTION	7.52	7.93	0	12:10	0.00		
Jun-48	JUNCTION	0.00	26.61	0	12:05	0.00		
Jun-49	JUNCTION	0.00	0.71	0	12:00	0.00		
Jun-50	JUNCTION	0.00	0.00	0	00:00	0.00		
Jun-51	JUNCTION	0.00	9.12	0	12:13	0.00		
Jun-52	JUNCTION	0.00	0.68	0	12:04	0.00		
Jun-53	JUNCTION	0.00	2.53	0	00:00	0.00		
Jun-54	JUNCTION	0.00	41.76	0	12:06	0.00		
Jun-63	JUNCTION	0.00	15.62	0	12:26	0.00		
Jun-64	JUNCTION	0.00	42.11	0	12:07	0.00		
Out-01	OUTFALL	0.00	40.30	0	12:14	0.00		
Out-02	OUTFALL	0.00	0.00	0	00:00	0.00		
Stor-01	STORAGE	0.88	3.41	0	12:02	0.00		
Stor-10	STORAGE	0.49	2.81	0	12:03	0.00		
Stor-12	STORAGE	0.00	2.30	0	12:03	0.00		
Stor-13	STORAGE	0.90	0.90	0	12:00	0.00		
Stor-14	STORAGE	0.88	0.88	0	12:00	0.00		
Stor-15	STORAGE	2.22	2.22	0	12:14	0.00		
Stor-16	STORAGE	0.84	0.84	0	12:00	0.00		
Stor-17	STORAGE	0.00	0.00	0	00:00	0.00		

Stor-18	STORAGE	0.67	0.67	0	12:00	0.00			
Stor-19	STORAGE	0.71	0.71	0	12:00	0.00			
Stor-20	STORAGE	0.00	0.00	0	00:00	0.00			
Stor-21	STORAGE	0.67	0.67	0	12:00	0.00			
Stor-22	STORAGE	0.82	1.48	0	12:01	0.21	0	12:02	

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Storage Node Summary
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Storage Node ID	Maximum Ponded Volume 1000 ft³	Maximum Ponded Volume (%)	Time of Max Ponded Volume days hh:mm	Average Ponded Volume 1000 ft³	Average Ponded Volume (%)	Maximum Storage Node Outflow cfs	Maximum Exfiltration Rate cfm	Total Exfiltrated Volume 1000 ft³
Stor-01	0.452	48	0 12:09	0.037	4	1.25	0.00	0.000
Stor-10	0.346	37	0 12:04	0.031	3	1.14	0.00	0.000
Stor-12	0.721	77	0 12:04	0.031	3	1.85	0.00	0.000
Stor-13	0.560	64	0 12:06	0.111	13	0.56	0.00	0.000
Stor-14	0.452	70	0 12:05	0.083	13	0.62	0.00	0.000
Stor-15	0.553	52	0 12:15	0.132	12	2.21	0.00	0.000
Stor-16	0.295	26	0 12:04	0.048	4	0.68	0.00	0.000
Stor-17	0.000	0	0 00:00	0.000	0	0.00	0.00	0.000
Stor-18	0.281	48	0 12:05	0.048	8	0.51	0.00	0.000
Stor-19	0.000	16	0 12:00	0.000	2	0.71	0.00	0.000
Stor-20	0.000	0	0 00:00	0.000	0	0.00	0.00	0.000
Stor-21	0.209	66	0 12:03	0.033	11	0.56	0.00	0.000
Stor-22	0.433	100	0 12:02	0.059	14	1.13	0.00	0.000

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Outfall Loading Summary
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Outfall Node ID	Flow Frequency (%)	Average Flow cfs	Peak Inflow cfs
Out-01	99.79	6.87	40.30
Out-02	0.00	0.00	0.00
System	49.89	6.87	40.30

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Link Flow Summary
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Link ID	Element Type	Time of Peak Flow Occurrence days	hh:mm	Maximum Velocity Attained ft/sec	Length Factor	Peak Flow during Analysis cfs	Design Flow Capacity cfs	Ratio of Maximum /Design Flow	Ratio of Maximum Flow	Total Time minutes	Reported Condition
09+89-10+13	CONDUIT	0	12:10	4.62	1.00	1.39	14.51	0.10	0.23	0	Calculated
10+13_OFF2.0RT-13.1RT	CONDUIT	0	12:07	8.30	1.00	40.74	23.97	1.70	1.00	23	SURCHARGED
10+131-11+70	CONDUIT	0	12:07	8.30	1.00	40.72	23.05	1.77	1.00	39	SURCHARGED
11+70-13+44	CONDUIT	0	12:19	5.36	1.00	26.31	23.10	1.14	1.00	45	SURCHARGED
13+44-14+01	CONDUIT	0	12:18	5.20	1.00	25.54	23.07	1.11	1.00	46	SURCHARGED
14+01-16+96	CONDUIT	0	12:26	4.38	1.00	21.52	22.89	0.94	1.00	43	SURCHARGED
16+96-18+56	CONDUIT	0	12:26	3.91	1.00	18.08	22.58	0.80	1.00	40	SURCHARGED
18+56-20+29	CONDUIT	0	12:26	3.82	1.00	15.63	23.41	0.67	1.00	38	SURCHARGED
20+29-20+77	CONDUIT	0	12:26	3.91	1.00	15.62	22.95	0.68	1.00	37	SURCHARGED
20+77-22+51	CONDUIT	0	12:26	3.92	1.00	15.16	22.87	0.66	1.00	35	SURCHARGED
22+51-24+38	CONDUIT	0	12:00	3.94	1.00	14.82	23.35	0.63	1.00	30	SURCHARGED
24+38-27+57	CONDUIT	0	12:13	3.15	1.00	9.12	12.34	0.74	1.00	27	SURCHARGED
Avista_Pipe	CONDUIT	0	01:40	0.75	1.00	0.00	0.90	0.00	0.03	0	Calculated
Avista_Pipe2	CONDUIT	0	00:09	1.36	1.00	0.03	24.82	0.00	0.50	0	Calculated
Ditch1	CHANNEL	0	00:00	3.72	1.00	2.53	6.44	0.39	0.51	0	Calculated
Ditch2	CHANNEL	0	00:03	3.04	1.00	0.70	89.31	0.01	0.13	0	Calculated
Ditch3	CHANNEL	0	00:00	0.00	1.00	0.00	231.47	0.00	0.01	0	Calculated
Ditch4	CHANNEL	0	00:20	0.24	1.00	0.07	421.47	0.00	0.01	0	Calculated
Division_Main1	CONDUIT	0	00:00	0.00	1.00	0.00	11.71	0.00	0.00	0	Calculated
Division_Main2	CONDUIT	0	00:00	0.00	1.00	0.00	7.31	0.00	0.00	0	Calculated
Lateral1	CONDUIT	0	12:03	3.08	1.00	0.56	11.92	0.05	0.16	0	Calculated
Lateral10	CONDUIT	0	12:15	4.32	1.00	2.26	11.99	0.19	0.71	0	Calculated
Lateral11	CONDUIT	0	12:04	3.09	1.00	0.68	10.94	0.06	0.70	0	Calculated
Lateral12	CONDUIT	0	00:00	0.00	1.00	0.00	32.90	0.00	0.00	0	Calculated

Lateral13	CONDUIT	0	12:40	6.50	1.00	7.94	14.30	0.56	0.65	0	Calculated
Lateral14	CONDUIT	0	12:05	4.02	1.00	0.62	17.51	0.04	0.17	0	Calculated
Lateral15	CONDUIT	0	12:16	3.67	1.00	5.44	12.87	0.42	1.00	9	SURCHARGED
Lateral16	CONDUIT	0	12:07	5.74	1.00	10.15	17.20	0.59	1.00	13	SURCHARGED
Lateral17	CONDUIT	0	12:06	6.16	1.00	10.13	11.04	0.92	0.92	0	Calculated
Lateral18	CONDUIT	0	12:02	6.19	1.00	7.80	14.80	0.53	1.00	26	SURCHARGED
Lateral19	CONDUIT	0	12:02	2.74	1.00	2.99	14.80	0.20	1.00	26	SURCHARGED
Lateral2	CONDUIT	0	12:01	9.72	1.00	17.09	11.92	1.43	1.00	2	SURCHARGED
Lateral3	CONDUIT	0	00:00	0.00	1.00	0.00	0.44	0.00	0.00	0	Calculated
Lateral4	CONDUIT	0	00:00	0.00	1.00	0.00	13.83	0.00	0.00	0	Calculated
Lateral5	CONDUIT	0	12:10	6.05	1.00	7.93	12.64	0.63	0.69	0	Calculated
Lateral6	CONDUIT	0	12:00	3.40	1.00	0.71	12.64	0.06	0.18	0	Calculated
Lateral7	CONDUIT	0	12:05	5.64	1.00	9.96	12.87	0.77	1.00	5	SURCHARGED
Lateral8	CONDUIT	0	12:05	5.74	1.00	9.96	13.46	0.74	0.95	0	Calculated
Lateral9	CONDUIT	0	12:05	7.06	1.00	9.96	15.39	0.65	0.74	0	Calculated
Lateral-Division1	CONDUIT	0	00:00	0.00	1.00	0.00	1.97	0.00	0.00	0	Calculated
Lateral-Division2	CONDUIT	0	00:00	0.00	1.00	0.00	6.86	0.00	0.00	0	Calculated
Lateral-Pine1	CONDUIT	0	00:00	0.00	1.00	0.00	90.52	0.00	0.00	0	Calculated
Lateral-Pine2	CONDUIT	0	00:00	0.00	1.00	0.00	1.74	0.00	0.00	0	Calculated
Lateral-Pine3	CONDUIT	0	00:00	0.00	1.00	0.00	7.68	0.00	0.00	0	Calculated
Lateral-Pine4	CONDUIT	0	00:00	0.00	1.00	0.00	6.97	0.00	0.00	0	Calculated
Lateral-Pine5	CONDUIT	0	00:00	0.00	1.00	0.00	6.27	0.00	0.00	0	Calculated
Main_Lincoln	CONDUIT	0	12:12	5.73	1.00	40.50	35.49	1.14	1.00	12	SURCHARGED
Pine_Main1	CONDUIT	0	12:03	0.64	1.00	0.90	28.33	0.03	0.71	0	Calculated
Pine_Main2	CONDUIT	0	12:02	0.73	1.00	2.83	28.17	0.10	0.91	0	Calculated
Pine_Main3	CONDUIT	0	12:14	6.33	1.00	40.30	28.32	1.42	0.84	0	> CAPACITY
Weir-01	WEIR	0	00:00			0.00			0.00		
Weir-02	WEIR	0	00:00			1.13			0.62		
Weir-03	WEIR	0	12:03			0.56			0.34		
Weir-04	WEIR	0	00:00			0.00			0.00		
Weir-05	WEIR	0	12:05			0.51			0.32		
Weir-06	WEIR	0	12:00			0.71			0.40		
Weir-07	WEIR	0	12:15			2.21			0.76		
Weir-08	WEIR	0	12:04			0.68					

```
0.39
  Weir-09              WEIR         0  12:06                          0.56
0.34
  Weir-10              WEIR         0  12:05                          0.62
0.36
  Weir-11              WEIR         0  12:03                          2.30
1.00
  Weir-12              WEIR         0  12:03                          2.40
0.92
  Weir-13              WEIR         0  12:02                          2.63
1.00


  ********************************
  Highest Flow Instability Indexes
  ********************************
  Link Weir-11 (3)
  Link Lateral2 (2)
  Link 10+13_OFF2.0RT-13.1RT (2)
  Link Lateral14 (1)
  Link Lateral19 (1)
```

```
  WARNING 108 : Surcharge elevation defined for Junction Jun-48 is below junction maximum
elevation. Assumed surcharge elevation equal to maximum elevation.
  WARNING 008 : Elevation drop exceeds length for Conduit Lateral-Pine1.
  WARNING 002 : Max/rim elevation (depth) increased to account for connecting conduit height
dimensions for Node Jun-10.
  WARNING 002 : Max/rim elevation (depth) increased to account for connecting conduit height
dimensions for Node Jun-13.
  WARNING 002 : Max/rim elevation (depth) increased to account for connecting conduit height
dimensions for Node Jun-16.
  WARNING 002 : Max/rim elevation (depth) increased to account for connecting conduit height
dimensions for Node Jun-22.
  WARNING 002 : Max/rim elevation (depth) increased to account for connecting conduit height
dimensions for Node Jun-37.
  WARNING 002 : Max/rim elevation (depth) increased to account for connecting conduit height
dimensions for Node Jun-38.
  WARNING 002 : Max/rim elevation (depth) increased to account for connecting conduit height
dimensions for Node Jun-53.
  WARNING 002 : Max/rim elevation (depth) increased to account for connecting conduit height
dimensions for Node Jun-64.

  Analysis began on:  Wed Dec 11 08:12:31 2024
  Analysis ended on:  Wed Dec 11 08:12:37 2024
  Total elapsed time: 00:00:06
```