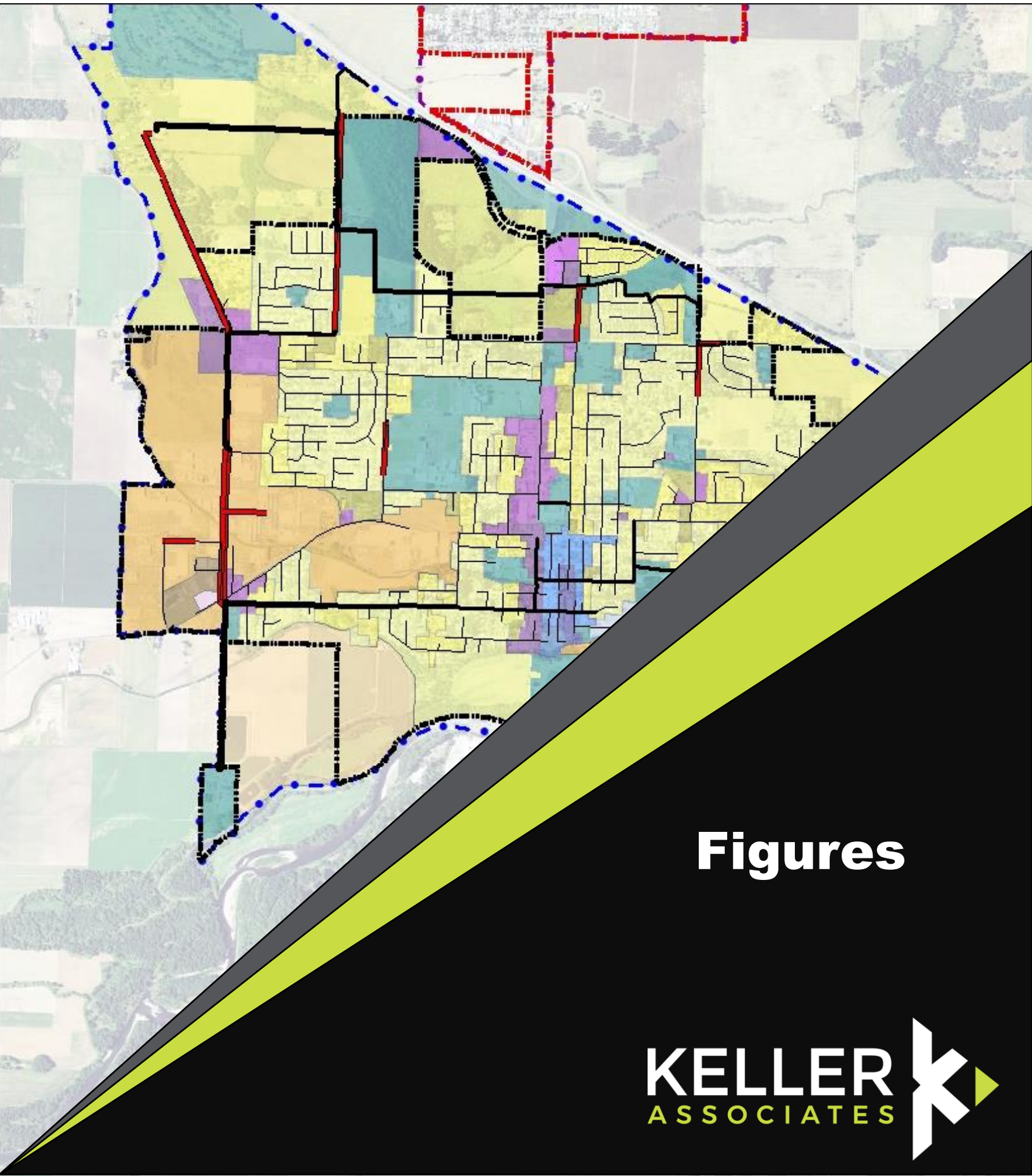
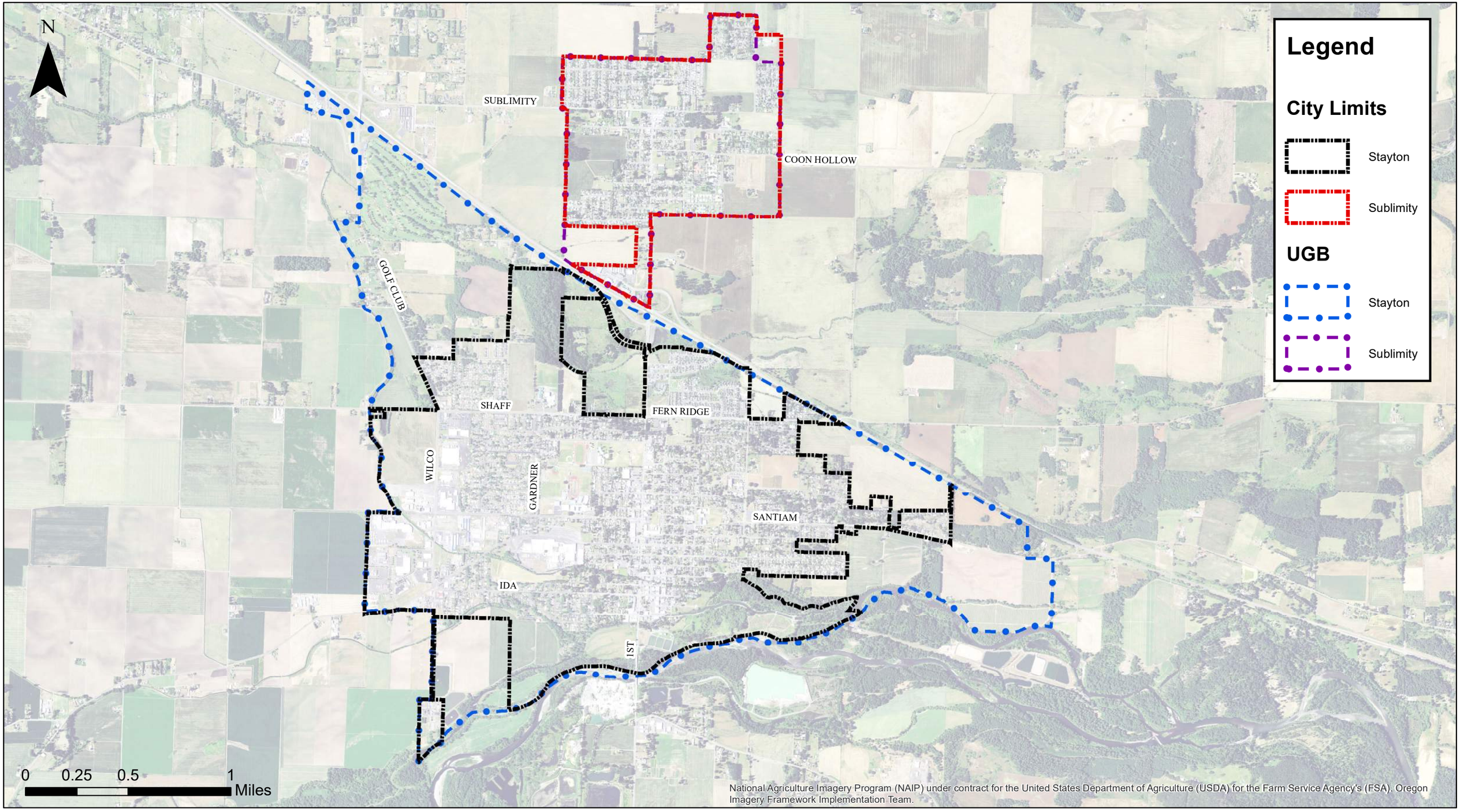
City of Stayton OREGON

Appendix A



Figures

KELLER ASSOCIATES



KELLER ASSOCIATES

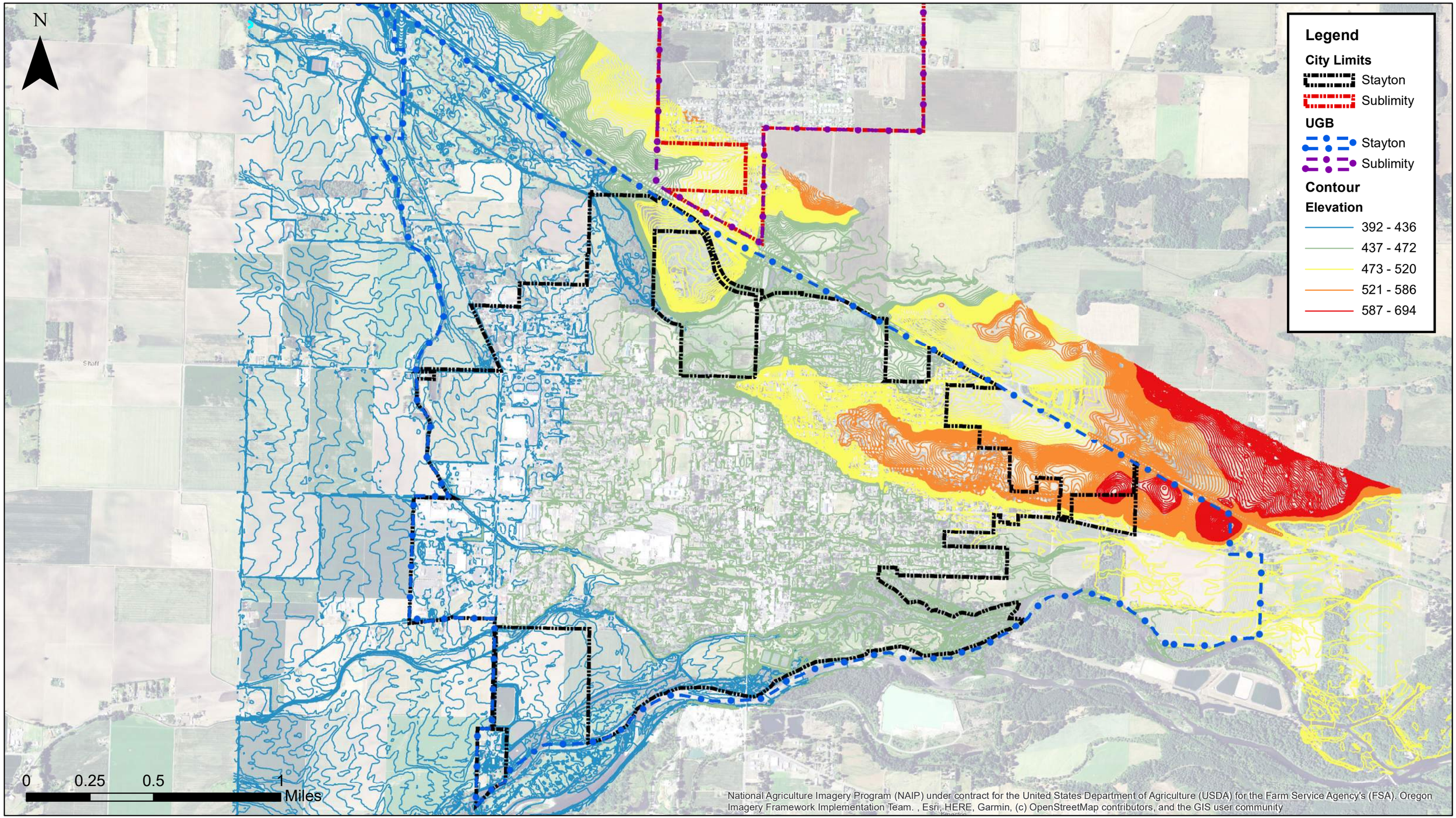
Study Area

Wastewater Facilities Planning Study

CITY OF STAYTON

Figure 1

City of Stayton, OR



KELLER ASSOCIATES

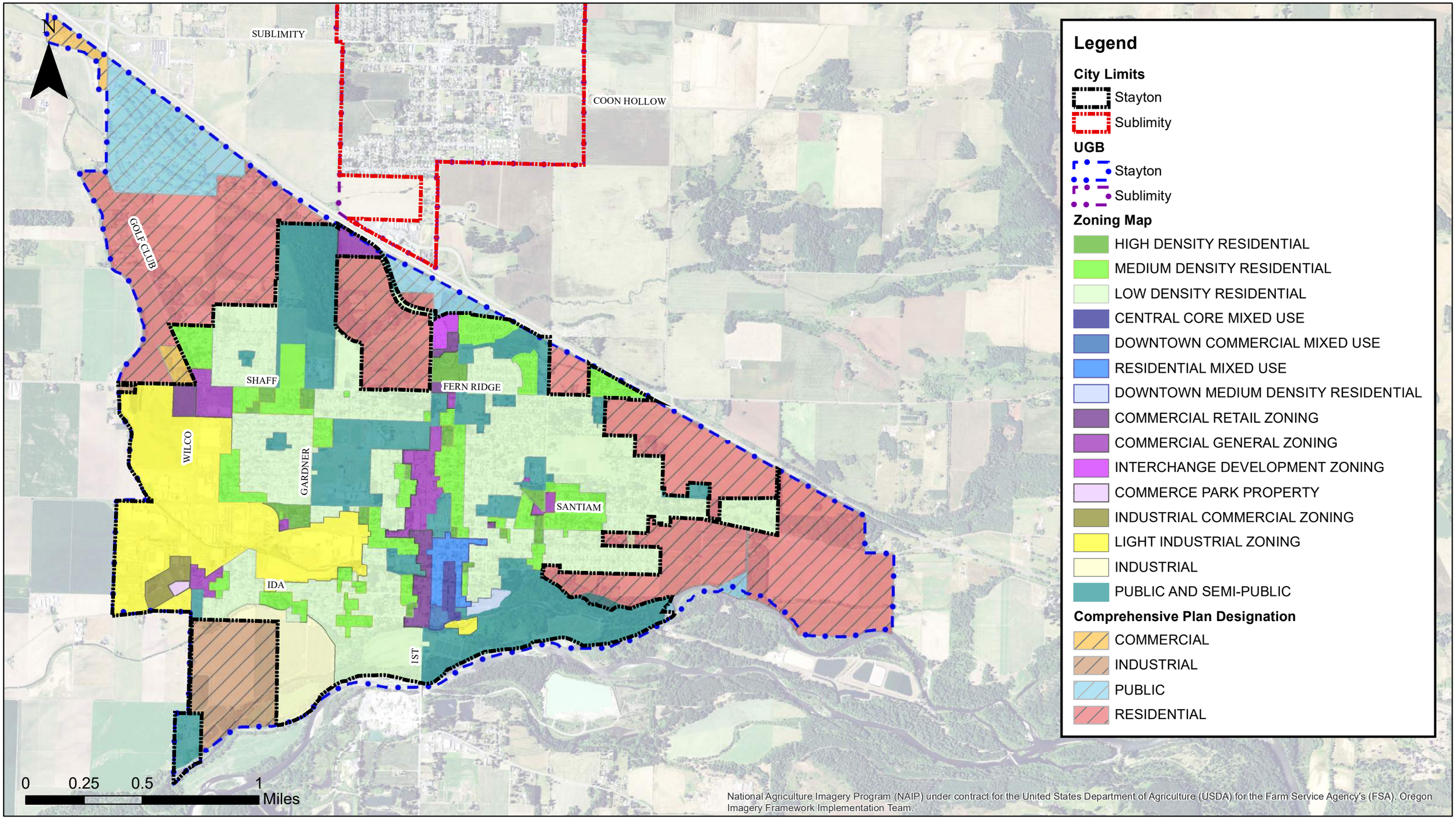
Study Area - Contours

Wastewater Facilities Planning Study

CITY OF STAYTON

Figure 2

City of Stayton, OR



KELLER ASSOCIATES

Existing Zoning and Comprehensive Plan

Wastewater Facilities Planning Study

CITY OF STAYTON

Figure 3

City of Stayton, OR

N

GOLF CLUB

SHAFF

FERN RIDGE

WILCO

GARDNER

SANTIAM

IDA

1ST

Legend

City Limits

- Stayton
- Sublimity

UGB

- Stayton
- Sublimity

FLD_ZONE, ZONE_SUBTY

- 1% Annual Chance of Flood Hazard (100-year storm)
- Regulatory Floodway

Other Areas of Flood

- 0.2 % Annual Chance Flood Hazard (500-year storm)

0 0.25 0.5 1 Miles

National Agriculture Imagery Program (NAIP) under contract for the United States Department of Agriculture (USDA) for the Farm Service Agency's (FSA). Oregon Imagery Framework Implementation Team.

KELLER ASSOCIATES

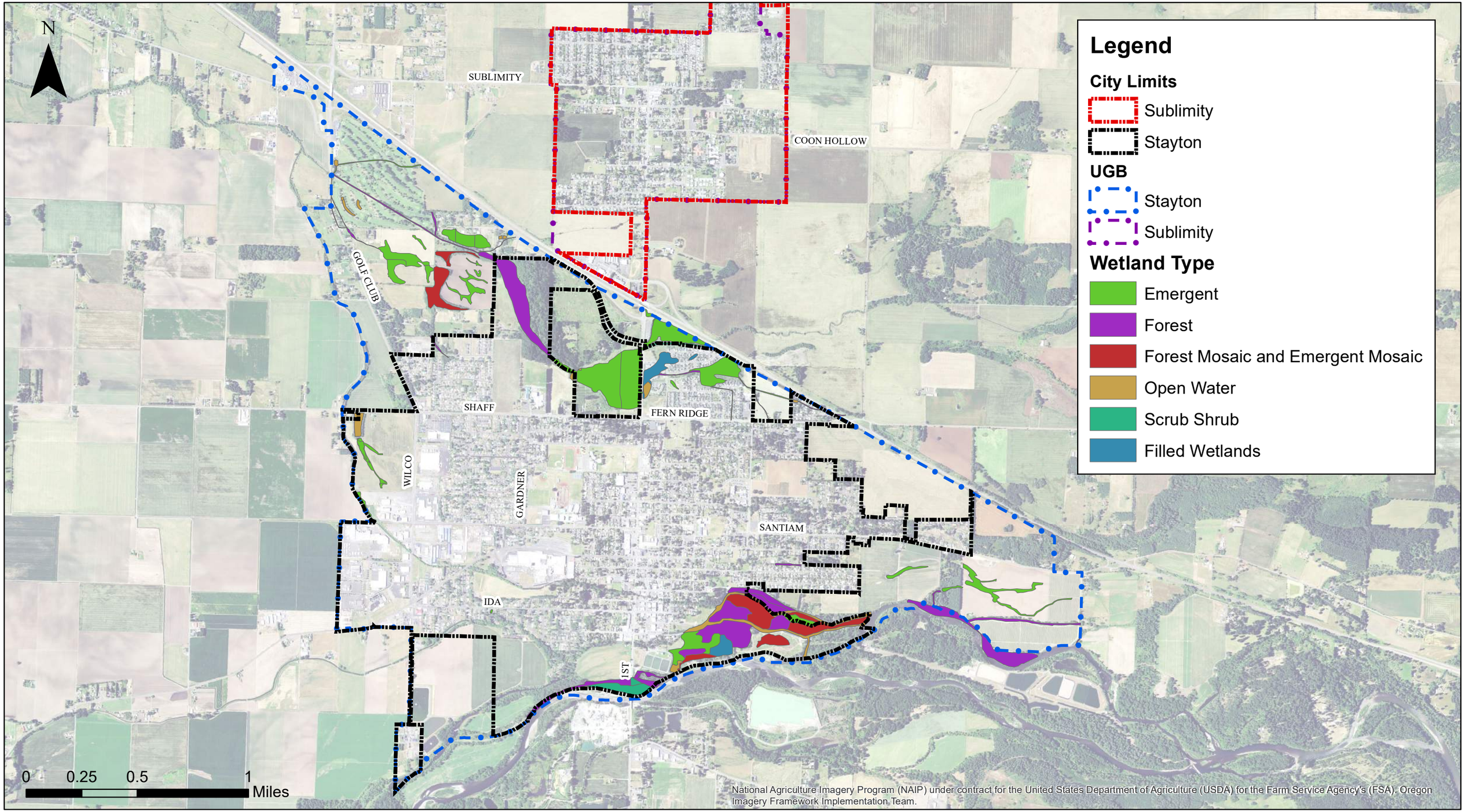
FEMA Floodplain

Wastewater Facilities Planning Study

CITY OF STAYTON

Figure 4

City of Stayton, OR



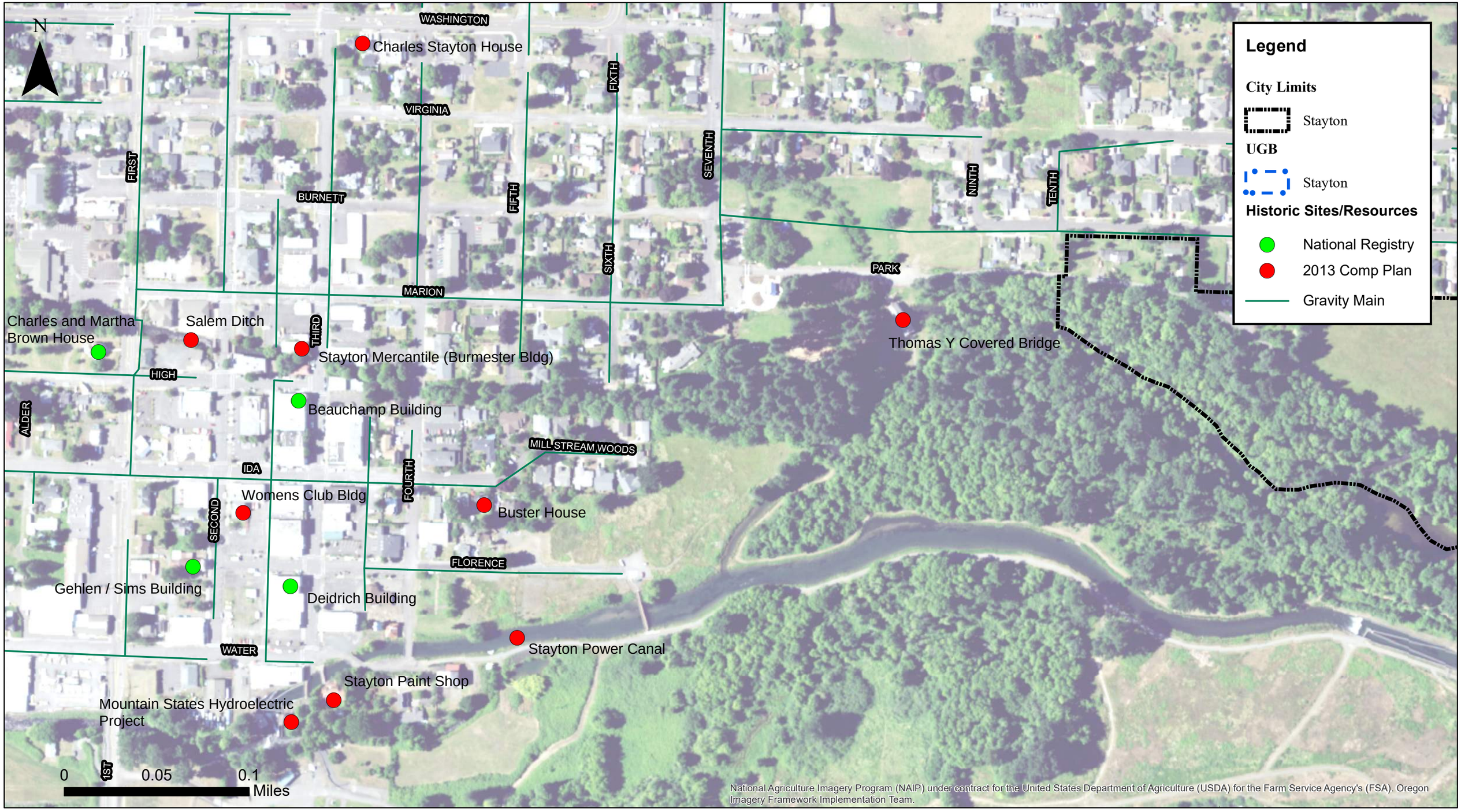
KELLER ASSOCIATES

Local Wetland Inventory

Wastewater Facilities Planning Study

Figure 5

City of Stayton, OR



KELLER ASSOCIATES

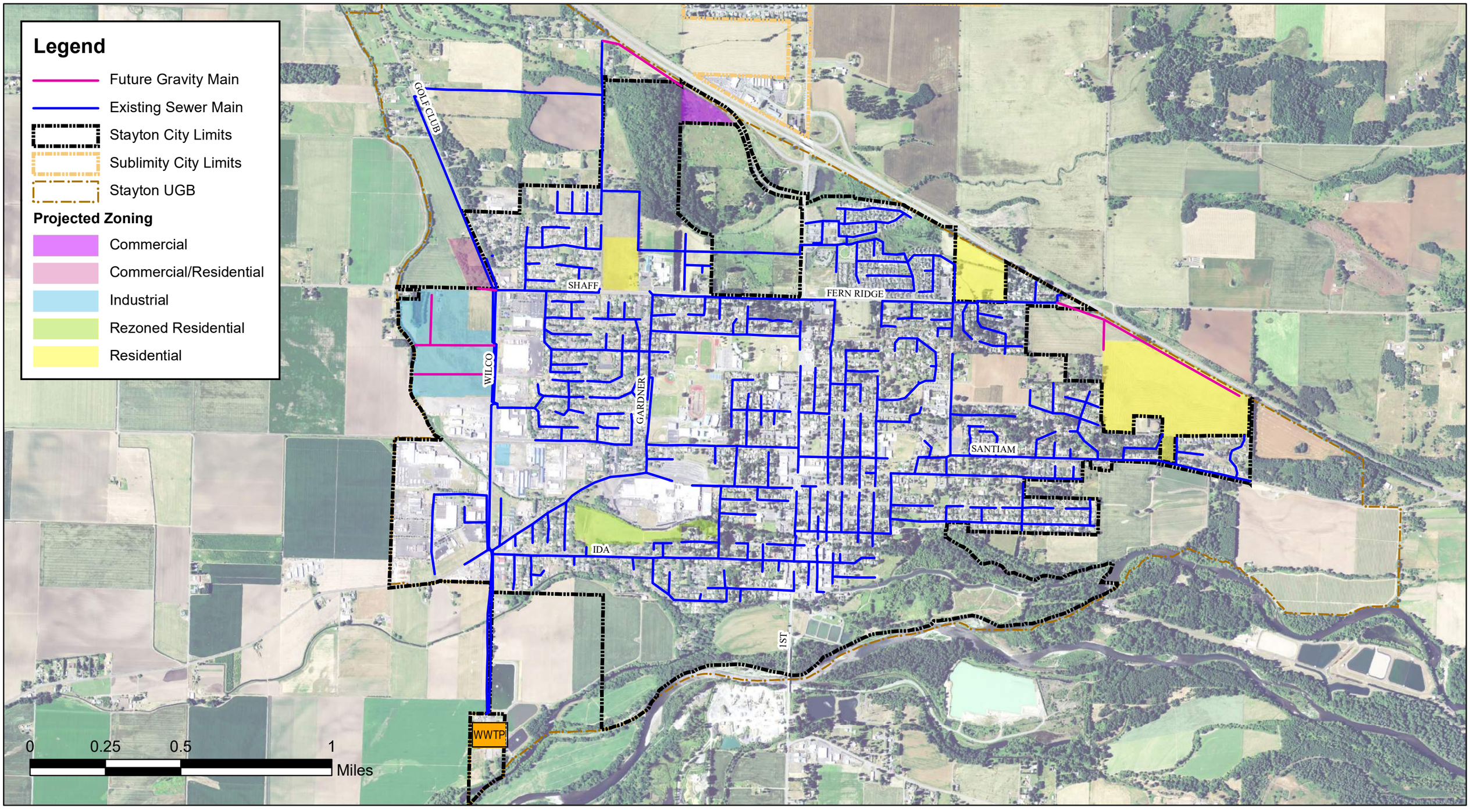
Historic Sites/Buildings/etc.

Wastewater Facilities Planning Study

CITY OF STAYTON

Figure 6

City of Stayton, OR



KELLER ASSOCIATES

20-Year (2040) Projected Development Areas within Stayton UGB

Figure 7

City of Stayton, OR

Wastewater Facilities Planning Study

Mill Creek
PS
Gardner
PS
Wilco
PS
Industrial Area
PS
WWTP
0 0.25 0.5 1 Miles

Legend

PS Pump Stations

City Limits
- Stayton
- Sublimity

UGB
- Stayton
- Sublimity

Force Mains

DIAMETER
- 2
- 6
- 8
- 10
- 18
- 20

Gravity & Mains

DIAMETER
- 8
- 10
- 12
- 14
- 15
- 16
- 18
- 20
- 21
- 24

National Agriculture Imagery Program (NAIP) under contract for the United States Department of Agriculture (USDA) for the Farm Service Agency's (FSA). Oregon Imagery Framework Implementation Team.

KELLER ASSOCIATES

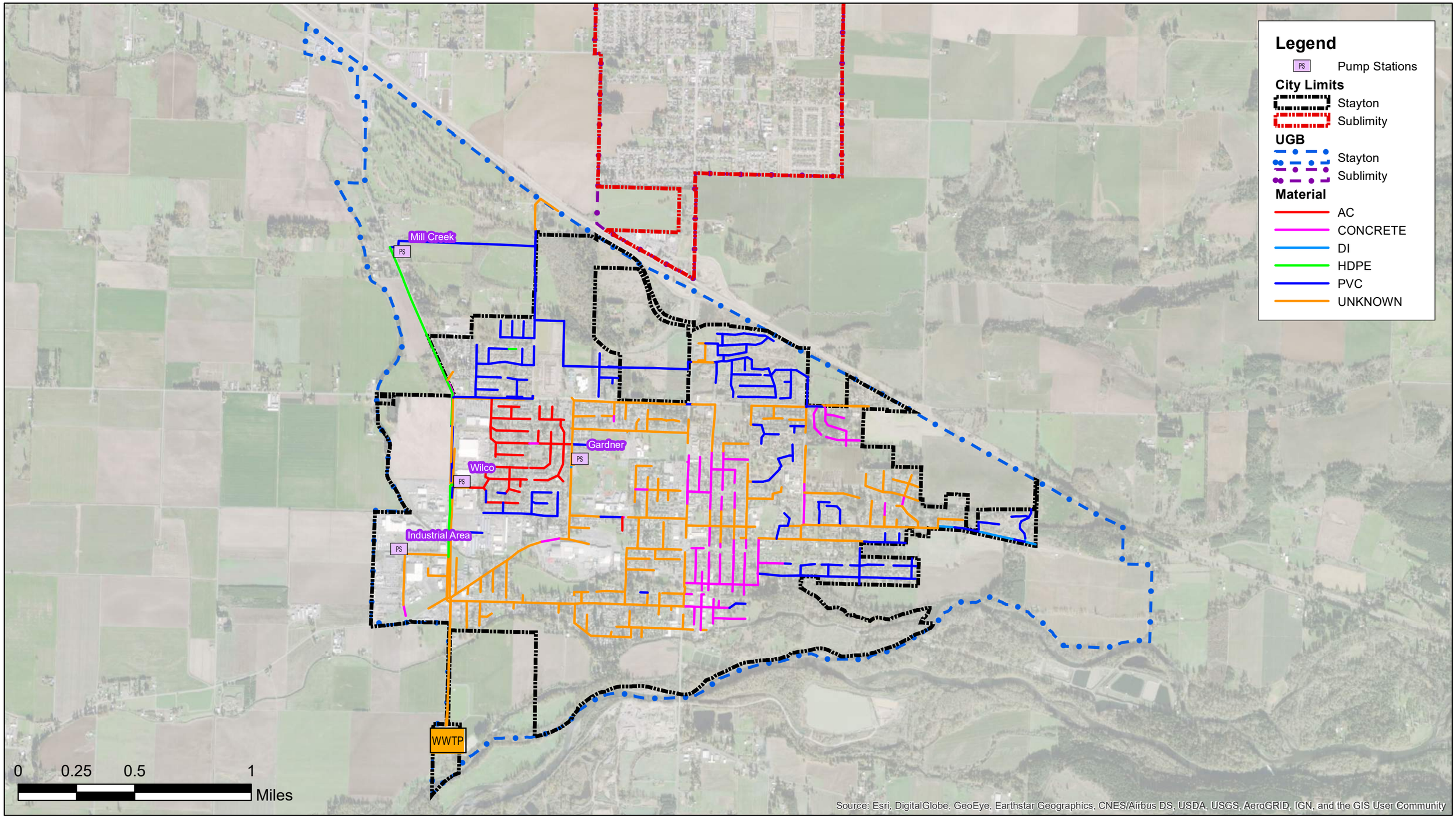
Existing System - Pipe Diameter

Wastewater Facilities Planning Study

CITY OF STAYTON

Figure 8

City of Stayton, OR



KELLER ASSOCIATES

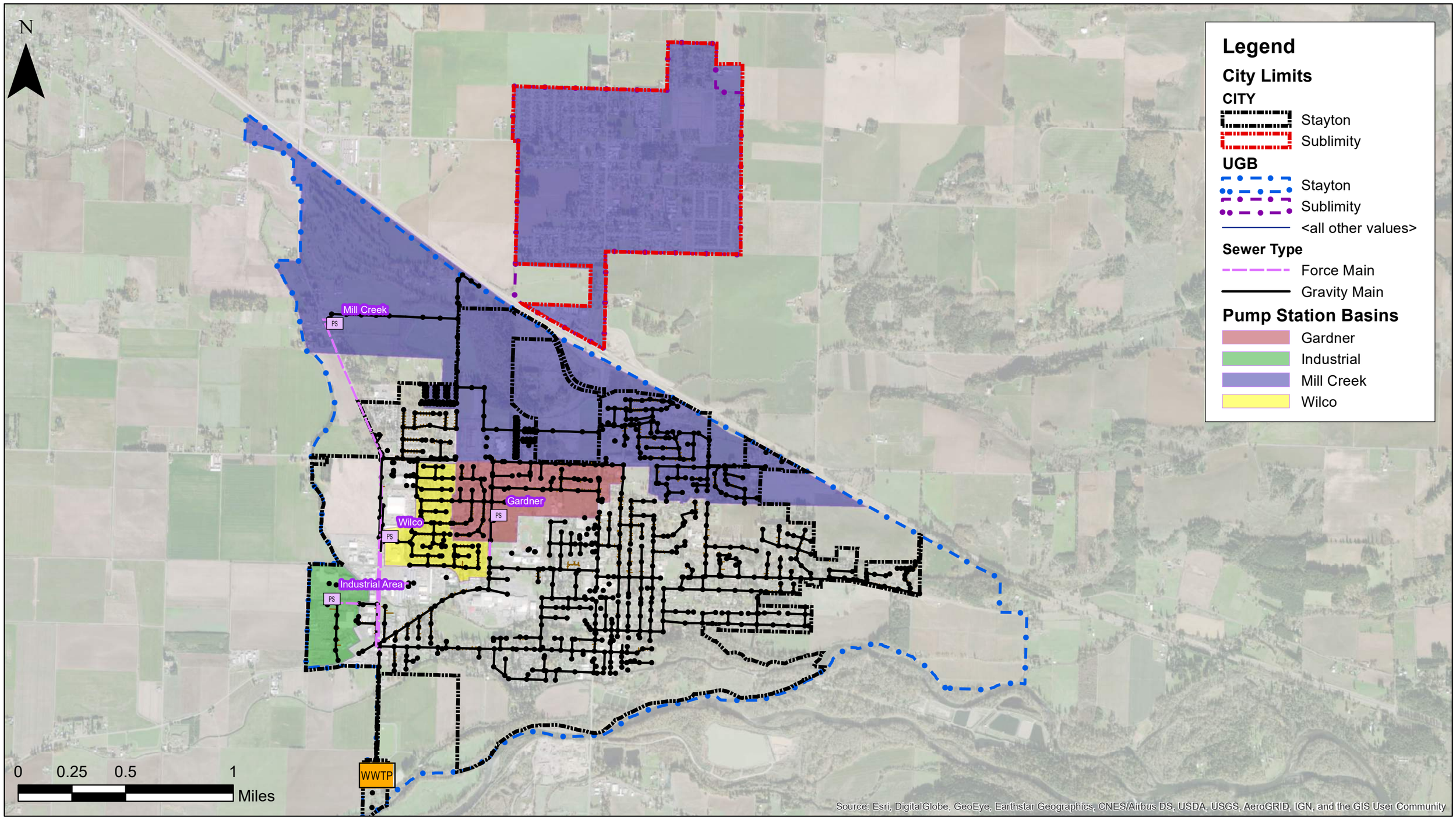
Existing System - Pipe Material

Wastewater Facilities Planning Study

CITY OF STAYTON

Figure 9

City of Stayton, OR



KELLER ASSOCIATES

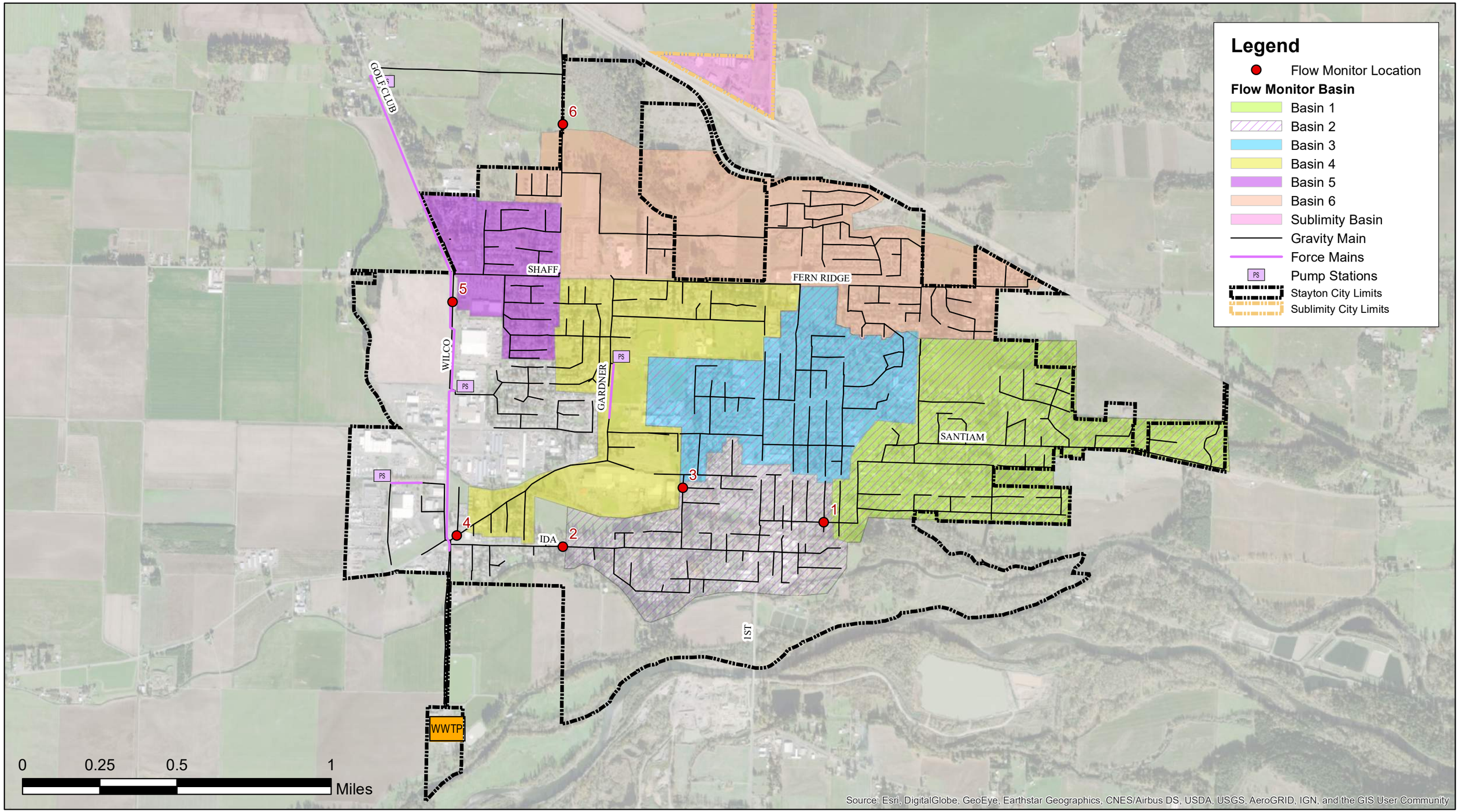
Pump Station Basins

Wastewater Facilities Planning Study

CITY OF STAYTON

Figure 10

City of Stayton, OR



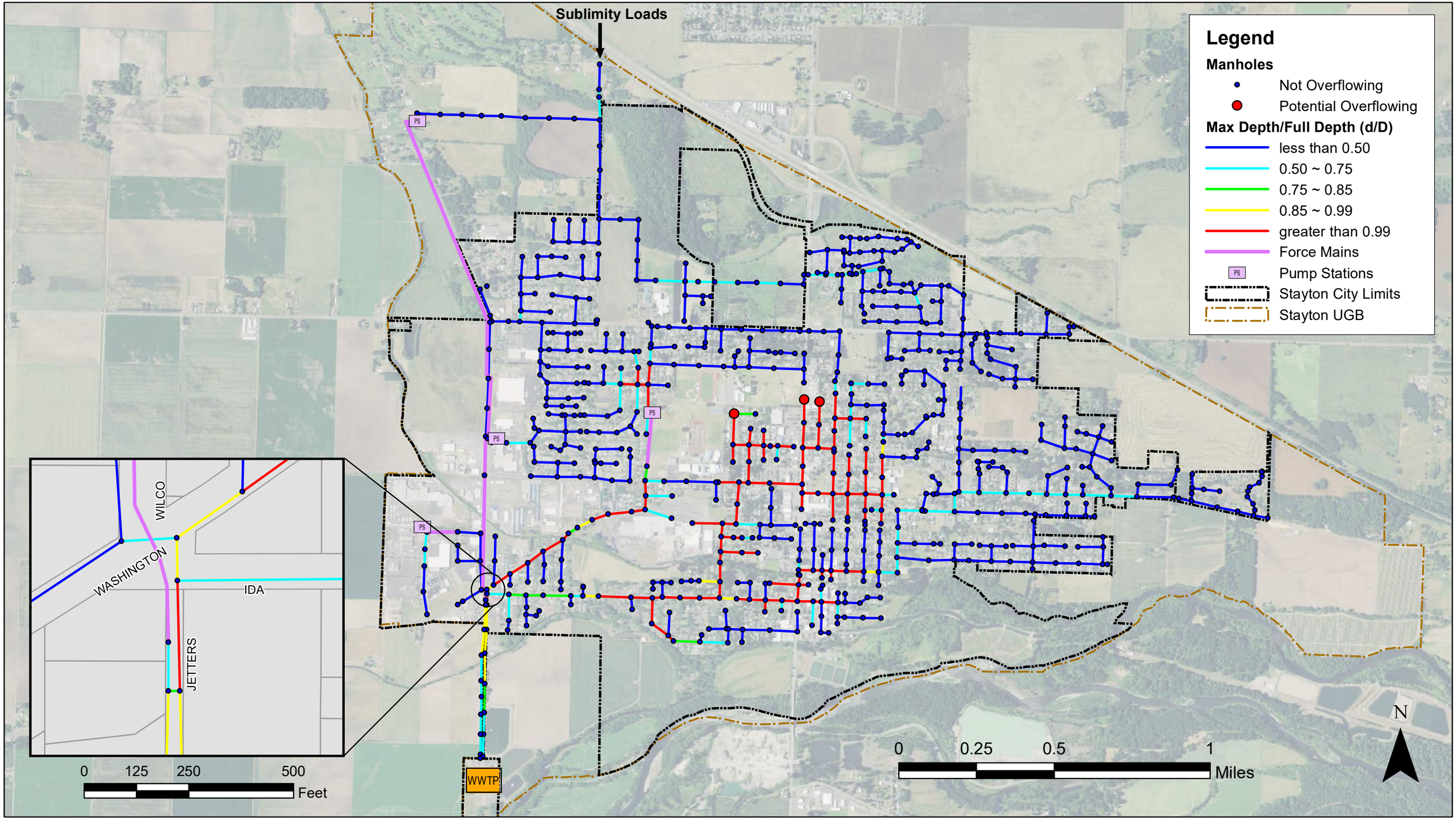
KELLER ASSOCIATES

Flow Monitoring Locations

Wastewater Facilities Planning Study

Figure 11

City of Stayton, OR



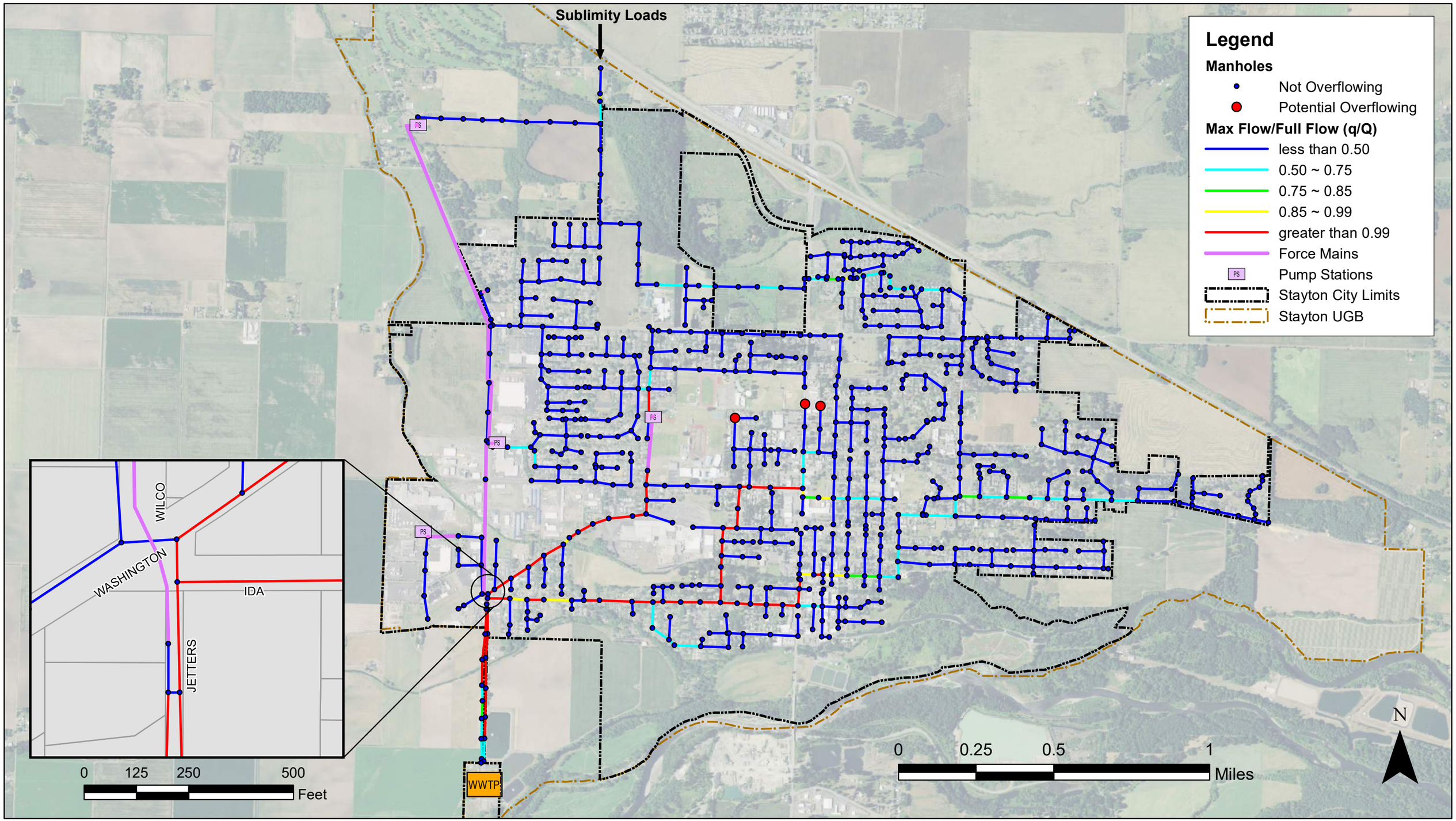
KELLER ASSOCIATES

Existing (2020) System Evaluation: Maximum Depth of Flow

Wastewater Facilities Planning Study

Figure 12a

City of Stayton, OR



KELLER ASSOCIATES

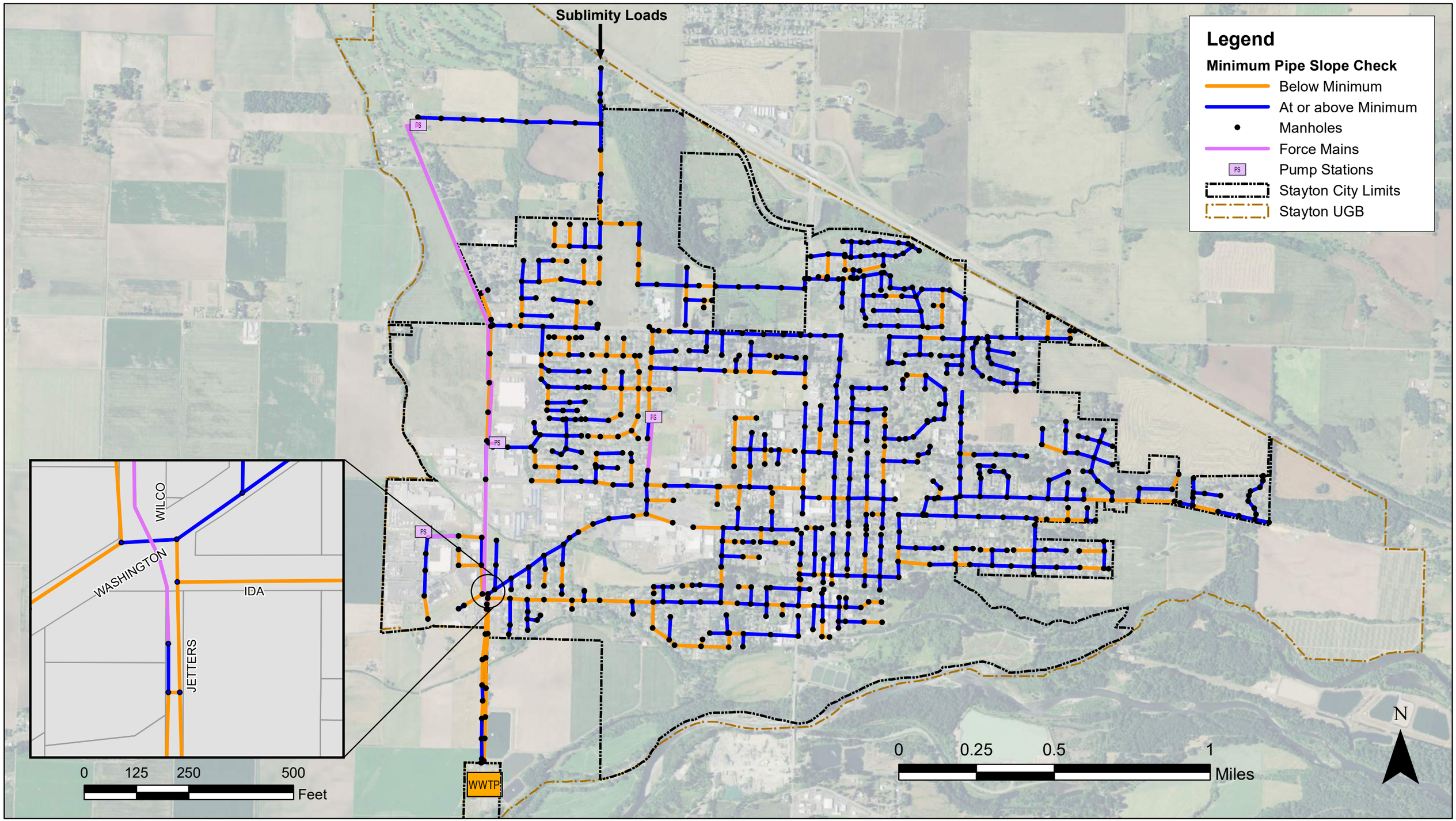
Existing (2020) System Evaluation: Maximum Flow

Wastewater Facilities Planning Study

CITY OF STAYTON

Figure 12b

City of Stayton, OR



KELLER ASSOCIATES

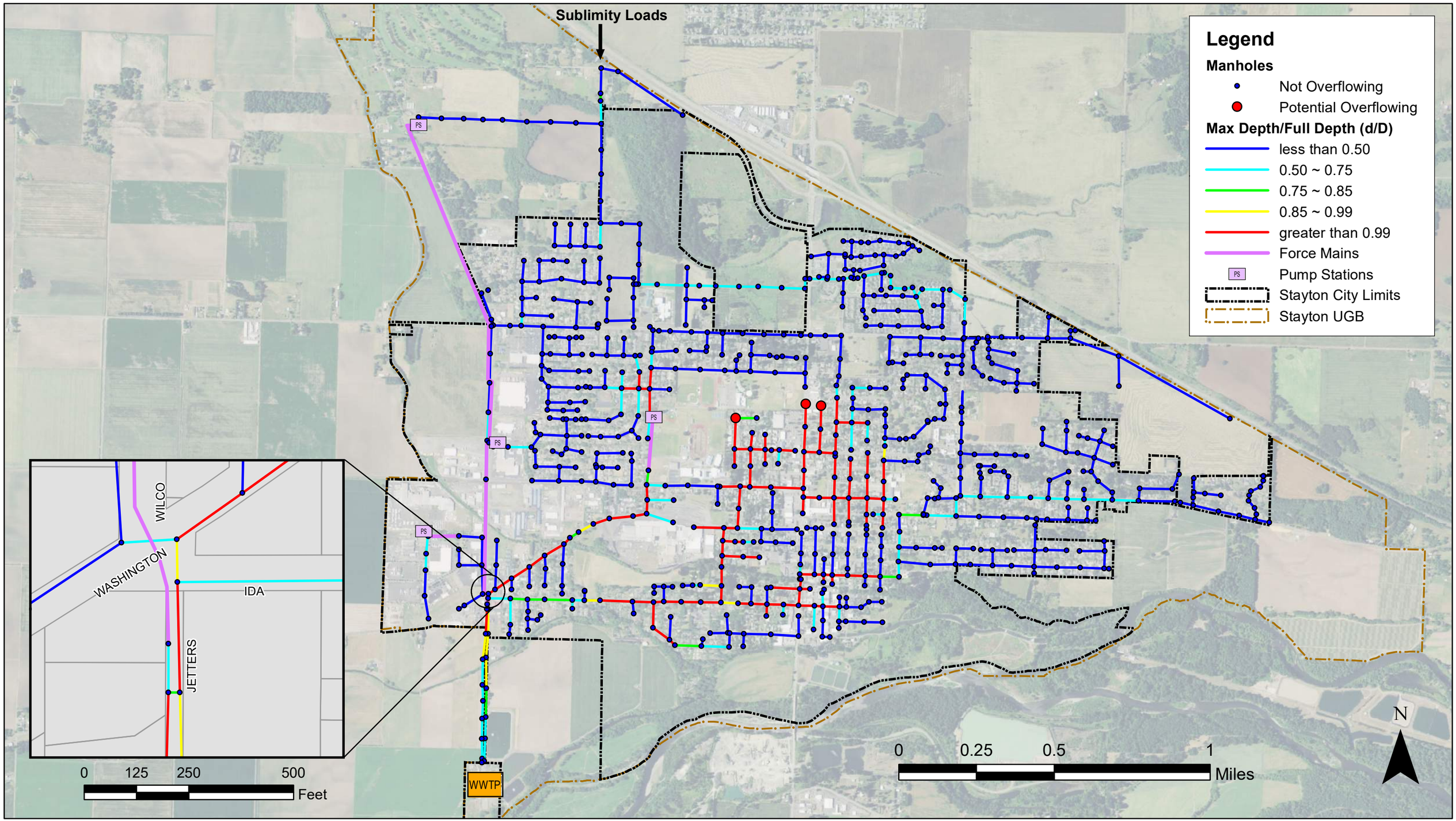
Existing (2020) System Evaluation: Minimum Pipe Slope

Wastewater Facilities Planning Study

CITY OF STAYTON

Figure 13

City of Stayton, OR



KELLER ASSOCIATES

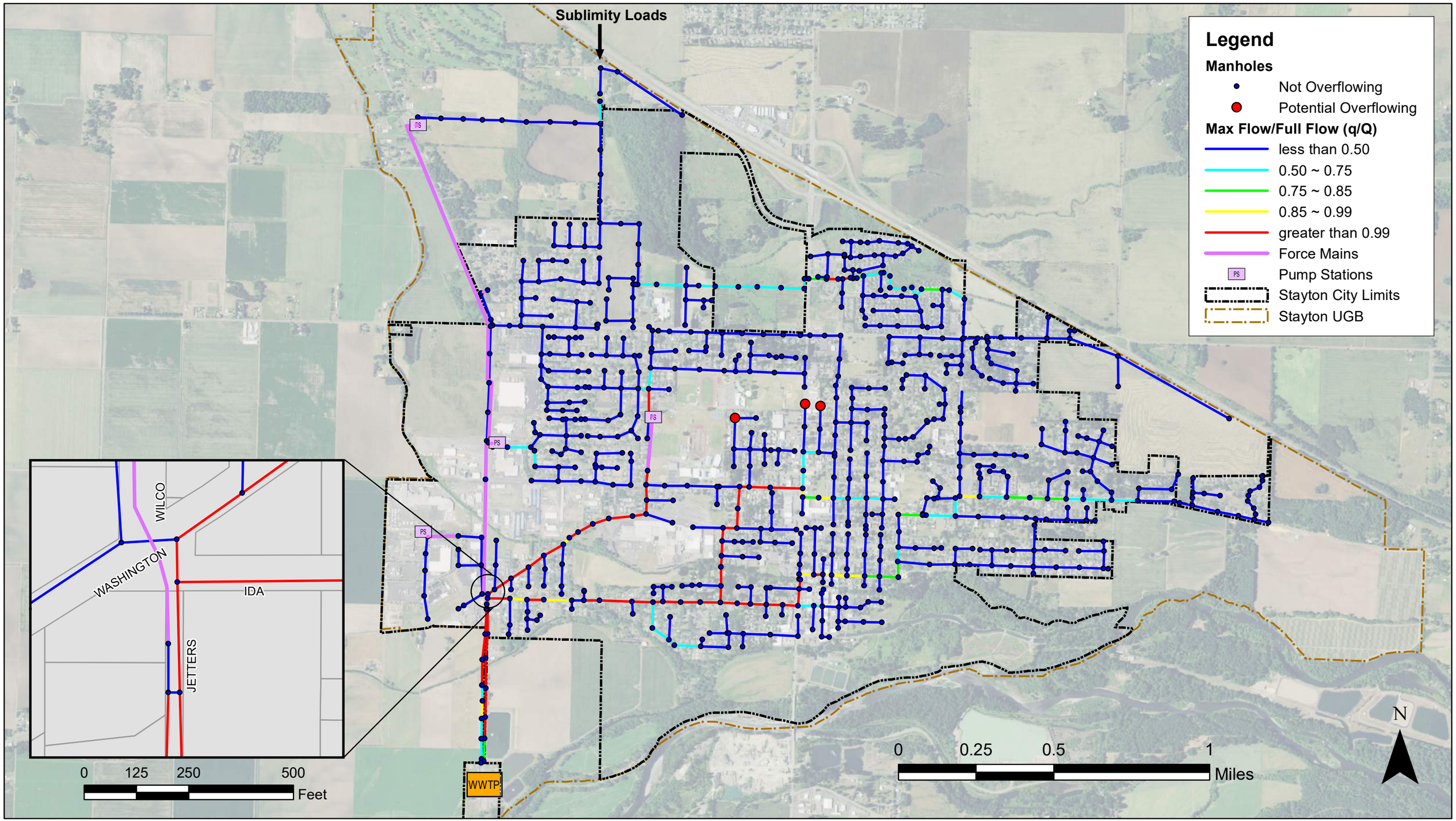
Future (2040) System Evaluation: Maximum Depth of Flow

Wastewater Facilities Planning Study

CITY OF STAYTON

Figure 14a

City of Stayton, OR



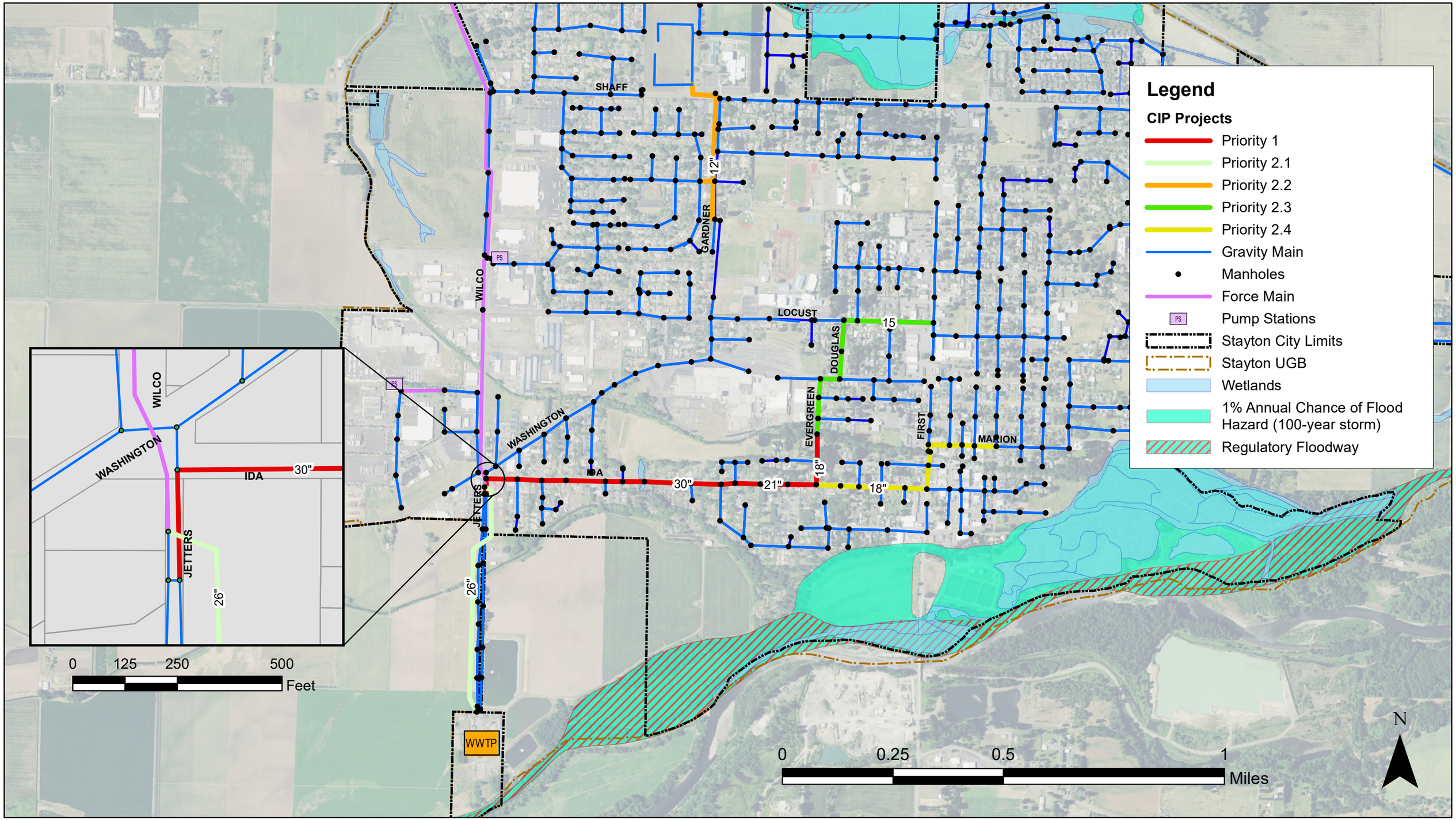
KELLER ASSOCIATES

Future (2040) System Evaluation: Maximum Flow

Wastewater Facilities Planning Study

Figure 14b

City of Stayton, OR



KELLER ASSOCIATES

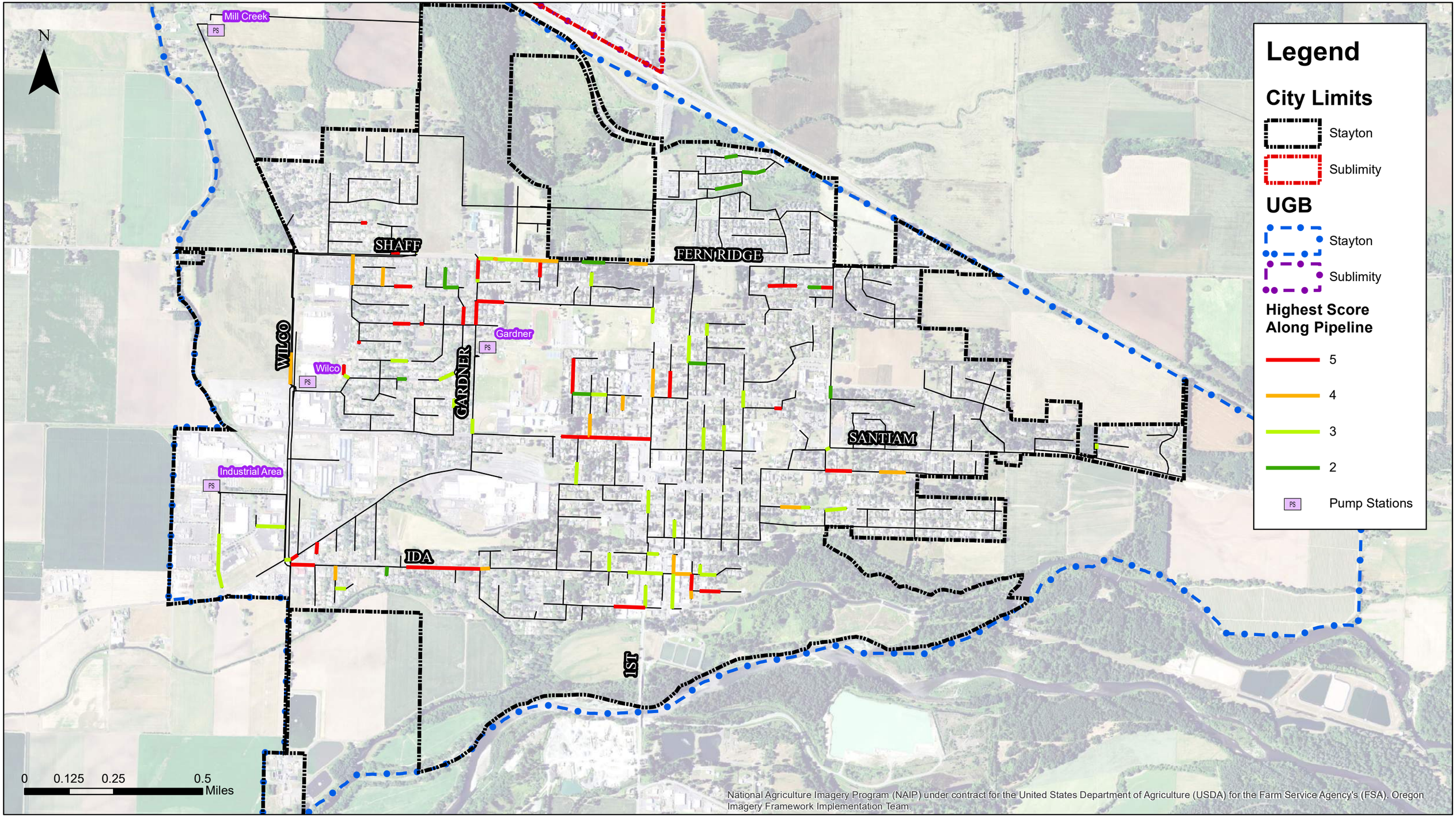
Collection System Capital Improvement Plan (CIP)

Wastewater Facilities Planning Study

CITY OF STAYTON

Figure 15

City of Stayton, OR



KELLER ASSOCIATES

I/I Highest Defect Score Along Pipeline

Wastewater Facilities Planning Study

CITY OF STAYTON

Figure 16

City of Stayton,OR

N

Mill Creek
PS
SHAFF
FERN RIDGE
WILCO
Gardner
PS
GARDNER
Wilco
PS
SANTIAM
Industrial Area
PS
IDA
1ST

0 0.125 0.25 0.5 Miles

National Agriculture Imagery Program (NAIP) under contract for the United States Department of Agriculture (USDA) for the Farm Service Agency's (FSA), Oregon Imagery Framework Implementation Team.

Legend

City Limits

- Stayton
- Sublimity

UGB

- Stayton
- Sublimity

1-10 PACP Score

- 10
- 9
- 8
- 7
- 6
- 5
- 4
- 3
- 2
- 0-1
- PS Pump Stations

KELLER ASSOCIATES

Pipe Condition 1-10 PACP Score

Wastewater Facilities Planning Study

CITY OF STAYTON

Figure 17

City of Stayton, OR

N

Mill Creek
PS
SHAFF
FERN RIDGE
WILCO
Gardner
PS
GARDNER
Wilco
PS
SANTIAM
Industrial Area
PS
IDA
1ST

0 0.125 0.25 0.5 Miles

National Agriculture Imagery Program (NAIP) under contract for the United States Department of Agriculture (USDA) for the Farm Service Agency's (FSA), Oregon Imagery Framework Implementation Team.

Legend

City Limits
- Stayton
- Sublimity

UGB
- Stayton
- Sublimity

Pipe Condition Score
- 10 - 13
- 7 - 9
- 4 - 6
- 1 - 3
- 0

PS Pump Stations

KELLER ASSOCIATES

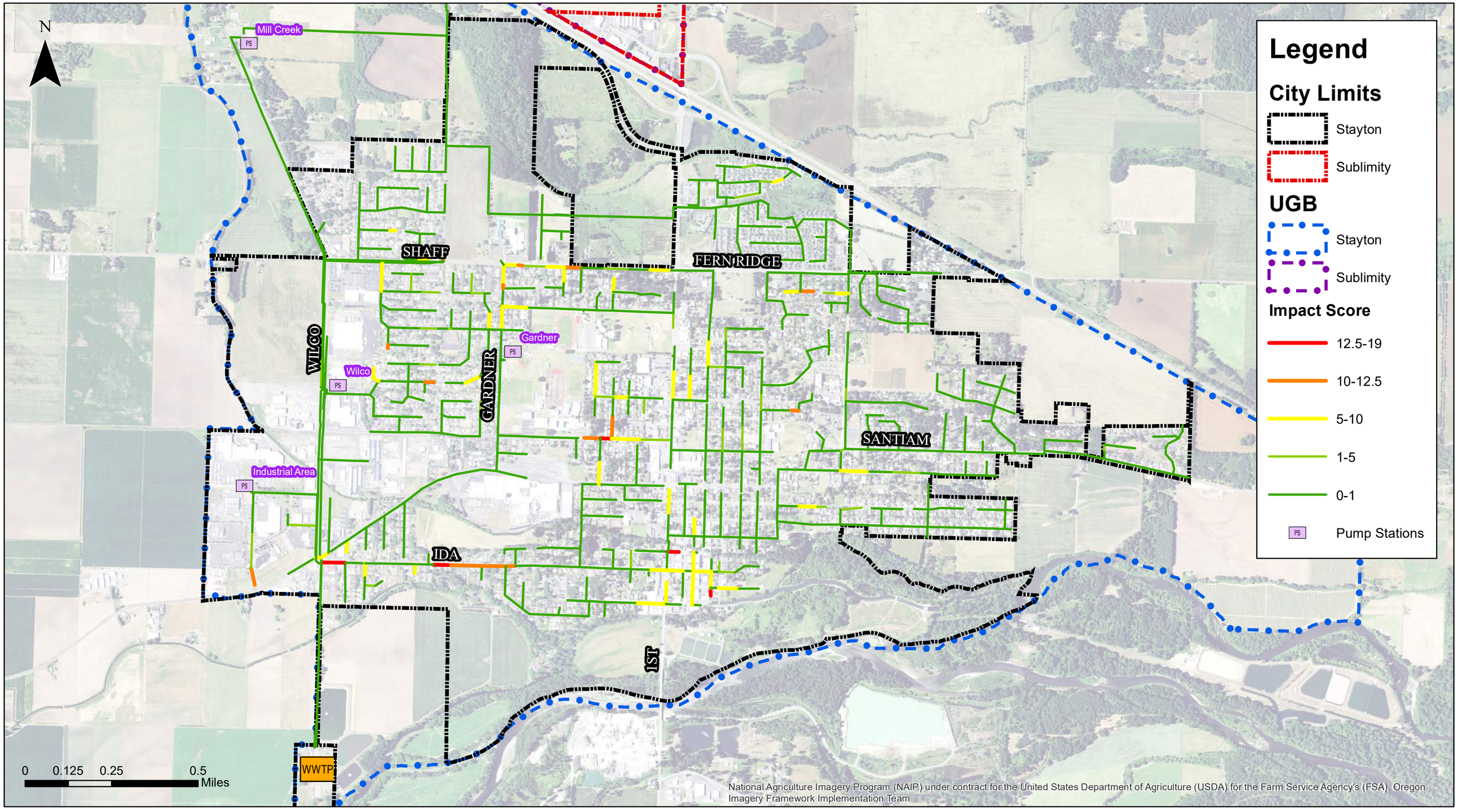
Pipe Condition PACP, Material, and Night-Time Flow

Wastewater Facilities Planning Study

CITY OF STAYTON

Figure 18

City of Stayton, OR



KELLER ASSOCIATES

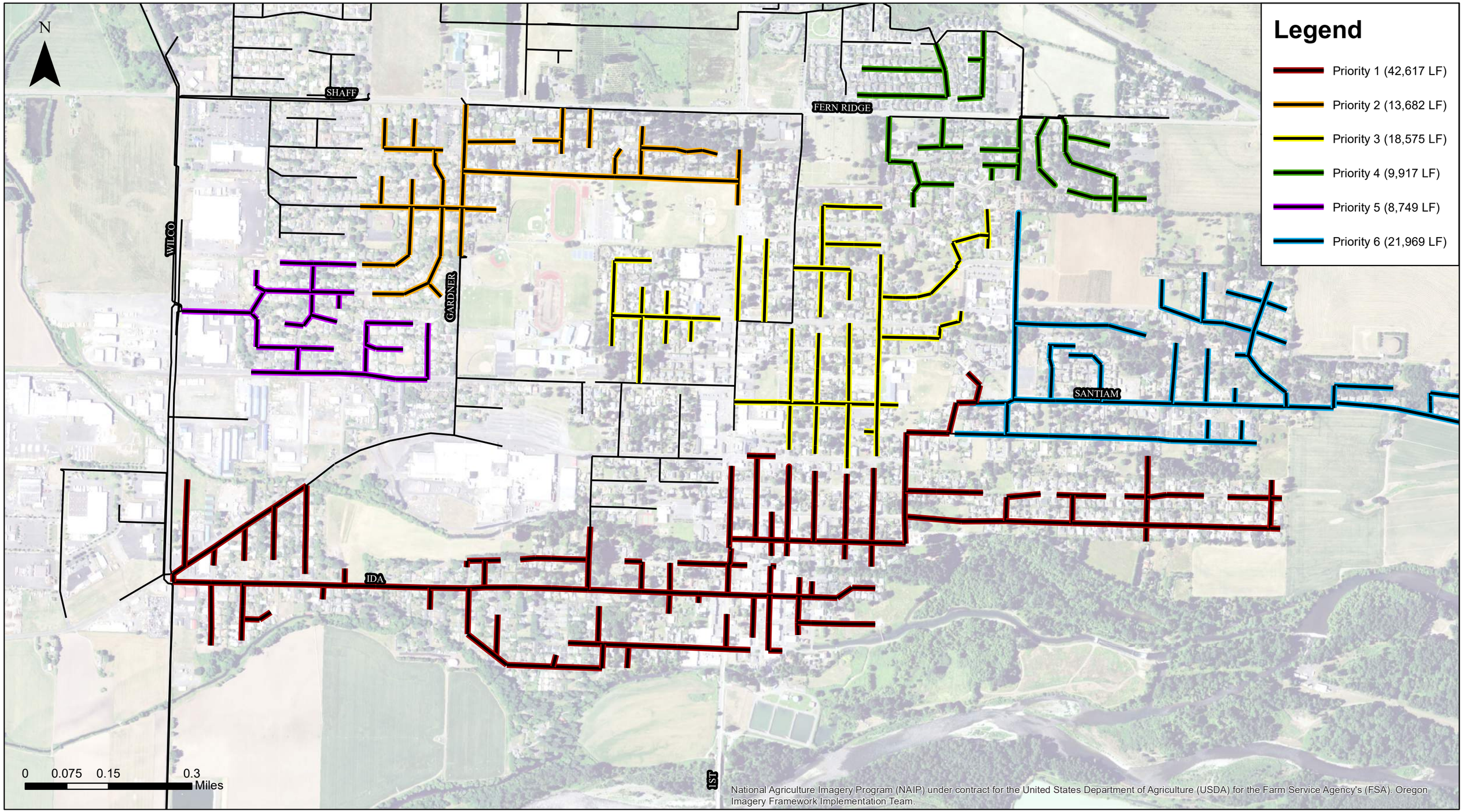
I/I Impact Scores

Wastewater Facilities Planning Study

CITY OF STAYTON

Figure 19

City of Stayton, OR



KELLER ASSOCIATES

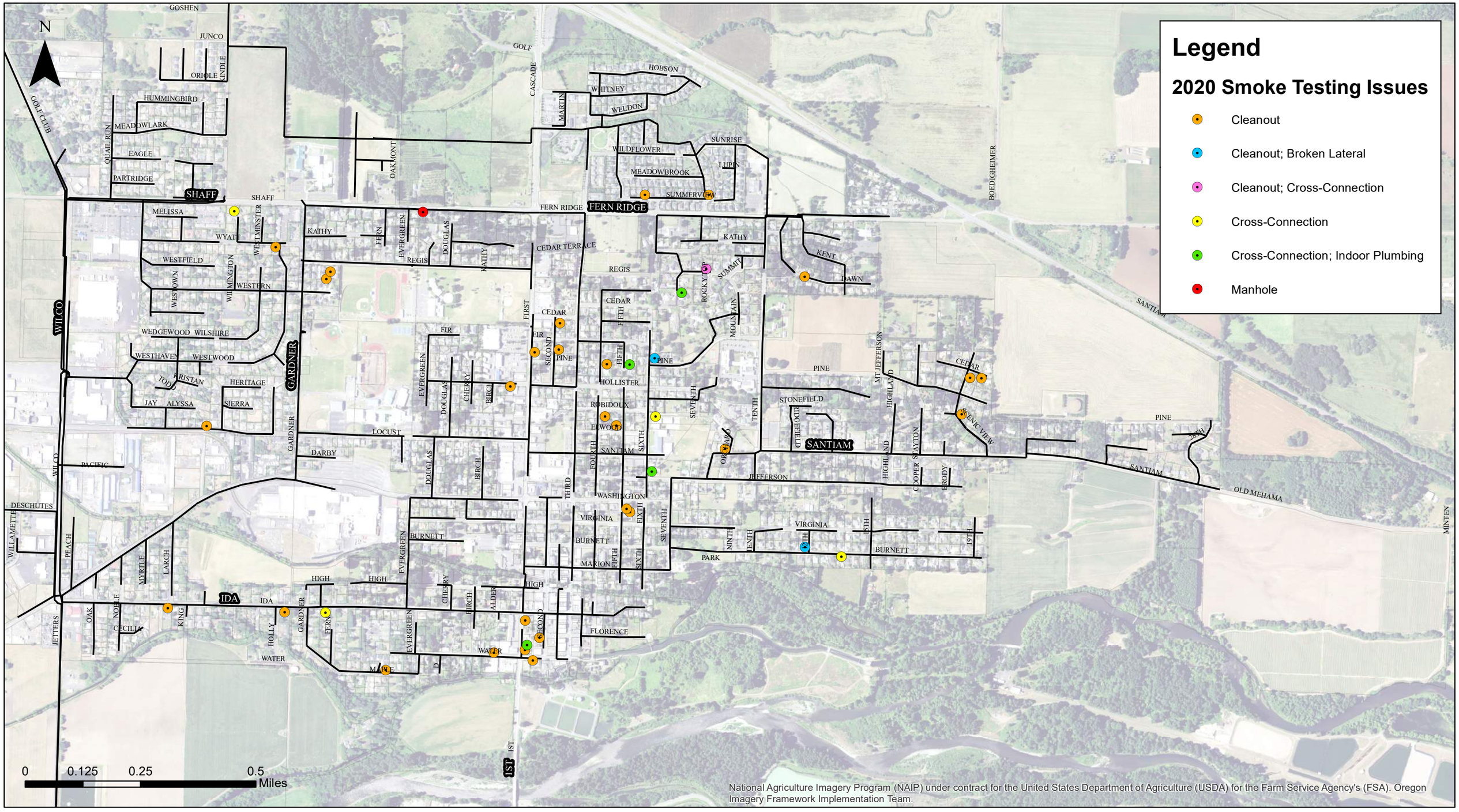
I/I Smoke Testing Priorities

Wastewater Facilities Planning Study

CITY OF STAYTON

Figure 20

City of Stayton, OR



KELLER ASSOCIATES

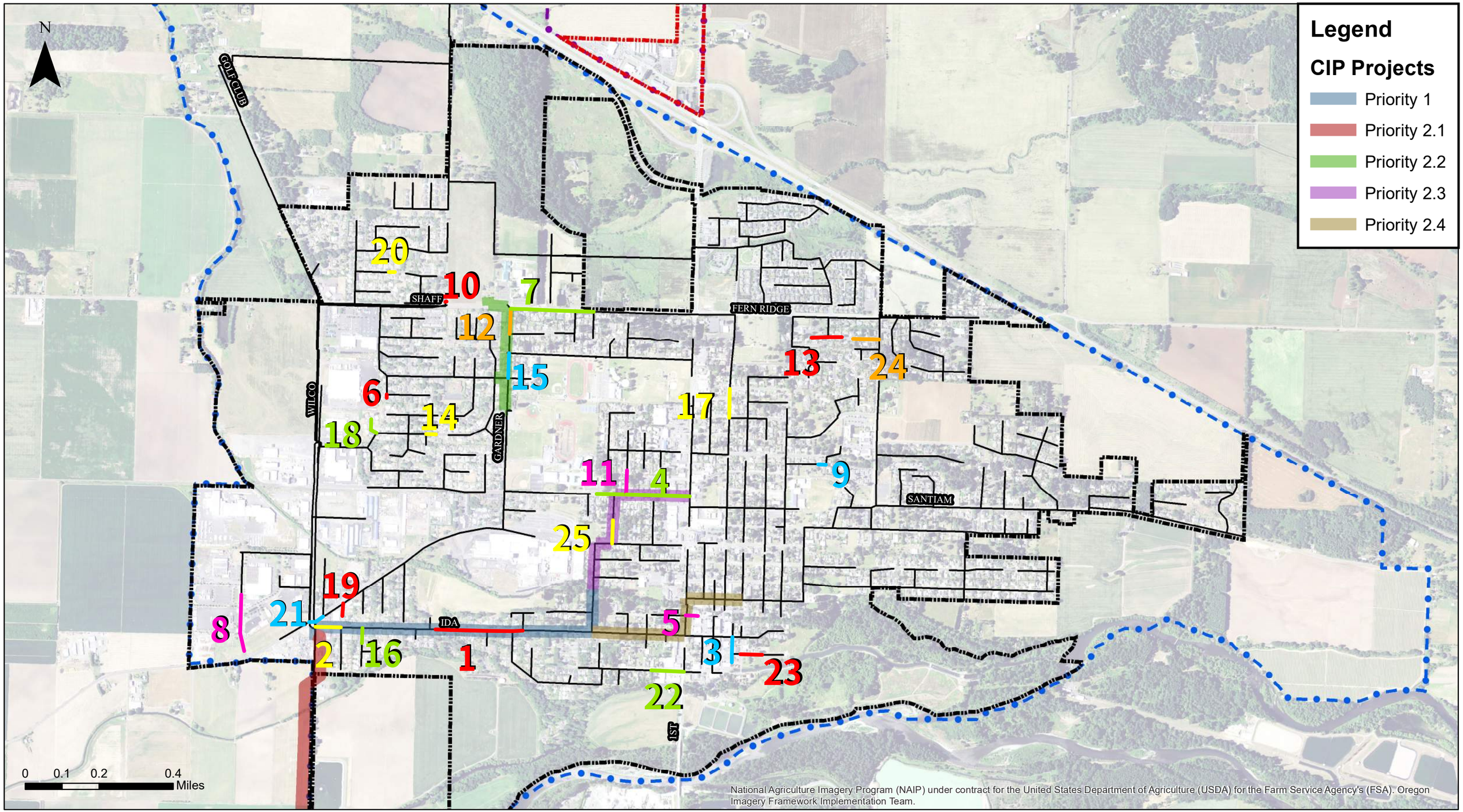
I/I Smoke Testing Results

Wastewater Facilities Planning Study

CITY OF STAYTON

Figure 21

City of Stayton, OR



KELLER ASSOCIATES

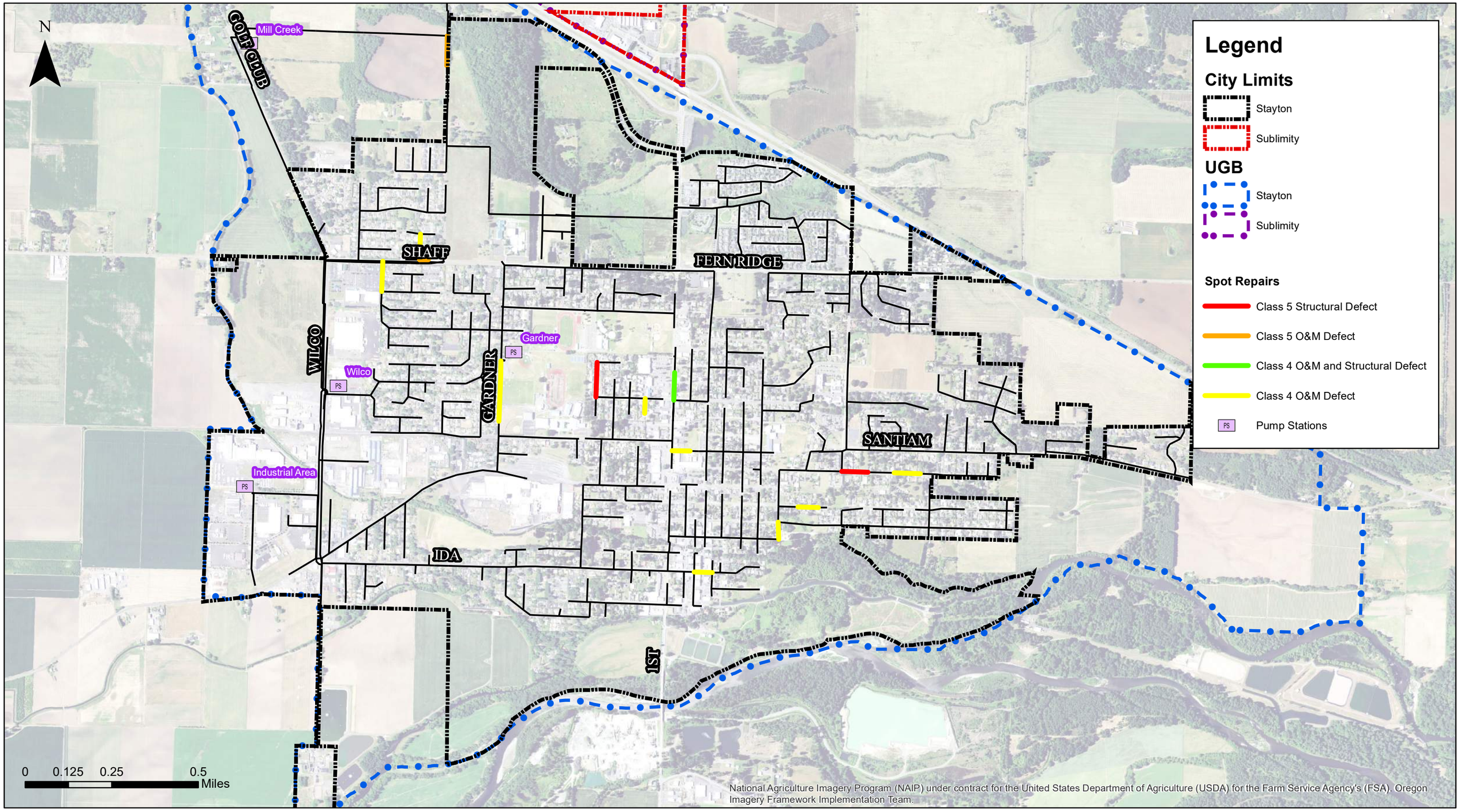
I/I Prioritization

Wastewater Facilities Planning Study

CITY OF STAYTON

Figure 22

City of Stayton, OR



KELLER ASSOCIATES

I/I Spot Repair List

Wastewater Facilities Planning Study

CITY OF STAYTON

Figure 23

City of Stayton, OR

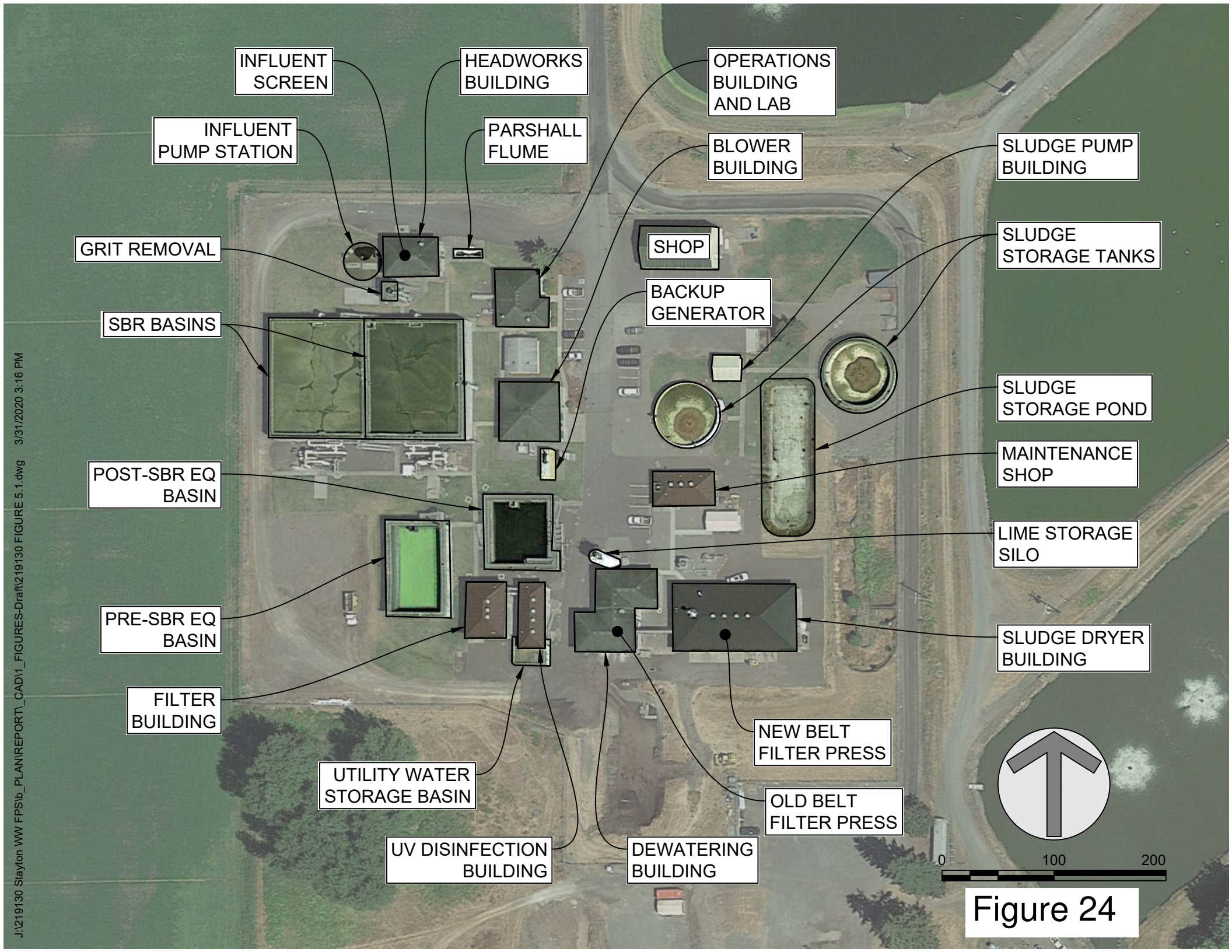

INFLUENT SCREEN
HEADWORKS BUILDING
OPERATIONS BUILDING AND LAB
INFLUENT PUMP STATION
PARSHALL FLUME
BLOWER BUILDING
SLUDGE PUMP BUILDING
GRIT REMOVAL
SHOP
SLUDGE STORAGE TANKS
BACKUP GENERATOR
SBR BASINS
SLUDGE STORAGE POND
MAINTENANCE SHOP
POST-SBR EQ BASIN
LIME STORAGE SILO
PRE-SBR EQ BASIN
SLUDGE DRYER BUILDING
FILTER BUILDING
NEW BELT FILTER PRESS
UTILITY WATER STORAGE BASIN
OLD BELT FILTER PRESS
UV DISINFECTION BUILDING
DEWATERING BUILDING
0
100
200
J:\219130 Stayton WW FPSIb_PLAN\REPORT_CAD\1_FIGURES-Draft\219130 FIGURE 5.1.dwg 3/31/2020 3:16 PM

Figure 24

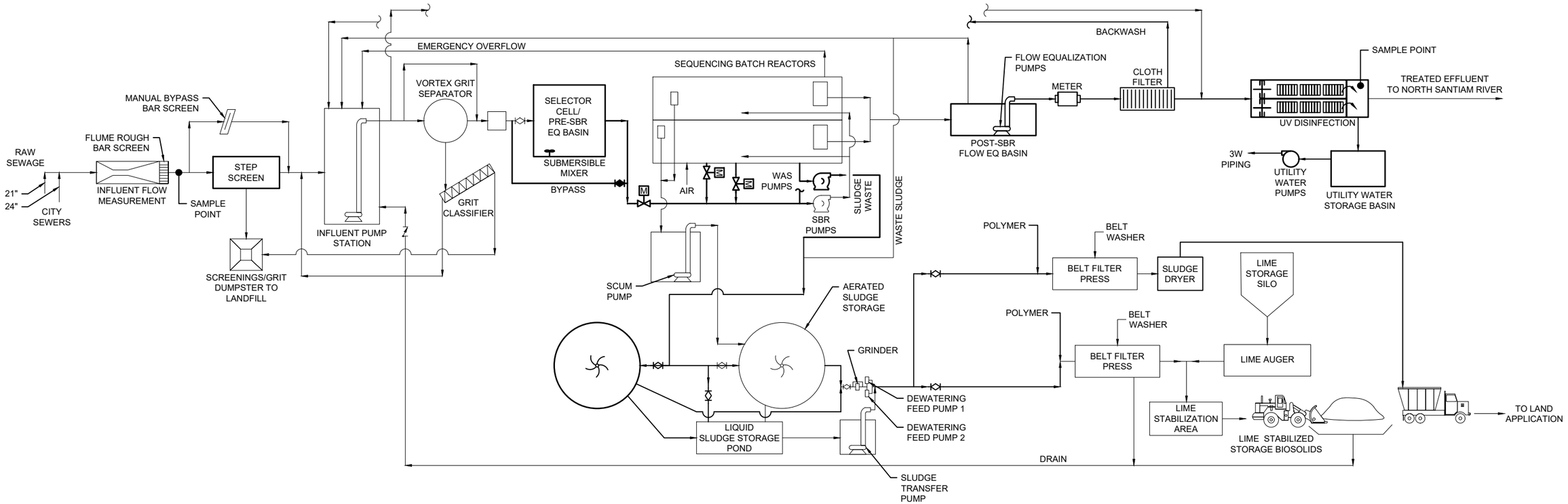
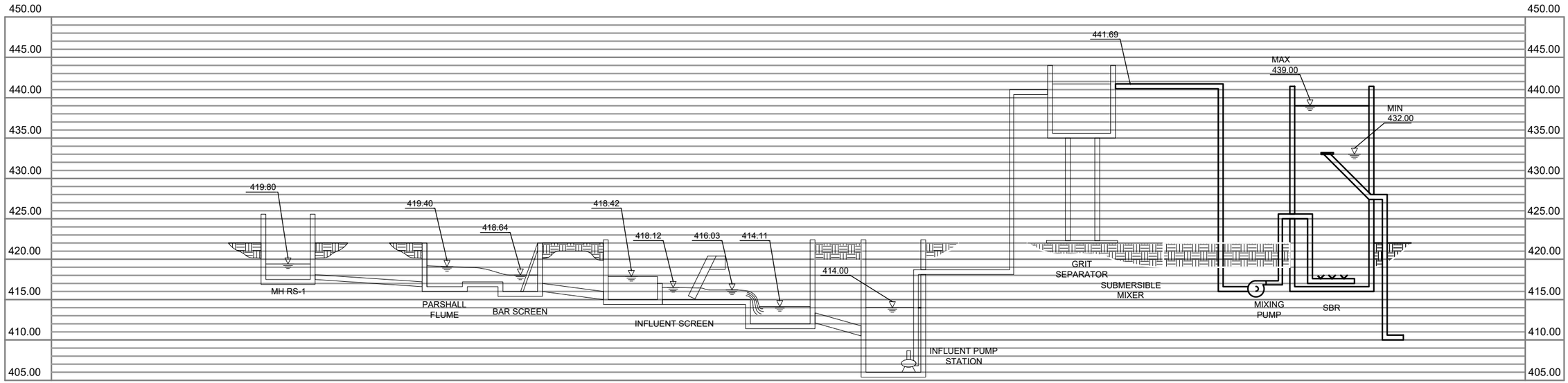
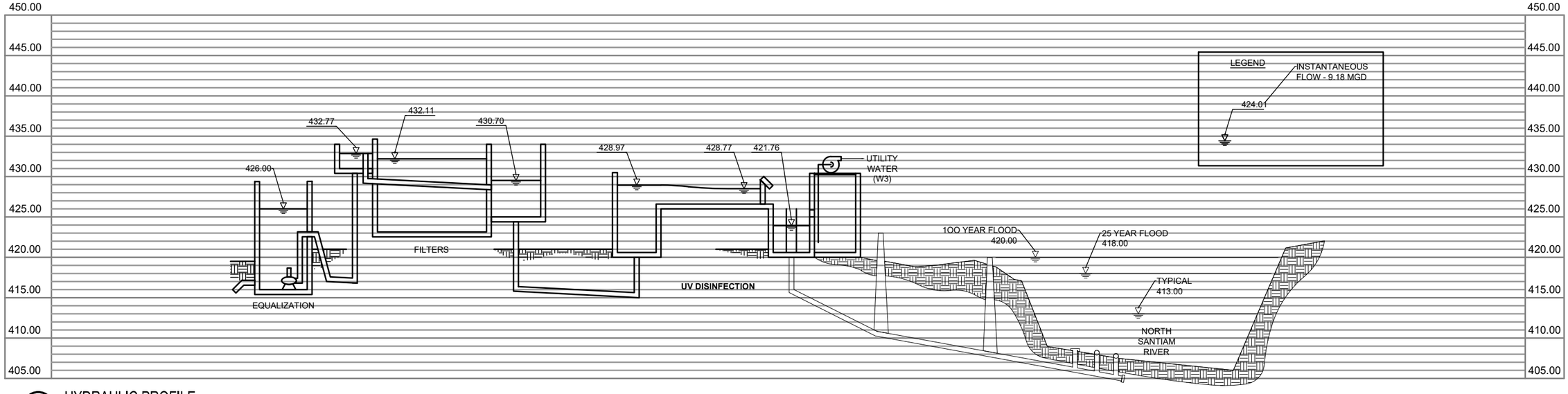

RAW SEWAGE
21"
24"
CITY SEWERS
FLUME ROUGH BAR SCREEN
INFLUENT FLOW MEASUREMENT
MANUAL BYPASS BAR SCREEN
STEP SCREEN
SAMPLE POINT
SCREENINGS/GRIT DUMPSTER TO LANDFILL
INFLUENT PUMP STATION
EMERGENCY OVERFLOW
VORTEX GRIT SEPARATOR
GRIT CLASSIFIER
SELECTOR CELL/ PRE-SBR EQ BASIN
SUBMERSIBLE MIXER
BYPASS
SEQUENCING BATCH REACTORS
AIR
WAS PUMPS
SBR PUMPS
SLUDGE WASTE
WASTE SLUDGE
SCUM PUMP
AERATED SLUDGE STORAGE
GRINDER
LIQUID SLUDGE STORAGE POND
DEWATERING FEED PUMP 1
DEWATERING FEED PUMP 2
SLUDGE TRANSFER PUMP
DRAIN
BACKWASH
FLOW EQUALIZATION PUMPS
POST-SBR FLOW EQ BASIN
METER
CLOTH FILTER
SAMPLE POINT
TREATED EFFLUENT TO NORTH SANTIAM RIVER
UV DISINFECTION
3W PIPING
UTILITY WATER PUMPS
UTILITY WATER STORAGE BASIN
POLYMER
BELT WASHER
BELT FILTER PRESS
SLUDGE DRYER
LIME STORAGE SILO
LIME AUGER
LIME STABILIZATION AREA
LIME STABILIZED STORAGE BIOSOLIDS
TO LAND APPLICATION

Figure 25



B1 HYDRAULIC PROFILE



A1 HYDRAULIC PROFILE

C:\Users\tlabor\appdata\local\temp\AcPublish_4572\219130 FIGURE 5.3.dwg DATE: 07/08/2020 TIME: 08:37:20 AM

KELLER ASSOCIATES

CITY OF STAYTON
STAYTON, OREGON

WW Facility Planning Study Update

HYDRAULIC PROFILES

PROJECT NO.
219130

FIGURE NO.
26

City of Stayton OREGON

Appendix B

Planning Documents

KELLER ASSOCIATES

BIOLOGICAL RESOURCES

U.S. Fish and Wildlife Services Endangered Species List

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Marion County, Oregon

Local office

Oregon Fish And Wildlife Office

(503) 231-6179
(503) 231-6195

2600 Southeast 98th Avenue, Suite 100
Portland, OR 97266-1398

https://www.fws.gov/oregonfwo/articles.cfm?id=149489416

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information.
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Birds

NAME	STATUS

Northern Spotted Owl Strix occidentalis caurina — Threatened
There is **final** critical habitat for this species. Your location is outside the critical habitat.
https://ecos.fws.gov/ecp/species/1123

Streaked Horned Lark Eremophila alpestris strigata — Threatened
There is **final** critical habitat for this species. Your location is outside the critical habitat.
https://ecos.fws.gov/ecp/species/7268

Insects

NAME	STATUS
Fender's Blue Butterfly Icaricia icarioides fenderi There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/6659	Endangered

Flowering Plants

NAME	STATUS
Bradshaw's Desert-parsley Lomatium bradshawii No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/5743	Endangered
Kincaid's Lupine Lupinus sulphureus ssp. kincaidii There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/3747	Threatened
Nelson's Checker-mallow Sidalcea nelsoniana No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/7340	Threatened
Water Howellia Howellia aquatilis No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/7090	Threatened
Willamette Daisy Erigeron decumbens There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/6270	Endangered

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE

BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)

Bald Eagle Haliaeetus leucocephalus — Breeds Jan 1 to Sep 30
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/1626

Great Blue Heron Ardea herodias fannini — Breeds Mar 15 to Aug 15
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Lesser Yellowlegs Tringa flavipes — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9679

Long-billed Curlew Numenius americanus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/5511

Olive-sided Flycatcher Contopus cooperi — Breeds May 20 to Aug 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3914

Rufous Hummingbird selasphorus rufus — Breeds Apr 15 to Jul 15
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/8002

Whimbrel Numenius phaeopus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9483

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

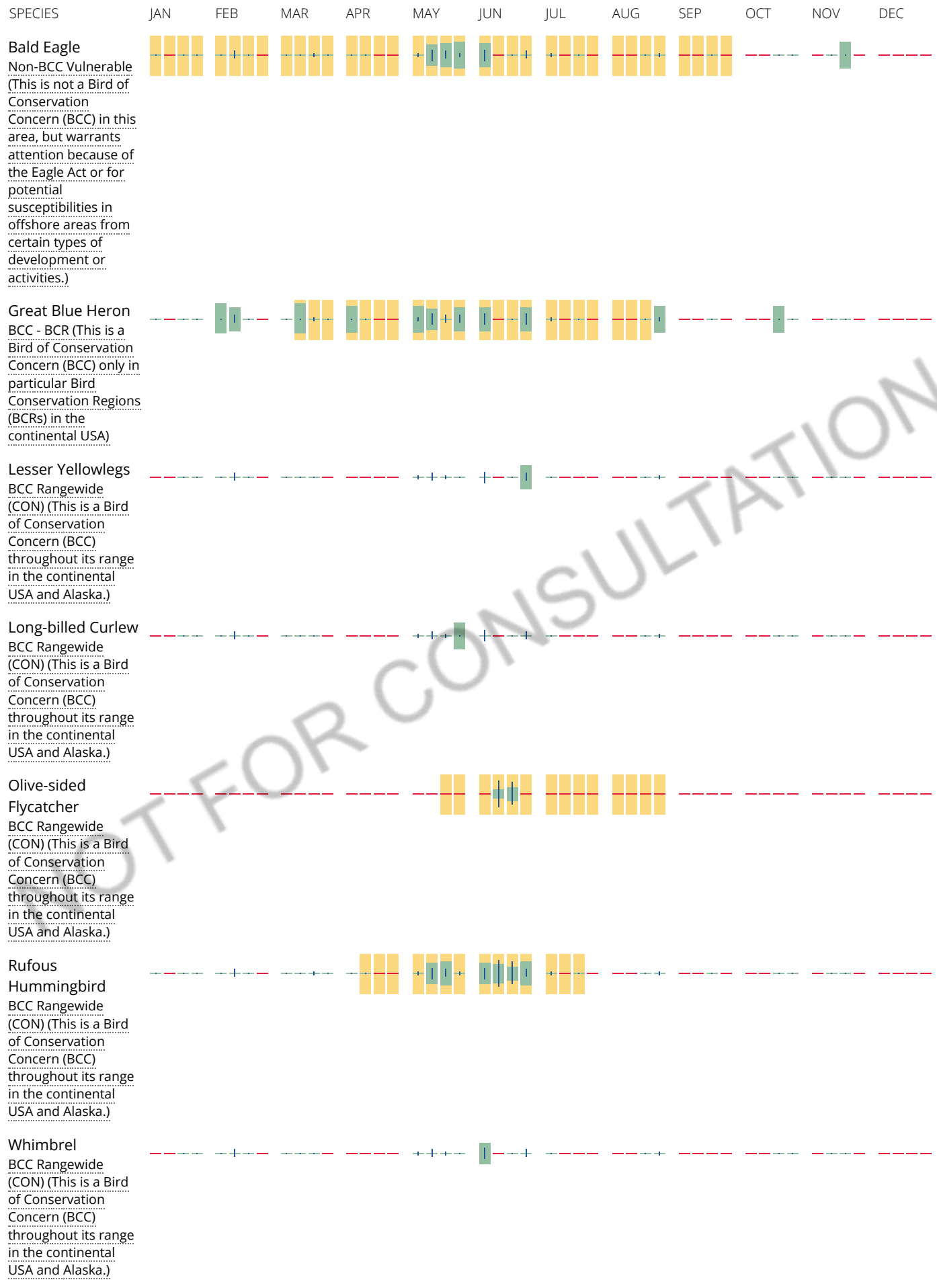
Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

■ probability of presence ■ breeding season | survey effort – no data



Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures and/or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from

certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER EMERGENT WETLAND

- PEM1Cx
- PEM1C
- PEM1A

FRESHWATER FORESTED/SHRUB WETLAND

- PFOC
- PFOA
- PSSCx

FRESHWATER POND

- PUBK
- PUBFh
- PUBFx
- PUSCx

RIVERINE

- R2UBH
- R4SBC
- R4SBCx
- R2UBHx
- R2USC

R5UBH
R3UBH
R5UBFx

A full description for each wetland code can be found at the National Wetlands Inventory website

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

U.S. Fish & Wildlife Service

ECOS

ECOS / Species Reports / Species By County Report

Species By County Report

The following report contains Species that are known to or are believed to occur in this county. Species with range unrefined past the state level are now excluded from this report. If you are looking for the Section 7 range (for Section 7 Consultations), please visit the IPaC application.

County: Marion, Oregon

CSV

Need to contact a FWS field office about a species? Follow this link to find your local FWS Office.

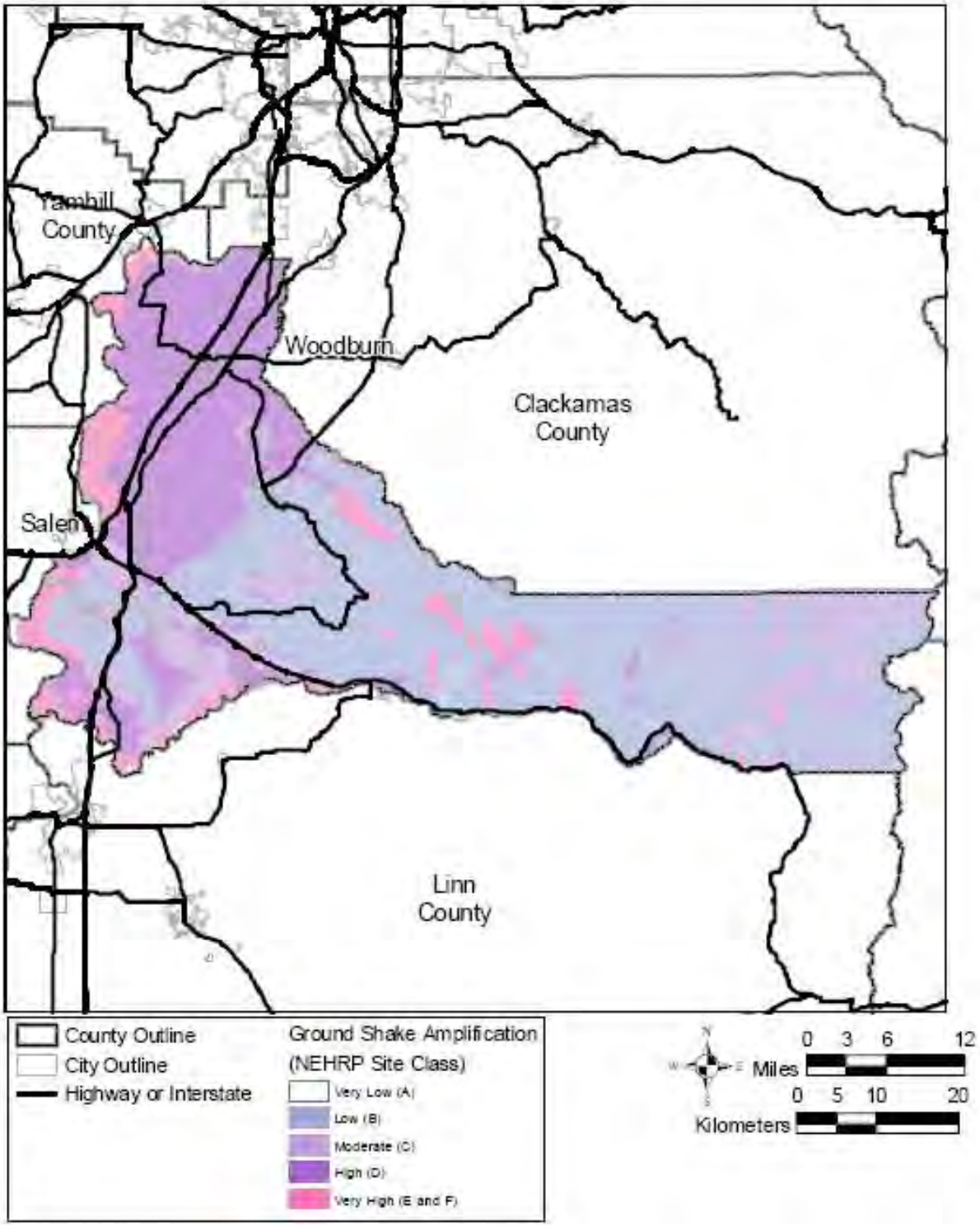
Group	Name	Population	Status	Lead Office	Recovery Plan	Recovery Plan Action Status	Recovery Plan Stage
Birds	Yellow-billed Cuckoo (*Coccyzus americanus*)	Western U.S. DPS	Threatened	Arizona Ecological Services Field Office			
Birds	Northern spotted owl (*Strix occidentalis caurina*)	Wherever found	Threatened	Oregon Fish and Wildlife Office	Revised Recovery Plan for the Northern Spotted Owl	Implementation Progress	Final Revision 1
Birds	Marbled murrelet (*Brachyramphus marmoratus*)	U.S.A. (CA, OR, WA)	Threatened	Washington Fish and Wildlife Office	Recovery Plan for the Threatened Marbled Murrelet (Brachyramphus marmoratus) in Washington, Oregon, and California	Implementation Progress	Final
Birds	Streaked Horned lark (*Eremophila alpestris strigata*)	Wherever found	Threatened	Oregon Fish and Wildlife Office	Draft Recovery Plan for the Streaked Horned Lark	Recovery efforts in progress, but no implementation information yet to display.	Draft
Conifers and Cycads	Whitebark pine (*Pinus albicaulis*)	Wherever found	Candidate	Wyoming Ecological Services Field Office			

Group	Name	Population	Status	Lead Office	Recovery Plan	Recovery Plan Action Status	Recovery Plan Stage
Fishes	Bull Trout (*Salvelinus confluentus*)	U.S.A., conterminous, lower 48 states	Threatened	Idaho Fish and Wildlife Office	Recovery Plan for the Coterminous United States Population of Bull Trout (Salvelinus confluentus)	Implementation Progress	Final
Fishes	Oregon chub (*Oregonichthys crameri*)	Wherever found	Recovery	Oregon Fish and Wildlife Office	Oregon Chub (Oregonichthys crameri) Recovery Plan	Implementation Progress	Final
Flowering Plants	Bradshaw's desert-parsley (*Lomatium bradshawii*)	Wherever found	Endangered	Oregon Fish and Wildlife Office	Final Recovery Plan for the Prairie Species of Western Oregon and Southwestern Washington	Implementation Progress	Final
Flowering Plants	Nelson's checker-mallow (*Sidalcea nelsoniana*)	Wherever found	Threatened	Oregon Fish and Wildlife Office	Final Recovery Plan for the Prairie Species of Western Oregon and Southwestern Washington	Implementation Progress	Final
Flowering Plants	golden paintbrush (*Castilleja levisecta*)	Wherever found	Threatened	Washington Fish and Wildlife Office	Recovery Plan for the Golden Paintbrush (Castilleja levisecta)	Implementation Progress	Final
Flowering Plants	Water howellia (*Howellia aquatilis*)		Threatened	Montana Ecological Services Field Office	Water Howellia (Howellia aquatilis) Recovery Plan, Public and Agency Review Draft	Implementation Progress	Draft
Flowering Plants	Willamette daisy (*Erigeron decumbens*)	Wherever found	Endangered	Oregon Fish and Wildlife Office	Final Recovery Plan for the Prairie Species of Western Oregon and Southwestern Washington	Implementation Progress	Final

Group	Name	Population	Status	Lead Office	Recovery Plan	Recovery Plan Action Status	Recovery Plan Stage
Flowering Plants	Kincaid's Lupine (*Lupinus sulphureus ssp. kincaidii*)	Wherever found	Threatened	Oregon Fish and Wildlife Office	Final Recovery Plan for the Prairie Species of Western Oregon and Southwestern Washington	Implementation Progress	Final
Insects	Fender's blue butterfly (*Icaricia icarioides fenderi*)	Wherever found	Endangered	Oregon Fish and Wildlife Office	Final Recovery Plan for the Prairie Species of Western Oregon and Southwestern Washington	Implementation Progress	Final
Mammals	Fisher (*Pekania pennanti*)	West coast DPS	Proposed Threatened	Yreka Fish and Wildlife Office			

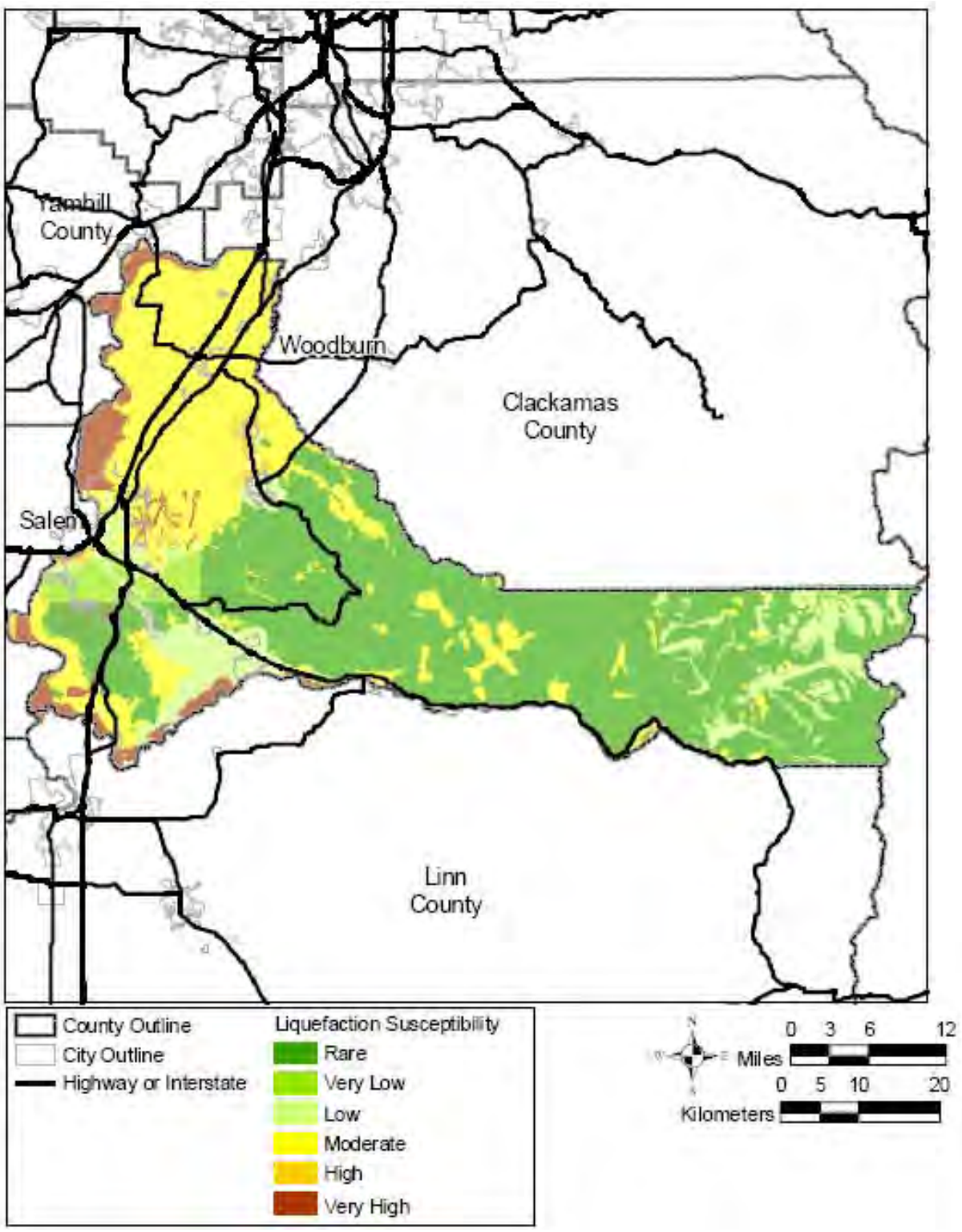
Geographic Hazard Maps

Figure 3 Amplification Susceptibility for Marion County



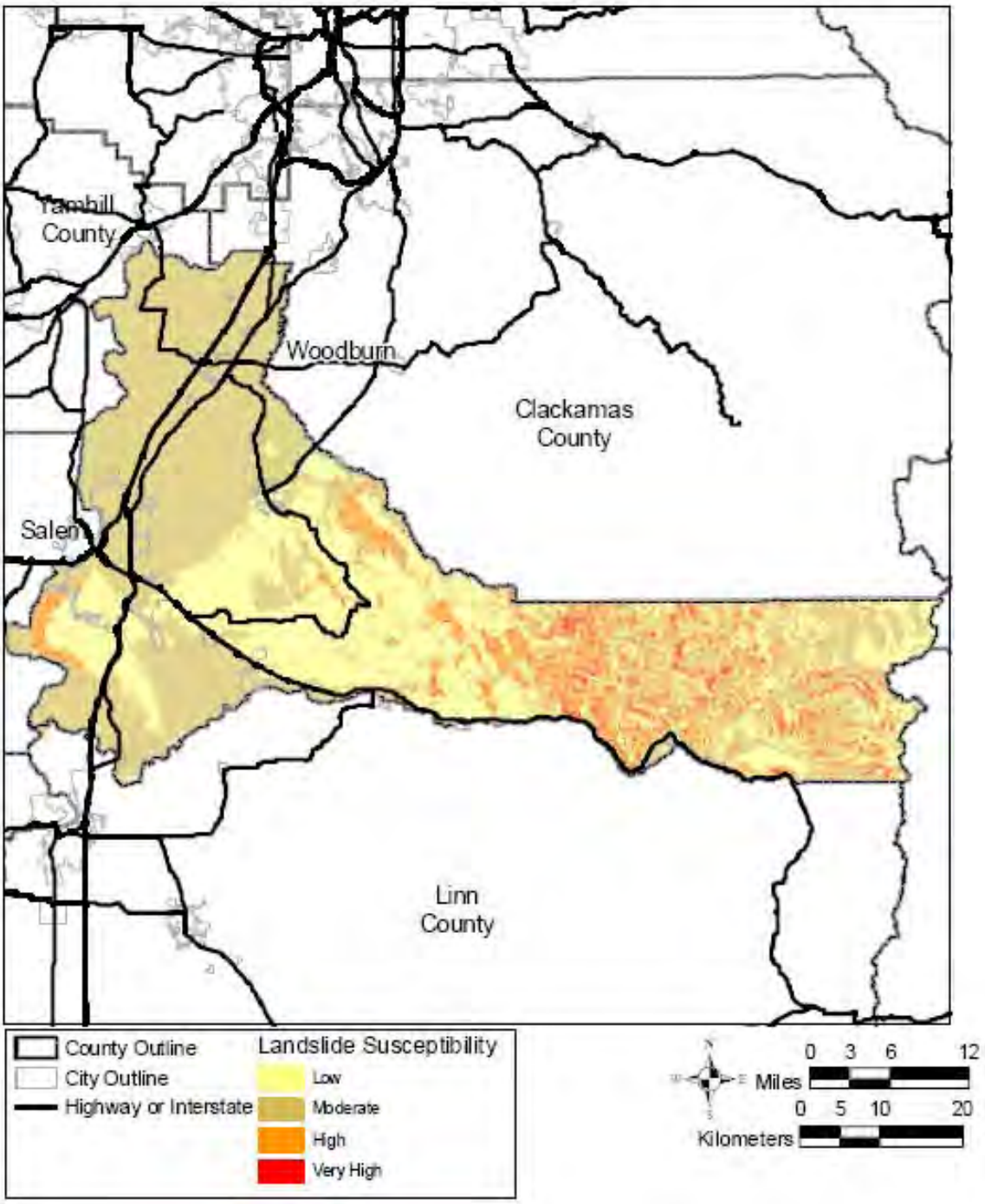
Source: IMS-24, Geologic Hazards, Earthquake and Landslide Hazard Maps, and Future Earthquake Damage Estimates for Six Counties in the Mid/Southern Willamette Valley Including Yamhill, Marion, Polk, Benton, Linn, and Lane Counties, and the City of Albany, Oregon, by William J. Burns, R. Jon Hofmeister, and Yumei Wang.

Figure 4 Relative Liquefaction Hazard for Marion County



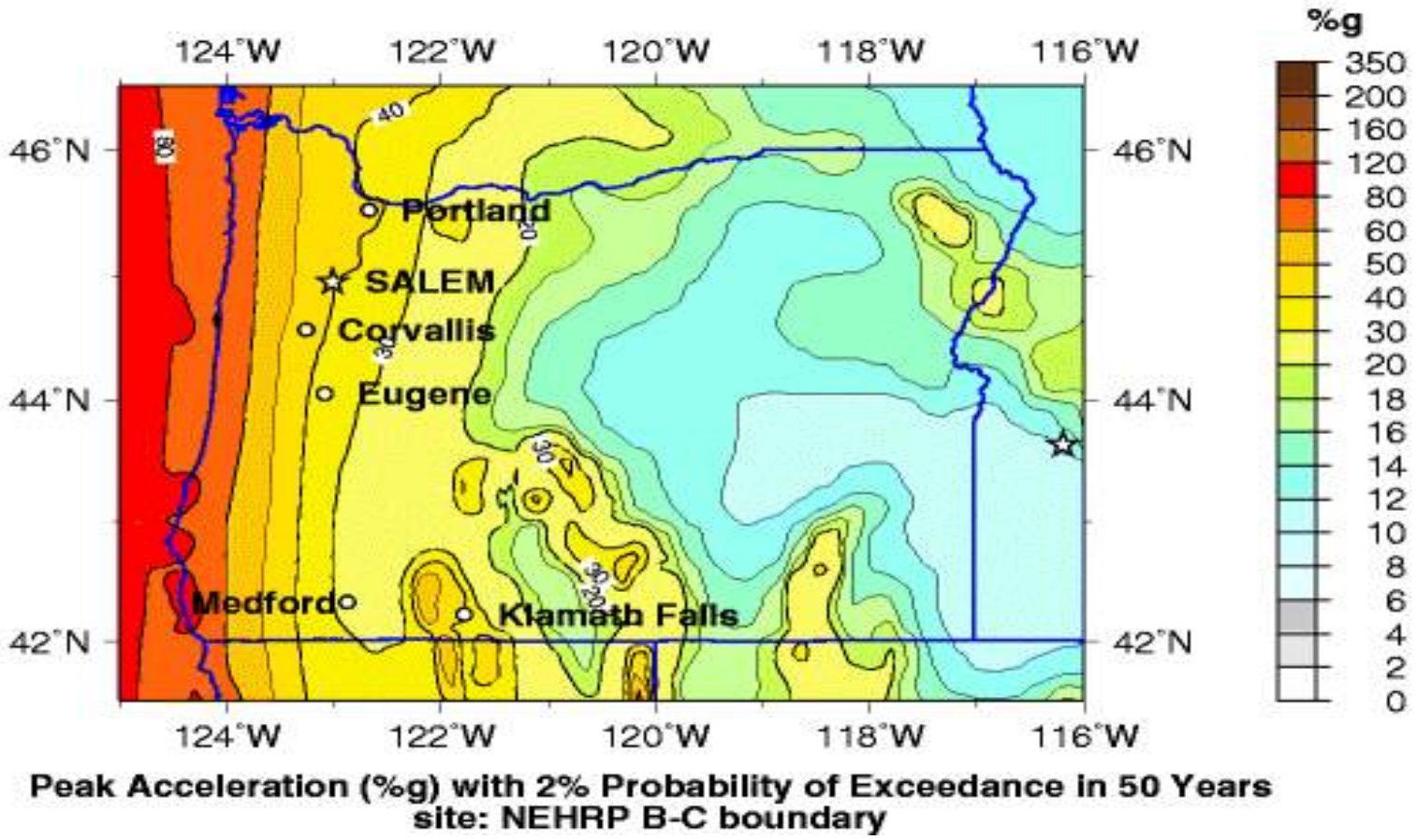
Source: IMS-24, Geologic Hazards, Earthquake and Landslide Hazard Maps, and Future Earthquake Damage Estimates for Six Counties in the Mid/Southern Willamette Valley Including Yamhill, Marion, Polk, Benton, Linn, and Lane Counties, and the City of Albany, Oregon, by William J. Burns, R. Jon Hofmeister, and Yumei Wang.

Figure 5 Earthquake Induced Landslide Hazards for Marion County



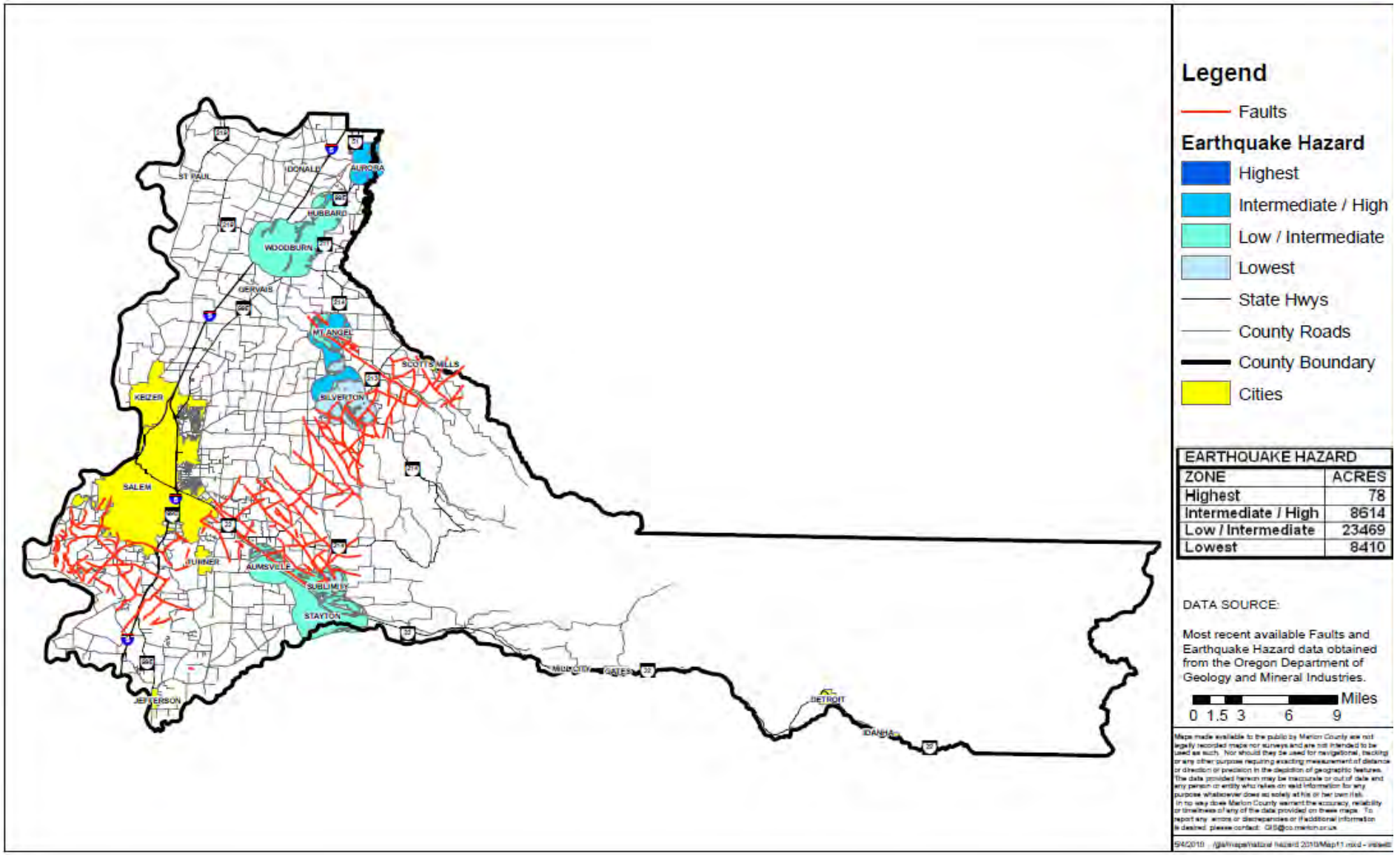
Source: IMS-24, Geologic Hazards, Earthquake and Landslide Hazard Maps, and Future Earthquake Damage Estimates for Six Counties in the Mid/Southern Willamette Valley Including Yamhill, Marion, Polk, Benton, Linn, and Lane Counties, and the City of Albany, Oregon, by William J. Burns, R. Jon Hofmeister, and Yumei Wang.

Figure 6 Peak Ground Acceleration in Marion County



Source: National Seismic Hazard Mapping Project (2008), USGS

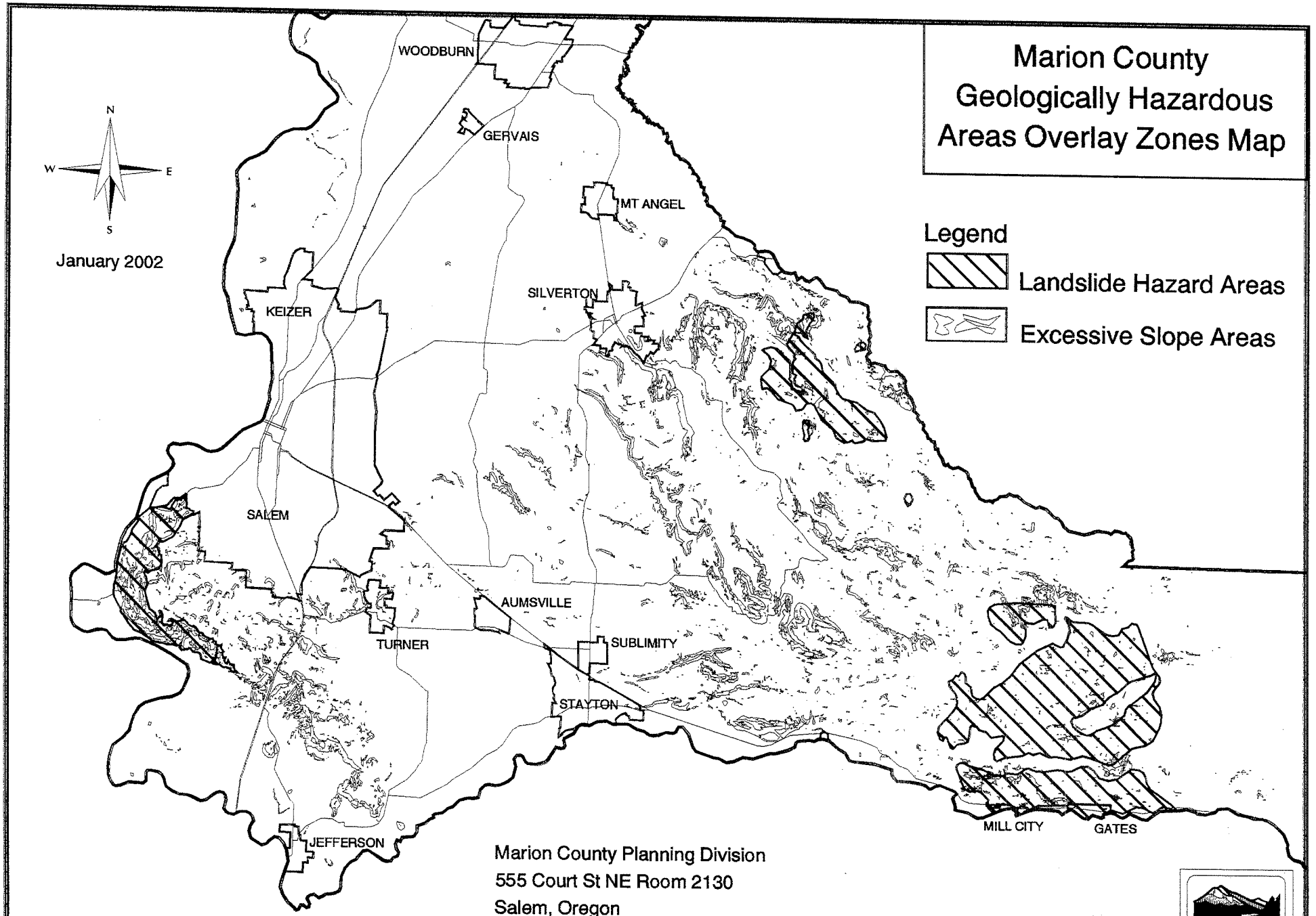
Figure 7 Comprehensive Earthquake Hazards in Marion County



Source: Marion County GIS

Marion County Geologically Hazardous Areas Overlay Zones Map

January 2002



Legend

Landslide Hazard Areas

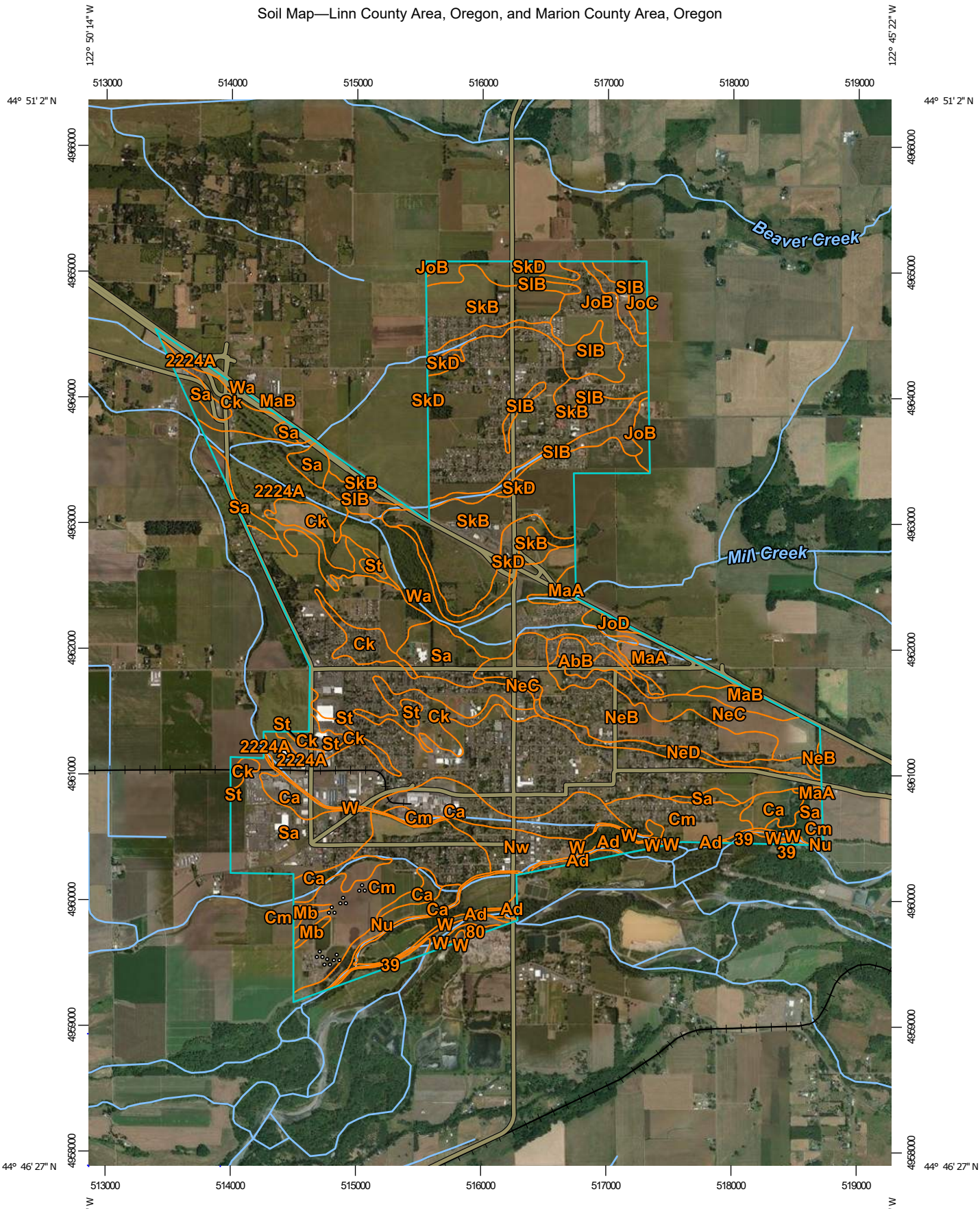
Excessive Slope Areas

Marion County Planning Division
555 Court St NE Room 2130
Salem, Oregon
Phone: 503-588-5038
http://www.open.org/mcplann

Note: This map is for illustrative purposes only

Marion County

Soils Maps


122° 50' 14" W
122° 45' 22" W
44° 51' 2" N
44° 46' 27" N
513000
514000
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519000
4966000
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Beaver Creek
Mill Creek
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SkD
SIB
JoC
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Ck
MaB
St
MaA
JoD
AbB
NeC
NeB
NeD
Ca
W
Cm
Nw
Ad
Mb
Nu
80
39
Map Scale: 1:41,300 if printed on A portrait (8.5" x 11") sheet.
N
Meters
0
500
1000
2000
3000
Feet
0
2000
4000
8000
12000
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N 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 1:20,000.

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: Linn County Area, Oregon
Survey Area Data: Version 14, Sep 10, 2019

Soil Survey Area: Marion County Area, Oregon
Survey Area Data: Version 16, Sep 10, 2019

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

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

Date(s) aerial images were photographed: Jul 5, 2011—Jun 23, 2015

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
39	Fluvents-Fluvaquents complex, nearly level	16.3	0.4%
80	Pits	6.6	0.2%
W	Water	18.7	0.5%
Subtotals for Soil Survey Area		**41.6**	**1.1%**
Totals for Area of Interest		**3,863.6**	**100.0%**

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
2224A	Courtney gravelly silty clay loam, 0 to 3 percent slopes	148.4	3.8%
AbB	Abiqua silty clay loam, 3 to 5 percent slopes	21.9	0.6%
Ad	Alluvial land	32.6	0.8%
Ca	Camas gravelly sandy loam	261.3	6.8%
Ck	Clackamas gravelly loam	197.8	5.1%
Cm	Cloquato silt loam	300.0	7.8%
JoB	Jory silty clay loam, 2 to 7 percent slopes	121.8	3.2%
JoC	Jory silty clay loam, 7 to 12 percent slopes	17.3	0.4%
JoD	Jory silty clay loam, 12 to 20 percent slopes	4.8	0.1%
MaA	McAlpin silty clay loam, 0 to 3 percent slopes	96.0	2.5%
MaB	McAlpin silty clay loam, 3 to 6 percent slopes	23.5	0.6%
Mb	McBee silty clay loam	10.3	0.3%
NeB	Nekia silty clay loam, 2 to 7 percent slopes	170.8	4.4%
NeC	Nekia silty clay loam, 7 to 12 percent slopes	101.2	2.6%
NeD	Nekia silty clay loam, 12 to 20 percent slopes	38.3	1.0%
Nu	Newberg fine sandy loam	35.3	0.9%
Nw	Newberg silt loam	53.9	1.4%
Sa	Salem gravelly silt loam	277.7	7.2%
SkB	Salkum silty clay loam, 2 to 6 percent slopes	657.4	17.0%
SkD	Salkum silty clay loam, 6 to 20 percent slopes	61.9	1.6%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
SlB	Salkum silty clay loam, basin, 0 to 6 percent slopes	198.4	5.1%
St	Sifton gravelly loam	752.0	19.5%
W	Water	37.3	1.0%
Wa	Waldo silty clay loam	201.9	5.2%
Subtotals for Soil Survey Area		**3,821.9**	**98.9%**
Totals for Area of Interest		**3,863.6**	**100.0%**

NPDES PERMIT

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
WASTE DISCHARGE PERMIT

Oregon Department of Environmental Quality
Western Region – Salem Office
4026 Fairview Industrial Drive SE
Salem, Oregon 97302
Telephone: 800-349-7677

Issued pursuant to ORS 468B.050 and The Federal Clean Water Act

ISSUED TO:
City of Stayton
362 N. Third Avenue
Stayton, OR 97383

SOURCES COVERED BY THIS PERMIT:

Type of Waste	Outfall Number	Outfall Location
Treated Wastewater	001	North Santiam River, River Mile 14.9
Recycled Water Reuse	002	Specified in Recycled Water Use Plan
Biosolids Land Application	N/A	Specified in Biosolids Management/Land Application Plan

FACILITY TYPE AND LOCATION:
Sequencing Batch Reactor, Disk Filtration, Ultra-Violet Light Disinfection.
950 Jetters Way
Stayton, OR 97383

Treatment System Class: Level III
Collection System Class: Level III

RECEIVING STREAM INFORMATION:
WRD Basin: Willamette

Sub-Basin: North Santiam
Receiving Stream: North Santiam River
LLID: 1230064446868 – 14.9 D
Lat/Long: 44.786/-122.814
County: Marion

EPA REFERENCE NO.: OR002042-7

Issued in response to Application No. 972293 received December 11, 2008. This permit is issued based on the land use findings in the permit record.

Ranei Nomura, Water Quality Manager
Western Region

2/23/2016
Signature Date

3/14/2016
Effective Date

PERMITTED ACTIVITIES

Until this permit expires or is modified or revoked, the permittee is authorized to: 1) operate a wastewater collection, treatment, control and disposal system; and 2) discharge treated wastewater to waters of the state only from the authorized discharge point or points in Schedule A in conformance with the requirements, limits, and conditions set forth in this permit.

Unless specifically authorized by this permit, by another NPDES permit, or by Oregon statute or administrative rule, any other direct or indirect discharge of pollutants to waters of the state is prohibited.

SCHEDULE A: WASTE DISCHARGE LIMITS

1. Outfall 001 – Treated Effluent

a. BOD_5, $CBOD_5$ and TSS

i. May 1 – October 31. During this time period the permittee must comply with the limits in the following table:

Table A1: $CBOD_5$ and TSS Limits

Parameter	Average Effluent Concentrations, mg/L		Monthly Average lbs/day	Weekly Average lbs/day	Daily Maximum lbs
	Monthly	Weekly			
$CBOD_5$	10 mg/l	15 mg/l	110	160	220
TSS	10 mg/l	15 mg/l	110	160	220

ii. November 1 – April 30: During this time period the permittee must comply with the limits in the following table:

Table A2: BOD_5 and TSS Limits

Parameter	Average Effluent Concentrations		Monthly Average lbs/day	Weekly Average lbs/day	Daily Maximum Lbs
	Monthly	Weekly			
BOD_5	30 mg/l	45 mg/l	340	510	680
TSS	30 mg/l	45 mg/l	340	510	680

iii. Additional information for the limits in Tables A1 and A2 above.

(A) The $CBOD_5$ concentration limits are considered equivalent to the minimum design criteria for BOD_5 specified in OAR Chapter 340, Division 41.

(B) Average dry weather design flow to the facility equals 1.90 MGD. Mass load limits are based on the average dry weather flow of 1.35 MGD.

b. Additional Parameters.

Permittee must comply with the limits of the following table (year around except as noted):

Table A3: Limits for Additional Parameters

Year-round (except as noted)	Limits
BOD_5 and $CBOD_5$ and TSS Removal Efficiency	May not be less than 85% monthly average for BOD_5, $CBOD_5$ and TSS. $CBOD_5$ limits apply from May 1 through October 31. BOD_5 limits apply from November 1 through April 30. TSS Limits apply all year.

Year-round (except as noted)	Limits
Temperature	During the rearing period (June 16 through August 31), the permittee may not discharge more than 57 million Kcals/day as a rolling seven-day average. The spawning period has a wet season (April 1 through April 30) and two dry seasons (May 1 through June 15 and September 1 through October 31). During the wet spawning season, the permittee may not discharge more than 129 million Kcals/day as a rolling seven-day average. During the dry spawning seasons, the permittee may not discharge more than 89 million Kcals/day as a rolling seven-day average.
E. coli Bacteria (see Note)	Monthly geometric mean may not exceed 126 organisms per 100 ml. No single sample may exceed 406 organisms per 100 ml.
pH	Shall be within the range of 6.0 – 9.0
Notes: If a single sample exceeds 406 organisms per 100 mL, then re-samples may be taken during the next five consecutive discharge intervals beginning no more than 34 hours after the original sample was taken. If the log mean of the five re-samples is less than or equal to 126 organisms per 100 mL, a violation shall not be triggered.	

2. Regulatory Mixing Zone

Pursuant to OAR 340-041-0053, the permittee is granted a regulatory mixing zone as described below:

> The allowable mixing zone is that portion of the North Santiam River contained within a band extending out sixty-six (66) feet from the north bank of the river and extending from a point ten (10) feet upstream of the outfall to a point two hundred (200) feet downstream from the outfall. The Zone of Immediate Dilution (ZID) shall be defined as that portion of the allowable mixing zone that is within twenty (20) feet of the point of discharge

3. Groundwater Protection

The permittee may not conduct any activities that could cause an adverse impact on existing or potential beneficial uses of groundwater. All wastewater and process related residuals must be managed and disposed of in a manner that will prevent a violation of the Groundwater Quality Protection Rules (OAR Chapter 340, Division 40).

4. Outfall 002 - Recycled Water

The permittee is authorized to distribute recycled water if it is:

a. Treated and used according to the criteria listed in Table A4.

b. Managed in accordance with its DEQ-approved Recycled Water Use Plan unless exempt as provided in Schedule D, Condition 3.

c. Used in a manner and applied at a rate that does not have the potential to adversely impact groundwater quality.

d. Applied at a rate and in accordance with site management practices that ensure continued agricultural, horticultural, or silvicultural production and does not reduce the productivity of the site.

e. Irrigated using sound irrigation practices to prevent:

   i. Offsite surface runoff or subsurface drainage through drainage tile;

   ii. Creation of odors, fly and mosquito breeding, or other nuisance conditions; and

   iii. Overloading of land with nutrients, organics, or other pollutants.

Table A4: Recycled Water Limits

Class	Level of Treatment (after disinfection unless otherwise specified)	Beneficial Uses
A.	Class A recycled water must be oxidized, filtered and disinfected. Before disinfection, unless otherwise approved in writing by DEQ turbidity may not exceed: • 2 NTUs within a 24-hour period. • 5 NTUs more than five percent of the time within a 24-hour period.10 NTUs at any time. After disinfection, total coliform may not exceed: • A median of 2.2 organisms per 100 mL based on daily sampling over the last 7 days that analyses have been completed. • 23 organisms per 100 mL in any single samples.	Class A recycled water may be used for: • Class B, Class C, Class D, and nondisinfected uses. • Irrigation for any agricultural or horticultural use. • Landscape irrigation of parks, playgrounds, school yards, residential landscapes, or other landscapes accessible to the public. • Commercial car washing or fountains when the water is not intended for human consumption. • Water supply source for non restricted recreational impoundments.
B.	Class B recycled water must be oxidized and disinfected. Total coliform may not exceed: • A median of 2.2 organisms per 100 mL, based on the last 7 days that analyses have been completed. • 23 total coliform organisms per 100 mL in any single sample.	Class B recycled water may be used for: • Class C, Class D, and nondisinfected uses. • Stand-alone fire suppression systems in commercial and residential building, non-residential toilet or urinal flushing, or floor drain trap priming. • Water supply source for restricted recreational impoundments.

Class	Level of Treatment (after disinfection unless otherwise specified)	Beneficial Uses
C.	Class C recycled water must be oxidized and disinfected. Total coliform may not exceed: • A median of 23 total coliform organisms per 100 mL, based on results of the last 7 days that analyses have been completed. • 240 total coliform organisms per 100 mL in any two consecutive samples.	Class C recycled water may be used for: • Class D and non-disinfected uses. • Irrigation of processed food crops; irrigation of orchards or vineyards if an irrigation method is used to apply recycled water directly to the soil. • Landscape irrigation of golf courses, cemeteries, highway medians, or industrial or business campuses. • Industrial, commercial, or construction uses limited to: industrial cooling, rock crushing, aggregate washing, mixing concrete, dust control, nonstructural fire fighting using aircraft, street sweeping, or sanitary sewer flushing.
D.	Class D recycled water must be an oxidized and disinfected wastewater. Total coliform may not exceed: • A 30-day log mean of 126 E. coli organisms per 100 milliliters • 406 E. coli organisms per 100 milliliters in any single sample.	• Irrigation of firewood, ornamental nursery stock, Christmas trees, sod, or pasture for animals; and • Any beneficial purpose authorized in writing by the department pursuant to OAR 340-055-0016(6).

5. Biosolids

The permittee may land apply biosolids or provide biosolids for sale or distribution, subject to the following conditions:

a. The permittee must manage biosolids in accordance with its DEQ-approved Biosolids Management Plan and Land Application Plan.

b. Except when used for land reclamation and approved by DEQ, biosolids must be applied at or below the agronomic rate required for maximum crop yield.

c. The permittee must obtain written site authorization from DEQ for each land application site prior to land application (see Schedule D, Condition 6) and follow the site-specific management conditions in the DEQ-issued site authorization letter.

d. Biosolids must meet one of the pathogen reduction standards under 40 CFR §503.32 and one of the vector attraction reduction standards under 40 CFR §503.33.

e. Pollutants in biosolids may not exceed the ceiling concentrations shown in Table A5 below. Biosolids exceeding the pollutant concentrations in Table A5 must be applied at a rate that does not exceed the corresponding cumulative pollutant loading rates.

Table A5: Biosolids Limits

Pollutant	Ceiling concentrations[1] (mg/kg)	Pollutant concentrations[1] (mg/kg)	Cumulative pollutant loading rates[1] (kg/ha)
Arsenic	75	41	41
Cadmium	85	39	39
Copper	4300	1500	1500
Lead	840	300	300
Mercury	57	17	17
Molybdenum	75	N/A	N/A
Nickel	420	420	420
Selenium	100	100	100
Zinc	7500	2800	2800

Note:

1. Biosolids pollutant limits are described in 40 CFR Part 503.13, which uses the terms *ceiling concentrations*, *pollutant concentrations*, and *cumulative pollutant loading rates*. Biosolids containing pollutants in excess of the ceiling concentrations may not be applied to the land. Biosolids containing pollutants in excess of the pollutant concentrations, but below the ceiling concentrations, may be applied to the land; however, the total quantity of biosolids applied may not exceed the cumulative pollutant loading rates.

6. Septage Requirements

Permittee may not accept septage at this facility for treatment or processing without written approval from DEQ.

7. Chlorine Usage

No chlorine or chlorine compounds may be used for effluent disinfection purposes and no chlorine residual resulting from chlorine used for maintenance purposes may be allowed in the effluent, unless the effluent is being disinfected for Class A, B, or C recycled water.

8. Re-opener

Upon EPA approval of a Total Maximum Daily Load (TMDL) addressing any pollutants during the discharge period, this permit may be re-opened to include any waste load allocation (WLA), best management practice or any other condition required by the TMDL. The modified permit may include a schedule for the Permittee to achieve compliance with a water quality based effluent limit.

SCHEDULE B: MINIMUM MONITORING AND REPORTING REQUIREMENTS

1. Monitoring and Reporting Protocols

a. Test Methods, Quantitation Limits, and Laboratory Quality Assurance and Quality Control

i. *Test Methods – monitoring must be conducted according to test procedures in 40 CFR Part* 136.

ii. Quantitation Limits (QLs) – all compliance analyses must meet the QLs specified in the permit. Effluent characterization monitoring must use the QLs unless one of the conditions below is met.

(A) The monitoring result indicates nondetect at an MDL which is less than or equal to the QL, or

(B) *Monitoring is being conducted solely for the purpose of effluent characterization,* and matrix effects prevent the attainment of QLs. In such cases, DEQ may authorize re-sampling. If requested by the permit holder, Tier 1 re-sampling may be combined with Tier 2 monitoring. Sections B.5 and B.6 contain more information on Tier 1 and Tier 2 monitoring.

Laboratories may need to modify methods as allowed in 40 CFR Part 136.6 or in EPA's Solutions for Analytical Chemistry Problems with Clean Water Methods, EPA 821-R-07-002 March 2007 in order to achieve some QLs.

iii. Laboratory Quality Assurance and Quality Control (QA/QC) – the permittee must develop and implement a written QA/QC program that conforms to the requirements of 40 CFR Part 136.7.

b. Re-analysis and Re-sampling if QA/QC Requirements Not Met

If QA/QC requirements are not met for any analysis, the permittee must re-analyze the sample. If the sample cannot be re-analyzed, the permittee must re-sample and analyze at the earliest seasonally appropriate opportunity. If a sample does not meet QA/QC requirements, the permittee must include the result in the monitoring report along with a notation explaining how it does not meet QA/QC requirements, but the permittee must not use the result in any calculation required by the permit.

c. Significant Figures and Rounding Conventions

Mass load limits all have two significant figures unless otherwise noted. The permittee must report the same number of significant digits as the permit limit for a given parameter. Regardless of the rounding conventions used by the permittee (such as, rounding 5 up for the calculated results or, in the case of laboratory results, rounding 5 to the nearest even number), the permittee must use the convention consistently, and must ensure that laboratories employed by the permittee use the same convention.

d. Reporting of Detection Levels and Quantitation Limits

When reporting sampling results, the permittee must record the laboratory detection level and quantitation limit as defined below for each analyte except BOD5, and CBOD5, TSS, pH, and e.coli. This information is not required to be submitted with each DMR but must be maintained by the permittee.

i. Detection Level (DL): The Method Detection Limit (MDL) or Limit of Detection (LOD) and derived using 40 CFR Part 136 Appendix B; and

ii. Quantitation Limit (QL): The Method Reporting Limit (MRL) or Limit of Quantitation (LOQ). It is the lowest level at which the entire analytical system gives a recognizable signal and acceptable calibration for the analyte. It is equivalent to the concentration of the lowest calibration standard assuming that all method-specified sample weights, volumes, and cleanup procedures have been employed.

e. Reporting Sample Results

The permittee must follow the procedures listed below when reporting sampling results.

i. If a sample result is below the DL, the permittee must report the result as less than the specified DL. For example, if the DL is 1.0 µg/L and the result is non-detect, report "<1.0 µg/L" on the discharge monitoring report (DMR).

ii. If a sample result is above the DL but below the QL, the permittee must report the result as the DL preceded by DEQ's data code "e". For example, if the DL is 1.0 µg/l, the QL is 3.0 µg/L, and the result is estimated to be between the DL and QL, the permittee must report "e1.0 µg/L" on the DMR.

iii. If a sample result does not meet QA/QC requirements, the result must be included in the DMR along with a notation explaining how it does not meet QA/QC requirements, but the permittee must not use the result in any calculation required by this permit.

iv. Requirements i. and ii. above do not apply to the following parameters: CBOD, BOD, TSS, pH, and E.coli

f. Calculating and Reporting Mass Loads

The permittee must follow the procedures listed below when calculating and reporting mass loads.

Flow (MGD) X Concentration (mg/L) X 8.34 = Pounds per day

i. When concentration data are below the DL: To calculate the mass load from this result, use the DL. Report the mass load as less than the calculated mass load. For example, if flow is 2 MGD and the reported sample result is <1.0 µg/L, report "<0.02 lb/day" for mass load on the DMR (1.0 µg/L x 2 MGD x conversion factor = 0.017 lb/day, round off to 0.02 lb/day).

ii. When concentration data are above the DL, but below the QL: To calculate the mass load from this result, use the detection level. Report the mass load as the calculated mass load preceded by "e". For example, if flow is 2 MGD and the reported sample result is e1.0 µg/L, report "e0.02 lb/day" for mass load on the DMR (1.0 µg/L x 2 MGD x conversion factor = 0.017 lb/day, round off to 0.02 lb/day).

2. Influent Monitoring and Reporting Requirements

The permittee must monitor influent sewage at the plant headworks at the parshall flume and report results in accordance with the table below.

Table B1: Influent Monitoring

Item or Parameter	Time Period	Minimum Frequency	Sample Type/Action	Report
Total Flow (MGD)	Year-round	Daily	Measurement	Monthly
Flow Meter Calibration	Year-round	Semi-annually	Verification	Each Event
BOD_5 and TSS (mg/L)	Nov – May	2/week	24-Hour Composite	Monthly
$CBOD_5$ and TSS (mg/L)	May – Oct	2/week	24-Hour Composite	Monthly
pH (S.U.)	Year-Round	3/week	Grab	Monthly

3. Compliance Effluent Monitoring and Reporting

The permittee must monitor effluent for Outfall 001 downstream of the UV disinfection system and report results in accordance with the table below:

Table B2: Effluent Monitoring

Item or Parameter	Time Period	Minimum Frequency	Sample Type/Required Action	Report
Total Flow (MGD)	Year-Round	Daily	Measurement	Monthly
Flow Meter Calibration	Annual	2/Year	Verification	Each Event
$CBOD_5$ and TSS (mg/L)	May - Oct	2/Week	24-Hour Composite	Monthly
Ammonia-N (mg/L)	May - Oct	2/Week	24-Hour Composite	Monthly
BOD_5 and TSS (mg/L)	Nov -Apr	2/Week	24-Hour Composite	Monthly
BOD_5 and TSS Mass Load (lb/day)	Nov- Apr	2/Week	Calculation	Monthly
CBOD5 and TSS Mass Load (lb/day)	May - Oct	2/Week	Calculation	Monthly
BOD_5 or $CBOD_5$ and TSS Percent Removal (%)	Year-Round	Monthly	Calculation	Monthly
TKN, NO2+NO3, Total Phosphorus	May - Oct	1/Week	24-Hour Composite	Monthly
Effluent Temperature, Daily Maximum (Degrees Celsius)	Daily	2/Hour	Measurement[3]	Monthly
Excess Thermal Load (Mkcal/day)	Apr 1 – Apr 30	Daily (as a rolling 7-day avg starting on April 7th)	Calculation[2.]	Monthly
Excess Thermal Load (Mkcal/day)	May 1 – Jun 15	Daily (as a rolling 7-day avg starting on May 7th)	Calculation[2.]	Monthly
Excess Thermal Load (Mkcal/day)	Jun 16 – Aug 31	Daily (as a rolling 7-day avg starting on Jun 22nd)	Calculation[1.]	Monthly

Item or Parameter	Time Period	Minimum Frequency	Sample Type/Required Action	Report
Excess Thermal Load (Mkcal/day)	Sep 1 – Oct 31	Daily (as a rolling 7-day avg starting on September 7th)	Calculation[2]	Monthly
E. coli (# of organisms/100 mL)	Year-Round	2/Week	Grab	Monthly
UV dose (mJ/cm2)	Year-Round	Daily	Measurement	Monthly
pH (S.U.)	Year-Round	3/week	Grab	Monthly

Note 1. Calculated as follows:
(Weekly average of daily maximum effluent temperatures during decant in °C - applicable stream temperature standard, 16°C) X (Weekly average of daily flow in MGD) X 3.785 = Excess Thermal Load, in Million Kcals/day.

Note 2. Calculated as follows:
(Weekly average of daily maximum effluent temperatures during decant in °C - applicable stream temperature standard, 13°C) X (Weekly average of daily flow in MGD) X 3.785 = Excess Thermal Load, in Million Kcals/day.

Note 3. Due to the intermittent nature of the discharge, effluent temperature monitoring is required only when discharging. If temperature data must also be collected during periods of non-discharge (based on equipment installation), efforts should be made to distinguish between discharging and non-discharging periods. All continuous temperature monitors are to be checked visually monthly to insure that the devices are still in place and submerged. All continuous temperature monitors must be audited quarterly and checked monthly, following procedures described in DEQ Procedural Guidance for Water Temperature Monitoring. The Department acknowledges that uninterrupted data collection is not guaranteed due to vandalism, theft, damage or disturbance. In the event of equipment failure or loss, the permittee shall notify the Department and deploy new equipment to minimize interruption of data collection.

4. Effluent Toxics Characterization Monitoring (also referred to as Tier 1 monitoring)

The permittee must analyze effluent samples for the parameters listed in the tables above and below. For toxics, the permittee must collect samples at the effluent sampler located upstream of the UV disinfection system such that 4 sampling events occur within 2 years. Samples must be 24 hour composites except as noted in Tables B3 and B4 for Total Cyanide, Free Cyanide, Total Phenolic Compounds and Volatile Organic Compounds.

Table B3: Metals, Cyanide, Total Phenols, Nitrates, Ammonia and Hardness

Pollutant[a]	CAS[b]	QL	Pollutant[a]	CAS[b]	QL
Antimony (total)	7440360	0.10	Mercury (total)	7439976	0.001
Arsenic (total)	7440382	0.50	Nickel (total and dissolved)	7440020	1.0
Arsenic (Total Inorganic)	7440382	1.0	Selenium (total and dissolved)	7782492	0.1

Pollutant[a]	CAS[b]	QL	Pollutant[a]	CAS[b]	QL
Arsenic (Total Inorganic Dissolved)	22541544	50	Silver (total and dissolved)	7440224	1.0
Beryllium (total)	7440417	0.10	Thallium (total)	7440280	0.10
Cadmium (total and dissolved)	7440439	0.10	Zinc (total and dissolved)	7440666	5.0
Chromium (total)	7440473	0.40	Cyanide (Free)[c]	57125	5.0
Chromium III (total and dissolved)	16065831	2.0	Cyanide (Total)[d]	57125	5.0
Chromium VI (total and dissolved)	18540299	2.0			
Copper (total)	7440508	2.0	Nitrate-Nitrite as N	14797558	100
Iron	7439896	100	Ammonia as N	7664417	1000
Lead (total and dissolved)	7439921	1.0	Hardness (Total as CaCO3)		

Notes:

a. The term "total" used in reference to metals is intended to cover all EPA-accepted standard digestion methods and is considered to be equivalent to the term "total recoverable".
b. Chemical Abstract Service
c. There are multiple approved methods for testing for free cyanide. For more information, refer to DEQ's analytical memo on the subject of cyanide monitoring at http://www.deq.state.or.us/wq/standards/docs/toxics/cyanide.pdf
d. When sampling for Total Cyanide, the permittee must collect at least six discrete grab samples over the operating day. The aliquot must be at least 100 mL and collected and composited into a larger container that has been preserved with sodium hydroxide to insure sample integrity.

Table B4: Volatile Organic Compounds

(µg/L unless otherwise specified)

Pollutant[a]	CAS	QL	Pollutant[a]	CAS	QL
Acrolein	107028	5.0	1,2-trans-dichloroethylene[d]	156605	0.50
Acrylonitrile	107131	5.0	1,1-dichloroethylene[e]	75354	0.50
Benzene	71432	0.50	1,2-dichloropropane	78875	0.50
Bromoform	75252	0.50	1,3-dichloropropylene[f]	542756	0.50
Carbon Tetrachloride	56235	0.50	Ethylbenzene	100414	0.50
Chlorobenzene	108907	0.50	Methyl Bromide[g]	74839	0.50
Chlorodibromomethane[b]	124481	0.50	Methyl Chloride[h]	74873	0.50
Chloroethane	75003	0.50	Methylene Chloride	75092	0.50
2-Chloroethylvinyl Ether	110758	10	1,1,2,2-tetrachloroethane	79345	0.50
Chloroform	67663	0.50	Tetrachloroethylene[i]	127184	0.50
Dichlorobromomethane[c]	75274	0.50	Toluene	108883	0.50
1,2-Dichlorobenzene (o)	95501	0.50	1,1,1-trichloroethane	71556	0.50
1,3-Dichlorobenzene (m)	541731	0.50	1,1,2-trichloroethane	79005	0.50
1,4-Dichlorobenzene (p)	106467	0.50	Trichloroethylene[j]	79016	0.50
1,1-dichloroethane	75343	0.50	Vinyl Chloride	75014	0.50
1,2-dichloroethane	107062	0.50			

Notes:

a. The term "total" used in reference to metals is intended to cover all EPA-accepted standard digestion methods and is considered to be equivalent to the term "total recoverable.
b. Chlorodibromomethane is identified as Dibromochloromethane in 40 CFR Part 136.3, Table 1C.
c. Dichlorobromomethane is identified as Bromodichloromethane in 40 CFR Part 136.3, Table 1C.
d. 1,2-trans-dichloroethylene is identified as trans-1,2-dichloroethene in 40 CFR Part 136.3, Table 1C.
e. 1,1-dichloroethylene is identified as 1,1-dichloroethene in 40 CFR Part 136.3, Table 1C.

Pollutant[a]	CAS	QL	Pollutant[a]	CAS	QL

f. 1,3-dichloropropylene consists of both cis-1,3-dichloropropene and trans-1,3-dichloropropene. Both should be reported individually.
g. Methyl bromide is identified as Bromomethane in 40 CFR Part 136.3, Table 1C.
h. Methyl chloride is identified as chloromethane in 40 CFR Part 136.3, Table 1C.
i. Tetrachloroethylene is identified as tetrachloroethene in 40 CFR Part 136.3, Table 1C.
j. Trichloroethylene is identified as trichloroethene in 40 CFR Part 136.3, Table 1C.

Table B5: Acid-Extractable Compounds
(µg/L unless otherwise specified)

Pollutant	CAS	QL[a]	Pollutant	CAS	QLa
p-chloro-m-cresol[b]	59507	1.0	2-nitrophenol	88755	2.0
2-chlorophenol	95578	1.0	4-nitrophenol	100027	5.0
2,4-dichlorophenol	120832	1.0	Pentachlorophenol	87865	1.0
2,4-dimethylphenol	105679	5.0	Phenol	108952	1.0
4,6-dinitro-o-cresol[c]	534521	2.0	2,4,5-trichlorophenol[d]	95954	2.0
2,4-dinitrophenol	51285	5.0	2,4,6-trichlorophenol	88062	1.0

a. Some QLs may need methods with modification allowed in 40 CFR Part 136.6 or EPA's Solutions for Analytical Chemistry Problems w/Clean Water Methods, March 2007. (url: http://water.epa.gov/scitech/methods/cwa/atp/upload/2008_02_06_methods_pumpkin.pdf)
b. p-chloro-m-cresol is identified as 4-Chloro-3-methylphenol in 40 CFR Part 136.3, Table 1C.
c. 4,6-dinitro-o-cresol is identified as 2-Methyl-4,6-dinitrophenol in 40 CFR Part 136.3, Table 1C.
d. To monitor for 2,4,5-trichlorophenol, use EPA Method 625.

Table B6: Base-Neutral Compounds
(µg/L unless otherwise specified)

Pollutant	CAS	QL[a]	Pollutant	CAS	QL
Acenaphthene	83329	1.0	Dimethyl phthalate	131113	1.0
Acenaphthylene	208968	1.0	2,4-dinitrotoluene	121142	1.0
Anthracene	120127	1.0	2,6-dinitrotoluene	606202	1.0
Benzidine	92875	10	1,2-diphenylhydrazine[d]	122667	2.0
Benzo(a)anthracene	56553	0.5	Fluoranthene	206440	2.0
Benzo(a)pyrene	50328	0.5	Fluorene	86737	1.0
3,4-benzofluoranthene[b]	205992	0.5	Hexachlorobenzene	118741	1.0
Benzo(ghi)perylene	191242	1.0	Hexachlorobutadiene	87683	2.0
Benzo(k)fluoranthene	207089	1.0	Hexachlorocyclopentadiene	77474	2.0
Bis(2-chloroethoxy)methane	111911	2.0	Hexachloroethane	67721	1.0
Bis(2-chloroethyl)ether	111444	1.0	Indeno(1,2,3-cd)pyrene	193395	0.5
Bis(2-chloroisopropyl)ether[c]	108601	2.0	Isophorone	78591	5.0
Bis (2-ethylhexyl)phthalate	117817	1.0	Napthalene	91203	1.0
4-bromophenyl phenyl ether	101553	1.0	Nitrobenzene	98953	1.0
Butylbenzyl phthalate	85687	1.0	N-nitrosodi-n-propylamine	621647	2.0
2-chloronaphthalene	91587	1.0	N-nitrosodimethylamine	62759	1.0
4-chlorophenyl phenyl ether	7005723	1.0	N-nitrosodiphenylamine	86306	1.0
Chrysene	218019	1.0	Pentachlorobenzene	608935	1.0
Di-n-butyl phthalate	84742	1.0	Phenanthrene[e]	85018	1.0
Di-n-octyl phthalate	117840	1.0	Pyrene	129000	1.0
Dibenzo(a,h)anthracene	53703	1.0	1,2,4-trichlorobenzene	120821	1.0
3,3-Dichlorobenzidine	91941	1.0	Tetrachlorobenzene,1,2,4,5[e]	95943	1.0
Diethyl phthalate	84662	1.0			

Pollutant	CAS	QL[a]	Pollutant	CAS	QL

a. Some QLs may need methods with modification allowed in 40 CFR Part 136.6 or EPA's *Solutions for Analytical chemistry Problems w/Clean Water Methods, March 2007.*
b. 3,4-benzofluoranthene is listed as Benzo(b)fluoranthene in 40 CFR Part 136.
c. Bis(2-chloroisopropyl)ether is listed as 2,2'-oxybis(2-chloro-propane in 40 CFR Part 136.
d. 1,2-diphenylhydrazine is difficult to analyze given its rapid decomposition rate in water. Azobenzene (a decomposition product of 1,2-diphenylhydrazine), should be analyzed as an estimate of this chemical.
e. To analyze for Pentachlorobenzene and Tetrachlorobenzene 1,2,4,5, use EPA 625.

Table B7: Pesticides and PCBs
(µg/L unless otherwise specified)

Pollutant	CAS	QL[a]	Pollutant	CAS	QL[a]
Aldrin	309002	0.010	Endrin Aldehyde	7421934	0.010
BHC Technical (Hexachloro-cylco-hexane)[b]	608731	0.010	Guthion[c]	86500	1.0
BHC-alpha[b]	319846	0.010	Heptachlor	76448	0.010
BHC-beta[b]	319857	0.010	Heptachlor Epoxide	1024573	0.010
BHC-gamma (Lindane)[b]	58899	0.010	Malathion	121755	0.20
Chlordane	57749	0.10	Methoxychlor	72435	0.010
Chloropyrifos[c]	2921882	0.010	Mirex	2385855	0.010
Demeton	8065483	1.0	Parathion[c]	56382	10.0
DDD 4,4'	72548	0.010	Toxaphene	8001352	0.50
DDE 4,4'	72559	0.010	PCB- Aroclor 1254	11097691	0.50
DDT 4,4'	50293	0.010	PCB- Aroclor 1232	11141165	0.50
Dieldrin	60571	0.010	PCB- Aroclor 1260	11096825	0.50
Endosulfan alpha[d]	959988	0.010	PCB- Aroclor 1242	53469219	0.50
Endosulfan beta[e]	33213659	0.010	PCB- Aroclor 1221	11104282	0.50
Endosulfan Sulfate	1031078	0.010	PCB- Aroclor 1248	12672296	0.50
Endrin	72208	0.010	PCB- Aroclor 1016	12674112	0.50

a. Some QLs may need methods with modification allowed in 40 CFR Part 136.6 or EPA's Solutions for Analytical chemistry Problems w/Clean Water Methods, March 2007.
b. There is no analytical method for Technical BHC. Instead, the four major isomers (alpha, beta, delta and gamma) must be separately analyzed and then added together to compare to the BHC Technical criteria.
c. Analytical Methods: Chloropyrifos use EPA 625 or 608; Parathion and Guthion use EPA 614, 622 or 625. Parathion is listed as ethyl parathion in 40 CFR Part 136. Guthion is identified in 40 CFR Part 136.3, Table 1D as Azinphos methyl.
d. Endosulfan alpha is identified as Endosulfan I in 40 CFR Part 136.3, Table 1D.
e. Endosulfan beta is identified as Endosulfan II in 40 CFR Part 136.3, Table 1D.

Table B8: Other Parameters with State Water Quality Criteria
(µg/L unless otherwise specified)

Pollutant	CAS	QL	Pollutant	CAS	QL
Barium, Total[a]	7440393	0.10	Dioxin 2,3,7,8-TCDD[e]	1746016	$1.0x10^{-5}$
			N-Nitrosodibutylamine	924163	2.0
Sulfide-Hydrogen Sulfide[b]	7783064	100	N-Nitrosodiethylamine	55185	2.0
2,4,5-TP [2-(2,4,5-Trichloro-phenoxy) propanoic acid][c]	93721	1.0	N-Nitrosopyrrolidine	930552	2.0
2,4-D (2,4-Dichlorophenoxy)[d] acetic acid)	94757	1.0	Total Phosphorus as P	7723140	10

a. Barium, Total is identified as Barium-Total in 40 CFR Part 136.3, Table 1B.
b. Report Sulfide-Hydrogen Sulfide as Dissolved Sulfide as S.
c. This chemical is listed as Chlorophenoxy Herbicide (2,4,5-TP) in Table 40.
d. This chemical is listed as Chlorophenoxy Herbicide (2,4-D) in Table 40
e. Dioxin 2,3,7,8-TCDD is identified as 2,3,7,8-Tetrachloro-dibenzo-p-dioxin in 40 CFR Part 136.3,Table 1C. To achieve the QL, it may be necessary to use Method 1613B.

5. Ambient and Additional Effluent Characterization Monitoring

DEQ will evaluate the results of monitoring required under Schedule B : Effluent Toxics Characterization Monitoring (also referred to as Tier 1 monitoring) to determine whether the permittee will be required to conduct additional ambient water quality and/or effluent monitoring (also referred to as Tier 2 monitoring). DEQ will notify the permittee of its determination through a written "Monitoring Action Letter."

a. Sampling Plan

If additional monitoring is needed, the permittee must submit a sample and analysis plan to DEQ for approval within 3 months of receipt of the DEQ Monitoring Action Letter. The sampling plan must include the following:

i. Characterization of ambient water quality for any pollutants identified as having the reasonable potential to exceed the water quality criterion at the point of discharge.

ii. Additional effluent monitoring for pollutants listed below when monitoring data for them is found to exceed the water quality criteria at the point of discharge. Surrogate parameters to which this language may apply are as follows:

- Total Arsenic for Inorganic Arsenic and Arsenic III
- Total Chromium for Chromium III and Chromium VI
- Total Phosphorus for Elemental Phosphorus
- Total Cyanide for Free Cyanide
- Total Cadmium, Copper, Lead, Nickel, Silver and Zinc in lieu of Dissolved Copper, Lead, Nickel, Silver and Zinc respectively. If this condition is included in the permit, Tables B4 and B9 should be modified to require monitoring for the surrogates.]

iii. Additional effluent monitoring (six additional samples each) for any pollutants identified by Tier 1 characterization monitoring results as having reasonable potential to exceed the water quality criteria at the point of discharge.

iv. Completion of Schedule B sampling requirements that could not be completed due to analytical interferences.

v. Sampling locations for receiving water must be located as far upstream from outfall location as necessary to insure that samples contain no effluent.

vi. Monitoring of ambient conditions. This includes flow, temperature, ph, hardness and alkalinity.

b. Implementation

The permittee must implement the approved plan within 3 months of approval and report the ambient and additional characterization by 36 months after plan approval.

6. Whole Effluent Toxicity Testing Requirements

The permittee must monitor final effluent for whole effluent toxicity as described below using the testing protocols specified in Schedule D, Condition 9, Whole Effluent Toxicity Testing for Outfall 001 must be collected at the location specified below.

Table B9: WET Test Monitoring

Parameter	Minimum Frequency	Sample Type/Location
Acute toxicity	The permit holder must monitor 4 times over the permit cycle with each sample collected during a different quarter . All four samples may be collected in the first year of the permit or they may be collected during a different quarter each year over 4 years (i.e., Year 1, Qtr 1) When possible, conduct WET testing concurrent with Effluent Toxics Characterization Monitoring. Any combination of testing may be performed provided that all four seasons are tested within the first four years of the permit cycle. If 4 consecutive tests show no toxicity at acute toxicity at the ZID dilutions and no chronic toxicity at the RMZ dilutions, no further testing is required. Otherwise, the permittee must re-test, and if necessary, evaluate the cause of toxicity as described in Schedule D, Condition 9.e.	For acute toxicity: Composite sample, taken directly upstream of the UV disinfection system.
Chronic toxicity		For chronic toxicity: 24-hr composite sample taken directly upstream of the UV disinfection system.

7. Recycled Water Monitoring Requirements: Outfall 002

The permittee must monitor recycled water as listed below. The samples must be representative of the recycled water delivered for beneficial reuse at a location identified in the Recycled Water Use Plan. The monitoring and reporting requirements are only applicable when land application of recycled water is occurring.

Table B10: Recycled Water Monitoring

Item or Parameter	Minimum Frequency	Sample Type/Required Action
Total Flow (MGD) or Quantity Irrigated (inches/acre)	Daily	Measurement
Flow Meter Calibration	Annually	Verification
Quantity Chlorine Used (lbs)	Daily – if chlorine is used	Measurement
Chlorine, Total Residual (mg/L)	Daily – if chlorine is used	Grab
UV dose (mJ/cm2)	Daily – if UV is used	Calculation based on UVI grab and average daily flow
pH	2/Week	Grab
Total Coliform	Daily (Class A) 3/Week (Class B) Weekly (Class C)	Grab
Turbidity	Hourly (Class A only)	Measurement
Nutrients (TKN, NO2+NO3-N, NH3, Total Phosphorus)	Quarterly (Class C and D only)	Grab

8. Biosolids Monitoring Requirements

The permittee must monitor biosolids land applied or produced for sale or distribution as listed below. The samples must be representative of the quality and quantity of biosolids generated and undergo the same treatment process used to prepare the biosolids.

Table B11: Biosolids Monitoring

Item or Parameter	Minimum Frequency	Sample Type
Nutrient and conventional parameters (% dry weight unless otherwise specified): Total Kjeldahl Nitrogen (TKN) Nitrate-Nitrogen (NO_3-N) Ammonia-Nitrogen (NH_3-N) Total Phosphorus (P) Potassium (K) pH (S.U.) Total Solids Volatile Solids	As described in the DEQ-approved Biosolids Management Plan.	As described in the DEQ-approved Biosolids Management Plan
Pollutants: As, Cd, Cu, Hg, Pb, Mo, Ni, Se, Zn, mg/kg dry weight	As described in the DEQ-approved Biosolids Management Plan.	As described in the DEQ-approved Biosolids Management Plan
Pathogen reduction	As described in the DEQ-approved Biosolids Management Plan.	As described in the DEQ-approved Biosolids Management Plan
Vector attraction reduction	As described in the DEQ-approved Biosolids Management Plan.	As described in the DEQ-approved Biosolids Management Plan

Item or Parameter	Minimum Frequency	Sample Type
Record of biosolids land application: date, quantity, location.	Each event	Record the date, quantity, and location of biosolids land applied on site location map or equivalent electronic system, such as GIS.

Table B12: Biosolids Minimum Monitoring Frequency

Minimum Sampling Frequency	
(dry metric tons)	
Greater than zero but less than 290	Once per Year
290 to 1,500	Once per Quarter
1,500 to 15,000	Once per 60 Days
Equal to or Greater than 15,000	Once per Month
Note: After the sewage sludge has been monitored for two years at the frequency in Table 1 of§ 503.16, the permitting authority may reduce the frequency of monitoring for pollutant concentrations and for the pathogen density requirements in § 503.32(a)(5)(ii) and (a)(5)(iii).	

9. Permit Application Monitoring Requirements

The renewal application for this permit requires 3 scans for the parameters listed in the table below. This data may be collected up to 4.5 years in advance of submittal of the renewal application. DEQ recognizes that some facilities may find it difficult to collect 3 scans that are representative of the seasonal variation in the discharge from each outfall within the permit renewal timeframe, and is therefore requiring that this monitoring be completed as part of compliance with this permit.

Table B13: Effluent Monitoring Required for NPDES Permit Application
(a minimum of 3 scans required)

Parameter
Ammonia (as N)
Chlorine (Total Residual, TRC)
Dissolved Oxygen
Total Kjeldahl Nitrogen (TKN)
Nitrate Plus Nitrite Nitrogen
Oil and Grease
Phosphorus (Total)
Total Dissolved Solids (TDS)

10. Minimum Reporting Requirements

The permittee must submit to DEQ monitoring reports as listed below.

Table B14: Reporting Requirements and Due Dates

Reporting Requirement	Frequency	Due Date	Report Form (unless otherwise specified in writing)	Submit To:
Table B1: Influent Monitoring Table B2: Effluent Monitoring	Monthly	15th day of the month following the monitoring period	DEQ-approved discharge monitoring report (DMR) form, hard copy (see Notes a. and b.)	For majors: DEQ Regional Office DEQ Water Quality Division, OIS
Tables B.3 – B.8: Effluent Toxics Characterization	Once (see Note c.)	End of the 25th month of this permit term	DEQ - approved electronic summary.	DEQ Regional Office
Condition B.5: Ambient and Additional Effluent Toxics Characterization Data	Once (see Note c.)	If required, by 3 months after approval.	Data in electronic format using RPA spreadsheet (so DEQ can upload to LASAR)	DEQ Regional Office
Table 9: WET Test Monitoring	See Table B.9	Within the month following the performance of the test.	1 hard copy	DEQ Regional Office
Recycled water annual report describing effectiveness of recycled water system in complying with the DEQ-approved recycled water use plan, OAR 340-055, and this permit. (see Schedule D for more detail) Table B10: Recycled Water Monitoring	Annually, if irrigation took place	January31, if used.	2 hard copies	One each to: DEQ Regional Office DEQ Water Reuse Program Coordinator
Wastewater solids annual report describing quality, quantity, and use or disposal of wastewater solids generated at the facility.	Annually	February 19. If generated.	2 hard copies	One each to: DEQ Regional Office DEQ Biosolids Program Coordinator

Reporting Requirement	Frequency	Due Date	Report Form (unless otherwise specified in writing)	Submit To:
Biosolids land application annual report describing solids handling activities for the previous year and includes the information described in OAR 340-050-0035(6)(a)-(e). Table B10: Recycled Water Monitoring	Annually	February 19	2 hard copies	One each to: DEQ Regional Office DEQ Biosolids Program Coordinator (Portland HQ)
Inflow and infiltration report (see Schedule D, Section 1 for description)	Annually	September 1st of each year.	1 hard copy	DEQ Regional Office

Notes:

a. Name, certificate classification, and grade level of each responsible principal operator as well as identification of each system classification must be included on DMRs. For submittals that are provided to DEQ by mail, the postmarked date must not be later than the due date.
b. Equipment breakdowns and bypass events must be noted on DMRs.
c. *Though the overall characterization only needs to be performed once during the permit cycle, a particular* characterization may include multiple sampling events.

SCHEDULE D: SPECIAL CONDITIONS

1. Inflow and Infiltration

An annual inflow and infiltration report must be submitted to DEQ as directed in Schedule B. The report must include the following:

a. Details of activities performed in the previous year to identify and reduce inflow and infiltration.

b. Details of activities planned for the following year to identify and reduce inflow and infiltration.

c. A summary of sanitary sewer overflows that occurred during the previous year.

2. Emergency Response and Public Notification Plan

The permittee must develop and maintain an Emergency Response and Public Notification Plan (the Plan) per Schedule F, Section B, and Conditions 7 & 8. The permit holder must develop the plan within 12 months of permit issuance and update the Plan annually to ensure that telephone and email contact information for applicable public agencies are current and accurate. An updated copy of the plan must be kept on file at the wastewater treatment facility for Department review. The latest plan revision date must be listed on the Plan cover along with the reviewer's initials or signature.

3. Recycled Water Use Plan

In order to distribute recycled water for reuse, the permittee must have and maintain a DEQ-approved Recycled Water Use Plan meeting the requirements in OAR 340-055-0025. The permittee must submit substantial modifications to an existing plan to DEQ for approval at least 60 days prior to making the proposed changes. Conditions in the plan are enforceable requirements under this permit At least six months prior to distributing recycled water for beneficial use, the permittee must submit to DEQ a Recycled Water Use Plan meeting the requirements in OAR 340-055-0025 for public comment and approval. Note that modifications to the RWUP can only be made prior to the expiration date of this permit.

4. Exempt Wastewater Reuse at the Treatment System

The permittee is exempt from the recycled water use requirements in OAR 340-055 when recycled water is used at the wastewater treatment system for landscape irrigation or for in-plant processes at a wastewater treatment system and all of the following conditions are met:

a. The recycled water is an oxidized and disinfected wastewater.

b. The recycled water is used at the wastewater treatment system site where it is generated or at an auxiliary wastewater or sludge treatment facility that is subject to the same NPDES or WPCF permit as the wastewater treatment system. Contiguous property to the parcel of land upon which the treatment system is located is considered the wastewater treatment system site if under the same ownership.

c. Spray or drift or both from the use does not occur off the site.

d. Public access to the site is restricted.

5. Biosolids Management Plan

The permittee must maintain a Biosolids Management Plan meeting the requirements in OAR 340-050-0031(5). The permittee must keep the plan updated and submit substantial modifications to an existing plan to DEQ for approval at least 60 days prior to making the proposed changes. Conditions in the plan are en-

forceable requirements under this permit. Note that modifications to the BMP can only be made prior to the expiration date of this permit.

6. Land Application Plan

a. Plan Contents

The permittee must maintain a land application plan that contains the information listed below. The land application plan may be incorporated into the Biosolids Management Plan.

i. All known DEQ-approved sites that will receive biosolids while the permit is effective.

ii. The geographic location, identified by county or smaller unit, of new sites which are not specifically listed at the time of permit application.

iii. Criteria that will be used in the selection of new sites.

iv. Management practices that will be implemented at new sites authorized by the DEQ.

v. Procedures for notifying property owners adjacent to proposed sites of the proposed activity prior to the start of application.

b. Site Authorization

The permittee must obtain written authorization from DEQ for each land application site prior to its use. Conditions in site authorizations are enforceable requirements under this permit. The permittee may land apply biosolids to a DEQ-approved site only as described in the site authorization, while this permit is effective and with the written approval of the property owner. DEQ may modify or revoke a site authorization following the procedures for a permit modification described in OAR 340-045-0055.

c. Public Participation

i. No DEQ-initiated public notice is required for continued use of sites identified in the DEQ-approved land application plan.

ii. For new sites that fail to meet the site selection criteria in the land application plan or that are deemed by DEQ to be sensitive with respect to residential housing, runoff potential, or threat to groundwater, DEQ will provide an opportunity for public comment as directed by OAR 340-050-0015(10).

iii. For all other new sites, the permittee must provide for public participation following procedures in its DEQ-approved land application plan.

d. Exceptional Quality (EQ) Biosolids

The permittee is exempt from the requirements in condition 6.b-c. above if:

i. Pollutant concentrations of biosolids are less than the pollutant concentration limits in Schedule A,Table A5.

ii. Biosolids meet one of the Class A pathogen reduction alternatives in 40 CFR §503.32(a); and

iii. Biosolids meet one of the vector attraction reduction options in 40 CFR §503.33(b)(1) through (8).

7. Wastewater Solids Transfers

a. *Within state.* The permittee may transfer wastewater solids including Class A and Class B biosolids, to another facility permitted to process or dispose of wastewater solids, including but not limited to: another wastewater treatment facility, landfill, or incinerator. The permittee must monitor, report, and dispose of solids as required under the permit of the receiving facility.

b. *Out of state.* If wastewater solids, including Class A and Class B biosolids, are transferred out of state for use or disposal, the permittee must obtain written authorization from DEQ, meet Oregon requirements for the use or disposal of wastewater solids, notify in writing the receiving state of the proposed use or disposal of wastewater solids, and satisfy the requirements of the receiving state.

8. Hauled Waste Control

The permittee may accept hauled wastes at discharge points designated by the POTW after receiving written DEQ approval of a hauled waste control plan. Hauled wastes may include wastewater solids from another wastewater treatment facility, septage, grease trap wastes, portable and chemical toilet wastes, landfill leachate, groundwater remediation wastewaters and commercial/industrial wastewaters. Wastewater solids from out-of-state facilities must not exceed the ceiling concentration limits in Schedule A, Table A5: Biosolids Limits.

9. Whole Effluent Toxicity Testing

a. The permit holder must conduct whole effluent toxicity (WET) tests as specified here and in Schedule B of this permit.

b. Acute Toxicity Testing - Organisms and Protocols

i. The permittee must conduct 48-hour static renewal tests with *Ceriodaphnia dubia* (water flea) and 96-hour static renewal tests with *Pimephales promelas* (fathead minnow).

ii. All test methods and procedures must be in accordance with *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, Fifth Edition, EPA-821-R-02-012, October 2002.* Any deviation of the bioassay procedures outlined in this method must be submitted in writing to DEQ for review and approval prior to use.

iii. Treatments to the final effluent samples (for example, dechlorination), except those included as part of the methodology, may not be performed by the laboratory unless approved by DEQ prior to analysis.

iv. Unless otherwise approved by DEQ in writing, acute tests must be conducted on a control (0%) and the following dilution series: 6.25%, 12.5%, 25%, 50%, and 100%. An acute WET test will be considered to show toxicity if there is a statistically significant difference in survival between the control and 32.3% effluent reported as the NOEC .

c. Chronic Toxicity Testing - Organisms and Protocols

i. The permittee must conduct tests with *Ceriodaphnia dubia* (water flea) for reproduction and survival test endpoint, *Pimephales promelas* (fathead minnow) for growth and survival test endpoint, and *Raphidocelis subcapitata* (green alga formerly known as *Selanastrum capricornutum*) for growth test endpoint.

ii. All test methods and procedures must be in accordance with *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition, EPA-821-R-02-013, October 2002.* Any deviation of the bioassay procedures outlined in this method must be submitted in writing to DEQ for review and approval prior to use.

iii. Treatments to the final effluent samples (for example, dechlorination), except those included as part of the methodology, may not be performed by the laboratory unless approved by DEQ prior to analysis.

iv. Unless otherwise approved by DEQ in writing, chronic tests must be conducted on a control (0%) and the following dilution series: 6.25%, 12.5%, 25%, 50%, and 100%. A chronic WET test will be considered to show toxicity if the IC25 (25% inhibition concentration) occurs at dilutions equal to or less than the dilution that is known to occur at the edge of the mixing zone, that is, IC25 $\leq$ 11%.

d. Dual End-Point Tests

i. WET tests may be dual end-point tests in which both acute and chronic end-points can be determined from the results of a single chronic test. The acute end-point will be based on 48-hours for the *Ceriodaphnia dubia* (water flea) and 96-hours for the *Pimephales promelas* (fathead minnow).

ii. All test methods and procedures must be in accordance with *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition, EPA-821-R-02-013, October 2002*. Any deviation of the bioassay procedures outlined in this method must be submitted in writing to DEQ for review and approval prior to use.

iii. Unless otherwise approved by DEQ in writing, tests run as dual end-point tests must be conducted on a control (0%) and the following dilution series: 6.25%, 12.5%, 25%, 50%, and 100% .

e. Evaluation of Causes and Exceedances

i. If any test exhibits toxicity as described in Condition 9, the permittee must conduct another toxicity test using the same species and DEQ-approved methodology within two weeks unless otherwise approved by DEQ.

ii. If two consecutive WET test results indicate acute or chronic toxicity as described in conditions 9.b and c, above, the permittee must immediately notify DEQ of the results. DEQ will work with the permittee to determine the appropriate course of action to evaluate and address the toxicity.

f. Quality Assurance and Reporting

i. Quality assurance criteria, statistical analyses, and data reporting for the WET tests must be in accordance with the EPA documents stated in this condition.

ii. A bioassay laboratory report for each test must be prepared according to the EPA method documents referenced in this Schedule. The report must include all QA/QC documentation, statistical analysis for each test performed, standard reference toxicant test (SRT) conducted on each species required for the toxicity tests, and completed Chain of Custody forms for the samples including time of sample collection and receipt. Reports must be submitted to DEQ within 45 days of test completion.

iii. The report must include all endpoints measured in the test: NOEC, LOEC, and IC_{25}.

iv. The permittee must make available to DEQ upon request the written standard operating procedures they, or the laboratory performing the WET tests, use for all toxicity tests required by DEQ.

g. Reopener

DEQ may reopen and modify this permit to include new limits, monitoring requirements, and/or conditions as determined by DEQ to be appropriate, and in accordance with procedures outlined in OAR Chapter 340, Division 45 if:

i. WET testing data indicate acute and/or chronic toxicity.

ii. The facility undergoes any process changes.

iii. Discharge monitoring data indicate a change in the reasonable potential to cause or contribute to an exceedance of a water quality standard.

10. Operator Certification

a. Definitions

i. "Supervise" means to have full and active responsibility for the daily on site technical operation of a wastewater treatment system or wastewater collection system.

ii. "Supervisor" or "designated operator", means the operator delegated authority by the permittee for establishing and executing the specific practice and procedures for operating the wastewater treatment system or wastewater collection system in accordance with the policies of the owner of the system and any permit requirements.

iii. "Shift Supervisor" means the operator delegated authority by the permittee for executing the specific practice and procedures for operating the wastewater treatment system or wastewater collection system when the system is operated on more than one daily shift.

iv. "System" includes both the collection system and the treatment systems.

b. The permittee must comply with OAR Chapter 340, Division 49, "Regulations Pertaining to Certification of Wastewater System Operator Personnel" and designate a supervisor whose certification corresponds with the classification of the collection and/or treatment system as specified on p. 1 of this permit.

c. The permittee must have its system supervised full-time by one or more operators who hold a valid certificate for the type of wastewater treatment or wastewater collection system, and at a grade equal to or greater than the wastewater system's classification as specified on p. 1 one of this permit.

d. The permittee's wastewater system may not be without the designated supervisor for more than 30 days. During this period, there must be another person available to supervise who is certified at no more than one grade lower than the classification of the wastewater system. The permittee must delegate authority to this operator to supervise the operation of the system.

e. If the wastewater system has more than one daily shift, the permittee must have another properly certified operator available to supervise operation of the system. Each shift supervisor, if any, must be certified at no more than one grade lower than the system classification.

f. The permittee is not required to have a supervisor on site at all times; however, the supervisor must be available to the permittee and operator at all times.

g. The permittee must notify DEQ in writing of the name of the system supervisor. The permittee may replace or re-designate the system supervisor with another properly certified operator at any time and must notify DEQ in writing within 30 days of replacement or re-designation of operator in charge. As of this writing, the notice of replacement or re-designation must be sent to Water Quality Division, Operator Certification Program, 2020 SW 4th Avenue, Suite 400, Portland, OR 97201. This address may be updated in writing by DEQ during the term of this permit.

h. When compliance with item (e) of this section is not possible or practicable because the system supervisor is not available or the position is vacated unexpectedly, and another certified operator is not qualified to assume supervisory responsibility, the Director may grant a time extension for compliance with the requirements in response to a written request from the system owner. The Director will not grant an extension longer than 120 days unless the system owner documents the existence of extraordinary circumstances.

11. Industrial User Survey

The permittee must conduct an industrial user survey to determine the presence of any industrial users discharging wastewaters subject to pretreatment and submit a report on the findings to DEQ with the next permit renewal application. The purpose of the survey is to identify whether there are any categorical industrial users discharging to the POTW, and ensure regulatory oversight of these discharges to state waters. If the POTW has already completed a baseline IU Survey the results of this survey are to be provided to DEQ within two months of permit re-issuance.

Guidance on conducting IU Surveys can be found at
http://www.deq.state.or.us/wq/pretreatment/docs/guidance/IUSurveyGuidance.pdf

Once an initial baseline IU Survey is conducted it is to be maintained by the POTW and made available for inspection by DEQ. Every 5 years from permit renewal, the permittee must submit an updated IU survey.

12. Mercury Minimization Plan

By no later than 24 months after the issuance date of this permit the permittee shall develop and submit a Mercury Minimization Plan (MMP) for approval. At a minimum, the MMP must include the following:

a. Identification and evaluation of current and potential mercury (both MeHg and total) sources

b. Identification and evaluation of conditions (i.e., anaerobic conditions) that might contribute to the methylation of elemental mercury in the collection and treatment systems

c. Identification of industrial, commercial and residential sources of mercury

d. A monitoring plan to confirm current or potential sources of mercury (Monitoring Plan)

e. Identification of potential methods for reducing or eliminating mercury. These may include but are not limited to:

    i. BMP requirements or limits for industrial and commercial sources of mercury to a collection system

    ii. Material substitution

    iii. Material recovery

    iv. Spill control and collection

    v. Waste recycling

    vi. Process modifications

    vii. Laboratory housekeeping, use and disposal practices and

    viii. Public education.

f. Ongoing monitoring of effluent to enable evaluation of the effectiveness and implementation of the MMP.

The Department will put the plan out on public notice for 30 days prior to DEQ's approval. The permit holder must begin implementation of the plan within one month of DEQ's approval. If it is determined that the MMP is not effective or if a water column translation of the fish tissue criterion is developed, DEQ may reopen the permit to modify the permit conditions. These modifications may include but are not limited to the addition of a numeric effluent limit.

SCHEDULE F
NPDES GENERAL CONDITIONS – DOMESTIC FACILITIES
October 1, 2015 Version

SECTION A. STANDARD CONDITIONS

A1. Duty to Comply with Permit

The permittee must comply with all conditions of this permit. Failure to comply with any permit condition is a violation of Oregon Revised Statutes (ORS) 468B.025 and the federal Clean Water Act and is grounds for an enforcement action. Failure to comply is also grounds for DEQ to terminate, modify and reissue, revoke, or deny renewal of a permit.

A2. Penalties for Water Pollution and Permit Condition Violations

The permit is enforceable by DEQ or EPA, and in some circumstances also by third-parties under the citizen suit provisions of 33 USC § 1365. DEQ enforcement is generally based on provisions of state statutes and Environmental Quality Commission (EQC) rules, and EPA enforcement is generally based on provisions of federal statutes and EPA regulations.

ORS 468.140 allows DEQ to impose civil penalties up to $25,000 per day for violation of a term, condition, or requirement of a permit. The federal Clean Water Act provides for civil penalties not to exceed $37,500 and administrative penalties not to exceed $16,000 per day for each violation of any condition or limitation of this permit.

Under ORS 468.943, unlawful water pollution in the second degree, is a Class A misdemeanor and is punishable by a fine of up to $25,000, imprisonment for not more than one year, or both. Each day on which a violation occurs or continues is a separately punishable offense. The federal Clean Water Act provides for criminal penalties of not more than $50,000 per day of violation, or imprisonment of not more than 2 years, or both for second or subsequent negligent violations of this permit.

Under ORS 468.946, unlawful water pollution in the first degree is a Class B felony and is punishable by a fine of up to $250,000, imprisonment for not more than 10 years, or both. The federal Clean Water Act provides for criminal penalties of $5,000 to $50,000 per day of violation, or imprisonment of not more than 3 years, or both for knowing violations of the permit. In the case of a second or subsequent conviction for knowing violation, a person is subject to criminal penalties of not more than $100,000 per day of violation, or imprisonment of not more than 6 years, or both.

A3. Duty to Mitigate

The permittee must take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit. In addition, upon request of DEQ, the permittee must correct any adverse impact on the environment or human health resulting from noncompliance with this permit, including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying discharge.

A4. Duty to Reapply

If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and have the permit renewed. The application must be submitted at least 180 days before the expiration date of this permit.

DEQ may grant permission to submit an application less than 180 days in advance but no later than the permit expiration date.

A5. Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause including, but not limited to, the following:

a. Violation of any term, condition, or requirement of this permit, a rule, or a statute.
b. Obtaining this permit by misrepresentation or failure to disclose fully all material facts.
c. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.
d. The permittee is identified as a Designated Management Agency or allocated a wasteload under a total maximum daily load (TMDL).
e. New information or regulations.
f. Modification of compliance schedules.
g. Requirements of permit reopener conditions
h. Correction of technical mistakes made in determining permit conditions.
i. Determination that the permitted activity endangers human health or the environment.
j. Other causes as specified in 40 CFR §§ 122.62, 122.64, and 124.5.
k. For communities with combined sewer overflows (CSOs):
   (1) To comply with any state or federal law regulation for CSOs that is adopted or promulgated subsequent to the effective date of this permit.
   (2) If new information that was not available at the time of permit issuance indicates that CSO controls imposed under this permit have failed to ensure attainment of water quality standards, including protection of designated uses.
   (3) Resulting from implementation of the permittee's long-term control plan and/or permit conditions related to CSOs.

The filing of a request by the permittee for a permit modification, revocation or reissuance, termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

A6. Toxic Pollutants

The permittee must comply with any applicable effluent standards or prohibitions established under Oregon Administrative Rule (OAR) 340-041-0033 and section 307(a) of the federal Clean Water Act for toxic pollutants, and with standards for sewage sludge use or disposal established under section 405(d) of the federal Clean Water Act, within the time provided in the regulations that establish those standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

A7. Property Rights and Other Legal Requirements

The issuance of this permit does not convey any property rights of any sort, or any exclusive privilege, or authorize any injury to persons or property or invasion of any other private rights, or any infringement of federal, tribal, state, or local laws or regulations.

A8. Permit References

Except for effluent standards or prohibitions established under section 307(a) of the federal Clean Water Act and OAR 340-041-0033 for toxic pollutants, and standards for sewage sludge use or disposal established under section 405(d) of the federal Clean Water Act, all rules and statutes referred to in this permit are those in effect on the date this permit is issued.

A9. Permit Fees

The permittee must pay the fees required by OAR.

SECTION B. OPERATION AND MAINTENANCE OF POLLUTION CONTROLS

B1. Proper Operation and Maintenance

The permittee must at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary

facilities or similar systems that are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

B2. Need to Halt or Reduce Activity Not a Defense

For industrial or commercial facilities, upon reduction, loss, or failure of the treatment facility, the permittee must, to the extent necessary to maintain compliance with its permit, control production or all discharges or both until the facility is restored or an alternative method of treatment is provided. This requirement applies, for example, when the primary source of power of the treatment facility fails or is reduced or lost. It is not a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

B3. Bypass of Treatment Facilities

a. Definitions
   (1) "Bypass" means intentional diversion of waste streams from any portion of the treatment facility. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, provided the diversion is to allow essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs b and c of this section.
   (2) "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources that can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

b. Prohibition of bypass.
   (1) Bypass is prohibited and DEQ may take enforcement action against a permittee for bypass unless:
      i. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
      ii. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate backup equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass that occurred during normal periods of equipment downtime or preventative maintenance; and
      iii. The permittee submitted notices and requests as required under General Condition B3.c.
   (2) DEQ may approve an anticipated bypass, after considering its adverse effects and any alternatives to bypassing, if DEQ determines that it will meet the three conditions listed above in General Condition B3.b.(1).

c. Notice and request for bypass.
   (1) Anticipated bypass. If the permittee knows in advance of the need for a bypass, a written notice must be submitted to DEQ at least ten days before the date of the bypass.
   (2) Unanticipated bypass. The permittee must submit notice of an unanticipated bypass as required in General Condition D5.

B4. Upset

a. Definition. "Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operation error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventative maintenance, or careless or improper operation.

b. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the requirements of General Condition B4.c are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

c. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset must demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

(1) An upset occurred and that the permittee can identify the causes(s) of the upset;
(2) The permitted facility was at the time being properly operated;
(3) The permittee submitted notice of the upset as required in General Condition D5, hereof (24-hour notice); and
(4) The permittee complied with any remedial measures required under General Condition A3 hereof.

d. Burden of proof. In any enforcement proceeding the permittee seeking to establish the occurrence of an upset has the burden of proof.

B5. Treatment of Single Operational Upset

For purposes of this permit, a single operational upset that leads to simultaneous violations of more than one pollutant parameter will be treated as a single violation. A single operational upset is an exceptional incident that causes simultaneous, unintentional, unknowing (not the result of a knowing act or omission), temporary noncompliance with more than one federal Clean Water Act effluent discharge pollutant parameter. A single operational upset does not include federal Clean Water Act violations involving discharge without a NPDES permit or noncompliance to the extent caused by improperly designed or inadequate treatment facilities. Each day of a single operational upset is a violation.

B6. Overflows from Wastewater Conveyance Systems and Associated Pump Stations

a. Definition. "Overflow" means any spill, release or diversion of sewage including:
(1) An overflow that results in a discharge to waters of the United States; and
(2) An overflow of wastewater, including a wastewater backup into a building (other than a backup caused solely by a blockage or other malfunction in a privately owned sewer or building lateral), even if that overflow does not reach waters of the United States.

b. Reporting required. All overflows must be reported orally to DEQ within 24 hours from the time the permittee becomes aware of the overflow. Reporting procedures are described in more detail in General Condition D5.

B7. Public Notification of Effluent Violation or Overflow

If effluent limitations specified in this permit are exceeded or an overflow occurs that threatens public health, the permittee must take such steps as are necessary to alert the public, health agencies and other affected entities (for example, public water systems) about the extent and nature of the discharge in accordance with the notification procedures developed under General Condition B8. Such steps may include, but are not limited to, posting of the river at access points and other places, news releases, and paid announcements on radio and television.

B8. Emergency Response and Public Notification Plan

The permittee must develop and implement an emergency response and public notification plan that identifies measures to protect public health from overflows, bypasses, or upsets that may endanger public health. At a minimum the plan must include mechanisms to:

a. Ensure that the permittee is aware (to the greatest extent possible) of such events;
b. Ensure notification of appropriate personnel and ensure that they are immediately dispatched for investigation and response;
c. Ensure immediate notification to the public, health agencies, and other affected public entities (including public water systems). The overflow response plan must identify the public health and other officials who will receive immediate notification;
d. Ensure that appropriate personnel are aware of and follow the plan and are appropriately trained;
e. Provide emergency operations; and
f. Ensure that DEQ is notified of the public notification steps taken.

B9. Removed Substances

Solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters must be disposed of in such a manner as to prevent any pollutant from such materials from entering waters of the state, causing nuisance conditions, or creating a public health hazard.

SECTION C. MONITORING AND RECORDS

C1. Representative Sampling

Sampling and measurements taken as required herein must be representative of the volume and nature of the monitored discharge. All samples must be taken at the monitoring points specified in this permit, and must be taken, unless otherwise specified, before the effluent joins or is diluted by any other waste stream, body of water, or substance. Monitoring points must not be changed without notification to and the approval of DEQ. Samples must be collected in accordance with requirements in 40 CFR part 122.21 and 40 CFR part 403 Appendix E.

C2. Flow Measurements

Appropriate flow measurement devices and methods consistent with accepted scientific practices must be selected and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. The devices must be installed, calibrated and maintained to insure that the accuracy of the measurements is consistent with the accepted capability of that type of device. Devices selected must be capable of measuring flows with a maximum deviation of less than ± 10 percent from true discharge rates throughout the range of expected discharge volumes.

C3. Monitoring Procedures

Monitoring must be conducted according to test procedures approved under 40 CFR part 136 or, in the case of sludge (biosolids) use and disposal, approved under 40 CFR part 503 unless other test procedures have been specified in this permit.

For monitoring of recycled water with no discharge to waters of the state, monitoring must be conducted according to test procedures approved under 40 CFR part 136 or as specified in the most recent edition of Standard Methods for the Examination of Water and Wastewater unless other test procedures have been specified in this permit or approved in writing by DEQ.

C4. Penalties for Tampering

The federal Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit may, upon conviction, be punished by a fine of not more than $10,000 per violation, imprisonment for not more than two years, or both. If a conviction of a person is for a violation committed after a first conviction of such person, punishment is a fine not more than $20,000 per day of violation, or by imprisonment of not more than four years, or both.

C5. Reporting of Monitoring Results

Monitoring results must be summarized each month on a discharge monitoring report form approved by DEQ. The reports must be submitted monthly and are to be mailed, delivered or otherwise transmitted by the 15th day of the following month unless specifically approved otherwise in Schedule B of this permit.

C6. Additional Monitoring by the Permittee

If the permittee monitors any pollutant more frequently than required by this permit, using test procedures approved under 40 CFR part 136 or, in the case of sludge (biosolids) use and disposal, approved under 40 CFR part 503, or as specified in this permit, the results of this monitoring must be included in the calculation and reporting of the data submitted in the discharge monitoring report. Such increased frequency must also be indicated. For a pollutant parameter that may be sampled more than once per day (for example, total residual chlorine), only the average daily value must be recorded unless otherwise specified in this permit.

C7. Averaging of Measurements
Calculations for all limitations that require averaging of measurements must utilize an arithmetic mean, except for bacteria which must be averaged as specified in this permit.

C8. Retention of Records
Records of monitoring information required by this permit related to the permittee's sewage sludge use and disposal activities must be retained for a period of at least 5 years (or longer as required by 40 CFR part 503). Records of all monitoring information including all calibration and maintenance records, all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit and records of all data used to complete the application for this permit must be retained for a period of at least 3 years from the date of the sample, measurement, report, or application. This period may be extended by request of DEQ at any time.

C9. Records Contents
Records of monitoring information must include:
a. The date, exact place, time, and methods of sampling or measurements;
b. The individual(s) who performed the sampling or measurements;
c. The date(s) analyses were performed;
d. The individual(s) who performed the analyses;
e. The analytical techniques or methods used; and
f. The results of such analyses.

C10. Inspection and Entry
The permittee must allow DEQ or EPA upon the presentation of credentials to:
a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
d. Sample or monitor at reasonable times, for the purpose of assuring permit compliance or as otherwise authorized by state law, any substances or parameters at any location.

C11. Confidentiality of Information
Any information relating to this permit that is submitted to or obtained by DEQ is available to the public unless classified as confidential by the Director of DEQ under ORS 468.095. The permittee may request that information be classified as confidential if it is a trade secret as defined by that statute. The name and address of the permittee, permit applications, permits, effluent data, and information required by NPDES application forms under 40 CFR § 122.21 are not classified as confidential [40 CFR § 122.7(b)].

SECTION D. REPORTING REQUIREMENTS

D1. Planned Changes
The permittee must comply with OAR 340-052, "Review of Plans and Specifications" and 40 CFR § 122.41(l)(1). Except where exempted under OAR 340-052, no construction, installation, or modification involving disposal systems, treatment works, sewerage systems, or common sewers may be commenced until the plans and specifications are submitted to and approved by DEQ. The permittee must give notice to DEQ as soon as possible of any planned physical alternations or additions to the permitted facility.

D2. Anticipated Noncompliance
The permittee must give advance notice to DEQ of any planned changes in the permitted facility or activity that may result in noncompliance with permit requirements.

D3. Transfers

This permit may be transferred to a new permittee provided the transferee acquires a property interest in the permitted activity and agrees in writing to fully comply with all the terms and conditions of the permit and EQC rules. No permit may be transferred to a third party without prior written approval from DEQ. DEQ may require modification, revocation, and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under 40 CFR § 122.61. The permittee must notify DEQ when a transfer of property interest takes place.

D4. Compliance Schedule

Reports of compliance or noncompliance with, or any progress reports on interim and final requirements contained in any compliance schedule of this permit must be submitted no later than 14 days following each schedule date. Any reports of noncompliance must include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirements.

D5. Twenty-Four Hour Reporting

The permittee must report any noncompliance that may endanger health or the environment. Any information must be provided orally (by telephone) to the DEQ regional office or Oregon Emergency Response System (1-800-452-0311) as specified below within 24 hours from the time the permittee becomes aware of the circumstances.

a. Overflows.
   (1) Oral Reporting within 24 hours.
      i. For overflows other than basement backups, the following information must be reported to the Oregon Emergency Response System (OERS) at 1-800-452-0311. For basement backups, this information should be reported directly to the DEQ regional office.
         (a) The location of the overflow;
         (b) The receiving water (if there is one);
         (c) An estimate of the volume of the overflow;
         (d) A description of the sewer system component from which the release occurred (for example, manhole, constructed overflow pipe, crack in pipe); and
         (e) The estimated date and time when the overflow began and stopped or will be stopped.
      ii. The following information must be reported to the DEQ regional office within 24 hours, or during normal business hours, whichever is earlier:
         (a) The OERS incident number (if applicable); and
         (b) A brief description of the event.
   (2) Written reporting postmarked within 5 days.
      i. The following information must be provided in writing to the DEQ regional office within 5 days of the time the permittee becomes aware of the overflow:
         (a) The OERS incident number (if applicable);
         (b) The cause or suspected cause of the overflow;
         (c) Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the overflow and a schedule of major milestones for those steps;
         (d) Steps taken or planned to mitigate the impact(s) of the overflow and a schedule of major milestones for those steps; and
         (e) For storm-related overflows, the rainfall intensity (inches/hour) and duration of the storm associated with the overflow.

      DEQ may waive the written report on a case-by-case basis if the oral report has been received within 24 hours.

b. Other instances of noncompliance.
   (1) The following instances of noncompliance must be reported:
      i. Any unanticipated bypass that exceeds any effluent limitation in this permit;
      ii. Any upset that exceeds any effluent limitation in this permit;

iii. Violation of maximum daily discharge limitation for any of the pollutants listed by DEQ in this permit; and
iv. Any noncompliance that may endanger human health or the environment.

(2) During normal business hours, the DEQ regional office must be called. Outside of normal business hours, DEQ must be contacted at 1-800-452-0311 (Oregon Emergency Response System).

(3) A written submission must be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission must contain:
i. A description of the noncompliance and its cause;
ii. The period of noncompliance, including exact dates and times;
iii. The estimated time noncompliance is expected to continue if it has not been corrected;
iv. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance; and
v. Public notification steps taken, pursuant to General Condition B7.

(4) DEQ may waive the written report on a case-by-case basis if the oral report has been received within 24 hours.

D6. Other Noncompliance

The permittee must report all instances of noncompliance not reported under General Condition D4 or D5 at the time monitoring reports are submitted. The reports must contain:
a. A description of the noncompliance and its cause;
b. The period of noncompliance, including exact dates and times;
c. The estimated time noncompliance is expected to continue if it has not been corrected; and
d. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

D7. Duty to Provide Information

The permittee must furnish to DEQ within a reasonable time any information that DEQ may request to determine compliance with the permit or to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit. The permittee must also furnish to DEQ, upon request, copies of records required to be kept by this permit.

Other Information: When the permittee becomes aware that it has failed to submit any relevant facts or has submitted incorrect information in a permit application or any report to DEQ, it must promptly submit such facts or information.

D8. Signatory Requirements

All applications, reports or information submitted to DEQ must be signed and certified in accordance with 40 CFR § 122.22.

D9. Falsification of Information

Under ORS 468.953, any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance, is subject to a Class C felony punishable by a fine not to exceed $125,000 per violation and up to 5 years in prison per ORS chapter 161. Additionally, according to 40 CFR § 122.41(k)(2), any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit including monitoring reports or reports of compliance or non-compliance will, upon conviction, be punished by a federal civil penalty not to exceed $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

D10. Changes to Indirect Dischargers

The permittee must provide adequate notice to DEQ of the following:

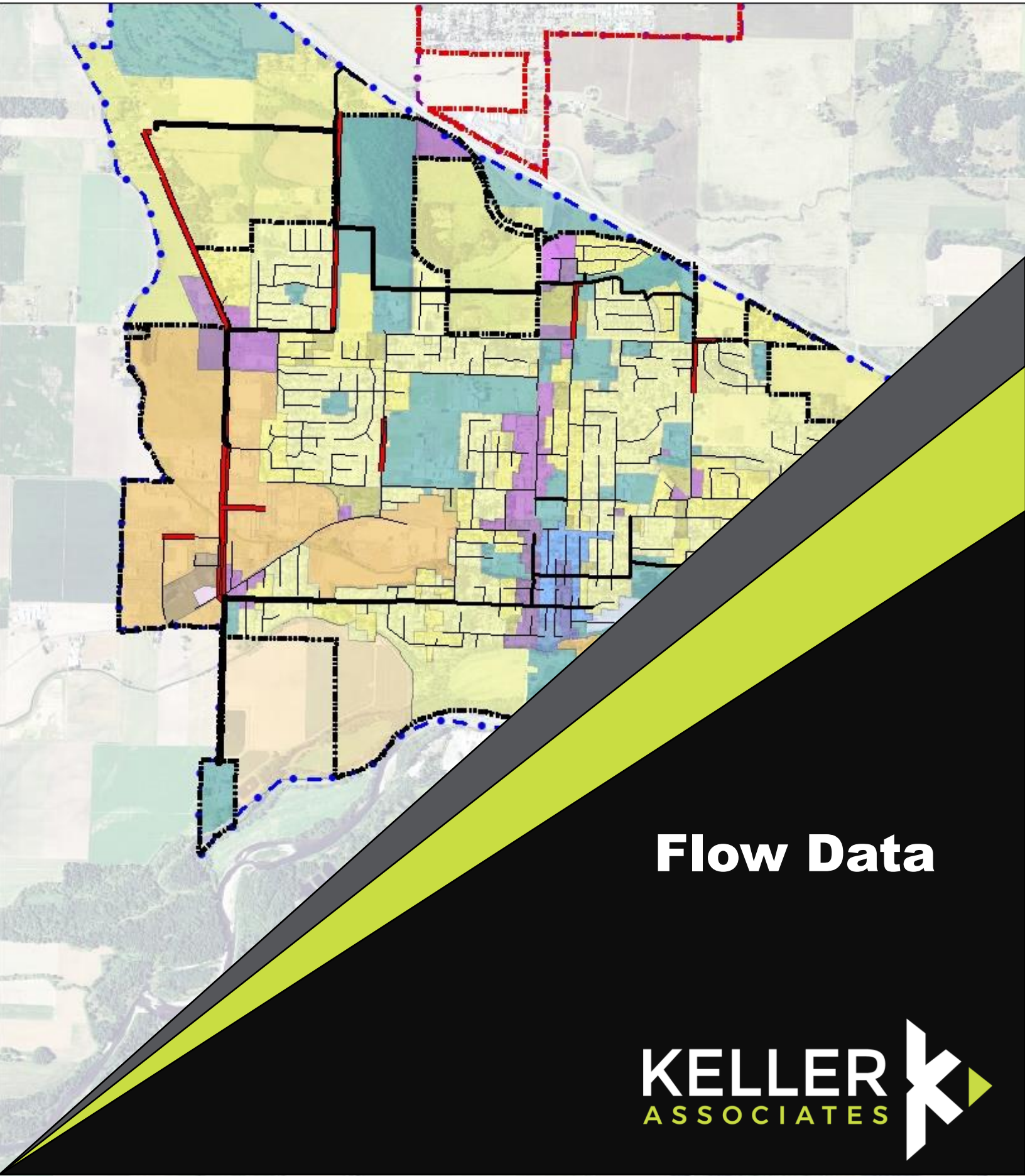
a. Any new introduction of pollutants into the POTW from an indirect discharger which would be subject to section 301 or 306 of the federal Clean Water Act if it were directly discharging those pollutants and;
b. Any substantial change in the volume or character of pollutants being introduced into the POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.
c. For the purposes of this paragraph, adequate notice must include information on (i) the quality and quantity of effluent introduced into the POTW, and (ii) any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

SECTION E. DEFINITIONS

E1. *BOD* or BOD_5 means five-day biochemical oxygen demand.
E2. *CBOD* or $CBOD_5$ means five-day carbonaceous biochemical oxygen demand.
E3. *TSS* means total suspended solids.
E4. *Bacteria* means but is not limited to fecal coliform bacteria, total coliform bacteria, *Escherichia coli* (*E. coli*) bacteria, and *Enterococcus* bacteria.
E5. *FC* means fecal coliform bacteria.
E6. *Total residual chlorine* means combined chlorine forms plus free residual chlorine
E7. *Technology based permit effluent limitations* means technology-based treatment requirements as defined in 40 CFR § 125.3, and concentration and mass load effluent limitations that are based on minimum design criteria specified in OAR 340-041.
E8. *mg/l* means milligrams per liter.
E9. *µg/l* means microgram per liter.
E10. *kg* means kilograms.
E11. m^3/d means cubic meters per day.
E12. *MGD* means million gallons per day.
E13. *Average monthly effluent limitation* as defined at 40 CFR § 122.2 means the highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.
E14. *Average weekly effluent limitation* as defined at 40 CFR § 122.2 means the highest allowable average of daily discharges over a calendar week, calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week.
E15. *Daily discharge* as defined at 40 CFR § 122.2 means the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the daily discharge must be calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the daily discharge must be calculated as the average measurement of the pollutant over the day.
E16. *24-hour composite sample* means a sample formed by collecting and mixing discrete samples taken periodically and based on time or flow.
E17. *Grab sample* means an individual discrete sample collected over a period of time not to exceed 15 minutes.
E18. *Quarter* means January through March, April through June, July through September, or October through December.
E19. *Month* means calendar month.
E20. *Week* means a calendar week of Sunday through Saturday.
E21. *POTW* means a publicly-owned treatment works.

City of Stayton OREGON

Appendix C

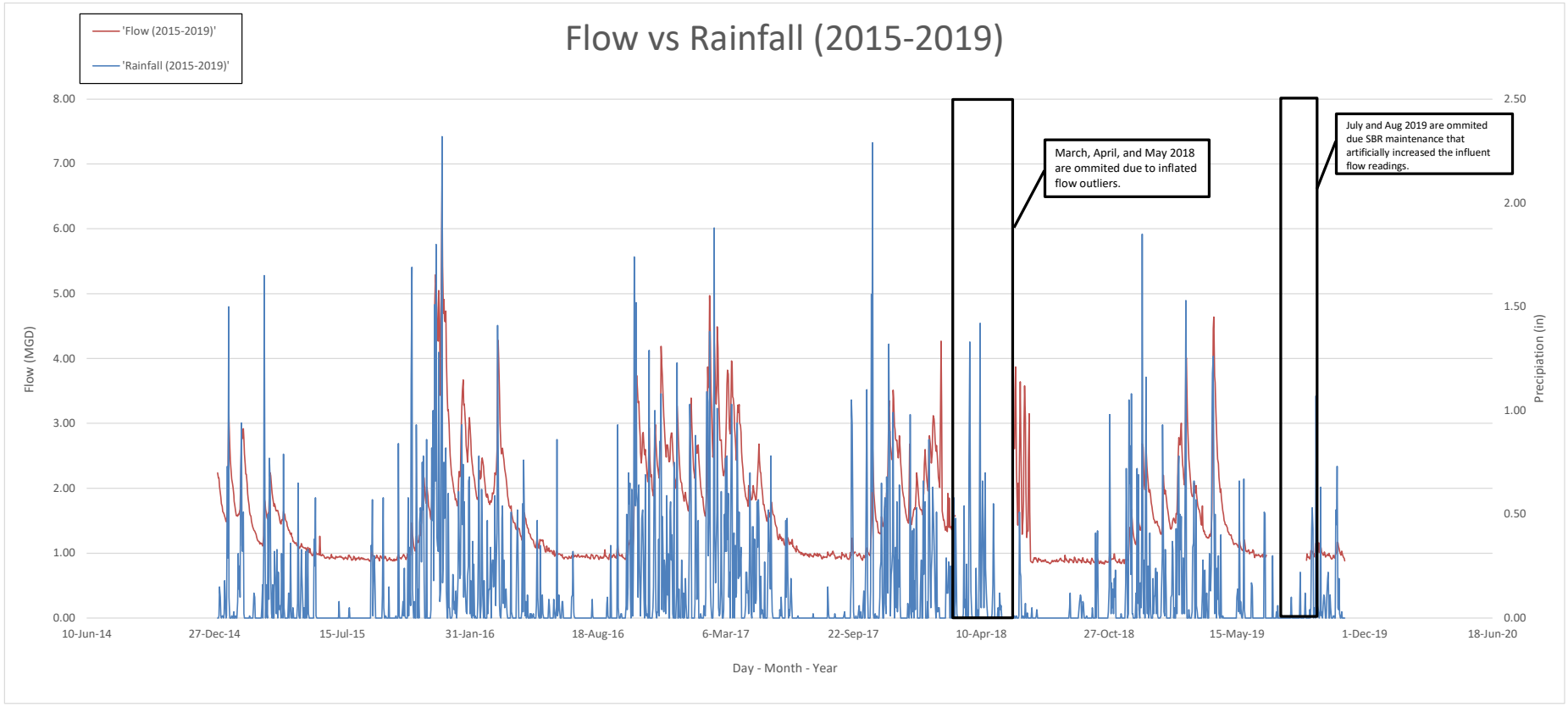


Flow Data

KELLER ASSOCIATES

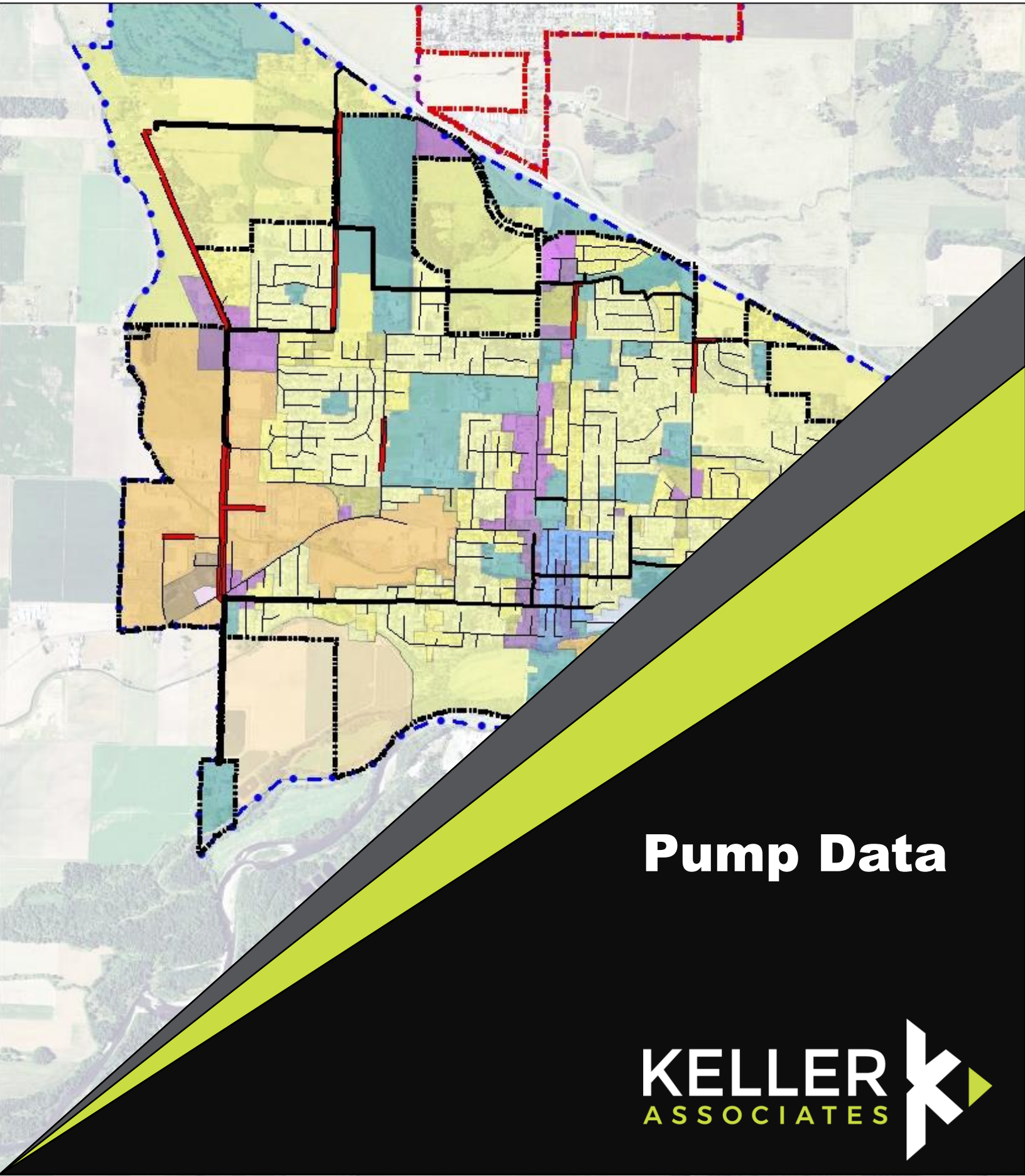
Peak Flow Days Data

Date	DMR Flow (MGD)	Rain (in)	Peak Inst. Flow (MGD)	60 day rainfall (in)	PF
8-Dec-15	5.29	0.66	5.40	17.14	**1.02**
18-Dec-15	6.70	2.32	7.20	24.28	**1.07**
19-Dec-15	5.43	0.17	5.76	24.21	**1.06**
15-Mar-16	4.28	0.83	4.74	15.27	**1.11**
17-Oct-16	3.54	1.52	4.83	10.54	**1.36**
9-Feb-17	4.97	1.38	5.40	14.10	**1.09**
16-Feb-17	4.29	1.88	4.75	15.13	**1.02**
15-Mar-17	3.96	1.03	4.62	19.44	**1.17**
25-Jan-18	3.12	0.53	3.40	11.30	**1.09**
26-Jan-18	3.07	0.38	3.39	11.96	**1.10**
18-Dec-18	2.69	1.85	3.44	11.73	**1.28**
24-Dec-18	2.64	1.16	3.52	13.99	**1.33**
17-Feb-19	3.00	0.49	3.58	10.78	**1.19**
24-Feb-19	3.97	1.53	4.89	11.21	**1.23**
7-Apr-19	2.83	1.18	3.58	12.41	**1.27**
8-Apr-19	4.46	1.26	5.83	13.67	**1.31**
9-Apr-19	4.64	0.72	5.14	14.39	**1.11**
10-Apr-19	3.73	0.02	4.31	13.98	**1.16**
11-Apr-19	3.63	0.50	4.16	2.52	**1.15**
			Average		1.16


Flow vs Rainfall (2015-2019)
'Flow (2015-2019)'
'Rainfall (2015-2019)'
March, April, and May 2018 are ommited due to inflated flow outliers.
July and Aug 2019 are ommited due SBR maintenance that artificially increased the influent flow readings.
Flow (MGD)
Precipiation (in)
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
2.50
2.00
1.50
1.00
0.50
0.00
10-Jun-14
27-Dec-14
15-Jul-15
31-Jan-16
18-Aug-16
6-Mar-17
22-Sep-17
10-Apr-18
27-Oct-18
15-May-19
1-Dec-19
18-Jun-20
Day - Month - Year

City of Stayton OREGON

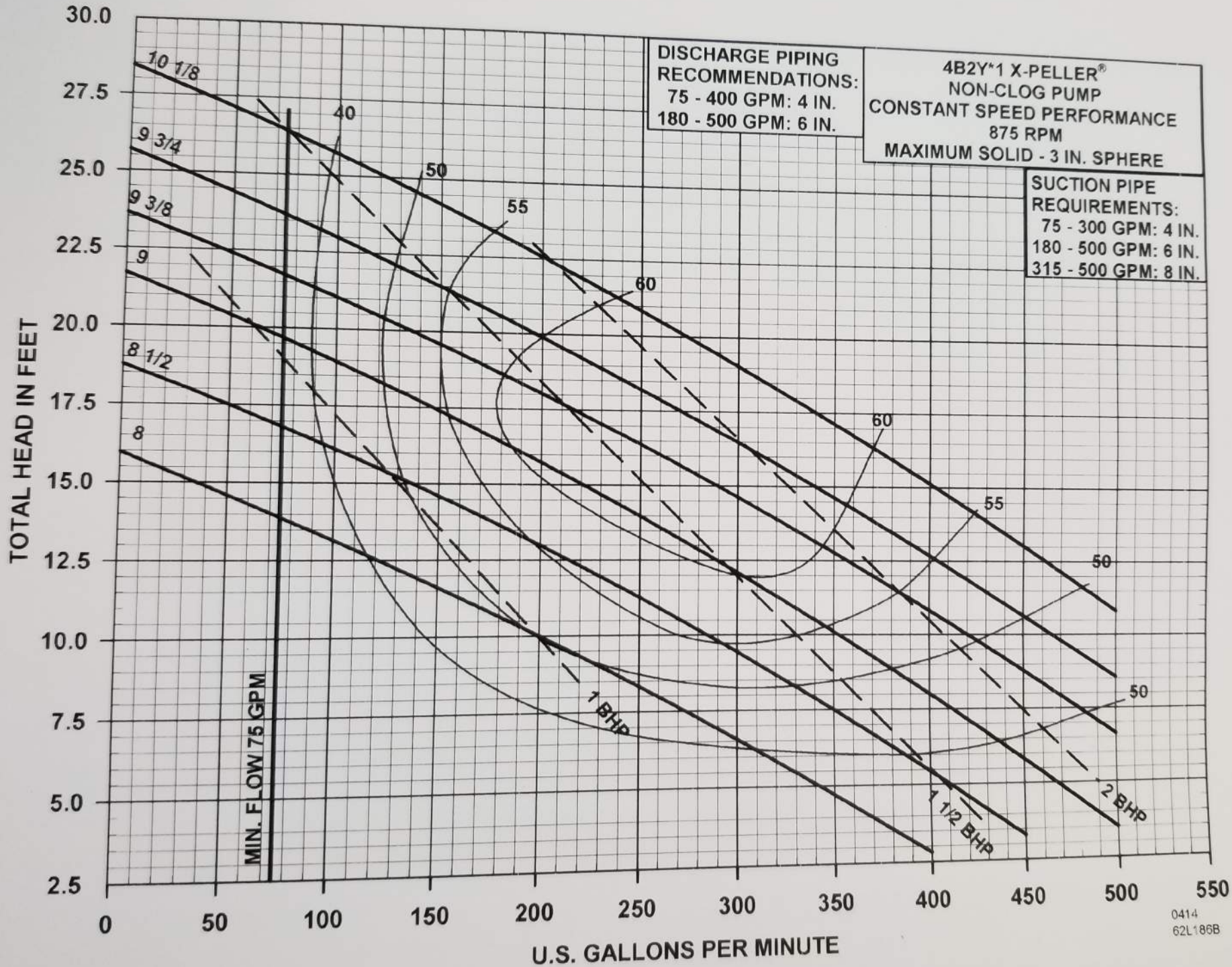
Appendix D



Pump Data

KELLER ASSOCIATES

INDUSTRIAL
PUMP STATION



Smith & Loveless, Inc.®
14040 West Santa Fe Trail Drive
Lenexa, Kansas 66215-1284

Non-Clog Pump
Constant Speed
4B2Y*1 X-PELLER®
875 RPM
March, 2016 (Rev.)

MILL CREEK
PUMP STATION

FLYGT

TEST REPORT

Mill Creek Pump Station

PRODUCT

Serial No.		Performance curve No.		Motor module/type	Voltage (V)
3202.090	0550020	63- 640-00-7040		170	460
Base module	**Impeller No.**	**Gear type**	**Gear ratio**	**Imp.diam/Blade angle**	**Water temp °C**
040	607 42 00			376	17

TEST RESULTS

Pump total head H (ft)	Volume rate of flow Q (USGpm)	Motor input power P (kW)	Voltage U (V)	Current I (A)	Overall efficiency η (%)
108.25	18.6	28.29	460	46.0	1.34
84.86	1049.6	31.53	460	49.5	53.30
75.88	1692.4	35.05	460	53.9	69.11
65.65	2359.1	39.58	459	59.9	73.83
57.47	2810.8	42.30	459	63.4	72.04
47.32	3348.9	44.11	459	65.6	67.77
39.08	3762.4	45.47	459	67.4	61.00

Accepted after	Test facility	Test date	Time	Chief tester 2175
HI	Lindas Sweden Q1	05-07-19	15:20	

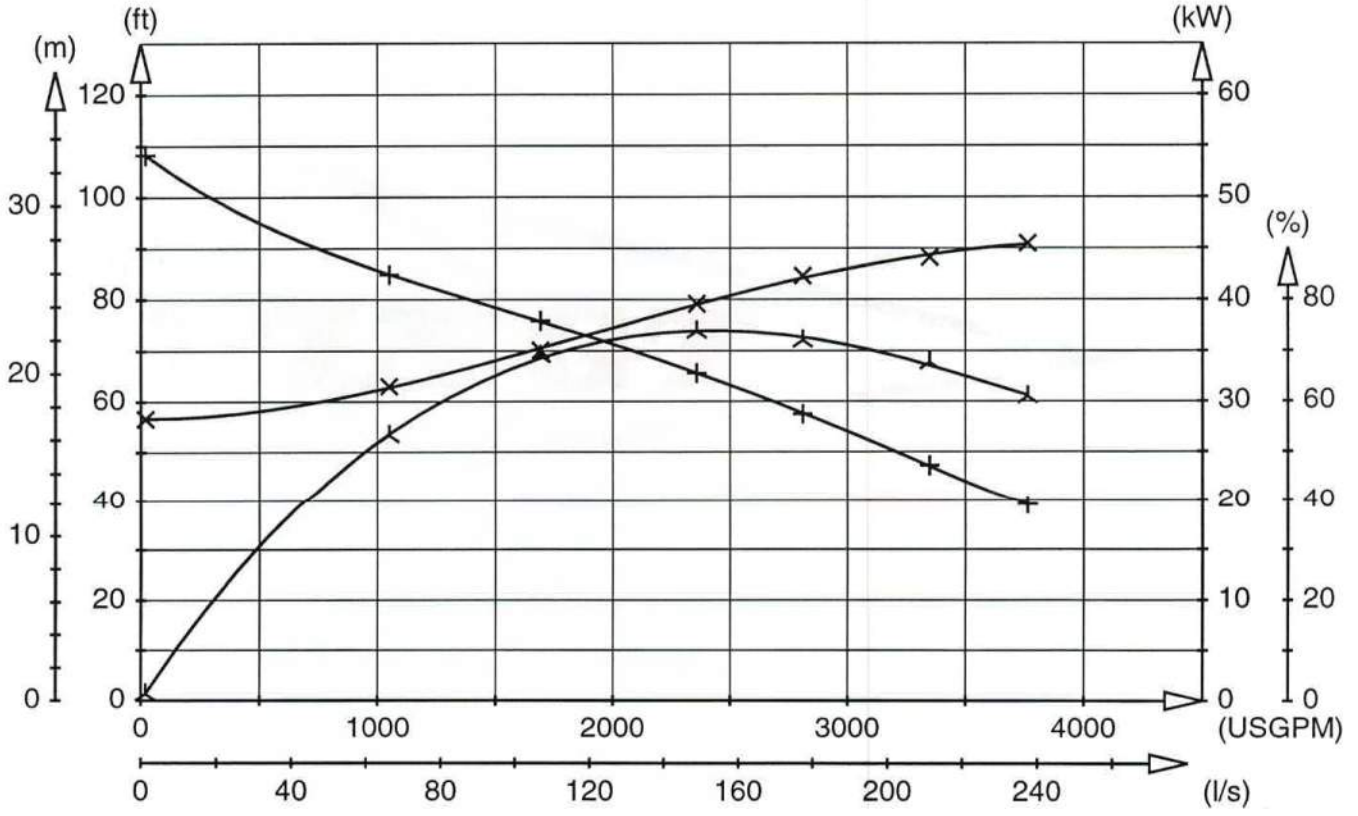
144498-1

PLOTTED TEST RESULTS

Measured point : + = Q/H, × = Q/P Duty point : ◇ = Q/H, □ = Q/P, △ = Q/ETA overall Calculated point : 人 = Q/ETA overall 1

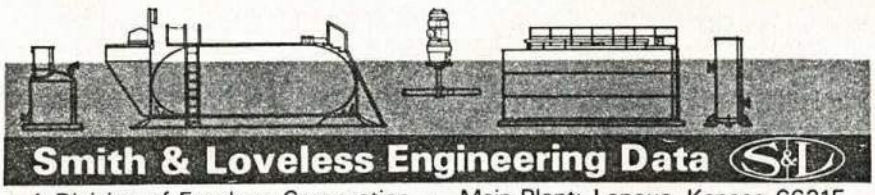
TOTAL HEAD

INPUT POWER



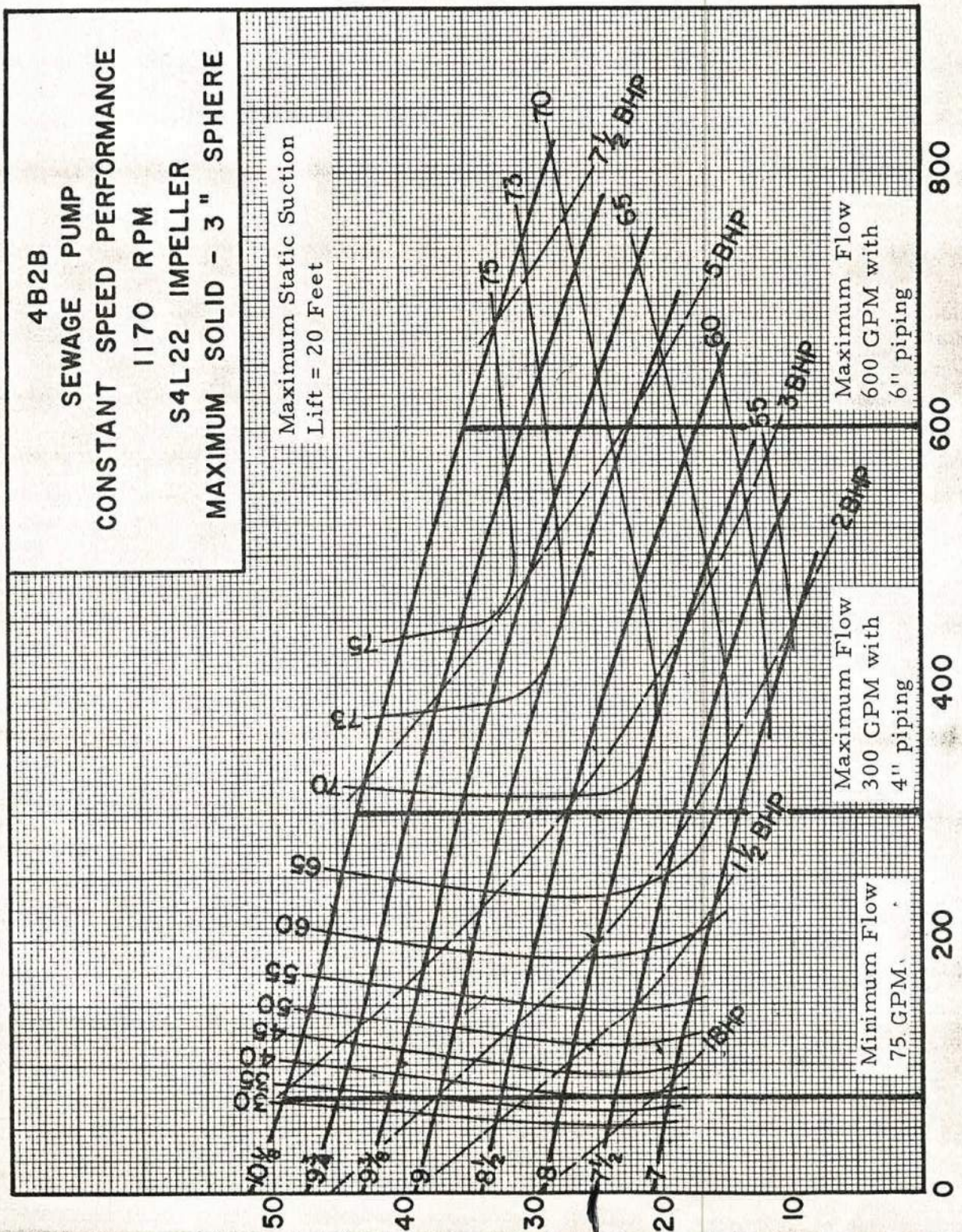
WILCO
PUMP STATION

Pump Performance Curves
Constant Speed
4B2B
1170 RPM



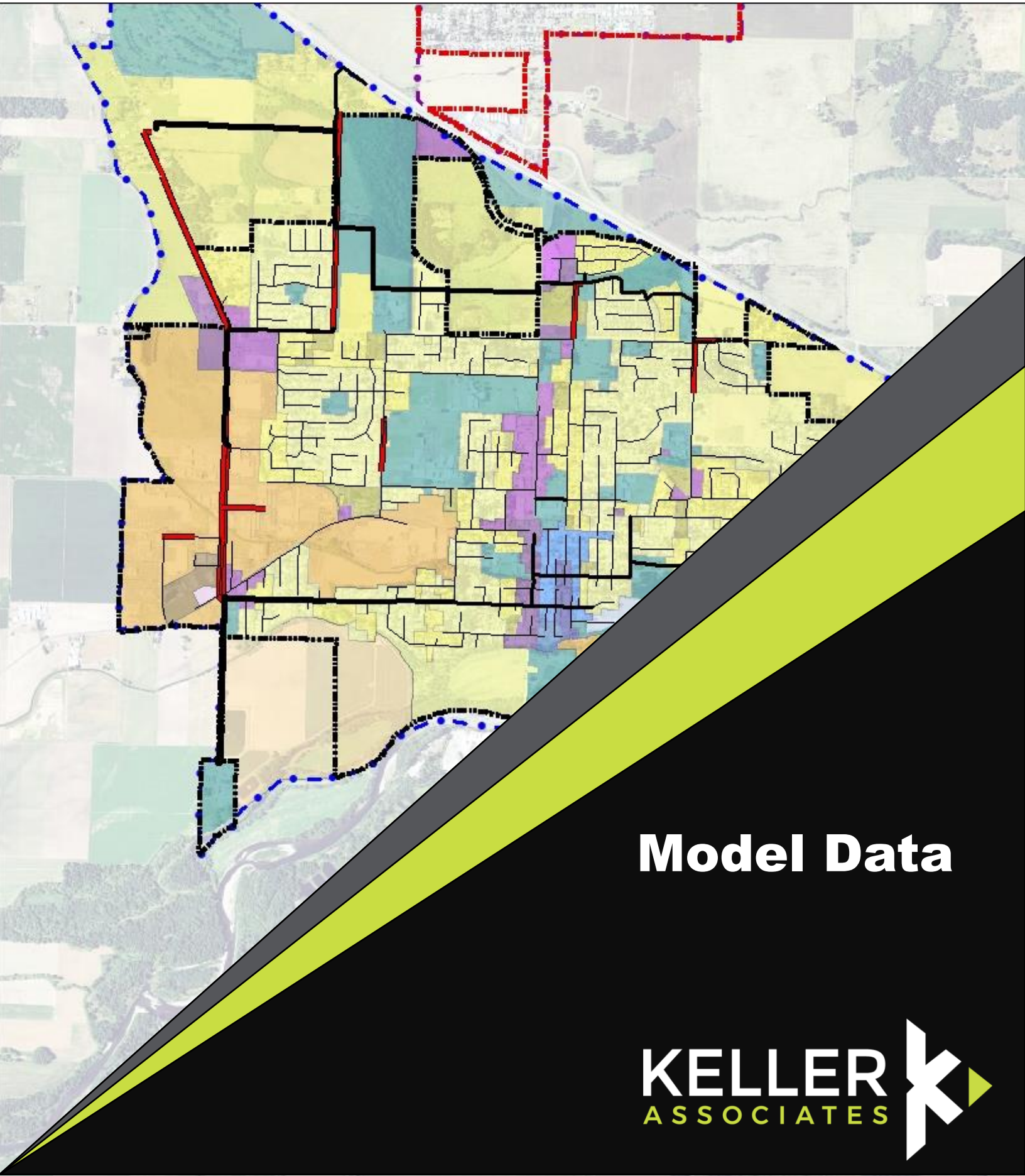
Smith & Loveless Engineering Data

A Division of Ecodyne Corporation • Main Plant: Lenexa, Kansas 66215



City of Stayton OREGON

Appendix E



Model Data

KELLER ASSOCIATES

EXISTING SYSTEM FLOWS

Existing System Flows, 5-year, 24-hour storm event

Input				Output					
Manhole ID	Invert Elev.	Rim Elev.	DWF Pattern	Max Depth (ft)	Max HGL (ft)	Freeboard (ft)	Max Inflow (gpm)	Total Flood Vol. (MG)	Time Flooded (hrs)
1001-09	495.14	500.64	-	0	495.1	5.5	0.0	0	0.00
1001-1	468.95	474.95	FM_6	0.0765	469.0	5.9	16.5	0	0.00
1001-10	515.50	520.54	-	0	515.5	5.0	0.0	0	0.00
1001-11	496.21	501.25	FM_3	0.0402	496.3	5.0	9.3	0	0.00
1001-12	511.96	518.16	FM_3	0.0899	512.0	6.1	31.4	0	0.00
1001-13	520.97	526.97	FM_3	0.0215	521.0	6.0	3.6	0	0.00
1001-14	516.23	522.34	FM_3	0.0818	516.3	6.0	24.1	0	0.00
1001-14.5	524.03	529.00	-	0	524.0	5.0	0.0	0	0.00
1001-15	522.04	530.11	FM_3	0.0725	522.1	8.0	17.7	0	0.00
1001-15.1	530.16	536.16	FM_3	0.0296	530.2	6.0	6.4	0	0.00
1001-15.5	516.78	529.00	-	0	516.8	12.2	0.0	0	0.00
1001-16	522.86	528.86	FM_3	0.0856	522.9	5.9	6.4	0	0.00
1001-18	523.60	531.89	-	0	523.6	8.3	0.0	0	0.00
1001-2	463.75	468.75	FM_6	0.1566	463.9	4.8	44.5	0	0.00
1001-24	514.47	525.75	-	0	514.5	11.3	0.0	0	0.00
1001-26	505.41	508.00	-	0	505.4	2.6	0.0	0	0.00
1001-3	462.25	468.75	FM_6	0.1838	462.4	6.3	56.0	0	0.00
1001-4	484.66	490.75	FM_6	0.0378	484.7	6.1	4.9	0	0.00
1001-5	480.34	487.25	FM_6	0.0573	480.4	6.9	21.4	0	0.00
1001-6	488.75	498.79	FM_6	0.0426	488.8	10.0	9.9	0	0.00
1001-7	496.77	506.77	FM_6	0.0458	496.8	10.0	11.5	0	0.00
1001-8	491.44	501.44	FM_6	0.0469	491.5	10.0	13.2	0	0.00
1001-9	492.00	502.00	FM_6	0.0435	492.0	10.0	4.9	0	0.00
1002-09	509.06	515.08	-	0	509.1	6.0	0.0	0	0.00
1002-1	449.35	454.25	FM_3	4.9	454.3	0.0	59.3	0.1132	53.64
1002-10	490.14	497.20	-	3.3591	493.5	3.7	6.6	0	0.00
1002-11	457.83	459.45	FM_3	0.0928	457.9	1.5	34.6	0	0.00
1002-12	500.15	507.23	FM_1	0.0408	500.2	7.0	4.3	0	0.00
1002-13	493.34	498.55	FM_4	0.0855	493.4	5.1	59.6	0	0.00
1002-14	472.14	482.04	FM_4	0.1195	472.3	9.8	60.3	0	0.00
1002-15	450.95	454.55	FM_3	3.6	454.6	0.0	24.2	0.0052	24.52
1002-19	482.58	487.65	FM_3	0.0267	482.6	5.0	6.5	0	0.00
1002-2	451.52	456.15	FM_4	0.0411	451.6	4.6	1.3	0	0.00
1002-3	450.40	457.15	FM_4	0.0513	450.5	6.7	5.0	0	0.00
1002-4	450.75	469.58	FM_4	1.2756	452.0	17.6	1.3	0	0.00
1002-5	496.25	501.20	FM_3	0.0603	496.3	4.9	13.6	0	0.00

Existing System Flows, 5-year, 24-hour storm event

Input				Output					
Manhole ID	Invert Elev.	Rim Elev.	DWF Pattern	Max Depth (ft)	Max HGL (ft)	Freeboard (ft)	Max Inflow (gpm)	Total Flood Vol. (MG)	Time Flooded (hrs)
1002-6	489.92	496.80	FM_3	0.0471	490.0	6.8	21.4	0	0.00
1002-7	468.92	474.30	FM_3	0.0787	469.0	5.3	47.0	0	0.00
1002-8	453.58	459.75	FM_3	1.4741	455.1	4.7	53.5	0	0.00
1003-1	441.39	449.15	FM_4	0.1706	441.6	7.6	51.5	0	0.00
1003-10	447.25	451.50	FM_4	0.0896	447.3	4.2	13.8	0	0.00
1003-11	447.53	452.00	FM_4	0.0891	447.6	4.4	12.6	0	0.00
1003-12	448.50	453.00	FM_4	0.0708	448.6	4.4	8.8	0	0.00
1003-13	448.08	453.05	FM_4	0.1399	448.2	4.8	72.1	0	0.00
1003-14	451.16	456.15	FM_4	0.1613	451.3	4.8	67.4	0	0.00
1003-15	458.58	463.55	FM_4	0.1239	458.7	4.8	65.0	0	0.00
1003-16	467.93	475.22	FM_4	0.1101	468.0	7.2	62.6	0	0.00
1003-2	441.95	450.16	FM_4	0.1745	442.1	8.0	47.8	0	0.00
1003-3	442.88	450.65	FM_4	0.1597	443.0	7.6	40.2	0	0.00
1003-4	444.58	452.75	FM_4	0.0933	444.7	8.1	11.3	0	0.00
1003-5	443.89	448.75	FM_4	0.0479	443.9	4.8	6.3	0	0.00
1003-6	444.42	448.63	FM_4	0.0449	444.5	4.2	3.8	0	0.00
1003-7	448.16	455.17	FM_4	0.3339	448.5	6.7	3.8	0	0.00
1003-8	445.00	450.44	FM_4	0.1002	445.1	5.3	25.1	0	0.00
1003-9	446.81	451.29	FM_4	0.0876	446.9	4.4	16.3	0	0.00
1004-1	431.04	443.75	FM_4	1.8993	432.9	10.8	473.5	0	0.00
1004-10	440.81	444.55	FM_4	0.0553	440.9	3.7	10.1	0	0.00
1004-11	438.67	445.75	FM_4	0.2376	438.9	6.8	100.7	0	0.00
1004-12	441.35	448.25	FM_4	0.2168	441.6	6.7	82.9	0	0.00
1004-13	442.95	447.25	FM_4	0.06	443.0	4.2	6.3	0	0.00
1004-14	439.95	444.75	FM_4	0.0915	440.0	4.7	15.1	0	0.00
1004-15	440.59	445.21	FM_4	0.0585	440.6	4.6	8.8	0	0.00
1004-16	442.63	446.42	FM_4	0.047	442.7	3.7	5.0	0	0.00
1004-17	433.69	441.97	FM_4	0.2594	433.9	8.0	117.4	0	0.00
1004-19	433.73	440.65	FM_4	0.0376	433.8	6.9	2.5	0	0.00
1004-2	432.44	441.35	FM_4	0.8285	433.3	8.1	201.4	0	0.00
1004-22	439.51	447.86	-	0	439.5	8.3	0.0	0	0.00
1004-25	435.73	442.42	-	0	435.7	6.7	0.0	0	0.00
1004-3	436.25	443.05	FM_4	0.1565	436.4	6.6	65.4	0	0.00
1004-4	439.65	446.45	FM_4	0.1476	439.8	6.7	56.6	0	0.00
1004-5	433.45	440.85	FM_4	0.2773	433.7	7.1	131.1	0	0.00
1004-6	436.12	442.95	FM_4	0.2941	436.4	6.5	109.0	0	0.00

Existing System Flows, 5-year, 24-hour storm event

Input				Output					
Manhole ID	Invert Elev.	Rim Elev.	DWF Pattern	Max Depth (ft)	Max HGL (ft)	Freeboard (ft)	Max Inflow (gpm)	Total Flood Vol. (MG)	Time Flooded (hrs)
1004-7	437.62	444.35	FM_4	0.2398	437.9	6.5	104.3	0	0.00
1004-8	435.63	442.75	FM_4	0.219	435.8	6.9	111.4	0	0.00
1004-9	434.88	441.65	-	0.2524	435.1	6.5	111.4	0	0.00
1005-1	429.32	442.65	FM_4	2.4701	431.8	10.9	497.5	0	0.00
1005-3	431.75	443.39	FM_4	0.0543	431.8	11.6	6.3	0	0.00
1005-4	440.09	445.05	-	0.8017	440.9	4.2	700.9	0	0.00
1006-1	442.10	450.85	FM_3	6.0994	448.2	2.7	148.3	0	0.00
1006-10	444.75	452.25	FM_3	3.6103	448.4	3.9	27.8	0	0.00
1006-11	445.83	450.95	FM_3	2.4509	448.3	2.7	10.6	0	0.00
1006-12	446.00	453.58	FM_3	2.3514	448.4	5.2	37.8	0	0.00
1006-13	444.33	451.71	FM_3	4.02	448.4	3.4	83.7	0	0.00
1006-14	444.75	450.72	FM_3	3.5909	448.3	2.4	12.0	0	0.00
1006-2	443.24	451.05	FM_3	5.0528	448.3	2.8	138.1	0	0.00
1006-3	445.69	450.65	FM_3	2.5795	448.3	2.4	7.8	0	0.00
1006-4	444.55	450.25	FM_3	3.7312	448.3	2.0	47.1	0	0.00
1006-5	446.31	448.21	FM_3	1.9	448.2	0.0	39.9	0.0209	21.47
1006-6	447.84	450.69	FM_3	0.383	448.2	2.5	14.5	0	0.00
1006-7	446.25	454.75	FM_3	2.098	448.3	6.4	7.9	0	0.00
1006-8	445.25	452.85	FM_3	3.1196	448.4	4.5	23.1	0	0.00
1006-9	449.29	453.54	FM_3	0.0547	449.3	4.2	10.6	0	0.00
1007-1	446.55	455.45	FM_3	7.7978	454.3	1.1	209.0	0	0.00
1007-10	454.17	460.25	FM_3	0.8992	455.1	5.2	18.5	0	0.00
1007-11	477.85	484.35	FM_3	0.0501	477.9	6.4	17.4	0	0.00
1007-12	455.41	459.25	FM_3	0.0769	455.5	3.8	10.6	0	0.00
1007-13	455.13	459.93	FM_3	0.0604	455.2	4.7	6.5	0	0.00
1007-14	455.15	459.25	FM_3	1.6113	456.8	2.5	9.5	0	0.00
1007-15	453.58	460.25	FM_3	3.1857	456.8	3.5	18.7	0	0.00
1007-16	453.54	458.75	FM_3	2.7955	456.3	2.4	9.1	0	0.00
1007-17	452.20	459.45	FM_3	4.1402	456.3	3.1	20.1	0	0.00
1007-18	452.48	457.45	FM_3	3.3698	455.8	1.6	10.4	0	0.00
1007-19	451.05	457.05	FM_3	4.8146	455.9	1.2	29.1	0	0.00
1007-2	447.68	455.45	FM_3	6.9065	454.6	0.9	188.7	0	0.00
1007-3	449.75	457.55	FM_3	5.0013	454.8	2.8	145.6	0	0.00
1007-4	449.18	454.85	FM_3	5.4166	454.6	0.3	37.9	0	0.00
1007-5	445.25	454.75	FM_3	8.9113	454.2	0.6	217.8	0	0.00
1007-6	448.25	455.25	COMMERCIAL	6.0727	454.3	0.9	55.7	0	0.00

Existing System Flows, 5-year, 24-hour storm event

Input				Output					
Manhole ID	Invert Elev.	Rim Elev.	DWF Pattern	Max Depth (ft)	Max HGL (ft)	Freeboard (ft)	Max Inflow (gpm)	Total Flood Vol. (MG)	Time Flooded (hrs)
1007-7	451.04	457.25	FM_3	3.885	454.9	2.3	141.8	0	0.00
1007-8	451.94	457.15	FM_3	3.0901	455.0	2.1	130.2	0	0.00
1007-9	453.03	457.85	FM_3	2.0314	455.1	2.8	68.2	0	0.00
1008-1	454.75	461.45	FM_3	2.4877	457.2	4.2	161.1	0	0.00
1008-10	501.25	505.75	COMMERCIAL	0.0784	501.3	4.4	53.6	0	0.00
1008-12	459.00	466.95	FM_3	0.1555	459.2	7.8	54.7	0	0.00
1008-12.5	463.03	465.00	-	0	463.0	2.0	0.0	0	0.00
1008-13	466.07	473.49	FM_3	0.0825	466.2	7.3	48.3	0	0.00
1008-13.5	463.97	466.00	-	0	464.0	2.0	0.0	0	0.00
1008-14	477.06	484.30	FM_3	0.0744	477.1	7.2	44.6	0	0.00
1008-15	504.30	513.59	FM_3	0.0739	504.4	9.2	42.4	0	0.00
1008-16	507.13	515.22	-	0	507.1	8.1	0.0	0	0.00
1008-18	506.73	514.38	FM_3	0.1025	506.8	7.5	37.3	0	0.00
1008-18.5	458.09	488.00	-	0.1307	458.2	29.8	0.6	0	0.00
1008-19	507.13	515.17	FM_3	0.1263	507.3	7.9	33.7	0	0.00
1008-2	456.11	461.35	FM_3	1.3353	457.4	3.9	156.5	0	0.00
1008-3	457.00	461.65	FM_3	0.4775	457.5	4.2	73.8	0	0.00
1008-4	457.00	462.20	FM_3	0.5207	457.5	4.7	66.0	0	0.00
1008-5	458.16	463.00	FM_3	0.0606	458.2	4.8	7.7	0	0.00
1008-6	458.99	463.85	FM_3	0.1892	459.2	4.7	73.6	0	0.00
1008-7	460.94	465.81	FM_3	0.1558	461.1	4.7	65.9	0	0.00
1008-8	461.25	467.55	FM_3	0.2083	461.5	6.1	59.5	0	0.00
1008-9	488.75	492.85	FM_3	0.0702	488.8	4.0	56.4	0	0.00
1009-1	450.36	456.25	FM_1	0.5408	450.9	5.3	450.3	0	0.00
1009-10	454.59	462.05	FM_3	2.4109	457.0	5.0	21.9	0	0.00
1009-11	456.67	461.65	FM_3	0.3309	457.0	4.6	9.1	0	0.00
1009-12	452.65	461.95	FM_3	4.369	457.0	4.9	190.3	0	0.00
1009-13	456.95	461.95	FM_3	0.0479	457.0	5.0	5.0	0	0.00
1009-14	460.85	465.85	FM_1	0.0574	460.9	4.9	6.7	0	0.00
1009-15	456.14	464.55	FM_1	1.177	457.3	7.2	426.7	0	0.00
1009-16	454.57	461.15	FM_1	0.3991	455.0	6.2	431.7	0	0.00
1009-17	452.35	458.15	FM_1	0.4015	452.8	5.4	436.2	0	0.00
1009-18	451.14	455.30	FM_1	0.3016	451.4	3.9	152.7	0	0.00
1009-19	460.75	464.84	-	0	460.8	4.1	0.0	0	0.00
1009-2	452.21	457.25	FM_1	0.0772	452.3	5.0	9.7	0	0.00
1009-20	462.44	466.32	-	0	462.4	3.9	0.0	0	0.00

Existing System Flows, 5-year, 24-hour storm event

Input				Output					
Manhole ID	Invert Elev.	Rim Elev.	DWF Pattern	Max Depth (ft)	Max HGL (ft)	Freeboard (ft)	Max Inflow (gpm)	Total Flood Vol. (MG)	Time Flooded (hrs)
1009-21	456.43	464.64	-	0.0908	456.5	8.1	1.0	0	0.00
1009-23	455.99	464.56	-	0.5306	456.5	8.0	3.2	0	0.00
1009-24	455.97	464.00	-	0.5504	456.5	7.5	427.3	0	0.00
1009-3	454.69	459.55	FM_1	0.047	454.7	4.8	5.2	0	0.00
1009-4	455.40	458.05	FM_1	0.0281	455.4	2.6	1.5	0	0.00
1009-5	449.85	455.45	FM_1	0.6601	450.5	4.9	604.4	0	0.00
1009-6	449.75	454.05	FM_1	0.0682	449.8	4.2	11.2	0	0.00
1009-7	450.69	455.25	FM_1	0.0553	450.7	4.5	5.2	0	0.00
1009-8	453.89	457.85	FM_1	0.0222	453.9	3.9	1.5	0	0.00
1009-9	455.51	459.75	FM_3	1.5122	457.0	2.7	6.1	0	0.00
1010-1	452.25	457.85	FM_2	0.0723	452.3	5.5	20.7	0	0.00
1010-10	449.67	455.85	FM_2	0.0716	449.7	6.1	24.0	0	0.00
1010-11	451.04	455.55	FM_2	0.0913	451.1	4.4	13.6	0	0.00
1010-12	451.35	456.75	FM_3	3.0387	454.4	2.4	12.5	0	0.00
1010-13	447.08	457.65	FM_3	7.3129	454.4	3.3	319.4	0	0.00
1010-14	443.96	456.45	FM_3	9.9942	454.0	2.5	499.7	0	0.00
1010-15	448.51	457.15	FM_3	6.6473	455.2	2.0	312.9	0	0.00
1010-16	449.33	457.45	FM_3	6.5282	455.9	1.6	310.0	0	0.00
1010-17	450.29	457.55	FM_3	6.0297	456.3	1.2	260.2	0	0.00
1010-18	451.55	459.45	FM_3	5.2061	456.8	2.7	224.1	0	0.00
1010-19	453.25	460.55	FM_3	3.5083	456.8	3.8	12.3	0	0.00
1010-2	454.33	459.35	FM_2	0.0742	454.4	4.9	10.4	0	0.00
1010-20	453.15	458.95	FM_3	2.7093	455.9	3.1	24.1	0	0.00
1010-21	452.47	457.95	FM_3	3.8657	456.3	1.6	12.7	0	0.00
1010-22	452.67	458.15	FM_3	3.6421	456.3	1.8	3.6	0	0.00
1010-23	454.28	459.45	FM_3	2.4851	456.8	2.7	10.2	0	0.00
1010-24	454.80	459.35	-	1.9586	456.8	2.6	3.3	0	0.00
1010-25	453.95	459.75	FM_4	0.0451	454.0	5.8	6.8	0	0.00
1010-26	448.62	452.95	FM_2	0.129	448.7	4.2	22.0	0	0.00
1010-3	451.65	456.95	FM_2	0.0721	451.7	5.2	19.1	0	0.00
1010-4	454.06	459.25	FM_2	0.0672	454.1	5.1	10.4	0	0.00
1010-5	450.65	455.65	FM_2	0.0839	450.7	4.9	28.5	0	0.00
1010-6	448.63	454.55	FM_2	0.1119	448.7	5.8	38.1	0	0.00
1010-7	452.36	457.85	FM_2	0.1064	452.5	5.4	26.1	0	0.00
1010-8	452.86	458.25	FM_2	0.0898	452.9	5.3	13.6	0	0.00
1010-9	453.03	457.05	FM_2	0.0599	453.1	4.0	5.4	0	0.00

Existing System Flows, 5-year, 24-hour storm event

Input				Output					
Manhole ID	Invert Elev.	Rim Elev.	DWF Pattern	Max Depth (ft)	Max HGL (ft)	Freeboard (ft)	Max Inflow (gpm)	Total Flood Vol. (MG)	Time Flooded (hrs)
1011-1	436.00	444.05	FM_2	6.2945	442.3	1.8	789.7	0	0.00
1011-10	440.32	452.25	FM_3	7.7674	448.1	4.2	654.0	0	0.00
1011-11	442.15	453.45	FM_3	8.2755	450.4	3.0	508.4	0	0.00
1011-12	449.27	454.15	FM_3	0.0932	449.4	4.8	15.4	0	0.00
1011-13	448.03	455.95	FM_3	0.1218	448.2	7.8	25.6	0	0.00
1011-14	446.65	452.85	FM_3	0.1653	446.8	6.0	48.5	0	0.00
1011-15	450.38	455.35	FM_3	0.0721	450.5	4.9	11.5	0	0.00
1011-16	445.96	452.15	FM_3	0.1502	446.1	6.0	94.5	0	0.00
1011-17	436.73	444.75	FM_3	6.5641	443.3	1.5	764.9	0	0.00
1011-18	435.20	443.85	FM_2	5.8461	441.0	2.8	818.6	0	0.00
1011-19	439.17	444.15	FM_2	1.8878	441.1	3.1	14.7	0	0.00
1011-2	438.50	444.51	FM_2	3.8103	442.3	2.2	14.1	0	0.00
1011-2.1	438.00	444.25	FM_2	4.3223	442.3	1.9	27.1	0	0.00
1011-20	442.79	448.29	-	0	442.8	5.5	0.0	0	0.00
1011-22	440.11	446.63	-	0.9489	441.1	5.6	9.1	0	0.00
1011-3	447.33	452.75	FM_3	0.1476	447.5	5.3	35.8	0	0.00
1011-4	448.58	453.55	FM_3	0.116	448.7	4.9	25.6	0	0.00
1011-5	449.50	454.25	FM_3	0.0934	449.6	4.7	14.1	0	0.00
1011-6	437.42	445.85	FM_3	6.9325	444.4	1.5	757.1	0	0.00
1011-7	438.48	451.95	FM_3	6.9647	445.4	6.5	684.3	0	0.00
1011-8	439.51	451.85	FM_3	7.0653	446.6	5.3	667.9	0	0.00
1011-9	440.56	450.65	FM_3	6.0205	446.6	4.1	10.5	0	0.00
1012-1	437.82	441.65	FM_4	0.0287	437.8	3.8	1.3	0	0.00
1012-2	435.94	442.55	-	1.7087	437.6	4.9	673.1	0	0.00
1012-3	436.82	444.75	FM_4	1.6879	438.5	6.2	703.1	0	0.00
1012-4	438.82	443.55	FM_4	0.0544	438.9	4.7	5.0	0	0.00
1012-5	437.56	446.55	-	1.8083	439.4	7.2	708.4	0	0.00
1012-6	439.11	446.05	FM_4	0.2626	439.4	6.7	69.8	0	0.00
1012-7	440.67	447.65	FM_4	0.0599	440.7	6.9	6.3	0	0.00
1012-8	442.77	450.65	FM_4	0.0278	442.8	7.9	1.3	0	0.00
1012-9	438.85	443.85	FM_3	4.436	443.3	0.6	17.7	0	0.00
1013-1	430.54	440.15	FM_2	1.5547	432.1	8.1	225.1	0	0.00
1013-10	433.79	440.65	FM_2	0.1865	434.0	6.7	62.7	0	0.00
1013-11	434.55	439.55	FM_2	0.1676	434.7	4.8	50.4	0	0.00
1013-12	434.85	440.15	FM_2	0.1991	435.0	5.1	41.8	0	0.00
1013-13	437.47	442.55	FM_2	0.0968	437.6	5.0	16.9	0	0.00

Existing System Flows, 5-year, 24-hour storm event

Input				Output					
Manhole ID	Invert Elev.	Rim Elev.	DWF Pattern	Max Depth (ft)	Max HGL (ft)	Freeboard (ft)	Max Inflow (gpm)	Total Flood Vol. (MG)	Time Flooded (hrs)
1013-2	436.15	441.65	FM_2	0.0844	436.2	5.4	12.0	0	0.00
1013-3	428.54	440.65	FM_2	2.9179	431.5	9.2	2403.2	0	0.00
1013-4	429.81	441.35	FM_2	2.4035	432.2	9.1	2167.3	0	0.00
1013-5	430.44	442.55	FM_2	3.1912	433.6	8.9	2100.3	0	0.00
1013-6	431.21	444.15	FM_2	3.8558	435.1	9.1	2088.7	0	0.00
1013-7	438.35	442.75	FM_2	0.0775	438.4	4.3	12.0	0	0.00
1013-8	437.67	444.25	FM_2	0.5069	438.2	6.1	20.7	0	0.00
1013-9	434.75	443.12	FM_2	0.0572	434.8	8.3	7.1	0	0.00
1014-1	438.88	444.75	FM_2	0.1582	439.0	5.7	57.3	0	0.00
1014-10	442.38	447.85	FM_2	0.0793	442.5	5.4	10.4	0	0.00
1014-11	442.00	447.65	FM_2	1.6399	443.6	4.0	12.3	0	0.00
1014-12	438.15	446.85	FM_2	3.548	441.7	5.2	1161.0	0	0.00
1014-13	441.48	448.25	FM_2	0.22	441.7	6.6	12.0	0	0.00
1014-14	437.55	445.89	FM_2	2.8913	440.4	5.4	1194.2	0	0.00
1014-15	439.45	444.45	FM_2	1.0153	440.5	4.0	16.9	0	0.00
1014-16	436.96	443.95	FM_2	2.1958	439.2	4.8	1223.0	0	0.00
1014-17	436.42	444.75	FM_2	1.6779	438.1	6.7	1235.2	0	0.00
1014-18	437.85	443.05	FM_2	0.0945	437.9	5.1	16.9	0	0.00
1014-2	436.02	442.35	FM_2	0.2407	436.3	6.1	82.9	0	0.00
1014-3	435.23	442.05	FM_2	0.3251	435.6	6.5	132.5	0	0.00
1014-4	436.27	442.55	FM_2	0.1386	436.4	6.1	42.5	0	0.00
1014-5	431.97	445.05	FM_2	4.5313	436.5	8.5	2071.9	0	0.00
1014-6	433.14	443.15	FM_2	5.0674	438.2	4.9	842.3	0	0.00
1014-7	434.02	444.35	FM_2	6.0012	440.0	4.3	825.0	0	0.00
1014-8	440.92	445.95	FM_2	0.0819	441.0	4.9	10.4	0	0.00
1014-9	440.06	446.75	FM_2	0.1007	440.2	6.6	17.4	0	0.00
1015-1	443.63	450.45	FM_2	0.1839	443.8	6.6	61.6	0	0.00
1015-10	444.07	451.15	FM_2	0.1897	444.3	6.9	63.2	0	0.00
1015-11	445.59	450.85	FM_2	0.085	445.7	5.2	12.0	0	0.00
1015-12	445.50	450.75	FM_2	0.0825	445.6	5.2	12.0	0	0.00
1015-13	445.00	450.20	FM_2	0.1411	445.1	5.1	28.9	0	0.00
1015-14	444.27	449.45	FM_2	0.0952	444.4	5.1	15.3	0	0.00
1015-15	441.73	448.15	FM_2	0.1282	441.9	6.3	37.1	0	0.00
1015-16	443.23	448.05	COMMERCIAL	0.1074	443.3	4.7	20.2	0	0.00
1015-17	444.31	449.75	FM_2	0.1455	444.5	5.3	39.2	0	0.00
1015-18	442.59	450.55	FM_2	1.0734	443.7	6.9	155.3	0	0.00

Existing System Flows, 5-year, 24-hour storm event

Input				Output					
Manhole ID	Invert Elev.	Rim Elev.	DWF Pattern	Max Depth (ft)	Max HGL (ft)	Freeboard (ft)	Max Inflow (gpm)	Total Flood Vol. (MG)	Time Flooded (hrs)
1015-19	445.21	449.55	FM_2	0.0815	445.3	4.3	15.3	0	0.00
1015-2	444.65	451.05	FM_2	0.1464	444.8	6.3	37.6	0	0.00
1015-20	441.47	449.35	FM_2	2.0106	443.5	5.9	222.8	0	0.00
1015-21	443.58	448.55	FM_2	0.0966	443.7	4.9	19.1	0	0.00
1015-22	443.89	449.05	FM_2	0.0793	444.0	5.1	8.7	0	0.00
1015-23	440.87	448.75	FM_2	2.4095	443.3	5.5	244.4	0	0.00
1015-24	438.78	447.85	FM_2	4.1051	442.9	5.0	1136.4	0	0.00
1015-25	439.49	448.05	FM_2	4.108	443.6	4.5	886.2	0	0.00
1015-26	442.61	447.75	FM_2	1.0288	443.6	4.1	7.1	0	0.00
1015-27	439.78	447.45	FM_2	4.2367	444.0	3.4	859.3	0	0.00
1015-28	439.83	447.05	-	4.2402	444.1	3.0	845.6	0	0.00
1015-29	440.50	446.85	FM_2	3.6998	444.2	2.7	839.8	0	0.00
1015-3	445.90	451.55	FM_2	0.1183	446.0	5.5	25.6	0	0.00
1015-30	444.26	449.65	FM_2	0.1329	444.4	5.3	30.5	0	0.00
1015-31	441.38	448.85	FM_2	3.3438	444.7	4.1	811.7	0	0.00
1015-32	441.63	449.25	FM_2	3.3834	445.0	4.2	781.8	0	0.00
1015-33	442.95	447.45	FM_2	2.099	445.0	2.4	13.6	0	0.00
1015-34	441.96	450.05	FM_2	3.3125	445.3	4.8	740.7	0	0.00
1015-35	443.70	448.95	FM_2	1.5962	445.3	3.7	10.4	0	0.00
1015-4	445.34	450.55	FM_2	0.0728	445.4	5.1	8.7	0	0.00
1015-5	444.36	450.75	FM_2	1.2934	445.7	5.1	715.0	0	0.00
1015-6	447.25	451.35	FM_2	0.134	447.4	4.0	31.0	0	0.00
1015-7	445.02	452.75	FM_2	1.03	446.1	6.7	680.7	0	0.00
1015-8	447.51	452.55	FM_2	0.1412	447.7	4.9	35.2	0	0.00
1015-9	445.07	451.95	FM_2	0.1628	445.2	6.7	49.1	0	0.00
1016-1	449.55	454.55	FM_1	0.0331	449.6	5.0	1.5	0	0.00
1016-2	445.57	453.75	FM_1	0.7069	446.3	7.5	624.2	0	0.00
1016-3	446.29	455.65	FM_1	0.6389	446.9	8.7	608.6	0	0.00
1016-4	447.00	452.15	FM_2	0.0993	447.1	5.1	16.9	0	0.00
1016-5	445.59	451.18	FM_2	0.171	445.8	5.4	38.8	0	0.00
1016-6	446.08	451.30	FM_2	0.1168	446.2	5.1	18.6	0	0.00
1103-01	490.21	498.33	-	0	490.2	8.1	0.0	0	0.00
1103-2	468.52	481.15	-	0.1716	468.7	12.5	93.5	0	0.00
1103-3	470.25	477.25	FM_6	0.2101	470.5	6.8	91.8	0	0.00
1104-1	460.59	471.10	FM_6	0.0774	460.7	10.4	80.7	0	0.00
1104-10	459.63	469.18	FM_6	0.1768	459.8	9.4	19.8	0	0.00

Existing System Flows, 5-year, 24-hour storm event

Input				Output					
Manhole ID	Invert Elev.	Rim Elev.	DWF Pattern	Max Depth (ft)	Max HGL (ft)	Freeboard (ft)	Max Inflow (gpm)	Total Flood Vol. (MG)	Time Flooded (hrs)
1104-11	464.07	478.22	FM_6	0.059	464.1	14.1	16.5	0	0.00
1104-12	478.02	489.85	FM_6	0.0504	478.1	11.8	13.2	0	0.00
1104-13	488.31	500.44	FM_6	0.03	488.3	12.1	4.9	0	0.00
1104-14	489.44	499.44	FM_6	0.05	489.5	10.0	21.4	0	0.00
1104-15	519.47	529.47	FM_6	0.0356	519.5	10.0	6.6	0	0.00
1104-16	537.28	542.15	FM_1	0.0126	537.3	4.9	0.7	0	0.00
1104-17	533.87	538.85	FM_1	0.0195	533.9	5.0	1.5	0	0.00
1104-18	473.67	483.77	FM_6	0.1748	473.8	9.9	52.7	0	0.00
1104-19	475.51	481.74	FM_6	0.1427	475.7	6.1	41.2	0	0.00
1104-2	455.03	471.04	-	0.285	455.3	15.7	281.2	0	0.00
1104-20	486.88	494.41	FM_6	0.0695	486.9	7.5	31.3	0	0.00
1104-21	489.67	498.25	FM_6	0.0769	489.7	8.5	18.1	0	0.00
1104-22	493.02	504.05	FM_6	0.051	493.1	11.0	8.2	0	0.00
1104-23	501.50	507.00	-	0	501.5	5.5	0.0	0	0.00
1104-24	458.27	466.04	FM_6	0.1312	458.4	7.6	100.0	0	0.00
1104-25	463.26	472.15	FM_6	0.1449	463.4	8.7	98.4	0	0.00
1104-26	464.76	475.65	FM_6	0.2157	465.0	10.7	95.1	0	0.00
1104-28	505.44	516.00	-	0.0288	505.5	10.5	6.6	0	0.00
1104-3	457.00	467.49	-	0.3118	457.3	10.2	180.7	0	0.00
1104-5	461.78	466.78	FM_6	0.1436	461.9	4.9	80.7	0	0.00
1104-6	463.93	468.85	FM_6	0.1487	464.1	4.8	77.4	0	0.00
1104-7	468.71	473.59	FM_6	0.0758	468.8	4.8	16.5	0	0.00
1104-8	473.18	478.72	FM_6	0.0999	473.3	5.4	59.3	0	0.00
1104-9	456.19	468.33	-	0.298	456.5	11.8	200.5	0	0.00
1105-09	463.49	468.47	-	0	463.5	5.0	0.0	0	0.00
1105-1	462.71	468.65	FM_1	0.1248	462.8	5.8	45.5	0	0.00
1105-10	465.68	470.63	-	0	465.7	5.0	0.0	0	0.00
1105-11	470.95	475.69	-	0	471.0	4.7	0.0	0	0.00
1105-12	465.65	470.31	-	0	465.7	4.7	0.0	0	0.00
1105-13	463.99	468.76	-	0	464.0	4.8	0.0	0	0.00
1105-2	470.28	475.75	FM_1	0.0882	470.4	5.4	43.3	0	0.00
1105-3	494.69	500.45	FM_1	0.046	494.7	5.7	18.7	0	0.00
1105-4	512.45	516.95	-	0.0151	512.5	4.5	1.5	0	0.00
1105-5	528.04	532.95	-	0.0175	528.1	4.9	1.5	0	0.00
1105-6	514.80	518.75	FM_1	0.044	514.8	3.9	10.5	0	0.00
1105-7	527.12	531.17	FM_1	0.0277	527.1	4.0	3.7	0	0.00

Existing System Flows, 5-year, 24-hour storm event

Input				Output					
Manhole ID	Invert Elev.	Rim Elev.	DWF Pattern	Max Depth (ft)	Max HGL (ft)	Freeboard (ft)	Max Inflow (gpm)	Total Flood Vol. (MG)	Time Flooded (hrs)
1105-8	542.76	546.86	FM_1	0.0186	542.8	4.1	2.2	0	0.00
1105-9	497.65	501.05	FM_1	0.1015	497.8	3.3	16.4	0	0.00
1106-04	562.74	565.00	-	0	562.7	2.3	0.0	0	0.00
1106-1	474.33	479.60	FM_1	0.0488	474.4	5.2	8.2	0	0.00
1106-10	535.21	539.85	FM_1	0.0545	535.3	4.6	15.7	0	0.00
1106-11	537.54	542.05	FM_1	0.035	537.6	4.5	3.0	0	0.00
1106-12	539.34	544.35	FM_1	0.0439	539.4	5.0	6.7	0	0.00
1106-13	546.54	552.05	FM_1	0.0285	546.6	5.5	4.5	0	0.00
1106-14	543.24	548.15	FM_1	0.0249	543.3	4.9	3.0	0	0.00
1106-15	531.27	538.10	FM_1	1.2879	532.6	5.5	6.0	0	0.00
1106-16	509.44	515.15	FM_1	0.0768	509.5	5.6	43.4	0	0.00
1106-17	518.72	523.05	FM_1	0.0219	518.7	4.3	3.0	0	0.00
1106-18	495.42	500.45	FM_1	0.0819	495.5	4.9	46.4	0	0.00
1106-19	473.35	477.25	FM_1	0.0467	473.4	3.9	3.7	0	0.00
1106-2	510.00	520.69	FM_1	0.0175	510.0	10.7	2.2	0	0.00
1106-20	471.75	477.12	FM_1	0.1052	471.9	5.3	21.6	0	0.00
1106-3	551.16	556.35	FM_1	0.0598	551.2	5.1	2.2	0	0.00
1106-5	555.58	562.95	FM_1	0.0412	555.6	7.3	3.7	0	0.00
1106-6	554.50	563.15	FM_1	0.0464	554.5	8.6	6.0	0	0.00
1106-7	549.56	555.35	FM_1	0.0579	549.6	5.7	11.2	0	0.00
1106-8	545.91	551.45	FM_1	0.0443	546.0	5.5	14.2	0	0.00
1106-9	523.74	529.75	FM_1	0.0755	523.8	5.9	38.9	0	0.00
1107-1	510.53	515.23	FM_1	0.0418	510.6	4.7	18.7	0	0.00
1107-2	522.20	527.16	FM_1	0.0392	522.2	4.9	9.0	0	0.00
1107-3	523.16	560.71	FM_1	0.0681	523.2	37.5	3.0	0	0.00
1107-4	529.40	535.20	-	0	529.4	5.8	0.0	0	0.00
1107-5	523.30	537.44	FM_1	0.0215	523.3	14.1	7.5	0	0.00
1107-6	482.35	486.88	FM_1	0.0502	482.4	4.5	9.0	0	0.00
1108-01	580.11	584.89	-	0	580.1	4.8	0.0	0	0.00
1108-1	530.70	534.40	FM_1	0.0577	530.8	3.6	6.7	0	0.00
1108-2	532.46	536.20	FM_1	0.0395	532.5	3.7	3.0	0	0.00
1108-3	528.22	532.80	FM_1	0.121	528.3	4.5	144.4	0	0.00
1108-4	537.47	541.95	FM_1	0.1216	537.6	4.4	143.0	0	0.00
1108-5	558.79	562.99	FM_1	0.1182	558.9	4.1	140.9	0	0.00
1108-6	573.43	577.47	FM_1	0.1181	573.5	3.9	138.9	0	0.00
1109-1	481.56	484.75	FM_1	0.3155	481.9	2.9	150.7	0	0.00

Existing System Flows, 5-year, 24-hour storm event

Input				Output					
Manhole ID	Invert Elev.	Rim Elev.	DWF Pattern	Max Depth (ft)	Max HGL (ft)	Freeboard (ft)	Max Inflow (gpm)	Total Flood Vol. (MG)	Time Flooded (hrs)
1109-2	483.26	486.73	FM_1	0.2876	483.5	3.2	149.3	0	0.00
1109-3	484.48	486.95	FM_1	0.2941	484.8	2.2	147.2	0	0.00
1109-4	486.97	492.22	FM_1	0.1752	487.1	5.1	146.5	0	0.00
1109-5	499.04	503.35	FM_1	0.1226	499.2	4.2	145.8	0	0.00
1109-6	517.26	521.57	FM_1	0.1227	517.4	4.2	145.1	0	0.00
1109-7	485.60	488.16	-	0	485.6	2.6	0.0	0	0.00
1110-1	475.70	481.70	FM_1	1.3685	477.1	4.6	50.8	0	0.00
1110-2	474.56	479.50	FM_1	0.404	475.0	4.5	233.1	0	0.00
1110-4	475.80	480.73	-	0.3631	476.2	4.6	180.1	0	0.00
1110-6	478.16	483.54	FM_1	0.3127	478.5	5.1	161.6	0	0.00
1110-7	478.50	483.25	FM_1	0.3205	478.8	4.4	160.1	0	0.00
1110-9	479.86	483.70	-	0.2768	480.1	3.6	159.4	0	0.00
1111-1	469.20	474.74	FM_1	0.4258	469.6	5.1	277.7	0	0.00
1111-10	458.14	463.86	FM_1	0.2283	458.4	5.5	83.4	0	0.00
1111-11	459.03	464.79	FM_1	0.2391	459.3	5.5	79.0	0	0.00
1111-12	460.60	468.72	FM_1	0.2018	460.8	7.9	76.1	0	0.00
1111-13	462.00	467.57	FM_1	0.2149	462.2	5.4	73.3	0	0.00
1111-14	461.40	466.99	FM_1	0.0494	461.4	5.5	3.7	0	0.00
1111-16	459.93	464.84	FM_1	0.0474	460.0	4.9	7.5	0	0.00
1111-17	464.51	470.01	-	0	464.5	5.5	0.0	0	0.00
1111-18	471.31	475.36	-	0	471.3	4.1	0.0	0	0.00
1111-19	469.95	474.18	-	0	470.0	4.2	0.0	0	0.00
1111-2	470.50	476.62	FM_1	0.4171	470.9	5.7	265.8	0	0.00
1111-20	470.25	472.48	-	0	470.3	2.2	0.0	0	0.00
1111-21	467.73	473.98	-	0	467.7	6.3	0.0	0	0.00
1111-22	469.16	476.09	-	0	469.2	6.9	0.0	0	0.00
1111-23	463.00	468.50	-	0	463.0	5.5	0.0	0	0.00
1111-3	472.59	476.65	FM_1	0.3237	472.9	3.7	239.8	0	0.00
1111-5	466.95	472.65	FM_1	0.0278	467.0	5.7	1.5	0	0.00
1111-6	456.80	463.13	FM_1	0.1028	456.9	6.2	18.7	0	0.00
1111-7	455.93	462.67	FM_1	0.2717	456.2	6.5	112.5	0	0.00
1111-8	466.78	472.02	FM_1	0.0321	466.8	5.2	3.7	0	0.00
1111-9	457.14	462.86	FM_1	0.2079	457.3	5.5	87.0	0	0.00
1111-?	456.77	463.13	FM_1	0.0456	456.8	6.3	4.5	0	0.00
1112-1	457.71	467.55	FM_1	0.5163	458.2	9.3	420.0	0	0.00
1112-10	453.20	457.55	FM_1	0.072	453.3	4.3	8.2	0	0.00

Existing System Flows, 5-year, 24-hour storm event

Input				Output					
Manhole ID	Invert Elev.	Rim Elev.	DWF Pattern	Max Depth (ft)	Max HGL (ft)	Freeboard (ft)	Max Inflow (gpm)	Total Flood Vol. (MG)	Time Flooded (hrs)
1112-11	454.27	458.50	FM_1	0.0552	454.3	4.2	4.5	0	0.00
1112-12	455.79	458.83	FM_1	0.0517	455.8	3.0	3.0	0	0.00
1112-13	455.09	459.28	FM_1	0.0715	455.2	4.1	9.0	0	0.00
1112-14	456.39	460.58	FM_1	0.0422	456.4	4.1	3.0	0	0.00
1112-15	457.78	461.30	FM_1	0.0654	457.8	3.5	4.5	0	0.00
1112-16	455.01	461.16	FM_1	0.2742	455.3	5.9	117.7	0	0.00
1112-17	454.19	460.34	FM_1	0.2908	454.5	5.9	132.6	0	0.00
1112-18	453.24	458.56	FM_1	0.3142	453.6	5.0	137.0	0	0.00
1112-19	452.40	458.73	FM_1	0.2892	452.7	6.0	150.5	0	0.00
1112-2	459.27	466.05	FM_1	0.3984	459.7	6.4	385.7	0	0.00
1112-3	461.55	466.25	FM_1	0.4809	462.0	4.2	337.3	0	0.00
1112-4	466.35	470.55	FM_1	0.3545	466.7	3.8	332.1	0	0.00
1112-5	467.95	472.55	FM_1	0.4534	468.4	4.1	285.2	0	0.00
1112-6	460.35	467.55	FM_1	0.1101	460.5	7.1	20.9	0	0.00
1112-7	461.95	467.65	FM_1	0.0915	462.0	5.6	15.0	0	0.00
1112-8	465.95	470.95	FM_1	0.0444	466.0	5.0	5.2	0	0.00
1112-9	458.80	467.05	FM_1	0.5077	459.3	7.7	393.9	0	0.00
1503-1	434.50	441.75	FM_2	0.3324	434.8	6.9	154.3	0	0.00
1503-2	439.24	444.15	FM_2	0.0764	439.3	4.8	15.3	0	0.00
1504-1	431.56	439.75	FM_2	0.9475	432.5	7.2	212.2	0	0.00
1504-2	431.91	438.15	FM_2	0.7274	432.6	5.5	191.4	0	0.00
1504-3	433.19	438.88	FM_2	0.3651	433.6	5.3	171.1	0	0.00
1602-1	422.99	427.95	-	1.5049	424.5	3.5	2616.1	0	0.00
1602-2	423.39	429.54	FM_2	1.5968	425.0	4.6	2762.6	0	0.00
1606-2	422.19	427.08	-	1.1237	423.3	3.8	2528.1	0	0.00
1606-3	422.59	427.73	FM_2	1.3738	424.0	3.8	2543.1	0	0.00
214-1	469.66	474.27	FM_6	0.0388	469.7	4.6	1.6	0	0.00
214-2	470.75	477.30	-	0.2289	471.0	6.3	90.2	0	0.00
214-5	477.75	481.57	-	0.1117	477.9	3.7	90.2	0	0.00
313-09	435.46	443.28	-	0	435.5	7.8	0.0	0	0.00
313-16	434.67	444.00	-	0	434.7	9.3	0.0	0	0.00
313-17	436.29	444.65	-	0	436.3	8.4	0.0	0	0.00
313-18	439.50	445.00	-	0	439.5	5.5	0.0	0	0.00
313-19	437.04	444.15	-	0	437.0	7.1	0.0	0	0.00
313-20	439.50	445.00	-	0	439.5	5.5	0.0	0	0.00
315-04	441.50	446.06	-	0	441.5	4.6	0.0	0	0.00

Existing System Flows, 5-year, 24-hour storm event

Input				Output					
Manhole ID	Invert Elev.	Rim Elev.	DWF Pattern	Max Depth (ft)	Max HGL (ft)	Freeboard (ft)	Max Inflow (gpm)	Total Flood Vol. (MG)	Time Flooded (hrs)
315-05	441.46	446.96	-	0	441.5	5.5	0.0	0	0.00
315-10	437.00	446.61	FM_6	0.2242	437.2	9.4	85.1	0	0.00
315-11	435.00	446.23	FM_6	0.4921	435.5	10.7	739.7	0	0.00
315-12	435.26	450.00	-	0.706	436.0	14.0	729.8	0	0.00
315-13	435.71	450.00	FM_6	0.4722	436.2	13.8	729.8	0	0.00
315-14	438.40	447.00	-	0.283	438.7	8.3	591.4	0	0.00
315-15	436.51	450.00	FM_6	0.2362	436.7	13.3	136.8	0	0.00
315-16	438.20	446.48	FM_6	0.1864	438.4	8.1	65.2	0	0.00
315-17	440.50	445.74	FM_6	0.0553	440.6	5.2	6.6	0	0.00
315-18	439.62	446.37	FM_6	0.1471	439.8	6.6	46.1	0	0.00
315-19	440.33	448.00	FM_6	0.1342	440.5	7.5	34.6	0	0.00
315-20	439.07	447.26	FM_6	0.0825	439.2	8.1	14.2	0	0.00
315-21	440.50	448.26	FM_6	0.046	440.5	7.7	8.2	0	0.00
315-22	438.20	447.38	FM_6	0.1195	438.3	9.1	50.0	0	0.00
315-23	438.95	447.00	FM_6	0.5617	439.5	7.5	591.4	0	0.00
315-24	440.58	451.20	FM_6	0.1495	440.7	10.5	42.8	0	0.00
315-25	458.58	465.06	FM_6	0.0547	458.6	6.4	21.4	0	0.00
315-26	455.53	462.04	FM_6	0.066	455.6	6.4	11.5	0	0.00
315-27	468.66	475.81	FM_6	0.0348	468.7	7.1	8.2	0	0.00
315-28	473.15	479.49	FM_6	0.1478	473.3	6.2	107.7	0	0.00
315-30	465.64	472.33	FM_6	0.0261	465.7	6.7	4.9	0	0.00
315-31	445.62	455.41	FM_6	0.0358	445.7	9.8	6.6	0	0.00
315-42	442.54	451.66	FM_6	0.0733	442.6	9.0	14.8	0	0.00
315-6	441.50	445.72	COMMERCIAL	0.0573	441.6	4.2	6.8	0	0.00
315-7	439.75	446.59	FM_6	0.0769	439.8	6.8	11.7	0	0.00
315-8	438.32	446.32	FM_6	0.0742	438.4	7.9	14.9	0	0.00
315-9	437.75	446.42	FM_6	0.2231	438.0	8.4	81.8	0	0.00
316-1	455.95	462.74	FM_6	0.1705	456.1	6.6	148.9	0	0.00
316-10	440.41	447.00	FM_6	0.4963	440.9	6.1	533.8	0	0.00
316-11	440.05	447.00	FM_6	0.5621	440.6	6.4	545.3	0	0.00
316-12	442.53	449.03	FM_6	0.0524	442.6	6.4	6.6	0	0.00
316-13	439.03	447.57	FM_6	0.2507	439.3	8.3	45.1	0	0.00
316-14	439.81	448.31	FM_6	0.1478	440.0	8.4	41.8	0	0.00
316-15	440.73	447.98	FM_6	0.1274	440.9	7.1	31.3	0	0.00
316-16	441.35	448.31	FM_6	0.1105	441.5	6.8	23.1	0	0.00
316-17	442.39	448.18	FM_6	0.0935	442.5	5.7	18.1	0	0.00

Existing System Flows, 5-year, 24-hour storm event

Input				Output					
Manhole ID	Invert Elev.	Rim Elev.	DWF Pattern	Max Depth (ft)	Max HGL (ft)	Freeboard (ft)	Max Inflow (gpm)	Total Flood Vol. (MG)	Time Flooded (hrs)
316-18	443.30	447.27	FM_6	0.0672	443.4	3.9	9.9	0	0.00
316-19	442.79	448.49	FM_6	0.0519	442.8	5.6	4.9	0	0.00
316-2	460.30	466.62	FM_6	0.2192	460.5	6.1	137.4	0	0.00
316-20	443.88	448.96	FM_6	0.0683	443.9	5.0	8.2	0	0.00
316-21	442.55	448.63	FM_6	0.1022	442.7	6.0	21.4	0	0.00
316-22	441.50	448.93	FM_6	0.0986	441.6	7.3	28.0	0	0.00
316-25	445.30	450.93	FM_6	0.0642	445.4	5.6	8.2	0	0.00
316-26	443.96	451.69	FM_6	0.0626	444.0	7.7	8.2	0	0.00
316-29	443.32	448.00	FM_6	0.5255	443.8	4.2	523.9	0	0.00
316-3	465.45	472.54	FM_6	0.1812	465.6	6.9	122.6	0	0.00
316-30	450.23	454.89	-	0	450.2	4.7	0.0	0	0.00
316-31	451.31	454.86	-	0	451.3	3.5	0.0	0	0.00
316-32	452.08	459.43	-	0	452.1	7.4	0.0	0	0.00
316-33	457.20	464.12	-	0	457.2	6.9	0.0	0	0.00
316-4	451.54	458.67	FM_6	0.1127	451.7	7.0	29.6	0	0.00
316-5	448.77	455.13	FM_6	0.2314	449.0	6.1	193.4	0	0.00
316-6	444.07	450.26	FM_6	0.4714	444.5	5.7	519.0	0	0.00
316-7	442.71	448.00	FM_6	0.5404	443.3	4.7	525.5	0	0.00
316-8	441.78	447.28	FM_6	0.5383	442.3	5.0	530.5	0	0.00
316-9	440.96	447.00	FM_6	0.5358	441.5	5.5	532.1	0	0.00
415-1	422.03	430.78	FM_5	0.3128	422.3	8.4	153.8	0	0.00
415-11	425.83	432.35	FM_5	0.0547	425.9	6.5	7.5	0	0.00
415-12	429.00	432.94	FM_5	0.0493	429.0	3.9	5.0	0	0.00
415-15	427.92	433.67	FM_5	0.0469	428.0	5.7	5.8	0	0.00
415-16	419.90	428.40	FM_5	0.263	420.2	8.2	178.8	0	0.00
415-18	420.56	428.54	FM_5	0.4821	421.0	7.5	204.2	0	0.00
415-2	423.15	432.05	FM_5	0.3065	423.5	8.6	140.5	0	0.00
415-3	424.70	430.82	FM_5	0.2573	425.0	5.9	128.8	0	0.00
415-4	426.32	430.51	FM_5	0.0737	426.4	4.1	10.0	0	0.00
415-5	426.02	432.27	FM_5	0.2462	426.3	6.0	111.3	0	0.00
415-6	427.48	430.94	FM_5	0.1031	427.6	3.4	19.2	0	0.00
415-7	429.14	433.17	FM_5	0.0706	429.2	4.0	11.7	0	0.00
415-8	427.38	431.57	FM_5	0.2244	427.6	4.0	85.4	0	0.00
416-08	419.40	425.00	-	0	419.4	5.6	0.0	0	0.00
416-09	418.03	435.62	-	0	418.0	17.6	0.0	0	0.00
416-1	427.08	433.89	FM_5	0.0998	427.2	6.7	13.4	0	0.00

Existing System Flows, 5-year, 24-hour storm event

Input				Output					
Manhole ID	Invert Elev.	Rim Elev.	DWF Pattern	Max Depth (ft)	Max HGL (ft)	Freeboard (ft)	Max Inflow (gpm)	Total Flood Vol. (MG)	Time Flooded (hrs)
416-12	425.03	434.41	-	0	425.0	9.4	0.0	0	0.00
416-13	423.54	433.60	-	0	423.5	10.1	0.0	0	0.00
416-14	421.94	431.68	-	0	421.9	9.7	0.0	0	0.00
416-15	420.62	434.00	-	0	420.6	13.4	0.0	0	0.00
416-16	425.96	431.82	-	0	426.0	5.9	0.0	0	0.00
416-2	429.08	433.58	FM_5	0.2089	429.3	4.3	79.6	0	0.00
416-3	430.26	434.90	FM_5	0.0796	430.3	4.6	10.0	0	0.00
416-4	430.06	434.46	FM_5	0.0612	430.1	4.3	6.2	0	0.00
416-5	431.55	435.84	FM_4	0.0537	431.6	4.2	3.7	0	0.00
416-6	427.05	434.92	FM_5	0.5031	427.6	7.4	3.3	0	0.00
416-7	430.26	433.97	FM_5	0.0651	430.3	3.6	6.7	0	0.00
901-09	429.02	436.27	-	0	429.0	7.3	0.0	0	0.00
901-1	430.75	438.25	FM_5	0.0297	430.8	7.5	1.7	0	0.00
901-10	425.55	433.00	FM_5	0.0844	425.6	7.4	18.4	0	0.00
901-11	435.18	438.68	FM_4	0.0837	435.3	3.4	8.8	0	0.00
901-12	434.99	438.80	FM_4	0.0851	435.1	3.7	8.8	0	0.00
901-13	435.00	436.91	FM_4	0.1144	435.1	1.8	15.2	0	0.00
901-14	434.60	438.60	FM_4	0.1534	434.8	3.8	29.9	0	0.00
901-15	434.07	439.49	FM_4	0.1628	434.2	5.3	43.7	0	0.00
901-16	433.39	440.31	FM_4	0.1648	433.6	6.8	48.8	0	0.00
901-17	432.31	442.02	FM_4	1.1009	433.4	8.6	57.5	0	0.00
901-18	434.04	439.96	FM_4	0.0677	434.1	5.9	10.1	0	0.00
901-19	434.14	439.65	FM_4	0.0766	434.2	5.4	8.8	0	0.00
901-2	430.01	437.26	FM_5	0.0566	430.1	7.2	6.7	0	0.00
901-20	431.74	441.91	FM_4	1.5565	433.3	8.6	244.8	0	0.00
901-21	432.36	439.48	FM_4	1.5653	433.9	5.6	65.4	0	0.00
901-22	433.33	437.95	FM_4	0.1245	433.5	4.5	25.6	0	0.00
901-23	434.85	438.38	FM_5	0.0788	434.9	3.5	13.7	0	0.00
901-24	431.18	436.40	FM_5	0.0383	431.2	5.2	2.5	0	0.00
901-24.5	429.96	436.21	-	0	430.0	6.3	0.0	0	0.00
901-25	429.42	436.06	FM_5	0.0629	429.5	6.6	6.7	0	0.00
901-3	430.20	437.39	FM_5	0.0481	430.2	7.1	5.0	0	0.00
901-4	429.03	436.44	FM_5	0.0659	429.1	7.3	10.0	0	0.00
901-5	427.97	435.50	FM_5	0.0442	428.0	7.5	4.2	0	0.00
901-6	426.52	435.82	FM_5	0.1155	426.6	9.2	21.7	0	0.00
901-7	427.50	433.90	FM_5	0.0405	427.5	6.4	2.5	0	0.00

Existing System Flows, 5-year, 24-hour storm event

Input				Output					
Manhole ID	Invert Elev.	Rim Elev.	DWF Pattern	Max Depth (ft)	Max HGL (ft)	Freeboard (ft)	Max Inflow (gpm)	Total Flood Vol. (MG)	Time Flooded (hrs)
901-7.5	429.00	434.80	FM_5	0.0178	429.0	5.8	0.8	0	0.00
901-8	427.08	433.40	FM_5	0.1026	427.2	6.2	13.4	0	0.00
901-9	428.18	435.20	FM_5	0.0246	428.2	7.0	0.8	0	0.00
902-1	417.25	430.50	FM_5	0.5133	417.8	12.7	484.7	0	0.00
902-10	426.33	433.50	FM_5	0.2453	426.6	6.9	98.5	0	0.00
902-11	427.08	434.44	FM_5	0.2304	427.3	7.1	96.8	0	0.00
902-12	427.68	435.48	FM_5	0.2575	427.9	7.5	82.6	0	0.00
902-13	427.56	433.81	FM_5	0.0926	427.7	6.2	9.2	0	0.00
902-13.5	427.86	433.90	FM_5	0.052	427.9	6.0	4.2	0	0.00
902-2	418.05	429.00	FM_5	0.5275	418.6	10.4	505.6	0	0.00
902-20	419.67	431.66	FM_5	0.489	420.2	11.5	329.4	0	0.00
902-3	418.85	428.40	FM_5	0.523	419.4	9.0	506.7	0	0.00
902-4	421.21	432.10	COMMERCIAL	0.3631	421.6	10.5	328.5	0	0.00
902-5	422.95	432.30	FM_5	0.2422	423.2	9.1	168.5	0	0.00
902-6	424.95	431.10	FM_5	0.2523	425.2	5.9	146.8	0	0.00
902-7	425.50	434.96	FM_5	0.1386	425.6	9.3	28.4	0	0.00
902-8	425.57	433.79	FM_5	0.3564	425.9	7.9	116.0	0	0.00
902-9	426.93	434.68	FM_5	0.068	427.0	7.7	15.9	0	0.00
907-10	428.80	435.39	FM_1	0.0627	428.9	6.5	6.4	0	0.00
907-11	428.00	435.47	FM_1	0.0806	428.1	7.4	9.6	0	0.00
907-12	425.79	435.39	FM_1	0.1788	426.0	9.4	65.0	0	0.00
907-13	422.74	435.82	FM_1	0.3614	423.1	12.7	243.2	0	0.00
907-14	431.04	435.75	FM_1	0.0642	431.1	4.6	7.5	0	0.00
907-15	430.04	435.97	FM_1	0.0792	430.1	5.9	11.7	0	0.00
907-16	429.77	437.74	FM_1	0.058	429.8	7.9	6.4	0	0.00
907-17	425.00	435.50	FM_1	0.3079	425.3	10.2	176.1	0	0.00
907-18	426.05	433.85	FM_1	0.3462	426.4	7.5	171.9	0	0.00
907-19	420.57	431.33	FM_1	0.2716	420.8	10.5	245.3	0	0.00
907-2	415.59	433.00	FM_5	0.4551	416.0	17.0	451.1	0	0.00
907-21	430.53	436.06	FM_1	0.0593	430.6	5.5	5.3	0	0.00
907-3	416.08	432.60	FM_1	0.2845	416.4	16.2	246.3	0	0.00
907-6	416.45	431.50	FM_5	0.5421	417.0	14.5	469.1	0	0.00
907-8	428.00	435.48	FM_5	0.2241	428.2	7.3	71.8	0	0.00
907-9	430.89	436.35	FM_1	0.0501	430.9	5.4	4.3	0	0.00
908-1	430.89	437.25	FM_1	0.0663	431.0	6.3	7.5	0	0.00
908-10	433.15	439.61	FM_4	0.1356	433.3	6.3	22.1	0	0.00

Existing System Flows, 5-year, 24-hour storm event

Input				Output					
Manhole ID	Invert Elev.	Rim Elev.	DWF Pattern	Max Depth (ft)	Max HGL (ft)	Freeboard (ft)	Max Inflow (gpm)	Total Flood Vol. (MG)	Time Flooded (hrs)
908-11	433.05	440.84	FM_4	0.1834	433.2	7.6	51.5	0	0.00
908-12	433.59	441.63	FM_4	0.1789	433.8	7.9	41.6	0	0.00
908-13.5	436.64	442.14	-	0	436.6	5.5	0.0	0	0.00
908-14	434.25	440.27	FM_4	0.1623	434.4	5.9	39.2	0	0.00
908-15	434.75	439.33	FM_4	0.1671	434.9	4.4	32.1	0	0.00
908-16	435.25	439.33	FM_1	0.1284	435.4	4.0	23.7	0	0.00
908-17	427.70	436.80	FM_1	0.3216	428.0	8.8	163.4	0	0.00
908-18	428.57	437.50	FM_1	0.3019	428.9	8.6	149.6	0	0.00
908-19	430.32	439.10	FM_1	0.288	430.6	8.5	139.1	0	0.00
908-2	429.35	435.51	FM_1	0.104	429.5	6.1	23.4	0	0.00
908-20	431.50	439.55	FM_1	0.2791	431.8	7.8	134.8	0	0.00
908-21	434.25	444.63	FM_1	0.2304	434.5	10.1	91.7	0	0.00
908-26	430.30	436.65	FM_1	0.0607	430.4	6.3	7.5	0	0.00
908-28	432.85	439.46	FM_1	0.2426	433.1	6.4	97.7	0	0.00
908-29	436.05	443.24	FM_1	0.2278	436.3	7.0	88.7	0	0.00
908-3	428.05	436.96	FM_1	0.1603	428.2	8.7	49.0	0	0.00
908-30	436.81	441.75	FM_1	0.2101	437.0	4.7	81.8	0	0.00
908-31	438.09	441.81	FM_1	0.0635	438.2	3.7	6.4	0	0.00
908-32	436.18	439.32	FM_1	0.0984	436.3	3.0	14.9	0	0.00
908-33	435.23	438.45	FM_1	0.1368	435.4	3.1	28.8	0	0.00
908-34	432.95	438.31	FM_1	0.127	433.1	5.2	33.0	0	0.00
908-35	435.88	438.75	FM_1	0.0792	436.0	2.8	11.7	0	0.00
908-36	437.05	440.56	FM_1	0.0634	437.1	3.4	6.4	0	0.00
908-4	429.65	437.88	FM_1	0.0502	429.7	8.2	5.3	0	0.00
908-5	429.36	437.99	FM_1	0.0855	429.4	8.5	13.9	0	0.00
908-5.5	431.16	436.79	FM_1	0.0564	431.2	5.6	5.3	0	0.00
908-6	432.23	437.25	FM_1	0.0372	432.3	5.0	3.2	0	0.00
908-7	431.18	436.40	FM_5	0.1812	431.4	5.0	63.6	0	0.00
908-7.5	429.42	436.06	FM_5	0.1788	429.6	6.5	67.7	0	0.00
908-8	435.50	437.00	FM_1	0.0483	435.5	1.5	4.5	0	0.00
908-9	433.50	438.50	FM_4	0.1085	433.6	4.9	13.3	0	0.00
909-1	430.14	437.45	FM_4	1.7384	431.9	5.6	668.0	0	0.00
909-2	430.79	437.55	FM_4	1.5582	432.3	5.2	657.7	0	0.00
909-3	432.59	442.35	FM_4	0.726	433.3	9.0	657.4	0	0.00
909-4	433.36	441.15	FM_4	0.9075	434.3	6.9	655.2	0	0.00
909-5	434.20	442.35	COMMERCIAL	1.1742	435.4	7.0	651.6	0	0.00

Existing System Flows, 5-year, 24-hour storm event

Input				Output					
Manhole ID	Invert Elev.	Rim Elev.	DWF Pattern	Max Depth (ft)	Max HGL (ft)	Freeboard (ft)	Max Inflow (gpm)	Total Flood Vol. (MG)	Time Flooded (hrs)
909-6	435.32	442.85	FM_4	1.5107	436.8	6.0	654.9	0	0.00
910-1	431.25	436.05	FM_4	0.0732	431.3	4.7	9.4	0	0.00
911-10	415.35	429.90	COMMERCIAL	1.9014	417.3	12.6	35.5	0	0.00
911-3	431.02	435.23	COMMERCIAL	0.2622	431.3	3.9	117.9	0	0.00
911-4	429.92	436.00	COMMERCIAL	0.2593	430.2	5.8	111.4	0	0.00
914-1	429.99	432.84	COMMERCIAL	0.0564	430.0	2.8	9.3	0	0.00
914-2	419.16	429.54	FM_4	0.0945	419.3	10.3	14.5	0	0.00
914-3	418.36	430.29	COMMERCIAL	0.1091	418.5	11.8	23.7	0	0.00
914-4	416.91	430.56	COMMERCIAL	0.3129	417.2	13.3	28.3	0	0.00
914-5	431.46	435.02	COMMERCIAL	0.0397	431.5	3.5	2.3	0	0.00
914-6	430.20	433.56	COMMERCIAL	0.0687	430.3	3.3	7.0	0	0.00
914-7	428.63	434.52	COMMERCIAL	0.2754	428.9	5.6	123.7	0	0.00
914-8	427.31	435.79	COMMERCIAL	0.1712	427.5	8.3	129.5	0	0.00
914-9	428.64	434.40	COMMERCIAL	0.0958	428.7	5.7	14.0	0	0.00
915-1	423.79	436.58	FM_2	1.6154	425.4	11.2	2918.0	0	0.00
915-10	429.07	439.45	FM_4	1.5286	430.6	8.9	649.9	0	0.00
915-11	433.27	438.05	FM_4	0.0846	433.4	4.7	12.6	0	0.00
915-12	434.33	438.65	FM_4	0.0553	434.4	4.3	5.0	0	0.00
915-13	426.29	439.65	FM_2	1.3786	427.7	12.0	2520.2	0	0.00
915-14	425.98	438.65	FM_2	1.3432	427.3	11.3	2584.2	0	0.00
915-15	434.95	439.23	FM_2	0.1514	435.1	4.1	42.2	0	0.00
915-16	425.61	438.05	FM_2	1.3227	426.9	11.1	2620.0	0	0.00
915-17	434.10	438.70	FM_2	0.0796	434.2	4.5	24.5	0	0.00
915-18	435.75	437.25	FM_2	0.084	435.8	1.4	13.0	0	0.00
915-19	436.23	440.25	FM_2	0.0853	436.3	3.9	17.9	0	0.00
915-2	424.21	434.35	-	1.9669	426.2	8.2	3396.7	0	0.00
915-20	434.75	437.29	-	0	434.8	2.5	0.0	0	0.00
915-21	436.62	438.61	-	0	436.6	2.0	0.0	0	0.00
915-25	434.45	438.05	FM_2	0.1703	434.6	3.4	53.5	0	0.00
915-3	425.71	436.35	FM_4	0.8546	426.6	9.8	784.4	0	0.00
915-4	426.22	436.85	FM_4	0.8344	427.1	9.8	674.5	0	0.00
915-5	429.58	435.25	FM_4	0.1066	429.7	5.6	19.5	0	0.00
915-6	427.18	436.35	FM_4	1.0716	428.3	8.1	654.5	0	0.00
915-7	431.25	436.25	FM_4	0.0824	431.3	4.9	16.6	0	0.00
915-8	428.17	438.25	FM_4	1.3122	429.5	8.8	645.4	0	0.00
915-9	432.87	436.85	FM_4	0.0685	432.9	3.9	7.5	0	0.00

Existing System Flows, 5-year, 24-hour storm event

Input				Output					
Manhole ID	**Invert Elev.**	**Rim Elev.**	**DWF Pattern**	**Max Depth (ft)**	**Max HGL (ft)**	**Freeboard (ft)**	**Max Inflow (gpm)**	**Total Flood Vol. (MG)**	**Time Flooded (hrs)**
915-SPLITTER	423.00	436.53	FM_2	2.8931	425.9	10.6	4993.7	0	0.00
916-05	427.14	435.40	-	1.1724	428.3	7.1	2474.6	0	0.00
916-06	431.00	435.00	-	0	431.0	4.0	0.0	0	0.00
916-1	435.46	440.55	FM_4	0.0725	435.5	5.0	8.8	0	0.00
916-10	438.50	444.00	-	0	438.5	5.5	0.0	0	0.00

Existing System Flows, 5-year, 24-hour storm event

Input								Output					
Pipe ID	Upstream MH	Downstream MH	Length (ft)	Roughness	US Invert (ft)	DS Invert (ft)	Diameter (ft)	Full Flow (gpm)	Slope (%)	Max Flow (gpm)	Max Velocity (ft/s)	Max.Flow/Full Flow	Max.Depth/Full Depth
4701.1	915-SPLITTER	915-1	420.22	0.012	423.72	423.63	1.75	994	0.0167	2911	2.78	2.93	0.96
4702.1	915-1	1602-2	408.4	0.012	423.61	423.31	1.75	2411	0.0979	2759	2.71	1.14	0.91
4703.1	1602-2	1602-1	492.04	0.012	423.21	422.8	1.75	2197	0.0813	2616	2.62	1.19	0.89
4704.1	1602-1	1606-3	476.21	0.012	422.75	422.51	1.75	2233	0.084	2541	2.69	1.14	0.82
4705.1	1606-3	1606-2	402.55	0.012	422.43	421.94	1.75	2429	0.0994	2528	3.07	1.04	0.71
4706.1	1606-2	JCT_130	363.01	0.012	421.88	421.49	1.75	3383	0.1928	2512	3.96	0.74	0.57
CDT_11	JCT_102	JCT_188	40	0.012	418.36	417.29	2.50	32625	2.676	6249	8.36	0.19	0.37
CDT_113	1104-2	JCT_116	256.6	0.012	455.03	452.21	0.83	1117	1.0991	281	3.70	0.25	0.35
CDT_115	JCT_116	JCT_118	400.35	0.012	452.21	448.41	0.83	1038	0.9492	281	2.98	0.27	0.41
CDT_117	JCT_118	JCT_120	303.65	0.012	448.41	447.2	0.83	673	0.3985	284	2.94	0.42	0.42
CDT_119	JCT_120	JCT_122	121	0.012	447.2	446.16	0.83	988	0.8595	288	2.67	0.29	0.45
CDT_121	JCT_122	JCT_124	349	0.012	446.16	445.13	0.83	579	0.2951	301	2.61	0.52	0.48
CDT_123	JCT_124	316-6	164	0.012	445.13	444.07	0.83	856	0.6464	311	2.60	0.36	0.49
CDT_125	315-11	JCT_134	74	0.012	435	434.43	1.00	1520	0.7703	740	3.35	0.49	0.60
CDT_129	JCT_126	JCT_80	50	0.012	425	424.5	1.00	2217	1.0001	1840	9.90	0.83	1.00
CDT_13	JCT_12	JCT_70	375.72	0.012	415.82	415.1	1.50	2236	0.1916	828	2.65	0.37	0.42
CDT_131	JCT_66	JCT_140	80.54	0.012	392.36	391.89	2.00	8403	0.5836	2155	4.99	0.26	0.35
CDT_135	JCT_130	JCT_102	23.36	0.012	420.91	418.46	1.75	25020	10.5462	2512	9.74	0.10	0.30
CDT_139	S-1B	JCT_10	386.69	0.012	420.27	412.26	1.00	2494	2.0719	1350	7.67	0.54	0.66
CDT_141	JCT_132	MOBILE_PARK	500	0.012	421	420.56		0	0.088	81	-1.00	-1.00	-1.00
CDT_143	JCT_134	JCT_136	204	0.012	434.43	433.9	1.00	883	0.2598	740	3.02	0.84	0.66
CDT_145	JCT_136	JCT_50	298	0.012	433.9	432.68	1.00	1108	0.4094	740	3.52	0.67	0.58
CDT_147	JCT_138	902-20	100	0.012	421.16	419.77	1.17	3083	1.3901	329	3.09	0.11	0.28
CDT_149	JCT_78	JCT_80	5500	0.012	424.5	410.5	1.50	17	0	3587	5.24	205.51	1.00
CDT_15	JCT_14	JCT_12	356.69	0.012	416.42	415.82	1.50	2095	0.1682	820	2.51	0.39	0.43
CDT_151	JCT_80	JCT_156	644.249	0.012	424.5	426	1.50	2884	0.2328	4086	5.30	1.42	1.00
CDT_153	JCT_140	STOR_10	30	0.012	391.69	391.5	2.00	8754	0.6333	2155	5.14	0.25	0.34
CDT_155	JCT_142	JCT_88	160.15	0.012	423.88	423.73	2.00	3366	0.0937	4231	3.15	1.26	0.99
CDT_157	JCT_142	915-SPLITTER	2	0.012	423.53	423.53	3.00	7252	0.05	2992	1.84	0.41	0.79
CDT_169	JCT_156	JCT_84	2125.93	0.012	426	429.76	1.50	2486	0.1769	4236	5.64	1.70	0.90
CDT_17	JCT_16	JCT_14	310.75	0.012	417.02	416.42	1.50	2244	0.1931	820	2.53	0.37	0.43
CDT_19	JCT_26	JCT_16	343.49	0.012	417.77	417.02	1.50	2387	0.2183	820	2.67	0.34	0.41
CDT_205	JCT_188	1606-1	35	0.012	417.1	417.01	2.50	10113	0.2571	6251	5.54	0.62	0.51
CDT_209	1104-28	1104-14	159.6428	0.012	505.44	489.44	0.67	1867	10.0731	7	1.76	0.00	0.06
CDT_21	JCT_28	JCT_26	350.11	0.012	418.43	417.77	1.50	2218	0.1885	818	2.63	0.37	0.41
CDT_211	1009-24	1009-16	416.3864	0.012	455.97	454.67	0.83	595	0.3122	427	2.84	0.72	0.59
CDT_213	916-05	916-3	204.4625	0.012	427.14	426.88	2.50	7112	0.1272	2474	2.28	0.35	0.50
CDT_23	JCT_30	JCT_28	329.33	0.012	419.02	418.43	1.50	2162	0.1792	818	2.54	0.38	0.43
CDT_25	JCT_32	JCT_30	318.86	0.012	420.15	419.02	1.25	1870	0.3544	817	3.06	0.44	0.49
CDT_27	JCT_34	JCT_32	501.74	0.012	421.15	420.15	1.25	1402	0.1993	817	2.83	0.58	0.52
CDT_29	JCT_36	JCT_34	214.33	0.012	421.9	421.15	1.25	1858	0.3499	785	2.75	0.42	0.51
CDT_31	JCT_38	JCT_36	280.6	0.012	422.43	421.9	1.25	1365	0.1889	783	2.81	0.57	0.50
CDT_33	JCT_40	JCT_38	391.35	0.012	423.46	422.43	1.25	1611	0.2632	783	2.68	0.49	0.52
CDT_35	JCT_42	JCT_40	376.92	0.012	424.41	423.46	1.25	1577	0.252	782	2.87	0.50	0.50
CDT_37	JCT_44	JCT_42	349.27	0.012	425.26	424.41	1.25	1550	0.2434	780	2.83	0.50	0.50
CDT_39	JCT_46	JCT_44	349.52	0.012	426.26	425.26	1.25	1680	0.2861	778	2.90	0.46	0.49
CDT_41	JCT_48	JCT_46	162.55	0.012	426.79	426.26	1.25	1794	0.3261	778	3.06	0.43	0.47
CDT_43	JCT_50	JCT_48	18.7	0.012	432.68	432.58	1.00	1267	0.5348	743	3.76	0.59	0.55
CDT_45	JCT_10	JCT_52	428.18	0.012	412.26	410.78	2.00	6467	0.3457	2139	4.21	0.33	0.39
CDT_47	JCT_52	JCT_54	435.04	0.012	410.78	408.89	2.00	7250	0.4344	2139	5.32	0.30	0.33
CDT_49	JCT_54	JCT_56	424.44	0.012	408.89	402.86	2.00	13112	1.4208	2140	5.33	0.16	0.33
CDT_51	JCT_56	JCT_58	405.6	0.012	402.86	401.25	2.00	6930	0.3969	2140	4.36	0.31	0.38

Existing System Flows, 5-year, 24-hour storm event

Input								Output					
Pipe ID	Upstream MH	Downstream MH	Length (ft)	Roughness	US Invert (ft)	DS Invert (ft)	Diameter (ft)	Full Flow (gpm)	Slope (%)	Max Flow (gpm)	Max Velocity (ft/s)	Max.Flow/Full Flow	Max.Depth/Full Depth
CDT_53	JCT_58	JCT_60	323.08	0.012	401.25	399.92	2.00	7058	0.4117	2140	4.40	0.30	0.38
CDT_55	JCT_60	JCT_62	363.67	0.012	399.92	398.4	2.00	7111	0.418	2140	4.41	0.30	0.38
CDT_57	JCT_62	JCT_64	362.99	0.012	398.22	396.9	2.00	6633	0.3636	2146	4.25	0.32	0.39
CDT_59	JCT_64	JCT_66	364.34	0.012	396.88	392.5	2.00	12061	1.2023	2148	6.46	0.18	0.29
CDT_63	JCT_70	JCT_76	450.81	0.012	415.1	414.12	1.50	2381	0.2174	832	2.64	0.35	0.42
CDT_65	JCT_72	JCT_10	450.52	0.012	413.35	412.26	1.50	2512	0.2419	838	2.40	0.33	0.46
CDT_67	JCT_76	JCT_72	401.7	0.012	414.12	413.35	1.50	2236	0.1917	834	2.69	0.37	0.41
CDT_79	JCT_84	JCT_142	66.78	0.012	428.46	424.13	1.75	19639	6.4977	4100	9.08	0.21	0.65
CDT_81	JCT_88	JCT_90	394.17	0.012	423.68	423.67	2.00	554	0.0025	4027	3.19	7.27	0.87
CDT_83	JCT_90	JCT_92	356.97	0.012	423.63	423.2	2.00	3818	0.1205	3975	3.98	1.04	0.67
CDT_85	JCT_92	JCT_94	390.14	0.012	423.15	422.14	2.00	5597	0.2589	3849	4.26	0.69	0.61
CDT_87	JCT_94	JCT_96	459.65	0.012	421.98	421.23	2.00	4443	0.1632	3767	4.04	0.85	0.63
CDT_89	JCT_96	JCT_98	448.57	0.012	421.18	419.94	2.00	5783	0.2764	3759	4.50	0.65	0.58
CDT_91	JCT_98	JCT_100	424.89	0.012	419.84	418.82	2.00	5389	0.2401	3732	4.56	0.69	0.56
CDT_93	JCT_100	JCT_102	27.76	0.012	418.72	418.51	2.00	9567	0.7565	3734	6.37	0.39	0.43
HOWDY	1002-12	1002-13	267	0.012	500.24	493.44	0.67	939	2.5476	0	0.00	0.00	0.00
L1	915-2	915-SPLITTER	174.1	0.012	424.21	424.01	1.75	2611	0.1149	4137	3.91	1.58	1.00
L10	914-3	914-4	302.11	0.012	418.36	416.91	0.67	408	0.48	24	1.16	0.06	0.32
L100	1015-7	1015-5	300.08	0.012	445.02	444.36	1.00	812	0.2199	681	2.52	0.84	1.00
L101	1015-5	1015-34	254.13	0.012	444.36	443.8	1.00	813	0.2204	715	3.00	0.88	1.00
L102	1015-34	1015-32	155.26	0.012	441.96	441.63	1.00	799	0.2125	736	2.37	0.92	1.00
L103	1015-32	1015-31	152.01	0.012	441.63	441.38	1.00	703	0.1645	776	2.51	1.10	1.00
L104	1015-31	1015-29	245.1	0.012	441.38	440.78	1.00	857	0.2448	807	3.06	0.94	1.00
L105	1010-5	1015-32	261.28	0.012	450.65	445.25	0.67	846	2.0672	29	2.50	0.03	0.13
L106	1015-33	1015-32	131.06	0.012	442.95	442.35	0.67	398	0.4578	15	1.17	0.04	1.00
L107	1010-2	1010-1	340.59	0.012	454.33	452.65	0.67	413	0.4933	10	1.16	0.03	0.11
L108	1010-1	1015-6	249	0.012	452.25	447.25	0.67	834	2.0084	21	1.37	0.02	0.15
L109	1015-6	1015-5	113.07	0.012	447.25	446.81	0.67	367	0.3891	31	1.50	0.08	0.19
L11	914-4	911-10	281.35	0.012	416.91	415.35	0.67	438	0.5545	29	0.76	0.07	0.73
L110	1010-26	1015-7	360.03	0.012	448.62	447.61	0.67	312	0.2805	22	1.23	0.07	0.17
L111	1009-8	1009-7	199.04	0.012	453.89	450.69	0.67	746	1.6079	1	0.54	0.00	0.06
L112	1009-7	1009-6	234.21	0.012	450.69	449.75	0.67	373	0.4014	5	0.72	0.01	0.09
L113	1009-6	1016-2	275.12	0.012	449.75	447.65	0.67	514	0.7633	11	1.34	0.02	0.10
L114	1010-24	1010-23	62.29	0.012	454.8	454.38	0.50	224	0.6743	5	0.61	0.02	1.00
L115	1010-25	1010-26	339.21	0.012	453.95	448.62	0.67	738	1.5715	7	0.56	0.01	0.13
L116	1010-4	1010-3	352.05	0.012	454.06	451.65	0.67	487	0.6846	10	1.19	0.02	0.10
L117	1010-3	1015-34	348.14	0.012	451.65	445.62	0.67	774	1.7323	19	2.08	0.02	0.11
L118	1010-8	1010-7	100.02	0.012	452.86	452.46	0.67	372	0.3999	14	1.19	0.04	0.13
L119	1010-9	1010-7	148.03	0.012	453.03	452.46	0.67	365	0.3851	5	0.91	0.01	0.08
L12	911-10	911-2	294.01	0.012	415.35	417.06	0.67	449	0.5816	35	0.36	0.08	0.60
L120	1010-7	1010-6	440.11	0.012	452.36	449.52	0.67	473	0.6453	26	1.62	0.06	0.16
L121	1010-6	1015-31	350.28	0.012	448.63	444.71	0.67	622	1.1192	38	2.20	0.06	0.17
L122	1009-4	1009-3	124.02	0.012	455.4	454.69	0.67	445	0.5725	1	0.48	0.00	0.06
L123	1009-3	1009-2	314.04	0.012	454.69	452.21	0.67	523	0.7897	5	0.92	0.01	0.09
L124	1009-2	1009-1	299.24	0.012	452.21	451.01	0.67	373	0.401	10	1.08	0.03	0.11
L125	1112-19	1009-18	430.06	0.012	452.4	451.24	1.00	900	0.2697	150	2.02	0.17	0.26
L126	1009-18	1009-5	544.3	0.012	451.14	450.06	1.00	772	0.1984	153	1.36	0.20	0.38
L127	1009-17	1009-1	261.23	0.012	452.35	450.36	0.83	929	0.7618	436	3.06	0.47	0.57
L128	1009-1	1009-5	245.07	0.012	450.36	449.85	1.00	790	0.2081	450	2.04	0.57	0.60
L129	1016-1	1016-2	226	0.012	449.55	448.65	0.67	371	0.3982	1	0.62	0.00	0.04
L131	1010-11	1010-10	340.18	0.012	451.04	449.67	0.67	373	0.4027	14	1.24	0.04	0.12
L132	1011-15	1011-14	423	0.012	450.38	447.69	0.67	469	0.6359	11	1.27	0.02	0.11

Existing System Flows, 5-year, 24-hour storm event

Input								Output					
Pipe ID	Upstream MH	Downstream MH	Length (ft)	Roughness	US Invert (ft)	DS Invert (ft)	Diameter (ft)	Full Flow (gpm)	Slope (%)	Max Flow (gpm)	Max Velocity (ft/s)	Max.Flow/Full Flow	Max.Depth/Full Depth
L133	1011-5	1011-4	285.3	0.012	449.5	448.58	0.67	334	0.3225	14	0.98	0.04	0.16
L134	1011-4	1011-3	250.2	0.012	448.58	447.43	0.67	399	0.4596	26	1.47	0.06	0.17
L135	1011-3	1011-16	220.23	0.012	447.33	446.53	0.67	355	0.3633	36	1.53	0.10	0.21
L136	1011-14	1011-16	171.24	0.012	446.65	445.96	0.67	373	0.4029	49	1.71	0.13	0.24
L137	1011-13	1011-14	297	0.012	448.03	446.85	0.67	371	0.3973	26	1.42	0.07	0.17
L138	1011-12	1011-13	320.31	0.012	449.27	448.03	0.67	366	0.3871	15	1.19	0.04	0.16
L139	1011-16	1011-6	410.15	0.012	445.96	437.42	0.67	849	2.0826	94	1.77	0.11	0.61
L140	1011-7	1011-6	334.43	0.012	438.48	437.52	0.83	570	0.2871	684	2.80	1.20	1.00
L141	1011-8	1011-7	375.12	0.012	439.51	438.48	0.83	558	0.2746	668	2.73	1.20	1.00
L142	1011-17	1011-1	221.51	0.012	436.73	436	0.83	611	0.3296	765	3.13	1.25	1.00
L143	1011-6	1011-17	239.08	0.012	437.42	436.73	0.83	572	0.2886	758	3.10	1.33	1.00
L144	1011-9	1011-8	355	0.012	440.56	439.56	0.67	312	0.2817	7	0.69	0.02	1.00
L145	1011-10	1011-8	156.26	0.012	440.32	439.65	0.67	385	0.4288	654	4.17	1.70	1.00
L146	1011-11	1011-10	360.07	0.012	442.15	440.32	0.67	419	0.5082	508	3.24	1.21	1.00
L147	1010-14	1011-11	549.3	0.012	443.96	442.15	0.67	338	0.3295	499	3.18	1.48	1.00
L148	1010-13	1010-14	149	0.012	447.08	446.48	0.67	373	0.4027	319	2.75	0.85	1.00
L149	1010-12	1010-13	277.05	0.012	451.35	450.25	0.67	371	0.397	11	0.65	0.03	1.00
L150	1010-16	1010-15	254.02	0.012	449.33	448.51	0.67	334	0.3228	309	2.45	0.93	1.00
L151	1010-15	1010-13	270.12	0.012	448.51	447.21	0.67	408	0.4813	313	2.84	0.77	1.00
L152	1007-5	1010-14	303.32	0.012	445.25	444.06	0.67	369	0.3923	218	1.93	0.59	1.00
L153	1012-8	1012-7	345.39	0.012	442.77	440.91	0.67	432	0.5385	1	0.68	0.00	0.04
L154	1007-19	1010-16	348.24	0.012	451.05	449.65	0.67	373	0.402	20	1.19	0.05	1.00
L155	1010-17	1010-16	254.05	0.012	450.29	449.33	0.67	362	0.3779	260	2.16	0.72	1.00
L156	1010-18	1010-17	305	0.012	451.55	450.29	0.67	378	0.4131	224	2.25	0.59	1.00
L157	1009-12	1010-18	277.35	0.012	452.65	451.55	0.67	371	0.3966	190	2.21	0.51	1.00
L158	1010-20	1010-16	448	0.012	453.15	451.35	0.67	373	0.4018	24	1.39	0.07	1.00
L159	1010-22	1010-21	61.03	0.012	452.67	452.47	0.67	337	0.3277	9	0.82	0.03	1.00
L16	911-3	911-4	390.5861	0.012	431.02	429.97	0.83	552	0.2688	107	1.87	0.19	0.28
L160	1010-21	1010-17	405.03	0.012	452.47	450.87	0.67	370	0.395	9	0.92	0.03	1.00
L161	1007-17	1010-17	330.34	0.012	452.2	450.87	0.67	373	0.4026	20	1.29	0.05	1.00
L162	1010-19	1010-18	280.04	0.012	453.25	452.21	0.67	359	0.3714	12	1.06	0.03	1.00
L163	1010-23	1010-19	186.01	0.012	454.28	453.25	0.67	438	0.5537	8	0.91	0.02	1.00
L164	1009-11	1009-10	168	0.012	456.67	456.25	0.67	294	0.25	14	0.91	0.05	0.75
L165	1009-9	1009-10	230.03	0.012	455.51	454.59	0.67	372	0.4	4	0.62	0.01	1.00
L166	1009-10	1009-12	261.12	0.012	454.59	453.55	0.67	371	0.3983	21	1.22	0.06	1.00
L167	1009-13	1009-12	202.04	0.012	456.95	455.35	0.67	524	0.7919	5	1.04	0.01	0.54
L168	1008-2	1008-1	356.02	0.012	456.11	454.75	0.67	364	0.382	156	2.18	0.43	1.00
L169	1008-1	1009-12	294.01	0.012	454.75	453.55	0.67	376	0.4082	161	2.38	0.43	1.00
L17	911-4	914-7	468.7701	0.012	429.92	428.63	0.83	558	0.2752	115	1.83	0.21	0.31
L170	1007-14	1007-15	395.05	0.012	455.15	453.58	0.67	371	0.3974	10	0.93	0.03	1.00
L171	1007-15	1010-18	369.02	0.012	453.58	452.08	0.67	375	0.4065	19	1.28	0.05	1.00
L172	1007-16	1007-17	332.1	0.012	453.54	452.2	0.67	374	0.4035	10	0.93	0.03	1.00
L173	1007-18	1007-19	359.11	0.012	452.48	451.05	0.67	371	0.3982	11	1.07	0.03	1.00
L174	1008-7	1008-6	223.08	0.012	460.94	458.99	0.67	550	0.8742	66	2.70	0.12	0.26
L175	1008-6	1008-2	358.24	0.012	458.99	457.15	0.67	422	0.5136	74	2.04	0.18	0.36
L176	1112-1	1009-15	501.2	0.012	457.71	456.14	0.83	596	0.3133	420	1.98	0.71	0.81
L177	1009-15	1009-24	469.13	0.012	456.14	454.67	0.83	203	0.0362	427	1.97	2.11	0.83
L178	1009-16	1009-17	291.11	0.012	454.57	452.35	0.83	929	0.7626	432	3.71	0.46	0.48
L179	1112-2	1112-9	75.15	0.012	459.27	458.81	0.83	833	0.6121	386	2.88	0.46	0.54
L18	914-7	914-8	489.7374	0.012	428.63	427.31	0.83	552	0.2695	115	2.18	0.21	0.27
L180	1112-9	1112-1	306.01	0.012	458.8	457.81	0.83	605	0.3235	394	2.83	0.65	0.55
L181	1105-2	1105-1	197.06	0.012	470.28	462.71	0.67	1154	3.8443	43	3.42	0.04	0.16

Existing System Flows, 5-year, 24-hour storm event

Input								Output					
Pipe ID	Upstream MH	Downstream MH	Length (ft)	Roughness	US Invert (ft)	DS Invert (ft)	Diameter (ft)	Full Flow (gpm)	Slope (%)	Max Flow (gpm)	Max Velocity (ft/s)	Max.Flow/Full Flow	Max.Depth/Full Depth
L182	1105-1	1112-2	306	0.012	462.71	459.58	0.67	595	1.0229	46	2.24	0.08	0.19
L183	1009-14	1112-9	364.17	0.012	460.85	458.8	0.67	441	0.5629	7	1.03	0.02	0.42
L184	1112-6	1112-1	394.15	0.012	460.35	458.75	0.67	375	0.4059	21	1.35	0.06	0.16
L185	1112-4	1112-3	462.13	0.012	466.35	461.55	0.67	600	1.0387	332	3.22	0.55	0.63
L186	1112-3	1112-2	338.09	0.012	461.55	459.95	0.67	405	0.4733	337	3.03	0.83	0.67
L187	1112-11	1112-10	291.01	0.012	454.27	453.3	0.83	614	0.3333	4	0.80	0.01	0.06
L188	1112-10	1112-19	266.19	0.012	453.2	452.5	0.83	546	0.263	8	0.82	0.02	0.16
L189	1112-12	1112-13	207.09	0.012	455.79	455.19	0.67	317	0.2897	3	0.69	0.01	0.06
L19	914-8	915-3	87.14	0.012	427.31	425.81	0.83	1396	1.7216	129	1.92	0.09	0.56
L190	1112-14	1112-13	244.07	0.012	456.39	455.19	0.67	413	0.4917	3	0.83	0.01	0.06
L191	1112-13	1112-17	259.09	0.012	455.09	454.29	0.83	591	0.3088	9	0.90	0.02	0.16
L192	1112-17	1112-18	381.3	0.012	454.19	453.34	1.00	818	0.2229	133	1.85	0.16	0.26
L193	1112-18	1112-19	244.1	0.012	453.24	452.8	1.00	735	0.1803	137	1.78	0.19	0.27
L194	1112-15	1111-6	344.07	0.012	457.78	456.9	0.67	298	0.2558	4	0.75	0.02	0.08
L195	1111-6	1111-7	273.03	0.012	456.8	456	0.83	576	0.293	19	1.09	0.03	0.18
L196	1111-7	1112-16	381.16	0.012	455.93	455.11	1.00	804	0.2151	112	1.74	0.14	0.24
L197	1112-16	1112-17	326.1	0.012	455.01	454.29	1.00	814	0.2208	118	1.79	0.14	0.24
L198	1111-14	1111-16	348.24	0.012	461.4	459.94	0.67	381	0.4193	4	0.84	0.01	0.07
L198.1	1111-16	1111-6	194.37	0.012	459.93	456.9	0.67	735	1.5591	7	1.51	0.01	0.07
L199	1111-8	1111-6	429.23	0.012	466.78	458.19	0.67	832	2.0017	4	1.33	0.00	0.05
L20	915-3	915-2	72.84	0.012	425.71	425.52	0.83	544	0.2608	784	3.52	1.44	0.89
L200	1111-?	1111-7	117.07	0.012	456.77	456	0.67	477	0.6577	4	0.94	0.01	0.19
L201	1111-9	1111-7	390.18	0.012	457.14	456	1.00	936	0.2922	87	1.68	0.09	0.20
L202	1111-10	1111-9	386.05	0.012	458.14	457.24	1.00	836	0.2331	83	1.64	0.10	0.20
L203	1111-5	1112-8	164.6	0.012	466.95	465.95	0.67	459	0.6075	1	0.52	0.00	0.05
L204	1112-8	1112-7	399.08	0.012	465.95	461.95	0.67	589	1.0024	5	0.63	0.01	0.10
L205	1112-7	1112-6	404.18	0.012	461.95	460.35	0.67	370	0.3959	15	1.07	0.04	0.15
L206	1107-3	1107-2	442.11	0.012	523.16	522.33	0.50	118	0.1877	3	0.59	0.03	0.11
L206.1	1107-2	1107-1	230.01	0.012	522.2	510.53	0.67	1326	5.0802	9	2.30	0.01	0.06
L208	1110-4	1110-2	439.16	0.012	475.8	474.56	0.67	313	0.2824	180	1.94	0.58	0.58
L21	1014-5	1013-6	340.01	0.012	431.97	431.21	1.25	1485	0.2235	2072	3.76	1.40	1.00
L212	1111-3	1111-2	284.09	0.012	472.59	470.5	0.67	505	0.7357	240	2.68	0.48	0.56
L213	1111-2	1111-1	325.08	0.012	470.5	469.2	0.67	372	0.3999	266	2.55	0.71	0.63
L214	1111-1	1112-5	304.37	0.012	469.2	467.95	0.67	377	0.4107	278	2.53	0.74	0.66
L215	1112-5	1112-4	386.03	0.012	467.95	466.35	0.67	379	0.4145	285	2.87	0.75	0.61
L216	1106-20	1111-2	270.42	0.012	471.75	470.5	0.67	400	0.4622	22	1.66	0.05	0.39
L217	1106-19	1111-3	160	0.012	473.35	472.69	0.67	378	0.4125	4	0.79	0.01	0.20
L218	1106-1	1111-1	308.72	0.012	474.33	469.2	0.67	758	1.6619	8	1.33	0.01	0.36
L219	1111-13	1111-12	426	0.012	462	460.6	0.67	337	0.3286	73	1.75	0.22	0.31
L22	1013-6	1013-5	325.04	0.012	431.21	430.44	1.25	1529	0.2369	2089	3.79	1.37	1.00
L220	1111-12	1111-11	296.17	0.012	460.6	459.29	0.67	391	0.4423	76	1.99	0.19	0.29
L221	1111-11	1111-10	407.28	0.012	459.03	458.24	1.00	763	0.194	79	1.52	0.10	0.21
L224	1106-15	1106-9	334.15	0.012	532.52	523.89	0.67	946	2.5835	6	1.68	0.01	0.06
L225	1106-7	1106-8	202.12	0.012	549.56	545.91	0.67	791	1.8062	11	2.03	0.01	0.08
L226	1106-8	1106-9	294.64	0.012	545.91	523.84	0.67	1613	7.5116	14	3.17	0.01	0.07
L227	1106-9	1106-16	237.12	0.012	523.74	509.69	0.67	1433	5.9357	39	3.96	0.03	0.11
L228	1106-16	1106-18	203.81	0.012	509.44	495.42	0.67	1545	6.8953	43	4.12	0.03	0.12
L229	1106-18	1110-1	304.08	0.012	495.42	477.06	0.67	1447	6.0489	46	4.22	0.03	0.12
L23	1013-5	1013-4	309.1	0.012	430.44	429.81	1.25	1418	0.2038	2100	3.81	1.48	1.00
L230	1110-1	1110-2	133	0.012	476.95	474.85	0.67	739	1.5791	51	2.70	0.07	0.18
L232	1106-3	1106-7	422.52	0.012	551.16	550.45	0.67	241	0.168	2	0.49	0.01	0.07
L233	1106-5	1106-6	152.21	0.012	555.58	554.5	0.67	496	0.7096	4	1.12	0.01	0.07

Existing System Flows, 5-year, 24-hour storm event

Input								Output					
Pipe ID	Upstream MH	Downstream MH	Length (ft)	Roughness	US Invert (ft)	DS Invert (ft)	Diameter (ft)	Full Flow (gpm)	Slope (%)	Max Flow (gpm)	Max Velocity (ft/s)	Max.Flow/Full Flow	Max.Depth/Full Depth
L234	1106-6	1106-7	373.3	0.012	554.5	550.45	0.67	613	1.085	6	1.24	0.01	0.07
L235	1106-2	1106-1	357.71	0.012	510	474.33	0.67	1863	10.0217	2	0.99	0.00	0.05
L236	1106-14	1106-10	198.64	0.012	543.24	535.47	0.67	1164	3.9146	3	1.58	0.00	0.04
L237	1106-10	1106-9	296.38	0.012	535.21	523.84	0.67	1153	3.8391	16	2.59	0.01	0.08
L238	1106-11	1106-10	230.46	0.012	537.54	535.47	0.67	558	0.8982	3	0.95	0.01	0.05
L239	1106-13	1106-12	148.93	0.012	546.54	539.34	0.67	1294	4.8401	4	2.20	0.00	0.05
L24	1013-4	1013-3	164.51	0.012	429.81	429.43	1.25	1510	0.231	2169	3.97	1.44	1.00
L240	1106-12	1106-10	222.65	0.012	539.34	535.47	0.67	776	1.7384	7	1.52	0.01	0.07
L241	1105-7	1105-6	319.1	0.012	527.12	514.8	0.67	1156	3.8637	4	1.22	0.00	0.05
L242	1105-6	1105-9	364.01	0.012	514.8	499.65	0.67	1201	4.1656	10	2.35	0.01	0.07
L243	1105-9	1105-3	244.9	0.012	497.65	496.75	0.67	357	0.3675	16	1.23	0.05	0.14
L244	1105-3	1105-2	222.02	0.012	494.69	470.28	0.67	1957	11.0616	19	2.28	0.01	0.10
L245	1104-16	1104-17	74.67	0.012	537.28	533.87	0.67	1258	4.5715	1	0.90	0.00	0.02
L246	1104-17	1105-5	193.01	0.012	533.87	528.04	0.67	1023	3.0219	1	1.24	0.00	0.03
L247	1105-5	1105-4	315.23	0.012	528.04	512.45	0.67	1309	4.9517	1	1.50	0.00	0.02
L248	1105-4	1105-3	194.09	0.012	512.45	495.99	0.67	1716	8.5113	1	1.67	0.00	0.02
L249	1008-10	1008-9	105.26	0.012	501.25	488.75	0.67	2035	11.96	55	7.58	0.03	0.11
L25	1013-3	916-8	360.2	0.012	428.54	428.12	1.50	1744	0.1166	2403	3.03	1.38	1.00
L250	1008-9	1008-8	167.61	0.012	488.75	461.25	0.67	2399	16.6325	56	6.57	0.02	0.21
L251	1008-8	1008-7	115.26	0.012	461.25	460.94	0.67	305	0.269	59	1.79	0.20	0.27
L252	1008-5	1008-4	197.21	0.012	458.16	457	0.67	451	0.5882	8	0.31	0.02	0.44
L253	1008-4	1008-3	133.02	0.012	457.3	457	0.67	279	0.2255	66	1.48	0.24	0.52
L254	1008-3	1008-2	245.4	0.012	457	456.11	0.67	354	0.3627	72	1.27	0.20	0.86
L2574	916-8	916-5	554.36	0.012	428.12	427.49	1.50	1722	0.1136	2455	3.10	1.43	1.00
L260	1104-6	1104-5	118.21	0.012	463.93	462.21	0.67	710	1.4552	77	2.97	0.11	0.22
L261	1104-5	1104-3	75.66	0.012	461.78	460.4	0.67	794	1.8243	81	3.25	0.10	0.22
L265	1104-21	1104-20	218.02	0.012	489.67	486.88	0.67	666	1.2798	18	1.93	0.03	0.11
L268	1104-11	1104-10	143.75	0.012	464.07	459.75	0.67	1020	3.0066	16	2.42	0.02	0.09
L272	1001-6	1001-5	196.01	0.012	488.75	480.34	0.67	1219	4.2946	10	2.25	0.01	0.07
L273	1001-5	1001-2	290.17	0.012	480.34	463.75	0.67	1408	5.7267	21	3.11	0.02	0.16
L274	1001-4	1001-5	239.1	0.012	484.66	480.44	0.67	782	1.7652	5	1.39	0.01	0.06
L275	1001-9	1001-8	57.27	0.012	492	491.44	0.67	582	0.9779	5	1.08	0.01	0.07
L276	1001-8	1001-1	447.45	0.012	491.44	468.95	0.67	1320	5.0326	13	2.73	0.01	0.09
L277	1001-1	1001-2	515.16	0.012	468.95	463.75	0.67	591	1.0094	16	0.90	0.03	0.17
L278	1001-2	1001-3	384.33	0.012	463.75	462.25	0.67	368	0.3903	44	1.41	0.12	0.26
L279	1001-3	1104-1	331.07	0.012	462.25	460.59	0.67	417	0.5014	56	2.59	0.13	0.20
L28	916-5	916-05	471.01	0.012	427.49	426.88	1.50	1392	0.0743	2475	3.32	1.78	0.89
L280	1104-1	1104-2	24.7	0.012	460.59	455.03	0.67	2828	23.1031	81	4.49	0.03	0.27
L281	1104-9	1104-2	241.2	0.012	456.19	455.03	0.83	739	0.4809	200	2.63	0.27	0.35
L284	1104-26	1104-25	355.09	0.012	464.76	463.36	0.83	668	0.3943	95	2.00	0.14	0.25
L285	1104-25	1104-24	237.26	0.012	463.26	458.27	0.83	1544	2.1036	98	3.70	0.06	0.17
L286	1104-24	1104-3	41.6	0.012	458.27	457	0.83	1862	3.0543	100	2.02	0.05	0.27
L288	316-2	316-1	414.01	0.012	460.3	456.15	0.67	589	1.0024	137	3.06	0.23	0.33
L289	316-3	316-2	297.14	0.012	465.45	460.5	0.67	759	1.6661	123	3.56	0.16	0.27
L29	916-3	915-13	467.13	0.012	426.88	426.29	1.75	2738	0.1263	2506	2.79	0.92	0.77
L290	315-28	316-3	259.05	0.012	473.15	465.65	0.67	1001	2.8964	108	4.17	0.11	0.22
L291	316-1	316-5	223.19	0.012	455.95	448.97	0.67	1041	3.1289	149	4.71	0.14	0.26
L292	316-4	316-5	390.68	0.012	451.54	448.97	0.67	477	0.6578	30	1.69	0.06	0.17
L293	315-26	316-4	409.4	0.012	455.53	451.74	0.67	566	0.9258	12	1.44	0.02	0.10
L294	316-5	316-6	290.93	0.012	448.77	444.07	0.67	748	1.6157	193	2.45	0.26	0.53
L295	316-6	316-29	170.47	0.012	444.07	443.32	1.00	1149	0.44	519	2.96	0.45	0.50
L2951	S-2	S-1C	430.12	0.014	427.47	422	1.00	1675	1.2718	0	0.01	0.00	0.32

Existing System Flows, 5-year, 24-hour storm event

Input								Output					
Pipe ID	Upstream MH	Downstream MH	Length (ft)	Roughness	US Invert (ft)	DS Invert (ft)	Diameter (ft)	Full Flow (gpm)	Slope (%)	Max Flow (gpm)	Max Velocity (ft/s)	Max.Flow/Full Flow	Max.Depth/Full Depth
L2952	S-1C	S-1B	126.02	0.012	421.9	420.93	1.00	1520	0.7697	1350	4.88	0.89	0.73
L296	316-29	316-7	133	0.012	443.32	442.91	1.00	962	0.3083	524	3.05	0.54	0.49
L296.1	316-7	316-8	240.53	0.012	442.71	441.98	1.00	954	0.3035	526	3.00	0.55	0.50
L297	316-8	316-9	202.02	0.012	441.78	441.16	1.00	960	0.3069	530	3.02	0.55	0.50
L298	316-9	316-10	119.88	0.012	440.96	440.61	1.00	936	0.292	532	3.04	0.57	0.50
L299	316-10	316-11	46.53	0.012	440.41	440.25	1.00	1016	0.3439	534	3.21	0.53	0.48
L30	915-13	915-14	286	0.012	426.29	425.98	1.75	2537	0.1084	2520	2.80	0.99	0.78
L300	316-11	315-23	304.14	0.012	440.05	439.15	1.00	942	0.2959	545	2.99	0.58	0.51
L301	315-23	315-14	114.48	0.012	438.95	438.6	1.00	958	0.3057	591	3.17	0.62	0.52
L3010	IND~LS	911-3	526.06	0.012	413	431.3	0.33	252	3.4808	103	3.40	0.41	0.72
L3014	GARDNER~LS	1005-4	918.85	0.012	436.25	440.25	0.50	235	0.4353	610	6.92	2.59	1.00
L302	315-24	315-23	328.07	0.012	440.58	439.15	0.67	388	0.4359	43	1.53	0.11	0.38
L3023	902-4	JCT_138	35	0.012	421.21	421.16	1.17	988	0.1429	329	3.21	0.33	0.27
L3024	1110-2	1111-3	486.2	0.012	474.56	472.69	0.67	365	0.3846	233	2.60	0.64	0.56
L3025	1110-6	1110-4	613.08	0.012	478.16	475.85	0.67	361	0.3768	162	2.24	0.45	0.47
L3027	316-20	316-21	327.98	0.012	443.88	442.55	0.67	375	0.4055	8	0.70	0.02	0.13
L3028	316-20	316-19	153.83	0.012	444.4	442.79	0.67	602	1.0467	0	0.00	0.00	0.04
L303	316-12	316-11	287.17	0.012	442.53	440.25	0.67	524	0.794	7	1.04	0.01	0.31
L3030	1107-1	1110-4	210.86	0.012	510.53	475.9	0.67	2401	16.6493	19	4.20	0.01	0.23
L3031	1104-20	1104-19	209.09	0.012	486.88	475.51	0.67	1373	5.4459	31	2.34	0.02	0.16
L3032	1104-19	1104-18	378.87	0.012	475.51	473.67	0.67	410	0.4857	41	1.44	0.10	0.24
L3033	1104-18	1104-8	113.09	0.012	473.67	473.18	0.67	387	0.4333	53	2.26	0.14	0.21
L3034	1104-8	1104-6	211.68	0.012	473.18	464.03	0.67	1224	4.3266	59	4.03	0.05	0.15
L3035	1104-7	1104-6	446.21	0.012	468.71	464.03	0.67	603	1.0489	16	1.67	0.03	0.11
L3036	1104-22	1104-21	240.02	0.012	493.02	489.67	0.67	695	1.3959	8	1.19	0.01	0.10
L3037	1104-13	1104-12	215.08	0.012	488.31	478.21	0.67	1276	4.7011	5	1.94	0.00	0.05
L3038	1104-12	1104-11	313.84	0.012	478.02	466.26	0.67	1139	3.7498	13	2.43	0.01	0.08
L3040	1001-15	1001-14	396.4	0.012	522.04	516.23	0.67	712	1.4658	18	1.75	0.02	0.12
L3041	1104-15	1104-28	300.73	0.012	519.47	489.44	0.67	1271	4.6704	7	2.49	0.01	0.05
L3042	1104-14	1104-1	285	0.012	489.44	460.59	0.67	1877	10.1751	21	3.63	0.01	0.10
L3043	1001-7	1104-14	171.24	0.012	496.77	489.44	0.67	1218	4.2845	12	2.90	0.01	0.07
L3058	901-1	901-23	68.59	0.012	435.25	434.85	0.50	208	0.5832	0	0.00	0.00	0.08
L306	315-27	315-25	142.47	0.012	468.66	458.78	0.67	1551	6.9515	8	2.60	0.01	0.05
L307	315-25	315-24	254.33	0.012	458.58	440.78	0.67	1558	7.016	21	3.51	0.01	0.08
L308	316-18	316-17	145.65	0.012	443.3	442.39	0.67	465	0.6248	10	1.31	0.02	0.12
L309	316-19	316-17	85.87	0.012	442.79	442.39	0.67	402	0.4658	5	0.64	0.01	0.11
L31	915-14	915-16	296.49	0.012	425.98	425.61	1.75	2722	0.1248	2585	2.94	0.95	0.76
L312	316-21	316-22	199.74	0.012	442.55	441.5	0.67	427	0.5257	21	1.44	0.05	0.15
L313	316-22	315-19	115.11	0.012	441.5	440.33	0.67	593	1.0165	28	1.52	0.05	0.17
L314	315-19	315-18	161.52	0.012	440.33	439.62	0.67	390	0.4396	35	1.44	0.09	0.21
L315	315-18	315-16	263.23	0.012	439.62	438.2	0.67	432	0.5395	46	1.50	0.11	0.25
L316	315-16	315-9	106.47	0.012	438.2	437.75	0.67	383	0.4227	65	1.60	0.17	0.31
L317	315-9	315-10	226.02	0.012	437.75	437	0.67	339	0.3318	82	1.77	0.24	0.34
L318	315-10	315-15	139	0.012	437	436.51	0.67	349	0.3525	85	1.77	0.24	0.35
L319	315-22	315-15	107.67	0.012	438.2	436.61	0.67	715	1.4769	50	2.39	0.07	0.19
L32	915-16	915-2	368.01	0.012	425.61	425.18	1.75	2634	0.1168	2631	3.66	1.00	0.65
L320	316-13	315-22	409.78	0.012	439.07	438.2	0.67	271	0.2123	45	1.49	0.17	0.25
L321	316-14	316-13	179.1	0.012	439.81	439.03	0.67	388	0.4355	42	1.06	0.11	0.30
L322	316-15	316-14	207.17	0.012	440.73	439.81	0.67	392	0.4441	31	1.34	0.08	0.21
L323	316-16	316-15	143.89	0.012	441.35	440.73	0.67	386	0.4309	23	1.22	0.06	0.18
L324	316-17	316-16	195.26	0.012	442.39	441.35	0.67	429	0.5326	18	1.19	0.04	0.15
L325	315-21	316-14	141.17	0.012	440.5	439.81	0.67	411	0.4888	4	0.64	0.01	0.15

Existing System Flows, 5-year, 24-hour storm event

Input								Output					
Pipe ID	Upstream MH	Downstream MH	Length (ft)	Roughness	US Invert (ft)	DS Invert (ft)	Diameter (ft)	Full Flow (gpm)	Slope (%)	Max Flow (gpm)	Max Velocity (ft/s)	Max.Flow/Full Flow	Max.Depth/Full Depth
L326	315-21	315-20	243.74	0.012	440.5	439.07	0.67	451	0.5867	4	0.56	0.01	0.10
L327	315-20	315-16	159.53	0.012	439.07	438.2	0.67	434	0.5454	14	1.03	0.03	0.20
L328	315-17	315-18	139.09	0.012	440.5	439.62	0.67	468	0.6327	7	1.10	0.01	0.15
L329	315-6	315-7	301.23	0.012	441.5	439.75	0.67	448	0.581	7	1.09	0.02	0.10
L33	1011-1	1011-18	254.13	0.012	436	435.2	0.83	597	0.3148	789	3.23	1.32	1.00
L330	315-7	315-8	282.21	0.012	439.75	438.32	0.67	419	0.5067	12	1.18	0.03	0.11
L331	315-8	315-9	34.06	0.012	438.32	438	0.67	570	0.9396	15	1.56	0.03	0.11
L332	315-15	315-13	144.09	0.012	436.51	435.91	1.00	1118	0.4164	137	2.19	0.12	0.25
L333	315-14	315-13	65.28	0.012	438.4	435.91	1.00	3385	3.8171	591	7.21	0.17	0.28
L337	315-30	315-31	231.31	0.012	465.64	445.62	0.67	1734	8.6877	5	2.69	0.00	0.05
L338	315-31	315-11	244.02	0.012	445.62	436	0.67	1169	3.9454	7	2.00	0.01	0.05
L339	315-12	315-11	130.7	0.012	435.26	435	1.00	773	0.1989	730	3.31	0.94	0.60
L34	1011-18	1014-7	188.22	0.012	435.2	434.29	0.83	740	0.4835	818	3.55	1.11	1.00
L340	315-13	315-12	48.76	0.012	435.71	435.26	1.00	1664	0.9229	730	3.38	0.44	0.59
L342	1002-12	1002-5	399.55	0.012	500.13	496.25	0.67	581	0.9761	4	0.80	0.01	0.08
L343	1002-5	1002-6	291.08	0.012	496.25	489.92	0.67	868	2.1752	13	2.28	0.02	0.08
L345	1002-13	1002-14	257.07	0.012	493.34	472.24	0.67	1688	8.2357	59	5.04	0.04	0.13
L345.1	1002-14	1003-16	159.03	0.012	472.14	468.74	0.67	860	2.1385	60	3.16	0.07	0.18
L346	1003-16	1003-15	290.29	0.012	467.93	458.58	0.67	1056	3.2226	63	3.38	0.06	0.18
L347	1002-6	1002-7	162.02	0.012	489.92	468.92	0.67	2127	13.0716	21	2.85	0.01	0.09
L348	1002-7	1002-8	210.24	0.012	468.92	453.58	0.67	1591	7.3159	47	4.20	0.03	0.56
L349	1002-2	1002-3	231	0.012	451.52	451	0.67	279	0.2251	1	0.47	0.00	0.05
L35	1014-7	1014-6	323.08	0.012	434.02	433.14	0.83	555	0.2724	825	3.37	1.49	1.00
L350	1002-3	1003-4	516.14	0.012	450.4	447.55	0.67	437	0.5522	5	0.98	0.01	0.07
L351	1002-4	1002-3	262.19	0.012	452	450.4	0.67	460	0.6103	1	0.35	0.00	0.06
L352	1003-12	1003-11	244.18	0.012	448.5	447.53	0.67	371	0.3973	9	0.91	0.02	0.12
L353	1003-11	1003-10	89.94	0.012	447.53	447.25	0.67	328	0.3113	13	1.00	0.04	0.13
L354	1002-8	1007-8	414.2	0.012	453.58	451.94	0.67	370	0.3959	54	1.42	0.15	1.00
L355	1007-8	1007-7	222.04	0.012	451.94	451.04	0.67	375	0.4053	130	2.05	0.35	1.00
L356	1007-9	1007-8	269.05	0.012	453.03	451.97	0.67	369	0.394	68	1.51	0.19	1.00
L357	1002-11	1007-9	235.02	0.012	457.83	453.13	0.67	832	2.0002	35	2.58	0.04	0.57
L358	1002-15	1007-4	393.18	0.012	450.95	449.18	0.67	395	0.4502	24	1.52	0.06	1.00
L359	1002-1	1007-6	389.16	0.012	449.8	448.25	0.67	371	0.3983	55	0.35	0.15	1.00
L36	1014-6	1014-5	278.09	0.012	433.14	432.34	0.83	571	0.2877	841	3.44	1.47	1.00
L360	1007-11	1002-11	298.3	0.012	477.85	457.93	0.67	1522	6.6928	17	3.24	0.01	0.08
L361	1007-12	1007-10	302.37	0.012	455.41	454.17	0.67	377	0.4101	11	1.07	0.03	0.56
L362	1007-10	1007-9	269.05	0.012	454.17	453.08	0.67	374	0.4051	20	0.97	0.05	1.00
L363	1007-13	1007-9	466.13	0.012	455.13	453.13	0.67	385	0.4291	7	0.75	0.02	0.55
L364	1007-6	1007-1	424.17	0.012	448.25	446.55	0.67	372	0.4008	44	0.74	0.12	1.00
L365	1007-1	1007-5	319.04	0.012	446.55	445.25	0.67	376	0.4075	209	2.29	0.56	1.00
L366	1007-3	1007-2	270.47	0.012	449.75	448.67	0.67	372	0.3993	145	2.18	0.39	1.00
L367	1007-2	1007-1	259.16	0.012	447.68	446.65	0.67	371	0.3974	189	2.37	0.51	1.00
L368	1007-4	1007-2	394.41	0.012	449.18	447.78	0.67	351	0.355	40	1.39	0.11	1.00
L369	1007-7	1007-3	303.11	0.012	451.04	449.85	0.67	369	0.3926	142	2.21	0.38	1.00
L37	1015-24	1014-12	265.37	0.012	438.78	438.15	1.00	844	0.2374	1136	3.22	1.35	1.00
L370	1006-7	1006-8	273.47	0.012	446.25	445.25	0.67	356	0.3657	9	0.81	0.03	1.00
L371	1006-9	1006-8	234.21	0.012	449.29	445.25	0.67	773	1.7252	11	1.96	0.01	0.54
L372	1006-8	1006-10	122.1	0.012	445.25	444.75	0.67	377	0.4095	24	1.20	0.06	1.00
L373	1006-10	1006-13	112.45	0.012	444.75	444.33	0.67	360	0.3735	28	0.80	0.08	1.00
L374	1006-13	1006-2	251.16	0.012	444.33	443.24	0.67	388	0.434	84	1.66	0.22	1.00
L375	1006-2	1006-1	286	0.012	443.24	442.1	0.67	371	0.3986	138	2.04	0.37	1.00
L376	1006-1	1011-10	355.32	0.012	442.1	440.7	0.67	369	0.394	148	2.19	0.40	1.00

Existing System Flows, 5-year, 24-hour storm event

Input								Output					
Pipe ID	Upstream MH	Downstream MH	Length (ft)	Roughness	US Invert (ft)	DS Invert (ft)	Diameter (ft)	Full Flow (gpm)	Slope (%)	Max Flow (gpm)	Max Velocity (ft/s)	Max.Flow/Full Flow	Max.Depth/Full Depth
L377	1006-3	1006-4	294.03	0.012	445.69	444.65	0.67	350	0.3537	7	0.90	0.02	1.00
L378	1006-4	1006-2	266.03	0.012	444.55	443.34	0.67	397	0.4548	47	1.42	0.12	1.00
L379	1006-6	1006-5	358	0.012	447.84	446.52	0.67	357	0.3687	17	0.82	0.05	0.79
L38	1014-12	1014-14	281.04	0.012	438.15	437.55	1.00	800	0.2135	1159	3.29	1.45	1.00
L380	1006-5	1006-4	524.28	0.012	446.52	444.55	0.67	361	0.3758	31	1.18	0.09	1.00
L381	1006-11	1006-2	279.12	0.012	445.83	443.24	0.67	567	0.928	11	1.45	0.02	1.00
L382	1006-12	1006-13	255.01	0.012	446	444.33	0.67	476	0.6549	39	2.34	0.08	1.00
L383	1006-14	1006-13	244.02	0.012	444.75	444.33	0.67	244	0.1721	19	0.71	0.08	1.00
L384	1014-13	1014-12	171.14	0.012	441.48	441.15	0.67	258	0.1928	13	0.91	0.05	0.58
L385	1503-2	1014-2	216.08	0.012	439.24	437.35	0.67	550	0.8747	15	1.53	0.03	0.11
L386	1003-4	1003-3	420.58	0.012	444.58	443.35	0.67	318	0.2925	11	1.03	0.04	0.12
L387	1003-3	1003-2	243	0.012	442.88	442.05	0.67	344	0.3416	40	1.56	0.12	0.22
L388	1003-2	1003-1	186.32	0.012	441.95	441.39	0.67	323	0.3006	48	1.48	0.15	0.26
L389	1003-1	1004-4	419.31	0.012	441.39	439.65	0.67	379	0.415	52	1.80	0.14	0.24
L39	1014-14	1014-16	271.18	0.012	437.55	436.96	1.00	808	0.2176	1193	3.38	1.48	1.00
L390	1004-4	1004-3	424.34	0.012	439.65	436.25	0.67	527	0.8013	57	2.10	0.11	0.23
L391	1004-3	1004-2	402.32	0.012	436.25	432.85	0.67	541	0.8451	65	2.33	0.12	0.43
L392	1004-16	1004-15	281.22	0.012	442.63	440.59	0.67	501	0.7254	5	0.88	0.01	0.08
L393	1004-15	1004-14	72.25	0.012	440.59	439.95	0.67	554	0.8858	9	0.96	0.02	0.11
L394	1004-14	1004-11	249.1	0.012	439.95	438.85	0.67	391	0.4416	15	1.25	0.04	0.13
L395	1004-13	1004-12	368.09	0.012	442.95	441.45	0.67	376	0.4075	6	0.93	0.02	0.13
L396	1003-6	1003-5	106.61	0.012	444.42	443.89	0.67	415	0.4971	4	0.83	0.01	0.07
L397	1003-5	1003-2	185	0.012	443.89	441.95	0.67	603	1.0487	6	1.15	0.01	0.17
L398	1003-10	1003-9	116.42	0.012	447.25	446.81	0.67	362	0.3779	14	1.12	0.04	0.13
L399	1003-9	1003-8	321.1	0.012	446.81	445	0.67	442	0.5637	16	1.28	0.04	0.14
L40	1014-16	1014-17	219.18	0.012	436.96	436.42	1.00	860	0.2464	1224	3.47	1.42	1.00
L400	1003-8	1003-3	276.35	0.012	445	442.88	0.67	515	0.7672	25	1.24	0.05	0.19
L401	1003-7	1003-8	213.08	0.012	448.46	445	0.67	750	1.624	4	0.48	0.01	0.10
L402	1003-15	1003-14	346.02	0.012	458.58	451.16	0.67	862	2.1449	65	2.64	0.08	0.21
L403	1003-14	1003-13	353.28	0.012	451.16	448.08	0.67	549	0.8719	67	2.54	0.12	0.23
L404	1003-13	1004-12	346.05	0.012	448.08	442.48	0.67	749	1.6185	72	3.02	0.10	0.21
L405	1004-12	1004-11	260.49	0.012	441.35	440.29	0.67	375	0.4069	83	2.00	0.22	0.31
L406	1004-11	1004-7	265.05	0.012	438.67	437.62	0.67	370	0.3962	101	2.00	0.27	0.36
L407	1004-7	1004-6	365.27	0.012	437.62	436.12	0.67	377	0.4107	104	1.78	0.28	0.40
L408	1004-6	1004-8	189.13	0.012	436.12	435.63	0.67	299	0.2591	109	1.96	0.36	0.38
L409	1004-8	1004-9	98.25	0.012	435.63	434.98	0.67	479	0.6616	111	2.49	0.23	0.33
L41	1014-17	1014-5	288.39	0.012	436.42	435.84	1.00	777	0.2011	1235	3.85	1.59	0.86
L410	1004-9	1004-17	307.32	0.012	434.88	433.69	0.67	366	0.3872	111	2.01	0.30	0.38
L411	1004-17	1004-5	61.66	0.012	433.69	433.45	0.67	367	0.3892	117	1.99	0.32	0.40
L412	1004-5	1004-2	266.01	0.012	433.45	432.44	0.67	363	0.3797	131	1.80	0.36	0.71
L413	1004-2	1004-1	357.62	0.012	432.44	431.04	0.67	368	0.3915	240	1.67	0.65	1.00
L414	1004-1	1005-1	454.03	0.012	431.04	429.32	0.67	362	0.3788	487	3.16	1.35	1.00
L417	1004-10	1004-5	409.54	0.012	440.81	434.75	0.67	716	1.4799	10	1.62	0.01	0.08
L418	901-12	901-15	298.74	0.012	434.99	434.17	0.67	308	0.2745	9	0.93	0.03	0.11
L419	901-11	901-14	293.11	0.012	435.18	434.6	0.67	262	0.1979	9	0.75	0.03	0.18
L42	1013-13	1014-4	299.02	0.012	437.47	436.27	0.67	373	0.4013	17	1.04	0.05	0.18
L420	901-13	901-14	245.25	0.012	435	434.6	0.67	238	0.1631	15	0.69	0.06	0.20
L421	901-14	901-15	276.15	0.012	434.6	434.07	0.67	258	0.1919	30	1.05	0.12	0.24
L422	901-15	901-16	210.02	0.012	434.07	433.39	0.67	335	0.3238	44	1.46	0.13	0.25
L423	901-16	901-17	282.12	0.012	433.39	432.31	0.67	364	0.3828	49	1.30	0.13	0.62
L424	901-17	901-20	282.01	0.012	432.31	431.74	0.67	265	0.2021	85	0.94	0.32	1.00
L425	1004-19	901-16	72.01	0.012	433.73	433.39	0.67	404	0.4722	3	0.79	0.01	0.15

Existing System Flows, 5-year, 24-hour storm event

Input								Output					
Pipe ID	Upstream MH	Downstream MH	Length (ft)	Roughness	US Invert (ft)	DS Invert (ft)	Diameter (ft)	Full Flow (gpm)	Slope (%)	Max Flow (gpm)	Max Velocity (ft/s)	Max.Flow/Full Flow	Max.Depth/Full Depth
L426	908-8	908-9	386.47	0.012	435.5	433.5	0.67	423	0.5175	4	0.52	0.01	0.12
L427	908-9	908-10	226.75	0.012	433.5	433.15	0.67	231	0.1544	13	0.68	0.06	0.18
L428	908-10	901-21	448.32	0.012	433.15	432.36	0.67	247	0.1762	22	0.69	0.09	0.60
L429	901-21	901-20	292.08	0.012	432.36	431.74	0.67	271	0.2123	119	1.05	0.44	1.00
L43	1014-4	1014-3	34.23	0.012	436.27	436.07	0.67	450	0.5843	43	1.80	0.09	0.21
L430	901-20	1004-1	180.025	0.012	431.74	431.04	0.67	367	0.3888	245	1.61	0.67	1.00
L431	901-22	901-21	296.24	0.012	433.33	432.36	0.67	337	0.3274	26	0.80	0.08	0.59
L432	901-18	901-21	268.12	0.012	434.04	432.36	0.67	466	0.6266	10	1.36	0.02	0.55
L433	901-19	901-22	282.3	0.012	434.14	433.33	0.67	315	0.2869	9	0.94	0.03	0.15
L434	901-23	901-22	246	0.012	434.85	433.33	0.67	462	0.6179	14	0.93	0.03	0.15
L436	908-16	908-15	202.3	0.012	435.25	434.75	0.67	293	0.2472	24	0.92	0.08	0.22
L437	908-15	908-14	304	0.012	434.75	434.25	0.67	239	0.1645	32	1.06	0.13	0.25
L438	908-14	908-12	250.6	0.012	434.25	433.59	0.67	302	0.2634	39	1.24	0.13	0.26
L439	908-12	908-11	267.75	0.012	433.59	433.05	0.67	264	0.2017	42	1.21	0.16	0.27
L44	1014-2	1014-3	238.17	0.012	436.02	435.34	0.67	314	0.2855	83	1.75	0.26	0.34
L440	908-11	901-20	467.39	0.012	433.05	431.74	0.67	311	0.2803	51	0.82	0.17	0.64
L442	901-1	901-2	131.46	0.012	430.75	430.01	0.67	441	0.5629	2	0.55	0.00	0.06
L443	901-2	902-11	499.17	0.012	430.01	427.08	0.67	451	0.587	7	0.69	0.01	0.22
L444	902-11	902-10	182.46	0.012	427.08	426.33	0.67	377	0.4111	97	1.93	0.26	0.36
L445	902-10	902-8	226.08	0.012	426.33	425.57	0.67	341	0.3362	98	1.43	0.29	0.45
L446	902-8	902-6	352	0.012	425.57	424.95	0.67	247	0.1761	116	1.66	0.47	0.46
L447	902-6	902-5	289.25	0.012	424.95	423	0.67	483	0.6742	147	2.70	0.30	0.38
L448	901-5	901-6	223	0.012	427.97	426.52	0.67	474	0.6502	4	0.99	0.01	0.12
L449	901-6	902-7	320.31	0.012	426.52	425.5	0.67	332	0.3184	22	1.04	0.07	0.19
L45	1014-1	1014-2	460.18	0.012	438.88	436.02	0.67	464	0.6215	57	1.46	0.12	0.30
L450	902-7	902-6	211.44	0.012	425.5	424.95	0.67	300	0.2601	28	1.08	0.09	0.29
L451	901-7	901-8	122.15	0.012	427.5	427.08	0.67	345	0.3438	3	0.61	0.01	0.11
L452	901-8	901-6	285.02	0.012	427.08	426.52	0.67	261	0.1965	13	0.83	0.05	0.16
L453	902-13	901-8	247.52	0.012	427.56	427.08	0.67	259	0.1939	10	0.79	0.04	0.14
L454	901-3	901-4	178	0.012	430.2	429.03	0.67	477	0.6573	5	1.07	0.01	0.09
L455	901-4	902-9	496.15	0.012	429.03	426.93	0.67	526	0.4233	10	1.22	0.02	0.10
L456	902-9	902-8	155.4	0.012	426.93	425.57	0.67	778	0.8752	16	1.52	0.02	0.32
L457	908-7.5	907-8	265.09	0.012	429.42	428	0.67	431	0.5357	68	1.70	0.16	0.30
L458	907-8	902-12	127.25	0.012	428	427.68	0.67	295	0.2515	72	1.41	0.24	0.36
L459	902-12	902-11	267.27	0.012	427.68	427.08	0.67	279	0.2245	83	1.59	0.30	0.37
L46	1015-15	1014-1	468.72	0.012	441.73	438.88	0.67	459	0.6081	37	1.50	0.08	0.21
L460	907-9	907-16	224.08	0.012	430.89	429.83	0.67	405	0.4731	4	0.90	0.01	0.07
L461	907-16	908-5	58.08	0.012	429.77	429.47	0.67	423	0.5165	6	1.02	0.02	0.08
L462	908-5	908-3	281.03	0.012	429.36	428.1	0.67	394	0.4484	14	1.11	0.04	0.15
L463	908-5.5	908-5	159.11	0.012	431.16	430.45	0.67	393	0.4462	5	0.94	0.01	0.08
L464	907-10	907-11	164.35	0.012	428.8	428	0.50	190	0.4868	6	1.01	0.03	0.14
L465	907-11	907-12	88.1	0.012	428	427.7	0.67	343	0.3405	10	1.04	0.03	0.11
L466	908-3	907-12	452.4	0.012	428.05	425.99	0.67	397	0.4554	49	1.77	0.12	0.23
L467	908-4	908-3	249.02	0.012	429.65	428.1	0.67	464	0.6225	5	0.93	0.01	0.12
L468	907-14	907-15	157.47	0.012	431.04	430.07	0.50	214	0.616	7	1.15	0.03	0.13
L469	907-15	908-2	125.25	0.012	430.04	429.44	0.67	407	0.479	12	1.20	0.03	0.11
L47	1015-16	1015-15	338.09	0.012	443.23	441.83	0.67	379	0.4141	20	1.34	0.05	0.15
L470	908-2	908-3	218.28	0.012	429.35	428.1	0.67	445	0.5727	23	1.50	0.05	0.16
L471	908-1	908-2	273.66	0.012	430.89	429.39	0.50	202	0.5481	7	1.11	0.04	0.13
L472	908-26	908-17	280.09	0.012	430.3	428.7	0.67	445	0.5713	7	1.09	0.02	0.09
L473	908-17	907-18	401.12	0.012	427.7	426.15	0.67	366	0.3864	163	2.38	0.45	0.45
L474	907-18	907-17	264	0.012	426.05	425.15	0.67	344	0.3409	172	2.34	0.50	0.48

Existing System Flows, 5-year, 24-hour storm event

Input								Output					
Pipe ID	Upstream MH	Downstream MH	Length (ft)	Roughness	US Invert (ft)	DS Invert (ft)	Diameter (ft)	Full Flow (gpm)	Slope (%)	Max Flow (gpm)	Max Velocity (ft/s)	Max.Flow/Full Flow	Max.Depth/Full Depth
L475	907-17	907-13	88.41	0.012	425	424.58	0.67	406	0.4751	176	2.58	0.43	0.45
L476	907-12	907-13	256.28	0.012	425.79	424.5	0.67	417	0.5034	65	1.96	0.16	0.26
L477	907-13	907-19	399.02	0.012	422.74	420.6	0.67	431	0.5363	243	2.88	0.56	0.53
L478	907-19	907-3	254.02	0.012	420.57	416.93	0.67	704	1.4331	245	4.09	0.35	0.41
L48	1014-3	1503-1	235.14	0.012	435.23	434.6	0.67	305	0.2679	132	2.04	0.43	0.43
L480	908-20	908-19	235.31	0.012	431.5	430.52	0.67	380	0.4165	135	2.31	0.36	0.40
L481	908-19	908-18	396.01	0.012	430.32	428.72	0.67	374	0.404	139	2.30	0.37	0.41
L482	908-18	908-17	238.17	0.012	428.57	427.7	0.67	356	0.3653	150	2.08	0.42	0.47
L484	907-21	908-18	450.07	0.012	430.53	428.77	0.67	368	0.3911	5	0.90	0.01	0.12
L485	1005-3	1005-1	388.68	0.012	431.75	429.32	0.67	465	0.6252	6	1.05	0.01	0.54
L487	1005-4	1012-5	244.09	0.012	440.09	439.22	0.83	635	0.3564	698	3.34	1.10	0.82
L488	1012-5	1012-3	257.05	0.012	437.56	436.82	0.83	571	0.2879	691	2.91	1.21	1.00
L489	1012-3	1012-2	235.21	0.012	436.82	435.94	0.83	651	0.3741	672	2.98	1.03	1.00
L49	1503-1	1504-3	471.24	0.012	434.5	433.19	0.67	310	0.278	154	1.89	0.50	0.52
L490	1012-7	1012-6	382	0.012	440.67	439.11	0.67	376	0.4084	6	0.80	0.02	0.24
L491	1012-6	1012-5	319.26	0.012	439.11	437.87	0.67	367	0.3884	102	1.07	0.28	0.70
L492	1012-4	1012-3	456.03	0.012	438.82	437.02	0.67	370	0.3947	5	0.84	0.01	0.54
L493	1012-9	1011-17	501.1	0.012	438.85	437.25	0.67	332	0.3193	16	0.55	0.05	1.00
L494	1012-1	1012-2	479.11	0.012	437.82	436.04	0.67	359	0.3715	1	0.59	0.00	0.52
L496	909-5	909-4	286.19	0.012	434.2	433.36	0.83	577	0.2935	652	2.68	1.13	1.00
L497	909-4	909-3	285.08	0.012	433.36	432.59	0.83	553	0.2701	655	2.76	1.18	0.94
L498	909-3	909-2	183.7	0.012	432.59	431.96	0.83	623	0.343	655	3.28	1.05	0.76
L499	909-2	909-1	145.34	0.012	430.79	430.14	0.83	712	0.4472	646	2.92	0.91	1.00
L50	1504-3	1504-2	447.29	0.012	433.19	431.96	0.67	309	0.275	175	2.06	0.57	0.76
L500	909-1	915-10	380.06	0.012	430.14	429.07	0.83	565	0.2815	632	2.65	1.12	1.00
L501	915-10	915-8	326.6	0.012	429.07	428.17	0.83	559	0.2756	629	2.64	1.13	1.00
L502	915-8	915-6	355.11	0.012	428.17	427.18	0.83	562	0.2788	635	2.65	1.13	1.00
L503	915-6	915-4	337.82	0.012	427.18	426.22	0.83	567	0.2842	649	2.66	1.14	1.00
L504	915-4	915-3	145.89	0.012	426.22	425.81	0.83	564	0.281	674	2.94	1.20	0.95
L505	915-7	915-6	189.01	0.012	431.25	429.82	0.67	512	0.7566	17	1.50	0.03	0.12
L506	915-9	915-8	328.04	0.012	432.87	431.55	0.67	373	0.4024	8	1.00	0.02	0.09
L507	915-12	915-11	286.63	0.012	434.33	433.27	0.67	358	0.3698	5	0.69	0.01	0.10
L508	915-11	915-10	225.8	0.012	433.27	432.29	0.67	388	0.434	13	1.19	0.03	0.12
L509	916-1	916-2	372.39	0.012	435.46	434.12	0.67	353	0.3598	9	0.89	0.02	0.12
L51	1504-2	1504-1	129.4	0.012	431.91	431.56	0.67	306	0.2705	189	1.93	0.62	1.00
L510	916-2	909-1	337.48	0.012	434.12	432.1	0.67	455	0.5986	16	1.38	0.04	0.13
L512	916-4	916-3	148.17	0.012	428.21	427.65	0.67	362	0.3779	18	1.13	0.05	0.50
L513	915-19	915-15	169.19	0.012	436.23	434.95	0.67	512	0.7566	18	1.36	0.04	0.18
L515	915-18	915-15	189.13	0.012	435.75	434.95	0.67	383	0.423	13	0.91	0.03	0.18
L516	915-17	915-16	447.02	0.012	434.1	425.61	0.67	811	1.8996	24	2.50	0.03	0.56
L517	910-1	915-5	419.14	0.012	431.25	429.58	0.67	371	0.3984	9	0.75	0.03	0.13
L518	915-5	915-4	411.35	0.012	429.58	427.92	0.67	374	0.4036	19	1.32	0.05	0.15
L519	914-1	914-9	109.42	0.012	429.99	428.72	0.67	634	1.1607	9	1.46	0.01	0.08
L52	1013-2	1504-1	389.42	0.012	436.15	434.55	0.67	377	0.4109	12	1.15	0.03	0.12
L520	914-9	914-8	368.99	0.012	428.64	427.31	0.67	353	0.3604	14	1.45	0.04	0.20
L521	914-5	914-6	266.12	0.012	431.46	430.23	0.50	185	0.4622	2	0.73	0.01	0.08
L522	914-6	914-7	385.3496	0.012	430.2	428.63	0.50	174	0.4074	7	1.08	0.04	0.34
L523	415-4	415-3	350.89	0.012	426.32	424.79	0.67	389	0.436	10	1.08	0.03	0.18
L524	416-7	415-7	233.48	0.012	430.26	429.34	0.67	369	0.394	7	0.96	0.02	0.09
L525	415-7	415-6	234.01	0.012	429.14	427.48	0.67	496	0.7094	12	1.19	0.02	0.13
L526	415-6	415-5	360.02	0.012	427.48	426.05	0.67	371	0.3972	19	1.19	0.05	0.24
L527	416-3	416-2	365.01	0.012	430.26	429.08	0.67	335	0.3233	10	1.05	0.03	0.22

Existing System Flows, 5-year, 24-hour storm event

Input								Output					
Pipe ID	Upstream MH	Downstream MH	Length (ft)	Roughness	US Invert (ft)	DS Invert (ft)	Diameter (ft)	Full Flow (gpm)	Slope (%)	Max Flow (gpm)	Max Velocity (ft/s)	Max.Flow/Full Flow	Max.Depth/Full Depth
L528	416-5	416-4	421.04	0.012	431.55	430.13	0.67	342	0.3373	4	0.78	0.01	0.07
L529	416-4	416-2	263.23	0.012	430.06	429.12	0.67	352	0.3571	6	0.78	0.02	0.17
L53	1504-1	1013-1	348.28	0.012	431.56	430.59	0.67	311	0.2785	210	2.12	0.68	1.00
L530	416-2	415-8	387	0.012	429.08	427.42	0.67	385	0.4289	80	2.00	0.21	0.30
L531	415-8	415-5	381.16	0.012	427.38	426.03	0.67	350	0.3542	85	1.78	0.24	0.35
L532	415-5	415-3	284.04	0.012	426.02	424.76	0.67	392	0.4436	111	2.22	0.28	0.36
L533	415-3	415-2	284	0.012	424.7	423.3	0.67	413	0.493	129	2.37	0.31	0.38
L534	415-2	415-1	287.03	0.012	423.15	422.16	0.67	346	0.3449	140	2.22	0.41	0.42
L535	415-1	902-4	240.63	0.012	422.03	421.21	0.67	343	0.3408	154	1.93	0.45	0.51
L536	416-1	901-10	480.02	0.012	427.08	425.65	0.67	321	0.2979	13	1.08	0.04	0.13
L537	901-10	902-5	476.09	0.012	425.55	423.05	1.00	1255	0.5251	18	1.20	0.01	0.11
L538	902-5	902-4	287.01	0.012	422.95	421.31	1.00	1310	0.5714	169	2.41	0.13	0.25
L539	902-20	902-3	387.06	0.012	419.67	419.06	1.17	1038	0.1576	329	2.15	0.32	0.36
L54	1013-1	1013-3	434.17	0.012	430.54	429.31	0.67	313	0.2833	225	2.13	0.72	1.00
L541	901-9	901-10	509.02	0.012	428.18	426.2	1.00	1080	0.389	1	0.68	0.00	0.02
L542	902-3	902-2	457.74	0.012	418.85	418.05	1.33	1559	0.1748	505	2.22	0.32	0.39
L543	902-2	902-1	494.15	0.012	418.05	417.25	1.33	1500	0.1619	483	2.16	0.32	0.39
L544	902-1	907-6	502.48	0.012	417.25	416.45	1.33	1488	0.1592	467	2.05	0.31	0.39
L547	907-3	907-1	75.31	0.012	416.08	415.44	0.83	981	0.8499	246	3.34	0.25	0.34
L549	907-2	907-1	74.79	0.012	415.59	415.44	1.33	1670	0.2006	451	2.66	0.27	0.32
L55	1013-12	1013-11	112	0.012	434.85	434.65	0.67	249	0.1786	42	1.34	0.17	0.25
L552	415-11	415-2	236.05	0.012	425.83	423.79	0.67	547	0.8643	8	1.23	0.01	0.08
L553	415-15	415-1	498.26	0.012	427.92	423	0.67	585	0.9875	6	1.19	0.01	0.07
L554	415-12	416-1	239.76	0.012	429	427.5	0.67	465	0.6256	5	1.00	0.01	0.07
L555	416-6	416-1	216.23	0.012	427.5	427.08	0.67	259	0.1942	3	0.35	0.01	0.11
L557	908-29	908-21	406.06	0.012	436.05	434.45	0.67	369	0.394	89	2.02	0.24	0.32
L558	908-31	908-32	441.04	0.012	438.09	436.33	0.67	372	0.3991	6	0.95	0.02	0.09
L56	1013-11	1013-10	161	0.012	434.55	433.89	0.67	377	0.4099	50	1.74	0.13	0.24
L560	908-35	908-33	115.17	0.012	435.88	435.33	0.67	407	0.4776	12	1.20	0.03	0.11
L561	908-32	908-33	199.72	0.012	436.18	435.48	0.67	348	0.3505	15	1.18	0.04	0.14
L563	908-33	908-34	43.19	0.012	435.23	435.1	0.67	323	0.301	29	1.41	0.09	0.19
L564	908-34	908-20	243.13	0.012	432.95	431.7	0.67	422	0.5141	33	1.63	0.08	0.19
L565	908-36	908-35	255.1	0.012	437.05	436.03	0.67	372	0.3998	6	0.95	0.02	0.09
L566	908-21	908-28	301.06	0.012	434.25	433.05	0.67	371	0.3986	92	2.05	0.25	0.33
L567	908-28	908-20	303.82	0.012	432.85	431.7	0.67	362	0.3785	98	2.05	0.27	0.34
L568	908-30	908-29	129.1	0.012	436.81	436.25	0.67	388	0.4338	82	2.03	0.21	0.30
L57	1013-9	1013-10	152	0.012	434.75	433.79	0.67	468	0.6316	7	0.90	0.02	0.18
L570	908-6	908-5.5	94.19	0.012	432.23	431.2	0.50	285	1.0936	3	1.07	0.01	0.07
L571	908-7	908-7.5	238.01	0.012	431.18	429.54	0.50	226	0.6891	64	2.21	0.28	0.36
L572	901-7.5	901-7	87.05	0.012	429	427.5	0.50	358	1.7234	1	0.41	0.00	0.06
L573	902-13.5	902-13	91.01	0.012	427.86	427.56	0.67	338	0.3296	4	0.71	0.01	0.11
L575	915-15	915-25	123.15	0.012	434.95	434.454	0.67	373	0.4028	42	1.47	0.11	0.24
L576	915-25	915-14	205.06	0.012	434.45	433.57	0.67	385	0.4291	53	1.79	0.14	0.25
L577	916-9	916-8	207.54	0.012	434.09	433.25	0.67	374	0.4047	19	1.31	0.05	0.15
L578	1012-2	909-6	230.82	0.012	435.94	435.32	0.83	552	0.2686	651	2.69	1.18	1.00
L579	909-6	909-5	400.32	0.012	435.32	434.2	0.83	563	0.2798	643	2.70	1.14	1.00
L58	1013-10	1013-4	250.01	0.012	433.79	432.75	0.67	379	0.416	63	1.86	0.17	0.27
L580	1015-8	1015-7	164.05	0.012	447.51	446.85	0.67	373	0.4023	35	1.57	0.09	0.20
L581	1014-11	1015-25	490.59	0.012	442	440.05	0.67	371	0.3975	14	0.95	0.04	1.00
L585	1001-11	1007-11	321.7	0.012	496.21	480.55	0.67	1299	4.8737	9	2.40	0.01	0.06
L587	1002-19	1002-11	179.18	0.012	482.58	457.83	0.67	2197	13.9466	7	2.47	0.00	0.09
L588	1104-10	1104-9	73.93	0.012	459.63	459.59	0.67	137	0.0541	20	0.87	0.14	0.20

Existing System Flows, 5-year, 24-hour storm event

Input								Output					
Pipe ID	Upstream MH	Downstream MH	Length (ft)	Roughness	US Invert (ft)	DS Invert (ft)	Diameter (ft)	Full Flow (gpm)	Slope (%)	Max Flow (gpm)	Max Velocity (ft/s)	Max.Flow/Full Flow	Max.Depth/Full Depth
L589	1104-3	1104-9	241.2	0.012	457	456.19	0.83	617	0.3358	181	2.23	0.29	0.37
L59	1013-7	1013-8	134	0.012	438.35	437.67	0.67	419	0.5075	12	1.33	0.03	0.44
L595	415-16	902-3	118.34	0.012	419.9	419.2	0.83	818	0.5915	177	2.67	0.22	0.32
L596	415-18	415-16	477.18	0.012	420.56	420	0.83	365	0.1174	177	1.65	0.49	0.45
L597	1106-17	1106-16	133.06	0.012	518.72	509.69	0.67	1534	6.8021	3	1.91	0.00	0.03
L60	1013-8	1014-6	354.32	0.012	437.67	436.25	0.67	372	0.4008	22	1.25	0.06	0.88
L61	1014-8	1014-9	207.06	0.012	440.92	440.16	0.67	356	0.367	10	1.08	0.03	0.11
L610	214-1	1103-2	361.5	0.012	469.66	468.62	0.67	316	0.2877	2	0.55	0.01	0.08
L612	1103-2	1104-26	410.12	0.012	468.52	464.86	0.83	1005	0.8925	93	2.57	0.09	0.21
L614	214-5	214-2	87.02	0.012	477.75	472.25	0.67	1481	6.333	90	5.22	0.06	0.17
L615	214-2	1103-3	130	0.012	470.75	470.25	0.67	365	0.3846	90	2.01	0.25	0.33
L616	1103-3	1103-2	403	0.012	470.25	468.52	0.83	697	0.4293	92	2.17	0.13	0.23
L62	1014-9	1014-16	283.18	0.012	440.06	438.92	0.67	373	0.4026	18	1.28	0.05	0.25
L620	901-24	901-25	257.24	0.012	431.18	429.54	0.50	218	0.6376	3	0.86	0.01	0.07
L621	901-25	902-12	369.01	0.012	429.42	427.81	0.67	389	0.4363	7	0.98	0.02	0.14
L622	907-6	907-2	474	0.012	416.45	415.69	1.33	1493	0.1603	450	2.32	0.30	0.35
L624	1001-16	1001-15	321.16	0.012	522.86	522.24	0.67	259	0.1931	6	0.73	0.02	0.10
L627	1001-14	1001-12	248.1	0.012	516.23	512.16	0.67	754	1.6407	24	2.20	0.03	0.12
L628	1001-12	1008-19	252.14	0.012	511.96	507.23	0.67	806	1.8763	31	2.48	0.04	0.13
L629	1008-19	1008-18	30	0.012	507.13	506.97	0.67	430	0.5333	34	1.66	0.08	0.19
L629.1	1008-18	1008-15	144.85	0.012	506.73	504.5	0.67	730	1.5397	37	2.44	0.05	0.15
L63	1014-10	1014-14	280.09	0.012	442.38	441.25	0.67	374	0.4034	10	1.10	0.03	0.11
L630	1008-15	1008-14	351.44	0.012	504.3	477.26	0.67	1634	7.7169	42	4.45	0.03	0.11
L631	1008-14	1008-13	130	0.012	477.06	466.27	0.67	1698	8.3287	45	4.64	0.03	0.11
L632	1008-13	1008-12	108.12	0.012	466.07	459.2	0.67	1485	6.3669	48	4.34	0.03	0.12
L633	1008-12	1008-4	247.34	0.012	459	457.5	0.67	458	0.6065	55	1.97	0.12	0.23
L634	1001-13	1001-12	78.1	0.012	520.97	512.43	0.67	1951	11.0007	4	2.39	0.00	0.03
L636	1001-15.1	1001-15	95.34	0.012	530.16	522.24	0.67	1699	8.3359	6	2.56	0.00	0.04
L638	1109-3	1109-2	277.48	0.012	484.48	483.33	0.67	379	0.4144	147	2.36	0.39	0.42
L639	1109-2	1109-1	353.21	0.012	483.26	481.66	0.67	396	0.453	149	2.42	0.38	0.42
L64	1014-15	1014-14	199.3	0.012	439.45	438.65	0.67	373	0.4014	18	1.19	0.05	1.00
L640	1109-1	1110-9	443.65	0.012	481.56	479.96	0.67	353	0.3606	151	2.28	0.43	0.44
L641	1110-9	1110-7	222.8	0.012	479.86	478.6	0.67	442	0.5655	159	2.59	0.36	0.41
L642	1110-7	1110-6	98.95	0.012	478.5	478.16	0.67	345	0.3436	160	2.18	0.46	0.47
L643	1108-2	1108-1	276.86	0.012	532.46	530.8	0.67	456	0.5996	3	0.87	0.01	0.06
L644	1108-1	1107-5	191.85	0.012	530.7	529.6	0.67	446	0.5734	7	1.06	0.02	0.08
L645	1107-4	1107-5	241.01	0.012	529.4	523.7	0.67	905	2.3657	0	0.00	0.00	0.00
L646	1107-5	1107-6	86.15	0.012	523.3	482.55	0.67	4311	53.687	7	5.03	0.00	0.03
L647	1107-6	1110-9	135.03	0.012	482.35	479.96	0.67	783	1.7703	9	1.57	0.01	0.17
L65	1014-18	1014-4	303.37	0.012	437.85	436.41	0.67	405	0.4747	17	1.32	0.04	0.14
L655	1108-6	1108-5	121.66	0.012	573.43	558.89	0.67	2041	12.0376	139	7.42	0.07	0.18
L656	1108-5	1108-4	172.93	0.012	558.79	537.57	0.67	2069	12.3643	141	7.52	0.07	0.18
L657	1108-4	1108-3	81.15	0.012	537.47	528.32	0.67	1982	11.3478	143	7.34	0.07	0.18
L658	1108-3	1109-6	92.66	0.012	528.22	517.36	0.67	2021	11.8016	144	7.46	0.07	0.18
L659	1109-6	1109-5	161.97	0.012	517.26	499.14	0.67	1974	11.2579	145	7.35	0.07	0.18
L66	1015-14	1015-23	405.18	0.012	444.27	442.65	0.67	372	0.3998	16	1.22	0.04	0.54
L660	1109-5	1109-4	105.77	0.012	499.04	487.07	0.67	1986	11.3902	146	7.39	0.07	0.18
L661	1109-4	1109-3	87.86	0.012	486.97	484.58	0.67	971	2.7212	147	4.16	0.15	0.28
L662	1109-7	1109-3	248.09	0.012	485.6	484.58	0.67	377	0.4111	0	0.00	0.00	0.15
L667	1105-8	1105-7	204.88	0.012	542.76	527.17	0.67	1625	7.6315	2	1.82	0.00	0.03
L669	316-25	316-6	234.36	0.012	445.3	444.07	0.67	426	0.5248	8	0.92	0.02	0.40
L67	1015-23	1015-24	263.02	0.012	440.87	439.87	0.67	363	0.3802	244	2.47	0.67	1.00

Existing System Flows, 5-year, 24-hour storm event

Input								Output					
Pipe ID	Upstream MH	Downstream MH	Length (ft)	Roughness	US Invert (ft)	DS Invert (ft)	Diameter (ft)	Full Flow (gpm)	Slope (%)	Max Flow (gpm)	Max Velocity (ft/s)	Max.Flow/Full Flow	Max.Depth/Full Depth
L670	316-26	315-42	202.01	0.012	443.96	442.74	0.67	457	0.6039	8	1.14	0.02	0.09
L671	315-42	315-24	181.02	0.012	442.54	440.78	0.67	580	0.9723	15	1.57	0.03	0.11
L674	1005-1	1005-5	63.39	0.012	429.32	428.95	0.67	450	0.5837	524	3.64	1.17	1.00
L68	1010-10	1015-30	189.26	0.012	449.67	444.35	0.67	987	2.8121	24	2.64	0.02	0.11
L69	1015-30	1015-29	163.08	0.012	444.26	443.62	0.67	369	0.3924	31	1.50	0.08	0.53
L70	1015-29	1015-28	80.02	0.012	440.5	440.3	1.00	866	0.2499	842	3.25	0.97	1.00
L700	1001-09	1001-9	196	0.012	495.14	492.31	0.67	706	1.444	0	0.00	0.00	0.00
L701	916-06	916-05	150	0.012	431	429.9	0.67	503	0.7334	0	0.00	0.00	0.00
L703	1002-09	1002-10	290	0.012	509.06	491.33	0.67	1454	6.1253	0	0.00	0.00	0.50
L704	1111-17	1111-12	166.2221	0.012	464.51	460.4	0.67	901	2.3529	0	0.00	0.00	0.15
L705	315-05	315-7	386	0.012	441.46	441.09	0.67	182	0.0959	0	0.00	0.00	0.00
L706	316-26	316-25	280.0643	0.012	446.92	446.39	0.67	256	0.1892	0	0.00	0.00	0.00
L707	1008-18.5	1008-5	850.178	0.012	458.09	412.83	0.67	53	0.0082	1	0.12	0.01	0.14
L708	1103-01	1104-20	293.4226	0.012	490.21	488.78	0.67	410	0.4874	0	0.00	0.00	0.00
L709	1105-09	1112-3	314.8051	0.012	463.49	461.7	0.67	443	0.5686	0	0.00	0.00	0.25
L71	1015-28	1015-27	24.7	0.012	439.83	439.78	1.00	779	0.2024	851	2.41	1.09	1.00
L712	1008-13.5	1008-12.5	168	0.012	463.97	463.03	0.67	440	0.5595	0	0.00	0.00	0.00
L713	1008-12.5	1009-20	169	0.012	463.03	462.44	0.67	347	0.3491	0	0.00	0.00	0.00
L714	1009-20	1009-19	183.6594	0.012	462.44	460.75	0.67	564	0.9202	0	0.00	0.00	0.00
L715	1009-21	1009-23	11.8002	0.012	456.43	455.99	0.67	1135	3.7313	1	0.02	0.00	0.47
L716	1009-19	1009-21	280.5499	0.012	460.75	456.43	0.67	729	1.54	0	0.00	0.00	0.07
L717	416-16	416-08	371.1892	0.012	425.96	419.5	0.67	775	1.7406	0	0.00	0.00	0.00
L718	416-08	416-09	250	0.012	419.4	418.22	0.67	404	0.472	0	0.00	0.00	0.00
L719	416-15	416-08	258	0.012	420.62	419.5	0.67	387	0.4341	0	0.00	0.00	0.00
L72	1015-27	1015-25	162	0.012	439.78	439.49	1.00	733	0.179	856	2.53	1.17	1.00
L720	416-09	JCT_12	403.5831	0.012	418.03	415.68	0.67	435	0.5476	0	0.00	0.00	0.48
L721	1001-18	1001-24	146	0.012	523.6	514.67	0.67	1455	6.1279	0	0.00	0.00	0.00
L723	1104-23	1104-20	131.6296	0.012	501.5	488.78	0.67	1831	9.7089	0	0.00	0.00	0.00
L724	1104-16	1104-17	271	0.012	537.41	533.34	0.67	672	1.3064	0	0.00	0.00	0.01
L725	1106-04	1106-3	265.706	0.012	562.74	552.13	0.67	1175	3.9963	0	0.00	0.00	0.00
L726	315-04	315-05	150	0.012	441.5	441.46	0.67	96	0.0267	0	0.00	0.00	0.00
L727	1111-18	1111-20	209	0.012	471.31	470.25	0.67	418	0.5072	0	0.00	0.00	0.00
L728	316-30	JCT_122	270.9461	0.012	450.23	449.28	0.67	348	0.3506	0	0.00	0.00	0.00
L729	316-31	316-30	145	0.012	451.31	451	0.67	272	0.2138	0	0.00	0.00	0.00
L73	1015-25	1015-24	281.86	0.012	439.49	438.78	1.00	869	0.2519	885	2.51	1.02	1.00
L730	316-32	316-30	358	0.012	452.08	451	0.67	323	0.3017	0	0.00	0.00	0.00
L731	916-10	916-1	131.5766	0.012	438.5	435.46	0.67	893	2.3111	0	0.00	0.00	0.05
L732	1111-19	1111-22	208	0.012	469.95	469.21	0.67	350	0.3558	0	0.00	0.00	0.00
L733	1111-22	1111-21	354	0.012	469.16	468.01	0.67	335	0.3249	0	0.00	0.00	0.00
L734	316-33	316-32	234	0.012	457.2	452	0.67	869	2.1886	0	0.00	0.00	0.00
L736	1108-01	1108-6	76	0.012	580.11	573.6	0.67	1723	8.5974	0	0.00	0.00	0.00
L737	1001-24	1104-28	246.8348	0.012	514.47	513.13	0.67	433	0.5429	0	0.00	0.00	0.00
L738	1004-22	1004-1	338.2601	0.012	439.51	439	0.67	228	0.1508	0	0.00	0.00	0.00
L739	1008-16	1008-15	26.8718	0.012	507.13	506.97	0.67	453	0.5954	0	0.00	0.00	0.00
L74	1015-22	1015-21	67.78	0.012	443.89	443.68	0.67	327	0.3098	9	0.98	0.03	0.11
L740	1011-22	1011-19	273.155	0.012	440.11	439.17	0.67	345	0.3441	9	0.08	0.03	1.00
L741	KA2	KA1	229	0.012	469.83	468.91	0.67	372	0.4018	0	0.00	0.00	0.00
L742	KA1	KA3	113	0.012	468.71	468.26	0.67	371	0.3982	0	0.00	0.00	0.00
L743	KA3	1112-4	350.9022	0.012	468.16	466.33	0.67	422	0.5158	0	0.00	0.00	0.27
L744	1105-11	1105-10	239.9	0.012	470.95	465.68	0.67	871	2.1973	0	0.00	0.00	0.00
L745	1105-12	1105-10	24	0.012	465.65	465.55	0.67	208	0.125	0	0.00	0.00	0.00
L746	1105-10	1105-13	126	0.012	465.68	464.09	0.67	660	1.262	0	0.00	0.00	0.00

Existing System Flows, 5-year, 24-hour storm event

Input								Output					
Pipe ID	Upstream MH	Downstream MH	Length (ft)	Roughness	US Invert (ft)	DS Invert (ft)	Diameter (ft)	Full Flow (gpm)	Slope (%)	Max Flow (gpm)	Max Velocity (ft/s)	Max.Flow/Full Flow	Max.Depth/Full Depth
L747	1105-13	1105-09	83	0.012	463.99	463.59	0.67	408	0.4819	0	0.00	0.00	0.00
L748	1111-21	1111-5	120	0.012	467.73	467.41	0.67	303	0.2667	0	0.00	0.00	0.00
L749	1111-20	1111-22	322	0.012	470.25	469.21	0.67	334	0.323	0	0.00	0.00	0.00
L75	1015-21	1015-20	220.33	0.012	443.58	442.45	0.67	421	0.5129	19	1.39	0.05	0.57
L750	KA6	1111-20	149	0.012	471	470.25	0.67	417	0.5034	0	0.00	0.00	0.00
L751	KA5	1504-3	120.2805	0.012	434.23	434.19	0.67	107	0.0333	0	0.00	0.00	0.00
L752	KA8	1013-7	165.8975	0.012	441	440.61	0.67	285	0.2351	0	0.00	0.00	0.00
L753	915-20	915-17	162.7238	0.012	434.75	434.1	0.67	371	0.3995	0	0.00	0.00	0.06
L754	915-21	915-19	97.8681	0.012	436.62	436.23	0.67	371	0.3985	0	0.00	0.00	0.06
L755	1011-20	1011-2	177.9001	0.012	442.79	439.01	0.67	857	2.1253	0	0.00	0.00	0.50
L756	1002-10	1002-13	180	0.012	490.14	482.4	0.67	783	1.7781	7	0.95	0.01	0.56
L757	1001-10	1002-09	275	0.012	515.15	514.41	0.67	370	0.3964	0	0.00	0.00	0.00
L758	1001-26	1001-7	200	0.012	505.41	501.27	0.67	845	2.0704	0	0.00	0.00	0.00
L759	1001-15.5	1001-16	105.1129	0.012	523.35	522.96	0.67	358	0.371	0	0.00	0.00	0.00
L76	1015-20	1015-23	147.28	0.012	441.47	440.87	0.67	376	0.4074	219	2.24	0.58	1.00
L760	1001-14.5	1001-15.5	145	0.012	524.03	523.45	0.67	372	0.4	0	0.00	0.00	0.00
L761	416-12	416-15	369	0.012	425.03	424	0.67	310	0.2791	0	0.00	0.00	0.00
L762	416-14	416-15	262	0.012	421.94	421	0.67	352	0.3588	0	0.00	0.00	0.00
L763	416-13	416-14	365	0.012	423.54	422.5	0.67	314	0.2849	0	0.00	0.00	0.00
L765	901-09	901-9	56.5971	0.012	429.02	427.93	1.00	2111	1.4843	0	0.00	0.00	0.01
L766	901-24.5	901-09	15.3601	0.012	429.96	429.1	1.00	4102	5.6077	0	0.00	0.00	0.00
L767	KA7	916-06	10	0.012	433	432	0.67	1863	10.0504	0	0.00	0.00	0.00
L768	1111-23	1111-11	80.981	0.012	463	459.4	1.00	3654	4.4499	0	0.00	0.00	0.00
L769	1009-23	1009-24	6.2348	0.012	455.24	455.22	0.67	333	0.3208	3	0.40	0.01	0.81
L77	1015-26	1015-25	169	0.012	442.61	441.91	0.67	379	0.4142	10	0.95	0.03	1.00
L770	1004-25	1004-9	77	0.012	435.73	435	0.83	1037	0.9481	0	0.00	0.00	0.08
L771	KA9	1108-01	8	0.012	581	580.4	0.67	1611	7.5212	0	0.00	0.00	0.00
L772	KA10	1108-01	5	0.012	581	580.4	0.67	2043	12.0873	0	0.00	0.00	0.00
L773	313-18	313-17	132	0.012	439.5	439.15	0.67	303	0.2652	0	0.00	0.00	0.00
L774	313-17	313-16	305	0.012	436.29	435	0.67	382	0.423	0	0.00	0.00	0.00
L775	313-19	313-16	431	0.012	437.04	435	0.67	404	0.4733	0	0.00	0.00	0.00
L776	313-16	JCT_34	241	0.012	434.67	434	0.67	310	0.278	0	0.00	0.00	0.00
L777	313-09	JCT_34	301	0.012	435.46	434	0.67	409	0.4851	0	0.00	0.00	0.00
L78	1015-1	1015-18	247.24	0.012	443.63	442.65	0.67	370	0.3964	62	1.43	0.17	0.64
L781	313-20	313-17	122	0.012	439.5	439.15	0.67	315	0.2869	0	0.00	0.00	0.00
L782	908-13.5	908-12	173.2305	0.012	436.64	436.13	0.67	319	0.2944	0	0.00	0.00	0.00
L783	KA4	1012-8	302.6928	0.012	445.27	444.82	0.67	227	0.1487	0	0.00	0.00	0.00
L79	1015-4	1015-10	150	0.012	445.34	444.73	0.67	375	0.4067	9	1.06	0.02	0.10
L80	1015-10	1015-18	122	0.012	444.07	443.59	0.67	369	0.3934	63	1.85	0.17	0.27
L81	1015-18	1015-20	277.18	0.012	442.59	441.47	0.67	374	0.4041	154	1.90	0.41	1.00
L82	1015-19	1015-18	158.03	0.012	445.21	444.15	0.67	482	0.6708	15	1.40	0.03	0.12
L83	1015-12	1015-13	128.04	0.012	445.5	445	0.67	368	0.3905	12	0.87	0.03	0.17
L84	1015-13	1015-17	275.02	0.012	445	444.31	0.67	295	0.2509	29	1.18	0.10	0.21
L85	1015-17	1015-20	244.07	0.012	444.31	443.25	0.67	388	0.4343	40	1.64	0.10	0.28
L86	1015-2	1015-1	124	0.012	444.65	444.16	0.67	370	0.3952	38	1.59	0.10	0.21
L87	1015-11	1015-1	111	0.012	445.59	445.15	0.67	370	0.3964	12	1.15	0.03	0.12
L88	1011-19	1011-18	356.36	0.012	439.17	437.75	0.67	371	0.3985	16	1.05	0.04	1.00
L89	1011-2	1011-2.1	140.13	0.012	438.5	438	0.67	351	0.3568	14	0.84	0.04	1.00
L9	914-2	914-3	245.1	0.012	419.16	418.36	0.67	336	0.3264	15	0.96	0.04	0.15
L90	1011-2.1	1011-1	214.39	0.012	438	437.48	0.67	290	0.2425	26	1.04	0.09	1.00
L91	1016-6	1016-5	220.02	0.012	446.08	445.59	0.67	278	0.2227	19	0.90	0.07	0.22
L92	1016-5	1015-9	166.47	0.012	445.59	445.15	0.67	302	0.2643	39	1.44	0.13	0.23

Existing System Flows, 5-year, 24-hour storm event

Input								Output					
Pipe ID	**Upstream MH**	**Downstream MH**	**Length (ft)**	**Roughness**	**US Invert (ft)**	**DS Invert (ft)**	**Diameter (ft)**	**Full Flow (gpm)**	**Slope (%)**	**Max Flow (gpm)**	**Max Velocity (ft/s)**	**Max.Flow/Full Flow**	**Max.Depth/Full Depth**
L93	1015-9	1015-10	245.2	0.012	445.07	444.07	0.67	376	0.4078	49	1.48	0.13	0.26
L94	1016-4	1015-3	306.03	0.012	447	445.9	0.67	353	0.3594	17	1.20	0.05	0.16
L95	1015-3	1015-2	310.16	0.012	445.9	444.65	0.67	374	0.403	26	1.16	0.07	0.20
L96	1015-35	1015-34	154.03	0.012	443.7	443.1	0.67	367	0.3895	12	1.06	0.03	1.00
L97	1009-5	1016-3	263.12	0.012	449.85	449.26	1.00	820	0.2242	604	2.88	0.74	0.58
L98	1016-3	1016-2	317.19	0.012	446.29	445.57	1.00	825	0.227	609	2.51	0.74	0.65
L99	1016-2	1015-7	252.16	0.012	445.57	445.02	1.00	809	0.2181	624	2.46	0.77	0.85

20 YEAR PROJECTED
SYSTEM FLOWS

20-Year Projected System Flows, 5-year, 24-hour storm event

Input				Output					
Manhole ID	Invert Elev.	Rim Elev.	DWF Pattern	Max Depth (ft)	Max HGL (ft)	Freeboard (ft)	Max Inflow (gpm)	Total Flood Vol. (MG)	Time Flooded (hrs)
1001-09	495.14	500.64	-	0	495.1	5.5	0.0	0	0.00
1001-1	468.95	474.95	FM_6	0.0765	469.0	5.9	16.5	0	0.00
1001-10	515.50	520.54	-	0	515.5	5.0	0.0	0	0.00
1001-11	496.21	501.25	FM_3	0.0402	496.3	5.0	9.3	0	0.00
1001-12	511.96	518.16	FM_3	0.0899	512.0	6.1	31.4	0	0.00
1001-13	520.97	526.97	FM_3	0.0215	521.0	6.0	3.6	0	0.00
1001-14	516.23	522.34	FM_3	0.0818	516.3	6.0	24.1	0	0.00
1001-14.5	524.03	529.00	-	0	524.0	5.0	0.0	0	0.00
1001-15	522.04	530.11	FM_3	0.0725	522.1	8.0	17.7	0	0.00
1001-15.1	530.16	536.16	FM_3	0.0296	530.2	6.0	6.4	0	0.00
1001-15.5	516.78	529.00	-	0	516.8	12.2	0.0	0	0.00
1001-16	522.86	528.86	FM_3	0.0856	522.9	5.9	6.4	0	0.00
1001-18	523.60	531.89	-	0	523.6	8.3	0.0	0	0.00
1001-2	463.75	468.75	FM_6	0.1566	463.9	4.8	44.5	0	0.00
1001-24	514.47	525.75	-	0	514.5	11.3	0.0	0	0.00
1001-26	505.41	508.00	-	0	505.4	2.6	0.0	0	0.00
1001-3	462.25	468.75	FM_6	0.1838	462.4	6.3	56.0	0	0.00
1001-4	484.66	490.75	FM_6	0.0378	484.7	6.1	4.9	0	0.00
1001-5	480.34	487.25	FM_6	0.0573	480.4	6.9	21.4	0	0.00
1001-6	488.75	498.79	FM_6	0.0426	488.8	10.0	9.9	0	0.00
1001-7	496.77	506.77	FM_6	0.0458	496.8	10.0	11.5	0	0.00
1001-8	491.44	501.44	FM_6	0.0469	491.5	10.0	13.2	0	0.00
1001-9	492.00	502.00	FM_6	0.0435	492.0	10.0	4.9	0	0.00
1002-09	509.06	515.08	-	0	509.1	6.0	0.0	0	0.00
1002-1	449.35	454.25	FM_3	4.9	454.3	0.0	59.0	0.1168	53.78
1002-10	490.14	497.20	-	3.3551	493.5	3.7	6.6	0	0.00
1002-11	457.83	459.45	FM_3	0.0928	457.9	1.5	34.6	0	0.00
1002-12	500.15	507.23	FM_1	0.0408	500.2	7.0	4.3	0	0.00
1002-13	493.34	498.55	FM_4	0.0855	493.4	5.1	59.6	0	0.00
1002-14	472.14	482.04	FM_4	0.1195	472.3	9.8	60.3	0	0.00
1002-15	450.95	454.55	FM_3	3.6	454.6	0.0	24.2	0.0056	25.00
1002-19	482.58	487.65	FM_3	0.0267	482.6	5.0	6.5	0	0.00
1002-2	451.52	456.15	FM_4	0.0411	451.6	4.6	1.3	0	0.00
1002-3	450.40	457.15	FM_4	0.0513	450.5	6.7	5.0	0	0.00
1002-4	450.75	469.58	FM_4	1.2756	452.0	17.6	1.3	0	0.00
1002-5	496.25	501.20	FM_3	0.0603	496.3	4.9	13.6	0	0.00

20-Year Projected System Flows, 5-year, 24-hour storm event

Input				Output					
Manhole ID	Invert Elev.	Rim Elev.	DWF Pattern	Max Depth (ft)	Max HGL (ft)	Freeboard (ft)	Max Inflow (gpm)	Total Flood Vol. (MG)	Time Flooded (hrs)
1002-6	489.92	496.80	FM_3	0.0471	490.0	6.8	21.4	0	0.00
1002-7	468.92	474.30	FM_3	0.0787	469.0	5.3	47.0	0	0.00
1002-8	453.58	459.75	FM_3	1.5306	455.1	4.6	53.5	0	0.00
1003-1	441.39	449.15	FM_4	0.1706	441.6	7.6	51.5	0	0.00
1003-10	447.25	451.50	FM_4	0.0896	447.3	4.2	13.8	0	0.00
1003-11	447.53	452.00	FM_4	0.0891	447.6	4.4	12.6	0	0.00
1003-12	448.50	453.00	FM_4	0.0708	448.6	4.4	8.8	0	0.00
1003-13	448.08	453.05	FM_4	0.1399	448.2	4.8	72.1	0	0.00
1003-14	451.16	456.15	FM_4	0.1613	451.3	4.8	67.4	0	0.00
1003-15	458.58	463.55	FM_4	0.1239	458.7	4.8	65.0	0	0.00
1003-16	467.93	475.22	FM_4	0.1101	468.0	7.2	62.6	0	0.00
1003-2	441.95	450.16	FM_4	0.1745	442.1	8.0	47.8	0	0.00
1003-3	442.88	450.65	FM_4	0.1597	443.0	7.6	40.2	0	0.00
1003-4	444.58	452.75	FM_4	0.0933	444.7	8.1	11.3	0	0.00
1003-5	443.89	448.75	FM_4	0.0479	443.9	4.8	6.3	0	0.00
1003-6	444.42	448.63	FM_4	0.0449	444.5	4.2	3.8	0	0.00
1003-7	448.16	455.17	FM_4	0.3339	448.5	6.7	3.8	0	0.00
1003-8	445.00	450.44	FM_4	0.1002	445.1	5.3	25.1	0	0.00
1003-9	446.81	451.29	FM_4	0.0876	446.9	4.4	16.3	0	0.00
1004-1	431.04	443.75	FM_4	1.8982	432.9	10.8	473.4	0	0.00
1004-10	440.81	444.55	FM_4	0.0553	440.9	3.7	10.1	0	0.00
1004-11	438.67	445.75	FM_4	0.2376	438.9	6.8	100.7	0	0.00
1004-12	441.35	448.25	FM_4	0.2168	441.6	6.7	82.8	0	0.00
1004-13	442.95	447.25	FM_4	0.06	443.0	4.2	6.3	0	0.00
1004-14	439.95	444.75	FM_4	0.0915	440.0	4.7	15.1	0	0.00
1004-15	440.59	445.21	FM_4	0.0585	440.6	4.6	8.8	0	0.00
1004-16	442.63	446.42	FM_4	0.047	442.7	3.7	5.0	0	0.00
1004-17	433.69	441.97	FM_4	0.2594	433.9	8.0	117.5	0	0.00
1004-19	433.73	440.65	FM_4	0.0376	433.8	6.9	2.5	0	0.00
1004-2	432.44	441.35	FM_4	0.8269	433.3	8.1	201.4	0	0.00
1004-22	439.51	447.86	-	0	439.5	8.3	0.0	0	0.00
1004-25	435.73	442.42	-	0	435.7	6.7	0.0	0	0.00
1004-3	436.25	443.05	FM_4	0.1565	436.4	6.6	65.4	0	0.00
1004-4	439.65	446.45	FM_4	0.1476	439.8	6.7	56.6	0	0.00
1004-5	433.45	440.85	FM_4	0.2773	433.7	7.1	131.1	0	0.00
1004-6	436.12	442.95	FM_4	0.2941	436.4	6.5	109.0	0	0.00

20-Year Projected System Flows, 5-year, 24-hour storm event

Input				Output					
Manhole ID	Invert Elev.	Rim Elev.	DWF Pattern	Max Depth (ft)	Max HGL (ft)	Freeboard (ft)	Max Inflow (gpm)	Total Flood Vol. (MG)	Time Flooded (hrs)
1004-7	437.62	444.35	FM_4	0.2398	437.9	6.5	104.3	0	0.00
1004-8	435.63	442.75	FM_4	0.219	435.8	6.9	111.4	0	0.00
1004-9	434.88	441.65	-	0.2524	435.1	6.5	111.4	0	0.00
1005-1	429.32	442.65	FM_4	2.4698	431.8	10.9	497.6	0	0.00
1005-3	431.75	443.39	FM_4	0.0543	431.8	11.6	6.3	0	0.00
1005-4	440.09	445.05	-	0.8017	440.9	4.2	701.4	0	0.00
1006-1	442.10	450.85	FM_3	6.0991	448.2	2.7	147.1	0	0.00
1006-10	444.75	452.25	FM_3	3.621	448.4	3.9	27.6	0	0.00
1006-11	445.83	450.95	FM_3	2.4602	448.3	2.7	10.6	0	0.00
1006-12	446.00	453.58	FM_3	2.3589	448.4	5.2	37.8	0	0.00
1006-13	444.33	451.71	FM_3	4.0165	448.3	3.4	83.6	0	0.00
1006-14	444.75	450.72	FM_3	3.5722	448.3	2.4	12.0	0	0.00
1006-2	443.24	451.05	FM_3	5.0474	448.3	2.8	137.1	0	0.00
1006-3	445.69	450.65	FM_3	2.5797	448.3	2.4	8.5	0	0.00
1006-4	444.55	450.25	FM_3	3.7242	448.3	2.0	46.0	0	0.00
1006-5	446.31	448.21	FM_3	1.9	448.2	0.0	42.2	0.0246	24.65
1006-6	447.84	450.69	FM_3	0.3816	448.2	2.5	14.8	0	0.00
1006-7	446.25	454.75	FM_3	2.0862	448.3	6.4	7.9	0	0.00
1006-8	445.25	452.85	FM_3	3.1117	448.4	4.5	22.9	0	0.00
1006-9	449.29	453.54	FM_3	0.0547	449.3	4.2	10.6	0	0.00
1007-1	446.55	455.45	FM_3	7.7948	454.3	1.1	209.2	0	0.00
1007-10	454.17	460.25	FM_3	0.9299	455.1	5.2	18.5	0	0.00
1007-11	477.85	484.35	FM_3	0.0501	477.9	6.4	17.4	0	0.00
1007-12	455.41	459.25	FM_3	0.0769	455.5	3.8	10.6	0	0.00
1007-13	455.13	459.93	FM_3	0.0604	455.2	4.7	6.5	0	0.00
1007-14	455.15	459.25	FM_3	1.5987	456.7	2.5	9.1	0	0.00
1007-15	453.58	460.25	FM_3	3.1595	456.7	3.5	18.6	0	0.00
1007-16	453.54	458.75	FM_3	2.7759	456.3	2.4	9.1	0	0.00
1007-17	452.20	459.45	FM_3	4.1234	456.3	3.1	20.8	0	0.00
1007-18	452.48	457.45	FM_3	3.3549	455.8	1.6	10.4	0	0.00
1007-19	451.05	457.05	FM_3	4.7928	455.8	1.2	29.1	0	0.00
1007-2	447.68	455.45	FM_3	6.9107	454.6	0.9	188.8	0	0.00
1007-3	449.75	457.55	FM_3	4.9944	454.7	2.8	145.4	0	0.00
1007-4	449.18	454.85	FM_3	5.4191	454.6	0.3	37.9	0	0.00
1007-5	445.25	454.75	FM_3	8.9008	454.2	0.6	218.1	0	0.00
1007-6	448.25	455.25	COMMERCIAL	6.0812	454.3	0.9	55.2	0	0.00

20-Year Projected System Flows, 5-year, 24-hour storm event

Input				Output					
Manhole ID	Invert Elev.	Rim Elev.	DWF Pattern	Max Depth (ft)	Max HGL (ft)	Freeboard (ft)	Max Inflow (gpm)	Total Flood Vol. (MG)	Time Flooded (hrs)
1007-7	451.04	457.25	FM_3	3.8936	454.9	2.3	141.6	0	0.00
1007-8	451.94	457.15	FM_3	3.101	455.0	2.1	130.0	0	0.00
1007-9	453.03	457.85	FM_3	2.0436	455.1	2.8	68.2	0	0.00
1008-1	454.75	461.45	FM_3	2.4774	457.2	4.2	160.7	0	0.00
1008-10	501.25	505.75	COMMERCIAL	0.0784	501.3	4.4	53.6	0	0.00
1008-12	459.00	466.95	FM_3	0.1555	459.2	7.8	54.7	0	0.00
1008-12.5	463.03	465.00	-	0	463.0	2.0	0.0	0	0.00
1008-13	466.07	473.49	FM_3	0.0825	466.2	7.3	48.3	0	0.00
1008-13.5	463.97	466.00	-	0	464.0	2.0	0.0	0	0.00
1008-14	477.06	484.30	FM_3	0.0744	477.1	7.2	44.6	0	0.00
1008-15	504.30	513.59	FM_3	0.0739	504.4	9.2	42.4	0	0.00
1008-16	507.13	515.22	-	0	507.1	8.1	0.0	0	0.00
1008-18	506.73	514.38	FM_3	0.1025	506.8	7.5	37.3	0	0.00
1008-18.5	458.09	488.00	-	0.1307	458.2	29.8	0.6	0	0.00
1008-19	507.13	515.17	FM_3	0.1263	507.3	7.9	33.7	0	0.00
1008-2	456.11	461.35	FM_3	1.3369	457.4	3.9	156.4	0	0.00
1008-3	457.00	461.65	FM_3	0.4792	457.5	4.2	73.8	0	0.00
1008-4	457.00	462.20	FM_3	0.5207	457.5	4.7	66.0	0	0.00
1008-5	458.16	463.00	FM_3	0.0606	458.2	4.8	7.7	0	0.00
1008-6	458.99	463.85	FM_3	0.1892	459.2	4.7	73.6	0	0.00
1008-7	460.94	465.81	FM_3	0.1558	461.1	4.7	65.9	0	0.00
1008-8	461.25	467.55	FM_3	0.2083	461.5	6.1	59.5	0	0.00
1008-9	488.75	492.85	FM_3	0.0702	488.8	4.0	56.3	0	0.00
1009-1	450.36	456.25	FM_1	0.5558	450.9	5.3	470.7	0	0.00
1009-10	454.59	462.05	FM_3	2.4102	457.0	5.0	19.3	0	0.00
1009-11	456.67	461.65	FM_3	0.3311	457.0	4.6	9.1	0	0.00
1009-12	452.65	461.95	FM_3	4.3625	457.0	4.9	188.6	0	0.00
1009-13	456.95	461.95	FM_3	0.0473	457.0	5.0	5.0	0	0.00
1009-14	460.85	465.85	FM_1	0.0574	460.9	4.9	6.7	0	0.00
1009-15	456.14	464.55	FM_1	1.2407	457.4	7.2	447.1	0	0.00
1009-16	454.57	461.15	FM_1	0.4099	455.0	6.2	452.1	0	0.00
1009-17	452.35	458.15	FM_1	0.4124	452.8	5.4	456.5	0	0.00
1009-18	451.14	455.30	FM_1	0.3016	451.4	3.9	152.7	0	0.00
1009-19	460.75	464.84	-	0	460.8	4.1	0.0	0	0.00
1009-2	452.21	457.25	FM_1	0.0772	452.3	5.0	9.7	0	0.00
1009-20	462.44	466.32	-	0	462.4	3.9	0.0	0	0.00

20-Year Projected System Flows, 5-year, 24-hour storm event

Input				Output					
Manhole ID	Invert Elev.	Rim Elev.	DWF Pattern	Max Depth (ft)	Max HGL (ft)	Freeboard (ft)	Max Inflow (gpm)	Total Flood Vol. (MG)	Time Flooded (hrs)
1009-21	456.43	464.64	-	0.11	456.5	8.1	1.3	0	0.00
1009-23	455.99	464.56	-	0.5499	456.5	8.0	3.2	0	0.00
1009-24	455.97	464.00	-	0.5697	456.5	7.5	447.6	0	0.00
1009-3	454.69	459.55	FM_1	0.047	454.7	4.8	5.2	0	0.00
1009-4	455.40	458.05	FM_1	0.0281	455.4	2.6	1.5	0	0.00
1009-5	449.85	455.45	FM_1	0.6749	450.5	4.9	624.6	0	0.00
1009-6	449.75	454.05	FM_1	0.0682	449.8	4.2	11.2	0	0.00
1009-7	450.69	455.25	FM_1	0.0553	450.7	4.5	5.2	0	0.00
1009-8	453.89	457.85	FM_1	0.0222	453.9	3.9	1.5	0	0.00
1009-9	455.51	459.75	FM_3	1.5167	457.0	2.7	5.6	0	0.00
1010-1	452.25	457.85	FM_2	0.0723	452.3	5.5	20.7	0	0.00
1010-10	449.67	455.85	FM_2	0.0716	449.7	6.1	24.0	0	0.00
1010-11	451.04	455.55	FM_2	0.0913	451.1	4.4	13.6	0	0.00
1010-12	451.35	456.75	FM_3	3.0292	454.4	2.4	13.8	0	0.00
1010-13	447.08	457.65	FM_3	7.2984	454.4	3.3	318.3	0	0.00
1010-14	443.96	456.45	FM_3	9.9854	453.9	2.5	499.1	0	0.00
1010-15	448.51	457.15	FM_3	6.6391	455.1	2.0	312.4	0	0.00
1010-16	449.33	457.45	FM_3	6.4945	455.8	1.6	308.7	0	0.00
1010-17	450.29	457.55	FM_3	6.0211	456.3	1.2	260.0	0	0.00
1010-18	451.55	459.45	FM_3	5.1847	456.7	2.7	223.4	0	0.00
1010-19	453.25	460.55	FM_3	3.4888	456.7	3.8	13.3	0	0.00
1010-2	454.33	459.35	FM_2	0.0742	454.4	4.9	10.4	0	0.00
1010-20	453.15	458.95	FM_3	2.6862	455.8	3.1	24.1	0	0.00
1010-21	452.47	457.95	FM_3	3.8412	456.3	1.6	13.3	0	0.00
1010-22	452.67	458.15	FM_3	3.6412	456.3	1.8	3.9	0	0.00
1010-23	454.28	459.45	FM_3	2.4754	456.8	2.7	7.5	0	0.00
1010-24	454.80	459.35	-	1.9474	456.7	2.6	2.9	0	0.00
1010-25	453.95	459.75	FM_4	0.0451	454.0	5.8	6.8	0	0.00
1010-26	448.62	452.95	FM_2	0.129	448.7	4.2	22.0	0	0.00
1010-3	451.65	456.95	FM_2	0.0721	451.7	5.2	19.1	0	0.00
1010-4	454.06	459.25	FM_2	0.0672	454.1	5.1	10.4	0	0.00
1010-5	450.65	455.65	FM_2	0.0839	450.7	4.9	28.5	0	0.00
1010-6	448.63	454.55	FM_2	0.1119	448.7	5.8	38.1	0	0.00
1010-7	452.36	457.85	FM_2	0.1064	452.5	5.4	26.1	0	0.00
1010-8	452.86	458.25	FM_2	0.0898	452.9	5.3	13.6	0	0.00
1010-9	453.03	457.05	FM_2	0.0599	453.1	4.0	5.4	0	0.00

20-Year Projected System Flows, 5-year, 24-hour storm event

Input				Output					
Manhole ID	Invert Elev.	Rim Elev.	DWF Pattern	Max Depth (ft)	Max HGL (ft)	Freeboard (ft)	Max Inflow (gpm)	Total Flood Vol. (MG)	Time Flooded (hrs)
1011-1	436.00	444.05	FM_2	6.3578	442.4	1.7	788.7	0	0.00
1011-10	440.32	452.25	FM_3	7.7745	448.1	4.2	653.7	0	0.00
1011-11	442.15	453.45	FM_3	8.2854	450.4	3.0	507.7	0	0.00
1011-12	449.27	454.15	FM_3	0.0932	449.4	4.8	15.4	0	0.00
1011-13	448.03	455.95	FM_3	0.1218	448.2	7.8	25.6	0	0.00
1011-14	446.65	452.85	FM_3	0.1653	446.8	6.0	48.5	0	0.00
1011-15	450.38	455.35	FM_3	0.0721	450.5	4.9	11.5	0	0.00
1011-16	445.96	452.15	FM_3	0.1502	446.1	6.0	94.5	0	0.00
1011-17	436.73	444.75	FM_3	6.6122	443.3	1.4	764.1	0	0.00
1011-18	435.20	443.85	FM_2	5.9242	441.1	2.7	816.1	0	0.00
1011-19	439.17	444.15	FM_2	1.9586	441.1	3.0	14.6	0	0.00
1011-2	438.50	444.51	FM_2	3.8754	442.4	2.1	13.7	0	0.00
1011-2.1	438.00	444.25	FM_2	4.3758	442.4	1.9	25.1	0	0.00
1011-20	442.79	448.29	-	0	442.8	5.5	0.0	0	0.00
1011-22	440.11	446.63	-	1.0316	441.1	5.5	7.6	0	0.00
1011-3	447.33	452.75	FM_3	0.1476	447.5	5.3	35.8	0	0.00
1011-4	448.58	453.55	FM_3	0.116	448.7	4.9	25.6	0	0.00
1011-5	449.50	454.25	FM_3	0.0934	449.6	4.7	14.1	0	0.00
1011-6	437.42	445.85	FM_3	6.9843	444.4	1.4	756.0	0	0.00
1011-7	438.48	451.95	FM_3	6.989	445.5	6.5	683.9	0	0.00
1011-8	439.51	451.85	FM_3	7.0964	446.6	5.2	667.3	0	0.00
1011-9	440.56	450.65	FM_3	6.0452	446.6	4.0	10.3	0	0.00
1012-1	437.82	441.65	FM_4	0.0287	437.8	3.8	1.3	0	0.00
1012-2	435.94	442.55	-	1.7164	437.7	4.9	673.1	0	0.00
1012-3	436.82	444.75	FM_4	1.6892	438.5	6.2	703.1	0	0.00
1012-4	438.82	443.55	FM_4	0.0544	438.9	4.7	5.0	0	0.00
1012-5	437.56	446.55	-	1.8083	439.4	7.2	708.4	0	0.00
1012-6	439.11	446.05	FM_4	0.2627	439.4	6.7	69.9	0	0.00
1012-7	440.67	447.65	FM_4	0.0599	440.7	6.9	6.3	0	0.00
1012-8	442.77	450.65	FM_4	0.0278	442.8	7.9	1.3	0	0.00
1012-9	438.85	443.85	FM_3	4.5029	443.4	0.5	17.6	0	0.00
1013-1	430.54	440.15	FM_2	1.6175	432.2	8.0	226.1	0	0.00
1013-10	433.79	440.65	FM_2	0.1865	434.0	6.7	62.7	0	0.00
1013-11	434.55	439.55	FM_2	0.1676	434.7	4.8	50.4	0	0.00
1013-12	434.85	440.15	FM_2	0.1991	435.0	5.1	41.8	0	0.00
1013-13	437.47	442.55	FM_2	0.0968	437.6	5.0	16.9	0	0.00

20-Year Projected System Flows, 5-year, 24-hour storm event

Input				Output					
Manhole ID	Invert Elev.	Rim Elev.	DWF Pattern	Max Depth (ft)	Max HGL (ft)	Freeboard (ft)	Max Inflow (gpm)	Total Flood Vol. (MG)	Time Flooded (hrs)
1013-2	436.15	441.65	FM_2	0.0844	436.2	5.4	12.0	0	0.00
1013-3	428.54	440.65	FM_2	2.9773	431.5	9.1	2413.1	0	0.00
1013-4	429.81	441.35	FM_2	2.4677	432.3	9.1	2178.9	0	0.00
1013-5	430.44	442.55	FM_2	3.271	433.7	8.8	2112.5	0	0.00
1013-6	431.21	444.15	FM_2	3.9508	435.2	9.0	2100.5	0	0.00
1013-7	438.35	442.75	FM_2	0.0775	438.4	4.3	12.0	0	0.00
1013-8	437.67	444.25	FM_2	0.604	438.3	6.0	20.7	0	0.00
1013-9	434.75	443.12	FM_2	0.0572	434.8	8.3	7.1	0	0.00
1014-1	438.88	444.75	FM_2	0.1582	439.0	5.7	57.3	0	0.00
1014-10	442.38	447.85	FM_2	0.0793	442.5	5.4	10.4	0	0.00
1014-11	442.00	447.65	FM_2	1.7613	443.8	3.9	12.7	0	0.00
1014-12	438.15	446.85	FM_2	3.6494	441.8	5.1	1176.1	0	0.00
1014-13	441.48	448.25	FM_2	0.3204	441.8	6.4	12.0	0	0.00
1014-14	437.55	445.89	FM_2	2.9585	440.5	5.4	1209.7	0	0.00
1014-15	439.45	444.45	FM_2	1.0985	440.5	3.9	16.9	0	0.00
1014-16	436.96	443.95	FM_2	2.2286	439.2	4.8	1238.7	0	0.00
1014-17	436.42	444.75	FM_2	1.6941	438.1	6.6	1251.0	0	0.00
1014-18	437.85	443.05	FM_2	0.0945	437.9	5.1	16.9	0	0.00
1014-2	436.02	442.35	FM_2	0.2407	436.3	6.1	82.9	0	0.00
1014-3	435.23	442.05	FM_2	0.3251	435.6	6.5	132.5	0	0.00
1014-4	436.27	442.55	FM_2	0.1386	436.4	6.1	42.5	0	0.00
1014-5	431.97	445.05	FM_2	4.6439	436.6	8.4	2084.0	0	0.00
1014-6	433.14	443.15	FM_2	5.17	438.3	4.8	839.2	0	0.00
1014-7	434.02	444.35	FM_2	6.0811	440.1	4.2	822.2	0	0.00
1014-8	440.92	445.95	FM_2	0.0819	441.0	4.9	10.4	0	0.00
1014-9	440.06	446.75	FM_2	0.1006	440.2	6.6	17.4	0	0.00
1015-1	443.63	450.45	FM_2	0.1957	443.8	6.6	61.6	0	0.00
1015-10	444.07	451.15	FM_2	0.1897	444.3	6.9	63.2	0	0.00
1015-11	445.59	450.85	FM_2	0.085	445.7	5.2	12.0	0	0.00
1015-12	445.50	450.75	FM_2	0.0825	445.6	5.2	12.0	0	0.00
1015-13	445.00	450.20	FM_2	0.1411	445.1	5.1	28.9	0	0.00
1015-14	444.27	449.45	FM_2	0.0951	444.4	5.1	15.3	0	0.00
1015-15	441.73	448.15	FM_2	0.1282	441.9	6.3	37.1	0	0.00
1015-16	443.23	448.05	COMMERCIAL	0.1074	443.3	4.7	20.2	0	0.00
1015-17	444.31	449.75	FM_2	0.1455	444.5	5.3	39.2	0	0.00
1015-18	442.59	450.55	FM_2	1.2015	443.8	6.8	155.3	0	0.00

20-Year Projected System Flows, 5-year, 24-hour storm event

Input				Output					
Manhole ID	Invert Elev.	Rim Elev.	DWF Pattern	Max Depth (ft)	Max HGL (ft)	Freeboard (ft)	Max Inflow (gpm)	Total Flood Vol. (MG)	Time Flooded (hrs)
1015-19	445.21	449.55	FM_2	0.0815	445.3	4.3	15.3	0	0.00
1015-2	444.65	451.05	FM_2	0.1464	444.8	6.3	37.6	0	0.00
1015-20	441.47	449.35	FM_2	2.1427	443.6	5.7	222.0	0	0.00
1015-21	443.58	448.55	FM_2	0.0966	443.7	4.9	19.1	0	0.00
1015-22	443.89	449.05	FM_2	0.0793	444.0	5.1	8.7	0	0.00
1015-23	440.87	448.75	FM_2	2.5431	443.4	5.3	243.3	0	0.00
1015-24	438.78	447.85	FM_2	4.2265	443.0	4.8	1151.8	0	0.00
1015-25	439.49	448.05	FM_2	4.2753	443.8	4.3	902.0	0	0.00
1015-26	442.61	447.75	FM_2	1.1501	443.8	4.0	10.2	0	0.00
1015-27	439.78	447.45	FM_2	4.3974	444.2	3.3	874.0	0	0.00
1015-28	439.83	447.05	-	4.4122	444.2	2.8	862.0	0	0.00
1015-29	440.50	446.85	FM_2	3.8875	444.4	2.5	856.3	0	0.00
1015-3	445.90	451.55	FM_2	0.1183	446.0	5.5	25.6	0	0.00
1015-30	444.26	449.65	FM_2	0.1329	444.4	5.3	30.5	0	0.00
1015-31	441.38	448.85	FM_2	3.5501	444.9	3.9	829.7	0	0.00
1015-32	441.63	449.25	FM_2	3.6024	445.2	4.0	802.3	0	0.00
1015-33	442.95	447.45	FM_2	2.3049	445.3	2.2	13.6	0	0.00
1015-34	441.96	450.05	FM_2	3.5434	445.5	4.5	765.8	0	0.00
1015-35	443.70	448.95	FM_2	1.8244	445.5	3.4	10.4	0	0.00
1015-4	445.34	450.55	FM_2	0.0728	445.4	5.1	8.7	0	0.00
1015-5	444.36	450.75	FM_2	1.5433	445.9	4.8	735.2	0	0.00
1015-6	447.25	451.35	FM_2	0.134	447.4	4.0	31.0	0	0.00
1015-7	445.02	452.75	FM_2	1.301	446.3	6.4	700.9	0	0.00
1015-8	447.51	452.55	FM_2	0.1412	447.7	4.9	35.2	0	0.00
1015-9	445.07	451.95	FM_2	0.1628	445.2	6.7	49.1	0	0.00
1016-1	449.55	454.55	FM_1	0.0331	449.6	5.0	1.5	0	0.00
1016-2	445.57	453.75	FM_1	1.0375	446.6	7.1	644.6	0	0.00
1016-3	446.29	455.65	FM_1	0.6536	446.9	8.7	628.9	0	0.00
1016-4	447.00	452.15	FM_2	0.0993	447.1	5.1	16.9	0	0.00
1016-5	445.59	451.18	FM_2	0.171	445.8	5.4	38.8	0	0.00
1016-6	446.08	451.30	FM_2	0.1168	446.2	5.1	18.6	0	0.00
1103-01	490.21	498.33	-	0	490.2	8.1	0.0	0	0.00
1103-2	468.52	481.15	-	0.2501	468.8	12.4	197.2	0	0.00
1103-3	470.25	477.25	FM_6	0.3104	470.6	6.7	195.7	0	0.00
1104-1	460.59	471.10	FM_6	0.0774	460.7	10.4	80.7	0	0.00
1104-10	459.63	469.18	FM_6	0.1768	459.8	9.4	19.8	0	0.00

20-Year Projected System Flows, 5-year, 24-hour storm event

Input				Output					
Manhole ID	Invert Elev.	Rim Elev.	DWF Pattern	Max Depth (ft)	Max HGL (ft)	Freeboard (ft)	Max Inflow (gpm)	Total Flood Vol. (MG)	Time Flooded (hrs)
1104-11	464.07	478.22	FM_6	0.059	464.1	14.1	16.5	0	0.00
1104-12	478.02	489.85	FM_6	0.0504	478.1	11.8	13.2	0	0.00
1104-13	488.31	500.44	FM_6	0.03	488.3	12.1	4.9	0	0.00
1104-14	489.44	499.44	FM_6	0.05	489.5	10.0	21.4	0	0.00
1104-15	519.47	529.47	FM_6	0.0356	519.5	10.0	6.6	0	0.00
1104-16	537.28	542.15	FM_1	0.0126	537.3	4.9	0.7	0	0.00
1104-17	533.87	538.85	FM_1	0.0195	533.9	5.0	1.5	0	0.00
1104-18	473.67	483.77	FM_6	0.1748	473.8	9.9	52.7	0	0.00
1104-19	475.51	481.74	FM_6	0.1427	475.7	6.1	41.2	0	0.00
1104-2	455.03	471.04	-	0.3357	455.4	15.7	381.3	0	0.00
1104-20	486.88	494.41	FM_6	0.0695	486.9	7.5	31.3	0	0.00
1104-21	489.67	498.25	FM_6	0.0769	489.7	8.5	18.1	0	0.00
1104-22	493.02	504.05	FM_6	0.051	493.1	11.0	8.2	0	0.00
1104-23	501.50	507.00	-	0	501.5	5.5	0.0	0	0.00
1104-24	458.27	466.04	FM_6	0.1861	458.5	7.6	203.7	0	0.00
1104-25	463.26	472.15	FM_6	0.2071	463.5	8.7	202.0	0	0.00
1104-26	464.76	475.65	FM_6	0.3162	465.1	10.6	198.8	0	0.00
1104-28	505.44	516.00	-	0.0288	505.5	10.5	6.6	0	0.00
1104-3	457.00	467.49	-	0.4007	457.4	10.1	282.3	0	0.00
1104-5	461.78	466.78	FM_6	0.1436	461.9	4.9	80.7	0	0.00
1104-6	463.93	468.85	FM_6	0.1487	464.1	4.8	77.4	0	0.00
1104-7	468.71	473.59	FM_6	0.0758	468.8	4.8	16.5	0	0.00
1104-8	473.18	478.72	FM_6	0.0999	473.3	5.4	59.3	0	0.00
1104-9	456.19	468.33	-	0.375	456.6	11.8	302.0	0	0.00
1105-09	463.49	468.47	-	0	463.5	5.0	0.0	0	0.00
1105-1	462.71	468.65	FM_1	0.1248	462.8	5.8	45.5	0	0.00
1105-10	465.68	470.63	-	0	465.7	5.0	0.0	0	0.00
1105-11	470.95	475.69	-	0	471.0	4.7	0.0	0	0.00
1105-12	465.65	470.31	-	0	465.7	4.7	0.0	0	0.00
1105-13	463.99	468.76	-	0	464.0	4.8	0.0	0	0.00
1105-2	470.28	475.75	FM_1	0.0882	470.4	5.4	43.3	0	0.00
1105-3	494.69	500.45	FM_1	0.046	494.7	5.7	18.7	0	0.00
1105-4	512.45	516.95	-	0.0151	512.5	4.5	1.5	0	0.00
1105-5	528.04	532.95	-	0.0175	528.1	4.9	1.5	0	0.00
1105-6	514.80	518.75	FM_1	0.044	514.8	3.9	10.5	0	0.00
1105-7	527.12	531.17	FM_1	0.0277	527.1	4.0	3.7	0	0.00

20-Year Projected System Flows, 5-year, 24-hour storm event

Input				Output					
Manhole ID	Invert Elev.	Rim Elev.	DWF Pattern	Max Depth (ft)	Max HGL (ft)	Freeboard (ft)	Max Inflow (gpm)	Total Flood Vol. (MG)	Time Flooded (hrs)
1105-8	542.76	546.86	FM_1	0.0186	542.8	4.1	2.2	0	0.00
1105-9	497.65	501.05	FM_1	0.1015	497.8	3.3	16.4	0	0.00
1106-04	562.74	565.00	-	0	562.7	2.3	0.0	0	0.00
1106-1	474.33	479.60	FM_1	0.0488	474.4	5.2	8.2	0	0.00
1106-10	535.21	539.85	FM_1	0.0603	535.3	4.6	19.5	0	0.00
1106-11	537.54	542.05	FM_1	0.0516	537.6	4.5	6.8	0	0.00
1106-12	539.34	544.35	FM_1	0.0439	539.4	5.0	6.7	0	0.00
1106-13	546.54	552.05	FM_1	0.0285	546.6	5.5	4.5	0	0.00
1106-14	543.24	548.15	FM_1	0.0249	543.3	4.9	3.0	0	0.00
1106-15	531.27	538.10	FM_1	1.304	532.6	5.5	12.6	0	0.00
1106-16	509.44	515.15	FM_1	0.0851	509.5	5.6	53.8	0	0.00
1106-17	518.72	523.05	FM_1	0.0219	518.7	4.3	3.0	0	0.00
1106-18	495.42	500.45	FM_1	0.0903	495.5	4.9	56.8	0	0.00
1106-19	473.35	477.25	FM_1	0.0467	473.4	3.9	3.7	0	0.00
1106-2	510.00	520.69	FM_1	0.0175	510.0	10.7	2.2	0	0.00
1106-20	471.75	477.12	FM_1	0.1052	471.9	5.3	21.6	0	0.00
1106-3	551.16	556.35	FM_1	0.0598	551.2	5.1	2.2	0	0.00
1106-5	555.58	562.95	FM_1	0.0412	555.6	7.3	3.7	0	0.00
1106-6	554.50	563.15	FM_1	0.0464	554.5	8.6	6.0	0	0.00
1106-7	549.56	555.35	FM_1	0.0579	549.6	5.7	11.2	0	0.00
1106-8	545.91	551.45	FM_1	0.0443	546.0	5.5	14.2	0	0.00
1106-9	523.74	529.75	FM_1	0.0847	523.8	5.9	49.3	0	0.00
1107-1	510.53	515.23	FM_1	0.0513	510.6	4.6	28.8	0	0.00
1107-2	522.20	527.16	FM_1	0.0569	522.3	4.9	19.1	0	0.00
1107-3	523.16	560.71	FM_1	0.1332	523.3	37.4	13.1	0	0.00
1107-4	529.40	535.20	-	0	529.4	5.8	0.0	0	0.00
1107-5	523.30	537.44	FM_1	0.0215	523.3	14.1	7.5	0	0.00
1107-6	482.35	486.88	FM_1	0.0502	482.4	4.5	9.0	0	0.00
1108-01	580.11	584.89	-	0	580.1	4.8	0.0	0	0.00
1108-1	530.70	534.40	FM_1	0.0577	530.8	3.6	6.7	0	0.00
1108-2	532.46	536.20	FM_1	0.0395	532.5	3.7	3.0	0	0.00
1108-3	528.22	532.80	FM_1	0.121	528.3	4.5	144.4	0	0.00
1108-4	537.47	541.95	FM_1	0.1216	537.6	4.4	143.0	0	0.00
1108-5	558.79	562.99	FM_1	0.1182	558.9	4.1	140.9	0	0.00
1108-6	573.43	577.47	FM_1	0.1181	573.5	3.9	138.9	0	0.00
1109-1	481.56	484.75	FM_1	0.3155	481.9	2.9	150.7	0	0.00

20-Year Projected System Flows, 5-year, 24-hour storm event

Input				Output					
Manhole ID	Invert Elev.	Rim Elev.	DWF Pattern	Max Depth (ft)	Max HGL (ft)	Freeboard (ft)	Max Inflow (gpm)	Total Flood Vol. (MG)	Time Flooded (hrs)
1109-2	483.26	486.73	FM_1	0.2876	483.5	3.2	149.3	0	0.00
1109-3	484.48	486.95	FM_1	0.2941	484.8	2.2	147.2	0	0.00
1109-4	486.97	492.22	FM_1	0.1752	487.1	5.1	146.5	0	0.00
1109-5	499.04	503.35	FM_1	0.1226	499.2	4.2	145.8	0	0.00
1109-6	517.26	521.57	FM_1	0.1227	517.4	4.2	145.1	0	0.00
1109-7	485.60	488.16	-	0	485.6	2.6	0.0	0	0.00
1110-1	475.70	481.70	FM_1	1.3798	477.1	4.6	61.3	0	0.00
1110-2	474.56	479.50	FM_1	0.4289	475.0	4.5	253.7	0	0.00
1110-4	475.80	480.73	-	0.3756	476.2	4.6	190.2	0	0.00
1110-6	478.16	483.54	FM_1	0.3127	478.5	5.1	161.6	0	0.00
1110-7	478.50	483.25	FM_1	0.3205	478.8	4.4	160.1	0	0.00
1110-9	479.86	483.70	-	0.2768	480.1	3.6	159.4	0	0.00
1111-1	469.20	474.74	FM_1	0.4476	469.6	5.1	298.3	0	0.00
1111-10	458.14	463.86	FM_1	0.2283	458.4	5.5	83.4	0	0.00
1111-11	459.03	464.79	FM_1	0.2391	459.3	5.5	79.0	0	0.00
1111-12	460.60	468.72	FM_1	0.2018	460.8	7.9	76.1	0	0.00
1111-13	462.00	467.57	FM_1	0.2149	462.2	5.4	73.3	0	0.00
1111-14	461.40	466.99	FM_1	0.0494	461.4	5.5	3.7	0	0.00
1111-16	459.93	464.84	FM_1	0.0474	460.0	4.9	7.5	0	0.00
1111-17	464.51	470.01	-	0	464.5	5.5	0.0	0	0.00
1111-18	471.31	475.36	-	0	471.3	4.1	0.0	0	0.00
1111-19	469.95	474.18	-	0	470.0	4.2	0.0	0	0.00
1111-2	470.50	476.62	FM_1	0.4389	470.9	5.7	286.4	0	0.00
1111-20	470.25	472.48	-	0	470.3	2.2	0.0	0	0.00
1111-21	467.73	473.98	-	0	467.7	6.3	0.0	0	0.00
1111-22	469.16	476.09	-	0	469.2	6.9	0.0	0	0.00
1111-23	463.00	468.50	-	0	463.0	5.5	0.0	0	0.00
1111-3	472.59	476.65	FM_1	0.3398	472.9	3.7	260.3	0	0.00
1111-5	466.95	472.65	FM_1	0.0278	467.0	5.7	1.5	0	0.00
1111-6	456.80	463.13	FM_1	0.1028	456.9	6.2	18.7	0	0.00
1111-7	455.93	462.67	FM_1	0.2717	456.2	6.5	112.5	0	0.00
1111-8	466.78	472.02	FM_1	0.0321	466.8	5.2	3.7	0	0.00
1111-9	457.14	462.86	FM_1	0.2079	457.3	5.5	87.0	0	0.00
1111-?	456.77	463.13	FM_1	0.0456	456.8	6.3	4.5	0	0.00
1112-1	457.71	467.55	FM_1	0.5332	458.2	9.3	440.5	0	0.00
1112-10	453.20	457.55	FM_1	0.072	453.3	4.3	8.2	0	0.00

20-Year Projected System Flows, 5-year, 24-hour storm event

Input				Output					
Manhole ID	Invert Elev.	Rim Elev.	DWF Pattern	Max Depth (ft)	Max HGL (ft)	Freeboard (ft)	Max Inflow (gpm)	Total Flood Vol. (MG)	Time Flooded (hrs)
1112-11	454.27	458.50	FM_1	0.0552	454.3	4.2	4.5	0	0.00
1112-12	455.79	458.83	FM_1	0.0517	455.8	3.0	3.0	0	0.00
1112-13	455.09	459.28	FM_1	0.0715	455.2	4.1	9.0	0	0.00
1112-14	456.39	460.58	FM_1	0.0422	456.4	4.1	3.0	0	0.00
1112-15	457.78	461.30	FM_1	0.0654	457.8	3.5	4.5	0	0.00
1112-16	455.01	461.16	FM_1	0.2742	455.3	5.9	117.7	0	0.00
1112-17	454.19	460.34	FM_1	0.2908	454.5	5.9	132.6	0	0.00
1112-18	453.24	458.56	FM_1	0.3142	453.6	5.0	137.0	0	0.00
1112-19	452.40	458.73	FM_1	0.2892	452.7	6.0	150.5	0	0.00
1112-2	459.27	466.05	FM_1	0.4106	459.7	6.4	406.2	0	0.00
1112-3	461.55	466.25	FM_1	0.5066	462.1	4.2	357.8	0	0.00
1112-4	466.35	470.55	FM_1	0.3678	466.7	3.8	352.6	0	0.00
1112-5	467.95	472.55	FM_1	0.4799	468.4	4.1	305.7	0	0.00
1112-6	460.35	467.55	FM_1	0.1101	460.5	7.1	20.9	0	0.00
1112-7	461.95	467.65	FM_1	0.0915	462.0	5.6	15.0	0	0.00
1112-8	465.95	470.95	FM_1	0.0444	466.0	5.0	5.2	0	0.00
1112-9	458.80	467.05	FM_1	0.5246	459.3	7.7	414.4	0	0.00
1503-1	434.50	441.75	FM_2	0.3324	434.8	6.9	154.3	0	0.00
1503-2	439.24	444.15	FM_2	0.0764	439.3	4.8	15.3	0	0.00
1504-1	431.56	439.75	FM_2	1.0055	432.6	7.2	211.8	0	0.00
1504-2	431.91	438.15	FM_2	0.7855	432.7	5.5	191.4	0	0.00
1504-3	433.19	438.88	FM_2	0.3636	433.6	5.3	171.1	0	0.00
1602-1	422.99	427.95	-	1.5495	424.5	3.4	2699.2	0	0.00
1602-2	423.39	429.54	FM_2	1.657	425.0	4.5	2800.7	0	0.00
1606-2	422.19	427.08	-	1.1523	423.3	3.7	2618.1	0	0.00
1606-3	422.59	427.73	FM_2	1.4083	424.0	3.7	2625.2	0	0
214-1	469.66	474.27	FM_6	0.0385	469.7	4.6	1.6	0	0
214-2	470.75	477.30	-	0.2259	471.0	6.3	90.2	0	0
214-5	477.75	481.57	-	0.1117	477.9	3.7	90.2	0	0
313-09	435.46	443.28	-	0	435.5	7.8	0.0	0	0
313-16	434.67	444.00	-	0	434.7	9.3	0.0	0	0
313-17	436.29	444.65	-	0	436.3	8.4	0.0	0	0
313-18	439.50	445.00	-	0	439.5	5.5	0.0	0	0
313-19	437.04	444.15	-	0	437.0	7.1	0.0	0	0
313-20	439.50	445.00	-	0	439.5	5.5	0.0	0	0
315-04	441.50	446.06	-	0	441.5	4.6	0.0	0	0

20-Year Projected System Flows, 5-year, 24-hour storm event

Input				Output					
Manhole ID	Invert Elev.	Rim Elev.	DWF Pattern	Max Depth (ft)	Max HGL (ft)	Freeboard (ft)	Max Inflow (gpm)	Total Flood Vol. (MG)	Time Flooded (hrs)
315-05	441.46	446.96	-	0	441.5	5.5	0.0	0	0
315-10	437.00	446.61	FM_6	0.2242	437.2	9.4	85.1	0	0
315-11	435.00	446.23	FM_6	0.5468	435.5	10.7	881.9	0	0
315-12	435.26	450.00	-	0.8021	436.1	13.9	872.0	0	0
315-13	435.71	450.00	FM_6	0.5305	436.2	13.8	872.0	0	0
315-14	438.40	447.00	-	0.3162	438.7	8.3	733.6	0	0
315-15	436.51	450.00	FM_6	0.2362	436.7	13.3	136.8	0	0
315-16	438.20	446.48	FM_6	0.1864	438.4	8.1	65.2	0	0
315-17	440.50	445.74	FM_6	0.0553	440.6	5.2	6.6	0	0
315-18	439.62	446.37	FM_6	0.1471	439.8	6.6	46.1	0	0
315-19	440.33	448.00	FM_6	0.1342	440.5	7.5	34.6	0	0
315-20	439.07	447.26	FM_6	0.0825	439.2	8.1	14.2	0	0
315-21	440.50	448.26	FM_6	0.046	440.5	7.7	8.2	0	0
315-22	438.20	447.38	FM_6	0.1195	438.3	9.1	50.0	0	0
315-23	438.95	447.00	FM_6	0.6413	439.6	7.4	733.7	0	0
315-24	440.58	451.20	FM_6	0.1495	440.7	10.5	42.8	0	0
315-25	458.58	465.06	FM_6	0.0547	458.6	6.4	21.4	0	0
315-26	455.53	462.04	FM_6	0.066	455.6	6.4	11.5	0	0
315-27	468.66	475.81	FM_6	0.0348	468.7	7.1	8.2	0	0
315-28	473.15	479.49	FM_6	0.1478	473.3	6.2	107.7	0	0
315-30	465.64	472.33	FM_6	0.0261	465.7	6.7	4.9	0	0
315-31	445.62	455.41	FM_6	0.0358	445.7	9.8	6.6	0	0
315-42	442.54	451.66	FM_6	0.0733	442.6	9.0	14.8	0	0
315-6	441.50	445.72	COMMERCIAL	0.0573	441.6	4.2	6.8	0	0
315-7	439.75	446.59	FM_6	0.0769	439.8	6.8	11.7	0	0
315-8	438.32	446.32	FM_6	0.0742	438.4	7.9	14.9	0	0
315-9	437.75	446.42	FM_6	0.2231	438.0	8.4	81.8	0	0
316-1	455.95	462.74	FM_6	0.1705	456.1	6.6	148.9	0	0
316-10	440.41	447.00	FM_6	0.5666	441.0	6.0	676.2	0	0
316-11	440.05	447.00	FM_6	0.6545	440.7	6.3	687.7	0	0
316-12	442.53	449.03	FM_6	0.0524	442.6	6.4	6.6	0	0
316-13	439.03	447.57	FM_6	0.2507	439.3	8.3	45.1	0	0
316-14	439.81	448.31	FM_6	0.1478	440.0	8.4	41.8	0	0
316-15	440.73	447.98	FM_6	0.1274	440.9	7.1	31.3	0	0
316-16	441.35	448.31	FM_6	0.1105	441.5	6.8	23.1	0	0
316-17	442.39	448.18	FM_6	0.0935	442.5	5.7	18.1	0	0

20-Year Projected System Flows, 5-year, 24-hour storm event

Input				Output					
Manhole ID	Invert Elev.	Rim Elev.	DWF Pattern	Max Depth (ft)	Max HGL (ft)	Freeboard (ft)	Max Inflow (gpm)	Total Flood Vol. (MG)	Time Flooded (hrs)
316-18	443.30	447.27	FM_6	0.0672	443.4	3.9	9.9	0	0
316-19	442.79	448.49	FM_6	0.0519	442.8	5.6	4.9	0	0
316-2	460.30	466.62	FM_6	0.2192	460.5	6.1	137.4	0	0
316-20	443.88	448.96	FM_6	0.0683	443.9	5.0	8.2	0	0
316-21	442.55	448.63	FM_6	0.1022	442.7	6.0	21.4	0	0
316-22	441.50	448.93	FM_6	0.0986	441.6	7.3	28.0	0	0
316-25	445.30	450.93	FM_6	0.0642	445.4	5.6	8.2	0	0
316-26	443.96	451.69	FM_6	0.0626	444.0	7.7	8.2	0	0
316-29	443.32	448.00	FM_6	0.6072	443.9	4.1	666.4	0	0
316-3	465.45	472.54	FM_6	0.1812	465.6	6.9	122.6	0	0
316-30	450.23	454.89	-	0	450.2	4.7	0.0	0	0
316-31	451.31	454.86	-	0	451.3	3.5	0.0	0	0
316-32	452.08	459.43	-	0	452.1	7.4	0.0	0	0
316-33	457.20	464.12	-	0	457.2	6.9	0.0	0	0
316-4	451.54	458.67	FM_6	0.1127	451.7	7.0	29.6	0	0
316-5	448.77	455.13	FM_6	0.2314	449.0	6.1	193.4	0	0
316-6	444.07	450.26	FM_6	0.5442	444.6	5.6	661.6	0	0
316-7	442.71	448.00	FM_6	0.6291	443.3	4.7	668.0	0	0
316-8	441.78	447.28	FM_6	0.6247	442.4	4.9	672.9	0	0
316-9	440.96	447.00	FM_6	0.6178	441.6	5.4	674.5	0	0
415-1	422.03	430.78	FM_5	0.3128	422.3	8.4	153.8	0	0
415-11	425.83	432.35	FM_5	0.0547	425.9	6.5	7.5	0	0
415-12	429.00	432.94	FM_5	0.0493	429.0	3.9	5.0	0	0
415-15	427.92	433.67	FM_5	0.0469	428.0	5.7	5.8	0	0
415-16	419.90	428.40	FM_5	0.2632	420.2	8.2	179.0	0	0
415-18	420.56	428.54	FM_5	0.4823	421.0	7.5	204.2	0	0
415-2	423.15	432.05	FM_5	0.3065	423.5	8.6	140.5	0	0
415-3	424.70	430.82	FM_5	0.2573	425.0	5.9	128.8	0	0
415-4	426.32	430.51	FM_5	0.0737	426.4	4.1	10.0	0	0
415-5	426.02	432.27	FM_5	0.2462	426.3	6.0	111.3	0	0
415-6	427.48	430.94	FM_5	0.1031	427.6	3.4	19.2	0	0
415-7	429.14	433.17	FM_5	0.0706	429.2	4.0	11.7	0	0
415-8	427.38	431.57	FM_5	0.2244	427.6	4.0	85.4	0	0
416-08	419.40	425.00	-	0	419.4	5.6	0.0	0	0
416-09	418.03	435.62	-	0	418.0	17.6	0.0	0	0
416-1	427.08	433.89	FM_5	0.0998	427.2	6.7	13.4	0	0

20-Year Projected System Flows, 5-year, 24-hour storm event

Input				Output					
Manhole ID	Invert Elev.	Rim Elev.	DWF Pattern	Max Depth (ft)	Max HGL (ft)	Freeboard (ft)	Max Inflow (gpm)	Total Flood Vol. (MG)	Time Flooded (hrs)
416-12	425.03	434.41	-	0	425.0	9.4	0.0	0	0
416-13	423.54	433.60	-	0	423.5	10.1	0.0	0	0
416-14	421.94	431.68	-	0	421.9	9.7	0.0	0	0
416-15	420.62	434.00	-	0	420.6	13.4	0.0	0	0
416-16	425.96	431.82	-	0	426.0	5.9	0.0	0	0
416-2	429.08	433.58	FM_5	0.2089	429.3	4.3	79.6	0	0
416-3	430.26	434.90	FM_5	0.0796	430.3	4.6	10.0	0	0
416-4	430.06	434.46	FM_5	0.0612	430.1	4.3	6.2	0	0
416-5	431.55	435.84	FM_4	0.0537	431.6	4.2	3.7	0	0
416-6	427.05	434.92	FM_5	0.5031	427.6	7.4	3.3	0	0
416-7	430.26	433.97	FM_5	0.0651	430.3	3.6	6.7	0	0
901-09	429.02	436.27	-	0	429.0	7.3	0.0	0	0
901-1	430.75	438.25	FM_5	0.0297	430.8	7.5	1.7	0	0
901-10	425.55	433.00	FM_5	0.0844	425.6	7.4	18.4	0	0
901-11	435.18	438.68	FM_4	0.0837	435.3	3.4	8.8	0	0
901-12	434.99	438.80	FM_4	0.0851	435.1	3.7	8.8	0	0
901-13	435.00	436.91	FM_4	0.1144	435.1	1.8	15.2	0	0
901-14	434.60	438.60	FM_4	0.1534	434.8	3.8	29.9	0	0
901-15	434.07	439.49	FM_4	0.1628	434.2	5.3	43.7	0	0
901-16	433.39	440.31	FM_4	0.1648	433.6	6.8	48.8	0	0
901-17	432.31	442.02	FM_4	1.0597	433.4	8.7	57.5	0	0
901-18	434.04	439.96	FM_4	0.0677	434.1	5.9	10.1	0	0
901-19	434.14	439.65	FM_4	0.0766	434.2	5.4	8.8	0	0
901-2	430.01	437.26	FM_5	0.0566	430.1	7.2	6.7	0	0
901-20	431.74	441.91	FM_4	1.4701	433.2	8.7	244.9	0	0
901-21	432.36	439.48	FM_4	1.1672	433.5	6.0	65.4	0	0
901-22	433.33	437.95	FM_4	0.1245	433.5	4.5	25.6	0	0
901-23	434.85	438.38	FM_5	0.0788	434.9	3.5	13.7	0	0
901-24	431.18	436.40	FM_5	0.0383	431.2	5.2	2.5	0	0
901-24.5	429.96	436.21	-	0	430.0	6.3	0.0	0	0
901-25	429.42	436.06	FM_5	0.0629	429.5	6.6	6.7	0	0
901-3	430.20	437.39	FM_5	0.0481	430.2	7.1	5.0	0	0
901-4	429.03	436.44	FM_5	0.0659	429.1	7.3	10.0	0	0
901-5	427.97	435.50	FM_5	0.0442	428.0	7.5	4.2	0	0
901-6	426.52	435.82	FM_5	0.1155	426.6	9.2	21.7	0	0
901-7	427.50	433.90	FM_5	0.0405	427.5	6.4	2.5	0	0

20-Year Projected System Flows, 5-year, 24-hour storm event

Input				Output					
Manhole ID	Invert Elev.	Rim Elev.	DWF Pattern	Max Depth (ft)	Max HGL (ft)	Freeboard (ft)	Max Inflow (gpm)	Total Flood Vol. (MG)	Time Flooded (hrs)
901-7.5	429.00	434.80	FM_5	0.0178	429.0	5.8	0.8	0	0
901-8	427.08	433.40	FM_5	0.1026	427.2	6.2	13.4	0	0
901-9	428.18	435.20	FM_5	0.0246	428.2	7.0	0.8	0	0
902-1	417.25	430.50	FM_5	0.5872	417.8	12.7	605.7	0	0
902-10	426.33	433.50	FM_5	0.2453	426.6	6.9	98.5	0	0
902-11	427.08	434.44	FM_5	0.2304	427.3	7.1	96.8	0	0
902-12	427.68	435.48	FM_5	0.2575	427.9	7.5	82.6	0	0
902-13	427.56	433.81	FM_5	0.0926	427.7	6.2	9.2	0	0
902-13.5	427.86	433.90	FM_5	0.052	427.9	6.0	4.2	0	0
902-2	418.05	429.00	FM_5	0.5369	418.6	10.4	534.8	0	0
902-20	419.67	431.66	FM_5	0.489	420.2	11.5	329.4	0	0
902-3	418.85	428.40	FM_4	0.5416	419.4	9.0	537.1	0	0
902-4	421.21	432.10	COMMERCIAL	0.3631	421.6	10.5	328.5	0	0
902-5	422.95	432.30	FM_5	0.2422	423.2	9.1	168.5	0	0
902-6	424.95	431.10	FM_5	0.2523	425.2	5.9	146.8	0	0
902-7	425.50	434.96	FM_5	0.1386	425.6	9.3	28.4	0	0
902-8	425.57	433.79	FM_5	0.3564	425.9	7.9	116.0	0	0
902-9	426.93	434.68	FM_5	0.068	427.0	7.7	15.9	0	0
907-10	428.80	435.39	FM_1	0.0627	428.9	6.5	6.4	0	0
907-11	428.00	435.47	FM_1	0.0806	428.1	7.4	9.6	0	0
907-12	425.79	435.39	FM_1	0.1788	426.0	9.4	65.0	0	0
907-13	422.74	435.82	FM_1	0.3614	423.1	12.7	243.2	0	0
907-14	431.04	435.75	FM_1	0.0642	431.1	4.6	7.5	0	0
907-15	430.04	435.97	FM_1	0.0792	430.1	5.9	11.7	0	0
907-16	429.77	437.74	FM_1	0.058	429.8	7.9	6.4	0	0
907-17	425.00	435.50	FM_1	0.3079	425.3	10.2	176.1	0	0
907-18	426.05	433.85	FM_1	0.3462	426.4	7.5	171.9	0	0
907-19	420.57	431.33	FM_1	0.2716	420.8	10.5	245.3	0	0
907-2	415.59	433.00	FM_5	1.0313	416.6	16.4	655.5	0	0
907-21	430.53	436.06	FM_1	0.0593	430.6	5.5	5.3	0	0
907-3	416.08	432.60	FM_1	0.6081	416.7	15.9	246.3	0	0
907-6	416.45	431.50	FM_5	0.6179	417.1	14.4	605.0	0	0
907-8	428.00	435.48	FM_5	0.2241	428.2	7.3	71.8	0	0
907-9	430.89	436.35	FM_1	0.0501	430.9	5.4	4.3	0	0
908-1	430.89	437.25	FM_1	0.0663	431.0	6.3	7.5	0	0
908-10	433.15	439.61	FM_4	0.1356	433.3	6.3	22.1	0	0

20-Year Projected System Flows, 5-year, 24-hour storm event

Input				Output					
Manhole ID	Invert Elev.	Rim Elev.	DWF Pattern	Max Depth (ft)	Max HGL (ft)	Freeboard (ft)	Max Inflow (gpm)	Total Flood Vol. (MG)	Time Flooded (hrs)
908-11	433.05	440.84	FM_4	0.1834	433.2	7.6	51.5	0	0
908-12	433.59	441.63	FM_4	0.1789	433.8	7.9	41.6	0	0
908-13.5	436.64	442.14	-	0	436.6	5.5	0.0	0	0
908-14	434.25	440.27	FM_4	0.1623	434.4	5.9	39.2	0	0
908-15	434.75	439.33	FM_4	0.1671	434.9	4.4	32.1	0	0
908-16	435.25	439.33	FM_1	0.1284	435.4	4.0	23.7	0	0
908-17	427.70	436.80	FM_1	0.3216	428.0	8.8	163.4	0	0
908-18	428.57	437.50	FM_1	0.3019	428.9	8.6	149.6	0	0
908-19	430.32	439.10	FM_1	0.288	430.6	8.5	139.1	0	0
908-2	429.35	435.51	FM_1	0.104	429.5	6.1	23.4	0	0
908-20	431.50	439.55	FM_1	0.2791	431.8	7.8	134.8	0	0
908-21	434.25	444.63	FM_1	0.2304	434.5	10.1	91.7	0	0
908-26	430.30	436.65	FM_1	0.0607	430.4	6.3	7.5	0	0
908-28	432.85	439.46	FM_1	0.2426	433.1	6.4	97.7	0	0
908-29	436.05	443.24	FM_1	0.2278	436.3	7.0	88.7	0	0
908-3	428.05	436.96	FM_1	0.1603	428.2	8.7	49.0	0	0
908-30	436.81	441.75	FM_1	0.2101	437.0	4.7	81.8	0	0
908-31	438.09	441.81	FM_1	0.0635	438.2	3.7	6.4	0	0
908-32	436.18	439.32	FM_1	0.0984	436.3	3.0	14.9	0	0
908-33	435.23	438.45	FM_1	0.1368	435.4	3.1	28.8	0	0
908-34	432.95	438.31	FM_1	0.127	433.1	5.2	33.0	0	0
908-35	435.88	438.75	FM_1	0.0792	436.0	2.8	11.7	0	0
908-36	437.05	440.56	FM_1	0.0634	437.1	3.4	6.4	0	0
908-4	429.65	437.88	FM_1	0.0502	429.7	8.2	5.3	0	0
908-5	429.36	437.99	FM_1	0.0855	429.4	8.5	13.9	0	0
908-5.5	431.16	436.79	FM_1	0.0564	431.2	5.6	5.3	0	0
908-6	432.23	437.25	FM_1	0.0372	432.3	5.0	3.2	0	0
908-7	431.18	436.40	FM_5	0.1812	431.4	5.0	63.6	0	0
908-7.5	429.42	436.06	FM_5	0.1788	429.6	6.5	67.7	0	0
908-8	435.50	437.00	FM_1	0.0483	435.5	1.5	4.5	0	0
908-9	433.50	438.50	FM_4	0.1085	433.6	4.9	13.3	0	0
909-1	430.14	437.45	FM_4	1.7457	431.9	5.6	667.9	0	0
909-2	430.79	437.55	FM_4	1.5671	432.4	5.2	657.7	0	0
909-3	432.59	442.35	FM_4	0.726	433.3	9.0	657.5	0	0
909-4	433.36	441.15	FM_4	0.9079	434.3	6.9	655.2	0	0
909-5	434.20	442.35	COMMERCIAL	1.1619	435.4	7.0	651.7	0	0

20-Year Projected System Flows, 5-year, 24-hour storm event

Input				Output					
Manhole ID	Invert Elev.	Rim Elev.	DWF Pattern	Max Depth (ft)	Max HGL (ft)	Freeboard (ft)	Max Inflow (gpm)	Total Flood Vol. (MG)	Time Flooded (hrs)
909-6	435.32	442.85	FM_4	1.4999	436.8	6.0	654.9	0	0
910-1	431.25	436.05	FM_4	0.0732	431.3	4.7	9.4	0	0
911-10	415.35	429.90	COMMERCIAL	1.9017	417.3	12.6	35.5	0	0
911-3	431.02	435.23	COMMERCIAL	0.2621	431.3	3.9	117.9	0	0
911-4	429.92	436.00	COMMERCIAL	0.2592	430.2	5.8	111.4	0	0
914-1	429.99	432.84	COMMERCIAL	0.0564	430.0	2.8	9.3	0	0
914-2	419.16	429.54	FM_4	0.0945	419.3	10.3	14.5	0	0
914-3	418.36	430.29	COMMERCIAL	0.1091	418.5	11.8	23.7	0	0
914-4	416.91	430.56	COMMERCIAL	0.3129	417.2	13.3	28.3	0	0
914-5	431.46	435.02	COMMERCIAL	0.0397	431.5	3.5	2.3	0	0
914-6	430.20	433.56	COMMERCIAL	0.0687	430.3	3.3	7.0	0	0
914-7	428.63	434.52	COMMERCIAL	0.2753	428.9	5.6	123.7	0	0
914-8	427.31	435.79	COMMERCIAL	0.1712	427.5	8.3	129.5	0	0
914-9	428.64	434.40	COMMERCIAL	0.0958	428.7	5.7	14.0	0	0
915-1	423.79	436.58	FM_2	1.701	425.5	11.1	2982.1	0	0
915-10	429.07	439.45	FM_4	1.5348	430.6	8.8	649.7	0	0
915-11	433.27	438.05	FM_4	0.0846	433.4	4.7	12.6	0	0
915-12	434.33	438.65	FM_4	0.0553	434.4	4.3	5.0	0	0
915-13	426.29	439.65	FM_2	1.3989	427.7	12.0	2560.7	0	0
915-14	425.98	438.65	FM_2	1.3636	427.3	11.3	2626.0	0	0
915-15	434.95	439.23	FM_2	0.1514	435.1	4.1	42.2	0	0
915-16	425.61	438.05	FM_2	1.3466	427.0	11.1	2665.0	0	0
915-17	434.10	438.70	FM_2	0.0796	434.2	4.5	24.5	0	0
915-18	435.75	437.25	FM_2	0.084	435.8	1.4	13.0	0	0
915-19	436.23	440.25	FM_2	0.0853	436.3	3.9	17.9	0	0
915-2	424.21	434.35	-	2.0665	426.3	8.1	3461.0	0	0
915-20	434.75	437.29	-	0	434.8	2.5	0.0	0	0
915-21	436.62	438.61	-	0	436.6	2.0	0.0	0	0
915-25	434.45	438.05	FM_2	0.1703	434.6	3.4	53.5	0	0
915-3	425.71	436.35	FM_4	0.8697	426.6	9.8	784.8	0	0
915-4	426.22	436.85	FM_4	0.8513	427.1	9.8	675.1	0	0
915-5	429.58	435.25	FM_4	0.1066	429.7	5.6	19.5	0	0
915-6	427.18	436.35	FM_4	1.0887	428.3	8.1	654.3	0	0
915-7	431.25	436.25	FM_4	0.0824	431.3	4.9	16.6	0	0
915-8	428.17	438.25	FM_4	1.3192	429.5	8.8	645.6	0	0
915-9	432.87	436.85	FM_4	0.0685	432.9	3.9	7.5	0	0

20-Year Projected System Flows, 5-year, 24-hour storm event

Input				Output					
Manhole ID	Invert Elev.	Rim Elev.	DWF Pattern	Max Depth (ft)	Max HGL (ft)	Freeboard (ft)	Max Inflow (gpm)	Total Flood Vol. (MG)	Time Flooded (hrs)
915-SPLITTER	423.00	436.53	FM_2	2.9974	426.0	10.5	4795.7	0	0
916-05	427.14	435.40	-	1.191	428.3	7.1	2516.1	0	0
916-06	431.00	435.00	-	0	431.0	4.0	0.0	0	0
916-1	435.46	440.55	FM_4	0.0725	435.5	5.0	8.8	0	0
916-10	438.50	444.00	-	0	438.5	5.5	0.0	0	0
916-2	434.12	439.95	FM_4	0.0866	434.2	5.7	16.3	0	0
916-3	426.88	438.75	FM_2	1.3535	428.2	10.5	2547.2	0	0
916-4	428.21	433.05	FM_2	0.1009	428.3	4.7	17.9	0	0
916-5	427.49	435.15	FM_2	1.936	429.4	5.7	2515.9	0	0
916-8	428.12	439.95	FM_2	2.5654	430.7	9.3	2466.2	0	0
916-9	434.09	438.55	FM_2	0.104	434.2	4.4	18.6	0	0
GARDNER~LS	424.00	443.35	-	87.8609	511.9	-68.5	600.0	0	0
IND~LS	413.00	430.69	-	37.4978	450.5	-19.8	500.0	0	0
JCT_10	412.26	427.38	-	0.8389	413.1	14.3	2367.2	0	0
JCT_100	418.72	425.82	-	0.8959	419.6	6.2	3951.1	0	0
JCT_102	418.36	425.41	FM_2	0.7857	419.1	6.3	6567.2	0	0
JCT_116	452.21	461.50	-	0.3494	452.6	8.9	381.3	0	0
JCT_118	448.41	455.20	FM_6	0.494	448.9	6.3	427.4	0	0
JCT_12	415.82	433.74	FM_6	0.707	416.5	17.2	995.6	0	0
JCT_120	447.20	453.00	FM_6	0.3848	447.6	5.4	430.5	0	0
JCT_122	446.16	451.98	FM_6	0.579	446.7	5.2	443.7	0	0
JCT_124	445.13	449.31	FM_6	0.4311	445.6	3.7	453.5	0	0
JCT_126	420.00	430.00	-	32.2888	452.3	-22.3	800.0	0	0
JCT_130	420.91	425.81	-	0.382	421.3	4.5	2614.3	0	0
JCT_132	421.00	429.00	FM_5	0	421.0	8.0	81.0	0	0
JCT_134	434.43	446.37	-	0.8129	435.2	11.1	881.9	0	0
JCT_136	433.90	447.20	-	0.6846	434.6	12.6	881.9	0	0
JCT_138	421.16	432.49	-	0.2573	421.4	11.1	328.5	0	0
JCT_14	416.42	435.74	-	0.7286	417.1	18.6	987.4	0	0
JCT_140	391.69	419.08	-	0.713	392.4	26.7	2383.2	0	0
JCT_142	423.00	436.63	-	2.9947	426.0	10.6	6025.0	0	0
JCT_144	495.80	499.00	-	0.1266	495.9	3.1	104.2	0	0
JCT_146	0.00	529.00	FM_1	526.1243	526.1	2.9	52.1	0	0
JCT_148	499.00	502.00	FM_1	0.1577	499.2	2.8	52.1	0	0
JCT_150	428.81	434.00	-	0.0505	428.9	5.1	3.8	0	0
JCT_152	469.00	472.00	FM_3	0.0295	469.0	3.0	3.8	0	0

20-Year Projected System Flows, 5-year, 24-hour storm event

Input				Output					
Manhole ID	Invert Elev.	Rim Elev.	DWF Pattern	Max Depth (ft)	Max HGL (ft)	Freeboard (ft)	Max Inflow (gpm)	Total Flood Vol. (MG)	Time Flooded (hrs)
JCT_156	426.00	434.00	FM_4	76.2185	502.2	-68.2	4249.3	0	0
JCT_158	420.55	440.70	-	0.0875	420.6	20.1	30.2	0	0
JCT_16	417.02	434.34	-	0.6965	417.7	16.6	987.5	0	0
JCT_160	419.83	441.04	-	0.179	420.0	21.0	30.2	0	0
JCT_162	421.87	441.81	-	0.0898	422.0	19.9	19.6	0	0
JCT_164	423.07	440.17	-	0.1077	423.2	17.0	19.6	0	0
JCT_166	423.89	439.88	-	0	423.9	16.0	0.0	0	0
JCT_168	428.75	438.09	-	0.1272	428.9	9.2	19.7	0	0
JCT_170	430.16	440.03	FM_5	0.1156	430.3	9.8	19.7	0	0
JCT_172	427.28	439.97	-	0.0713	427.4	12.6	10.6	0	0
JCT_174	428.64	438.11	-	0.0921	428.7	9.4	10.6	0	0
JCT_176	432.52	439.90	FM_5	0.0592	432.6	7.3	10.6	0	0
JCT_188	417.10	424.50	-	1.3274	418.4	6.1	6567.8	0	0
JCT_26	417.77	437.46	FM_6	0.6726	418.4	19.0	987.6	0	0
JCT_28	418.43	439.84	-	0.707	419.1	20.7	985.9	0	0
JCT_30	419.02	441.32	FM_6	0.7119	419.7	21.6	986.0	0	0
JCT_32	420.15	442.37	-	0.6343	420.8	21.6	958.4	0	0
JCT_34	421.15	442.66	FM_6	0.7963	421.9	20.7	958.4	0	0
JCT_36	421.90	443.66	FM_6	0.6241	422.5	21.1	926.8	0	0
JCT_38	422.43	441.77	-	0.7685	423.2	18.6	925.2	0	0
JCT_40	423.46	441.96	FM_6	0.6792	424.1	17.8	925.3	0	0
JCT_42	424.41	442.76	FM_6	0.6899	425.1	17.7	923.7	0	0
JCT_44	425.26	442.93	FM_6	0.6955	426.0	17.0	922.0	0	0
JCT_46	426.26	442.81	-	0.6602	426.9	15.9	920.5	0	0
JCT_48	426.79	442.86	-	0.6348	427.4	15.4	920.5	0	0
JCT_50	432.68	445.33	FM_6	0.6052	433.3	12.0	885.1	0	0
JCT_52	410.78	428.08	-	0.8065	411.6	16.5	2367.1	0	0
JCT_54	408.89	427.36	FM_6	0.5756	409.5	17.9	2368.6	0	0
JCT_56	402.86	425.05	-	0.8065	403.7	21.4	2368.6	0	0
JCT_58	401.25	421.02	-	0.7982	402.0	19.0	2368.6	0	0
JCT_60	399.92	421.63	-	0.7949	400.7	20.9	2368.6	0	0
JCT_62	398.22	420.22	FM_6	0.8273	399.0	21.2	2374.4	0	0
JCT_64	396.88	419.52	FM_6	0.6018	397.5	22.0	2375.9	0	0
JCT_66	392.36	419.55	FM_6	0.7287	393.1	26.5	2383.2	0	0
JCT_70	415.10	431.70	FM_6	0.6784	415.8	15.9	1000.5	0	0
JCT_72	413.35	428.32	FM_6	0.6606	414.0	14.3	1007.0	0	0

20-Year Projected System Flows, 5-year, 24-hour storm event

Input				Output					
Manhole ID	**Invert Elev.**	**Rim Elev.**	**DWF Pattern**	**Max Depth (ft)**	**Max HGL (ft)**	**Freeboard (ft)**	**Max Inflow (gpm)**	**Total Flood Vol. (MG)**	**Time Flooded (hrs)**
JCT_76	414.12	431.30	FM_6	0.715	414.8	16.5	1002.1	0	0
JCT_78	410.50	426.00	-	196.7337	607.2	-181.2	4647.5	0	0
JCT_80	424.50	434.00	-	31.6111	456.1	-22.1	4228.4	0	0
JCT_84	427.00	436.51	-	2.0129	429.0	7.5	4250.4	0	0
JCT_88	423.68	436.73	-	2.109	425.8	10.9	4391.2	0	0
JCT_90	423.63	435.40	FM_2	1.5643	425.2	10.2	4147.1	0	0
JCT_92	423.15	430.25	-	1.2628	424.4	5.8	4079.3	0	0
JCT_94	421.98	427.88	-	1.4577	423.4	4.4	4046.9	0	0
JCT_96	421.18	426.93	FM_2	1.2185	422.4	4.5	3956.4	0	0
JCT_98	419.84	425.64	-	1.2751	421.1	4.5	3954.8	0	0
KA1	468.71	475.74	-	0	468.7	7.0	0.0	0	0
KA10	581.00	587.00	-	0	581.0	6.0	0.0	0	0
KA2	469.83	475.13	-	0	469.8	5.3	0.0	0	0
KA3	468.16	473.87	-	0	468.2	5.7	0.0	0	0
KA4	445.27	450.77	-	0	445.3	5.5	0.0	0	0
KA5	434.23	439.73	-	0	434.2	5.5	0.0	0	0
KA6	471.00	476.50	-	0	471.0	5.5	0.0	0	0
KA7	433.00	438.50	-	0	433.0	5.5	0.0	0	0
KA8	441.00	447.00	-	0	441.0	6.0	0.0	0	0
KA9	581.00	587.00	-	0	581.0	6.0	0.0	0	0
S-1B	420.27	426.20	SUBLIMITY	0.5381	420.8	5.4	1409.0	0	0
S-1C	421.90	428.30	SUBLIMITY	0.7607	422.7	5.6	1409.0	0	0
S-2	427.47	434.70	-	0.0351	427.5	7.2	3.8	0	0

20-Year Projected System Flows, 5-year, 24-hour storm event

Input								Output					
Pipe ID	Upstream MH	Downstream MH	Length (ft)	Roughness	US Invert (ft)	DS Invert (ft)	Diameter (ft)	Full Flow (gpm)	Slope (%)	Max Flow (gpm)	Max Velocity (ft/s)	Max.Flow/Full Flow	Max.Depth/Full Depth
4701.1	915-SPLITTER	915-1	420.22	0.012	423.72	423.63	1.75	994	0.0167	2976	2.82	2.99	0.99
4702.1	915-1	1602-2	408.4	0.012	423.61	423.31	1.75	2411	0.0979	2798	2.71	1.16	0.96
4703.1	1602-2	1602-1	492.04	0.012	423.21	422.8	1.75	2197	0.0813	2699	2.63	1.23	0.92
4704.1	1602-1	1606-3	476.21	0.012	422.75	422.51	1.75	2233	0.084	2624	2.73	1.18	0.85
4705.1	1606-3	1606-2	402.55	0.012	422.43	421.94	1.75	2429	0.0994	2618	3.10	1.08	0.73
4706.1	1606-2	JCT_130	363.01	0.012	421.88	421.49	1.75	3383	0.1928	2614	4.00	0.77	0.58
CDT_11	JCT_102	JCT_188	40	0.012	418.36	417.29	2.50	32625	2.676	6568	8.42	0.20	0.38
CDT_113	1104-2	JCT_116	256.6	0.012	455.03	452.21	0.83	1117	1.0991	381	4.02	0.34	0.41
CDT_115	JCT_116	JCT_118	400.35	0.012	452.21	448.41	0.83	1038	0.9492	381	3.09	0.37	0.51
CDT_117	JCT_118	JCT_120	303.65	0.012	448.41	447.2	0.83	673	0.3985	427	3.26	0.64	0.53
CDT_119	JCT_120	JCT_122	121	0.012	447.2	446.16	0.83	988	0.8595	430	2.94	0.44	0.58
CDT_121	JCT_122	JCT_124	349	0.012	446.16	445.13	0.83	579	0.2951	444	2.86	0.77	0.61
CDT_123	JCT_124	316-6	164	0.012	445.13	444.07	0.83	856	0.6464	453	3.05	0.53	0.59
CDT_125	315-11	JCT_134	74	0.012	435	434.43	1.00	1520	0.7703	882	3.46	0.58	0.68
CDT_129	JCT_126	JCT_80	50	0.012	425	424.5	1.00	2217	1.0001	1961	12.84	0.88	1.00
CDT_13	JCT_12	JCT_70	375.72	0.012	415.82	415.1	1.50	2236	0.1916	996	2.78	0.45	0.46
CDT_131	JCT_66	JCT_140	80.54	0.012	392.36	391.89	2.00	8403	0.5836	2383	5.13	0.28	0.36
CDT_135	JCT_130	JCT_102	23.36	0.012	420.91	418.46	1.75	25020	10.5462	2614	9.76	0.10	0.31
CDT_139	S-1B	JCT_10	386.69	0.012	420.27	412.26	1.00	2494	2.0719	1409	7.75	0.57	0.69
CDT_141	JCT_132	MOBILE_PARK	500	0.012	421	420.56		0	0.088	81	-1.00	-1.00	-1.00
CDT_143	JCT_134	JCT_136	204	0.012	434.43	433.9	1.00	883	0.2598	882	3.12	1.00	0.75
CDT_145	JCT_136	JCT_50	298	0.012	433.9	432.68	1.00	1108	0.4094	882	3.67	0.80	0.64
CDT_147	JCT_138	902-20	100	0.012	421.16	419.77	1.17	3083	1.3901	329	3.09	0.11	0.28
CDT_149	JCT_78	JCT_80	5500	0.012	424.5	410.5	1.50	17	0	3587	5.20	205.49	1.00
CDT_15	JCT_14	JCT_12	356.69	0.012	416.42	415.82	1.50	2095	0.1682	987	2.63	0.47	0.48
CDT_151	JCT_80	JCT_156	644.249	0.012	424.5	426	1.50	2884	0.2328	4234	8.30	1.47	1.00
CDT_153	JCT_140	STOR_10	30	0.012	391.69	391.5	2.00	8754	0.6333	2383	5.28	0.27	0.36
CDT_155	JCT_142	JCT_88	160.15	0.012	423.88	423.73	2.00	3366	0.0937	4391	3.21	1.30	1.00
CDT_157	JCT_142	915-SPLITTER	2	0.012	423.53	423.53	3.00	7252	0.05	3038	1.62	0.42	0.82
CDT_159	JCT_150	S-2	285	0.012	428.81	427.67	0.67	372	0.4	4	0.83	0.01	0.07
CDT_161	JCT_152	JCT_150	1350	0.012	469	429.01	0.67	1011	2.9635	4	1.53	0.00	0.04
CDT_163	JCT_146	JCT_144	2200	0.012	526	496	0.67	686	1.3638	52	2.58	0.08	0.19
CDT_165	JCT_148	JCT_144	530	0.012	499	496.2	0.67	427	0.5283	52	1.86	0.12	0.23
CDT_167	JCT_144	1103-3	500	0.012	495.8	470.45	0.67	1324	5.0765	104	5.04	0.08	0.19
CDT_169	JCT_156	JCT_84	2125.93	0.012	426	429.76	1.50	2486	0.1769	4250	5.67	1.71	0.90
CDT_17	JCT_16	JCT_14	310.75	0.012	417.02	416.42	1.50	2244	0.1931	987	2.66	0.44	0.48
CDT_171	JCT_160	JCT_30	21	0.012	419.83	419.85	1.00	535	0.0952	30	0.99	0.06	0.14
CDT_173	JCT_158	JCT_160	42.6025	0.012	420.55	420.03	1.00	1914	1.2207	30	2.00	0.02	0.09
CDT_175	JCT_162	JCT_158	230.5594	0.012	421.87	420.75	1.00	1207	0.4858	20	1.31	0.02	0.09
CDT_177	JCT_164	JCT_162	384.461	0.012	423.07	421.97	1.00	927	0.2861	20	1.13	0.02	0.10
CDT_179	JCT_166	JCT_164	115.7837	0.012	423.89	423.17	1.00	1366	0.6219	0	0.00	0.00	0.00
CDT_181	JCT_168	JCT_164	452.7137	0.012	428.75	427.59	0.67	297	0.2562	20	1.15	0.07	0.17
CDT_183	JCT_170	JCT_168	371.2882	0.012	430.16	428.95	0.67	335	0.3259	20	1.25	0.06	0.16
CDT_185	JCT_172	JCT_158	100.7715	0.012	427.28	426.7	0.67	446	0.5756	11	1.21	0.02	0.10
CDT_187	JCT_174	JCT_172	413.2665	0.012	428.64	427.48	0.67	311	0.2807	11	0.99	0.03	0.12
CDT_189	JCT_176	JCT_174	300	0.012	432.52	428.84	0.67	651	1.2268	11	1.55	0.02	0.09
CDT_19	JCT_26	JCT_16	343.49	0.012	417.77	417.02	1.50	2387	0.2183	987	2.80	0.41	0.46
CDT_205	JCT_188	1606-1	35	0.012	417.1	417.01	2.50	10113	0.2571	6568	5.63	0.65	0.52
CDT_209	1104-28	1104-14	159.6428	0.012	505.44	489.44	0.67	1867	10.0731	7	1.76	0.00	0.06
CDT_21	JCT_28	JCT_26	350.11	0.012	418.43	417.77	1.50	2218	0.1885	986	2.77	0.44	0.46
CDT_211	1009-24	1009-16	416.3864	0.012	455.97	454.67	0.83	595	0.3122	447	2.87	0.75	0.61
CDT_213	916-05	916-3	204.4625	0.012	427.14	426.88	2.50	7112	0.1272	2515	2.28	0.35	0.51

20-Year Projected System Flows, 5-year, 24-hour storm event

Input								Output					
Pipe ID	Upstream MH	Downstream MH	Length (ft)	Roughness	US Invert (ft)	DS Invert (ft)	Diameter (ft)	Full Flow (gpm)	Slope (%)	Max Flow (gpm)	Max Velocity (ft/s)	Max.Flow/Full Flow	Max.Depth/Full Depth
CDT_23	JCT_30	JCT_28	329.33	0.012	419.02	418.43	1.50	2162	0.1792	986	2.67	0.46	0.47
CDT_25	JCT_32	JCT_30	318.86	0.012	420.15	419.02	1.25	1870	0.3544	958	3.17	0.51	0.54
CDT_27	JCT_34	JCT_32	501.74	0.012	421.15	420.15	1.25	1402	0.1993	958	2.94	0.68	0.57
CDT_29	JCT_36	JCT_34	214.33	0.012	421.9	421.15	1.25	1858	0.3499	927	2.87	0.50	0.57
CDT_31	JCT_38	JCT_36	280.6	0.012	422.43	421.9	1.25	1365	0.1889	925	2.93	0.68	0.56
CDT_33	JCT_40	JCT_38	391.35	0.012	423.46	422.43	1.25	1611	0.2632	925	2.80	0.57	0.58
CDT_35	JCT_42	JCT_40	376.92	0.012	424.41	423.46	1.25	1577	0.252	924	2.99	0.59	0.55
CDT_37	JCT_44	JCT_42	349.27	0.012	425.26	424.41	1.25	1550	0.2434	922	2.94	0.60	0.55
CDT_39	JCT_46	JCT_44	349.52	0.012	426.26	425.26	1.25	1680	0.2861	920	3.02	0.55	0.54
CDT_41	JCT_48	JCT_46	162.55	0.012	426.79	426.26	1.25	1794	0.3261	920	3.20	0.51	0.52
CDT_43	JCT_50	JCT_48	18.7	0.012	432.68	432.58	1.00	1267	0.5348	885	3.99	0.70	0.60
CDT_45	JCT_10	JCT_52	428.18	0.012	412.26	410.78	2.00	6467	0.3457	2367	4.33	0.37	0.41
CDT_47	JCT_52	JCT_54	435.04	0.012	410.78	408.89	2.00	7250	0.4344	2367	5.48	0.33	0.35
CDT_49	JCT_54	JCT_56	424.44	0.012	408.89	402.86	2.00	13112	1.4208	2369	5.48	0.18	0.35
CDT_51	JCT_56	JCT_58	405.6	0.012	402.86	401.25	2.00	6930	0.3969	2369	4.48	0.34	0.40
CDT_53	JCT_58	JCT_60	323.08	0.012	401.25	399.92	2.00	7058	0.4117	2369	4.52	0.34	0.40
CDT_55	JCT_60	JCT_62	363.67	0.012	399.92	398.4	2.00	7111	0.418	2369	4.53	0.33	0.40
CDT_57	JCT_62	JCT_64	362.99	0.012	398.22	396.9	2.00	6633	0.3636	2374	4.37	0.36	0.41
CDT_59	JCT_64	JCT_66	364.34	0.012	396.88	392.5	2.00	12061	1.2023	2376	6.65	0.20	0.30
CDT_63	JCT_70	JCT_76	450.81	0.012	415.1	414.12	1.50	2381	0.2174	1000	2.77	0.42	0.46
CDT_65	JCT_72	JCT_10	450.52	0.012	413.35	412.26	1.50	2512	0.2419	1007	2.59	0.40	0.50
CDT_67	JCT_76	JCT_72	401.7	0.012	414.12	413.35	1.50	2236	0.1917	1002	2.83	0.45	0.46
CDT_79	JCT_84	JCT_142	66.78	0.012	428.46	424.13	1.75	19639	6.4977	4250	8.44	0.22	0.66
CDT_81	JCT_88	JCT_90	394.17	0.012	423.68	423.67	2.00	554	0.0025	4144	3.20	7.48	0.88
CDT_83	JCT_90	JCT_92	356.97	0.012	423.63	423.2	2.00	3818	0.1205	4079	3.99	1.07	0.69
CDT_85	JCT_92	JCT_94	390.14	0.012	423.15	422.14	2.00	5597	0.2589	4047	4.29	0.72	0.63
CDT_87	JCT_94	JCT_96	459.65	0.012	421.98	421.23	2.00	4443	0.1632	3955	4.07	0.89	0.66
CDT_89	JCT_96	JCT_98	448.57	0.012	421.18	419.94	2.00	5783	0.2764	3955	4.54	0.68	0.60
CDT_91	JCT_98	JCT_100	424.89	0.012	419.84	418.82	2.00	5389	0.2401	3951	4.63	0.73	0.58
CDT_93	JCT_100	JCT_102	27.76	0.012	418.72	418.51	2.00	9567	0.7565	3951	6.46	0.41	0.45
HOWDY	1002-12	1002-13	267	0.012	500.24	493.44	0.67	939	2.5476	0	0.00	0.00	0.00
L1	915-2	915-SPLITTER	174.1	0.012	424.21	424.01	1.75	2611	0.1149	4205	3.95	1.61	1.00
L10	914-3	914-4	302.11	0.012	418.36	416.91	0.67	408	0.48	24	1.16	0.06	0.32
L100	1015-7	1015-5	300.08	0.012	445.02	444.36	1.00	812	0.2199	701	2.54	0.86	1.00
L101	1015-5	1015-34	254.13	0.012	444.36	443.8	1.00	813	0.2204	736	3.02	0.91	1.00
L102	1015-34	1015-32	155.26	0.012	441.96	441.63	1.00	799	0.2125	758	2.37	0.95	1.00
L103	1015-32	1015-31	152.01	0.012	441.63	441.38	1.00	703	0.1645	794	2.51	1.13	1.00
L104	1015-31	1015-29	245.1	0.012	441.38	440.78	1.00	857	0.2448	823	3.06	0.96	1.00
L105	1010-5	1015-32	261.28	0.012	450.65	445.25	0.67	846	2.0672	29	2.50	0.03	0.13
L106	1015-33	1015-32	131.06	0.012	442.95	442.35	0.67	398	0.4578	15	1.16	0.04	1.00
L107	1010-2	1010-1	340.59	0.012	454.33	452.65	0.67	413	0.4933	10	1.16	0.03	0.11
L108	1010-1	1015-6	249	0.012	452.25	447.25	0.67	834	2.0084	21	1.37	0.02	0.15
L109	1015-6	1015-5	113.07	0.012	447.25	446.81	0.67	367	0.3891	31	1.50	0.08	0.19
L11	914-4	911-10	281.35	0.012	416.91	415.35	0.67	438	0.5545	29	0.76	0.07	0.73
L110	1010-26	1015-7	360.03	0.012	448.62	447.61	0.67	312	0.2805	22	1.23	0.07	0.17
L111	1009-8	1009-7	199.04	0.012	453.89	450.69	0.67	746	1.6079	1	0.54	0.00	0.06
L112	1009-7	1009-6	234.21	0.012	450.69	449.75	0.67	373	0.4014	5	0.72	0.01	0.09
L113	1009-6	1016-2	275.12	0.012	449.75	447.65	0.67	514	0.7633	11	1.34	0.02	0.10
L114	1010-24	1010-23	62.29	0.012	454.8	454.38	0.50	224	0.6743	3	0.61	0.01	1.00
L115	1010-25	1010-26	339.21	0.012	453.95	448.62	0.67	738	1.5715	7	0.56	0.01	0.13
L116	1010-4	1010-3	352.05	0.012	454.06	451.65	0.67	487	0.6846	10	1.19	0.02	0.10
L117	1010-3	1015-34	348.14	0.012	451.65	445.62	0.67	774	1.7323	19	2.08	0.02	0.11

20-Year Projected System Flows, 5-year, 24-hour storm event

Input								Output					
Pipe ID	Upstream MH	Downstream MH	Length (ft)	Roughness	US Invert (ft)	DS Invert (ft)	Diameter (ft)	Full Flow (gpm)	Slope (%)	Max Flow (gpm)	Max Velocity (ft/s)	Max.Flow/Full Flow	Max.Depth/Full Depth
L118	1010-8	1010-7	100.02	0.012	452.86	452.46	0.67	372	0.3999	14	1.19	0.04	0.13
L119	1010-9	1010-7	148.03	0.012	453.03	452.46	0.67	365	0.3851	5	0.91	0.01	0.08
L12	911-10	911-2	294.01	0.012	415.35	417.06	0.67	449	0.5816	35	0.36	0.08	0.60
L120	1010-7	1010-6	440.11	0.012	452.36	449.52	0.67	473	0.6453	26	1.62	0.06	0.16
L121	1010-6	1015-31	350.28	0.012	448.63	444.71	0.67	622	1.1192	38	2.20	0.06	0.25
L122	1009-4	1009-3	124.02	0.012	455.4	454.69	0.67	445	0.5725	1	0.48	0.00	0.06
L123	1009-3	1009-2	314.04	0.012	454.69	452.21	0.67	523	0.7897	5	0.92	0.01	0.09
L124	1009-2	1009-1	299.24	0.012	452.21	451.01	0.67	373	0.401	10	1.08	0.03	0.11
L125	1112-19	1009-18	430.06	0.012	452.4	451.24	1.00	900	0.2697	150	2.02	0.17	0.26
L126	1009-18	1009-5	544.3	0.012	451.14	450.06	1.00	772	0.1984	153	1.35	0.20	0.38
L127	1009-17	1009-1	261.23	0.012	452.35	450.36	0.83	929	0.7618	457	3.10	0.49	0.58
L128	1009-1	1009-5	245.07	0.012	450.36	449.85	1.00	790	0.2081	471	2.07	0.60	0.62
L129	1016-1	1016-2	226	0.012	449.55	448.65	0.67	371	0.3982	1	0.62	0.00	0.04
L131	1010-11	1010-10	340.18	0.012	451.04	449.67	0.67	373	0.4027	14	1.24	0.04	0.12
L132	1011-15	1011-14	423	0.012	450.38	447.69	0.67	469	0.6359	11	1.27	0.02	0.11
L133	1011-5	1011-4	285.3	0.012	449.5	448.58	0.67	334	0.3225	14	0.98	0.04	0.16
L134	1011-4	1011-3	250.2	0.012	448.58	447.43	0.67	399	0.4596	26	1.47	0.06	0.17
L135	1011-3	1011-16	220.23	0.012	447.33	446.53	0.67	355	0.3633	36	1.53	0.10	0.21
L136	1011-14	1011-16	171.24	0.012	446.65	445.96	0.67	373	0.4029	49	1.71	0.13	0.24
L137	1011-13	1011-14	297	0.012	448.03	446.85	0.67	371	0.3973	26	1.42	0.07	0.17
L138	1011-12	1011-13	320.31	0.012	449.27	448.03	0.67	366	0.3871	15	1.19	0.04	0.16
L139	1011-16	1011-6	410.15	0.012	445.96	437.42	0.67	849	2.0826	94	1.77	0.11	0.61
L140	1011-7	1011-6	334.43	0.012	438.48	437.52	0.83	570	0.2871	684	2.80	1.20	1.00
L141	1011-8	1011-7	375.12	0.012	439.51	438.48	0.83	558	0.2746	667	2.73	1.20	1.00
L142	1011-17	1011-1	221.51	0.012	436.73	436	0.83	611	0.3296	764	3.12	1.25	1.00
L143	1011-6	1011-17	239.08	0.012	437.42	436.73	0.83	572	0.2886	756	3.09	1.32	1.00
L144	1011-9	1011-8	355	0.012	440.56	439.56	0.67	312	0.2817	7	0.69	0.02	1.00
L145	1011-10	1011-8	156.26	0.012	440.32	439.65	0.67	385	0.4288	654	4.17	1.70	1.00
L146	1011-11	1011-10	360.07	0.012	442.15	440.32	0.67	419	0.5082	508	3.24	1.21	1.00
L147	1010-14	1011-11	549.3	0.012	443.96	442.15	0.67	338	0.3295	498	3.18	1.48	1.00
L148	1010-13	1010-14	149	0.012	447.08	446.48	0.67	373	0.4027	319	2.75	0.85	1.00
L149	1010-12	1010-13	277.05	0.012	451.35	450.25	0.67	371	0.397	12	0.65	0.03	1.00
L150	1010-16	1010-15	254.02	0.012	449.33	448.51	0.67	334	0.3228	309	2.45	0.92	1.00
L151	1010-15	1010-13	270.12	0.012	448.51	447.21	0.67	408	0.4813	312	2.84	0.77	1.00
L152	1007-5	1010-14	303.32	0.012	445.25	444.06	0.67	369	0.3923	218	1.92	0.59	1.00
L153	1012-8	1012-7	345.39	0.012	442.77	440.91	0.67	432	0.5385	1	0.68	0.00	0.04
L154	1007-19	1010-16	348.24	0.012	451.05	449.65	0.67	373	0.402	20	1.19	0.05	1.00
L155	1010-17	1010-16	254.05	0.012	450.29	449.33	0.67	362	0.3779	260	2.16	0.72	1.00
L156	1010-18	1010-17	305	0.012	451.55	450.29	0.67	378	0.4131	223	2.25	0.59	1.00
L157	1009-12	1010-18	277.35	0.012	452.65	451.55	0.67	371	0.3966	189	2.21	0.51	1.00
L158	1010-20	1010-16	448	0.012	453.15	451.35	0.67	373	0.4018	24	1.39	0.07	1.00
L159	1010-22	1010-21	61.03	0.012	452.67	452.47	0.67	337	0.3277	8	0.82	0.02	1.00
L16	911-3	911-4	390.5861	0.012	431.02	429.97	0.83	552	0.2688	107	1.87	0.19	0.28
L160	1010-21	1010-17	405.03	0.012	452.47	450.87	0.67	370	0.395	10	0.92	0.03	1.00
L161	1007-17	1010-17	330.34	0.012	452.2	450.87	0.67	373	0.4026	21	1.29	0.06	1.00
L162	1010-19	1010-18	280.04	0.012	453.25	452.21	0.67	359	0.3714	14	1.06	0.04	1.00
L163	1010-23	1010-19	186.01	0.012	454.28	453.25	0.67	438	0.5537	9	0.91	0.02	1.00
L164	1009-11	1009-10	168	0.012	456.67	456.25	0.67	294	0.25	12	0.91	0.04	0.75
L165	1009-9	1009-10	230.03	0.012	455.51	454.59	0.67	372	0.4	4	0.62	0.01	1.00
L166	1009-10	1009-12	261.12	0.012	454.59	453.55	0.67	371	0.3983	20	1.22	0.05	1.00
L167	1009-13	1009-12	202.04	0.012	456.95	455.35	0.67	524	0.7919	5	1.04	0.01	0.54
L168	1008-2	1008-1	356.02	0.012	456.11	454.75	0.67	364	0.382	156	2.18	0.43	1.00

20-Year Projected System Flows, 5-year, 24-hour storm event

Input								Output					
Pipe ID	Upstream MH	Downstream MH	Length (ft)	Roughness	US Invert (ft)	DS Invert (ft)	Diameter (ft)	Full Flow (gpm)	Slope (%)	Max Flow (gpm)	Max Velocity (ft/s)	Max.Flow/Full Flow	Max.Depth/Full Depth
L169	1008-1	1009-12	294.01	0.012	454.75	453.55	0.67	376	0.4082	161	2.38	0.43	1.00
L17	911-4	914-7	468.7701	0.012	429.92	428.63	0.83	558	0.2752	115	1.83	0.21	0.31
L170	1007-14	1007-15	395.05	0.012	455.15	453.58	0.67	371	0.3974	10	0.93	0.03	1.00
L171	1007-15	1010-18	369.02	0.012	453.58	452.08	0.67	375	0.4065	19	1.28	0.05	1.00
L172	1007-16	1007-17	332.1	0.012	453.54	452.2	0.67	374	0.4035	10	0.93	0.03	1.00
L173	1007-18	1007-19	359.11	0.012	452.48	451.05	0.67	371	0.3982	11	1.07	0.03	1.00
L174	1008-7	1008-6	223.08	0.012	460.94	458.99	0.67	550	0.8742	66	2.70	0.12	0.26
L175	1008-6	1008-2	358.24	0.012	458.99	457.15	0.67	422	0.5136	74	2.04	0.18	0.36
L176	1112-1	1009-15	501.2	0.012	457.71	456.14	0.83	596	0.3133	440	2.05	0.74	0.82
L177	1009-15	1009-24	469.13	0.012	456.14	454.67	0.83	203	0.0362	447	2.04	2.21	0.84
L178	1009-16	1009-17	291.11	0.012	454.57	452.35	0.83	929	0.7626	452	3.76	0.49	0.49
L179	1112-2	1112-9	75.15	0.012	459.27	458.81	0.83	833	0.6121	406	2.91	0.49	0.56
L18	914-7	914-8	489.7374	0.012	428.63	427.31	0.83	552	0.2695	115	2.18	0.21	0.27
L180	1112-9	1112-1	306.01	0.012	458.8	457.81	0.83	605	0.3235	414	2.85	0.68	0.58
L181	1105-2	1105-1	197.06	0.012	470.28	462.71	0.67	1154	3.8443	43	3.42	0.04	0.16
L182	1105-1	1112-2	306	0.012	462.71	459.58	0.67	595	1.0229	46	2.24	0.08	0.19
L183	1009-14	1112-9	364.17	0.012	460.85	458.8	0.67	441	0.5629	7	1.03	0.02	0.44
L184	1112-6	1112-1	394.15	0.012	460.35	458.75	0.67	375	0.4059	21	1.35	0.06	0.16
L185	1112-4	1112-3	462.13	0.012	466.35	461.55	0.67	600	1.0387	353	3.25	0.59	0.66
L186	1112-3	1112-2	338.09	0.012	461.55	459.95	0.67	405	0.4733	358	3.07	0.88	0.70
L187	1112-11	1112-10	291.01	0.012	454.27	453.3	0.83	614	0.3333	4	0.80	0.01	0.06
L188	1112-10	1112-19	266.19	0.012	453.2	452.5	0.83	546	0.263	8	0.82	0.02	0.16
L189	1112-12	1112-13	207.09	0.012	455.79	455.19	0.67	317	0.2897	3	0.69	0.01	0.06
L19	914-8	915-3	87.14	0.012	427.31	425.81	0.83	1396	1.7216	129	1.92	0.09	0.56
L190	1112-14	1112-13	244.07	0.012	456.39	455.19	0.67	413	0.4917	3	0.83	0.01	0.06
L191	1112-13	1112-17	259.09	0.012	455.09	454.29	0.83	591	0.3088	9	0.90	0.02	0.16
L192	1112-17	1112-18	381.3	0.012	454.19	453.34	1.00	818	0.2229	133	1.85	0.16	0.26
L193	1112-18	1112-19	244.1	0.012	453.24	452.8	1.00	735	0.1803	137	1.78	0.19	0.27
L194	1112-15	1111-6	344.07	0.012	457.78	456.9	0.67	298	0.2558	4	0.75	0.02	0.08
L195	1111-6	1111-7	273.03	0.012	456.8	456	0.83	576	0.293	19	1.09	0.03	0.18
L196	1111-7	1112-16	381.16	0.012	455.93	455.11	1.00	804	0.2151	112	1.74	0.14	0.24
L197	1112-16	1112-17	326.1	0.012	455.01	454.29	1.00	814	0.2208	118	1.79	0.14	0.24
L198	1111-14	1111-16	348.24	0.012	461.4	459.94	0.67	381	0.4193	4	0.84	0.01	0.07
L198.1	1111-16	1111-6	194.37	0.012	459.93	456.9	0.67	735	1.5591	7	1.51	0.01	0.07
L199	1111-8	1111-6	429.23	0.012	466.78	458.19	0.67	832	2.0017	4	1.33	0.00	0.05
L20	915-3	915-2	72.84	0.012	425.71	425.52	0.83	544	0.2608	785	3.52	1.44	0.95
L200	1111-?	1111-7	117.07	0.012	456.77	456	0.67	477	0.6577	4	0.94	0.01	0.19
L201	1111-9	1111-7	390.18	0.012	457.14	456	1.00	936	0.2922	87	1.68	0.09	0.20
L202	1111-10	1111-9	386.05	0.012	458.14	457.24	1.00	836	0.2331	83	1.64	0.10	0.20
L203	1111-5	1112-8	164.6	0.012	466.95	465.95	0.67	459	0.6075	1	0.52	0.00	0.05
L204	1112-8	1112-7	399.08	0.012	465.95	461.95	0.67	589	1.0024	5	0.63	0.01	0.10
L205	1112-7	1112-6	404.18	0.012	461.95	460.35	0.67	370	0.3959	15	1.07	0.04	0.15
L206	1107-3	1107-2	442.11	0.012	523.16	522.33	0.50	118	0.1877	13	0.94	0.11	0.22
L206.1	1107-2	1107-1	230.01	0.012	522.2	510.53	0.67	1326	5.0802	19	3.19	0.01	0.08
L208	1110-4	1110-2	439.16	0.012	475.8	474.56	0.67	313	0.2824	190	1.94	0.61	0.60
L21	1014-5	1013-6	340.01	0.012	431.97	431.21	1.25	1485	0.2235	2084	3.78	1.40	1.00
L212	1111-3	1111-2	284.09	0.012	472.59	470.5	0.67	505	0.7357	260	2.74	0.52	0.58
L213	1111-2	1111-1	325.08	0.012	470.5	469.2	0.67	372	0.3999	286	2.59	0.77	0.66
L214	1111-1	1112-5	304.37	0.012	469.2	467.95	0.67	377	0.4107	298	2.56	0.79	0.70
L215	1112-5	1112-4	386.03	0.012	467.95	466.35	0.67	379	0.4145	306	2.91	0.81	0.64
L216	1106-20	1111-2	270.42	0.012	471.75	470.5	0.67	400	0.4622	22	1.66	0.05	0.41
L217	1106-19	1111-3	160	0.012	473.35	472.69	0.67	378	0.4125	4	0.79	0.01	0.21

20-Year Projected System Flows, 5-year, 24-hour storm event

Input								Output					
Pipe ID	Upstream MH	Downstream MH	Length (ft)	Roughness	US Invert (ft)	DS Invert (ft)	Diameter (ft)	Full Flow (gpm)	Slope (%)	Max Flow (gpm)	Max Velocity (ft/s)	Max.Flow/Full Flow	Max.Depth/Full Depth
L218	1106-1	1111-1	308.72	0.012	474.33	469.2	0.67	758	1.6619	8	1.33	0.01	0.37
L219	1111-13	1111-12	426	0.012	462	460.6	0.67	337	0.3286	73	1.75	0.22	0.31
L22	1013-6	1013-5	325.04	0.012	431.21	430.44	1.25	1529	0.2369	2101	3.81	1.37	1.00
L220	1111-12	1111-11	296.17	0.012	460.6	459.29	0.67	391	0.4423	76	1.99	0.19	0.29
L221	1111-11	1111-10	407.28	0.012	459.03	458.24	1.00	763	0.194	79	1.52	0.10	0.21
L224	1106-15	1106-9	334.15	0.012	532.52	523.89	0.67	946	2.5835	13	2.11	0.01	0.08
L225	1106-7	1106-8	202.12	0.012	549.56	545.91	0.67	791	1.8062	11	2.03	0.01	0.08
L226	1106-8	1106-9	294.64	0.012	545.91	523.84	0.67	1613	7.5116	14	3.17	0.01	0.07
L227	1106-9	1106-16	237.12	0.012	523.74	509.69	0.67	1433	5.9357	49	4.26	0.03	0.13
L228	1106-16	1106-18	203.81	0.012	509.44	495.42	0.67	1545	6.8953	54	4.41	0.03	0.13
L229	1106-18	1110-1	304.08	0.012	495.42	477.06	0.67	1447	6.0489	57	4.47	0.04	0.14
L23	1013-5	1013-4	309.1	0.012	430.44	429.81	1.25	1418	0.2038	2112	3.83	1.49	1.00
L230	1110-1	1110-2	133	0.012	476.95	474.85	0.67	739	1.5791	61	2.85	0.08	0.20
L232	1106-3	1106-7	422.52	0.012	551.16	550.45	0.67	241	0.168	2	0.49	0.01	0.07
L233	1106-5	1106-6	152.21	0.012	555.58	554.5	0.67	496	0.7096	4	1.12	0.01	0.07
L234	1106-6	1106-7	373.3	0.012	554.5	550.45	0.67	613	1.085	6	1.24	0.01	0.07
L235	1106-2	1106-1	357.71	0.012	510	474.33	0.67	1863	10.0217	2	0.99	0.00	0.05
L236	1106-14	1106-10	198.64	0.012	543.24	535.47	0.67	1164	3.9146	3	1.58	0.00	0.04
L237	1106-10	1106-9	296.38	0.012	535.21	523.84	0.67	1153	3.8391	19	2.77	0.02	0.09
L238	1106-11	1106-10	230.46	0.012	537.54	535.47	0.67	558	0.8982	7	1.21	0.01	0.08
L239	1106-13	1106-12	148.93	0.012	546.54	539.34	0.67	1294	4.8401	4	2.20	0.00	0.05
L24	1013-4	1013-3	164.51	0.012	429.81	429.43	1.25	1510	0.231	2180	3.97	1.44	1.00
L240	1106-12	1106-10	222.65	0.012	539.34	535.47	0.67	776	1.7384	7	1.52	0.01	0.07
L241	1105-7	1105-6	319.1	0.012	527.12	514.8	0.67	1156	3.8637	4	1.22	0.00	0.05
L242	1105-6	1105-9	364.01	0.012	514.8	499.65	0.67	1201	4.1656	10	2.35	0.01	0.07
L243	1105-9	1105-3	244.9	0.012	497.65	496.75	0.67	357	0.3675	16	1.23	0.05	0.14
L244	1105-3	1105-2	222.02	0.012	494.69	470.28	0.67	1957	11.0616	19	2.28	0.01	0.10
L245	1104-16	1104-17	74.67	0.012	537.28	533.87	0.67	1258	4.5715	1	0.90	0.00	0.02
L246	1104-17	1105-5	193.01	0.012	533.87	528.04	0.67	1023	3.0219	1	1.24	0.00	0.03
L247	1105-5	1105-4	315.23	0.012	528.04	512.45	0.67	1309	4.9517	1	1.50	0.00	0.02
L248	1105-4	1105-3	194.09	0.012	512.45	495.99	0.67	1716	8.5113	1	1.67	0.00	0.02
L249	1008-10	1008-9	105.26	0.012	501.25	488.75	0.67	2035	11.96	55	7.59	0.03	0.11
L25	1013-3	916-8	360.2	0.012	428.54	428.12	1.50	1744	0.1166	2412	3.04	1.38	1.00
L250	1008-9	1008-8	167.61	0.012	488.75	461.25	0.67	2399	16.6325	56	6.59	0.02	0.21
L251	1008-8	1008-7	115.26	0.012	461.25	460.94	0.67	305	0.269	59	1.79	0.20	0.27
L252	1008-5	1008-4	197.21	0.012	458.16	457	0.67	451	0.5882	8	0.31	0.02	0.44
L253	1008-4	1008-3	133.02	0.012	457.3	457	0.67	279	0.2255	66	1.48	0.24	0.52
L254	1008-3	1008-2	245.4	0.012	457	456.11	0.67	354	0.3627	72	1.27	0.20	0.86
L2574	916-8	916-5	554.36	0.012	428.12	427.49	1.50	1722	0.1136	2465	3.11	1.43	1.00
L260	1104-6	1104-5	118.21	0.012	463.93	462.21	0.67	710	1.4552	77	2.97	0.11	0.22
L261	1104-5	1104-3	75.66	0.012	461.78	460.4	0.67	794	1.8243	81	3.25	0.10	0.22
L265	1104-21	1104-20	218.02	0.012	489.67	486.88	0.67	666	1.2798	18	1.93	0.03	0.11
L268	1104-11	1104-10	143.75	0.012	464.07	459.75	0.67	1020	3.0066	16	2.42	0.02	0.09
L272	1001-6	1001-5	196.01	0.012	488.75	480.34	0.67	1219	4.2946	10	2.25	0.01	0.07
L273	1001-5	1001-2	290.17	0.012	480.34	463.75	0.67	1408	5.7267	21	3.11	0.02	0.16
L274	1001-4	1001-5	239.1	0.012	484.66	480.44	0.67	782	1.7652	5	1.39	0.01	0.06
L275	1001-9	1001-8	57.27	0.012	492	491.44	0.67	582	0.9779	5	1.08	0.01	0.07
L276	1001-8	1001-1	447.45	0.012	491.44	468.95	0.67	1320	5.0326	13	2.73	0.01	0.09
L277	1001-1	1001-2	515.16	0.012	468.95	463.75	0.67	591	1.0094	16	0.90	0.03	0.17
L278	1001-2	1001-3	384.33	0.012	463.75	462.25	0.67	368	0.3903	44	1.41	0.12	0.26
L279	1001-3	1104-1	331.07	0.012	462.25	460.59	0.67	417	0.5014	56	2.59	0.13	0.20
L28	916-5	916-05	471.01	0.012	427.49	426.88	1.50	1392	0.0743	2516	3.36	1.81	0.90

20-Year Projected System Flows, 5-year, 24-hour storm event

Input								Output					
Pipe ID	Upstream MH	Downstream MH	Length (ft)	Roughness	US Invert (ft)	DS Invert (ft)	Diameter (ft)	Full Flow (gpm)	Slope (%)	Max Flow (gpm)	Max Velocity (ft/s)	Max.Flow/Full Flow	Max.Depth/Full Depth
L280	1104-1	1104-2	24.7	0.012	460.59	455.03	0.67	2828	23.1031	81	4.48	0.03	0.31
L281	1104-9	1104-2	241.2	0.012	456.19	455.03	0.83	739	0.4809	302	3.03	0.41	0.43
L284	1104-26	1104-25	355.09	0.012	464.76	463.36	0.83	668	0.3943	199	2.47	0.30	0.36
L285	1104-25	1104-24	237.26	0.012	463.26	458.27	0.83	1544	2.1036	202	4.58	0.13	0.24
L286	1104-24	1104-3	41.6	0.012	458.27	457	0.83	1862	3.0543	204	2.66	0.11	0.35
L288	316-2	316-1	414.01	0.012	460.3	456.15	0.67	589	1.0024	137	3.06	0.23	0.33
L289	316-3	316-2	297.14	0.012	465.45	460.5	0.67	759	1.6661	123	3.56	0.16	0.27
L29	916-3	915-13	467.13	0.012	426.88	426.29	1.75	2738	0.1263	2547	2.80	0.93	0.79
L290	315-28	316-3	259.05	0.012	473.15	465.65	0.67	1001	2.8964	108	4.17	0.11	0.22
L291	316-1	316-5	223.19	0.012	455.95	448.97	0.67	1041	3.1289	149	4.71	0.14	0.26
L292	316-4	316-5	390.68	0.012	451.54	448.97	0.67	477	0.6578	30	1.69	0.06	0.17
L293	315-26	316-4	409.4	0.012	455.53	451.74	0.67	566	0.9258	12	1.44	0.02	0.10
L294	316-5	316-6	290.93	0.012	448.77	444.07	0.67	748	1.6157	193	2.45	0.26	0.58
L295	316-6	316-29	170.47	0.012	444.07	443.32	1.00	1149	0.44	661	3.15	0.58	0.58
L2951	S-2	S-1C	430.12	0.014	427.47	422	1.00	1675	1.2718	4	0.05	0.00	0.35
L2952	S-1C	S-1B	126.02	0.012	421.9	420.93	1.00	1520	0.7697	1409	4.91	0.93	0.76
L296	316-29	316-7	133	0.012	443.32	442.91	1.00	962	0.3083	666	3.27	0.69	0.56
L296.1	316-7	316-8	240.53	0.012	442.71	441.98	1.00	954	0.3035	668	3.20	0.70	0.57
L297	316-8	316-9	202.02	0.012	441.78	441.16	1.00	960	0.3069	673	3.23	0.70	0.57
L298	316-9	316-10	119.88	0.012	440.96	440.61	1.00	936	0.292	675	3.26	0.72	0.57
L299	316-10	316-11	46.53	0.012	440.41	440.25	1.00	1016	0.3439	676	3.45	0.67	0.54
L30	915-13	915-14	286	0.012	426.29	425.98	1.75	2537	0.1084	2563	2.81	1.01	0.79
L300	316-11	315-23	304.14	0.012	440.05	439.15	1.00	942	0.2959	688	3.18	0.73	0.59
L301	315-23	315-14	114.48	0.012	438.95	438.6	1.00	958	0.3057	734	3.38	0.77	0.59
L3010	IND~LS	911-3	526.06	0.012	413	431.3	0.33	252	3.4808	103	3.40	0.41	0.72
L3014	GARDNER~LS	1005-4	918.85	0.012	436.25	440.25	0.50	235	0.4353	605	6.87	2.58	1.00
L302	315-24	315-23	328.07	0.012	440.58	439.15	0.67	388	0.4359	43	1.53	0.11	0.44
L3023	902-4	JCT_138	35	0.012	421.21	421.16	1.17	988	0.1429	329	3.21	0.33	0.27
L3024	1110-2	1111-3	486.2	0.012	474.56	472.69	0.67	365	0.3846	254	2.66	0.70	0.59
L3025	1110-6	1110-4	613.08	0.012	478.16	475.85	0.67	361	0.3768	162	2.20	0.45	0.48
L3027	316-20	316-21	327.98	0.012	443.88	442.55	0.67	375	0.4055	8	0.70	0.02	0.13
L3028	316-20	316-19	153.83	0.012	444.4	442.79	0.67	602	1.0467	0	0.00	0.00	0.04
L303	316-12	316-11	287.17	0.012	442.53	440.25	0.67	524	0.794	7	1.04	0.01	0.38
L3030	1107-1	1110-4	210.86	0.012	510.53	475.9	0.67	2401	16.6493	29	4.42	0.01	0.25
L3031	1104-20	1104-19	209.09	0.012	486.88	475.51	0.67	1373	5.4459	31	2.35	0.02	0.16
L3032	1104-19	1104-18	378.87	0.012	475.51	473.67	0.67	410	0.4857	41	1.44	0.10	0.24
L3033	1104-18	1104-8	113.09	0.012	473.67	473.18	0.67	387	0.4333	53	2.26	0.14	0.21
L3034	1104-8	1104-6	211.68	0.012	473.18	464.03	0.67	1224	4.3266	59	4.03	0.05	0.15
L3035	1104-7	1104-6	446.21	0.012	468.71	464.03	0.67	603	1.0489	16	1.67	0.03	0.11
L3036	1104-22	1104-21	240.02	0.012	493.02	489.67	0.67	695	1.3959	8	1.19	0.01	0.10
L3037	1104-13	1104-12	215.08	0.012	488.31	478.21	0.67	1276	4.7011	5	1.94	0.00	0.05
L3038	1104-12	1104-11	313.84	0.012	478.02	466.26	0.67	1139	3.7498	13	2.43	0.01	0.08
L3040	1001-15	1001-14	396.4	0.012	522.04	516.23	0.67	712	1.4658	18	1.75	0.02	0.12
L3041	1104-15	1104-28	300.73	0.012	519.47	489.44	0.67	1271	4.6704	7	2.50	0.01	0.05
L3042	1104-14	1104-1	285	0.012	489.44	460.59	0.67	1877	10.1751	21	3.63	0.01	0.10
L3043	1001-7	1104-14	171.24	0.012	496.77	489.44	0.67	1218	4.2845	12	2.90	0.01	0.07
L3058	901-1	901-23	68.59	0.012	435.25	434.85	0.50	208	0.5832	0	0.00	0.00	0.08
L306	315-27	315-25	142.47	0.012	468.66	458.78	0.67	1551	6.9515	8	2.60	0.01	0.05
L307	315-25	315-24	254.33	0.012	458.58	440.78	0.67	1558	7.016	21	3.51	0.01	0.08
L308	316-18	316-17	145.65	0.012	443.3	442.39	0.67	465	0.6248	10	1.31	0.02	0.12
L309	316-19	316-17	85.87	0.012	442.79	442.39	0.67	402	0.4658	5	0.65	0.01	0.11
L31	915-14	915-16	296.49	0.012	425.98	425.61	1.75	2722	0.1248	2630	2.95	0.97	0.77

20-Year Projected System Flows, 5-year, 24-hour storm event

Input								Output					
Pipe ID	Upstream MH	Downstream MH	Length (ft)	Roughness	US Invert (ft)	DS Invert (ft)	Diameter (ft)	Full Flow (gpm)	Slope (%)	Max Flow (gpm)	Max Velocity (ft/s)	Max.Flow/Full Flow	Max.Depth/Full Depth
L312	316-21	316-22	199.74	0.012	442.55	441.5	0.67	427	0.5257	21	1.44	0.05	0.15
L313	316-22	315-19	115.11	0.012	441.5	440.33	0.67	593	1.0165	28	1.52	0.05	0.17
L314	315-19	315-18	161.52	0.012	440.33	439.62	0.67	390	0.4396	35	1.44	0.09	0.21
L315	315-18	315-16	263.23	0.012	439.62	438.2	0.67	432	0.5395	46	1.50	0.11	0.25
L316	315-16	315-9	106.47	0.012	438.2	437.75	0.67	383	0.4227	65	1.60	0.17	0.31
L317	315-9	315-10	226.02	0.012	437.75	437	0.67	339	0.3318	82	1.77	0.24	0.34
L318	315-10	315-15	139	0.012	437	436.51	0.67	349	0.3525	85	1.77	0.24	0.35
L319	315-22	315-15	107.67	0.012	438.2	436.61	0.67	715	1.4769	50	2.39	0.07	0.19
L32	915-16	915-2	368.01	0.012	425.61	425.18	1.75	2634	0.1168	2704	3.69	1.03	0.68
L320	316-13	315-22	409.78	0.012	439.07	438.2	0.67	271	0.2123	45	1.49	0.17	0.25
L321	316-14	316-13	179.1	0.012	439.81	439.03	0.67	388	0.4355	42	1.06	0.11	0.30
L322	316-15	316-14	207.17	0.012	440.73	439.81	0.67	392	0.4441	31	1.34	0.08	0.21
L323	316-16	316-15	143.89	0.012	441.35	440.73	0.67	386	0.4309	23	1.22	0.06	0.18
L324	316-17	316-16	195.26	0.012	442.39	441.35	0.67	429	0.5326	18	1.19	0.04	0.15
L325	315-21	316-14	141.17	0.012	440.5	439.81	0.67	411	0.4888	4	0.64	0.01	0.15
L326	315-21	315-20	243.74	0.012	440.5	439.07	0.67	451	0.5867	4	0.56	0.01	0.10
L327	315-20	315-16	159.53	0.012	439.07	438.2	0.67	434	0.5454	14	1.03	0.03	0.20
L328	315-17	315-18	139.09	0.012	440.5	439.62	0.67	468	0.6327	7	1.10	0.01	0.15
L329	315-6	315-7	301.23	0.012	441.5	439.75	0.67	448	0.581	7	1.09	0.02	0.10
L33	1011-1	1011-18	254.13	0.012	436	435.2	0.83	597	0.3148	788	3.22	1.32	1.00
L330	315-7	315-8	282.21	0.012	439.75	438.32	0.67	419	0.5067	12	1.18	0.03	0.11
L331	315-8	315-9	34.06	0.012	438.32	438	0.67	570	0.9396	15	1.56	0.03	0.11
L332	315-15	315-13	144.09	0.012	436.51	435.91	1.00	1118	0.4164	137	2.17	0.12	0.28
L333	315-14	315-13	65.28	0.012	438.4	435.91	1.00	3385	3.8171	734	7.54	0.22	0.32
L337	315-30	315-31	231.31	0.012	465.64	445.62	0.67	1734	8.6877	5	2.69	0.00	0.05
L338	315-31	315-11	244.02	0.012	445.62	436	0.67	1169	3.9454	7	2.00	0.01	0.05
L339	315-12	315-11	130.7	0.012	435.26	435	1.00	773	0.1989	872	3.45	1.13	0.67
L34	1011-18	1014-7	188.22	0.012	435.2	434.29	0.83	740	0.4835	816	3.55	1.10	1.00
L340	315-13	315-12	48.76	0.012	435.71	435.26	1.00	1664	0.9229	872	3.50	0.52	0.67
L342	1002-12	1002-5	399.55	0.012	500.13	496.25	0.67	581	0.9761	4	0.80	0.01	0.08
L343	1002-5	1002-6	291.08	0.012	496.25	489.92	0.67	868	2.1752	13	2.28	0.02	0.08
L345	1002-13	1002-14	257.07	0.012	493.34	472.24	0.67	1688	8.2357	59	5.04	0.04	0.13
L345.1	1002-14	1003-16	159.03	0.012	472.14	468.74	0.67	860	2.1385	60	3.16	0.07	0.18
L346	1003-16	1003-15	290.29	0.012	467.93	458.58	0.67	1056	3.2226	63	3.38	0.06	0.18
L347	1002-6	1002-7	162.02	0.012	489.92	468.92	0.67	2127	13.0716	21	2.85	0.01	0.09
L348	1002-7	1002-8	210.24	0.012	468.92	453.58	0.67	1591	7.3159	47	4.22	0.03	0.56
L349	1002-2	1002-3	231	0.012	451.52	451	0.67	279	0.2251	1	0.47	0.00	0.05
L35	1014-7	1014-6	323.08	0.012	434.02	433.14	0.83	555	0.2724	822	3.36	1.48	1.00
L350	1002-3	1003-4	516.14	0.012	450.4	447.55	0.67	437	0.5522	5	0.98	0.01	0.07
L351	1002-4	1002-3	262.19	0.012	452	450.4	0.67	460	0.6103	1	0.35	0.00	0.06
L352	1003-12	1003-11	244.18	0.012	448.5	447.53	0.67	371	0.3973	9	0.91	0.02	0.12
L353	1003-11	1003-10	89.94	0.012	447.53	447.25	0.67	328	0.3113	13	1.00	0.04	0.13
L354	1002-8	1007-8	414.2	0.012	453.58	451.94	0.67	370	0.3959	54	1.42	0.15	1.00
L355	1007-8	1007-7	222.04	0.012	451.94	451.04	0.67	375	0.4053	130	2.05	0.35	1.00
L356	1007-9	1007-8	269.05	0.012	453.03	451.97	0.67	369	0.394	68	1.51	0.19	1.00
L357	1002-11	1007-9	235.02	0.012	457.83	453.13	0.67	832	2.0002	35	2.58	0.04	0.57
L358	1002-15	1007-4	393.18	0.012	450.95	449.18	0.67	395	0.4502	24	1.52	0.06	1.00
L359	1002-1	1007-6	389.16	0.012	449.8	448.25	0.67	371	0.3983	55	0.35	0.15	1.00
L36	1014-6	1014-5	278.09	0.012	433.14	432.34	0.83	571	0.2877	839	3.43	1.47	1.00
L360	1007-11	1002-11	298.3	0.012	477.85	457.93	0.67	1522	6.6928	17	3.24	0.01	0.08
L361	1007-12	1007-10	302.37	0.012	455.41	454.17	0.67	377	0.4101	11	1.07	0.03	0.56
L362	1007-10	1007-9	269.05	0.012	454.17	453.08	0.67	374	0.4051	20	0.98	0.05	1.00

20-Year Projected System Flows, 5-year, 24-hour storm event

Input								Output					
Pipe ID	Upstream MH	Downstream MH	Length (ft)	Roughness	US Invert (ft)	DS Invert (ft)	Diameter (ft)	Full Flow (gpm)	Slope (%)	Max Flow (gpm)	Max Velocity (ft/s)	Max.Flow/Full Flow	Max.Depth/Full Depth
L363	1007-13	1007-9	466.13	0.012	455.13	453.13	0.67	385	0.4291	7	0.75	0.02	0.55
L364	1007-6	1007-1	424.17	0.012	448.25	446.55	0.67	372	0.4008	44	0.74	0.12	1.00
L365	1007-1	1007-5	319.04	0.012	446.55	445.25	0.67	376	0.4075	209	2.29	0.56	1.00
L366	1007-3	1007-2	270.47	0.012	449.75	448.67	0.67	372	0.3993	146	2.18	0.39	1.00
L367	1007-2	1007-1	259.16	0.012	447.68	446.65	0.67	371	0.3974	189	2.37	0.51	1.00
L368	1007-4	1007-2	394.41	0.012	449.18	447.78	0.67	351	0.355	40	1.39	0.11	1.00
L369	1007-7	1007-3	303.11	0.012	451.04	449.85	0.67	369	0.3926	142	2.21	0.38	1.00
L37	1015-24	1014-12	265.37	0.012	438.78	438.15	1.00	844	0.2374	1151	3.27	1.36	1.00
L370	1006-7	1006-8	273.47	0.012	446.25	445.25	0.67	356	0.3657	9	0.81	0.02	1.00
L371	1006-9	1006-8	234.21	0.012	449.29	445.25	0.67	773	1.7252	11	1.96	0.01	0.54
L372	1006-8	1006-10	122.1	0.012	445.25	444.75	0.67	377	0.4095	24	1.20	0.06	1.00
L373	1006-10	1006-13	112.45	0.012	444.75	444.33	0.67	360	0.3735	28	0.80	0.08	1.00
L374	1006-13	1006-2	251.16	0.012	444.33	443.24	0.67	388	0.434	84	1.66	0.22	1.00
L375	1006-2	1006-1	286	0.012	443.24	442.1	0.67	371	0.3986	137	2.04	0.37	1.00
L376	1006-1	1011-10	355.32	0.012	442.1	440.7	0.67	369	0.394	147	2.19	0.40	1.00
L377	1006-3	1006-4	294.03	0.012	445.69	444.65	0.67	350	0.3537	7	0.90	0.02	1.00
L378	1006-4	1006-2	266.03	0.012	444.55	443.34	0.67	397	0.4548	45	1.42	0.11	1.00
L379	1006-6	1006-5	358	0.012	447.84	446.52	0.67	357	0.3687	17	0.81	0.05	0.79
L38	1014-12	1014-14	281.04	0.012	438.15	437.55	1.00	800	0.2135	1174	3.33	1.47	1.00
L380	1006-5	1006-4	524.28	0.012	446.52	444.55	0.67	361	0.3758	30	1.19	0.08	1.00
L381	1006-11	1006-2	279.12	0.012	445.83	443.24	0.67	567	0.928	11	1.45	0.02	1.00
L382	1006-12	1006-13	255.01	0.012	446	444.33	0.67	476	0.6549	39	2.34	0.08	1.00
L383	1006-14	1006-13	244.02	0.012	444.75	444.33	0.67	244	0.1721	19	0.71	0.08	1.00
L384	1014-13	1014-12	171.14	0.012	441.48	441.15	0.67	258	0.1928	13	0.91	0.05	0.73
L385	1503-2	1014-2	216.08	0.012	439.24	437.35	0.67	550	0.8747	15	1.53	0.03	0.11
L386	1003-4	1003-3	420.58	0.012	444.58	443.35	0.67	318	0.2925	11	1.03	0.04	0.12
L387	1003-3	1003-2	243	0.012	442.88	442.05	0.67	344	0.3416	40	1.56	0.12	0.22
L388	1003-2	1003-1	186.32	0.012	441.95	441.39	0.67	323	0.3006	48	1.48	0.15	0.26
L389	1003-1	1004-4	419.31	0.012	441.39	439.65	0.67	379	0.415	52	1.80	0.14	0.24
L39	1014-14	1014-16	271.18	0.012	437.55	436.96	1.00	808	0.2176	1209	3.43	1.50	1.00
L390	1004-4	1004-3	424.34	0.012	439.65	436.25	0.67	527	0.8013	57	2.10	0.11	0.23
L391	1004-3	1004-2	402.32	0.012	436.25	432.85	0.67	541	0.8451	65	2.33	0.12	0.43
L392	1004-16	1004-15	281.22	0.012	442.63	440.59	0.67	501	0.7254	5	0.88	0.01	0.08
L393	1004-15	1004-14	72.25	0.012	440.59	439.95	0.67	554	0.8858	9	0.96	0.02	0.11
L394	1004-14	1004-11	249.1	0.012	439.95	438.85	0.67	391	0.4416	15	1.25	0.04	0.13
L395	1004-13	1004-12	368.09	0.012	442.95	441.45	0.67	376	0.4075	6	0.93	0.02	0.13
L396	1003-6	1003-5	106.61	0.012	444.42	443.89	0.67	415	0.4971	4	0.83	0.01	0.07
L397	1003-5	1003-2	185	0.012	443.89	441.95	0.67	603	1.0487	6	1.15	0.01	0.17
L398	1003-10	1003-9	116.42	0.012	447.25	446.81	0.67	362	0.3779	14	1.12	0.04	0.13
L399	1003-9	1003-8	321.1	0.012	446.81	445	0.67	442	0.5637	16	1.28	0.04	0.14
L40	1014-16	1014-17	219.18	0.012	436.96	436.42	1.00	860	0.2464	1239	3.52	1.44	1.00
L400	1003-8	1003-3	276.35	0.012	445	442.88	0.67	515	0.7672	25	1.24	0.05	0.19
L401	1003-7	1003-8	213.08	0.012	448.46	445	0.67	750	1.624	4	0.48	0.01	0.10
L402	1003-15	1003-14	346.02	0.012	458.58	451.16	0.67	862	2.1449	65	2.64	0.08	0.21
L403	1003-14	1003-13	353.28	0.012	451.16	448.08	0.67	549	0.8719	67	2.54	0.12	0.23
L404	1003-13	1004-12	346.05	0.012	448.08	442.48	0.67	749	1.6185	72	3.02	0.10	0.21
L405	1004-12	1004-11	260.49	0.012	441.35	440.29	0.67	375	0.4069	83	2.00	0.22	0.31
L406	1004-11	1004-7	265.05	0.012	438.67	437.62	0.67	370	0.3962	101	2.00	0.27	0.36
L407	1004-7	1004-6	365.27	0.012	437.62	436.12	0.67	377	0.4107	104	1.78	0.28	0.40
L408	1004-6	1004-8	189.13	0.012	436.12	435.63	0.67	299	0.2591	109	1.96	0.36	0.38
L409	1004-8	1004-9	98.25	0.012	435.63	434.98	0.67	479	0.6616	111	2.49	0.23	0.33
L41	1014-17	1014-5	288.39	0.012	436.42	435.84	1.00	777	0.2011	1251	3.87	1.61	0.89

20-Year Projected System Flows, 5-year, 24-hour storm event

Input								Output					
Pipe ID	Upstream MH	Downstream MH	Length (ft)	Roughness	US Invert (ft)	DS Invert (ft)	Diameter (ft)	Full Flow (gpm)	Slope (%)	Max Flow (gpm)	Max Velocity (ft/s)	Max.Flow/Full Flow	Max.Depth/Full Depth
L410	1004-9	1004-17	307.32	0.012	434.88	433.69	0.67	366	0.3872	111	2.01	0.30	0.38
L411	1004-17	1004-5	61.66	0.012	433.69	433.45	0.67	367	0.3892	117	1.99	0.32	0.40
L412	1004-5	1004-2	266.01	0.012	433.45	432.44	0.67	363	0.3797	131	1.80	0.36	0.71
L413	1004-2	1004-1	357.62	0.012	432.44	431.04	0.67	368	0.3915	240	1.67	0.65	1.00
L414	1004-1	1005-1	454.03	0.012	431.04	429.32	0.67	362	0.3788	488	3.16	1.35	1.00
L417	1004-10	1004-5	409.54	0.012	440.81	434.75	0.67	716	1.4799	10	1.62	0.01	0.08
L418	901-12	901-15	298.74	0.012	434.99	434.17	0.67	308	0.2745	9	0.93	0.03	0.11
L419	901-11	901-14	293.11	0.012	435.18	434.6	0.67	262	0.1979	9	0.75	0.03	0.18
L42	1013-13	1014-4	299.02	0.012	437.47	436.27	0.67	373	0.4013	17	1.04	0.05	0.18
L420	901-13	901-14	245.25	0.012	435	434.6	0.67	238	0.1631	15	0.69	0.06	0.20
L421	901-14	901-15	276.15	0.012	434.6	434.07	0.67	258	0.1919	30	1.05	0.12	0.24
L422	901-15	901-16	210.02	0.012	434.07	433.39	0.67	335	0.3238	44	1.46	0.13	0.25
L423	901-16	901-17	282.12	0.012	433.39	432.31	0.67	364	0.3828	49	1.30	0.13	0.62
L424	901-17	901-20	282.01	0.012	432.31	431.74	0.67	265	0.2021	84	0.94	0.32	1.00
L425	1004-19	901-16	72.01	0.012	433.73	433.39	0.67	404	0.4722	3	0.79	0.01	0.15
L426	908-8	908-9	386.47	0.012	435.5	433.5	0.67	423	0.5175	4	0.52	0.01	0.12
L427	908-9	908-10	226.75	0.012	433.5	433.15	0.67	231	0.1544	13	0.68	0.06	0.18
L428	908-10	901-21	448.32	0.012	433.15	432.36	0.67	247	0.1762	22	0.69	0.09	0.60
L429	901-21	901-20	292.08	0.012	432.36	431.74	0.67	271	0.2123	119	1.05	0.44	1.00
L43	1014-4	1014-3	34.23	0.012	436.27	436.07	0.67	450	0.5843	43	1.80	0.09	0.21
L430	901-20	1004-1	180.025	0.012	431.74	431.04	0.67	367	0.3888	245	1.61	0.67	1.00
L431	901-22	901-21	296.24	0.012	433.33	432.36	0.67	337	0.3274	26	0.80	0.08	0.59
L432	901-18	901-21	268.12	0.012	434.04	432.36	0.67	466	0.6266	10	1.36	0.02	0.55
L433	901-19	901-22	282.3	0.012	434.14	433.33	0.67	315	0.2869	9	0.94	0.03	0.15
L434	901-23	901-22	246	0.012	434.85	433.33	0.67	462	0.6179	14	0.93	0.03	0.15
L436	908-16	908-15	202.3	0.012	435.25	434.75	0.67	293	0.2472	24	0.92	0.08	0.22
L437	908-15	908-14	304	0.012	434.75	434.25	0.67	239	0.1645	32	1.06	0.13	0.25
L438	908-14	908-12	250.6	0.012	434.25	433.59	0.67	302	0.2634	39	1.24	0.13	0.26
L439	908-12	908-11	267.75	0.012	433.59	433.05	0.67	264	0.2017	42	1.21	0.16	0.27
L44	1014-2	1014-3	238.17	0.012	436.02	435.34	0.67	314	0.2855	83	1.75	0.26	0.34
L440	908-11	901-20	467.39	0.012	433.05	431.74	0.67	311	0.2803	51	0.82	0.17	0.64
L442	901-1	901-2	131.46	0.012	430.75	430.01	0.67	441	0.5629	2	0.55	0.00	0.06
L443	901-2	902-11	499.17	0.012	430.01	427.08	0.67	451	0.587	7	0.69	0.01	0.22
L444	902-11	902-10	182.46	0.012	427.08	426.33	0.67	377	0.4111	97	1.93	0.26	0.36
L445	902-10	902-8	226.08	0.012	426.33	425.57	0.67	341	0.3362	98	1.43	0.29	0.45
L446	902-8	902-6	352	0.012	425.57	424.95	0.67	247	0.1761	116	1.66	0.47	0.46
L447	902-6	902-5	289.25	0.012	424.95	423	0.67	483	0.6742	147	2.70	0.30	0.38
L448	901-5	901-6	223	0.012	427.97	426.52	0.67	474	0.6502	4	0.99	0.01	0.12
L449	901-6	902-7	320.31	0.012	426.52	425.5	0.67	332	0.3184	22	1.04	0.07	0.19
L45	1014-1	1014-2	460.18	0.012	438.88	436.02	0.67	464	0.6215	57	1.46	0.12	0.30
L450	902-7	902-6	211.44	0.012	425.5	424.95	0.67	300	0.2601	28	1.08	0.09	0.29
L451	901-7	901-8	122.15	0.012	427.5	427.08	0.67	345	0.3438	3	0.61	0.01	0.11
L452	901-8	901-6	285.02	0.012	427.08	426.52	0.67	261	0.1965	13	0.83	0.05	0.16
L453	902-13	901-8	247.52	0.012	427.56	427.08	0.67	259	0.1939	10	0.79	0.04	0.14
L454	901-3	901-4	178	0.012	430.2	429.03	0.67	477	0.6573	5	1.08	0.01	0.09
L455	901-4	902-9	496.15	0.012	429.03	426.93	0.67	526	0.4233	10	1.22	0.02	0.10
L456	902-9	902-8	155.4	0.012	426.93	425.57	0.67	778	0.8752	16	1.52	0.02	0.32
L457	908-7.5	907-8	265.09	0.012	429.42	428	0.67	431	0.5357	68	1.70	0.16	0.30
L458	907-8	902-12	127.25	0.012	428	427.68	0.67	295	0.2515	72	1.41	0.24	0.36
L459	902-12	902-11	267.27	0.012	427.68	427.08	0.67	279	0.2245	83	1.59	0.30	0.37
L46	1015-15	1014-1	468.72	0.012	441.73	438.88	0.67	459	0.6081	37	1.50	0.08	0.21
L460	907-9	907-16	224.08	0.012	430.89	429.83	0.67	405	0.4731	4	0.90	0.01	0.07

20-Year Projected System Flows, 5-year, 24-hour storm event

Input								Output					
Pipe ID	Upstream MH	Downstream MH	Length (ft)	Roughness	US Invert (ft)	DS Invert (ft)	Diameter (ft)	Full Flow (gpm)	Slope (%)	Max Flow (gpm)	Max Velocity (ft/s)	Max.Flow/Full Flow	Max.Depth/Full Depth
L461	907-16	908-5	58.08	0.012	429.77	429.47	0.67	423	0.5165	6	1.02	0.02	0.08
L462	908-5	908-3	281.03	0.012	429.36	428.1	0.67	394	0.4484	14	1.11	0.04	0.15
L463	908-5.5	908-5	159.11	0.012	431.16	430.45	0.67	393	0.4462	5	0.94	0.01	0.08
L464	907-10	907-11	164.35	0.012	428.8	428	0.50	190	0.4868	6	1.02	0.03	0.14
L465	907-11	907-12	88.1	0.012	428	427.7	0.67	343	0.3405	10	1.04	0.03	0.11
L466	908-3	907-12	452.4	0.012	428.05	425.99	0.67	397	0.4554	49	1.77	0.12	0.23
L467	908-4	908-3	249.02	0.012	429.65	428.1	0.67	464	0.6225	5	0.93	0.01	0.12
L468	907-14	907-15	157.47	0.012	431.04	430.07	0.50	214	0.616	7	1.15	0.03	0.13
L469	907-15	908-2	125.25	0.012	430.04	429.44	0.67	407	0.479	12	1.20	0.03	0.11
L47	1015-16	1015-15	338.09	0.012	443.23	441.83	0.67	379	0.4141	20	1.34	0.05	0.15
L470	908-2	908-3	218.28	0.012	429.35	428.1	0.67	445	0.5727	23	1.50	0.05	0.16
L471	908-1	908-2	273.66	0.012	430.89	429.39	0.50	202	0.5481	7	1.11	0.04	0.13
L472	908-26	908-17	280.09	0.012	430.3	428.7	0.67	445	0.5713	7	1.09	0.02	0.09
L473	908-17	907-18	401.12	0.012	427.7	426.15	0.67	366	0.3864	163	2.38	0.45	0.45
L474	907-18	907-17	264	0.012	426.05	425.15	0.67	344	0.3409	172	2.34	0.50	0.48
L475	907-17	907-13	88.41	0.012	425	424.58	0.67	406	0.4751	176	2.58	0.43	0.45
L476	907-12	907-13	256.28	0.012	425.79	424.5	0.67	417	0.5034	65	1.96	0.16	0.26
L477	907-13	907-19	399.02	0.012	422.74	420.6	0.67	431	0.5363	243	2.88	0.56	0.53
L478	907-19	907-3	254.02	0.012	420.57	416.93	0.67	704	1.4331	245	4.09	0.35	0.41
L48	1014-3	1503-1	235.14	0.012	435.23	434.6	0.67	305	0.2679	132	2.04	0.43	0.43
L480	908-20	908-19	235.31	0.012	431.5	430.52	0.67	380	0.4165	135	2.31	0.36	0.40
L481	908-19	908-18	396.01	0.012	430.32	428.72	0.67	374	0.404	139	2.30	0.37	0.41
L482	908-18	908-17	238.17	0.012	428.57	427.7	0.67	356	0.3653	150	2.08	0.42	0.47
L484	907-21	908-18	450.07	0.012	430.53	428.77	0.67	368	0.3911	5	0.90	0.01	0.12
L485	1005-3	1005-1	388.68	0.012	431.75	429.32	0.67	465	0.6252	6	1.05	0.01	0.54
L487	1005-4	1012-5	244.09	0.012	440.09	439.22	0.83	635	0.3564	698	3.34	1.10	0.82
L488	1012-5	1012-3	257.05	0.012	437.56	436.82	0.83	571	0.2879	691	2.91	1.21	1.00
L489	1012-3	1012-2	235.21	0.012	436.82	435.94	0.83	651	0.3741	672	2.98	1.03	1.00
L49	1503-1	1504-3	471.24	0.012	434.5	433.19	0.67	310	0.278	154	1.89	0.50	0.52
L490	1012-7	1012-6	382	0.012	440.67	439.11	0.67	376	0.4084	6	0.80	0.02	0.24
L491	1012-6	1012-5	319.26	0.012	439.11	437.87	0.67	367	0.3884	102	1.07	0.28	0.70
L492	1012-4	1012-3	456.03	0.012	438.82	437.02	0.67	370	0.3947	5	0.84	0.01	0.54
L493	1012-9	1011-17	501.1	0.012	438.85	437.25	0.67	332	0.3193	16	0.55	0.05	1.00
L494	1012-1	1012-2	479.11	0.012	437.82	436.04	0.67	359	0.3715	1	0.59	0.00	0.52
L496	909-5	909-4	286.19	0.012	434.2	433.36	0.83	577	0.2935	652	2.68	1.13	1.00
L497	909-4	909-3	285.08	0.012	433.36	432.59	0.83	553	0.2701	655	2.75	1.18	0.94
L498	909-3	909-2	183.7	0.012	432.59	431.96	0.83	623	0.343	655	3.28	1.05	0.76
L499	909-2	909-1	145.34	0.012	430.79	430.14	0.83	712	0.4472	646	2.92	0.91	1.00
L50	1504-3	1504-2	447.29	0.012	433.19	431.96	0.67	309	0.275	175	2.06	0.57	0.77
L500	909-1	915-10	380.06	0.012	430.14	429.07	0.83	565	0.2815	632	2.65	1.12	1.00
L501	915-10	915-8	326.6	0.012	429.07	428.17	0.83	559	0.2756	629	2.64	1.13	1.00
L502	915-8	915-6	355.11	0.012	428.17	427.18	0.83	562	0.2788	635	2.65	1.13	1.00
L503	915-6	915-4	337.82	0.012	427.18	426.22	0.83	567	0.2842	649	2.66	1.14	1.00
L504	915-4	915-3	145.89	0.012	426.22	425.81	0.83	564	0.281	675	2.94	1.20	0.96
L505	915-7	915-6	189.01	0.012	431.25	429.82	0.67	512	0.7566	17	1.50	0.03	0.12
L506	915-9	915-8	328.04	0.012	432.87	431.55	0.67	373	0.4024	8	1.00	0.02	0.09
L507	915-12	915-11	286.63	0.012	434.33	433.27	0.67	358	0.3698	5	0.69	0.01	0.10
L508	915-11	915-10	225.8	0.012	433.27	432.29	0.67	388	0.434	13	1.19	0.03	0.12
L509	916-1	916-2	372.39	0.012	435.46	434.12	0.67	353	0.3598	9	0.89	0.02	0.12
L51	1504-2	1504-1	129.4	0.012	431.91	431.56	0.67	306	0.2705	188	1.93	0.61	1.00
L510	916-2	909-1	337.48	0.012	434.12	432.1	0.67	455	0.5986	16	1.38	0.04	0.13
L512	916-4	916-3	148.17	0.012	428.21	427.65	0.67	362	0.3779	18	1.13	0.05	0.51

20-Year Projected System Flows, 5-year, 24-hour storm event

Input								Output					
Pipe ID	Upstream MH	Downstream MH	Length (ft)	Roughness	US Invert (ft)	DS Invert (ft)	Diameter (ft)	Full Flow (gpm)	Slope (%)	Max Flow (gpm)	Max Velocity (ft/s)	Max.Flow/Full Flow	Max.Depth/Full Depth
L513	915-19	915-15	169.19	0.012	436.23	434.95	0.67	512	0.7566	18	1.37	0.04	0.18
L515	915-18	915-15	189.13	0.012	435.75	434.95	0.67	383	0.423	13	0.91	0.03	0.18
L516	915-17	915-16	447.02	0.012	434.1	425.61	0.67	811	1.8996	24	2.50	0.03	0.56
L517	910-1	915-5	419.14	0.012	431.25	429.58	0.67	371	0.3984	9	0.75	0.03	0.13
L518	915-5	915-4	411.35	0.012	429.58	427.92	0.67	374	0.4036	19	1.32	0.05	0.15
L519	914-1	914-9	109.42	0.012	429.99	428.72	0.67	634	1.1607	9	1.46	0.01	0.08
L52	1013-2	1504-1	389.42	0.012	436.15	434.55	0.67	377	0.4109	12	1.15	0.03	0.12
L520	914-9	914-8	368.99	0.012	428.64	427.31	0.67	353	0.3604	14	1.45	0.04	0.20
L521	914-5	914-6	266.12	0.012	431.46	430.23	0.50	185	0.4622	2	0.73	0.01	0.08
L522	914-6	914-7	385.3496	0.012	430.2	428.63	0.50	174	0.4074	7	1.08	0.04	0.34
L523	415-4	415-3	350.89	0.012	426.32	424.79	0.67	389	0.436	10	1.08	0.03	0.18
L524	416-7	415-7	233.48	0.012	430.26	429.34	0.67	369	0.394	7	0.96	0.02	0.09
L525	415-7	415-6	234.01	0.012	429.14	427.48	0.67	496	0.7094	12	1.19	0.02	0.13
L526	415-6	415-5	360.02	0.012	427.48	426.05	0.67	371	0.3972	19	1.19	0.05	0.24
L527	416-3	416-2	365.01	0.012	430.26	429.08	0.67	335	0.3233	10	1.05	0.03	0.22
L528	416-5	416-4	421.04	0.012	431.55	430.13	0.67	342	0.3373	4	0.78	0.01	0.07
L529	416-4	416-2	263.23	0.012	430.06	429.12	0.67	352	0.3571	6	0.78	0.02	0.17
L53	1504-1	1013-1	348.28	0.012	431.56	430.59	0.67	311	0.2785	211	2.11	0.68	1.00
L530	416-2	415-8	387	0.012	429.08	427.42	0.67	385	0.4289	80	2.00	0.21	0.30
L531	415-8	415-5	381.16	0.012	427.38	426.03	0.67	350	0.3542	85	1.78	0.24	0.35
L532	415-5	415-3	284.04	0.012	426.02	424.76	0.67	392	0.4436	111	2.22	0.28	0.36
L533	415-3	415-2	284	0.012	424.7	423.3	0.67	413	0.493	129	2.37	0.31	0.38
L534	415-2	415-1	287.03	0.012	423.15	422.16	0.67	346	0.3449	140	2.22	0.41	0.42
L535	415-1	902-4	240.63	0.012	422.03	421.21	0.67	343	0.3408	154	1.93	0.45	0.51
L536	416-1	901-10	480.02	0.012	427.08	425.65	0.67	321	0.2979	13	1.08	0.04	0.13
L537	901-10	902-5	476.09	0.012	425.55	423.05	1.00	1255	0.5251	18	1.20	0.01	0.11
L538	902-5	902-4	287.01	0.012	422.95	421.31	1.00	1310	0.5714	169	2.41	0.13	0.25
L539	902-20	902-3	387.06	0.012	419.67	419.06	1.17	1038	0.1576	329	2.15	0.32	0.36
L54	1013-1	1013-3	434.17	0.012	430.54	429.31	0.67	313	0.2833	226	2.13	0.72	1.00
L541	901-9	901-10	509.02	0.012	428.18	426.2	1.00	1080	0.389	1	0.68	0.00	0.02
L542	902-3	902-2	457.74	0.012	418.85	418.05	1.33	1559	0.1748	534	2.27	0.34	0.40
L543	902-2	902-1	494.15	0.012	418.05	417.25	1.33	1500	0.1619	512	2.08	0.34	0.42
L544	902-1	907-6	502.48	0.012	417.25	416.45	1.33	1488	0.1592	592	2.25	0.40	0.45
L547	907-3	907-1	75.31	0.012	416.08	415.44	0.83	981	0.8499	327	3.34	0.33	0.87
L549	907-2	907-1	74.79	0.012	415.59	415.44	1.33	1670	0.2006	709	2.87	0.42	0.83
L55	1013-12	1013-11	112	0.012	434.85	434.65	0.67	249	0.1786	42	1.34	0.17	0.25
L552	415-11	415-2	236.05	0.012	425.83	423.79	0.67	547	0.8643	8	1.23	0.01	0.08
L553	415-15	415-1	498.26	0.012	427.92	423	0.67	585	0.9875	6	1.19	0.01	0.07
L554	415-12	416-1	239.76	0.012	429	427.5	0.67	465	0.6256	5	1.00	0.01	0.07
L555	416-6	416-1	216.23	0.012	427.5	427.08	0.67	259	0.1942	3	0.35	0.01	0.11
L557	908-29	908-21	406.06	0.012	436.05	434.45	0.67	369	0.394	89	2.02	0.24	0.32
L558	908-31	908-32	441.04	0.012	438.09	436.33	0.67	372	0.3991	6	0.95	0.02	0.09
L56	1013-11	1013-10	161	0.012	434.55	433.89	0.67	377	0.4099	50	1.74	0.13	0.24
L560	908-35	908-33	115.17	0.012	435.88	435.33	0.67	407	0.4776	12	1.20	0.03	0.11
L561	908-32	908-33	199.72	0.012	436.18	435.48	0.67	348	0.3505	15	1.18	0.04	0.14
L563	908-33	908-34	43.19	0.012	435.23	435.1	0.67	323	0.301	29	1.41	0.09	0.19
L564	908-34	908-20	243.13	0.012	432.95	431.7	0.67	422	0.5141	33	1.63	0.08	0.19
L565	908-36	908-35	255.1	0.012	437.05	436.03	0.67	372	0.3998	6	0.95	0.02	0.09
L566	908-21	908-28	301.06	0.012	434.25	433.05	0.67	371	0.3986	92	2.05	0.25	0.33
L567	908-28	908-20	303.82	0.012	432.85	431.7	0.67	362	0.3785	98	2.05	0.27	0.34
L568	908-30	908-29	129.1	0.012	436.81	436.25	0.67	388	0.4338	82	2.03	0.21	0.30
L57	1013-9	1013-10	152	0.012	434.75	433.79	0.67	468	0.6316	7	0.90	0.02	0.18

20-Year Projected System Flows, 5-year, 24-hour storm event

Input								Output					
Pipe ID	Upstream MH	Downstream MH	Length (ft)	Roughness	US Invert (ft)	DS Invert (ft)	Diameter (ft)	Full Flow (gpm)	Slope (%)	Max Flow (gpm)	Max Velocity (ft/s)	Max.Flow/Full Flow	Max.Depth/Full Depth
L570	908-6	908-5.5	94.19	0.012	432.23	431.2	0.50	285	1.0936	3	1.07	0.01	0.07
L571	908-7	908-7.5	238.01	0.012	431.18	429.54	0.50	226	0.6891	64	2.21	0.28	0.36
L572	901-7.5	901-7	87.05	0.012	429	427.5	0.50	358	1.7234	1	0.41	0.00	0.06
L573	902-13.5	902-13	91.01	0.012	427.86	427.56	0.67	338	0.3296	4	0.71	0.01	0.11
L575	915-15	915-25	123.15	0.012	434.95	434.454	0.67	373	0.4028	42	1.47	0.11	0.24
L576	915-25	915-14	205.06	0.012	434.45	433.57	0.67	385	0.4291	53	1.79	0.14	0.25
L577	916-9	916-8	207.54	0.012	434.09	433.25	0.67	374	0.4047	19	1.31	0.05	0.15
L578	1012-2	909-6	230.82	0.012	435.94	435.32	0.83	552	0.2686	651	2.69	1.18	1.00
L579	909-6	909-5	400.32	0.012	435.32	434.2	0.83	563	0.2798	643	2.70	1.14	1.00
L58	1013-10	1013-4	250.01	0.012	433.79	432.75	0.67	379	0.416	63	1.86	0.17	0.27
L580	1015-8	1015-7	164.05	0.012	447.51	446.85	0.67	373	0.4023	35	1.57	0.09	0.20
L581	1014-11	1015-25	490.59	0.012	442	440.05	0.67	371	0.3975	14	0.94	0.04	1.00
L585	1001-11	1007-11	321.7	0.012	496.21	480.55	0.67	1299	4.8737	9	2.40	0.01	0.06
L587	1002-19	1002-11	179.18	0.012	482.58	457.83	0.67	2197	13.9466	7	2.44	0.00	0.09
L588	1104-10	1104-9	73.93	0.012	459.63	459.59	0.67	137	0.0541	20	0.87	0.14	0.20
L589	1104-3	1104-9	241.2	0.012	457	456.19	0.83	617	0.3358	282	2.53	0.46	0.47
L59	1013-7	1013-8	134	0.012	438.35	437.67	0.67	419	0.5075	12	1.33	0.03	0.51
L595	415-16	902-3	118.34	0.012	419.9	419.2	0.83	818	0.5915	177	2.67	0.22	0.32
L596	415-18	415-16	477.18	0.012	420.56	420	0.83	365	0.1174	177	1.65	0.49	0.45
L597	1106-17	1106-16	133.06	0.012	518.72	509.69	0.67	1534	6.8021	3	1.91	0.00	0.03
L60	1013-8	1014-6	354.32	0.012	437.67	436.25	0.67	372	0.4008	22	1.24	0.06	0.95
L61	1014-8	1014-9	207.06	0.012	440.92	440.16	0.67	356	0.367	10	1.08	0.03	0.11
L610	214-1	1103-2	361.5	0.012	469.66	468.62	0.67	316	0.2877	2	0.55	0.01	0.14
L612	1103-2	1104-26	410.12	0.012	468.52	464.86	0.83	1005	0.8925	197	3.19	0.20	0.30
L614	214-5	214-2	87.02	0.012	477.75	472.25	0.67	1481	6.333	90	5.22	0.06	0.17
L615	214-2	1103-3	130	0.012	470.75	470.25	0.67	365	0.3846	90	1.76	0.25	0.40
L616	1103-3	1103-2	403	0.012	470.25	468.52	0.83	697	0.4293	196	2.71	0.28	0.34
L62	1014-9	1014-16	283.18	0.012	440.06	438.92	0.67	373	0.4026	18	1.28	0.05	0.27
L620	901-24	901-25	257.24	0.012	431.18	429.54	0.50	218	0.6376	3	0.86	0.01	0.07
L621	901-25	902-12	369.01	0.012	429.42	427.81	0.67	389	0.4363	7	0.98	0.02	0.14
L622	907-6	907-2	474	0.012	416.45	415.69	1.33	1493	0.1603	655	2.49	0.44	0.56
L624	1001-16	1001-15	321.16	0.012	522.86	522.24	0.67	259	0.1931	6	0.73	0.02	0.10
L627	1001-14	1001-12	248.1	0.012	516.23	512.16	0.67	754	1.6407	24	2.20	0.03	0.12
L628	1001-12	1008-19	252.14	0.012	511.96	507.23	0.67	806	1.8763	31	2.48	0.04	0.13
L629	1008-19	1008-18	30	0.012	507.13	506.97	0.67	430	0.5333	34	1.66	0.08	0.19
L629.1	1008-18	1008-15	144.85	0.012	506.73	504.5	0.67	730	1.5397	37	2.44	0.05	0.15
L63	1014-10	1014-14	280.09	0.012	442.38	441.25	0.67	374	0.4034	10	1.10	0.03	0.11
L630	1008-15	1008-14	351.44	0.012	504.3	477.26	0.67	1634	7.7169	42	4.45	0.03	0.11
L631	1008-14	1008-13	130	0.012	477.06	466.27	0.67	1698	8.3287	45	4.64	0.03	0.11
L632	1008-13	1008-12	108.12	0.012	466.07	459.2	0.67	1485	6.3669	48	4.34	0.03	0.12
L633	1008-12	1008-4	247.34	0.012	459	457.5	0.67	458	0.6065	55	1.97	0.12	0.23
L634	1001-13	1001-12	78.1	0.012	520.97	512.43	0.67	1951	11.0007	4	2.39	0.00	0.03
L636	1001-15.1	1001-15	95.34	0.012	530.16	522.24	0.67	1699	8.3359	6	2.56	0.00	0.04
L638	1109-3	1109-2	277.48	0.012	484.48	483.33	0.67	379	0.4144	147	2.36	0.39	0.42
L639	1109-2	1109-1	353.21	0.012	483.26	481.66	0.67	396	0.453	149	2.42	0.38	0.42
L64	1014-15	1014-14	199.3	0.012	439.45	438.65	0.67	373	0.4014	18	1.19	0.05	1.00
L640	1109-1	1110-9	443.65	0.012	481.56	479.96	0.67	353	0.3606	151	2.28	0.43	0.44
L641	1110-9	1110-7	222.8	0.012	479.86	478.6	0.67	442	0.5655	159	2.59	0.36	0.41
L642	1110-7	1110-6	98.95	0.012	478.5	478.16	0.67	345	0.3436	160	2.18	0.46	0.47
L643	1108-2	1108-1	276.86	0.012	532.46	530.8	0.67	456	0.5996	3	0.87	0.01	0.06
L644	1108-1	1107-5	191.85	0.012	530.7	529.6	0.67	446	0.5734	7	1.06	0.02	0.08
L645	1107-4	1107-5	241.01	0.012	529.4	523.7	0.67	905	2.3657	0	0.00	0.00	0.00

20-Year Projected System Flows, 5-year, 24-hour storm event

Input								Output					
Pipe ID	Upstream MH	Downstream MH	Length (ft)	Roughness	US Invert (ft)	DS Invert (ft)	Diameter (ft)	Full Flow (gpm)	Slope (%)	Max Flow (gpm)	Max Velocity (ft/s)	Max.Flow/Full Flow	Max.Depth/Full Depth
L646	1107-5	1107-6	86.15	0.012	523.3	482.55	0.67	4311	53.687	7	5.03	0.00	0.03
L647	1107-6	1110-9	135.03	0.012	482.35	479.96	0.67	783	1.7703	9	1.57	0.01	0.17
L65	1014-18	1014-4	303.37	0.012	437.85	436.41	0.67	405	0.4747	17	1.32	0.04	0.14
L655	1108-6	1108-5	121.66	0.012	573.43	558.89	0.67	2041	12.0376	139	7.42	0.07	0.18
L656	1108-5	1108-4	172.93	0.012	558.79	537.57	0.67	2069	12.3643	141	7.52	0.07	0.18
L657	1108-4	1108-3	81.15	0.012	537.47	528.32	0.67	1982	11.3478	143	7.34	0.07	0.18
L658	1108-3	1109-6	92.66	0.012	528.22	517.36	0.67	2021	11.8016	144	7.46	0.07	0.18
L659	1109-6	1109-5	161.97	0.012	517.26	499.14	0.67	1974	11.2579	145	7.35	0.07	0.18
L66	1015-14	1015-23	405.18	0.012	444.27	442.65	0.67	372	0.3998	16	1.22	0.04	0.57
L660	1109-5	1109-4	105.77	0.012	499.04	487.07	0.67	1986	11.3902	146	7.39	0.07	0.18
L661	1109-4	1109-3	87.86	0.012	486.97	484.58	0.67	971	2.7212	147	4.16	0.15	0.28
L662	1109-7	1109-3	248.09	0.012	485.6	484.58	0.67	377	0.4111	0	0.00	0.00	0.15
L667	1105-8	1105-7	204.88	0.012	542.76	527.17	0.67	1625	7.6315	2	1.82	0.00	0.03
L669	316-25	316-6	234.36	0.012	445.3	444.07	0.67	426	0.5248	8	0.92	0.02	0.46
L67	1015-23	1015-24	263.02	0.012	440.87	439.87	0.67	363	0.3802	244	2.47	0.67	1.00
L670	316-26	315-42	202.01	0.012	443.96	442.74	0.67	457	0.6039	8	1.14	0.02	0.09
L671	315-42	315-24	181.02	0.012	442.54	440.78	0.67	580	0.9723	15	1.57	0.03	0.11
L674	1005-1	1005-5	63.39	0.012	429.32	428.95	0.67	450	0.5837	524	3.64	1.17	1.00
L68	1010-10	1015-30	189.26	0.012	449.67	444.35	0.67	987	2.8121	24	2.64	0.02	0.11
L69	1015-30	1015-29	163.08	0.012	444.26	443.62	0.67	369	0.3924	31	1.50	0.08	0.60
L70	1015-29	1015-28	80.02	0.012	440.5	440.3	1.00	866	0.2499	858	3.27	0.99	1.00
L700	1001-09	1001-9	196	0.012	495.14	492.31	0.67	706	1.444	0	0.00	0.00	0.00
L701	916-06	916-05	150	0.012	431	429.9	0.67	503	0.7334	0	0.00	0.00	0.00
L703	1002-09	1002-10	290	0.012	509.06	491.33	0.67	1454	6.1253	0	0.00	0.00	0.50
L704	1111-17	1111-12	166.2221	0.012	464.51	460.4	0.67	901	2.3529	0	0.00	0.00	0.15
L705	315-05	315-7	386	0.012	441.46	441.09	0.67	182	0.0959	0	0.00	0.00	0.00
L706	316-26	316-25	280.0643	0.012	446.92	446.39	0.67	256	0.1892	0	0.00	0.00	0.00
L707	1008-18.5	1008-5	850.178	0.012	458.09	412.83	0.67	53	0.0082	1	0.12	0.01	0.14
L708	1103-01	1104-20	293.4226	0.012	490.21	488.78	0.67	410	0.4874	0	0.00	0.00	0.00
L709	1105-09	1112-3	314.8051	0.012	463.49	461.7	0.67	443	0.5686	0	0.00	0.00	0.27
L71	1015-28	1015-27	24.7	0.012	439.83	439.78	1.00	779	0.2024	866	2.46	1.11	1.00
L712	1008-13.5	1008-12.5	168	0.012	463.97	463.03	0.67	440	0.5595	0	0.00	0.00	0.00
L713	1008-12.5	1009-20	169	0.012	463.03	462.44	0.67	347	0.3491	0	0.00	0.00	0.00
L714	1009-20	1009-19	183.6594	0.012	462.44	460.75	0.67	564	0.9202	0	0.00	0.00	0.00
L715	1009-21	1009-23	11.8002	0.012	456.43	455.99	0.67	1135	3.7313	1	0.02	0.00	0.49
L716	1009-19	1009-21	280.5499	0.012	460.75	456.43	0.67	729	1.54	0	0.00	0.00	0.08
L717	416-16	416-08	371.1892	0.012	425.96	419.5	0.67	775	1.7406	0	0.00	0.00	0.00
L718	416-08	416-09	250	0.012	419.4	418.22	0.67	404	0.472	0	0.00	0.00	0.00
L719	416-15	416-08	258	0.012	420.62	419.5	0.67	387	0.4341	0	0.00	0.00	0.00
L72	1015-27	1015-25	162	0.012	439.78	439.49	1.00	733	0.179	872	2.53	1.19	1.00
L720	416-09	JCT_12	403.5831	0.012	418.03	415.68	0.67	435	0.5476	0	0.00	0.00	0.50
L721	1001-18	1001-24	146	0.012	523.6	514.67	0.67	1455	6.1279	0	0.00	0.00	0.00
L723	1104-23	1104-20	131.6296	0.012	501.5	488.78	0.67	1831	9.7089	0	0.00	0.00	0.00
L724	1104-16	1104-17	271	0.012	537.41	533.34	0.67	672	1.3064	0	0.00	0.00	0.01
L725	1106-04	1106-3	265.706	0.012	562.74	552.13	0.67	1175	3.9963	0	0.00	0.00	0.00
L726	315-04	315-05	150	0.012	441.5	441.46	0.67	96	0.0267	0	0.00	0.00	0.00
L727	1111-18	1111-20	209	0.012	471.31	470.25	0.67	418	0.5072	0	0.00	0.00	0.00
L728	316-30	JCT_122	270.9461	0.012	450.23	449.28	0.67	348	0.3506	0	0.00	0.00	0.00
L729	316-31	316-30	145	0.012	451.31	451	0.67	272	0.2138	0	0.00	0.00	0.00
L73	1015-25	1015-24	281.86	0.012	439.49	438.78	1.00	869	0.2519	900	2.55	1.04	1.00
L730	316-32	316-30	358	0.012	452.08	451	0.67	323	0.3017	0	0.00	0.00	0.00
L731	916-10	916-1	131.5766	0.012	438.5	435.46	0.67	893	2.3111	0	0.00	0.00	0.05

20-Year Projected System Flows, 5-year, 24-hour storm event

Input								Output					
Pipe ID	Upstream MH	Downstream MH	Length (ft)	Roughness	US Invert (ft)	DS Invert (ft)	Diameter (ft)	Full Flow (gpm)	Slope (%)	Max Flow (gpm)	Max Velocity (ft/s)	Max.Flow/Full Flow	Max.Depth/Full Depth
L732	1111-19	1111-22	208	0.012	469.95	469.21	0.67	350	0.3558	0	0.00	0.00	0.00
L733	1111-22	1111-21	354	0.012	469.16	468.01	0.67	335	0.3249	0	0.00	0.00	0.00
L734	316-33	316-32	234	0.012	457.2	452	0.67	869	2.1886	0	0.00	0.00	0.00
L736	1108-01	1108-6	76	0.012	580.11	573.6	0.67	1723	8.5974	0	0.00	0.00	0.00
L737	1001-24	1104-28	246.8348	0.012	514.47	513.13	0.67	433	0.5429	0	0.00	0.00	0.00
L738	1004-22	1004-1	338.2601	0.012	439.51	439	0.67	228	0.1508	0	0.00	0.00	0.00
L739	1008-16	1008-15	26.8718	0.012	507.13	506.97	0.67	453	0.5954	0	0.00	0.00	0.00
L74	1015-22	1015-21	67.78	0.012	443.89	443.68	0.67	327	0.3098	9	0.98	0.03	0.11
L740	1011-22	1011-19	273.155	0.012	440.11	439.17	0.67	345	0.3441	8	0.07	0.02	1.00
L741	KA2	KA1	229	0.012	469.83	468.91	0.67	372	0.4018	0	0.00	0.00	0.00
L742	KA1	KA3	113	0.012	468.71	468.26	0.67	371	0.3982	0	0.00	0.00	0.00
L743	KA3	1112-4	350.9022	0.012	468.16	466.33	0.67	422	0.5158	0	0.00	0.00	0.28
L744	1105-11	1105-10	239.9	0.012	470.95	465.68	0.67	871	2.1973	0	0.00	0.00	0.00
L745	1105-12	1105-10	24	0.012	465.65	465.55	0.67	208	0.125	0	0.00	0.00	0.00
L746	1105-10	1105-13	126	0.012	465.68	464.09	0.67	660	1.262	0	0.00	0.00	0.00
L747	1105-13	1105-09	83	0.012	463.99	463.59	0.67	408	0.4819	0	0.00	0.00	0.00
L748	1111-21	1111-5	120	0.012	467.73	467.41	0.67	303	0.2667	0	0.00	0.00	0.00
L749	1111-20	1111-22	322	0.012	470.25	469.21	0.67	334	0.323	0	0.00	0.00	0.00
L75	1015-21	1015-20	220.33	0.012	443.58	442.45	0.67	421	0.5129	19	1.38	0.05	0.57
L750	KA6	1111-20	149	0.012	471	470.25	0.67	417	0.5034	0	0.00	0.00	0.00
L751	KA5	1504-3	120.2805	0.012	434.23	434.19	0.67	107	0.0333	0	0.00	0.00	0.00
L752	KA8	1013-7	165.8975	0.012	441	440.61	0.67	285	0.2351	0	0.00	0.00	0.00
L753	915-20	915-17	162.7238	0.012	434.75	434.1	0.67	371	0.3995	0	0.00	0.00	0.06
L754	915-21	915-19	97.8681	0.012	436.62	436.23	0.67	371	0.3985	0	0.00	0.00	0.06
L755	1011-20	1011-2	177.9001	0.012	442.79	439.01	0.67	857	2.1253	0	0.00	0.00	0.50
L756	1002-10	1002-13	180	0.012	490.14	482.4	0.67	783	1.7781	7	0.95	0.01	0.56
L757	1001-10	1002-09	275	0.012	515.15	514.41	0.67	370	0.3964	0	0.00	0.00	0.00
L758	1001-26	1001-7	200	0.012	505.41	501.27	0.67	845	2.0704	0	0.00	0.00	0.00
L759	1001-15.5	1001-16	105.1129	0.012	523.35	522.96	0.67	358	0.371	0	0.00	0.00	0.00
L76	1015-20	1015-23	147.28	0.012	441.47	440.87	0.67	376	0.4074	219	2.24	0.58	1.00
L760	1001-14.5	1001-15.5	145	0.012	524.03	523.45	0.67	372	0.4	0	0.00	0.00	0.00
L761	416-12	416-15	369	0.012	425.03	424	0.67	310	0.2791	0	0.00	0.00	0.00
L762	416-14	416-15	262	0.012	421.94	421	0.67	352	0.3588	0	0.00	0.00	0.00
L763	416-13	416-14	365	0.012	423.54	422.5	0.67	314	0.2849	0	0.00	0.00	0.00
L765	901-09	901-9	56.5971	0.012	429.02	427.93	1.00	2111	1.4843	0	0.00	0.00	0.01
L766	901-24.5	901-09	15.3601	0.012	429.96	429.1	1.00	4102	5.6077	0	0.00	0.00	0.00
L767	KA7	916-06	10	0.012	433	432	0.67	1863	10.0504	0	0.00	0.00	0.00
L768	1111-23	1111-11	80.981	0.012	463	459.4	1.00	3654	4.4499	0	0.00	0.00	0.00
L769	1009-23	1009-24	6.2348	0.012	455.24	455.22	0.67	333	0.3208	3	0.40	0.01	0.84
L77	1015-26	1015-25	169	0.012	442.61	441.91	0.67	379	0.4142	10	0.94	0.03	1.00
L770	1004-25	1004-9	77	0.012	435.73	435	0.83	1037	0.9481	0	0.00	0.00	0.08
L771	KA9	1108-01	8	0.012	581	580.4	0.67	1611	7.5212	0	0.00	0.00	0.00
L772	KA10	1108-01	5	0.012	581	580.4	0.67	2043	12.0873	0	0.00	0.00	0.00
L773	313-18	313-17	132	0.012	439.5	439.15	0.67	303	0.2652	0	0.00	0.00	0.00
L774	313-17	313-16	305	0.012	436.29	435	0.67	382	0.423	0	0.00	0.00	0.00
L775	313-19	313-16	431	0.012	437.04	435	0.67	404	0.4733	0	0.00	0.00	0.00
L776	313-16	JCT_34	241	0.012	434.67	434	0.67	310	0.278	0	0.00	0.00	0.00
L777	313-09	JCT_34	301	0.012	435.46	434	0.67	409	0.4851	0	0.00	0.00	0.00
L78	1015-1	1015-18	247.24	0.012	443.63	442.65	0.67	370	0.3964	62	1.43	0.17	0.65
L781	313-20	313-17	122	0.012	439.5	439.15	0.67	315	0.2869	0	0.00	0.00	0.00
L782	908-13.5	908-12	173.2305	0.012	436.64	436.13	0.67	319	0.2944	0	0.00	0.00	0.00
L783	KA4	1012-8	302.6928	0.012	445.27	444.82	0.67	227	0.1487	0	0.00	0.00	0.00

20-Year Projected System Flows, 5-year, 24-hour storm event

Input								Output					
Pipe ID	Upstream MH	Downstream MH	Length (ft)	Roughness	US Invert (ft)	DS Invert (ft)	Diameter (ft)	Full Flow (gpm)	Slope (%)	Max Flow (gpm)	Max Velocity (ft/s)	Max.Flow/Full Flow	Max.Depth/Full Depth
L79	1015-4	1015-10	150	0.012	445.34	444.73	0.67	375	0.4067	9	1.06	0.02	0.10
L80	1015-10	1015-18	122	0.012	444.07	443.59	0.67	369	0.3934	63	1.85	0.17	0.29
L81	1015-18	1015-20	277.18	0.012	442.59	441.47	0.67	374	0.4041	153	1.90	0.41	1.00
L82	1015-19	1015-18	158.03	0.012	445.21	444.15	0.67	482	0.6708	15	1.40	0.03	0.12
L83	1015-12	1015-13	128.04	0.012	445.5	445	0.67	368	0.3905	12	0.87	0.03	0.17
L84	1015-13	1015-17	275.02	0.012	445	444.31	0.67	295	0.2509	29	1.18	0.10	0.21
L85	1015-17	1015-20	244.07	0.012	444.31	443.25	0.67	388	0.4343	40	1.64	0.10	0.38
L86	1015-2	1015-1	124	0.012	444.65	444.16	0.67	370	0.3952	38	1.59	0.10	0.21
L87	1015-11	1015-1	111	0.012	445.59	445.15	0.67	370	0.3964	12	1.15	0.03	0.12
L88	1011-19	1011-18	356.36	0.012	439.17	437.75	0.67	371	0.3985	15	1.05	0.04	1.00
L89	1011-2	1011-2.1	140.13	0.012	438.5	438	0.67	351	0.3568	11	0.84	0.03	1.00
L9	914-2	914-3	245.1	0.012	419.16	418.36	0.67	336	0.3264	15	0.96	0.04	0.15
L90	1011-2.1	1011-1	214.39	0.012	438	437.48	0.67	290	0.2425	26	1.04	0.09	1.00
L91	1016-6	1016-5	220.02	0.012	446.08	445.59	0.67	278	0.2227	19	0.90	0.07	0.22
L92	1016-5	1015-9	166.47	0.012	445.59	445.15	0.67	302	0.2643	39	1.44	0.13	0.23
L93	1015-9	1015-10	245.2	0.012	445.07	444.07	0.67	376	0.4078	49	1.49	0.13	0.26
L94	1016-4	1015-3	306.03	0.012	447	445.9	0.67	353	0.3594	17	1.20	0.05	0.16
L95	1015-3	1015-2	310.16	0.012	445.9	444.65	0.67	374	0.403	26	1.16	0.07	0.20
L96	1015-35	1015-34	154.03	0.012	443.7	443.1	0.67	367	0.3895	13	1.05	0.04	1.00
L97	1009-5	1016-3	263.12	0.012	449.85	449.26	1.00	820	0.2242	624	2.90	0.76	0.59
L98	1016-3	1016-2	317.19	0.012	446.29	445.57	1.00	825	0.227	629	2.53	0.76	0.81
L99	1016-2	1015-7	252.16	0.012	445.57	445.02	1.00	809	0.2181	645	2.47	0.80	1.00

CIP SYSTEM FLOWS

CIP System Flows, 5-year, 24-hour storm event

Input				Output					
Manhole ID	Invert Elev.	Rim Elev.	DWF Pattern	Max Depth (ft)	Max HGL (ft)	Freeboard (ft)	Max Inflow (gpm)	Total Flood Vol. (MG)	Time Flooded (hrs)
1001-09	495.14	500.64	-	0	495.1	5.5	0.0	0	0.00
1001-1	468.95	474.95	FM_6	0.0765	469.0	5.9	16.5	0	0.00
1001-10	515.50	520.54	-	0	515.5	5.0	0.0	0	0.00
1001-11	496.21	501.25	FM_3	0.0402	496.3	5.0	9.3	0	0.00
1001-12	511.96	518.16	FM_3	0.0899	512.0	6.1	31.4	0	0.00
1001-13	520.97	526.97	FM_3	0.0215	521.0	6.0	3.6	0	0.00
1001-14	516.23	521.96	FM_3	0.0818	516.3	5.6	24.1	0	0.00
1001-14.5	524.03	529.00	-	0	524.0	5.0	0.0	0	0.00
1001-15	516.78	523.56	FM_3	5.3325	522.1	1.4	17.7	0	0.00
1001-15.1	530.16	536.16	FM_3	0.0296	530.2	6.0	6.4	0	0.00
1001-15.5	516.78	529.00	-	0	516.8	12.2	0.0	0	0.00
1001-16	522.86	528.86	FM_3	0.0856	522.9	5.9	6.4	0	0.00
1001-18	523.60	531.89	-	0	523.6	8.3	0.0	0	0.00
1001-2	463.75	468.75	FM_6	0.1566	463.9	4.8	44.5	0	0.00
1001-24	514.47	525.75	-	0	514.5	11.3	0.0	0	0.00
1001-26	505.41	508.00	-	0	505.4	2.6	0.0	0	0.00
1001-3	462.25	468.75	FM_6	0.1838	462.4	6.3	56.0	0	0.00
1001-4	484.66	490.75	FM_6	0.0378	484.7	6.1	4.9	0	0.00
1001-5	480.34	487.25	FM_6	0.0573	480.4	6.9	21.4	0	0.00
1001-6	488.75	498.79	FM_6	0.0426	488.8	10.0	9.9	0	0.00
1001-7	496.77	506.77	FM_6	0.0458	496.8	10.0	11.5	0	0.00
1001-8	491.44	501.44	FM_6	0.0469	491.5	10.0	13.2	0	0.00
1001-9	492.00	502.00	FM_6	0.0435	492.0	10.0	4.9	0	0.00
1002-09	509.06	515.08	-	0	509.1	6.0	0.0	0	0.00
1002-1	449.35	454.25	FM_3	0.4976	449.8	4.4	3.8	0	0.00
1002-10	490.14	497.20	-	3.3452	493.5	3.7	6.6	0	0.00
1002-11	457.83	459.45	FM_3	0.0928	457.9	1.5	34.6	0	0.00
1002-12	500.15	507.23	FM_1	0.0408	500.2	7.0	4.3	0	0.00
1002-13	493.34	498.55	FM_4	0.0854	493.4	5.1	59.6	0	0.00
1002-14	472.14	482.04	FM_4	0.1195	472.3	9.8	60.3	0	0.00
1002-15	450.95	454.55	FM_3	0.112	451.1	3.5	24.2	0	0.00
1002-19	482.58	487.65	FM_3	0.0267	482.6	5.0	6.5	0	0.00
1002-2	451.52	456.15	FM_4	0.0411	451.6	4.6	1.3	0	0.00
1002-3	450.40	457.15	FM_4	0.0513	450.5	6.7	5.0	0	0.00
1002-4	450.75	469.58	FM_4	1.2756	452.0	17.6	1.3	0	0.00
1002-5	496.25	501.20	FM_3	0.0603	496.3	4.9	13.6	0	0.00

CIP System Flows, 5-year, 24-hour storm event

Input				Output					
Manhole ID	Invert Elev.	Rim Elev.	DWF Pattern	Max Depth (ft)	Max HGL (ft)	Freeboard (ft)	Max Inflow (gpm)	Total Flood Vol. (MG)	Time Flooded (hrs)
1002-6	489.92	496.80	FM_3	0.0471	490.0	6.8	21.4	0	0.00
1002-7	468.92	474.30	FM_3	0.0787	469.0	5.3	47.0	0	0.00
1002-8	453.58	459.75	FM_3	0.1714	453.8	6.0	53.5	0	0.00
1003-1	441.39	449.15	FM_4	0.1706	441.6	7.6	51.5	0	0.00
1003-10	447.25	451.50	FM_4	0.0896	447.3	4.2	13.8	0	0.00
1003-11	447.53	452.00	FM_4	0.0891	447.6	4.4	12.6	0	0.00
1003-12	448.50	453.00	FM_4	0.0708	448.6	4.4	8.8	0	0.00
1003-13	448.08	453.05	FM_4	0.1399	448.2	4.8	72.1	0	0.00
1003-14	451.16	456.15	FM_4	0.1613	451.3	4.8	67.4	0	0.00
1003-15	458.58	463.55	FM_4	0.1239	458.7	4.8	65.0	0	0.00
1003-16	467.93	475.22	FM_4	0.1101	468.0	7.2	62.6	0	0.00
1003-2	441.95	450.16	FM_4	0.1745	442.1	8.0	47.8	0	0.00
1003-3	442.88	450.65	FM_4	0.1597	443.0	7.6	40.2	0	0.00
1003-4	444.58	452.75	FM_4	0.0933	444.7	8.1	11.3	0	0.00
1003-5	443.89	448.75	FM_4	0.0479	443.9	4.8	6.3	0	0.00
1003-6	444.42	448.63	FM_4	0.0449	444.5	4.2	3.8	0	0.00
1003-7	448.16	455.17	FM_4	0.3339	448.5	6.7	3.8	0	0.00
1003-8	445.00	450.44	FM_4	0.1002	445.1	5.3	25.1	0	0.00
1003-9	446.81	451.29	FM_4	0.0876	446.9	4.4	16.3	0	0.00
1004-1	431.04	443.75	FM_4	0.3936	431.4	12.3	206.4	0	0.00
1004-10	440.81	444.55	FM_4	0.0553	440.9	3.7	10.1	0	0.00
1004-11	438.67	445.75	FM_4	0.2376	438.9	6.8	100.7	0	0.00
1004-12	441.35	448.25	FM_4	0.2168	441.6	6.7	82.9	0	0.00
1004-13	442.95	447.25	FM_4	0.06	443.0	4.2	6.3	0	0.00
1004-14	439.95	444.75	FM_4	0.0915	440.0	4.7	15.1	0	0.00
1004-15	440.59	445.21	FM_4	0.0585	440.6	4.6	8.8	0	0.00
1004-16	442.63	446.42	FM_4	0.047	442.7	3.7	5.0	0	0.00
1004-17	433.69	441.97	FM_4	0.2594	433.9	8.0	117.4	0	0.00
1004-19	433.73	440.65	FM_4	0.0376	433.8	6.9	2.5	0	0.00
1004-2	432.44	441.35	FM_4	0.3519	432.8	8.6	201.4	0	0.00
1004-22	439.51	447.86	-	0	439.5	8.3	0.0	0	0.00
1004-25	435.73	442.42	-	0	435.7	6.7	0.0	0	0.00
1004-3	436.25	443.05	FM_4	0.1565	436.4	6.6	65.4	0	0.00
1004-4	439.65	446.45	FM_4	0.1476	439.8	6.7	56.6	0	0.00
1004-5	433.45	440.85	FM_4	0.2773	433.7	7.1	131.1	0	0.00
1004-6	436.12	442.95	FM_4	0.2941	436.4	6.5	109.0	0	0.00

CIP System Flows, 5-year, 24-hour storm event

Input				Output					
Manhole ID	Invert Elev.	Rim Elev.	DWF Pattern	Max Depth (ft)	Max HGL (ft)	Freeboard (ft)	Max Inflow (gpm)	Total Flood Vol. (MG)	Time Flooded (hrs)
1004-7	437.62	444.35	FM_4	0.2398	437.9	6.5	104.3	0	0.00
1004-8	435.63	442.75	FM_4	0.219	435.8	6.9	111.4	0	0.00
1004-9	434.88	441.65	-	0.2524	435.1	6.5	111.4	0	0.00
1005-1	429.32	442.65	FM_4	0.1837	429.5	13.1	216.4	0	0.00
1005-3	431.75	443.39	FM_4	0.0543	431.8	11.6	6.3	0	0.00
1005-4	440.09	445.05	-	0.2258	440.3	4.7	97.9	0	0.00
1006-1	442.10	450.85	FM_3	0.3067	442.4	8.4	152.8	0	0.00
1006-10	444.75	452.25	FM_3	0.1218	444.9	7.4	26.2	0	0.00
1006-11	445.83	450.95	FM_3	0.0633	445.9	5.1	10.6	0	0.00
1006-12	446.00	453.58	FM_3	0.128	446.1	7.5	37.8	0	0.00
1006-13	444.33	451.71	FM_3	0.2072	444.5	7.2	81.2	0	0.00
1006-14	444.75	450.72	FM_3	0.1005	444.9	5.9	12.0	0	0.00
1006-2	443.24	451.05	FM_3	0.2863	443.5	7.5	142.2	0	0.00
1006-3	445.69	450.65	FM_3	0.0671	445.8	4.9	6.5	0	0.00
1006-4	444.55	450.25	FM_3	0.1497	444.7	5.6	43.9	0	0.00
1006-5	446.31	448.21	FM_3	0.3328	446.6	1.6	26.7	0	0.00
1006-6	447.84	450.69	FM_3	0.079	447.9	2.8	10.6	0	0.00
1006-7	446.25	454.75	FM_3	0.0686	446.3	8.4	7.9	0	0.00
1006-8	445.25	452.85	FM_3	0.1102	445.4	7.5	22.4	0	0.00
1006-9	449.29	453.54	FM_3	0.0547	449.3	4.2	10.6	0	0.00
1007-1	446.55	455.45	FM_3	0.3658	446.9	8.5	219.0	0	0.00
1007-10	454.17	460.25	FM_3	0.1009	454.3	6.0	18.5	0	0.00
1007-11	477.85	484.35	FM_3	0.0501	477.9	6.4	17.4	0	0.00
1007-12	455.41	459.25	FM_3	0.0769	455.5	3.8	10.6	0	0.00
1007-13	455.13	459.93	FM_3	0.0604	455.2	4.7	6.5	0	0.00
1007-14	455.15	459.25	FM_3	0.0719	455.2	4.0	9.1	0	0.00
1007-15	453.58	460.25	FM_3	0.1029	453.7	6.6	18.2	0	0.00
1007-16	453.54	458.75	FM_3	0.0716	453.6	5.1	9.1	0	0.00
1007-17	452.20	459.45	FM_3	0.1068	452.3	7.1	19.5	0	0.00
1007-18	452.48	457.45	FM_3	0.0769	452.6	4.9	10.4	0	0.00
1007-19	451.05	457.05	FM_3	0.1001	451.2	5.9	18.2	0	0.00
1007-2	447.68	455.45	FM_3	0.3545	448.0	7.4	197.1	0	0.00
1007-3	449.75	457.55	FM_3	0.2952	450.0	7.5	144.8	0	0.00
1007-4	449.18	454.85	FM_3	0.1501	449.3	5.5	38.9	0	0.00
1007-5	445.25	454.75	FM_3	0.3799	445.6	9.1	228.2	0	0.00
1007-6	448.25	455.25	COMMERCIAL	0.0923	448.3	6.9	15.3	0	0.00

CIP System Flows, 5-year, 24-hour storm event

Input				Output					
Manhole ID	Invert Elev.	Rim Elev.	DWF Pattern	Max Depth (ft)	Max HGL (ft)	Freeboard (ft)	Max Inflow (gpm)	Total Flood Vol. (MG)	Time Flooded (hrs)
1007-7	451.04	457.25	FM_3	0.2929	451.3	5.9	141.0	0	0.00
1007-8	451.94	457.15	FM_3	0.27	452.2	4.9	129.0	0	0.00
1007-9	453.03	457.85	FM_3	0.1932	453.2	4.6	67.6	0	0.00
1008-1	454.75	461.45	FM_3	0.3151	455.1	6.4	164.2	0	0.00
1008-10	501.25	505.75	COMMERCIAL	0.079	501.3	4.4	53.6	0	0.00
1008-12	462.33	463.05	FM_3	0.1165	462.4	0.6	54.7	0	0.00
1008-12.5	463.03	465.00	-	0	463.0	2.0	0.0	0	0.00
1008-13	463.22	468.00	FM_3	2.9455	466.2	1.8	48.3	0	0.00
1008-13.5	463.97	466.00	-	0	464.0	2.0	0.0	0	0.00
1008-14	477.06	484.30	FM_3	0.0744	477.1	7.2	44.6	0	0.00
1008-15	504.30	513.59	FM_3	0.0739	504.4	9.2	42.4	0	0.00
1008-16	507.13	515.22	-	0	507.1	8.1	0.0	0	0.00
1008-18	506.73	516.00	FM_3	0.1001	506.8	9.2	37.3	0	0.00
1008-18.5	458.09	488.00	-	0.1307	458.2	29.8	0.6	0	0.00
1008-19	507.13	515.17	FM_3	0.2163	507.3	7.8	33.7	0	0.00
1008-2	456.11	461.35	FM_3	0.3088	456.4	4.9	159.2	0	0.00
1008-3	457.00	461.65	FM_3	0.2065	457.2	4.4	73.8	0	0.00
1008-4	457.00	462.20	FM_3	0.5257	457.5	4.7	66.0	0	0.00
1008-5	458.16	463.00	FM_3	0.0606	458.2	4.8	7.7	0	0.00
1008-6	458.99	463.85	FM_3	0.1892	459.2	4.7	73.6	0	0.00
1008-7	460.94	465.81	FM_3	0.1558	461.1	4.7	65.9	0	0.00
1008-8	461.25	467.55	FM_3	0.2083	461.5	6.1	59.5	0	0.00
1008-9	488.75	492.85	FM_3	0.0702	488.8	4.0	56.8	0	0.00
1009-1	450.36	456.25	FM_1	0.5558	450.9	5.3	470.7	0	0.00
1009-10	454.59	462.05	FM_3	0.0986	454.7	7.4	16.4	0	0.00
1009-11	456.67	461.65	FM_3	0.0891	456.8	4.9	9.1	0	0.00
1009-12	452.65	461.95	FM_3	0.3406	453.0	9.0	191.9	0	0.00
1009-13	456.95	461.95	FM_3	0.046	457.0	5.0	5.0	0	0.00
1009-14	460.85	465.85	FM_1	0.0574	460.9	4.9	6.7	0	0.00
1009-15	456.14	464.55	FM_1	0.5465	456.7	7.9	447.1	0	0.00
1009-16	454.57	461.15	FM_1	0.4099	455.0	6.2	452.1	0	0.00
1009-17	452.35	458.15	FM_1	0.4123	452.8	5.4	456.6	0	0.00
1009-18	451.14	455.30	FM_1	0.3016	451.4	3.9	152.7	0	0.00
1009-19	460.75	464.84	-	0	460.8	4.1	0.0	0	0.00
1009-2	452.21	457.25	FM_1	0.0772	452.3	5.0	9.7	0	0.00
1009-20	462.44	466.32	-	0	462.4	3.9	0.0	0	0.00

CIP System Flows, 5-year, 24-hour storm event

Input				Output					
Manhole ID	Invert Elev.	Rim Elev.	DWF Pattern	Max Depth (ft)	Max HGL (ft)	Freeboard (ft)	Max Inflow (gpm)	Total Flood Vol. (MG)	Time Flooded (hrs)
1009-21	456.43	464.64	-	0.11	456.5	8.1	0.9	0	0.00
1009-23	455.99	464.56	-	0.5498	456.5	8.0	3.2	0	0.00
1009-24	455.97	464.00	-	0.5697	456.5	7.5	447.4	0	0.00
1009-3	454.69	459.55	FM_1	0.047	454.7	4.8	5.2	0	0.00
1009-4	455.40	458.05	FM_1	0.0281	455.4	2.6	1.5	0	0.00
1009-5	449.85	455.45	FM_1	0.6749	450.5	4.9	624.6	0	0.00
1009-6	449.75	454.05	FM_1	0.0682	449.8	4.2	11.2	0	0.00
1009-7	450.69	455.25	FM_1	0.0553	450.7	4.5	5.2	0	0.00
1009-8	453.89	457.85	FM_1	0.0222	453.9	3.9	1.5	0	0.00
1009-9	455.51	459.75	FM_3	0.0465	455.6	4.2	3.6	0	0.00
1010-1	452.25	457.85	FM_2	0.0723	452.3	5.5	20.7	0	0.00
1010-10	449.67	455.85	FM_2	0.0716	449.7	6.1	24.0	0	0.00
1010-11	451.04	455.55	FM_2	0.0913	451.1	4.4	13.6	0	0.00
1010-12	451.35	456.75	FM_3	0.0403	451.4	5.4	2.3	0	0.00
1010-13	447.08	457.65	FM_3	0.4948	447.6	10.1	328.3	0	0.00
1010-14	443.96	456.45	FM_3	0.4904	444.5	12.0	564.4	0	0.00
1010-15	448.51	457.15	FM_3	0.4579	449.0	8.2	322.4	0	0.00
1010-16	449.33	457.45	FM_3	0.5403	449.9	7.6	318.7	0	0.00
1010-17	450.29	457.55	FM_3	0.4269	450.7	6.8	267.4	0	0.00
1010-18	451.55	459.45	FM_3	0.3743	451.9	7.5	228.8	0	0.00
1010-19	453.25	460.55	FM_3	0.0838	453.3	7.2	10.9	0	0.00
1010-2	454.33	459.35	FM_2	0.0742	454.4	4.9	10.4	0	0.00
1010-20	453.15	458.95	FM_3	0.118	453.3	5.7	24.1	0	0.00
1010-21	452.47	457.95	FM_3	0.0679	452.5	5.4	7.3	0	0.00
1010-22	452.67	458.15	FM_3	0.0488	452.7	5.4	3.6	0	0.00
1010-23	454.28	459.45	FM_3	0.0544	454.3	5.1	5.9	0	0.00
1010-24	454.80	459.35	-	0.0237	454.8	4.5	0.9	0	0.00
1010-25	453.95	459.75	FM_4	0.0451	454.0	5.8	6.8	0	0.00
1010-26	448.62	452.95	FM_2	0.129	448.7	4.2	22.0	0	0.00
1010-3	451.65	456.95	FM_2	0.0721	451.7	5.2	19.1	0	0.00
1010-4	454.06	459.25	FM_2	0.0672	454.1	5.1	10.4	0	0.00
1010-5	450.65	455.65	FM_2	0.0839	450.7	4.9	28.5	0	0.00
1010-6	448.63	454.55	FM_2	0.1119	448.7	5.8	38.1	0	0.00
1010-7	452.36	457.85	FM_2	0.1064	452.5	5.4	26.1	0	0.00
1010-8	452.86	458.25	FM_2	0.0898	452.9	5.3	13.6	0	0.00
1010-9	453.03	457.05	FM_2	0.0599	453.1	4.0	5.4	0	0.00

CIP System Flows, 5-year, 24-hour storm event

Input				Output					
Manhole ID	Invert Elev.	Rim Elev.	DWF Pattern	Max Depth (ft)	Max HGL (ft)	Freeboard (ft)	Max Inflow (gpm)	Total Flood Vol. (MG)	Time Flooded (hrs)
1011-1	436.00	444.05	FM_2	0.631	436.6	7.4	881.5	0	0.00
1011-10	440.32	452.25	FM_3	0.5175	440.8	11.4	738.5	0	0.00
1011-11	442.15	453.45	FM_3	0.432	442.6	10.9	575.1	0	0.00
1011-12	449.27	454.15	FM_3	0.0932	449.4	4.8	15.4	0	0.00
1011-13	448.03	455.95	FM_3	0.1218	448.2	7.8	25.6	0	0.00
1011-14	446.65	452.85	FM_3	0.1653	446.8	6.0	48.5	0	0.00
1011-15	450.38	455.35	FM_3	0.0721	450.5	4.9	11.5	0	0.00
1011-16	445.96	452.15	FM_3	0.1502	446.1	6.0	94.5	0	0.00
1011-17	436.73	444.75	FM_3	0.6067	437.3	7.4	856.6	0	0.00
1011-18	435.20	443.85	FM_2	0.5654	435.8	8.1	917.8	0	0.00
1011-19	439.17	444.15	FM_2	0.0853	439.3	4.9	12.0	0	0.00
1011-2	438.50	444.51	FM_2	0.0786	438.6	5.9	10.4	0	0.00
1011-2.1	438.00	444.25	FM_2	0.1411	438.1	6.1	24.0	0	0.00
1011-20	442.79	448.29	-	0	442.8	5.5	0.0	0	0.00
1011-22	440.11	446.63	-	0	440.1	6.5	0.0	0	0.00
1011-3	447.33	452.75	FM_3	0.1476	447.5	5.3	35.8	0	0.00
1011-4	448.58	453.55	FM_3	0.116	448.7	4.9	25.6	0	0.00
1011-5	449.50	454.25	FM_3	0.0934	449.6	4.7	14.1	0	0.00
1011-6	437.42	445.85	FM_3	0.6303	438.1	7.8	849.0	0	0.00
1011-7	438.48	451.95	FM_3	0.605	439.1	12.9	770.4	0	0.00
1011-8	439.51	451.85	FM_3	0.5936	440.1	11.7	753.0	0	0.00
1011-9	440.56	450.65	FM_3	0.0668	440.6	10.0	6.5	0	0.00
1012-1	437.82	441.65	FM_4	0.0292	437.8	3.8	1.3	0	0.00
1012-2	435.94	442.55	-	0.2659	436.2	6.3	121.8	0	0.00
1012-3	436.82	444.75	FM_4	0.2428	437.1	7.7	120.6	0	0.00
1012-4	438.82	443.55	FM_4	0.0576	438.9	4.7	5.0	0	0.00
1012-5	437.56	446.55	-	0.2475	437.8	8.7	108.7	0	0.00
1012-6	439.11	446.05	FM_4	0.0838	439.2	6.9	11.3	0	0.00
1012-7	440.67	447.65	FM_4	0.0599	440.7	6.9	6.3	0	0.00
1012-8	442.77	450.65	FM_4	0.0323	442.8	7.8	1.3	0	0.00
1012-9	438.85	443.85	FM_3	0.0409	438.9	5.0	2.5	0	0.00
1013-1	430.54	440.15	FM_2	0.4582	431.0	9.2	227.2	0	0.00
1013-10	433.79	440.65	FM_2	0.1865	434.0	6.7	62.7	0	0.00
1013-11	434.55	439.55	FM_2	0.1676	434.7	4.8	50.4	0	0.00
1013-12	434.85	440.15	FM_2	0.1991	435.0	5.1	41.8	0	0.00
1013-13	437.47	442.55	FM_2	0.0968	437.6	5.0	16.9	0	0.00

CIP System Flows, 5-year, 24-hour storm event

Input				Output					
Manhole ID	Invert Elev.	Rim Elev.	DWF Pattern	Max Depth (ft)	Max HGL (ft)	Freeboard (ft)	Max Inflow (gpm)	Total Flood Vol. (MG)	Time Flooded (hrs)
1013-2	436.15	441.65	FM_2	0.0844	436.2	5.4	12.0	0	0.00
1013-3	428.54	440.65	FM_2	1.0606	429.6	11.0	2548.0	0	0.00
1013-4	429.81	441.35	FM_2	0.9645	430.8	10.6	2311.1	0	0.00
1013-5	430.44	442.55	FM_2	1.0243	431.5	11.1	2242.0	0	0.00
1013-6	431.21	444.15	FM_2	0.9718	432.2	12.0	2230.2	0	0.00
1013-7	438.35	442.75	FM_2	0.0775	438.4	4.3	12.0	0	0.00
1013-8	437.67	444.25	FM_2	0.11	437.8	6.5	20.7	0	0.00
1013-9	434.75	443.12	FM_2	0.0572	434.8	8.3	7.1	0	0.00
1014-1	438.88	444.75	FM_2	0.1582	439.0	5.7	57.3	0	0.00
1014-10	442.38	447.85	FM_2	0.0793	442.5	5.4	10.4	0	0.00
1014-11	442.00	447.65	FM_2	0.0798	442.1	5.6	10.4	0	0.00
1014-12	438.15	446.85	FM_2	0.7624	438.9	7.9	1212.9	0	0.00
1014-13	441.48	448.25	FM_2	0.112	441.6	6.7	12.0	0	0.00
1014-14	437.55	445.89	FM_2	0.7734	438.3	7.6	1248.5	0	0.00
1014-15	439.45	444.45	FM_2	0.0997	439.5	4.9	16.9	0	0.00
1014-16	436.96	443.95	FM_2	0.7541	437.7	6.2	1279.3	0	0.00
1014-17	436.42	444.75	FM_2	0.814	437.2	7.5	1291.2	0	0.00
1014-18	437.85	443.05	FM_2	0.0945	437.9	5.1	16.9	0	0.00
1014-2	436.02	442.35	FM_2	0.2407	436.3	6.1	82.9	0	0.00
1014-3	435.23	442.05	FM_2	0.3251	435.6	6.5	132.5	0	0.00
1014-4	436.27	442.55	FM_2	0.1386	436.4	6.1	42.5	0	0.00
1014-5	431.97	445.05	FM_2	0.9862	433.0	12.1	2213.5	0	0.00
1014-6	433.14	443.15	FM_2	0.6103	433.8	9.4	948.7	0	0.00
1014-7	434.02	444.35	FM_2	0.61	434.6	9.7	925.9	0	0.00
1014-8	440.92	445.95	FM_2	0.0819	441.0	4.9	10.4	0	0.00
1014-9	440.06	446.75	FM_2	0.1011	440.2	6.6	17.4	0	0.00
1015-1	443.63	450.45	FM_2	0.1839	443.8	6.6	61.6	0	0.00
1015-10	444.07	451.15	FM_2	0.1897	444.3	6.9	63.2	0	0.00
1015-11	445.59	450.85	FM_2	0.085	445.7	5.2	12.0	0	0.00
1015-12	445.50	450.75	FM_2	0.0825	445.6	5.2	12.0	0	0.00
1015-13	445.00	450.20	FM_2	0.1411	445.1	5.1	28.9	0	0.00
1015-14	444.27	449.45	FM_2	0.0953	444.4	5.1	15.3	0	0.00
1015-15	441.73	448.15	FM_2	0.1282	441.9	6.3	37.1	0	0.00
1015-16	443.23	448.05	COMMERCIAL	0.1074	443.3	4.7	20.2	0	0.00
1015-17	444.31	449.75	FM_2	0.1455	444.5	5.3	39.2	0	0.00
1015-18	442.59	450.55	FM_2	0.2997	442.9	7.7	155.3	0	0.00

CIP System Flows, 5-year, 24-hour storm event

Input				Output					
Manhole ID	Invert Elev.	Rim Elev.	DWF Pattern	Max Depth (ft)	Max HGL (ft)	Freeboard (ft)	Max Inflow (gpm)	Total Flood Vol. (MG)	Time Flooded (hrs)
1015-19	445.21	449.55	FM_2	0.0815	445.3	4.3	15.3	0	0.00
1015-2	444.65	451.05	FM_2	0.1464	444.8	6.3	37.6	0	0.00
1015-20	441.47	449.35	FM_2	0.3726	441.8	7.5	225.6	0	0.00
1015-21	443.58	448.55	FM_2	0.0976	443.7	4.9	19.1	0	0.00
1015-22	443.89	449.05	FM_2	0.0793	444.0	5.1	8.7	0	0.00
1015-23	440.87	448.75	FM_2	0.423	441.3	7.5	251.1	0	0.00
1015-24	438.78	447.85	FM_2	0.7299	439.5	8.3	1187.6	0	0.00
1015-25	439.49	448.05	FM_2	0.6234	440.1	7.9	926.5	0	0.00
1015-26	442.61	447.75	FM_2	0.0656	442.7	5.1	7.1	0	0.00
1015-27	439.78	447.45	FM_2	0.6701	440.5	7.0	894.0	0	0.00
1015-28	439.83	447.05	-	0.6629	440.5	6.6	885.4	0	0.00
1015-29	440.50	446.85	FM_2	0.5867	441.1	5.8	881.6	0	0.00
1015-3	445.90	451.55	FM_2	0.1183	446.0	5.5	25.6	0	0.00
1015-30	444.26	449.65	FM_2	0.133	444.4	5.3	30.5	0	0.00
1015-31	441.38	448.85	FM_2	0.6039	442.0	6.9	844.9	0	0.00
1015-32	441.63	449.25	FM_2	0.6474	442.3	7.0	808.9	0	0.00
1015-33	442.95	447.45	FM_2	0.0861	443.0	4.4	13.6	0	0.00
1015-34	441.96	450.05	FM_2	0.588	442.5	7.5	764.7	0	0.00
1015-35	443.70	448.95	FM_2	0.0801	443.8	5.2	10.4	0	0.00
1015-4	445.34	450.55	FM_2	0.0728	445.4	5.1	8.7	0	0.00
1015-5	444.36	450.75	FM_2	0.5796	444.9	5.8	735.2	0	0.00
1015-6	447.25	451.35	FM_2	0.134	447.4	4.0	31.0	0	0.00
1015-7	445.02	452.75	FM_2	0.7413	445.8	7.0	700.9	0	0.00
1015-8	447.51	452.55	FM_2	0.1412	447.7	4.9	35.2	0	0.00
1015-9	445.07	451.95	FM_2	0.1628	445.2	6.7	49.1	0	0.00
1016-1	449.55	454.55	FM_1	0.0331	449.6	5.0	1.5	0	0.00
1016-2	445.57	453.75	FM_1	0.6745	446.2	7.5	644.6	0	0.00
1016-3	446.29	455.65	FM_1	0.6536	446.9	8.7	628.9	0	0.00
1016-4	447.00	452.15	FM_2	0.0993	447.1	5.1	16.9	0	0.00
1016-5	445.59	451.18	FM_2	0.171	445.8	5.4	38.8	0	0.00
1016-6	446.08	451.30	FM_2	0.1168	446.2	5.1	18.6	0	0.00
1103-01	490.21	498.33	-	0	490.2	8.1	0.0	0	0.00
1103-2	468.52	481.15	-	0.2501	468.8	12.4	197.2	0	0.00
1103-3	470.25	477.25	FM_6	0.3104	470.6	6.7	195.7	0	0.00
1104-1	460.59	471.10	FM_6	0.0774	460.7	10.4	80.7	0	0.00
1104-10	459.63	469.18	FM_6	0.1768	459.8	9.4	19.8	0	0.00

CIP System Flows, 5-year, 24-hour storm event

Input				Output					
Manhole ID	Invert Elev.	Rim Elev.	DWF Pattern	Max Depth (ft)	Max HGL (ft)	Freeboard (ft)	Max Inflow (gpm)	Total Flood Vol. (MG)	Time Flooded (hrs)
1104-11	464.07	478.22	FM_6	0.059	464.1	14.1	16.5	0	0.00
1104-12	478.02	489.85	FM_6	0.0504	478.1	11.8	13.2	0	0.00
1104-13	488.31	500.44	FM_6	0.03	488.3	12.1	4.9	0	0.00
1104-14	489.44	499.44	FM_6	0.05	489.5	10.0	21.4	0	0.00
1104-15	519.47	529.47	FM_6	0.0289	519.5	10.0	6.6	0	0.00
1104-16	537.41	542.46	FM_1	0.0101	537.4	5.0	0.7	0	0.00
1104-17	533.87	538.85	FM_1	0.0195	533.9	5.0	1.5	0	0.00
1104-18	473.67	483.77	FM_6	0.1748	473.8	9.9	52.7	0	0.00
1104-19	475.51	481.74	FM_6	0.1427	475.7	6.1	41.2	0	0.00
1104-2	455.03	471.04	-	0.3357	455.4	15.7	381.3	0	0.00
1104-20	486.88	494.41	FM_6	0.0695	486.9	7.5	31.3	0	0.00
1104-21	489.67	498.25	FM_6	0.0769	489.7	8.5	18.1	0	0.00
1104-22	493.02	504.05	FM_6	0.051	493.1	11.0	8.2	0	0.00
1104-23	501.50	507.00	-	0	501.5	5.5	0.0	0	0.00
1104-24	458.27	466.04	FM_6	0.1861	458.5	7.6	203.7	0	0.00
1104-25	463.26	472.15	FM_6	0.2071	463.5	8.7	202.0	0	0.00
1104-26	464.76	475.65	FM_6	0.3162	465.1	10.6	198.8	0	0.00
1104-28	505.44	516.00	-	0.0288	505.5	10.5	6.6	0	0.00
1104-3	457.00	467.49	-	0.4007	457.4	10.1	282.3	0	0.00
1104-5	461.78	466.78	FM_6	0.1436	461.9	4.9	80.7	0	0.00
1104-6	463.93	468.85	FM_6	0.1487	464.1	4.8	77.4	0	0.00
1104-7	468.71	473.59	FM_6	0.0758	468.8	4.8	16.5	0	0.00
1104-8	473.18	478.72	FM_6	0.0999	473.3	5.4	59.3	0	0.00
1104-9	456.19	468.33	-	0.375	456.6	11.8	302.0	0	0.00
1105-09	463.49	468.47	-	0	463.5	5.0	0.0	0	0.00
1105-1	462.71	468.65	FM_1	0.1248	462.8	5.8	45.5	0	0.00
1105-10	465.68	470.63	-	0	465.7	5.0	0.0	0	0.00
1105-11	470.95	475.69	-	0	471.0	4.7	0.0	0	0.00
1105-12	465.65	470.31	-	0	465.7	4.7	0.0	0	0.00
1105-13	463.99	468.76	-	0	464.0	4.8	0.0	0	0.00
1105-2	470.28	475.75	FM_1	0.0882	470.4	5.4	43.3	0	0.00
1105-3	494.69	500.45	FM_1	0.046	494.7	5.7	18.7	0	0.00
1105-4	512.45	516.95	-	0.0151	512.5	4.5	1.5	0	0.00
1105-5	528.04	532.95	-	0.0175	528.1	4.9	1.5	0	0.00
1105-6	514.80	518.75	FM_1	0.044	514.8	3.9	10.5	0	0.00
1105-7	527.12	531.17	FM_1	0.0277	527.1	4.0	3.7	0	0.00

CIP System Flows, 5-year, 24-hour storm event

Input				Output					
Manhole ID	Invert Elev.	Rim Elev.	DWF Pattern	Max Depth (ft)	Max HGL (ft)	Freeboard (ft)	Max Inflow (gpm)	Total Flood Vol. (MG)	Time Flooded (hrs)
1105-8	542.76	546.86	FM_1	0.0186	542.8	4.1	2.2	0	0.00
1105-9	497.65	501.05	FM_1	0.1015	497.8	3.3	16.4	0	0.00
1106-04	562.74	565.00	-	0	562.7	2.3	0.0	0	0.00
1106-1	474.33	479.60	FM_1	0.0488	474.4	5.2	8.2	0	0.00
1106-10	535.21	539.85	FM_1	0.0603	535.3	4.6	19.5	0	0.00
1106-11	537.54	542.05	FM_1	0.0516	537.6	4.5	6.8	0	0.00
1106-12	539.34	544.35	FM_1	0.0439	539.4	5.0	6.7	0	0.00
1106-13	546.54	552.05	FM_1	0.0285	546.6	5.5	4.5	0	0.00
1106-14	543.24	548.15	FM_1	0.0249	543.3	4.9	3.0	0	0.00
1106-15	531.27	538.10	FM_1	1.304	532.6	5.5	12.6	0	0.00
1106-16	509.44	515.15	FM_1	0.0851	509.5	5.6	53.8	0	0.00
1106-17	518.72	523.05	FM_1	0.0219	518.7	4.3	3.0	0	0.00
1106-18	495.42	500.45	FM_1	0.0903	495.5	4.9	56.8	0	0.00
1106-19	473.35	477.25	FM_1	0.0467	473.4	3.9	3.7	0	0.00
1106-2	510.00	520.69	FM_1	0.0175	510.0	10.7	2.2	0	0.00
1106-20	471.75	477.12	FM_1	0.1052	471.9	5.3	21.6	0	0.00
1106-3	551.16	556.35	FM_1	0.0598	551.2	5.1	2.2	0	0.00
1106-5	555.58	562.95	FM_1	0.0412	555.6	7.3	3.7	0	0.00
1106-6	554.50	563.15	FM_1	0.0464	554.5	8.6	6.0	0	0.00
1106-7	549.56	555.35	FM_1	0.0579	549.6	5.7	11.2	0	0.00
1106-8	545.91	551.45	FM_1	0.0443	546.0	5.5	14.2	0	0.00
1106-9	523.74	529.75	FM_1	0.0847	523.8	5.9	49.3	0	0.00
1107-1	510.53	515.23	FM_1	0.0513	510.6	4.6	28.8	0	0.00
1107-2	522.20	527.16	FM_1	0.0569	522.3	4.9	19.1	0	0.00
1107-3	523.16	560.71	FM_1	0.1332	523.3	37.4	13.1	0	0.00
1107-4	529.40	535.20	-	0	529.4	5.8	0.0	0	0.00
1107-5	523.30	537.44	FM_1	0.0215	523.3	14.1	7.5	0	0.00
1107-6	482.35	486.88	FM_1	0.0502	482.4	4.5	9.0	0	0.00
1108-01	580.11	584.89	-	0	580.1	4.8	0.0	0	0.00
1108-1	530.70	534.40	FM_1	0.0577	530.8	3.6	6.7	0	0.00
1108-2	532.46	536.20	FM_1	0.0395	532.5	3.7	3.0	0	0.00
1108-3	528.22	532.80	FM_1	0.121	528.3	4.5	144.4	0	0.00
1108-4	537.47	541.95	FM_1	0.1216	537.6	4.4	143.0	0	0.00
1108-5	558.79	562.99	FM_1	0.1182	558.9	4.1	140.9	0	0.00
1108-6	573.43	577.47	FM_1	0.1181	573.5	3.9	138.9	0	0.00
1109-1	481.56	484.75	FM_1	0.3155	481.9	2.9	150.7	0	0.00

CIP System Flows, 5-year, 24-hour storm event

Input				Output					
Manhole ID	Invert Elev.	Rim Elev.	DWF Pattern	Max Depth (ft)	Max HGL (ft)	Freeboard (ft)	Max Inflow (gpm)	Total Flood Vol. (MG)	Time Flooded (hrs)
1109-2	483.26	486.73	FM_1	0.2876	483.5	3.2	149.3	0	0.00
1109-3	484.48	486.95	FM_1	0.2941	484.8	2.2	147.2	0	0.00
1109-4	486.97	492.22	FM_1	0.1752	487.1	5.1	146.5	0	0.00
1109-5	499.04	503.35	FM_1	0.1226	499.2	4.2	145.8	0	0.00
1109-6	517.26	521.57	FM_1	0.1227	517.4	4.2	145.1	0	0.00
1109-7	485.60	488.16	-	0	485.6	2.6	0.0	0	0.00
1110-1	475.70	481.70	FM_1	1.3798	477.1	4.6	61.3	0	0.00
1110-2	474.56	479.50	FM_1	0.4289	475.0	4.5	253.7	0	0.00
1110-4	475.80	480.73	-	0.3756	476.2	4.6	190.2	0	0.00
1110-6	478.16	483.54	FM_1	0.3127	478.5	5.1	161.6	0	0.00
1110-7	478.50	483.25	FM_1	0.3205	478.8	4.4	160.1	0	0.00
1110-9	479.86	483.70	-	0.2767	480.1	3.6	159.4	0	0.00
1111-1	469.20	474.74	FM_1	0.4476	469.6	5.1	298.3	0	0.00
1111-10	458.14	463.86	FM_1	0.2283	458.4	5.5	83.4	0	0.00
1111-11	459.03	464.79	FM_1	0.2391	459.3	5.5	79.0	0	0.00
1111-12	460.60	468.72	FM_1	0.2018	460.8	7.9	76.1	0	0.00
1111-13	462.00	467.57	FM_1	0.2149	462.2	5.4	73.3	0	0.00
1111-14	461.40	466.99	FM_1	0.0494	461.4	5.5	3.7	0	0.00
1111-16	459.93	464.84	FM_1	0.0474	460.0	4.9	7.5	0	0.00
1111-17	464.51	470.01	-	0	464.5	5.5	0.0	0	0.00
1111-18	471.31	475.36	-	0	471.3	4.1	0.0	0	0.00
1111-19	469.95	474.18	-	0	470.0	4.2	0.0	0	0.00
1111-2	470.50	476.62	FM_1	0.4389	470.9	5.7	286.4	0	0.00
1111-20	470.25	472.48	-	0	470.3	2.2	0.0	0	0.00
1111-21	467.73	473.98	-	0	467.7	6.3	0.0	0	0.00
1111-22	469.16	476.09	-	0	469.2	6.9	0.0	0	0.00
1111-23	463.00	468.50	-	0	463.0	5.5	0.0	0	0.00
1111-3	472.59	476.65	FM_1	0.3398	472.9	3.7	260.3	0	0.00
1111-5	466.95	472.65	FM_1	0.0278	467.0	5.7	1.5	0	0.00
1111-6	456.80	463.13	FM_1	0.1028	456.9	6.2	18.7	0	0.00
1111-7	455.93	462.67	FM_1	0.2717	456.2	6.5	112.5	0	0.00
1111-8	466.78	472.02	FM_1	0.0321	466.8	5.2	3.7	0	0.00
1111-9	457.14	462.86	FM_1	0.2079	457.3	5.5	87.0	0	0.00
1111-?	456.77	463.13	FM_1	0.0456	456.8	6.3	4.5	0	0.00
1112-1	457.71	467.55	FM_1	0.5332	458.2	9.3	440.5	0	0.00
1112-10	453.20	457.55	FM_1	0.072	453.3	4.3	8.2	0	0.00

CIP System Flows, 5-year, 24-hour storm event

Input				Output					
Manhole ID	Invert Elev.	Rim Elev.	DWF Pattern	Max Depth (ft)	Max HGL (ft)	Freeboard (ft)	Max Inflow (gpm)	Total Flood Vol. (MG)	Time Flooded (hrs)
1112-11	454.27	458.50	FM_1	0.0552	454.3	4.2	4.5	0	0.00
1112-12	455.79	458.83	FM_1	0.0517	455.8	3.0	3.0	0	0.00
1112-13	455.09	459.28	FM_1	0.0715	455.2	4.1	9.0	0	0.00
1112-14	456.39	460.58	FM_1	0.0422	456.4	4.1	3.0	0	0.00
1112-15	457.78	461.30	FM_1	0.0654	457.8	3.5	4.5	0	0.00
1112-16	455.01	461.16	FM_1	0.2742	455.3	5.9	117.7	0	0.00
1112-17	454.19	460.34	FM_1	0.2908	454.5	5.9	132.6	0	0.00
1112-18	453.24	458.56	FM_1	0.3142	453.6	5.0	137.0	0	0.00
1112-19	452.40	458.73	FM_1	0.2892	452.7	6.0	150.5	0	0.00
1112-2	459.27	466.05	FM_1	0.4106	459.7	6.4	406.2	0	0.00
1112-3	461.55	466.25	FM_1	0.5066	462.1	4.2	357.8	0	0.00
1112-4	466.35	470.55	FM_1	0.3678	466.7	3.8	352.6	0	0.00
1112-5	467.95	472.55	FM_1	0.4799	468.4	4.1	305.7	0	0.00
1112-6	460.35	467.55	FM_1	0.1101	460.5	7.1	20.9	0	0.00
1112-7	461.95	467.65	FM_1	0.0915	462.0	5.6	15.0	0	0.00
1112-8	465.95	470.95	FM_1	0.0444	466.0	5.0	5.2	0	0.00
1112-9	458.80	467.05	FM_1	0.5246	459.3	7.7	414.4	0	0.00
1503-1	434.50	441.75	FM_2	0.3324	434.8	6.9	154.3	0	0.00
1503-2	439.24	444.15	FM_2	0.0764	439.3	4.8	15.3	0	0.00
1504-1	431.56	439.75	FM_2	0.4045	432.0	7.8	211.9	0	0.00
1504-2	431.91	438.15	FM_2	0.378	432.3	5.9	188.0	0	0.00
1504-3	433.19	438.88	FM_2	0.3675	433.6	5.3	171.1	0	0.00
1602-1	422.99	427.95	-	1.0028	424.0	4.0	1406.7	0	0.00
1602-2	423.39	429.54	FM_2	1.0159	424.4	5.1	1407.4	0	0.00
1606-2	422.19	427.08	-	0.8023	423.0	4.1	1407.3	0	0.00
1606-3	422.59	427.73	FM_2	0.9602	423.6	4.2	1407.6	0	0.00
214-1	469.66	474.27	FM_6	0.0385	469.7	4.6	1.6	0	0.00
214-2	470.75	477.30	-	0.2259	471.0	6.3	90.2	0	0.00
214-5	477.75	481.57	-	0.1117	477.9	3.7	90.2	0	0.00
313-09	435.46	443.28	-	0	435.5	7.8	0.0	0	0.00
313-16	434.67	444.00	-	0	434.7	9.3	0.0	0	0.00
313-17	436.29	444.65	-	0	436.3	8.4	0.0	0	0.00
313-18	439.50	445.00	-	0	439.5	5.5	0.0	0	0.00
313-19	437.04	444.15	-	0	437.0	7.1	0.0	0	0.00
313-20	439.50	445.00	-	0	439.5	5.5	0.0	0	0.00
315-04	441.50	446.06	-	0	441.5	4.6	0.0	0	0.00

CIP System Flows, 5-year, 24-hour storm event

Input				Output					
Manhole ID	Invert Elev.	Rim Elev.	DWF Pattern	Max Depth (ft)	Max HGL (ft)	Freeboard (ft)	Max Inflow (gpm)	Total Flood Vol. (MG)	Time Flooded (hrs)
315-05	441.46	446.96	-	0	441.5	5.5	0.0	0	0.00
315-10	437.00	446.61	FM_6	0.2242	437.2	9.4	85.1	0	0.00
315-11	435.00	446.23	FM_6	0.5468	435.5	10.7	881.9	0	0.00
315-12	435.26	450.00	-	0.8021	436.1	13.9	872.0	0	0.00
315-13	435.71	450.00	FM_6	0.5305	436.2	13.8	872.0	0	0.00
315-14	438.40	447.00	-	0.3162	438.7	8.3	733.6	0	0.00
315-15	436.51	450.00	FM_6	0.2362	436.7	13.3	136.8	0	0.00
315-16	438.20	446.48	FM_6	0.1864	438.4	8.1	65.2	0	0.00
315-17	440.50	445.74	FM_6	0.0553	440.6	5.2	6.6	0	0.00
315-18	439.62	446.37	FM_6	0.1471	439.8	6.6	46.1	0	0.00
315-19	440.33	448.00	FM_6	0.1342	440.5	7.5	34.6	0	0.00
315-20	439.07	447.26	FM_6	0.0825	439.2	8.1	14.2	0	0.00
315-21	440.50	448.26	FM_6	0.046	440.5	7.7	8.2	0	0.00
315-22	438.20	447.38	FM_6	0.1195	438.3	9.1	50.0	0	0.00
315-23	438.95	447.00	FM_6	0.6413	439.6	7.4	733.7	0	0.00
315-24	440.58	451.20	FM_6	0.1495	440.7	10.5	42.8	0	0.00
315-25	458.58	465.06	FM_6	0.0547	458.6	6.4	21.4	0	0.00
315-26	455.53	462.04	FM_6	0.066	455.6	6.4	11.5	0	0.00
315-27	468.66	475.81	FM_6	0.0348	468.7	7.1	8.2	0	0.00
315-28	473.15	479.49	FM_6	0.1478	473.3	6.2	107.7	0	0.00
315-30	465.64	472.33	FM_6	0.0261	465.7	6.7	4.9	0	0.00
315-31	445.62	455.41	FM_6	0.0358	445.7	9.8	6.6	0	0.00
315-42	442.54	451.66	FM_6	0.0733	442.6	9.0	14.8	0	0.00
315-6	441.50	445.72	COMMERCIAL	0.0573	441.6	4.2	6.8	0	0.00
315-7	439.75	446.59	FM_6	0.0769	439.8	6.8	11.7	0	0.00
315-8	438.32	446.32	FM_6	0.0742	438.4	7.9	14.9	0	0.00
315-9	437.75	446.42	FM_6	0.2231	438.0	8.4	81.8	0	0.00
316-1	455.95	462.74	FM_6	0.1705	456.1	6.6	148.9	0	0.00
316-10	440.41	447.00	FM_6	0.5667	441.0	6.0	676.2	0	0.00
316-11	440.05	447.00	FM_6	0.6545	440.7	6.3	687.7	0	0.00
316-12	442.53	449.03	FM_6	0.0524	442.6	6.4	6.6	0	0.00
316-13	439.03	447.57	FM_6	0.2507	439.3	8.3	45.1	0	0.00
316-14	439.81	448.31	FM_6	0.1478	440.0	8.4	41.8	0	0.00
316-15	440.73	447.98	FM_6	0.1274	440.9	7.1	31.3	0	0.00
316-16	441.35	448.31	FM_6	0.1105	441.5	6.8	23.1	0	0.00
316-17	442.39	448.18	FM_6	0.0935	442.5	5.7	18.1	0	0.00

CIP System Flows, 5-year, 24-hour storm event

Input				Output					
Manhole ID	Invert Elev.	Rim Elev.	DWF Pattern	Max Depth (ft)	Max HGL (ft)	Freeboard (ft)	Max Inflow (gpm)	Total Flood Vol. (MG)	Time Flooded (hrs)
316-18	443.30	447.27	FM_6	0.0672	443.4	3.9	9.9	0	0.00
316-19	442.79	448.49	FM_6	0.0519	442.8	5.6	4.9	0	0.00
316-2	460.30	466.62	FM_6	0.2192	460.5	6.1	137.4	0	0.00
316-20	443.88	448.96	FM_6	0.0683	443.9	5.0	8.2	0	0.00
316-21	442.55	448.63	FM_6	0.1022	442.7	6.0	21.4	0	0.00
316-22	441.50	448.93	FM_6	0.0986	441.6	7.3	28.0	0	0.00
316-25	445.30	450.93	FM_6	0.0642	445.4	5.6	8.2	0	0.00
316-26	443.96	451.69	FM_6	0.0626	444.0	7.7	8.2	0	0.00
316-29	443.32	448.00	FM_6	0.6072	443.9	4.1	666.4	0	0.00
316-3	465.45	472.54	FM_6	0.1812	465.6	6.9	122.6	0	0.00
316-30	450.23	454.89	-	0	450.2	4.7	0.0	0	0.00
316-31	451.31	454.86	-	0	451.3	3.5	0.0	0	0.00
316-32	452.08	459.43	-	0	452.1	7.4	0.0	0	0.00
316-33	457.20	464.12	-	0	457.2	6.9	0.0	0	0.00
316-4	451.54	458.67	FM_6	0.1127	451.7	7.0	29.6	0	0.00
316-5	448.77	455.13	FM_6	0.2314	449.0	6.1	193.4	0	0.00
316-6	444.07	450.26	FM_6	0.5442	444.6	5.6	661.6	0	0.00
316-7	442.71	448.00	FM_6	0.6291	443.3	4.7	668.0	0	0.00
316-8	441.78	447.28	FM_6	0.6247	442.4	4.9	672.9	0	0.00
316-9	440.96	447.00	FM_6	0.6178	441.6	5.4	674.6	0	0.00
415-1	422.03	430.78	FM_5	0.3128	422.3	8.4	153.8	0	0.00
415-11	425.83	432.35	FM_5	0.0547	425.9	6.5	7.5	0	0.00
415-12	429.00	432.94	FM_5	0.0493	429.0	3.9	5.0	0	0.00
415-15	427.92	433.67	FM_5	0.0469	428.0	5.7	5.8	0	0.00
415-16	419.90	428.40	FM_5	0.263	420.2	8.2	178.7	0	0.00
415-18	420.56	428.54	FM_5	0.482	421.0	7.5	204.2	0	0.00
415-2	423.15	432.05	FM_5	0.3065	423.5	8.6	140.5	0	0.00
415-3	424.70	430.82	FM_5	0.2573	425.0	5.9	128.8	0	0.00
415-4	426.32	430.51	FM_5	0.0737	426.4	4.1	10.0	0	0.00
415-5	426.02	432.27	FM_5	0.2462	426.3	6.0	111.3	0	0.00
415-6	427.48	430.94	FM_5	0.1031	427.6	3.4	19.2	0	0.00
415-7	429.14	433.17	FM_5	0.0706	429.2	4.0	11.7	0	0.00
415-8	427.38	431.57	FM_5	0.2244	427.6	4.0	85.4	0	0.00
416-08	419.40	425.00	-	0	419.4	5.6	0.0	0	0.00
416-09	418.03	435.62	-	0	418.0	17.6	0.0	0	0.00
416-1	427.08	433.89	FM_5	0.0998	427.2	6.7	13.4	0	0.00

CIP System Flows, 5-year, 24-hour storm event

Input				Output					
Manhole ID	Invert Elev.	Rim Elev.	DWF Pattern	Max Depth (ft)	Max HGL (ft)	Freeboard (ft)	Max Inflow (gpm)	Total Flood Vol. (MG)	Time Flooded (hrs)
416-12	425.03	434.41	-	0	425.0	9.4	0.0	0	0.00
416-13	423.54	433.60	-	0	423.5	10.1	0.0	0	0.00
416-14	421.94	431.68	-	0	421.9	9.7	0.0	0	0.00
416-15	420.62	434.00	-	0	420.6	13.4	0.0	0	0.00
416-16	425.96	431.82	-	0	426.0	5.9	0.0	0	0.00
416-2	429.08	433.58	FM_5	0.2089	429.3	4.3	79.6	0	0.00
416-3	430.26	434.90	FM_5	0.0796	430.3	4.6	10.0	0	0.00
416-4	430.06	434.46	FM_5	0.0612	430.1	4.3	6.2	0	0.00
416-5	431.55	435.84	FM_4	0.0537	431.6	4.2	3.7	0	0.00
416-6	427.05	434.92	FM_5	0.5031	427.6	7.4	3.3	0	0.00
416-7	430.26	433.97	FM_5	0.0651	430.3	3.6	6.7	0	0.00
901-09	429.02	436.27	-	0	429.0	7.3	0.0	0	0.00
901-1	430.75	438.25	FM_5	0.0297	430.8	7.5	1.7	0	0.00
901-10	425.55	433.00	FM_5	0.0844	425.6	7.4	18.4	0	0.00
901-11	435.18	438.68	FM_4	0.0837	435.3	3.4	8.8	0	0.00
901-12	434.99	438.80	FM_4	0.0851	435.1	3.7	8.8	0	0.00
901-13	435.00	436.91	FM_4	0.1144	435.1	1.8	15.2	0	0.00
901-14	434.60	438.60	FM_4	0.1534	434.8	3.8	29.9	0	0.00
901-15	434.07	439.49	FM_4	0.1628	434.2	5.3	43.7	0	0.00
901-16	433.39	440.31	FM_4	0.1648	433.6	6.8	48.8	0	0.00
901-17	432.31	442.02	FM_4	0.2113	432.5	9.5	57.5	0	0.00
901-18	434.04	439.96	FM_4	0.0677	434.1	5.9	10.1	0	0.00
901-19	434.14	439.65	FM_4	0.0766	434.2	5.4	8.8	0	0.00
901-2	430.01	437.26	FM_5	0.0566	430.1	7.2	6.7	0	0.00
901-20	431.74	441.91	FM_4	0.3289	432.1	9.8	181.8	0	0.00
901-21	432.36	439.48	FM_4	0.2228	432.6	6.9	65.2	0	0.00
901-22	433.33	437.95	FM_4	0.1245	433.5	4.5	25.6	0	0.00
901-23	434.85	438.38	FM_5	0.0788	434.9	3.5	13.7	0	0.00
901-24	431.18	436.40	FM_5	0.0383	431.2	5.2	2.5	0	0.00
901-24.5	429.96	436.21	-	0	430.0	6.3	0.0	0	0.00
901-25	429.42	436.06	FM_5	0.0629	429.5	6.6	6.7	0	0.00
901-3	430.20	437.39	FM_5	0.0481	430.2	7.1	5.0	0	0.00
901-4	429.03	436.44	FM_5	0.0659	429.1	7.3	10.0	0	0.00
901-5	427.97	435.50	FM_5	0.0442	428.0	7.5	4.2	0	0.00
901-6	426.52	435.82	FM_5	0.1155	426.6	9.2	21.7	0	0.00
901-7	427.50	433.90	FM_5	0.0405	427.5	6.4	2.5	0	0.00

CIP System Flows, 5-year, 24-hour storm event

Input				Output					
Manhole ID	Invert Elev.	Rim Elev.	DWF Pattern	Max Depth (ft)	Max HGL (ft)	Freeboard (ft)	Max Inflow (gpm)	Total Flood Vol. (MG)	Time Flooded (hrs)
901-7.5	429.00	434.80	FM_5	0.0178	429.0	5.8	0.8	0	0.00
901-8	427.08	433.40	FM_5	0.1026	427.2	6.2	13.4	0	0.00
901-9	428.18	435.20	FM_5	0.0246	428.2	7.0	0.8	0	0.00
902-1	417.25	430.50	FM_5	1.5242	418.8	11.7	604.8	0	0.00
902-10	426.33	433.50	FM_5	0.2453	426.6	6.9	98.5	0	0.00
902-11	427.08	434.44	FM_5	0.2304	427.3	7.1	96.8	0	0.00
902-12	427.68	435.48	FM_5	0.2575	427.9	7.5	82.6	0	0.00
902-13	427.56	433.81	FM_5	0.0926	427.7	6.2	9.2	0	0.00
902-13.5	427.86	433.90	FM_5	0.052	427.9	6.0	4.2	0	0.00
902-2	418.05	429.00	FM_5	0.7554	418.8	10.2	534.6	0	0.00
902-20	419.67	431.66	FM_5	0.489	420.2	11.5	329.4	0	0.00
902-3	418.85	428.40	FM_4	0.5417	419.4	9.0	537.1	0	0.00
902-4	421.21	432.10	COMMERCIAL	0.3631	421.6	10.5	328.5	0	0.00
902-5	422.95	432.30	FM_5	0.2422	423.2	9.1	168.5	0	0.00
902-6	424.95	431.10	FM_5	0.2523	425.2	5.9	146.8	0	0.00
902-7	425.50	434.96	FM_5	0.1386	425.6	9.3	28.4	0	0.00
902-8	425.57	433.79	FM_5	0.3564	425.9	7.9	116.0	0	0.00
902-9	426.93	434.68	FM_5	0.068	427.0	7.7	15.9	0	0.00
907-10	428.80	435.39	FM_1	0.0627	428.9	6.5	6.4	0	0.00
907-11	428.00	435.47	FM_1	0.0806	428.1	7.4	9.6	0	0.00
907-12	425.79	435.39	FM_1	0.1788	426.0	9.4	65.0	0	0.00
907-13	422.74	435.82	FM_1	0.3614	423.1	12.7	243.2	0	0.00
907-14	431.04	435.75	FM_1	0.0642	431.1	4.6	7.5	0	0.00
907-15	430.04	435.97	FM_1	0.0792	430.1	5.9	11.7	0	0.00
907-16	429.77	437.74	FM_1	0.058	429.8	7.9	6.4	0	0.00
907-17	425.00	435.50	FM_1	0.3079	425.3	10.2	176.1	0	0.00
907-18	426.05	433.85	FM_1	0.3462	426.4	7.5	171.9	0	0.00
907-19	420.57	431.33	FM_1	0.2716	420.8	10.5	245.3	0	0.00
907-2	415.59	433.00	FM_5	3.051	418.6	14.4	598.4	0	0.00
907-21	430.53	436.06	FM_1	0.0593	430.6	5.5	5.3	0	0.00
907-3	416.08	432.60	FM_1	2.5853	418.7	13.9	246.3	0	0.00
907-6	416.45	431.50	FM_5	2.2592	418.7	12.8	597.8	0	0.00
907-8	428.00	435.48	FM_5	0.2241	428.2	7.3	71.8	0	0.00
907-9	430.89	436.35	FM_1	0.0501	430.9	5.4	4.3	0	0.00
908-1	430.89	437.25	FM_1	0.0663	431.0	6.3	7.5	0	0.00
908-10	433.15	439.61	FM_4	0.1348	433.3	6.3	22.1	0	0.00

CIP System Flows, 5-year, 24-hour storm event

Input				Output					
Manhole ID	Invert Elev.	Rim Elev.	DWF Pattern	Max Depth (ft)	Max HGL (ft)	Freeboard (ft)	Max Inflow (gpm)	Total Flood Vol. (MG)	Time Flooded (hrs)
908-11	433.05	440.84	FM_4	0.1834	433.2	7.6	51.5	0	0.00
908-12	433.59	441.63	FM_4	0.1789	433.8	7.9	41.6	0	0.00
908-13.5	436.64	442.14	-	0	436.6	5.5	0.0	0	0.00
908-14	434.25	440.27	FM_4	0.1623	434.4	5.9	39.2	0	0.00
908-15	434.75	439.33	FM_4	0.1671	434.9	4.4	32.1	0	0.00
908-16	435.25	439.33	FM_1	0.1284	435.4	4.0	23.7	0	0.00
908-17	427.70	436.80	FM_1	0.3216	428.0	8.8	163.4	0	0.00
908-18	428.57	437.50	FM_1	0.3019	428.9	8.6	149.6	0	0.00
908-19	430.32	439.10	FM_1	0.288	430.6	8.5	139.1	0	0.00
908-2	429.35	435.51	FM_1	0.104	429.5	6.1	23.4	0	0.00
908-20	431.50	439.55	FM_1	0.2791	431.8	7.8	134.8	0	0.00
908-21	434.25	444.63	FM_1	0.2304	434.5	10.1	91.7	0	0.00
908-26	430.30	436.65	FM_1	0.0607	430.4	6.3	7.5	0	0.00
908-28	432.85	439.46	FM_1	0.2426	433.1	6.4	97.7	0	0.00
908-29	436.05	443.24	FM_1	0.2278	436.3	7.0	88.7	0	0.00
908-3	428.05	436.96	FM_1	0.1603	428.2	8.7	49.0	0	0.00
908-30	436.81	441.75	FM_1	0.2101	437.0	4.7	81.8	0	0.00
908-31	438.09	441.81	FM_1	0.0635	438.2	3.7	6.4	0	0.00
908-32	436.18	439.32	FM_1	0.0984	436.3	3.0	14.9	0	0.00
908-33	435.23	438.45	FM_1	0.1368	435.4	3.1	28.8	0	0.00
908-34	432.95	438.31	FM_1	0.127	433.1	5.2	33.0	0	0.00
908-35	435.88	438.75	FM_1	0.0792	436.0	2.8	11.7	0	0.00
908-36	437.05	440.56	FM_1	0.0634	437.1	3.4	6.4	0	0.00
908-4	429.65	437.88	FM_1	0.0502	429.7	8.2	5.3	0	0.00
908-5	429.36	437.99	FM_1	0.0855	429.4	8.5	13.9	0	0.00
908-5.5	431.16	436.79	FM_1	0.0564	431.2	5.6	5.3	0	0.00
908-6	432.23	437.25	FM_1	0.0372	432.3	5.0	3.2	0	0.00
908-7	431.18	436.40	FM_5	0.1812	431.4	5.0	63.6	0	0.00
908-7.5	429.42	436.06	FM_5	0.1788	429.6	6.5	67.7	0	0.00
908-8	435.50	437.00	FM_1	0.0483	435.5	1.5	4.5	0	0.00
908-9	433.50	438.50	FM_4	0.1085	433.6	4.9	13.3	0	0.00
909-1	430.14	437.45	FM_4	0.3071	430.4	7.0	163.7	0	0.00
909-2	430.79	437.55	FM_4	0.2525	431.0	6.5	142.2	0	0.00
909-3	432.59	442.35	FM_4	0.2734	432.9	9.5	139.9	0	0.00
909-4	433.36	441.15	FM_4	0.2867	433.6	7.5	137.5	0	0.00
909-5	434.20	442.35	COMMERCIAL	0.2731	434.5	7.9	133.9	0	0.00

CIP System Flows, 5-year, 24-hour storm event

Input				Output					
Manhole ID	Invert Elev.	Rim Elev.	DWF Pattern	Max Depth (ft)	Max HGL (ft)	Freeboard (ft)	Max Inflow (gpm)	Total Flood Vol. (MG)	Time Flooded (hrs)
909-6	435.32	442.85	FM_4	0.2671	435.6	7.3	125.3	0	0.00
910-1	431.25	436.05	FM_4	0.0732	431.3	4.7	9.4	0	0.00
911-10	415.35	429.90	COMMERCIAL	1.9012	417.3	12.6	35.5	0	0.00
911-3	431.02	435.23	COMMERCIAL	0.2621	431.3	3.9	117.9	0	0.00
911-4	429.92	436.00	COMMERCIAL	0.2592	430.2	5.8	111.4	0	0.00
914-1	429.99	432.84	COMMERCIAL	0.0564	430.0	2.8	9.3	0	0.00
914-2	419.16	429.54	FM_4	0.0945	419.3	10.3	14.5	0	0.00
914-3	418.36	430.29	COMMERCIAL	0.1091	418.5	11.8	23.7	0	0.00
914-4	416.91	430.56	COMMERCIAL	0.3129	417.2	13.3	28.3	0	0.00
914-5	431.46	435.02	COMMERCIAL	0.0397	431.5	3.5	2.3	0	0.00
914-6	430.20	433.56	COMMERCIAL	0.0687	430.3	3.3	7.0	0	0.00
914-7	428.63	434.52	COMMERCIAL	0.2754	428.9	5.6	123.7	0	0.00
914-8	427.31	435.79	COMMERCIAL	0.1712	427.5	8.3	129.5	0	0.00
914-9	428.64	434.40	COMMERCIAL	0.0958	428.7	5.7	14.0	0	0.00
915-1	423.79	436.58	FM_2	0.9664	424.8	11.8	1405.1	0	0.00
915-10	429.07	439.45	FM_4	0.3266	429.4	10.1	181.5	0	0.00
915-11	433.27	438.05	FM_4	0.0846	433.4	4.7	12.6	0	0.00
915-12	434.33	438.65	FM_4	0.0553	434.4	4.3	5.0	0	0.00
915-13	426.29	439.65	FM_2	1.1116	427.4	12.2	2700.3	0	0.00
915-14	425.98	438.65	FM_2	1.0892	427.1	11.6	2764.6	0	0.00
915-15	434.95	439.23	FM_2	0.1514	435.1	4.1	42.2	0	0.00
915-16	425.61	438.05	FM_2	1.0972	426.7	11.3	2800.0	0	0.00
915-17	432.00	437.29	FM_2	2.1796	434.2	3.1	24.5	0	0.00
915-18	435.75	437.25	FM_2	0.084	435.8	1.4	13.0	0	0.00
915-19	433.11	438.61	FM_2	3.2053	436.3	2.3	17.9	0	0.00
915-2	424.21	434.35	-	1.1358	425.3	9.0	3157.6	0	0.00
915-20	434.75	437.29	-	0	434.8	2.5	0.0	0	0.00
915-21	436.62	438.61	-	0	436.6	2.0	0.0	0	0.00
915-25	434.45	438.05	FM_2	0.1703	434.6	3.4	53.5	0	0.00
915-3	425.71	436.35	FM_4	0.4853	426.2	10.2	371.4	0	0.00
915-4	426.22	436.85	FM_4	0.3879	426.6	10.2	242.1	0	0.00
915-5	429.58	435.25	FM_4	0.1066	429.7	5.6	19.5	0	0.00
915-6	427.18	436.35	FM_4	0.3568	427.5	8.8	216.5	0	0.00
915-7	431.25	436.25	FM_4	0.0824	431.3	4.9	16.6	0	0.00
915-8	428.17	438.25	FM_4	0.3404	428.5	9.7	197.0	0	0.00
915-9	432.87	436.85	FM_4	0.0685	432.9	3.9	7.5	0	0.00

CIP System Flows, 5-year, 24-hour storm event

Input				Output					
Manhole ID	Invert Elev.	Rim Elev.	DWF Pattern	Max Depth (ft)	Max HGL (ft)	Freeboard (ft)	Max Inflow (gpm)	Total Flood Vol. (MG)	Time Flooded (hrs)
915-SPLITTER	423.00	436.53	FM_2	2.0346	425.0	11.5	3159.0	0	0.00
916-05	427.14	435.40	-	1.0601	428.2	7.2	2653.7	0	0.00
916-06	431.00	435.00	-	0	431.0	4.0	0.0	0	0.00
916-1	435.46	440.55	FM_4	0.0725	435.5	5.0	8.8	0	0.00
916-10	438.50	444.00	-	0	438.5	5.5	0.0	0	0.00
916-2	434.12	439.95	FM_4	0.0866	434.2	5.7	16.3	0	0.00
916-3	426.88	438.75	FM_2	1.0668	427.9	10.8	2685.9	0	0.00
916-4	428.21	433.05	FM_2	0.1009	428.3	4.7	17.9	0	0.00
916-5	427.49	435.15	FM_2	1.0488	428.5	6.6	2653.9	0	0.00
916-8	428.12	439.95	FM_2	1.0836	429.2	10.7	2602.5	0	0.00
916-9	434.09	438.55	FM_2	0.104	434.2	4.4	18.6	0	0.00
IND~LS	413.00	430.69	-	58.9256	471.9	-41.2	500.0	0	0.00
JCT_10	412.26	427.38	-	0.9125	413.2	14.2	2749.0	0	0.00
JCT_100	418.72	425.82	-	0.5816	419.3	6.5	1762.9	0	0.00
JCT_102	418.36	425.41	FM_2	0.5502	418.9	6.5	3170.8	0	0.00
JCT_116	452.21	461.50	-	0.3494	452.6	8.9	381.3	0	0.00
JCT_118	448.41	455.20	FM_6	0.494	448.9	6.3	427.4	0	0.00
JCT_12	415.82	433.74	FM_6	0.8546	416.7	17.1	1370.9	0	0.00
JCT_120	447.20	453.00	FM_6	0.3848	447.6	5.4	430.5	0	0.00
JCT_122	446.16	451.98	FM_6	0.579	446.7	5.2	443.7	0	0.00
JCT_124	445.13	449.31	FM_6	0.4311	445.6	3.7	453.5	0	0.00
JCT_126	420.00	430.00	-	39.3345	459.3	-29.3	800.0	0	0.00
JCT_130	420.91	425.81	-	0.2816	421.2	4.6	1406.9	0	0.00
JCT_132	421.00	429.00	FM_5	0	421.0	8.0	81.0	0	0.00
JCT_134	434.43	446.37	-	0.8129	435.2	11.1	881.9	0	0.00
JCT_136	433.90	447.20	-	0.6846	434.6	12.6	881.9	0	0.00
JCT_138	421.16	432.49	-	0.2573	421.4	11.1	328.5	0	0.00
JCT_14	416.42	435.74	-	0.8849	417.3	18.4	1362.7	0	0.00
JCT_140	391.69	419.08	-	0.7724	392.5	26.6	2765.0	0	0.00
JCT_142	423.00	436.63	-	2.0344	425.0	11.6	1759.4	0	0.00
JCT_144	495.80	499.00	-	0.1266	495.9	3.1	104.2	0	0.00
JCT_146	0.00	529.00	FM_1	526.1243	526.1	2.9	52.1	0	0.00
JCT_148	499.00	502.00	FM_1	0.1577	499.2	2.8	52.1	0	0.00
JCT_150	428.81	434.00	-	0.0505	428.9	5.1	3.8	0	0.00
JCT_152	469.00	472.00	FM_3	0.0295	469.0	3.0	3.8	0	0.00
JCT_156	426.00	434.00	FM_4	29.6202	455.6	-21.6	4292.3	0	0.00

CIP System Flows, 5-year, 24-hour storm event

Input				Output					
Manhole ID	Invert Elev.	Rim Elev.	DWF Pattern	Max Depth (ft)	Max HGL (ft)	Freeboard (ft)	Max Inflow (gpm)	Total Flood Vol. (MG)	Time Flooded (hrs)
JCT_158	420.55	440.70	-	0.3168	420.9	19.8	416.3	0	0.00
JCT_16	417.02	434.34	-	0.8438	417.9	16.5	1362.7	0	0.00
JCT_160	419.83	441.04	-	0.5188	420.3	20.7	416.3	0	0.00
JCT_162	421.87	441.81	-	0.4017	422.3	19.5	409.9	0	0.00
JCT_164	423.07	440.17	-	0.4826	423.6	16.6	409.9	0	0.00
JCT_166	423.89	439.88	-	0.3697	424.3	15.6	398.0	0	0.00
JCT_168	428.75	438.09	-	0.1272	428.9	9.2	19.7	0	0.00
JCT_170	430.16	440.03	FM_5	0.1156	430.3	9.8	19.7	0	0.00
JCT_172	427.28	439.97	-	0.0713	427.4	12.6	10.6	0	0.00
JCT_174	428.64	438.11	-	0.0921	428.7	9.4	10.6	0	0.00
JCT_176	432.52	439.90	FM_5	0.0592	432.6	7.3	10.6	0	0.00
JCT_178	424.97	441.98	-	0.5252	425.5	16.5	398.0	0	0.00
JCT_180	425.87	441.93	-	0.5174	426.4	15.5	398.0	0	0.00
JCT_182	426.78	441.45	-	0.5169	427.3	14.2	398.0	0	0.00
JCT_184	427.68	443.49	-	0.5195	428.2	15.3	398.1	0	0.00
JCT_186	428.58	442.81	-	0.3526	428.9	13.9	216.4	0	0.00
JCT_188	417.10	424.50	-	1.3558	418.5	6.0	6829.3	0	0.00
JCT_26	417.77	437.46	FM_6	0.8123	418.6	18.9	1362.8	0	0.00
JCT_28	418.43	439.84	-	0.8554	419.3	20.6	1361.2	0	0.00
JCT_30	419.02	441.32	FM_6	0.8643	419.9	21.4	1361.2	0	0.00
JCT_32	420.15	442.37	-	0.6343	420.8	21.6	958.4	0	0.00
JCT_34	421.15	442.66	FM_6	0.7953	421.9	20.7	958.4	0	0.00
JCT_36	421.90	443.66	FM_6	0.6241	422.5	21.1	926.8	0	0.00
JCT_38	422.43	441.77	-	0.7685	423.2	18.6	925.2	0	0.00
JCT_40	423.46	441.96	FM_6	0.6792	424.1	17.8	925.3	0	0.00
JCT_42	424.41	442.76	FM_6	0.6899	425.1	17.7	923.7	0	0.00
JCT_44	425.26	442.93	FM_6	0.6955	426.0	17.0	922.1	0	0.00
JCT_46	426.26	442.81	-	0.6602	426.9	15.9	920.5	0	0.00
JCT_48	426.79	442.86	-	0.6348	427.4	15.4	920.5	0	0.00
JCT_50	432.68	445.33	FM_6	0.6053	433.3	12.0	885.1	0	0.00
JCT_52	410.78	428.08	-	0.8737	411.7	16.4	2748.9	0	0.00
JCT_54	408.89	427.36	FM_6	0.6218	409.5	17.8	2750.4	0	0.00
JCT_56	402.86	425.05	-	0.8763	403.7	21.3	2750.4	0	0.00
JCT_58	401.25	421.02	-	0.867	402.1	18.9	2750.4	0	0.00
JCT_60	399.92	421.63	-	0.8633	400.8	20.8	2750.4	0	0.00
JCT_62	398.22	420.22	FM_6	0.8994	399.1	21.1	2756.2	0	0.00

CIP System Flows, 5-year, 24-hour storm event

Input				Output					
Manhole ID	Invert Elev.	Rim Elev.	DWF Pattern	Max Depth (ft)	Max HGL (ft)	Freeboard (ft)	Max Inflow (gpm)	Total Flood Vol. (MG)	Time Flooded (hrs)
JCT_64	396.88	419.52	FM_6	0.6504	397.5	22.0	2757.7	0	0.00
JCT_66	392.36	419.55	FM_6	0.7897	393.1	26.4	2765.0	0	0.00
JCT_70	415.10	431.70	FM_6	0.8181	415.9	15.8	1375.8	0	0.00
JCT_72	413.35	428.32	FM_6	0.7942	414.1	14.2	1382.2	0	0.00
JCT_76	414.12	431.30	FM_6	0.8629	415.0	16.3	1377.3	0	0.00
JCT_78	410.50	426.00	-	113.8378	524.3	-98.3	4619.9	0	0.00
JCT_80	424.50	434.00	-	35.0275	459.5	-25.5	4276.1	0	0.00
JCT_84	427.00	436.51	-	2.3881	429.4	7.1	4293.2	0	0.00
JCT_88	423.68	436.73	-	1.2686	424.9	11.8	1759.2	0	0.00
JCT_90	423.63	435.40	FM_2	0.9575	424.6	10.8	1762.1	0	0.00
JCT_92	423.15	430.25	-	0.7753	423.9	6.3	1761.9	0	0.00
JCT_94	421.98	427.88	-	0.8994	422.9	5.0	1761.9	0	0.00
JCT_96	421.18	426.93	FM_2	0.7649	421.9	5.0	1763.4	0	0.00
JCT_98	419.84	425.64	-	0.7979	420.6	5.0	1763.4	0	0.00
KA1	468.71	475.74	-	0	468.7	7.0	0.0	0	0.00
KA10	581.00	587.00	-	0	581.0	6.0	0.0	0	0.00
KA2	469.83	475.13	-	0	469.8	5.3	0.0	0	0.00
KA3	468.16	473.87	-	0	468.2	5.7	0.0	0	0.00
KA4	445.27	450.77	-	0	445.3	5.5	0.0	0	0.00
KA5	434.23	439.73	-	0	434.2	5.5	0.0	0	0.00
KA6	471.00	476.50	-	0	471.0	5.5	0.0	0	0.00
KA7	433.00	438.50	-	0	433.0	5.5	0.0	0	0.00
KA8	441.00	447.00	-	0	441.0	6.0	0.0	0	0.00
KA9	581.00	587.00	-	0	581.0	6.0	0.0	0	0.00
S-1B	420.27	426.20	SUBLIMITY	0.5381	420.8	5.4	1409.0	0	0.00
S-1C	421.90	428.30	SUBLIMITY	0.7607	422.7	5.6	1409.0	0	0.00
S-2	427.47	434.70	-	0.0351	427.5	7.2	3.8	0	0.00
S-7	439.66	445.10	-	0	439.7	5.4	0.0	0	0.00

CIP System Flows, 5-year, 24-hour storm event

Input								Output					
Pipe ID	Upstream MH	Downstream MH	Length (ft)	Roughness	US Invert (ft)	DS Invert (ft)	Diameter (ft)	Full Flow (gpm)	Slope (%)	Max Flow (gpm)	Max Velocity (ft/s)	Max.Flow/Full Flow	Max.Depth/Full Depth
4701.1	915-SPLITTER	915-1	420.22	0.012	423.72	423.63	1.75	994	0.0167	1399	1.88	1.41	0.65
4702.1	915-1	1602-2	408.4	0.012	423.61	423.31	1.75	2411	0.0979	1404	2.23	0.58	0.57
4703.1	1602-2	1602-1	492.04	0.012	423.21	422.8	1.75	2197	0.0813	1407	2.18	0.64	0.58
4704.1	1602-1	1606-3	476.21	0.012	422.75	422.51	1.75	2233	0.084	1406	2.26	0.63	0.56
4705.1	1606-3	1606-2	402.55	0.012	422.43	421.94	1.75	2429	0.0994	1407	2.58	0.58	0.50
4706.1	1606-2	JCT_130	363.01	0.012	421.88	421.49	1.75	3383	0.1928	1407	3.34	0.42	0.41
CDT_11	JCT_102	JCT_188	40	0.012	418.36	417.29	2.50	32625	2.676	3181	6.59	0.10	0.34
CDT_113	1104-2	JCT_116	256.6	0.012	455.03	452.21	0.83	1117	1.0991	381	4.02	0.34	0.41
CDT_115	JCT_116	JCT_118	400.35	0.012	452.21	448.41	0.83	1038	0.9492	381	3.09	0.37	0.51
CDT_117	JCT_118	JCT_120	303.65	0.012	448.41	447.2	0.83	673	0.3985	427	3.26	0.64	0.53
CDT_119	JCT_120	JCT_122	121	0.012	447.2	446.16	0.83	988	0.8595	430	2.94	0.44	0.58
CDT_121	JCT_122	JCT_124	349	0.012	446.16	445.13	0.83	579	0.2951	444	2.86	0.77	0.61
CDT_123	JCT_124	316-6	164	0.012	445.13	444.07	0.83	856	0.6464	453	3.05	0.53	0.59
CDT_125	315-11	JCT_134	74	0.012	435	434.43	1.00	1520	0.7703	882	3.46	0.58	0.68
CDT_129	JCT_126	JCT_80	50	0.012	425	424.5	1.00	2217	1.0001	2379	13.05	1.07	1.00
CDT_13	JCT_12	JCT_70	375.72	0.012	415.82	415.1	1.50	2236	0.1916	1371	3.02	0.61	0.56
CDT_131	JCT_66	JCT_140	80.54	0.012	392.36	391.89	2.00	8403	0.5836	2765	5.34	0.33	0.39
CDT_135	JCT_130	JCT_102	23.36	0.012	420.91	418.46	1.75	25020	10.5462	1407	8.81	0.06	0.21
CDT_139	S-1B	JCT_10	386.69	0.012	420.27	412.26	1.00	2494	2.0719	1409	7.74	0.57	0.73
CDT_141	JCT_132	MOBILE_PARK	500	0.012	421	420.56		0	0.088	81	-1.00	-1.00	-1.00
CDT_143	JCT_134	JCT_136	204	0.012	434.43	433.9	1.00	883	0.2598	882	3.12	1.00	0.75
CDT_145	JCT_136	JCT_50	298	0.012	433.9	432.68	1.00	1108	0.4094	882	3.67	0.80	0.64
CDT_147	JCT_138	902-20	100	0.012	421.16	419.77	1.17	3083	1.3901	329	3.09	0.11	0.28
CDT_149	JCT_78	JCT_80	5,500.00	0.012	424.5	410.5	1.50	17	0	3687	5.19	211.21	1.00
CDT_15	JCT_14	JCT_12	356.69	0.012	416.42	415.82	1.50	2095	0.1682	1363	2.86	0.65	0.58
CDT_151	JCT_80	JCT_156	644.249	0.012	424.5	426	1.50	2884	0.2328	4280	8.44	1.48	1.00
CDT_153	JCT_140	STOR_10	30	0.012	391.69	391.5	2.00	8754	0.6333	2765	5.50	0.32	0.39
CDT_155	JCT_142	JCT_88	160.15	0.012	423.88	423.73	2.00	3366	0.0937	1759	2.02	0.52	0.59
CDT_157	JCT_142	915-SPLITTER	2	0.012	423.53	423.53	3.00	7252	0.05	1759	1.62	0.24	0.50
CDT_159	JCT_150	S-2	285.00	0.012	428.81	427.67	0.67	372	0.4	4	0.83	0.01	0.07
CDT_161	JCT_152	JCT_150	1350	0.012	469	429.01	0.67	1011	2.9635	4	1.53	0.00	0.04
CDT_163	JCT_146	JCT_144	2200	0.012	526	496	0.67	686	1.3638	52	2.58	0.08	0.19
CDT_165	JCT_148	JCT_144	530	0.012	499	496.2	0.67	427	0.5283	52	1.86	0.12	0.23
CDT_167	JCT_144	1103-3	500	0.012	495.8	470.45	0.67	1324	5.0765	104	5.04	0.08	0.19
CDT_169	JCT_156	JCT_84	2125.9299	0.012	426	429.76	1.50	2486	0.1769	4293	5.72	1.73	0.90
CDT_17	JCT_16	JCT_14	310.75	0.012	417.02	416.42	1.50	2244	0.1931	1363	2.88	0.61	0.58
CDT_171	JCT_160	JCT_30	21	0.012	419.83	419.85	1.00	535	0.0952	416	2.62	0.78	0.46
CDT_173	JCT_158	JCT_160	42.6025	0.012	420.55	420.03	1.00	1914	1.2207	416	4.32	0.22	0.32
CDT_175	JCT_162	JCT_158	230.5594	0.012	421.87	420.75	1.00	1207	0.4858	410	3.10	0.34	0.40
CDT_177	JCT_164	JCT_162	384.461	0.012	423.07	421.97	1.00	927	0.2861	410	2.73	0.44	0.44
CDT_179	JCT_166	JCT_164	115.7837	0.012	423.89	423.17	1.00	1366	0.6219	398	3.28	0.29	0.38
CDT_181	JCT_168	JCT_164	452.7137	0.012	428.75	427.59	0.67	297	0.2562	20	1.15	0.07	0.17
CDT_183	JCT_170	JCT_168	371.2882	0.012	430.16	428.95	0.67	335	0.3259	20	1.25	0.06	0.16
CDT_185	JCT_172	JCT_158	100.7715	0.012	427.28	426.7	0.67	446	0.5756	11	1.21	0.02	0.10
CDT_187	JCT_174	JCT_172	413.2665	0.012	428.64	427.48	0.67	311	0.2807	11	0.99	0.03	0.12
CDT_189	JCT_176	JCT_174	300	0.012	432.52	428.84	0.67	651	1.2268	11	1.55	0.02	0.09
CDT_19	JCT_26	JCT_16	343.49	0.012	417.77	417.02	1.50	2387	0.2183	1363	3.04	0.57	0.55
CDT_191	JCT_84	JCT_188	2793.0884	0.012	428.46	417.72	2.17	10554	0.3845	3905	5.90	0.37	0.42
CDT_193	JCT_178	JCT_166	400	0.012	424.97	424.09	1.00	813	0.22	398	2.52	0.49	0.46
CDT_195	JCT_180	JCT_178	365	0.012	425.87	425.07	1.00	811	0.2192	398	2.44	0.49	0.47
CDT_197	JCT_182	JCT_180	365	0.012	426.78	425.97	1.00	816	0.2219	398	2.46	0.49	0.47
CDT_199	JCT_184	JCT_182	365	0.012	427.68	426.88	1.00	811	0.2192	398	2.46	0.49	0.47

CIP System Flows, 5-year, 24-hour storm event

Input								Output					
Pipe ID	Upstream MH	Downstream MH	Length (ft)	Roughness	US Invert (ft)	DS Invert (ft)	Diameter (ft)	Full Flow (gpm)	Slope (%)	Max Flow (gpm)	Max Velocity (ft/s)	Max.Flow/Full Flow	Max.Depth/Full Depth
CDT_201	JCT_186	JCT_184	365	0.012	428.58	427.78	1.00	811	0.2192	216	1.72	0.27	0.39
CDT_203	1005-1	JCT_186	22.2617	0.012	429.12	428.68	1.00	2938	2.8761	216	3.81	0.07	0.22
CDT_205	JCT_188	1606-1	35	0.012	417.1	417.01	2.50	10113	0.2571	6829	5.71	0.68	0.53
CDT_207	901-20	JCT_184	166.6175	0.012	431.74	431.04	0.67	381	0.4201	182	2.52	0.48	0.47
CDT_209	1104-28	1104-14	159.6428	0.012	505.44	489.44	0.67	1867	10.0731	7	1.76	0.00	0.06
CDT_21	JCT_28	JCT_26	350.11	0.012	418.43	417.77	1.50	2218	0.1885	1361	3.01	0.61	0.56
CDT_211	1009-24	1009-16	416.3864	0.012	455.97	454.67	0.83	595	0.3122	447	2.87	0.75	0.61
CDT_213	916-05	916-3	204.4625	0.012	427.14	426.88	2.50	7112	0.1272	2654	2.97	0.37	0.43
CDT_23	JCT_30	JCT_28	329.33	0.012	419.02	418.43	1.50	2162	0.1792	1361	2.89	0.63	0.57
CDT_25	JCT_32	JCT_30	318.86	0.012	420.15	419.02	1.25	1870	0.3544	958	2.78	0.51	0.60
CDT_27	JCT_34	JCT_32	500.3013	0.012	421.15	420.15	1.25	1404	0.1999	958	2.94	0.68	0.57
CDT_29	JCT_36	JCT_34	214.33	0.012	421.9	421.15	1.25	1858	0.3499	927	2.87	0.50	0.57
CDT_31	JCT_38	JCT_36	280.6	0.012	422.43	421.9	1.25	1365	0.1889	925	2.93	0.68	0.56
CDT_33	JCT_40	JCT_38	391.35	0.012	423.46	422.43	1.25	1611	0.2632	925	2.80	0.57	0.58
CDT_35	JCT_42	JCT_40	376.92	0.012	424.41	423.46	1.25	1577	0.252	924	2.99	0.59	0.55
CDT_37	JCT_44	JCT_42	349.27	0.012	425.26	424.41	1.25	1550	0.2434	922	2.94	0.60	0.55
CDT_39	JCT_46	JCT_44	349.52	0.012	426.26	425.26	1.25	1680	0.2861	920	3.02	0.55	0.54
CDT_41	JCT_48	JCT_46	162.55	0.012	426.79	426.26	1.25	1794	0.3261	920	3.20	0.51	0.52
CDT_43	JCT_50	JCT_48	18.7	0.012	432.68	432.58	1.00	1267	0.5348	885	3.99	0.70	0.60
CDT_45	JCT_10	JCT_52	428.18	0.012	412.26	410.78	2.00	6467	0.3457	2749	4.51	0.43	0.45
CDT_47	JCT_52	JCT_54	435.04	0.012	410.78	408.89	2.00	7250	0.4344	2749	5.71	0.38	0.37
CDT_49	JCT_54	JCT_56	424.44	0.012	408.89	402.86	2.00	13112	1.4208	2750	5.70	0.21	0.37
CDT_51	JCT_56	JCT_58	405.6	0.012	402.86	401.25	2.00	6930	0.3969	2750	4.66	0.40	0.44
CDT_53	JCT_58	JCT_60	323.08	0.012	401.25	399.92	2.00	7058	0.4117	2750	4.71	0.39	0.43
CDT_55	JCT_60	JCT_62	363.67	0.012	399.92	398.4	2.00	7111	0.418	2750	4.72	0.39	0.43
CDT_57	JCT_62	JCT_64	362.99	0.012	398.22	396.9	2.00	6633	0.3636	2756	4.56	0.42	0.44
CDT_59	JCT_64	JCT_66	364.34	0.012	396.88	392.5	2.00	12061	1.2023	2758	6.93	0.23	0.33
CDT_63	JCT_70	JCT_76	450.81	0.012	415.1	414.12	1.50	2381	0.2174	1376	3.01	0.58	0.56
CDT_65	JCT_72	JCT_10	450.52	0.012	413.35	412.26	1.50	2512	0.2419	1382	3.01	0.55	0.57
CDT_67	JCT_76	JCT_72	401.7	0.012	414.12	413.35	1.50	2236	0.1917	1377	3.06	0.62	0.55
CDT_81	JCT_88	JCT_90	394.17	0.012	423.68	423.67	2.00	554	0.0025	1759	2.23	3.17	0.55
CDT_83	JCT_90	JCT_92	356.97	0.012	423.63	423.2	2.00	3818	0.1205	1762	3.13	0.46	0.42
CDT_85	JCT_92	JCT_94	390.14	0.012	423.15	422.14	2.00	5597	0.2589	1762	3.60	0.31	0.38
CDT_87	JCT_94	JCT_96	459.65	0.012	421.98	421.23	2.00	4443	0.1632	1762	3.30	0.40	0.40
CDT_89	JCT_96	JCT_98	448.57	0.012	421.18	419.94	2.00	5783	0.2764	1763	3.78	0.30	0.37
CDT_91	JCT_98	JCT_100	424.89	0.012	419.84	418.82	2.00	5389	0.2401	1763	3.68	0.33	0.37
CDT_93	JCT_100	JCT_102	27.76	0.012	418.72	418.51	2.00	9567	0.7565	1763	5.17	0.18	0.29
HOWDY	1002-12	1002-13	267	0.012	500.24	493.44	0.67	939	2.5476	0	0.00	0.00	0.00
L1	915-2	915-SPLITTER	174.1	0.012	424.21	424.01	2.50	6760	0.1149	3157	3.47	0.47	0.43
L10	914-3	914-4	302.11	0.012	418.36	416.91	0.67	408	0.48	24	1.16	0.06	0.32
L100	1015-7	1015-5	300.08	0.012	445.02	444.36	1.00	812	0.2199	701	2.84	0.86	0.66
L101	1015-5	1015-34	254.13	0.012	444.36	443.8	1.50	2398	0.2204	735	2.93	0.31	0.35
L102	1015-34	1015-32	155.26	0.012	441.96	441.63	1.50	2355	0.2125	765	2.48	0.32	0.41
L103	1015-32	1015-31	152.01	0.012	441.63	441.38	1.50	2071	0.1645	809	2.58	0.39	0.42
L104	1015-31	1015-29	245.1	0.012	441.38	440.78	1.50	2527	0.2448	845	3.13	0.33	0.37
L105	1010-5	1015-32	261.28	0.012	450.65	445.25	0.67	846	2.0672	29	2.50	0.03	0.13
L106	1015-33	1015-32	131.06	0.012	442.95	442.35	0.67	398	0.4578	14	1.23	0.03	0.12
L107	1010-2	1010-1	340.59	0.012	454.33	452.65	0.67	413	0.4933	10	1.16	0.03	0.11
L108	1010-1	1015-6	249	0.012	452.25	447.25	0.67	834	2.0084	21	1.37	0.02	0.15
L109	1015-6	1015-5	113.07	0.012	447.25	446.81	0.67	367	0.3891	31	1.50	0.08	0.19
L11	914-4	911-10	281.35	0.012	416.91	415.35	0.67	438	0.5545	29	0.76	0.07	0.73
L110	1010-26	1015-7	360.03	0.012	448.62	447.61	0.67	312	0.2805	22	1.23	0.07	0.17

CIP System Flows, 5-year, 24-hour storm event

Input								Output					
Pipe ID	Upstream MH	Downstream MH	Length (ft)	Roughness	US Invert (ft)	DS Invert (ft)	Diameter (ft)	Full Flow (gpm)	Slope (%)	Max Flow (gpm)	Max Velocity (ft/s)	Max.Flow/Full Flow	Max.Depth/Full Depth
L111	1009-8	1009-7	199.04	0.012	453.89	450.69	0.67	746	1.6079	1	0.54	0.00	0.06
L112	1009-7	1009-6	234.21	0.012	450.69	449.75	0.67	373	0.4014	5	0.72	0.01	0.09
L113	1009-6	1016-2	275.12	0.012	449.75	447.65	0.67	514	0.7633	11	1.34	0.02	0.10
L114	1010-24	1010-23	62.29	0.012	454.8	454.38	0.50	224	0.6743	1	0.65	0.00	0.05
L115	1010-25	1010-26	339.21	0.012	453.95	448.62	0.67	738	1.5715	7	0.56	0.01	0.13
L116	1010-4	1010-3	352.05	0.012	454.06	451.65	0.67	487	0.6846	10	1.19	0.02	0.10
L117	1010-3	1015-34	348.14	0.012	451.65	445.62	0.67	774	1.7323	19	2.08	0.02	0.11
L118	1010-8	1010-7	100.02	0.012	452.86	452.46	0.67	372	0.3999	14	1.19	0.04	0.13
L119	1010-9	1010-7	148.03	0.012	453.03	452.46	0.67	365	0.3851	5	0.91	0.01	0.08
L12	911-10	911-2	294.01	0.012	415.35	417.06	0.67	449	0.5816	35	0.36	0.08	0.60
L120	1010-7	1010-6	440.11	0.012	452.36	449.52	0.67	473	0.6453	26	1.62	0.06	0.16
L121	1010-6	1015-31	350.28	0.012	448.63	444.71	0.67	622	1.1192	38	2.20	0.06	0.17
L122	1009-4	1009-3	124.02	0.012	455.4	454.69	0.67	445	0.5725	1	0.48	0.00	0.06
L123	1009-3	1009-2	314.04	0.012	454.69	452.21	0.67	523	0.7897	5	0.92	0.01	0.09
L124	1009-2	1009-1	299.24	0.012	452.21	451.01	0.67	373	0.401	10	1.08	0.03	0.11
L125	1112-19	1009-18	430.06	0.012	452.4	451.24	1.00	900	0.2697	150	2.02	0.17	0.26
L126	1009-18	1009-5	544.3	0.012	451.14	450.06	1.00	772	0.1984	153	1.31	0.20	0.38
L127	1009-17	1009-1	261.23	0.012	452.35	450.36	0.83	929	0.7618	456	3.10	0.49	0.58
L128	1009-1	1009-5	245.07	0.012	450.36	449.85	1.00	790	0.2081	471	2.07	0.60	0.62
L129	1016-1	1016-2	226	0.012	449.55	448.65	0.67	371	0.3982	1	0.62	0.00	0.04
L131	1010-11	1010-10	340.18	0.012	451.04	449.67	0.67	373	0.4027	14	1.24	0.04	0.12
L132	1011-15	1011-14	423	0.012	450.38	447.69	0.67	469	0.6359	11	1.27	0.02	0.11
L133	1011-5	1011-4	285.3	0.012	449.5	448.58	0.67	334	0.3225	14	0.98	0.04	0.16
L134	1011-4	1011-3	250.2	0.012	448.58	447.43	0.67	399	0.4596	26	1.47	0.06	0.17
L135	1011-3	1011-16	220.23	0.012	447.33	446.53	0.67	355	0.3633	36	1.53	0.10	0.21
L136	1011-14	1011-16	171.24	0.012	446.65	445.96	0.67	373	0.4029	49	1.71	0.13	0.24
L137	1011-13	1011-14	297	0.012	448.03	446.85	0.67	371	0.3973	26	1.42	0.07	0.17
L138	1011-12	1011-13	320.31	0.012	449.27	448.03	0.67	366	0.3871	15	1.19	0.04	0.16
L139	1011-16	1011-6	410.15	0.012	445.96	437.42	0.67	849	2.0826	94	1.96	0.11	0.57
L140	1011-7	1011-6	334.43	0.012	438.48	437.52	1.25	1683	0.2871	770	3.17	0.46	0.45
L141	1011-8	1011-7	375.12	0.012	439.51	438.48	1.25	1646	0.2746	753	2.89	0.46	0.48
L142	1011-17	1011-1	221.51	0.012	436.73	436	1.25	1803	0.3296	857	3.15	0.48	0.50
L143	1011-6	1011-17	239.08	0.012	437.42	436.73	1.25	1687	0.2886	849	3.12	0.50	0.49
L144	1011-9	1011-8	355	0.012	440.56	439.56	0.67	312	0.2817	7	0.71	0.02	0.46
L145	1011-10	1011-8	156.26	0.012	440.32	439.65	1.25	2057	0.4288	739	3.47	0.36	0.41
L146	1011-11	1011-10	360.07	0.012	442.15	440.32	1.25	2239	0.5082	575	3.00	0.26	0.38
L147	1010-14	1011-11	549.3	0.012	443.96	442.15	1.25	1803	0.3295	564	3.06	0.31	0.37
L148	1010-13	1010-14	149	0.012	447.08	446.48	0.67	373	0.4027	328	2.92	0.88	0.67
L149	1010-12	1010-13	277.05	0.012	451.35	450.25	0.67	371	0.397	2	0.71	0.01	0.05
L150	1010-16	1010-15	254.02	0.012	449.33	448.51	0.67	334	0.3228	319	2.53	0.95	0.75
L151	1010-15	1010-13	270.12	0.012	448.51	447.21	0.67	408	0.4813	322	3.02	0.79	0.64
L152	1007-5	1010-14	303.32	0.012	445.25	444.06	0.67	369	0.3923	228	2.43	0.62	0.58
L153	1012-8	1012-7	504.6203	0.012	442.77	440.91	0.67	357	0.3686	1	0.60	0.00	0.04
L154	1007-19	1010-16	348.24	0.012	451.05	449.65	0.67	373	0.402	18	1.20	0.05	0.24
L155	1010-17	1010-16	254.05	0.012	450.29	449.33	0.67	362	0.3779	267	2.20	0.74	0.73
L156	1010-18	1010-17	305	0.012	451.55	450.29	0.67	378	0.4131	229	2.33	0.61	0.60
L157	1009-12	1010-18	277.35	0.012	452.65	451.55	0.67	371	0.3966	192	2.24	0.52	0.54
L158	1010-20	1010-16	448	0.012	453.15	451.35	0.67	373	0.4018	24	1.40	0.06	0.17
L159	1010-22	1010-21	61.03	0.012	452.67	452.47	0.67	337	0.3277	4	0.82	0.01	0.09
L16	911-3	911-4	390.5862	0.012	431.02	429.97	0.83	552	0.2688	107	1.87	0.19	0.28
L160	1010-21	1010-17	405.03	0.012	452.47	450.87	0.67	370	0.395	7	0.99	0.02	0.09
L161	1007-17	1010-17	330.34	0.012	452.2	450.87	0.67	373	0.4026	20	1.32	0.05	0.15

CIP System Flows, 5-year, 24-hour storm event

Input								Output					
Pipe ID	Upstream MH	Downstream MH	Length (ft)	Roughness	US Invert (ft)	DS Invert (ft)	Diameter (ft)	Full Flow (gpm)	Slope (%)	Max Flow (gpm)	Max Velocity (ft/s)	Max.Flow/Full Flow	Max.Depth/Full Depth
L162	1010-19	1010-18	280.04	0.012	453.25	452.21	0.67	359	0.3714	11	1.10	0.03	0.11
L163	1010-23	1010-19	186.01	0.012	454.28	453.25	0.67	438	0.5537	6	0.91	0.01	0.10
L164	1009-11	1009-10	168	0.012	456.67	456.25	0.67	294	0.25	9	0.92	0.03	0.11
L165	1009-9	1009-10	230.03	0.012	455.51	454.59	0.67	372	0.4	4	0.62	0.01	0.11
L166	1009-10	1009-12	261.12	0.012	454.59	453.55	0.67	371	0.3983	16	1.25	0.04	0.14
L167	1009-13	1009-12	202.04	0.012	456.95	455.35	0.67	524	0.7919	5	1.06	0.01	0.07
L168	1008-2	1008-1	356.02	0.012	456.11	454.75	0.67	364	0.382	159	2.21	0.44	0.47
L169	1008-1	1009-12	294.01	0.012	454.75	453.55	0.67	376	0.4082	164	2.42	0.44	0.45
L17	911-4	914-7	468.7701	0.012	429.92	428.63	0.83	558	0.2752	115	1.83	0.21	0.31
L170	1007-14	1007-15	395.05	0.012	455.15	453.58	0.67	371	0.3974	9	0.93	0.02	0.13
L171	1007-15	1010-18	369.02	0.012	453.58	452.08	0.67	375	0.4065	18	1.30	0.05	0.14
L172	1007-16	1007-17	332.1	0.012	453.54	452.2	0.67	374	0.4035	9	0.93	0.02	0.13
L173	1007-18	1007-19	359.11	0.012	452.48	451.05	0.67	371	0.3982	10	1.07	0.03	0.13
L174	1008-7	1008-6	223.08	0.012	460.94	458.99	0.67	550	0.8742	66	2.70	0.12	0.26
L175	1008-6	1008-2	358.24	0.012	458.99	457.15	0.67	422	0.5136	74	2.04	0.17	0.28
L176	1112-1	1009-15	501.2	0.012	457.71	456.14	0.83	596	0.3133	440	2.63	0.74	0.65
L177	1009-15	1009-24	53.7423	0.012	456.14	455.97	0.83	599	0.3163	447	2.57	0.75	0.67
L178	1009-16	1009-17	291.11	0.012	454.57	452.35	0.83	929	0.7626	452	3.76	0.49	0.49
L179	1112-2	1112-9	75.15	0.012	459.27	458.81	0.83	833	0.6121	406	2.91	0.49	0.56
L18	914-7	914-8	489.7374	0.012	428.63	427.31	0.83	552	0.2695	115	2.18	0.21	0.27
L180	1112-9	1112-1	306.01	0.012	458.8	457.81	0.83	605	0.3235	414	2.85	0.68	0.57
L181	1105-2	1105-1	197.06	0.012	470.28	462.71	0.67	1154	3.8443	43	3.41	0.04	0.16
L182	1105-1	1112-2	306	0.012	462.71	459.58	0.67	595	1.0229	46	2.24	0.08	0.19
L183	1009-14	1112-9	364.17	0.012	460.85	458.8	0.67	441	0.5629	7	1.03	0.02	0.44
L184	1112-6	1112-1	394.15	0.012	460.35	458.75	0.67	375	0.4059	21	1.35	0.06	0.16
L185	1112-4	1112-3	462.13	0.012	466.35	461.55	0.67	600	1.0387	353	3.25	0.59	0.66
L186	1112-3	1112-2	338.09	0.012	461.55	459.95	0.67	405	0.4733	358	3.07	0.88	0.70
L187	1112-11	1112-10	291.01	0.012	454.27	453.3	0.83	614	0.3333	4	0.80	0.01	0.06
L188	1112-10	1112-19	266.19	0.012	453.2	452.5	0.83	546	0.263	8	0.82	0.02	0.16
L189	1112-12	1112-13	207.09	0.012	455.79	455.19	0.67	317	0.2897	3	0.69	0.01	0.06
L19	914-8	915-3	87.14	0.012	427.31	425.81	0.83	1396	1.7216	129	2.21	0.09	0.33
L190	1112-14	1112-13	244.07	0.012	456.39	455.19	0.67	413	0.4917	3	0.83	0.01	0.06
L191	1112-13	1112-17	259.09	0.012	455.09	454.29	0.83	591	0.3088	9	0.90	0.02	0.16
L192	1112-17	1112-18	381.3	0.012	454.19	453.34	1.00	818	0.2229	133	1.85	0.16	0.26
L193	1112-18	1112-19	244.1	0.012	453.24	452.8	1.00	735	0.1803	137	1.78	0.19	0.27
L194	1112-15	1111-6	344.07	0.012	457.78	456.9	0.67	298	0.2558	4	0.75	0.02	0.08
L195	1111-6	1111-7	273.03	0.012	456.8	456	0.83	576	0.293	19	1.09	0.03	0.18
L196	1111-7	1112-16	381.16	0.012	455.93	455.11	1.00	804	0.2151	112	1.74	0.14	0.24
L197	1112-16	1112-17	326.1	0.012	455.01	454.29	1.00	814	0.2208	118	1.79	0.14	0.24
L198	1111-14	1111-16	348.24	0.012	461.4	459.94	0.67	381	0.4193	4	0.84	0.01	0.07
L198.1	1111-16	1111-6	194.37	0.012	459.93	456.9	0.67	735	1.5591	7	1.51	0.01	0.07
L199	1111-8	1111-6	429.23	0.012	466.78	458.19	0.67	832	2.0017	4	1.33	0.00	0.05
L20	915-3	915-2	72.84	0.012	425.71	425.52	0.83	544	0.2608	371	2.80	0.68	0.53
L200	1111-?	1111-7	117.07	0.012	456.77	456	0.67	477	0.6577	4	0.94	0.01	0.19
L201	1111-9	1111-7	390.18	0.012	457.14	456	1.00	936	0.2922	87	1.68	0.09	0.20
L202	1111-10	1111-9	386.05	0.012	458.14	457.24	1.00	836	0.2331	83	1.64	0.10	0.20
L203	1111-5	1112-8	164.6	0.012	466.95	465.95	0.67	459	0.6075	1	0.52	0.00	0.05
L204	1112-8	1112-7	399.08	0.012	465.95	461.95	0.67	589	1.0024	5	0.63	0.01	0.10
L205	1112-7	1112-6	404.18	0.012	461.95	460.35	0.67	370	0.3959	15	1.07	0.04	0.15
L206	1107-3	1107-2	442.11	0.012	523.16	522.33	0.50	118	0.1877	13	0.94	0.11	0.22
L206.1	1107-2	1107-1	230.01	0.012	522.2	510.53	0.67	1326	5.0802	19	3.19	0.01	0.08
L208	1110-4	1110-2	439.16	0.012	475.8	474.56	0.67	313	0.2824	190	1.94	0.61	0.60

CIP System Flows, 5-year, 24-hour storm event

Input								Output					
Pipe ID	Upstream MH	Downstream MH	Length (ft)	Roughness	US Invert (ft)	DS Invert (ft)	Diameter (ft)	Full Flow (gpm)	Slope (%)	Max Flow (gpm)	Max Velocity (ft/s)	Max.Flow/Full Flow	Max.Depth/Full Depth
L21	1014-5	1013-6	340.01	0.012	431.97	431.21	1.75	3643	0.2235	2213	3.56	0.61	0.56
L212	1111-3	1111-2	284.09	0.012	472.59	470.5	0.67	505	0.7357	260	2.74	0.52	0.58
L213	1111-2	1111-1	325.08	0.012	470.5	469.2	0.67	372	0.3999	286	2.59	0.77	0.66
L214	1111-1	1112-5	304.37	0.012	469.2	467.95	0.67	377	0.4107	298	2.56	0.79	0.70
L215	1112-5	1112-4	386.03	0.012	467.95	466.35	0.67	379	0.4145	306	2.91	0.81	0.64
L216	1106-20	1111-2	270.42	0.012	471.75	470.5	0.67	400	0.4622	22	1.66	0.05	0.41
L217	1106-19	1111-3	160	0.012	473.35	472.69	0.67	378	0.4125	4	0.79	0.01	0.21
L218	1106-1	1111-1	308.72	0.012	474.33	469.2	0.67	758	1.6619	8	1.33	0.01	0.37
L219	1111-13	1111-12	426	0.012	462	460.6	0.67	337	0.3286	73	1.75	0.22	0.31
L22	1013-6	1013-5	325.04	0.012	431.21	430.44	1.75	3750	0.2369	2230	3.51	0.59	0.57
L220	1111-12	1111-11	296.17	0.012	460.6	459.29	0.67	391	0.4423	76	1.99	0.19	0.29
L221	1111-11	1111-10	407.28	0.012	459.03	458.24	1.00	763	0.194	79	1.52	0.10	0.21
L224	1106-15	1106-9	334.15	0.012	532.52	523.89	0.67	946	2.5835	13	2.11	0.01	0.08
L225	1106-7	1106-8	202.12	0.012	549.56	545.91	0.67	791	1.8062	11	2.03	0.01	0.08
L226	1106-8	1106-9	294.64	0.012	545.91	523.84	0.67	1613	7.5116	14	3.17	0.01	0.07
L227	1106-9	1106-16	237.12	0.012	523.74	509.69	0.67	1433	5.9357	49	4.26	0.03	0.13
L228	1106-16	1106-18	203.81	0.012	509.44	495.42	0.67	1545	6.8953	54	4.41	0.03	0.13
L229	1106-18	1110-1	304.08	0.012	495.42	477.06	0.67	1447	6.0489	57	4.47	0.04	0.14
L23	1013-5	1013-4	309.1	0.012	430.44	429.81	1.75	3478	0.2038	2242	3.54	0.64	0.57
L230	1110-1	1110-2	133	0.012	476.95	474.85	0.67	739	1.5791	61	2.85	0.08	0.20
L232	1106-3	1106-7	422.52	0.012	551.16	550.45	0.67	241	0.168	2	0.49	0.01	0.07
L233	1106-5	1106-6	152.21	0.012	555.58	554.5	0.67	496	0.7096	4	1.11	0.01	0.07
L234	1106-6	1106-7	373.3	0.012	554.5	550.45	0.67	613	1.085	6	1.24	0.01	0.07
L235	1106-2	1106-1	357.71	0.012	510	474.33	0.67	1863	10.0217	2	0.98	0.00	0.05
L236	1106-14	1106-10	198.64	0.012	543.24	535.47	0.67	1164	3.9146	3	1.58	0.00	0.04
L237	1106-10	1106-9	296.38	0.012	535.21	523.84	0.67	1153	3.8391	19	2.77	0.02	0.09
L238	1106-11	1106-10	230.46	0.012	537.54	535.47	0.67	558	0.8982	7	1.21	0.01	0.08
L239	1106-13	1106-12	148.93	0.012	546.54	539.34	0.67	1294	4.8401	4	2.20	0.00	0.05
L24	1013-4	1013-3	164.51	0.012	429.81	429.43	1.75	3703	0.231	2311	4.14	0.62	0.51
L240	1106-12	1106-10	222.65	0.012	539.34	535.47	0.67	776	1.7384	7	1.52	0.01	0.07
L241	1105-7	1105-6	319.1	0.012	527.12	514.8	0.67	1156	3.8637	4	1.22	0.00	0.05
L242	1105-6	1105-9	364.01	0.012	514.8	499.65	0.67	1201	4.1656	10	2.35	0.01	0.07
L243	1105-9	1105-3	244.9	0.012	497.65	496.75	0.67	357	0.3675	16	1.23	0.05	0.14
L244	1105-3	1105-2	222.02	0.012	494.69	470.28	0.67	1957	11.0616	19	2.28	0.01	0.10
L245	1104-16	1104-17	74.67	0.012	537.28	533.87	0.67	1282	4.7462	0	0.67	0.00	0.02
L246	1104-17	1105-5	193.01	0.012	533.87	528.04	0.67	1023	3.0219	1	1.23	0.00	0.03
L247	1105-5	1105-4	315.23	0.012	528.04	512.45	0.67	1309	4.9517	1	1.49	0.00	0.02
L248	1105-4	1105-3	194.09	0.012	512.45	495.99	0.67	1716	8.5113	1	1.67	0.00	0.02
L249	1008-10	1008-9	105.26	0.012	501.25	488.75	0.67	2035	11.96	56	7.59	0.03	0.11
L25	1013-3	916-8	360.2	0.012	428.54	428.12	2.50	6810	0.1166	2548	2.82	0.37	0.43
L250	1008-9	1008-8	167.61	0.012	488.75	461.25	0.67	2399	16.6325	56	6.66	0.02	0.21
L251	1008-8	1008-7	115.26	0.012	461.25	460.94	0.67	305	0.269	59	1.79	0.20	0.27
L252	1008-5	1008-4	197.21	0.012	458.16	457	0.67	451	0.5882	8	0.31	0.02	0.44
L253	1008-4	1008-3	133.02	0.012	457.3	457	0.67	279	0.2255	66	1.50	0.24	0.32
L254	1008-3	1008-2	245.4	0.012	457	456.11	0.67	354	0.3627	74	1.32	0.21	0.39
L2574	916-8	916-5	554.36	0.012	428.12	427.49	2.50	6723	0.1136	2602	2.90	0.39	0.43
L260	1104-6	1104-5	118.21	0.012	463.93	462.21	0.67	710	1.4552	77	2.97	0.11	0.22
L261	1104-5	1104-3	75.66	0.012	461.78	460.4	0.67	794	1.8243	81	3.25	0.10	0.22
L265	1104-21	1104-20	218.02	0.012	489.67	486.88	0.67	666	1.2798	18	1.93	0.03	0.11
L268	1104-11	1104-10	143.75	0.012	464.07	459.75	0.67	1020	3.0066	16	2.42	0.02	0.09
L272	1001-6	1001-5	196.01	0.012	488.75	480.34	0.67	1219	4.2946	10	2.25	0.01	0.07
L273	1001-5	1001-2	290.17	0.012	480.34	463.75	0.67	1408	5.7267	21	3.11	0.02	0.16

CIP System Flows, 5-year, 24-hour storm event

Input								Output					
Pipe ID	Upstream MH	Downstream MH	Length (ft)	Roughness	US Invert (ft)	DS Invert (ft)	Diameter (ft)	Full Flow (gpm)	Slope (%)	Max Flow (gpm)	Max Velocity (ft/s)	Max.Flow/Full Flow	Max.Depth/Full Depth
L274	1001-4	1001-5	239.1	0.012	484.66	480.44	0.67	782	1.7652	5	1.39	0.01	0.06
L275	1001-9	1001-8	57.27	0.012	492	491.44	0.67	582	0.9779	5	1.08	0.01	0.07
L276	1001-8	1001-1	447.45	0.012	491.44	468.95	0.67	1320	5.0326	13	2.73	0.01	0.09
L277	1001-1	1001-2	515.16	0.012	468.95	463.75	0.67	591	1.0094	16	0.90	0.03	0.17
L278	1001-2	1001-3	384.33	0.012	463.75	462.25	0.67	368	0.3903	44	1.41	0.12	0.26
L279	1001-3	1104-1	331.07	0.012	462.25	460.59	0.67	417	0.5014	56	2.59	0.13	0.20
L28	916-5	916-05	265.5472	0.012	427.49	427.14	2.50	7241	0.1318	2654	3.00	0.37	0.42
L280	1104-1	1104-2	24.7	0.012	460.59	455.03	0.67	2828	23.1031	81	4.66	0.03	0.31
L281	1104-9	1104-2	241.2	0.012	456.19	455.03	0.83	739	0.4809	302	3.03	0.41	0.43
L284	1104-26	1104-25	355.09	0.012	464.76	463.36	0.83	668	0.3943	199	2.47	0.30	0.36
L285	1104-25	1104-24	237.26	0.012	463.26	458.27	0.83	1544	2.1036	202	4.58	0.13	0.24
L286	1104-24	1104-3	41.6	0.012	458.27	457	0.83	1862	3.0543	204	2.66	0.11	0.35
L288	316-2	316-1	414.01	0.012	460.3	456.15	0.67	589	1.0024	137	3.06	0.23	0.33
L289	316-3	316-2	297.14	0.012	465.45	460.5	0.67	759	1.6661	123	3.56	0.16	0.27
L29	916-3	915-13	467.13	0.012	426.88	426.29	2.50	7088	0.1263	2686	2.91	0.38	0.44
L290	315-28	316-3	259.05	0.012	473.15	465.65	0.67	1001	2.8964	108	4.17	0.11	0.22
L291	316-1	316-5	223.19	0.012	455.95	448.97	0.67	1041	3.1289	149	4.71	0.14	0.26
L292	316-4	316-5	390.68	0.012	451.54	448.97	0.67	477	0.6578	30	1.69	0.06	0.17
L293	315-26	316-4	409.4	0.012	455.53	451.74	0.67	566	0.9258	12	1.44	0.02	0.10
L294	316-5	316-6	290.93	0.012	448.77	444.07	0.67	748	1.6157	193	2.45	0.26	0.58
L295	316-6	316-29	170.47	0.012	444.07	443.32	1.00	1149	0.44	661	3.15	0.58	0.58
L2951	S-2	S-1C	430.12	0.014	427.47	422	1.00	1675	1.2718	4	0.05	0.00	0.35
L2952	S-1C	S-1B	126.02	0.012	421.9	420.93	1.00	1520	0.7697	1409	4.91	0.93	0.76
L296	316-29	316-7	133	0.012	443.32	442.91	1.00	962	0.3083	666	3.27	0.69	0.56
L296.1	316-7	316-8	240.53	0.012	442.71	441.98	1.00	954	0.3035	668	3.20	0.70	0.57
L297	316-8	316-9	202.02	0.012	441.78	441.16	1.00	960	0.3069	673	3.23	0.70	0.57
L298	316-9	316-10	119.88	0.012	440.96	440.61	1.00	936	0.292	675	3.26	0.72	0.57
L299	316-10	316-11	46.53	0.012	440.41	440.25	1.00	1016	0.3439	676	3.45	0.67	0.54
L30	915-13	915-14	286	0.012	426.29	425.98	2.50	6566	0.1084	2700	2.89	0.41	0.44
L300	316-11	315-23	304.14	0.012	440.05	439.15	1.00	942	0.2959	688	3.18	0.73	0.59
L301	315-23	315-14	114.48	0.012	438.95	438.6	1.00	958	0.3057	734	3.38	0.77	0.59
L3010	IND~LS	911-3	526.06	0.012	413	431.3	0.33	252	3.4808	103	3.40	0.41	0.72
L302	315-24	315-23	328.07	0.012	440.58	439.15	0.67	388	0.4359	43	1.53	0.11	0.44
L3023	902-4	JCT_138	35	0.012	421.21	421.16	1.17	988	0.1429	329	3.21	0.33	0.27
L3024	1110-2	1111-3	486.2	0.012	474.56	472.69	0.67	365	0.3846	254	2.66	0.70	0.59
L3025	1110-6	1110-4	613.08	0.012	478.16	475.85	0.67	361	0.3768	162	2.20	0.45	0.48
L3027	316-20	316-21	327.98	0.012	443.88	442.55	0.67	375	0.4055	8	0.70	0.02	0.13
L3028	316-20	316-19	153.83	0.012	444.4	442.79	0.67	602	1.0467	0	0.00	0.00	0.04
L303	316-12	316-11	287.17	0.012	442.53	440.25	0.67	524	0.794	7	1.04	0.01	0.38
L3030	1107-1	1110-4	210.86	0.012	510.53	475.9	0.67	2401	16.6493	29	4.42	0.01	0.25
L3031	1104-20	1104-19	209.09	0.012	486.88	475.51	0.67	1373	5.4459	31	2.34	0.02	0.16
L3032	1104-19	1104-18	378.87	0.012	475.51	473.67	0.67	410	0.4857	41	1.44	0.10	0.24
L3033	1104-18	1104-8	113.09	0.012	473.67	473.18	0.67	387	0.4333	53	2.26	0.14	0.21
L3034	1104-8	1104-6	211.68	0.012	473.18	464.03	0.67	1224	4.3266	59	4.03	0.05	0.15
L3035	1104-7	1104-6	446.21	0.012	468.71	464.03	0.67	603	1.0489	16	1.67	0.03	0.11
L3036	1104-22	1104-21	240.02	0.012	493.02	489.67	0.67	695	1.3959	8	1.19	0.01	0.10
L3037	1104-13	1104-12	215.08	0.012	488.31	478.21	0.67	1276	4.7011	5	1.94	0.00	0.05
L3038	1104-12	1104-11	313.84	0.012	478.02	466.26	0.67	1139	3.7498	13	2.43	0.01	0.08
L3040	1001-15	1001-14	396.4	0.012	522.04	516.23	0.67	712	1.4658	18	1.79	0.02	0.12
L3041	1104-15	1104-28	140.0254	0.012	519.47	505.44	0.67	1867	10.0703	7	3.50	0.00	0.04
L3042	1104-14	1104-1	285	0.012	489.44	460.59	0.67	1877	10.1751	21	3.79	0.01	0.10
L3043	1001-7	1104-14	171.24	0.012	496.77	489.44	0.67	1218	4.2845	12	2.90	0.01	0.07

CIP System Flows, 5-year, 24-hour storm event

Input								Output					
Pipe ID	Upstream MH	Downstream MH	Length (ft)	Roughness	US Invert (ft)	DS Invert (ft)	Diameter (ft)	Full Flow (gpm)	Slope (%)	Max Flow (gpm)	Max Velocity (ft/s)	Max.Flow/Full Flow	Max.Depth/Full Depth
L3058	901-1	901-23	68.59	0.012	435.25	434.85	0.50	208	0.5832	0	0.00	0.00	0.08
L306	315-27	315-25	142.47	0.012	468.66	458.78	0.67	1551	6.9515	8	2.60	0.01	0.05
L307	315-25	315-24	254.33	0.012	458.58	440.78	0.67	1558	7.016	21	3.51	0.01	0.08
L308	316-18	316-17	145.65	0.012	443.3	442.39	0.67	465	0.6248	10	1.31	0.02	0.12
L309	316-19	316-17	85.87	0.012	442.79	442.39	0.67	402	0.4658	5	0.66	0.01	0.11
L31	915-14	915-16	296.49	0.012	425.98	425.61	2.50	7045	0.1248	2765	2.99	0.39	0.44
L312	316-21	316-22	199.74	0.012	442.55	441.5	0.67	427	0.5257	21	1.44	0.05	0.15
L313	316-22	315-19	115.11	0.012	441.5	440.33	0.67	593	1.0165	28	1.52	0.05	0.17
L314	315-19	315-18	161.52	0.012	440.33	439.62	0.67	390	0.4396	35	1.44	0.09	0.21
L315	315-18	315-16	263.23	0.012	439.62	438.2	0.67	432	0.5395	46	1.50	0.11	0.25
L316	315-16	315-9	106.47	0.012	438.2	437.75	0.67	383	0.4227	65	1.60	0.17	0.31
L317	315-9	315-10	226.02	0.012	437.75	437	0.67	339	0.3318	82	1.77	0.24	0.34
L318	315-10	315-15	139	0.012	437	436.51	0.67	349	0.3525	85	1.77	0.24	0.35
L319	315-22	315-15	107.67	0.012	438.2	436.61	0.67	715	1.4769	50	2.39	0.07	0.19
L32	915-16	915-2	368.01	0.012	425.61	425.18	2.50	6817	0.1168	2800	3.59	0.41	0.38
L320	316-13	315-22	409.78	0.012	439.07	438.2	0.67	271	0.2123	45	1.49	0.17	0.25
L321	316-14	316-13	179.1	0.012	439.81	439.03	0.67	388	0.4355	42	1.06	0.11	0.30
L322	316-15	316-14	207.17	0.012	440.73	439.81	0.67	392	0.4441	31	1.34	0.08	0.21
L323	316-16	316-15	143.89	0.012	441.35	440.73	0.67	386	0.4309	23	1.22	0.06	0.18
L324	316-17	316-16	195.26	0.012	442.39	441.35	0.67	429	0.5326	18	1.19	0.04	0.15
L325	315-21	316-14	141.17	0.012	440.5	439.81	0.67	411	0.4888	4	0.64	0.01	0.15
L326	315-21	315-20	243.74	0.012	440.5	439.07	0.67	451	0.5867	4	0.56	0.01	0.10
L327	315-20	315-16	159.53	0.012	439.07	438.2	0.67	434	0.5454	14	1.03	0.03	0.20
L328	315-17	315-18	139.09	0.012	440.5	439.62	0.67	468	0.6327	7	1.10	0.01	0.15
L329	315-6	315-7	301.23	0.012	441.5	439.75	0.67	448	0.581	7	1.09	0.02	0.10
L33	1011-1	1011-18	254.13	0.012	436	435.2	1.25	1762	0.3148	881	3.39	0.50	0.48
L330	315-7	315-8	282.21	0.012	439.75	438.32	0.67	419	0.5067	12	1.18	0.03	0.11
L331	315-8	315-9	34.06	0.012	438.32	438	0.67	570	0.9396	15	1.56	0.03	0.11
L332	315-15	315-13	144.09	0.012	436.51	435.91	1.00	1118	0.4164	137	2.17	0.12	0.28
L333	315-14	315-13	65.28	0.012	438.4	435.91	1.00	3385	3.8171	734	7.54	0.22	0.32
L337	315-30	315-31	231.31	0.012	465.64	445.62	0.67	1734	8.6877	5	2.69	0.00	0.05
L338	315-31	315-11	244.02	0.012	445.62	436	0.67	1169	3.9454	7	2.00	0.01	0.05
L339	315-12	315-11	130.7	0.012	435.26	435	1.00	773	0.1989	872	3.45	1.13	0.67
L34	1011-18	1014-7	188.22	0.012	435.2	434.29	1.25	2184	0.4835	918	3.79	0.42	0.45
L340	315-13	315-12	48.76	0.012	435.71	435.26	1.00	1664	0.9229	872	3.50	0.52	0.67
L342	1002-12	1002-5	399.55	0.012	500.13	496.25	0.67	581	0.9761	4	0.80	0.01	0.08
L343	1002-5	1002-6	291.08	0.012	496.25	489.92	0.67	868	2.1752	13	2.28	0.02	0.08
L345	1002-13	1002-14	257.07	0.012	493.34	472.24	0.67	1688	8.2357	59	5.04	0.04	0.13
L345.1	1002-14	1003-16	159.03	0.012	472.14	468.74	0.67	860	2.1385	60	3.16	0.07	0.18
L346	1003-16	1003-15	290.29	0.012	467.93	458.58	0.67	1056	3.2226	63	3.38	0.06	0.18
L347	1002-6	1002-7	162.02	0.012	489.92	468.92	0.67	2127	13.0716	21	2.85	0.01	0.09
L348	1002-7	1002-8	210.24	0.012	468.92	453.58	0.67	1591	7.3159	47	4.23	0.03	0.19
L349	1002-2	1002-3	231	0.012	451.52	451	0.67	279	0.2251	1	0.47	0.00	0.05
L35	1014-7	1014-6	323.08	0.012	434.02	433.14	1.50	2666	0.2724	926	3.06	0.35	0.41
L350	1002-3	1003-4	516.14	0.012	450.4	447.55	0.67	437	0.5522	5	0.98	0.01	0.07
L351	1002-4	1002-3	262.19	0.012	452	450.4	0.67	460	0.6103	1	0.35	0.00	0.06
L352	1003-12	1003-11	244.18	0.012	448.5	447.53	0.67	371	0.3973	9	0.91	0.02	0.12
L353	1003-11	1003-10	89.94	0.012	447.53	447.25	0.67	328	0.3113	13	1.00	0.04	0.13
L354	1002-8	1007-8	414.2	0.012	453.58	451.94	0.67	370	0.3959	54	1.42	0.14	0.33
L355	1007-8	1007-7	222.04	0.012	451.94	451.04	0.67	375	0.4053	129	2.05	0.34	0.42
L356	1007-9	1007-8	269.05	0.012	453.03	451.97	0.67	369	0.394	68	1.53	0.18	0.32
L357	1002-11	1007-9	235.02	0.012	457.83	453.13	0.67	832	2.0002	35	2.62	0.04	0.14

CIP System Flows, 5-year, 24-hour storm event

Input								Output					
Pipe ID	Upstream MH	Downstream MH	Length (ft)	Roughness	US Invert (ft)	DS Invert (ft)	Diameter (ft)	Full Flow (gpm)	Slope (%)	Max Flow (gpm)	Max Velocity (ft/s)	Max.Flow/Full Flow	Max.Depth/Full Depth
L358	1002-15	1007-4	393.18	0.012	450.95	449.18	0.67	395	0.4502	24	1.52	0.06	0.20
L359	1002-1	1007-6	389.16	0.012	449.8	448.25	0.67	371	0.3983	4	0.44	0.01	0.10
L36	1014-6	1014-5	278.09	0.012	433.14	432.34	1.50	2739	0.2877	949	3.30	0.35	0.40
L360	1007-11	1002-11	298.3	0.012	477.85	457.93	0.67	1522	6.6928	17	3.24	0.01	0.08
L361	1007-12	1007-10	302.37	0.012	455.41	454.17	0.67	377	0.4101	11	1.07	0.03	0.13
L362	1007-10	1007-9	269.05	0.012	454.17	453.08	0.67	374	0.4051	19	0.97	0.05	0.18
L363	1007-13	1007-9	466.13	0.012	455.13	453.13	0.67	385	0.4291	7	0.75	0.02	0.12
L364	1007-6	1007-1	424.17	0.012	448.25	446.55	0.67	372	0.4008	15	0.74	0.04	0.34
L365	1007-1	1007-5	319.04	0.012	446.55	445.25	0.67	376	0.4075	219	2.43	0.58	0.56
L366	1007-3	1007-2	270.47	0.012	449.75	448.67	0.67	372	0.3993	145	2.33	0.39	0.42
L367	1007-2	1007-1	259.16	0.012	447.68	446.65	0.67	371	0.3974	197	2.53	0.53	0.50
L368	1007-4	1007-2	394.41	0.012	449.18	447.78	0.67	351	0.355	39	1.39	0.11	0.30
L369	1007-7	1007-3	303.11	0.012	451.04	449.85	0.67	369	0.3926	141	2.30	0.38	0.41
L37	1015-24	1014-12	265.37	0.012	438.78	438.15	1.50	2489	0.2374	1188	3.01	0.48	0.50
L370	1006-7	1006-8	273.47	0.012	446.25	445.25	0.67	356	0.3657	8	0.81	0.02	0.13
L371	1006-9	1006-8	234.21	0.012	449.29	445.25	0.67	773	1.7252	11	1.96	0.01	0.12
L372	1006-8	1006-10	122.1	0.012	445.25	444.75	0.67	377	0.4095	22	1.22	0.06	0.17
L373	1006-10	1006-13	112.45	0.012	444.75	444.33	0.67	360	0.3735	26	0.87	0.07	0.25
L374	1006-13	1006-2	251.16	0.012	444.33	443.24	0.67	388	0.434	81	1.66	0.21	0.37
L375	1006-2	1006-1	286	0.012	443.24	442.1	0.67	371	0.3986	142	2.11	0.38	0.44
L376	1006-1	1011-10	355.32	0.012	442.1	440.7	0.67	369	0.394	153	2.35	0.41	0.43
L377	1006-3	1006-4	294.03	0.012	445.69	444.65	0.67	350	0.3537	7	0.92	0.02	0.09
L378	1006-4	1006-2	266.03	0.012	444.55	443.34	0.67	397	0.4548	44	1.42	0.11	0.25
L379	1006-6	1006-5	358	0.012	447.84	446.52	0.67	357	0.3687	11	0.80	0.03	0.15
L38	1014-12	1014-14	281.04	0.012	438.15	437.55	1.50	2360	0.2135	1213	2.97	0.51	0.51
L380	1006-5	1006-4	524.28	0.012	446.52	444.55	0.67	361	0.3758	27	1.19	0.07	0.20
L381	1006-11	1006-2	279.12	0.012	445.83	443.24	0.67	567	0.928	11	1.45	0.02	0.26
L382	1006-12	1006-13	255.01	0.012	446	444.33	0.67	476	0.6549	38	2.34	0.08	0.25
L383	1006-14	1006-13	244.02	0.012	444.75	444.33	0.67	244	0.1721	12	0.71	0.05	0.23
L384	1014-13	1014-12	171.14	0.012	441.48	441.15	0.67	258	0.1928	12	0.91	0.05	0.14
L385	1503-2	1014-2	216.08	0.012	439.24	437.35	0.67	550	0.8747	15	1.53	0.03	0.11
L386	1003-4	1003-3	420.58	0.012	444.58	443.35	0.67	318	0.2925	11	1.03	0.04	0.12
L387	1003-3	1003-2	243	0.012	442.88	442.05	0.67	344	0.3416	40	1.56	0.12	0.22
L388	1003-2	1003-1	186.32	0.012	441.95	441.39	0.67	323	0.3006	48	1.48	0.15	0.26
L389	1003-1	1004-4	419.31	0.012	441.39	439.65	0.67	379	0.415	52	1.80	0.14	0.24
L39	1014-14	1014-16	271.18	0.012	437.55	436.96	1.50	2382	0.2176	1249	3.08	0.52	0.51
L390	1004-4	1004-3	424.34	0.012	439.65	436.25	0.67	527	0.8013	57	2.10	0.11	0.23
L391	1004-3	1004-2	402.32	0.012	436.25	432.85	0.67	541	0.8451	65	2.33	0.12	0.23
L392	1004-16	1004-15	281.22	0.012	442.63	440.59	0.67	501	0.7254	5	0.87	0.01	0.08
L393	1004-15	1004-14	72.25	0.012	440.59	439.95	0.67	554	0.8858	9	0.96	0.02	0.11
L394	1004-14	1004-11	249.1	0.012	439.95	438.85	0.67	391	0.4416	15	1.25	0.04	0.13
L395	1004-13	1004-12	368.09	0.012	442.95	441.45	0.67	376	0.4075	6	0.93	0.02	0.13
L396	1003-6	1003-5	106.61	0.012	444.42	443.89	0.67	415	0.4971	4	0.83	0.01	0.07
L397	1003-5	1003-2	185	0.012	443.89	441.95	0.67	603	1.0487	6	1.15	0.01	0.17
L398	1003-10	1003-9	116.42	0.012	447.25	446.81	0.67	362	0.3779	14	1.12	0.04	0.13
L399	1003-9	1003-8	321.1	0.012	446.81	445	0.67	442	0.5637	16	1.28	0.04	0.14
L40	1014-16	1014-17	219.18	0.012	436.96	436.42	1.50	2535	0.2464	1279	3.05	0.50	0.52
L400	1003-8	1003-3	276.35	0.012	445	442.88	0.67	515	0.7672	25	1.24	0.05	0.19
L401	1003-7	1003-8	213.08	0.012	448.46	445	0.67	750	1.624	4	0.48	0.01	0.10
L402	1003-15	1003-14	346.02	0.012	458.58	451.16	0.67	862	2.1449	65	2.64	0.08	0.21
L403	1003-14	1003-13	353.28	0.012	451.16	448.08	0.67	549	0.8719	67	2.54	0.12	0.23
L404	1003-13	1004-12	346.05	0.012	448.08	442.48	0.67	749	1.6185	72	3.02	0.10	0.21

CIP System Flows, 5-year, 24-hour storm event

Input								Output					
Pipe ID	Upstream MH	Downstream MH	Length (ft)	Roughness	US Invert (ft)	DS Invert (ft)	Diameter (ft)	Full Flow (gpm)	Slope (%)	Max Flow (gpm)	Max Velocity (ft/s)	Max.Flow/Full Flow	Max.Depth/Full Depth
L405	1004-12	1004-11	260.49	0.012	441.35	440.29	0.67	375	0.4069	83	2.00	0.22	0.31
L406	1004-11	1004-7	265.05	0.012	438.67	437.62	0.67	370	0.3962	101	2.00	0.27	0.36
L407	1004-7	1004-6	365.27	0.012	437.62	436.12	0.67	377	0.4107	104	1.78	0.28	0.40
L408	1004-6	1004-8	189.13	0.012	436.12	435.63	0.67	299	0.2591	109	1.96	0.36	0.38
L409	1004-8	1004-9	98.25	0.012	435.63	434.98	0.67	479	0.6616	111	2.49	0.23	0.33
L41	1014-17	1014-5	288.39	0.012	436.42	435.84	1.50	2291	0.2011	1291	3.38	0.56	0.49
L410	1004-9	1004-17	307.32	0.012	434.88	433.69	0.67	366	0.3872	111	2.01	0.30	0.38
L411	1004-17	1004-5	61.66	0.012	433.69	433.45	0.67	367	0.3892	117	1.99	0.32	0.40
L412	1004-5	1004-2	266.01	0.012	433.45	432.44	0.67	363	0.3797	131	1.81	0.36	0.47
L413	1004-2	1004-1	357.62	0.012	432.44	431.04	0.67	368	0.3915	201	2.23	0.55	0.56
L414	1004-1	1005-1	454.03	0.012	431.04	429.32	0.67	362	0.3788	206	3.17	0.57	0.43
L417	1004-10	1004-5	409.54	0.012	440.81	434.75	0.67	716	1.4799	10	1.62	0.01	0.08
L418	901-12	901-15	298.74	0.012	434.99	434.17	0.67	308	0.2745	9	0.93	0.03	0.11
L419	901-11	901-14	293.11	0.012	435.18	434.6	0.67	262	0.1979	9	0.75	0.03	0.18
L42	1013-13	1014-4	299.02	0.012	437.47	436.27	0.67	373	0.4013	17	1.04	0.05	0.18
L420	901-13	901-14	245.25	0.012	435	434.6	0.67	238	0.1631	15	0.69	0.06	0.20
L421	901-14	901-15	276.15	0.012	434.6	434.07	0.67	258	0.1919	30	1.05	0.12	0.24
L422	901-15	901-16	210.02	0.012	434.07	433.39	0.67	335	0.3238	44	1.46	0.13	0.25
L423	901-16	901-17	282.12	0.012	433.39	432.31	0.67	364	0.3828	49	1.34	0.13	0.28
L424	901-17	901-20	282.01	0.012	432.31	431.74	0.67	265	0.2021	58	0.97	0.22	0.41
L425	1004-19	901-16	72.01	0.012	433.73	433.39	0.67	404	0.4722	3	0.79	0.01	0.15
L426	908-8	908-9	386.47	0.012	435.5	433.5	0.67	423	0.5175	4	0.51	0.01	0.12
L427	908-9	908-10	226.75	0.012	433.5	433.15	0.67	231	0.1544	13	0.68	0.06	0.18
L428	908-10	901-21	448.32	0.012	433.15	432.36	0.67	247	0.1762	22	0.69	0.09	0.27
L429	901-21	901-20	292.08	0.012	432.36	431.74	0.67	271	0.2123	65	1.06	0.24	0.41
L43	1014-4	1014-3	34.23	0.012	436.27	436.07	0.67	450	0.5843	43	1.80	0.09	0.21
L431	901-22	901-21	296.24	0.012	433.33	432.36	0.67	337	0.3274	26	0.80	0.08	0.26
L432	901-18	901-21	268.12	0.012	434.04	432.36	0.67	466	0.6266	10	1.36	0.02	0.22
L433	901-19	901-22	282.3	0.012	434.14	433.33	0.67	315	0.2869	9	0.94	0.03	0.15
L434	901-23	901-22	246	0.012	434.85	433.33	0.67	462	0.6179	14	0.93	0.03	0.15
L436	908-16	908-15	202.3	0.012	435.25	434.75	0.67	293	0.2472	24	0.92	0.08	0.22
L437	908-15	908-14	304	0.012	434.75	434.25	0.67	239	0.1645	32	1.06	0.13	0.25
L438	908-14	908-12	250.6	0.012	434.25	433.59	0.67	302	0.2634	39	1.24	0.13	0.26
L439	908-12	908-11	267.75	0.012	433.59	433.05	0.67	264	0.2017	42	1.21	0.16	0.27
L44	1014-2	1014-3	238.17	0.012	436.02	435.34	0.67	314	0.2855	83	1.75	0.26	0.34
L440	908-11	901-20	467.39	0.012	433.05	431.74	0.67	311	0.2803	51	0.94	0.17	0.38
L442	901-1	901-2	131.46	0.012	430.75	430.01	0.67	441	0.5629	2	0.55	0.00	0.06
L443	901-2	902-11	499.17	0.012	430.01	427.08	0.67	451	0.587	7	0.69	0.01	0.22
L444	902-11	902-10	182.46	0.012	427.08	426.33	0.67	377	0.4111	97	1.93	0.26	0.36
L445	902-10	902-8	226.08	0.012	426.33	425.57	0.67	341	0.3362	98	1.43	0.29	0.45
L446	902-8	902-6	352	0.012	425.57	424.95	0.67	247	0.1761	116	1.66	0.47	0.46
L447	902-6	902-5	289.25	0.012	424.95	423	0.67	483	0.6742	147	2.70	0.30	0.38
L448	901-5	901-6	223	0.012	427.97	426.52	0.67	474	0.6502	4	0.99	0.01	0.12
L449	901-6	902-7	320.31	0.012	426.52	425.5	0.67	332	0.3184	22	1.04	0.07	0.19
L45	1014-1	1014-2	460.18	0.012	438.88	436.02	0.67	464	0.6215	57	1.46	0.12	0.30
L450	902-7	902-6	211.44	0.012	425.5	424.95	0.67	300	0.2601	28	1.08	0.09	0.29
L451	901-7	901-8	122.15	0.012	427.5	427.08	0.67	345	0.3438	3	0.61	0.01	0.11
L452	901-8	901-6	285.02	0.012	427.08	426.52	0.67	261	0.1965	13	0.83	0.05	0.16
L453	902-13	901-8	247.52	0.012	427.56	427.08	0.67	259	0.1939	10	0.79	0.04	0.14
L454	901-3	901-4	178	0.012	430.2	429.03	0.67	477	0.6573	5	1.07	0.01	0.09
L455	901-4	902-9	496.15	0.012	429.03	426.93	0.67	526	0.4233	10	1.22	0.02	0.10
L456	902-9	902-8	155.4	0.012	426.93	425.57	0.67	778	0.8752	16	1.52	0.02	0.32

CIP System Flows, 5-year, 24-hour storm event

Input								Output					
Pipe ID	Upstream MH	Downstream MH	Length (ft)	Roughness	US Invert (ft)	DS Invert (ft)	Diameter (ft)	Full Flow (gpm)	Slope (%)	Max Flow (gpm)	Max Velocity (ft/s)	Max.Flow/Full Flow	Max.Depth/Full Depth
L457	908-7.5	907-8	265.09	0.012	429.42	428	0.67	431	0.5357	68	1.70	0.16	0.30
L458	907-8	902-12	127.25	0.012	428	427.68	0.67	295	0.2515	72	1.41	0.24	0.36
L459	902-12	902-11	267.27	0.012	427.68	427.08	0.67	279	0.2245	83	1.59	0.30	0.37
L46	1015-15	1014-1	468.72	0.012	441.73	438.88	0.67	459	0.6081	37	1.50	0.08	0.21
L460	907-9	907-16	224.08	0.012	430.89	429.83	0.67	405	0.4731	4	0.90	0.01	0.07
L461	907-16	908-5	58.08	0.012	429.77	429.47	0.67	423	0.5165	6	1.02	0.02	0.08
L462	908-5	908-3	281.03	0.012	429.36	428.1	0.67	394	0.4484	14	1.11	0.04	0.15
L463	908-5.5	908-5	159.11	0.012	431.16	430.45	0.67	393	0.4462	5	0.94	0.01	0.08
L464	907-10	907-11	164.35	0.012	428.8	428	0.50	190	0.4868	6	1.01	0.03	0.14
L465	907-11	907-12	88.1	0.012	428	427.7	0.67	343	0.3405	10	1.04	0.03	0.11
L466	908-3	907-12	452.4	0.012	428.05	425.99	0.67	397	0.4554	49	1.77	0.12	0.23
L467	908-4	908-3	249.02	0.012	429.65	428.1	0.67	464	0.6225	5	0.93	0.01	0.12
L468	907-14	907-15	157.47	0.012	431.04	430.07	0.50	214	0.616	7	1.15	0.03	0.13
L469	907-15	908-2	125.25	0.012	430.04	429.44	0.67	407	0.479	12	1.20	0.03	0.11
L47	1015-16	1015-15	338.09	0.012	443.23	441.83	0.67	379	0.4141	20	1.34	0.05	0.15
L470	908-2	908-3	218.28	0.012	429.35	428.1	0.67	445	0.5727	23	1.50	0.05	0.16
L471	908-1	908-2	273.66	0.012	430.89	429.39	0.50	202	0.5481	7	1.11	0.04	0.13
L472	908-26	908-17	280.09	0.012	430.3	428.7	0.67	445	0.5713	7	1.09	0.02	0.09
L473	908-17	907-18	401.12	0.012	427.7	426.15	0.67	366	0.3864	163	2.38	0.45	0.45
L474	907-18	907-17	264	0.012	426.05	425.15	0.67	344	0.3409	172	2.34	0.50	0.48
L475	907-17	907-13	88.41	0.012	425	424.58	0.67	406	0.4751	176	2.58	0.43	0.45
L476	907-12	907-13	256.28	0.012	425.79	424.5	0.67	417	0.5034	65	1.96	0.16	0.26
L477	907-13	907-19	399.02	0.012	422.74	420.6	0.67	431	0.5363	243	2.88	0.56	0.53
L478	907-19	907-3	254.02	0.012	420.57	416.93	0.67	704	1.4331	245	4.09	0.35	0.70
L48	1014-3	1503-1	235.14	0.012	435.23	434.6	0.67	305	0.2679	132	2.04	0.43	0.43
L480	908-20	908-19	235.31	0.012	431.5	430.52	0.67	380	0.4165	135	2.31	0.36	0.40
L481	908-19	908-18	396.01	0.012	430.32	428.72	0.67	374	0.404	139	2.30	0.37	0.41
L482	908-18	908-17	238.17	0.012	428.57	427.7	0.67	356	0.3653	150	2.08	0.42	0.47
L484	907-21	908-18	450.07	0.012	430.53	428.77	0.67	368	0.3911	5	0.90	0.01	0.12
L485	1005-3	1005-1	388.68	0.012	431.75	429.32	0.67	465	0.6252	6	1.11	0.01	0.18
L487	1005-4	1012-5	244.09	0.012	440.09	439.22	0.83	635	0.3564	98	1.97	0.15	0.26
L488	1012-5	1012-3	257.05	0.012	437.56	436.82	0.83	571	0.2879	109	1.81	0.19	0.29
L489	1012-3	1012-2	235.21	0.012	436.82	435.94	0.83	651	0.3741	121	1.91	0.19	0.31
L49	1503-1	1504-3	471.24	0.012	434.5	433.19	0.67	310	0.278	154	1.85	0.50	0.52
L490	1012-7	1012-6	382	0.012	440.67	439.11	0.67	376	0.4084	6	0.79	0.02	0.11
L491	1012-6	1012-5	319.26	0.012	439.11	437.87	0.67	367	0.3884	11	1.12	0.03	0.12
L492	1012-4	1012-3	456.03	0.012	438.82	437.02	0.67	370	0.3947	5	0.89	0.01	0.08
L493	1012-9	1011-17	501.1	0.012	438.85	437.25	0.67	332	0.3193	2	0.57	0.01	0.10
L494	1012-1	1012-2	479.11	0.012	437.82	436.04	0.67	359	0.3715	1	0.59	0.00	0.15
L496	909-5	909-4	286.19	0.012	434.2	433.36	0.83	577	0.2935	134	1.86	0.23	0.34
L497	909-4	909-3	285.08	0.012	433.36	432.59	0.83	553	0.2701	137	1.90	0.25	0.34
L498	909-3	909-2	183.7	0.012	432.59	431.96	0.83	623	0.343	140	2.17	0.22	0.31
L499	909-2	909-1	145.34	0.012	430.79	430.14	0.83	712	0.4472	142	1.97	0.20	0.34
L50	1504-3	1504-2	447.29	0.012	433.19	431.96	0.67	309	0.275	171	2.07	0.55	0.52
L500	909-1	915-10	380.06	0.012	430.14	429.07	0.83	565	0.2815	164	1.92	0.29	0.38
L501	915-10	915-8	326.6	0.012	429.07	428.17	0.83	559	0.2756	182	1.98	0.32	0.40
L502	915-8	915-6	355.11	0.012	428.17	427.18	0.83	562	0.2788	197	2.03	0.35	0.42
L503	915-6	915-4	337.82	0.012	427.18	426.22	0.83	567	0.2842	216	2.07	0.38	0.45
L504	915-4	915-3	145.89	0.012	426.22	425.81	0.83	564	0.281	243	2.43	0.43	0.46
L505	915-7	915-6	189.01	0.012	431.25	429.82	0.67	512	0.7566	17	1.50	0.03	0.12
L506	915-9	915-8	328.04	0.012	432.87	431.55	0.67	373	0.4024	8	1.00	0.02	0.09
L507	915-12	915-11	286.63	0.012	434.33	433.27	0.67	358	0.3698	5	0.69	0.01	0.10

CIP System Flows, 5-year, 24-hour storm event

Input								Output					
Pipe ID	Upstream MH	Downstream MH	Length (ft)	Roughness	US Invert (ft)	DS Invert (ft)	Diameter (ft)	Full Flow (gpm)	Slope (%)	Max Flow (gpm)	Max Velocity (ft/s)	Max.Flow/Full Flow	Max.Depth/Full Depth
L508	915-11	915-10	225.8	0.012	433.27	432.29	0.67	388	0.434	13	1.19	0.03	0.12
L509	916-1	916-2	372.39	0.012	435.46	434.12	0.67	353	0.3598	9	0.89	0.02	0.12
L51	1504-2	1504-1	129.4	0.012	431.91	431.56	0.67	306	0.2705	188	1.97	0.61	0.59
L510	916-2	909-1	337.48	0.012	434.12	432.1	0.67	455	0.5986	16	1.38	0.04	0.13
L512	916-4	916-3	148.17	0.012	428.21	427.65	0.67	362	0.3779	18	1.13	0.05	0.30
L513	915-19	915-15	169.19	0.012	436.23	434.95	0.67	512	0.7566	18	0.95	0.04	0.18
L515	915-18	915-15	189.13	0.012	435.75	434.95	0.67	383	0.423	13	0.98	0.03	0.18
L516	915-17	915-16	447.02	0.012	434.1	425.61	0.67	811	1.8996	24	1.37	0.03	0.56
L517	910-1	915-5	419.14	0.012	431.25	429.58	0.67	371	0.3984	9	0.75	0.03	0.13
L518	915-5	915-4	411.35	0.012	429.58	427.92	0.67	374	0.4036	19	1.32	0.05	0.15
L519	914-1	914-9	109.42	0.012	429.99	428.72	0.67	634	1.1607	9	1.46	0.01	0.08
L52	1013-2	1504-1	389.42	0.012	436.15	434.55	0.67	377	0.4109	12	1.15	0.03	0.12
L520	914-9	914-8	368.99	0.012	428.64	427.31	0.67	353	0.3604	14	1.45	0.04	0.20
L521	914-5	914-6	266.12	0.012	431.46	430.23	0.50	185	0.4622	2	0.73	0.01	0.08
L522	914-6	914-7	385.3496	0.012	430.2	428.63	0.50	174	0.4074	7	1.07	0.04	0.34
L523	415-4	415-3	350.89	0.012	426.32	424.79	0.67	389	0.436	10	1.08	0.03	0.18
L524	416-7	415-7	233.48	0.012	430.26	429.34	0.67	369	0.394	7	0.96	0.02	0.09
L525	415-7	415-6	234.01	0.012	429.14	427.48	0.67	496	0.7094	12	1.19	0.02	0.13
L526	415-6	415-5	360.02	0.012	427.48	426.05	0.67	371	0.3972	19	1.19	0.05	0.24
L527	416-3	416-2	365.01	0.012	430.26	429.08	0.67	335	0.3233	10	1.05	0.03	0.22
L528	416-5	416-4	421.04	0.012	431.55	430.13	0.67	342	0.3373	4	0.78	0.01	0.07
L529	416-4	416-2	263.23	0.012	430.06	429.12	0.67	352	0.3571	6	0.78	0.02	0.17
L53	1504-1	1013-1	348.28	0.012	431.56	430.59	0.67	311	0.2785	212	2.12	0.68	0.61
L530	416-2	415-8	387	0.012	429.08	427.42	0.67	385	0.4289	80	2.00	0.21	0.30
L531	415-8	415-5	381.16	0.012	427.38	426.03	0.67	350	0.3542	85	1.78	0.24	0.35
L532	415-5	415-3	284.04	0.012	426.02	424.76	0.67	392	0.4436	111	2.22	0.28	0.36
L533	415-3	415-2	284	0.012	424.7	423.3	0.67	413	0.493	129	2.37	0.31	0.38
L534	415-2	415-1	287.03	0.012	423.15	422.16	0.67	346	0.3449	140	2.22	0.41	0.42
L535	415-1	902-4	240.63	0.012	422.03	421.21	0.67	343	0.3408	154	1.93	0.45	0.51
L536	416-1	901-10	480.02	0.012	427.08	425.65	0.67	321	0.2979	13	1.08	0.04	0.13
L537	901-10	902-5	476.09	0.012	425.55	423.05	1.00	1255	0.5251	18	1.20	0.01	0.11
L538	902-5	902-4	287.01	0.012	422.95	421.31	1.00	1310	0.5714	169	2.41	0.13	0.25
L539	902-20	902-3	387.06	0.012	419.67	419.06	1.17	1038	0.1576	329	2.15	0.32	0.36
L54	1013-1	1013-3	434.17	0.012	430.54	429.31	0.67	313	0.2833	227	2.34	0.73	0.59
L541	901-9	901-10	509.02	0.012	428.18	426.2	1.00	1080	0.389	1	0.68	0.00	0.02
L542	902-3	902-2	457.74	0.012	418.85	418.05	1.33	1559	0.1748	534	2.27	0.34	0.47
L543	902-2	902-1	494.15	0.012	418.05	417.25	1.33	1500	0.1619	511	2.08	0.34	0.78
L544	902-1	907-6	502.48	0.012	417.25	416.45	1.33	1488	0.1592	584	2.24	0.39	1.00
L547	907-3	907-1	75.31	0.012	416.08	415.44	0.83	981	0.8499	324	3.33	0.33	1.00
L549	907-2	907-1	74.79	0.012	415.59	415.44	1.33	1670	0.2006	710	2.87	0.43	1.00
L55	1013-12	1013-11	112	0.012	434.85	434.65	0.67	249	0.1786	42	1.34	0.17	0.25
L552	415-11	415-2	236.05	0.012	425.83	423.79	0.67	547	0.8643	8	1.23	0.01	0.08
L553	415-15	415-1	498.26	0.012	427.92	423	0.67	585	0.9875	6	1.19	0.01	0.07
L554	415-12	416-1	239.76	0.012	429	427.5	0.67	465	0.6256	5	1.00	0.01	0.07
L555	416-6	416-1	216.23	0.012	427.5	427.08	0.67	259	0.1942	3	0.35	0.01	0.11
L557	908-29	908-21	406.06	0.012	436.05	434.45	0.67	369	0.394	89	2.02	0.24	0.32
L558	908-31	908-32	441.04	0.012	438.09	436.33	0.67	372	0.3991	6	0.95	0.02	0.09
L56	1013-11	1013-10	161	0.012	434.55	433.89	0.67	377	0.4099	50	1.74	0.13	0.24
L560	908-35	908-33	115.17	0.012	435.88	435.33	0.67	407	0.4776	12	1.20	0.03	0.11
L561	908-32	908-33	199.72	0.012	436.18	435.48	0.67	348	0.3505	15	1.18	0.04	0.14
L563	908-33	908-34	43.19	0.012	435.23	435.1	0.67	323	0.301	29	1.41	0.09	0.19
L564	908-34	908-20	243.13	0.012	432.95	431.7	0.67	422	0.5141	33	1.63	0.08	0.19

CIP System Flows, 5-year, 24-hour storm event

Input								Output					
Pipe ID	Upstream MH	Downstream MH	Length (ft)	Roughness	US Invert (ft)	DS Invert (ft)	Diameter (ft)	Full Flow (gpm)	Slope (%)	Max Flow (gpm)	Max Velocity (ft/s)	Max.Flow/Full Flow	Max.Depth/Full Depth
L565	908-36	908-35	255.1	0.012	437.05	436.03	0.67	372	0.3998	6	0.95	0.02	0.09
L566	908-21	908-28	301.06	0.012	434.25	433.05	0.67	371	0.3986	92	2.05	0.25	0.33
L567	908-28	908-20	303.82	0.012	432.85	431.7	0.67	362	0.3785	98	2.05	0.27	0.34
L568	908-30	908-29	129.1	0.012	436.81	436.25	0.67	388	0.4338	82	2.03	0.21	0.30
L57	1013-9	1013-10	152	0.012	434.75	433.79	0.67	468	0.6316	7	0.90	0.02	0.18
L570	908-6	908-5.5	94.19	0.012	432.23	431.2	0.50	285	1.0936	3	1.07	0.01	0.07
L571	908-7	908-7.5	238.01	0.012	431.18	429.54	0.50	226	0.6891	64	2.21	0.28	0.36
L572	901-7.5	901-7	87.05	0.012	429	427.5	0.50	358	1.7234	1	0.41	0.00	0.06
L573	902-13.5	902-13	91.01	0.012	427.86	427.56	0.67	338	0.3296	4	0.71	0.01	0.11
L575	915-15	915-25	123.15	0.012	434.95	434.454	0.67	373	0.4028	42	1.47	0.11	0.24
L576	915-25	915-14	205.06	0.012	434.45	433.57	0.67	385	0.4291	53	1.79	0.14	0.25
L577	916-9	916-8	207.54	0.012	434.09	433.25	0.67	374	0.4047	19	1.31	0.05	0.15
L578	1012-2	909-6	230.82	0.012	435.94	435.32	0.83	552	0.2686	122	1.80	0.22	0.32
L579	909-6	909-5	400.32	0.012	435.32	434.2	0.83	563	0.2798	125	1.82	0.22	0.32
L58	1013-10	1013-4	250.01	0.012	433.79	432.75	0.67	379	0.416	63	1.86	0.17	0.27
L580	1015-8	1015-7	164.05	0.012	447.51	446.85	0.67	373	0.4023	35	1.57	0.09	0.20
L581	1014-11	1015-25	490.59	0.012	442	440.05	0.67	371	0.3975	10	1.10	0.03	0.11
L585	1001-11	1007-11	321.7	0.012	496.21	480.55	0.67	1299	4.8737	9	2.40	0.01	0.06
L587	1002-19	1002-11	179.18	0.012	482.58	457.83	0.67	2197	13.9466	7	2.44	0.00	0.09
L588	1104-10	1104-9	73.93	0.012	459.63	459.59	0.67	137	0.0541	20	0.87	0.14	0.20
L589	1104-3	1104-9	241.2	0.012	457	456.19	0.83	617	0.3358	282	2.53	0.46	0.47
L59	1013-7	1013-8	134	0.012	438.35	437.67	0.67	419	0.5075	12	1.33	0.03	0.14
L595	415-16	902-3	118.34	0.012	419.9	419.2	0.83	818	0.5915	176	2.67	0.22	0.32
L596	415-18	415-16	477.18	0.012	420.56	420	0.83	365	0.1174	177	1.64	0.49	0.45
L597	1106-17	1106-16	133.06	0.012	518.72	509.69	0.67	1534	6.8021	3	1.91	0.00	0.03
L60	1013-8	1014-6	354.32	0.012	437.67	436.25	0.67	372	0.4008	21	1.34	0.06	0.15
L61	1014-8	1014-9	207.06	0.012	440.92	440.16	0.67	356	0.367	10	1.08	0.03	0.11
L610	214-1	1103-2	361.5	0.012	469.66	468.62	0.67	316	0.2877	2	0.55	0.01	0.14
L612	1103-2	1104-26	410.12	0.012	468.52	464.86	0.83	1005	0.8925	197	3.19	0.20	0.30
L614	214-5	214-2	87.02	0.012	477.75	472.25	0.67	1481	6.333	90	5.22	0.06	0.17
L615	214-2	1103-3	130	0.012	470.75	470.25	0.67	365	0.3846	90	1.76	0.25	0.40
L616	1103-3	1103-2	403	0.012	470.25	468.52	0.83	697	0.4293	196	2.71	0.28	0.34
L62	1014-9	1014-16	283.18	0.012	440.06	438.92	0.67	373	0.4026	17	1.28	0.05	0.14
L620	901-24	901-25	257.24	0.012	431.18	429.54	0.50	218	0.6376	3	0.86	0.01	0.07
L621	901-25	902-12	369.01	0.012	429.42	427.81	0.67	389	0.4363	7	0.98	0.02	0.14
L622	907-6	907-2	474	0.012	416.45	415.69	1.33	1493	0.1603	598	2.50	0.40	1.00
L624	1001-16	1001-15	321.16	0.012	522.86	522.24	0.67	259	0.1931	6	0.73	0.02	0.10
L627	1001-14	1001-12	248.1	0.012	516.23	512.16	0.67	754	1.6407	24	2.20	0.03	0.12
L628	1001-12	1008-19	252.14	0.012	511.96	507.23	0.67	806	1.8763	31	2.22	0.04	0.15
L629	1008-19	1008-18	149.6926	0.012	507.13	506.97	0.67	192	0.1069	34	1.07	0.18	0.25
L629.1	1008-18	1008-15	131.0827	0.012	506.73	504.5	0.67	767	1.7015	37	2.53	0.05	0.15
L63	1014-10	1014-14	280.09	0.012	442.38	441.25	0.67	374	0.4034	10	1.10	0.03	0.11
L630	1008-15	1008-14	351.44	0.012	504.3	477.26	0.67	1634	7.7169	42	4.45	0.03	0.11
L631	1008-14	1008-13	130	0.012	477.06	466.27	0.67	1698	8.3287	45	4.64	0.03	0.11
L632	1008-13	1008-12	108.12	0.012	466.07	459.2	0.67	1095	3.4612	48	3.02	0.04	0.16
L633	1008-12	1008-4	247.34	0.012	459	457.5	0.67	822	1.9532	55	2.97	0.07	0.17
L634	1001-13	1001-12	78.1	0.012	520.97	512.43	0.67	1951	11.0007	4	2.39	0.00	0.03
L636	1001-15.1	1001-15	95.34	0.012	530.16	522.24	0.67	1699	8.3359	6	2.56	0.00	0.04
L638	1109-3	1109-2	277.48	0.012	484.48	483.33	0.67	379	0.4144	147	2.36	0.39	0.42
L639	1109-2	1109-1	353.21	0.012	483.26	481.66	0.67	396	0.453	149	2.42	0.38	0.42
L64	1014-15	1014-14	199.3	0.012	439.45	438.65	0.67	373	0.4014	17	1.27	0.05	0.14
L640	1109-1	1110-9	443.65	0.012	481.56	479.96	0.67	353	0.3606	151	2.28	0.43	0.44

CIP System Flows, 5-year, 24-hour storm event

Input								Output					
Pipe ID	Upstream MH	Downstream MH	Length (ft)	Roughness	US Invert (ft)	DS Invert (ft)	Diameter (ft)	Full Flow (gpm)	Slope (%)	Max Flow (gpm)	Max Velocity (ft/s)	Max.Flow/Full Flow	Max.Depth/Full Depth
L641	1110-9	1110-7	222.8	0.012	479.86	478.6	0.67	442	0.5655	159	2.59	0.36	0.41
L642	1110-7	1110-6	98.95	0.012	478.5	478.16	0.67	345	0.3436	160	2.18	0.46	0.47
L643	1108-2	1108-1	276.86	0.012	532.46	530.8	0.67	456	0.5996	3	0.87	0.01	0.06
L644	1108-1	1107-5	191.85	0.012	530.7	529.6	0.67	446	0.5734	7	1.06	0.02	0.08
L645	1107-4	1107-5	241.01	0.012	529.4	523.7	0.67	905	2.3657	0	0.00	0.00	0.00
L646	1107-5	1107-6	86.15	0.012	523.3	482.55	0.67	4311	53.687	7	5.03	0.00	0.03
L647	1107-6	1110-9	135.03	0.012	482.35	479.96	0.67	783	1.7703	9	1.57	0.01	0.17
L65	1014-18	1014-4	303.37	0.012	437.85	436.41	0.67	405	0.4747	17	1.32	0.04	0.14
L655	1108-6	1108-5	121.66	0.012	573.43	558.89	0.67	2041	12.0376	139	7.42	0.07	0.18
L656	1108-5	1108-4	172.93	0.012	558.79	537.57	0.67	2069	12.3643	141	7.52	0.07	0.18
L657	1108-4	1108-3	81.15	0.012	537.47	528.32	0.67	1982	11.3478	143	7.34	0.07	0.18
L658	1108-3	1109-6	92.66	0.012	528.22	517.36	0.67	2021	11.8016	144	7.46	0.07	0.18
L659	1109-6	1109-5	161.97	0.012	517.26	499.14	0.67	1974	11.2579	145	7.35	0.07	0.18
L66	1015-14	1015-23	405.18	0.012	444.27	442.65	0.67	372	0.3998	15	1.22	0.04	0.13
L660	1109-5	1109-4	105.77	0.012	499.04	487.07	0.67	1986	11.3902	146	7.39	0.07	0.18
L661	1109-4	1109-3	87.86	0.012	486.97	484.58	0.67	971	2.7212	147	4.16	0.15	0.28
L662	1109-7	1109-3	248.09	0.012	485.6	484.58	0.67	377	0.4111	0	0.00	0.00	0.15
L667	1105-8	1105-7	204.88	0.012	542.76	527.17	0.67	1625	7.6315	2	1.82	0.00	0.03
L669	316-25	316-6	234.36	0.012	445.3	444.07	0.67	426	0.5248	8	0.92	0.02	0.46
L67	1015-23	1015-24	263.02	0.012	440.87	439.87	0.67	363	0.3802	251	2.66	0.69	0.58
L670	316-26	315-42	202.01	0.012	443.96	442.74	0.67	457	0.6039	8	1.14	0.02	0.09
L671	315-42	315-24	181.02	0.012	442.54	440.78	0.67	580	0.9723	15	1.57	0.03	0.11
L68	1010-10	1015-30	189.26	0.012	449.67	444.35	0.67	987	2.8121	24	2.64	0.02	0.11
L69	1015-30	1015-29	163.08	0.012	444.26	443.62	0.67	369	0.3924	31	1.50	0.08	0.19
L70	1015-29	1015-28	80.02	0.012	440.5	440.3	1.50	2553	0.2499	882	3.29	0.35	0.37
L700	1001-09	1001-9	196	0.012	495.14	492.31	0.67	706	1.444	0	0.00	0.00	0.00
L701	916-06	916-05	150	0.012	431	429.9	0.67	503	0.7334	0	0.00	0.00	0.00
L703	1002-09	1002-10	290	0.012	509.06	491.33	0.67	1454	6.1253	0	0.00	0.00	0.50
L704	1111-17	1111-12	166.2221	0.012	464.51	460.4	0.67	901	2.3529	0	0.00	0.00	0.15
L705	315-05	315-7	386	0.012	441.46	441.09	0.67	182	0.0959	0	0.00	0.00	0.00
L706	316-26	316-25	280.0643	0.012	446.92	446.39	0.67	256	0.1892	0	0.00	0.00	0.00
L707	1008-18.5	1008-5	850.178	0.012	458.09	412.83	0.67	53	0.0082	1	0.12	0.01	0.14
L708	1103-01	1104-20	293.4225	0.012	490.21	488.78	0.67	410	0.4874	0	0.00	0.00	0.00
L709	1105-09	1112-3	317	0.012	463.49	461.7	0.67	442	0.5647	0	0.00	0.00	0.27
L71	1015-28	1015-27	24.7	0.012	439.83	439.78	1.50	2298	0.2024	885	2.60	0.39	0.44
L712	1008-13.5	1008-12.5	168	0.012	463.97	463.03	0.67	440	0.5595	0	0.00	0.00	0.00
L713	1008-12.5	1009-20	169	0.012	463.03	462.44	0.67	347	0.3491	0	0.00	0.00	0.00
L714	1009-20	1009-19	183.6594	0.012	462.44	460.75	0.67	564	0.9202	0	0.00	0.00	0.00
L715	1009-21	1009-23	11.8002	0.012	456.43	455.99	0.67	1135	3.7313	1	0.02	0.00	0.49
L716	1009-19	1009-21	280.5499	0.012	460.75	456.43	0.67	729	1.54	0	0.00	0.00	0.08
L717	416-16	416-08	371.1892	0.012	425.96	419.5	0.67	775	1.7406	0	0.00	0.00	0.00
L718	416-08	416-09	250	0.012	419.4	418.22	0.67	404	0.472	0	0.00	0.00	0.00
L719	416-15	416-08	258	0.012	420.62	419.5	0.67	387	0.4341	0	0.00	0.00	0.00
L72	1015-27	1015-25	162	0.012	439.78	439.49	1.50	2161	0.179	894	2.73	0.41	0.43
L720	416-09	JCT_12	403.5831	0.012	418.03	415.68	0.67	435	0.5476	0	0.00	0.00	0.50
L721	1001-18	1001-24	146	0.012	523.6	514.67	0.67	1455	6.1279	0	0.00	0.00	0.00
L723	1104-23	1104-20	131.6296	0.012	501.5	488.78	0.67	1831	9.7089	0	0.00	0.00	0.00
L724	1104-16	1104-17	271	0.012	537.41	533.34	0.67	672	1.3064	0	0.35	0.00	0.02
L725	1106-04	1106-3	265.706	0.012	562.74	552.13	0.67	1175	3.9963	0	0.00	0.00	0.00
L726	315-04	315-05	150	0.012	441.5	441.46	0.67	96	0.0267	0	0.00	0.00	0.00
L727	1111-18	1111-20	209	0.012	471.31	470.25	0.67	418	0.5072	0	0.00	0.00	0.00
L728	316-30	JCT_122	270.9461	0.012	450.23	449.28	0.67	348	0.3506	0	0.00	0.00	0.00

CIP System Flows, 5-year, 24-hour storm event

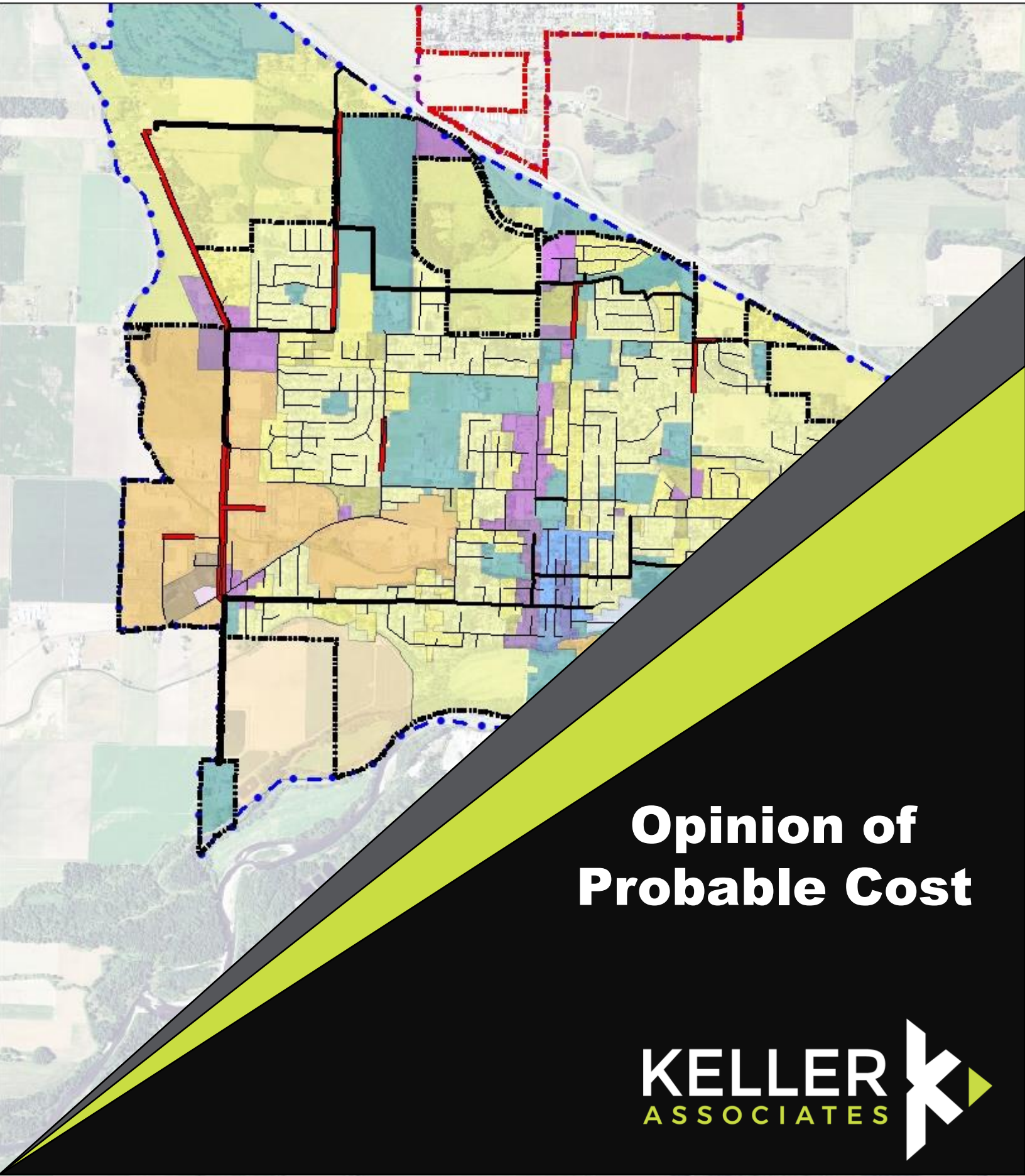
Input								Output					
Pipe ID	Upstream MH	Downstream MH	Length (ft)	Roughness	US Invert (ft)	DS Invert (ft)	Diameter (ft)	Full Flow (gpm)	Slope (%)	Max Flow (gpm)	Max Velocity (ft/s)	Max.Flow/Full Flow	Max.Depth/Full Depth
L729	316-31	316-30	145	0.012	451.31	451	0.67	272	0.2138	0	0.00	0.00	0.00
L73	1015-25	1015-24	281.86	0.012	439.49	438.78	1.50	2563	0.2519	926	2.70	0.36	0.45
L730	316-32	316-30	358	0.012	452.08	451	0.67	323	0.3017	0	0.00	0.00	0.00
L731	916-10	916-1	131.5766	0.012	438.5	435.46	0.67	893	2.3111	0	0.00	0.00	0.05
L732	1111-19	1111-22	208	0.012	469.95	469.21	0.67	350	0.3558	0	0.00	0.00	0.00
L733	1111-22	1111-21	354	0.012	469.16	468.01	0.67	335	0.3249	0	0.00	0.00	0.00
L734	316-33	316-32	234	0.012	457.2	452	0.67	869	2.1886	0	0.00	0.00	0.00
L736	1108-01	1108-6	76	0.012	580.11	573.6	0.67	1723	8.5974	0	0.00	0.00	0.00
L737	1001-24	1104-28	246.8348	0.012	514.47	513.13	0.67	433	0.5429	0	0.00	0.00	0.00
L738	1004-22	1004-1	338.2601	0.012	439.51	439	0.67	228	0.1508	0	0.00	0.00	0.00
L739	1008-16	1008-15	26.8718	0.012	507.13	506.97	0.67	453	0.5954	0	0.00	0.00	0.00
L74	1015-22	1015-21	67.78	0.012	443.89	443.68	0.67	327	0.3098	9	0.98	0.03	0.11
L740	1011-22	1011-19	273.155	0.012	440.11	439.17	0.67	345	0.3441	0	0.00	0.00	0.06
L741	KA2	KA1	229	0.012	469.83	468.91	0.67	372	0.4018	0	0.00	0.00	0.00
L742	KA1	KA3	113	0.012	468.71	468.26	0.67	371	0.3982	0	0.00	0.00	0.00
L743	KA3	1112-4	352	0.012	468.16	466.33	0.67	421	0.5142	0	0.00	0.00	0.28
L744	1105-11	1105-10	239.9	0.012	470.95	465.68	0.67	871	2.1973	0	0.00	0.00	0.00
L745	1105-12	1105-10	24	0.012	465.65	465.55	0.67	208	0.125	0	0.00	0.00	0.00
L746	1105-10	1105-13	126	0.012	465.68	464.09	0.67	660	1.262	0	0.00	0.00	0.00
L747	1105-13	1105-09	83	0.012	463.99	463.59	0.67	408	0.4819	0	0.00	0.00	0.00
L748	1111-21	1111-5	120	0.012	467.73	467.41	0.67	303	0.2667	0	0.00	0.00	0.00
L749	1111-20	1111-22	322	0.012	470.25	469.21	0.67	334	0.323	0	0.00	0.00	0.00
L75	1015-21	1015-20	220.33	0.012	443.58	442.45	0.67	421	0.5129	19	1.40	0.05	0.14
L750	KA6	1111-20	149	0.012	471	470.25	0.67	417	0.5034	0	0.00	0.00	0.00
L751	KA5	1504-3	120.2805	0.012	434.23	434.19	0.67	107	0.0333	0	0.00	0.00	0.00
L752	KA8	1013-7	165.8976	0.012	441	440.61	0.67	285	0.2351	0	0.00	0.00	0.00
L753	915-20	915-17	162.7238	0.012	434.75	434.1	0.67	371	0.3995	0	0.00	0.00	0.06
L754	915-21	915-19	97.8681	0.012	436.62	436.23	0.67	371	0.3985	0	0.00	0.00	0.06
L755	1011-20	1011-2	177.9001	0.012	442.79	439.01	0.67	857	2.1253	0	0.00	0.00	0.00
L756	1002-10	1002-13	180	0.012	490.14	482.4	0.67	783	1.7781	7	0.95	0.01	0.56
L757	1001-10	1002-09	275	0.012	515.15	514.41	0.67	370	0.3964	0	0.00	0.00	0.00
L758	1001-26	1001-7	200	0.012	505.41	501.27	0.67	845	2.0704	0	0.00	0.00	0.00
L759	1001-15.5	1001-16	105.1129	0.012	523.35	522.96	0.67	358	0.371	0	0.00	0.00	0.00
L76	1015-20	1015-23	147.28	0.012	441.47	440.87	0.67	376	0.4074	226	2.31	0.60	0.60
L760	1001-14.5	1001-15.5	145	0.012	524.03	523.45	0.67	372	0.4	0	0.00	0.00	0.00
L761	416-12	416-15	369	0.012	425.03	424	0.67	310	0.2791	0	0.00	0.00	0.00
L762	416-14	416-15	262	0.012	421.94	421	0.67	352	0.3588	0	0.00	0.00	0.00
L763	416-13	416-14	365	0.012	423.54	422.5	0.67	314	0.2849	0	0.00	0.00	0.00
L765	901-09	901-9	56.5971	0.012	429.02	427.93	1.00	2111	1.4843	0	0.00	0.00	0.01
L766	901-24.5	901-09	15.3601	0.012	429.96	429.1	1.00	4102	5.6077	0	0.00	0.00	0.00
L767	KA7	916-06	10	0.012	433	432	0.67	1863	10.0504	0	0.00	0.00	0.00
L768	1111-23	1111-11	80.981	0.012	463	459.4	1.00	3654	4.4499	0	0.00	0.00	0.00
L769	1009-23	1009-24	6.2348	0.012	455.99	455.97	0.67	333	0.3208	3	0.36	0.01	0.84
L77	1015-26	1015-25	169	0.012	442.61	441.91	0.67	379	0.4142	7	0.99	0.02	0.09
L770	1004-25	1004-9	77	0.012	435.73	435	0.83	1037	0.9481	0	0.00	0.00	0.08
L771	KA9	1108-01	8	0.012	581	580.4	0.67	1611	7.5212	0	0.00	0.00	0.00
L772	KA10	1108-01	5	0.012	581	580.4	0.67	2043	12.0873	0	0.00	0.00	0.00
L773	313-18	313-17	132	0.012	439.5	439.15	0.67	303	0.2652	0	0.00	0.00	0.00
L774	313-17	313-16	305	0.012	436.29	435	0.67	382	0.423	0	0.00	0.00	0.00
L775	313-19	313-16	431	0.012	437.04	435	0.67	404	0.4733	0	0.00	0.00	0.00
L776	313-16	JCT_34	241	0.012	434.67	434	0.67	310	0.278	0	0.00	0.00	0.00
L777	313-09	JCT_34	301	0.012	435.46	434	0.67	409	0.4851	0	0.00	0.00	0.00

CIP System Flows, 5-year, 24-hour storm event

Input								Output					
Pipe ID	Upstream MH	Downstream MH	Length (ft)	Roughness	US Invert (ft)	DS Invert (ft)	Diameter (ft)	Full Flow (gpm)	Slope (%)	Max Flow (gpm)	Max Velocity (ft/s)	Max.Flow/Full Flow	Max.Depth/Full Depth
L78	1015-1	1015-18	247.24	0.012	443.63	442.65	0.67	370	0.3964	62	1.44	0.17	0.32
L781	313-20	313-17	122	0.012	439.5	439.15	0.67	315	0.2869	0	0.00	0.00	0.00
L782	908-13.5	908-12	173.2305	0.012	436.64	436.13	0.67	319	0.2944	0	0.00	0.00	0.00
L783	KA4	1012-8	300.7852	0.012	445.27	442.77	0.67	536	0.8312	0	0.00	0.00	0.02
L79	1015-4	1015-10	150	0.012	445.34	444.73	0.67	375	0.4067	9	1.06	0.02	0.10
L80	1015-10	1015-18	122	0.012	444.07	443.59	0.67	369	0.3934	63	1.85	0.17	0.27
L81	1015-18	1015-20	277.18	0.012	442.59	441.47	0.67	374	0.4041	155	1.96	0.42	0.50
L82	1015-19	1015-18	158.03	0.012	445.21	444.15	0.67	482	0.6708	15	1.40	0.03	0.12
L83	1015-12	1015-13	128.04	0.012	445.5	445	0.67	368	0.3905	12	0.86	0.03	0.17
L84	1015-13	1015-17	275.02	0.012	445	444.31	0.67	295	0.2509	29	1.17	0.10	0.21
L85	1015-17	1015-20	244.07	0.012	444.31	443.25	0.67	388	0.4343	39	1.64	0.10	0.21
L86	1015-2	1015-1	124	0.012	444.65	444.16	0.67	370	0.3952	38	1.59	0.10	0.21
L87	1015-11	1015-1	111	0.012	445.59	445.15	0.67	370	0.3964	12	1.15	0.03	0.12
L88	1011-19	1011-18	356.36	0.012	439.17	437.75	0.67	371	0.3985	12	1.15	0.03	0.12
L89	1011-2	1011-2.1	140.13	0.012	438.5	438	0.67	351	0.3568	10	0.84	0.03	0.16
L9	914-2	914-3	245.1	0.012	419.16	418.36	0.67	336	0.3264	15	0.96	0.04	0.15
L90	1011-2.1	1011-1	214.39	0.012	438	437.48	0.67	290	0.2425	24	1.21	0.08	0.18
L91	1016-6	1016-5	220.02	0.012	446.08	445.59	0.67	278	0.2227	19	0.90	0.07	0.22
L92	1016-5	1015-9	166.47	0.012	445.59	445.15	0.67	302	0.2643	39	1.44	0.13	0.23
L93	1015-9	1015-10	245.2	0.012	445.07	444.07	0.67	376	0.4078	49	1.48	0.13	0.26
L94	1016-4	1015-3	306.03	0.012	447	445.9	0.67	353	0.3594	17	1.20	0.05	0.16
L95	1015-3	1015-2	310.16	0.012	445.9	444.65	0.67	374	0.403	26	1.16	0.07	0.20
L96	1015-35	1015-34	154.03	0.012	443.7	443.1	0.67	367	0.3895	10	1.09	0.03	0.11
L97	1009-5	1016-3	263.12	0.012	449.85	449.26	1.00	820	0.2242	624	2.90	0.76	0.59
L98	1016-3	1016-2	317.19	0.012	446.29	445.57	1.00	825	0.227	629	2.53	0.76	0.66
L99	1016-2	1015-7	252.16	0.012	445.57	445.02	1.00	809	0.2181	645	2.42	0.80	0.71

City of Stayton OREGON

Appendix F



Opinion of Probable Cost

KELLER ASSOCIATES

Mill Creek Pump Station - Short Term Improvements Alternative 1				
GENERAL LINE ITEM	EST. QTY	UNIT	UNIT PRICE	AMOUNT
Discharge Pressure Gauge	3	EA	$ 140	$ 420
4" Combination Air/Vacuum Valve	1	EA	$ 3,100	$ 3,100
Flow Meter, Isolation Valves, and Vault				
24" Plug Valve	1	EA	$ 32,000	$ 32,000
Demolition	1	LS	$ 2,000	$ 2,000
12" Mag Meter	1	EA	$ 35,000	$ 35,000
12-inch Plug Valve	2	EA	$ 20,000	$ 40,000
12-inch Dismantling Joint	2	EA	$ 4,200	$ 8,400
12"X10" Tapping Valve	2	EA	$ 4,050	$ 8,100
10-inch Ductile Iron Pipe	20	LF	$ 130	$ 2,600
10" DI 90 Bend	1	EA	$ 1,210	$ 1,210
10" DI Tee	1	EA	$ 1,920	$ 1,920
10" Pipe Cap	1	EA	$ 600	$ 600
1/2" Injection Valve	1	EA	$ 100	$ 100
2-inch Chemical Piping	10	LF	$ 35	$ 350
Vault	1	LS	$ 10,000	$ 10,000
Mobilization			5%	$ 8,000
Contingency and Allowances	1	LS	30%	$ 47,000
Construction Subtotal (rounded)				***$ 201,000***
Engineering and CMS	1	LS	30%	$ 61,000
Legal, Admin, and Permitting	1	LS	2%	$ 5,000
Total Project Cost (rounded)				***$ 267,000***

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Mill Creek Pump Station - Short Term Improvements Alternative 2				
GENERAL LINE ITEM	EST. QTY	UNIT	UNIT PRICE	AMOUNT
12" Clamp-On Ultrasonic Flow Meter	1	EA	$ 6,600	$ 6,600
Contingency and Allowances	1	LS	30%	$ 1,980
Construction Subtotal (rounded)				***$ 9,000***
Engineering and CMS	1	LS	25%	$ 3,000
Legal, Admin, and Permitting	1	LS	2%	$ 1,000
Total Project Cost (rounded)				***$ 13,000***

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Industrial Pump Station - Short Term Improvements				
GENERAL LINE ITEM	EST. QTY	UNIT	UNIT PRICE	AMOUNT
Bollards	2	EA	$ 1,000	$ 2,000
Contingency and Allowances	1	LS	30%	$ 1,000
Total Project Cost (rounded)				***$ 3,000***

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Industrial Pump Station - Long Term Improvements				
GENERAL LINE ITEM	EST. QTY	UNIT	UNIT PRICE	AMOUNT
Site Improvements (Demolition, Bypass Pumping)	1	LS	$ 40,000	$ 40,000
Valve Vault and Mechanical	1	LS	$ 35,000	$ 35,000
Submersible Pumps and Rail Installation	2	EA	$ 6,000	$ 12,000
Electrical	1	LS	$ 12,000	$ 12,000
Instrumentation	1	LS	$ 4,000	$ 4,000
Control System	1	LS	$ 4,000	$ 4,000
Enclosure	1	LS	$ 6,000	$ 6,000
Mobilization	1	LS	5%	$ 6,000
Contingency and Allowances	1	LS	30%	$ 36,000
Construction Subtotal (rounded)				***$ 155,000***
Engineering and CMS	1	LS	30%	$ 47,000
Legal, Admin, and Permitting	1	LS	2%	$ 4,000
Total Project Cost (rounded)				***$ 206,000***

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Wilco Pump Station - Long Term Improvements				
GENERAL LINE ITEM	EST. QTY	UNIT	UNIT PRICE	AMOUNT
Site Improvements (Demolition, Bypass Pumping)	1	LS	$ 50,000	$ 50,000
Valve Vault	1	LS	$ 45,000	$ 45,000
Submersible Pumps	2	EA	$ 25,000	$ 50,000
Electrical	1	LS	$ 14,000	$ 14,000
Instrumentation	1	LS	$ 4,000	$ 4,000
Control System	1	LS	$ 4,000	$ 4,000
Mobilization	1	LS	5%	$ 9,000
Contingency and Allowances	1	LS	30%	$ 53,000
Construction Subtotal (rounded)				***$ 229,000***
Engineering and CMS	1	LS	20%	$ 46,000
Legal, Admin, and Permitting	1	LS	2%	$ 5,000
Total Project Cost (rounded)				***$ 280,000***

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Priority 1 - Upsizing on Jetters and Ida to Reduce Risk of Overflow				
GENERAL LINE ITEM	EST. QTY	UNIT	UNIT PRICE	AMOUNT
Jetters Way				
30-inch Pipe - Excavation, Backfill	180	LF	$ 220	$ 39,600
Replacement Control Vault	1	EA	$ 40,000	$ 40,000
Full Lane Pavement Repair	180	LF	$ 60	$ 10,800
Bypass Pumping	1	LS	$ 5,000	$ 5,000
Traffic Control (without Flagging)	180	LF	$ 4	$ 720
W Ida Street				
21-inch Pipe - Excavation, Backfill	1,740	LF	$ 170	$ 295,800
30-inch Pipe - Excavation, Backfill	2,810	LF	$ 220	$ 618,200
Reconnect Services	4,550	LF	$ 15	$ 68,250
Manhole (48")	4	EA	$ 7,500	$ 30,000
Manhole (72")	8	EA	$ 17,000	$ 136,000
Full Lane Pavement Repair	4,550	LF	$ 60	$ 273,000
Bypass Pumping	1	LS	$ 45,000	$ 45,000
Traffic Control	4,550	LF	$ 8	$ 36,400
N Evergreen Avenue				
18-inch Pipe - Excavation, Backfill	610	LF	$ 155	$ 94,550
Reconnect Services	610	LF	$ 15	$ 9,150
Manhole (48")	2	EA	$ 7,500	$ 15,000
Full Lane Pavement Repair	610	LF	$ 60	$ 36,600
Bypass Pumping	1	LS	$ 6,000	$ 6,000
Traffic Control	610	LF	$ 8	$ 4,880
Mobilization	1	LS	5%	$ 89,000
Contingency and Allowances	1	LS	30%	$ 557,000
Construction Subtotal (rounded)				***$ 2,411,000***
Engineering and CMS	1	LS	20%	$ 483,000
Legal, Admin, and Permitting	1	LS	2%	$ 49,000
Total Project Cost (rounded)				***$ 2,943,000***

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Priority 2.1 - Mill Creek Force Main Extension				
GENERAL LINE ITEM	EST. QTY	UNIT	UNIT PRICE	AMOUNT
Erosion and Sediment Control	1	EA	$ 7,600	$ 7,600
Traffic Control	1	LF	$ 2,200	$ 2,200
Construction Staking	1	LS	$ 5,400	$ 5,400
Connection to Existing Force Main	1	LF	$ 43,000	$ 43,000
Discharge Structure	1		$ 24,200	$ 24,200
Air Release Valve Station Type I	1	LF	$ 13,500	$ 13,500
Air Release Valve Station Type II	4	LF	$ 13,100	$ 52,400
Two-Way Pressure Sewer Cleanout	2	LF	$ 18,300	$ 36,600
Force Main, 26” HDPE	2,750	EA	$ 200	$ 550,000
Power Canal Crossing	1	LF	$ 64,400	$ 64,400
Salem Waterline Crossing	1	LS	$ 38,700	$ 38,700
Asphalt Roadway Surface Restoration	520	LF	$ 60	$ 31,200
Gravel Surface Restoration	50		$ 10	$ 500
Miscellaneous Surface Restoration	2,210	LF	$ 10	$ 22,100
Import Trench Backfill	50	LF	$ 30	$ 1,500
Mobilization	1	LS	5%	$ 45,000
Easement Acquisition	1	LS	$ 10,000	$ 10,000
Contingency and Allowances	1	LS	10%	$ 94,000
Construction Subtotal (rounded)				***$ 1,043,000***
Engineering and CMS	1	LS	12%	$ 126,000
Legal, Admin, and Permitting	1	LS	2%	$ 21,000
Total Project Cost (rounded)				***$ 1,190,000***

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Priority 2.2 - Gardner Pump Station Displacement				
GENERAL LINE ITEM	EST. QTY	UNIT	UNIT PRICE	AMOUNT
12-inch Pipe - Excavation, Backfill	2,170	LF	$ 120	$ 260,400
Reconnect Services	170	LF	$ 15	$ 2,550
Manhole (48")	6	EA	$ 7,500	$ 45,000
Full Lane Pavement Repair	2,170	LF	$ 60	$ 130,200
Abandon Line	1	LS	$ 2,000	$ 2,000
Bypass Pumping	1	LS	$ 2,500	$ 2,500
Traffic Control	2,170	LF	$ 8	$ 17,360
Demolition	1	LS	$ 7,000	$ 7,000
Mobilization	1	LS	5%	$ 24,000
Contingency and Allowances	1	LS	30%	$ 148,000
Construction Subtotal (rounded)				***$ 640,000***
Engineering and CMS	1	LS	20%	$ 128,000
Legal, Admin, and Permitting	1	LS	2%	$ 13,000
Total Project Cost (rounded)				***$ 781,000***

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Priority 2.3 - Evergreen Upsizing				
GENERAL LINE ITEM	EST. QTY	UNIT	UNIT PRICE	AMOUNT
N Evergreen Ave				
15-inch Pipe - Excavation, Backfill	670	LF	$ 180	$ 120,600
Canal Crossing	60	LF	$ 800	$ 48,000
Reconnect Services	670	LF	$ 15	$ 10,050
Manhole (48")	3	EA	$ 7,500	$ 22,500
Full Lane Pavement Repair	670	LF	$ 60	$ 40,200
Bypass Pumping	1	LS	$ 7,000	$ 7,000
Traffic Control	670	LF	$ 8	$ 5,360
W Washington St and N Douglas Ave				
15-inch Pipe - Excavation, Backfill	950	LF	$ 180	$ 171,000
Reconnect Services	950	LF	$ 15	$ 14,250
Manhole (48")	3	EA	$ 7,500	$ 22,500
Full Lane Pavement Repair	950	LF	$ 60	$ 57,000
Bypass Pumping	1	LS	$ 10,000	$ 10,000
Traffic Control	950	LF	$ 8	$ 7,600
W Locust St				
15-inch Pipe - Excavation, Backfill	1,100	LF	$ 180	$ 198,000
Manhole (48")	3	EA	$ 7,500	$ 22,500
Full Lane Pavement Repair	1,100	LF	$ 60	$ 66,000
Bypass Pumping	1	LS	$ 10,000	$ 10,000
Traffic Control	1,100	LF	$ 8	$ 8,800
Mobilization	1	LS	5%	$ 43,000
Contingency and Allowances	1	LS	30%	$ 266,000
Construction Subtotal (rounded)				***$ 1,151,000***
Engineering and CMS	1	LS	20%	$ 231,000
Legal, Admin, and Permitting	1	LS	2%	$ 24,000
Total Project Cost (rounded)				***$ 1,406,000***

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Priority 2.4 - Ida East Upsizing				
GENERAL LINE ITEM	EST. QTY	UNIT	UNIT PRICE	AMOUNT
W Ida St				
18-inch Pipe - Excavation, Backfill	1,330	LF	$ 180	$ 239,400
Reconnect Services	1,330	LF	$ 15	$ 19,950
Manhole (48")	5	EA	$ 7,500	$ 37,500
Full Lane Pavement Repair	1,330	LF	$ 60	$ 79,800
Bypass Pumping	1	LS	$ 15,000	$ 15,000
Traffic Control	1,330	LF	$ 8	$ 10,640
N First Ave				
18-inch Pipe - Excavation, Backfill	550	LF	$ 180	$ 99,000
Canal Crossing	60	LF	$ 800	$ 48,000
Reconnect Services	550	LF	$ 15	$ 8,250
Manhole (48")	4	EA	$ 7,500	$ 30,000
Full Lane Pavement Repair	550	LF	$ 60	$ 33,000
Bypass Pumping	1	LS	$ 6,000	$ 6,000
Traffic Control	550	LF	$ 8	$ 4,400
E Marion St				
18-inch Pipe - Excavation, Backfill	900	LF	$ 180	$ 162,000
Manhole (48")	4	EA	$ 7,500	$ 30,000
Full Lane Pavement Repair	900	LF	$ 60	$ 54,000
Bypass Pumping	1	LS	$ 2,000	$ 2,000
Traffic Control	900	LF	$ 8	$ 7,200
Mobilization	1	LS	5%	$ 45,000
Contingency and Allowances	1	LS	30%	$ 280,000
Construction Subtotal (rounded)				***$ 1,212,000***
Engineering and CMS	1	LS	20%	$ 243,000
Legal, Admin, and Permitting	1	LS	2%	$ 25,000
Total Project Cost (rounded)				***$ 1,480,000***

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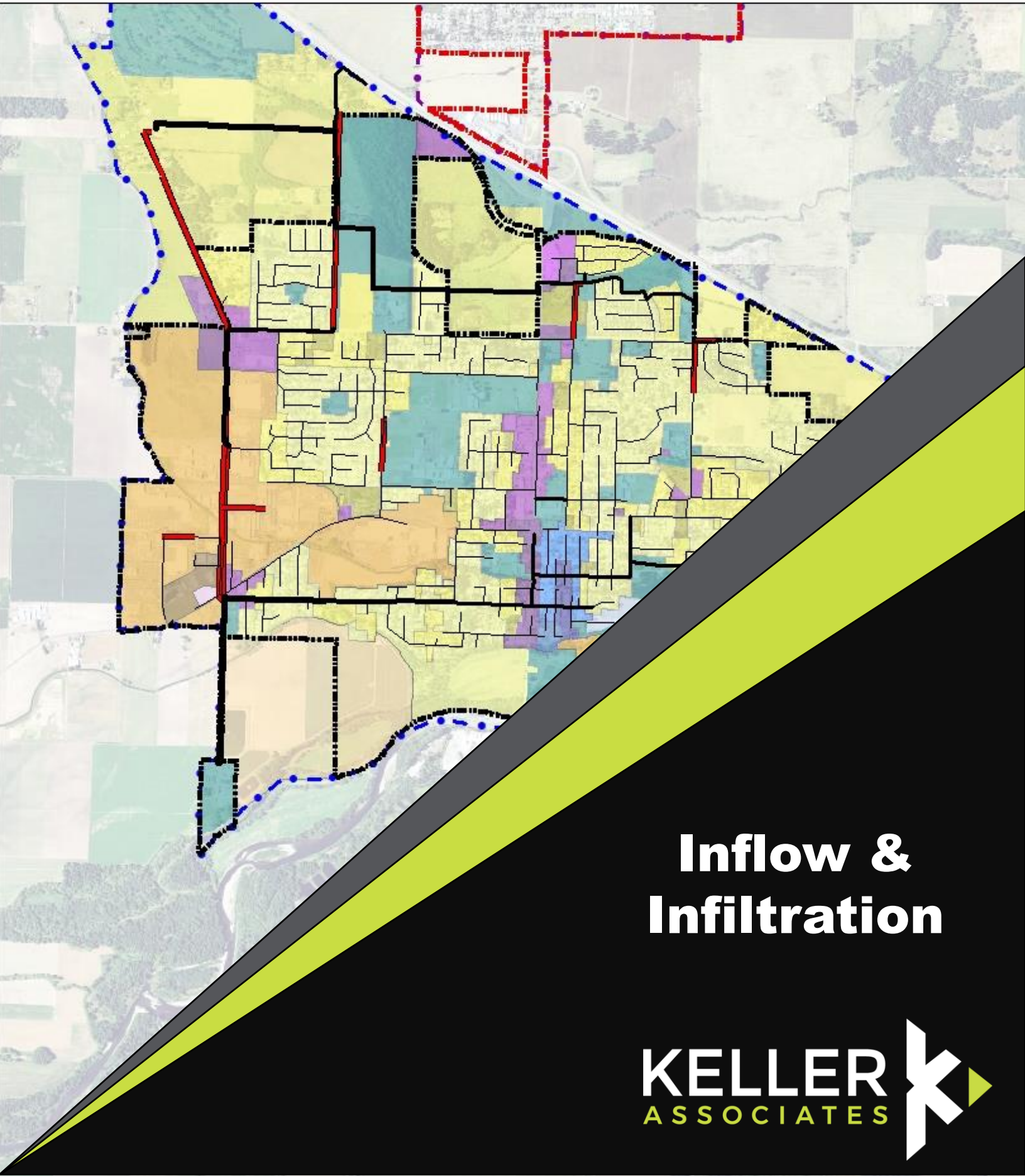
City of Stayton OREGON

Appendix G



Inflow & Infiltration

KELLER ASSOCIATES

Smoke Testing
Photo Log

Picture ID #1
Address: 776 Fifth ave
Description: Smoking cleanout on south side of yard beside fence.

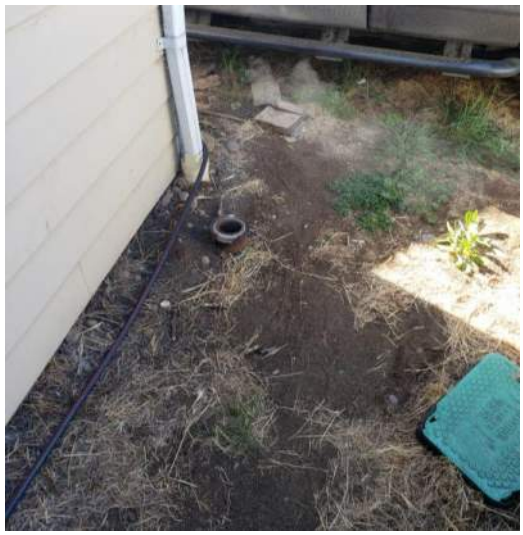
Picture ID #2
Address: 776 Fifth ave
Description: Smoking cleanout on south side of house behind fence.

Picture ID #3
Address: 935 E Santiam St
Description: Smoking cleanout on east side of yard in grass.

Picture ID #4
Address: 645 Twelfth St
Description: Green cleanout cover smoking in sidewalk on edge. Behind smoking from ground.

Picture ID #5
Address: 1352 Burnett st
Description: Driveway Drain.

Picture ID #6
Address: 112 Ida st
Description: Open cleanout on side of house facing 1st st.



Picture ID #7
Address: 104 First ave
Description: Open cleanout in front yard.

Picture ID #8
Address: 136 First ave
Description: Smoking from side of building.

Picture ID #9
Address: 209 Water st
Description: Smoking cleanout

Picture ID #10
Address: 1414 First ave
Description: Smoking from cleanout lid.

Picture ID #11
Address: 189 Second ave
Description: Open Stack next to building.

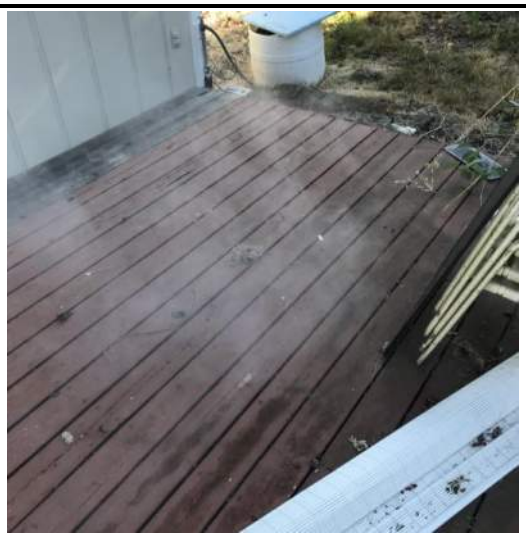
Picture ID #12
Address: 603 Maple st
Description: South side of Maple Court Apartments; Cleanout seal broken

Picture ID #13
Address: 818 Ida st
Description: Leaking in multiple spots along roof gutter.

Picture ID #14
Address: 970 Ida st
Description: Smoking from cleanout lid.

Picture ID #15
Address: 1466 Ida st
Description: Open Cleanout.

Picture ID #16
Address: 1176 Fourth ave
Description: Smoking from under deck.



Picture ID #17
Address: 615B Jefferson st
Description: Smoking from Attic.

Picture ID #18
Address: 1200 Sixth ave
Description: Smoking from catholic school lawn grate.

Picture ID #19
Address: 1462 Fifth ct
Description: Smoking out of crawl space vent.

Picture ID #20
Address: 1462 Second ave
Description: Smoking cleanout on Property Line.

Picture ID #21
Address: 230 Cedar st
Description: Smoking cleanout between sidewalk and street.

Picture ID #22
Address: 970 Regis st
Description: Low spot is cleanout.

Picture ID #23
Address: 1684 Mountain ct
Description: Smoking from Rock Garden.

Picture ID #24
Address: 1277 Dawn dr
Description: Street cleanout.

Picture ID #25
Address: 1482 Scenic View
Description: Open cleanout on Retaining Wall.

Picture ID #26
Address: 1366 Scenic View
Description: Smoking cleanout located where the pathway meets the driveway.

Picture ID #27
Address: 1133 Fifth ave
Description: Smoking from next to tree on 5th st side of house.

Picture ID #28
Address: 1432 Sixth ave
Description: Smoking cleanout in garden along house.

Picture ID #29
Address: 1460 Fourth ave
Description: Smoking cleanout near front of house.

Picture ID #30
Address: Water st and First ave
Description: Street cleanout.

Picture ID #31
Address: 180 Hollister st
Description: Smoking cleanout.

Picture ID #32
Address: 2220 Wildflower dr
Description: Open Cleanout on North side of driveway.

Picture ID #33
Address: 555 Summerview dr
Description: Smoking from green cleanout and drain in front yard.

Picture ID #34
Address: 1200 Mountain ct
Description: Smoking from cleanout in front yard.

Picture ID #35
Address: 1978 Cedar st
Description: Smoking from water meter box.

Picture ID #36
Address: 1845 Wilding pl
Description: Smoking Cleanout in front yard.

Picture ID #37
Address: 1200 Wyatt ave
Description: Manhole in backyard not in GIS map

Picture ID #38
Address: 540 Shaff rd
Description: Open cleanout along fence line.

Picture ID #39
Address: 1401 Locust st
Description: Broken cleanout cap.

Picture ID #40
Address: 950 Regis st
Description: Smoking from ground (potential cleanout) along house.

Replacement / Rehabilitation Project Sheets

Rehabilitation/Replacement Priority: 1

CIP Year: 1

Total Length (ft): 1104

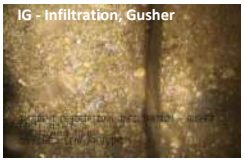
Preliminary Opinion of Probable Cost: $ 259,440.00

Manhole From	Manhole To	Diameter (in)	Material	Install Date	Segment Length (ft)
916-07	916-05	18	RCP	1/1/1962	292
916-08	916-07	18	RCP	1/1/1977	209
1013-04	1013-03	15	RCP	6/1/1990	173
1013-03	916-08	15	RCP	6/1/1971	430

PACP Findings

Inspected by Michels Pipe Services in 2019

- Multiple Infiltration Gushers - Leak at Laterals
- Multiple Infiltration Gushers - Leak at Joint
- One RMJ - Roots, Medium, Joint
- Three RFJ - Roots, Fine, Joint
- All pipes have been spot repaired in past five years.



Project Location

Ida St and Gardner Ave

Night-time I/I Flow (May '20)/Smoke Testing (Aug '20)

- Pipeline segments appeared to have high night-time flows.
- Roof drain located during smoke testing just upstream of Project.

Comments

- Located along hospital discharge line.
- Project located in close proximity to river/creek.
- Located along Industrial/Commercial discharge line
- Project 1 overlaps with CIP Project 1

Rehabilitation/Replacement Priority: 2

CIP Year: 1

Total Length (ft): 134

Preliminary Opinion of Probable Cost: $ 31,490.00

Manhole From	Manhole To	Diameter (in)	Material	Install Date	Segment Length (ft)
915-16	915-02	21	RCP	1/1/1962	134

PACP Findings

Inspected by Michels Pipe Services in 2019

- One Infiltration Gusher - Leak at Joints
- Multiple Infiltration Runner - Leak at Joints
- One Tap, Break-in / Hammer; Intruding 1.5-inch
- Pipe has been spot repaired in the past five years.

Project Location

Ida St and Jetters Way

Night-time I/I Flow (May '20)/Smoke Testing (Aug '20)

- Pipeline segments appeared to have average night-time flows.

Comments

- Located along hospital discharge line.
- Project located in close proximity to river/creek.
- Located along Industrial/Commercial discharge line
- Project 2 overlaps with CIP Project 1

Rehabilitation/Replacement Priority: 3

CIP Year: 1

Total Length (ft): 778

Preliminary Opinion of Probable Cost: $ 182,830.00

Manhole From	Manhole To	Diameter (in)	Material	Install Date	Segment Length (ft)
1011-10	1011-08	8	RCP	1/1/1962	240
1011-09	1011-08	8	RCP	1/1/1978	83
1011-11	1011-10	8	RCP	1/1/1962	95
1010-14	1010-11	8	RCP	1/1/1962	360

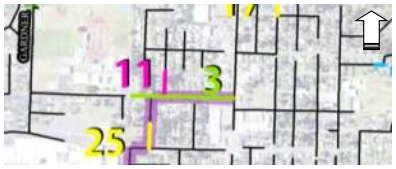
PACP Findings

Inspected by Michels Pipe Services IN 2019

- Six Infiltration Gusher
- Two Cracks
- Three Holes
- Five Deposits
- MH1010-14 to MH 1010-11 has been spot repaired in the past five years.

Project Location

Locust St and Douglas Ave



Night-time I/I Flow (May '20)/Smoke Testing (Aug '20)

- Pipeline segments appeared to have low night-time flows

Comments

- Located along hospital discharge line.
- Located along Industrial/Commercial discharge line
- Project 3 overlaps with CIP Project 2.3

Rehabilitation/Replacement Priority: 4

CIP Year: 2

Total Length (ft): 94

Preliminary Opinion of Probable Cost: $ 22,090.00

Manhole From	Manhole To	Diameter (in)	Material	Install Date	Segment Length (ft)
1015-26	1015-25	8	RCP	1/1/1962	94

PACP Findings

Inspected by Michels Pipe Services IN 2019

- Intruding Seal Material - Sealing Ring: Broken
- Four Cracks
- Three Infiltration Drippers

Project Location

High St and First Ave

Night-time I/I Flow (May '20)/Smoke Testing (Aug '20)

- Pipeline segments appeared to have low night-time flows

Comments

- Project located in close proximity to river/creek.
- Project 4 is adjacent with CIP Project 2.4

Rehabilitation/Replacement Priority: 5

CIP Year: 2

Total Length (ft): 723

Preliminary Opinion of Probable Cost: $ 169,905.00

Manhole From	Manhole To	Diameter (in)	Material	Install Date	Segment Length (ft)
1015-11	1015-01	8	RCP	1/1/1962	349
1015-01	1015-18	8	RCP	1/1/1978	374

PACP Findings

Inspected by Michels Pipe Services in 2018

- Multiple Infiltration Gushers - Leak at Laterals
- Multiple Infiltration Gushers - Leak at Joint
- MH1015-01 to MH 1015-18 has been spot repaired in the past five years.

Project Location

3rd Ave and Florence St

Night-time I/I Flow (May '20)/Smoke Testing (Aug '20)

- Pipeline segments appeared to have low night-time flows.

Comments

- Project located in close proximity to river/creek.
- Located along Industrial/Commercial discharge line

Rehabilitation/Replacement Priority: 6

CIP Year: 2

Total Length (ft): 351

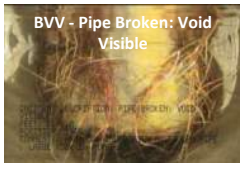
Preliminary Opinion of Probable Cost: $ 82,485.00

Manhole From	Manhole To	Diameter (in)	Material	Install Date	Segment Length (ft)
907-08	902-12	8	AC	1/1/1962	351

PACP Findings

Inspected by Michels Pipe Services in 2017

- Two Broken Pipe
- Two Deposits
- One Infiltration - Gusher
- One Roots, Ball: Barrel
- Pipe has been spot repaired in the past five years.



Project Location

W Brett Ct

Night-time I/I Flow (May '20)/Smoke Testing (Aug '20)

- Pipeline segments appeared to have low night-time flows

Comments

-

Rehabilitation/Replacement Priority: 7

CIP Year: 2

Total Length (ft): 795

Preliminary Opinion of Probable Cost: $ 186,825.00

Manhole From	Manhole To	Diameter (in)	Material	Install Date	Segment Length (ft)
1004-06	1004-24	8	RCP	1/1/2001	34
1004-12	1004-11	8	AC	1/1/1999	386
1004-11	1004-07	8	RCP	1/1/1999	152
1004-24	1004-09	8	PVC	1/1/1999	223

PACP Findings

Inspected by Michels Pipe Services IN 2017 & 218

- Four Infiltration Defects
- Two Roots
- Defective Point Repair


RPPD - Point Repair - Patch Repair: Defective


IR - Infiltration Runner


IR - Infiltration Runner

Project Location

Shaff Rd and Gardner Ave

Night-time I/I Flow (May '20)/Smoke Testing (Aug '20)

- Pipeline segments appeared to have low night-time flows

Comments

- Project 7 is adjacent with CIP Project 2.2

Rehabilitation/Replacement Priority: 8

CIP Year: 3

Total Length (ft): 348

Preliminary Opinion of Probable Cost: $ 81,780.00

Manhole From	Manhole To	Diameter (in)	Material	Install Date	Segment Length (ft)
914-10	914-02	6	RCP	1/1/1962	225
914-02	914-03	8	RCP	6/1/1996	123

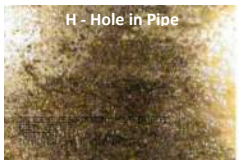
PACP Findings

Inspected by Michels Pipe Services in 2019

- Four Infiltration Drippers
- Three Holes
- One Crack
- All pipes have been spot repaired in past five years.


CC - Crack Circumferential


IR - Infiltration Dripper


H - Hole in Pipe

Project Location

Rogue Ave

Night-time I/I Flow (May '20)/Smoke Testing (Aug '20)

- Pipeline segments appeared to have low night-time flows

Comments

- Located along Industrial/Commercial discharge line

Rehabilitation/Replacement Priority: 9

CIP Year: 3

Total Length (ft): 29

Preliminary Opinion of Probable Cost: $ 6,815.00

Manhole From	Manhole To	Diameter (in)	Material	Install Date	Segment Length (ft)
1008-07	1008-06	8	RCP	1/1/1962	29

Project Location

Robidoux St

Night-time I/I Flow (May '20)/Smoke Testing (Aug '20)

- Pipeline segments appeared to have low night-time flows

PACP Findings

Inspected by Michels Pipe Services

- Hole in Bottom of Pipe
- Two Cracks
- Pipe has been spot repaired in the past five years.

Comments

- Located along hospital discharge line.

Rehabilitation/Replacement Priority: 10

CIP Year: 3

Total Length (ft): 15.5

Preliminary Opinion of Probable Cost: $ 3,642.50

Manhole From	Manhole To	Diameter (in)	Material	Install Date	Segment Length (ft)
901-24	901-09	8	PVC	1/1/1978	15.5

Project Location

High St and First Ave

Night-time I/I Flow (May '20)/Smoke Testing (Aug '20)

- Pipeline segments appeared to have low night-time flows

PACP Findings

Inspected by Michels Pipe Services in 2017

- One Lining Failure

Comments

-

Rehabilitation/Replacement Priority: 11

CIP Year: 3

Total Length (ft): 459

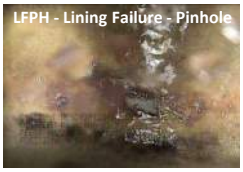
Preliminary Opinion of Probable Cost: $ 107,865.00

Manhole From	Manhole To	Diameter (in)	Material	Install Date	Segment Length (ft)
1006-01	1011-10	8	FRP	1/1/1995	459

PACP Findings

Inspected by Michels Pipe Services in 2019

- Four Infiltration Defects
- Multiple Linear Seal Defects



Project Location

Douglas Ave and Locust St

Night-time I/I Flow (May '20)/Smoke Testing (Aug '20)

- Pipeline segments appeared to have low night-time flows

Comments

- Project 11 is adjacent with CIP Project 2.3

Rehabilitation/Replacement Priority: 12

CIP Year: 3

Total Length (ft): 204

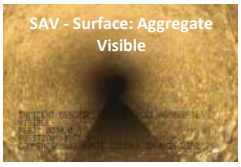
Preliminary Opinion of Probable Cost: $ 47,940.00

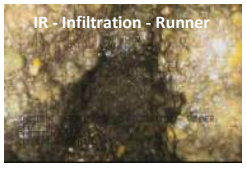
Manhole From	Manhole To	Diameter (in)	Material	Install Date	Segment Length (ft)
1004-17	1004-05	8	RCP	1/1/1999	130
1004-09	1004-17	8	RCP	1/1/1999	74

PACP Findings

Inspected by Michels Pipe Services in 2017

- Aggragate Visible in this Line
- Two Holes
- Four Infiltration Defects
- MH1015-01 to MH 1015-18 has been spot repaired in the past five years.





Project Location

Gardner Ave and Shaff Rd

Night-time I/I Flow (May '20)/Smoke Testing (Aug '20)

- Pipeline segments appeared to have low night-time flows

Comments

- Project 12 overlaps with CIP Project 2.2

Rehabilitation/Replacement Priority: 13

CIP Year: 3

Total Length (ft): 648

Preliminary Opinion of Probable Cost: $ 152,280.00

Manhole From	Manhole To	Diameter (in)	Material	Install Date	Segment Length (ft)
1001-06	1001-05	8	RCP	1/1/1975	440
1001-04	1001-05	8	RCP	1/1/1975	208

PACP Findings

Inspected by Michels Pipe Services in 2016

- Four Infiltration Defects
- One Tap, Break-in / Hammer: Intruding
- No Pictures Available

Project Location

Kathy St

Night-time I/I Flow (May '20)/Smoke Testing (Aug '20)

- Pipeline segments appeared to have low night-time flows

Comments

-

Rehabilitation/Replacement Priority: 14

CIP Year: 4

Total Length (ft): 265

Preliminary Opinion of Probable Cost: $ 62,275.00

Manhole From	Manhole To	Diameter (in)	Material	Install Date	Segment Length (ft)
908-16	908-04	6	AC	1/1/1999	265

PACP Findings

Inspected by Michels Pipe Services in 2017

- Crack Multiple - Joint
- Two Crack Spiral - Joint
- No Pictures Available

Project Location

Westwood Dr

Night-time I/I Flow (May '20)/Smoke Testing (Aug '20)

- Pipeline segments appeared to have low night-time flows

Comments

-

Rehabilitation/Replacement Priority: 15

CIP Year: 4

Total Length (ft): 77

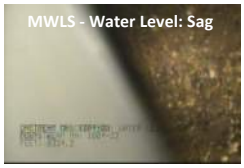
Preliminary Opinion of Probable Cost: $ 18,095.00

Manhole From	Manhole To	Diameter (in)	Material	Install Date	Segment Length (ft)
1004-02	1004-23	8	RCP	1/1/2003	77

PACP Findings

Inspected by Michels Pipe Services in 2017

- Two Infiltration Defects
- One Hole
- One Major Sag in Pipe
- Pipe has been spot repaired in the past five years.



Project Location

Gardner Ave and Western Ave

Night-time I/I Flow (May '20)/Smoke Testing (Aug '20)

- Pipeline segments appeared to have low night-time flows

Comments

- Project 15 overlaps with CIP Project 2.2

Rehabilitation/Replacement Priority: 16

CIP Year: 4

Total Length (ft): 57

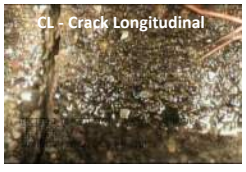
Preliminary Opinion of Probable Cost: $ 13,395.00

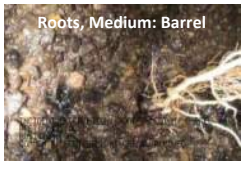
Manhole From	Manhole To	Diameter (in)	Material	Install Date	Segment Length (ft)
915-22	915-14	8	RCP	1/1/1974	57

PACP Findings

Inspected by Michels Pipe Services in 2019

- Three Root Defects
- Multiple Cracks
- One Joint Offset: Gasket Exposed
- Pipe has been spot repaired in the past five years.





Project Location

Noble Ave and Ida St

Night-time I/I Flow (May '20)/Smoke Testing (Aug '20)

- Pipeline segments appeared to have low night-time flows

Comments

- Project located in close proximity to river/creek.
- Project 16 is adjacent with CIP Project 1

Rehabilitation/Replacement Priority: 17

CIP Year: 4

Total Length (ft): 379

Preliminary Opinion of Probable Cost: $ 89,065.00

Manhole From	Manhole To	Diameter (in)	Material	Install Date	Segment Length (ft)
1002-08	1007-08	8	RCP	1/1/1962	379

PACP Findings

Inspected by Michels Pipe Services in 2018

- One Crack
- One Hole
- Multiple Sag in Pipe

Project Location

3rd Ave and Fir St

Night-time I/I Flow (May '20)/Smoke Testing (Aug '20)

- Pipeline segments appeared to have low night-time flows

Comments

-

Rehabilitation/Replacement Priority: 18

CIP Year: 4

Total Length (ft): 592

Preliminary Opinion of Probable Cost: $ 139,120.00

Manhole From	Manhole To	Diameter (in)	Material	Install Date	Segment Length (ft)
907-10	907-11	6	AC	1/1/2005	358
907-11	907-12	6	AC	1/1/2005	234

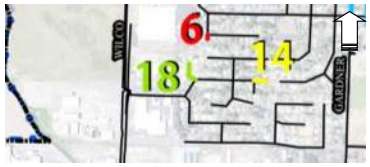
PACP Findings

Inspected by Michels Pipe Services

- One Crack: Multiple
- One DNGV - Deposit Ingress Gravel
- One Deposits Settled : Compacted

Project Location

Westhaven Pl



Night-time I/I Flow (May '20)/Smoke Testing (Aug '20)

- Pipeline segments appeared to have low night-time flows

Comments

-

Rehabilitation/Replacement Priority: 19

CIP Year: 4

Total Length (ft): 167

Preliminary Opinion of Probable Cost: $ 39,245.00

Manhole From	Manhole To	Diameter (in)	Material	Install Date	Segment Length (ft)
915-07	915-06	8	RCP	6/1/1996	167

PACP Findings

Inspected by Michels Pipe Services in 2019

- Four Crack Defects
- One Hole on Top of Pipe
- One Infiltration - Dripper
- Pipe has been spot repaired in the past five years.

Project Location

Oak St and Washington St

Night-time I/I Flow (May '20)/Smoke Testing (Aug '20)

- Pipeline segments appeared to have low night-time flows

Comments

-

Rehabilitation/Replacement Priority: 20

CIP Year: 4

Total Length (ft): 372

Preliminary Opinion of Probable Cost: $ 87,420.00

Manhole From	Manhole To	Diameter (in)	Material	Install Date	Segment Length (ft)
915-04	915-03	10	RCP	1/1/1992	225
914-08	915-03	8	RCP	1/1/1962	147

PACP Findings

Inspected by Michels Pipe Services in 2019

- Gasket Purtruding at Joint
- Line Turn Down
- One Hole
- MH915-04 to MH915-03 has been spot repaired in the past five years.

Project Location

Washington St and Wilco Rd

Night-time I/I Flow (May '20)/Smoke Testing (Aug '20)

- Pipeline segments appeared to have High night-time flows

Comments

- Located along Industrial/Commercial discharge line
- Located along School discharge line
- Project 20 is adjacent with CIP Project 1

Rehabilitation/Replacement Priority: 21

CIP Year: 4

Total Length (ft): 428

Preliminary Opinion of Probable Cost: $ 100,580.00

Manhole From	Manhole To	Diameter (in)	Material	Install Date	Segment Length (ft)
1015-15	1014-01	8	RCP	1/1/2006	428

PACP Findings

Inspected by Michels Pipe Services in 2019

- Multipe Cracks
- Large Hole on Top of Pipe
- One Infiltration Dripper
- Pipe has been spot repaired in the past five years.

Project Location

Water St

Night-time I/I Flow (May '20)/Smoke Testing (Aug '20)

- Pipeline segments appeared to have low night-time flows

Comments

- Project located in close proximity to river/creek.

Rehabilitation/Replacement Priority: 22

CIP Year: 5

Total Length (ft): 157

Preliminary Opinion of Probable Cost: $ 36,895.00

Manhole From	Manhole To	Diameter (in)	Material	Install Date	Segment Length (ft)
1015-03	1015-02	8	RCP	1/1/1999	157

PACP Findings

Inspected by Michels Pipe Services in 2016

- Pipe Broken
- Multiple Cracks
- Two Roots, Fine: Joint
- No Pictures Available

Project Location

Florence St

Night-time I/I Flow (May '20)/Smoke Testing (Aug '20)

- Pipeline segments appeared to have low night-time flows

Comments

- Project located in close proximity to river/creek.

Rehabilitation/Replacement Priority: 23

CIP Year: 5

Total Length (ft): 503

Preliminary Opinion of Probable Cost: $ 118,205.00

Manhole From	Manhole To	Diameter (in)	Material	Install Date	Segment Length (ft)
1001-07	1104-14	8	RCP	1/1/1999	77
1001-26	1001-07	8	RCP	1/1/1978	426

PACP Findings

Inspected by Michels Pipe Services in 2016

- One Infiltration Gusher
- Two Tap, Beak-in / Hammer: Intruding
- No Pictures Available

Project Location

Kathy St

Night-time I/I Flow (May '20)/Smoke Testing (Aug '20)

- Pipeline segments appeared to have low night-time flows

Comments

-

Rehabilitation/Replacement Priority: 24

CIP Year: 5

Total Length (ft): 303

Preliminary Opinion of Probable Cost: $ 71,205.00

Manhole From	Manhole To	Diameter (in)	Material	Install Date	Segment Length (ft)
1011-07	1011-06	10	RCP	1/1/2003	303

PACP Findings

Inspected by Michels Pipe Services in 2018

- Two Sags in Line
- One Deposit Defect

Project Location

Washington St and Douglas Ave

Night-time I/I Flow (May '20)/Smoke Testing (Aug '20)

- Pipeline segments appeared to have low night-time flows

Comments

- Located along hospital discharge line.
- Located along Industrial/Commercial discharge line
- Project 24 overlaps with CIP Project 2.3

Rehabilitation/Replacement Priority: 25

CIP Year: 5

Total Length (ft): 226

Preliminary Opinion of Probable Cost: $ 53,110.00

Manhole From	Manhole To	Diameter (in)	Material	Install Date	Segment Length (ft)
415-13	415-12	8	PVC	1/1/1962	226

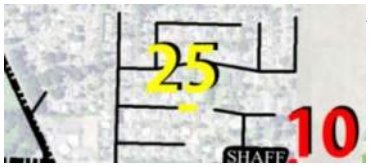
PACP Findings

Inspected by Michels Pipe Services in 2017

- One Deposits Defect

Project Location

Eagle St



Night-time I/I Flow (May '20)/Smoke Testing (Aug '20)

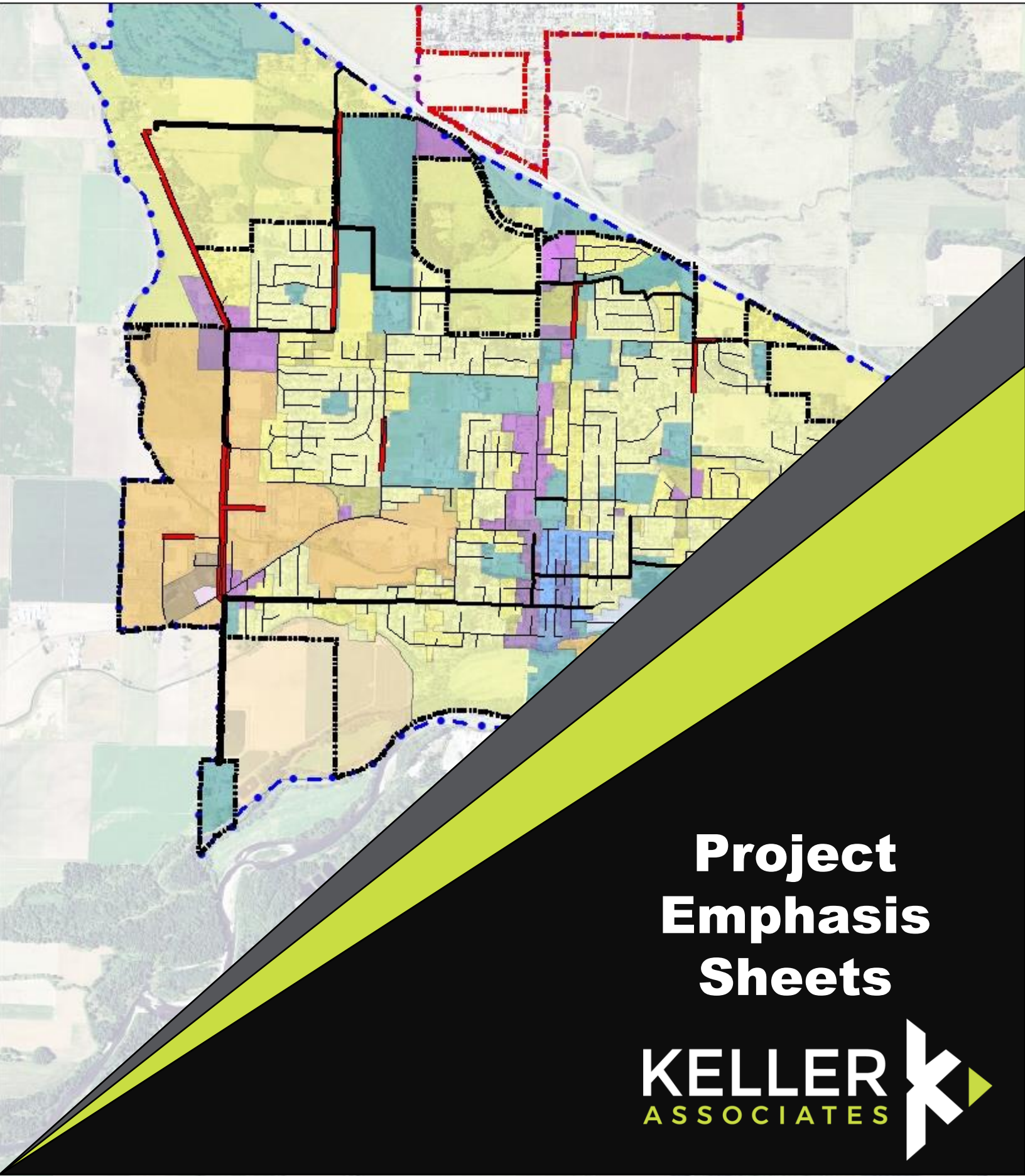
- Pipeline segments appeared to have low night-time flows

Comments

-

City of Stayton OREGON

Appendix H



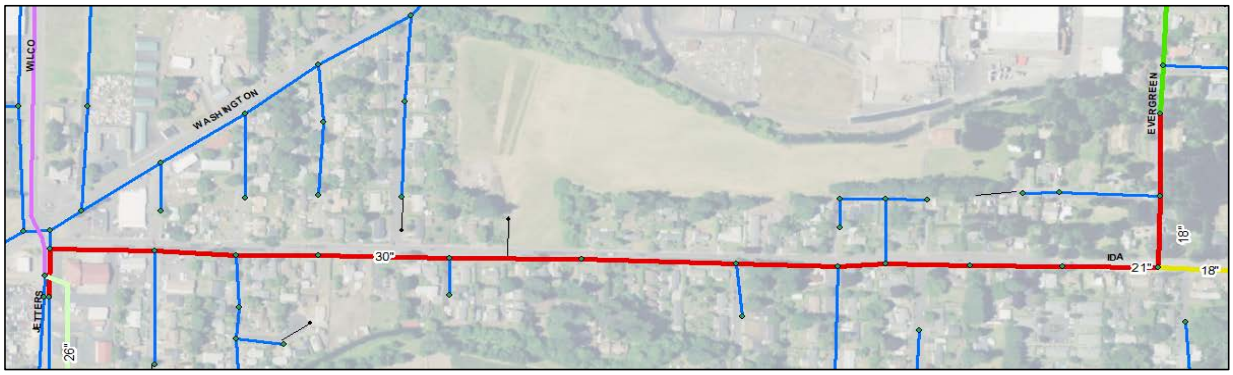
Project Emphasis Sheets

KELLER ASSOCIATES

Wastewater Facilities Project: **Pipeline Upsizing**
Project Identifier: **1.1**

Objective: Upsize the trunkline on Jetters Way and W Ida Street to address existing and future capacity issues.

Project Location: Jetters Way and W Ida Street



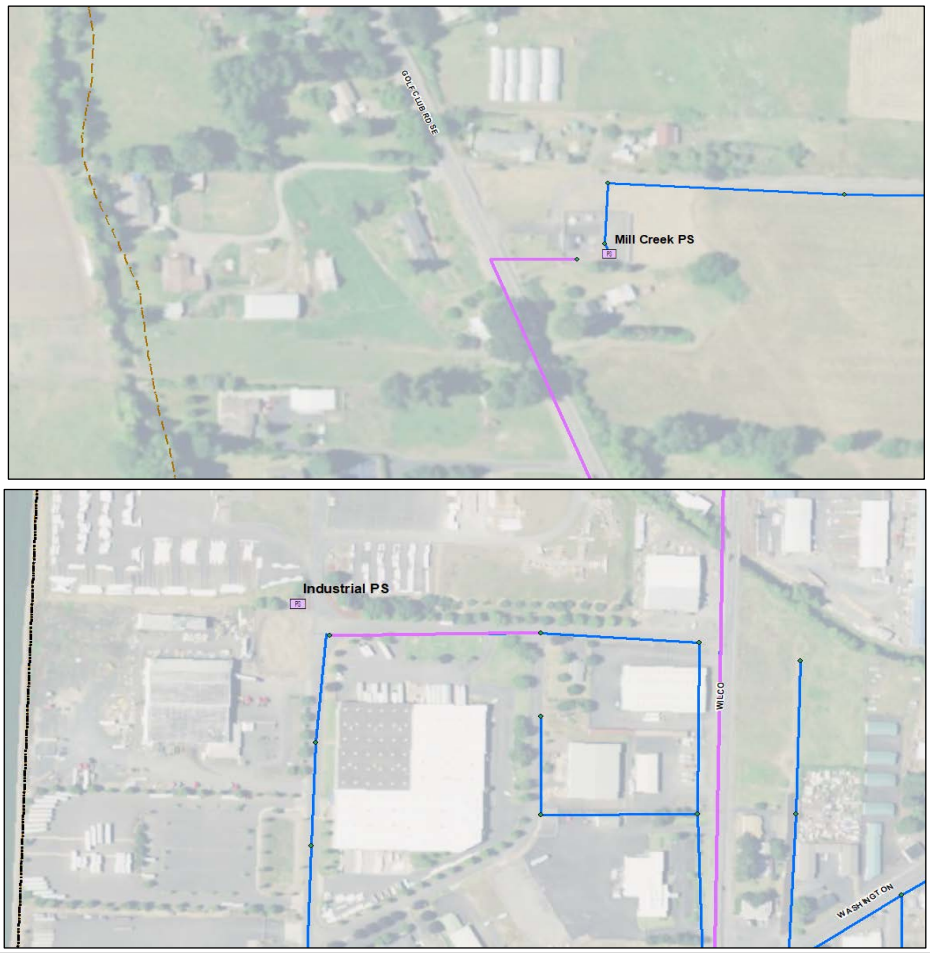
Items	Cost (2020)
Jetters Way	
30-inch Pipe - Excavation, Backfill	$ 39,600
Replacement Control Vault	$ 40,000
Full Lane Pavement Repair	$ 10,800
Bypass Pumping	$ 5,000
Traffic Control (without Flagging)	$ 720
W Ida Street	
21-inch Pipe - Excavation, Backfill	$ 295,800
30-inch Pipe - Excavation, Backfill	$ 618,200
Reconnect Services	$ 68,250
Manhole (48")	$ 30,000
Manhole (72")	$ 136,000
Full Lane Pavement Repair	$ 273,000
Bypass Pumping	$ 45,000
Traffic Control	$ 36,400
N Evergreen Avenue	
18-inch Pipe - Excavation, Backfill	$ 94,550
Reconnect Services	$ 9,150
Manhole (48")	$ 15,000
Full Lane Pavement Repair	$ 36,600
Bypass Pumping	$ 6,000
Traffic Control	$ 4,880
Subtotal (rounded)	*$ 1,765,000*
Mobilization (5%)	$ 89,000
Subtotal	*$ 1,854,000*
Contingency (30%)	$ 557,000
Total Construction Cost	$ 2,411,000
Engineering and CMS (20%)	$ 483,000
General and Administrative Costs (2%)	$ 49,000
Total Project Cost	$ 2,943,000

The opinion of most probable cost herein is based on our perception of current conditions at the project location. This estimate reflects our opinion of probable costs at this time and is subject to change as the project design matures. Keller Associates has no control over variances in the cost of labor, materials, equipment, services provided by others, contractor's methods of determining prices, competitive bidding or market conditions, practices or bidding strategies. Keller Associates cannot and does not warrant or guarantee that proposals, bids or actual construction costs will not vary from the costs presented herein.

Wastewater Facilities Project: **Pump Station Upgrades**
Project Identifier: **1.2**

Objective: Replace flow meter and vault at Mill Creek pump station for improved operations. Install bollards at Industrial pump station for improved safety,

Project Location: Mill Creek and Industrial Pump Stations



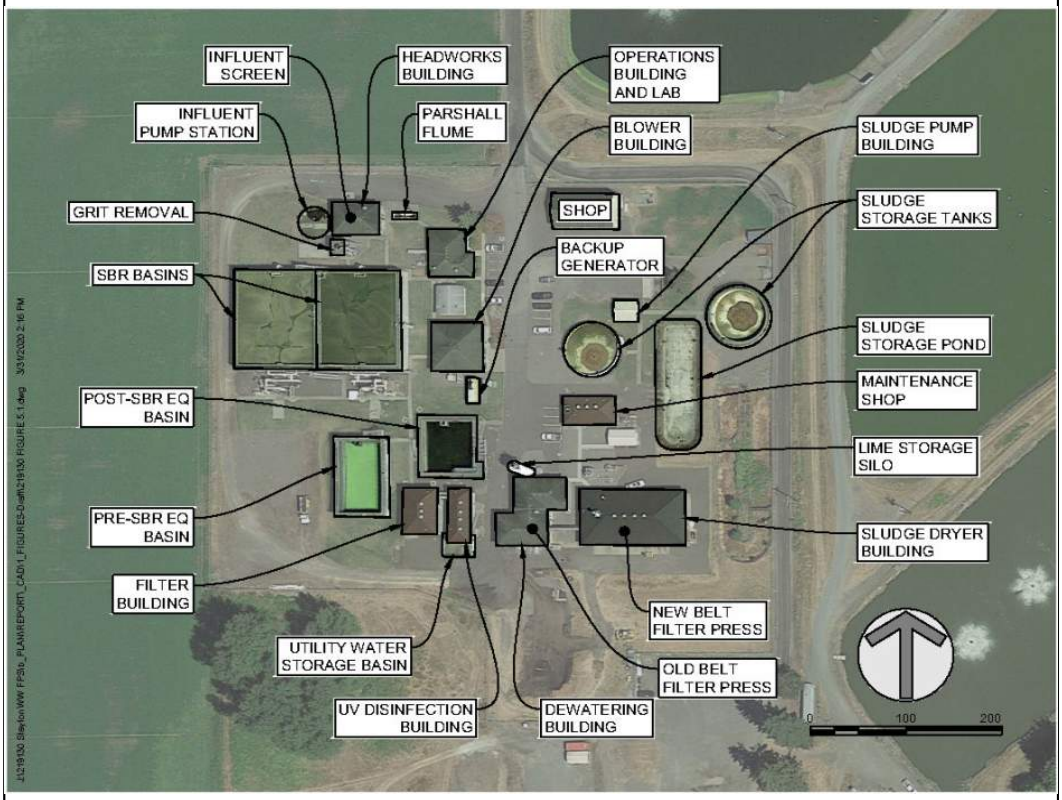
Items	Cost (2020)
Mill Creek Pump Station	
Discharge Pressure Gauge	$ 420
4" Combination Air/Vacuum Valve	$ 3,100
24" Plug Valve	$ 32,000
Flow Meter, Isolation Valves, and Vault	
Demolition	$ 2,000
12" Mag Meter	$ 35,000
12-inch Plug Valve	$ 40,000
12-inch Dismantling Joint	$ 8,400
12"X10" Tapping Valve	$ 8,100
10-inch Ductile Iron Pipe	$ 2,600
10" DI 90 Bend	$ 1,210
10" DI Tee	$ 1,920
10" Pipe Cap	$ 600
1/2" Injection Valve	$ 100
2-inch Chemical Piping	$ 350
Vault	$ 10,000
Industrial Pump Station	
Bollards	$ 2,000
Subtotal (rounded)	*$ 148,000*
Mobilization (5%)	$ 8,000
Subtotal	*$ 156,000*
Contingency (30%)	$ 47,000
Total Construction Cost	$ 203,000
Engineering and CMS (30%)	$ 61,000
General and Administrative Costs (2%)	$ 5,000
Total Project Cost	$ 270,000

The opinion of most probable cost herein is based on our perception of current conditions at the project location. This estimate reflects our opinion of probable costs at this time and is subject to change as the project design matures. Keller Associates has no control over variances in the cost of labor, materials, equipment, services provided by others, contractor's methods of determining prices, competitive bidding or market conditions, practices or bidding strategies. Keller Associates cannot and does not warrant or guarantee that proposals, bids or actual construction costs will not vary from the costs presented herein.

Wastewater Facilities Project: **Winter Equalization**
Project Identifier: **1.3**

Objective: Add influent wastewater lagoons to use as equalization for peak influent flows. The equalization lagoons would store the influent above approximately 4.1 MGD, and then release it back to the WWTP during lower flow periods.

Project Location: Near WWTP



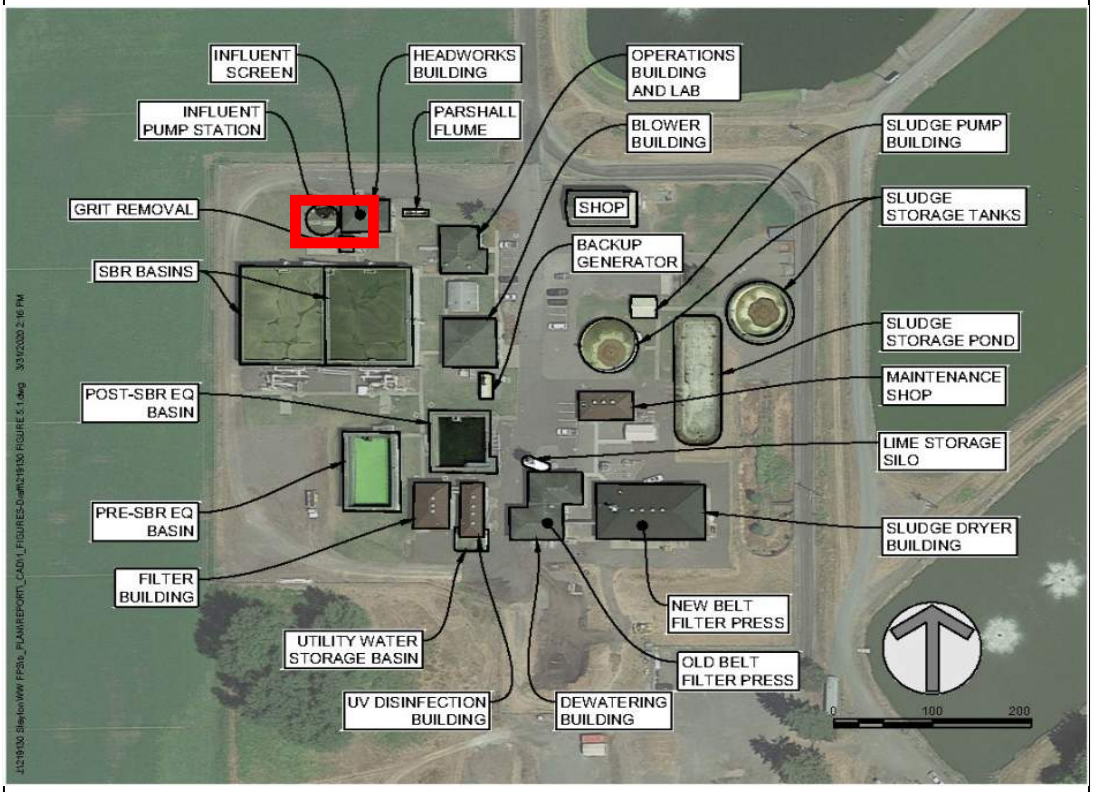
Item	Cost (2020)
Storage Lagoons	$ 4,900,000
Lagoon Pumping & Transmission	$ 430,000
Subtotal	*$ 5,330,000*
General Conditions (10%)	$ 540,000
Subtotal	*$ 5,870,000*
Contingency (30%)	$ 1,770,000
Subtotal	*$ 7,640,000*
Contractor OH&P (15%)	$ 1,150,000
Total Construction Cost	$ 8,790,000
Engineering and CMS (22%)	$ 1,940,000
General and Administrative Costs (3%)	$ 260,000
Land Purchase Price	$ 525,000
Due Dilligence for Purchase	$ 15,000
Total Project Cost	$ 11,530,000

The opinion of most probable cost herein is based on our perception of current conditions at the project location. This estimate reflects our opinion of probable costs at this time and is subject to change as the project design matures. Keller Associates has no control over variances in the cost of labor, materials, equipment, services provided by others, contractor's methods of determining prices, competitive bidding or market conditions, practices or bidding strategies. Keller Associates cannot and does not warrant or guarantee that proposals, bids or actual construction costs will not vary from the costs presented herein.

Wastewater Facilities Project: **Influent Pump Control**
Project Identifier: **1.4**

Objective: Add variable frequency drives, flow meter, and new control panel to provide a uniform flow to the SBR.

Project Location: Influent Pump Station



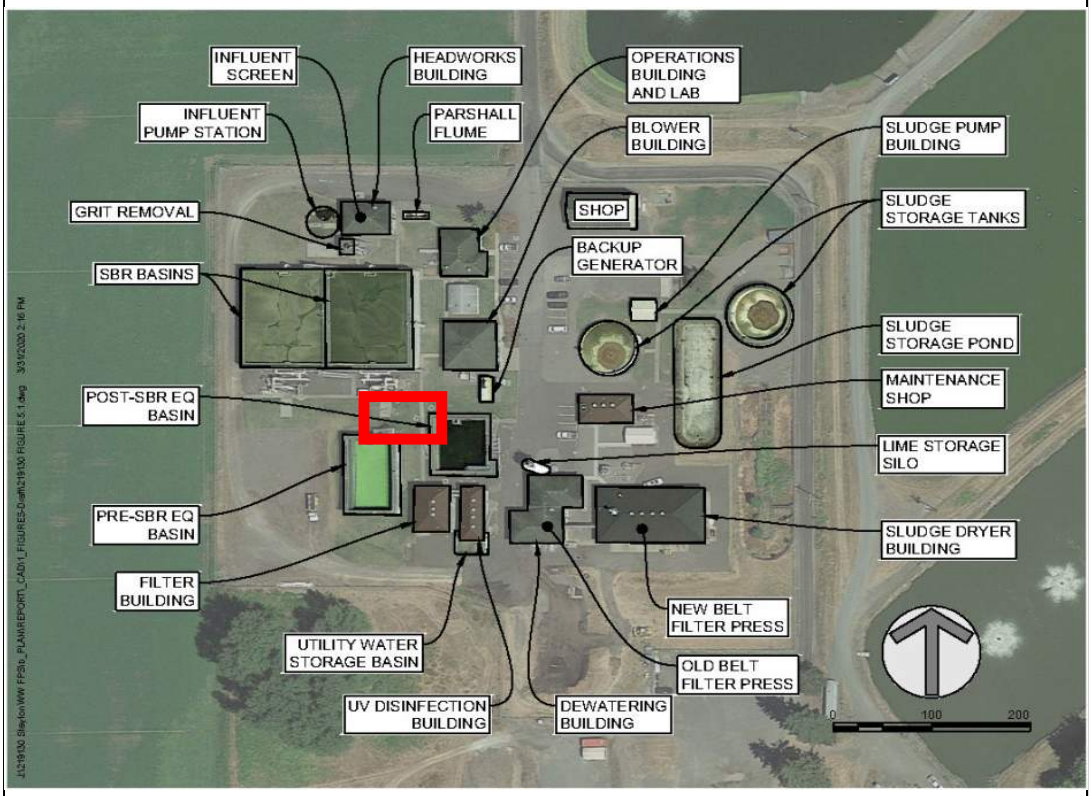
Item	Cost (2020)
VFDs, Flow Meter, and Control Panel	$ 50,000
Subtotal	*$ 50,000*
General Conditions (10%)	$ 5,000
Subtotal	*$ 55,000*
Contingency (30%)	$ 17,000
Subtotal	*$ 72,000*
Contractor OH&P (15%)	$ 11,000
Total Construction Cost	$ 83,000
Engineering and CMS (22%)	$ 18,000
General and Administrative Costs (3%)	$ 2,000
Total Project Cost	$ 103,000

The opinion of most probable cost herein is based on our perception of current conditions at the project location. This estimate reflects our opinion of probable costs at this time and is subject to change as the project design matures. Keller Associates has no control over variances in the cost of labor, materials, equipment, services provided by others, contractor's methods of determining prices, competitive bidding or market conditions, practices or bidding strategies. Keller Associates cannot and does not warrant or guarantee that proposals, bids or actual construction costs will not vary from the costs presented herein.

Wastewater Facilities Project: **Post-SBR Equalization**
Project Identifier: **1.5**

Objective: Add piping to connect the SBR decant to the existing Selector Cell and the existing Post-SBR Equalization.

Project Location: Post-SBR EQ Basin



Item	Cost (2020)
Site Work	$ 20,000
Piping	$ 20,000
Subtotal	*$ 40,000*
General Conditions (10%)	$ 10,000
Subtotal	*$ 50,000*
Contingency (30%)	$ 20,000
Subtotal	*$ 70,000*
Contractor OH&P (15%)	$ 20,000
Total Construction Cost	$ 90,000
Engineering and CMS (22%)	$ 20,000
General and Administrative Costs (3%)	$ 10,000
Total Project Cost	$ 120,000

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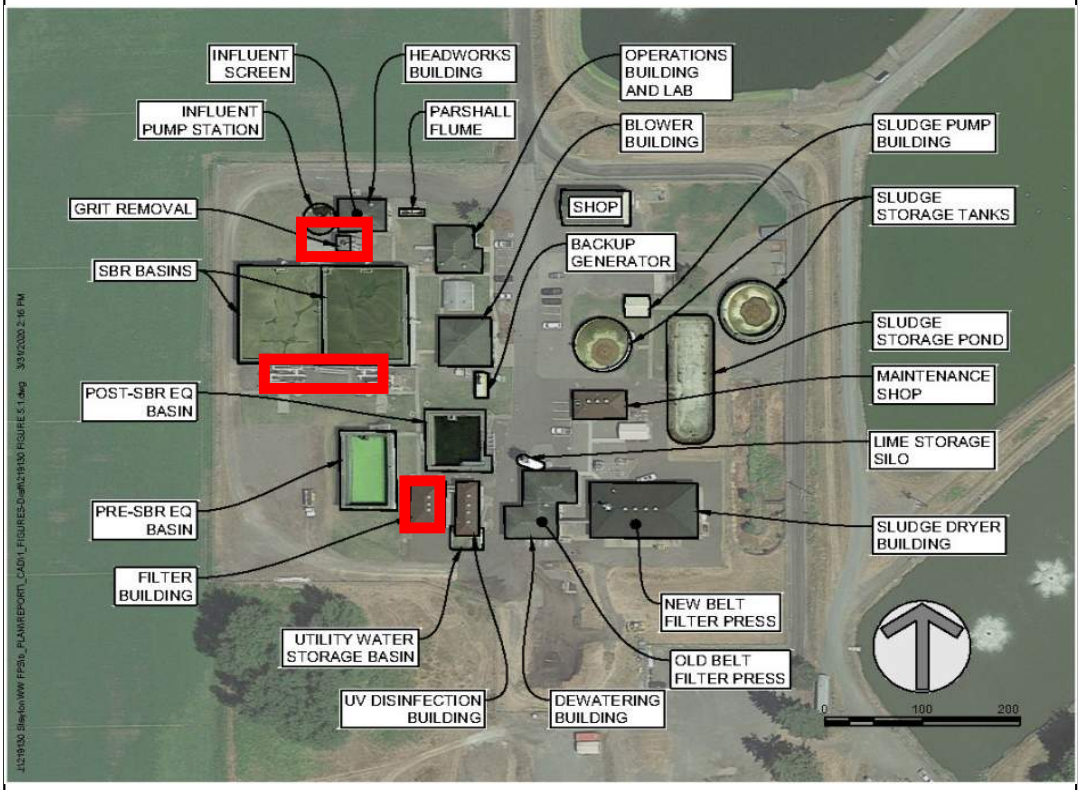
Wastewater Facilities Project: **Miscellaneous Parts**
Project Identifier: **1.6**

Objective: Miscellaneous parts including replacing the influent pump valves and SBR decant valves, purchasing spare pumps and motors for the grit removal system, and replacement filter media for Filter #3.

Project Location: Multiple Locations



Item		Cost (2020)
New Influent Pump Valves	$	60,000
New SBR Decant Valves	$	60,000
Grit Removal System Spare Parts	$	30,000
Filter Media	$	5,000
Subtotal	*$*	*155,000*
Contingency (30%)	$	47,000
Total Construction Cost	$	202,000
Engineering and CMS (none)	$	-
General and Administrative Costs (none)	$	-
Total Project Cost	$	202,000

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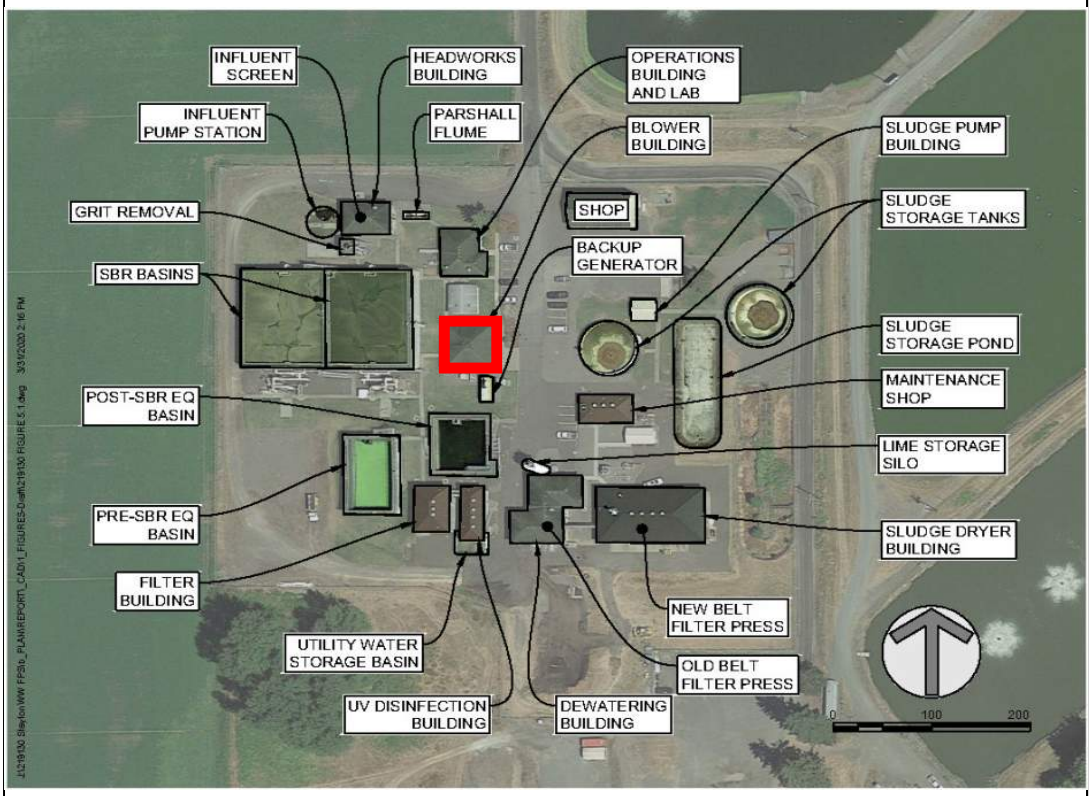
Wastewater Facilities Project: **Turbo Blower Replacement**
Project Identifier: **1.7**

Objective: Replace the existing K-turbo blowers with blowers that are less difficult to maintain.

Project Location: Blower Building



Item		Cost (2020)
Two New Blowers (including Installation)	$	450,000
Electrical/Controls	$	30,000
Subtotal	*$*	*480,000*
General Conditions (10%)	$	48,000
Subtotal	*$*	*528,000*
Contingency (30%)	$	159,000
Subtotal	*$*	*687,000*
Contractor OH&P (15%)	$	104,000
Total Construction Cost	$	791,000
Engineering and CMS (22%)	$	175,000
General and Administrative Costs (3%)	$	24,000
Total Project Cost	$	990,000

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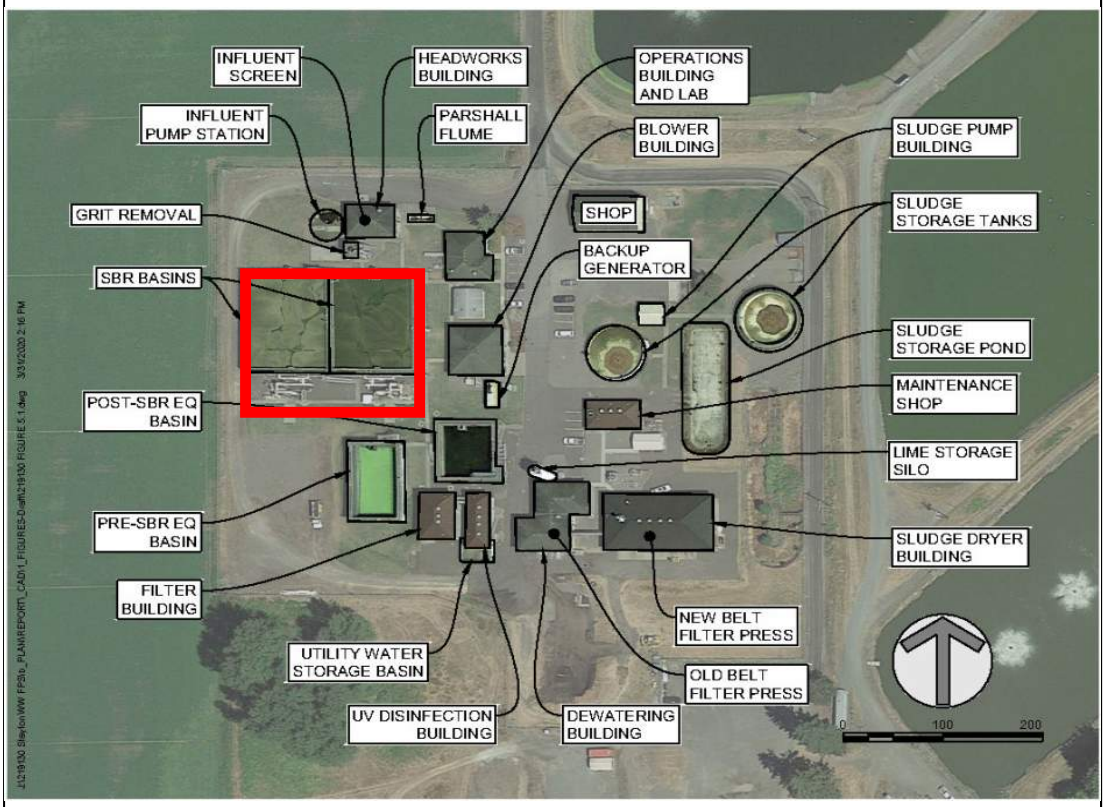
Wastewater Facilities Project: **Misc. SBR Improvements**
Project Identifier: **1.8**

Objective: Replace the existing scum removal system, cover the pumps and piping area with a metal cover, and update the SBR programming to provide automatic wasting in single-basin mode.

Project Location: SBR Basins



Item	Cost (2020)
New Scum Removal	$ 15,000
Cover Pumps	$ 60,000
SBR Programming for WAS	$ 5,000
Subtotal	*$ 80,000*
General Conditions (10%)	$ 8,000
Subtotal	*$ 88,000*
Contingency (30%)	$ 27,000
Subtotal	*$ 115,000*
Contractor OH&P (15%)	$ 18,000
Total Construction Cost	$ 133,000
Engineering and CMS (22%)	$ 30,000
General and Administrative Costs (3%)	$ 4,000
Total Project Cost	$ 167,000

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